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THE GEOLOGICAL MAP OF THE WORLD

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GEOLOGICAL MAP OF THE WORLD — 1:25,000,000

For many years it has not been possible to supply a geological map of the world that comes up to expectations of quality, cost and size. Although one or two maps have been published, they have either been too expensive or of inadequate quality or of an inappropriate size.

At long last, this situation has changed. UNESCO and CGMW have jointly published a geological map of the world which is of genuine quality, sensible size and easily affordable.

The map comes in four sheets which can be assembled in two different configurations, with either the Atlantic Ocean or the Pacific Ocean central (as shown here). The map is at a scale of 1:25,000,000 and when assembled measures two metres by one metre (6'6" x 3'3"). This size and the striking nature of the map make it ideal for wall display at presentations and meetings as well as in schools and colleges. It would also make a colourful and informative contribution to the office or study of any organisation or individual with an interest in the Earth Sciences.

As can be seen from the illustration, the geological structure of both the continents and the oceans is clearly presented. This makes the map of great utility in the demonstration of the many observed facts which have led to our current understanding of the Earth, that is, the theory of plate tectonics. For example, active volcanoes are clearly marked, making evident their correlation with orogenic belts. The age of oceanic basements is shown and the increase in age away from constructive margins can be clearly seen. While the stratigraphic resolution inevitably cannot be very fine it is more than adequate to show the general pattern of rocks that make up the Earth's surface.

All the information contained in this new map was taken from national cartographic projects and compiled using computers.

This is a map of all-round utility which incorporates our modern understanding of the Earth. It will be valued not only by those involved in the teaching of geology and professional geologists, but also by those with a casual interest in geology. Geological mapping is the basis of geology and there can be no map more fundamental than this one; therefore it is one of the principal tools in the understanding of geology.

SPECIFICATIONS

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Geothermal's Kapoho #9 moves ahead of schedule

POHOIKI, Hawaii - Power from Puna Geothermal Venture's new production well may be available sooner than expected.

Drillers encountered a high-pressure zone at the project's Kapoho State 9 well at a depth of about 3,300 feet, according to Steve Morris, Puna Geothermal vice president.

Morris said the high-pressure "can be an indicator that the well may be near a production zone" - steam that can be used to generate electrical power.

Casing of the well was then pushed up ahead of schedule. Casing involves placing a 9 1/2-inch pipe into the hole and cementing it. It reduces the

chances of an uncontrolled release of geothermal fluids.

Drilling was to have gone to the 4,000-foot level before casing would be installed.

In 1991, failure to place casing in another well, Kapoho State 8, led to a blowout that delayed the \$120 million project by almost a year.

Officials of the project said at the time that production steam found in KS-8 came in at a much shallower depth than had been anticipated.

KS-8, which was producing 10 megawatts of power for a short time in October, was abandoned in November because of problems that developed after a lightning strike during a storm.

Handwritten notes:
K...
M...
501-2

Hawaii Tribune - Herald, Wednesday January 6, 1993-

Geo not in right place

My name is Cayenne, I'm 10 years old and in fifth grade. I am putting this letter in the paper to tell people about geothermal.

Geothermal is not bad, but the places that they close to put the two plants are not good. One of the plants is too close to people and makes them sick. The other plant is in the rainforest taking the animals homes; they also cut down the trees that we need. It is not necessary to take away a need.

I believe there is going to be more and more geothermal plants. No one would mind, if the people who want goethermal would use their brains and choose the right place.

Cayenne Carocci
Hilo

-Hawaii Tribune - Herald, Tuesday, January 5, 1993

Geo not bad, but...

My name is Angel, and I am 10 years old. Geothermal is not bad but where they put it is. It is destroying our trees. I do not think it is necessary to destroy our trees! All animals are important and so is life. We will have a terrible life if we do not wise up! I think we can find a better place if we try.

Angel Gray
Hilo

Activist Petricci acquitted in geo trespassing case

By ROBIN M. JONES
West Hawaii Today

HILO — An outspoken opponent of geothermal development in Puna was acquitted of criminal trespass charges Wednesday for entering Puna Geothermal Venture property in August.

Robert Petricci, argued the same defense of necessity for his Aug. 12, 1992, trespass incident and 14 other protesters used in an August mass trial before the same District Court judge, Riki May Amano.

The 15 defendants were convicted for their offenses in the previous trial, but Petricci said the defense worked during the recent trial because the danger from the plant was imminent, as a hydrogen sulfide leak was detected.

Petricci entered the grounds of the Pohoiki plant in August in an attempt to stop Kapoho State 8 well flow tests.

"I had every right to go in there," Petricci said.

The defense, which the judge said was not applicable to the defendants in the August trial, worked this time because she said she believed entry was necessary as all other alternatives had been exhausted and harm to the community was imminent, he said.

The necessity, or choice of evils, defense is used to justify illegal acts when the defendant believes the act will prevent harm, or, as in this case, the harm from the plant will be greater than the harm created by the act of trespassing.

The difference between the previous trial, during which Petricci was convicted on two counts

of trespass, and the recent acquittal, was the tests were planned, he said.

They were scheduled to begin the day Petricci entered the grounds of the more than \$130 million plant.

"This was predictable," he said. "Everybody in the community knew it was going to be a disaster."

Also, the problems experienced during the testing showed he was justified in worrying about his health and safety and the safety of others in his community, he said.

"The action I took was understandable under the circumstances."

During the tests, Petricci and about 30 other people staged a protest, but Petricci was the only one to be arrested because he alone entered the grounds and proceeded toward the drilling rig.

The tests were to determine whether a sufficient geothermal resource in the area and well exists. Steven Morris, vice president and general manager, previously said the tests had not gone well.

Furthermore, Petricci said, his actions and the problems experienced during the flow tests forced them to stop about an hour after the tests began. He said the judge probably took that into consideration.

The tests were scheduled to last 10 days, but uncontrolled releases of hydrogen sulfide, possibly due to a faulty flange, required the tests be ceased until the problem could be solved. The tests resumed a few days later but were halted again due to more leaks.

Petricci has been arrested numerous times for geothermal-related incidents, but he said the verdict Wednesday made him feel

like he has finally won a battle.

"It is going to put PGV on notice that they don't have the right to do this to the community," he said.

He also said he hopes the verdict will prompt the state Department of Health to make some changes

"This is going to make them look bad," he said, "Because I shouldn't have to do this to protect myself."

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TO WHOM IT MAY CONCERN:

Kentucky's new law for registration of professional geologists became effective July 14, 1992. This law was enacted to regulate the public practice of geology in the state. The law requires the registration of all geologists offering their professional services to the public in Kentucky.

Requirements and provisions of this new law may be important to members of your association/society who now practice or may practice geology in Kentucky. Please inform your membership of this matter in your next newsletter, or by other means. The suggested announcement is enclosed.

Sincerely,

David C. Scott, Chairman
KY Board of Registration
for Professional Geologists

Geothermal firm gives up on two wells

By Hugh Clark

Advertiser Big Island Bureau

POHOIKI, Hawaii — The future of commercial geothermal energy production on the Big Island took two steps backward yesterday.

Puna Geothermal Venture announced it will abandon the KS-8 well, which once was expected to produce 10 or more megawatts of power.

Steve Morris, general manager of the \$110 million project, said hopes for converting KS-4 from an injection well — to return spent fluids back deep in the earth — into a production well have been given up.

That means the company will have to start anew by drilling KS-9 near the site of the now cemented KS-8 well, and that power production won't resume until next year.

In yesterday's announcement, Morris did not give a timetable for starting up the 10-unit production plant. He said drilling will start next week and take up to 60 days.

The well then has to be tested, completed and hooked into the plant system. Some preliminary work on the well site has been done.

The good news, he said, is that with KS-4 completed, the company has three injection wells that can accommodate the 25 megawatts of energy Puna Geothermal is contracted to provide Hawaii Electric Light Co.

Wells won't be providing energy soon

POHOIKI, Hawaii (AP) — Puna Geothermal Venture will not provide power until sometime next year, as it plans to abandon one well and scrap production plans for another.

The Kapoho State-8 well, which was projected to produce at least 10 megawatts of electricity, is cemented over and will not be tapped again, PVG general manager Steve Morris said Tuesday.

Plans to convert the KS-4 from an injection well to a production well have been canceled, he said. The well is completed at a depth of 6,800 feet.

That means PVG has three injection wells that can accommodate the 25 megawatts of energy the company is under contract to provide Hawaii Electric Light Co., Morris said. An injection well returns spent fluids back into the earth in the geothermal energy production cycle.

PGV will start new drilling at its KS-9 well next week, and the work is expected to take up to 60 days, he said. Morris did not indicate when the 10-megawatt production plant would be started.

There have been numerous delays to the geothermal venture because of state permitting problems over hydrogen sulfide emissions at the site.

Geothermal's ill affects spread beyond plant site

Your pro-geothermal editorials of Oct. 23 and 28 reveal a lack of understanding of the tremendously powerful forces under the Big Island that make your attack on environmentalists inappropriate.

Your claim that only a small area of the rainforest will be destroyed by geothermal development only considers it from the narrow point of view of the land taken up by the physical facilities.

Ever since the original state HGP-A well and several other private wells very close to it began their open-venting practices in the '70s, terribly offensive odors that have roared out of these mile-deep iron pipes have been the focus of concern.

Residents worry that these well

pipes will rupture from the corrosive steam or from the violent shaking, rising and falling of the ground associated with eruptions in the Kapoho area.

Originally claimed to contain only 3 ppm hydrogen sulfide, state officials changed their figures and now report close to 1,000 ppm since 1982. This dramatically changed the picture, as this level is so strong that it can and has knocked workers unconscious and stopped their breathing before they were rescued.

Health effects such as nausea, headache and respiratory problems begin at only 0.1 ppm (100 ppb). Luckily there have been no deaths yet, however they endanger people and the environment for miles in every direction from the well sites.

Wally Bachman

-Hawaii Tribune - Herald, Friday, November 20, 1992

PGV KS-4 well drilling to finish

Drilling at Puna Geothermal Venture's KS-4 well should be completed within the next several days, PGV project manager Steve Morris said yesterday.

Scientists will then take up to two weeks to determine whether the well has enough geothermal resource to make it financially feasible as a production hole. Other factors would also need to be considered such as the acidity of the resource.

KS-4, now drilled to a depth of 7,000 feet, was originally intended to be an injection well but the shutdown of KS-8 because of continuing leaking problems less than a week into actual production has forced PGV to consider KS-4 as a production well, at least on a temporary basis.

If the decision is made to make it a production well, a Christmas return for PGV power "would not be an unreasonable time frame," Morris said.

Regardless of whether KS-4 is production or injection, PGV next plans to drill a new production well, KS-9. Drilling there would take between 45 and 60 days, he said.

Morris said that in the meantime, there have been no leaks at either KS-8 or the plant.

PGV must drill new well

Geo power won't come on line now until after Christmas

By Gordon Y.K. Pang
Tribune-Herald

Puna Geothermal Venture won't have energy for Christmas after all.

The company announced yesterday that it won't use the re-

cently completed KS-4 geothermal well as a production hole, but rather as an injector for spent geothermal fluids.

As a result, PGV will now need to drill KS-9, an entirely new hole, as its first resource well. PGV project manager Steve Morris has estimated the drilling process will take about 60 days, meaning steady power for Helco's grids can't be expected until sometime early 1993. Drilling of KS-9 is ex-

pected to begin next week.

The latest series of setbacks for the Pohoiki plant began when the state and the company "agreed" to shut down the troublesome KS-8 production well at the beginning of the month because of constant leaks of hydrogen sulfide. KS-8 had been expected to provide between 8 and 15 megawatts to the power grid.

That move left the company without production capability.

PGV was contemplating using KS-4, now drilled to a depth of 6,800 feet, as a producer at least on a temporary basis.

"It would have been (a) very complex process and detrimental to the overall timetable for getting the project to a full 25 megawatts of production," Morris said in a prepared release. "Therefore, we concluded it was in the best interest of the project to complete the well as an injector."

Morris said PGV engineers are hopeful about the potential source available at KS-9, which is being drilled in the vicinity of the now-defunct KS-8.

"The KS-8 well defined a production area that has extremely valuable resources," he said.

Morris further downplayed the situation by noting that PGV

See PGV, Page 10

PGV: Geo power now not expected till '93

From Page 1

now has three reinjection wells which should provide the necessary capability to handle 25 megawatts of production.

"It appears we are very close to meeting that goal," he said.

Jon Olson of the Lanipuna Gardens Community Association found Morris' comments amusing. "This is kind of like

the captain of the Titanic reporting to the passengers that they now have an unlimited supply of ice," he said.

Olson said the experts he spoke to told him all along that PGV would never be able to use KS-4 as a production well. Since it's in the vicinity of KS-3, he said, "they would be

pumping out of KS-4 and pumping it cold into KS-3," thus reducing the heat of the resource.

Olson also expressed skepticism about PGV's ability to find a solid resource at KS-9. "The resources here are over such a small area, it's like little pin points that come up to the surface."

Residents are also concerned about drilling of the well and fear a recurrence of the problems associated with KS-8, he said, including a blowout that occurred in June 1991 and several other instances which led to uncontrolled venting of hydrogen sulfide.

Cap likely to remain on Puna steam well

Puna Geothermal Venture announced the closure of a geothermal steam well in Pohoiki is likely to be permanent. The well, which intermittently leaked hydrogen sulfide during its first 10 days in operation, was plugged with cement earlier this month. A location for a new well is being sought, according to PGV.

Geothermal doesn't belong

One flash of lightning and the multimillion-dollar geothermal operation on the Big Island is knocked out of commission. Imagine what would happen if an earthquake or another Kāpoho eruption struck!

A decade ago, Jack Schweigert and I led the first legal challenge to the irresponsible development and open venting conducted by the state at its first geothermal well, right next to the current site. We were asked to intervene by hundreds of Puna residents whose families

had suffered serious illness from the geothermal stench. Judge Harold Fong decided that nobody could prove they were made sick by geothermal fumes because they and their doctors were not "experts" in geothermal matters.

Pele has been providing her own protest of this decision with the longest and most powerful eruption in recorded history. This eruption's 10th anniversary will be Jan. 3.

How much more damage must be done before people become convinced that the most powerful and poisonous geothermal wells in the world cannot be safely operated right next to residential neighborhoods?

WALLY BACHMAN

ENVIRONMENTAL UPDATE

Threat of lead poisoning still hangs over residents of Hawaii

The specter of lead poisoning arises repeatedly in Hawaii, a non-industrial state where you wouldn't expect a big problem.

Studies of fish in Honolulu streams, and of stream sediment, show elevated levels of lead, apparently associated with the runoff. Scientists say they think much of the lead is left over from the formerly common use of lead in gasoline. Exhaust material settled on the ground, eventually was washed, and is still washing, into our waterways.

There is the concern that acid rain associated with volcanic sulfur emissions leaches lead into homes with catchment systems on the Big Island. Such homes often have lead-based paint on roofs, lead flashing and lead solder in house piping, and some of the lead can enter drinking water that flows over these sources.

Catchment systems

A study showed more than a quarter of the homes with catchment systems had water lead levels higher than the proposed EPA standard for lead. Blood tests were also taken, but while lead in a home's water tended to correlate with levels of lead in the blood, studies did not find individuals with dangerously elevated blood lead levels linked to water systems.

There is also the more recent concern that lead was being released into Kauai's air through the burning on Kauai of hurricane debris that might contain lumber with old lead-based paint.

Lead-based paint was banned for use on houses in 1978, but one of the big concerns continues to be the paint that's still on older houses. It's a particular problem for youngsters who might eat flaking paint.

Lead poisoning is a special problem for children, in whom it has more serious effects than adults. Lead can act as a neurotoxin, and has been associated with reduced IQ, impaired short-term memory, reduced ability to concentrate and slower reaction times, according to



Advertiser photo

Sign for lead screening clinic on the Big Island during the household lead scare in 1988.

a 1990 study by the Environmental Defense Fund.

There can be mood changes, crankiness, loss of appetite, mental retardation and in extremely high doses, death.

It is an extremely persistent chemical, remaining in the body for many years, so the effects of continued exposure tend to accumulate.

It's also a problem in wildlife. Lead shot has been banned in hunting over water in the United States and Canada, because birds mistake the shot for small pebbles they need as part of their digestion. The lead is worn down and absorbed in the bloodstream, and can cause the death of the birds.

The use of lead in fishing weights was banned five years ago in England because of damage to birds that ate the weights. Last month, four major environmental and fishing groups in this country called on the Department of Interior to ban the use of lead fishing weights in national wildlife refuges and parks. They said there is now evidence that certain birds, including the com-

mon loon and trumpeter swan, are poisoned by eating lead sinkers.

Lead-free weights are available at low cost. The cheapest and most popular ones are made of tin.

Concern for kids

Studies on lead in children in Hawaii show the state has levels generally lower than the national average. Two children have been admitted to Hawaii hospitals suffering from apparent lead poisoning, and both had a history of chewing on painted articles. The paint was not tested in either case, but health officials assumed it was the culprit.

Once again, there are several reasons for special concern about kids, beyond the fact that their growing neurological systems are sensitive to lead poisoning. Here are some of the other points cited in a 1991 study by Hawaii physicians Robert Wiebe, Carl Lehman, Denis Fu and Bruce Anderson, who is also deputy director of the state Health Department:

■ While adults typically absorb into their bodies 5 percent

of lead that goes through their digestive systems, children can absorb as much as 20 percent.

■ Young children have a hand-to-mouth habit that can cause them to ingest more contaminated substances than adults, like dirt and flaked paint.

■ Most lead is stored in the bones, and in the growing bones of children, it can slow growth.

For adults, special areas for concern can include: paint removal; radiator repair; making lead fishing weights; a task that should be done with plenty of ventilation; burning old, painted wood; preparing food with lead utensils and vessels like antique pewter and lead-glazed pottery.

Deputy Health Director Anderson said one of the interesting things about lead is that humans don't need it. Unlike elements like zinc and iron, it provides no known benefit, and the body's lead level should be zero.

Avoid hazards

And while Hawaii tends not to be a state with particular lead hazards, it pays for individuals to avoid sources of lead poisoning and to attend to kids with habits that might lead them into danger.

The Hawaii doctors' report includes these lines:

"Exposure to lead is widespread and in unexpected forms in our environment. It is quite clear that even minimal but chronic exposure to lead can result in neuropsychologic effects that are often irreversible. Prevention of exposure to lead is far more worthwhile than the recognition and then treatment of the signs and symptoms once they have occurred."



JAN
TENBRUGGENCATE
Advertiser
Environment Writer

Geothermal & smoking

You (Jon Olson) made several references about the "threat to life" and blame geo-development, as recently as Sept. 5, at a forum (mayoral) in Pahoa. Following the PGV (June 12-13, 1991) venting, you gave testimony on how it impacted the residents of Lanipuna Gardens. The episode at the forum attracted my attention because you had a pack of cigarettes that nearly fell out of your shirt pocket.

Your presence and Martinovitch's at the forum confirmed that you were in the best of health and very much alive to confront one of the candidates in the manner you did. If you were impacted and poisoned as you claimed, Jon, what about your smoking habit? And during that hearing at the UH Hilo Campus Center (Sept. 23), you couldn't wait to get out of the building (during a break) and subjected us non-smokers to inhale your contaminated secondary smoke in the waiting room. Where was your concern, Jon?

Also at every hearing I attended, concerning geothermal, I was subjected to inhale smoke created by you smokers. Every entrance and exit of the building, smokers (your majority) congregated and totally disregarded and ignored the presence of other people who didn't smoke. But as soon as someone agreed to geothermal, your screams became the loudest. Very hypocritical. I wonder why?

I have been exposed to H₂S a good part of my life, and, for two years, to the saturated air at the Hawaii Volcano National Park. Never have I experienced any ill-effects, then and now. Also, lower Puna has had its share of sulphur emission, before and after the 1955 eruption and to this very day. My ancestors has survived this (hy-

drogen sulphide) element for thousands of years with no adverse effect. They stood tall, large in stature, strong and healthy, until your ancestors violated their lifestyle. I do enjoy every chance to visit the sulphur bank in the national park, for a breath of H₂H, that began when I was eight years old. HANU'OLA, "the breath of life" my Kupunas (elders) would say.

Dan Makuakane
Pahoa

On geothermal energy: the Hawaiian side

By Mahealani Kuamoo-Henry

Viewpoint

I'm a native Hawaiian and a resident of Pohoiki, Puna. My roots are on this land where Pele lives. With recognition, respect and acceptance, my Kupunas lived physically and spiritually within her presence daily.

Today, Pele has become more fully recognized beyond this area, thanks to the resurgence of identity and pride placed upon our "Hawaiianess," along with her forceful activity in reclaiming her lands and creation of more. Her "being" and her activity are familiar experiences, especially upon those who recognize her existence without limits, and know that her forces of power are also unlimited. She is not reliant nor bound by man's influences, religions, laws, ideals, etc.

In 1881, King David Kalakaua recognized Pele as more than our goddess of fire. He saw her powerful energy as an unlimited natural resource for electric power and he voiced this to his distinguished visitor, Thomas Edison. His insight then would have placed him on the front lines today, promoting the means to utilize Pele's source of powerful energy.

His wisdom, and those of our Kupunas, would choose to promote this resource rather than to rely on foreign oil products. The use of land from some of our forest areas would also be done, rather than to risk the lives of our loved ones in foreign war to continue the flow of foreign oil.

'A'ale! 'A'ole! Their voices ring clear...mor'betta take land from our forest than the lives of our loved ones, and even mor'betta to make use of our own resources! Such is the way of our people and Kupunas who believe in using natural resources. All things were put to use. As fitting our needs, including the clearing of forested areas for planting, to build our homes, religious sites, etc.

Within the Wao Kele O Puna rainforest set aside for the geothermal plant project, it has yet to be proven to contain any evidence as a site set aside by our Ali'i for religious purposes. Without such formal designations, lands were utilized as needed.

For us Hawaiians, and those of Hawaiian hearts, our King David Kalakaua, along with many of our Kupunas, is gone physically, but not

so in spirit. By custom we are linked still from past to present with our Kupunas, and we accept their unstilled voices, influences, love and inspiration. The path to follow is hold firm our togetherness, love and mana, as they would have us do above the controversies that surrounds the geothermal plant project. Know that we, with Pele, share these ainas, as has been for centuries past, and we have, can and do serve each other's needs and aloha. We trust that future results will be best for our people and our Hawaii Nei.

In light of this, we know that we need not harbor ill will against those in protest. They, perhaps, are from foreign soil and breeding, led more by outside influences. Even so, we know that "protest" does serve as an additional means for balance, improvements, etc., within our system. However, do not be misled by irrational statements based on misinformation and radical attitudes stemming from ignorance. Those self-appointed guardians of our Hawaiian culture and religion had better find another format to exploit as cause for expression and social changes.

The examples of their "madness" holds no value, no worth: Those who use their children as "props" for dramatic display at their demonstrations; those who care not about the "rights" and "needs" of others, by their methods of harassment, blocking traffic, causing traffic hazards, placing great risk upon our fellow citizens, encampments at our State Building, confrontations with our bulldozer operators, police, and many others of our working class fellow citizens.

Auwe! Who of "right" mind would care to be supportive of such madness!

Auwe! It is not "Hawaiianess" nor of our Aloha spirit to support such pilikia! Better that these with their madness find their calling on some other distant shores.

Finally, keep in mind that the stages for progress, research, discovery, infancy and usage are never free of controversies, as those which surrounds the geothermal plant project. Even so, it is a project worth supporting, as a means for energy to serve the needs of our people, ALL of Hawaii Nei. To those few who choose not, need not.

Editor's note: Mahealani Kuamoo-Henry is a farmer, raising "ko'oko'olau" and "mamani" tea in Pohoiki, Puna.

Backers of proposed biogas plant appear before leery Paia neighbors

By HARRY EAGAR
Staff Writer

PAIA — Tom Miles, "professional pyromaniac," meet the citizens of Paia, professional doubters.

Miles, a Portland, Ore., engineer who has spent 45 years working on wood and energy projects (hence, pyromania), including virtually every gasification project in America in the past 15 years, was amazed and amused at Paia's reaction to a proposed \$9.2 million gasification demonstration project. Asked, during a four-hour meeting Thursday night at Paia Community Center, if he had ever seen anything like it, he smiled and said no, never, not even when he helped build a gasifier in downtown Lewiston, Maine.

The meeting was called by the Maui County Planning Department after a public hearing revealed deep unease about the federal-state-private project. Planning Director Brian Miskae pointed out that no public hearings are required for Land Use Commission special use permits (which in this case can be granted by the Planning Commission), but it is commission policy to have hearings anyway.

In this case, Miskae recommended an extra informational meeting. It did not allay all fears but it appeared to calm many of them.

In fact, several people wished the project well — though perhaps somewhere else. Carl Freedman, an energy policy expert and constant observer of local projects, advised the project engineers to remember

the experience at Pohoiki, another energy demonstration project that left neighbors very unhappy. (Pohoiki was a geothermal well and generator in Puna, since closed.)

"We all want your program to be a success," Freedman said. "But success is not going to be measured on purely engineering criteria. You're going to be judged on whether you are a good neighbor. . . . I hope throughout your design, management and development, you stress to everybody the importance of being good neighbors."

Some who had expressed concerns appeared somewhat mollified when they learned that the project is expected to run less than two years, then be dismantled. If the demonstration is a success, then much larger, commercial projects could be proposed, said Andy Trenka of the Pacific Center for High Technology Research, but these would require an all-new application process, complete with public hearings.

By the end of the evening, with about 20 of the original 100 listeners still hanging on, concerns had focused on two issues:

■ What does the state Department of Health know now, and what standards will it impose on air quality changes?

■ How much danger would Skill Village be in if the system failed?

The two concerns are closely linked, because under normal operating conditions the project would, according to Miles, emit fewer pollutants than the existing bagasse burning at the Paia mill.

But, speaker after speaker asked, what if the system fails? An environmental assessment alarmed many by mentioning naphthalene and benzene as products of the process of changing bagasse to either gas fuel or methyl alcohol.

Both substances are poisonous.

In phase one, the gaseous products will be "flared off," burned, including the naphthalene and benzene. PICHTR engineer Roy Ruel was quizzed closely about what would happen if the flare went out.

Very unlikely, he said, but there would be three backup systems: a propane pilot light to relight the gas stream, an electronic igniter to relight the pilot light if it went out, and, finally, an automatic shutdown.

Miles said shutdown would be as simple as stopping the conveyor belt feeding bagasse into the gasifier. Gas production would stop within about three minutes.

Much less was heard last night about moving the project to Pūnēne, which was a main theme at the public hearing last month.

Hawaiian Commercial & Sugar Co. Vice President Robert Kwok said several considerations made Paia the preferred choice: It has surplus bagasse, and Pūnēne doesn't; it has a bagasse dryer, and Pūnēne doesn't ("Build one," said a voice from the crowd); and the mill is large enough that the gasifier will be 1,200 feet from the nearest outside structure.

The Planning Commission is scheduled to reconsider the special use permit application Nov. 24.

Geo talks stalled by anger

□ Pahoa meeting 'unproductive,' state officials leave early

By J. Witty
Tribune Herald

Calling the people of lower Puna angry is a lot like saying the ocean is vast or that geothermal development is controversial. True enough, but it really doesn't convey the depth of the

reality.

The Pahoa High School cafeteria was seething last night as about 150 Puna residents met with state health officials to find some common ground on geothermal. It didn't happen.

After more than two hours of mostly derisive dialogue, interruptions and scattered shouting, moderator Bob Lerro cut the meeting short a half-hour early.

"This time it wasn't productive," said State Health Director

Dr. John Lewin after the meeting. "There was so much anger we didn't get to take it toward a constructive outcome. When people get this angry, it doesn't help us get the problem resolved ... There's no reason to come back out here again."

That's fine with Puna resident Bob Petricci who says he and his fellows are tired of running into stone walls.

"If we want to stop this plant, we have to stop it," Petricci told

the audience and panel. "You'd better get the National Guard ready and everything else. You'll have to put me in prison because I'm not going to the hospital anymore."

And Petricci queried the panelists: "Can you name one thing PGV has done right?"

Big Island Department of Health administrator Sam Ruben couldn't or wouldn't. After several seconds, he said, "They even screw up notifying

us."

"We're here not because we're getting paid overtime," said Lewin. "We're here because there are people hurting."

Despite the sympathetic tone, a steady stream of speakers lambasted the officials for lack of community input on an advisory committee and a long list of reported health transgressions

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GEO: Communication breakdown in Puna

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they say the state hasn't dealt with.

"I firmly, totally believe that (health effects from hydrogen sulfide emissions) are real," said Ruben. "It doesn't help that the developer has created this atmosphere of fear and loathing ... But it's tough to prove causation."

State toxicologist Barbara Brooks agreed.

"I believe the community is sick," said Brooks. "But it can't be documented by toxicological processes."

"... To do this kind of project with this kind of pressure with

these kinds of gasses, it's not right to impose that on a fellow human being," Harry Young told the panel.

Lewin said he would have preferred a buffer zone between the PGV plant and residents.

"That's the way it should happen," said Lewin. "It's not the way it is happening. I can't shut it down."

But Lewin said he may be able to bring outside experts in to evaluate the hazards.

"It seems to me that that request is a very legitimate one to take from this meeting to the

Governor," he said.

But in the end, that wasn't enough. The meeting ended abruptly and heated calls to "shut it down," trailed off into the Pahoa night.

PGV plugged its KS-8 well earlier this month after officials said a lightning strike disabled the well and spiked hydrogen sulfide levels. According to Civil Defense chief Harry Kim, some residents complained of vomiting, headaches and nausea. Fifteen people voluntarily evacuated their homes.

The well had begun producing 10 megawatts of power 10 days

before the mishap.

In addition to Lewin, Brooks and Ruben, panelists included Deputy Health Director Bruce Anderson, Hiram Young from the Department of Land and Natural Resources and Dean Nakano from the state Department of Business and Economic Development.

Police arrived midway through the meeting and maintained a presence until the end of the meeting when they left the cafeteria with state officials. No one was arrested and no incidents of violence were reported.

Geo leaks & shutdown

You don't know what a relief it is now that the Puna Geothermal Venture well is shut down again. We can open our windows and feel that fresh tradewind without worrying about a leak at the plant.

We live in the 3,500-foot hazard zone of PGV. We were not informed last Wednesday night or the next day of the massive leaks at the plant. We sleep with our windows open makai side to catch the breeze. That's also the PGV side; they're upwind.

You know, their failure to notify us of the danger is very unprofessional, and typical of the approach this "industry" has taken against the people of Puna. These developers would have been laughed off any mainland site long ago, due to their bumbling attempts and weak excuses for failure.

We have other reliable options for power that don't poison people. So let's get our priorities straight. Puna is for People First!

Andy Kier
Leilani Estates

Lanipuna group wants geo probe

Residents of the Lanipuna Gardens subdivision said yesterday they want all drilling stopped at the site of the neighboring Puna Geothermal Venture power plant.

A statement from the Lanipuna Gardens Community Association said the residents also want an independent team of experts to investigate the troubled facility, especially the KS-8 production well, the plant's non-condensable gas facility and the several reinjection wells on the site.

The residents want to know the underground status of the recently failed KS-8 well and why there were leaks of hydrogen sulfide after it was reportedly plugged with cement.

They also want to know whether high concentrations of hydrogen sulfide in the underground steam is corroding the condensers and compressors, which have been the source of several leaks.

The association also questions PGV's plans to now use KS-4, drilled originally as a reinjection well, as a production well since KS-8 is out of service.

"Because we can no longer trust our own Health Department, we need to recall the investigative team brought out for the June 1991 blowout of KS-8," said Lanipuna resident Janice Wilson. "This is not a scare tactic, we are truly frightened for our safety."

The Big Island Rainforest Action Group, in a separate press release, said it supported the resident organization's requests.

PGV plugs new geo well

□ Gas leaks cause evacuations; power not expected soon

By Gordon Y.K. Pang
Tribune-Herald

Fifteen people from five families from Lanipuna Gardens near the Puna Geothermal Venture plant voluntarily evacuated their homes Tuesday night when ele-

vated hydrogen sulfide levels, the result of the closing of KS-8, were recorded.

Meanwhile, PGV vice president Steve Morris agreed with state Land Board Chairman William Paty that the cement plugging of well KS-8 is "not necessarily but most likely" permanent. That has PGV scrambling for a production well less than a week after KS-8 was thought to have gone on-line for good.

Civil Defense administrator Harry Kim said hydrogen sulfide readings of between 20 and 40 parts per billion were detected by both PGV and Health Department monitors between 5 and 7 p.m. PGV had not yet begun cementing KS-8, Kim said.

Kim said he made the decision to authorize the evacuations after analyzing what he concluded was an unreasonable ordeal on the part of residents. Residents first began com-

plaining of detection as early as Sunday night and early Monday morning, Kim said. Monitors recorded levels as high as 6 to 7 ppb during that period, he said.

With levels reaching 40 ppb Tuesday, he said, "some (residents) were complaining of nausea, headaches and vomiting."

When PGV officials informed him that the plugging would take several hours, Kim said he asked if they would agree to pay

for the evacuation. Kim said they agreed, provided the residents lived within a reasonable distance from the plant.

The "kill" process involved with cementing KS-8 was completed early yesterday morning, Kim said.

"The situation was very tense on Tuesday night, there was a lot of frustration," Kim said.

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PGV: Power flow won't resume for weeks

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"The decision to offer evacuation shelter facilities was done to minimize stress on residents."

Kim said monitors now are showing no more leakage from the area of KS-8.

Morris, this morning, said the leak was coming not from the KS-8 well itself, but from a "flange," a side valve on the well.

He said bolts on the flange were loosened as a result of the cooling of the well, necessary for its shutdown.

Under normal circumstances, those bolts would not be loosened, he said.

Morris confirmed that it was highly probable that KS-8 would now be shut down permanently.

While a cement plug is

"something that's done all the time in the drilling process," parties have agreed that PGV should now look elsewhere for energy.

"We don't know exactly what is wrong with the well," he said. "The well has grown and expanded to beyond what we'd like to see it."

The company is now looking at KS-4, which was in the process of being drilled as a reinjection well, to be turned into a production well, he said.

If KS-4 is found to have capable source, it could be in use as a producer in two to three weeks, Morris said, adding that he did not know how likely it would be.

Friday, November 6, 1992 — THE MAUI NEWS

New geothermal wells under way

POHOIKI (AP) — The head of Puna Geothermal Venture's Pohoiki power plant on the Big Island says the decision to shut down the trouble-plagued KS-8 well is a setback, but certainly not an end to the \$120 million geothermal project.

PGV Vice President and General Manager Steve Morris said drilling work on the nearby KS-4 well will continue to see if it might be brought on as a producing well.

The original intent of KS-4 was to serve as an injection well to put the expended geothermal brine back into the earth, Morris said.

It should be two to three weeks more drilling at KS-4 to determine its future either as a production well or an injection well, he said.

The drilling rig would then be shifted to the KS-9 well site were it would take about six to eight weeks to dill, he said.

44 — Thursday, November 5, 1992 — THE MAUI NEWS

Company seals only geothermal well

Mechanical woes stopped production after week on line

POHOIKI, Hawaii (AP) — Puna Geothermal Venture has killed its only production well by filling it with concrete, officials said Wednesday.

The impact of the move on geothermal energy development in Hawaii is unclear, but state officials note the company has other wells

that can be developed.

The KS-8 well had been brought into operation last month and had been supplying power to Hawaii Electric Light Co.'s grid for more than a week.

Puna Geothermal Vice President Steve Morris said the decision to plug the controversial KS-8 well was made Tuesday and followed a decision on Monday to turn off the well because of mechanical problems.

Monday, state Board of Land and Natural Resources Chairman Bill Paty had ordered the company to close the well if it was unable to

demonstrate its integrity.

"We had serious concerns regarding the integrity of the well," Paty said. "It was for this reason that we notified PGV that we would not permit resumption of production from this well until PGV could show that KS-8 could operate in a safe and sustained manner."

"With their action to kill this well, PGV can now turn full attention to development of new wells, KS-4 and KS-9, that can utilize this major geothermal resource and bring on line the power so badly needed on the Big Island," he said.

The KS-8 well was killed once before, following a 31-hour blowout in June 1991.

Morris said the company will consider reopening the well but will probably decide to abandon it.

County officials said that during the process of killing the well last night, emissions of noxious hydrogen sulfide gas escaped into the nearby residential area.

Civil Defense officials, assisted by the Red Cross, voluntarily evacuated 15 residents to the Waiakea Villas in Hilo.

PGV well may have to be abandoned

□ Ten megawatts of electricity taken out of Big Isle grid

By Dave Smith
Tribune-Herald

Puna Geothermal Venture's only existing production well may have to be abandoned, the firm's vice president said yesterday.

PGV's Kapoho State-8 well, also known as KS-8, was temporarily "shut in" by PGV engineers yesterday, stopping the flow of about 10 megawatts of

electricity into the Big Island power grid.

The plant had begun power production 10 days earlier after suffering many months of delays for mechanical and regulatory problems.

PGV Vice President Steve Morris, who is also general manager of the PGV plant in Pohoiki, said the well had suffered stresses that placed its condition beyond a "zone of comfort" for PGV engineers.

Meanwhile, Bill Paty, head of the state Department of Land and Natural Resources, said yesterday that PGV must "verify

the integrity" of the well before it will be allowed to resume production.

"After evaluating (Sunday's) incident, we support the closing of KS-8 in order to remove any doubt about its integrity and safety," Paty said in a prepared statement. Paty said he remains convinced that geothermal energy can be safely harnessed in Hawaii and that the "technical problem encountered with KS-8 will not be encountered with a new production well."

Morris said the problems of the well can be traced back to an uncontrolled release, or blow-

out, of the well in June 1991 which caused stress to the well's integrity. He said the well also "may have been subjected to some degradation during prolonged idle periods resulting from legal and regulatory disputes."

But Morris said the well's integrity suffered another blow Sunday night when the power plant had to be taken suddenly off-line following a lightning strike at around 9 p.m. on the line connecting PGV to Hawaii Electric Light Co. circuits.

When the power generation ceased, piping carrying steam to

generators were closed. Since steam was no longer being released from the well the steam pressure increased, causing the well's cement bond to break and allowing the wellhead to expand or rise.

Sunday night's expansion of about four inches, combined with an earlier expansion of the wellhead of about nine inches after the power plant began operations 10 days earlier, worried PGV engineers, Morris said. A decision was made at about 8 a.m. by officials from the

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PGV: New geo well may be abandoned

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county, state and PGV to close main valves on the well to allow further inspection of the well.

"The well expanded to a point right on the edge of our comfort zone," Morris said. He stressed he was referring to a "comfort zone" and not a "safety zone."

Morris said some expansion of the well was expected and allowed for in its construction.

Morris said yesterday that an evaluation of the well should be completed sometime this week to find out if the well can be repaired. He said it is possible that the well may have to be abandoned.

Morris insisted that the shutting down of the well was not prompted by leaks of hydrogen sulfide gas from the well itself.

"The problems do not involve any leaks or emissions of hydrogen sulfide," Morris said in a prepared statement yesterday.

However, county Civil Defense Administrator Harry Kim told the Tribune-Herald yesterday that very high levels of hy-

drogen sulfide were being intermittently emitted yesterday morning from KS-8.

Yesterday afternoon, Morris said there were no leaks from KS-8 and declined to comment on Kim's report.

Kim said today he had been informed yesterday by several members of Morris' staff of the leaks, which were measured in parts per million, as opposed to the much weaker parts per billion scale in which hydrogen sulfide is usually measured.

He said because of the discrepancy he was referring all questions about the well to Morris.

Morris said yesterday that if the KS-8 well must be abandoned, PGV will not be able to generate electricity until a second production well can be drilled. He said under the best of conditions that would take at least 60 days. He said site preparation for the drilling of well KS-9 will likely begin today.

However, Morris said KS-4, a well currently being drilled as a third reinjection well, could be

used as a production well if it is planned for 7,500 feet.

strikes the geothermal steam resource. He said KS-4 has reached the 5,000-foot depth and

The reinjection wells are used to force spent geothermal brine back underground.



—T-H photo by William Ing

INIKI FUNDS — Mayor Lorraine Inouye presented checks totaling over \$59,000 to Capt. George Rodriguera of the Salvation Army Hilo Corps for the Hurricane Iniki disaster relief effort. The money, which was donated by Hawaii County residents as part of Project "Kokua Kauai," were collected at the Big Island branches of First Hawaiian Bank and Bank of Hawaii. From left to right, Bank of Hawaii Vice President Richard West, Rodriguera, Salvation Army Capt. Phil Lum and Inouye.

State gives geothermal go-ahead

Opponents of project on Big Island vow to continue their battle

By Hugh Clark
Advertiser Big Island Bureau

HILO, Hawaii — State regulators yesterday gave the green light for Puna Geothermal Venture to begin supplying power to Hawaii Electric Light Co., ending 16 months of debate, disputes and demonstrations over the \$120 million project.

But geothermal opponents

said their battle is far from over.

Ralph "Palikapu" Dedman of the Pele Defense Fund said state officials should have waited for the pending visit of a U.S. Environmental Protection Agency team from the Mainland.

"It is not over by any means," Dedman said.

"I feel strongly there are things they (the developers

and regulators) don't know about."

He said there are several legal suits pending as well.

The end to the regulatory stalemate came with an afternoon announcement in Honolulu by the two state departments — Health, and Business and Economic Development — that Puna Geothermal had met all of its permit conditions and could begin commercial produc-

tion of electricity.

The project had been stalled since June 1991 when a blowout of a development well occurred. The state yesterday said it granted approval only after the developer completed tests and equipment changes after a seven-day test of the plant in August.

Steve Morris, vice president of Puna Geothermal, said there was no champagne celebration

at the project yesterday.

"We are just beginning a lot of hard work. We are focused on producing safe power," he said.

The well will be opened and the plant fired up today, with power delivered possibly tomorrow, Morris said.

State officials said Puna Geothermal would deliver about 5 megawatts of power initially.

HELCO representatives were

not available to comment on the utility's plans to receive the electricity.

HELCO has a contract with Puna Geothermal to buy 25 megawatts of energy — enough to serve about 25,000 residents. The entire supply had been due in October 1991 under the contract.

The new source of energy is

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Geothermal: State lets the drilling resume

FROM PAGE ONE

expected to help relieve HELCO's power-generation shortfall.

The shortfall has been blamed for about two dozen rolling blackouts and many more unscheduled outages over the last 18 months and has spurred two Public Utility Commission investigations into HELCO's reliability.

As the state announcement was released, Morris was meeting just outside the company's gate at Pohoiki with concerned community members — several of whom had been sentenced Tuesday for trespassing on the project site during protests in February and March.

Critics said Puna Geothermal should not have been allowed to start up because all of the conditions in its geothermal resources permit granted in 1989 by the County Planning Commission have not been met.

The biggest concern, Dedman said, is: "Who protects us when something goes wrong?"

The state yesterday said a direct communication line has been installed between Puna Geothermal and the Department of Health, enabling regulators to have immediate access to air quality data from the company's monitoring stations in the community.

The department completed its analysis of steam and brine from the August flow test and found that hydrogen sulfide,

radon, mercury, lead and other natural elements in geothermal fluid were within ranges predicted by the company and "pose no health hazards," the state said.

The beginning of commercial generation — first discussed by county leaders more than 20 years ago — was hailed by labor and business officials.

The 45,000-member Hawaii Island Geothermal Alliance, made up of union and business leaders, said it was delighted there was a conclusion to the fights in courts and meeting rooms.

Puna Geothermal is drilling a new reinjection well that is halfway done and it soon will start drilling the Kapoho

State-9 well — intended to be a second producing well, according to announcements that nearby residents received Tuesday and yesterday.

According to the developers and regulators, the company has two types of wells — those to bring up the hot steam that turn 10 individual turbines to generate power, and others to take the spent fluids and return them deep into the earth without fouling the ground water supply.

Residents have said they are deeply concerned not only about the June 1991 blowout that halted the project until February and the flawed flow tests of August, but also about future problems such as water contamination.

Protesters found guilty

□ Judge rules 15 geo opponents' actions unjustified

By Crystal Kua
Tribune-Herald

KEAAU — Protesters had legal alternatives available to them to stop geothermal development and did not have to resort to breaking the law when they walked on to Puna Geothermal Venture's property in Fe-

bruary and March, a District Court judge ruled yesterday.

In finding 15 geothermal opponents — including two Green Party candidates — guilty of trespass, District Judge Riki May Amano also ruled that at the time of the offenses, the "harm" caused by geothermal drilling had not yet resumed.

"(The) trespasses in and of themselves would not have stopped geothermal," Amano said.

The defendants were charged

with either simple trespass, a criminal violation, or second-degree criminal trespass, a petty misdemeanor, or both stemming from demonstrations at the PGV drilling site in Pohoiki on Feb. 23, March 1 and March 8.

Each was fined \$225 or \$300 with most of the fine suspended provided they not get arrested for similar actions within the next six months. Most opted to convert the remainder of their fines to 10 hours or less of community service.

The protesters admitted to

trespassing on the PGV property but they said they did so because the harm caused by geothermal outweighed the criminal action and they had no remaining avenues other than to trespass to stop the development.

Among those convicted were Green Party candidates Kristine Kubat, who is running for the state House 4th district seat, and Russell Ruderman, who is running for the County Council 5th district seat.

The other defendants are Jim Albertini, Holit Bat-Edit, Ole

Fulks, Michele Marzullo, Renee Mata, Lucien Noe, Athena Peanut, Robert Petricci, Kevin Roddy, Antonio Rosa, Penelope Shaver, Rene Siracusa and David Zeissler.

Most of the defendants expressed disappointment at the judge's ruling while one called the verdict a "travesty" and politically motivated and another, during an outburst, refused to accept the sentence handed

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PROTESTERS: 15 found guilty of trespass

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down by Amano.

Amano said, however, that she considered as facts of the case the reported geothermal-related ailments and frustrations suffered by the protesters as well as their efforts to stop geothermal in conventional ways.

But she also found that "geothermal emission was not imminent."

The trespasses occurred right before and immediately after Mayor Lorraine Inouye lifted the PGV drilling ban, which went into effect after the June 1991 blowout, over the objections of Civil Defense Admini-

strator Harry Kim.

Highlights of the four-day trial in August included a legal battle between the defense and county attorneys over having Inouye and Kim testify as defense witnesses.

After Amano ruled that the two were to appear if called, Kim complied the next day. Inouye, however, avoided honoring her subpoena until the last day of the trial and she did so only after Amano threatened to issue a bench warrant and to drop the charges against the protesters if the mayor did not appear.

Lead defense attorney Michael Zola, who represented

Shaver, yesterday unsuccessfully asked Amano to reconsider her decision.

Several of the protesters gave emotional statements prior to being sentenced and were even on the verge of tears as they spoke.

Ruderman told the judge that the demonstrators had exhausted all legal ways to halt geothermal.

"I have never been convicted of a criminal action," an emotional Ruderman said.

Albertini called the verdict a "travesty" and accused Amano of "potential political considerations" by waiting until after the

primary election to hand down her ruling.

"I take personal offense to your statement regarding the primary election," Amano told Albertini.

During an outburst, Zeissler refused to accept any sentence Amano gave. "I'm not doing any of it," he said, asking for a lobotomy at one point.

Amano for a short time even considered giving out a five-day jail term for Zeissler but his friends were able to calm him down and come to his defense.

"We're victims, not the criminals," Shaver told the judge as she stood behind Zeissler.

Geothermal patience

LIFE is seldom easy in the Big Island world of geothermal development. Puna Geothermal Venture often seems to be in hot water, the wrong kind, as it seeks to tap the underground energy source that could reduce Hawaii County dependency on imported oil for electricity.

In the latest setback, Puna Geothermal has had to plug up a well after a series of problems indicated it could be more trouble in the neighborhood than it was worth. This means a delay of between three weeks and three months until a new well is ready to begin tapping the volcanically heated water to supply steam for the 25 megawatt power plant. The operation, which received clearances from the state to resume last month, was producing about 10 megawatts when it was shut down.

Leaks and other malfunctions have plagued the company after it resolved the problems related to its June 1991 blowout. Escaping hydrogen sulfide reached levels sufficient for Civil Defense Director Harry Kim to allow 15 nearby residents to stay two nights in a Hilo hotel. It's always something. We support the effort, as do state and county officials and many others, as a way of harnessing alternate energy and easing the Big Island's brownouts and power failures. But patience grows thin with the company's recurring problems.

Having withstood the resistance of native Hawaiian groups and pro-rainforest activists and made peace with their Puna neighbors, the geothermal developers have had a political path cleared for them to a source of energy awaited by all.

It is now up to the company to demonstrate that it can operate successfully in the field it has chosen for itself. The industry has had enough problems on the Big Island. The public's investment of confidence in a geothermal future can't wait too much longer for the dividends to start.

Puna Geothermal gets safety ultimatum

Prove well not a hazard or shut it down permanently, official says

By Hugh Clark

Advertiser Big Island Bureau

POHOIKI, Hawaii — The state will require Puna Geothermal Venture to permanently shut down its production well unless it can assure its safety, the head of the Department of Land and Natural Resources said yesterday.

DLNR Director William Paty issued a strongly worded statement after Puna Geothermal's \$120 million project was shut down for an indefinite period yesterday after developing "mechanical problems" at its power plant and hydrogen sulfide leaks at its Kapoho State-8

or KS-8 well.

"After evaluating (Sunday night's) incident, we support the closing of KS-8 in order to remove any doubt about its integrity and safety," Paty said.

But Paty said the shutdown is not the end of geothermal production in the state. He said Puna Geothermal is drilling other wells and "we remain optimistic that the technical problems encountered with KS-8 will not be encountered with a new production well."

Puna Geothermal produced 10 days of commercial power for the Big Island before the well was closed. The company had just reached its intermedi-

ate goal of producing 10 megawatts of power for the energy-starved Big Island. Ten megawatts is enough to meet the needs of 10,000 residents.

The latest problem started when lightning caused a power outage shortly after dusk Sunday that forced a shutdown of the Puna Geothermal transmission line from Pohoiki to Keau substation, said Steve Morris, company vice president.

That, in turn, forced Puna Geothermal to shut down its power plant and return geothermal steam to its well.

But a state Health Department official said the shutdown came after high emissions of hy-

drogen sulfide fumes — which have a rotten-egg smell — from the well early yesterday.

The peak reading of hydrogen sulfide outside the project boundary was 40 parts per million, well over the allowable hourly average but not regarded as harmful to human health.

A state health official in Honolulu said he understood that Puna Geothermal had voluntarily closed the well at 11:21 a.m.

Morris said the well's shutdown was unrelated to the leak, but he said it "has previously experienced considerable stress during last year's uncontrolled flow (which others de-

scribed as a blowout) and may have been subject to some degradation during prolonged idle periods resulting from legal and regulatory disputes."

His reference was to a downtime that lasted for several months while the company awaited governmental permits and court clearances.

Some Puna residents yesterday called for a permanent closing of the well and plant.

"Pele's power is too hot and too corrosive. Shut it down," said Aurora Martinovich, a longtime foe who lives near by the well and has been arrested several times while protesting geothermal development.

—West Hawaii Today, Thursday, October 29, 1992

PGV steadily producing five megawatts

HILO — Puna Geothermal Venture has been steadily producing about five megawatts of power since Friday and is expected to increase its output by the end of the week, if all continues to go well at the Pohoiki site.

Following earlier projections, PGV officials expect to have the capacity to generate at least 10 megawatts of power by week's end, after reaching a peak of about seven megawatts Wednesday morning.

Generation had also peaked at about seven megawatts over the weekend but was taken back down while the company inspected various parts of the system. PGV is contracted to supply Hawaii Electric Light Co. with 25 megawatts of geothermal steam-generated power, which it expects it can do by early next year. PGV officials also predict they will be generating 15 megawatts of power by the end of this year.

An additional injection well and another production well need

to be completed before the maximum goal can be reached. The additional injection well, KS-4, is currently being worked on and is expected to be finished within a few weeks, said Steven Morris, PGV vice president and general manager.

Morris said that although PGV will have the capacity to continuously generate 10 megawatts by the end of the week, it will probably fluctuate that output while it continues to use some of the steam to check the system.

PGV leaks raise new stink

□ State DOH, Civil Defense investigate; residents complain

By Gordon Y.K. Pang
Tribune-Herald

Hydrogen sulfide levels of more than 100 parts per billion were recorded outside Puna Geothermal Venture's Pohoiki plant Wednesday night, raising new concerns by area residents

and government officials about the safety and reliability of the facility.

Plant officials have acknowledged that smaller leaks have occurred since production began seven days ago. Civil Defense Administrator Harry Kim reported that H2S levels have been recorded in the range between 2 to 3 parts per billion with spikes of about 5 to 6 ppb, since beginning of production.

Clearly, however, the two leaks on Wednesday appeared

more serious:

● A leak on Wednesday afternoon between about 4 and 6 p.m. led to one PGV employee being sent to the hospital for inhalation of hydrogen sulfide. The source was identified as a leak in one of its non-condensable gas compressors, the contraption which compresses non-condensed gases into fluid and reinjects it into the ground. Kim said the worker was treated and released. The problem was apparently miti-

gated before 6 p.m., he said. Health Department monitors recorded spikes of up to 34 ppb during the episode.

● Another leak several hours later led to readings of up to 500 ppb by Health Department officials on site, Kim and Deputy Health Director Bruce Anderson confirmed, and readings as high as 140 ppb off-site.

According to Kim and Anderson, it was Kim and Health Department scientist Clifford Furu-kado who identified the source

of the leak — a steam turbine seal of an energy converter unit between the plant and well field — to PGV officials.

The PGV information line reported that company monitors picked up an hourly average between 6 and 7 ppb with spikes in the mid 20's, between 5 a 6 p.m.

PGV's permits allow for up to 5 ppb above ambient level

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PGV: Officials to probe geothermal leaks

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generally regarded as no more than 3 ppb, on an hourly average.

Kim said he would have shut down the plant in the second instance if the two sources had not been identified and the problems addressed in a timely manner.

Both Kim and Anderson said they are continuing to investigate both incidents and once again ripped PGV for the lack of notification to government officials.

"The fact that things weren't discovered or reported to us in a timely manner is of great concern," Anderson said. "We certainly don't consider this a mi-

nor problem."

"The monitoring system is not adequate, as has been pointed out by myself and residents since day one," Kim said. "Everything is not hunky-dory as has been indicated by PGV. We have been asking too damn much from the residents."

Kim said emergency shelter arrangements were made through American Red Cross Wednesday night. Although some families apparently evacuated on their own, no one relocated to the designated relocation hotel in Hilo, he said.

Kim and Anderson were also

dismayed that during the second incident, it took government officials to discover the source of the leak.

"We should not be in a position to have to find problems for PGV," Anderson said.

Kim said he received seven calls on Wednesday night from residents either directly or through the Police Department. Anderson said the Health Department hotline received one.

Several statements were faxed to the Tribune-Herald from area residents yesterday afternoon regarding Wednesday's events.

"Leaks are occurring day and night, causing families in Lani-

puna Gardens and Leilani Estates to wake from the stench of H2S, and having immediate bouts of diarrhea, vomiting, burning eyes and nose in both children and adults," Lanipuna Gardens resident Norene Roberts said.

"We deplore the vice president and general manager of Puna Geothermal Venture, Steve Morris, for his lie in claiming that the plant can achieve zero emissions at their perimeter," said Adrian Barber of the Big Island Rainforest Action Group. BIRAG is demanding immediate shutdown of the facility.

Leaks reported at geothermal site

POHOIKI, Hawaii (AP) — The state Health Department is concerned about a series of leaks at Puna Geothermal Venture's Puna well site this week and is investigating.

A worker at Puna Geothermal Venture's well site in Puna had to be hospitalized for exposure to hydrogen sulfide gas, the latest in a series of incidents nearby residents say show the plant remains unsafe.

The worker was back at work Thursday after being taken to Hilo Hospital Wednesday after two separate leaks were found.

The company said the leaks were controlled that same day, but Big Island Civil Defense chief Harry Kim said the leaks and worker's illness are not minor incidents.

"We are asking too much tolerance of the residents," Kim said. "I do not consider these minor incidents."

Some area residents opposed to geothermal drilling so close to their homes have complained to the media all week about nightly leaks and the horrible "rotten eggs" smell caused by the hydrogen sulfide, as well as illnesses among their children and fears of future illnesses caused by leaking gas and other chemicals.

"That plant is a stinking, leaking, dangerous horror," said Adrian Barber of the Big Island Rainforest Action Group. "The health and safety of the community demands that this plant be shut down now, permanently, before an irreversible tragedy occurs."

Deputy state Health Director Bruce Anderson says the problems are "quite serious" and will be investigated. He said the leaks were "beyond what we expect of a shutdown."

Puna Geothermal vice president Steven Morris said the leaks or the company's response haven't led to a violation of its permits with the state to operate the plant and provide electricity to Hawaii Electric Light Co.

Opponents accused Morris of lying.

"We deplore ... his lie in claiming that the plant can achieve zero emissions at their perimeter," Barber said. "Steve Morris does not tell the truth. The condition of the health of local residents every time this plant opens up clearly indicates that his zero emissions claim is a falsehood."

The plant had been closed for more than a year because of continuing problems with hydrogen sulfide leaks, other safety concerns and a well blowout. It opened its production wells Oct. 22.

PGV well shut down

Leaks cast doubt on future use of the geothermal well

By Dave Smith
Tribune-Herald

Serious leaks this morning prompted Civil Defense officials to shut down the main well at Lanipuna Geothermal Venture's geothermal plant at Pohoiki.

At about 10 a.m., Civil Defense Administrator Harry Kim said he was shutting down well KS-8 with the concurrence of PGV officials. He

said the action was being taken to allow workers to gauge the severity of leaks from KS-8, leaks which he said cast doubts about the future of the well.

KS-8 is the well currently providing geothermal steam for PGV's electrical generation efforts which got under way Oct. 23. According to Hawaii Electric Light Co. officials, PGV was producing between 7 and 10 megawatts of electricity this morning before the well was closed.

In a message on its telephone informational line today PGV announced that tomorrow

it would begin drilling a second production well, KS-9. The firm has been drilling a second well for injection of

spent geothermal fluid back underground.

Kim said very high — though intermittent — levels

of hydrogen sulfide levels were being registered at KS-8 this morning. He said the readings fluctuated between "parts per billion" to "parts per million." The latter is 1,000 times as much as the former.

However, hydrogen sulfide levels outside of the plant's perimeter remained relatively low this morning, Kim said.

He said the shutting down of the well would require much of the day. He could not say how long it would take to evaluate the condition and fu-

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ture of the well.

PGV Vice President Steve Morris, who did not return telephone calls this morning, last week said that some leaking had been encountered with the well's casing. But he said such leaks were not unusual with geothermal wells and he anticipated that the problem would be remedied.

According to DOH's Clifford Furukado, the highest off-site measurements recorded this morning on DOH equipment of hydrogen sulfide, the noxious gas associated with geothermal wells, was at 12 parts per billion. Furukado said those measurements were taken at Lanipuna Gardens, the subdivision closest to the PGV plant.

Furukado said DOH personnel would continue testing the air for H₂S both off-site and at PGV's perimeter.

DOH spokeswoman Barbara Hastings said this morning that PGV's own monitoring station near Lanipuna Gardens had recorded levels between 30-40 parts per billion of hydrogen sulfide some time this morning. PGV officials could not be reached for confirmation.

"Our people are still pulling information together," Hastings said.

The person considered the closest neighbor to the PGV

plant said she was "getting gassed out again" this morning.

Aurora Martinovich said the presence of gas detectable from the plant located several hundred feet to the west was nothing new, but was "extra strong this morning."

A neighbor of Martinovich, Norene Roberts of Lanipuna Gardens, said she suffered a severe effect from the emissions this morning as she prepared to take her daughter to the bus stop.

"I opened my door and got a hit of H₂S and started violently throwing up," Roberts said. That was the second time she had suffered such a reaction from emissions, the other occurring during earlier flow testing of the geothermal wells.

Peak hydrogen sulfide levels of more than 100 parts per billion were recorded last Wednesday outside the PGV plant perimeter. The leaks resulted in a PGV employee being treated at Hilo Hospital and later released for inhalation of hydrogen sulfide.

PGV officials said last week's leaks originated from two pieces of equipment, a gas compression unit and a steam-turbine energy converter.

PGV's permit with the DOH establishes maximum emission standards of 5 ppb, measured on an hourly average.

-Hawaii Tribune - Herald, Monday, November 2, 1992

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Lightning is blamed for latest shutdown of PGV geothermal well

By ROBIN M. JONES
West Hawaii Today

HILO — Puna Geothermal Venture's main production well, KS-8, was shut down voluntarily Monday morning due to the overheating and overexpansion of the wellhead.

Steven Morris, PGV vice president and general manager, said however, that the shutdown had nothing to do with reports of excessive hydrogen sulfide leaks. He said that there are "no leaks or emissions associated" with the shutdown or with the problem that caused PGV officials to shut off the well.

The noxious gas leaks have been plaguing the Pohoiki plant's efforts to fulfill its contract obligations with Hawaii Electric Light Co., but the problems that started Sunday night and led to the shutdown can be blamed on nature, according to John Keppeler, deputy chairman of the state Department of Land and Natural Resources.

A transmission pole carrying PGV-generated power to HELCO's power grid took a direct hit by lightning during Sunday night's thunderstorm, which set off a chain of occurrences that led to KS-8's wellhead overheating and overexpanding, Keppeler said.

The wellhead expanded to the limits of the "comfort zone," Morris said, so PGV

officials, in conjunction with DNLR officials, voluntarily determined it would be best to shutdown.

The wellhead heated to extremes of 600 degrees and needs to be cooled to less than 100 degrees before the extent of possible damage to the well and wellhead can be assessed, Keppeler said. Reviewing the extent of the problem "may take some time," he said. "It is a very technical thing."

He predicted it will take at least a week to determine the extent of damage and to begin getting the well back up for production, if it has not been rendered unusable.

The overheating could have left the well inoperative, if the well casing was too severely stressed and cracked by the extreme expansion caused during overheating, Keppeler said. He added, however, that the shutdown "is really not a major setback."

Morris said that the well may not be repairable, in which case another one will have to be drilled to replace it.

Morris said, however, that it will take several days to determine the extent of the damage and what will need to be done to fix the well and wellhead.

"But we're talking days as opposed to weeks and months" to determine the prob-

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...Lightning causes latest PGV shutdown

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lem. Once the problem is known, they will determine the time needed to fix it, he added.

Early Monday, Civil Defense Agency Administrator Harry Kim went to the PGV site because he had received numerous complaints from residents near the plant about the rotten-egg smell of a hydrogen sulfide leak, said Bruce Butts, Civil Defense spokesman.

Civil Defense received reports of H₂S emission readings of 7 to 9 parts per billion in nearby Lanipuna Gardens subdivision with peaks of as high as 40 ppb, Butts said.

PGV's emissions, however, had not violated any state Department of Health permit requirements, said Barbara Hastings,

DOH spokeswoman. "None of our monitoring stations indicates a violation," she said.

PGV can not exceed an average of 25 parts per billion over an hour, she said. So the spikes of 40 ppb are acceptable, as long as the overall hourly reading is below the limit, she said.

PGV began having significant gas leaks Oct. 28 after beginning to produce between three and 10 megawatts of power on Oct. 23. PGV was supplying HELCO with about 10 megawatts when the problem began Sunday night, Keppeler said.

PGV officials acknowledged that small leaks ranging between two and six parts per billion have happened sporadically since startup.

One incident Wednesday after-

noon caused a PGV worker to be sent to the hospital because he had inhaled hydrogen sulfide. Later that day, state Department of Health officials recorded emission levels of as high as 500 ppb on PGV grounds and 140 ppb away from the site.

Residents living near the Puna site have said the plant has leaked continuously since it began production. But Morris denied the leaks have been constant, though he did say there have been a few leaks.

State and county officials have expressed concern that PGV has failed to notify them of the problems experienced last week or that it took state and county officials to find the source of one of the leaks.

Puna well may have to be totally abandoned

□ The integrity of the pipes is in serious question

By Rod Thompson
Big Island correspondent

KAPOHO, Hawaii — Overheated, expanding pipes in Puna Geothermal's KS-8 well forced the company to shut down yesterday, said Steven Morris, the company's vice president.

The shutdown meant a halt in power production, which was up to 10.5 megawatts in the last nine days.

Bill Paty, chairman of the state Board of Land and Natural Resources, yesterday said that state officials will permanently shut down the well unless the company can "verify the integrity of the well."

Morris said the expanding pipes had nothing to do with a separate problem higher than normal readings of hydrogen sulfide in the area.

That problem apparently had two sources: "fugitive emissions" from the power plant, and a bad odor around the well, apparently from surface chemicals.

The expanding pipes were more serious, Morris said.

"The incident has moved the mechanical performance of the well to the edge of our comfort zone," he said.

The well consists of a hole in rock with several pipes inside each other going down the hole, all cemented in place. The pipes are expected to rise out of the ground as they heat, he said.

But a thunderstorm Sunday night knocked out a Hawaii Electric Light Co. power transmission line, automatically causing valves at Puna Geothermal to shut off steam from the well. The pipes heated and expanded more than planned.

Company engineers decided yesterday that the expansion might be tearing up the cement in the well. If the cement is too badly damaged, the entire well may have to be abandoned, Morris said.

While the company tried to get a better fix on that problem, people living nearby were complaining about hydrogen sulfide.

Instrument readings showed spikes of hydrogen sulfide as high as 40 parts per billion in nearby Lanipuna Gardens and about 1,000 times higher than that right at the wellhead, Civil Defense director Harry Kim said.

Morris said the high readings could not be due to geothermal steam leaking from the well, because that would cause even higher readings.

Whatever the cause, the company hopes to put a "collar" around the wellhead to block surface gases there, he said.

The readings at the well may not even have been of hydrogen sulfide but a different sulfur compound, Morris said.

As to the "fugitive emissions," the company hopes to prevent them eventually by tightening everything up.

"We haven't been comfortable with the level of emissions we've been seeing from the plant," he said.

Mechanical troubles idle well in Puna

POHOIKI, Hawaii (AP) — Puna Geothermal Venture said mechanical problems led the company to shut down its KS-8 production well Monday.

Company officials said the most recent problems did not involve any leaks or emissions of hydrogen sulfide gas. But Big Island Civil Defense officials said emission levels of hydrogen sulfide fluctuated earlier in the day.

Civil Defense Administrator Harry Kim said there was a leak of the gas, which smelled like rotten eggs, but the source was not known.

The state said it will force Puna Geothermal to shut down the KS-8 site permanently unless the company "can verify the integrity of the well," the Department of Land and Natural Resources said in a news release.

The company has 30 days to perform tests to prove that the KS-8 well can function properly, the state said. The well has had problems since a major blowout there last year.

The well had mechanical problems Sunday night after the lightning struck Hawaii Electric Light Co.'s Pohoiki transmission line. The generator was producing about 10 megawatts of electricity at the time, the state said.

The plant then shut down and the production well was throttled back, the company said.

Puna Geothermal General Manager Steven Morris said the problem at the KS-8 well was not a "complete surprise." The well was stressed by last year's blowout and may have degenerated during long idle periods caused by legal and regulatory disputes, he said.

More leaks at PGV well raise concerns

By JASON ARMSTRONG

West Hawaii Today

HILO — The system for monitoring hydrogen sulfide emissions at Puna Geothermal Venture's plant is not adequate and failed to promptly locate two separate leaks that nearly forced closure of the facility last week, a Civil Defense official said.

Harry Kim, county Civil Defense administrator, criticized monitoring procedures because the source of leaks, which resulted in peak H₂S readings of 140 parts per billion in residential areas and 500 ppb at the Pohoiki site Wednesday evening, were not detected promptly.

The state Department of Health recorded H₂S readings of "well over 100 parts per billion in Lanipuna Gardens" subdivision, Kim said.

"The system doesn't work," Kim said Friday. "The system needs to be overhauled."

He said residents suffering the effects of H₂S exposure informed him of emissions that later were traced to an energy converter at PGV's \$120-million plant in Pohoiki.

Kim said he assured concerned residents no more emissions would occur after receiving conformation from the DOH and PGV the problem had been solved around 6 p.m.

However, Kim said he received another call regarding strong emissions at about 7:30 p.m., which he personally investigated.

"As I hit that area, it was obvious to my senses that I was detecting a strong odor of H₂S," Kim said.

He began a manual check, accompanied by DOH personnel, of the location where the earlier leak has occurred, but detected no emissions.

Kim said he next began examining the area where H₂S gas was released Monday when a second, more significant leak, was found at the compressor that combines unused gas with brine material before it is re-injected into the ground.

"It was obvious to me, as well as the DOH, that we had run into some rather strong H₂S," Kim said.

Monitors indicated H₂S concentrations at the plant reached 500 ppb and 140 ppb in the nearby Lanipuna Gardens community around 10:30 p.m., Kim said.

Local police and fire personnel were

...H₂S gas leaks at PGV raise concerns

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placed on stand-by and the Red Cross was notified to establish an emergency shelter in Hilo, he said.

Kim said PGV was able to quickly re-route the gases through an alternate compressor, which allowed the H₂S concentrations to dissipate.

However, Kim said he was "absolutely" prepared to shut down operations had the leak not been stopped, while adding some Puna families voluntarily evacuated their homes.

Steve Morris, PGV vice president and general manager, Friday called the emissions "serious" and said he was dissatisfied they had happened.

"We're doing everything we can to eliminate emissions and any type of impact on the perimeter," Morris said.

He also confirmed an unidentified PGV worker had been taken to Hilo Hospital's emergency room Wednesday evening after being exposed to H₂S gas. The man was released that night and returned to work the following day, Morris said.

Nearby residents have remained vehemently critical of the plant and have complained to Civil Defense about health problems every day since the operational phase began Oct. 22, Kim said.

"Leaks are occurring day and night, causing families in Lanipuna Gardens and Liliha Estates

to wake from the stench of H₂S, and having immediate bouts of diarrhea, vomiting, burning eyes and nose in both children and adults," Lanipuna Gardens resident Norene Roberts said.

Roberts said she would have sought medical treatment for her exposure to the gas, but refused to leave her children unattended at home.

Adrian Barber, Big Island Rainforest Action Group spokeswoman, attacked Morris for his claim of zero H₂S emissions.

"The condition of the health of the local residents every time this plant opens up clearly indicates that his zero emission claim is a falsehood propagated for public relations reasons only," Barber said.

Geothermal well plugged to drill new one

By Rod Thompson
Big Island correspondent

KAPOHO, Hawaii — Puna Geothermal Venture may not be producing power again for three weeks to three months, following a decision yesterday to plug its KS-8 well.

That's the range of time that will be needed to drill a new well to supply the 25-megawatt power-plant with steam, said Steve Morris, company vice-president. The plant had been producing about 10 megawatts when it was shut down, he said.

The company began "killing" the well Tuesday night when it failed to cool properly after being shut off Sunday night, Morris said.

The killing involved cooling the well by pumping cold water into it, then pumping drilling mud into it and finally pouring in concrete, he said.

The company killed the same well last year after a dramatic 31-hour blowout, but Morris emphasized there was no drama this time. "The blowout is just so totally different," he said.

This time overheating caused pipes in the well to stretch up out of the ground a few inches, he said. That in turn indicated excessive cracking of concrete holding the pipe in place below ground.

The company was already drilling a new well, KS-4, which was to be used to reinject used geothermal fluids back into the ground. The company will now try to use that well as a new source of geothermal fluid, Morris said.

If that doesn't work, the company will still have to finish that well, then go through the two-month process of drilling another well, KS-9, as a source well, he said.

One bright spot is that Hawaii Electric Light Co. doesn't need the power at this point. "It will definitely mean that our generation reserves are decreased, but we do not see the need for rolling blackouts," said Helco spokesman Army Curtis. The reason is Helco's newly installed combustion turbine at Keaau, which is producing 20 megawatts.

While Puna Geothermal was working to kill KS-8, finishing at 3:30 a.m. yesterday, another problem developed.

Contraction of bolts on a metal flange allowed the escape of smelly hydrogen sulfide. With averages of 25 parts per billion at the company's fence line and spikes of 40 parts per billion, Civil Defense Director Harry Kim authorized 15 nearby residents to stay in a Hilo hotel overnight, he said. They were allowed to stay a second night last night, he said.

State investigating leaks at Puna geothermal plant

POHOIKI, Hawaii (AP) — The state Health Department is concerned about a series of leaks at Puna Geothermal Venture's Puna well site this week and is investigating.

A worker at Puna Geothermal Venture's well site in Puna had to be hospitalized for exposure to hydrogen sulfide gas, the latest in a series of incidents nearby residents say shows the plant remains unsafe.

The worker was back at work Thursday after being taken to Hilo Hospital Wednesday after two separate leaks were found.

The company said the leaks were controlled that same day, but Big Island Civil Defense chief Harry Kim said the leaks and worker's illness are not minor incidents.

"We are asking too much tolerance of the residents," Kim said. "I do not consider these minor incidents."

Some area residents opposed to geothermal drilling so close to their homes have complained to the media all week about nightly leaks and the horrible "rotten eggs" smell caused by the hydrogen sulfide, as well as illnesses among their children and fears of future illnesses caused by leaking gas and other chemicals.

"That plant is a stinking, leaking, dangerous horror," said Adrian Bar-

ber of the Big Island Rainforest Action Group. "The health and safety of the community demands that this plant be shut down now, permanently, before an irreversible tragedy occurs."

Deputy state Health Director Bruce Anderson says the problems are "quite serious" and will be investigated. He said the leaks were "beyond what we expect of a shake-down."

Puna Geothermal Vice President Steven Morris said the leaks or the company's response haven't led to a violation of its permits with the state to operate the plant and provide electricity to Hawaii Electric Light Co.

Opponents accused Morris of lying.

"We deplore . . . his lie in claiming that the plant can achieve zero emissions at their perimeter," Barber said. "Steve Morris does not tell the truth. The condition of the health of local residents every time this plant opens up clearly indicates that his zero emissions claim is a falsehood."

The plant had been closed for more than a year because of continuing problems with hydrogen sulfide leaks, other safety concerns and a well blowout. It opened its production wells Oct. 22.

Geothermal Puna well shut down again

So the on-again, off-again saga of Big Island geothermal power production is off again.

Puna Geothermal Venture, which had been producing a welcome 10 megawatts of power, had to halt production Sunday night when Hawaii Electric Light Company shut down its transmission line during a lightning storm.

The 3,500-foot-deep well didn't cool properly; overheating caused pipe in the well to expand, indicating that the surrounding concrete had cracked.

The problems are just "mechanical," insisted the venture's vice president, Steve Morris. But state Land Director Bill Paty cited "serious concerns regarding the integrity of the well."

And several nearby residents spent a couple of nights at Hilo hotels because of leaking

hydrogen sulfide gas.

So, just as it did a year ago after the well's dramatic blowout, the Puna venture "killed" the well, filling it with concrete. Now options are to give the present well a third chance, to convert a reinjection well now being drilled into a production well, or to begin a third hole.

Paty says Puna Geothermal should forget the plugged well and get on with the other two to "utilize this major geothermal resource and bring on-line the power so badly needed on the Big Island."

The new combustion turbine at Keaau means HELCO can handle the shutdown for now. But with resumption of geothermal power weeks or months away, and still uncertain, and that has to worry HELCO planners.

Mayor has a plan to



□ Appointed panel to establish rules for disbursement

By Dave Smith
Tribune-Herald

Mayor Lorraine Inouye said Friday she was disappointed that the geothermal asset fund was not set up before Puna Geothermal Venture began operations, but she has a new plan to finally get it established.

Inouye said she is forming a

new appointed panel to help establish rules for the geothermal asset fund and to make recommendations on other geothermal matters.

Inouye said some of the panel's members would be residents of the areas around geothermal plants. The rest of the panel's membership would be made up of representatives from various county and state departments and from geothermal developers.

Inouye said the new panel should have more than just advisory powers, unlike an earlier

panel made up of residents of geothermal development areas.

The county Planning Department has been struggling to establish the rules governing the use of the fund established by the county Planning Commission to provide compensation for victims of geothermal accidents.

The fund currently holds about \$500,000 contributed by the state and geothermal developers.

Heavy criticism of the draft regulations led the county to cancel a July hearing for the adoption of those rules. Area residents said they wanted the

establish geo asset fund

draft rules changed to allow the community and not the appointed Planning Commission to decide who will benefit from the asset fund.

According to Rodney Nakano of the Planning Department, county planners and attorneys have spent the last four months trying to incorporate residents' concerns into the rules.

Meanwhile, on Friday, following numerous delays, PGV began feeding a small amount of electricity into the Big Island grid.

"I'm disappointed we don't

have (the rules) already in place," Inouye said Friday. "My plans were to have asset fund rules in place prior to start-up."

Inouye said the new panel would be charged not only with formulating asset fund rules but would also oversee all aspects of geothermal development.

While she believes "there's still a role for the Planning Commission" in deciding who qualifies for help from the asset fund, Inouye said she personally would like to see decisions on compensation and relocation

made by the new panel.

Inouye said she is still awaiting comment from the state on her proposal, but hopes to see it in place within a month.

Inouye said the panel would be appointed by the mayor and contain perhaps a half-dozen lower Puna residents, six representatives from key county and state departments and several members from the geothermal industry. It might also include a representative of the Hawaii Island Geothermal Alliance, she said.

PGV geothermal plant will be turned on today

By JASON ARMSTRONG
West Hawaii Today

Puna Geothermal Venture was given permission by the state Department of Health Wednesday afternoon to begin producing electricity at its \$120-million Pohoi Plant.

A DOH release stated: "Approval for the start-up of the state's first commercial geothermal power plant was given after the developer completed tests and equipment changes based on the results of a seven-day test of the plant in August."

The company has improved communications with safety officials, subjected the plant to state inspection, modified its chemical abatement system and installed upgraded pressure valves, according to the DOH.

The plant will be turned on today, according to Steve Morris, PGV vice president and general manager.

"We're happy to have the permits. We're anxious to get started," MORRIS said.

However, supplying power to Hawaii Electric Light Co. will not begin immediately, MORRIS said.

"We won't actually produce electricity until Friday," MORRIS said. The delay is to allow engineers a chance to examine operations before steam is diverted through the turbines, he said. "We still have a lot of work to do."

MORRIS said plant operators will be "extremely cautious" during the initial operating phase to ensure the plant is functioning properly.

"We plan to start up with about five megawatts," MORRIS said. Electricity generation will be expanded to about 10 megawatts by the end of October and won't

reach the contracted level of 25 megawatts until "the first quarter of next year," MORRIS said.

DOH analysis of stream and brine results from the August flow test have indicated hydrogen sulfide emissions were "within the ranges predicted in the company's emergency response plan." Additional testing for radon, mercury, lead and other potentially harmful materials have confirmed all emissions fell within or below predicted ranges and posed no health risks, according to the DOH.

A direct information phone line has been established between PGV and the DOH to provide regulators with immediate access to air quality data from PGV's monitoring sources, according to DOH officials.

An information hotline has also been established to provide updates regarding daily activities and developments at the plant. The number is 934-9072.

"Many people are interested in the activities at our site," MORRIS said. "The information line is a vehicle for providing some of that information."

THE MAUI NEWS — Friday, October 23, 1992 -

Geothermal electricity to be routed to HELCO

POHOIKI, Big Island (AP) — Puna Geothermal Venture was set to begin delivering electricity today to Hawaii Electric Light Co. — more than a year behind schedule and millions of dollars over budget.

The company began sending steam through its electric plant Thursday after finally winning approval from the state to begin power generation.

The well site in the Puna area of the Big Island has been the subject of numerous problems regarding the safety of the operation and the health effects on nearby residents, and was closed for more than a year after a well blowout in June 1991.

There were no reports of problems with noise or smells from the

geothermal plant Thursday, even though there was a leak of some hydrogen sulfide yesterday afternoon.

The company will begin sending HELCO five megawatts of power today, Puna Geothermal vice president Steven Morris said.

HELCO is supposed to be receiving 25 megawatts of power from Puna Geothermal, and should be getting 15 megawatts by the end of the year, MORRIS said. The full 25 megawatts will be delivered when a second well is drilled and brought on line next year.

Also, the company has established a 24-hour phone line for people to call with questions or complaints. The number is 934-9072.

THE MAUI NEWS — Monday, October 26, 1992 -

Puna Geothermal pumps power

POHOIKI, Hawaii (AP) — Hawaii's first commercial geothermal plant has begun feeding electricity to the Big Island's power grid.

After getting off to slow start, Puna Geothermal Venture hooked in to the grid late Friday night, company vice president Steve Morris said.

On Saturday, the plant met its goal of producing 5 megawatts of power, but the output was reduced to 4 megawatts for testing purposes, MORRIS said.

The electricity is being fed to Hawaii Electric Light Co.'s substa-

tion in Keaau. Each megawatt meet the electrical needs of about 1,000 homes.

The plant is expected to produce 10 megawatts of power by the end of the month, 15 by the end of year and 25 when a second geothermal well is dug in 1993.

PGV had hoped to go on line earlier Friday, but the plant was unable to produce enough consistent power.

The company was supposed to begin providing power last October, but the timetable was thrown off by a well blowout in June 1991.

Geothermal's set to go

Power could start flowing tomorrow; residents outraged

By Gordon Y.K. Pang
Tribune-Herald

POHOIKI — Puna Geothermal Venture and the Big Island took the big leap this morning

when the state's first commercial geothermal plant "switched on."

Actual production, of up to 5 megawatts this week and possibly 10 by next week, won't begin until tomorrow, said Steve Morris, PGV project manager vice president. PGV will do a systems test during the first 24 hours, sending the fluids into the system and back into the ground.

PGV got its final two approvals for start-up from the state Department of Health, according to a press release issued by the state Department of Business, Economic Development and Tourism.

In anticipation of the opening, the Hawaii Island Geothermal Alliance hailed the development as a "historic moment which will mark the beginning of a

brighter environmental and economic future."

But about 20 residents meeting with Morris yesterday afternoon criticized the way they were notified of the start-up, and said they were bracing themselves for a possible evacuation in the event something goes wrong. Residents and other opponents said they were also contemplating a demonstration this

morning.

"Anytime you start-up, you can have items come up, but we don't anticipate any major problems," Morris said in attempting to assure residents.

The DBED release said PGV "has met all regulatory requirements." What the project actu-

See GEOTHERMAL,
Page 8

GEOTHERMAL: Permits issued for start

From Page 1

ally received yesterday was a permit to operate for the plant and an underground injection control permit for its first two reinjection wells — KS-1A and KS-3.

The approvals were given "after the developer completed tests and equipment changes based on the results of a seven-day test of the plant in August," the release said.

Three upgraded backpressure valves were installed after it was discovered during that test that they were releasing hydrogen sulfide as a result of leaks, DBED said. The facility's chemical abatement system has also been modified "to ensure that the system is effective in reduc-

ing H2S emissions and that caustic soda is not released to the atmosphere," the release said. Nearby residents also reported being sprayed with caustic soda during the August flow test.

KS-8, the well which blew out in June 1991, is expected to produce up to 15 of the 25 megawatts PGV is contracted to provide to the power grids of the Hawaii Electric Light Co. The DBED release said the well has been inspected by the state Department of Land and Natural Resources "to ensure its safety."

PGV has also installed additional casing in KS-3 to ensure against seepage of spent geothermal fluids and gases into

groundwater systems, the release said.

The Health Department has meanwhile completed an analysis of steam and brine from the flow test and "found the hydrogen sulfide content to be within the ranges predicted in the company's emergency response plan," the release said. The same analysis found that levels of radon, mercury, lead and other particulates in the fluid "all fell within or below predicted ranges and pose no health hazards," DBED said.

Residents yesterday said they were outraged at the short notification time of both the start-up and the late afternoon meeting. A number of residents said they

weren't notified at all.

Lanipuna Gardens resident Aurora Martinovich, considered the closest neighbor to PGV, accused Morris of deliberately delaying the information to the residents "because he doesn't want to give us time to organize a protest."

"From our perspective, we didn't have an obligation to do anything," Morris replied. "We got the permit, we could turn on the plant."

One angry resident said the only reason a meeting was called yesterday was "so that you could make yourself look good in the next newspaper article."

Two leaks now contained at Puna geothermal plant

Worker hospitalized briefly in gas exposure

By Hugh Clark

Advertiser Big Island Bureau

POHOIKI, Hawaii — Two separate leaks of hydrogen sulfide gas at Puna Geothermal Venture's electric plant were discovered Wednesday night and later controlled, but one plant worker was briefly hospitalized for observation after being exposed to the gas.

The worker was back on the job yesterday, and company officials tried to minimize the extent of the problems with the leaks.

But Hawaii County civil defense chief Harry Kim said: "I do not consider these minor incidents."

Bruce Anderson, deputy state health director, said from his Honolulu office that he regarded the problems as "quite serious . . . beyond what we expect of a shakedown."

The \$120 million project began production last Friday, after winning permits to proceed from the state. The Department of Health gave the go-ahead on Oct. 21.

Kim said he would have "damn well shut down the operation" had not the second source of gas release been discovered and quickly dealt with.

Anderson said the latest problems, while "certainly not life-threatening," are troubling and his agency is investigating the causes. He said it was "to Puna Geothermal's credit" that each leak was "corrected quickly."

Steve Morris, Puna Geothermal vice president, said he did not believe that the company violated any of its permit conditions during the two releases. The leaks did not disrupt the flow of electricity to Hawaii Electric Light Co.

After months of delays, Puna Geothermal opened up its production well Oct. 22.

The restart of the project Feb. 23, approved by Mayor Lorraine Inouye, was over Kim's strenuous objections because he felt the emergency response plan was still insufficient.

"We are asking too much tolerance of the residents," said Kim.

Meanwhile, Morris said preliminary indications are that the hourly average readings were not excessive.

Both Kim and Morris said a worker was taken to Hilo Hospital after the second leak.

Morris said the worker was taken for a precautionary examination and was unhurt and back on the job yesterday. He was not identified.

Morris said the worker briefly lost orientation because of the high level of fumes near the compressor where he was working. Anderson said that did not sound like a typical symptom of exposure to the gas.

Kim



The first problem occurred Wednesday when the seal on one of the turbine production units began leaking. The unit was taken off line and the leak repaired.

The second leak, which Kim pressed workers to find, turned out to be coming from a gas compressor that is supposed to confine gas odor in brine, which is re-injected into the earth.

Despite the problems, Morris said the plant was stepping up its power supply to HELCO and yesterday morning had reached the 6½-megawatt level — enough for about 6,500 residents.

PGV all but up, running

Hawaii Tribune - Herald, Friday, October 23, 1992

☐ Helco expects to get its geothermal power this morning

By Dave Smith
Tribune-Herald

With little fanfare and no apparent civil disobedience, Puna Geothermal Venture was expected to begin delivering power to Big Island electricity customers today.

PGV Vice President Steve Morris said this morning that the power was expected to be fed into the Big Island's electrical grid about 10:30 a.m. He said the power would be introduced slowly, with an initial delivery of about a megawatt expected to grow to about 5 megawatts within the next day or so.

Morris said two of PGV's 10 modular generators, each holding a pair of 3-megawatt turbine generators, will be used initially. He said PGV hopes to have 10 megawatts of supply by the end of the month and an additional 5 megawatts upon completion of drilling of a second well to be used to inject geothermal brine and other by-products back into the ground.

A megawatt of electricity will power 1,000 homes.

Hawaiian Electric Light Co. spokesman Army Curtis said this morning that Helco was unsure of exactly how much power it would receive from PGV's Pohoiki geothermal plant, but added the utility would "welcome all we can get."

Curtis said Helco has encouraged PGV to "take its time" in bringing the plant on-line, which involves extensive testing of equipment as well as the geothermal steam resource.

Though opponents of geothermal had threatened civil disobedience, Puna police reported no incidents connected with the

See PGV,
Page 8

PGV: Power flow expected to start today

From Page 1

startup.

"It's been business as usual," Puna police Capt. James Correa said this morning. "We've had no complaints from the public or calls from PGV."

However, the long-awaited start-up of the \$120 million plant was not without some

glitches. Subterranean steam was first introduced into the power plant at around 10 a.m. and at about 1:45 p.m. a small leak developed.

According to PGV, one of several bolts holding together a pipe joint near the wellhead expanded from the heat, allowing a

small discharge of steam.

Deputy state Health Director Bruce Anderson said this morning that the leak was minor and was corrected within 20 minutes.

He said readings at Department of Health monitoring stations were well below maximum al-

lowable limits.

Anderson said PGV has received all its necessary permits to operate the power plant and the start-up "has gone smoothly." He said DCHE monitoring of air quality will continue at the plant site around the clock.

Geothermal

Welcome to the power grid

Puna Geothermal Venture's "conservative estimate" that it could start supplying the Big Island with electricity on 20 minutes' notice turned out to be a bit optimistic. It took a day or so, as it turns out.

That's a meaningless delay compared to the years of technical, legal and regulatory battles it's taken to make commercial geothermal power a reality in Puna.

By Saturday, the plant was humming along, producing 4 megawatts (enough for 4,000 people). The complex is expected to produce 10 megawatts within a few days,

and 25 megawatts sometime next year, when a new well is completed.

That will be a relief to Hawaii Electric Light Company and its customers. HELCO has blamed months of undependable power delivery on the Puna venture's failure to have those 25 megawatts on line a year ago.

Whether it's entirely Puna geothermal's fault is open to question. But in any case, the new geothermal increment in the Big Island's power grid is welcome indeed. We hope future problems can be minimized.

-Hawaii Tribune - Herald, Monday, October 26, 1992

PGV running; resident complains

Puna Geothermal Venture project manager Steve Morris said things have been running smoothly at the plant since late Friday but a Lanipuna Gardens resident said she and neighbors have been plagued by noise and odors since the weekend.

"We're making power, we're currently running between 4½ to 5 (megawatts)," he said, adding that up to 7 megawatts have been generated at any one time for Helco's power grids.

Aurora Martinovich, however, painted a bleaker portrait of the first few days.

"We've been getting noise and smells, the leaks have been continuous," the Lanipuna Gardens resident said. "They're popping up everywhere."

"I wouldn't characterize the situation as leaks popping up everywhere," Morris said. "Under normal operations, we expect to run at virtually zero emissions," he said. The highest reading of hydrogen sulfide recorded has been of 8 parts per billion, he said. "We haven't had very much in excess of 2's or 3's."

Health Department environmental officer Clifford Furukado said there were readings of up to 3 ppb when there were detections.

Furukado said there was a leak from a flange last night near KS-8 and another coming from a non-condensable gas compressor Saturday.

"Those were the two they could pinpoint," Furukado said. "I guess they have minor ones all over the place" with H2S levels that could not be detected along PGV's borders, he said.

PGV is allowed H2S emissions of up to 25 ppb on an hourly average.

Morris said the emissions are coming primarily from the non-condensable gas compressors associated with the plant itself. He said he had no information regarding the regularity of emissions other than that "it's not a continuous stream."

Morris said "during start-up, it's not unexpected to have some minor levels of emissions but we're working hard to eliminate those."

PGV working out bugs in electricity generator

Local and wire sources
POHOIKI — It is taking longer than expected for Puna Geothermal Venture to connect its power plant to the Hawaii Electric Light Co. grid. The company wanted to hook up Friday, but could not because the plant was unable to generate enough consistent power. Puna Geothermal was expected to generate five megawatts of

power, but the most it managed was 2½ megawatts for about 20 minutes around 5 p.m., company vice president Steven Morris said. Morris said the exact cause of the problem was unknown. The geothermal project is more than a year behind schedule and millions of dollars over budget. The company began sending steam through its electric plant Thursday after finally winning

approval from the state to begin power generation. The well site in the Puna area has been the subject of numerous concerns regarding the safety of the operation and potential health effects on nearby residents. The site was closed for more than a year after Kapoho State-8 blew out in June 1991. There were no reports of problems with noise or smells from

the geothermal plant Thursday, even though there was a leak of some hydrogen sulfide from an expansion bolt. By Saturday afternoon, the plant was producing 1.5 megawatts of power, but expected to increase that to 3 megawatts later in the evening. HELCO is supposed to be receiving 25 megawatts of power from Puna Geothermal, and

should be getting 10 megawatts by the end of the month and 15 megawatts by the end of the year, Morris said. The full 25 megawatts will be delivered when a second well, KS-9, is drilled and brought on line next year. Also, the company has established a 24-hour phone line to field questions or complaints and provide daily updates. The number is 934-9072.

Star-Bulletin

Friday, October 30, 1992

Geothermal leak fells one worker

□ 'Disturbing' gas levels are reported in nearby housing

By Chris Loos
Special to the Star-Bulletin

POHOIKI, Hawaii — A Puna Geothermal Venture employee was taken by ambulance to the hospital after he was exposed to hydrogen sulfide gas from a plant leak this week, a company official said.

And Health Department officials recorded "disturbing" levels of hydrogen sulfide gas in a subdivision near the geothermal plant Wednesday evening when two gas leaks occurred, said Big Island Civil Defense Administrator Harry Kim.

The employee became disoriented at about 5 p.m. Wednesday after being exposed to hydrogen sulfide leaking from a seal on a turbine unit. He was taken to the hospital as a precaution, said Steve Morris, Puna Geothermal's vice president and general manager. The worker was treated and re-

He was back on the job yesterday, Morris said.

A second leak in a non-condensable gas compressor, reported at 8 p.m. Wednesday, was stopped quickly, Morris said.

The latest leaks were the worst since Puna Geothermal's operations resumed last Thursday, Kim said. He said he has received complaints of hydrogen sulfide odors nearly every night since the plant reopened.

"We have people who have called up to say that they wake up in the middle of the night and they have a sore stomach or headache or coughing because of throat irritation."

Aurora Martinovich, the plant's closest resident, said a "strong stench" entered her Lanipuna Gardens home Wednesday night.

Kim said Health Department officials recorded hydrogen sulfide levels of 146 parts per billion in a narrow plume in the subdivision.

Puna Geothermal's emergency response plan calls for evacuation when hydrogen sulfide levels reach 1,000 parts per billion, but 146 parts per billion "is within the level of what, for some, would be very disturbing," Kim said.

He said a couple of families evacuated the area Wednesday night.

Morris says Puna Geothermal is focusing on eliminating new leaks.

"We're in the start-up process and we don't like the fact that we've had some leaks in the system," he said. "But they're certainly not un-

9A

**AGENDA
FOR THE MEETING OF THE
BOARD OF LAND AND NATURAL RESOURCES**

DATE: FRIDAY, JANUARY 8, 1993
TIME: 9:00 A.M.
PLACE: BOARD ROOM
KALANIMOKU BUILDING, ROOM 132
1151 PUNCHBOWL STREET
HONOLULU, HAWAII

MINUTES
NOVEMBER 20, 1992

F. DIVISION OF LAND MANAGEMENT

1. TRANSMITTAL OF DOCUMENTS FOR BOARD CONSIDERATION:
 - (a) ASSIGNMENT OF GRANT OF EASEMENT NO. S-4098 BETWEEN YOSHITO IWAMOTO, ASSIGNOR AND LARRY R. OLER AND MIDGE J.L. OLER, HUSBAND AND WIFE, ASSIGNEES, ACCESS EASEMENT AT WAIOHINU, KAU, HAWAII, TAX MAP KEY 9-5-02:40
 - (b) ISSUANCE OF REVOCABLE PERMIT TO GOMES SCHOOL BUS SERVICE, LTD., GOVERNMENT LAND AT LELEO AND KUWILI, HONOLULU, OAHU, TAX MAP KEY 1-5-07:75
2. AMENDMENT TO PRIOR BOARD ACTION OF JUNE 12, 1992 (AGENDA ITEM F-5) TO GTE HAWAIIAN TELEPHONE COMPANY, INC. AT PUUKAPU HOMESTEADS, 2ND SERIES, WAIMEA, SO. KOHALA, HAWAII, TAX MAP KEY 6-4-03:POR. 97
3. CANCELLATION OF GENERAL LEASE NO. S-5017 TO DOROTHY E. NISHIE AND GRACE M. SHIMA, TRUSTEES OF THE PHILLIPS FAMILY TRUST, LALAMILO, WAIMEA, SO. KOHALA, HAWAII, TAX MAP KEY 6-6-09:52
4. DEPARTMENT OF EDUCATION REQUEST FOR APPROVAL OF LEASE CONTRACT NO. DACA84-1-93-18, PORTION OF SCHOFIELD BARRACKS MILITARY RESERVATION FOR PUBLIC SCHOOL PURPOSES, WAHIAWA, OAHU

H. ADMINISTRATION

1. CONSERVATION DISTRICT USE APPLICATION FOR CONSTRUCTION OF A BOAT RAMP, REVETMENTS, JIB CRANES, FLOATING DOCK, AND INLET AND FINGER PIER AT KALHI CHANNEL, TMK 1-5-41:06; APPLICANTS: DBEDT-HONOLULU WATERFRONT PROJECT
2. BUILDING PLAN REVIEW, LANDSCAPING PLAN REVIEW AND VIEWPLANE ANALYSIS AS PER CONDITION NO. 6 OF CDUP HA-2562 FOR A SINGLE FAMILY RESIDENCE AT KIHOLE BAY, NORTH KONA, HAWAII, TAX MAP KEY 7-1-02:12; APPLICANT: JOHN PAUL DEJORIA C/O HARRY MCDONALD; AGENT: SIDNEY FUKE & ASSOCIATES
3. PARADISE PARK ANNUAL REPORT, FUTURE PLANS AND EXHIBITS, MANOA VALLEY, OAHU, TAX MAP KEY 2-9-54:18; APPLICANT: MR. JAMES W.Y. WONG, PRESIDENT, PARADISE PARK, INC.
4. UNCOLLECTIBLE DEBTS (RELATING TO FILM INDUSTRY BRANCH)

K. OTHER DEPARTMENTS

1. MEMORANDUM OF AGREEMENT AND LICENSES FOR USE OF REAL PROPERTY, HONOLULU INTERNATIONAL AIRPORT, HONOLULU INTERNATIONAL AIRPORT, LIHUE AIRPORT, KAHULUI AIRPORT, HILO INTERNATIONAL AIRPORT (NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION)
2. APPLICATION FOR ISSUANCE OF REVOCABLE PERMITS 4912, 4922, 4927, AIRPORTS DIVISION, HONOLULU INTERNATIONAL AIRPORT, OAHU
3. CONTINUANCE OF REVOCABLE PERMITS H-86-1383, ETC., HARBORS DIVISION

STATE OF HAWAII
REQUISITION & PURCHASE ORDER

DEPARTMENT OF LAND AND NATURAL RESOURCES

DOWALD

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FUNCTION AND ACTIVITY

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		AUTHORIZED SIGNATURE	

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PGV set with geo for Helco

□ But residents still have their concerns

By Gordon Y.K. Pang
Tribune-Herald

A Puna Geothermal Venture spokesman said a scheduled 10-day flow test, the last step before full-scale energy production, has gone without incident since yesterday afternoon and that the plant was expected to begin generating energy from geothermal steam for the first time sometime today.

"Things went well through the night, we got on-line at 12:30 and have been running continuously since then," said PGV general manager Steve Morris.

The good news for PGV came after several hitches that began when the company first attempted to start the flow test at 8 a.m. Wednesday.

Equipment preparation delayed the test for more than three hours during that morning. That was followed by a flange leak in an hour into the test which shut things down until yesterday morning. The test then encountered a leak in a packer.

Morris deemed both of the leaks minor and harmless.

"If you didn't encounter these kinds of incidents, you wouldn't have to do tests," he said. "It's hard to call any problem common, but you have to take them as they come and keep moving forward."

Morris described today as "a big day." While the plant has generated small amounts of power through other types of steam in the past, PGV is hoping to make electricity with geothermal steam for the first time today.

"We'll run fans for the first time today," he said, pointing to a possible concern. "We'll be watching noise levels very closely."

Meanwhile, residents continued to make complaints about hydrogen sulfide emissions as both Morris and Health Department officials contend no serious levels are being recorded.

On Tuesday, four families accepted PGV's offer to spend the night at a Hilo hotel. A total of 13 families slept over in Hilo on Wednesday, although a PGV spokeswoman this morning reported 11 families the company made reservations for did not check-in. PGV made reservations for 14 families last night, although it could not be confirmed how many actually did so.

Steve Philips, a Leilani Estates resident about a mile from the plant, said his family has been experiencing symptoms commonly associated with hydrogen sulfide inhalation — sore

GEO: PGV to produce power sometime soon

From Page 1

noses, sore throats and the PGV property line and not headaches.

"They were pretty good whiffs, it didn't last a whole long time, but long enough to say we can't take this anymore," he said.

Philips and his family have moved in with a cousin elsewhere for the time being.

Clifford Furukado, a Health Department air monitoring specialist who has been testing air quality in and around the plant, said hydrogen sulfide levels of up to 11 parts per billion were recorded yesterday — but along

per billion on an hourly average basis. "We haven't detected any significant emissions at the perimeter," he said.

Abatement efficiency of hydrogen sulfide has been running at 97 to 98 percent, Morris said, higher than the 95 percent PGV officials had hoped for.

Morris said he is continuing to meet with residents at 4 p.m. every day at the former HGP-A facility "to explain to them what activities have been performed during the day, what is planned for that evening and the next

morning ... and share whatever problems may have been encountered."

He acknowledged that there were some complaints by residents but that most of the discussions have centered around concerns about what is to happen.

PGV is scheduled to provide up to 25 megawatts of energy to Helco. Well KS-8, the same well that blew out in June 1991, causing nearly 13 months of delays, is expected to supply between 5 and 7 megawatts of that power.

Geothermal flow testing halted by steam leakage

Peaceful protest nets only one arrest

By JASON ARMSTRONG
West Hawaii Today

POHOIKI — Puna Geothermal Venture officials halted flow testing of well KS-8 Wednesday after detecting leakage in a well-head assembly about 45 minutes into the lengthy procedure.

Testing of the well, which was to have begun at 8 a.m., was delayed several times while workers finished adjusting instruments, said Steven Morris, PGV vice president and general manager.

Steam and heated brine began flowing from the well about 11:38 a.m., but testing was quickly halted, as a safety precaution, once the leak was detected, he said.

"There was a leak somewhere in the system and they decided to shut it down," Morris said. "It doesn't sound to me like it was much of an issue. There was a problem and they shut it down."

Workers were repairing the well Wednesday afternoon in anticipation the flow testing could resume at 8 a.m. today, Morris said.

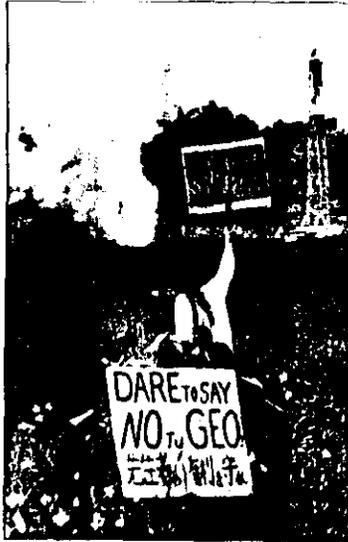
A slight buzzing noise and hydrogen sulfide — a potentially deadly gas in high concentrations that smells like rotten eggs — were detected near the well site prior to the shutdown.

"There is a distinct H2S odor at the site," said Harry Kim, Civil Defense Administrator, who attended the testing. Kim said noise and H2S readings from mobile receptors did not exceed rigid safety levels for geothermal operations set by the state Department of Health.

"The noise is just nothing up there," Morris said.

Various sound insulators had been installed to reduce noise levels at the power plant, although more work could be done to lessen the impact on the surrounding community, Morris added.

"We view noise mitigation as never ending," he said.



—BARON SEKIYA—WHT
PROTEST — A member of the Big Island Rainforest Action Group makes a point at the "Flow Test Protest."

A total of four mobile monitors, two each from the DOH and PGV, recorded air composition and noise levels near the well site, according to Morris.

Big Island Rainforest Action Group members staged a "flow-test protest" during the proceedings

See 1 ARREST:
Page 4A

...1 arrest at BIRAG geothermal protest

From Page 1A

to further state their opposition to geothermal development on the Big Island. PGV and local police scheduled additional personnel in case of a violent confrontation, although none occurred as the 30 or so protesters peacefully displayed signs and coped with the rainy weather for more than five hours.

BIRAG spokesman Robert Petricci, however, was arrested and charged with second-degree criminal trespassing after he walked past a lone PGV security guard stationed at one of three entrance gates and up the well site at 8 a.m.

Petricci, who claimed to have been arrested seven times for similar offenses, had his \$50 bail posted and was returned to the protest area by 10 a.m.

"I got to the rig," he said. "I felt pretty good about it."

The initial stages of the flow test resulted in the discharge of steam, which billowed straight upward in large, white plumes because of the lack of wind. The clouds were clearly visible to the protesters and various media representatives gathered on the outskirts of PGV property about 1,500 feet away.

The \$110 million power plant should begin producing up to seven megawatts of electricity within a month, although some power may be made during the next few days, according to Morris.



—BARON SEKIYA—WHT
PGV BOSS — Steve Morris of Puna Geothermal Venture, speaks to members of the media about the flow test process Thursday at the PGV site.

Limited generation may be possible by the weekend, he said. If so, it will be monitored and given to Hawaii Electric Light Co. — if all goes well, Morris said.

Several steps remain, however, before work is completed on the 25-megawatt plant, Morris said. Larger piping must be installed, which will increase noise levels during the 10-day flow test.

The test will also include numerous measurements of the geothermal resource and its specific components, Morris said. The steam will be separated, converted into energy and the

brine byproduct will be re-injected back into one of two injection wells, Morris said.

Once this stage is finished, a two-week process will be needed to replace temporary pipes with permanent ones before electricity production can be achieved on a continuous basis, he said.

Morris said PGV plans to drill four additional wells, two each for steam production and brine to injection before the plant can produce full power. The plant will have the capability to shut down any number of its 10 modules should a problem arise, so limited generation could still be generated by the

—BARON SEKIYA—WHT
FLOW TEST — As Puna Geothermal Venture conducts a flow test on the KS-8 rig at right, protesters creep up to the outskirts of the PGV site.



PGV restarts flow testing

Company officials say glitches are not major

By Gordon Y.K. Pang
Tribune-Herald

POHOIKI — Puna Geothermal Venture officials restarted a scheduled 10-day flow test this morning after a "minor" pipe leak one hour into the proceeding halted the operation yesterday.

PGV general manager Steven Morris blamed yesterday's hitch on heat-expanded bolts and said workers were testing connections this morning to make sure the same didn't occur again.

Meanwhile, Morris said 13 area families accepted an offer issued by PGV Tuesday night to temporarily relocate to Hilo hotels last night. Four did so Tuesday.

"The bottom line is we're trying to accommodate the residents to lessen the effect on them as best we can," he said. "We know it's a difficult time for them."

Morris added, however, that he knew of no complaint reports filed regarding noise or emissions, the two major concerns that have been raised by residents over the years.

Yesterday, a thick cloud of white steam billowed over the KS-8 production well shortly after 11:30 a.m. as about 40 residents, journalists, police and others watched from outside the papaya fields which make up the southeastern boundary of the Pohoiki well and plant site.

The flow test is considered the last major step before actual production of between 5 and 7 megawatts of what is a 25-megawatt contract with Helco.

The flow test is designed to measure the strength of the well source and the integrity of piping, an elaborate abatement system and other equipment, according to Morris.

Additionally, the flow test will give scientists the chance to

measure the geochemical fluids coming out of the well, Morris said. The fluids have been a concern raised by residents and geothermal expert Wilson Goddard.

From the PGV boundaries yesterday, there was no noticeable detection of hydrogen sulfide although a faint buzzing noise could be heard coming from the well area.

The steam was not coming directly out of the well, but from a cylinder-shaped muffler several feet away designed to purify the steam. Brine from the well was meanwhile being diverted into a pond. Under normal production, the steam will go into the power plant and the brine underground into a reinjection well.

Some observers noted that the steam release yesterday produced significantly less smell and noise than a previous open venting which spewed forth a dirty plume.

Residents in the area, nonetheless, picketed in front of television cameras and demanded the shutdown of the plant. Several covered their faces with masks.

At extremely high levels of concentration, hydrogen sulfide can be a major health concern but both PGV and government officials have continued to maintain that the plant's emissions are significantly less.

As Morris was telling reporters, about an hour into the flow test, that it was going smoothly, he was told that a leak had sprung. Morris later blamed the problem on heat expansion of bolts. The situation was not considered serious.

"We tightened up all of our bolts last night," Morris said this morning. "We ran (the test) for about 15 to 20 minutes in order to heat up the well, and then we shut it down again," he said, noting that he expected the test to go non-stop sometime later today.

Yesterday's aborted well test was delayed about 3 1/2 hours later than the original 8 a.m. start-

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Page 12



—TH photo by William Ing

GEO TEST — Protesters watch as Puna Geothermal Venture conducts a flow test on its KS-8 rig yesterday.

PGV: Geo flow testing resumes today

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up time, the result of equipment testing.

Neither the soft rain nor the arrest of Leilani Estates resident Robert Petricci affected yesterday's start-up, Morris said. Petricci, who now has been arrested

seven times for geothermal-related protests, was busted for second-degree criminal trespassing when he was discovered on the KS-8 well pad prior to yesterday morning's flow test. He was released on bail within an hour.

Morris said residents and other observers should expect to see a steam plume over the plant off and on during the next 10 days. While no steam plume is released during full power production, clean steam is allowed into the atmosphere during the

flow test, Morris said, emphasizing once again that levels of hydrogen sulfide have so far been well below what is allowed under normal operating conditions. PGV is expecting 95 percent abatement, he said.

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Hawaii

G-Day 'very close' in Puna

Geothermal firm hopes to be pumping electricity today

By Hugh Clark

Advertiser Big Island Bureau

POHOIKI, Hawaii — With testing of Puna Geothermal Venture's Kapoho State-8 well proceeding nicely, company officials hope to begin producing power today on an experimental basis.

After 27 hours of testing, two of the 10 generating units in the power plant were receiving steam by yesterday afternoon and separating the brine or unwanted fluids from the steam that will generate electricity.

The power plant is scheduled to go on line next month.

"We are very close to producing some net power," Steve Morris, vice president and general manager, said yesterday. He said he believes the generators will be turned on sometime today and produce 2 to 4 megawatts of electricity for experimental purposes.

Eventually all 10 of the units — each capable of producing about 3 megawatts of power — will be tested and the full extent of the well will become known based on pressure and

temperature measurements.

Puna Geothermal hopes to get up to 7 megawatts of power from the well. Up to four more wells are planned to produce the 25 megawatts contracted for by Hawaii Electric Light Co.

Morris said engineers are continuing a series of tests in which increasing amounts of steam are released from the well into a series of large pipes carrying the steam into the plant.

The plant itself was completed earlier in the year and has

been awaiting the use of the well, which blew out in June 1991. That blowout caused about 13 months of delays.

The test began Wednesday while geothermal protesters looked on with picket signs. The initial day provided only an hour of steam because several small leaks were discovered.

The flow test resumed Thursday morning but was shut down briefly for a second time. Then the unbroken release of steam started Thursday afternoon.

Second day of testing indicates geothermal well is 'productive'

By Rod Thompson

Big Island correspondent

KAPOHO, Hawaii — Puna Geothermal Venture officials are pleased with flow testing of their KS-8 well after minor problems cropped up yesterday.

The testing is being done in preparation for commercial power production in two to four weeks.

"It's going very well," company general manager Steve Morris said after several hours of testing.

Early results showed the well to be very productive, he said.

The geothermal fluid is separated into steam, which will be used to run the 25-megawatt power plant, and liquid brine, which is useless. The company got additional good news in the form of data showing the percentage of useless brine is low, Morris said.

The company started the testing Wednesday, but stopped after an hour because of a leaking pipe joint. The company determined

the cause was one pipe expanding faster than another because of the heat of the geothermal fluid.

The solution was simply to let the pipe expand, then stop the flow test and tighten the pipe. That's what the company did yesterday as it resumed the flow test.

Then another problem arose, Morris said. Packing around some pipes started to leak. Again the flow was stopped while new packing was installed.

From that point on, the testing went smoothly, he said.

Hydrogen sulfide testing at the company's fence line showed only one instance of the gas being measured at 21 parts per billion for a few moments, Morris said. State Health Department regulations permit up to 25 parts per billion averaged over one hour.

But after the momentary spike, all other measurements showed 0-2 parts per billion, below the level at which most people can smell the gas.

Puna Geothermal power flows into Big Island's lines

Test run lasts several hours

By Hugh Clark

Advertiser Big Island Bureau

VOLCANO, Hawaii — Puna Geothermal Venture's new generating plant produced its first power late Friday night, contributing 1 to 2 megawatts for the island's energy grid over several hours in a continuing test run.

The PGM's Kapoho State-8 well in Pohoiki is being flow-tested under special state and county permits. So far, the test has been without major incident, though some nearby residents have complained of the smell and taste of hydrogen sulfide.

PGV's well has been releasing steam without interruption since minor leaks detected Wednesday and Thursday were sealed off.

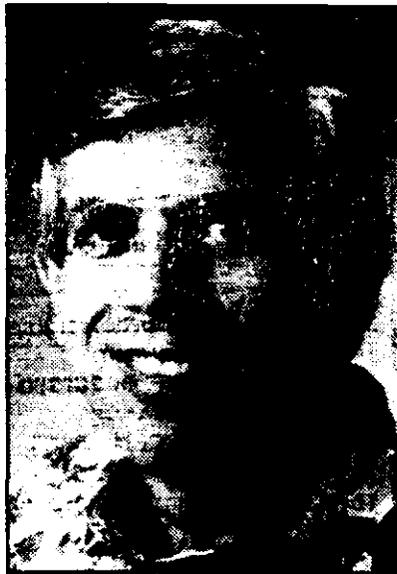
The steam is separated in the 25-megawatt plant into brine (waste fluids) and usable steam, which is sent through two generators. All 10 units are to be tested by the end of next week, said Steve Morris, Puna Geothermal vice president.

Sometime next month, the plant should be producing commercial power for the Big Island's energy-strapped Hawaii Electric Light Co.

Federal monitoring: Meanwhile, federal officials announced they are taking samples of the fluids produced by the Puna Geothermal Venture well and will send them to the Mainland for an independent analysis.

Results of the analysis could resolve the furor over emissions from the well raised by residents and geothermal opponents who have repeatedly said they do not trust the PGM and state Health Department tests.

Morris said the level of hydro-



Steven Morris

Says hydrogen sulfide in limits

gen sulfide — responsible for the rotten egg smell — is well below the permitted 25 parts per billion. The highest recorded reading was 21 parts per billion, registered Thursday morning, he said.

David Clague, scientist-in-charge of Hawaiian Volcano Observatory, said a specialist from the U.S. Geological Survey in Menlo Park, Calif., is on the Big Island to sample the fluids at the wellhead.

Clague said his agency will be "using the most reliable techniques available" to look at a wide range of chemicals, gases and components.

The work is with the cooperation of the developer, whom Clague said has "generously allowed the Geological Survey to obtain samples during the flow test."

Clague said his agency will release the results of its analysis.

Geothermal proponent

Editor:

Maybe it's a good idea the state Public Utilities Commission is meeting in Honolulu to discuss the problems HELCO is having in delivering electricity to Big Island consumers. The rolling blackouts Big Islanders are experiencing are much more than a nuisance. They're a health and safety hazard.

By having their inquiry on Oahu, they should have no trou-

ble calling in the state Department of Health, the state Department of Land and Natural Resources, and the state Department of Business, Economic Development and Tourism. The PUC commissioners and staff can ask HELCO to verify whether the state of Hawaii, the County of Hawaii and the state Legislature directed HELCO to hold off development of oil-fired powerplants so the Big Island utility could use geothermal power.

The PUC probers might even probe their own organization. Should they submit to self-examination, they'll find even the PUC had endorsed the use of geothermal energy.

If they really want to be thorough, the PUC should review the state Democratic Party platforms over the past several election years. The commissioners will discover that Hawaii's dominant political party has been a consistent proponent of using local geothermal power rather than imported oil for generating electricity.

It is self-evident that geothermal energy will help Hawaii:

—Because geothermal power is cleaner than oil and coal

—Because geothermal power will reduce Hawaii's dependency on imported crude oil

—Because geothermal energy is locally produced, it will reduce the possibilities of ecologically disastrous oil spills

—Because geothermal is local, Hawaii's economy will benefit since we won't have to pay for imported products plus the transportation costs

—Because geothermal power is local, the energy source is secure from foreign disputes, shipping disruptions, rapid price escalation, etc.

So why is the PUC engaging in HELCO-bashing? So why isn't the PUC calling in the governor, mayor, a multitude of state and county agencies, the state Democratic Party, the state Legislature? Investigations are fine, but the PUC has to ask the right people the right answers.

Can you imagine the cries of anguish that would have been emitted had HELCO a few years ago told the state and county administrations and the state Legislature that despite the many benefits of geothermal energy, they were going to go with foul-burning imported crude oil?

With the benefit of 20-20 hindsight (a gift which HELCO-bashers seem to be blessed with), HELCO likely would admit they erred in succumbing to government pressures. Chances are HELCO will be less public-spirited in the future.

Bill Cook
Executive Director
Hawaii Island
Geothermal Alliance

State fields geo concerns

BIRAG still plans
flow-test protest
start-up tomorrow

by Gordon Y.K. Pang
Tribune-Herald

County concerns about flow
tests at a Puna Geothermal Ven-
tures well this week are being
addressed, state officials said
yesterday.

State Department of Health
officials said the health and
safety concerns raised by the
county's Energy Advisory Com-
mission have been written into
already existing permits for the
geothermal production well.

The Big Island Rainforest Ac-
tion Group, meanwhile, said it
will stage a protest at PGV's
gates at 7 a.m. tomorrow, which
could include acts of civil
disobedience.

The 10-day flow test, the last

major procedure before the pro-
duction of steam for electricity,
is scheduled to begin at 8 a.m.

In mid-July, Mayor Lorraine
Inoué asked state agencies to
respond to 11 concerns raised
by her appointed energy adviso-
ry commission.

Critical among those concerns
was a geo-chemical analysis of
the steam during the flow test
and use of cyclonic mufflers and
other abatement procedures dur-
ing the test period.

Health Director John Lewin,
in a response dated July 27, said
both issues are already
addressed by a revamped 'au-
thority to construct permit
issued to PGV.

One condition of the ATC
"requires testing and analyses of
the steam condensate, steam,
particulates and/or gases ema-
nating from each well," he said.

Additionally, the ATC re-
quires the use of a cyclonic
muffler during drilling, abated

well cleanout and flow testing
operations," Lewin wrote.

Lewin said a reinjection well
monitoring standard already ex-
ists "to assure that ground water
sources are not adversely im-
pacted by geothermal fluid that
are injected into the group."

Lewin also wrote that his of-
fice will continue to monitor the
health status of those living in

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GEO: State allays concerns; protest set

From Page 1

the surrounding neighborhoods
and that it has asked the federal
Centers for Disease Control to
do the same.

Further, he said the
emergency response plan for the
PGV project is "a living docu-
ment" that will change to meet
tougher requirements as deemed
necessary.

Lewin said his responses
"should help assure the commis-
sion that geothermal resource
development can continue with-
out posing an unacceptable
threat to public health or
safety."

Although it had not been
brought by the advisory com-
mission, there had also been

concerns raised over how state
budget cuts would affect the
funding for three positions to
provide around-the-clock
surveillance of geothermal activ-
ities at PGV.

"The funding issue has been
worked out with the Department
of Budget and Finance, and we
will be able to provide the
necessary inspection and moni-
toring to insure proper regula-
tion of geothermal activities,"
Lewin wrote.

State Land Board Chairman
William Paty answered a con-
cern related to shutdown proce-
dures in the event of a failure of
the reinjection process.

Paty said the Land Board has
set procedures for abandonment,
noting that "a \$250,000 bond
has been filed by PGV and will
remain in force for the life of
the wells and will not be re-
leased until these wells are
properly abandoned."

Ron Phillips, a member of the
commission, said he had not
seen the responses from state
officials. But after hearing some
of the responses given, Phillips
said, "I think they're satisfying
our concerns."

Other lower Puna residents
were not satisfied, however.

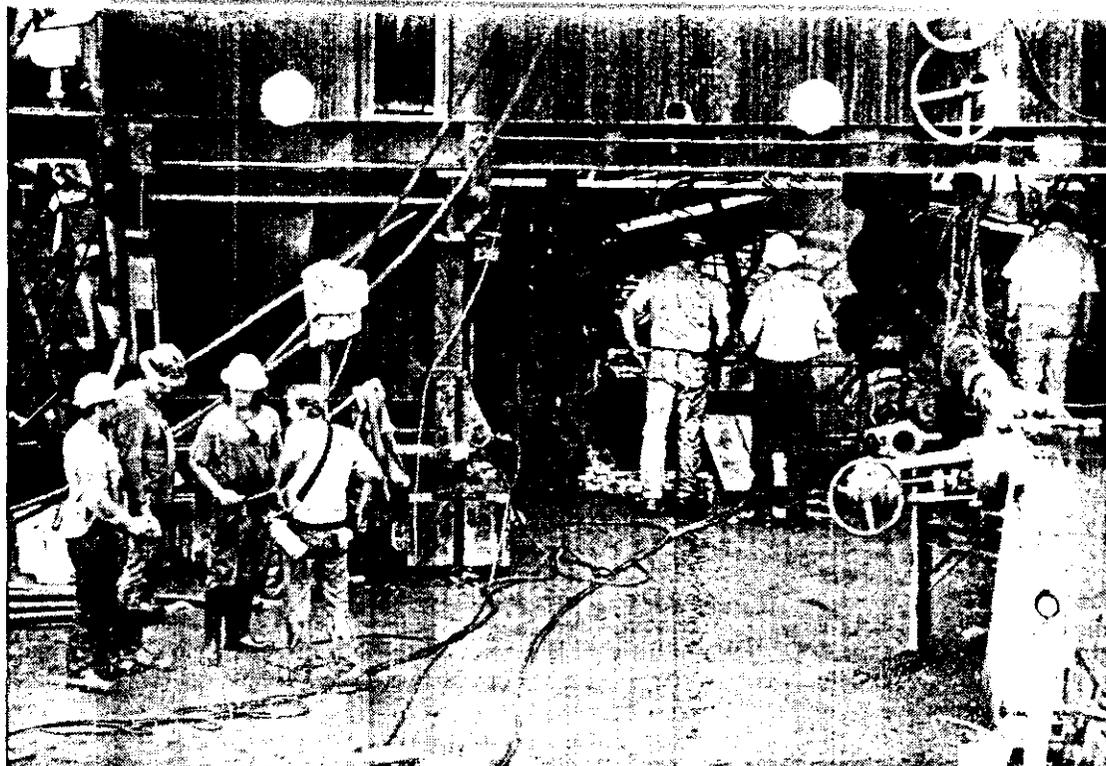
BIRAG spokesman Robert
Petricci, in announcing tomor-

row's protest, questioned the
"mechanical integrity" of the
KS-8 well and its casing. Pet-
ricci said PGV has refused to
release tests done on the well's
structural safety.

Petricci said no flow testing
should be conducted until results
of the mechanical integrity test
are made public.

Leilani Estates resident Steve
Philips said he and his family
are concerned about the flow
test and are preparing for the
worst.

"We'll be on a 24-hour alert
with our car packed with camp-
ing gear to enable us to run at a
moment's notice," Phillips said.



—BARON SEKIYA—WHI

FLOW TEST WORKERS — Puna Geothermal Venture workers are busy at the base of their KS-8 rig on Wednesday. Flow testing resumed Thursday before it was halted to stop minor leaks and then once again resumed.

'Minor leak' halts testing at Puna geothermal well

By **JASON ARMSTRONG**
West Hawaii Today

POHOIKI — Flow testing of Puna Geothermal Venture's KS-8 well resumed Thursday morning, but was quickly halted after detection of a "minor leak" involving a pipe sealant forced another, four-hour delay in the procedure, company officials said.

An adhesive agent used in securing one section of pipe inside of another failed to hold and the 10-day testing process was postponed until 12:30 p.m., according to Steven Morris, PGV vice president and general manager.

"It gave way a little bit," Morris said. "It was a fairly minor leak."

The test was halted, new adhesive was added

and work proceeded without problems for the remainder of the afternoon, according to Morris.

"Things are going pretty well," he said late Thursday afternoon.

PGV officials initially began flow testing the geothermal well Wednesday morning, but soon postponed the procedure a full day to allow workers a chance to repair a leaking well flange that was later blamed on the heat expansion of bolts.

The testing process was started "a little after 8 a.m." Thursday and continued for about 30 minutes before officials purposely shut the process down to allow for cooling and the adjustment of

See **PGV:**
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loose bolts, Morris said.

Work resumed a few minutes later and things appeared to be functioning without problems for about 15 minutes, then the leaking adhesive was detected and testing was again stopped, Morris said.

Problems typically arise during the flow testing of geothermal wells and will likely occur again during the coming days, Morris added.

State Department of Health

officials will soon be contacted by PGV representatives to see if a permit extension is needed to make up for the lost testing time, Morris said.

Mobile, hand-held air and noise monitors detected only trace amounts of the irritating hydrogen sulfide gas and no noticeable noise Thursday, according to Morris.

"We're not having any problem with H2S at the moment," Morris said.

The highest H2S reading

occurred Wednesday during the initial minutes of testing, he said. A momentary reading of 21 parts-per-billion was noted, Morris added.

The DOH's latest ambient air quality standards require H2S levels of 25 ppb for a one-hour period before the affected area can be placed on alert status.

Numerous area residents have remained skeptical of the testing procedure and 17 families have accepted PGV's offer of temporary relocation to Hilo hotels, according to Morris.

Geothermal tests begin, but leak causes halt

More venting expected today at Puna facility

By Hugh Clark
Advertiser Big Island Bureau

POHOIKI, Hawaii — Eager to resume energy development, Puna Geothermal Venture began 10 days of crucial tests yesterday after a 3½-hour delay, but the program was halt-

ed after an hour because of a small leak.

Meanwhile, nearly three dozen protesters held a vigil in the nearby Lanipuna Gardens subdivision. One protester — Robert Petricci — was arrested for trespassing on the project site before the test began.

Engineers and technicians carefully reopened the geothermal well that had been shut since a blowout 13 months ago halted the entire Puna Geothermal project.

A large steam plume burst into the air at 11:37 a.m. but

did not produce any strong odor or loud noise.

But the test was halted after a flange began leaking. The leak was blamed on heat expansion of bolts. The test is expected to resume at 8 a.m. today.

As the steam suddenly began rising from the master vent, the protesters pleaded for another explosion, hoping that would close the project.

"Go, Pele, go," a woman yelled, evoking the name of the Hawaiian goddess of fire.

Puna Geothermal Venture

general manager Steve Morris said the project could be delivering power to Hawaii Electric Light Co. within 22 days.

Actual power could be produced in two or three days while the project's power plant is being tested.

Morris said yesterday's test was "going very well" until the unexpected halt, which occurred as he was holding a news conference.

Geothermal energy — using steam piped from deep underground to power electricity-producing generators — is seen

in many government and business quarters as the answer to the Big Island's shortage of electricity. But opponents say geothermal drilling creates safety and health hazards and is an affront to the Hawaiian religion.

Previous "open vent" from the well was marked by a dark, dirty plume or gas, roaring noise, and the odor of hydrogen sulfide.

A special muffler has been installed, and noise and emissions from the well yesterday seemed significantly lower.

Geothermal power could flow today

By Hugh Clark
Advertiser Big Island Bureau

POHOIKI, Hawaii — Puna Geothermal Venture could be sending power to Hawaii Electric Power Co. by as early as this afternoon or tomorrow, said company vice president Steve Morris.

The 10-day flow test of the company's key well went with-

out major problems yesterday, and both the temperature and pressure of the well appear promising, Morris said.

"We have a potentially excellent well. But it is too early to really tell," he said.

Morris, speaking last night after the second day of stop-and-go testing, said all of the leaks blamed on bolts and packing of pipes are believed

to have been closed.

Flow testing of the well was suspended yesterday morning, as it was Wednesday on the first day of tests, because of some problems. But it resumed at 12:30 p.m. and continued without incident into the night.

At 2:30 p.m., some of the steam was diverted into the power plant system.

By today, Morris expects the

separator that divides brine (waste fluids) and the steam to be in operation, an essential part of the test to determine the well's energy potential.

"This could be the big-time test for the plant," said Morris.

The plant is part of a project that cost over \$120 million and seeks to harness geothermal power for electricity.

First day of geothermal test successful despite problems

By Rod Thompson

Big Island correspondent

KAPOHO, Hawaii — Puna Geothermal Venture hoped to restart a 10-day flow test of its KS-8 well today after halting it one hour into the testing yesterday.

The testing was shut down yesterday due to a leaky pipe fitting, said Puna Geothermal general manager Steven Morris.

The testing is preparation for the company producing up to 7 megawatts of electricity in two to four weeks. The power plant would not reach its full 25-megawatt capacity until more wells are drilled.

The testing yesterday appeared successful while it was under way, with no noise or hydrogen sulfide gas detectable from the company's property line, about 1,500 feet from the well.

The company released a white cloud of steam during the testing, but even near the well, noise from the steam was held to a low rumble.

Civil Defense chief Harry Kim said there was a distinct smell of hydrogen sulfide near the well during the test, but others said it was minimal.

Measurements showed the steam was emitting 1.39 pounds of the gas per hour, well below the 5 pounds per hour permitted by the state

Health Department, Morris said.

Besides the chemical scrubbing of the gas from the steam, noise was held to a minimum by a water tank-like cyclonic muffler.

Both the gas abatement and the muffler were new requirements by the state after the KS-8 well suffered a 31-hour blowout a year ago. After that incident, the state prohibited open venting, the procedure in which the company previously cleaned wells without either gas or noise controls.

A group of about 20 geothermal opponents gathered outside the property line beginning at 7 a.m. to protest the test. Protester Robert Petricci walked onto the property, was arrested for trespassing, and was back protesting within a few hours.

Petricci said it was the seventh time he has been arrested protesting geothermal development.

The current testing will collect data on the temperature, pressure, chemistry, and flow rate of geothermal fluid from the well, Morris said.

During the testing, the fluid is separated into liquid brine and steam.

Steam will go through the power plant's maze of pipes. Brine will be pumped back into the ground, a process tested earlier with fresh water, but not geothermal brine.

Geothermal test put off

POHOIKI, Hawaii (AP) — Puna Geothermal Venture has postponed today's planned test of its Pohoiki well that was shut for 13 months following an explosion in June 1991.

Puna Geothermal vice president Stephen Morris said Thursday night the delay was "operationally related," but didn't give details. He did say the delay wasn't caused by permit problems with the state Health Department.

Morris said he expects the flow test to be conducted sometime next week.

The test is needed to make sure there is a significant geothermal resource available to be harnessed into energy for the Big Island.

Puna Geothermal says it could begin providing some of the 25 megawatts of power it is contracted to Hawaii Electric Light Co. before the end of the month if the tests go well.

West Hawaii Today, Sunday, August 9, 1992

PGV receives DOH approval

Puna Geothermal Venture this week will begin a 10-day flow test at its well in Pohoiki, bringing the controversial project one step closer to reality.

If all goes according to plan, the well is expected to begin providing 5 to 7 megawatts of power to Hawaii Electric Light Co. soon after the test is completed.

The test, scheduled to begin Wednesday, involves measuring the steam from the KS-8 well that will pass through the company's \$110 million power plant, according to Steve Morris, PGV vice president.

Morris announced Friday that the company had received the required approval from the state Department of Health to operate the well.

Geothermal work on the Big Island was temporarily halted after the well blew out in June 1991. Prior to that, PGV was under contract to provide 25 megawatts of power to HELCO by October of last year.

PGV had planned to start the test today but deferred the work because of operational problems, Morris said.

Puna Geothermal's test of Pohoiki well postponed

POHOIKI, Hawaii — Puna Geothermal Venture has postponed today's planned test of its Pohoiki well that was shut for 13 months following an explosion in June 1991.

Puna Geothermal vice president Stephen Morris said Thursday night the delay was "operationally related," but didn't give details. He did say the delay wasn't caused by per-

mit problems with the state Health Department.

Morris said he expects the flow test to be conducted sometime next week.

Geothermal bill shot down

A bill which would give authority for geothermal resource permits to the County Council was shot down at a Planning Committee meeting this week.

The bill now goes to the full Council, where it is expected to be formally shelved.

The measure was introduced by Councilwoman Helene Hale who argued that matters dealing with the controversial geothermal issue should be under the purview of the elected Council.

Currently, geothermal resource permits are issued by the appointed Planning Commission.

Geothermal test is interrupted by leak

POHOIKI, Hawaii (AP) — A planned 10-day flow test at Puna Geothermal Venture's well got under way Wednesday, but the first day ended about an hour after it began because of a minor pipe leak, company officials said.

The test of the KS-8 well, inactive some 13 months because of a blowout last year, is to be the final step before the plant is brought on line as a source of power for Hawaii Electric Light Co.

Tests initially were delayed about 3 1/2 hours Wednesday by preparation work, the company said. The tests were to be resumed today.

Several dozen anti-geothermal protesters gathered in the rain at the company's Puna well site. One man carrying a "Go Solar" sign was arrested after entering the grounds, but he was released on bail shortly afterward.

Puna Geothermal said it is removing 95 percent of the hydrogen sulfide content of the steam before releasing it during the tests.

PGV flow test begins Wednesday

Puna Geothermal Venture officials said Friday they have received state Department of Health approvals to proceed with a flow test of a well at its Pohoiki plant site.

Puna Geothermal Venture vice president Steven Morris said the test, which will take about 10 days, will begin Wednesday. He said the DOH approval was granted Thursday afternoon.

PGV officials on Thursday said they would postpone the testing scheduled for the following day. They would not give the reason for the delay but said it was not the result of permitting problems.

Meanwhile, a group of residents of the area near the PGV plant have challenged the firm to provide timely results of the flow testing.

Kristine Kubat, a spokesperson for the group, said the residents should have immediate information on types of chemicals being found in the steam.

Kubat said Department of Health promises to relay the information once it is delivered by PGV are "not good enough."

"The public has a right to know exactly what they have been exposed to and what will be coming out of those wells during future upsets," she said.

The PGV plant is expected to begin producing about 6 megawatts of electricity soon after the testing is completed. The well was shut down in June 1991 following a blow out. Its return to operation was also delayed while the state re-wrote emission standard regulations.

THE MAUI NEWS — Wednesday, August 12, 1992

The Associated Press

Geothermal test today

POHOIKI, Big Island — Puna Geothermal Ventures is set to begin flow testing at its Pohoiki well site today, and geothermal foes will be there to voice opposition.

The flow tests are the final step before the company begins generating geothermal electricity from the site.

Puna Geothermal was supposed to begin supplying Hawaii Electric Light Co. with electricity from the plant last year, but a well blowout in June 1991 idled work for 13 months.

The well that exploded last year is the same well that will be tested.

The state Health Department granted Puna Geothermal a state permit to resume operations last week.

Geothermal opponents say the site is too close to homes and presents too great of a health and environmental risk.

If the tests go well, the site could be producing energy by the end of the month, company officials said.

-Hawaii Tribune - Herald, Friday, August 7, 1992

PGV postpones flow testing

Puna Geothermal Venture has postponed today's planned test of its Pohoiki well that was shut down for 13 months following a blow out in June 1991.

Puna Geothermal vice president Stephen Morris was quoted as saying last night the delay was "operationally related" but didn't give details. He did say the delay wasn't caused by permit problems with the state Health Department.

"Our understanding is that it is a main valve at the well," said Jennifer Castleberry, Health Department spokeswoman. "It was not a major problem."

"They have to notify us 24 hours in advance before the flow test begins," Castleberry said. "We assume it will probably be the middle of next week."

Castleberry said monitoring sites continue to operate in and around the PGV site. She said that once the flow test begins, one or two Health Department officials will be on-site.

The flow test is needed to make sure there is a significant geothermal resource available to be converted into energy.

Puna Geothermal says it could begin providing some of the 25 megawatts of power stipulated in its contract with Hawaii Electric Light Co. before the end of the month if the tests go well.

Protesters guilty of trespassing

By ROBIN M. JONES
West Hawaii Today

HILO — The 15 geothermal opponents charged with trespassing on Puna Geothermal property in February and March were all found guilty Tuesday by District Court Judge Riki May Amano.

Most of the defendants expressed disappointment in the verdict and reiterated their belief that they are in imminent harm from PGV and had no alternative but to act in civil disobedience to stop operations at the Pohokai plant.

Amano said she understood the "strength of character it takes to undertake in civil disobedience," and that she understood the defendants "when you speak of your moral duty." But she added that her moral duties required her to find the defendants guilty.

The eight men and seven women claimed they had entered the PGV grounds on Feb. 23, March 1 and March 8 because they thought their presence would prevent the resumption of drilling after Mayor Lorraine Inouye lifted PGV's drilling ban Feb. 25.

The ban had been issued after the June 12 KS-8 well blowout which released Hydrogen sulfide and other particulate into the air for several hours.

The defendants used the "choice of evils" defense saying they feared the harm from the drilling and geothermal operations would be far greater than the harm caused by their acts of civil disobedience, which included entering the plant site.

Amano, however, said she did not think their "choice of evils" defense was applicable to this case.

The defendants also claimed they had exhausted every legal means available to them to get government officials to address

See GEO:
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...Geo protesters guilty of trespassing

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the health and safety concerns they have about the geothermal operations. They said their trespassing was a last resort in an attempt to prevent further well blowouts and uncontrolled releases of hydrogen sulfide.

Amano disagreed. She said "there were legal alternatives available to you." She also said she did not believe there was imminent harm on the days the opponents trespassed and "any reasonable person could not believe" that trespassing would stop geothermal operations.

One defendant, Penny Shaver, said she did feel she and her children were and still are in imminent danger. "If you lived there, you'd understand," she said. "It's a scary thing living out there."

Other defendants in the case are Jim Albertini, Holit Bat-Edit, Ole Fulks, Kristine Kubat, Renee Mata, Michele Marzullo, Lucien Noe, Athena Peanut, Robert Petricci, Kevin Roddy, Antonio Rosa, Russell Ruderman, Rene Siracusa and David Zeissler.

Most defendants charged for trespassing at a Feb. 23 demonstration entitled "Shut Down Geothermal," when 17 demonstrators were arrested for entering a gate at the Puna Geothermal site, and for trespassing on March 1, when another 16 protesters were arrested, were all found guilty of simple trespass.

They were fined \$225, but Amano suspended \$200 of the fine for six months with the stipulation that the defendants

will not commit any more similar violations.

The defendants charged with trespass on March 8, when another 13 demonstrators were arrested, were found guilty for second-degree criminal trespass and fined \$300. Amano also suspended for six months \$250 of their fine under the same stipulation.

Amano also offered each defendant the opportunity to commute their fines to community service, which all but one of them did. She gave 10 hours for the criminal trespass and five hours of community service for the simple trespass.

Shaver told Amano "I'll probably see you before six months" because she would not stop trying to shut down PGV.

The trial came to a lively end when another defendant, Zeissler, told Amano her verdict was not justice. "I think this is a joke," he said. He also said he was "in hell living over there." Zeissler told Amano she could sentence him but he would not adhere to her sentence. He also told her to send him to jail. "Take me away now," he said.

The trial had also gotten off to an interesting start Aug. 25 when county attorneys used legal maneuvers to prevent Mayor Lorraine Inouye and Civil Defense Administrator Harry Kim from having to appear in court. Other public officials, including state Health Department official Sam Ruben, state Sen. Richard Matsuura and Andy Levin, were also received subpoenas to testify.

County attorneys had advised Inouye not to testify and claimed her testimony would not be relevant to the case. But Amano ruled that Inouye would be required to adhere to a defense-issued subpoena that demanded her appearance. Amano then issued a bench warrant Aug. 31 to force Inouye to testify after she had resisted the subpoena. Amano had recalled the warrant and threatened to dismiss the case if Inouye refused to testify.

Inouye reluctantly testified Aug. 31. Her testimony centered on her decision to lift the drilling suspension despite Kim's insistence that all health and safety concerns had not been met. She testified that state Health Director John Lewin had written to inform her that all concerns had been addressed.

But during the trial, Kim testified that the health concerns held by the residents were "absolutely" valid and had not been addressed. Kim also said he had not approved an emergency response plan that had to be accepted before the drilling suspension could be lifted. He had not approved the plan because the conditions of the resource permit had not been met, he had said.

Ruben testified that the well blow out had made the residents ill and that the operations are a health treat to the nearby residents. He added that he thought there should be a buffer zone far greater than the virtually non-existent one that now separates residents from the plant.

Geothermal firm optimistic about power readiness

By Hugh Clark

Advertiser Big Island Bureau

HILO, Hawaii — Puna Geothermal Venture says it is ready to begin supplying electricity to Hawaii Electric Light Co. on 20 minutes' notice.

That was the "conservative estimate" yesterday by Steve Morris, vice president of the \$120 million project, which is awaiting final state approval.

Puna Geothermal had hoped to begin providing up to 10 megawatts of power to the Big Island energy grid last week.

But the company was held up because final permits to operate the power plant and to reinject used geothermal fluids into the ground have not been approved by state health officials.

"We are on a day-to-day basis and know we're very close," Morris said.

The company has 140 workers involved in drilling a new reinjection well known as Kapoho State-4, preparing for the start-up of the electricity-production plant, and maintenance and operations.

Morris said the cement work on two casing systems at KS-4 has been completed to the 2,044-foot level. The well is to be drilled to about 4,000 feet.

Completion of that well is not contingent on the start-up of the production facilities.

Geothermal activists nabbed for trespass

By Chris Loos

Special to the Star-Bulletin

KEAAU, Hawaii — Fifteen geothermal protesters were convicted on trespass charges yesterday for entering the property of Puna Geothermal Venture earlier this year to try to stop a company's resumption of drilling at its well site in Pohoiki.

Longtime activist Jim Albertini and others had put on a "choice of evils" defense, which required them to prove that harm was imminent, that the harm caused by the trespass was a lesser evil than the harm caused by the geothermal plans and that they had exhausted all legal options.

In written closing arguments submitted last month, Hawaii County Deputy Prosecuting Attorney Michael Udovick said the defendants had not met their burden of providing those elements.

"This defense exists in rare circumstances and should not be available to protesters who are not confronted with imminent harm but want to affect the political process by influencing change in government policy," Udovick argued.

Circuit Judge Riki May Amano agreed, saying the "choice of evils" defense did not apply in this case.

Amano said the defendants had been harmed by geothermal activity, but there was no evidence that geothermal emissions were imminent on the dates of the three trespasses in February and March.

She also said the defendants had not exhausted the legal option of seeking relief through the court system.

Amano told the defendants that she understands the principles it takes to protest. "I hear you when you speak of your moral duty," she said. But she added that her moral duty is to afford every citizen fair and due process and to apply the law fairly.

She found all the defendants guilty as charged.

Each defendant was given an opportunity to speak to the court before sentencing.

Albertini, convicted of simple trespass, accused Amano of delaying her verdict until after the primary election for political reasons. "I take personal offense to (that) statement," Amano shot back.

Russell Ruderman, who is running for the 5th County Council seat on the Green Party, said, "I've never in my entire life been convicted of criminal activity. The court is about to make a criminal out of me." Ruderman was convicted of simple trespass.

The courtroom became tense when David Zeissler, convicted of simple trespass, yelled, "Screw your damn justice system . . . this isn't justice . . . You're all pigs." Zeissler at first refused to pay any fine or perform any community service. "Put me in jail . . . give me a lobotomy," he shouted.

Following the outburst, Amano urged Zeissler to reconsider. Eventually he agreed to the sentence.

Convicted of simple trespass were Renee Mata, Ole Fulks, Kristine Kubat, Athena Peanut, Zeissler, Ruderman, Rene Siracusa, Albertini, Kevin Roddy and Lucien Noe.

Convicted of criminal trespass were Holit Bat-Edit, Penny Shaver and Antonia Rosa.

Convicted of one charge of simple trespass and one of criminal trespass were Robert Petricci and Michele Marzullo. All defendants convicted of simple trespass, were fined \$225 with \$200 suspended, provided they have no similar violations in the next six months. Those convicted of criminal trespass were fined \$300 with \$250 suspended.

All defendants were given the option of performing community service in lieu of fines.

The case received attention in August when Amano threatened to issue a bench warrant for Mayor Lorraine Inouye after Inouye failed to appear as a witness on behalf of the defendants.

Inouye later testified.

PGV may be given two final permits today

By Gordon Y.K. Pang
Tribune-Herald

Two Department of Health permits — which could come as soon as this afternoon — are all that stand between Puna Geothermal Venture and the beginning of firm power from the controversial alternate resource.

Health Department spokeswo-

man Barbara Hastings said an air quality permit has been completed and is currently being reviewed by the state Attorney General's office. Meanwhile, a "final document" of an underground injection control permit for PGV's two reinjection wells is being prepared.

The Health Department and PGV officials had been aiming

for a mid-October start-up date. But Hastings said it would be incorrect to say the hold-up was strictly with the DOH.

"As late as last Friday, we were waiting for stuff from them," Hastings said, referring to PGV officials.

"Now it's all done and we're doing it as rapidly as possible,"

she said.

PGV project manager Steve Morris said he wasn't blaming the Health Department for the missing of the mid-October inception. "They're working hard, we've been working with them," he said. "There's been a lot of back and forth. We're very pleased with the way they've done things."

Star-Bulletin Thursday, October 22, 1992

Geothermal power plant due to start up today

□ At full capacity, the Big Island facility will generate 25 megawatts

Star-Bulletin staff

Puna Geothermal Venture plans to start its 25 megawatt geothermal power plant today.

Steven Morris, Puna Geothermal Venture vice president, said yesterday, "PGV is ready to go. The power plant is ready, the well field is ready and we have all the necessary permits to operate."

The approval to begin producing continuous power for the Big Island's Hawaii Electric Light Co. came yesterday.

Five megawatts of electricity are expected to come on line initially from the 25-megawatt geothermal plant. The balance will be added gradually over the next 12 months, said Mufi Hannemann, director of the Department of Business, Economic Development & Tourism.

The plant can meet the electrical needs of 25,000 residents on the Big Island, Puna Geothermal said.

Geothermal energy is generated when water comes into contact with hot underground lava rock. Puna Geothermal drills into areas where underground steam is trapped and directs it into the blades of steam turbines to produce electricity.

Puna Geothermal has been plagued with a well blowout and legal problems

that halted the project.

Approval for the start-up was given after Puna Geothermal completed tests and equipment changes based on results of a seven-day test in August.

Since the August trial, the state said, the developer has:

■ Installed three upgraded back pressure valves.

■ Modified the chemical abatement system of the plant's Emergency Steam Release Facility to ensure that the system is effective in reducing hydrogen sulfide emissions and that caustic soda is not released in the atmosphere.

■ Improved its communication system to give timely reports about plant operations to regulators and the community.

Geothermal start raises hopes for a brighter day

THE start by Puna Geothermal Venture of its 25-megawatt plant on the Big Island is the long-awaited action that could help light up the lives of thousands.

Puna Geothermal, a troubled but determined venture, got its approval from state authorities Wednesday to begin operating at a 5-megawatt level, with the balance of its 25-megawatt capacity to come on line gradually over the next 12 months.

By then, its output should serve the needs of 25,000 residents, customers of the Big Island's Hawaii Electric Light Co. PGV's plant has a 30-megawatt capacity and is a basis for hopes that it can tap underground energy to improve electric service to an island plagued by power failures.

The start-up also means long-delayed success for an alternate energy source that could help reduce Hawaii's dependency on imported oil as a fuel to generate electricity. The way has not been easy. A well blowout 16 months ago was a major setback, forcing Puna Geothermal to shut down and meet new state health and safety demands before it could resume. Court rulings affecting the Hawaii geothermal industry's drilling and emission standards also led to delays.

Before gaining approval to restart, Puna Geothermal had to run a 7-day test in August and satisfy state agencies that it was effective in reducing hydrogen sulfide emissions and not releasing caustic soda into the atmosphere. Other changes, including improved communication with state regulators and the local community, have been incorporated into state requirements for allowing the plant back on line at Pohoiki.

Helco and its customers have been patient in waiting for the geothermal switch to be thrown. State and energy industry officials elsewhere are anxious too for success in harnessing the volcanically heated underground steam.

Environmentalists and others resisting the energy development have made much of its threats to a rainforest in the area. The actual amount of wooded land affected is relatively small. Fifteen of those who protested by entering Puna Geothermal's property earlier this year were convicted Tuesday of simple or criminal trespass charges. Circuit Court Judge Riki May Amano gave them a choice of fines — most of the amounts were to be suspended — or community service.

Geothermal firms carry the important burden of being good neighbors, but the news that Puna Geothermal is back at work in the ground should come as the dawning of a new energy day for a Big Island that has suffered too long in darkness.

Saturday, October 24, 1992 The Honolulu Advertiser

Geothermal

start-up is short-lived

By Hugh Clark

Advertiser Big Island Bureau

POHOIKI, Hawaii — Despite high hopes for the start-up of geothermal production on the Big Island, Puna Geothermal Venture last night had still not generated enough consistent power to supply Hawaii Electric Light Co. with the energy it expected.

The \$120 million geothermal production project was scheduled to contribute five megawatts to HELCO's energy-starved energy grid yesterday morning.

But the company managed just 2½ megawatts for about 20 minutes or less shortly before 5 p.m., according to Steve Morris, Puna Geothermal Venture vice president.

Morris could not pinpoint the reason for the problems, saying there were "100 reasons why" plans went awry. He said as of last night all of the difficulties were related to the project's power plant.

Earlier in the day, part of the delay was blamed on a power outage at

See Geothermal, Page A2

Geothermal: Big Isle start-up short-lived

FROM PAGE ONE

the generation site east of Pahoa that Morris said was due to a combination of problems at Puna Geothermal and HELCO facilities.

Morris said his company was re-starting its system in an attempt to put more, and consistent, power on line.

At 8:05 last night, Army Curtis, HELCO distribution superintendent, said about 1½ megawatts of power was flowing, but it was uncertain how long that would last.

Other utility officials were reported off island and unavailable for comment until Monday.

Morris stressed the company did not vi-

olate any governmental permit conditions in its frustrating start-up attempt.

Earlier in the week, Morris had estimated it would require just 20 minutes for the geothermal plant to start serving HELCO. But he conceded last night that he may have overstated the speed of delivering the power.

Curtis said the situation was not unexpected. "This is considered part of the start-up process," he explained.

HELCO was anxious to receive the first electricity from the geothermal plant but it was not critical to serving the utility company's customers last night.

The most critical days are Mondays and Tuesdays between 5 p.m. and 8 p.m., when rolling blackouts and unscheduled

outages have been most frequent.

Morris said one or two of the 10 geothermal steam power units are being used to deliver the first five megawatts to HELCO; delivery of 15 megawatts of power is expected between now and the end of the year.

Puna Geothermal's contract calls for a full 25 megawatts to be provided in the first quarter of next year, according to Morris.

Puna Geothermal was to have delivered the 25 megawatts to HELCO a year ago but was unable to because the project was ordered shut down by the state until February of this year following a blowout of the main production well, known as Kapohe State-8, in June 1991.

*Murphy/Gordon/Huffman
Junk/Jan/Hunk
HJ/King*

PGV may get state permits to operate

By JASON ARMSTRONG
West Hawaii Today

Puna Geothermal Venture could receive the two final state Department of Health permits that will allow it to produce electricity as soon as today, according to DOH officials.

"It's possible it could be opened tomorrow," Barbara Hastings, DOH communications director, said Tuesday as the DOH was conducting final reviews on the two required permits.

"They are literally being finished," she said.

The required air-quality permit has already been drafted and was sent to the state Attorney General's office for final review Tuesday, according to Hastings.

The other permit, an underground injection-control permit, was being finalized late Tuesday by DOH officials, she said.

The two permits are the only ones holding up the long-awaited \$120-million Pohoiki plant.

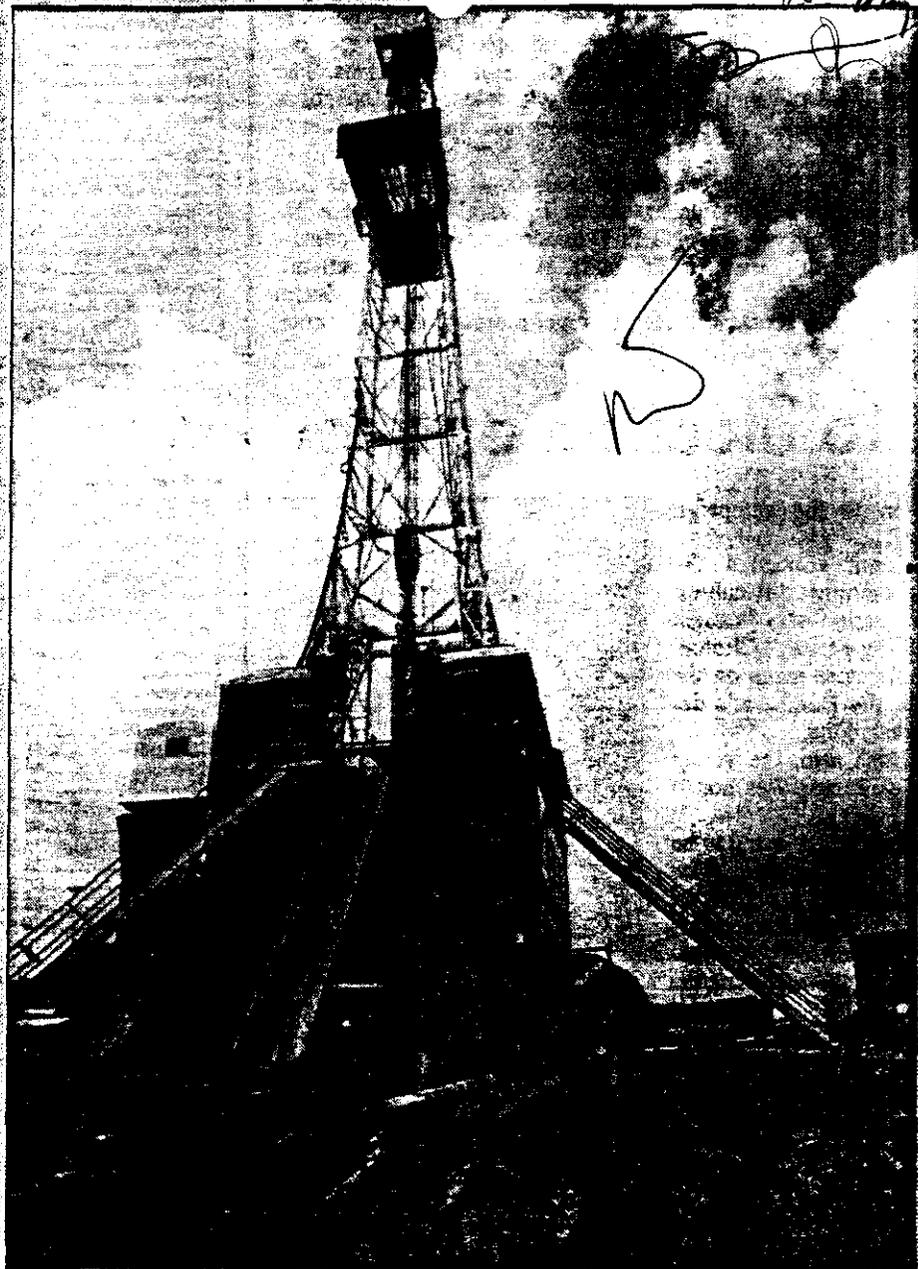
The DOH has no additional requirements that need to be satisfied before it will allow PGV to begin supplying Hawaii Electric Light Co. with electricity, according to Hastings.

PGV has already been given the green light by the state Department of Land and Natural Resources, according to Hiram Young, project administration engineer.

"As far as we're concerned, they're allowed to operate," Young said. "There are no outstanding permits with the department."

The Hawaii Island Geothermal Alliance has issued a statement calling the impending PGV opening a "historic moment" that

See PGV:
Page 4A



—BARON SEKIYA—WHT

PGV IN THE NEWS—PGV could begin producing electricity as soon as today if it receives the proper state permits. Meanwhile, 15 geothermal protestors were found guilty for trespassing on PGV property.

...PGV could start producing electricity

From Page 1A

will likely signal and end to the "controversial, frustrating battle" that has accounted for numerous delays.

"Our alliance has been working for several years toward this historic moment which will mark the beginning of a brighter environmental and economic future for the Big Island," HIGA spokeswo-

man June Curtiss said.

"Soon PGV and HELCO will prove to the doubters that geothermal can be harnessed safely to serve our island," Curtiss added.

Steve Morris, PGV vice president and general manager, has said well KS-8 is capable of initially producing between three and four megawatts of power, and will eventually supply about

10 megawatts of electricity.

PGV is nearly two years late in fulfilling its contractual obligations to provide HELCO with 25 megawatts of power.

Morris has maintained the plant is capable of electrical production, but will not be turned on until the two remaining DOH permits are received.

Health official says PGV can't start next week

By JASON ARMSTRONG
West Hawaii Today

Puna Geothermal Venture executives are expecting to begin honoring a contract to supply Hawaii Electric Light Co. with power by next week, yet state health officials said that won't be possible.

Bruce Anderson, deputy director for the state Department of Health, told a group of Puna residents Wednesday that about two more weeks will be needed before PGV will be allowed to begin electricity production, according to Barbara Hastings, DOH communications director.

Anderson made the announcement in response to questions posed during a public meeting aimed at addressing health and safety concerns raised by local community members.

Health officials are waiting for more information about recent accidents that resulted in harmful hydrogen sulfide gas emissions prior to a halting of flow-testing operations by the DOH in late August, Hastings said.

Once PGV officials provide the information, the DOH will review the material and consult the federal Environmental Protection Agency before granting opera-

tion permits, Hastings said.

Finally, the DOH must inspect the \$120-million Pohoiki plant to ensure the upgraded pressure valves was properly installed, according to Hastings. The inspection has not yet been scheduled, she added.

The entire review process should take about two weeks to complete and must be done before PGV will be allowed to begin supplying HELCO with up to 25 megawatts of electricity, Hastings said.

Steve Morris, PGV vice president and project manager, said he is working very closely with the DOH to ensure all

necessary regulations are completed in a timely manner.

"We're very optimistic. Things are going very well," Morris said. "We're still hoping for mid-October" to begin power production, he said.

Repairs to re-injection well KS-3 have been completed, Morris added. A new liner was fitted on the well about a week ago after a "small" leak was detected in the well casing, he said.

The well, along with accompanying KS-4, allows discarded gasses and brine to be pumped back into the ground.

Geo SM

Handwritten signatures and initials, including "Hastings" and "Morris".

Wind power

Are we more dependent on oil?

Despite all the money, effort and good intentions, are we losing the battle against dependence on imported oil for our energy needs?

The latest disappointment is the closing by a Hawaiian Electric Industries subsidiary of its wind farm at Kahuku for "chronic mechanical problems and poor financial performance." A year earlier, it closed a wind farm on the Big Island.

At best, the Kahuku farm produced less than 1 percent of Oahu's power. Now wind power looks like a scratch. What about other alternatives?

■ **OTEC:** The quietly promising Natural Energy Laboratory of Hawaii at Keahole Point uses the temperature difference between deep-ocean and surface water to generate electricity. Two ocean thermal energy conversion projects could be on line by the end of next year.

■ **SOLAR:** Used to heat water, it can cut household electricity use in half. If every house had solar, it would lower the amount of oil burned for power. But withdrawal of the federal tax credit some years

ago means it takes years to realize savings. That put most installers out of business.

■ **BIOMASS:** Bagasse, waste from sugar cane, is burned to power sugar mills and generate electricity. But post-sugar, the mills will convert to coal or diesel fuel.

■ **COAL:** A new coal-fired power plant on Oahu is said to be as clean as existing oil-fired plants. Coal is safer to ship than oil but, like oil, it's not renewable, and we're just as powerless over supplies and prices.

■ **GEOHERMAL:** Puna's steam is hot all right, and if regulatory and legal hurdles are ever bridged, it may finally make Big Island electricity reliable. But earlier hopes for massive megawatts via undersea cable to Oahu seem about as far off as — remember cold fusion? — cold fusion.

What's the bottom line? Some of these alternatives are more promising than others, but none is really competitive with cheap oil, which is forecast to stay that way in the near term. For now, it's a pleasant delusion to suppose it always will.

State may OK geothermal power next week

By Joan Conrow
Special to The Advertiser

HILO, Hawaii — The state Department of Health has indicated that next week it will grant Puna Geothermal Venture the two permits needed to begin producing power.

Health Department spokeswoman Barbara Hastings said her "best guess" is the permits would be issued "the beginning of next week, but it could go to the end of next week."

One permit would allow Puna Geothermal to operate its power plant, while the other would authorize the firm to inject spent geothermal fluids into underground wells.

The permits would breathe new life into the \$110 million project, which was due to provide Hawaii Electric Light Co. with 25 megawatts of power a year ago. A well blowout and legal problems stalled the project.

"We're very close, we're ready to go," said Steve Morris, Puna Geothermal vice president. "We could have geothermal energy on the Big Island at any time. But they're (the Health Department) in the driver's seat."

Hastings said Health Department engineers checked valves at the plant Monday, and inspected all parts of the system that could emit hydrogen sulfide.

The department is now completing its reports on that review and finishing up

its response to the Environmental Protection Agency's request for technical information, she said.

Meanwhile, Puna Geothermal has been conducting a systems check of start-up procedures at the power plant, Morris said, as well as continuing to drill KS-4, a future injection well.

"We're ready to start up today," Morris said yesterday, "but we'll start up when everybody's ready and comfortable with it."

The plant is expected to initially produce between 7 and 10 megawatts of electricity, although the exact amount of power is not yet known. A megawatt is enough electricity to power about 1,000 homes.

THE MAUI NEWS — Friday, October 9, 1992 —

Geothermal firm lacks permits to supply power to HELCO

HILO (AP) — Puna Geothermal Venture expects to connect to the Big Island power grid next week even though state officials say the company can't obtain needed permits by then.

Deputy Health Director Bruce Anderson told about 100 Puna residents Wednesday night that it would probably take at least two weeks before an injection permit is issued to PGV.

Air quality issues also must be addressed before the company's geothermal plant begins supplying power to Hawaii Electric Light Co., Anderson said.

Health Director John Lewin told

the gathering that the state will require underground injection standards to be as stringent as those mandated by the federal Environmental Protection Agency.

Steve Morris, PGV vice president, said Thursday that the plant would be ready and hopefully have the necessary permits to begin power production next Thursday or Friday.

"We are proceeding with our estimate. But if we are delayed for some reason we'll have to live with it," Morris said.

The project has been an on-again, off-again affair since June 1991, when a well blowout caused a halt in drilling.

Monday, October 12, 1992

PACIFIC BUSINESS NEWS

Hawaii Supreme Court upholds geothermal land swap

The 1985 land swap that led to geothermal development in the Wao Kele O Puna rain forest was upheld by the state Supreme Court. Pele Defense Fund challenged the land exchange in which the state gave away 27,800 acres of ceded rain forest lands for 25,800 upslope acres in Kahaulea owned by The Estate Of James Campbell. After the swap, True/Mid-Pacific Geothermal Venture was given the lease to the Wao Kele O Puna land and started exploratory well-drilling.

Puna Geothermal start pushed back by state

□ The firm hoped to begin providing power this week

By Chris Loos

Special to the Star-Bulletin

POHOIKI, Hawaii — Puna Geothermal Venture will not be able to go on line with power this week as hoped, a state Department of Health official said yesterday.

The department is still evaluating information provided by Puna Geothermal to determine if permit requirements have been satisfied, said Paul Aki, manager of the department's Clean Air Branch.

Puna Geothermal is "ready to go," Puna Geothermal Vice President Steve Morris said yesterday, adding that he expects the department to complete the permit process very soon, "and then we'll be producing power."

Meanwhile, the Health Department continues to evaluate data obtained during a flow test in August, but those results aren't required for issuance of the permits.

Preliminary analysis of the geothermal steam from the test show hydrogen sulfide levels to be the same as estimates contained in Puna Geothermal's Emergency Response Plan, department environmental toxicologist Barbara Brooks said yesterday.

Radon levels from the sample were less than half of those projected in the response plan, Brooks said.

Hydrogen sulfide in the sample steam averaged almost 1.4 million parts per billion. That is not to be confused with emission levels, which the state limits to 25 parts per billion during normal operations. Brooks called that limit "very health protective."

The Health Department is translating the sample figures into projections of human exposure levels during a potential accident, using formulas for wind speed and characteristics of the gas, Brooks said. "If there is another blowout, we want to make sure we wouldn't have" health problems, Brooks said.

A worst-case scenario accident described in the Emergency Response Plan predicts hydrogen sulfide emissions at 12,786 parts per billion. Although Puna Geothermal says this scenario can be quickly controlled through closing valves, Brooks said the department is looking at health effects of an uncontrolled blowout.

Brooks said she hopes that in two weeks the department will have preliminary projections for potential health effects of hydrogen sulfide. That will be followed by projections for radon and heavy metals.

Aki said the department will probably decide next week whether to issue Puna Geothermal's permits.

The evaluation of the company's information will have to be presented to Deputy Health Director Bruce Anderson, who is on the mainland and won't be returning until later this week, Aki said.

PGV's about ready to go but permits may delay startup

□ DOH concerns could push power supply back weeks

By Dave Smith
Tribune-Herald

Steve Morris, vice president of Puna Geothermal Venture, said today that the company is rapidly closing in on the day it will begin supplying the Big Island with electricity.

However, Morris could not say exactly when that day will be.

"I really couldn't tell you (the starting date)," he said. "(But) we're getting pretty close," he said.

"Last minute stuff," is all that's holding up the start-up of PGV's plant in Pohoiki in lower

Puna, Morris said. "It's just a matter of tying up odds and ends."

Morris said he was unsure exactly what was left to do before the plant begins generating electricity under a contract with Hawaii Electric Light Company.

He said PGV has fulfilled all of the major requirements set forth in regulations by the state Department of Health, including a recent order to upgrade steam valves within the plant and to install a liner in an injection well to be used to force spent geothermal brine back underground.

Morris said he expects the DOH to issue final approvals to operate the geothermal plant and

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Page 10

PGV: Power firm's ready, DOH may not be

From Page 1

the injection wells within two weeks, possibly sooner.

DOH officials did not return telephone calls this morning. A week ago, Deputy Health Director Bruce Anderson said he expected PGV to begin full-scale operations "in a couple of

ceeding the 7 megawatts of power originally expected. Morris said PGV will feed the electricity into the Big Island power grid in increments. It will provide 3 or 4 megawatts initially, later stepping that up to 10 megawatts, he said.

Morris said KS-8 is expected to eventually contribute up to 15 megawatts. PGV has a contract to provide Helco with 25 megawatts of power, which will require the drilling of another resource well and additional injection wells.

PGV geo well being evaluated before opening

By JASON ARMSTRONG
West Hawaii Today

State Department of Health officials said a complete evaluation of data collected Monday during a site inspection of Puna Geothermal Venture's Pohoiki plant must be finished before the \$120 million facility can be opened.

"We're evaluating and so is the state Department of Land and Natural Resources evaluating the information that is coming from those tests," Barbara Hastings, DOH communications director, said.

DOH officials inspected new valves that were recently installed to replace inadequate valves that leaked hydrogen sulfide gas during flow testing in August, according to Hastings.

"We conducted some inspections Monday on the valves," she said Tuesday.

Evidence of other possible H₂S leaks was sought, along with information generated when PGV was allowed to resume flow testing operations on well KS-8 Monday, Hastings said. The DOH must receive the data and review it before granting start-up approval to PGV, she said.

DOH officials also requested additional technical information regarding valve operation and possible malfunction, she said. The data had been sought by the federal Environmental Protection Agency and is still being compiled, according to Hastings.

"We won't issue the permits until we are sure the EPA has gotten all the responses to the questions that they had raised," Hastings said.

A "couple of days" will be needed to evaluate the information and compile a report, while a similar length of time will be required to send a letter to the EPA, according to Hastings. A draft of the letter has already been made, she added.

Bruce Anderson, deputy health director, was in Washington, D.C. Tuesday and did not return phone messages placed to his Oahu office.

See PGV WELL:

...PGV well undergoing state inspection

From Page 1A

Hastings said the electrical plant should be allowed to begin supplying Hawaii Electric Light Co. with power very soon.

"There is not a lot holding it up," she said. "All of the answers are there. We have all of the responses to those points."

Steve Morris, PGV vice president and general manager, said he had hoped to begin power production by the end of the week.

The plant is operational, although final DOH approval must be secured before about 3 to 4 megawatts of electricity will initially be sent to HELCO, he said.

The KS-8 well is expected

later to churn out about 10 megawatts of power, with an eventual peak capacity of about 15 megawatts, he said.

PGV has contractual obligations to deliver a total of 25 megawatts of power, about one-fifth of the Big Island's total demand, to HELCO.

New lawsuit asks court to halt geo

□ Opponents say health department wrong on permits

By Dave Smith
Tribune-Herald

A lawsuit has been filed by geothermal opponents who say the state Department of Health has not followed legal requirements in issuing permits for the Puna Geothermal Venture operation in Pohoiki.

The lawsuit was filed in Honolulu's First Circuit Court by Kauai attorney Kenneth Carlson on behalf of the Pele Defense Fund, the Kapoho Community Association and Puna residents Robert Petricci, Jennifer Perry, Aurora Martinovich and Steve Phillips.

According to Pele Defense Fund spokesperson Margaret McGuire, the lawsuit is aimed at four issues, including forcing the DOH to allow for "public participation" in the issuance of a construction permit for the PGV plant.

McGuire said the suit also seeks to force PGV to obtain a separate permit to store hazardous wastes in storage ponds before operating its plant.

The Pele Defense Fund also wants PGV to pay for the cost of geothermal air monitoring, which it said will cost a half million dollars according to DOH figures.

And finally, McGuire said the combined effect of DOH's ac-

See LAWSUIT,
Page 8

PACIFIC BUSINESS NEWS Monday, October 5, 1992

Fair weather causes geothermal delay

Good weather forced Puna Geothermal Venture to curtail drilling of the KS-4 reinjection well. Clear and still evenings are bad nights for drilling because of the chance PGV will break the 47 decibel noise limit set on the project for hours after 7 p.m. Prior to 7 p.m., the limit is 55 decibels. When drilling started last month, the project was estimated to take

45 to 60 days. With the delay, the completion date will be closer to the 60-day estimate, said Steve Morris, PGV vice president.

LAWSUIT: Court asked to stop geo work

From Page 1
From those areas "results in a denial of due process."

McGuire said the lawsuit seeks an injunction against the PGV project "until the DOH complies with all applicable laws."

PGV Vice President Steven Morris could not be reached for comment on the lawsuit.

When construction permits were issued to PGV earlier this year, Deputy Health Director Bruce Anderson said public

hearings were not required because PGV was defined as a "minor source pollutant" and not a major source which would trigger public hearings.

Anderson today confirmed that determination, and added that public input was solicited when PGV's construction permit was originally issued. Anderson said the permit was later amended to reflect "minor changes only," including new air quality standards.

As for the storage ponds, An-

derson said the DOH has tested the contents of the ponds "extensively" and found them to be non-hazardous.

"They do not meet the criteria for hazardous waste," he said, adding that the ponds are for temporary storage only, to hold the fluids until they can be injected into the ground.

"There is no long-term storage of wastes at the project site," Anderson said.

Puna Geothermal Venture is currently completing work on its

electrical generation plant and on injection wells that will allow production wastes to be forced underground. The firm plans to begin feeding electricity into the Big Island grid sometime this month after receiving a DOH permit to operate the power plant and ejection wells.

Anderson said a number of conditions involving steam valves and corrosion liners for the injection wells must be met before the operating permit is issued.

Geothermal start-up may be delayed

Health officials say state permits still incomplete

By Hugh Clark

Advertiser Big Island Bureau

HILO, Hawaii — Puna Geothermal Venture still hopes to be producing power for Hawaii Electric Light Co. by next week.

But state health officials told a Puna gathering Wednesday night that prospect was unlikely because various permit pro-

cedures still need to be ironed out.

The comments to the community were made by Bruce Anderson, deputy state health director, at a "town hall" meeting led by state Health Director John Lewin and state Sen. Andy Levin.

Steve Morris, vice president of Puna Geothermal, said if there is a problem he does not know about it, "but obviously we gotta work it out."

Morris stressed his company "will be ready and hopefully will have the permits" to deliv-

er the first increment of geothermal power by next Thursday or Friday.

The \$110 million project was due to provide HELCO with 25 megawatts of power a year ago, but has been delayed by a well blowout and legal problems.

The exact amount of power that is due to come on line initially is not yet known but it is expected to be between 7 and 10 megawatts.

Power out twice: Big Islanders in four districts suffered power outages yesterday morn-

ing after Hawaii Electric Light Co.'s newest production unit tripped off line.

They were also taken off line a second time for periods of 5 to 11 minutes in a second failure later in the day.

The new \$24 million, 21-megawatt combustion turbine No. Three in Keaau failed at 9:05 a.m. because of a control problem that was repaired, company officials said. The unit was back in service later in the day, but it tripped again at 2:45 p.m.

THE MAUI NEWS — Sunday, October 4, 1992

Geothermal well lined

POHOIKI, Hawaii — Officials at Puna Geothermal Development say they are on track for a mid-October start-up of their power plant at Pohoiki now that a new liner has been installed into an injection well.

Puna Geothermal Vice President Steven Morris said the seven-inch liner in the 6,500-foot deep well will ensure against seepage of spent geothermal fluids into ground water resources near the well.

Morris said an additional liner will be placed into the casing to provide double protection and crews have exchanged three pressure control valves.

Those valves malfunctioned during an August flow test, causing the company to suspend the testing that

was a prelude to producing commercial power.

Hale's plan to strip planners' geo power shot down

By JASON ARMSTRONG
West Hawaii Today

HILO — Councilwoman Helene Hale's latest attempt to strip the Planning Commission's authority to issue geothermal permits generated luke-warm support here Tuesday as just one of her six Planning Committee colleagues supported the bill.

Councilman Brian De Lima joined Hale in backing the bill she co-signed with Merle Lai. It is aimed at granting elected council members the sole power to issue or disapprove permits for geothermal development.

Planning Committee Chairman Takashi Domingo, Vice Chairman Harry Ruddle, along with

Eddie Alonzo, James Arakaki and Bob Makuakane, presented a unified front in overruling Hale and De Lima by a 5-2 margin.

However, all proposed ordinances are required to go before the full council and the Hale-Lai permit bill will be discussed here Oct. 21, although it will not be adopted as long as the five

majority members remain in opposition.

De Lima rejected Hale's previous attempts to eliminate all power currently entrusted to the appointed Planning Commission because he said the initial proposals were not comprehensive enough and lacked thoroughness.

Hale responded by teaming up

with retiring Lai to draft a more expansive proposal that would only remove the Planning Commission's power to issue geothermal permits. All other powers for commercial, residential and industrial development would remain with the Planning Com-

**See HALE'S:
Page 4A**

...Hale's plan to strip permit power nixed

From Page 1A

mission, according to the proposal.

De Lima Tuesday proposed sending the bill onto the Planning Commission for review, although a second motion was not received and De Lima's motion was killed.

"To me, if we're not going to refer this to the Planning Commission, then we should take control of this bill," De Lima said. "I will be voting in favor of this bill."

Hale responded by speculating such a move would result in an "obvious" rejection by the Planning Commission. "Nobody likes to give up power," Hale said.

Makuakane asked why other commissions for police and liquor exist if not to assume those responsibilities that would likely overburden council members.

"I want to give up this power. I don't want it," Makuakane said.

"I have enough problems reading all (these) communications and all this stuff we have here."

Hale then stated for the record that she opposes all commissions and feels council members should have approval power for all issues. Hale later said she has no plans to introduce similar legislation to eliminate or reduce the powers of the Police Commission, Liquor Commission or any other appointed commission exclusive of the Planning Commission.

Ruddle supported Makuakane by saying, "I will be against this vote. My position is clear."

Alonzo also stated his rejection of the bill, while Arakaki and Domingo elected to use their respective votes as Planning Committee members to express their objection to the proposed ordinance.

Planning Committee members also approved a zoning request that would allow 46 acres of 20-acre agricultural land in Keaau to be subdivided into one-acre ag lots.

Hale said she has a problem approving one-acre agricultural lots because they are typically used by "gentlemen farmers" and tend to go against the county agricultural plan.

Makuakane and Alonzo expressed concern about maintaining a private roadway, located near the land owned by Kapoho Properties, which had previously been maintained by the county.

A provision to prohibit ohana zoning on the property was included before the proposed bill was approved by the Planning Committee.

The bill will now go before the full council Oct. 21.

Geothermal power bill fails

Measure would have stripped planning panel of permitting power

By Gordon Y.K. Pang
Tribune-Herald

A second effort to move the authority to issue geothermal permits to the County Council has apparently failed.

The Council's Planning Committee yesterday gave a 5-2 re-

commendation to kill the measure, which would have stripped the county Planning Commission of its powers over geothermal resource permits in favor of the Council.

The outcome is not expected to change when the full, nine-member Council takes a final vote in two weeks.

Council members Helene Hale and Merle Lai introduced the bill. They argued that the appointed nine-member Planning Commission should not be the final arbiter on a matter as con-

troversial as geothermal.

The Council is more directly accountable to the public and should be making those decisions, Hale said during yesterday's proceedings.

Those voting against the bill said they think the Planning Commission is perfectly capable of being the final arbiter. Ka'u Councilman Bob Makuakane said the panel and other commissions serve a valuable function by shedding the Council of much of the decision-making.

Hale said she supports doing

away with all county boards and commissions and having the Council take over their functions.

Hale introduced an initial bill giving the Council powers over geothermal permits in early August. When that was defeated, Councilman Brian De Lima urged Hale to come up with a new measure because he felt the original was too vague. De Lima said he would likely vote for a more comprehensive measure.

Yesterday, De Lima joined Hale as the only members to

vote for the bill (Lai is not on the committee), noting however that he was doing so "only for discussion purposes." Before the vote, De Lima attempted unsuccessfully to send the measure to the Planning Commission for its comments. The commission had earlier sent a letter, signed by all its members, stating their opposition to stripping it of its powers.

Under the terms of the second

See GEOTHERMAL,
Page 8

GEOTHERMAL: Bill to limit power fails

From Page 1

bill, no permit would have been issued if it were found that a geothermal project held "unreasonable adverse health, environmental or socio-economic effects on residents or surrounding

property" or would "unreasonably burden public agencies ..."

During discussion on the first bill, Councilman Jimmy Arakaki questioned Hale's motive for introducing the measure now when

she could have done so several years ago before the Puna Geothermal Venture plant got its permit. Hale recently moved into Lanipuna Gardens and is seeking re-election from the lower Puna district.

All nine Council members are Democrats. The Hawaii County Democratic Party earlier this year adopted the position that the County Council should make the final decisions on geothermal resource permits.

Stop picking on geothermal

There have been many negative comments about HEI, the holding company for firms engaged in transportation, banking and electricity generation and transmission.

Government — state and county — should be probing the Public Utilities Commission as much as it looks into the activities of Hawaii Electric Light Co. or HEI. Government should investigate why in the world state and county agencies throw up so many roadblocks to development of new energy sources.

Why has it taken almost 20 years to get geothermal moving forward? Given the critical need for more power generation capacity on the Big Island, why are state and county regulatory agencies continuing to complain about a lack of resources to regulate and monitor geothermal energy in particular, and any energy development in general?

Why are the state and county imposing more environmental standards (and a host of other standards) on geothermal power development than they do on other power sources? Let's get with it. Let's get real.

GEORGE MARTIN
Hilo

West Hawaii Today, Tuesday, October 6, 1992-

State sued over geo permits

HONOLULU (AP) — The state Department of Health is being sued for allegedly failing to comply with state law regarding air pollution and hazardous waste permits for Puna Geothermal Venture on the Big Island.

The lawsuit, which also names Health Director John Lewin, was filed Monday in state Circuit Court by the Pele Defense Fund, the Kapoho Community Association and four Puna residents.

Puna Geothermal is constructing a power plant meant to tap geothermal energy to sell to energy-hungry Hawaii Electric Light Co.

Geothermal needs help

We believe Hawaii Electric Light Co. and the people of the Big Island are the victims of a bureaucratic system that, with the noblest of motivations of protecting the health and welfare of citizens, has become a time-consuming, wasteful and costly quagmire of regulation.

The situation is further aggravated by government's inability to afford the bureaucratic morass it has created. County and state agencies charged with regulating and monitoring geothermal development complain of lack of personnel, money, equipment, expertise, etc..

Our studies and experience are teaching us that geothermal power will never become available in significant commercial quantities until and unless the state and county governments provide private industry with a decent regulatory and business climate.

What we would hope to see is a concerted effort on the part of the state, county, private operators and responsible citizens to develop a sensible energy policy and a really good energy program and legislative package to be considered by the 1993 session of the Hawaii Legislature.

JUNE R. CURTISS, Chairwoman
Hawaii Island Geothermal Alliance (HIGA)

Helco dozes Puna land for geo line

□ Several residents
are puzzled by
flurry of activity

By Dave Smith

Tribune-Herald

Crews are currently preparing the pathway for a second transmission line to carry electricity from the Puna Geothermal Venture plant in lower Puna.

According to John Pauole, manager of Hawaii Electric Light Company's distribution department, the new line is being strung from the PGV plant in Pohoiki to Helco's Puna power plant in Keaau. It will run along the north side of Nanawale Estates and through several other Puna subdivisions on the makai side of Highway 13.

Pauole said the utility hopes to have the power line completed by the end of the year.

The tree-clearing and bulldozing work puzzled residents of the Nanawale Estates subdivision near Pahoā, several of whom called the Tribune-Herald to say they could not figure why the work was being performed. They said trucks involved in the work were unmarked and when asked, members of tree-trimming crews claimed not to know the reason for their work.

Julian Leopoldo of Nanawale Estates said he was concerned about what he said was a flurry of activity in a wide area behind the subdivision, especially when he was unable to determine the reason by talking to workers.

"They're cutting all the trees down," Leopoldo said. He said it appeared the crews were "all hush-hush — trying to keep it quiet."

Pauole denied Helco was trying to keep the project under wraps.

"We've told everyone who calls what's going on," he said. Helco doesn't usually publicize power line projects, Pauole said.

The new power line has a capacity of 69 kilovolts, as does the first line finished in late 1991. Pauole said the two lines will serve as a redundant system, providing the utility a back-up transmission system for the geothermal-produced power.

Pauole said each transmission line has the capacity — but just barely — to carry the entire 25 megawatts of electricity that PGV is under contract to provide to Helco.

PGV is currently completing work on its power plant as well as on ejection wells that will be used to force brine and other by-products from the geothermal steam back into the ground.

RECEIVED
PREMIER GEOPHYSICS INC.
E-SCAN, 3D Advanced Resource Evaluation Systems

September 24, 1992

3 - 11520 Voyager Way, Richmond, BC, Canada V6X 3E1
Telephone 604 273 7877 FAX 604 273 8101

Dr. Manabu Tagomori
State of Hawaii
PO Box 373
Honolulu, HI, USA 96809

92 SEP 30 A 9:10

DIV. OF WATER &
LAND DEVELOPMENT

Dear Dr. Tagomori:

Imagine a resource exploration tool the equivalent of 3D seismic or a CAT-scan, something that can get through all the shallow clutter of mine facilities, swamps, or pediment to resolve strong or subtle zones and features associated with epithermal gold deposits. Or porphyry copper/gold. *Or geothermal resources.* A method that, like airborne geophysics, can function with full data density and resolution even over extremely rough ground. Yet, unlike airborne, providing 3D data penetration as much as 2-3 miles deep, if target resolution requires it.

The technique is E-SCAN 3D. Successfully used since 1982 for large, simple targets, including geothermal, E-SCAN was upgraded in July 1992 to full 3D inversion capability, providing unprecedented resolution of targets in more complex exploration conditions. Look at the attached case summary from northern British Columbia.

In E-SCAN 3D's *very first project with new 3D inversion software*, the first anomaly drilled provided an intersection of **78 oz./ton gold and 1300 oz./ton silver, over 1.75 metres width**, representing the central conduit feeding a silicic epithermal alteration zone. This discovery is less than 1000 metres from client Cheni Gold's mill facility, and had been explored periodically over ten years with conventional tools, without any commercial result.

Elsewhere, recent 3D inversion processing of a significant Nevada epithermal deposit signature shows that the field data from conventional surveys was completely misleading, showing conductive instead of resistive. 3D inversion-processed E-SCAN data delivered accurate bull's eye targeting that matches the resistive signature known to represent the tightly silicified rock. Once again, a regional exploration signature has been established, along with the tools to detect it, shallow or deep, in open country, culturally-cluttered conditions, or steepening terrain.

What does this mean to you? Think of the surgeon presented with the first display of CAT-scan images, complete with case history backup showing 100% success in measuring the previously unmeasurable. The petroleum geologist shown how 3D seismic fits his broken lithology (finally!), compared to the distorted, *yet dangerously valid-looking* 2D results that simply don't match drill results. **The real world is 3D.**

It's time to take a close look at E-SCAN 3D. It isn't one of those surveys whose main result is a recommendation for more surveys. E-SCAN goes directly from untested ground, no preconceptions, to 3D-imaged drill targets, or else a firm declaration that nothing geo-electrically significant is there. Having measured the equivalent of 20 to 30 conventional surveys in one pass, *you simply can't measure anything else, nor will you ever need to.*

Think about applying E-SCAN 3D to

- Find new geothermal sources to extend field life, *even where you've already looked, and drilled, for years.*
- Break the exploration impasse on that promising but so far disappointing exploration property by resolving not just the shallow zoning, but underlying structural controls and features, in full 3D.
- Reduce large area holdings to just the key thermal system centers, for detailed exploration now or later.
- Acquire unexplored, high-potential new properties that are available now because, before E-SCAN, nobody knew how to deal with them cost-effectively.

Some of your people may have heard about E-SCAN before. Impressed or not, they now need to get the full story on E-SCAN 3D with high resolution 3D conjugate gradient inversion, **available only since July, 1992.**

One drilled test case is worth a ten thousand words. We have a bunch of cases. Let's talk.

Yours truly,


Greg A. Shore, President

E-SCAN® Advanced Resource Mapping Systems

Debut of 3D data inversion

78 oz./ton gold intersection

Significant gold vein strike used E-SCAN's new 3D inversion to define targets.

September 9, 1992: In its first commercial application following 5 years of research and development, Premier's new 3D inversion capability for E-SCAN data has already come up with its first success story: the drilling of a mineralized vein structure high-lighted by a 78 ounce/ton gold (>1300 ounce/ton silver) intersection over a 1.75 metres width.

It's early in the project yet (see the news release attached), but this is already an auspicious start to the new era of E-SCAN 3D, featuring a full 3D conjugate gradient inversion (CGI) of every project data set we measure.

Some known gold mineralization and highgrade float helped geologists to decide on a kilometre-square area of *epithermal-looking* raw data results for interpretation by 3D inversion. The CGI processing revealed that the large raw-data anomaly was actually caused by ten smaller zones, most on the ridge, but several in the valley below a cliff.

One of the zones corresponds with the known mineralization, but the other nine were untested. None of the interpreted zones were positioned in places one might expect from review of the raw data plan and pseudosections. Mutual interference between the ten closely-adjacent features had blurred the anomalies, making the raw data uninterpretable by manual techniques.

Geophysical techniques including E-SCAN 3D can only map and present possible geologic settings for gold, not the gold itself, since gold is never concentrated enough to provide its own measurable electrical signature.

In this case, by providing accurate 3D resolution of individual bodies within a complex, conventionally uninterpretable geo-electric regime, 3D CGI processing helped geologists focus the early trenching and drilling within a most likely area. In tight economic times, early encouragement helps secure continued project funding. *It makes sense to consider universal E-SCAN 3D mapping as early as possible in a program. But even for an advanced project, 3D can still make a big difference.*

Running out of ore?

Blanketing a former (or present) producer with E-SCAN 3D provides an unprecedented 3D view of geo-electric features to a depth of a mile, regardless of terrain extremes, power lines, pipes, buildings, etc. *And an E-SCAN survey can be run through active open pit operations without shutting down.*

Before you resign yourself to closure or investigate new areas needing new permitting, make sure you look into an E-SCAN 3D assessment of your already-permitted property. Since E-SCAN 3D is new since July 1992, chances are your property has never been objectively and comprehensively 3D tested (with electrical geophysics) for previously undetected ore types and structures. *You may be sitting on or near another few years of mill feed.*

Desert tortoises limiting your exploration options?

E-SCAN has always been accepted for use in environmentally sensitive terrain, needing no vehicles and leaving absolutely no trace of land disturbance. E-SCAN has operated in BLM restricted desert tortoise areas of California. E-SCAN 3D provides deep, comprehensive mapping and detailed 3D target resolution in a single survey sweep, even in deep cover and dry desert conditions.

This reduces the number of drill sites needed to fully evaluate a property's potential, resulting in reduced permitting demands and *a faster, more effective, lower cost overall project completion*, in any terrain. Talk to Greg Shore about it.

E-SCAN 3D: environmentally helpful geophysics for the 90's.

E-SCAN 3D survey costs kept in line with tough times.

Recognizing the bad economy, static gold prices, increasing mining, startup, reclamation and permitting costs, Premier is holding its prices for E-SCAN services at 1990 levels. This, even though the new 3D conjugate gradient inversion processing is now a standard part of every survey, to make sure we wring out every ounce of information.

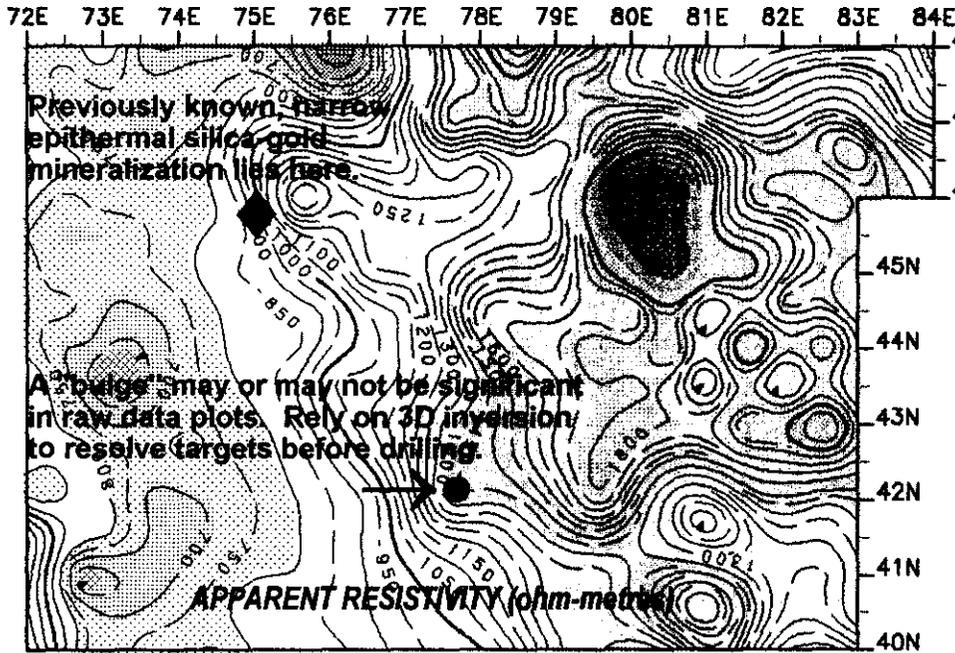
How can we do it? When our new 486-based field data acquisition system completed its field shakedown in early 1992, we measured a *25% gain in field productivity*,- enough to cover the estimated cost of 3D processing (about 20% of the field data acquisition costs). We pass this advantage along to you:- full 3D CGI processing, no price hike.

E-SCAN 3-1 a breakthrough in hidden resource mapping

3D field data acquisition+3D computer inversion/imaging: new ore discoveries in old areas

Advance #1: 3D RAW DATA: "You know this area is interesting..."

Multi-directional E-SCAN 3D raw data sets are 100 to 500 times denser than conventional survey data, allowing superior raw data presentation in plan views. This resistive anomaly suggests a center of epithermal mineralization, but drilling the raw data resistivity highs now would be a mistake. Use 3D inversion to clarify...



Launched in July 1992, E-SCAN 3D is the culmination of 15 years of R&D and field proving sponsored by the Geological Survey of Canada, and the Natural Sciences and Engineering Research Council of Canada. Using 127 remote micro-computers in a complex but rugged network of injection and measurement electrodes, E-SCAN 3D is the CAT-scan of electrical geophysics.

E-SCAN is a universal, multi-direction technique, mapping in a single survey the equivalent of four or more conventional surveys, each run at different angles. With 3 to 10 times the normal survey depth penetration, E-SCAN not only maps the shallow or economic exploitation depths, but also the mid-range, where downfaulted ore extensions or more deeply buried ore systems may be hidden, and the very deep range (to several thousand feet), imaging underlying ore-controlling structure, faults, and intrusives.

Even the "equivalent" dozen or more complete conventional surveys run at various spacings (depth ranges) and orientations would still not equal E-SCAN, because only E-SCAN 3D data are the maximum-information-content potential field measurements (not the derivative or gradient data measured by dipole techniques), required for advanced, high resolution CGI 3D inversion of electrical data.

There's more: E-SCAN operates in any terrain,- cliffs, lakes, dry desert,- absolutely nothing interferes with cost-effective, guaranteed-cost 3D data acquisition and full 3D interpretation. *Anywhere you think a resource might be located, E-SCAN 3D can map.* The property at left is cut by a 100 m cliff.

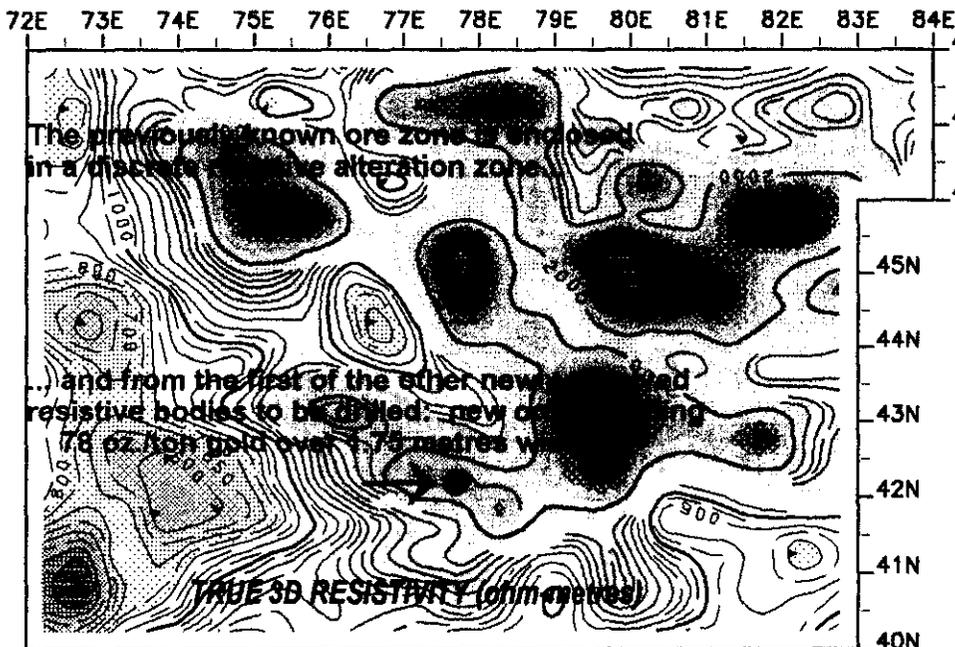
E-SCAN maps right through open pit mines (without mine shutdown), to verify the signature and setting of the remaining or depleted ore zone, and to test for other mineralization adjacent or at depth, even among roads, buildings, powerlines, fences and installations.

E-SCAN was permitted to operate in BLM restricted desert tortoise lands in California,- a cost-reducing boost to exploration effectiveness in sensitive environments, using fewer drillholes.

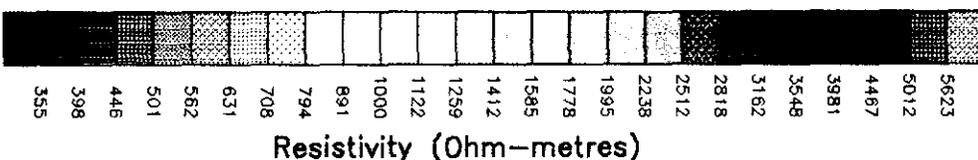
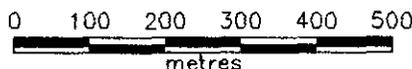
With unique 3D capability, and resolving power far above that of CSAMT, EM and other IP/resistivity, E-SCAN 3D continues to map new ore where other techniques are shut out.

Advance #2: TRUE 3D IMAGING: "...and now you know how to drill it."

3D inversion uses the full 10,000 point raw data set, (including the data above), to compute the underlying zones and features in 3D. This slice through the computed 3D model shows 12 discrete features, one already known (♦), and 11 to be tested.



Dwg: 3DM325.226.02.



Resistivity (Ohm-metres)

Geot

R.

hermal

aling seems doubly positive

A Hawaii Supreme Court ruling this week is a victory for both geothermal development on the Big Island and recognition of Hawaiian rights there and elsewhere. Whether and how the two activities will further conflict remains a question.

In economic terms, the unanimous ruling rejected a challenge by native Hawaiians to an 1985 land swap of 27,800 acres of ceded public lands in Puna for 25,800 acres of Campbell Estate land. The former public land is now leased by the estate for geothermal development.

This would seem to clear the way for the partners in the so-called True Geothermal group to resume drilling in the isolated rain forest area. This is a separate development from the Puna Geothermal Venture project elsewhere in a more urbanized section of Puna. That project has been plagued by equipment and emission problems.

At the same time, the new Supreme Court ruling may be a landmark in expanding the rights of native Hawaiians to go into "undeveloped" private property for traditional religious, cultural and hunting activities. That issue regarding the True Geothermal project will be heard in a Circuit Court case; legal sources on the geothermal side say the companies involved have never sought to prevent access to "undeveloped" areas of the vast parcel.

In theory, all this would seem to allow for geothermal development and traditional practices to coexist. But in practice some Hawaiians are among those who oppose geothermal development in any place in the islands.

So legal battles are likely to continue. But at least such development has cleared a hurdle on this frontier, even as it struggles to get going again elsewhere in Puna.

SEP 20 1992

Repair

Advertiser Staff
and News Servi

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EPA backs away from 'puzzling' statements

□ Federal official says EPA won't require geo permit

By Gordon Y.K. Pang and Dave Smith

Tribune-Herald

The federal Environmental Protection Agency is not pulling rank on the state Health Department and does not intend to issue a separate permit for Puna Geothermal Venture's 25-megawatt plant in Pohoiki.

That's according to Clarence Tenley, chief of the underground injection control division of the EPA's San Francisco office.

Last week, Deputy Health Director Bruce Anderson said he was "puzzled" by the harsh language in EPA's comments regarding a pending underground injection control permit issued to PGV for its KS-3 and KS-1A reinjection wells.

The letter, signed off by EPA Water Management Division director Harry Seraydarian, raised

See GEO, Page 10



SOAP — Residents as far as five miles from the PGV plant in Pohoiki reported blobs of soap suds floating into their neighborhoods recently. A plant official said steps were being taken to prevent further recurrences.

From Page 1

concerns about the pending permit and went so far as to imply that the agency was thinking of issuing its own permit.

But in a phone conversation Friday, Tenley said the EPA "has not issued any permits in Hawaii" and that the agency did not plan to do so "in the near future."

Tenley said the letter was "not a signal of conflict" between the EPA and the Health Department. "We're not pulling rank," he said.

Seraydarian's letter had made reference to a final permit issued to PGV, although Anderson and the state is emphatic no such permit has yet been issued.

Tenley called those references a matter of "semantics."

Steve Morris, PGV vice president, said he was as puzzled as Anderson was about the EPA letter but refused to comment on

it beyond "we don't see anything there that would delay our start-up."

Morris also continued to fend off accusations made by neighboring residents about PGV's operations.

PGV intends to have two reinjection wells, KS-3 and KS-1A ready to accept spent fluid from up to 12.5 megawatts when the plant comes on-line in mid-October.

The company had been drilling KS-4, to be used as a third reinjection well, but pulled the drill pipe out of that well and moved the rig to KS-3 to make final preparations before use, Morris said.

Repairs are being done to KS-3, he said, but neither the well nor its casing is "broken" as some residents have been

claiming. Workers are putting in an additional seven-inch liner in the hole, he said.

The repairs should be done in five days, Morris said. The rig will then return to KS-4 to complete drilling there. Completion of KS-4 is not necessary for the plant to begin, he said.

Area residents said they also heard that a drill bit had been stuck and broken in the KS-4 well, leading to difficulties when PGV attempted to remove the drill pipe and move the rig.

Not so, Morris said. "Stuck is a state of mind in the drilling business," he said. "The pipe is completely out of the hole."

On the plant side, Morris acknowledged there may have been brief bursts of caustic soda, used as a neutralizer for the noxious hydrogen sulfide odors, during the weekend when KS-8, the production well, was opened up

for pre-operations testing.

"There's been a lot of activity," he said.

Ten days ago, blob-like soap bubbles floated from the plant as far as five miles into the Kapoho subdivision, area residents reported. Those residents raised concerns about the make-up of the bubbles and their effects on water catchment tanks.

"It's soap, biodegradable soap," Morris said. The soap is used during drilling "to bring the cuttings out of the hole."

Morris said the soap bubbles are safe and that "we won't be using the soap beyond a couple more days ... we've installed a sprinkler system to water it down to mitigate the wind's effects."

Anderson, when informed of the soap bubble incident, said it was the first he'd heard of it.

SEP. 23 1992

Military, residents cleaning up Garden Isle

LIHUE (AP) — More than 2,400 military personnel have joined the residents of Kauai to undertake a week-long, island-wide cleanup of debris left by Hurricane Iniki.

"Operation Garden Sweep" that began Monday involves crews of military and civilian workers scouring neighborhoods to remove garbage, downed trees, metal scraps, building materials and rubble.

Army National Guard Brig. Gen. Eugene Imai said the debris is being dumped temporarily at five sites approved by the state Department of Health to be disposed of later.

He said green waste will be shredded and the metal scraps will be compacted.

Being used in the cleanup operation are more than 100 pieces of military equipment, including five-ton cargo trucks, troop carriers, fork lifts and bucket loaders.

Meanwhile, some street lights were back on in Lihue Tuesday night for the first time since Hurricane Iniki put them out Sept. 11.

A spokesman for Kauai Electric Co. said the company's Lihue substation was re-energized yesterday, bringing power to the area from the Port Allen generating plant.

Street lights along Kuhio Highway between the substation and Wilcox Hospital were back in service last night.

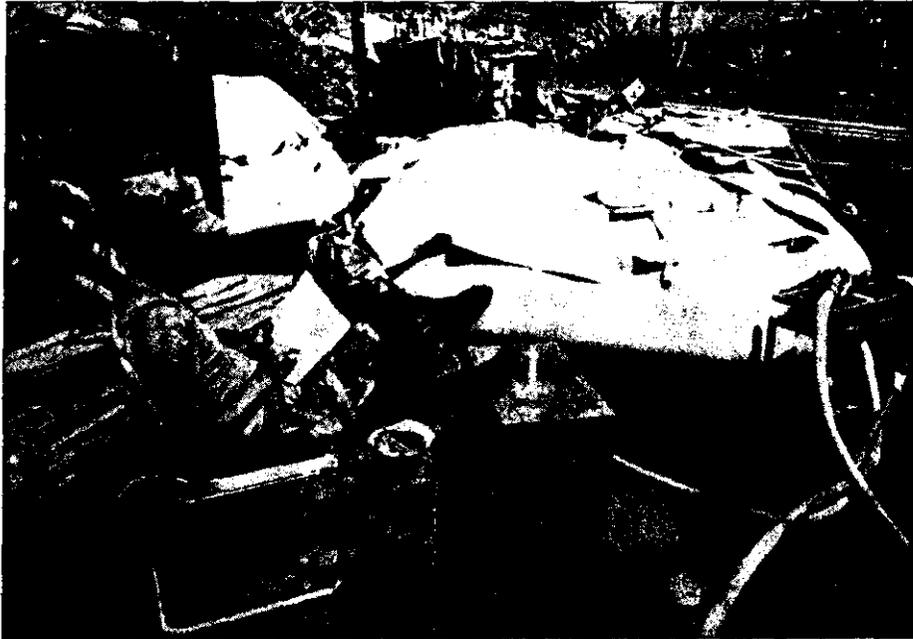
Power has also been restored to the McDonald's Restaurant and Garden Isle newspaper, the spokesman said.

Kauai residents who lost their jobs from Hurricane Iniki can apply for several hundred temporary state and county public service jobs, the state Department of Labor announced yesterday.

Applications can be made starting today at the Kauai Employment Service office at 3100 Kuhio Ave., the department said.

Officials said the jobs will involve a variety of cleanup work, such as restoring public utilities, repairing public facilities and providing necessary public services.

Applications can be made in the morning hours for clerical, paraprofessional, professional, medical paraprofessional and medical jobs.



—Associated Press photo

WATER PURIFICATION — Cpl. Todd Olson of the MWSS 174 Maintenance Marines from Kaneohe Bay reads a technical manual in Hanapepe, Kauai. Olson's unit operates a Reverse Osmosis Water Purification Unit to provide water to the victims of Hurricane Iniki.

These pay from \$9 to \$14 an hour.

In the afternoon, applications can be made for laborer jobs, paying from \$10 to \$18 an hour.

The Labor Department said the temporary jobs are being made available with a \$2 million federal grant.

It advised that anyone who previously went to the Kauai Employment Service for private sector jobs must make a new application for the temporary public service jobs.

In Honolulu, Michael Buck, head of the state's Division of Forestry and Wildlife, says it looks like someone took a weedeater and shaved Kauai's mountain slopes. That someone was Hurricane Iniki.

Buck said the damage to Kauai's forests is hard to judge from the air, but he said most of the leaves were blown off the trees.

Kauai's most native forest — the Alakai Swamp — escaped major damage, Buck said.

Buck said his biggest concern is the fire hazard created with all the downed timber and

blocked forest roads and trails during the current dry season.

The Department of Land and Natural Resources, which manages Hawaii's conservation areas, has asked the public to stay out of the Kauai forests and wildland areas until they can be cleaned up.

Buck said the island's watershed took a beating and there is no canopy of leaves to intercept the rainfall.

Any torrential downpour will hit the ground directly and could result in serious erosion, landslides, flooding and stream siltation, he said.

Based on the Hurricane Iwa experience 10 years ago, the

leaves will sprout back within months, Buck said.

Meanwhile, Mayor Frank Fasi says he's sending four specialists from the Honolulu Botanical Gardens to Kauai to assist in saving rare and valuable plants damaged by Hurricane Iniki.

The team will spend today at Kauai's National Tropical Botanical Garden and be assisted by 25 students from the Hawaii Job Corps, Fasi said.

The one-day recovery effort was arranged by the Friends of Hoomaluhia, a support group of the city's Hoomaluhia Botanical Gardens.

Hawaiian Airlines is providing the group's transportation.

EPA backs away from 'puzzling' statements

□ Federal official says EPA won't require geo permit

By Gordon Y.K. Pang and Dave Smith
Tribune-Herald

The federal Environmental Protection Agency is not pulling rank on the state Health Department and does not intend to issue a separate permit for Puna Geothermal Venture's 25-megawatt plant in Pohoiki.

That's according to Clarence Tenley, chief of the underground injection control division of the EPA's San Francisco office.

Last week, Deputy Health Director Bruce Anderson said he was "puzzled" by the harsh language in EPA's comments regarding a pending underground injection control permit issued to PGV for its KS-3 and KS-1A reinjection wells.

The letter, signed off by EPA Water Management Division director Harry Seraydarian, raised

See GEO, Page 10



SOAP — Residents as far as five miles from the PGV plant in Pohoiki reported blobs of soap suds floating into their neighborhoods recently. A plant official said steps were being taken to prevent further recurrences.

Handwritten notes:
Morris
Seraydarian
Anderson
Tenley
Pang
Smith
Chin (pic)

GEO: EPA not 'pulling any rank' on state

From Page 1

concerns about the pending permit and went so far as to imply that the agency was thinking of issuing its own permit.

But in a phone conversation Friday, Tenley said the EPA "has not issued any permits in Hawaii" and that the agency did not plan to do so "in the near future."

Tenley said the letter was "not a signal of conflict" between the EPA and the Health Department. "We're not pulling rank," he said.

Seraydarian's letter had made reference to a final permit issued to PGV, although Anderson and the state is emphatic no such permit has yet been issued.

Tenley called those references a matter of "semantics."

Steve Morris, PGV vice president, said he was as puzzled as Anderson was about the EPA letter but refused to comment on

it beyond "we don't see anything there that would delay our start-up."

Morris also continued to fend off accusations made by neighboring residents about PGV's operations.

PGV intends to have two reinjection wells, KS-3 and KS-1A ready to accept spent fluid from up to 12.5 megawatts when the plant comes on-line in mid-October.

The company had been drilling KS-4, to be used as a third reinjection well, but pulled the drill pipe out of that well and moved the rig to KS-3 to make final preparations before use, Morris said.

Repairs are being done to KS-3, he said, but neither the well nor its casing is "broken" as some residents have been

claiming. Workers are putting in an additional seven-inch liner in the hole, he said.

The repairs should be done in five days, Morris said. The rig will then return to KS-4 to complete drilling there. Completion of KS-4 is not necessary for the plant to begin, he said.

Area residents said they also heard that a drill bit had been stuck and broken in the KS-4 well, leading to difficulties when PGV attempted to remove the drill pipe and move the rig.

Not so, Morris said. "Stuck is a state of mind in the drilling business," he said. "The pipe is completely out of the hole."

On the plant side, Morris acknowledged there may have been brief bursts of caustic soda, used as a neutralizer for the noxious hydrogen sulfide odors, during the weekend when KS-8, the production well, was opened up

for pre-operations testing.

"There's been a lot of activity," he said.

Ten days ago, blob-like soap bubbles floated from the plant as far as five miles into the Kapoho subdivision, area residents reported. Those residents raised concerns about the make-up of the bubbles and their effects on water catchment tanks.

"It's soap, biodegradable soap," Morris said. The soap is used during drilling "to bring the cuttings out of the hole."

Morris said the soap bubbles are safe and that "we won't be using the soap beyond a couple more days ... we've installed a sprinkler system to water it down to mitigate the wind's effects."

Anderson, when informed of the soap bubble incident, said it was the first he'd heard of it.

Councilwomen introduce bill on geo permits

□ Hale, Lai say Council should have final approval power

By Gordon Y.K. Pang
Tribune-Herald

A new bill has surfaced which would give the County Council the final say for issuance of geothermal resource permits.

"As elected officials, we need to insure that geothermal resource development will be done in a safe and protective manner," wrote Council members Helene Hale and Merle Lai in a cover letter introducing the bill.

The measure will get its first airing before the Council's Planning Committee on Tuesday.

Another bill introduced by Hale which called for essentially the same action was shot down in the Planning Committee in early August when a majority of the members said they felt the bill was too vague.

"We have taken the committee's directive and have prepared a comprehensive proposal," said Hale and Lai, the Council's minority members.

Vice Chairman Brian De Lima said he would support transferring the authority on geothermal resource permits to the Council if a bill were honed that had substantive language.

De Lima said this morning that he will recommend the bill be immediately referred to the Planning Commission for its input as required for a change to the zoning code. "I support the general concept," he said. "I would like to suggest some changes."

"It looked like they spent some time on it so obviously I'm going to read it through," he said. The first proposal "had no substance," he said.

Currently, geothermal resource

GEO: Bill on permit issuance introduced

From Page 1

permits are issued by the Planning Commission, a consequence of the commission's Rule 12 that was adopted in 1986. Only two such permits have ever been issued — one for Puna Geothermal Venture's 25-megawatt facility in Pohoiki, the other for the University of Hawaii's scientific observation hole project in Kapoho and Wao Kele o Puna.

Critics of the existing process claim elected, not appointed, officials should be the final arbiters on decisions as controversial as geothermal development.

"Community impacts caused

by the development of geothermal resources create a serious question relating to public policy and ... formulation of public policy is the primary function and duty of the County Council," the bill states.

Under the terms of the new bill:

- No permit would be issued if it is found that there are "unreasonable adverse health, environmental or socio-economic effects on residents or surrounding property; if the development would "unreasonably burden public agencies" A permit

would be issued if "there are reasonable measures available to mitigate the unreasonable adverse effects on burdens" as stated above.

- An applicant would need to send a notice of hearing 30 days in advance to those living on or owning property within 3,500 feet of the perimeter of the requested area.

- Mediation would be granted to any party submitting written comments at the first public hearing of the County Council.

- The planning director would

be responsible for monitoring of the permit and any conditions proposed by the Council.

- Appeals to decisions made by the Council would be taken directly to the Hawaii Supreme Court and "shall not be subject to a contested case hearing."

- The Planning Department would still process applications and draw up the language for the permits, Hale said. The Planning Commission would continue to hold hearings giving recommendations to the Council as it does on other zoning bills.

PGV ready to produce electricity in October

By JASON ARMSTRONG
West Hawaii Today

POHOIKI — Puna Geothermal Venture officials said the \$120-million power plant should be ready to produce electricity by mid-October despite a "small leak" in an injection well that will require six days to repair.

"The well (KS-3) didn't re-

spond the way we wanted it to, and some of the (air) pressure was leaking," Steve Morris, PGV vice president and general manager, said Friday.

Work on the injection well was suspended when the leak was detected, Morris said. Replacement of well liners and casings sche-

duled to begin Saturday and will take about six days to complete, he said.

"After evaluating the condition of the well and our options, we determined that minor repairs are necessary and it is most cost effective to repair the well prior to the power plant start up," Morris said.

The leak, which does not involve the release of hydrogen sulfide gas as previous leaks at the PGV plant have done, was detected some time ago, Morris said, but left unrepaired while work was switched to the adjacent KS-4 injection well.

The drill rigging will be moved from KS-4 to KS-3 to allow for

the repairs, then the equipment will be returned so drilling operations may resume on well KS-4, Morris said.

The casing in the injection well is used to ensure spent geothermal fluids are being returned to sufficient depths to avoid tainting the area's ground water supplies.

Hawaii Tribune - Herald, Friday, September 25, 1992.

Geo trespass case

Recent press accounts of the geothermal trespass cases in Keaau District Court have highlighted the appearance of various government officials during the trial. Your readers should be aware that the defendants attempted to use the court as a political forum on geothermal development. As one reporter observed, when Judge Amano assured all parties that she would not allow her courtroom to be used as a staging area for political theatrics, our office advised the Mayor to proceed and to appear at the trial.

We live in a government of laws. The Hawaii Supreme Court has rules governing discovery of information from witnesses before a trial commences. To my knowledge, Rule 16 of the Rules of Penal Procedure concerning information within the possession of the County of Hawaii was never utilized.

This led to unnecessary procedural wrangling over issues during the trial which should have been resolved before the trial in accordance with the Hawaii Supreme Court rules. Judge Amano's handling of all the issues under such extreme circumstances must be applauded.

Michael J. Matsukawa
Corporation Counsel

- Sunday, September 27, 1992 - THE MAUI NEWS

Geothermal rig to be moved, fixed

HILO (AP) — Officials at Puna Geothermal Venture said Friday they will be moving their drilling rig to an old injection well to make repairs in a broken well casing.

Company Vice President Steve Morris said that after evaluating a small leak in the well casing, the company decided to repair it before the power plant goes into operation.

The casing in the injection well is used to ensure spent geothermal fluids are being returned to sufficient depths to avoid tainting the area's ground water supplies.

Geo can be clean

At first, when the geothermal plant opened it was all new and clean. It had a control operator, a boiler operator, a guard and one trainee plus one man at the Hawaiian Natural Energy Laboratory. They had one shift supervisor for each of three eight-hour shifts. This plant was to be "experimental" and was to run the maximum of two years. Its nine K.V. capacity was to be used to fill in the spaces in Helco's generating capacity. Being "Experimental" it had a lot of built-in mistakes. It had a very elaborate monitor and alarm system. All systems went downhill from there.

First of all it went from employing 15 people a day to one employee 8 hours a day, plus one security guard 16 hours at night. I suppose, when it was found how much money could be made selling its power, the decision was made to run it just as long as possible or until forced to shut it down. It was not designed to smell, it was to use fresh water steam. It was only when they hit what I call "Artesian" steam that the whole process changed. Now it was producing power much sooner than expected, at a much lower rate of investment. They received a lot of benefits but then Murphy's imperative "For every advantage there is a direct and distinct disadvantage" took over: they got smell, and unmanagable waste products. The plant was impossible to maintain and toward the end of 10 years was ready to shut itself down. At times it was dangerous to man and beast.

What we have here is a clean source of power and if someone with enough expertise can be hired to make sure these people exercise caution and enforce safety rules it should last as long as there is heat in the earth with very little additional expense. Since the facility is financed with stockholder money the cost of generation should come way down, resulting in cheaper power. I note here that knowing our beaurocrats and politicians the inspector will be some political appointee who, at best, will only know the "on-off" principle of a light switch. So, we, the consumer, will be hung out to dry again.

It seems as though neither side in this dispute wants the facts. One side is motivated by greed and the other by ignorance. Those two factors cannot be married in any real sense.

J.R. Muckridge
Pahoa

Court helps geothermal and Hawaiian rights too

THE state Supreme Court has rendered a decision that helps the often conflicting causes of geothermal energy development and native Hawaiian cultural rights.

Both are important, and the court's unanimous opinion, written by Associate Justice Robert Klein, who is part-Hawaiian, helps to balance the interests of past and future Hawaii.

The court upheld the Big Island land exchange between the state and Campbell Estate seven years ago, a transaction which provided the state with 25,807 acres of land in Kahaualea, along Kilauea's east rift zone, and gave Campbell in return 27,785 acres in the Wao Kele o Puna Forest Reserve.

The site for the True/Mid-Pacific Geothermal Venture is leased from Campbell on forest land. Since it was part of the ceded lands once held by Hawaii's monarchy, the Pele Defense Fund sought to prevent the swap that has allowed geothermal activity in a forest of religious and cultural importance.

The court did grant the Pele fund a chance to demonstrate how the geothermal project affects the exercise of Hawaiian religious rights. The fund must show in Big Island Circuit Court that the Wao Kele o Puna area was indeed a traditional Hawaiian gathering place and how the geothermal presence is impeding observances of that tradition. The high court also said the fund had the right to sue the state over the Campbell land swap but that the plaintiffs had waited too long and missed the two-year statute of limitation. The fund contended it had six years. Establishing the right to sue the state on such matters was a source of encouraging news for lawyers representing native Hawaiian interests.

The long battle over harnessing geothermal's volcanically-heated water as an alternate source of energy is far from over. Hawaiian activists, environmental interests and Puna residents have opposed it. A March decision by the high court ordered the state Health Department to impose stricter standards on the True geothermal drilling and found fault with the state's procedures in issuing a permit to the firm.

Geothermal interests have had bad luck, especially with the June 1991 blowout of the Puna Geothermal Venture in Pohoiki, and the smells of their hydrogen sulfide emissions have not won many friends. But it remains the best available source of alternate energy, and the Big Island, with continual problems in power outages and brownouts, needs it desperately.

We have maintained on such issues as geothermal energy and the construction of H-3 that Hawaii can have the progress it needs without desecrating its host culture. The Supreme Court's decision seems consistent with that belief.

Feds have DOH puzzled

□ EPA says state geo permit may not be strict enough

By Gordon Y.K. Pang
Tribune-Herald

The Environmental Protection Agency's threat to require an additional federal permit of Puna

Geothermal Venture has a state health official puzzled.

Bruce Anderson, the state's deputy health director, said yesterday that most of the concerns raised by the EPA about a pending PGV permit for two reinjection wells have been addressed.

But the EPA letter says proposed state conditions on the reinjection well permit are not stringent enough.

"I'm a little bit puzzled with the language," Anderson said of the letter.

Anderson said it was his understanding that the federal EPA had given its authority over the permits to the state agencies.

But, according to the letter from EPA Water Management Division director Harry Seraydarian, dated Sept. 18: "EPA would not issue (an underground

injection control) permit for these wells with the present injection well configuration of KS-1A (no tubing) and the questionable operation of KS-3. Before a UIC permit is issued, it must be demonstrated that PGV's injection and production wells have mechanical integrity."

Numerous calls to Seraydarian in San Francisco were not answered.

In all, 14 points were raised regarding the KS-3 and KS-1A reinjection wells.

"We have been working diligently with your staff to insure that your UIC permit would be as stringent as a federal UIC permit so that it would be unnecessary for us to require a

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PERMIT: Feds have state DOH puzzled

From Page 1

permit application from PGV," the letter said.

But according to Anderson, "EPA has never expressed to us an intent to issue a permit separately. My understanding is that they do not usually issue such permits and leave it up to the states. We need to get clarification."

Anderson said EPA was asked to comment on an initial draft of the permit and most of those concerns, including what he believes are the major questions, have been addressed.

"That permit was subsequently modified before EPA even submitted its comments," he said.

Anderson could not explain why there are several references in the EPA letter to a "final"

permit issued to PGV.

The underground injection control permit to operate has not yet been issued and will not be given until all requirements are met, he said.

In addition, Anderson believes "many of the concerns raised by EPA are moot because they've already been addressed." The casing of KS-3 has already been "rehabilitated," he said, and the hang down tubing referred to by Seraydarian has been installed "to ensure integrity."

"After we are assured the well is constructed according to specifications, then we'll issue a permit to operate," he said. "We have not issued a permit to operate for the injection wells and we will be modifying the permit to reflect any legitimate concerns."

Anderson said "mechanical integrity tests" are being done by PGV to ensure there are no leaks in either the wells or their casings.

Mechanical integrity of the well has been the major concern for both DOH and EPA, he said. "I don't see that these (other) issues are going to create any serious problems with regard to proceeding on the construction of these wells or start-up of the plant."

"We appreciate the comments EPA has made," Anderson said. "We intend to work closely with EPA through the life of the project and we did ask EPA for comments."

Pele Defense Fund, last month, asked EPA to intercede with the state permits. But ac-

cording to Anderson, "we sent a draft to EPA long before the PDF letter was written."

"The draft permit EPA reviewed was very dated," he said. "We do not allow rock mufflers, the ponds are lined and fluids are injected back into the injection well," Anderson said with respect to three other concerns raised.

Anderson said EPA could pull rank on the Health Department "if they felt we're not adequately addressing the concerns." But, he said, "EPA has never issued a permit for a reinjection well and I don't expect them to do so in this case."

But according to Seraydarian's letter, EPA "conclude(s) that it is not yet as stringent as an EPA permit."

Land swap upheld by court

□ But high court strengthens native rights of access

By Gordon Y.K. Pang
Tribune-Herald

The Pele Defense Fund's attempt to overturn the controversial 1985 state land swap that led to geothermal development at Wao Kele o Puna was re-

jected by the Hawaii Supreme Court yesterday.

The decision, however, apparently increases the rights of native Hawaiians to enter undeveloped private lands in order to hunt, gather and perform other traditional Hawaiian religious and cultural practices.

In the 1985 swap, the state exchanged 27,800 acres of ceded lands in Wao Kele o Puna for 25,800 upslope acres in Kahaualea owned by Campbell Es-

tate. Following the exchange, True/Mid-Pacific Geothermal Venture was given the lease to the Wao Kele land and has proceeded with exploratory well drilling there.

The PDF lawsuit, which Third Circuit Judge Ernest Kubota dismissed without a trial, charged the state with breaching its duty by exchanging the ceded property. Such lands, once owned by the Hawaiian monarchy, are supposed to be held in trust by the

state for the best interests of the public, including native Hawaiians.

State officials and attorneys believe the swap was in the best interest of the community. Pro-geothermal sources have also contended that Kahaualea is more pristine and fertile than the Wao Kele lands downslope.

The high court said the issues raised by PDF had already been decided in federal courts and noted also that a two-year statute

of limitations from the time of the exchange had expired. The court put that date at April 1986, when the state Legislature failed to nullify the December 1985 swap.

Pele Defense officials in Hilo and Molokai declined comment until they see the actual decision while Alan Murakami of the Native Hawaiian Legal Corp.,

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SWAP: High court upholds Campbell deal

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which represented PDF in the suit, could not be reached this morning.

While the decision is a clear setback to PDF's attempts to stop True Geothermal's project, the unanimous opinion written by recently appointed part-Hawaiian Associate Justice Robert Klein also appears to have strengthened native Hawaiian gathering rights.

William Tam, a deputy attorney general for the state, said the decision was "historic" in that it broadened the right of access of native Hawaiians to undeveloped private property for traditional purposes involving

culture, religion and subsistence.

Under a 1982 decision, native Hawaiians could enter undeveloped lands to engage in traditional cultural and religious practices if the lands were within the historical ahupua'a of a family's home.

The new interpretation would open up private properties for those whose homes historically are in neighboring ahupua'as as well.

True Geothermal attorney Allan Kawada said he's happy with the high court decision, adding that he felt the expansion of parameters for native Ha-

waiian gathering and religious practice rights was "fair."

While the decision threw to the Circuit Court the issue of whether Campbell and the geothermal companies have to allow access, Kawada said he didn't think that would be necessary.

"The only area we are keeping people out of are the drilling portions," Kawada said, noting that those sections constitute about 20 acres. "There's 27,000 acres out there. People go hunting in the area, people grow pakalolo in the area. So long as it's not an imposition on the project. The court recognized the

balance between the rights of the private landowner and the constitutional rights of native Hawaiians to gather and hold religious ceremonies."

Kawada said so long as those wishing to use the property can show "some history of using it," the developer would have no problem allowing native Hawaiians onto undeveloped lands.

Meanwhile, Kawada said the True project is still on hold pending permits from the state Department of Land and Natural Resources.

"Money has never been a problem," he said.

Geothermal

Ruling seems doubly positive

A Hawaii Supreme Court ruling this week is a victory for both geothermal development on the Big Island and recognition of Hawaiian rights there and elsewhere. Whether and how the two activities will further conflict remains a question.

In economic terms, the unanimous ruling rejected a challenge by native Hawaiians to an 1985 land swap of 27,800 acres of ceded public lands in Puna for 25,800 acres of Campbell Estate land. The former public land is now leased by the estate for geothermal development.

This would seem to clear the way for the partners in the so-called True Geothermal group to resume drilling in the isolated rain forest area. This is a separate development from the Puna Geothermal Venture project elsewhere in a more urbanized section of Puna. That project has been plagued by equipment and emission problems.

At the same time, the new Supreme Court ruling may be a landmark in expanding the rights of native Hawaiians to go into "undeveloped" private property for traditional religious, cultural and hunting activities. That issue regarding the True Geothermal project will be heard in a Circuit Court case; legal sources on the geothermal side say the companies involved have never sought to prevent access to "undeveloped" areas of the vast parcel.

In theory, all this would seem to allow for geothermal development and traditional practices to coexist. But in practice some Hawaiians are among those who oppose geothermal development in any place in the islands.

So legal battles are likely to continue. But at least such development has cleared a hurdle on this frontier, even as it struggles to get going again elsewhere in Puna.

Tuesday, September 29, 1992

Star-Bulletin

Hawaiian group wins, loses geothermal cases

By Benjamin Seto
Star-Bulletin

A native Hawaiian group won the chance to exercise its religious and cultural rights, but its efforts to strip the land from under the Big Island's True/Mid-Pacific Geothermal Venture apparently have failed.

The state Supreme Court yesterday granted the Pele Defense Fund a trial to determine if its members' access to the geothermal site at the Wao Kele o Puna Forest Reserve has been hampered by the geothermal project.

But the high court refused the group's request to undo a 7-year-old land swap between Campbell Estate and the state. The geothermal project sits on property gained by the land swap.

"The state and geothermal officials shouldn't take comfort," said Mahealani Kamaau, executive director of the Native Hawaiian Legal Corp., which represented the Pele Defense Fund.

She said the decision shows that lands may be exchanged, but not at the loss of native Hawaiians' traditional cultural and religious concerns.

The group had argued that the state violated its trust duties when it swapped 27,785 acres in the forest reserve for 25,807 acres of Campbell Estate property in Kahaulea, along Kilauea's east rift zone.

The state land was part of the ceded lands, former crown lands held in perpetuity for the benefit of native Hawaiians.

Campbell Estate attorneys could not be reached for comment yesterday.

In the decision written by Associate Justice Robert Klein, who is part-Hawaiian, the court ruled that native Hawaiian gathering rights guaranteed by state law "may extend beyond the ahupua'a in which a native Hawaiian resides where such rights have been customarily and traditionally exercised in this manner."



Robert Klein

The Pele Defense Fund must now show in court that the Wao Kele o Puna area was a traditional gathering site.

Klein also wrote that the state does not enjoy immunity in every situation. The court ruled that the Pele Defense Fund had the right to sue the state; it just took too long to do it.

"We are of the firm conviction," he wrote, "that our courts must be available to the citizens of Hawaii to avert such a purported breach of public trust."

But Klein said a two-year statute of limitation applied to the group, which first filed suit to protest the land swap in November 1985. The Pele Defense Fund argued that it had six years.

"It's a definite win," said the Hawaiian group's attorney, Alan Murakami, about the court's recognition of the group's right to sue. "That's an important tool for Hawaiians and we'll hopefully use it in the future."

High court upholds

Rejects challenge to geothermal deal;

By Ken Kobayashi
Advertiser Courts Writer

The Hawaii Supreme Court yesterday rejected a challenge by native Hawaiians to the state's massive land swap in 1985 that cleared the way for a geothermal development in the Puna District on the Big Island.

But at the same time, the court expanded the rights of native Hawaiians to go onto undeveloped private property to exercise traditional practices related to hunting and religious and cultural activities.

The court also appears to have made it easier to challenge the state for its

handling of lands it holds in trust for the public and native Hawaiians.

Deputy Attorney General William Tam called the decision "historic" and perhaps the most significant in dealing with native Hawaiian rights in the past 10 years.

In a unanimous 47-page opinion written by Associate Justice Robert Klein, the court upheld the state's exchange of 27,800 acres of "ceded" public lands for about 25,800 acres owned by the Campbell Estate, which now leases the former state land for geothermal development by True Energy Geothermal Corp., True Geothermal Drilling Co. and Mid-Pacific Geother-

INSIDE:

■ Expansion of native Hawaiians' access to private property 'historic' / PAGE A4

mal Inc.

The Pele Defense Fund, represented by the Native Hawaiian Legal Corp., challenged the swap on a number of grounds, including the contention that the state violated its trust to the native Hawaiians by giving up the "ceded" land that includes the Wao Kele 'O Puna Natural Area Reserve.

"Ceded" lands belonged to the Hawaiian government before the overthrow

Puna land swap

expands Hawaiians' access to land

of the Hawaiian monarchy in 1893 and have been entrusted to the state for the public and native Hawaiians.

The high court indicated the Pele Defense Fund's lawsuit challenging the swap could be heard in state courts, but concluded that it was throwing out the case because those issues have already been decided in federal courts and that the suit was filed too late in 1989 after a two-year statute of limitation had expired.

The court, however, sent the case back to Circuit Court on the Big Island to determine whether Campbell Estate and the geothermal companies can prohibit the Pele Defense Fund's

native Hawaiian members from going onto the undeveloped portions of the land to carry out traditional practices.

The court held those members have a right to that access — as long as their practices don't cause any harm; that right was recognized in the state Constitution and a 1982 "landmark" high court decision.

But the court yesterday went further than the 1982 ruling and said it is no longer necessary for native Hawaiians to be living in the same ahupua'a, an ancient Hawaiian division of land that generally ran from the sea to the mountains, as the private property in question to exercise that right.

PACIFIC BUSINESS NEWS Monday, September 21, 1992
Puna Geothermal eyes October startup

Puna Geothermal Venture faces review by three state regulatory agencies and five weeks of engineering and technical work before it can begin supplying power to Hawaii Electric Light Co. If all goes well, the \$120 million plant will be operating in October. Inspection of the facility is required by the state departments of Health; Land & Natural Resources; and Business, Economic Development & Tourism.

Geo protesters win suit

HILO — The 11 women strip searched following a 1989 geothermal demonstration were each awarded \$10,000 Friday after a jury found Hawaii County liable of violating the women's constitutional rights.

The federal court also awarded the plaintiffs an additional \$100,000 for attorney's fees.

Last year, the women filed suit against the county, Police Chief Victor Vierra, police Lt. Wendell Costa and police officer Darnell Otani because Otani had striped search them. Men who had been arrested during the same demonstration were not searched.

The Dec. 14, 1989 demonstration at the True Geothermal site in lower Puna resulted in the arrest of 39 people.

Saturday, September 26, 1992 The Honolulu Advertiser

Repairs planned for geothermal well

Advertiser Staff
and News Services

HILO, Hawaii — Puna Geothermal Venture yesterday announced plans to move its drilling rig from a new injection well to an old one to make repairs in a broken well casing.

Steve Morris, the vice president of the state's first commercial geothermal project, said after evaluating a small leak in the well casing the company decided to repair it before the power plant is started up.

The casing is used to ensure the spent geothermal fluids are returned to sufficient depths to avoid tainting ground water supplies.

The company hopes to begin commercial production

by the middle of October, if it can clear various state and federal regulatory hurdles.

In yesterday's announcement, Morris said the company will move the drilling unit from the unfinished Kapoho State-4 well back to KS-3 to begin repair work. It is expected to take about six days.

The rig then will be moved back to KS-4 to complete drilling there.

Earlier this week, it was reported that U.S. Environmental Protection Agency told the state Department of Health that it will not allow injection of geothermal fluids into the ground until certain EPA concerns are addressed.

In a letter to state Deputy Health Director Bruce Anderson last week, EPA Wa-

ter Management Director Harry Seraydarian said Puna Geothermal Venture's permit for underground injection does not meet EPA standards.

One of the concerns raised in the letter is that geothermal fluids could leak into underground sources of drinking water.

Anderson said Tuesday that he had not yet received the letter, but that he welcomed input from the EPA.

Anderson said the Health Department would work with Puna Geothermal to address the concerns raised by the EPA. He said Puna Geothermal will have to demonstrate that the well won't leak geothermal fluids.

Noise constraints may lengthen PGV drilling

By ROBIN M. JONES
West Hawaii Today

HILO — Drilling operations on Puna Geothermal Venture's injection well KS-4 may take longer than first anticipated due to stringent noise-level constraints.

PGV is required by conditions of its drilling permit to stay below a certain noise level after 7 p.m. The operations are not allowed to exceed about 45 decibels at night, compared to the limit of about 55 during the day, especially because well KS-4 is very near homes.

PGV officials had originally planned to allow 45 to 60 days to drill the injection well, and PGV Vice President Steven Morris had said it would be closer to the

45-day prediction than the 60. But now he said it will probably take all of the 60 days, and that is if things progress relatively smoothly. Drilling began about Sept. 14.

Because the last few nights have been still and quiet, drilling has been stopped rather than curtailed, Morris said.

Due to the restrictions, the process is going "a little slower than we would like," Morris added. The "constraints are slowing us down at night."

Drilling had reached a depth of about 1,100 feet by early Monday, but there are about 5,400 feet left to be drilled to reach the projected well depth of about 6,500 feet.

Morris said, despite the noise restric-

tions and ensuing delay, drilling is going "pretty well." There have so far been no problems or occurrences that are out of the ordinary, he said.

Once the well is drilled, a casing will be installed before the well can be used to accept the brine and steam leftover after the resource flows through the Pohoiki power plant.

PGV will use a latex type of cement casing to prevent any leaks in KS-4 similar to the one found in KS-3, the well most recently drilled.

The leak in KS-3 was found during testing and caused the officials to stop work on that well while they figured out what course of action to take. PGV officials may repair the leak in KS-3 or abandon the well, depending on which is more economically feasible.

The leak is believed to have been a natural result of the resource's chemistry at a certain depth in the well, Morris said.

After well KS-4 is finished and a decision is made about KS-3, PGV has at least another two wells to drill, Morris said. Currently, PGV has two injection wells drilled, KS-1A and KS-3. There is also one production well, KS-8. P plans to drill at least one more production well, KS-9, and one backup production well, Morris said.

"If we get lucky, that will be it for now," Morris said. But the actual number of wells to be drilled depends on the quality of the wells, he added. If KS-9 is not as productive as the officials hope, another will have to be drilled. The same is true for injection wells, he added.

Good weather hampers

By Gordon Y.K. Pang
Tribune-Herald

PGV general manager Steve Morris said clear and windless evening conditions at the Pohoiki plant recently have forced project workers to shut down drilling of the KS-4 reinjection well early for fear of breaking the 47-decibel noise limit for evening hours. The limit during daylight is 55 decibels.

Morris said PGV prefers to

refer to clear, windless evenings as "unfavorable for PGV ... meteorological conditions that would enhance the sound."

As a result, Morris said, drilling of KS-4 is expected now to be nearer to 60 days rather than the 45 days estimated earlier.

Also slowing the process is "a tight spot" in the well "where the pipe isn't going up and down like we want it to."

PGV needs to bring the drill pipe up occasionally to change drill bits at the bottom of the

pipe.

"Where there's a tight spot, we have to be very careful so we don't break the pipe," Morris said.

"The upper zone is very fractured," he said. Now drilling at a depth of 1,100 feet, "there are a lot of rocks and garbage that, as you drill down, stuff tends to fall in on you."

Morris said PGV intends to drill KS-4 to about 6,500 feet in depth.

PGV drilling at Pohoiki

Meanwhile, Morris said PGV has chosen to make the improvements necessary to use KS-3 as a reinjection well. Earlier, there had been some question about whether KS-3 could join KS1-A as dual reinjection wells when production begins as scheduled in mid-October.

KS-3 apparently did not take in as much as plant officials had estimated, but PGV now feels it's worth the cost of using anyway.

As a result, KS-4 won't need to come on-line at the same time as the plant, Morris said.

PGV still needs approval from the Health Department before actual production can begin in earnest.

Health Department officials said they want assurances that hydrogen sulfide leaks such as those occurring during flow testing of production well KS-8 do not happen again. They also want improved notification time from PGV.

"We're continuing to do the things we need to do on the plant," Morris said, adding that he's "comfortable" PGV can gain necessary approvals for start-up by mid-October.

PGV has a contract to provide up to 25 megawatts of geothermal energy to the Hawaii Electric Light Co. KS-8 is to provide a good portion of those 25 megawatts. PGV is banking on a yet-to-be-drilled KS-9 to provide the rest.

Geothermal, or 'Geofuneral'

Let's wake up, Hawaii! The highly touted geothermal development is, in truth, a thinly veiled "Geo-Funeral" for the health of the people of Hawaii and the health of their land.

Must we wait for the increasing medical evidence of the deadly effects of hydrogen sulfide gas (i.e., respiratory illness, skin disorders and severe eye troubles) to become common knowledge?

In the light of the overwhelming evidence of global warming, can the last stronghold of universal beauty on this planet afford to sacrifice any more of its rain forests to greedy developers — energy or otherwise?

Will the development of more resorts somehow compensate the native Hawaiian people for the destruction and thievery of their native lands or the total disregard for their customs, their rights and their religions?

What are our "leaders" really doing to this land and its people?

John Joseph Hogan
Kamuela

John Mark
J.F.

PGV aiming to resume energy flow in October

□ Uncertainty over reinjection system could affect power

By Gordon Y.K. Pang
Tribune-Herald

Puna Geothermal Venture is now shooting for an early October start-up to produce up to 25 megawatts of power to Helco.

Company officials are completing a schedule for the long-delayed project, PGV vice president Steve Morris said from his Honolulu office yesterday.

PGV is currently making improvements to the Pohoiki facility, Morris said. Some are required by the state Health Department, which cited the company for permit violations during a flow test of its KS-8 production well last month.

Also, PGV will be submitting the results of a chemical analysis of emissions soon, he said.

Health officials have said they will not issue either an operating permit or reinjection well permit to PGV until they are satisfied with the improvements.

"Our estimate is we're looking at the first part of October to complete everything we need to do," Morris said. "We still have to work with the regulatory issues ... but there's no reason to believe we can't accomplish both within the same time frame."

Meanwhile, Morris said PGV's current ability to reinject spent fluids remains a mystery. Lack of reinjection capability could reduce the amount of energy produced.

"We ... won't know until we actually start producing," Morris said.

The uncertainty is one reason PGV will now drill KS-4, an injection well, rather than KS-9, a production well, as originally planned, he said.

During the recent flow test, the company used both KS-3 and KS-1A to reinject spent fluids. Initially, KS-3 had been projected to be the major reinjection hole but KS-1A took most of the brine, he said. KS-3 was abandoned as non-productive.

PGV officials are deciding whether to use KS-3 at all or whether to consider drilling another reinjector after KS-4 is completed. KS-4's potential as a reinjection well will also play a role, Morris said.

-Hawaii Tribune - Herald, Sunday, September 13, 1992

Candidates and geo

We Republicans strongly object to Steven Yamashiro's comments in regard to the so-called Emergency Zone for the PGV plant in Puna. In a hotly debated issue last Saturday, Steven Yamashiro, Democratic candidate for mayor, stated that a zone of only 1,500 feet was a zone sufficient to protect the residents of Puna from disaster.

This and other comments made by the Democratic political machine angered the public enough that the moderator of the Kapoho Community Association had to intervene and quiet the disturbance. The residents were voicing strong objections to Steven's comments and the entire geothermal issue.

As Mayor, I told the audience that my first act as mayor would be to shut PGV down. This for the record was met with loud applause. It was made glaringly apparent that Mr. Yamashiro had no concept of the technical aspects of what he stated to the public. Jack Davis also spoke up for the shutdown. The incumbent political party and its special interest groups has violated the public trust. The PGV geothermal plant should never have been allowed to be permitted in the first place. It was shoved down our throats by the U.S. Sen. Daniel Inouye and the state. How dare they tell women and children to leave their homes for the public good. Puna refuses to be manipulated by the incumbent political machine which has spoken in ignorance on this extremely volatile story. The climax to this story is coming, and it will rest with the Kingdom of Hawaii which will absolutely write the last episode to this folly of a government that is unresponsive to the men, women and children who have chosen to live in the most beautiful island continent in the world.

Jerry Kaleo Begin
Hilo

Matsuura's info on geo fumes disputed

Major supporter says sulphur dioxide is the 'real culprit'

By Dave Smith
Tribune-Herald

A state legislator and leading proponent of geothermal development apparently got his facts mixed up at a recent candidate's forum.

State Sen. Richard Matsuura

(D-Downtown Hilo, Waiakea) said that the most worrisome gas emitted from geothermal wells — the "real culprit" — is sulphur dioxide.

His remarks at the Big Island Press Club forum raised a few eyebrows since it is another form of sulphuric gas, hydrogen sulfide, that concerns area residents and is the target of strict regulations imposed by the state Department of Health.

Matsuura is considered one of

the Big Island's strongest supporters of geothermal development. When a judge earlier this year ruled that geothermal emission standards had not been properly established, Matsuura unsuccessfully attempted to establish the standards legislatively rather than through more time-consuming public hearings. Matsuura said the new law would permit geothermal activities to continue while the state Department of Health held public hear-

ings on the standards.

When first questioned at the forum about geothermal, Matsuura said he did not agree with putting geothermal into a residential area and had introduced a residents' relocation bill at the Legislature.

He then began discussing the gas sulphur dioxide, saying that more of it can be found emanating from Hilo's sewage treatment plant than the geothermal wells. He said "true environ-

mentalists" consider power plants using nuclear, coal or oil sources of greater concern than geothermal.

"Geothermal is the answer to global warming," Matsuura added.

Meanwhile, Matsuura's primary opponent, Linda D. Cruz, was calling relocation efforts "a lot of hogwash." She said the geothermal plant should be

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DISPUTE: Geo info challenged at forum

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moved, not the people living around it.

At that point the forum moderator asked Matsuura a question submitted from the audience as to why he was discussing sulphur dioxide when hydrogen sulfide was the gas of concern around geothermal development.

Matsuura said "SO₂ is the real culprit" as well as the gas "environmentalists are watching very closely."

"There is H₂S, you know," Matsuura said, adding that sewage treatment plants also emit more hydrogen sulfide than the geothermal facility.

"I don't think people realize that."

He said automobiles are the "biggest source" of sulphur

dioxide.

"I mean if you're talking about real emissions, and all that, the biggest emitter is your automobile."

Matsuura said his information was provided to him by someone he was unable to identify from the University of California at Davis.

According to Jim Morrow, head of environmental matters for the American Lung Association of Hawaii, Matsuura is misinformed.

Morrow said Matsuura "must not be paying attention" to newspapers and television accounts of concerns over hydrogen sulfide.

Morrow said Matsuura is par-

tially correct — all sources cited by Matsuura emit more SO₂ than a geothermal plant because the wells emit none of the gas. Morrow said there is no oxygen deep in the earth and the volcano's sulphur instead combines with hydrogen to form hydrogen sulphide inside the geothermal brine.

Some of the hydrogen sulfide will eventually break down into sulphur dioxide, Morrow said, but that takes time and by then it will probably have escaped from the Big Island entirely.

"The problem in geothermal is clearly H₂S," Morrow said.

Asked whether sulphur dioxide is considered a health threat, Morrow said it can be, but even

the massive amounts of it churned out at the summit of Kilauea Volcano rapidly oxidizes into other substances.

Morrow said there have been short-term studies of hydrogen sulfide emissions from sewage treatment plants, done out of concern over whether they might be affected by new geothermal emission rules. He said officials recorded "high levels" at the sewage plants but did insufficient sampling to establish an hourly average.

The rules for geothermal allow up to an hourly average of 25 parts per billion.

Morrow said he has not heard of concerns over sulphur dioxide emissions from automobiles.

HIGA favors geo and want energy policy

By **JUNE R. CURTISS**
Chairperson
Hawaii Island
Geothermal Alliance

The Hawaii Island Geothermal Alliance is in favor of geothermal energy development for the Big Island. Generation of electricity from geothermal steam can be done safely, and it can be a tremendous boost for the failing economy of the Big Island.

Geothermal power is not the only solution to our energy problems. We must continue to look for other alternate energy — wind, solar, biomass, ocean thermal, etc. Most importantly, we must practice conservation and energy efficiency.

The Hawaii Island Geothermal Alliance is more concerned about finding solutions than we are about placing blame for our energy problems. We certainly are not going to be participants in HELCO-bashing.

We believe HELCO and the people of the Big Island are the victims of a bureaucratic system which — with the noblest of motivations of protecting the health and welfare of citizens — has become a time-consuming, wasteful and costly quagmire of regulation.

The situation is further aggravated by government's inability to afford the bureaucratic morass it has created. County and state agencies charged with regulating and monitoring geothermal development complain of lack of personnel, money, equipment, expertise.

Rules, regulations, laws and policies direct power utility companies in Hawaii to do business with independent power producers. When they comply, they are castigated by the state's consumer advocate, and even the Public Utilities Commission.

I suspect the two state legislative committees which recently held hearings on the Big Island were motivated to organize these meetings because their members felt compelled to learn — to expose — something about how HELCO messed up in supplying reliable electric power to Big Island businesses and residential users.

By all means, they should investigate HELCO's activities, but they should extend their inquiry to HELCO's involvement; look into the painfully slow activities by the state Department of Health, the state Department of Land and Natural resources, the county Planning Department, Public Works Department, office of Civil Defense and on and on.

They might find out why the governor made geothermal energy development one of his major initiatives six years ago; why the state Legislature made geothermal power part of the state general plan.

They would learn that the County of Hawaii — the administration and the council — also promoted geothermal energy development as part of its energy policy.

HIGA does not profess to have technological skills, but our studies indicate that geothermal power can be produced on the Big Island in a manner that does not pose a threat to health and safety.

Our studies and experience are teaching us that geothermal power will never become available in significant commercial quantities until and unless state and county governments provide private industry with a decent regulatory and business climate.

Our alliance urges the PUC, the state's consumer advocate, the state Legislature and the appropriate state and county agencies to stop searching for scapegoats. It appears to us there are multiple places to place blame. Likewise, there are multiple places to find solutions.

What we would hope to see result is a concerted effort on the part of the state, county, private operators and responsible citizens to develop a sensible energy policy and a really good energy program and legislative package to be considered by the 1993 session of the Hawaii state Legislature.

Viewpoint articles represent the views of individuals in our community and do not necessarily reflect the opinion of the newspaper.

Monday, September 14, 1992 — THE MAUI NEWS

Puna firm starts new well, halts work on another

POHOIKI, Hawaii (AP) — Puna Geothermal Venture has begun drilling a new injection well and has temporarily halted work on another well found to have a small leak, said project general manager Steve Morris.

Work on the Kapoho State-4 well that began Friday likely will take 45 to 60 days to complete, Morris said.

The temporary suspension of drilling at the KS-3 well became necessary after a small leak was found in its casing during routine pressure testing, Morris said. The work halt was not expected to affect the plant's targeted start-up date of mid-October, he said.

The conditions of drilling activities related to the KS-8 production well and the power plant operation still must be resolved.

PGV begins drilling KS-4 well

Puna Geothermal Venture began drilling its KS-4 reinjection well on Friday, both PGV and state Department of Business and Economic Development officials confirmed.

DBED Deputy Director Tak Yoshihara said PGV has received the necessary approvals to begin drilling at KS-4.

PGV project manager Steve Morris said earlier last week that engineers were uncertain how much reinjection capability the plant had with two wells now designated for the task and made the decision to drill KS-4 before proceeding with a second production well, KS-9.

Drilling is expected to take 45 to 60 days.

KS-3, one of the plant's existing reinjection wells, could not take in as much spent fluid as PGV had hoped, Morris said. At this point, no decision has been made about whether KS-3 should be used at all.

Also on Friday, PGV announced that KS-3 has run into other problems. Workers were casing the well but suspended the operation after a small leak was discovered in the casing during routine pressure testing, PGV said.

Workers discovered the leak when the casing was tested at pressures greatly exceeding normal injection pressures, according to PGV's release.

Suspension of work on KS-3 is not expected to affect the timing of power plant start-up which is expected to commence in mid-October, PGV said.

PGV's contract calls for up to 25 megawatts of electricity to be placed on Helco's power grid.

Monday, September 14, 1992 PACIFIC BUSINESS NEWS

Ruling delayed for geothermal protesters

Fifteen geothermal protesters accused of trespassing on Puna Geothermal Venture property will have to wait until Oct. 20 for a ruling in their non-jury trial. District Judge Riki May Amano will review closing arguments from the four-day trial and issue her verdict next month after returning from vacation. Eight men and seven women were charged with trespassing on Puna Geothermal property on three different occasions this year.

PGV may begin supplying power in October

By JASON ARMSTRONG
West Hawaii Today

POHOIKI — Puna Geothermal Venture officials hope to begin supplying electricity to Hawaii Electric Light Co. in October, provided three state regulatory agencies deem the \$120-million plant to be safe.

Steven Morris, project vice president, said five weeks of engineering and technical work, including replacing previously

leaking valves with "upgraded" units, is needed before constant power production can be achieved.

The project must also pass inspection by state departments of Health, Land and Natural Resources, and Business, Economic Development and Tourism before going on line.

PGV faces fines of more than \$100,000 for three violations that allegedly occurred

during the flow testing of well KS-8, a 10-day process that was halted Aug. 18 after just seven days.

Excessive amounts of hydrogen sulfide were released, county and state agencies were not promptly notified when the "rotten-egg" odors were emitted and nearby residents were showered with a caustic soda mist. Bruce Anderson, state deputy health director, said the infractions all

occurred during testing, although meetings between both sides in Honolulu last week did not result in a settlement.

Results have also showed a peak of more than 8.5 megawatts of power was produced, along with 216 total megawatt hours, during the testing operations, according to Morris.

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...PGV shoots for October

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PGV was initially scheduled to supply HELCO with 25 megawatts of electricity by the end of 1990, but problems and forced shutdowns, including a 13-month stop-work order, have delayed the plant's opening.

A Sept. 5 date for power production was discussed during the first days of flow testing, but

was quickly postponed when the state agencies stepped in and halted operations.

Meanwhile, work has continued at the plant. Workers last week installed a new casing for well KS-3, which will serve as a re-injection well for unwanted brine from KS-8.

Also, drilling of a new well, KS-4, is scheduled to begin soon.

Green candidate alone on geo

□ Issues addressed in survey prepared by Big Island LWV

By Frankie Stapleton
Tribune-Herald

Green Party mayoral candidate Jack Davis is willing to propose or support legislation discontinuing all geothermal development in Hawaii, legislation his opponents in the race for mayor of Hawaii County would oppose.

On another topic, one of three Democratic Party candidates for mayor, Stephen Yamashiro, disagrees with restoring initiative on land use to the county, as does non-partisan Patricia Mahoney.

On the other hand, fellow Democrats Russell Kokubun and incumbent Lorraine Inouye "strongly agree" with restoring initiative to the county, a position also taken by the Republican Party's Wendell J. Kaehuana and Davis.

These views, and many others, are reflected in an issues questionnaire compiled by the League of Women Voters and the Coalition of Concerned Citizens Campaign 1992.

Noelie Rodriguez, League of Women Voters' coordinator of the issues questionnaire, said the survey was developed to help voters make analytical distinctions between the candidates.

"We wanted to bring a little

note of rationality to the process," she said, adding "we're hoping people will look to the issues."

The survey, which will be available for public review by the end of this week at the University of Hawaii-Hilo library as well as the public libraries in Hilo, Keaau, Pahala, Honokaa, Waimea and Kapaau, put 19 or 20 questions to Big Island candidates for mayor of Hawaii County, the nine county council seats, six state House and two state Senate posts.

The printed survey gives a quick comparison of views on such controversial issues as spaceport promotion, controlled growth, resort development in West Hawaii, higher taxes on land-sale profits and limitations to geothermal development as well as such "apple-pie" issues highway beautification, waste recycling, promotion of bed-and-breakfast inns, alternatives to roadside herbicide use, comparable-worth wages, increased funding for education and social services, and tree preservation.

The questionnaire allowed responses in boxes marked "strongly agree," "agree," "undecided," "disagree" and "strongly disagree." The final box indicated either a narrative or no response.

One question asked the respondents if they would propose or support legislation calling for a management audit of Hawaii



Electric Light Company. Of the 38 candidates' positions reflected in the survey, only incumbent Sen. Richard Matsuura and House candidate Dennis Yamamoto disagreed with such an audit of Helco while Yamamoto's opponent Richard Onishi, council hopefuls Keola Childs and Kelly Greenwell were undecided.

Rep. Jerry Chang, who faces a tough primary battle against fellow Democrats Yamamoto and Onishi as he attempts to switch House seats from Puna to Hilo, agrees with the need for an audit of the electric utility company.

All three candidates for the House District 2 seat strongly disagree with discontinuing all geothermal development in Hawaii although Chang and Yamamoto oppose exporting geothermal energy off the island, an issue on which Onishi reported he was undecided.

Yamamoto also favors promoting spaceport development in Ka'u, a stance only Matsuura, Mahoney, Greenwell and Walter Decker, a GOP candidate for House District 5 agree with; Chang and Onishi were undecided on the spaceport question, as were three other candidates, leaving 28 in opposition to promotion of the spaceport.

There were a number of non-respondents to the survey, which was mailed to candidates within a week of the June filing deadline and had a return date of Aug. 16, giving them more than six weeks to reply.

Those not responding to the survey included all council candidates for the first, third and fourth districts (with the exception of Fred Soriano, a Democratic Party candidate for the 3rd District on the council whose reply was returned after the printing of the survey's results); another 16 council candidates; incumbent representatives Harvey Tajiri (Dem.—3rd District) who faces no opposition and Mike O'Kieffe (Rep.—6th District); his opponent, Democrat Edwin Akana; six House and three of seven Senate candidates.

Seven of the 10 mayoral hopefuls responded; Libertarian Aaron Anderson and non-partisans Ronald "Cosmo" Gresham and Andrew Nesting did not.

ILWU supporting geo

The ILWU is concerned about the welfare and safety of its members and all citizens of the Big Island because of frequent rolling blackouts. The ILWU is concerned about the negative impact these blackouts have on the overall economy of the Big Island and the jobs of our members.

There are those who think the blame for the power problem is all Helco's. We don't agree. There is plenty of blame to be shared, including the geothermal operators.

Obviously, there have been errors made. How-

ever, we remain convinced and strongly support geothermal as our best immediate solution to improving the Big Island's need for reliable power economically and environmentally.

If we halt geothermal development, we stand to lose the \$130 million already spent. We could opt for Helco to install its own generators but that will take longer in getting the necessary equipment and permits. And this would still not solve our on-going blackouts.

This added expense will be passed on to our members and residents of the Big Island. This is just too costly, especially in light of C. Brewer's announcement of the closure of HCPC and Hamakua Sugar Company's filing of Chapter 11. For every one sugar worker laid off, it affects approximately three employees currently employed here in our community.

ILWU supports conservation, solar, wind and hydro energies, biomass, and in developing other high-tech alternatives.

We must work together to create a comprehensive energy legislative package that is safe and healthy to the economy, environment, our members, and residents of the Big Island. We also urge the state to re-enact relocation procedures for impacted residents of Puna.

Wallace A. Ishibashi Jr.

Business Agent

ILWU Local 142, Hawaii Division

Hilo

Viewpoint

Geothermal development is not going so smoothly yet

By **BARRY NORTHRUP**
Captain Cook

Geothermal energy. It seems like such a good idea. A non-fossil fuel source of energy right here in our own backyard. But like the backyard barbecue, there's a whole lot of stink going on down there.

First there was the dubious back room swap of the Native Hawaiian's land (that geothermal now sits on) for some other land that's not as good. Then came the shove-it-down-their-throats methods of citizen involvement by the governor and big business. Who cares what the residents of Puna want? It's power for Oahu (eventually) that counts. Oh, and let's not forget the deep ocean mining for mineral nodules connection. Such an industry would need power and lots of it. And remember when Harry Kim got hog-tied?

How is it that the island's head Civil Defense man got left out of the decision-making process on geothermal's safety? That one nearly got away from us. Next came the big blowout. Nobody knew who would pay for the relocation of evacuated residents. It took a while to figure that one out. And then the tests came. Each one seemed to have some problem. Lots of noisy, smelly gas releases.

I'm sure I've left out a few other

juicy geothermal memories, but now comes the latest flow test snafu. Leaking valves, and more dangerously high levels of gas. And I'm reading for the first time about the use of caustic soda, which can cause all kinds of health problems via elevated levels in the atmosphere and water catchment tanks. How many other surprises are there left?

As good as it sounds, geothermal is not the benign benefactor of power that it's billed to be. It's got problems and lots of them. And given the sleazy track record to date, it's not likely to improve. So what do we do about providing more power? God knows HELCO hasn't been doing so good. What's a better alternative?

The answer, in short, is solar power and conservation. Conservation efforts on this island are pretty poor. HELCO is just now starting to pay lip service to demand-side management. This means that instead of increasing supply by building more power plants, you decrease demand for electricity by retrofit, design, and power management. In most cases, by paying for conservation efforts and the like, utility companies can save money in the long run by not having to spend it on new power sources.

To date, at least \$125 million has been spent on geothermal development. It's a lot more if you take into account all the additional costs to the various levels of government for administrative, regulatory, and legal efforts on geothermal's behalf. And this also does not include the diminished value of surrounding property or the increased medical costs due to noxious gas emissions. Each of these could easily amount to many millions of dollars, especially if future deaths result in litigation and/or settlements.

But to be conservative, consider what \$125 million could do in an alternate scenario using solar energy technology available today. If that sum of money were put into a revolving loan fund, it could immediately finance approximately 12,195 solar electric power systems where the buyer applies the full amount of the state's renewable energy tax credit against the loan as a down payment. Each one of these systems could be financed at seven percent for 10 years at a monthly cost of \$119 to the homeowner. This payment would be offset by having no monthly power bills to pay.

As it is now, Puna Geothermal Venture must provide at least 30 years of power with no further major setbacks in

order to pay back the amount it has spent so far.

So what's the intelligent use of \$125 million? Hoping and praying for 30 years of safe, continual geothermal power production before turning a profit? Or providing over 12,000 homes with clean, safe, renewable solar energy and getting seven percent (\$875,000) on your money, that could be realoaned for additional solar powered homes.

I am not suggesting that solar electric power is a panacea. There is a place for centralized grid power of the sort HELCO manufactures. But there are far better ways to plan for our future than more destruction of forests followed by hazardous levels of pollution.

My plan is by no means complete. But it illustrates what sorts of creative solutions can be applied to our island's power needs. Until we get the government out of bed with the centralized power interests, and demand a healthier and more secure alternative to geothermal, hold your nose folks. Because there's a big stink brewing in Puna.

Viewpoint articles represent the views of individuals in our community and do not necessarily reflect the opinion of the newspaper.

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WEST HAWAII TODAY

SEP. 2 1992

Judge will delay decision in geothermal trial

By JASON ARMSTRONG
West Hawaii Today

KEAAU — A ruling in the non-jury trial of 15 geothermal protestors charged with trespassing on Puna Geothermal Venture property will not be issued by District Judge Riki May Amano until Oct. 20.

Amano will review closing arguments, submitted in written form by both sides, and issue her verdict next month after returning

from vacation, according to a clerk assigned to the Third District Court.

Trial proceedings for the eight men and seven women charged with trespassing on PGV property on three separate occasions earlier this year concluded Monday after four days of testimony.

Mayor Lorraine Inouye had resisted for nearly a week a subpoena to testify based on advice from her attorney, Corpo-

ration Counsel Michael Matsu-kawa. Inouye's reluctance to testify resulted in the threat of a bench warrant by Amano.

Inouye, however, made the 3 p.m. deadline Monday and testified for 90 minutes, thus avoiding having to post a \$25 bond and face possible contempt reprimands from Amano.

Joseph Kamelamela, deputy Corporation Counsel, had appealed to the state Supreme Court to

have Inouye excused from testifying, but has now withdrawn the petition following Inouye's testimony.

"We're filing the (withdrawal) motion today," Kamelamela said Tuesday, adding the issue has now become mute.

Harry Kim, county Civil Defense administrator, volunteered to testify last week, although attorneys for the county had also listed him in their peti-

tion to quash the subpoenas.

Several state officials and elected leaders were also subpoenaed by the defendants, although only Bruce Anderson, deputy Health director, was excused from the proceedings. Anderson used a special privilege as an agency head and the lack of provided travel expenses as sufficient justification not to testify.

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Those accused of having illegally trespassed at PGV's Pohoiki plant in February and March of this year used the "choice of evils" defense as justification for

their actions, according to Jim Albertini, one of the defendants.

Trespassing was not illegal because it was done to avoid imminent danger to the public, avoid harm and was only carried out after all other alternatives had been exhausted, Albertini said. The group's actions were aimed at delaying geothermal drilling operations, he added.

Meanwhile, diagnostic work at PGV's \$120-million plant continued Tuesday, according to Steven Morris, vice president and general manager.

Work on well KS-3, which began Monday, was conducted in preparation for inserting a liner inside the injection well, Morris said.

PGV told to follow order

□ DBED now is calling the shots

By Gordon Y.K. Pang
Tribune Herald

State agencies yesterday announced that Puna Geothermal Venture will not be allowed to start operations until after it meets new conditions issued by regulators.

There were no surprises among the four conditions set down by the Health Department and the Department of Land and

Natural Resources, which are, in effect, modifications made to existing permits issued by the two departments. PGV is basically being asked to address concerns already raised last week by Deputy Health Director Bruce Anderson following several incidents during the KS-8 well's flow test last week.

The conditions are that:

- Three backpressure valves, which allowed seepages of excess hydrogen sulfide into neighborhoods around the plant, be replaced and "demonstrated to be free of leaks."

- PGV's chemical injection system be reviewed to ensure no caustic soda is released into the atmosphere.

- KS-8 be "subjected to expert review and inspection" by the DLNR "to ensure its safety."

- A "more effective and responsive communication system" be established so that "more timely and accurate reports" are submitted to regulators.

The announcement came from the Department of Business, Economic Development and Tourism, instead of the Department of Health, or the Department of Land and Natural Resources.

Deputy DBED Director Tak Yoshihara defended his department's role in issuing the statement. His boss, DBED Director Mufi Hanneman, was off-island this morning.

"Mufi Hanneman is designated as the energy resources coordinator for the entire state government," Yoshihara said. "In that role, he oversees and coordinates state energy activities and really is the policymaker and advocate for energy programs."

Yoshihara said he sees no conflict in the notion of coordinating the efforts of the Health Department and the Department of Land and Natural Resources, the two "regulators" who have issued permits to PGV, and DBED, the "advocate."

"We're speaking as a single voice for the state," he said, and he described Hanneman as coordinating "spokesman" for Gov. John Waihee.

Yoshihara said he was puzzled by the focus of the

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NEW CONDITIONS: PGV told to follow order

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morning's Honolulu Advertiser story in which the reporter chose to emphasize the new conditions imposed by the Health Department and DLNR and, in his view, ignored the fact that "the test phase was overall a success, especially from a technical standpoint."

"It had zero on assessment of the test," Yoshihara said.

DBED, in its release, attempted to present "an overview of both sides, both from the regulating and energy coordinating

view," he said. "It was an attempt to balance the news particularly with the overall assessment. There's been so little written about the overall test phase."

In fact, he said, "we debated internally whether that should be the lead (in the press release) or the regulatory portion should be the lead."

The release quotes Hanneman as saying: "Our overall assessment of the test phase ... indicates that the technical results were very successful."

As noted in news accounts

last week, Hanneman said the well's potential for producing electricity is greater than originally anticipated, and that it could provide up to 7 of the 25 megawatts PGV is to place on Helco's power grids.

Hanneman's tone gets stricter further down in the release.

"We have made clear to PGV that a continued pattern of emissions and lack of timely response and information is unacceptable," he said. While there can't be guarantees the problems won't reoccur, "we can promise

that we will require everything be done to try to avoid them, and to report on them immediately should they occur."

PGV had originally hoped to begin operations two weeks after the flow test, which ended last Thursday. Following the flow test, that timetable is now being revised, PGV general manager Steve Morris said this morning. The new conditions won't affect that new schedule "because the conditions as laid out are things that need to be done whether the state said so or not."

Mayor denies 'pressure' to lift ban

Judge will rule Oct. 20 in the case of geothermal protesters

By Rod Thompson
Big Island correspondent

KEAAU, Hawaii — Mayor Lorraine Inouye has denied in court that she was responding to a deadline from outside forces when she lifted a ban on geothermal work on Feb. 28.

But Sen. Andrew Levin testified before Inouye yesterday that financial pressure forced state and county officials to end the ban.

"It's my understanding the decision to lift the ban was done because the deadline was running by the bank, which was going to revoke the loan made to PGV (Puna Geothermal Venture)," he said.

Inouye and Levin were testifying in the trial of 15 geothermal protesters for trespassing at Puna Geothermal Venture property in February and March.

Inouye, who had been refusing to testify, narrowly avoided a contempt-of-court citation when District Judge Riki May Amano said in the morning she planned to issue a bench warrant for the mayor. By the afternoon, both Amano and Inouye changed their minds, with Inouye appearing voluntarily.

Inouye ducked the general question of whether outside pressure of any other kind influenced her when Ama-

no ruled she didn't have to answer because the question was irrelevant to the defense of the protesters.

The protesters say they committed the lesser of evils when they trespassed. To win, they have to prove imminent harm would have happened if they didn't act, that there were no reasonable alternatives and that any damage done by their trespassing avoided some greater damage.

Inouye agreed there were health and safety risks to residents when the company suffered a dramatic well blowout starting June 12, 1991. But 8½ months later, when the ban was lifted, all concerns had been addressed, she said.

The protesters argued that legislative and administrative avenues to solving their problems had been cut off.

Defendant Jim Albertini noted that Inouye had overridden civil defense chief Harry Kim, who felt that the company's emergency response plan was not adequate.

But Amano finally cut him short: "Mayor Inouye has already said there wasn't anything anyone could do to make her change her mind."

Amano signaled she agreed with the defendants on one of the points. "The court believes there were no other alternatives (to trespassing)," she said.

Levin made the point that legislative action offered no hope for the geothermal opponents. "I consistently told them that it would not be possible to stop

geothermal," he said. Judge Amano said she will rule in the case on Oct. 20.



Lorraine Inouye



Andrew Levin

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New target date for Puna well

By Hugh Clark

Advertiser Big Island Bureau

HILO, Hawaii — The \$120 million Puna Geothermal Venture project could be sending power to Hawaii Electric Light Co. by next month.

That's the latest target date mentioned by Steve Morris, project vice president, although he added that the timing could be changed by pending regulatory demands by three state agencies.

Morris, who supervised last month's flow test of the Kapoho State-8 well, said the engineering and technical work at the well and the power plant will take about five more weeks to complete.

But the developer faces a state Health Department citation for three alleged violations of its permit, and the details of a settlement are unclear.

According to an announce-

ment issued two weeks ago by state Deputy Health Director Bruce Anderson, Puna Geothermal faces potential fines in excess of \$100,000 for exceeding its permit levels of hydrogen sulfide on Aug. 17-18; for failing to notify state and county regulators of the problems in a timely fashion; and for a caustic soda mist that fell on geothermal protesters Aug. 15.

Morris said he has been meeting with officials of the state departments of Health, Land and Natural Resources and Business, Economic Development and Tourism this week in Honolulu to try to resolve the issues raised in an Aug. 27 joint statement.

Morris said he is disappointed that the success of the aborted flow test — scheduled for 10 days but called off after seven — was overshadowed by the alleged permit violations. The test, cut short because of leaking hydrogen sulfide, indicated the

presence of more potential energy than expected at the KS-8 well.

The hydrogen sulfide release was blamed on three back pressure valves that will soon be replaced by stronger units.

Meanwhile, new casing is being inserted into another well, KS-3, which is to serve as a re-injection well for the unwanted brine or water from KS-8, which is to be used as the first producing well.

And drilling of KS-4, another proposed well, is due to start soon, despite demands by surrounding community residents for a permanent halt to all drilling.

Geothermal energy involves the use of hot steam and fluids from deep underground to power electricity-producing generators. Puna Geothermal Venture is under contract to provide 25 megawatts of power to the hard-pressed Hawaii Electric Light Co.

Puna Geothermal linked to lawsuit

Sister company seeks payment from firm once known as Ormat

By Hugh Clark

Advertiser Big Island Bureau

HILLO, Hawaii — Companies that formed the Puna Geothermal Venture are involved in a federal court suit in Delaware over an unpaid note owed by a subsidiary.

Hawaii officials said the suit is not directly related to Puna Geothermal, described as a sister company of CE Puna III.

CE Puna III is a subsidiary of Constellation Energy Inc. of Maryland and OESI Power Corp.

Constellation, through CE Puna III, has filed a suit against OESI Power Corp., previously known as Ormat in Hawaii, for \$3.978 million in principal plus interest and collection costs.

Steve Morris, vice president and general manager of Puna

Geothermal Venture, confirmed that the lawsuit had been filed but would not comment on the specifics of the suit.

In a statement issued by OESI Power Corp., chief financial officer James Verhey said the note in dispute is secured by OESI's equity interest in the Puna project. OESI has moved its corporate headquarters from Reno, Nev., to Portland, Ore.

"OESI does not dispute that it owes CE Puna the principal and interest on the note; but (it) was in the midst of negotiations with CE Puna to restructure its payment obligations when the lawsuit was filed," Verhey said.

OESI said it intends to continue negotiations for a restructuring of the note payments and for a dismissal of the lawsuit.

THE MAUI NEWS — Friday, August 28, 1992 —

Puna Geothermal issued new operating rules

HONOLULU (AP) — State and county officials have notified Puna Geothermal Venture that it must meet new conditions before the company will be allowed to resume work on producing geothermal power, a state official said Thursday.

While results of the company's recent seven-day flow test were encouraging, state officials aren't satisfied it is safe for the surrounding area.

"Our overall assessment of the test phase recently concluded indicates that the technical results were very successful," said Mufi Hannemann, director of the state's Department of Business and Economic Development and the state's energy resources coordinator.

The potential of the well to produce electricity was shown to be greater than anticipated, he said.

"On the other hand, we are still concerned that mechanical problems and human error resulted in instances of community residents being exposed to caustic soda and hydrogen sulfide gas emissions," he said.

In addition, state officials do not believe that community residents were kept informed of what was happening in a timely and responsive way, Hannemann said.

Everything possible is being done to eliminate further ill effects, whether it be from noise, air pollution or other causes as a result of the geothermal activity, he said.

The company is being required to

replace three backpressure valves which allowed seepage of hydrogen sulfide and to review its chemical injection system and procedures to ensure that no caustic soda can be released to the atmosphere.

Hannemann said state officials intend to work more closely with county agencies to find ways to improve communications with the nearby residents and police and other emergency agencies.

Puna Geothermal Venture Vice President Steven Morris said the company shares the concerns raised by the state.

"We concur that before we begin operation of the power plant, we need to address these issues to the

satisfaction of the appropriate regulatory agencies," he said.

State Department of Health Deputy Director Bruce Anderson said analysis of steam and brine from last week's flow test showed the hydrogen sulfide content to be within predicted ranges.

Results of other tests on the amount of radon, mercury, lead and other natural elements in the geothermal fluid are expected in another five to six weeks, Hannemann said.

Based on the flow test information, the Department of Health is going to re-evaluate the Emergency Response Plan to make sure it is adequate to protect the community, he said.

To Bill Cook

A letter to Bill Cook (HIGA): When you call the Petriccis, Albertinis, Martinovichs liars, please include me on that list. I consider it a compliment to be called a liar by you. You would never bring your wife and children to live near the geo plant and face the disruptions and health risk that are common here. PGM General Manager Steve Morris left his family in Honolulu because he would never use them as guinea pigs.

Someone always plays a Bill Cook character when big money and an uncaring government try to pollute a community. PGM has scared the living hell out of Puna. They have no concept of communication except propaganda. Their finances are questionable and nobody will take responsibility for this giant mistake. And the war hasn't even started yet.

Sean Stehura
Keaau

Viewpoint

Geothermal development is not going so smoothly yet

By **BARRY NORTHRUP**
Captain Cook

Geothermal energy. It seems like such a good idea. A non-fossil fuel source of energy right here in our own backyard. Like the backyard barbecue, there's a whole lot of stink going on down there.

First there was the dubious back room swap of the Native Hawaiian's land (that geothermal now sits on) for some other land that's not as good. Then came the shove-it-down-their-throats methods of citizen involvement by the governor and big business. Who cares what the residents of Puna want? It's power for Oahu (eventually) that counts. Oh, and let's not forget the deep ocean mining for mineral nodules connection. Such an industry would need power and lots of it. And remember when Harry Kim got hog-tied?

How is it that the island's head Civil Defense man got left out of the decision-making process on geothermal's safety? That one nearly got away from us. Next came the big blowout. Nobody knew who would pay for the relocation of evacuated residents. It took a while to figure that one out. And then the tests came. Each one seemed to have some problem. Lots of noisy, smelly gas releases.

I'm sure I've left out a few other

juicy geothermal memories, but now comes the latest flow test snafu. Leaking valves, and more dangerously high levels of gas. And I'm reading for the first time about the use of caustic soda, which can cause all kinds of health problems via elevated levels in the atmosphere and water catchment tanks. How many other surprises are there left?

As good as it sounds, geothermal is not the benign benefactor of power that it's billed to be. It's got problems and lots of them. And given the sleazy track record to date, it's not likely to improve. So what do we do about providing more power? God knows HELCO hasn't been doing so good. What's a better alternative?

The answer, in short, is solar power and conservation. Conservation efforts on this island are pretty poor. HELCO is just now starting to pay lip service to demand-side management. This means that instead of increasing supply by building more power plants, you decrease demand for electricity by retrofit, design, and power management. In most cases, by paying for conservation efforts and the like, utility companies can save money in the long run by not having to spend it on new power sources.

To date, at least \$125 million has been spent on geothermal development. It's a lot more if you take into account all the additional costs to the various levels of government for administrative, regulatory, and legal efforts on geothermal's behalf. And this also does not include the diminished value of surrounding property or the increased medical costs due to noxious gas emissions. Each of these could easily amount to many millions of dollars, especially if future deaths result in litigation and/or settlements.

But to be conservative, consider what \$125 million could do in an alternate scenario using solar energy technology available today. If that sum of money were put into a revolving loan fund, it could immediately finance approximately 12,195 solar electric power systems where the buyer applies the full amount of the state's renewable energy tax credit against the loan as a down payment. Each one of these systems could be financed at seven percent for 10 years at a monthly cost of \$119 to the homeowner. This payment would be offset by having no monthly power bills to pay.

As it is now, Puna Geothermal Venture must provide at least 30 years of power with no further major setbacks in

order to pay back the amount it has spent so far.

So what's the intelligent use of \$125 million? Hoping and praying for 30 years of safe, continual geothermal power production before turning a profit? Or providing over 12,000 homes with clean, safe, renewable solar energy and getting seven percent (\$875,000) on your money, that could be reloaned for additional solar powered homes.

I am not suggesting that solar electric power is a panacea. There is a place for centralized grid power of the sort HELCO manufactures. But there are far better ways to plan for our future than more destruction of forests followed by hazardous levels of pollution.

My plan is by no means complete. But it illustrates what sorts of creative solutions can be applied to our island's power needs. Until we get the government out of bed with the centralized power interests, and demand a healthier and more secure alternative to geothermal, hold your nose folks. Because there's a big stink brewing in Puna.

Viewpoint articles represent the views of individuals in our community and do not necessarily reflect the opinion of the newspaper.

Geothermal

An aborted test, new rules

Geothermal development on the Big Island looks like a perplexing mix — some news is encouraging, some quite worrisome.

A 10-day flow test of the well at Pohoiki was cut short last week, but the well seems to show the promised potential to meet some of the power-starved Big Island's needs.

Puna Geothermal Venture's KS-8 well may be twice as powerful as expected. That could mean fewer wells are needed to meet a 25-megawatt commitment to Hawaii Electric Light Company.

But the test also revealed more mechanical problems, so state agencies imposed new conditions before the \$120-million plant may begin commercial production. The projected start-up date of September 5 will likely not be met, stretching the possible time for more black-outs.

There's no question that the state is obligated to be extremely strict with

geothermal. A lack of supervision was one cause of the blow-out in June of last year.

Some of the power plant's problems are related to being closed for months following the blowout; others, to steam with higher heat and more pressure than expected.

The state Department of Health says it will re-evaluate the emergency response plan that was approved by Big Island Mayor Lorraine Inouye over the objections of Harry Kim, the civil defense administrator. That's a welcome assurance.

Despite its many setbacks, geothermal still holds out hope as a viable alternative for the Big Island, which badly needs electricity but not more dependence on fossil fuels.

But the public deserves assurance from the company and the government that the operation is top-caliber and health and safety standards are met with no further excuses.

pliance of the Department of Health with the needs of Puna Geothermal Venture to continue to experiment with their hopeless project while we the people are reduced to watching our children suffer, our animals and plants die and our work stagnate because we have to deal with this vile intrusion into our lives.

Puna Geothermal Venture vice president and general manager Steven Morris had the unmitigated gall to arbitrarily declare this catastrophic disaster, this unwarranted penetration into the lives, and health of the citizens, a success and states that the plant and wells are ready for operation. This is a lie. The test was a failure. The plant and wells are ready for operation. This is a lie. The test was a failure. The plant and wells are not now, nor will they ever be, capable of operation without vastly unacceptable intrusion into the lives of the residents. The authorities must take up their duty and close this development. Totally. Permanently. Now. Furthermore, the concept of the industrialization of East Hawaii must be completely abandoned. Geothermal development, space ports, ocean strip mining operations and manganese and titanium smelters — all these can never be because they are absolutely malignant to the environment.

Adrian Barber
Pahoa

Geothermal & DOH

The Department of Health is masquerading. Its proper name is the Department of Permitting Large Developers to Rape and Pilage and Poison. Puna Geothermal Venture was allowed to voluntarily shut well KS-8 after violations of its permit during the test flow venting and after days of poisoning and the total disruption to the lives of scores of residents. Our lives have been turned upside down and inside out by the evil com-

Buffer zone for geo, Ruben says

Attorneys told mayor not to testify in trial

By Crystal Kua
Tribune-Herald

KEAAU — A state Health Department official testified yesterday that he believes there should be more space between Puna Geothermal Venture's operations and residential communities in Puna.

"The level of stress and anxiety created by this geothermal development has pushed over nuisance into health effects," Dr. Sam Ruben said of hydrogen sulfide emissions coming from the plant.

"Medically, there should be a more adequate buffer zone," Ruben said.

Ruben, the chief DOH official on the Big Island, said that after the June 12, 1991 blowout, he saw many individuals who were genuinely sick with an array of ailments but he could not say if the illnesses were directly linked to geothermal or may be partly psychosomatic.

Fifteen geothermal opponents are on trial for trespassing onto PGM's property in February and March.

Meanwhile, it is not known if Mayor Lorraine Inouye will honor a subpoena to testify as a defense witness in the trial.

Defense attorney Michael Zola, who issued the subpoena on behalf of his client Penny Shaver, said that the mayor apparently "slipped out the back door" and he is not sure if he will pursue trying to get her to the witness stand.

"We haven't decided yet. It depends on whether she decides to appear or appeal and so far (she) has done neither," Zola said after yesterday's court session.

The mayor, however, was adamant about where she stands on the matter.

"My attorneys told me not to (testify)," the mayor told a Tribune-Herald reporter yesterday afternoon. "And I listen to my attorneys, that's it."

County attorneys were fighting to quash subpoenas served on Inouye and Civil Defense Administrator Harry Kim but District Judge Riki May Amano ruled earlier this week that both were relevant witnesses to the defense. Kim testified earlier this week.

Corporation Counsel Michael Matsukawa told the judge that the county was going to appeal the ruling to a Circuit Court judge but he also offered to substitute Inouye's testimony with documents or testimony of other county officials.

Zola said yesterday afternoon that he hasn't seen any documents yet.

Zola said that he could ask the judge to issue a bench war-

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GEO: Health official says buffer needed

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The trial is scheduled to wrap up on Monday, which is the not so lucky with another witness but could instead submit an affidavit of his testimony.
The defense, however, was Deputy Health Director Bruce Anderson need not appear as a witness but could instead submit an affidavit of his testimony.
Amano ruled yesterday that an affidavit of his testimony.

Judge will delay decision in geothermal trial

By JASON ARMSTRONG
West Hawaii Today

KEAAU — A ruling in the non-jury trial of 15 geothermal protestors charged with trespassing on Puna Geothermal Venture property will not be issued by District Judge Riki May Amano until Oct. 20.

Amano will review closing arguments, submitted in written form by both sides, and issue her verdict next month after returning

from vacation, according to a clerk assigned to the Third District Court.

Trial proceedings for the eight men and seven women charged with trespassing on PGV property on three separate occasions earlier this year concluded Monday after four days of testimony.

Mayor Lorraine Inouye had resisted for nearly a week a subpoena to testify based on advice from her attorney, Corpo-

ration Counsel Michael Matsu-kawa. Inouye's reluctance to testify resulted in the threat of a bench warrant by Amano.

Inouye, however, made the 3 p.m. deadline Monday and testified for 90 minutes, thus avoiding having to post a \$25 bond and face possible contempt reprimands from Amano.

Joseph Kamelamela, deputy Corporation Counsel, had appealed to the state Supreme Court to

have Inouye excused from testifying, but has now withdrawn the petition following Inouye's testimony.

"We're filing the (withdrawal) motion today," Kamelamela said Tuesday, adding the issue has now become mute.

Harry Kim, county Civil Defense administrator, volunteered to testify last week, although attorneys for the county had also listed him in their peti-

tion to quash the subpoenas.

Several state officials and elected leaders were also subpoenaed by the defendants, although only Bruce Anderson, deputy Health director, was excused from the proceedings. Anderson used a special privilege as an agency head and the lack of provided travel expenses as sufficient justification not to testify.

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...Judge delays geothermal trial decision

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State Sens. Richard Matsuura (D-downtown Hilo, Waiakea) and Andy Levin (D-Kailua-Kona, Ka'u, Puna) were forced to testify in the trial.

Those accused of having illegally trespassed at PGV's Pohoiki plant in February and March of this year used the "choice of evils" defense as justification for

their actions, according to Jim Albertini, one of the defendants.

Trespassing was not illegal because it was done to avoid imminent danger to the public, avoid harm and was only carried out after all other alternatives had been exhausted, Albertini said. The group's actions were aimed at delaying geothermal drilling operations, he added.

Meanwhile, diagnostic work at PGV's \$120-million plant continued Tuesday, according to Steven Morris, vice president and general manager.

Work on well KS-3, which began Monday, was conducted in preparation for inserting a liner inside the injection well, Morris said.

Noise from drilling

PGV just gave notice to neighboring residents that it will commence with the drilling of the new KS-4 well on Sept. 1. The County Geothermal Resource permit approved 30 wells. The Department of Health ATC permit approved 14 wells. Average time of drilling each well is 4 months.

Considering just noise impacts, what is it like living next to a drill rig which has been granted a permit to operate day and night? Do you adjust to a much louder level of noise? Do you learn to ignore the banging and clanging of pipes in the night and early morning, or the work crew yelling at each other over the din of the rig noises? Do you learn to sleep through the sound of that large semi-truck and trailer revving up the road to your house, constantly revving, not ever being able to change gears, just revving feverishly and never able to lower its RPM, never getting closer to your house, on and on until daybreak, revving, while it drills through a difficult spot or while it "trips out" pulling and disconnecting the mile or so of pipe that has been put down in the well? How should you respond while your children's dreams turn to nightmares when you hear the compressors of the Haliburton trucks forcing cement thousands of feet down into a 2-3-inch sleeve between the ground formation and the well casing, not knowing if a new string of casing is being put in the well, or if a "leak" has been found and attempts are being made to control the problem? What kind of permitting is this?

Jennifer Perry,
Pahoa

Release prompts Puna Geothermal to suspend tests

Puna Geothermal Venture suspended tests at its 25-megawatt geothermal power plant in Pohoiki after faulty valves allowed more than three times the limit of hydrogen sulfide gas to be released. A release as high as 84 parts per billion of the gas was recorded at one point. State Department of Health regulations call for a maximum release of 25 parts per billion. The flow testing process was in the seventh of 10 days. The suspension came after the plant's abatement system failed for a second straight day, releasing hydrogen sulfide. It also followed complaints of burning and itching sensations by nearby residents who were sprayed with caustic soda, which is used to neutralize the highly acidic hydrogen sulfide.

The Honolulu Advertiser

Tuesday, September 1, 1992

Big Isle mayor testifies at trial

By Hugh Clark

Advertiser Big Island Bureau

KEAAU, Hawaii — Under the threat of a bench warrant, Mayor Lorraine Inouye yesterday reluctantly testified at the criminal trial of 15 geothermal protesters.

Inouye's court appearance ended a nearly week-long standoff between her attorney — Corporation Counsel Mike Matsukawa — and defense attorneys who viewed Inouye's appearance as important to their case.

The trial, in its fourth day yesterday, has included testimony by Big Island Civil Defense Administrator Harry Kim and state Sens. Andy Levin and Richard Matsuura. The lawmakers hold opposite opinions on the alternative energy project.

The 15 are accused of three trespass incidents earlier this year at the Puna Geothermal Venture site.

Inouye had resisted testifying on the advice of her attorney.

But Judge Riki May Amano said she would issue a bench warrant for the mayor, forcing her appearance.

After Matsukawa assured the judge that the mayor would testify, the threat of the bench warrant was dropped.

Matsukawa said Inouye would testify after being assured that there would be no political theatrics and that only relevant questions would be allowed.

During the 90-minute appearance, Inouye said she lifted the ban on drilling at Puna Geothermal after a Feb. 12 letter from state health director John Lewin, who said the operation could be safely resumed under improved guidelines.

No one could have changed her mind after that, she testified, including civil defense chief Kim, who opposed the resumption and testified last week for the defense.

A ruling in the non-jury case is expected later.

EPA asked to shut down PGM plant

□ Health officials say they have been assisting the federal agency in monitoring

By Jordan Y.K. Pang
Tribune-Herald

Pele Defense fund and other groups are accusing the state of not doing its duties and are asking the federal Environmental Protection Administration to intervene and shut down Puna Geothermal Venture's 25-megawatt plant in Pohoiki.

But Bruce Anderson, the state's deputy health director for environmental concerns, said the

state and EPA are already working together to ensure safety and health concerns are being met at the PGM site.

In its letter to EPA western regional director Dan McGovern, the groups said the state has not adequately underground injection control programs in the Puna area "despite potential for geothermal contamination."

Further, the letter said, EPA must intervene because "the state is not acting in compliance with the Clean Air Act in permitting the construction of the PGM geothermal wellfield."

Besides Pele Defense Fund, others signing the letter included the Big Island Rainforest Action

Group, the Pahoia Chamber of Commerce, the Protect Kahoowale Fund, the Lanipuna Gardens Community Association, the Puna Community Council, the Citizens for Responsible Government, the Native Hawaiian Legal Corp., the Native Hawaiian Advisory Council and the Hawaii Island Environmental Council.

"PGM must be compelled to take steps to detect and prevent or minimize accidental releases and to protect human health and the environment," the letter said. "Appropriate state and county agencies and PGM must assure the presence of a competent and realistic emergency response

plan."

Anderson said yesterday, however, that EPA intervention is not necessary and would only duplicate actions already taken by the Health Department.

"The state and EPA operate under the same authorities," he said. "There is no reason for them to step in."

Anderson said he has already stated that PGM will be fined for violations associated with leaks that occurred during last month's flow test. Those fines could reach six figures.

For EPA to slap similar penalties, he said, "that would be a double jeopardy situation" for PGM.

"If (EPA) had a problem with our program, they would rescind delegation or overrule us and they have never done so," Anderson said.

He added, however, that "we would have no objections at all to EPA reviewing our program if the federal government chooses to do so."

"We have been working with EPA through every step of the regulatory process," Anderson said.

In addition, he said, there are eight EPA officers on "interagency loan" at his Honolulu office and "they are full appraisal of the problems associated with the plant."



—T-H photo by Crystal Kua

MAYOR TESTIFIES — Mayor Lorraine Inouye took the witness stand yesterday in the trial of 15 geothermal protesters charged with trespassing onto Puna Geothermal Venture's property. District Judge Riki May Amano, right, ordered a bench warrant to force the mayor's appearance but the judge later recalled the warrant.

Reluctant mayor takes witness stand

□ Judge would've dismissed case had Inouye failed to appear in court

By Crystal Kua
Tribune-Herald

KEAAU — A reluctant Mayor Lorraine Inouye took the witness stand yesterday afternoon in a trespass trial for 15 geothermal opponents, only after a District Court judge ordered a bench warrant to force her to appear.

Judge Riki May Amano, however, recalled the bench warrant later in the day after she decided to dismiss the charges against the defendants if Inouye chose not to show up.

Inouye and Civil Defense Director Harry Kim had been

subpoenaed to testify by the defense but county attorneys unsuccessfully argued that the two officials were not relevant witnesses to the case.

Kim testified on Wednesday but Corporation Counsel Michael Matsukawa tried to appeal Amano's ruling on Inouye's subpoena to a higher court.

Inouye had told the Tribune-Herald that her attorneys advised her not to testify.

The 15 protesters were arrested after trespassing onto Puna Geothermal Venture property on Feb. 23, March 1 and 8.

The defendants claim that they had no legal alternatives but to trespass in order to shut down the plant because government officials turned a deaf ear to their health and safety concerns.

Inouye walked into Puna

District Court a few minutes after 3 p.m., flanked by Matsukawa and county Managing Director Barry Mizuno. Her testimony was completed at 5 p.m.

The questions focused on Inouye's decision to override Kim in approving the geothermal emergency response plan which in turn lifted the drilling ban imposed on PGV after the June 1991 blowout.

She testified that the main reason she lifted the ban was the recommendation of state Health Director John Lewin.

Lewin wrote her a letter and said that "all of the concerns have been addressed and that he was satisfied," she testified.

She also said that there wasn't anything anyone could do to make her "reconsider" her decision.

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Page 8

TRIAL: Mayor Inouye takes witness stand

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Her responses to many questions were abrupt and several times she said she couldn't recall dates or she could not answer certain questions. At a couple of points, she confused the date of when drilling was suspended and when the ban was lifted.

Several times after a question was asked, she turned to look at the table where Matsukawa and Deputy Prosecutor Michael Udovic were seated.

Amano played a pivotal role in getting the mayor to the witness stand.

In a day of fast-moving events, it was Amano's deci-

sion to order the bench warrant yesterday morning which accelerated things.

During the afternoon session, Amano told the defendants that she decided not to process the paperwork for the bench warrant until she made a ruling on a defense request to dismiss the charges if Inouye did not honor the subpoena.

When the defendants decided they wanted a dismissal, Amano gave Inouye until 3 p.m. to show up or else the charges would be dismissed.

The judge told the defendants that if the mayor chose not to show up, "it is not fair

to all of you ... she is expected to appear."

Defense attorney Michael Zola, who issued the subpoena to the mayor, called Inouye to the stand "with our thanks to the court for getting her here."

Matsukawa told the judge that Inouye was in her office in the early afternoon and would appear.

Matsukawa offered the defense an affidavit and copies of documents in lieu of live testimony by the mayor.

"It is not the position or intent of the County of Hawaii, or the Office of the Mayor, to resist the order of the court," Matsukawa said in

the affidavit.

The most heated exchange came when defendant Jim Albertini began questioning Inouye and tried to ask her for the basis of her decision in lifting the ban.

Amano would not allow Albertini to ask if the financial considerations of PGV played a role in the decision. "I think I'm being blocked in this line of questioning," Albertini told the judge.

The trial wrapped up yesterday and Amano is expected to take at least two weeks to make a ruling after final documents are submitted to her by the prosecution and defense.



-T-H photo by William Ing

FAMILY TRESPASS — This photo was taken March 1 when Renee Mata, right, her common law husband Obed Kuahiwinui and their daughter Britney, who was 6 months old at the time, trespassed onto Puna Geothermal Venture property as a way to protest the development. Mata is one of 15 defendants on trial in Puna District Court for three trespassing incidents in February and March.

Puna resident tells of geo symptoms

□ Defense will try to get the mayor on witness stand

By Crystal Kua
Tribune-Herald

Leilani Estates resident Renee Mata returned to her home two days after the June 12, 1991 Puna Geothermal Venture well blowout, thinking it was safe to go back.

She then met up with her cousin, Deanna Kahookaulana, who was about two months pregnant with her first child and who lived about a street

KEAAU — District Judge Riki May Amano this morning issued a bench warrant for Mayor Lorraine Inouye to testify in the geothermal trial of 15 defendants charged with trespassing on Puna Geothermal Venture property.

County attorneys indicated that they were appealing to the state Supreme Court an earlier ruling by Amano to have Inouye testify in the trial.

Inouye has not honored a subpoena calling her as a defense witness, an action the mayor said she took on the advice of her attorneys.

away from Mata.

But then something unexpected happened that would further cloud Mata's view on geothermal development.

"She started bleeding," Mata said of her cousin who was in

obvious pain.

After her cousin went to the hospital, Mata learned during a telephone call from her auntie

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GEO: Mayor Inouye may testify today

From Page 1
that Kahookaulana had lost her baby.

"Her baby blew up," Mata testified.

"She's afraid of having any more children," Mata said. "I'm sorry we went home at that time."

Mata told her story last week to a District Court judge presiding over a trial of 15 geothermal opponents charged with trespassing onto the PGV site in February and March.

The Puna District Court trial, which began on Tuesday, was scheduled to wrap up today with testimony expected from Sen. Andy Levin, activist Palikapu Dedman and the remaining defendants.

Like Mata, other defendants gave their personalized accounts of what they said they've had to endure by living with geothermal as their next door neighbor.

Mata said watching what Kahookaulana went through was especially tough on her because she was seven months pregnant at the time of the blowout.

"I didn't know what was happening to me and my baby," she said.

She eventually gave birth to a baby girl.

Also when she went back home after the blowout, Mata said that she found her baby pigs dead and she was told not to drink the water in their

catchment tank.

After that, she sent her kids to stay with another family on the island.

Mata said she is currently three months pregnant and she was excused for the remainder of the trial after her testimony because she said she did not want the stress of the trial to complicate her pregnancy.

She wants geothermal to stop for the sake of her family and her pregnancy. "I don't want to have to worry for six (more) months," she said.

Mata was arrested March 1 after she entered the PGV property and headed for the drilling rig as a way to stop work.

"The safest place to be was

on the drilling rig," she said.

She said she had no choice but to trespass because "nobody listened as far as the government was concerned."

Under cross-examination, Mata said that she met with community members who were opposing the project including the Big Island Rainforest Action Group.

She said she voiced her concerns to her neighbors and let others become her agents in her fight against geothermal. These were "people who knew who to talk to and people who could talk."

Kahookaulana has filed a lawsuit against PGV stemming from her miscarriage.

AUG 26 1992

Judge rules mayor, Kim must testify

□ County will try
again to keep
Inouye from stand

By Crystal Kua
Tribune-Herald

Mayor Lorraine Inouye and Civil Defense Administrator Harry Kim can be called as defense witnesses in the trial of 15 geothermal opponents charged with trespassing on Puna Geothermal Venture property in February and March, a District Court judge ruled yesterday.

Judge Riki May Amano said that Inouye and Kim are relevant witnesses to the defendants' "choice of evils" defense.

However, county attorneys today were trying additional legal maneuvers in an attempt to have Inouye excused from testifying. Kim could be called to the witness stand as early as today.

Meanwhile, the state today was attempting to quash a subpoena issued for deputy state health director Bruce Anderson. A hearing on that matter is scheduled for tomorrow.

Defense attorney Michael Zola, who subpoenaed Inouye and Kim on behalf of his

Rainforest Action members about stopping the drilling, Zola said. "There was nothing they could do," Zola quoted Inouye as saying.

Inouye lifted the ban against the wishes of Kim who still had concerns about the emergency response plan.

The defense began their case yesterday afternoon after Deputy Prosecutor Michael Udovic called his only witness, a Burns Security manager who supervises the security guards at the PGV plant.

The security chief detailed the events of the Feb. 23,



—T-H photo by William Ing

SMELLY SCENE — Leilani Estates resident Penny Shaver indicates on a map where a Pahoa school bus picks up her 9-year-old daughter. She said her daughter told her that children on the bus were holding their noses because of the "rotten egg" smell caused by recent hydrogen sulfide leaks from the nearby Puna Geothermal Venture plant.

client Penny Shaver of Leilani Estates, successfully argued that Inouye's testimony would be "pivotal, central and absolutely essential" in proving the defense's case.

"Harry Kim is very critical to this defense," Zola also said.

The opponents admit to trespassing but they say they did so because they had no other legal alternatives to stop drilling after several government agencies turned a deaf ear to their health and safety concerns.

March 1 and March 8 protests in which the defendants were arrested.

Udovic said during his opening statements that the prosecution was trying the trespass cases and not the "merits" of geothermal.

Shaver, who lives in Leilani Estates about 1½ miles from the PGV plant, was the first defense witness to testify.

She testified that she moved into the area because she thought at first that geothermal was safe.

But her family began exper-

Zola argued that Inouye lifted the drilling ban, put into effect after a June 12, 1991 blowout at the KS-8 well, in February because of "pressure" that PGV would go financially "belly-up" if drilling was not resumed.

He said that Inouye had to choose between the health and safety of area residents or the "financial collapse of PGV."

The action of geothermal protestors was sparked in part by what Inouye told Big Island

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Page 12

encing a myriad of health problems that she linked to geothermal over the last three years and she had to evacuate her home several times as a result of problems at the geothermal sites.

She said she finally decided to trespass on March 8 because she thought she had "exhausted" all her possibilities with government agencies and she thought her "mere presence" at the drilling site would stop work. "They'd have to stop," she testified.

She was arrested before she got to the drilling pad, she

testified.

Those charged with either simple trespass or second-degree trespass are Shaver, Robert Petricci, Jim Albertini, David Zeissler, Ole Fulks, Kristine Kubat, Michele Marzullo, Holit Bat-Edit, Rene Siracusa, Russell Ruderman, Antonio Rosa, Lucien Noe, Athena Peanut, Renee Mata and Kevin Roddy.

The trial, which resumed this morning before Amano in Puna District Court in Keaau, is expected to run three more days.

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WEST HAWAII TODAY

AUG. 26 1992

Subpoenas for Inouye, Kim are upheld by district court

By JASON ARMSTRONG
West Hawaii Today

KEAAU — Subpoenas to have Mayor Lorraine Inouye and Civil Defense Administrator Harry Kim testify in the trial of 15 geothermal protesters were upheld Tuesday in Third District Court.

Judge Riki Amano denied a request to quash the subpoenas that had been submitted by the county's Corporation Counsel on behalf of Inouye and Kim, according to Joseph Kamelamela, deputy Corporation Counsel.

Inouye and Kim will be required to testify today in the trial of eight men and seven women accused of trespassing on Puna Geothermal Venture property Feb. 1, March 1 and March 8, Kamelamela said.

"There is a possibility of

another motion being filed," he said, which could excuse Inouye and Kim from testifying.

The anti-geothermal group is arguing defense of necessity, which is based on avoiding imminent danger, exhausting all other alternatives, and the action taken was designed to avoid harm, according to Jim Albertini, one of those charged with trespassing.

The group has also subpoenaed Bruce Anderson, state Health Department deputy director, Sam Ruben, Hawaii district health service administrator, Steven Morris, PGV vice president, state Sen. Richard Matsuura (D-downtown Hilo, Waiakea) and state Sen. Andrew Levin (D-Kailua-Kona, Ka'u, Puna), Albertini said.

They are all required to appear in court today, he said.

AUG 27 1992

PGV releases gas; Kim says it's minor

□ State still awaits
report on mishap

By Gordon Y.K. Pang

Tribune-Herald

While Hawaii County's role in the ongoing geothermal furor is on trial at Puna District Court in Keaau, there continues to be activity at the Puna Geothermal Venture plant in Pohoiki 12 miles away.

In geo-related developments this week:

● A short release of gas sent a shot of hydrogen sulfide into the air measuring up to 45 parts per billion Tuesday morning, although both PGV and Civil Defense Administrator Harry Kim termed the incident as minor.

● Government officials met with PGV engineers to discuss possible fines related to violations during last week's flow test to determine under which conditions the firm should be allowed to begin operations.

PGV general manager Steve Morris said the short release of steam at around 10 a.m. Tuesday was not serious. PGV workers are in the process of moving one

of its two drill rigs away from KS-8, the flow-tested production well, to KS-3, where a small lining project is slated to begin next week.

On Tuesday, Morris said, workers were removing what's known as a "kill line."

"When they disconnected it, it had some steam in the line," he said.

A fixed hydrogen sulfide monitoring station near the Kapoho boundary of the project recorded a peak reading of 45 parts per billion, Morris said. Within two minutes, he said, the readings went down to 18 and 17 ppb, and within 10 minutes after that, the monitor was recording 1 and 2 ppb.

PGV's construction permit from the Health Department allows for up to 25 parts per billion on an hourly average. During last week's flow test, there were at least two incidences which led to leaks averaging more than 40 ppb. There was also a peak reading of 83 ppb, but Health Department monitor-

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ing officials say the hand held monitor that took the reading was showing a low battery signal at the time.

Both Morris and Kim, who initiated emergency preparation procedures upon notification of the hydrogen sulfide release yesterday morning, said the incident was a minor one.

"The quantity released was very small," Kim said. "And it did not come from the source in the well."

"It didn't have a large odor to it and it wasn't pervasive," Mor-

ris said. Asked if the release could have been prevented, he said he did not know although he noted that the pulling of the kill line a routine part of removing the drilling rig.

Kim noted that PGV alerted the county of the incident in a timely fashion. Both Kim and other government officials last week criticized PGV's lack of notification of the two leaking incidences last week as well as an excessive release of caustic soda.

Deputy Health Director Bruce

Anderson said DOH will slap fines on PGV for those violations as well as exceeding allowable levels of hydrogen sulfide although he gave no specifics. While PGV did not exceed 25 ppb on an hourly average off-site, it did go over the 5 pounds per hour limit emission condition at the well site itself.

In fact, that was one of the topics discussed on Tuesday as state and county officials sat down with PGV engineers to discuss the conditions under which the company will be

allowed to operate, Morris said.

"We're still waiting on PGV's report on what happened and how to prevent the problems identified in the flow test from occurring in the future," Anderson said. "That's the bottom line."

Among others at the meeting were officials from the mayor's office, the Planning Department, the Department of Land and Natural Resources and the

Kim says Puna residents health concerns are valid

By **ROBIN M. JONES**
West Hawaii Today

HILO — County Civil Defense Administrator Harry Kim said the geothermal-related health and safety concerns raised by residents living near geothermal development are "absolutely" valid and have not been addressed.

Kim made his comments while spending several hours testifying during a trial of 15 geothermal protesters charged with trespassing on Puna Geothermal Venture property.

Despite efforts Tuesday to prevent Kim and Mayor Lorraine Inouye from having to participate in the trial, Kim began his lengthy testimony Wednesday while county attorneys continued the battle to have Inouye excused from having to appear as a defense witness.

Corporation Counsel Michael Matsukawa has appealed to circuit court the ruling by District Court Judge Riki May Amano that required Kim and Inouye to appear before her.

County attorney's had argued to Amano that Inouye and Kim should not have to adhere to their subpoenas requiring them to testify because the information being sought from them could be obtained elsewhere. Amano ruled, however, that the two were relevant witnesses and would need to appear.

State Attorney General Warren Price will argue this morning that state Deputy Health Director Bruce Anderson should also not be required to appear as a defense witness. Amano is expected to rule on

that today before the trial continues.

As the second witness of the defense and on the second day of the trial that is expected to last most of this week, Kim testified he too still has concerns about the health and safety of the residents who live near the plant.

The defendants, who are using a "choice of evils" defense, are arguing they trespassed on Puna Geothermal Venture property in an effort to prevent another episode of uncontrolled hydrogen sulfide emissions and to prevent possible harm from those emissions to nearby residents.

The eight men and seven women said they had exhausted all legal avenues to prevent the drilling they feared could cause another blowout and were left with no alternative but to go onto the property to try and prevent the commencement of drilling after a ban on it had been lifted.

The drilling ban had been imposed following a June 12, 1991 blowout of PGM's KS-8 well in Pohoiki. Inouye lifted the drilling suspension Feb. 28.

Much of the questioning Wednesday centered around PGM's emergency response plan and its approval. The plan had to be approved before the ban could be lifted and PGM could resume operations intended to produce 25 megawatts of electricity.

Kim stressed he had not approved the response plan because conditions of the resource permit allowing the geothermal development had not been met.



—T-H photos by William Ing



Geo on trial?

Testimony from key county and state officials was expected to continue today at the trial of 15 defendants charged with trespass for their part in protests at the Puna Geothermal Venture plant in lower Puna. Above, Civil Defense Administrator Harry Kim responds to a query from defendant Kristine Kihata. At left, state Sen. Richard Matsuura listens to a question posed by Jim Albertini, another defendant.

Kim tells court of geo 'frustration'

□ Trial against 15 protesters continues today

By Crystal Kua
Tribune-Herald

KEEAU — Civil Defense Administrator Harry Kim testified that he was frustrated "many times" in the government process in trying to ad-

dress health and safety concerns of Puna residents living near geothermal development.

"Our credibility with them (the residents) is zero or minus zero," Kim told a District Court judge yesterday.

Kim, popular among area residents, testified in the trial of 15 geothermal opponents who were arrested in February and March for trespassing onto Puna Geothermal Venture's property in Pohoiki.

The defendants are arguing in their "choice of evils" defense that the harm caused by geothermal development outweighs their criminal action of trespassing in order to shut-down the PGV plant.

The Civil Defense chief was asked by defense attorney Michael Zola if he thought that the health concerns by area residents were valid.

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"Absolutely," Kim replied.

As Kim left Puna District Court after completing 2½ hours of testimony, the standing-room-only crowd applauded him.

Also testifying yesterday was state Sen. Richard Matsuura, a geothermal proponent. He received a much cooler reception from the defendants.

Longtime activist Jim Albertini, one of the defendants, questioned Matsuura about his efforts to try and pass a measure that would establish interim hydrogen sulfide emissions standards legislatively instead of administratively.

Matsuura's action came after the state Supreme Court ruled that the state faltered when it failed to draft administrative rules for the emissions standards.

Albertini asked Matsuura why he had not tried to establish such standards during the eight years or so he has been in the legislature.

"I didn't think (hydrogen sul-

fide) was a hazard, as such," he replied.

In other developments from the case, county attorneys will ask a Circuit Court judge to review an earlier decision by District Judge Riki May Amano to allow Kim and Mayor Lorraine Inouye to testify as defense witnesses.

County attorneys tried unsuccessfully to quash subpoenas served on them by one of the defendants.

Kim agreed to testify but Inouye is not scheduled to testify until the matter is settled either through negotiations with defense attorneys or a Circuit Court ruling.

"We're not trying to obstruct anything," county Corporation Counsel Michael Matsukawa told Amano midway through yesterday's session.

Matsukawa offered other county officials and documents as a "substitute," as one attorney put it, for the mayor's testimony.

Also today, state attorneys were successful in quashing a subpoena for Deputy Health Director Bruce Anderson to testify.

In documents filed yesterday, Anderson claimed that his testimony is not necessary in the case and invoked a special privilege as an agency head not to be subpoenaed.

Anderson also said that costs for travel to the Big Island to testify were not provided.

Kim yesterday listed ailments "commonly associated" with exposure to hydrogen sulfide such as headaches, sore chest, skin irritation and breathing difficulties.

Kim also reiterated his reasons for not approving the geothermal emergency response plan which would set into action government agencies in case of an accident at the plant.

"I wanted a better clarification of risks to land, air, people and water," Kim said.

Inouye overrode Kim on Feb. 28 and lifted the drilling

ban while the June the KS-

He said Inouye's concerns the serious address

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AUG. 28 1992

Health official testifies at geo trial

By ROBIN M. JONES
West Hawaii Today

HILO — A second public official testified Thursday that Puna residents became sick as a result of the June 12, 1991 blowout of Puna Geothermal Venture's KS-8 well in Pohoiki, and they had a valid fear of further harm.

Dr. Sam Rubin, state Department of Health district health services administrator, said that after the blowout, he received a large number of health complaints that he could attribute to the uncontrolled release of hydrogen sulfide.

Rubin said, however, he could not be certain whether the health problems were caused exclusively by the release of hydrogen sulfide or whether fear and stress associated with the blowout and the unknown caused the problems to be as

severe as some were.

He did add, however; "I'm saying, people were sick." The illnesses he saw "certainly were very real clinically," he said.

People came to a health center set up in Pahoa and manned by Rubin following the blowout complaining of upper respiratory distress, sinus problems, skin sores and a host of other ailments, he said. "But each illness had a psychogenic overlay." There was a lot of stress in the community, he said. "For valid reasons."

The eight men and seven women who are being charged with trespassing on PGV property Feb. 23, March 1 or March 8, are using a "choice of evils" defense, saying they went onto the property to prevent further harm to themselves and the community.

They have said they had exhausted all legal channels to prevent further harm but their efforts went unanswered. They maintain they felt the drilling operations were a health and safety threat, and they did what they felt necessary to stop the threat following Mayor Lorraine Inouye's Feb. 28 lifting of a drilling suspension.

Rubin said the defendants fears were justified and valid.

"I myself would consider it a health threat," he said about PGV operations and the possibility of another blowout.

Rubin also said, "If I had my preference, I would have no one exposed to" the gasses and particulate that result from venting of the geothermal wells.

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From Page 1A

"My medical opinion is there should be an adequate buffer zone. There should be a buffer zone much greater than there is now," he said. The buffer zone was described as an area where residents could not live safely.

He added "there doesn't seem to be" a buffer zone, because people live immediately across the street from the PGV property. He would not, however, say how large the zone should be.

Rubin was asked whether the permit process that is designed to allow revision according to data

found during the plant's operations was allowing the residents near the plant to be part of an experiment.

"I always stood by a buffer zone to prevent any conception of that thought," he said.

He added, however, that the permit is aimed at protecting human health and safety.

Testimony and questioning got emotional during the trial in which many of the defendants are their own legal counsel.

One witness could not continue her questioning of Rubin after she broke down in tears.

Another defendant, Robert Petricci, said in frustration, "I can't get any help out of those guys" referring to the public officials he has contacted about his health problems and fears.

Civil Defense Administrator Harry Kim had testified Wednesday that he had also suffered frustration in the attempt to protect the residents from harm.

He said the residents had felt the same frustration. It was a feeling that was evident during the third day of the trial that will resume Monday in Judge Riki May Amano's Keauu courtroom.

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HONOLULU STAR BULLETIN

AUG 28 1992

New safety conditions set for Puna Geothermal

Associated Press

State and county officials have notified Puna Geothermal Venture that it must meet new conditions before the company will be allowed to resume work on producing geothermal power, a state official said yesterday.

While results of the company's recent seven-day flow test were encouraging, state officials aren't satisfied it is safe for the surrounding area.

"Our overall assessment of the test phase recently concluded indicates that the technical results were very successful," said Mufi Hannemann, director of the state's Department of Business and Economic Development and the state's energy resources coordinator.

The potential of the well to produce electricity was shown to be greater than anticipated, he said.

"On the other hand, we are still concerned that mechanical problems and human error resulted in instances of community residents being exposed to caustic soda and hydrogen

sulfide gas emissions," he said.

State officials says community residents were not informed of what was happening in a timely and responsive way, Hannemann said.

Everything possible is being done to eliminate further ill effects from noise, air pollution or other causes, he said.

The company is required to replace three backpressure valves which allowed hydrogen sulfide to seep out, and to review its chemical injection system and procedures to ensure that no caustic soda can be released to the atmosphere.

Hannemann said state officials intend to work more closely with county agencies to

improve communications with the nearby residents and police and other emergency agencies.

Puna Geothermal Venture vice president Steven Morris said the company shares the state's concerns.

"We concur that before we begin operation of the power plant, we need to address these issues to the satisfaction of the appropriate regulatory agencies," he said.

Department of Health Deputy Director Bruce Anderson said analysis of steam and brine from last week's flow test showed the hydrogen sulfide content to be within predicted ranges.

Results of other tests on the amount of radon, mercury, lead and other natural elements in the geothermal fluid are expected in another five to six weeks, Hannemann said.

Based on the flow test information, the Department of Health is going to reevaluate the Emergency Response Plan to make sure it protects the community, he said.



Mufi
Hannemann

AUG 28 1992

Buffer zone for geo, Ruben says

□ Attorneys told
mayor not to
testify in trial

By Crystal Kua
Tribune-Herald

KEAAU — A state Health Department official testified yesterday that he believes there should be more space between Puna Geothermal Venture's operations and residential communities in Puna.

"The level of stress and anxiety created by this geothermal development has pushed over nuisance into health effects," Dr. Sam Ruben said of hydrogen sulfide emissions coming from the plant.

"Medically, there should be a more adequate buffer zone," Ruben said.

Ruben, the chief DOH official on the Big Island, said that after the June 12, 1991 blowout, he saw many individuals who were genuinely sick with an array of ailments but he could not say if the illnesses were directly linked to geothermal or may be partly psychosomatic.

Fifteen geothermal opponents are on trial for trespassing onto PGV's property in February and March.

From Page 1

rant for Inouye but Amano has already said that she will not make such a move.

Meanwhile, it is not known if Mayor Lorraine Inouye will honor a subpoena to testify as a defense witness in the trial.

Defense attorney Michael Zola, who issued the subpoena on behalf of his client Penny Shaver, said that the mayor apparently "slipped out the back door" and he is not sure if he will pursue trying to get her to the witness stand.

"We haven't decided yet. It depends on whether she decides to appear or appeal and so far (she) has done neither," Zola said after yesterday's court session.

The mayor, however, was adamant about where she stands on the matter.

"My attorneys told me not to (testify)," the mayor told a Tribune-Herald reporter yesterday afternoon. "And I listen to my attorneys, that's it."

County attorneys were fighting to quash subpoenas served on Inouye and Civil Defense Administrator Harry Kim but District Judge Riki May Amano ruled earlier this week that both were relevant witnesses to the defense. Kim testified earlier this week.

Corporation Counsel Michael Matsukawa told the judge that the county was going to appeal the ruling to a Circuit Court judge but he also offered to substitute Inouye's testimony with documents or testimony of other county officials.

Zola said yesterday afternoon that he hasn't seen any documents yet.

Zola said that he could ask the judge to issue a bench war-

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The trial is scheduled to wrap up on Monday, which is the mayor's last opportunity to testify.

The defense, however, was not so lucky with another witness.

Amano ruled yesterday that

Deputy Health Director Bruce Anderson need not appear as a witness but could instead submit an affidavit of his testimony.

AUG 28 1992

PGV told to follow order

□ DBED now is calling the shots

By Gordon Y.K. Pang
Tribune-Herald

State agencies yesterday announced that Puna Geothermal Venture will not be allowed to start operations until after it meets new conditions issued by regulators.

There were no surprises among the four conditions set down by the Health Department and the Department of Land and

Natural Resources, which are, in effect, modifications made to existing permits issued by the two departments. PGV is basically being asked to address concerns already raised last week by Deputy Health Director Bruce Anderson following several incidents during the KS-8 well's flow test last week.

The conditions are that:

- Three backpressure valves, which allowed seepages of excess hydrogen sulfide into neighborhoods around the plant, be replaced and "demonstrated to be free of leaks."

- PGV's chemical injection system be reviewed to ensure no caustic soda is released into the atmosphere.

- KS-8 be "subjected to expert review and inspection" by the DLNR "to ensure its safety."

- A "more effective and responsive communication system" be established so that "more timely and accurate reports" are submitted to regulators.

The announcement came from the Department of Business, Economic Development and Tourism, instead of the Department of Health, or the Department

of Land and Natural Resources.

Deputy DBED Director Tak Yoshihara defended his department's role in issuing the statement. His boss, DBED Director Mufi Hanneman, was off-island this morning.

"Mufi Hanneman is designated as the energy resources coordinator for the entire state government," Yoshihara said. "In that role, he oversees and coordinates state energy activities and really is the policymaker and advocate for energy programs."

Yoshihara said he sees no conflict in the notion of coordinating the efforts of the Health Department and the Department of Land and Natural Resources, the two "regulators" who have issued permits to PGV, and DBED, the "advocate."

"We're speaking as a single voice for the state," he said, and he described Hanneman as a coordinating "spokesman" for Gov. John Waihee.

Yoshihara said he was puzzled by the focus of this

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morning's Honolulu Advertiser story in which the reporter chose to emphasize the new conditions imposed by the Health Department and DLNR and, in his view, ignored the fact that "the test phase was overall a success, especially from a technical standpoint."

"It had zero on assessment of the test," Yoshihara said.

DBED, in its release, attempted to present "an overview of both sides, both from the regulating and energy coordinating

view," he said. "It was an attempt to balance the news particularly with the overall assessment. There's been so little written about the overall test phase."

In fact, he said, "we debated internally whether that should be the lead (in the press release) or the regulatory portion should be the lead."

The release quotes Hanneman as saying: "Our overall assessment of the test phase ... indicates that the technical results were very successful."

As noted in news accounts

last week, Hanneman said the well's potential for producing electricity is greater than originally anticipated, and that it could provide up to 7 of the 25 megawatts PGV is to place on Helco's power grids.

Hanneman's tone gets stricter further down in the release.

"We have made clear to PGV that a continued pattern of emissions and lack of timely response and information is unacceptable," he said. While there can't be guarantees the problems won't reoccur, "we can promise

that we will require everything be done to try to avoid them, and to report on them immediately should they occur."

PGV had originally hoped to begin operations two weeks after the flow test, which ended last Thursday. Following the flow test, that timetable is now being revised, PGV general manager Steve Morris said this morning. The new conditions won't affect that new schedule "because the conditions as laid out are things that need to be done whether the state said so or not."

Upper Palolo no longer up the creek without tank

By Stacy Kaneshiro
Advertiser Staff Writer

After some 70 years of getting water through alternative sources, residents of La I Road in upper Palolo Valley will finally get water service.

Construction of a 25,000-gallon water tank at the valley's 900-foot level began in January and is expected to be completed by mid-September, said Manabu Tagomori, manager and chief engineer of the state Department of Land and Natural Resources water and land division.

After testing of the \$600,000 water tank, water service should be available to residents by the end of the year.

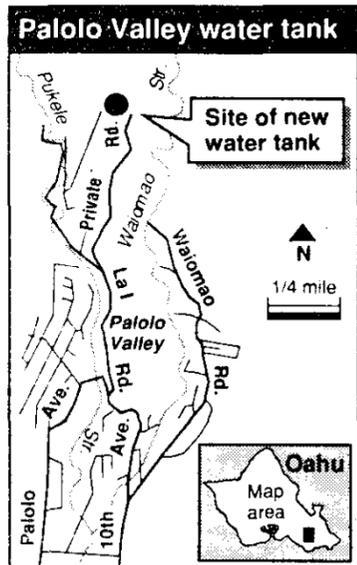
Because of the elevation, areas like upper Palolo cannot be served by the Board of Water Supply. Most of the board's pumping stations rely on gravity, board spokeswoman Denise DeCosta said.

Through the years, residents used various methods to collect water. Most have catchment systems to collect rain water, while those who live close to the stream have water diverted to their properties through tubes. Still, when absolutely necessary, water is trucked to the property and stored in small tanks. Filtering systems cleanse the water.

Ironically, there's a Board of Water Supply reservoir located at the 605-foot level on La I Road, but it serves residents in neighboring Waiomao valley. DeCosta said the developer of that subdivision built the reservoir specifically for Waiomao residents. The reservoir was built in 1950.



In our neighborhoods



Advertiser graphic by James Takamiya

Tagomori said it is not uncommon for the state to assist counties in developing or expanding water systems in areas the city cannot service. He said after the tanks are built, the facilities are turned over to the Board of Water Supply.

"It's been a longtime problem in the community," Tagomori said. "The Legislature finally made funds available. When the appropriation was made, we implemented (the construc-

tion of the tank)."

La I Road is at the end of Palolo Avenue, near Pukele Stream. La I Road branches off into four directions. The water tank is at the end of the first of the four branches.

People in the neighborhood are elated at the prospect of having water come from a tank rather than from streams or the rain via catchments. After all, not all residents can divert stream water because of their property's proximity from the stream, and dry spells at times make catchments useless.

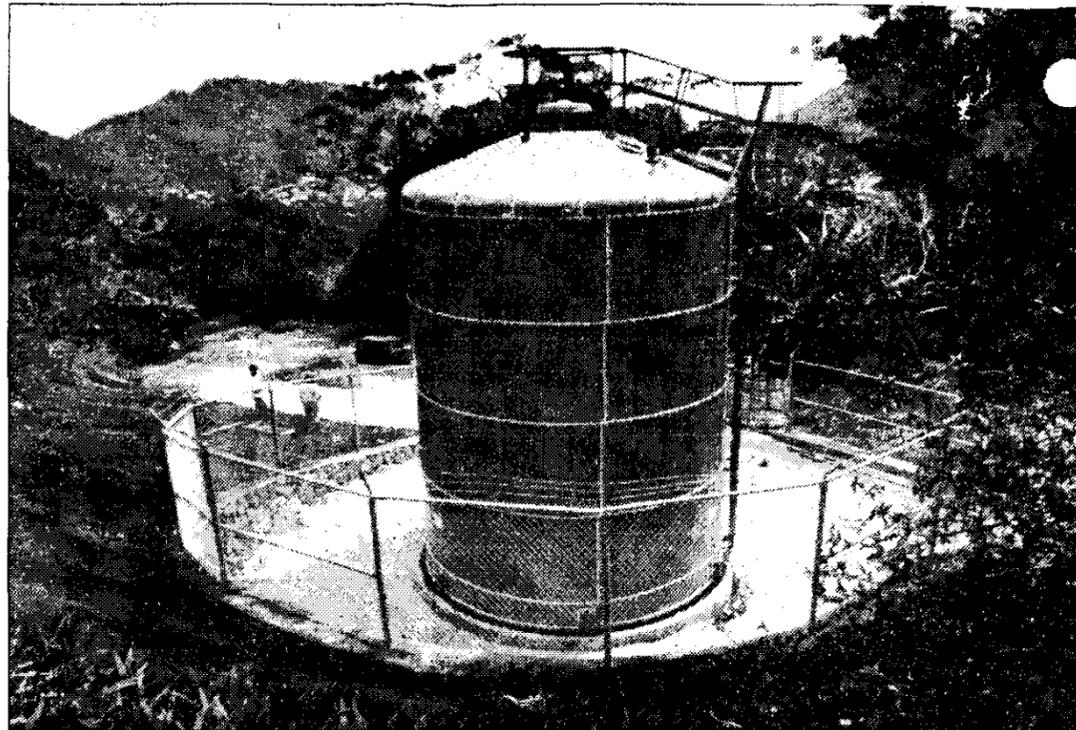
"I wish the old folks were around to see (the water tank)," said second-generation farmer Harold Narahara, who farms produce, plants and trees. "They wouldn't believe it."

If anyone should know how the residents feel, it is Narahara. His late father, Gensaku Narahara, was one of the first settlers in the area. Narahara said his father was the first to farm Manoa lettuce there.

Narahara said pleas for water service go back to the days when his father first settled in the area around 1918. But the requests were always denied because of the cost.

Longtime resident Caroline Kubo said in the past, the neighborhood was reluctant to "make waves" to get the tank built, so it didn't push the issue.

But about 10 years ago, the 25 or so area residents formed the Palolo Valley Agricultural District Association. Members made their case to the Board of Water Supply, Department of Land and Natural Resources and their lawmakers. Funds



Advertiser photo by Richard Ambo

This newly constructed water tower will provide city service to some upper Palolo Valley residents who have long been without it.

were eventually made available two years ago.

Kubo has since moved out of the neighborhood, but remains in the association with the blessing of other members. She said she felt compelled to see the project through to completion.

Ted Strand, association president, said the residents will be responsible for connecting pipes from their properties to the tank. They will also be responsible for maintaining the facility and the area surrounding the tank.

The road leading to the water tank is unpaved and is sometimes too slippery even for off-road vehicles, Strand said. He said residents will

share the costs for the water service.

Also, instead of the Board of Water Supply billing individual customers, it will charge the association for water fees. Strand said the association will later determine much the fees will be.

"Even though it's going to cost more, it's worth it," Kubo said.

Residents credit state Rep. Calvin Say and city Councilman Leigh-Wai Doo for helping pave the way for the water tank.

The effort to get the water tank has restored residents' faith in politicians.

"It shows that government can help you," Strand said.

"Talk to your representative, talk to your councilman. Most of the time, they'll help."

Honolulu is a big city, but we sometimes forget it's also small neighborhoods, good neighbors. In this article — and in articles to come — The Advertiser visits a neighborhood, exploring issues and chatting with folks who live there. If something is going on in your neighborhood that you'd like other people to know about — a dispute, a hassle with big government or something just downright heartwarming — write "Neighborhoods." The Advertiser, PO Box 3110, Honolulu, HI 96802.

SEP 1 1992



—T-H photo by Crystal Kua

MAYOR TESTIFIES — Mayor Lorraine Inouye took the witness stand yesterday in the trial of 15 geothermal protesters charged with trespassing onto Puna Geothermal Venture's property. District Judge Riki May Amano, right, ordered a bench warrant to force the mayor's appearance but the judge later recalled the warrant.

Reluctant mayor takes witness stand

□ Judge would've dismissed case had Inouye failed to appear in court

By Crystal Kua
Tribune-Herald

KEAAU — A reluctant Mayor Lorraine Inouye took the witness stand yesterday afternoon in a trespass trial for 15 geothermal opponents, only after a District Court judge ordered a bench warrant to force her to appear.

Judge Riki May Amano, however, recalled the bench warrant later in the day after she decided to dismiss the charges against the defendants if Inouye chose not to show up.

Inouye and Civil Defense Director Harry Kim had been

subpoenaed to testify by the defense but county attorneys unsuccessfully argued that the two officials were not relevant witnesses to the case.

Kim testified on Wednesday but Corporation Counsel Michael Matsukawa tried to appeal Amano's ruling on Inouye's subpoena to a higher court.

Inouye had told the Tribune-Herald that her attorneys advised her not to testify.

The 15 protesters were arrested after trespassing onto Puna Geothermal Venture property on Feb. 23, March 1 and 8.

The defendants claim that they had no legal alternatives but to trespass in order to shut down the plant because government officials turned a deaf ear to their health and safety concerns.

Inouye walked into Puna

District Court a few minutes after 3 p.m., flanked by Matsukawa and county Managing Director Barry Mizuno. Her testimony was completed at 5 p.m.

The questions focused on Inouye's decision to override Kim in approving the geothermal emergency response plan which in turn lifted the drilling ban imposed on PGV after the June 1991 blowout.

She testified that the main reason she lifted the ban was the recommendation of state Health Director John Lewin.

Lewin wrote her a letter and said that "all of the concerns have been addressed and that he was satisfied," she testified.

She also said that there wasn't anything anyone could do to make her "reconsider" her decision.

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Her responses to many questions were abrupt and several times she said she couldn't recall dates or she could not answer certain questions. At a couple of points, she confused the date of when drilling was suspended and when the ban was lifted.

Several times after a question was asked, she turned to look at the table where Matsukawa and Deputy Prosecutor Michael Udovic were seated.

Amano played a pivotal role in getting the mayor to the witness stand.

In a day of fast-moving events, it was Amano's deci-

sion to order the bench warrant yesterday morning which accelerated things.

During the afternoon session, Amano told the defendants that she decided not to process the paperwork for the bench warrant until she made a ruling on a defense request to dismiss the charges if Inouye did not honor the subpoena.

When the defendants decided they wanted a dismissal, Amano gave Inouye until 3 p.m. to show up or else the charges would be dismissed.

The judge told the defendants that if the mayor chose not to show up, "it is not fair

to all of you ... she is expected to appear."

Defense attorney Michael Zola, who issued the subpoena to the mayor, called Inouye to the stand "with our thanks to the court for getting her here."

Matsukawa told the judge that Inouye was in her office in the early afternoon and would appear.

Matsukawa offered the defense an affidavit and copies of documents in lieu of live testimony by the mayor.

"It is not the position or intent of the County of Hawaii, or the Office of the Mayor, to resist the order of the court," Matsukawa said in

the affidavit.

The most heated exchange came when defendant Jim Albertini began questioning Inouye and tried to ask her for the basis of her decision in lifting the ban.

Amano would not allow Albertini to ask if the financial considerations of PGV played a role in the decision. "I think I'm being blocked in this line of questioning," Albertini told the judge.

The trial wrapped up yesterday and Amano is expected to take at least two weeks to make a ruling after final documents are submitted to her by the prosecution and defense.

HAWAII

Tuesday, September 1, 1992 ■ Star-Bulletin

- Kauaians angry about electric bill hike **A-4**
- Burglar who shot Nuuanu man sought **A-4**
- States copy isle child-abuse program **A-5**

Mayor denies 'pressure' to lift ban

□ Judge will rule Oct. 20 in the case of geothermal protesters

By Rod Thompson
Big Island correspondent

KEAAU, Hawaii — Mayor Lorraine Inouye has denied in court that she was responding to a deadline from outside forces when she lifted a ban on geothermal work on Feb. 28.

But Sen. Andrew Levin testified before Inouye yesterday that financial pressure forced state and county officials to end the ban.

"It's my understanding the decision to lift the ban was done because the deadline was running by the bank, which was going to revoke the loan made to PGV (Puna Geothermal Venture)," he said.

Inouye and Levin were testifying in the trial of 15 geothermal protesters for trespassing at Puna Geothermal Venture property in February and March.

Inouye, who had been refusing to testify, narrowly avoided a contempt-of-court citation when District Judge Riki May Amano said in the morning she planned to issue a bench warrant for the mayor. By the afternoon, both Amano and Inouye changed their minds, with Inouye appearing voluntarily.

Inouye ducked the general question of whether outside pressure of any other kind influenced her when Ama-

no ruled she didn't have to answer because the question was irrelevant to the defense of the protesters.

The protesters say they committed the lesser of evils when they trespassed. To win, they have to prove imminent harm would have happened if they didn't act, that there were no reasonable alternatives and that any damage done by their trespassing avoided some greater damage.

Inouye agreed there were health and safety risks to residents when the company suffered a dramatic well blowout starting June 12, 1991. But 8½ months later, when the ban was lifted, all concerns had been addressed, she said.

The protesters argued that legislative and administrative avenues to solving their problems had been cut off.

Defendant Jim Albertini noted that Inouye had overridden civil defense chief Harry Kim, who felt that the company's emergency response plan was not adequate.

But Amano finally cut him short: "Mayor Inouye has already said there wasn't anything anyone could do to make her change her mind."

Amano signaled she agreed with the defendants on one of the points. "The court believes there were no other alternatives (to trespassing)," she said.

Levin made the point that legislative action offered no hope for the geothermal opponents. "I consistently told them that it would not be possible to stop geothermal," he said.

Judge Amano said she will rule in the case on Oct. 20.



Lorraine Inouye



Andrew Levin

SEP 2 1992

EPA asked to shut down PGV plant

□ Health officials say they have been assisting the federal agency in monitoring

By Gordon Y.K. Pang

Tribune-Herald

Pele Defense fund and other groups are accusing the state of not doing its duties and are asking the federal Environmental Protection Administration to intervene and shut down Puna Geothermal Venture's 25-megawatt plant in Pohoiki.

But Bruce Anderson, the state's deputy health director for environmental concerns, said the

state and EPA are already working together to ensure safety and health concerns are being met at the PGV site.

In its letter to EPA western regional director Dan McGovern, the groups said the state has not adequately underground injection control programs in the Puna area "despite potential for geothermal contamination."

Further, the letter said, EPA must intervene because "the state is not acting in compliance with the Clean Air Act in permitting the construction of the PGV geothermal wellfield."

Besides Pele Defense Fund, others signing the letter included the Big Island Rainforest Action

Group, the Pahoia Chamber of Commerce, the Protect Kahoolawe Fund, the Lanipuna Gardens Community Association, the Puna Community Council, the Citizens for Responsible Government, the Native Hawaiian Legal Corp., the Native Hawaiian Advisory Council and the Hawaii Island Environmental Council.

"PGV must be compelled to take steps to detect and prevent or minimize accidental releases and to protect human health and the environment," the letter said. "Appropriate state and county agencies and PGV must assure the presence of a competent and realistic emergency response

plan."

Anderson said yesterday, however, that EPA intervention is not necessary and would only duplicate actions already taken by the Health Department.

"The state and EPA operate under the same authorities," he said. "There is no reason for them to step in."

Anderson said he has already stated that PGV will be fined for violations associated with leaks that occurred during last month's flow test. Those fines could reach six figures.

For EPA to slap similar penalties, he said, "that would be a double jeopardy situation" for PGV.

"If (EPA) had a problem with our program, they would rescind delegation or overrule us and they have never done so," Anderson said.

He added, however, that "we would have no objections at all to EPA reviewing our program" if the federal government chose to do so.

"We have been working with EPA through every step of the regulatory process," Anderson said.

In addition, he said, there are eight EPA officers on "interagency loan" at his Honolulu office and "they are full apprised of the problems associated with the plant."



-T-H photos by William Ing



Geo on trial?

Testimony from key county and state officials was expected to continue today at the trial of 15 defendants charged with trespass for their part in protests at the Puna Geothermal Venture plant in lower Puna. Above, Civil Defense Administrator Harry Kim responds to a query from defendant Kristine Kubat. At left, state Sen. Richard Matsuura listens to a question posed by Jim Albertini, another defendant.

Kim tells court of geo 'frustration'

□ Trial against 15 protesters continues today

By Crystal Kua
Tribune-Herald

KEEAU — Civil Defense Administrator Harry Kim testified that he was frustrated "many times" in the government process in trying to ad-

dress health and safety concerns of Puna residents living near geothermal development.

"Our credibility with them (the residents) is zero or minus zero," Kim told a District Court judge yesterday.

Kim, popular among area residents, testified in the trial of 15 geothermal opponents who were arrested in February and March for trespassing onto Puna Geothermal Venture's property in Pohoiki.

The defendants are arguing in their "choice of evils" defense that the harm caused by geothermal development outweighs their criminal action of trespassing in order to shut down the PGV plant.

The Civil Defense chief was asked by defense attorney Michael Zola if he thought that the health concerns by area residents were valid.

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TRIAL: CD chief testifies in geo case

From Page 1

"Absolutely," Kim replied. As Kim left Puna District Court after completing 2½ hours of testimony, the standing-room-only crowd applauded him.

Also testifying yesterday was state Sen. Richard Matsuura, a geothermal proponent. He received a much cooler reception from the defendants.

Longtime activist Jim Albertini, one of the defendants, questioned Matsuura about his efforts to try and pass a measure that would establish interim hydrogen sulfide emissions standards legislatively instead of administratively.

Matsuura's action came after the state Supreme Court ruled that the state faltered when it failed to draft administrative rules for the emissions standards.

Albertini asked Matsuura why he had not tried to establish such standards during the eight years or so he has been in the legislature.

"I didn't think (hydrogen sul-

fide) was a hazard, as such," he replied.

In other developments from the case, county attorneys will ask a Circuit Court judge to review an earlier decision by District Judge Riki May Amano to allow Kim and Mayor Lorraine Inouye to testify as defense witnesses.

County attorneys tried unsuccessfully to quash subpoenas served on them by one of the defendants.

Kim agreed to testify but Inouye is not scheduled to testify until the matter is settled either through negotiations with defense attorneys or a Circuit Court ruling.

"We're not trying to obstruct anything," county Corporation Counsel Michael Matsukawa told Amano midway through yesterday's session.

Matsukawa offered other county officials and documents as a "substitute," as one attorney put it, for the mayor's testimony.

Also today, state attorneys were successful in quashing a subpoena for Deputy Health Director Bruce Anderson to testify.

In documents filed yesterday, Anderson claimed that his testimony is not necessary in the case and invoked a special privilege as an agency head not to be subpoenaed.

Anderson also said that costs for travel to the Big Island to testify were not provided.

Kim yesterday listed ailments "commonly associated" with exposure to hydrogen sulfide such as headaches, sore chest, skin irritation and breathing difficulties.

Kim also reiterated his reasons for not approving the geothermal emergency response plan which would set into action government agencies in case of an accident at the plant.

"I wanted a better clarification of risks to land, air, people and water," Kim said.

Inouye overrode Kim on Feb. 28 and lifted the drilling

ban which went into effect after the June 12, 1991 blowout at the KS-8 well.

He said that he objected to Inouye's move because concerns that were raised "were serious ones that needed to be addressed that weren't addressed."

Kim, under cross-examination by Deputy Prosecutor Michael Udovic, said that there was no drilling going on at the time the opponents trespassed.

He said that after the drilling ban was lifted, PGV began preparations for drilling but actual drilling did not begin until March 8.

Kim testified that hydrogen sulfide emissions are a "normal occurrence of any geothermal plant." When asked if closing the plant would make a difference in the level of emissions, he replied, "If all operations would shut down ... there should be no emissions."

Plenty blame, few answers

□ Legislators hear many reasons for isle energy woes

By Jim Witty
Tribune-Herald

Power outages are a pain in the okole. Most Big Islanders are united on that point.

What they can't agree on is who's causing the hurt.

In testimony before a state House panel Thursday and Friday, some blamed Hawaii Electric Light Co. for the persistent rash of power outages, charging the utility with shoddy management and improper planning.

Helco, on the other hand, blamed its service woes on re-

peated delays in getting 25 megawatts of long-promised power from Puna Geothermal Venture.

Others went after state regulators and the policies of former county administrations.

Helco president Warren Lee told members of the House committees on Consumer Protection and Commerce and Energy and Environmental Protection in Hilo Friday that all 22 rolling blackouts in the year ending July 31 could have been averted if PGV would have been on line.

But it wasn't, and the future of geothermal power here is still shrouded in uncertainty.

"Despite the fact that you seem to have an answer for everything, we're still saddled with rolling blackouts," said Rep.

Wayne Metcalf. " ... It appears something has gone wrong with the planning to date. Geo has been an iffy proposition for more than a decade."

Don't blame Helco for that, said former Hawaii County Mayor Dante Carpenter. He said that during his watch (between 1984 and 1988) he advised Helco to hold off on buying "fossil and fuel-fired equipment," thus perpetuating the utility's reliance on forthcoming geothermal energy. And his predecessor, Herbert Matayoshi, did the same, Carpenter said.

State Consumer Advocate Charles Totto focused his testimony on Helco's purchase of a generating turbine that he called a "lemon" and claimed the utility has been deficient in pursu-

ing energy efficiency measures.

"There's an immense amount of fat in the system," said Totto. "And I think in the next 10 years, you're going to see the fat get sweated out."

Others weren't so charitable.

Pahoa businessman Daniel Wilson called Helco "a proven incompetent, uncaring and short-sighted vendor for the service and product which it monopolizes on Hawaii." He claimed that power outages account for millions of dollars in business revenue losses each year and urged a shakeup in Helco management.

But Tony Hanley of the Hawaii Island Economic Develop-



See BLAME, WARREN LEE
Page 8 ... blames outages on PGV

BLAME: No answers to isle energy woes

From Page 1

ment Board equated repeated sniping at Helco with "Japan bashing." In castigating state regulators for leading Helco astray, he said, "The boy to be whipped must include those in the public trust."

In addition, much of the testimony, predictably, turned on the pros and cons of geothermal power. Proponents asserted it is clean, safe and essential to Big Island economic growth. Opponents advised Helco to practice

energy conservation and aggressively pursue alternative power sources.

Without it, said Lee, frequency of rolling blackouts could increase until a new turbine, CT-4, comes on line in 1994.

But, according to Totto, 1994 could bring more of the same because of growth in electric demand and delays in siting CT-4. Totto testified that CT-4 likely won't begin producing power

until late 1995.

In the interim, Totto forecast continued service problems.

"To avoid a substantial risk of more rolling blackouts in the remainder of 1992 and 1993, both CT-3 and PGV must be running at full capacity," he said.

Lee also outlined a contingency plan for Helco should PGV fail to honor its contract. Points include maximizing available generation including delaying unit retirements and compressing

and scheduling unit maintenance for low load periods, such as weekends; minimizing load demand through voluntary load reductions and energy efficiency programs; and, accelerating installation of additional generation, including CT-4 and a 10-megawatt battery storage system in West Hawaii.

With CT-2 down for repairs, Helco is now installing a 12-megawatt replacement turbine, Lee said.

15 geothermal protesters on trial today

By Crystal Kua

Tribune-Herald

Fifteen geothermal opponents go on trial in Keaau District Court this afternoon for protests held at Puna Geothermal Venture's Pohoiki operations in February and March.

Also, county attorneys will try to convince a District Court judge that Mayor Lorraine Inouye and Civil Defense Director Harry Kim, who were subpoenaed by defense, need not testify in the trial.

The opponents were charged

with either simple trespass, a violation, or second-degree trespass, a petty misdemeanor.

Defense attorney Michael Zola, who is representing Penny Shaver, said that the defendants will use a "choice of evils" defense which the county Corporation Counsel's Office is objecting to as part of its effort to quash the Inouye's and Kim's subpoenas.

Zola said that there are three elements to the defense:

- there was no legal alternative other than breaking the law.
- imminent harm or threat of

harm to the defendants as a result of geothermal.

● action of breaking the law was designed to prevent a greater harm.

Zola said that the defense will present evidence to show that the action was warranted because of the threat of safety by geothermal.

Other subpoenas served include state Health Department officials Bruce Anderson and Sam Ruben, state Sens. Richard Matsuura and Andy Levin and PGV vice president Steve Morris.

County attorneys will ask the judge not to allow the defense so that Kim and Inouye need not testify.

The Feb. 24 demonstration, entitled "Shut Down Geothermal" rally, attracted 350 people. A total of 17 demonstrators were arrested after entering a gate at the PGV drilling site.

The following week on March 1, 16 more protestors were arrested and after entering PGV property.

And, 13 demonstrators were arrested March 8.

Geo activists & ailments

Interesting, isn't it, that the same handful of activists keep popping up in the news with complaints about alleged geothermal-induced physical ailments.

No matter that the workers at the geothermal plant site suffer no ill effects nor do the neighbors of the ever-sick activists.

The Petriccis, Albertinis, Martinovichs, Kubats, etc., however are never too ill to take part in illegal demonstrations, lobby in Honolulu, attend countless hearings, etc.

Regardless of the credibility of the activists, the Hawaii Island Geothermal Alliance continues to urge the State Department of Health to initiate a comprehensive program to review all geothermal-related health complaints. Let's determine once and for all in a medically valid manner whether geothermal development or selective hysteria is the culprit.

Bill Cook
Executive Director
Hawaii Island Geothermal Alliance

State: Geothermal company violated permit during test

HONOLULU (AP) — Puna Geothermal Venture violated its permit during a recent flow test at its Big Island power plant by releasing too much hydrogen sulfide into the air, the state Department of Health said.

PGV also violated its permit by failing to immediately notify the department of equipment failures or malfunctions, Bruce Anderson, deputy director for environmental health, said Thursday.

"The Health Department will not issue a permit to operate the power plant until PGV assures us that their problems are corrected," Anderson said.

Although PGV's present permit limited hydrogen sulfide emissions to up to 5 pounds per hour, emission rates as high as 9 pounds per hour were recorded during the test that ended Tuesday, the department said.

The geothermal company also violated its permit by failing to cease operation and close down the well when steam was released through the power plant emergency release facility, health officials said.

"The unplanned release of hydrogen sulfide caused a serious odor nuisance to nearby residents," Anderson said. "This was beyond what would be expected during a normal shakedown period and unacceptable to the Department of Health. We are

pursuing enforcement action based on violations of their permit."

Leaking pressure relief valves, combined with problems with abatement in the emergency steam release system Monday, resulted in peak values of hydrogen sulfide as high as 84 parts per billion at the perimeter of the project, the department said.

But data collected so far indicated the level did not exceed 25 ppb over an hour, which would have been another violation, it said.

The department was also concerned that PGV failed to inform officials that too much caustic soda, or sodium hydroxide, was used in an effort to neutralize the hydrogen sulfide.

Neighboring residents complained Saturday about eye and skin irritation, symptoms that could be expected from exposure to sodium hydroxide, the department said.

Leaking pressure regulator valves in the power plant led PGV to halt the test Tuesday, the seventh day of the 10-day test.

"We experienced the leaking valves in the power plant for a couple of days," company vice president Steven Morris said. "Initially, we felt we could work around the leak. However, after the second incident of elevated hydrogen sulfide emissions, we decided to shut down the test."

Health Department says PGV violated permit

By the Associated Press
HONOLULU — Puna Geothermal Venture violated its permit during a recent flow-test at its Big Island power plant by releasing too much hydrogen sulfide into the air, the state Department of Health said.
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...DOH says PGV violated geo permit.

From Page 1A

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PGV to discuss testing

Puna Geothermal Venture Vice President Steven Morris will discuss results from the recently completed flow testing of well KS-8 at a 10 a.m. press conference today at PGV's Pohoiki plant.

Flow testing, originally scheduled to last 10 days, was halted Tuesday night after just seven days because of leaking pressure regulator valves at the 25-megawatt plant, Morris said.

"We experienced leaking valves in the power plant for a couple of days," Morris said in press release issued Thursday.

"Initially, we thought we could work around the leak. However, after the second incident of elevated hydrogen sulfide emissions, we decide to shut down the test," he said.

The remaining testing procedures will be conducted when operations resume, Morris said.

Once permanent piping is installed and the necessary permits are received from the state Department of Health, power for commercial use will be produced, Morris said.

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"We experienced the leaking valves in the power plant for a couple of days," company vice president Steven Morris said. "Initially, we felt we could work around the leak. However, after the second incident of elevated

hydrogen sulfide emissions, we decided to shut down the test."

The plant could begin regularly producing power sometime next month, Morris said before the Health Department announced the violations.

Confidence in PGV shaken

The developers of the Puna Geothermal Venture shot themselves in the foot again last week. The question now is: Will PGV ever be able to get online without any more incidents? We are not hopeful.

The series of incidents that led to the shutdown of a well last week at the geothermal plant in Pohoiki shows how little PGV officials have learned from the well blowout accident on June 12, 1991. After the blowout, it is reasonable to assume PGV officials would make a major effort to re-establish their credibility and trust in their neighborhood in Puna. But last week's incidents reflected, sadly, nothing near such an effort.

The fact that no apparent effort was made by PGV officials to report to the authorities in a timely manner when the emission of hydrogen sulfide exceeded the allowed level could be interpreted as an attempt to evade responsibility, hoping no one would find out about the violations. When the violations were discovered by the suspicious neighbors, the sagging PGV's credibility went down another notch.

Geothermal development on the Big Island got its bad name, in large part, from the state-county-operated HGP-A well near the PGA site. HGP-A was an experiment and was not well designed. What was baffling was that the state never used the HGP-A experience to develop a specific standard in time to regulate commercial projects until after a state Supreme Court ruling, laid down only a few months ago, forced the state health officials to promulgate a specific standard on the emission level for hydrogen sulfide.

Politics, too, exacerbated both proponents and opponents of the geothermal development and, unfortunately, polarized the community. When it appeared that it was to her political advantage, Mayor Lorraine Inouye took a sympathetic posture toward those whose efforts have been to stop or thwart geothermal development. Highly regarded Civil Defense Administrator Harry Kim was given the role of a meticulous enforcer making sure that geothermal developers follow every letter of the rules and regulations. When political winds shifted, puff, Kim was out of the picture.

Now, when she was confronted with angry residents affected last week by the latest PGV leaks, the mayor claimed the county could only play a small role in regulating geothermal development on the island. But was it not a major role she played when she ordered the PGV to shut down after the blowout? The county has and must have a major role in regulating geothermal development, or any industry, which will affect both the island's environment and the livelihood of the people.

State health officials say they will fine PGV for the violations, and that the amount of the fines could be as much as \$100,000 for four specific violations. We hope they will carry out their threat. And the officials assure the public that no permit for operation will be issued until PGV corrects all its problems. We hope they will be strict with their inspections of the PGV plant.

And perhaps state officials may consider a more thorough job of monitoring the plant. With PGV's record, it might behoove the state to demand that tough, knowledgeable public representatives be placed inside the plant itself to physically look over the shoulders of those running it. Then, when something goes wrong, the public wouldn't have to rely on the reluctant operators to provide proper warning of malfunctions to the community.

Whatever the outcome, our confidence in PGV's reliability and technological capability as a provider of electric power has been severely shaken. Our belief in geothermal as a viable alternate energy source on the Big Island, however, remains firm.

Let's get it together

I've been watching the events unfolding on this island for about 14 years and until now I've never had the gumption to express my views for fear of people misunderstanding me.

However, I can't remain mute on one subject, "geo power." First, I believe geo could be an answer to our power shortage problems but not at the expense of the people who live here.

"Well," you say, "what is your answer?" Okay, how about relocating the bloody thing. This is called the Big Island for a reason. The buggah is BIG. Why not tap into Mauna Loa, I'm no scientist, just a layman, but it's bound to have way more geo power potential than Kilauea. And, guess what? You can put geo many, many miles from anybody! Plus, I don't think the pig's, Mouflon and other animals up there would be bothered by its presence.

Also, why not have a vote on geo. This is the U.S.A. for God's sake, we've all got to stand together and stop going for each other's throat like a pack of rabid dogs. Nothing can get done that way.

If we don't take care of each other, who will? A little respect and compassion goes a long way. I don't believe anybody would choose to live next to geo. I was there when it blew, and I'll tell you I definitely wouldn't want anything like that happening in my backyard.

Now, I don't know much about the safety or science of geo, only what I've read about and looked into, but I do know about people and people don't like to be truly scared, at least not when it comes to their children and their own safety. And that, my friends is what it all boils down to, hard choices.

What do all of us want? How do we get there from here? How can we do it without endangering or angering the people it most directly affects. Sound's pretty simple when you break it down, yet nearly impossible to put into practice.

Well, there it is, I've said my piess. To the people of Puna, good luck and God speed. To our elected officials, THINK. No one likes to be railroaded.

Pat Anocona
Naalehu

Geothermal's promise grows despite problems

IT would be an understatement to say that geothermal energy is having problems getting started on the Big Island. The company faces possible state fines for exceeding chemical emission limits during seven days of flow testing, and that is only the latest in a long series of difficulties. Yet there is a favorable side to the developments that is easy to overlook but shouldn't be.

Steven Morris, vice president of Puna Geothermal Venture, says test results indicate the company's KS-8 well may be twice as powerful as previously believed. Morris said the KS-8 well, thought to have a five- to seven-megawatt capacity, may produce 15 megawatts. The company's power plant has a capacity of 30 megawatts, and the firm has a contract to sell 25 megawatts to Hawaii Electric Light Co.

The revised estimate of well capacity could reduce the number of wells needed to supply geothermal power for electricity, and the time needed to get the geothermal project into full operation. It could mean less nuisance for the Puna community from well clean-outs and tests, with the possibility each time that something could go wrong and toxic gases released. It could also mean savings for the company, which could be crucial to keeping the operation viable.

The down side of the recent tests is that residents of a nearby subdivision were sprayed with a mist of caustic soda, used as a neutralizer, after hydrogen sulfide leaked when there was no steam in the system. Morris conceded that the company can't promise it won't have more problems. But Puna Geothermal seems to be getting close to moving into commercial production of electricity after the year-long delay caused by the June 1991 blowout and a court ruling that forced the state Health Department to redraft its emission standards.

This is electricity that Big Island residents sorely need. Helco, plagued by inadequate capacity and the delay in bringing geothermal energy on line, has been forced to impose a series of blackouts that have left Big Islanders traumatized.

Geothermal energy can only be tapped if the health and safety of its neighbors are protected. Along the way this hasn't always been the case. Despite the problems, the goal of safe and plentiful power is attainable — and seems close to being achieved. It can't happen too soon for Big Islanders whose plight has given a new meaning to the term power-hungry.

PGV plans to drill well again soon

□ Geo power is unlikely to be fed into Helco grid next week

By Gordon Y.K. Pang
Tribune-Herald

Puna Geothermal Venture is set to drill another reinjection well within the next 10 days, a company official confirmed this morning.

It was also confirmed that PGV will unlikely be on-line with power to Helco by next week as originally scheduled, because of the problems encountered during last week's flow test.

Kapoho State No. 4, or KS-4, would be the third reinjection well at the Pohoiki plant site.

PGV's technology calls for leftover brine and steam to be reinjected into the ground through the reinjection wells after flowing through the power plant.

Nearby residents were notified of the impending drilling by letter last week.

Morris said the drilling will last about 60 days and won't begin until after a minor protective lining project on reinjection well KS-3, requiring use of the drill rig, is completed within the next few days.

KS-3 and KS-4 are on the same well pad, which is located on the HGP-A side of the plant property.

GEO: PGV plans to drill reinjection well

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Morris said the decision was made recently to drill KS-4 before drilling KS-9, which is another source well.

KS-8, the designated first production well, does not have the capability of producing all 25 megawatts PGV is contracted to provide to Helco. KS-9 is scheduled to be the second source, Morris said.

"We've been going back and forth between what our priority need is, production or injection," he said. "At this point, it's almost a toss-up," he said, emphasizing that the company didn't feel any urgency to drill the new injection well immediately.

"We'll do everything we can to mitigate the impacts," Morris said, of drilling at KS-4.

PGV's drill rig has been at the KS-8 well site for some time. The controversial flow test which ended last Wednesday proved the well capable of

grossing up to 15 megawatts.

Morris said this morning that it would be "extremely optimistic" to think alterations can be made to the flow system within 14 days as originally scheduled.

"Regulatory issues aside, we have to define our own timetable first," he said.

Exactly how long it will be before actual production begins will in large part be determined during the meeting with Health Department officials tomorrow, he said.

"Two weeks is extremely optimistic at this point," he said. "We're not in a hurry, we're not going to go any faster than we feel comfortable."

The flow test encountered a number of problems including leaky valves which led to unabated hydrogen sulfide and caustic soda drifting out of the plant's borders. Morris has emphasized that the problems were associated with the plant and not

KS-8 itself.

In related news, area residents scheduled a press conference for late this morning to discuss the problems they encountered during the seven-day long flow test.

Those from Lanipuna Gardens and Leilani Estates complained during the flow test of hydrogen sulfide emissions flowing into their homes. Several residents also reported being sprayed by caustic soda as they were observing the flow test.

The Health Department has stated that fines are imminent.

"DOH is going to be fining PGV \$100,000," said Lanipuna Gardens resident Aurora Martynovich. "Our community feels it should get half of it so we can buy monitoring equipment.

"The other half should be given to Health Department authorities, to learn how to monitor hydrogen sulfide. They failed miserably."

Morris reported that on a gi-

ven night during the flow test, up to 17 families voluntarily relocated to various Hilo hotels at PGV's expense.

No tabulation has yet been made, but Morris estimated the costs ran into the thousands of dollars.

Several residents last week also reported being harassed and receiving shoddy treatment from Hilo area hotel employees.

Some of the families also got bounced around from hotel to hotel because of advanced bookings at several of the facilities during what apparently was a busy travel week in Hilo.

"There were some logistical problems," Morris acknowledged. "We did our best to accommodate the needs of all the people," he said.

Morris also reported receiving two requests for medical reimbursement. "We're looking at 'em," he said.

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Kim says Puna residents health concerns are valid

By ROBIN M. JONES
West Hawaii Today

HILO — County Civil Defense Administrator Harry Kim said the geothermal-related health and safety concerns raised by residents living near geothermal development are "absolutely" valid and have not been addressed.

Kim made his comments while spending several hours testifying during a trial of 15 geothermal protesters charged with trespassing on Puna Geothermal Venture property.

Despite efforts Tuesday to prevent Kim and Mayor Lorraine Inouye from having to participate in the trial, Kim began his lengthy testimony Wednesday while county attorneys continued the battle to have Inouye excused from having to appear as a defense witness.

Corporation Counsel Michael Matsukawa has appealed to circuit court the ruling by District Court Judge Riki May Amano that required Kim and Inouye to appear before her.

County attorney's had argued to Amano that Inouye and Kim should not have to adhere to their subpoenas requiring them to testify because the information being sought from them could be obtained elsewhere. Amano ruled, however, that the two were relevant witnesses and would need to appear.

State Attorney General Warren Price will argue this morning that state Deputy Health Director Bruce Anderson should also not be required to appear as a defense witness. Amano is expected to rule on

that today before the trial continues.

As the second witness of the defense and on the second day of the trial that is expected to last most of this week, Kim testified he too still has concerns about the health and safety of the residents who live near the plant.

The defendants, who are using a "choice of evils" defense, are arguing they trespassed on Puna Geothermal Venture property in an effort to prevent another episode of uncontrolled hydrogen sulfide emissions and to prevent possible harm from those emissions to nearby residents.

The eight men and seven women said they had exhausted all legal avenues to prevent the drilling they feared could cause another blowout and were left with no alternative but to go onto the property to try and prevent the commencement of drilling after a ban on it had been lifted.

The drilling ban had been imposed following a June 12, 1991 blowout of PGV's KS-8 well in Pohoiki. Inouye lifted the drilling suspension Feb. 28.

Much of the questioning Wednesday centered around PGV's emergency response plan and its approval. The plan had to be approved before the ban could be lifted and PGV could resume operations intended to produce 25 megawatts of electricity.

Kim stressed he had not approved the response plan because conditions of the resource permit allowing the geothermal development had not been met.

New safety conditions set for Puna Geothermal

Associated Press

State and county officials have notified Puna Geothermal Venture that it must meet new conditions before the company will be allowed to resume work on producing geothermal power, a state official said yesterday.

While results of the company's recent seven-day flow test were encouraging, state officials aren't satisfied it is safe for the surrounding area.

"Our overall assessment of the test phase recently concluded indicates that the technical results were very successful," said Mufi Hannemann, director of the state's Department of Business and Economic Development and the state's energy resources coordinator.

The potential of the well to produce electricity was shown to be greater than anticipated, he said.

"On the other hand, we are still concerned that mechanical problems and human error resulted in instances of community residents being exposed to caustic soda and hydrogen

sulfide gas emissions," he said.

State officials says community residents were not informed of what was happening in a timely and responsive way, Hannemann said.

Everything possible is being done to eliminate further ill effects from noise, air pollution or other causes, he said.

The company is required to replace three backpressure valves which allowed hydrogen sulfide to seep out, and to review its chemical injection system and procedures to ensure that no caustic soda can be released to the atmosphere.

Hannemann said state officials intend to work more closely with county agencies to

improve communications with the nearby residents and police and other emergency agencies.

Puna Geothermal Venture vice president Steven Morris said the company shares the state's concerns.

"We concur that before we begin operation of the power plant, we need to address these issues to the satisfaction of the appropriate regulatory agencies," he said.

Department of Health Deputy Director Bruce Anderson said analysis of steam and brine from last week's flow test showed the hydrogen sulfide content to be within predicted ranges.

Results of other tests on the amount of radon, mercury, lead and other natural elements in the geothermal fluid are expected in another five to six weeks, Hannemann said.

Based on the flow test information, the Department of Health is going to reevaluate the Emergency Response Plan to make sure it protects the community, he said.



Mufi
Hannemann

Health official testifies at geo trial

By ROBIN M. JONES
West Hawaii Today

HILO — A second public official testified Thursday that Puna residents became sick as a result of the June 12, 1991 blowout of Puna Geothermal Venture's KS-8 well in Pohoiki, and they had a valid fear of further harm.

Dr. Sam Rubin, state Department of Health district health services administrator, said that after the blowout, he received a large number of health complaints that he could attribute to the uncontrolled release of hydrogen sulfide.

Rubin said, however, he could not be certain whether the health problems were caused exclusively by the release of hydrogen sulfide or whether fear and stress associated with the blowout and the unknown caused the problems to be as

severe as some were.

He did add, however, "I'm saying, people were sick." The illnesses he saw "certainly were very real clinically," he said.

People came to a health center set up in Pahoa and manned by Rubin following the blowout complaining of upper respiratory distress, sinus problems, skin sores and a host of other ailments, he said. "But each illness had a psychogenic overlay." There was a lot of stress in the community, he said. "For valid reasons."

The eight men and seven women who are being charged with trespassing on PGV property Feb. 23, March 1 or March 8, are using a "choice of evils" defense, saying they went onto the property to prevent further harm to themselves and the community.

They have said they had exhausted all legal channels to prevent further harm but their efforts went unanswered. They maintain they felt the drilling operations were a health and safety threat, and they did what they felt necessary to stop the threat following Mayor Lorraine Inouye's Feb. 28 lifting of a drilling suspension.

Rubin said the defendants fears were justified and valid.

"I myself would consider it a health threat," he said about PGV operations and the possibility of another blowout.

Rubin also said, "If I had my preference, I would have no one exposed to" the gasses and particulate that result from venting of the geothermal wells.

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...State health official testifies at geo trial

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"My medical opinion is there should be an adequate buffer zone. There should be a buffer zone much greater than there is now," he said. The buffer zone was described as an area where residents could not live safely.

He added "there doesn't seem to be" a buffer zone, because people live immediately across the street from the PGV property. He would not, however, say how large the zone should be.

Rubin was asked whether the permit process that is designed to allow revision according to data

found during the plant's operations was allowing the residents near the plant to be part of an experiment.

"I always stood by a buffer zone to prevent any conception of that thought," he said.

He added, however, that the permit is aimed at protecting human health and safety.

Testimony and questioning got emotional during the trial in which many of the defendants are their own legal counsel.

One witness could not continue her questioning of Rubin after she broke down in tears.

Another defendant, Robert Petricci, said in frustration, "I can't get any help out of those guys" referring to the public officials he has contacted about his health problems and fears.

Civil Defense Administrator Harry Kim had testified Wednesday that he had also suffered frustration in the attempt to protect the residents from harm.

He said the residents had felt the same frustration. It was a feeling that was evident during the third day of the trial that will resume Monday in Judge Riki May Amano's Keaau courtroom.

PGV releases gas; Kim says it's minor

State still awaits report on mishap

By Gordon Y.K. Pang
June-Herald

While Hawaii County's role in the ongoing geothermal furor is on trial at Puna District Court in Keaau, there continues to be activity at the Puna Geothermal Venture plant in Pohoiki 12 miles away.

In geo-related developments this week:

● A short release of gas sent a shot of hydrogen sulfide into the air measuring up to 45 parts per billion Tuesday morning, although both PGV and Civil Defense Administrator Harry Kim termed the incident as minor.

● Government officials met with PGV engineers to discuss possible fines related to violations during last week's flow test to determine under which conditions the firm should be allowed to begin operations.

PGV general manager Steve Morris said the short release of steam at around 10 a.m. Tuesday was not serious. PGV workers are in the process of moving one

of its two drill rigs away from KS-8, the flow-tested production well, to KS-3, where a small lining project is slated to begin next week.

On Tuesday, Morris said, workers were removing what's known as a "kill line."

"When they disconnected it, it had some steam in the line," he said.

A fixed hydrogen sulfide monitoring station near the Kapoho boundary of the project recorded a peak reading of 45 parts per billion, Morris said. Within two minutes, he said, the readings went down to 18 and 17 ppb, and within 10 minutes after that, the monitor was recording 1 and 2 ppb.

PGV's construction permit from the Health Department allows for up to 25 parts per billion on an hourly average. During last week's flow test, there were at least two incidences which led to leaks averaging more than 40 ppb. There was also a peak reading of 83 ppb, but Health Department monitor-

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PGV: Release of gas

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ing officials say the hand held monitor that took the reading was showing a low battery signal at the time.

Both Morris and Kim, who initiated emergency preparation procedures upon notification of the hydrogen sulfide release yesterday morning, said the incident was a minor one.

"The quantity released was very small," Kim said. "And it did not come from the source in the well."

"It didn't have a large odor to it and it wasn't pervasive," Mor-

ris said. Asked if the release could have been prevented, he said he did not know although he noted that the pulling of the kill line a routine part of removing the drilling rig.

Kim noted that PGV alerted the county of the incident in a timely fashion. Both Kim and other government officials last week criticized PGV's lack of notification of the two leaking incidences last week as well as an excessive release of caustic soda.

Deputy Health Director Bruce

termed minor incident

Anderson said DOH will slap fines on PGV for those violations as well as exceeding allowable levels of hydrogen sulfide although he gave no specifics. While PGV did not exceed 25 ppb on an hourly average off-site, it did go over the 5 pounds per hour limit emission condition at the well site itself.

In fact, that was one of the topics discussed on Tuesday as state and county officials sat down with PGV engineers to discuss the conditions under which the company will be al-

lowed to operate, Morris said.

"We're still waiting on PGV's report on what happened and how to prevent the problems identified in the flow test from occurring in the future," Anderson said. "That's the bottom line."

Among others at the meeting were officials from the mayor's office, the Planning Department, the Department of Land and Natural Resources and the Department of Business Economic Development.

State DOH to fine PGV

☐ Violations could cost firm \$100,000; no delays expected

By Gordon Y.K. Pang
Tribune-Herald

Puna Geothermal Venture violated State Health Department permit rules by emitting excessive amounts of hydrogen sulfide and by not telling officials about leaks during its flow test.

Deputy Health Director Bruce

Anderson said last night that PGV will be fined for the violations, which could amount to more than \$100,000.

Anderson also said an operating permit will not be issued to the power company "until PGV assures us that their problems are corrected."

A primary consideration will be a visual check of the plant by Health Department officials to ensure that PGV is following the terms of its authority-to-construct permit, he said. But Anderson does not view the problems as serious enough to

stop or delay the project, which had been scheduled to begin producing electricity two weeks after flow testing.

"I don't anticipate these enforcement actions the Department of Health is pursuing will significantly delay the development of geothermal resources on the Big Island," Anderson said last night.

Nonetheless, uncertainties remain about why PGV could not abate hydrogen sulfide with its emergency rock muffler system on two occasions Monday and Tuesday.

"We do have some continuing concerns about the ability of PGV to effectively abate hydrogen sulfide during the periods of time when the facility is not producing power," he said, "during upset conditions."

Those "upset conditions" occurred for about an hour late Monday night, and again for about an hour Tuesday afternoon.

Hydrogen sulfide emission levels did not exceed the hourly average limit of 25 parts per billion, Anderson reported, although peaks hit as high as 80 ppb just outside the PGV prop-

erty line.

PGV did, however, exceed the standard of 5 pounds per hour emission of hydrogen sulfide at the steam source itself. PGV's own monitors picked up readings as high as 9 pounds an hour on Monday night, a clear violation, Anderson said.

PGV is subject to a fine of up to \$20,000 per day it violates that portion of the permit.

From a financial standpoint, however, PGV's failure to notify

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Hawaii Tribune-Herald, Friday, August 21, 1992-

PGV: Emissions fines could total \$100,000

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the Health Department of problems could be even more costly. Anderson said PGV can be fined up to \$25,000 for each time it fails to report that allowable levels were exceeded.

"Those numbers can climb up pretty quickly," he said.

PGV's problems during the last several days of its flow test are apparently two-fold.

First, three leaky valves forced PGV to divert some of the steam coming from its resource away from its reinjection well and into the atmosphere instead.

"We're not so concerned about the leaking valve problems, those can be replaced," Anderson said.

But when such leaks happen, PGV's emergency rock muffler

system is supposed to abate the concentration of hydrogen sulfide before it is released into the air primarily by mixing it with sodium hydroxide, better known as caustic soda. The muffler, however, failed to properly abate enough hydrogen sulfide on Monday and Tuesday.

Three people observing the plant from 2,000 feet away on Saturday afternoon reported getting sprayed with caustic soda causing them to experience temporary burning and itching sensations. Anderson suspects Saturday's incident is closely associated with those that occurred Monday and Tuesday.

For an unexplained reason, Anderson said, PGV has had to manually mix caustic soda with the hydrogen sulfide in the steam flow when an automatic

system exists. A fluctuation in the amount of caustic soda being mixed with the steam could explain why excess caustic soda and hydrogen sulfide was occurring.

"We're not sure why they weren't using it," he said. "It could be the fluctuations in the hydrogen sulfide were so large the system was not working effectively."

Anderson said PGV did not violate its permit during the caustic spray incident on Saturday because the Health Department has no rules pertaining to sodium hydroxide.

"There are engineering solutions to address this problem," he said. "At this time, those solutions have not been presented to the Department of Health.

Certainly it may be a problem more inherent with engineering of the abatement system so that there is inadequate abatement, or scrubbing, prior to release of steam from the facility."

PGV's permit does not carry regulations on caustic soda release. Anderson said the Health Department will consider changing that.

Testing of six water tanks in the area by the Health Department, however, showed no elevated levels of sodium hydroxide in those systems, Anderson said. If taken in large doses, caustic soda can cause gastrointestinal problems, he said.

Anderson said that he, like PGV officials, believes that on the whole, the flow test was a success.

PGV: No serious problem

□ Official says news good despite threat of fines by state

By Gordon Y.K. Pang
Tribune-Herald

POHOIKI — Puna Geothermal Venture general manager Steve Morris continued to maintain during a press conference here on Friday that no serious problems plague the controversial 25-megawatt plant.

In fact, he said, the seven-day flow test resulted in good news. Originally expected to produce between 5 and 7 megawatts of energy, the KS-8 well is now believed capable of churning up to 15 megawatts, Morris said.

As for the series of mishaps that occurred during the flow test, he once again said the problems were "all power plant-related and nothing related to the well."

Morris also stressed that the problems encountered were due to minor equipment and human flaws and not due to faulty technology or planning.

Morris said preliminary measurements show the plant could be capable of producing initially up to 15 megawatts, about half the 30 megawatts the plant is designed to produce.

Helco's contract calls for 25 megawatts to be delivered to its power grids.

The flow test showed "there is more dry steam than brine, what creates the energy," Morris said.

During its flow test last week, PGV produced a total of 216

PGV: Tests show well with more energy

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megawatt hours. At its peak, the plant was producing about 8.54 megawatts gross and netting about 7.68 megawatts, Morris said. The difference is used to run the plant.

There are additional tests that need to be done on the well, but Morris said he does not think there is any need to continue flow testing. He acknowledged, however, that the final determination will probably have to be made by the Health Department.

The emergency release system facility performed at an average abatement efficiency of about 98 percent, Morris said.

He said there were four oc-

cassions on Monday and Tuesday during which PGV exceeded the 5 pounds per hour of hydrogen sulfide allowed. Each violation, according to the Health Department, is subject to a fine of up to \$20,000.

The Health Department said Thursday night that it will cite PGV, although the amount of the fines has not yet been determined.

Morris said the problems occurred as a result of leaking in its three emergency valve pipes. While the emergency system can handle full-scale situations, it is not designed to contain and abate small leaks or

what Morris called "seepage."

As a result, he said, the abatement system did not stifle the proper amount of hydrogen sulfide before steam emissions left its rock mufflers.

"We will be making modifications," he said. "Obviously, there are some problems with the system in the way that it operated."

Morris said the company will change to a different type of valve but he refused to acknowledge that there was a problem with the quality of the original.

PGV will also look at its problem with excess caustic soda, Morris said.

State and county officials have joined residents in criticizing PGV for not notifying anyone when problems arose. Deputy Health Director Bruce Anderson said the company could be fined for that infraction of its construction permit as well.

On Friday, Morris said communications need to be modified. He also expressed some surprise at the public comments by government officials, however. He noted that the Health Department's pounds-per-hour readings showing PGV's excesses were from logs that his company handed over to the state.

State demands safeguards by

By Hugh Clark

Advertiser Big Island Bureau

POHOIKI, Hawaii — State agencies yesterday imposed four new conditions on Puna Geothermal Venture before the \$120 million alternative energy project can begin commercial production.

The departments of Health; Land and Natural Resources; and Business, Economic Development & Tourism announced Puna Geothermal will not be able to resume operations until it has satisfied the state that:

■ Three pressure-release valves, blamed for the Aug. 17 and 18 incidents that violated permit conditions, have been replaced and shown to be

free of further leaks. Replacement valves were ordered last week, Puna Geothermal vice president Steve Morris said during a site visit on Friday.

■ The chemical injection system used to control the hydrogen sulfide by mixing it with caustic soda or sodium hydroxide is refined to ensure that "no amount of soda can be released to the atmosphere."

■ The well — Kapoho State 8 — has been reviewed and inspected by a land department expert to ensure its safety.

■ A more effective and responsive communication system is set up so Puna Geothermal can "give timely and accurate reports" to regulators and residents on what's going on.

"We are in total agreement with the regulators," Morris said.

He said he does not believe the additional requirements would extend the company's timetable or present any challenges that cannot be met.

Puna Geothermal has been under fire since high-level releases of hydrogen sulfide occurred Aug. 17 and 18 and caustic soda mist was discharged Aug. 15.

State health and civil defense officials have complained that they learned of the permit violations, called "upset conditions," last week from residents instead of from Morris.

"We have made clear to PGV that a continued pattern of emissions and

geothermal firm

lack of timely response is unacceptable," said Mufi Hannemann, head of the state business department.

While the state cannot guarantee that emissions won't happen again, Hannemann said he would ensure that they are reported "immediately should they occur."

"The plant is a goldfish bowl and we have to insist that everyone can see the fish at all times."

Morris, who called off a 10-day flow test after the seventh day on Aug. 18, said engineers are making adjustments and he will meet with his staff today to "finalize the timetable."

Puna Geothermal was scheduled to begin sending commercial power to

Hawaii Electric Light Co. on Sept. 5, but that's not likely to occur then, Morris said.

Before a major blowout in June 1991, Puna Geothermal was under contract to provide 25 megawatts of electricity to HELCO by last October.

Bruce Anderson, deputy health director, said that in addition to the requirements announced yesterday, he will "re-evaluate the emergency response plan to make sure it is adequate to protect the community."

That plan previously was criticized as inadequate by Harry Kim, Big Island civil defense administrator, but it was approved over his objections by Mayor Lorraine Inouye, who is the island's civil defense director.

EPA is urged to intervene in Puna dispute

By Rod Thompson

Big Island correspondent

HILO — The Pele Defense Fund has asked the U.S. Environmental Protection Agency to intervene in the regulation of Puna Geothermal Venture, saying the state Department of Health is now doing the job badly.

"The letter expresses concern that the PGV facility presents an immediate and genuine threat to human health and the environment," a Pele Defense statement said.

"We are asking that your office intervene to help prevent a disaster," the group wrote to Daniel McGovern, head of the EPA's San Francisco region.

But Bruce Anderson, deputy director of the state Department of Health, said "the

EPA has been involved in all aspects of the project."

Anderson said the EPA has worked closely with the Department of Health on pollution and other controls, and will continue to do so. He said the EPA has delegated responsibility for regulating the project to the Department of Health.

Puna Geothermal had several excessive releases of hydrogen sulfide gas during its recent flow testing of its KS-8 well and the company's 25-megawatt power plant.

However, all of the gas releases were in the nuisance range, none reaching health threatening levels according to standard assessments of the danger of various levels of the gas.

Despite that, about 30 nearby residents have been complaining

“
We are asking that
your office
intervene to help
prevent a disaster.
”

Pele Defense Fund

in a letter to Daniel McGovern
head of EPA's San Francisco region.

about a wide range of ailments
allegedly caused by the gas re-
leases.

The Health Department is con-
sidering imposing fines for the
violations of the company's per-
mit.

The Pele Defense Fund alleges that Puna Geothermal's work threatens underground drinking water, air quality around the plant, and rights of native Hawaiians.

It also calls for a series of protective measures to be taken, such as minimizing gas releases, monitoring gases, a creation of a "realistic" emergency response plan.

Anderson said the state has already imposed strict requirements on PGV to prevent health risks and will enforce those requirements as well as deal with new risks that might be identified.

However, he said, "There will be occasional nuisances to the public that are practically unavoidable."

DIVISION OF WATER AND LAND DEVELOPMENT

FROM: _____

DATE: _____

FILE IN: _____

TO:

INIT:

PLEASE:

REMARKS:

_____ M. TAGOMORI
 _____ L. Nanbu
 ✓ _____ G. Akita
 _____ L. Chang
 _____ E. Lau
 ✓ _____ A. Monden
 _____ H. Young
 _____ T. Kam
 _____ G. Miyashiro
 + _____ D. Lee
 _____ *to Janet*
 _____ *J. Lopez*
 _____ *MT*
 _____ *dis (file)*

_____ See Me
 ✓ _____ Call
 _____ Review & Comment
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FOR YOUR:

_____ Approval
 _____ Signature
 _____ Information



INTERNATIONAL LONGSHOREMEN'S & WAREHOUSEMEN'S UNION
LOCAL OFFICE 451 ATKINSON DRIVE • HONOLULU, HAWAII 96814 • PHONE 949-4161

HAWAII DIVISION: 100 West Lanikaula St., Hilo, Hawaii 96720 • OAHU DIVISION: 451 Atkinson Drive, Honolulu, Hawaii 96814
MAUI COUNTY DIVISION: 3000 W. Maui Street, Wailuku, Maui 96793 • KAUAI DIVISION: P. O. Box 1910, Lihue, Kauai 96766

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LOCAL 142

August 20, 1992
DEPT. OF WATER & LAND DEVELOPMENT

DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

Honorable Mazie Hirono, Chairperson
House Commerce and Consumer Affairs Committee

Honorable Ken Hiraki, Chairperson
House Energy and Environment Committee

re: Hearings on Big Island Blackouts and Statewide Energy Policy,
Thursday, August 20, 1992 - 5 p.m. - King Kamehameha Hotel

Dear Committee Chairpersons and Members:

Mahalo for this opportunity to testify. My name is Roy Jardine and I am here on behalf of the 7,000-plus Big Island families represented by the ILWU Local 142, Hawaii Division. I have also been asked to represent all of our organization's 28,000 members statewide at today's hearing.

I realize that one of the topics for today's hearing is our island's extended rolling blackouts; we share your concern about these events -- they should be taken very seriously.

The point is: there is no clear energy policy in place and being pursued for the environmental and economic well-being of the people of Hawaii. Frankly, we think the PUC has let us down. We think the Consumer Protector should be examining the PUC, the regulatory process and the overall policy -- or lack thereof -- that allows a community to be forced into blackouts.

We sincerely appreciate your committee's interest and concern; we therefore urge you to consider the following actions:

1. Visit the new \$100 million-plus PGV plant; see it for your own eyes -- and nose! (The business about hydrogen sulfide emissions is greatly exaggerated.)
2. Visit other alternative energy projects on the Big Island (like the solar project at Milolii and NELH's ocean-thermal research at Keahole).
3. Check out wind and hydro plants on this island; we are doing a lot in other alternatives.

(re: ILWU Testimony f hearings on Big Island Blackouts and State-wide Energy Policy)

08/20/92

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4. Listen to HELCo's problems -- especially what we can expect when HCPC and Hamakua Sugar begin their phase-out programs.
5. Then, please work with us -- not against us -- in developing a meaningful statewide and County-wide energy legislative package for the 1993 session.

The ILWU -- along with other public and private Big Island labor organizations -- is also a member of the Hawaii Island Geothermal Alliance.

The reason the ILWU strongly supports geothermal energy development is the recognition that it represents the only near-term source of stable, reliable, affordable power that will free us from our dependency on imported fossil fuels.

We also support conservation, biomass, wind and hydro power and the research needed to develop these and other more high-tech alternatives.

But in the near term -- the next 5 to 15 years -- it appears that only geothermal can provide stable power for our island economically and environmentally.

We are very aware of concerns expressed by some residents of Puna and anti-geothermal activists. However, our leadership has closely followed geothermal development over the past 15 years.

There have been mistakes by all parties concerned; in spite of these errors, we remain convinced that geothermal is our best immediate solution to improving our island's need for reliable power economically and environmentally.

Our membership has additional reasons for supporting stable, reliable power from geothermal energy:

1. Many of our members depend on the health and expansion of diversified agriculture; we believe that geothermal will enhance opportunities in agriculture. It can mean we are able to move water to where it is needed for small and large farming; it can mean value-added processing of products related to sugar and macadamia nuts. These are important to balancing our island's economic future.
2. Many of our members are hotel workers. We must be able to keep the lights on at the hotels. We also must find affordable, stable alternatives to interisland shipment of bunker crude oil which poses a continuing threat, not only to our marine environment but also our visitor industry when spills occur. I say "when"--not "if"--because it is only a matter of time. We must get off the crude oil habit yet meet our island's growing power needs.

(re: ILWU Testimony f hearings on Big Island Bi kouts and State-
wide Energy Policy)

08/20/92

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We know that money is short these days for everything; however, a solid energy program is, in fact, "economic development". It provides and/or secures jobs; if properly managed, it will also enhance our environment by getting us off our fossil fuel dependency.

Among the items we would like to see in an energy legislative package include:

1. Additional funding for monitoring/training of related regulatory agencies.
2. Additional funding for educational programs and tax incentives to encourage conservation.
3. Funding for research regarding ethanol products to reduce oil needs for transportation.
4. Funding for research on indirect uses of geothermal, in particular as it relates to diversified agriculture. We need these types of new jobs and businesses as we move away from sugar production.

More than anything, I wish to leave you today with a sense of Big Island support for geothermal. Thank you for this opportunity to speak. We appreciate your interest and concern and look forward to working with you on solutions. We need your responsible and expeditious action to move ahead to provide a healthy economy and environment for our members and all the people of the Big Island.

Mahalo,

Roy Jardine

Roy Jardine, Field Representative
ILWU Local 142, Hawaii Division

cc: Governor John Waihee/All Other State Legislators/Mayor Lorraine Inouye/Mayor Frank Fasi/Mayor Linda Lingle/All Hawaii County Council Members/Sus Ono/~~Bill Paty~~/Dr. John Lewin/Mufi Hanneman, DBED/Hawaii County Planning Commission/George Yokoyama, HCEOC/Warren Lee, HELCO/Paula Helfrich, HIEBD

cc: ILWU (Thomas Trask/Eusebio Lapenia, Jr./Guy Fujimura/Fred Galdo-
nes, Hawaii Division Director/William Kennison, Maui Division)

Manabu
[Handwritten signature]

Geothermal KS-8 well may reduce some drilling

□ The company's vice president says its power is double

By Rod Thompson
Big Island correspondent

KAPOHO, Hawaii — Puna Geothermal Venture believes its KS-8 well may be twice as powerful as previously thought, possibly reducing the need for less drilling.

But the company says it cannot promise it will not have more problems like the ones that upset nearby residents with chemical smells and mists last week and this week.

The company faces possible state fines for exceeding its emission limits during seven days of flow testing.

The KS-8 well, thought to have a 5-7 megawatt capacity, may produce 15 megawatts, Puna Geothermal vice president Steven Morris said in a news conference yesterday.

He quickly added that the assessment was preliminary, and even if it's accurate, the company probably won't try to drain the full 15 megawatts out of the well.



Steven Morris

A stronger well means fewer additional wells the company will have to drill to make up the full 30-megawatt capacity of its power plant. The company has a contract to sell 25 of the 30 megawatts to the Hawaii Electric Light Co.

Fewer wells means saving money for the company, and fewer headaches for the community, since there won't be so many well clean-outs and tests, with the possibility of something going wrong.

Some of the other good news from the company was questionable. Morris at first said the company's hydrogen sulfide gas disposal system performed as designed.

But later he admitted that nearby Lanipuna Gardens was sprayed with a fine mist of caustic soda last Saturday because of an unexpected problem.

When the system was full of steam, it did indeed work right, he said. But when there was no steam in the system, some hydrogen sulfide leaked past some valves.

"We're not going to mess around. We're going to upgrade them," he said.

The problem was compounded when workers trying to control the leaking gas manually applied caustic soda as a neutralizer, then momentarily forgot to turn on the automatic neutralizing system. It was human error, he conceded.

By one count, the company had five chemical leaks during its seven days of testing. Morris didn't rule out a repeat.

"We're not happy about the incidents. We have to be extraordinarily careful." But he added, "It's unrealistic to think we won't have some mechanical problems."

Emissions delay test of Puna well

HILO (AP) — Puna Geothermal Venture's testing was disrupted for about an hour Monday night at its well in Pohoiki after hydrogen sulfide emissions briefly exceeded permit levels, a company official said.

The excessive emissions occurred on the sixth day of the company's 10-day test, which is scheduled as its final review before bringing the plant on line to provide electrical power under contract to Hawaii Electric Light Co.

The plant shutdown procedure was begun about 8:15 p.m. after the company took a hydrogen sulfide reading of 51 parts per billion, PGV vice president Steve Morris said Monday night.

A reading of 80 ppb was reported by state health officials, Morris said. Full testing resumed after a leaky pressure control valve was adjusted and emissions fell below the maximum permitted average level of 25 ppb, he said.

The plant continued to generate power, and the well was unaffected, he said.

Some area residents happened to witness the disruption from the site, as the company had invited them to observe the nightly monitoring, Morris said.

Meanwhile, some plant neighbors complained at a press conference Monday of a burning caustic soda mist that they said fell Saturday up to 2,000 feet from the plant and caused an itching and burning sensation.

But state health officials, monitoring noise and air pollution from the tests, said their readings did not support those complaints.

The deliberate release of a sodium hydroxide mist is used to neutralize the naturally emitting hydrogen sulfide, and the combination can cause an uncomfortable tingling sensation, Morris said.

None of the residents sustained lasting burns and there were no reported hospitalizations from the incident. Morris said a sample of home water catchment systems would be tested as a precaution.

Hawaii County Civil Defense administrator Harry Kim said he makes daily visits to the area and shares monitoring data with state health officials.

Health Department: Geothermal emissions too high

□ During a test, the plant exceeds limits with hydrogen sulfide

By Harold Morse
Star-Bulletin

Puna Geothermal Venture violated its permit during a recent test at its Big Island power plant by releasing too much hydrogen sulfide into the air, the state Department of Health said.

State investigators found that hydrogen sulfide emissions were as high as 9 pounds an hour, though the permit limits emissions to 5 pounds an hour.

The Health Department also said Puna Geothermal failed to notify it immediately that equipment failures or malfunctions had taken place.

Violations are subject to up to \$25,000 a day penalties.

A Puna Geothermal spokesman said the firm had received no official notification about the alleged violations from the Health Department and would withhold comment until it does.

As the investigation continued, the

Health Department commented in a release on four aspects under scrutiny, specifically that the developer:

- Cannot exceed an ambient air level of 25 parts per billion of hydrogen sulfide (measured at the property line) over an hour. "So far, there is no evidence Puna Geothermal Venture exceeded this limit," the Health Department said.

- May not exceed an emission rate of 5 pounds of hydrogen sulfide an hour. The emission is measured at the source of the geothermal steam. "This section was violated."

- Is also required to report any emission "exceedences, upsets or malfunctions. There was a violation of this section."

- Is required to cease operation and close down the Big Island well if any steam is released through the power plant emergency release facility. "This requirement was violated."

Bruce Anderson, state deputy director for environmental health, said: "The unplanned releases of hydrogen sulfide caused a serious odor nuisance to nearby residents. This was beyond what would be expected during a normal shakedown period and unacceptable to the Department of Health.

We are pursuing enforcement action based on violations of their permit."

The extent of enforcement will be determined by further investigation, Anderson said.

Leaking pressure relief valves at the power plant, combined with inadequate abatement in the emergency steam release system Monday, created unacceptable levels of hydrogen sulfide, the Health Department said.

Some temporary levels were monitored as high as 84 parts per billion (ppb) at the perimeter of the project. But data so far indicates no levels exceeded 25 parts per billion over a full hour, the Health Department said.

Anderson said the department is concerned about not being told quickly about problems by Puna Geothermal, especially when it used too much caustic sodium hydroxide to neutralize the hydrogen sulfide.

Residents viewing the steam plume

from the project perimeter Saturday complained of eye and skin irritation, the release said.

"These symptoms are what would be expected from sodium hydroxide exposure."

As a precaution, the state tested water in catchment tanks from six homes nearby but found no dangerous concentrations in these tanks.

"The Health Department will not issue a permit to operate the power plant until PGV assures us that their problems are corrected," Anderson said.

Harry Kim, Big Island Civil Defense chief, said area residents affected by the emissions believe government and business pronouncements on geothermal have little credibility.

Government needs to demonstrate that it plays a watchdog role, Kim said. It must look after health, safety, land, air and water, he said.

"What DOH has stated today in regards to violations is only a beginning," he said.

Penalties are not the issue, Kim said. "My concern is what are we (government) going to do to follow up, following through with our total responsibility."



Bruce Anderson

Thursday, August 20, 1992 — THE MAUI NEWS

Geothermal test is cut short; next move uncertain

POHOIKI, Hawaii (AP) — Puna Geothermal officials haven't said what their next move will be after announcing it had completed its first phase of flow-testing for a well at its big island plant.

The test was supposed to last 10 days, but was halted Tuesday after

seven days because of problems with hydrogen sulfide emissions.

The company announced Wednesday that the test wouldn't be resumed.

Residents living near the drill site complained about the usual problems associated with geothermal drilling, such as eye and skin irritation, rotten

egg smell and noise pollution.

The company could have continued testing, since levels of hydrogen sulfide and other chemicals never exceeded hourly averages of maximum levels, state health officials said.

The tests had Puna Geothermal producing five megawatts of power for the energy-strapped Hawaii Elec-

tric Light Co.

The tests provided much information, and other scheduled tests may not be needed, PGV Vice President Steven Morris said. He added he thought the facility could begin regularly producing power sometime next month.

Residents scold Inouye about PGV testing

By JASON ARMSTRONG
West Hawaii Today

HILO — Dozens of angry Puna residents, upset by the latest discharge of hydrogen sulfide from Puna Geothermal Venture's Pohoiki power plant, vented their health and safety concerns to Mayor Lorraine Inouye Wednesday.

The residents packed Inouye's office at the county building and reiterated their objections to geothermal development during a heated press conference that lasted more than 30 minutes.

"You're not protecting me," cried a tearful Penny Shaver, "you're protecting the development on the hill."

Shaver, who said recurring health problems have plagued her and her children, stated safety issues should not be forced into taking a back seat to large-

scale development.

"Something is making us sick. My child is worth more than \$100 million," Shaver said, while adding action is now warranted. "We're not going to sit around any more," she warned. "If I had a bomb right now, I'd be up there."

Inouye said the concerns raised by the 30 or so geothermal opponents were valid. "The problem is real," Inouye told the vocal group.

Inouye's attempt to appease their worries only generated louder demands for the unconditional halt to all geothermal operations.

"We would like to have most of the issues resolved," Inouye said above the shouts of irate residents.

"It seems as though their \$125 million

is worth more than our lives," said Jon Olson, president of Lanipuna Gardens subdivision, the residential area nearest to PGV's plant. "We want to go back to our homes."

"My family can't go home," said Gregory Pommerenk, "we're stuck in a hotel."

Numerous other residents said their children had developed bleeding and respiratory ailments because of the uncontrolled blowout of well KS-8 last year and the periodic release of toxins and other harmful substances since.

Inouye later issued a press release which restated her concerns for the residents. Inouye said she visited the 25-megawatt power plant Tuesday after

See PUNANS:
Page 4A



MAYOR LORRAINE INOUYE

...Punans confront mayor over geo tests

From Page 1A

receiving word that high levels of toxic gases and caustic soda had again been released into the communities that surround the PGV plant.

Inouye also said she had received assurance from Bruce Anderson, deputy state health director, that an investigation focusing on emission controls, monitoring and the release of caustic soda had been initiated. Anderson said recent test results confirmed no nearby water catchment systems or other sources of drinking water had been polluted by the release of caustic soda, according to Inouye.

Still, Inouye said health con-

cerns remain paramount.

"It is important that we determine whether any violations occurred and take appropriate steps to prevent any recurrence," Inouye said. "The health and safety of area residents comes first, and we must do everything we can to meet that responsibility."

Inouye refused pleas from geothermal opponents present at the press conference to shut down the PGV operation.

The 10-day flow-testing process, halted after seven days when PGV operators were unsuccessful in their attempts to stop leaking valves Tuesday, has been completed, a company spokesman said late Wednesday.

The project has already cost more than \$120 million, according to Steven Morris, PGV vice president and general manager.

PGV has contractual obligations to supply Hawaii Electric Light Co. with 25 megawatts of power for the next 35 years at a cost of \$4 million a year, according to HELCO President Warren Lee.

Should PGV be able to provide the electricity without any other substantial setbacks, at least 30 years would be needed, under the terms of the current contract with HELCO, for the company to begin making a profit, according to testimony previously presented to the PUC.

Puna Geothermal now facing stiff fines for violating rules

By Hugh Clark
Advertiser Big Island Bureau

POHOIKI, Hawaii — Puna Geothermal Venture faces thousands of dollars in fines for violating its permit by exceeding hydrogen sulfide emission limits and failing to immediately notify the state Department of Health about equipment failures or malfunctions, the department said yesterday.

Deputy Health Director Bruce Anderson said last night the violations occurred during the "flow testing" that Puna Geothermal conducted from Aug. 12 until Tuesday.

The test had been scheduled to last 10 days, but came to an early end after hydrogen sulfide leaks Monday and Tuesday.

The problems may stem from underground steam that is hotter and under higher pressure than Puna Geothermal Venture's equipment can handle, Anderson said. The firm hopes to tap to that steam to power generators that would produce electricity for the power-poor Big Island.

Steve Morris, Puna Geothermal Venture vice president, has scheduled a press conference for this morning to brief the media on the next steps in the \$120 million project. Hawaii Electric Light Co. officials expect Puna Geothermal to begin delivering power by Sept. 5.

But Anderson said, "The Health Department will not issue a permit to operate the power plant until PGV assures us that their problems are corrected."

Morris, who became project general manager earlier this year, said he would not comment until he discusses the issues with Anderson.

Under the state permit that allows it to develop geothermal energy, Puna Geothermal Venture is allowed to release no more than 5 pounds of hydrogen sulfide per hour into the air.

Anderson said, "Emission rates as high as 9 pounds per hour were recorded."

Another permit requirement, that hydrogen sulfide in the air at the edge of the project site be no more than 25 parts per billion over an hour, was not violated, he said.

Anderson said the developer failed to report excessive emissions and malfunctions.

Anderson said he was upset that government officials first learned of problems at the Puna Geothermal project not from the company but from angry neighbors.

Anderson said the Health Department is still investigating to determine how many violations occurred and how much to fine Puna Geothermal Venture.

PGV shuts down geo well

□ Opponents say it's the beginning of end of operation

By Gordon Y.K. Pang
Tribune-Herald

Puna Geothermal Venture voluntarily shut down its week-old flow test early this morning after company officials decided they had no way of abating leaks plaguing its piping.

Opponents of geothermal this morning were gleefully calling the decision the beginning of the end for the controversial development on the Big Island.

PGV general manager Steve Morris said, however, he did not consider the lingering valve leaks a problem with the plant's technology that could not be addressed.

The decision was made late yesterday, only hours after Morris told the Tribune-Herald that the leaks were not a major concern.

But Morris' comments came prior to yesterday afternoon when, for a second straight day, the abatement system once again failed and sent high levels of hydrogen sulfide into Lanipuna



CONFRONTATION — Leilani Estates resident Robert Petricci (left) angrily confronts Puna Geothermal Venture General Manager Steve Morris over hydrogen sulfide leaks from the PGV plant. Morris

was meeting with area residents upset over a second straight day of leaks.

—T-H photo by William In...

See GEO,
Page 8

GEO: Leaks force PGV to shut down well

From Page 1

Gardens and Leilani Estates for about an hour.

Robert Tam, an environmental health specialist for the Health Department, said last night that using a hand-held monitor, peak levels shot up to 69, 60 and 45 parts per billion of hydrogen sulfide shortly after 2 p.m. yesterday just outside the PGV boundary on Pohoiki Road.

At 3:47 p.m., Tam said he recorded levels of 47, 46 and 25 ppb at the same site.

PGV's permit from the Health Department requires the company to emit no more than 25 parts per billion of hydrogen sulfide on an hourly average. This morning, Health Department spokeswoman Jennifer Castleberry said the highest hourly average reading calculated was 19 ppb.

"They were not in violation of the permit," she said.

Morris said he has not seen hourly average readings from PGV monitors.

As for the reasons PGV decided to close its well test, at least temporarily, Morris said: "We've been having troubles with three valves and reassessed whether we could continue to operate with these leaks and we made a decision we weren't

comfortable we would not have another release."

Morris said after the first readings of high emissions Monday night, a decision was made to continue because PGV felt the abatement system could be mitigated.

"Once we discovered the leaks, we would not have continued if we didn't feel we could mitigate it," he said. A discussion after yesterday's incident changed their minds, he said.

Critics have continued to raise a concern made by geothermal expert Wilson Goddard that PGV could not safely abate emissions during an emergency and area residents emphasized the point again in recent days in light of the two leak episodes and an overspray of caustic soda over the weekend.

Morris said abatement was not a problem.

Morris said that the flow test, in other aspects, went well and that the plant produced up to 6.5 megawatts yesterday.

(On a related note, Helco official Army Curtis said this morning that the utility did not ask PGV to delay shutting down because of an outage in Hilo last night. Morris said after Curtis'

comments that PGV "coordinated" with Helco to make sure "we didn't drop the load unnecessary.")

Engineers were to meet today to determine whether the flow test needs to or should continue, Morris said. The Health Department issued a 10-day permit for the flow test.

"If we had replacement valves available, we would start up again in short order, but we don't and we're not going to push that," Morris said.

The premature end of the flow test would not delay PGV's scheduled regular delivery of up to 25 megawatts to Helco, scheduled to begin next month, he said.

Morris said he was not pressured to shut the well down. Civil Defense administrator Harry Kim said yesterday afternoon however that if emission levels consistently exceeded 25 ppb, regardless of hourly averages, he would not hesitate in shutting the plant down.

Yesterday afternoon, before the decision to shut the well, Morris, Kim and a number of PGV engineers and other employees met with about 40 angry area residents primarily con-

cerned about getting emergency cash money from the company.

PGV has been relocating up to two dozen families at various Hilo hotels during the flow test. Yesterday, a good portion of those residents said the inconvenience of living outside of their homes had turned into a serious expense.

They appeared to be placated when PGV officials handed over \$1,300 to Lanipuna Gardens president Jon Olsen to disburse to 25 needy families.

Health concerns were also raised and several times Kim was forced to step between residents and Morris.

Olsen said that despite PGV's decision, area residents intended to demonstrate at the County Building before the County Council and the mayor's office.

Lanipuna Gardens resident Aurora Martinovich, who lives closest to the KS-8 well, called PGV's decision "the beginning of the end."

"The stuff is corrosive inside, and we have so much humidity outside, life will be like this under normal operations," she said.

"They intend to start up again, our intention is to keep it shut down."

Geothermal chief optimistic

Problems blamed on repairable plant valves

By Hugh Clark
Advertiser Big Island Bureau

POHOIKI, Hawaii — It was the power plant, not the geothermal well, that caused problems Monday and Tuesday at Puna Geothermal Venture's \$120 million development, vice president Steve Morris said yesterday.

Three regulator valves controlling the steam failed to operate and allowed the release of high levels of hydrogen sulfide. As a result, Morris ordered an early end to the planned, 10-day flow test Tuesday night.

He said the valves will be replaced with equipment capable of handling the higher-than-expected pressure and heat that the well produced during the seven days of testing.

During a two-hour site visit and press conference yesterday, Morris outlined the results of the test and responded to alleged permit violations.

Morris, whose company faces a \$25,000 fine for each violation each day it occurred, said he would soon sit down with deputy health director Bruce Anderson to discuss infractions cited by the state Thursday.

Morris admitted four instances when the release of hydrogen sulfide at the plant site exceeded the permit levels of 5 pounds per hour. The highest reading was at 9 pounds.

He said he was puzzled by the charge that he failed to inform the Health Department of the violations as they occurred. He said most of the data about the hydrogen sulfide re-

leases came from Puna Geothermal's logs.

Morris said the aborted test produced a lot of good news, including the potential for producing up to 15 megawatts of power — twice that initially projected.



Morris

But Morris said he doubts Puna Geothermal will now meet the Sept. 5 goal for supplying the first load of power to Hawaii Electric Light Co., as the utility testified Thursday in a legislative inquiry.

"That would be very optimistic now," Morris said, considering the state health department wants reassurances from Puna Geothermal that it can control what may be the world's hottest geothermal well before it is allowed to start commercial production.

Morris said communications "need to be worked on." He denied he evaded county Civil Defense administrator Harry Kim or Anderson and his staff. Both complained publicly they learned of the flow test problems from angry residents living near the plant rather than from the developer.

Morris reiterated that he made the decision Tuesday to shut down the test after he could not get "absolute

assurance" from his engineers that the existing valves could be adjusted to handle the steam.

Besides discovering the increased potential from the producing well, KS-8, he said company officials learned that the gas disposal system worked as designed, and that injection wells — Kapoho State 3 and KS-1A — can handle the fluids that, once they've gone through the Puna plant, are reinjected into the ground.

He said the levels of dissolved minerals and metals that have concerned neighbors opposed to the project "were lower than expected," though he released no data on the chemical analysis.

The best news may be the proportion of steam, which produces the power, is greater than the brine — the watery waste product — and that means production will be more than anticipated, Morris said.

At peak, Puna Geothermal produced 8.54 megawatts of energy, of which 7.68 megawatts was sent to HELCO. The difference was used to run the plant.

The 88 hours of power export during the test show that geothermal does and can work, Morris said.

He believes the problems were what might be expected with a plant shut down for 13 months by various regulatory and legal rulings.

Morris downplayed the furor over a caustic soda mist released last Saturday that fell onto observers in Lanipuna Gardens, saying tests of water catchment systems indicated they had not been fouled.

Geothermal detour at outage inquiry

By Hugh Clark
Advertiser Big Island Bureau

HILO, Hawaii — A state House inquiry into Hawaii Electric Light Co.'s 13 months of rolling blackouts and other outages turned into a geothermal battle yesterday.

Both sides lined up to testify about the promise or disaster they see in geothermal energy.

If Puna Geothermal Venture ever gets its 25 megawatts of electricity pouring into the starved HELCO system, the company could be out of the woods sometime in 1993, according to Warren Lee, president of the utility.

But without the geothermal power, the situation will worsen through 1994, he predicted.

Lee blamed the problems associated with Puna Geothermal for causing HELCO's energy shortfall.

He said "an inflexible permitting process" aggravated the problem. "The issue for HELCO was never

money, nor lack of will," Lee testified.

Angry customers blamed poor planning and management, and some called for canceling HELCO's franchise from the state Public Utilities Commission to supply power to the Big Island.

Dante Carpenter, former mayor of the Big Island, said "the morass and confusion" should be blamed on people like himself who were in county and state government and failed to develop an energy policy in Hawaii.

As mayor in 1984-88, he said, "I strongly urged HELCO and its (now retired) president Norman Oss to delay, defer or push back the starting time for purchase of fossil and fuel-fired equipment."

The Herbert Matayoshi administration also used similar tactics to keep HELCO dependent on geothermal power as its future energy source, Carpenter said.

Meanwhile, Puna residents opposed

to the geothermal project said the problems will only worsen unless HELCO is forced to begin conservation measures and find other ways to produce energy.

Business groups, including the 45,000-member Hawaii Geothermal Alliance, backed geothermal development and blamed poor state regulation for many of the problems of both HELCO and Puna Geothermal.

June Curtiss, a nurse who chairs the alliance, which includes several labor unions, said conservation is a part of the solution as well as geothermal, wind, solar and eventually ocean thermal power.

"We certainly are not going to be participants in HELCO-bashing," she said.

On Thursday in Kona, the ILWU and the Big Island Business Council said the Public Utilities Commission and others should be investigated rather than HELCO.

Monday, August 17, 1992 PACIFIC BUSINESS NEWS

Geothermal drilling complete

Puna Geothermal Venture finished drilling its \$100 million Pohoiki well and expects to produce from 5 to 7 megawatts of electricity by September. The well will be capable of serving 5,000 to 7,000 people, according to company officials.

Mayor gets gas on geo

□ Protesters also take complaints to the County Council

By Gordon Y.K. Pang
Tribune-Herald

Lower Puna residents opposed to geothermal gave an earful to Mayor Lorraine Inouye and the County Council yesterday but failed to obtain their major objectives.

Meanwhile, Puna Geothermal Venture formally announced that there would be no more flow testing of its KS-8 well. The test that began last Wednesday was cut short yesterday after officials concluded that they could not guarantee that valve leaks in the system would not spew excess levels of hydrogen sulfide into neighboring communities as it did Monday and Tuesday.

Mayor Lorraine Inouye defused a threatened protest in front of her office when she agreed to meet with 30 area residents at noon. Surrounded by television cameras, Inouye listened to the sometimes emotional pleas from her audience.



—T-H photo by William H.

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HOT SEAT — It was standing room only in county Mayor Lorraine Inouye's office yesterday where residents angry over two days of hydrogen sulfide leaks from the Puna Geothermal Venture plant

vented their frustration. Here Inouye listens while an aide, off camera to the mayor's left, supplies her with information in response to question from Puna resident Jon Olsen (standing, center).

MAYOR: Protest taken to county officials

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Most of those in attendance were residents of Lanipuna Gardens and Leilani Estates where most of the recent complaints have originated. Many had been relocated, at PGV's expense, to Hilo hotels during the flow test.

Jon Olsen, president of the Lanipuna Gardens Community Association, said he wanted an unequivocal "guarantee that what happened will never happen again."

Inouye said she could not give such an assurance.

That prompted more unhappy comments from the residents, who noted that the mayor promised them following the June 1991 blowout that another major incident would result in the plant's permanent shutdown.

"All these people here voted for you not as a business manager," Olsen said. "If we wanted a business manager, we would have voted for (Stephen) Yamashiro."

Inouye said it was previous

administrations which had made the decision to allow for the PGV project to be where it is. There is little she can do to stop the project unless it can be proven that county permits have been violated, she said.

Following more than an hour of discussion, Inouye said her administration is asking the company to investigate the reasons for the leaks of hydrogen sulfide and caustic soda over the past few days. County geothermal compliance coordinator Jim Moulds will review PGV's report and discuss the findings with her, Inouye said.

Health Department officials have also assured her that they will be investigating emission controls, monitoring and the caustic soda release, the mayor said.

The mayor's reception yesterday was in marked contrast to a visit from protesters in March, when 15 people were arrested — several by force — at Inouye's

outer offices when they failed to disperse after business hours.

The area residents visiting Inouye yesterday also got to do what many feel has long been overdue — a chance to put the ongoing geothermal issue before the Council.

Councilwoman Helene Hale had introduced a bill which would have given the authority to issue geothermal resource permits back to the Council. Currently, the appointed Planning Commission issues geothermal resource permits.

About 15 area residents told the Council yesterday they agree with Hale's assessment that elected officials should be making the decisions on an issue as controversial as geothermal.

"At least we can vote you guys out," said Leilani Estates resident Robert Petricci.

"We are being derelict in our responsibilities if we don't take control of this," said Hale, who is now living in Lanipuna Gar-

dens and said she smelled hydrogen sulfide Monday night.

Planning Director Norman Hayashi said the recent problems at PGV would not be solved if Hale's bill passed.

Monitoring of hydrogen sulfide and noise levels are the purview of the state, Hayashi said. As for conditions under which a county geothermal resource permit can be granted, he said, the Council would be able to decide what those conditions are but the responsibility of enforcing those responsibilities would still be with the Planning Department.

De Lima, who said he supports the intent of Hale's bill but feels it lacks substance, agreed. "The day-to-day management would still rest with the administration," he said.

The bill was defeated 7-2, which spurred catcalls from the audience. Hale was joined by Councilwoman Merle Lai in voting for the measure.

PGV leaks at high level

□ Residents, state and county officials angry at geo firm

By Gordon Y.K. Pang
Tribune-Herald

POHOIKI — Residents and government officials said they are angry and upset about elevated hydrogen sulfide levels last night from the Puna Geothermal Venture plant and the lack of response from the company.

Leakages in three pressure control valves at PGV's 25-megawatt plant coupled with a failure to abate those emissions caused hydrogen sulfide readings

of up to 51 parts per billion for at least an hour last night, more than twice as high as the allowable level.

The Health Department allows for up to 25 ppb of hydrogen sulfide emissions on an hourly average.

Residents of Lanipuna Gardens and Leilani Estates said they were detecting hydrogen sulfide at their homes starting in the afternoon although the strongest and most sustained detections apparently occurred between 7 and 9 p.m.

Civil Defense Administrator Harry Kim said he mobilized American Red Cross and police at around 8:30 and had gone to PGV headquarters to notify them

he was shutting them down — with a go-ahead from the Health Department — when he was informed that the leak had been identified and abated. The plant was not shut down last night as reported elsewhere, Kim said.

While PGV officials are downplaying the incident as a regulatory problem, county and state officials are joining area residents in criticizing the company for not alerting authorities about the leakages or the release of caustic soda during the weekend.

Steve Morris, PGV general manager, said the valves "have been leaking for several days" and continue to leak, but generally are not a problem.

During normal operations, practically all emissions are reinjected into a well after passing through the power plant, Morris said. PGV was in the middle of its 10-day flow test when it discovered the leaks, requiring a small portion of the steam to be diverted into a rock muffler emergency abatement system, he said.

There was not enough caustic soda to abate the hydrogen sulfide, he said, and weather patterns caused the elevated levels to drift off to where it went.

"We were getting higher readings at the perimeter after 8



See PGV, STEVEN MORRIS
Page 12 ... PGV general manager

PGV: Geothermal leaks gas at high level

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p.m.," Morris said.

The problem with the abatement system was found to be lack of caustic soda, he said, and was corrected.

"These leaks, we don't view them as significant," Morris said. "The results of the combination of events were significant," he said. "Wind and humidity" played a role in the emissions drifting into the subdivisions, he said.

Area residents last night, however, reported no abnormalities in weather conditions.

Morris reported that one handheld hydrogen sulfide monitor recorded levels as high as 48 and 51 ppb between 8:10 and 8:40 p.m. and zero at 9 p.m.

Lanipuna Gardens resident Conrad Zydervelt, who accompanied the person with the PGV monitor, said "for a solid hour

we saw readings from 38 ppb to 51 ppb."

Lanipuna Gardens resident Janice Wilson said the stench was so bad at her house at 7:30 that she went to a neighbor's to call Harry Kim.

Maria Roubique, a Leilani Estates resident about one mile from the plant, said her family had been experiencing sore throats and the smell of sulphur in the air starting yesterday afternoon.

She said she was told by the Health Department "there was no H2S" and added that she didn't get much help from the message taker at the PGV hotline either.

Kim said this morning that the first call he got was from Wilson and that neither he nor police at anytime received calls

from PGV about the incident. Nor, he said, did he receive any calls regarding the release of apparently abnormal doses of caustic soda into the air over the weekend, which caused three people burning and itching sensations and may have drifted into neighborhood catchment tanks.

Morris said he is not aware if authorities were notified or not when the elevated levels were recorded, although he knows Kim and others showed up soon afterwards.

"We have a problem here, this system is not working," Kim said this morning. "I dare anyone in this goddamn state to ... tell me it's not a hazard. I do not know what it will take to make the victims of these instances the victims and not the villains."

State District Health officer Sam Ruben accused PGV of not admitting to the leaks earlier.

"They didn't alert us again," Ruben said last night. "They didn't say a damn thing until we contacted them."

Ruben said that with the permission of Deputy Health Director Bruce Anderson, his boss, he was opening up health assessment clinics this morning at the Bay Clinic locations in Hilo and Pahoa to examine area residents.

Jon Olsen, president of the Lanipuna Gardens Association, said he and others are planning to protest the situation at Mayor Lorraine Inouye's office in the County Building tomorrow at noon.

"Are they going to stop at nothing short of bodies in the street?" Olsen asked.

Geothermal leaks force tests to end

By Hugh Clark

Advertiser Big Island Bureau

POHOIKI, Hawaii — Plagued by hydrogen sulfide leaks for a second day, Puna Geothermal Venture officials last night cut short the operating test of their project.

The "flow test" had been scheduled to last 10 days, but was ended after seven.

But the plant was producing electricity, so the shutdown was delayed last night while Hawaii Electric Light Co., which has been hard-pressed to meet the island's need for electricity, sorted out yet another power failure.

Puna Geothermal Venture vice president Steve Morris said the Kapoho State-8 well was producing six to seven megawatts of power at one point yesterday. But it was decided to halt the test after excessive amounts of hydrogen sulfide — the toxic, smelly gas that is found in geothermal steam — leaked out in the afternoon.

Similar high levels of hydrogen sulfide Monday night had county officials poised to shut the project then.

The leaks upset regulators as well as neighboring residents.

While the residents said the leaks proved their concerns about the project — which draws heat from underground steam and brine to power electricity-producing generators — Morris termed the test a success.

He said the test proved the

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Geothermal: Leaks force end to tests

FROM PAGE ONE

KS-8 well can produce significant power and that nine of the 10 modular generators in the project powerplant are ready to go operational.

He said problems with the valves that control geothermal power coming into the system produced the "belching of gas" Monday and yesterday. Both times, operators at the project failed to release enough caustic soda to neutralize the hydrogen sulfide and winds exacerbated the problem for neighbors.

Levels of hydrogen sulfide leaking from the test went as high as 60 parts per billion yesterday. The project's state Health

Department permit allows a maximum hourly average of 25 parts per billion.

State Health Department enforcement chief Paul Aki could not be reached yesterday.

Harry Kim, Hawaii County Civil Defense administrator, said he was pleased by the voluntary shutdown, which he and others had urged.

But Kim complained that on both Monday and yesterday, warnings about the hydrogen sulfide came not from Puna Geothermal but from troubled neighbors.

And, he said angrily, he dared anyone in the state "to tell me it's not a nuisance. Anyone would be pissed off at what these people are enduring psychologically."

Morris said last night that he was waiting for word from HELCO officials before cutting off the power his project was providing to the utility.

The area from Wainaku north of Hilo to Kaumana was left without electricity for more than a half-hour. Several thousand homes were believed to have been affected.

A HELCO spokesman said services were largely restored by 8 p.m., but he referred further questions to another company spokesman, who could not be reached.

HELCO's frequent outages plus 20 scheduled blackouts over the last year are the subject of legislative hearings in Kona tomorrow and Hilo on Friday.

Comments on closing Polihale for STARS missile launches

To the Forum:

Another concern of the residents of Kaua'i, is the fact that a portion of Polihale may have to be closed for a few hours a day for up to 30 days a year in order to maintain a safety zone for STARS missile launch and testing. Remember, not all of Polihale, but just a portion.

It is understandable that the public would be concerned at the periodic closure of any public facility or area. How often did you have to detour through and eat the dust of a cane field because of an accident on the highway, or because the electric company blocked the highway working on a power line, or even for workers trimming some trees along the highway? Why was your right to proceed along the highway interrupted? For your own safety, that's why.

Also of great concern is the extremely remote probability that a STARS missile might go awry, fall short, and hit a whale. Can you believe that? If you can, then maybe you'll believe Mt. Waialeale will erupt and bury Lihu'e on the second Tuesday of next week? Forgive me, I couldn't resist that.

Wha'eva! What about Polihale? The island of Kaua'i has nearly 80 miles of beautiful, usable, sandy beaches. Many of those miles of beaches are on Barking Sands, located outside the safety zone and would not be closed even during a STARS launch.

For example, Majors Bay, a very popular recreation area that entertains most of the 2,500 to 7,000 visitors to Barking Sands every month. I doubt very much if Polihale does 5% of that visitor count even in a good month. But think about it, even if a portion of Polihale

were closed for 30 days a year, that means it will be open for 335 days a year. Come on folks, how many people can afford to take off work and go to Polihale even 335 days a year? My family and I have been here for 7 years and we've been to Polihale twice.

Besides, the last time I was there, the condition of Polihale's facilities left a lot to be desired, and there are a lot more desirable and accessible beaches on Kaua'i. Frankly, it seems the periodic closure of Polihale is just another misguided excuse by the opponents of STARS to further stall progress of the STARS program, like the latest and most ridiculous demand for yet another EIS. But, like most of the questions they've raised, this doesn't hold water either.

Now, what about the whales? PMRF maintains over 1,000 square miles of sonar systems off the Kaua'i coast that are used to track targets, range users, fishing boats, tour boats, surfers, and even whales that may venture into the area. In thirty years of operations, it is understood that none of the hundreds of targets launched from PMRF has ever come within miles of hitting a whale, or anything else.

Besides, if an unfortunate whale ventures into Kaua'i waters, it would have a much better chance of getting hit by one of the hundreds of tour boats, fishing boats, pleasure crafts, jet skis, surfers, wind surfers, or swimmers that enter Kaua'i waters every day, than by a STARS missile launched from PMRF once every three months. Come on Kaua'i, think about it!

Fred A. Ponte
Waimea

Geo well spews caustic soda on residents

PGV officials acknowledge spray

By Gordon Y.K. Pang
Tribune-Herald

Puna Geothermal Venture officials over the weekend had to fend off a new concern brought

by angry nearby residents — caustic soda.

Three people said they were “sprayed” by the substance while standing near PGV’s borders and suffered burning and itching sensations as a result. Meanwhile, a Kapoho family said it found a white powdery substance in puddles on its prop-

erty and in a water catchment tank.

Both PGV and the Health Department said they were looking into the allegations, which they view as a concern but not a major health threat.

Pohoiki Bay Estates resident Rich Jones said he, his mother Mary Jones and Lanipuna Gar-

dens resident Janice Wilson were sprayed while observing PGV’s ongoing flow test from just outside the plant boundaries Saturday afternoon.

“We were standing there ... it was like little pin points burning and itching me all over,” Wilson said. “I had shorts and a small top on, I could feel burning all

over me.”

“It was a burning yet itching feeling on the exposed part of my skin,” Rich Jones said. His eyes got itchy and watery and were red through yesterday, he said. Wilson said she and Jones’

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CAUSTIC: Officials looking into geo spray

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mother had glasses on and did not experience the same symptoms in their eyes.

Both Jones and Wilson said they needed to shower three to four times to alleviate the itching.

Wilson and Jones said they stopped to observe the plant because the plume above the plant appeared bigger than at anytime since flow testing began on Wednesday.

Meanwhile, Kapoho Estates resident Greg Pommerenk said he noticed a white substance in rain puddles and on the catchment tank on his property, which is about 2,000 feet from PGV’s steam abatement system.

Pommerenk, a County Council candidate, said the puddles

smelled like hydrogen sulfide.

PGV officials told him to take samples to PGV scientists this morning.

Jones and Pommerenk said they are considering filing a criminal complaint with police or the prosecutors’ office.

PGV general manager Steve Morris this morning acknowledged that too much caustic soda, also known as sodium hydroxide, may have been used in its abatement system over the weekend. In the steam plume, he said, the substance may have drifted onto nearby properties. The substance is placed in rock mufflers to neutralize the highly acidic hydrogen sulfide that has been emanating from the geothermal source, which has been

one of the primary concerns for residents.

Morris said the company was aware of the complaints and is following up on them. He confirmed also that on-site workers may have also been sprayed.

Most of the effluent is now being reinjected underground so the plume and possible “overabatement” should no longer be a problem for residents, Morris said.

“It does sting, it’s not something you want to stand under for a long time,” he said. “If it gets on you, you should wash it off.”

“It’s not a major health or safety issue ... but certainly a major discomfort,” he said. “Any effects (on residents) are

serious in my opinion and we’re doing everything we can to mitigate the situation.”

Deputy Health Director Bruce Anderson said that after following up on complaints, the Health Department had PGV “cut back on its injection rate of caustic by 33 percent.”

There are no long-term effects, he said, at least not that he knows. “We have our toxicologists looking it up,” Anderson said.

A number of residents have been staying at Hilo hotels at PGV’s expense since flow testing began. Approximately 12 adults and 25 children were housed at the Hawaii Naniloa last night.

BIRAG says PGV chief hiding information

The Big Island Rainforest Action Group said Puna Geothermal Venture general manager Steve Morris is hiding information from those living near the Pohoiki plant.

Meanwhile, Morris said last night that the 10-day flow test which began in earnest Thursday is proceeding smoothly.

BIRAG spokeswoman Adrian Barber said in a prepared release that at a Tuesday meeting, Morris declined a request for a community representative to be on the site during the flow test.

The flow test is considered the last step before regular energy production for the

25-megawatt plant.

Additionally, Barber said he "saw no need for a sample of the steam and brine from this flow test venting to be given to the community for an independent analysis by the community at a properly accredited laboratory."

Barber said Morris also was "uncomfortable" with the community obtaining geophysical data collected and analyzed by a company hired by PGV.

Residents and scientists led by Wilson Goddard have insisted that a geochemical analysis be made to determine the types of emissions and the amounts com-

ing from the well.

Noting that Morris indicated when he took over from former PGV general manager Maurice Richard several months ago that he would work to improve relations with the residents, Barber concluded that "Mr. Morris cannot be trusted, should not be trusted and ... Puna Geothermal Venture does indeed have something to hide from the public."

Morris, however, said the company has nothing to hide, but has to be careful because of pending litigation.

He said the company will do what it is required to do.

In addition, he said, "we've

made arrangements for some members of the community to review the results from the monitoring stations we have."

Morris said a small amount of electricity is being generated during the flow test but commercial electricity won't be sent to Hawaiian Electric Light Co. for another three weeks.

Sending a small amount of power to the electric company is just one of many steps in the 10-day flow test, but is not the objective of the test, he said.

A little over one megawatt of electricity was sent to HELCO overnight Friday, he said.

The Honolulu Advertiser Thursday, August 20, 1992

Geothermal test is over; next step unknown

POHOIKI, Hawaii — In a terse announcement last night, Puna Geothermal Venture announced it has completed the flow test on its first energy-producing well.

Missing from the statement was what happens next in the 20-year effort to produce energy from underground steam and brine on the Big Island.

Steve Morris, the Puna Geothermal vice president who ordered the scheduled 10-day test halted Tuesday night — after

seven days — was unavailable for comment last night.

State officials earlier had said Puna Geothermal would have been allowed to continue testing.

Jennifer Castleberry, spokeswoman for the state Department of Health, said the testing had been "temporarily suspended" after several brief releases of high levels of hydrogen sulfide.

The halt came Tuesday night, after problems occurred

with a number of pressure release valves that allowed the release of hydrogen sulfide — the dangerous gas that smells like rotten eggs.

Despite reports from county officials, Castleberry said that at no time, in terms of hourly averages, did the level of hydrogen sulfide exceed the maximum permitted level of an hourly average of 25 parts per billion. So, Castleberry said, no punitive action would be taken against the company.

Morris hinted on Tuesday that he might call off further tests because so much data and understanding had been gained by that point.

He seemed confident that his project could begin producing 5 to 7 megawatts of power for Hawaiian Electric Light Co. next month.

Castleberry stressed that the decision to shut down was made by Morris and not because of any state pressure.

PGV generates power, reports no problems

By JASON ARMSTRONG
West Hawaii Today

POHOIKI — A few kilowatts of power were generated from Puna Geothermal Venture's well KS-8 Friday as flow testing continued without the return of leaks that had delayed operations earlier in the week, company officials said.

"It's very quiet on the western front," Steven Morris, PGV vice president and general manager, said late Friday. Likewise, no problems were reported on Saturday.

Steam from the geothermal well was diverted through the \$110 million power plant, which resulted in the brief generation of "a few kilowatts" of power, according to Morris.

The electricity, the first to have been produced from Big Island volcanoes, was returned to Hawaii Electric Light Co.'s grid to replace power consumed by

plant operations, Morris said.

He stressed electricity production is not the primary objective of the ongoing 10-day testing process; the recording of temperature measurements and well pressure is.

Morris did add, however, that if testing continues without problems, additional power will be generated from the well in the upcoming days.

Meanwhile, many nearby Puna residents remained concerned over the possible release of harmful hydrogen gas and other irritants from the site.

Morris said several families were housed in Hilo hotels Friday at PGV's expense, although he was uncertain exactly how many opted for relocation.

During the initial testing phase Wednesday and Thursday, 17 families sought shelter outside of the Puna district, Morris said.

Puna Geothermal Venture halts tests

HILO — Puna Geothermal Venture halted testing of its 25-megawatt power plant last night following an afternoon of high hydrogen-sulfide readings.

Civil Defense Director Harry Kim said company Vice President Steve Morris determined the high levels resulted from human error. But Morris ordered the halt, effective about 8 p.m., after company engineers couldn't assure him the gas leaks would not continue, Kim said.



Harry Kim

The company last night and today was to try to find and stop the leaks, and a decision on possibly restarting the tests was planned after that, Kim said. The company was in its seventh day of testing.

The latest round of problems started about 2 p.m. yesterday, when a resident near the power plant called Kim to report a hydrogen-sulfide reading of 39 parts per billion. The company is allowed no more than 25 parts per billion averaged over a one-hour period.

Later readings taken in a mild, 15-mph wind fluctuated from moment to moment from 0 to 60 parts per billion.

At the company's regular 4 p.m. meeting with the community, Morris faced a crowd angry over two cases of high gas levels and an instance of caustic soda mist, all since Saturday. Morris offered to pay affected families for temporary relocation to Hilo hotels, Kim said.

—THE GARDEN ISLAND—SUNDAY, AUGUST 16, 1992

Geothermal start up imminent

POHOIKI, Hawaii (AP) — Two of the 10 generating units in Puna Geothermal Venture's power plant received steam Friday, with the company saying some power — 2 to 4 megawatts — could be switched on Saturday.

Company vice president and general manager Steve Morris said the plant was very close to producing some net power.

A 10-day flow test of Puna Geothermal's well and plant began Wednesday.

The plant is slated to produce power next month for Hawaii Electric Light Co. Puna Geothermal hopes to provide the Big Island's electric grid with 7 megawatts of power.

The \$120 million plant was supposed to start providing Hawaii Electric with power last year, but was ordered closed for 13 months after a well blowout in June 1991.

Geothermal foes say they will continue to monitor the site to make sure the company and state keep their pledges to minimize negative health and environmental effects.

Puna plant spewed caustic soda, residents say

By Rod Thompson
Big Island correspondent

HILO — Residents near Puna Geothermal Venture's power plant are complaining that the company has substituted one chemical hazard for another.

Three people say they were hit Saturday afternoon with a fine mist containing sodium hydroxide as they were standing about 3,000 feet from the Puna Geothermal well now being flow-tested, said Richard Jones, one of the people caught in the mist.

Sodium hydroxide, also known as caustic soda, is used to neutralize smelly hydrogen sulfide gas.

About three dozen families who were not touched by the mist voluntarily evacuated their homes complaining of hydrogen sulfide or other chemical smells, and were housed in Hilo hotels at the company's expense.

Jones, who lives near the power plant, said his mother and another woman were with him when they were caught in the mist.

Record 5 megawatts produced

Star-Bulletin staff

KAPOHO, Hawaii — Puna Geothermal Venture has set a record for producing geothermal power in Hawaii, reaching 5 megawatts, says company vice president Steve Morris.

"The news is how we're doing on our test. We've been over 5 megawatts gross, sending about 3½ megawatts to Helco (Hawaii Electric Light Co.)," he said.

(Some power is used internally to keep the power plant run-

ning.)

The previous maximum geothermal output in Hawaii was about 3 megawatts from the state's now-closed HGP-A plant.

The steam from the KS-8 well is probably enough to produce still more power, but the company is not pushing the plant to maximum capacity while it is in this testing stage, he said.

The company hopes to complete testing Friday and begin commercial power production a few weeks later, he said.

"You could feel it hit you. It was like someone sprayed you with mist," he said. The material, which is strongly alkaline, caused an itchy, burning sensation on the skin, he said.

The three left 10 seconds after being hit, went home and washed

it off, he said.

"I showered immediately. It didn't leave any physical marks, but my eyes were red all night," he said. "Several people were asking if I smoked pot, my eyes were so red. I don't smoke or drink."

Puna Geothermal vice president Steve Morris responded, "We did find we were getting some sodium hydroxide drift. We made adjustments (in the hydrogen sulfide abatement system) as quickly as possible."

The company was using large amounts of sodium hydroxide to prevent hydrogen sulfide release, he said.

The problem should not recur because the company is now pumping geothermal fluids back into the ground, he said.

Several members of the evacuated families complained at a news conference yesterday of asthma attacks and other ailments Saturday.

But Richard Kiyota, who recently moved to Lanipuna Gardens next to Puna Geothermal with his wife, Councilwoman Helene Hale, said he smelled nothing at all Saturday.

"When you've got a phobia about something, any kind of little thing, you say, 'Gee, I got a headache,'" Kiyota said.

Faulty valve blamed in Puna geothermal gas leak

By Rod Thompson
Big Island correspondent

HILO — A leaking pressure valve at Puna Geothermal Venture flooded the surrounding area with excessive levels of hydrogen sulfide gas last night, Civil Defense Director Harry Kim said.

Levels of the gas went as high as 51 parts per billion during the two-hour event, he said. The company's permit allows it to release no more than 25 parts per billion averaged over a one-hour period.

Kim said he got a call about the leak from a resident in Leilani Estates, near the plant, about 7:30 p.m., and checked with the state Department of Health. The department also had received a number of complaints, but personnel there said that instrument readings from monitors in the area showed the levels were in the 2-to-9 parts-per-billion range, well below the 25-parts-per-billion maximum.

Kim said he drove to the area from Hilo, and on arrival realized the levels were higher than the reported readings.

When the high reading of 51 parts per billion

was eventually obtained, Kim said, he came within five minutes of deciding to order the entire operation to be shut down. "If I cannot be assured this is going to be secured, I will order a shutdown," he told Health Department and Puna Geothermal officials.

Meanwhile, he also ordered an evacuation center opened at the Pahoia Community Center and told police to sent up an informational roadblock in the area.

The leak was located and repaired about 9 p.m., and brisk evening breezes blew the gas out of the area in about 10 minutes.

Geothermal testing briefly

By Hugh Clark

Advertiser Big Island Bureau

State Health Department officials temporarily shut down testing of Puna Geothermal Venture's volcanic steam well last night after hydrogen sulfide emissions briefly jumped above permitted levels.

The stop-work order by Deputy Director Bruce Anderson was issued around 9 p.m. and was lifted shortly before 10 p.m., according to department spokeswoman Barbara Hastings.

Health Department monitoring equipment at the property line of the project picked up hydrogen sulfide emissions of around 80 parts per billion. Under its state permit, the project is allowed to release no more than 25 parts per billion of the gas, with its characteristic rotten egg smell.

Hastings said the problem apparently was a malfunctioning pressure release valve at the well site. The

problem was corrected and emission levels dropped to below 10 parts per billion, at which point Anderson allowed testing to resume.

Close monitoring was planned throughout the night.

Testing at the \$120 million project moves into its seventh day today, with some residents complaining that they are being poisoned and their concerns are falling on deaf ears.

Residents claim that on Saturday afternoon, a mist of caustic soda fell on people as far away as 2,000 feet from the plant, causing an itching and burning sensation.

Many of those claiming to be victims said the state and Puna Geothermal are in a "conspiracy" to cover up or ignore the dangers of a 10-day flow test to measure the geothermal energy potential of the Pohoiki well.

Residents who have relocated to Hilo drive the 50-mile round trip twice or more each day to take care of animals and attend afternoon com-

munity meetings with Puna Geothermal officials, they said.

"We have been living in limbo," said Luana Jones, one of those who elected to evacuate to Hilo. "We would not have left the comfort of our homes but for the threat of the potential danger, (which) is very serious to us."

At a press conference, the Puna residents complained most about the release of a mist of caustic soda — sodium hydroxide — used to neutralize the hydrogen sulfide.

The resulting base, which acts much like an acid, causes an uncomfortable tingling sensation, acknowledged Steve Morris, Puna Geothermal vice president.

None of the residents sustained lasting burns and there were no known hospitalizations from the incident.

The incident was blamed on an attempt to keep the hydrogen sulfide in check and on unusual wind pat-

shut down

terns that day.

Morris said studies are under way to avert a repeat of the incident and officials will sample home water catchment systems to see if domestic water supplies were adversely affected.

Robert Petricci and other residents said the state Health Department had failed to follow up on complaints about the fallout. He also complained police failed to investigate a criminal complaint he made about the incident.

Residents also complained that there is no state monitoring for such alleged toxins as Radon 222, boron, arsenic, lead and mercury.

Those at the press conference, including Gregory Pommerenk, a Kapoho resident who is running for County Council, said with the company's plans to drill up to 14 more wells, "the nightmare continues."

But Morris said future wells will be tested for only four hours and then

brought into the system without further venting.

Harry Kim, Hawaii County Civil Defense administrator, said he makes daily visits to the area and shares monitoring data with state health officials.

Kim said he recognizes the high level of anxiety and feels the residents' fears are real, even if the data does not support some of their claims.

Morris said the flow testing of the well and power plant has gone well. As of yesterday afternoon, the venture was producing more than three megawatts of power for energy-strapped Hawaii Electric Light Co.

Morris said the plant's power output will be gradually increased through Friday when the well's potential will be determined.

He said the well has not been fully opened and engineers do not know how much electricity can be expected from it.

Geothermal consequences

Good Heavens, people, have you noticed how many Pro-Geothermal letters-to-the-Editor are penned by members of a specific group? Meaning, of course, all those officials, politicians, developers, promoters, executive directors who, with a vested interest, are involved in this Big Bucks venture?

Further, have you noticed that their rosy, glowy, high-pressured promotions always skirt around the deeper issues; forever fail to mention the possible catastrophic consequences of this enterprise, which loudly warn us to "STOP GEOTHERMAL NOW?"

Example: Can you imagine that highly vocal executive director of the Hawaii Geothermal Alliance — (what "alliance?" Think of the thousands of Hawaii residents who disclaim any "alliance" with this venture!) — can you imagine his letters stressing even one of the following consequences of geothermal in Hawaii?

1. Destruction of the largest remaining expense of lowland tropical rainforest in the U.S. — Wao Kele O Puna.
2. Violation of native Hawaiian religious beliefs and gathering rights.
3. Illegal and unjust land swap of Hawaiian ceded lands.
4. Health threats, proven illnesses from hydrogen sulfide air emissions.
5. Water and land pollution from other geothermal toxic wastes,
6. Proposed geothermal site locations prone to earthquakes and lava flows.
7. Cost of geo project (\$4 billion) our taxes and electric rates to increase.
8. Fueling of industrialization and commercialization of Hawaii Island causing loss of rural lifestyle.
9. Violation of democratic due process and community self — determination.
10. Energy needs can be met, through efficiency, through clean alternate sources.

Alas, you geothermal advocates out there — you're not exactly tickled pink to see the above in print, once again. (And because of your displeasure, we are wise to the possibility that your future promotional strategy may be to downplay your position in the pecking order of this project!)

Would it hurt to listen to the people?

And just who are "the people?" Not a wacky, unemployed bunch of mainland activists looking for attention," as your rumors would have us believe. To be fair, "the people" are mostly intelligent, caring concerned resident citizens of Hawaii, who are exercising their democratic right to dissent and to champion their values for this and for future generations.

For once will you "Big Shots" cup your ears and listen to what we, I, so many of us are saying?

Nancy L. Fox
Captain Cook

PGV temporarily suspends geothermal testing

By JASON ARMSTRONG
West Hawaii Today

POHOIKI — Testing at Puna Geothermal Venture's well has been temporarily halted, the project general manager announced late Tuesday night.

Steven Morris of PGV said a tests have been voluntarily suspended until further notice while

leaking valves are inspected. Morris said the stoppage would be on a "day-to-day basis."

Hydrogen sulfide concentrations that tripled state Department of Health nuisance levels for geothermal operations were recorded late Monday on public and private land surrounding PGV's power plant, local and

state officials said.

An H₂S "spike" of 80 parts per billion was recorded on the perimeter of PGV property around 8:30 p.m. after a pressure-release valve malfunctioned, according to Jennifer Castleberry, DOH spokeswoman.

Flow-testing operations at the \$110 million powerplant were

nearly halted by Bruce Anderson, DOH deputy director, but H₂S concentrations were returned to within allowable levels by 10 p.m. when PGV operators were informed of the intended stop-work order, according to Castleberry.

PGV operators had voluntarily shut down two re-injection wells

shortly after 9 p.m. and channeled the harmful gasses through a rock muffler, which successfully returned the H₂S levels to within safe standards an hour later, according to Castleberry.

High levels of the potentially deadly gas were recorded by

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...PGV temporarily halts geo well testing

From Page 1A

PGV and DOH testers only between 8 p.m. and 9 p.m., and gas concentrations did not exceed the DOH allowable "nuisance" standard of 25 ppb for a continuous hour, according to Castleberry.

Harry Kim, county Civil Defense administrator, inspected the 25-megawatt power plant after talking with a resident that had been forced to evacuate her home because of the odorous gas.

Kim said he detected "rather strong" H₂S levels near the plant upon arriving at the site around 8 p.m., which prompted him to establish a police roadblock at the nearby entrance to Leilani Gardens subdivision to warn passing residents of the possible danger.

Kim, after receiving measurements that indicated the concentrations had reached 51 ppb, said he felt the H₂S levels had "surpassed a period of acceptance" and decided to issue his

own stop-work order around 9:10 p.m.

Kim approached PGV officials, but was subsequently given new data that indicated the gas concentrations were "dramatically down" to about 10 ppb, he said.

Kim then verified the information with other DOH monitors and conferred with Anderson before opting against issuing the stop-work order, he said.

Health officials continued their monitoring of the 10-day testing process and have not measured excessive H₂S concentrations since, Kim said, while adding he planned an additional inspection of the geothermal operation late Tuesday.

Residents living near the power plant have vehemently complained for days that flow testing, which began last Wednesday, was affecting their health.

John Olsen, president of Lani-

puna Gardens, claimed sodium hydroxide, or caustic soda, fell on people up to 2,000 feet from the plant on Saturday. Burning sensations to the eyes and skin were endured by those who came in contact with the material, which is used to neutralize H₂S, Olsen claimed.

"Burning and gassing citizens in the streets with toxic chemicals are the actions of third-world dictators," Olsen said.

A press conference is scheduled for today in Hilo at the county building so the opponents of geothermal development may present their views, Olsen said.

Numerous residents have also alleged suspected toxins such as boron, lead, mercury, arsenic and Radon 222 have also been released during the ongoing geothermal testing.

DOH is currently not testing for the presence of these elements, which has angered many residents.

PGV set with geo for Helco

□ But residents still have their concerns

By Gordon Y.K. Pang
Tribune-Herald

A Puna Geothermal Venture spokesman said a scheduled 10-day flow test, the last step before full-scale energy production, has gone without incident since yesterday afternoon and that the plant was expected to begin generating energy from geothermal steam for the first time sometime today.

"Things went well through the night, we got on-line at 12:30 and have been running continuously since then," said PGV general manager Steve Morris.

The good news for PGV came after several hitches that began when the company first attempted to start the flow test at 8 a.m. Wednesday.

Equipment preparation delayed the test for more than three hours during that morning. That was followed by a flange leak in an hour into the test which shut things down until yesterday morning. The test then encountered a leak in a packer.

Morris deemed both of the leaks minor and harmless.

"If you didn't encounter these kinds of incidents, you wouldn't have to do tests," he said. "It's hard to call any problem common, but you have to take them as they come and keep moving forward."

Morris described today as "a big day." While the plant has generated small amounts of power through other types of steam in the past, PGV is hoping to make electricity with geothermal steam for the first time today.

"We'll run fans for the first time today," he said, pointing to a possible concern. "We'll be watching noise levels very closely."

Meanwhile, residents continued to make complaints about hydrogen sulfide emissions as both Morris and Health Department officials contend no serious levels are being recorded.

On Tuesday, four families accepted PGV's offer to spend the night at a Hilo hotel. A total of 13 families slept over in Hilo on Wednesday, although a PGV spokeswoman this morning reported 11 families the company made reservations for did not check-in. PGV made reservations for 14 families last night, although it could not be confirmed how many actually did so.

Steve Phillips, a Leilani Estates resident about a mile from the plant, said his family has been experiencing symptoms commonly associated with hydrogen sulfide inhalation — sore

GEO: PGV to produce power sometime soon

From Page 1

noses, sore throats and the PGV property line and not headaches.

"They were pretty good whiffs, it didn't last a whole long time, but long enough to say we can't take this anymore," he said.

Phillips and his family have moved in with a cousin elsewhere for the time being.

Clifford Furukado, a Health Department air monitoring specialist who has been testing air quality in and around the plant, said hydrogen sulfide levels of up to 11 parts per billion were recorded yesterday — but along

per billion on an hourly average basis. "We haven't detected any significant emissions at the perimeter," he said.

Abatement efficiency of hydrogen sulfide has been running at 97 to 98 percent, Morris said, higher than the 95 percent PGV officials had hoped for.

Morris said he is continuing to meet with residents at 4 p.m. every day at the former HGP-A facility, to explain to them what activities have been performed during the day, what is planned for that evening and the next

morning ... and share whatever problems may have been encountered."

He acknowledged that there were some complaints by residents but that most of the discussions have centered around concerns about what is to happen.

PGV is scheduled to provide up to 25 megawatts of energy to Helco. Well KS-8, the same well that blew out in June 1991 causing nearly 13 months of delays, is expected to supply between 5 and 7 megawatts of that power.

Geothermal flow testing halted by steam leakage

Peaceful protest nets only one arrest

By JASON ARMSTRONG

West Hawaii Today

POHOIKI — Puna Geothermal Venture officials halted flow testing of well KS-8 Wednesday after detecting leakage in a well-head assembly about 45 minutes into the lengthy procedure.

Testing of the well, which was to have begun at 8 a.m., was delayed several times while workers finished adjusting instruments, said Steven Morris, PGV vice president and general manager.

Steam and heated brine began flowing from the well about 11:38 a.m., but testing was quickly halted, as a safety precaution, once the leak was detected, he said.

"There was a leak somewhere in the system and they decided to shut it down," Morris said. "It doesn't sound to me like it was much of an issue. There was a problem and they shut it down."

Workers were repairing the well Wednesday afternoon in anticipation the flow testing could resume at 8 a.m. today, Morris said.

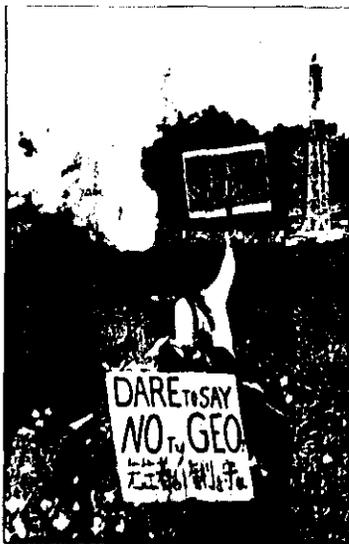
A slight buzzing noise and hydrogen sulfide — a potentially deadly gas in high concentrations that smells like rotten eggs — were detected near the well site prior to the shutdown.

"There is a distinct H2S odor at the site," said Harry Kim, Civil Defense Administrator, who attended the testing. Kim said noise and H2S readings from mobile receptors did not exceed rigid safety levels for geothermal operations set by the state Department of Health.

"The noise is just nothing up there," Morris said.

Various sound insulators had been installed to reduce noise levels at the power plant, although more work could be done to lessen the impact on the surrounding community, Morris added.

"We view noise mitigation as never ending," he said.



—BARON SEKIYA—WHT

PROTEST — A member of the Big Island Rainforest Action Group makes a point at the "Flow Test Protest."

A total of four mobile monitors, two each from the DOH and PGV, recorded air composition and noise levels near the well site, according to Morris.

Big Island Rainforest Action Group members staged a "flow-test protest" during the proceedings.

See 1 **ARREST:**
Page 4A

...1 arrest at BIRAG geothermal protest

From Page 1A

to further state their opposition to geothermal development on the Big Island. FGV and local police scheduled additional personnel in case of a violent confrontation, although none occurred as the 30 or so protesters peacefully displayed signs and coped with the rainy weather for more than five hours.

BIRAG spokesman Robert Petricci, however, was arrested and charged with second-degree criminal trespassing after he walked past a lone PGV security guard stationed at one of three entrance gates and up the well site at 8 a.m.

Petricci, who claimed to have been arrested seven times for similar offenses, had his \$50 bail posted and was returned to the protest area by 10 a.m.

"I got to the rig," he said. "I felt pretty good about it."

The initial stages of the flow test resulted in the discharge of steam, which billowed straight upward in large, white plumes because of the lack of wind. The clouds were clearly visible to the protesters and various media representatives gathered on the outskirts of PGV property about 1,500 feet away.

The \$110 million power plant should begin producing up to seven megawatts of electricity within a month, although some power may be made during the next few days, according to Morris.



—BARON SEKIYA—WHT

PGV BOSS — Steve Morris of Puna Geothermal Venture, speaks to members of the media about the flow test process Thursday at the PGV site.

Limited generation may be possible by the weekend, he said. If so, it will be monitored and given to Hawaii Electric Light Co. — if all goes well, Morris said.

Several steps remain, however, before work is completed on the 25-megawatt plant, Morris said. Larger piping must be installed, which will increase noise levels during the 10-day flow test.

The test will also include numerous measurements of the geothermal resource and its specific components, Morris said. The steam will be separated, converted into energy and the

brine byproduct will be re-injected back into one of two injection wells, Morris said.

Once this stage is finished, a two-week process will be needed to replace temporary pipes with permanent ones before electricity production can be achieved on a continuous basis, he said.

Morris said PGV plans to drill four additional wells, two each for steam production and brine re-injection before the plant can produce full power. The plant will have a capacity to shut down any number of its 10 modules should a problem arise, so limited electricity could still be generated, he said.

—BARON SEKIYA—WHT
FLOW TEST — As Puna Geothermal Venture conducts a flow test on the KS-8 rig at right, protesters creep up to the outskirts of the PGV site.



PGV restarts flow testing

Company officials say nitches are not major

By Gordon Y.K. Pang
Tribune-Herald

POHOIKI — Puna Geothermal Venture officials restarted a scheduled 10-day flow test this morning after a "minor" pipe leak one hour into the proceeding halted the operation yesterday.

PGV general manager Steven Morris blamed yesterday's hitch on heat-expanded bolts and said workers were testing connections this morning to make sure the same didn't occur again.

Meanwhile, Morris said 13 area families accepted an offer issued by PGV Tuesday night to temporarily relocate to Hilo hotels last night. Four did so Tuesday.

"The bottom line is we're trying to accommodate the residents to lessen the effect on them as best we can," he said. "We know it's a difficult time for them."

Morris added, however, that he knew of no complaint reports filed regarding noise or emissions, the two major concerns that have been raised by residents over the years.

Yesterday, a thick cloud of white steam billowed over the KS-8 production well shortly after 11:30 a.m. as about 40 residents, journalists, police and others watched from outside the papaya fields which make up the southeastern boundary of the Pohoiki well and plant site.

The flow test is considered the last major step before actual production of between 5 and 7 megawatts of what is a 25-megawatt contract with Helco.

The flow test is designed to measure the strength of the well source and the integrity of piping, an elaborate abatement system and other equipment, according to Morris.

Additionally, the flow test will give scientists the chance to

measure the geochemical fluids coming out of the well, Morris said. The fluids have been a concern raised by residents and geothermal expert Wilson Goddard.

From the PGV boundaries yesterday, there was no noticeable detection of hydrogen sulfide although a faint buzzing noise could be heard coming from the well area.

The steam was not coming directly out of the well, but from a cylinder-shaped muffler several feet away designed to purify the steam. Brine from the well was meanwhile being diverted into a pond. Under normal production, the steam will go into the power plant and the brine underground into a reinjection well.

Some observers noted that the steam release yesterday produced significantly less smell and noise than a previous open venting which spewed forth a dirty plume.

Residents in the area, nonetheless, picketed in front of television cameras and demanded the shutdown of the plant. Several covered their faces with masks.

At extremely high levels of concentration, hydrogen sulfide can be a major health concern but both PGV and government officials have continued to maintain that the plant's emissions are significantly less.

As Morris was telling reporters, about an hour into the flow test, that it was going smoothly, he was told that a leak had sprung. Morris later blamed the problem on heat expansion of bolts. The situation was not considered serious.

"We tightened up all of our bolts last night," Morris said this morning. "We ran (the test) for about 15 to 20 minutes in order to heat up the well, and then we shut it down again," he said, noting that he expected the test to go non-stop sometime later today.

Yesterday's aborted well test was delayed about 3½ hours later than the original 8 a.m. start-

See PGV, Page 12



—T-H photo by William Ing

GEO TEST — Protesters watch as Puna Geothermal Venture conducts a flow test on its KS-8 rig yesterday.

PGV: Geo flow testing resumes today

From Page 1

up time, the result of equipment testing.

Neither the soft rain nor the arrest of Leilani Estates resident Robert Petricci affected yesterday's start-up, Morris said. Petricci, who now has been arrested

seven times for geothermal-related protests, was busted for second-degree criminal trespassing when he was discovered on the KS-8 well pad prior to yesterday morning's flow test. He was released on bail within an hour.

Morris said residents and other observers should expect to see a steam plume over the plant off and on during the next 10 days. While no steam plume is released during full power production, clean steam is allowed into the atmosphere during the

flow test, Morris said, emphasizing once again that levels of hydrogen sulfide have so far been well below what is allowed under normal operating conditions. PGV is expecting 95 percent abatement, he said.

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Hawaii

G-Day 'very close' in Puna

Geothermal firm hopes to be pumping electricity today

By Hugh Clark

Advertiser Big Island Bureau

POHOIKI, Hawaii — With testing of Puna Geothermal Venture's Kapoho State-8 well proceeding nicely, company officials hope to begin producing power today on an experimental basis.

After 27 hours of testing, two of the 10 generating units in the power plant were receiving steam by yesterday afternoon and separating the brine or unwanted fluids from the steam that will generate electricity.

The power plant is scheduled to go on line next month.

"We are very close to producing some net power," Steve Morris, vice president and general manager, said yesterday. He said he believes the generators will be turned on sometime today and produce 2 to 4 megawatts of electricity for experimental purposes.

Eventually all 10 of the units — each capable of producing about 3 megawatts of power — will be tested and the full extent of the well will become known based on pressure and

temperature measurements.

Puna Geothermal hopes to get up to 7 megawatts of power from the well. Up to four more wells are planned to produce the 25 megawatts contracted for by Hawaii Electric Light Co.

Morris said engineers are continuing a series of tests in which increasing amounts of steam are released from the well into a series of large pipes carrying the steam into the plant.

The plant itself was completed earlier in the year and has

been awaiting the use of the well, which blew out in June 1991. That blowout caused about 13 months of delays.

The test began Wednesday while geothermal protesters looked on with picket signs. The initial day provided only an hour of steam because several small leaks were discovered.

The flow test resumed Thursday morning but was shut down briefly for a second time. Then the unbroken release of steam started Thursday afternoon.

Second day of testing indicates geothermal well is 'productive'

By Rod Thompson

Big Island correspondent

KAPOHO, Hawaii — Puna Geothermal Venture officials are pleased with flow testing of their KS-8 well after minor problems cropped up yesterday.

The testing is being done in preparation for commercial power production in two to four weeks.

"It's going very well," company general manager Steve Morris said after several hours of testing.

Early results showed the well to be very productive, he said.

The geothermal fluid is separated into steam, which will be used to run the 25-megawatt power plant, and liquid brine, which is useless. The company got additional good news in the form of data showing the percentage of useless brine is low, Morris said.

The company started the testing Wednesday, but stopped after an hour because of a leaking pipe joint. The company determined

the cause was one pipe expanding faster than another because of the heat of the geothermal fluid.

The solution was simply to let the pipe expand, then stop the flow test and tighten the pipe. That's what the company did yesterday as it resumed the flow test.

Then another problem arose, Morris said. Packing around some pipes started to leak. Again the flow was stopped while new packing was installed.

From that point on, the testing went smoothly, he said.

Hydrogen sulfide testing at the company's fence line showed only one instance of the gas being measured at 21 parts per billion for a few moments, Morris said. State Health Department regulations permit up to 25 parts per billion averaged over one hour.

But after the momentary spike, all other measurements showed 0-2 parts per billion, below the level at which most people can smell the gas.

Puna Geothermal power flows into Big Island's lines

Test run lasts several hours

By Hugh Clark

Advertiser Big Island Bureau

VOLCANO, Hawaii — Puna Geothermal Venture's new generating plant produced its first power late Friday night, contributing 1 to 2 megawatts for the island's energy grid over several hours in a continuing test run.

The PGV's Kapoho State-8 well in Pohoiki is being flow-tested under special state and county permits. So far, the test has been without major incident, though some nearby residents have complained of the smell and taste of hydrogen sulfide.

PGV's well has been releasing steam without interruption since minor leaks detected Wednesday and Thursday were sealed off.

The steam is separated in the 25-megawatt plant into brine (waste fluids) and usable steam, which is sent through two generators. All 10 units are to be tested by the end of next week, said Steve Morris, Puna Geothermal vice president.

Sometime next month, the plant should be producing commercial power for the Big Island's energy-strapped Hawaii Electric Light Co.

Federal monitoring: Meanwhile, federal officials announced they are taking samples of the fluids produced by the Puna Geothermal Venture well and will send them to the Mainland for an independent analysis.

Results of the analysis could resolve the furor over emissions from the well raised by residents and geothermal opponents who have repeatedly said they do not trust the PGV and state Health Department tests.

Morris said the level of hydro-



Steven Morris

Says hydrogen sulfide in limits

gen sulfide — responsible for the rotten egg smell — is well below the permitted 25 parts per billion. The highest recorded reading was 21 parts per billion, registered Thursday morning, he said.

David Clague, scientist-in-charge of Hawaiian Volcano Observatory, said a specialist from the U.S. Geological Survey in Menlo Park, Calif., is on the Big Island to sample the fluids at the wellhead.

Clague said his agency will be "using the most reliable techniques available" to look at a wide range of chemicals, gases and components.

The work is with the cooperation of the developer, whom Clague said has "generously allowed the Geological Survey to obtain samples during the flow test."

Clague said his agency will release the results of its analysis.

Geothermal proponent

Editor:

Maybe it's a good idea the state Public Utilities Commission is meeting in Honolulu to discuss the problems HELCO is having in delivering electricity to Big Island consumers. The rolling blackouts Big Islanders are experiencing are much more than a nuisance. They're a health and safety hazard.

By having their inquiry on Oahu, they should have no trou-

ble calling in the state Department of Health, the state Department of Land and Natural Resources, and the state Department of Business, Economic Development and Tourism. The PUC commissioners and staff can ask HELCO to verify whether the state of Hawaii, the County of Hawaii and the state Legislature directed HELCO to hold off development of oil-fired powerplants so the Big Island utility could use geothermal power.

The PUC probers might even probe their own organization. Should they submit to self-examination, they'll find even the PUC had endorsed the use of geothermal energy.

If they really want to be thorough, the PUC should review the state Democratic Party platforms over the past several election years. The commissioners will discover that Hawaii's dominant political party has been a consistent proponent of using local geothermal power rather than imported oil for generating electricity.

It is self-evident that geothermal energy will help Hawaii:

—Because geothermal power is cleaner than oil and coal

—Because geothermal power will reduce Hawaii's dependency on imported crude oil

—Because geothermal energy is locally produced, it will reduce the possibilities of ecologically disastrous oil spills

—Because geothermal is local, Hawaii's economy will benefit since we won't have to pay for imported products plus the transportation costs

—Because geothermal power is local, the energy source is secure from foreign disputes, shipping disruptions, rapid price escalation, etc.

So why is the PUC engaging in HELCO-bashing? So why isn't the PUC calling in the governor, mayor, a multitude of state and county agencies, the state Democratic Party, the state Legislature? Investigations are fine, but the PUC has to ask the right people the right answers.

Can you imagine the cries of anguish that would have been emitted had HELCO a few years ago told the state and county administrations and the state Legislature that despite the many benefits of geothermal energy, they were going to go with foul-burning imported crude oil?

With the benefit of 20-20 hindsight (a gift which HELCO-bashers seem to be blessed with), HELCO likely would admit they erred in succumbing to government pressures. Chances are HELCO will be less public-spirited in the future.

Bill Cook
Executive Director
Hawaii Island
Geothermal Alliance

State fields geo concerns

BIRAG still plans
flow-test protest
start-up tomorrow

Gordon Y.K. Pang
Puna-Herald

County concerns about flow
tests at a Puna Geothermal Ven-
tures well this week are being
addressed, state officials said
yesterday.

State Department of Health officials said the health and safety concerns raised by the county's Energy Advisory Commission have been written into already existing permits for the geothermal production well.

The Big Island Rainforest Action Group, meanwhile, said it will stage a protest at PGV's gates at 7 a.m. tomorrow, which could include acts of civil disobedience.

The 10-day flow test, the last

major procedure before the pro-
duction of steam for electricity,
is scheduled to begin at 8 a.m.

In mid-July, Mayor Lorraine
Inoué asked state agencies to
respond to 11 concerns raised
by her appointed energy adviso-
ry commission.

Critical among those concerns
was a geo-chemical analysis of
the steam during the flow test
and use of cyclonic mufflers and
other abatement procedures dur-
ing the test period.

Health Director John Lewin,
in a response dated July 27, said
both issues are already
addressed by a revamped 'au-
thority to construct permit
issued to PGV.

One condition of the ATC
"requires testing and analyses of
the steam condensate, steam,
particulates and/or gases eman-
ating from each well," he said.

Additionally, the ATC re-
quires the use of a cyclonic
muffler during drilling, abated

well cleanout and flow testing
operations," Lewin wrote.

Lewin said a reinjection well
monitoring standard already ex-
ists "to assure that ground water
sources are not adversely im-
pacted by geothermal fluids that
are injected into the group."

Lewin also wrote that his of-
fice will continue to monitor the
health status of those living in

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GEO: State allays concerns; protest set

From Page 1

the surrounding neighborhoods
and that it has asked the federal
Centers for Disease Control to
do the same.

Further, he said the
emergency response plan for the
PGV project is "a living docu-
ment" that will change to meet
tougher requirements as deemed
necessary.

Lewin said his responses
"should help assure the commis-
sion that geothermal resource
development can continue with-
out posing an unacceptable
threat to public health or
safety."

Although it had not been
brought by the advisory com-
mission, there had also been

concerns raised over how state
budget cuts would affect the
funding for three positions to
provide around-the-clock
surveillance of geothermal activ-
ities at PGV.

"The funding issue has been
worked out with the Department
of Budget and Finance, and we
will be able to provide the
necessary inspection and moni-
toring to insure proper regula-
tion of geothermal activities,"
Lewin wrote.

State Land Board Chairman
William Paty answered a con-
cern related to shutdown proce-
dures in the event of a failure of
the reinjection process.

Paty said the Land Board has
set procedures for abandonment,
noting that "a \$250,000 bond
has been filed by PGV and will
remain in force for the life of
the wells and will not be re-
leased until these wells are
properly abandoned."

Ron Phillips, a member of the
commission, said he had not
seen the responses from state
officials. But after hearing some
of the responses given, Phillips
said, "I think they're satisfying
our concerns."

Other lower Puna residents
were not satisfied, however.

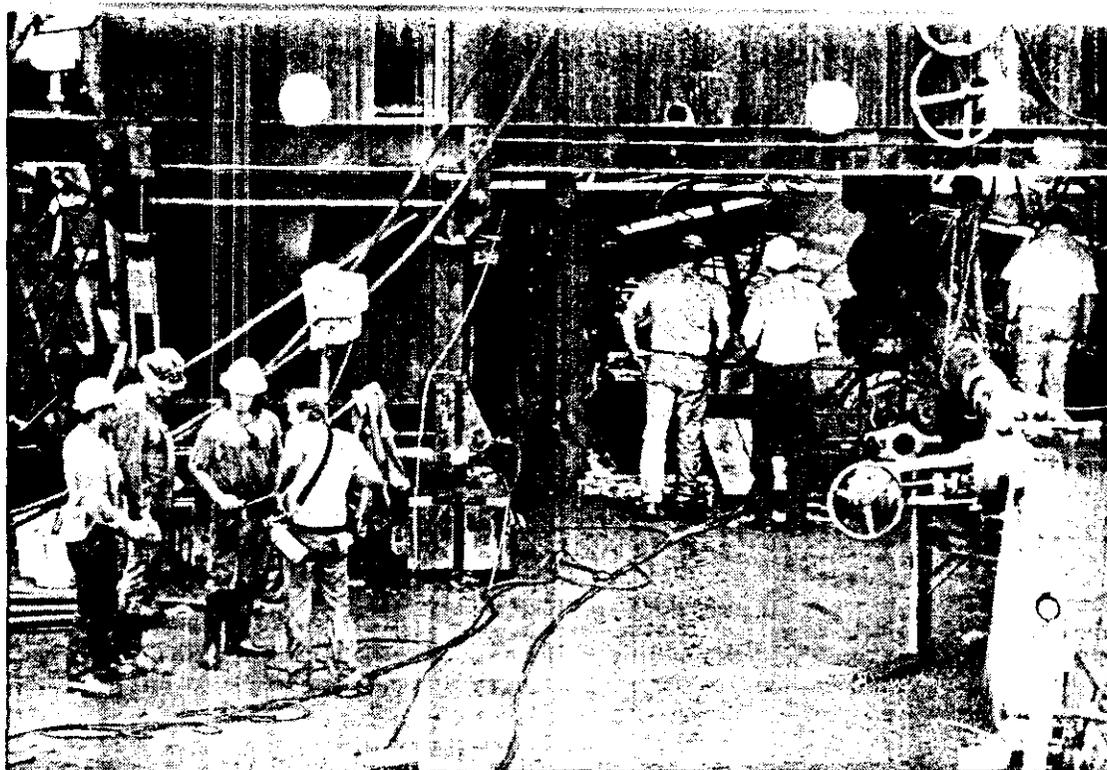
BIRAG spokesman Robert
Petricci, in announcing tomor-

row's protest, questioned the
"mechanical integrity" of the
KS-8 well and its casing. Pet-
ricci said PGV has refused to
release tests done on the well's
structural safety.

Petricci said no flow testing
should be conducted until results
of the mechanical integrity test
are made public.

Leilani Estates resident Steve
Phillips said he and his family
are concerned about the flow
test and are preparing for the
worst.

"We'll be on a 24-hour alert
with our car packed with camp-
ing gear to enable us to run at a
moment's notice," Phillips said.



—BARON SEKIYA—WHT

FLOW TEST WORKERS — Puna Geothermal Venture workers are busy at the base of their KS-8 rig on Wednesday. Flow testing resumed Thursday before it was halted to stop minor leaks and then once again resumed.

'Minor leak' halts testing at Puna geothermal well

By **JASON ARMSTRONG**
West Hawaii Today

POHOIKI — Flow testing of Puna Geothermal Venture's KS-8 well resumed Thursday morning, but was quickly halted after detection of a "minor leak" involving a pipe sealant forced another four-hour delay in the procedure, company officials said.

An adhesive agent used in securing one section of pipe inside of another failed to hold and the 10-day testing process was postponed until 12:30 p.m., according to Steven Morris, PGV vice president and general manager.

"It gave way a little bit," Morris said. "It was a fairly minor leak."

The test was halted, new adhesive was added

and work proceeded without problems for the remainder of the afternoon, according to Morris.

"Things are going pretty well," he said late Thursday afternoon.

PGV officials initially began flow testing the geothermal well Wednesday morning, but soon postponed the procedure a full day to allow workers a chance to repair a leaking well flange that was later blamed on the heat expansion of bolts.

The testing process was started "a little after 8 a.m." Thursday and continued for about 30 minutes before officials purposely shut the process down to allow for cooling and the adjustment of

**See PGV:
Page 4A**

From Page 1A
loose bolts, Morris said.

Work resumed a few minutes later and things appeared to be functioning without problems for about 15 minutes, then the leaking adhesive was detected and testing was again stopped, Morris said.

Problems typically arise during the flow testing of geothermal wells and will likely occur again during the coming days, Morris added.

State Department of Health

officials will soon be contacted by PGV representatives to see if a permit extension is needed to make up for the lost testing time, Morris said.

Mobile, hand-held air and noise monitors detected only trace amounts of the irritating hydrogen sulfide gas and no noticeable noise Thursday, according to Morris.

"We're not having any problem with H2S at the moment," Morris said.

The highest H2S reading

occurred Wednesday during the initial minutes of testing, he said. A momentary reading of 21 parts-per-billion was noted, Morris added.

The DOH's latest ambient air quality standards require H2S levels of 25 ppb for a one-hour period before the affected area can be placed on alert status.

Numerous area residents have remained skeptical of the testing procedure and 17 families have accepted PGV's offer of temporary relocation to Hilo hotels, according to Morris.

Geothermal tests begin, but leak causes halt

More venting expected today at Puna facility

By Hugh Clark
Advertiser Big Island Bureau

POHOIKI, Hawaii — Eager to resume energy development, Puna Geothermal Venture began 10 days of crucial tests yesterday after a 3½-hour delay, but the program was halted

after an hour because of a small leak.

Meanwhile, nearly three dozen protesters held a vigil in the nearby Lanipuna Gardens subdivision. One protester — Robert Petricci — was arrested for trespassing on the project site before the test began.

Engineers and technicians carefully reopened the geothermal well that had been shut since a blowout 13 months ago halted the entire Puna Geothermal project.

A large steam plume burst into the air at 11:37 a.m. but

did not produce any strong odor or loud noise.

But the test was halted after a flange began leaking. The leak was blamed on heat expansion of bolts. The test is expected to resume at 8 a.m. today.

As the steam suddenly began rising from the master vent, the protesters pleaded for another explosion, hoping that would close the project.

"Go, Pele, go," a woman yelled, evoking the name of the Hawaiian goddess of fire.

Puna Geothermal Venture

general manager Steve Morris said the project could be delivering power to Hawaii Electric Light Co. within 22 days.

Actual power could be produced in two or three days while the project's power plant is being tested.

Morris said yesterday's test was "going very well" until the unexpected halt, which occurred as he was holding a news conference.

Geothermal energy — using steam piped from deep underground to power electricity-producing generators — is seen

in many government and business quarters as the answer to the Big Island's shortage of electricity. But opponents say geothermal drilling creates safety and health hazards and is an affront to the Hawaiian religion.

Previous "open venting" from the well was marked a dark, dirty plume or gas, roaring noise, and the odor of hydrogen sulfide.

A special muffler has been installed, and noise and emissions from the well yesterday seemed significantly lower.

Geothermal power could flow today

By Hugh Clark
Advertiser Big Island Bureau

POHOIKI, Hawaii — Puna Geothermal Venture could be sending power to Hawaii Electric Power Co. by as early as this afternoon or tomorrow, said company vice president Steve Morris.

The 10-day flow test of the company's key well went with-

out major problems yesterday, and both the temperature and pressure of the well appear promising, Morris said.

"We have a potentially excellent well. But it is too early to really tell," he said.

Morris, speaking last night after the second day of stop-and-go testing, said all of the leaks blamed on bolts and packing of pipes are believed

to have been closed.

Flow testing of the well was suspended yesterday morning, as it was Wednesday on the first day of tests, because of some problems. But it resumed at 12:30 p.m. and continued without incident into the night.

At 2:30 p.m., some of the steam was diverted into the power plant system.

By today, Morris expects the

separator that divides brine (waste fluids) and the steam to be in operation, an essential part of the test to determine the well's energy potential.

"This could be the big-time test for the plant," said Morris.

The plant is part of a project that cost over \$120 million and seeks to harness geothermal power for electricity.

First day of geothermal test successful despite problems

By Rod Thompson

Big Island correspondent

KAPOHO, Hawaii — Puna Geothermal Venture hoped to restart a 10-day flow test of its KS-8 well today after halting it one hour into the testing yesterday.

The testing was shut down yesterday due to a leaky pipe fitting, said Puna Geothermal general manager Steven Morris.

The testing is preparation for the company producing up to 7 megawatts of electricity in two to four weeks. The power plant would not reach its full 25-megawatt capacity until more wells are drilled.

The testing yesterday appeared successful while it was under way, with no noise or hydrogen sulfide gas detectable from the company's property line, about 1,500 feet from the well.

The company released a white cloud of steam during the testing, but even near the well, noise from the steam was held to a low rumble.

Civil Defense chief Harry Kim said there was a distinct smell of hydrogen sulfide near the well during the test, but others said it was minimal.

Measurements showed the steam was emitting 1.39 pounds of the gas per hour, well below the 5 pounds per hour permitted by the state

Health Department, Morris said.

Besides the chemical scrubbing of the gas from the steam, noise was held to a minimum by a water tank-like cyclonic muffler.

Both the gas abatement and the muffler were new requirements by the state after the KS-8 well suffered a 31-hour blowout a year ago. After that incident, the state prohibited open venting, the procedure in which the company previously cleaned wells without either gas or noise controls.

A group of about 20 geothermal opponents gathered outside the property line beginning at 7 a.m. to protest the test. Protester Robert Petricci walked onto the property, was arrested for trespassing, and was back protesting within a few hours.

Petricci said it was the seventh time he has been arrested protesting geothermal development.

The current testing will collect data on the temperature, pressure, chemistry, and flow rate of geothermal fluid from the well, Morris said.

During the testing, the fluid is separated into liquid brine and steam.

Steam will go through the power plant's maze of pipes. Brine will be pumped back into the ground, a process tested earlier with fresh water, but not geothermal brine.

Geothermal test put off

POHOIKI, Hawaii (AP) — Puna Geothermal Venture has postponed today's planned test of its Pohoiki well that was shut for 13 months following an explosion in June 1991.

Puna Geothermal vice president Stephen Morris said Thursday night the delay was "operationally related," but didn't give details. He did say the delay wasn't caused by permit problems with the state Health Department.

Morris said he expects the flow test to be conducted sometime next week.

The test is needed to make sure there is a significant geothermal resource available to be harnessed into energy for the Big Island.

Puna Geothermal says it could begin providing some of the 25 megawatts of power it is contracted to Hawaii Electric Light Co. before the end of the month if the tests go well.

West Hawaii Today, Sunday, August 9, 1992

PGV receives DOH approval

Puna Geothermal Venture this week will begin a 10-day flow test at its well in Pohoiki, bringing the controversial project one step closer to reality.

If all goes according to plan, the well is expected to begin providing 5 to 7 megawatts of power to Hawaii Electric Light Co. soon after the test is completed.

The test, scheduled to begin Wednesday, involves measuring the steam from the KS-8 well that will pass through the company's \$110 million power plant, according to Steve Morris, PGV vice president.

Morris announced Friday that the company had received the required approval from the state Department of Health to operate the well.

Geothermal work on the Big Island was temporarily halted after the well blew out in June 1991. Prior to that, PGV was under contract to provide 25 megawatts of power to HELCO by October of last year.

PGV had planned to start the test today but deferred the work because of operational problems, Morris said.

THE MAUI NEWS — Friday, August 7, 1992 -

Puna Geothermal's test of Pohoiki well postponed

POHOIKI, Hawaii — Puna Geothermal Venture has postponed today's planned test of its Pohoiki well that was shut for 13 months following an explosion in June 1991.

Puna Geothermal vice president Stephen Morris said Thursday night the delay was "operationally related," but didn't give details. He did say the delay wasn't caused by per-

mit problems with the state Health Department.

Morris said he expects the flow test to be conducted sometime next week.

-Hawaii Tribune - Herald, Friday, August 7, 1992

Geothermal bill shot down

A bill which would give authority for geothermal resource permits to the County Council was shot down at a Planning Committee meeting this week.

The bill now goes to the full Council, where it is expected to be formally shelved.

The measure was introduced by Councilwoman Helene Hale who argued that matters dealing with the controversial geothermal issue should be under the purview of the elected Council.

Currently, geothermal resource permits are issued by the appointed Planning Commission.

Geothermal test is interrupted by leak

POHOIKI, Hawaii (AP) — A planned 10-day flow test at Puna Geothermal Venture's well got under way Wednesday, but the first day ended about an hour after it began because of a minor pipe leak, company officials said.

The test of the KS-8 well, inactive some 13 months because of a blowout last year, is to be the final step before the plant is brought on line as a source of power for Hawaii Electric Light Co.

Tests initially were delayed about 3 1/2 hours Wednesday by preparation work, the company said. The tests were to be resumed today.

Several dozen anti-geothermal protesters gathered in the rain at the company's Puna well site. One man carrying a "Go Solar" sign was arrested after entering the grounds, but he was released on bail shortly afterward.

Puna Geothermal said it is removing 95 percent of the hydrogen sulfide content of the steam before releasing it during the tests.

PGV flow test begins Wednesday

Puna Geothermal Venture officials said Friday they have received state Department of Health approvals to proceed with a flow test of a well at its Pohoiki plant site.

Puna Geothermal Venture vice president Steven Morris said the test, which will take about 10 days, will begin Wednesday. He said the DOH approval was granted Thursday afternoon.

PGV officials on Thursday said they would postpone the testing scheduled for the following day. They would not give the reason for the delay but said it was not the result of permitting problems.

Meanwhile, a group of residents of the area near the PGV plant have challenged the firm to provide timely results of the flow testing.

Kristine Kubat, a spokesperson for the group, said the residents should have immediate information on types of chemicals being found in the steam.

Kubat said Department of Health promises to relay the information once it is delivered by PGV are "not good enough."

"The public has a right to know exactly what they have been exposed to and what will be coming out of those wells during future upsets," she said.

The PGV plant is expected to begin producing about 6 megawatts of electricity soon after the testing is completed. The well was shut down in June 1991 following a blow out. Its return to operation was also delayed while the state re-wrote emission standard regulations.

The Associated Press

Geothermal test today

POHOIKI, Big Island — Puna Geothermal Ventures is set to begin flow testing at its Pohoiki well site today, and geothermal foes will be there to voice opposition.

The flow tests are the final step before the company begins generating geothermal electricity from the site.

Puna Geothermal was supposed to begin supplying Hawaii Electric Light Co. with electricity from the plant last year, but a well blowout in June 1991 idled work for 13 months.

The well that exploded last year is the same well that will be tested.

The state Health Department granted Puna Geothermal a state permit to resume operations last week.

Geothermal opponents say the site is too close to homes and presents too great of a health and environmental risk.

If the tests go well, the site could be producing energy by the end of the month, company officials said.

PGV postpones flow testing

Puna Geothermal Venture has postponed today's planned test of its Pohoiki well that was shut down for 13 months following a blow out in June 1991.

Puna Geothermal vice president Stephen Morris was quoted as saying last night the delay was "operationally related" but didn't give details. He did say the delay wasn't caused by permit problems with the state Health Department.

"Our understanding is that it is a main valve at the well," said Jennifer Castleberry, Health Department spokeswoman. "It was not a major problem."

"They have to notify us 24 hours in advance before the flow test begins," Castleberry said. "We assume it will probably be the middle of next week."

Castleberry said monitoring sites continue to operate in and around the PGV site. She said that once the flow test begins, one or two Health Department officials will be on-site.

The flow test is needed to make sure there is a significant geothermal resource available to be converted into energy.

Puna Geothermal says it could begin providing some of the 25 megawatts of power stipulated in its contract with Hawaii Electric Light Co. before the end of the month if the tests go well.

HON. ADVERTISER

↓ S-B 8-9-92

Puna Geothermal offices on Oahu

HILO, Hawaii - Puna Geothermal Venture has moved its offices to Oahu from the Hilo Lagoon Center, said Steve Morris, vice president and general manager of the venture.

He said the move will put him closer to state officials who regulate the \$110 million geothermal energy project.

The project, which had been stalled for months following a June 1991 blowout and an adverse decision by the Hawaii Supreme Court on emission controls, was cleared to resume operations last month.

The firm has been under contract with Hawaii Electric Light Co. since October to provide 25 megawatts of power.

Milolii goes solar; geothermal works

Two interesting reports are to be found in the July edition of Transitions, the newsletter on energy self-reliance published by the state Department of Business and Economic Development.

One is the transition taking place in the village of Milolii. The remote coastal fishing village is one of the old Hawaiian communities bypassed in the recent surge of development. The people of Milolii rely on catchment tanks or haul their water, and on electrical generators, for which the fuel must be trucked in.

Now photovoltaics have come to Milolii. There are now silent solar power systems on 27 of the homes and 23 more expect to have systems installed in the next few months.

The other report tells us that geothermal energy has been proven to be the most reliable source of domestic electric power in the Philippines. In 1990 this source is said to have saved the nation \$187 million which would have been spent on oil imports. Geothermal power plants represent 24 percent of the electricity produced in the Luzon grid.



Buzz 'n Kona

Buzz Newman

on Luzon

PGV finishes drilling of Pohoiki geothermal well

By JASON ARMSTRONG
West Hawaii Today

Drilling on Puna Geothermal Venture's long-awaited geothermal well in Pohoiki was completed Sunday and the \$100-plus million project should begin producing limited power by week's end and up to seven megawatts by September, company officials announced Monday.

"We are talking a matter of days before we are producing a kilowatt of power from geothermal energy," said Steven Morris, PGV vice president and general manager. "We will produce some power this weekend during the testing, but there are no guarantees," he added.

Morris cautioned that the upcoming testing period on well KS-8 will involve technical processes and no attempts will be made to produce power before the system is fully operational.

HELCO turns on third combustion turbine

A third combustion turbine generator put into operation Monday will ease the power crunch that led to recent rolling blackouts, according to Hawaii Electric Light Co. officials.

The new turbine increases HELCO generating capacity by 20.8 megawatts, the company said.

"This new generator should give us some breathing room," said HELCO President Warren Lee. However, he said it will not end the Big Island's energy shortage. The company still needs

the 25 megawatts contracted for from Puna Geothermal Venture, he said.

HELCO forecasted a peak demand of 151 megawatts this year, and has been operating with a maximum capacity of 161 megawatts.

This thin reserve margin has seriously strained its generating system and its ability to perform scheduled maintenance and unit overhauls, the company said.

"The amount of electricity that initially will be produced is a function of the productivity of the KS-8 well," he said. "We are expecting the well to be capable of producing five to seven megawatts, enough electricity to serve 5,000 to 7,000 people."

Work during the recently completed 15-day drilling process was finished without incident, ac-

ording to Morris. No hydrogen sulfide, gas that smells like rotten eggs, such a concern to many Puna residents, was released during the drilling operations and no loud noises occurred, he said.

Several safety steps remain, however, before the plant can be expected to power the homes of Hawaii Electric Light Co. customers this fall, Morris said.

"The next step will be testing the flow of geothermal fluids from the well," Morris said, while adding the procedure is complicated. "It is a non-trivial task," he said.

PGV officials will collect data during the testing process for chemical analysis, but first they must secure permission from the

state health department before going further.

"We expect to receive approval this week from the Department of Health to proceed with the test," Morris said.

The flow testing is expected to begin Friday and continue for 10 days, according to Morris.

"After completion of the flow test, the well will be shut down while the test piping is changed to the permanent piping. We will then be ready for commercial operation of the project," Morris said.

Exchanging the piping will take a couple of weeks to complete, Morris said.

The additional power supply will be eagerly received by HELCO officials who have struggled for months to meet island power demands despite antiquated and malfunctioning power plants.

-Hawaii Tribune - Herald, Tuesday, August 4, 1992

PGV flow-testing to begin Friday

□ Operation is the last step before start of energy production

Puna Geothermal Venture is expected to begin a 10-day flow testing of fluids at its KS-8 production well beginning Friday, PGV vice president Steven Morris said yesterday.

The flow test is expected to be the last major step before commercial operation of the

project, Morris said.

The 25-megawatt Pohoiki plant had been shut down for over a year after a June 1991 blowout at KS-8 which led to revisions in PGV's permits. The Health Department gave the go-ahead for PGV to continue last month.

The flow test was preceded by completion of drilling-related activities, which took about 15 days. Morris said there are no

loud noises or releases of hydrogen sulfide during that period despite complaints from area residents of odors and sicknesses they believe are associated with the well drilling.

Data for a complete chemical analysis of geothermal fluids, an action geothermal opponents have called for, will be collected during the flow test.

After the flow test, the well will shut down for a brief period to allow for permanent piping to

be fitted.

"We will then be ready for commercial operation of the project," Morris said.

He said PGV is hopeful the well can produce between 5 to 7 megawatts of energy, enough electricity to serve between 5,000 and 7,000 people. Exactly how much KS-8 can produce will be determined after the flow test, he said.

—By Gordon Y.K. Pang

Drilling completed on Puna well

Star-Bulletin staff

HILO — Puna Geothermal Venture has finished two weeks of drilling work to complete its KS-8 well, the same one that blew out of control for 31 hours last year.

The recent 15-day drilling was done without any loud noises or releases of hydrogen sulfide gas, said company general manager Steven Morris.

The company expects to receive a state Department of Health permit this week to test the flow of the

well for 10 days, beginning Friday, Morris said. After the testing, the well will be shut down for installation of permanent pipes. Commercial operations will follow that.

Since the flow of the well isn't yet known, the amount of electricity it can produce is also not known, but Puna Geothermal estimates it can produce 5 to 7 megawatts, Morris said. That's enough to serve 5,000 to 7,000 people.

The company already has completed its power plant, which has a capacity of up to 25 megawatts.

Geothermal asset fund ought to be strictly controlled

So the anti-geothermal activists want to hold the purse strings of the \$442,000 geothermal asset fund as opposed to having the Hawaii County Planning Commission administer the money.

I think it is inappropriate for the beneficiaries of the asset fund to be the administrators of the asset fund. I think it would be very appropriate, however, for people in Puna to have a voice in identifying community needs which might be financed by the fund — programs and projects which serve broad community needs.

Planning Director Norman Hayashi, all of Mayor Lorraine Inouye's administration and the County Council should support asset fund rules and regulations which permit the fund to be administered in a fair and impartial manner to serve the largest number of Puna residents — not just a handful of vocal activists with what many believe are imagined ills.

Denise Fleming
Keauu

PACIFIC BUSINESS NEWS Monday, August 3, 1992

HELCO blames Puna Geothermal for blackouts

In its report to the state Public Utilities Commission, Hawaii Electric Light Co. Inc. blamed the recent rash of rolling blackouts on Puna Geothermal Venture. HELCO's reserve margin is "exceedingly narrow," president Warren Lee stated in the report, because Puna Geothermal failed to deliver 25 megawatts of power to the utility on time. Puna Geothermal was unable to provide the power by Oct. 3, 1991, as had been agreed on, because operations were suspended in March until the state developed hydrogen sulfide release standards. Puna Geothermal began drilling again at the end of July and expects to deliver power to HELCO late this month.

Geo, tourism, politicians, etc.

Concerning geothermal. How can we condemn the Brazilians for destroying the Amazon when we are doing the same thing to our rain forests? We now know that by obliterating these places we are killing thousands of species of plant and animal life. Some of which may hold the cures for cancer, AIDS, and heart disease. Once the forests are gone they can never again be replaced.

How can we complain about water shortages, no land for "affordable" housing, and lack of electrical power, when our political "leaders" continue to grant permits to build more golf courses and mega hotels that require huge amounts of water, space, and electricity?

If you go to any hotel in Kona, you will see that the lights for them remain on constantly, that the pumps for the waterfalls run all the time. Remember when the hotels on Lanai were going to give jobs to all of the pineapple workers? Now they are being laid off. Occupancy is down all over the state and what do the politicians want to do? Build more hotels! Kona, Kohala, Lanai, Maui. When will it stop? Not until you vote the bums out of office and replace them with people who care about Hawaii.

Do the engineers in Puna really know what kind of pressures and temperatures they are dealing with? The answer is no! This is an experiment at the expense of the people of our state. I fear that because of man's ignorance, something catastrophic is about to happen. Where will our "leaders," their excuses, and "expertise" be then?

Douglas Olivares
Honolulu

Charges against geo protesters being dismissed

□ Mayor sanctioned
arrests outside of
her office in March

By Crystal Kua
Tribune-Herald

Misdemeanor charges will apparently be dismissed against 12 geothermal protesters who were arrested after a March 2 rally at the Mayor's Office.

But a Circuit Court judge must now decide if the prosecution can file new charges against them.

The protesters were arrested in Mayor Lorraine Inouye's outer office and charged with failure to disperse after they refused an order by the police to leave.

Deputy Prosecutor Michael Kagami wants to drop the original charges, misdemeanors which carry a penalty of up to a year in jail, and file new charges of simple trespass, a violation with no jail term.

"The state does not believe (failure to disperse) is a correct charge," Kagami told Circuit Judge Shunichi Kimura yesterday.

The deputy prosecutor explained that at the time of the offense, investigators believed that failure to disperse was the correct choice. But after a closer look at the case, the prosecution realized that the 12 were not charged properly.

Several defense attorneys said their clients would lose their right to a jury trial and to court-appointed counsel if the prosecution were allowed to file simple trespass charges against them.

The proper procedure would have been to "investigate first and then charge," said defense attorney Lester Ishado, who noted that there was no new evidence presented in the case to prompt the action.

Ishado said that the charges "should never have been brought in the first place ... it was a decision made by the mayor and the police officers."

Inouye, who had been subpoenaed as a defense witness in the case, denied that she ordered the arrests and said the decision was made by Police Capt. Elroy Osorio.

Osorio, however, wrote in police reports that he would not have arrested the protesters if the move was not "sanctioned" by the mayor, court documents said.

The move by Kagami comes two weeks before the date of the scheduled trial which is now off as a result of yesterday's moves.

Defense attorneys want Kimura to dismiss the case outright but hearings on their motions were canceled in light of the new development.

Kagami initially wanted to amend the charges to simple trespass and asked the judge to remand the case to District Court.

But defense attorneys questioned whether that was legally possible and objected, which is when Kagami asked for the dismissal of charges with an opportunity to file simple trespass charges against them in the future.

"It is duly burdensome," said defense attorney Ted Hong. He added that his client Athena Peanut, as a lay person, would not be able to raise the defenses that an attorney could.

Kagami denied that he wanted to take away jury trials and court-appointed attorneys from the defendants and that all he sought was to have the "proper charge" filed against the 12.

A total of 15 protesters were arrested when they refused to leave the mayor's outer office at the close of business but 12 of them asked for jury trials.

They are Holit Bat-Edit, Ronald Dicker, Ole Fulks, Kaliko Kanahale, Florence Karlik, Paula K. Kekahuna, Emily Naeole, Lucien Noe, Athena Peanut, Rene Siracusa, Steven Lew Tayama and Bernard Ke-liikoa. Siracusa is currently a candidate for election to the fifth district County Council seat.

COMMISSION ON RESOURCE MANAGEMENT

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JUL 23 1992

Give geothermal a chance

By Walter R. Steiger

Viewpoint

I was privileged today (July 15) to join a University of Hawaii at Hilo student group in visiting the Puna Geothermal Venture site which is operated by Ormat Hawaii. I was very impressed by what I saw and learned, and would like to share some of this with others.

There are several geothermal sites. This is the one that has essentially completed its construction and has for some months now been ready to generate electric power to feed into the Heico grid. The only matter holding it back has been that of government permits.

My first surprise was that PGV is not in a rain forest! It is in an area zoned for agriculture and rather barren. There is even little agriculture in the area. One of the most often used arguments against geothermal is that it is destroying precious rainforest. Certainly that is not the case for PGV!

The second most often heard argument against geothermal is the danger of hydrogen sulphide. Since the plant is not now in operation, the lack of any odor of H_2S today is not indicative of operational conditions. However, the system is designed in such a way that it is entirely closed. That is, geothermal fluids extracted from deep wells and passing through the turbines are returned to the depths from which they came. No gases are allowed to escape under normal operating conditions. It is possible that under unusual conditions, some gases may need to be vented. In such a circumstance abatement methods that will neutralize the H_2S are in place and will enable PGV to control the gas to levels below the newly established state standard of 25 ppb (parts per billion) for a first warning. At this incredibly low

level it is possible to detect the odor (the nose is an amazingly sensitive instrument!) but it is only a nuisance at worst. The state has set strict standards of operation and it is up to the citizenry to see to it that the state carries out its obligation to monitor and enforce the standards.

I am sure that there are those who will ask "What if...?" and refer to some worst-case hypothetical situation. No one can guarantee that anything is 100 percent risk-free. Life itself is full of risks and we daily make choices to accept risks, many of which are far greater than any potential geothermal accident risk. The most obvious example is the use of an automobile on the public roads. This is certainly the riskiest activity in our lives — some 25 people killed on this island alone so far this year! We accept this risk because we apparently feel the benefits are worth it (actually, most of us probably never stopped to think about it).

We are blessed here on the Big Island with the potential of almost unlimited energy from this geothermal resource. I believe it is incumbent upon us to develop this resource, and to develop it in a manner that is compatible with health and safety and with the preservation of the environment.

As a physicist, I was impressed by the careful design and construction of the entire system. Ormat has had a great deal of experience in this field and has given us a power plant that is at the forefront of the technology. I hope they can soon be allowed to demonstrate what they have created. Let's give them a chance!

Walter R. Steiger is professor emeritus of physics at the University of Hawaii, Manoa.

JUL 26 1992

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HAWAII TRIBUNE HERALD

Mayor asks state for stiffer geo standards

□ Inouye demands answer before PGV can begin drilling

By Gordon Y.K. Pang
Tribune-Herald

Mayor Lorraine Inouye is asking state agencies to respond to concerns raised by her appointed Energy Advisory Commission before allowing Puna Geothermal Venture to begin flow testing in early August.

A list of 11 recommendations were made by the commission to Inouye following a series of meetings with geothermal experts

and residents living near the PGV plant in Pohoiki. The commission said it wanted the recommendations to be followed "before allowing any geothermal plant to go into production of electricity."

Several of the recommendations are those given by state geothermal consultant Wilson Goddard in an earlier report and some were ignored by Inouye when raised by Civil Defense Administrator Harry Kim.

Inouye, after receiving the commission's recommendations, reviewed them with her cabinet members and forwarded them to the Health Director John Lewin and Land Board Chairman Bill

Paty.

Deputy Health Director Bruce Anderson said yesterday that the Health Department will be sending a response to Inouye by the end of the week.

The recommendations include:

- A complete geo-chemical analysis of the steam resource.
- Establishment of state standards for each toxic component identified in the steam.
- Use of cyclonic mufflers and full abatement during flow testing of all production wells.
- Baseline epidemiological studies on health impacts of living close to the plant.
- Establishment of reinjection well monitoring and develop-

ment of shut down procedures in the vent the reinjection process fails.

● Completion of a geothermal hazards risk analysis based on worst-case conditions.

In addition to the recommendations made by the commission, Inouye said she wants to know how the Health Department intends to ensure PGV operations are properly monitored given recently announced cuts in the agency budget.

Anderson said he agrees with the Hawaii County Energy Advisory Commission that health and safety concerns need to be addressed before geothermal development continues.

"Most of the recommendations (of) the commission have been acted on and we feel very confident that the development can continue without compromising public health," he said.

Cyclonic mufflers and full abatement during flow testing of production wells are already required under the PGV construction permit issued by the Health Department, he said.

But Anderson described as "impractical" the establishment of state standards for what may be hundreds of compounds in geothermal steam.

See MAYOR,
Page 8

From Page 1

"We will be providing testing for a wide variety of compounds, but not through promulgation of air quality standards," he said.

Nonetheless, "we will be considering each and every one of the conditions" set down by the commission, Anderson said.

Ron Phillips, a member of the commission, said the list of recommendations is "sound and reasonable" and "not anti-geothermal."

Phillips, said several of the recommendations "should have

been done a long time ago."

The 11th and final recommendation says that "if the risks are not acceptable, or the risks cannot be mitigated in an acceptable manner, stop the project and consider moving to a safer location."

Phillips acknowledged, however, that commission members do not specify "who makes those judgements" about what is acceptable.

Meanwhile, the Health Department's district health officer

met with 30 Puna residents late last week to hear complaints about headaches, respiratory problems and breast lumps some women believe are caused by emissions of hydrogen sulfide and other chemicals from geothermal wells.

"Not only the number of the cases but the clusters of the cases at certain time periods certainly makes it suspect," said Dr. Sam Ruben.

Ruben and other physicians also examined area residents fol-

lowing the June 1991 blowout at PGV. While Ruben and others recommended the patients move out, Ruben said the correlation between geothermal emissions and the ailments could not be proven by epidemiological standards.

PGV project manager Steve Morris noted that workers at the plant exposed to the same environment both on the job and living in the area have not reported health problems.

—AP also contributed

DIVISION OF WATER AND LAND DEVELOPMENT

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- ___ Information

TO: INT:

___ M. TAGOMORI

___ Nanbu

___ Akita

___ Chang

___ E. Lau

___ A. Monden

___ H. Young

___ T. Kam

___ G. Miyashiro

___ D. Lee

___ Janet

___ R. LOUI

___ S. Kokubun

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WEST HAWAII TODAY

JUN. 1 6 1982

HELCO official s

By ROBIN M. JONES

West Hawaii Today

HILO — Hawaii Electric Light Co. President Warren Lee reportedly said this week that Puna Geothermal Venture has been assessed \$2.9 million in fines for breaching its contract with HELCO.

According to the contract, PGV was to deliver 25 megawatts of

power to HELCO before 1991, or begin paying for the breach. Due to state county-ordered shutdowns, PGV has not been able to produce power it was contracted to deliver to HELCO.

PGV has argued that it is not responsible for the delays, at least some of which are beyond the energy company's control, and therefore

Developer wants to build golf course in Puna

By JASON ARMSTRONG
West Hawaii Today

A multi-million dollar golfing complex is being proposed for lower Puna by a Japanese-backed developer who has earned the support of community members by promising to improve their main subdivision roadway to comply with county standards.

Ainaloa Development Corporation plans to build a \$45 million golf course, complete with a swimming pool, tennis courts and club house, on 200 acres of agriculturally zoned land adjacent to the private Ainaloa subdivision in early 1994.

Property owner Bob Awana said he is prepared to spend an

estimated \$6.1 million to improve Ainaloa Boulevard, the main access road for the subdivision's 3,600 lots, so it meets Hawaii County roadway standards.

The subdivision's 600-plus homeowners, along with golfers wishing to use the course, would share the improved road under a preliminary agreement reached

Tuesday between Awana and the Ainaloa Community Association.

The Association's seven-member Board of Directors unanimously voted their support for the project, provided the three-mile Ainaloa Boulevard is widened and the necessary curbs, gutters and drainage infrastructure are installed to comply with

county standards.

Awana, with help from a Japanese investor, purchased the pair of 100-acre parcels last December in hopes of building homes, but has since opted for an 18-hole golf course and recreation center along with 17-to-20

See IS A:
Page 4A

From Page 1A

house lots, according to transcripts from the June meeting of the Ainaloa Board of Directors.

"We would like to do something special for the Ainaloa Community Association," Awana told board members at Tuesday's meeting. "Our intent is to operate a golf course open to the public," he said.

Ainaloa landowners would be offered green fees lower than those proposed for other Hawaii residents and tourists in exchange for allowing access to the course via the private roadway, Awana said. A round of golf, complete with cart rental, would be an estimated \$28 for Ainaloa property owners, Awana said.

The golf course would be only the second such facility in Puna, joining the Oneloa course currently under construction near Pohoiki. All of the 13 existing Big Island golf courses and the 27 previously approved for construction, with the exception of Oneloa, are located in other districts, according to county planning officials.

Awana, a self-described "golf nut," said the facility would be a community golf course and not a municipal one. It would include a "modest-sized" swimming pool

and indoor recreational center, while also serving as a site for scholastic sporting events, according to Awana.

Local residents would also have access to the complex, although they would be asked to serve as "policemen" for the facility, said Sidney Fuke, a planning consultant hired by Awana.

Ainaloa Board members expressed their wholehearted support for the golf course and agreed to draft a letter indicating its official backing for the project.

"I would rather have it than the 177 houses they had planned," said William Miller, community president. He added house development would generate too much "riff-raff" from undesirable owners and lessees, while the golf course would increase surrounding property values and provide jobs for the growing community.

Several members raised the issue of roadway improvements, although all appeared satisfied with Awana's promises to make the roller coaster-like Ainaloa Boulevard safe for pedestrians and motorists. Street lights may also be installed by the developer at all intersections, if county

planners deem them necessary, Fuke said.

Other members asked the developer to install a water main the entire length of Ainaloa Boulevard, from which connecting pipes could be added to provide homes on the side streets with county water.

Awana said he does not intend to build such a system, but will use a well to tap an underground aquifer. Members accepted this plan and proposed donating Ainaloa Boulevard, once it is improved, to Hawaii County and ask it to install the water system.

The proposal to build a golf course in Ainaloa is not without its critics. Greg Owen, a representative of the Puna Outdoor Circle, said the 80 members in his environmental organization are opposed to all golf course development in Puna.

"I would hate to see the forest taken down to get access to a club," Owen said. The use of pesticides and herbicides for golf courses is damaging to the environment and outweighs the benefits of additional jobs and recreational facilities, he added.

An environmental study of the property failed to uncover any endangered plants or animals.

Geo fund proposal blasted



—T-H photo by William Ing

"A LOT OF BUNK" — Steve Phillips of Leilani Estates angrily tells the Planning Department that the terms of the proposed geothermal asset fund aren't worth the paper they're written on.

□ **Planners hit for taking too long to come up with the proposed rules**

By Gordon Y.K. Pang
Tribune-Herald

PAHOA — About 40 lower Puna residents last night blasted the Planning Department's proposed rules for the county's geothermal asset fund.

Some residents said the proposal did not take into consideration advice given by community members to create a panel made up of area neighbors to decide who would get a share of the fund.

Others said the proposal was too vague and did not spell out the criteria for obtaining the funds.

The Planning Commission, which would have the final decision on who would get funds, will decide whether to accept the rules when it meets for a public hearing on July 7.

The fund was set up as a condition of the geothermal resource permit issued to Puna Geothermal Venture for its 25-megawatt plant in Pohoiki. The condition came about after a mediation effort to address the concerns of residents.

About \$448,000 is currently in the fund. The state contributed \$250,000 while PGV has put in \$160,000 — \$60,000 during its first year of existence in 1989 and \$50,000 each year for 1990 and 1991.

The Planning Department has been criticized for taking too long in setting up the rules, and more than a few residents felt the asset fund should have been

ready to go before PGV was allowed to start drilling.

Greg Pommerenk, who sat on the asset fund's advisory committee, said the group last met in April 1991 and was not given a chance to review the proposal which came out two weeks ago.

Pommerenk, president of the Puna Chamber of Commerce and a candidate for the County Council, said the advisory committee had agreed at its final meeting that the fund "needed to be controlled by a community panel" and that the Planning Department's draft "has nothing to do at all with what we tried to set up for two years."

Ron Phillips agreed, saying it was "always the intent coming out of mediation" that the asset fund be under the control of re-

See ASSET FUND
Page 8

From Page 1

sidents. The Planning Department is interpreting the resource permit condition to suit its own purposes, said Phillips, a candidate for the state House of Representatives.

"It doesn't reflect anything we worked on," said Leilani Estates resident Steve Phillips, another member of the advisory panel.

Planning Department staffer Rodney Nakano defended the proposal, however. Replacing the community group with a hearing officer as a recommending person and the Planning Commission as the final arbiter were the only substantive change made since the final meeting

with residents, Nakano said.

"Everything else remained intact," he said.

Lanipuna Gardens Association president Jon Olson said having the Planning Commission make the final decisions was not acceptable. "They are in large part responsible for the mess we have out here," he said. "They will have to admit they harmed us all" by approving the PGV project only to pay compensation to individuals, he said.

Asked why the Planning Department chose not to set up a community group to decide disbursement, Nakano replied "it was decided it would be too

cumbersome."

Alice Sun Cloud took exception to what she believed to be a lack of criteria for obtaining funds. "What do you say constitutes proof?" Sun Cloud asked. She said residents seeking compensation for health problems wouldn't know whether to get documentation from one, two or three doctors.

Claimants "already in the hole financially by virtue of the impacts" would need to "plunk down an extra \$50 when there's a good chance they'll get turned down," said Rene Siracusa, also a candidate for the Council this fall.

Resident associations could file a joint claim for funds on behalf of its members with one \$50 application, Nakano said, adding that the processing fee would be used primarily to pay for hearing notice advertisements in the newspaper.

Aurora Martinovich, the Lanipuna Gardens resident who lives closest to PGV, said she will "refuse and resist any money from you and the developer" because it's her belief the asset fund is being used as a ploy "just to shut people up."

"Your money cannot pay for the suffering we've endured," she said.

JUN 18 1992

Sewage fee increases get final OK

First takes effect next month; another to begin next year

By Gordon Y.K. Pang
Tribune-Herald

KAILUA — Sewage fees for residents will go from \$11.50 to \$14 come July 1 following passage of a new rate schedule given final approval by the County Council yesterday.

A year later, fees will go to \$18 monthly, according to the rate schedule.

Additionally, non-residential users will pay \$2.20 per 1,000 gallons of metered water used per month beginning in July with the exception of service stations, which will pay residential rates. The non-residential rates will not change in 1993.

Private haulers will pay a discharge fee of \$20 per 500 gallons. That rate will go to \$30 in July 1993.

There are currently 2,600 residential and commercial-type customers on the county sewer system in and around the island's two urban centers - Hilo and Kona.

The hike will pay the major share of the costs for operation, maintenance and replacement

associated with federally mandated sewer improvements now being implemented.

The improvements call for new plants in Hilo and Kona which will upgrade the processing of waste to secondary treatment levels. The improvements will also add a significant amount of new hook-ups over a 10-year period.

The goal of the project is to ensure protection of nearshore ocean waters around the Big Island.

County Wastewater Division Chief Harold Sugiyama estimates another 1,000 customers will come on-line within the next five years.

Sugiyama said operations, repair and maintenance will cost the county about \$4.1 million during the next fiscal year. About \$2 million of that will come from commercial fees, and \$1.2 million from residential users, including apartments and condominium customers. The rest would come from the county's general fund, he said.

The budget for fiscal 1993 is estimated at \$4.6 million. Of that amount, \$2.1 million would come from commercial customers and \$1.5 million from residential users with the rest coming from the general account,

Sugiyama said.

The idea, as required by the Environmental Protection Agency, is to get the customers to pick up most of the operating costs, he said.

Sugiyama said the Public Works Department can't calculate at this point when, or even if, additional hikes will come during the ensuing eight years because of the fluctuating number of customers and changing EPA requirements.

Sugiyama said the county will try to structure any additional increases evenly by mapping out when improvement costs will be incurred.

Councilwoman Merle Lai, chairwoman of the Public Works Committee, said Council members approved the hike grudgingly.

"It's not something we want to do, it's something we have to do," she said. "If we don't, we'll lose the funding and we'll probably get fined."

The EPA is picking up the major share of the tab for what is expected to be more than \$100 million in wastewater improvements over the next decade.

Of key concern is the cost incurred by those forced to hook-up to the sewer system.

Roughly 800 existing lots will be required to hook-up. The Wastewater Division has estimated as many as another 10,000 undeveloped lots may need to connect as well during the next decade if they are developed.

Cost estimates of the connections have ranged from \$3,500 to \$20,000, although the Public Works Department estimates it will cost most families between \$5,000 and \$7,000.

Yesterday, the Council deferred action on a guaranteed loan program which would be set up through a financial institution to help homeowners unable to pay the costs of mandated sewage hook-ups.

Lai said while the Council would have liked to see the loan bill approved yesterday along with the hike, a number of questions remain regarding the county's responsibilities in cases of default by borrowers.

Sugiyama said about 200 homes in the Waiakea Houselots and Waiakea Mill Pond subdivisions are being required to hook-up during the next year.

Eventually, portions of Ainao and Kalaniana'ole — both in Hilo — and Alii Drive in Kona, will also be forced to connect.

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HAWAII TRIBUNE HERALD

JUN 19 1992

Governor OKs standards for geo emissions

□ PGV drilling could start up again in two to three weeks

By Gordon Y.K. Pang
Tribune-Herald

Gov. John Waihee this morning signed-off on hydrogen emission standards, clearing the way for Puna Geothermal Venture's 25-megawatt plant to return to action in as early as two to three weeks.

A state Supreme Court decision earlier this year led to a court-ordered shutdown of the facility because of a lack of standards only weeks before it was to come on-line to Helco's grid system.

Deputy Health Director Bruce Anderson said this morning that health officials will now need to sit down with PGV officials and discuss revisions to their permit to reflect the new standards.

But because PGV's construction permits from the Health Department already have a maximum level of 25 parts per billion of hydrogen sulfide on an hourly average — the same amount listed as a standard in the new rules — Anderson said he doesn't expect the process to take very long.

"We're looking at a two- to three-week time frame, but it may take longer," Anderson

said. "But the ball is in PGV's court. They'll need to come in to the Health Department to ask for us to revise their permit."

Anderson acknowledged, however, that "the changes are minor."

He emphasized that state law requires the now-signed measure to sit in the lieutenant governor's office for 10 days before actually becoming law.

The new rules are "very defensible" from a public health and environmental protection standpoint, Anderson said, noting that they are the same standards applied in California.

When the rules went to public hearing, anti-geothermal forces called the allowable standard too high while others said they would be too low for non-geothermal industries to live with.

Anderson said leaders of other industries which emit high levels of hydrogen sulfide — primarily the sewage waste and sugar industries — have been assured the standard is "to be applied to new sources of air pollution ... and will not impact on their industries."

PGV attorneys could not be reached for comment this morning, but the company likely will not need court approval to get the suspension lifted, only gain a new permit from the Health Department.



Canadian Crew Energy Corp.

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92 JUN 19 A 8: 45

June 9, 1992

DIV. OF WATER &
LAND DEVELOPMENT

TRADING SYMBOL KNC

*Janet D
Mark P
Jon H
Chris
John*

NEWS RELEASE

JOINT VENTURE ESTABLISHED TO DEVELOP MEAGER CREEK AS CANADA'S FIRST GEOTHERMAL POWER PROJECT

Canadian Crew Energy Corp. (Crew), its wholly owned subsidiary Meager Creek Development corporation (MCDC) and Guy F. Atkinson Holdings Ltd. (Atkinson) have executed an Agreement establishing a Joint Venture to develop Crew's Meager Creek Geothermal Project, located 100 miles north of Vancouver, B.C. The structure and terms of the Joint Venture will be announced following ratification by the respective Boards of Directors.

The Initial Development of the project shall include the engagement of GeothermEx, Inc., the industry leader in geothermal resource evaluation, to undertake the necessary activities to prove up the geothermal resource and submit a final report on the commercial viability of the resource for the development of a geothermal power project at Meager Creek.

This phase shall also include a confirmation drilling program in preparation for the engineering, design and construction activities for the 60MW power plant. If successful, this phase shall be concluded by the negotiation of the necessary debt and equity financing for the initial plant which is planned for completion by the end of 1995.

In addition, the Joint Venture intends to undertake all aspects of the Federal and Provincial Regulatory and Permitting process, negotiate the terms of an electricity sales agreement for the initial 60 MW plant and negotiate transmission line easements and interconnection requirements. As reported previously, in conjunction with the proposed development plan, Commonwealth and Crew are also structuring the public consultation process and the environmental programs.

Guy F. Atkinson Holdings Ltd. is a wholly-owned subsidiary of Guy F. Atkinson Company of San Francisco, California, a major U.S. engineering and construction company. Commonwealth Construction Company Ltd., also a subsidiary of Atkinson, and one of Canada's foremost industrial engineering and construction companies, shall be the project manager and operator and undertake all construction and development activities on behalf of the Joint Venture.



WJ
Clerk

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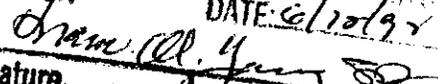
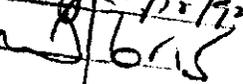
Award Title: GEOTHERMAL PERMIT & COORD. CENTER
Award Period: 6/89 to 6/92
Principal Investigator: TAGAMORI, MANABU

Award Number: 26579 Invoice Date: 06-08-1992
Invoice Period: 5/1/92 to 5/31/92 RCUH Project Number: 4361

Budget Category	Current Expenditure	Cumulative Expenditure
SALARIES	5,550.00	49,286.59
FRINGE BENEFITS	599.14	5,676.41
SUPPLIES	35.32	35.32
TRAVEL	168.00	2,487.92
CONSULTANTS	2,863.93	26,987.96
Total Direct Cost:	9,216.39	84,474.20
Indirect Cost: @ 5% TDC	460.82	4,223.71
Total Cost:	9,677.21	88,697.91

"I hereby certify that this is an ORIGINAL INVOICE."

By 
Authorized Signature

GOODS/SERVICES REC'D IN SATISFACTORY CONDITION		DATE: 6/12/92
Signature: 		Init. Date
Invoice Rec'd		6/12/92
OK to Pay		6/15
Rec'd to Div Off (opt.)		

Kim supports reduced emergency plan test

Special to the Star-Bulletin

HILO — Puna community groups want Big Island Mayor Lorraine Inouye to call a full-scale test of the Geothermal Emergency Response Plan before any geothermal activity resumes.

The plan was approved Feb. 28 by Inouye over the objections of Civil Defense Administrator Harry Kim, who had said he would OK the plan only if new conditions were met.

Jon Olson, Puna Community Council legislative chairman, sent a letter to Inouye's office Wednesday requesting the test to protect the health and safety of Puna residents.

Inouye was not available for comment, but Kim said a full-scale exercise would require up to 10,000 people to be evacuated. "We don't even do that for tsunamis," Kim said.

But Kim said it is important to ensure the public understands procedures for evacuation. "And we have not done this," he said.

Kim said he wants the county to conduct a "a field exercise, but not a full-scale exercise."

It would make sure that agencies responsible for warning and evacuating people know their jobs by testing them in the field, he said.

West Hawaii Today, Wednesday, June 17, 1992

Geothermal EIS transcripts out

The U.S. Department of Energy held 10 scoping meetings in five locations in Hawaii during March to obtain comments from the public to assist in preparing the Hawaii Geothermal Project Environmental Impact Statement (HGP EIS).

The transcripts of the scoping meetings are available at each of the HGP EIS reading rooms located in Hawaii. The address of the reading rooms on the Big Island follow:

Hawaii Energy Extension Service, Hawaii Business Center, 99 Aupuni St., Room 214, Hilo; 933-4558.

Library, Pakalana Street, Pahala; 928-8032.

Pahoa Public and School Library, 15-3038 Puna Rd., Pahoa; 965-8574; and

State of Hawaii, Department of Business, Economic Development and Tourism, Hilo office, 99 Aupuni St., Room 212, Hilo;

933-4600.

For more information or questions, contact: Dr. Lloyd F. Lewis, CE-121, HGP EIS Program Director, U.S. Department of Energy, Office of Conservation and Renewable Energy, 1000 Independence Avenue, S.W., Washington, DC 20585.

Geo fund proposal blasted



—T-H photo by William Ing

"A LOT OF BUNK" — Steve Phillips of Leilani Estates angrily tells the Planning Department that the terms of the proposed geothermal asset fund aren't worth the paper they're written on.

Planners hit for taking too long to come up with the proposed rules

By Gordon Y.K. Pang
Tribune-Herald

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ASSET FUND: Planners blasted b

From Page 1

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ASSET FUND, pg 8

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Hilo Public Library, 300 Wai-nuenue Ave., Hilo; 935-5407
Kailua-Kona Public Library, 75-138 Hualalai Rd., Kailua-Kona; 329-2196.
Mountain View Public and School Library, Highway 11, Mountain View; 968-6300.
Pahala Public and School

Handwritten signature or scribble at the bottom right of the page.

Governor OKs standards for geo emissions

□ PGV drilling could start up again in two to three weeks

By Gordon Y.K. Pang
Tribune-Herald

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PGV attorneys could not be reached for comment this morning, but the company likely will not need court approval to get the suspension lifted, only gain a new permit from the Health Department.

Geothermal energy needed

The Big Island is the victim of a poverty of power. We cannot continue with rolling blackouts that knock out traffic lights, power to our hospitals, sewer treatment plants, burglar alarms, home dialysis equipment and a score of other functions which are part of a modern community.

Our health, safety and economy are at stake. A lack of power hurts our business community when cash registers, computers, automatic doors, gas-line pumps and lights go out.

Geothermal energy is good for everyone, environmentally and economically.

I was a delegate to the recent Hawaii Island Democratic Party Convention in Kona and the State Democratic Party Convention in Honolulu. The Democratic Party in Hawaii is the party of the people, and I am especially pleased that delegates at both conventions overwhelmingly adopted resolutions calling for continued geothermal energy development on the Big Island.

June R. Curtiss,
Chairperson, Hawaii Island
Geothermal Alliance

Hawaii Tribune - Herald, Thursday, June 18, 1992-

Geo opponents 'thanked'

A big mahalo to all the anti-geothermal organizations and their supporters for not attending or making their presence known at the "pro-geothermal" rally in Hilo on May 13, 1992. Your

absence and usual radical dress and behavior was not missed by the great number of us "supporters" attending this event with friends and family members young and old. We the "silent majority" filled the auditorium with our peaceful manner of support and togetherness and enjoyed the evening's event.

It is likely that, as a group, we'll make no disturbing headlines for news coverage, since there's not much to say about a crowd of dignified people whose display of self-pride and respectful manner causes no threat or nuisance upon others.

We the "silent majority" are the average hard-working, law-abiding citizens that make up this great country of ours, and, at this rally, we came in large numbers to support the "solution" for mass-production energy needs that the Geothermal project can supply. We are tired of the "Rolling Blackouts" and the actions of protest against the geothermal project, neither of which provide "solutions" to meeting our needs for mass-energy production. Because of your absence, we had a most peaceful and productive evening. As the ole' saying goes — if you are not part of the "solution" then you are part of the "problem."

Mahealani Kuamoo-Henry
Pohoiki

Viewpoint not 'ludicrous'

On June 9, a letter to the editor in the Tribune-Herald said I had made a "completely ludicrous statement that if we use geothermal energy, we may have to export residual oil." I regret that the author of that letter found the statement ludicrous, but his quarrel will have to be with Pacific Resources, Inc., rather than with me. My information is from PRI and I believe it is accurate. PRI issued a position paper in February 1992. It began by saying that the company does not intend to "argue for or against the merits of geothermal energy." It went on to say "However, while geothermal has the opportunity to reduce the state's demand for residual fuel oil, it will not reduce the state's need to import crude oil." This alone may be of great significance to those who are arguing for or against geothermal development, since there seems to be a belief that geothermal will reduce the need to import oil. At least according to PRI, that is not the case and, therefore, the pros and cons of the geothermal arguments should take that into account.

The above does not deal with the question of possibly needing to export residual oil. That issue is dealt with further on in the PRI memo. The oil company explains as follows: "It is physically impossible for refiner to make only one of these products as the refining process naturally yields a variety of them.... In order to stay in business a refiner must sell all of its products at an overall profit.... If there were no demand for fuel oil in the local market, it would be necessary to export this product for lack of storage space. That could impact prices for other products and make it more difficult for a refiner to maintain its economic viability."

I stand by my viewpoint article, of which the export/import issue was only one point. I would be pleased to make available to anyone interested either that viewpoint article or the paper written by Pacific Resources, Inc.

Andrew Levin
Senator, First District

Geo EIS hearings

I would like to thank all the people who participated in the geothermal environmental impact statements hearings.

Now we must evaluate: 1. We are faced with a grave situation. 2. We have a geothermal emergency. We can't wait for the EIS to be completed in years. By that time too many people will be poisoned, or dead, and the rainforest will be destroyed.

We must shut down all geothermal now, once and for all.

Bertrand Guthrie
Volcano

Supports geothermal

To the Forum:

Senator Richard Matsuura has earned—over and over again—the admiration and gratitude of the many thousands of Big Islanders who support the development of geothermal energy for use on Hawai'i Island.

Despite the harsh criticism leveled at all who support harnessing this valued local resource for needed electrical power by a handful of anti-everything activists, Senator Matsuura steadfastly continues his strong support of geothermal energy.

The Senator's backing is founded on his understanding of the environmental and economic soundness of geothermal power, his awareness of the technological capabilities of the geothermal industry to provide power in a manner which protects the health and safety of Hawai'i's people.

I support Senator Matsuura because he bases his actions on fact, he refuses to pander to the anti-geothermal activists, as do a few politically motivated mouth-pieces in the State Legislature.

Thank you, Senator Matsuura.
May the power be with you.

John Davis
Carpenters Union
Hilo, Hawai'i

West Hawaii Today, Friday, June 26, 1992

Geo asset fund hits snag

The long-awaited geothermal asset fund rules have again hit a snag. Due to less than favorable public response to the rules, a July 7 Planning Commission hearing set to discuss them has been indefinitely postponed.

The rules met wide opposition from Puna community members during a June 16 meeting set to outline the rules.

The planning department would not say specifically what the major points of contention are with the plan. Planning Director Norman Hayashi did not return calls to comment.

Apparently, however, there were numerous aspects that met resistance by community members who live near the Pohoiki geothermal plant. The complaints included designating the planning commission as the final authority over distribution of the funds and a lack of community input in terms of who should draw from the fund.

Planning personnel will now try to work out the rules for the fund with more cooperation from the Puna Community members, who are the prospective recipients of the funds, now totaling more than \$440,000

Puna residents want say in rules

By Chris Loos

Special to the Star-Bulletin

HILO — Puna residents have accused county officials of circumventing the community in preparing rules for a Geothermal Asset Fund.

Rodney Nakano, acting county Planning Division chief, told residents at a public briefing Tuesday that the fund would compensate people if they could prove they were adversely affected by geothermal development authorized by county permits.

Adverse impact, the fund's rules say, includes "physical injury, medical and health conditions, business or economic loss, loss of residential property value, nuisance, or any other claim which is able to be substantiated by evidence."

The fund contains \$446,593.43 — \$250,000 of which came from the state and \$160,000 from Puna Geothermal Venture.

Puna Geothermal Venture's permit says the administration of the fund shall be "with participation of Puna residents." The rules

Geothermal fund rules

The Hawaii County Planning Commission will hold a public hearing on rules governing the Geothermal Asset Fund:

■ **When:** 3 p.m. July 7

■ **Where:** Hilo High School cafeteria.

make no such provision.

Greg Pomerenk was a member of an ad hoc committee formed in 1989 to work on rules for the fund. Pomerenk says the ad hoc committee of government and community members intended for a community panel to make the decision on who was eligible for compensation.

Under proposed rules, a hearing officer would hear the claims and report his findings to the Planning Commission, which then would announce its decision.

County Planning Director Norman Hayashi confirms he eliminated the community panel from the rules. But he says he will meet with his staff to discuss public comments and would not rule out a change to include participation by a community panel.

Hawaii Tribune - Herald, Thursday, June 25, 1992-

Hale applauded

I heartily applaud Councilwoman Helen Hale's astute letter about her views on the geothermal situation. What she is saying is what most people of good common sense would agree with. I am also looking toward alternative sources of energy besides fossil fuels, and, like Hale, I believe we need to make sure these alternatives are safe before we implement them. It is the duty of our government to make sure the public is informed and safe-guarded when any high-impact development is concerned. Andy Levin made the same point in an earlier letter. If government isn't there for the people, who is?

The way the pro-geothermal forces have conducted their business has only served to weaken their own credibility with the general public and to hamper their own progress. They seem to have consistently tried to cut corners and circumvent the necessary processes in their rush to see their goals completed. They are their own worst enemy. Instead of trying to work with the agencies involved, they are making each step a battleground.

Again, I agree with Hale that we should not prostitute ourselves to big money and "grandiose" schemes. This is not the greedy, glitzy eighties anymore. Let's get real. Development will always be on the horizon, but let's do it with wisdom and conscience, and not always bow down to the "Almighty Buck."

Valerie K. Loh
Hilo

Hawaii Tribune - Herald, Thursday, June 25, 1992

Asset fund hearing scrapped

A public hearing on proposed geothermal asset fund rules that was to be held by the county Planning Commission on July 7 was scrapped by the Planning Department.

"The department is reviewing the proposed rules as a result of comments received during and after the department's informational meeting held on June 16, 1992," according to a release issued yesterday.

Planning Director Norman Hayashi did not return calls placed yesterday to discuss specifically what segments of the draft rules were being reviewed.

At the June 16 meeting in Pahoa, however, area residents were critical of several parts of the draft plan.

For one, said some residents, the Planning Department ignored their recommendation to set up a community group to determine who would get shares from the fund, which currently has about \$448,000 in state and Puna Geothermal Venture contributions and interest earned.

Residents also took exception to placing the final authority for the fund's distribution with the Planning Commission, which they feel has been unreceptive to their concerns.

Additionally, residents said they were not happy with the notion of paying a \$50 non-refundable processing fee.

New standards to allow Big Island

By BRUCE DUNFORD
The Associated Press

HONOLULU — Gov. John Waihee has signed a new standard for Hawaii on the industrial emission of hydrogen sulfide at about the level where the rotten-egg smell of the gas becomes a nuisance, health officials announced Friday.

State Health Director Jack Lewin, however, said the Health Department will be setting much stricter standards in the permits issued for geothermal activities and other facilities that emit the gas.

Those tighter standards will de-

pend on the activity involved and its proximity to homes, he said.

Setting a standard for hydrogen sulfide was required by the state Supreme Court in a ruling earlier this year in a case brought by anti-geothermal development activists.

It applies to all man-made activities that generate the gas, including sewage treatment plants and oil-fired electrical plants.

Palikapu Dedman, president of the Pele Defense Fund, which took the case into court, charged that the Health Department railroaded the new rules through without considering all the concerns raised at the pub-

lic hearings.

He said his organization will press for a full environmental impact statement to be done by the state to determine the health, environmental, religious, social and economic effects of geothermal development.

Because two geothermal developments on the Big Island were shut down as a result of the high court's ruling, the Department of Health expedited enactment of the standard.

Steven Morris, Puna Geothermal Venture's vice president and general manager, said his company is pleased that the new emission rules were completed on a timely basis.

geothermal to resume

"The rules are very stringent," Morris said. "We are confident that they will meet the safety concerns of the community."

Morris said now that the standard has been set, Puna Geothermal Venture should be able to produce power very soon.

Deputy Health Director Bruce Anderson said it will still take a few weeks to revise and reissue the geothermal permits.

New permits will be issued only after the developers demonstrate they can comply with the new standard, Anderson said.

Lewin told a news conference that

the new standard of 25 parts per billion is about the same as the overall standard used in California, and he said he's confident it will be adequate to protect public health and the environment.

Exceeding the level could bring a fine of \$10,000 a day.

While the maximum emission of hydrogen sulfide is 25 parts per billion, Lewin said the permit for the normal operation of a geothermal power plant will set the standard at five parts per billion.

That's about the level of detection for odor for sensitive people, he said.

THE GARDEN ISLAND-WEDNESDAY, JUNE 24, 1992

Geothermal: Power for people

To the Forum:

The Big Island is the victim of a poverty of power. We cannot continue with rolling blackouts which knock out traffic lights, power to our hospitals, sewer treatment plants, burglar alarms, home dialysis equipment and a score of other functions which are part of a modern community.

Our health, safety and economy are at stake. A lack of power hurts our business community when cash

registers, computers, automatic doors, gasoline pumps and lights go out.

Geothermal energy is good for everyone, environmentally and economically.

I was a delegate to the recent Hawai'i Island Democratic Party Convention in Kona and the State Democratic Party Convention in Honolulu. The Democratic Party in Hawai'i is the party of the people, and I am especially pleased that

delegates at both conventions overwhelmingly adopted resolutions calling for continued geothermal energy development on the Big Island.

Geothermal energy truly is power for the people.

June R. Curtiss
Chairperson
Hawai'i Island Geothermal Alliance

Geo backers applaud emission rules

□ But 'restrictive nature' of the rules has raised concerns

Four groups of supporters for geothermal development on the Big Island have given an unanimous endorsement to the newly approved state rules setting hydrogen sulfide emission standards.

In separate written statements, the groups said Gov. John Waihee's Friday action in approving the rules would put long-delayed geothermal development back on track, even though they still have concerns over the "very restrictive nature" of the new emission standards.

The rules set the maximum limit at 25 parts of hydrogen for each billion parts of all substances emitted in one hour's time from a geothermal operation. Geothermal opponents have urged that the limit be set between 5 and 10 parts per billion, while geothermal supporters

have said the limit of 25 parts per billion is too restrictive.

Bill Cook, executive director of the Hawaii Island Geothermal Alliance, said his group is pleased with the governor's action. "We're hopeful that geothermal companies and other industries affected by the new standards can comply," Cook said. "We believe the people of Puna who are concerned about health and safety will be reassured and pleased with the state's prompt response to their air quality concerns."

While praising the state efforts in holding hearings to set the standards following a state Supreme Court ruling, Cook said his 45,000-member group "remains concerned about the very restrictive nature of the new H₂S rules, which set the statewide ambient standards at 25 parts per billion."

The court ruling led to a shutdown of Puna Geothermal Venture only weeks before it was to supply Hawaii Electric Light Co. with 25 megawatts of power.

HIGA urges the state Department of Health to re-issue permits soon to get geothermal-generated power to island residents and businesses, Cook said.

Herbert J. Perreira, chairman of the Big Island Labor Alliance, said his group hopes the new emission standards "will put an end to the many costly delays the geothermal industry on the Big Island has been subjected to over the past several years."

Perreira said his group is made up of "most public and private labor organizations on the Big Island and represents about 12,000 working men and women islandwide." "BILA members need reliable electrical power generated by geothermal for the health and safety of their families," he said. "They also need it to assure steady employment."

Wayne Blyth, president of the Big Island Business Council, said, "Now, True/Mid-Pacific Geothermal and Puna Geother-

mal Venture can resume developing geothermal energy for our power-starved Big Island."

Blyth noted that the Supreme Court ruling rendered earlier this year said the state must have a statewide H₂S standard before geothermal development could continue. But "the court never ruled geothermal energy was not a good power source for the Big Island, only that the state had missed a procedural step in the geothermal development program," Blyth said.

Fred Galdones, division director of ILWU operations on the Big Island, praised the state's "fast and comprehensive" action in developing the hydrogen sulfide emission standards.

"We believe the new H₂S emission standards are very restrictive and will protect the health and safety of Puna residents, and we have been advised that geothermal development can proceed and provide the Big Island with critically needed electric power," Galdones said.

Who to believe?

There has been a lot of posturing in the media recently by advocates of geothermal development, a free beer and food party, distortion about scientific statements and especially "lip service" about the importance of the health and safety of the lower Puna residents.

Governor Waihee stated that the Department of Health's H₂S standard hearing is proof the geothermal is being developed in a "safe" and "helpful" manner. He failed to mention that it took a \$35,000 lawsuit, a supreme court decision, and 12 years of complaints to force the Health Department to have these hearings. Real concern, eh?

The governor also stated, and the mayor concurred, that health concerns other than H₂S have been addressed and it is "self serving" of those opposed to geothermal to be bringing up such issues at this point. Harry Kim who has openly stated that he is neither pro- or anti-geothermal, has sincere and earnest concerns about the health and safety of the lower Puna residents. He has stated that the heavy metals such as lead, mercury, arsenic and radon 222 need to be explained and examined and their health impacts, (in conjunction with H₂S) on the community, need to be addressed. He also refused to sign off on the Emergency Response Plan (ERP) for geothermal accidents and resident evacuation. The mayor signed that plan.

Wilson Goddard, a geothermal expert and pro-development man hired by the state, has voiced his concerns very strongly about the health effects and impacts on the community by the "heavy metals" lead, mercury, arsenic and radon in the geothermal brine and aerosols questions. Mr. Goddard also stated that in development of geothermal energy certain steps need to be followed for success: (1) define the resource, (2) decide what to do with what you find (heavy metals), (3) during this whole process the community is involved in open and honest forums, and (4) then, and only when these steps have been taken, does the developer go and build his \$100 million plant. He has stated that in Hawaii everything has been done completely backwards. Personally I can see people like Senator Matsuura, who is concerned about the large money invested, telling the developer to go ahead, don't worry we'll make sure geothermal energy happens in Hawaii.

I have a question now for the general public, who have legitimate energy concerns, (concerns that can and will be met by other means), who do you believe, Harry Kim, a man of known integrity, and Wilson Goddard, a geothermal expert, or our politicians and people with money to gain? I, for one, know that answer. I hope everyone else asks this question.

Geoffrey Last
Upper Leilani

Give it a chance

Editor:

The latest geothermal topic to make the headlines is the state's effort to determine the maximum level of hydrogen sulfide (H₂S) allowable near the Big Island's geothermal facilities. It's yet another example of a routine matter being blown out of proportion by opponents of geothermal energy.

Geothermal is a safe, proven alternative to environmentally harmful fossil fuels. This has been proven on the mainland and

around the world. The H₂S emission standard of 25 parts per billion (ppb) being recommended by state health officials is unreasonable. The following should put the discussion into perspective:

Workers at local refineries, sewage treatment plants, landfills and fish processing plants are regularly exposed to levels of H₂S far in excess of 25 ppb, yet their lives are not considered to be in jeopardy.

The Occupational Safety and Health Administration (OSHA) allows workers to be exposed to 10,000 ppb for up to eight hours per day for a five-day work week.

An American Lung Association representative stated that H₂S concentrations in persons with bad breath have even been measured at 65 to 698 parts per billion.

Puna Geothermal Venture and the other geothermal developers continue to demonstrate their primary concern for public safety. They are being asked to comply with the stiffest safety controls on geothermal facilities anywhere in the world.

Geothermal clearly has the greatest potential to relieve Hawaii of its overdependence on fossil fuels. Let's give geothermal a chance. It may be our last.

Clint Churchill
Chairman
Pro-Geothermal Alliance

Monday, June 22, 1992 PACIFIC BUSINESS NEWS

Official: Puna Geothermal owes HELCO \$2.9 million

Puna Geothermal Venture owes Hawaii Electric Light Co. \$2.9 million in penalties for failing to deliver electricity on time per a contract, according to HELCO president Warren Lee. Puna Geothermal was to deliver 25 megawatts of electricity Oct. 3, 1991, according to Lee, but the company said delays, including a shutdown of operations because of well blowout, were beyond its control.

Act responsibly

Editor:

There have been several letters recently from Bill Cook, the paid lobbyist for the Geothermal Alliance where he tries to come across as "just plain folk who have our best interests at heart."

I met Cook and his wife at the State Democratic Convention. Somehow even though these people are paid lobbyists for geothermal, they were delegates to the state convention, supposedly representing their districts. When I asked how much he gets paid to lobby for geothermal and vote for geothermal as a party platform, he said it was none of my business. Well, when he's trying to make us believe that he's so down home and all, it does matter how much he is being bought for to say the things he does, like how affordable and reliable this geothermal is. He tells us how clean it is, when we all know how bad sulfur stinks. He tells us how safe and reliable it is, when we've seen it "blow out" uncontrollably. And how is it affordable, when we're all going to have to pay higher rates to have it on line?

Time and time again the powers that be say the centralized, meterable big power plants are the answer rather than renewable, decentralized power generation like wind and solar power. Time and time again the environmentalists and energy consultants say try to be self-sufficient with safe energy like solar and wind and biomass and alcohol as fuel. Why do we constantly have to fight the power companies who push only the environmentally degrading answers?

Cook says, "I believe the Big Island people know what they want." Well, Cook does not know what I want and those like me who want the Big Island to prosper and be the vanguard of the future, not a part of the global destruction. Cook thinks if we just get scared enough with enough black outs and are sedated enough with enough beer at their parties that we'll see it his way and settle on destroying the planet and our beautiful island so that he and the big business behind geothermal can make alot of money.

Cook overlooks the Big Island people who are directly impacted by the constant noise, the threat of being gassed to death, and by the fall in the values of their properties. No one wants to be dependent on foreign oil but if geothermal is going to be accepted at all, these poor people who are directly impacted need to be taken care of and relocated and fairly compensated for their losses. Cook and the pro-geothermal people have no right to think that it is okay for these local people to have to live in fear of being gassed to death. Just because some of these families are alternative lifestyles is no reason to ignore their personal and property rights. It is as plain as the nose on your face, and it's wrong.

Geothermal is not going to be accepted here unless it acts responsibly toward the people whose personal and property rights are impacted. It is not going to be accepted here unless it is nothing short of state of the art, high tech, and non-polluting. It is not going to be accepted here unless the destruction of the

rainforest is kept to the absolute minimum and diverse native species are replanted immediately throughout the area and only the absolute minimum of the space should be taken up with equipment and the plant itself. The acres that were bulldozed without permits need to be replanted now. Unless all these issues are responsibly and immediately dealt with, there is going to be division in the community.

Gary O'Brien
Kapaau

Geo example

Editor:

An April 1992 article appeared in the Philadelphia Inquirer titled "Manila Power Out Again."

The city of Manila suffered three straight days of power failures. A geothermal power plant had to be shut down because its pipes developed leaks.

Two questions: What does this say about all the claims we've been hearing that geothermal will bring reliable energy? And considering the urgency of the geothermal issue here in Hawaii, as well as our closer ties to the Philippines, why didn't you read about it in your local newspaper?

David Zeissler
Leilani Estates

Who gets the energy money?

Editor:

Geothermal development in Hawaii is about lies and greed. It's about who gets the rate-payer's money. With geothermal, the good ole boys get it; with energy conservation, the working class gets it.

Conservation does not mean running around turning off lights or shivering in the cold. In general, energy conservation means replacing energy-guzzling appliances with new energy-efficient ones.

It's nothing new. Energy experts have known since the 1970s that energy conservation is good for the environment, good for the rate-payers, good for small businesses and good for jobs. However, the vested interests are naturally reluctant to distribute information that would hurt them financially, and the general public has been kept in the dark.

On May 21, 1990, Robert J. Mowris published a report; "Energy Efficiency and Least-cost Planning: The Best Way to Save Money and Reduce Energy Use in Hawaii," which outlines a plan to implement energy conservation in Hawaii.

The centerpiece of Mowris' plan features a massive installation effort in existing homes and buildings consisting of the following: installing water-saving shower heads, installing compact fluorescent lamps, installing the most energy-efficient refrigerators, installing solar hot-water heaters and insulating existing hot-water heaters. As you can imagine, it's a very labor intensive process. It's good for jobs.

Mowris recommends that the Hawaiian utilities invest \$85 million per year, for the next 20 years in these conservation efforts. Of that \$85 million, approximately \$25 million would be spent on jobs each year. At a time when tourism is down, that would feed a lot of families.

The average cost of Mowris' conservation recommendations is calculated to be 3.6 cents per kilowatt hour (kWh). The estimated cost of geothermal power is at least 15 cents per kWh and could go as high as 30 cents per kWh. In other words, geothermal power will cost rate-payers at least four times more than power from conservation. Buying geothermal power when folks are having a hard time making ends meet, is like kicking 'em when they're down.

It's important to know that as consumers, we cannot tell whether additional electricity is produced by a geothermal power plant or by changing light bulbs, except that changing light bulbs is much cheaper than geothermal energy.

According to Mowris, the potential for energy savings in Hawaii is at least 40 percent. On the Big Island, that translates into 60 megawatts (MW). Compare that to the controversial Ormat geothermal plant, which would produce only 25 MW.

One can easily understand the geothermal issue if one knows where the money goes. The Ormat 25 MW plant will cost at least \$120 million. Of that, some money goes to the mainland drilling company, some goes to

Hawaii County royalties, some goes to State of Hawaii royalties, some goes to foreign turbine manufacturers, some goes to Puna Geothermal Ventures' profit and some goes to HELCO's profit and power lines.

As you can see, geothermal development greases our vast political machine in all the special spots.

In contrast to the \$120 million Ormat plant, the cost of 25 MW of conservation is estimated to be only about \$35 million. Of that, about 30 percent would go to Big Island jobs, about 40 percent would go to small Big Island businesses and about 30 percent would go to manufacturing (some of which could be established here). And we would still have \$85 million left over to spend on something else, perhaps a new school for our kids, perhaps we could fix-up our hospital, perhaps.

So it's about who gets the rate-payer's money. With energy conservation, the working class gets it; with geothermal, the good ole boys get it.

Respect for Pele

I agree with those native and non-native Hawaiians who claim that geothermal development is an assault upon Pele and a violation of religious rights. From my perspective as a non-native Hawaiian, the worship of Pele is the practice of an ancient and universal wisdom, an awareness of the connectedness of all things in nature, and an awareness of an order in nature existing for the purpose of benefitting all, the all being one, the one God in all of us, the spirit of Aloha.

To me, respect for Pele is respect for nature and the natural order of things. Respect means asking for as little as possible to fulfill our own material needs and living in a way that we give back to each other and to the earth as much as we can. Thus, through respect for nature, we experience the spirit of Aloha; and from this we gain a loving heart and a joy of life. We gain mana. Such is the order in nature that those who give shall receive.

But when we forget our real blessings and take nature for granted, when we desire to trade in the clean air, clean water, and bountiful earth for things we do not need, when we become greedy and fearful and are interested in providing only for ourselves, then we pay the price. Lack of respect for nature causes suffering for others and brings us sorrow and pain. Such is the order in nature that the first one now shall later be last.

Pele is a nature goddess. We would do well to show our respect and to learn from Her and to be grateful for Her simple gifts. We who expect to find happiness and security in the radical manipulation of Pele are victims of our own delusion.

If you are a Christian or a Buddhist, test what I say against your own religion. Would Jesus or Buddha have had any use for geothermal development?

Real power is the power of love, of Aloha. Let us not forget.

Alice Suncloud
Hawaiian Acres

Jay Hanson
Kailua-Kona

Geothermal backers praise state for action

Three pro-geothermal groups yesterday praised the state for promptly issuing new air quality standards for geothermal development, although one said it thought the new rules were too strict.

"The process was comprehensive and fair, although our alliance remains concerned about the very restrictive nature of the new rules which set the statewide ambient standards at 25 parts per billion," said Bill Cook, executive director of the Hawaii Island Geothermal Alliance.

The Big Island division of the International Longshoremen's and Warehousemen's Union and the Big Island Labor Alliance also praised the state's response to a March 18 ruling by the Hawaii Supreme Court that shut down Puna geothermal drilling until air quality standards were issued.

All three groups said the new rules paved the way for development of geothermal-generated electricity on the Big Island. Geothermal power is needed to re-

duce the island's dependence on imported oil, they said.

Not everybody is happy with the new standards. Palikapu Dedman, president of the anti-geothermal Pele Defense Fund, says the hopes of geothermal opponents now lie with a civil suit filed by the Sierra Club Legal Defense Fund.

The suit seeks to force the state and Hawaii County to complete an environmental impact statement on possible dangers from geothermal development.

Saturday, June 20, 1992

Star-Bulletin

Geothermal emission limits enacted

The companies may resume operations after receiving permits

By Linda Hosek
Star-Bulletin

The state has set new limits on how much hydrogen sulfide an industry can release into the air, opening the way for Big Island geothermal companies to resume operations.

Established in the past three months by the state Health Department, the standard balances public health and odor concerns with the needs of geothermal development, said state Health Director Dr. John Lewin.

"Some say this is too tight and the environmentalists say it is too loose," he said yesterday at the Health Department. "It's a fair, reasonable balance that can be tightened."

The new air rule limits hydrogen sulfide emissions to 25 parts per billion,

a standard 400 times stricter than the one set by the federal Occupational Safety and Health Administration.

OSHA allows healthy workers to be exposed to 10,000 ppb for eight hours. The new standard is stricter because not all residents fall into the "healthy" category, Lewin said.

Hydrogen sulfide emissions may affect people with emphysema, chronic bronchitis and other chronic respiratory conditions.

But the standard also represents a level at which some residents may be annoyed by the odor.

Sensitive noses can detect odor at 5 ppb, Lewin said.

Studies show that people become annoyed when hydrogen sulfide emissions are five times the level of smell detection, or 25 ppb.

Lewin said the standard, almost identical to California's, was intended to tell developers that they have to operate within new limits. But he also said it was not intended to discourage geothermal development.

Companies can be fined up to \$10,000 for each violation per day, Lewin said.

The two geothermal companies on the Big Island will have to reapply for permits, proving that they can meet the standard, said Bruce Anderson, deputy environmental director.

Operations were suspended in March after the state Supreme Court ruled that the Health Department had to set standards before it granted permits.

"The rules are very stringent," said Steven Morris, Puna Geothermal Venture vice president and general manager. "We are confident that they address the safety concerns of the community."

Puna was fined \$20,000 after a blow-out last June at one of its wells, releasing plumes of hydrogen sulfide. Emissions did not exceed the new standard in most places, Lewin said.

The company has a well about 1,000 feet from the nearest resident.

True Geothermal, fined \$5,000 two years ago for improper control equipment, has a well about a mile from the nearest resident.

Lewin said the new rule applies to all industries with hydrogen sulfide emissions, including power plants, sewage plants and agricultural operations.

But he also pointed out its shortcomings, saying it allows companies to emit up to a level instead of minimizing emissions.

"I don't think an air rule is the ideal approach," he said. "We did it because of the courts."

The state should monitor every stack and set individual limits, he said. States increasingly are turning to limits based on the best available control technology.

Gov. John Waihee approved the new rule Thursday



John Lewin

New standards clear way for geothermal projects

By ROBIN M. JONES
West Hawaii Today

HILO — Gov. John Waihee approved standardized hydrogen sulfide emission limits Friday, which should allow Big Island geothermal projects to get back to the job of preparing to supplement the limited Big Island power supply.

The new standards, required by the state Supreme Court, call for a 25 parts per billion limit of hydrogen sulfide emissions, which is the limit already set in Puna Geothermal Ventures' resource permit.

Steven Morris, vice president and general manager of PGV, said in a prepared statement that he is "pleased that the state has been able to complete the H₂S emission rules on a timely basis."

The statement also said PGV representatives are confident that the limit set addresses the safety concerns of the community.

A statement by the state Department of Health said the limit "was established because it protects against toxic effects of hydrogen sulfide and odor nuisance."

"I am comfortable with the standard because it is designed to

protect individuals from both health effects and odor nuisance," said John Lewin, director of health. He also said the rule allows for his department to apply stricter limits in some cases.

The Department of Health had originally advocated keeping the system of setting the limits on a case-by-case basis because it allowed the department to make the limits more strict when it deemed necessary.

The Department of Health said the limit is 400 times lower than the levels that have caused physical effects in humans and rats. The limit is also about the same or a bit more stringent than the limits set for geothermal projects in California.

Geothermal opponents have pointed out, however, that most of the projects in California are not located within a residential subdivision, and, therefore, need not be held under limits as strict.

Morris said he recognizes the standards are stringent, but at that level they address the communities concerns.

Morris also said that PGV "should be able to produce power very soon."

—Hawaii Tribune - Herald, Wednesday, June 24, 1992

Vote for responsible energy

The time is now for all those who came to the Big Island for special reasons to stand up for those reasons. We are not just anywhere USA. We are the Big Island and we have the ability to make this place a special shining example for the world. We don't need to settle for second rate energy such as geothermal. We don't need to destroy Hawaii to live. We can live responsibly. Let's vote for the future by voting for responsible energy, not irresponsible out-of-date dangerous geothermal. Tell your friends.

Martha Eugenio
Laupahoehoe

H₂S & eruptions

I would like to share my perspective as a part-Hawaiian, life-long Big Island resident who has witnessed many eruptions by Madame Pele. These comments relate to the State Department of Health's hydrogen sulfide (H₂S) standards:

In 1935, Mauna Loa erupted. I was six years old and barely remember this, but I do know that I didn't get sick from H₂S emissions and no one died from H₂S emissions.

In 1942, Mauna Loa erupted again — this time during wartime blackout. No one became sick and no one died from H₂S emissions.

In 1950, Mauna Loa erupted again, sending three fingers of lava into the sea. No one became sick or died from H₂S emissions.

In 1959, Kilauea Iki erupted, spewing red-hot lava and H₂S gas and other emissions 1,500-feet into the air. Thousands of people flocked to Volcanoes National Park and walked more than a mile to see the eruption. No one became sick or died from H₂S emissions.

In 1960, the Ni'i family cucumber patch at Kapoho was inundated by a lava flow. A community of 400 people was displaced but no one became sick or died from the H₂S emissions.

In 1983, Madam Pele began anew her march to the sea, eventually swallowing up much of Kalapana.

Then in June of 1991, the geothermal project at Pohoiki had a blowout. I am not defending that incident, but when compared to the volcano, it resulted in very low level emissions of H₂S — thousands of times lower than the current eruption.

Though there have been a number of complaints and accusations about illness, even the Department of Health's own physician said in a public statement before U.S. Senator Daniel Inouye that he could not conclusively relate the symptoms to the geothermal project. He indicated that the high level of ambient H₂S and other volcanic emissions in all of Puna is a problem for people with respiratory illnesses. However, this cannot be blamed on geothermal.

I was also told by a friend who lives near the PGV project — who has no problem with it — that opponents went door-to-door telling people to go to your clinic and complain about being sick. He said he wasn't; they told him to go complain anyway!

Our island needs more energy. We do not want to use oil for many reasons. Conservation won't reduce our consumption enough to avoid construction of new power plants, especially as our population continues to grow.

The emission standards for H₂S are too severe. Geothermal activist-opponents want to reduce the level to 10 ppb or even lower! The result would be to put every man, woman and child on the Big Island at risk due to blackouts, and due to continued dependency on fossil fuels.

Elmer A. Vieira
Hilo

Give geothermal a chance

The latest geothermal topic to make the headlines is the state's effort to determine the maximum level of hydrogen sulfide emissions allowable near the Big Island's geothermal facilities. It's yet another example of a routine matter being blown out of proportion by opponents of geothermal energy.

Geothermal is a safe, proven alternative to environmentally-harmful fossil fuels. This has been proven on the Mainland and around the world.

The hydrogen sulfide emission standard of 25 parts per billion being recommended by state health officials is unreasonable. The federal Occupational Safety and Health Administration allows workers to be exposed to 10,000 ppb for up to eight hours per day for a five-day work week. An American Lung Association representative stated that hydrogen sulfide emissions

from persons with bad breath have even been measured at 65 to 698 parts per billion.

Puna Geothermal Venture and the other geothermal developers are being asked to comply with the stiffest safety controls on geothermal facilities anywhere in the world.

Geothermal clearly has the greatest potential

to relieve Hawaii of its overdependence on fossil fuels. Let's give geothermal a chance. It may be our last.

CLINT CHURCHILL

Chairman

The Pro-Geothermal Alliance

The Honolulu Advertiser Thursday, June 18, 1992

Big Island needs geothermal

The Big Island is the victim of a poverty of power. We cannot continue with rolling blackouts that knock out power to traffic lights, our hospitals, sewer treatment plants, burglar alarms, home dialysis equipment and a score of other functions that are part of a modern community.

Our health, safety and economy are at stake. A lack of power hurts our business community when cash registers, computers, automatic doors, gasoline pumps and lights go out.

I was a delegate to the recent Hawaii Island Democratic Party convention in Kona and the state Democratic Party convention in Honolulu. I am especially pleased that delegates at both conventions overwhelmingly adopted resolutions calling for continued geothermal energy development on the Big Island.

Geothermal energy truly is power for the people.

JUNE R. CURTISS

Chairperson

Hawaii Island Geothermal Alliance

Monday, June 15, 1992 PACIFIC BUSINESS NEWS

Geothermal asset fund hearing set

A public hearing on the \$400,000 Geothermal Asset Fund has been set for July 7 at Hilo High School's Cafetorium. The plan would allow the county planning commission to authorize payments from the fund to claimants determined by the commission to have been adversely impacted by geothermal activities. The fund was set up as a condition of Puna Geothermal Venture's resource permit, which was issued in October 1989. Puna Geothermal contributed \$160,000 and is to add \$50,000 each year it continues to operate. The state Legislature contributed \$240,000.

-Hawaii Tribune - Herald, Sunday, June 14, 1992

Geo asset fund rules hearing

An informational meeting on the Planning Department's proposed rules for the county's geothermal asset fund will be held at 7 p.m. Tuesday at the Pahoa Neighborhood Facility.

The rules would allow for a hearing officer to gather testimony on individual claims that harm was caused by geothermal development in lower Puna and to come up with a recommendation to the Planning Commission, which would make the final decision on whether funds should be disbursed.

On Tuesday, the Planning Department will explain the details of the rules and will take questions from the audience at the meeting.

The Planning Commission must still determine whether to accept the rules. Testimony from the public concerning the rules will be accepted at a public hearing of the commission to take place 3 p.m. on July 7 at the Hilo High School cafeteria.

Way cleared for Big Isle

By William Kresnak

Advertiser Capitol Bureau Chief

The state unveiled strict new air quality emission standards for geothermal development yesterday, clearing the way for renewed work on a new source of energy for Hawaii County's power-starved electric system.

Big Island geothermal developers said they can live with the new "stringent" rules and hope to begin producing power soon.

But geothermal opponents said the standards still are not strict enough and said they will continue their efforts to halt the development of volcanic energy on the Big Island.

"The rules are very stringent. We

are confident that they address the safety concerns of the community," said Steven Morris, vice president and general manager of Puna Geothermal Venture, which is building a 25-megawatt power plant to produce electricity.

"Now that the standards are in place, we should be able to produce power within a month," Morris said.

Al Kawata, Hawaii project coordinator for the other major geothermal energy development project on the island — True/Mid Pacific Geothermal — said the new emissions standard of 25 parts per billion is stricter than what the company had been operating under but "we feel we can meet that standard."

He hopes to get drilling permits for more exploratory wells in another three months. The company wants to determine whether it has located a commercial reservoir of geothermal energy before building a 25-megawatt power plant.

"I'm not happy with the rules," he said, because he doesn't believe they need to be so strict. But he called the signing of the rules "a big step forward in getting to a point where we can drill again."

As a result of a lawsuit by geothermal opponents, the Hawaii Supreme Court on March 18 shut down Big Island geothermal drilling until the state Department set up statewide rules on how much hydrogen sulfide — the

geothermal development

"rotten egg"-smelling gas — should be allowed to be emitted.

Gov. John Waihee yesterday responded to that order by approving a new rule that sets a statewide standard for industrial hydrogen sulfide emissions at 25 parts per billion.

The new rule — which actually applies to any industrial release of hydrogen sulfide — also gives the state health director power to impose stricter levels. Health Director Dr. Jack Lewin said the limit probably would be set at 5 ppb at geothermal power plants.

State health officials said the 25 ppb standard is 400 times lower than the levels that have caused physical effects, such as nose and eye irritation in

people.

Palikapu Dedman, president of the Pele Defense fund which opposes geothermal development, said his group wanted a standard of 5 or 10 ppb.

"We're thinking about (protecting) children's lungs and people with respiratory problems," he said.

Dedman said he now pins his hopes on a civil suit that was filed by the Sierra Club Legal Defense Fund. The suit seeks to force the state and Hawaii County to complete an environmental impact statement — to determine health, environmental and other effects of geothermal development — before they can allow any more work on geothermal development.

HELCO official says PGV fined \$2.9 million

By **ROBIN M. JONES**
West Hawaii Today

HILO — Hawaii Electric Light Co. President Warren Lee reportedly said this week that Puna Geothermal Venture has been assessed \$2.9 million in fines for breaching its contract with HELCO.

According to the contract, PGV was to deliver 25 megawatts of

power to HELCO before Oct. 3 1991, or begin paying fines for the breach. Due to state- and county-ordered shutdowns, PGV has not been able to produce the power it was contracted to supply HELCO.

PGV has argued that the delays, at least some of them, are beyond the energy company's control, and therefore it should

not have to pay the penalties.

Terms of the contract exempt PGV from paying penalties if the contract is not honored due to circumstances beyond PGV's control.

PGV was ordered to discontinue drilling for geothermal steam following a June 1991 blowout of the company's KS-8 well in Pohoiki that spewed hy-

drogen sulfide into the air for 31 hours.

PGV was allowed to continue work in March but was again ordered idle in April until the state can formulate hydrogen sulfide emission standards. The standards are expected to be completed within the month.

Previously, HELCO representative Bill Stormont refused to

comment on the amount of fines owed HELCO and said an amount had not yet been determined. He said the attorneys for both parties were continuing to discuss the issue, reiterating what Lee had said in November 1991.

Neither Lee nor Stormont were available for comment Friday. Steven Morris, PGV general manager, did not return calls.

UNIVERSITY OF UTAH RESEARCH INSTITUTE

UURI

EARTH SCIENCE LABORATORY
391 CHIPETA WAY, SUITE C
SALT LAKE CITY, UTAH 84108-1295
TELEPHONE 801-524-3422

RECEIVED
92 MAY 7 8 01

UURI CENTER &
LAND DEVELOPMENT

February 28, 1992

Manabu Tagomori
Dept. of Land & Natural Resources
Div. Water/Land Development
P.O. Box 373
Honolulu, HI 96809

Dear Mr. Tagomori,

Enclosed please find 10 copies of a new brochure on geothermal energy that UURI has just published. This brochure is different from others currently available in that it is text-intensive. It was written with the objective of communicating the story of geothermal energy -- what it is, its advantages and its promise -- in fairly simple terms while retaining enough technical detail to be truly instructive.

We believe that geothermal energy can play a significant role in America's energy future. One of the obstacles we face is that few people know about this clean, domestic energy supply. It is very important for members of the geothermal community to reach out beyond our own group and help others understand what geothermal energy has to offer. I am hoping that you will help in this effort. Please keep whatever brochures you desire and pass the others on to people who may want or need information on geothermal energy. In this way, I hope to reach a broad audience.

Additional copies of this brochure can be made available to you upon request. Because UURI funded this publication out of its own limited funds, and because the demand has so far been surprisingly large, we would appreciate it if you would be willing to purchase *additional* brochures you may request at the rate of \$0.55 per copy. For large orders (more than 1,000 copies), please call Bob Turner at our office for a price. If you are unable to help us defray costs for additional copies you request, please call me and we will try to make some type of arrangement.

Sincerely,



Phillip Michael Wright
Technical Vice President
University of Utah Research Institute

PW/mt
Enclosure



Information Drilling Re Puna Geothe

Published by the County of Hawaii



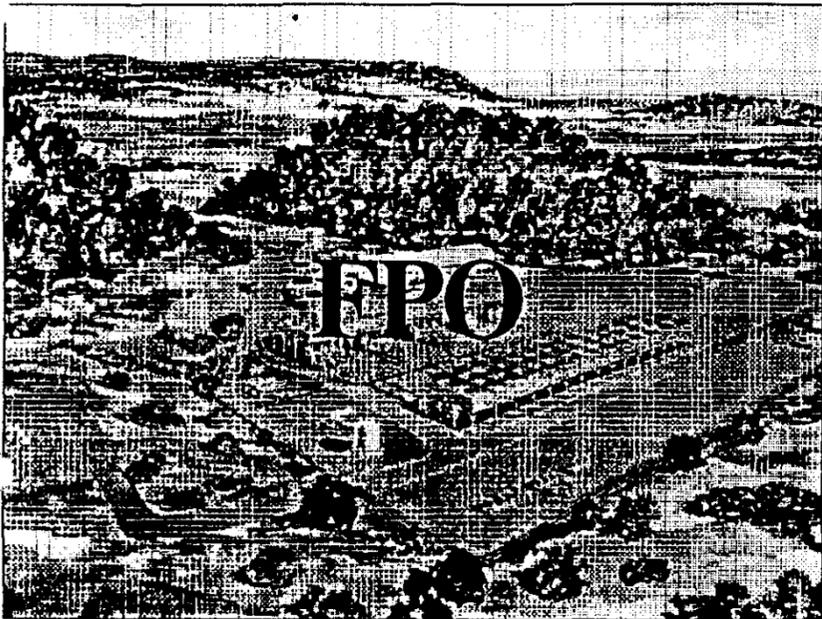
at ture

March 1992

Handwritten notes:
John
Mark
Higginson

file "general correspondence"

*John
Mark
Higginson*



This sketch shows what will be Hawaii's first commercial geothermal power plant. The facility in Kapoho will deliver 25 megawatts to Hawaii Electric Light Co.

New conditions placed on PGV for start-up operations Task force bans open venting, tightens drilling requirements, cuts emissions

After meeting the terms and conditions of a major overhaul on drilling, safety requirements and enforcement, Puna Geothermal Venture (PGV) has received permission to complete its 25-megawatt electric power plant in Kapoho.

The new criteria were issued in a Geothermal Management Plan prepared by a joint County-State task force. The plan tightens drilling requirements, improves emergency response procedures, improves emission requirements for hydrogen sulfide and noise, upgrades monitoring equipment and adds staff to ensure enforcement.

"I am advised that the new requirements add up to the stiffest set of safety controls on any geothermal facility anywhere, and that they exceed, by a significant margin, the regulations imposed on any kind of industrial plant in Hawaii," said Mayor Lorraine Inouye.

"Our first priority is to safeguard public health and safety. We are meeting this

priority with the new requirements and the commitment of more than \$1.6 million in State funds to ensure compliance."

The County suspended drilling operations at the facility in June, 1991, after an uncontrolled well blowout. Since then a County-State task force and independent consultants have developed the Geothermal Management Plan to address a wide range of concerns.

The Management Plan includes:

- a ban on the open venting of new or existing wells,
- an upgrade of the air monitoring program to meet the recommendations of independent consultants,
- a stiffening of noise controls.

To reduce future conflicts between PGV and the nearby community, County and State officials have committed to a good-faith effort to compensate or

See New Conditions page 4

\$1.6 million released to staff and equip upgraded health monitoring programs

"As you know, our experience with geothermal development on the Big Island suffered a setback last year. But we have taken sound measures to ensure the safety and health of our citizens. Satisfied, we remain determined and committed to the development of geothermal to fill the critical energy needs of the Big Island."

— Gov. John Waihee
1992 State of the State message

Gov. John Waihee has released \$1.6 million for personnel and upgraded equipment for monitoring and overseeing geothermal activities.

In addition, the State Administration has requested the Legislature set up permanent funding of about \$1.2 million annually to continue the monitoring work.

As part of the Governor's commitment, new personnel include:

- four Department of Health employees (two for air-quality and two for noise monitoring) who will staff shifts 24 hours a day during Puna Geothermal Venture (PGV) drilling. The staffers will be at the State monitoring office in the HGP-A facility next to the PGV plant.
- an air permitting engineer,
- a groundwater engineer,
- a planner to evaluate and update

emergency procedures,

- three State Department of Land and Natural Resources employees, including a geologist, technician and clerk-typist,
- a geothermal coordinator for the County of Hawaii.

In addition, the State Department of Business, Economic Development and Tourism has requested authorization to create a similar position to coordinate State activities.

While hiring is underway to fill these positions, the State has reassigned existing personnel into seven of the slots.

Regarding equipment, the Department of Health has set up four permanent monitoring stations in the PGV area to measure any hydrogen sulfide emissions. Two are to be upgraded to be in compliance with the new Geothermal Management Plan.

In addition, two portable high-grade Jerome monitors are available for use as needed.

The developer has also set up three permanent monitoring stations, bringing the total to nine hydrogen sulfide monitors.

"The PGV facility is the most closely regulated geothermal venture anywhere that we know of," said Dr. Bruce Anderson of the State Department of Health. ♦

Advisory council forms

The State Department of Health is forming an advisory committee made up of residents from communities near the Puna Geothermal Venture (PGV) plant to exchange information and discuss concerns about air quality and noise associated with geothermal development.

Health Department Clean Air Branch Chief Paul Aki, who will chair the meetings, said that community associations have selected persons to sit on the committee and that the first meeting will be scheduled within the next few weeks. Committee meetings will be held monthly.

Discussions will cover the full spectrum of air quality and noise issues. Other State health officials and Hawaii County staff also will attend. ♦

On the inside:

- Big Isle energy profile
- PGV project details
- H₂S levels addressed
- Relocation issues
- Other health concerns
- Changes in emergency plan
- Noise levels vary
- Complaint hot lines

Evaluation of radon turns up no problem, health officer says

State health officials have reevaluated the possible health hazards associated with exposure to natural constituents in geothermal emissions. These include radon, mercury, lead and other substances found in geothermal wells in Kapoho and other areas.

During normal power plant operations at Puna Geothermal Venture (PGV), all geothermal gases and fluids will be reinjected back into the ground where they originated. Since there are practically no emissions, there is no hazard associated with normal operations.

However, health officials are concerned about unplanned releases, which are addressed in the Emergency Response Plan. Plans are in place to assure that the public is protected from potential hazards should an upset condition occur.

Reevaluation

"Hydrogen sulfide (H₂S) is still the most important public health concern associated with geothermal development in Hawaii," said Bruce Anderson, Ph.D., deputy director for environmental health. "Based on a thorough reevaluation of existing data by our toxicologist and consultants, we do not anticipate an unacceptable health threat to nearby residents."

Dr. Anderson continued, "To be sure that we have good data to reevaluate hazards in the future, geothermal developers will be required to run periodic tests. Additional measurements will begin as soon as PGV resumes drilling and flow testing."

Scientists have carried out tests on radon in particular for years along the rift zone where the PGV plant is located. Radon is a radioactive gas found naturally in the air, ground and in groundwater. Exposure to high levels over a long period of time has been associated with an increased risk of lung cancer.

Homeowner exposure

On the Mainland, where radon is more of a problem, the U.S. Environmental Protection Agency says a homeowner should avoid an exposure of four or more picocuries per cubic liter in the house, based on hours a day over 70 years.

In Hawaii, where homes are built with more natural ventilation and fewer weather-proofing materials, the average, sustained level of radon in homes is less than one picocurie.

After a PGV well blowout in June, 1991, State health officials ordered PGV to do an in-depth study on all other contaminants, then linked those results to worst-case accident scenarios recently developed for the PGV plant.

H₂S serves as a reliable yardstick for overall safety because other contaminants found with it are proportionally much smaller. "We are confident that protecting for H₂S will also protect against other potential hazards, including radon," Dr. Anderson said.

"Radon is indeed in geothermal emissions and long-term exposure, over a lifetime, would be unacceptable. However, the short-term exposures that would possibly result from an unplanned steam release would not significantly increase risk."

Underground steam

State health officials said the precise amount of radioactive radon in Puna's underground steam is uncertain, but agree with PGV geochemical consultant Paul Hertz that the numbers are most likely less than 2 picocuries per cubic liter of uncondensed steam.

It is because more precise numbers have not yet been pinned down for new wells that the Department of Health will require developers to carry out well-specific testing. ♦

How the revised Emergency Response Plan operates

As one of the conditions for Puna Geothermal Venture (PGV) to resume operations, the joint County-State task force has required the plant to upgrade its Emergency Response Plan (ERP).

In the event of an accident, the Hawaii County Civil Defense Agency will determine whether to issue a watch or a warning notice to the surrounding community.

The key for Civil Defense authorities to decide whether to take action is based on the projected exposure of nearby residents to hydrogen sulfide (H₂S) emissions from an accident at the PGV plant.

The basic principle is that Civil Defense will issue a watch, or a warning, to the public depending on the possible exposure level to H₂S emissions caused by an accident. Civil Defense may also issue an evacuation notice at any time.

In order to help Civil Defense to determine those possible exposure levels, the plant's ERP spells out 12 accident scenarios based on computer modeling.

The 12 scenarios cover the range of situations where outside consultants and State health officials believe that contaminants could be released into the air

See How ERP works page 4

What is the newly revised Emergency Response Plan?

Part of the Geothermal Management Plan prepared by a joint County-State task force has required improvements in the emergency response plan for Puna Geothermal Venture (PGV) to better respond to conditions which may threaten the health, safety or welfare of employees and nearby residents.

The County suspended drilling operations last June shortly after an uncontrolled, 30-hour well blowout.

The Geothermal Management Plan requires more monitoring equipment and staff. The plan has reduced the levels of allowable hydrogen sulfide (H₂S) emissions and noise, and has set up two levels for action by Civil Defense authorities to replace a previous three-tiered plan.

All decisions about notifying nearby residents of emergencies at the plant, and evacuating them if necessary, will rest with the Hawaii County Civil Defense Agency and the Department of Health.

In this regard, any uncertainties will be resolved in favor of protecting public health and safety.

Among other matters, the ERP:

- spells out procedures to identify and notify all residents within the affected area of possible emergencies and warnings,
- describes potential problems and gives technical data on the nature of them,
- identifies how the wells and plant facilities

are inspected and monitored to prevent emergency situations,

• describes the warning and monitoring systems in place to alert personnel and the nearby community about an accident,

• explains training requirements for plant personnel, including shutting down the plant, handling emergency equipment, spill prevention, first aid and rescue, fire fighting and evacuation,

• details procedures PGV will follow to coordinate with county, state and federal personnel during and after an emergency,

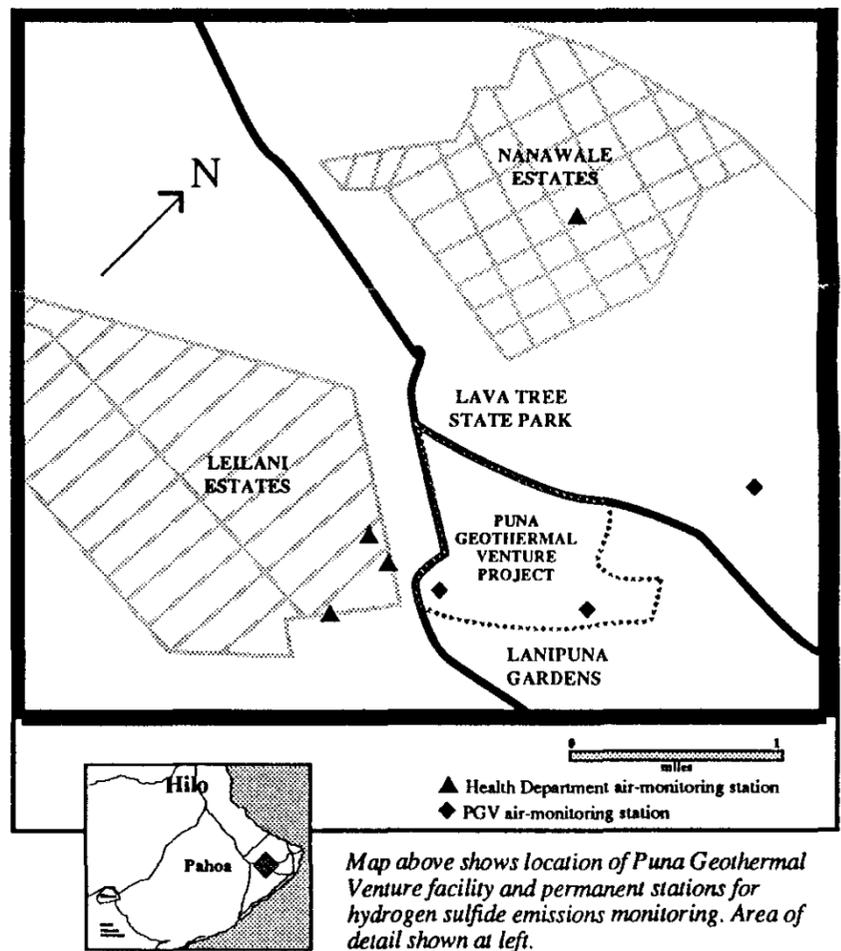
• requires frequent, unannounced emergency preparedness drills for personnel,

• addresses responses, notices and procedures in the event of natural hazards such as lava flows, earthquakes and storms.

For PGV employees, the ERP requires at least three persons trained in handling hydrogen sulfide (H₂S) emergencies to be present during drilling work shifts.

It also requires, before the start of operations, training by a certified H₂S safety instructor for all drill workers and contractors.

The ERP requires PGV's drilling superintendent to be certified in H₂S safety, and for the superintendent to carry out one or more unannounced emergency response drills monthly. ♦



Map above shows location of Puna Geothermal Venture facility and permanent stations for hydrogen sulfide emissions monitoring. Area of detail shown at left.

FLOOD CONTROL & MINERAL RESOURCE BRANCH
Division of Water and Land Development

FROM: Heam DATE: 6/17/92 FILE IN: _____

TO:	INITIAL:
2 ✓	<u>GA</u> G. AKITA
4, 1 ✓	<u>LC</u> L. Choo
_____	_____ T. Kam
_____	_____ S. Yong
_____	_____ C.P. Chang
_____	_____ Y. Xu
_____	_____ T. Nakama
///	<u>JS</u> J. Swift
///	_____ J. Florez
///	_____ M. Tanouye
_____	_____ C. D'Araujo
_____	_____ M. TAGOMORI
_____	_____ L. Nanbu
_____	_____ L. CHANG
_____	<u>Bill</u> _____
_____	_____
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PLEASE:

- _____ See Me
- _____ Call
- _____ Review & Comment
- _____ Take Action
- _____ Investigate & Report
- _____ Draft Reply
- _____ Acknowledge Receipt
- _____ Type Draft
- 1 Type Final
- _____ Xerox _____ copies

REMARKS:

Discussed response
w/ DUBBY and TRUE (GEOTHERMAL)

Both have no problems
w/ LETTER. THIS TAKES
CARE OF 3RD PARTY
REVIEW -

FOR YOUR:

- _____ Approval
- 2 Signature
- 3 Information
- 4 File

REQUESTED BY: _____
DATE _____

JUN 18 1992



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF WATER AND LAND DEVELOPMENT
P. O. BOX 373
HONOLULU, HAWAII 96809

WILLIAM W. PATY, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES

JOHN P. KEPPELER, II
DONA L. HANAIKE

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RESOURCES ENFORCEMENT
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FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
PROGRAM
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

JUN 18 1992

Mr. Duey Milner
400 East Roberts Lane, #37
Bakersfield, California 93308

Dear Mr. Milner:

Thank you for reviewing the geothermal well drilling permits for True/Mid-Pacific Geothermal Venture's KA2-1 and KA3-1.

As discussed, your comments will be incorporated as follows:

1. Addition of a double gate preventer to the 20-inch bope stack will be optional. The 20-inch hydrill bag bope is consistent with the Geothermal Management Plan.
2. Addition of a mud pit alarm and monitor will be evaluated by True to back-up their existing equipment.
3. Contrary to your understanding, the drill permit application shows that the 12-inch 900 series blowout preventer will be tested to 1500 psi for 30 minutes.
4. As stated, True drilling personnel are continually trained by Therma Source Incorporated, who is their drilling consultant for the project.

We certainly appreciate your assistance on this matter.

Sincerely,

A handwritten signature in black ink, appearing to read "Manabu Tagomori".
MANABU TAGOMORI
Manager-Chief Engineer

HY:lc

Want More Information?

This brochure was produced by the

Earth Science Laboratory
University of Utah Research Institute
391 Chipeta Way, Suite C
Salt Lake City, Utah 84108
(801) 524-3422

UURI would be happy to furnish additional information on geothermal energy or answer questions. Other sources of information on geothermal energy are:

Geothermal Resources Council
2001 Second Street #5
Davis, CA 95616
(916) 758-2360

Geothermal Education Office
664 Hilary Drive
Tiburon, CA 94920
(800) 866-4GEO

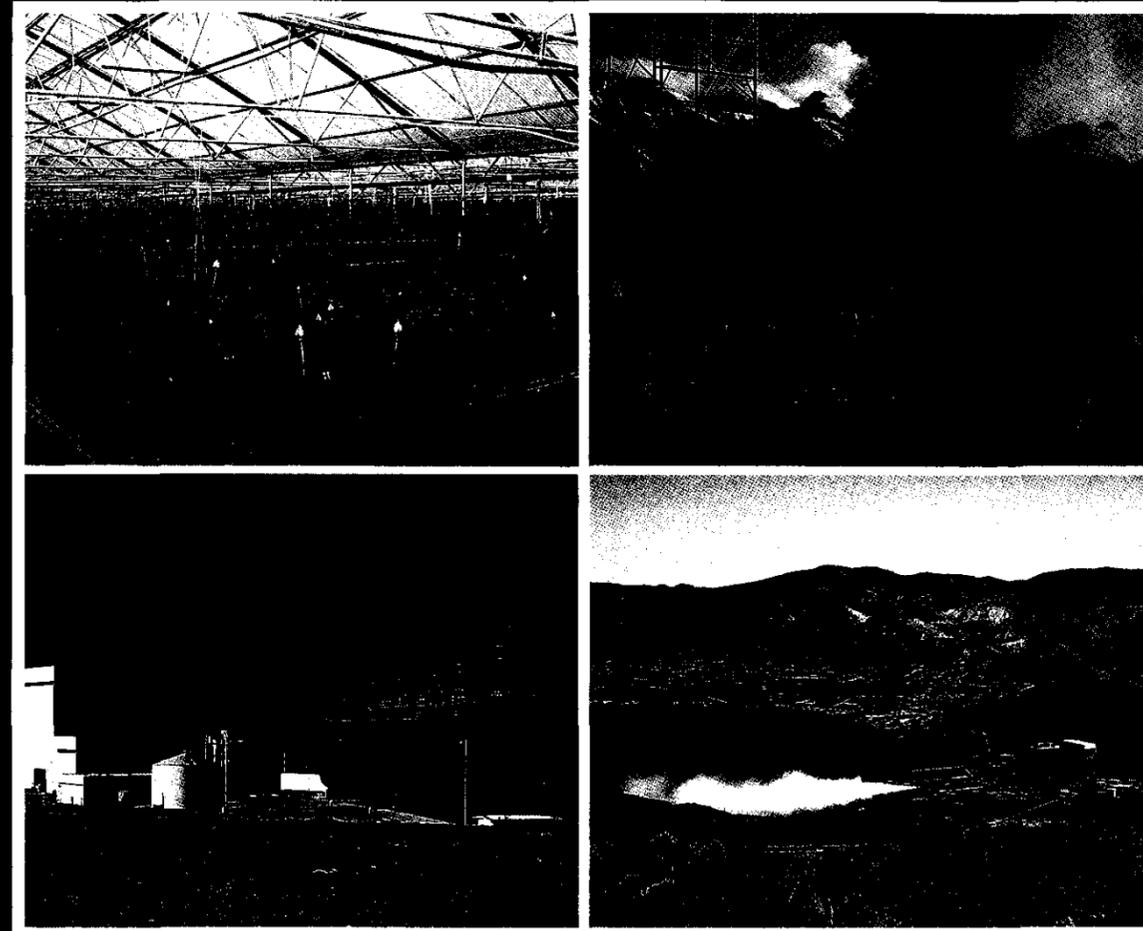
Earth Energy Association
777 North Capitol Street, Suite 805
Washington, D.C. 20002-4226
(202) 289-0868

International Ground-Source Heat
Pump Association
101 Industrial Building
Stillwater, OK 74078-0532
(405) 744-5175

Geothermal Division
U.S. Department of Energy
1000 Independence Ave. S.W.
Washington, DC 20585
(202) 586-5340

Geo-Heat Center
Oregon Institute of Technology
3201 Campus Drive
Klamath Falls, OR 97601-8801
(503) 885-1750

Geothermal Energy



Geothermal Energy – Net Positive Environmental Impact

Modern society's activities throughout the world generate and release unacceptable quantities of climate- and biosphere-modifying air pollution. The competing goals of increased energy production for continued worldwide social development and of mitigating release of atmosphere-polluting gases are not compatible using today's fuel mix, which relies heavily on coal and petroleum.

In the United States, electric utilities now account for 70 percent of our sulfur dioxide emissions (the main cause of acid precipitation), 33 percent of our nitrogen-oxide emissions (that combine photochemically with vaporized hydrocarbons to form ground-level

Development of geothermal energy has a large net positive impact on the environment compared with development of conventional energy sources.

ozone), 20 percent of the releases of gases linked to the atmospheric greenhouse effect, and 50 percent of all nuclear waste. Making it possible for utilities to use alternative-energy resources economically would help mitigate the many environmental problems associated with this generation of wastes.

Development of geothermal energy has a large net positive impact on the environment compared with development of conventional energy sources. Modern geothermal power plants operating on hydrothermal resources have extremely low levels of SO_x, CO₂, NO_x and particulate emissions.

Geothermal power plants have sulfur-emissions rates that average only a few percent of those from fossil-fuel alternatives. The Clean Air Act Amendments of 1990 require

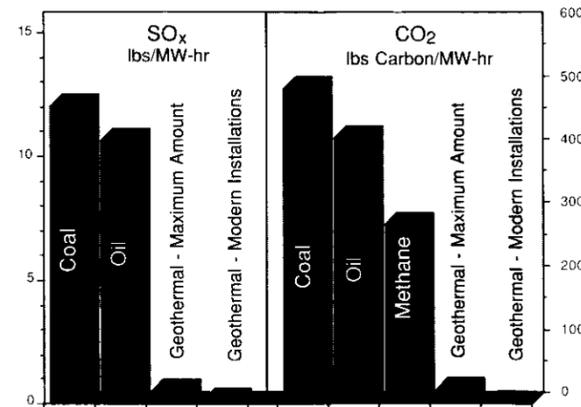
lower sulphur emissions to reduce environmental damage from acid precipitation. Clearly, geothermal energy is a preferred alternative to fossil fuels in this regard.

Geothermal energy use reduces emissions of greenhouse gases. The newest generation of geothermal power plants emits only 0.3 lb of carbon per megawatt-hour (MW-hr) of electricity generated. This figure compares with 282 lb/MW-hr of carbon for a plant operating on natural gas, 418 lb/MW-hr of carbon for a plant operating on #6 fuel oil and 497 lb/MW-hr of carbon for a plant using bituminous coal.

Nitrogen oxide emissions are much lower in geothermal power plants than in fossil power plants. Nitrogen oxides combine with hydrocarbon

vapors in the atmosphere to produce ozone, a gas having a high level of chemical reactivity. Although ozone is needed high in the atmosphere to protect us from damaging ultraviolet radiation from the sun, ozone at ground level causes substantial environmental damage, including adverse health effects in humans.

There are other environmental advantages to geothermal energy. Geothermal power plants require very little land, taking up only a fraction of that needed for other energy sources. Other land uses can mingle with geothermal plants with little interference or fear of accidents. Increased use of domestic, alternative energy resources would also reduce the need to transport petroleum, thereby reducing chances of an oil spill.



Land Occupied

(square meters per gigawatt-hour, over 30 years)

Technology	(square meters per gigawatt-hour, over 30 years)
Coal ¹	3,642
Solar Thermal	3,561
Photovoltaics	3,237
Wind ²	1,335
Geothermal	404

¹ Includes coal mining

² Land actually occupied by turbines and service roads

What Does Geothermal Energy Contribute?

Geothermal energy is here today -- it is not merely a hope for the future. The production of geothermal energy in the U.S. currently ranks third in alternative energy sources, following hydroelectric power and biomass energy. As a result of geothermal production today, consumption of exhaustible fossil fuels is offset, along with the release of acid-rain and greenhouse gases that are caused by fossil-fuel use. Today's geothermal energy use in the United States alone is equivalent to the burning of about 60 million barrels of oil each year, while worldwide geothermal energy use is equivalent

to the burning of about 150 million barrels of oil per year.

years with the oil saved by worldwide geothermal use.

The production of geothermal energy in the U.S. currently ranks third in alternative energy sources.

For comparison, the U.S. Strategic Petroleum Reserve contains about 600 million barrels of oil, an amount that could be replaced every four

Geothermal resources can contribute greatly to the world's energy needs, both on the supply side and on the demand side. Although most geothermal electrical power generation will be restricted to the western U.S., until deep hot dry rock resources can be tapped, geothermal heat pumps can be installed virtually anywhere, bringing the benefits of geothermal energy to all parts of our Nation.

Geothermal Energy – Increasing Our Energy Supply

With current technology and at present energy prices, geothermal energy is economically viable in some areas where the heat is concentrated by geological processes. Hot water and steam exist at many subsurface locations in the western U.S. in the form of hydrothermal systems. These hydrothermal systems can be tapped by existing well-drilling and energy-conversion technology to generate electricity or to produce hot water for direct use.

For generation of electricity, hot water, at temperatures ranging from about 300°F to more than 700°F, is brought from the underground reservoir to the surface through production wells. Steam is separated from the liquid and fed to a turbine engine, which turns a generator. The geothermal fluid is then injected back into peripheral parts of the reservoir to help maintain reservoir pressure. Some high-temperature resources yield steam directly from the reservoir rather than water, and this steam is fed straight to the turbines.

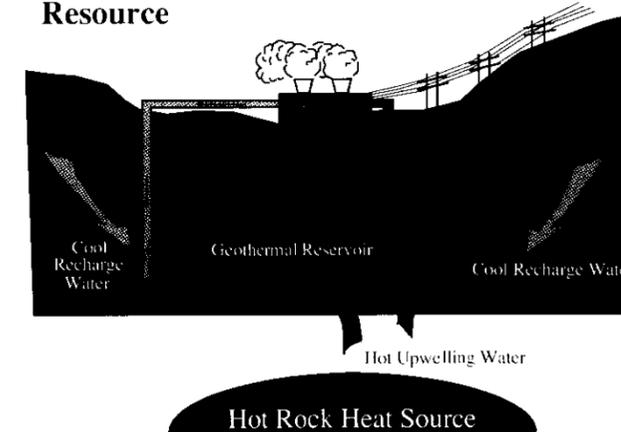
If the reservoir is to be used for direct-heat application, the geothermal water is usually fed to a heat exchanger before being injected back into the earth. Water heated in the heat exchanger is used for home heating, greenhouse heating,

vegetable drying and a wide variety of other uses.

Current Production

Geothermal energy is found in many places on the earth, and its worldwide utilization is growing rapidly. Approximately 5,700 megawatts of electricity (MWe) are currently being generated in some 20 countries from geothermal energy, and there are 11,300 thermal megawatts (MWt) of installed capacity worldwide for direct-heat applications at inlet temperatures above 95°F.

Hydrothermal Resource



5,700 megawatts of electricity are currently being generated from geothermal energy in 20 countries, and 11,300 thermal megawatts are being used for direct applications.

Full Steam Ahead In the Philippines

Continued from page two

Most immediate of the geothermal projects are a 150-megawatt plant in the Bicol region and an 80-megawatt geothermal power project in Valencia, Negros Oriental, both due to be activated in 1993. The Philippines government recently approved a 440-megawatt geothermal development project in Tongonan, Leyte, which will transmit power to the Metro Manila load center on Luzon via an underwater cable. This project as well as a 120-megawatt Mount Apo I project in Mindanao are both due for operation in 1994.

There are good reasons why the Philippines' energy mix is shifting toward geothermal. According to a recent report in the newsletter of the International Geothermal Association, "Geothermal energy proved to be the most reliable domestic source of electricity, saving the Philippines an estimated \$187 million in avoided cost of oil imports (7.5 million barrels of oil displaced)."

The Geothermal Act of 1991 was also passed recently by the Philippines government, designed to attract private investors to develop their geothermal resource. The legislation includes a number of incentives for prospective developers including an exemption from value-added taxes on imported equipment and materials used in development; ten-year accelerated depreciation of all tangible assets; waivers on royalties for eight years; an exemption of all taxes except income taxes.

According to the National Power Corporation, the Philippines' geothermal resources have a potential capacity of 3,400 megawatts, but only 26 percent has been commercially developed. ●

What You Can Do

— If you think geothermal will benefit Hawaii —

- Write letters to government leaders and newspapers explaining your point of view
- Talk to your friends and neighbors
- When you read or hear erroneous information about geothermal power, correct it yourself or let us know so we can
- Communicate the benefits to your co-workers and employees
- Join the ProGEO Alliance and help us communicate the facts effectively

For more information, call 808/523-8808.

Geothermal Hotline is produced by:
The Pro-Geothermal Alliance
737 Bishop Street, Suite 2880
Honolulu, Hawaii 96813
Ph: (808) 523-8808 / Fax: (808) 521-6141



The Pro-Geothermal Alliance

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1157 Punchbowl
Honolulu, HI 96813



October 2
Feb #10 May 1992

Commentary: Moving Forward With Geothermal Is The Right Thing To Do

Recent Supreme Court and District Court decisions halted geothermal operations on the Big Island until state rules regarding hydrogen sulfide emissions levels are established. The rulings do not mean that past or future development of geothermal energy in Hawaii is unsafe. The rulings simply deal with internal government procedures. One branch of government is telling another that its procedures need to be corrected. The industry is still moving forward and Hawaii's energy future is still looking up.

The governor and Big Island Mayor Inouye have both stood steadfastly by the promise of geothermal and it is their commitment and foresight that keep the hopes for geothermal alive. They should be commended for their leadership.

While the decisions mean that geothermal operations on the Big Island will not resume as quickly as anticipated, upcoming hearings on the subject will give the industry yet another opportunity to reiterate to the public its primary concern: the safety of the community.

Prior to the decisions, PGV agreed to what were called the "stiffest set of safety controls on any geothermal facility anywhere," and are still committed to making it the safest energy facility in the state. Having made such a commitment, PGV and the other geothermal developers continue to demonstrate their primary concern for public safety, while preparing to provide much-needed power for the residents of the Big Island.

With the prospect of a fully-operational geothermal facility in our own backyard in the very near future, we believe that the people of Hawaii will come to understand and appreciate the long-term benefits of geothermal energy.

Clint Churchill, Chairman
The Pro-Geothermal Alliance

Hydrogen Sulfide Emissions — Putting It Into Perspective

A major issue surrounding geothermal development is the concern over the release of hydrogen sulfide (H₂S) gas during normal operations within authorized limits and the possibility of accidental releases. We do not discount this concern, but would like to give some perspective to it.

Geothermal wells are not the only source of hydrogen sulfide gas in the country or in the state. There are many other sources, both man-made and natural. In the United States, there are about 75 industries that emit hydrogen sulfide. Notable man-made sources on the mainland include the oil, gas and paper industries. Local man-made sources include refineries (at Barbers Point on Oahu), sewage treatment plants, landfills, wastewater ponds at sugarcane mills, fish processing plants and other agricultural

processes. In and near communities on the mainland and in Canada, there are tens of thousands of natural gas-producing wells containing hydrogen sulfide. Hydrogen sulfide concentrations in these wells are routinely encountered at tens and even hundreds of times higher than concentrations expected at the Puna geothermal wells.

By far, the biggest source of natural H₂S emissions in the state is Kilauea Volcano. The Hawaiian Volcano Observatory estimates that Kilauea emits about 2,600 pounds per hour (31 tons per day) of hydrogen sulfide. In a year, that amounts to more than **11,000 tons** of hydrogen sulfide. By comparison, the total emissions of H₂S from year-round operation of a modern 25-megawatt geothermal power plant would amount to less than 4 tons a year.

An accidental release from a well in the Puna area could release an estimated 150 to 170 pounds per hour of hydrogen sulfide as

Continued on page 3

PUNA GEOTHERMAL VENTURE

A Hawaii Partnership

May 12, 1992

SUBJECT: GEOTHERMAL ENERGY AND HYDROGEN SULFIDE

Dear Friends of Geothermal:

Recently, opponents of our project and of all geothermal development in Hawaii have set forth a considerable amount of myth and misinformation regarding geothermal development and hydrogen sulfide (H₂S) emissions. Opponents have made unsupported claims that there have been substantial discharges of toxic gases from geothermal operations and that geothermal activities have supposedly caused great fear, distress, damage to human health and death and illness of wildlife, pets and livestock. Opponents have not offered the slightest bit of evidence to support these outrageous statements. In fact, numerous complaints have been made about emissions from our project and the effects of these emissions, even during periods of time when no activities (and certainly no emissions) were taking place. These claims are completely inconsistent with the experiences of the many employees of Puna Geothermal Venture (PGV) who both work and live near our operations in Puna. Our employees, their families and their pets have not experienced any of the alleged hardships claimed by our opponents.

To answer the legitimate concerns of some Puna residents, PGV would like to share with you the facts about hydrogen sulfide.

Hydrogen sulfide is a colorless gas with a characteristic rotten eggs odor. Hydrogen sulfide is found in natural gas, volcanic gas, and in certain natural spring waters. It may also be encountered in the manufacture of dyes, fertilizer, adhesives and synthetic petroleum products; in mining; in sewers, sewer treatment plants, and agricultural ponds; during drilling of oil and gas wells; and in oil refineries, breweries and slaughterhouses. Volcanos and geothermal fields are also sources.

Concentrations of hydrogen sulfide in the air are commonly measured in units of parts per million (ppm) or parts per billion (ppb). A concentration of 1 ppm means that the air contains one volume of hydrogen sulfide for every million equal volumes of air. Similarly, a concentration of 1 ppb means 1 volume of hydrogen sulfide for every billion volumes of air. A concentration of 1 ppm is the same as 1,000 ppb.

X9215801/92046.021

The behavior of hydrogen sulfide, its effects on health and detection methods, are well known. Like most substances, the health effects of hydrogen sulfide are directly related to dose, and dose is determined by the concentration and the duration of exposure. Even normally benign substances, like common table salt, are toxic at high doses. Hydrogen sulfide exists in the ambient air everywhere in the world, but usually in concentrations too low to be a concern.

Hydrogen sulfide gas is a component of the geothermal fluid at Puna and is found in virtually all geothermal and oil fields around the world.

The PGV power plant is designed to operate under normal conditions with virtually no release of hydrogen sulfide or other gases to the atmosphere. However, occasional releases are possible during plant upsets and flow testing of wells. PGV's current permit conditions allow for such occurrences, but provide for chemical abatement and/or dispersion to control the impact on ambient air quality. Even with abatement technology and procedures, we expect that certain releases may occur that involve to a minimal extent the "rotten egg" smell of hydrogen sulfide. Accordingly, PGV has agreed in its existing permits, under certain circumstances, to compensate those living near the plant for this inconvenience when hydrogen sulfide is released. There is, however, no threat to the health of the residents, their pets and livestock or the environment related to these emissions.

Since PGV began operations in 1989, there have been three measured releases of hydrogen sulfide to the atmosphere during PGV's drilling, testing and construction operations:

DATES	EVENT	H ₂ S CONCENTRATIONS MEASURED AT MONITORING STATIONS OR OUTSIDE PROJECT BOUNDARY
March 25-31, 1991	Permitted Flow Test of Well KS-3	Highest Hourly Average = 17 ppb at 11 PM 3/30/91, SW Monitoring Station
June 13-15, 1991	31-Hour Uncontrolled Flow of Well KS-8	Highest Hourly Average = 234 ppb at 11 AM 6/13/91, SW Monitoring Station
September 10, 1991	Accidental Venting of Gas from Well KS-3	Highest Hourly Average = 8 ppb

These emission figures should be compared to the OSHA limits for hydrogen sulfide -- which are 10,000 ppb. The federal limit for hydrogen sulfide is the amount to which a worker might be exposed for 8 hours a day throughout his/her career without adverse health impacts. The maximum concentration of emissions during these occurrences were less than two and one-half percent of the OSHA standard. These levels of hydrogen sulfide did not pose any health hazard to the nearby residents or the environment. Only one occurrence contributed to ambient air concentrations of hydrogen sulfide exceeding the strict California ambient air standards of 30 ppb.

Opponents of geothermal development have attempted to justify their false and misleading statements about hydrogen sulfide by referring to the recent Supreme Court ruling in Aluli vs. Lewin. Opponents would have the public believe that the Court's ruling is a statement by the Court condemning geothermal development, indicating that geothermal development is potentially unsafe. The fact is that Aluli vs. Lewin has little or nothing to do with geothermal development or hydrogen sulfide emissions. In Aluli vs. Lewin, the Court is expressing its concern over the "process" in which certain permits were issued. The Court says nothing about the "substance" of the geothermal permits or the safety and environmental issues related to geothermal development.

When we consider the issues of emissions, air pollutants and the effects of electricity generation on the environment, we firmly believe that the environmental impact of a 25 megawatt oil fired plant or a 25 megawatt coal fired plant is considerably more harmful than that of a 25 megawatt geothermal plant. Let's look at the facts and compare:

COMPARISONS (Emissions in Tons per Year)				
	HYDROGEN SULFIDE	SULPHUR DIOXIDE ¹	NITROGEN OXIDE	CARBON DIOXIDE ²
25 Megawatt Geothermal Plant	4	0	0	50
25 Megawatt Oil Fired Plant (Burning Low Sulphur Oil)	0	300	328	153,000
25 Megawatt Coal Fired Plant	0	1,313	38	217,500

¹ Principal source of acid rain.

² Major threat to global warming.

To put hydrogen sulfide emissions from a typical 25 megawatt geothermal project in perspective, consider the largest source of hydrogen sulfide in Hawaii, the Kilauea volcano. Each year the volcano emits more than 11,000 tons of hydrogen sulfide. The volcano emits the hydrogen sulfide equivalent of a 68,000 megawatt geothermal project!

We strongly believe that when people know the true facts about geothermal energy, geothermal energy can only be perceived as a safe, reliable, and environmentally sound method of electricity generation for the Big Island.

PGV remains committed to working to bring our project on-line as soon as possible. We appreciate your much needed support and look forward to generating electricity soon.

Very truly yours,



Steven E. Morris
Vice President and General Manager

G E  P U B S

GEOSCIENCE PUBLICATIONS SERVICES

London Office: 14 Orlestone Mews, London N7 8LL
Tel: 071 6079057 Fax: 071 6075037

17th November 1992

Dear Sir / Madam

Please find enclosed *GeoPubs Newsletter No. 2* which we trust you will find interesting. We have made this newsletter a fairly complete listing of regional earth science mapping, a factor that we hope will make it worth keeping for reference.

We would particularly like to draw your attention to the publications of UNESCO. These include the "Geological Map of the World", which you will find illustrated on the enclosed brochure, and the new "Geological Map of South and East Asia" (see over for details).

GeoPubs now distributes the very useful energy maps published by the *Petroleum Economist Magazine*. You will find most of these listed in the relevant sections of the newsletter. A more complete and up to date listing is also enclosed. On this listing you will find details of the very substantial discount that we have negotiated on the "Energy Map of the World". This map normally retails at £68.00 but is now available (exclusively through GeoPubs) at the much reduced price of £27.50. We regret that this offer is open to educational establishments only.

Finally, if you have any queries please don't hesitate to contact us, we will be very happy to help!

Yours faithfully



K.M. DOCKERILL
Partner

ENERGY MAPS

Published by the Petroleum Economist Magazine

Energy Map of the World

Actual dimensions are 1200mm x 720mm printed on high quality art paper. The map is available in either a folded or rolled and laminated format.

A unique energy map which includes all oil and gas producing countries.

Every country in the world is categorised by energy consumption per capita. Included: oil fields, oil shale, oil sands, major oil pipelines, gas fields, major gas pipelines, areas of major coal deposits, major refinery centres, export/import terminals, LNG plants.

Statistical data includes country and region analysis for energy production and consumption, nuclear power, population and Gross National Product.

Scale at Equator: 1:35,000,000.

Published: July 1991.

Price: folded £60.00, rolled & laminated £68.00.

Special Offer For a limited period the Energy Map of the World is available (exclusively through Geopubs) at the reduced price of £27.50. We regret that this offer is open to educational establishments only.

World Gas Map

Actual dimensions are 720mm x 1200mm printed on high quality art paper. The map is available in either a folded or rolled and laminated format.

This map includes all gas producing countries world-wide.

Included: gas fields, gas pipelines and LNG facilities. Additional data includes reserves data and annual production figures by sector calculated in billion cubic metres of gas. Also included is the latest economic data on: population, population growth rates, GNP per capita, real growth (GNP industrial production).

Scale: 1:35,000,000

Published: September 1992.

Price: folded £55.00, rolled & laminated £63.00.

Energy Map of Europe

Actual dimensions are 820mm x 840mm printed on high quality art paper. The map is available in either a folded or rolled and laminated format.

Details every country in Europe showing: oil fields, oil pipelines, oil refineries, gas/condensate fields, gas pipelines, combined oil and gas fields, export/import terminals, coal deposits, major hydro electric power schemes, world oil production by area, world energy production and consumption, nuclear power, oil refining by country with refining capacities.

Statistical data includes: population, population growth, Gross Domestic Product, Gross Domestic Product per capita.

Scale: 1:6,500,000

Published: October 1991.

Price: folded £55.00, rolled & laminated £63.00

Energy Map of Central & Eastern Europe

Actual dimensions are 800mm x 830mm printed on high quality art paper. The map is available in either a folded or rolled and laminated format.

All countries in Central and Eastern Europe are included and the map shows: oil fields, oil pipelines, oil refineries, gas/condensate fields, gas pipelines, gas fields, export import terminals, coal deposits, major hydro-electric power schemes, oil production and consumption, nuclear power. Statistical data includes: population, population growth, GDP/GNP and GNP per capita.

Scale: 1:3,000,000

Published: September 1992.

Price: folded £55.00, rolled & laminated £63.00

Energy Map of the North Sea

Actual dimensions are 800mm x 1200mm printed on high quality art paper. The map is available in either a folded or rolled and laminated format.

First published in 1989 this map has now been completely updated and expanded. It is, in all respects, a completely new map and meets the enhanced standards set by Petroleum Economist over the past year.

The map includes: oil and gas fields, oil and gas pipelines, oil refineries, nuclear power plants and export terminals. Additional data includes both reserves and production figures by sector calculated in million barrels per day of oil or oil equivalent.

Scale: 1:1,800,000

Published: July 1992.

Price: folded £55.00, rolled & laminated £63.00

Energy Map of the CIS

Actual dimensions are 1200mm x 720mm printed on high quality art paper. The map is available in either a folded or rolled and laminated format.

This is the very first energy map of the Commonwealth of Independent States, updated in February 1992 and including all new international country boundaries. Included: identification of oil and gas fields in the CIS, including re-named oil and gas fields, oil pipelines, gas pipelines, nuclear power plants, refineries, export/import terminals, major coal producing areas.

Scale: 1:5,000,000

Published: March 1992.

Price: folded £55.00, rolled & laminated £63.00

GEOPUBS



RECEIVED
E 17 A

DIV. OF WATER &
LAND DEVELOPMENT

Handwritten notes and signatures in the top right corner, including "28.05" and "Huy".

GEOPUBS NEWSLETTER NO. 2

JUNE 1992

Dear Sir / Madam

Here, slightly later than we anticipated, is our newsletter no. 2. We hope that you will find it interesting. We have packed in the details of as many useful maps and books as we can.

The list of maps that you will find below is a selection of the titles that will appear in the systematic catalogue of world geological mapping that we intend to make available in the near future. For more information on our catalogue see the section devoted to "Information" at the end of this document.

We would like to stress that this newsletter is not a complete catalogue in any sense. If you have a requirement for maps of any type, from any country in the world that are not listed please contact us. We will be very pleased to advise you of what is available.

Yours faithfully

Kern M. Dockerill

K.M. DOCKERILL Partner

HOW TO ORDER!

You can order all the maps and books listed in this catalogue from either of our offices by phone, fax or post.

GEOPUBS (London Office)

14 Orlestone Mews
London N7 8LL
England

Tel: 071 607 9057
Fax: 071 607 5037

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Tel: 0582 596993
Fax: 0582 580978

Payment may be made by:

● Cheque

● Visa or Mastercard



We accept payment in £ sterling or US\$. All prices are exclusive of post and packing.

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2. Other New Maps (Earth Science) - page 8.
3. Books and Atlases (Earth Science) - page 8.
4. Geology and Remote Sensing - page 9.
5. Stratigraphic Charts - page 9.
6. Information - page 9.

1. EARTH SCIENCE MAPS

The map listing below gives details of small scale earth science maps which cover large regions of the Earth's surface. Certain sections, covering areas where there is a keen interest at the moment, have been expanded to cover more detailed maps. These are the sections in boxes. We must stress that we also supply topographic and non earth science thematic mapping! Catalogues are in preparation.

In addition to earth science maps we have included a number of maps and atlases concerned with energy and oil and gas industry activity.

WORLD MAPS

● **NEW Geological Map of the World - 1:25,000,000.** Published jointly by UNESCO and the CGMW in 1990. The map consists of 4 sheets. An essential basic reference. Please request our colour brochure if you would like more information. Price per set £27.50

● **Geological World Atlas - 1:10,000,000.** Published jointly by UNESCO and the CGMW, completed in 1984. The Atlas includes 15 map sheets which cover the continental areas at 1:10,000,000 scale and 6 map sheets at 1:36,000,000 which cover the ocean basins. The Atlas is, quite simply, the best general coverage of the world, we cannot recommend it too highly! (N.B. contrary to the information given in our last newsletter this atlas is not going out of print - we have recently been informed by UNESCO that the binders only for the atlas were in short supply. New supplies have been obtained). Price £225.00

● **Geologic Map of Sectors of Gondwana - 1:10,000,000.** Published by the AAPG in 1988. The map consists of 2 sheets. Price per set £35.00

● **The Breakup and Dispersion of Pangea.** Published jointly by Elf Aquitaine and IFREMÉR in 1987. The map

NEW MAPS

Published jointly by UNESCO and the CGMW.

Geological Map of the World - 1:25,000,000.

The map consists of four sheets which can be assembled so that either the Pacific Ocean or the Atlantic Ocean is central. An excellent map for teaching and presentations. Published in 1990 this map became available in 1991.

Please request our colour brochure if you would like more information.

Sterling Price £27.50 + £3.50 post and packing (U.K.), £5.50 (Europe).

US Dollar Price \$50.00 + \$10.00 post and packing (North America).

Geological Map of South and East Asia - 1:5,000,000.

The map consists of six sheets including two legend sheets. Published in 1991 the map has only been available for a few months. It is the best general coverage of South and East Asia available!

Sterling price £95.00 + £5.00 post and packing (U.K.), £7.00 (Europe).

US Dollar Price \$170.00 + \$15.00 post and packing (North America).

Geological Map of Africa - 1:5,000,000.

The map consists of six sheets including one legend sheet. Publication of this map began in 1986 and was completed in 1991. We can now supply the whole set at a very competitive price!

Sterling price £75.00 + £3.50 post and packing (U.K.), £7.00 (Europe).

US Dollar price \$135.00 + \$15.00 post and packing (North America).

**SPECIAL OFFER - BUY ALL THREE MAPS AND WE WILL
SEND THEM POST FREE! ANYWHERE IN THE WORLD!**

● **Metamorphic Map of Europe - 1:2,500,000.** Published jointly by UNESCO and the SCMBW in 1978. The map consists of 17 sheets and an explanatory text. The set includes the Metamorphic Map of the Alps - 1:1,000,000 listed separately below. Price per set £40.00

● **Metamorphic Map of the Alps - 1:1,000,000.** Published jointly by UNESCO and the SCMBW in 1973. The map consist of 1 sheet and an explanatory text. Price £6.95

● **Metallogenic Map of Europe - 1:2,500,000.** Published jointly by UNESCO and the BRGM in 1983. The map consists of 9 sheets. Each sheet is accompanied by a separately printed list of deposits. A 560 page explanatory text is also included. Price per set £135.00

● **International Quaternary Map of Europe - 1:2,500,000.** Published jointly by UNESCO and the BfGR. The map consists of 15 sheets, 13 of which are published. Publication of the series began in 1967. New sheets can be supplied as published. Price per sheet £12.00

● **International Hydrogeological Map of Europe - 1:1,500,000.** Published jointly by UNESCO and the BfGR. The map consists of 30 sheets, 18 of which are published. Publication of the series began in 1970. New sheets can be supplied as published. Price per sheet £15.00

● **International Map of Natural Gas Fields in Europe - 1:2,000,000.** Published jointly by the BfGR and the EC in 1984. The map consists of 9 sheets. Price £175.00

RUSSIA / CIS / USSR

● **Geological Map of the USSR - 1:2,500,000.** Published by the VSEGEI in 1983. The map consists of 16 sheets. An English legend is included. Price per set £245.00

● **Mineral Map of the USSR - 1:5,000,000.** Published by the VSEGEI in 1987. The map consists of 6 sheets. It shows the location of the main mineral deposits superimposed on a geological background. Price per set £125.00

● **NEW Energy Map of the Commonwealth of Independent States (CIS) - 1:5/13,000,000.** Published by the Petroleum Economist in 1992. The map consists of 1 sheet. Price (folded) £55.00 (flat laminated) £63.00

● **Energy Map of the Soviet Union - 1:10,000,000.** First published by the Petroleum Economist in 1985, updated in May 1991. The map consist of 1 sheet. Price (folded) £45.00 (flat laminated) £53.00

● **Soviet Oil and Gas Supplies Pipeline Atlas.** Published by the Ministry of Oil and Gas Construction, Moscow. 120 maps show the layouts of long-distance gas, oil and oil product pipelines in the former Soviet Union. In addition major railways, motorways and waterways are shown together with the industrial and social infrastructure of the oil and gas industry. Price £295.00

● **Energy Map of Europe - 1:6,500,000.** Published by the Petroleum Economist in 1991. The map consists of 1 sheet. Price (folded) £55.00 (flat laminated) £63.00

MIDDLE EAST

● **Geological Map of the Middle East - 1:5,000,000.** Published by the CGMW in 1986. The map consists of 1 sheet. Price £15.00

● **Geological Map of the Arab World - 1:5,000,000.** Published by the AOMR in 1987. The map consists of 2 sheets and a 100 page explanatory text. The map covers the whole Arab world including the Arabian Peninsula and North Africa. Price per set £75.00

● **Geological Map of Iraq & South Western Iran - 1:1,000,000.** Published by the Robertson Group in 1987. The map consists of 1 sheet. Price £50.00

● **Tectonic Map of the Middle East - 1:5,000,000.** Published by Petroconsultants. Price £105.00

● **Available Soon Seismotectonic Map of the Middle East - 1:5,000,000.** To be published by the CGMW in late 1992.

● **Seismotectonic Map of Iran, Afghanistan and Pakistan - 1:5,000,000.** Published jointly by UNESCO and the CGMW in 1985. The map consists of 1 sheet and a 24 page explanatory text. Price £17.50

● **The Arabian Plate Producing Fields and Undeveloped Hydrocarbon Discoveries - 1:5,000,000.** Published by the AAPG in 1991. The map consists of 1 sheet. Price £20.00

● **Middle East Oil and Gas Activity and Concession Map - 1:1/2,000,000.** Published by OPL in 1992. The map consists of 1 sheet. Full offshore and adjacent onshore data for Jordan, Saudi Arabia, Iraq, Iran, Bahrain, Qatar, UAE, Oman and Yemen is included. Inset maps at 1:1,000,000 show key areas. Price £95.00

● **Middle East Oil and Gas Map - 1:4,500,000.** Published by OPL in 1991. The map consists of 1 sheet. The map shows pipelines, petrochemical plants, oil and gas fields, basins, fold belts, faults, tectonic features and structure contours. Much statistical information is also included. Price £83.00

● **Energy Map of the Middle East - 1:4,000,000.** Published regularly by the Petroleum Economist since 1983, revised after the Gulf War in November 1991. The map consists of 1 sheet. Price (folded) £55.00 (flat laminated) £63.00

SOUTH AND EAST ASIA

● **NEW Geological Map of South and East Asia - 1:5,000,000.** Published jointly by UNESCO and the CGMW in 1991. The map consists of 6 sheets, including 4 map sheets and 2 legend sheets. Price per set £95.00

● **Geologic and Structure Map of Eastern Asia - 1:2,500,000.** Published by the AAPG in 1988. The map consists of 3 sheets and an explanatory text. The map covers

● **Road Map of Vietnam - 1:2,000,000.** Published by the VS in 1989. The map consists of 1 sheet. Price £17.50

● **Road Map of Vietnam - 1:10,000,000.** Published by the VS in 1990. The map consists of 4 sheets. Price per set £25.00

● **Administrative Map of Vietnam - 1:1,500,000.** Published by the VS in 1984. The map consists of 4 sheets. Price per set £25.00

● **Topographic Map of Vietnam - 1:1,000,000.** Published by the VS in 1990. The map consists of 12 sheets. Price per set £75.00

● **Topographic Map of Vietnam - 1:500,000.** Published by the VS in 1970-75. The map consists of 24 sheets. Price per set £125.00

● **Topographic Map of Vietnam - 1:250,000.** Published by the VS in 1980-83. The map consists of 40 sheets. Price per set £225.00

● **Topographic Maps of the Provinces of Vietnam - 1:100,000.** Published by the VS in 1980-83. Provinces covered:- Cuu Long (4 s.), Hau Glang (6 s.), Dack Lack (12 s.), Ben Tre (2 s.), Klen Glang (8 s.), Dong Nai (4 s.), Nghla Binhh (10 s.), Da Nang (8 s.), Minh Hai (6 s.), Song Be (8 s.), Lam Dong (8 s.), Long An (4 s.), Thuan Hai (12 s.), Gilal Kontum (15 s.), Phu Khanh (8 s.), An Glang (4 s.), Dong Thap (4 s.), Lai Chau (5 s.), Hoang Lien Son (9 s.), Ha Tuyen (8 s.), Cao Bang (6 s.), Lang Son (6 s.), Bac Thai (4 s.), Quang Ninh (6 s.), Vinh Phu (4 s.), Son La (12 s.), Ha Son Binh (4 s.), Hal Hung (2 s.), Thal Binh (1 s.), Ha Nam Ninh (4 s.), Thanh Hoa (9 s.). The Price for each title varies depending on the number of sheets. To calculate the price of a set multiply the number of sheets (s.) by £5.00.

● **Topographic Map of Vietnam - 1:50,000.** Published in 1965. These are U.S. produced maps covering the whole country. Price per sheet £5.00

● **Geological Map of Vietnam - 1:1,500,000.** Published by the VGS in 1986. The map consists of 1 sheet. Price £75.00

● **Geological Map of Vietnam - 1:500,000.** Published by the VGS in 1989. The map consists of 28 sheets. Price per set £295.00

● **Metallogenic Map of Vietnam - 1:1,000,000.** Published by the VGS in 1991. The map consists of 4 sheets. Price per set £175.00

OCEANIC AND MARINE AREAS

ATLANTIC

● **Tectonic Map of Pre-Mesozoic Terrains in Circum-Atlantic Phanerozoic Orogens - 1:5,000,000.** Published by IGCP. Price £45.00

INDIAN OCEAN

● **Geological Map of the Indian Ocean.** Published by the AGU in 1977. The map consists of 1 sheet. Price £35.00

● **Sediment Thickness Map of the Indian Ocean.** Published by the AAPG in 1988. The map consists of 1 sheet. Price £20.00

MEDITERRANEAN

● **Geological and Structural Map of the Tertiary Basins of the Mediterranean Domain - 1:2,500,000.** Published jointly by IFP, CNEXO and INAG in 1974. The map consists of 2 sheets and an explanatory text in French. Price per set £85.00

● **Photogeological Sketch of the Mediterranean Domain - Large Structural Traits on Landsat 1 Satellite Images - 1:2,500,000.** Shows lineaments and fracture systems. Published jointly by IFP, CNEXO and INAG in 1976. The map consists of 2 sheets and a 36 page explanatory text in French. Price per set £55.00. (Also available are 7 regional sheets which are intended as overlays for the Geological and Structural Map of the Tertiary Basins of the Mediterranean listed above. Published in 1976. Price per set £66.00)

● **Mediterranean Oil and Gas Activity and Concession Map - 1:2/1,000,000.** Published by OPL in 1992. The map consists of 1 sheet. Provides a complete reference to exploration and field development in the area. Price £95.00

● **Evolution of the Northern Margin of Tethys - The Results of IGCP Project 198.** Vol. III, Contributions in Paleogeography. ESRI. Includes 11 palaeogeographic maps at 1:10,000,000 scale. Price £75.00 Also available Vol. I, Contributions in Paleobiology, Basin Analysis and Geophysics. Price £75.00 and Vol. II, Contributions in Structural Geology, Tectonics, Magmatism and Stratigraphy. Price £75.00

NORTH SEA

● **Tectonic Map of the North Sea - 1:1,000,000.** Published jointly by Geco and Alastair Beach Associates. The map consists of 1 sheet. Invaluable to anyone involved in the oil and gas industry in this area. Price £130.00

● **North Sea Structural Elements Relief Map - 1:1,000,000.** Published by Nopec. The Map consists of 1 sheet. It shows basins, platforms, ridges, troughs, fault lines and anomalies on a shaded relief base. Median line/quadrant and block overlay for easy orientation of the data for exploration purposes. Price £50.00

● **Offshore Mid Norway Structural Elements Relief Map - 1:1,000,000.** Published by Nopec. The map consists of 1 sheet. It shows basins, platforms, ridges, troughs, fault lines and anomalies on a shaded relief base. Median line/quadrant and block overlay for easy orientation of the data for exploration purposes. Price £50.00

● **Reservoir Rocks of the North Sea - 1:1,000,000.** Published by Atlas Design Drafting in 1991. The map

petroleum geology, geodynamics and basin evolution. Price £325.00

● **NEW Geology of England and Wales.** Published by the Geological Society Publishing House in 1992. A comprehensive account of the geology of England and Wales. Price £85.00 (hardback)

● **NEW Geology of Scotland, 3rd ed.** Published by the Geological Society Publishing House in 1992. A thorough account of the geology of Scotland. Price £75.00 (hardback)

● **Synthèse Géologique du Sud-Est de la France.** Volume 1: Stratigraphie et Paléogéographie. Volume 2: Atlas. Published by the BRGM in 1984. Mem. du BRGM 125 and 126. Price per set £160.00

● **Synthèse Géologique du Bassin de Paris.** Volume 1: Stratigraphie et Paléogéographie. Volume 2: Atlas. Volume 3: Lexique des noms de Formation. Published by the BRGM in 1980. Mem. du BRGM 101, 102 and 103. Price per set £130.00

4. GEOLOGY AND REMOTE SENSING

● **Geological Applications of Remote Sensing (video).** Produced by the National Remote Sensing Centre. This very useful video discusses the uses and the limitations of remote sensing in geology. It illustrates with a number of examples how it can assist in mapping and in the location of mineral resources. Running time 13 minutes. A very concise and understandable introduction to remote sensing for student and professional alike. Price £35.00

● **Remote Sensing Applications in Geology (slide set).** Produced by the National Remote Sensing Centre. The set consists of 19 slides and a 7 page commentary. Examples of the various techniques used in remote sensing are given, from aerial photography to space borne cameras and satellite imagery. Applications are illustrated including geological mapping, oil exploration, mineral exploration etc. The set forms an excellent basis for a lecture on the uses of remote sensing in geology. Price per set £9.95

5. STRATIGRAPHIC CHARTS

● **Elsevier Time Chart.** The fourth revised edition of Elsevier's Time Chart incorporates much new information including six palaeocirculation maps, major biological events, and a regional stratigraphic classification for China. As with the previous editions both local and regional chronostratigraphic units are correlated to standard international units according to the most recent information. Other information includes major orogenic events and magnetic reversals. Price £13.00

● **A Geologic Timescale 1989** by W.B. Harland et al. Published by Cambridge University Press in 1990. This reference book presents a concentrated review of the time scales used in geology to date stratigraphic sequences and to define geological epochs. The authors develop and assess a new calibration of the geologic time scale, employing a new database. The complete time scale is summarised on the back cover of the book and in a wall chart (published

separately). Price £25.00, wallchart £7.95

● **Geological Time with Useful Microfossil Ranges.** Published by Pennwell Books in 1985. Shows both the North American Geological Time Scale and Global Geological Time Scale. All the major taxa of microfossil are illustrated and their ranges indicated. Price £45.00

● **Stratigraphy of the North Sea. Cenozoic - Mesozoic Wallchart.** Published by Robertson McCarta. This full colour wallchart illustrates 14 sections composited from a wide area with actual locations in the U.K. and Netherlands sectors, Southern North Sea (Anglo Dutch basin), Denmark (Central Graben), Norway (Central Graben), Norwegian Danish basin, U.K. (Central Graben), inner and outer Moray Firth, U.K. and Norway South Viking Graben, East Shetland basin and the Horta platform. Price £45.00

6. INFORMATION

Almost every day we receive information about new maps and related publications from surveying and publishing organizations around the world. Our aim is to make as much of this information available to our customers as possible. In order to do this we have developed a threefold approach:

A. BULLETINS

Bulletins are a quick way for us to make information available to you our customers. Rather than make you wait for information to be incorporated into a detailed catalogue we will send this information out "ad hoc" to those people we are fairly sure will be interested. The titles available will also be listed in our newsletters so that you can request them. This is particularly useful where we have access to as many of a certain publishers catalogues as we need. Good examples of publishers like this would be UNESCO, BRGM and the BGS. See below for a list of the bulletins available.

Bulletin availability:-

No. 0001. National Atlas of Mongolia. Full details of this invaluable atlas which we hold in stock. It contains a very useful section on the geology of Mongolia, including geological and tectonic maps at 1:3,000,000.

No. 0002. Petroleum Economist Energy Maps. Catalogue and price list for 1992. The Petroleum Economist Magazine has published a number of very useful energy maps. Full specifications for these maps are given in this bulletin.

No. 0003. UNESCO. Complete list of UNESCO mapping available through GeoPubs. GeoPubs are U.K. agents for UNESCO.

No. 0004. British Geological Survey. Complete list of U.K. geological mapping including British Geological Survey catalogue.

No. 0005. Soil Survey and Land Research Centre. Complete list of U.K. soil mapping. Complete Soil Survey and Land Research Centre catalogue.

Geothermal firm drills another well

HILO — Puna Geothermal Venture has completed drilling its KS-9 well, the company announced.

It will test the well further, however, and it doesn't expect to produce geothermal power until the end of March, said Steven Morris, company vice president.



Steven
Morris

The KS-9 well, 4,600 feet deep, is in the same area as the KS-8 well that the company abandoned in November after numerous problems including a dramatic 31-hour blowout in June 1991. State officials put numerous safety restrictions on the company after the blowout.

"KS-9 appears to be a substantial well," Morris said. "KS-9 is a larger diameter well than KS-8; therefore, our expectations are that KS-9 should exceed the productivity of KS-8," he said.

The KS-8 was capable of producing up to 17 megawatts for the 25-megawatt plant, he said.

The company will move its drill rig to a new site next week in preparation for starting another well, to be known as KS-10, he said.

Opponents of geothermal energy held a meeting Wednesday to get ready to protest use of the well.

The opponents, which included Big Island Rain-forest Action Group, Pele Defense Fund and the Lanipuna Gardens Association, said they will hold a non-violent "flow test protest" soon.

Handwritten signatures and initials:
- Top right: A signature that appears to be "John".
- Middle left: A signature that appears to be "S.D.".
- Middle right: A signature that appears to be "M.A.S.".
- Far right: A signature that appears to be "J.H.".
- Below these: A circled number "10".

Flow-test protest meeting set

The Big Island Rainforest Action Group (BIRAG) has scheduled a meeting at 7 p.m. tomorrow to organize a non-violent protest of Puna Geothermal Venture's planned flow test of its KS-9 well. The discussion, set for the Pahoia Community Center, will also focus on civil disobedience, according to a BIRAG press release.

BIRAG spokesman Bob Petricci, who was found innocent Dec. 20 of trespassing on PGV property, said the residents of Puna have a right to protect themselves from "imminent harm."

"Nothing has changed," Petricci said in the written release. "PGV is continuing on with their reckless disregard for the health and safety of the community. We need to protect ourselves from being poisoned and driven from our homes. The state and county have turned a deaf ear to the residents of Puna."

Geo opponents seek to

□ PGV official denies reports that flow test is planned

By Gordon Y.K. Pang
Tribune-Herald

Opponents of geothermal development say they will meet with Mayor Steve Yamashiro on Monday to ask him to stop a flow test on a well at Puna Geothermal Venture's 25-megawatt facility in Pohoiki but a PGV official said no such procedure is being planned.

Bob Petricci of the Big Island Rainforest Action Group said if opponents don't get what they want, they will demonstrate at the project site when the test does occur.

PGV general manager Steve Morris said yesterday that drill-

ing at its KS-9 production well is close to being completed.

But PGV is planning "a four-hour clean-out of the well" necessary to remove debris accumulated in the hole, Morris said. "We're not doing a flow test."

It doesn't matter, said Petricci. "They say they're going to do a well clean-out, I'm not sure if they're actually go to do a flow test," he said. Nonetheless, "this four-hour venting is going to release toxins into the air."

Petricci said that BIRAG, Puna Outdoor Circle, the Sierra Club and other groups opposed to geothermal development in lower Puna believe the state Health Department's standard for hydrogen sulfide, 25 parts per billion on an hourly average, "is not safe or adequate to pro-

tect us."

During the last flow test in the fall, spikes as high as 80 ppb of hydrogen sulfide were recorded while at other times, caustic soda spewed into the neighborhoods, he said.

BIRAG and the other groups are meeting with Mayor Steve Yamashiro on Monday. It would be the first meeting between anti-geothermal forces and the new mayor since he took office Dec. 7.

Yamashiro, a former attorney for PGV and a strong advocate of geothermal development, has stated that he will work with area residents to iron out their concerns.

Petricci said the leaders won't be confrontational with Yamashiro. "We will present our side and ask for help," he said.

meet with Yamashiro

"We will make some recommendations to reopen the (geothermal resource) permit they got from the Planning Commission." We think he can do that."

Petricci said Yamashiro should take note that District Judge Riki May Amano recently acquitted him of trespassing during a demonstration on a "choice of evils" defense. Petricci said the decision was proof that the court system is beginning to see the danger in geothermal development in lower Puna.

"I would like for him just to understand the court decision," he said. "He's the mayor of this county, he should protect us. The victory I had in court has opened some people's eyes."

If nothing comes of the meeting, he said, a protest will occur on the morning of a well clean-

ing or flow test.

Final plans for the protest were discussed by about 25 BIRAG members at a meeting Wednesday night. Petricci said members originally believed the venting would take place next Thursday but that they have not been able to get confirmation as of yet.

Morris said that's because PGV hasn't completed its well and hasn't determined when that will be yet.

"Right now we're in the process where we drill and are looking to encounter fractures and when we do encounter fractures, then we would've completed the well," he said.

"Our target has been somewhere around 5,500 feet and we're at 4,400 feet now, so we're getting close," Morris said. That should take no more

than two weeks, he said.

Once the well drilling has been completed, workers will begin constructing the pipeline from the KS-9 well to the plant. "That's a fairly significant undertaking, there are a lot of valves involved," he said.

PGV would then be able to come on-line in late March, he said.

If KS-9 cannot provide the full 25 megawatts, Morris said PGV's next step likely will be drilling KS-11 as a production well. PGV isn't likely to need anymore reinjection wells since they currently have three in place: KS-1-A, KS-3 and KS-4, he said.

The KS-8 well, the latest cause for PGV's delays, is expected to remain shut down permanently.

PGV completes new well

POHOIKI — Puna Geothermal Venture officials Friday announced completion of production well KS-9 ahead of schedule.

Workers drilled the well to a depth of 4,600 feet as a replacement to well KS-8, according to Steven Morris, PGV vice president and general manager.

"The drilling of KS-9 went smoothly," Morris said in a press release. "The well encountered its target as planned and was completed ahead of its 60-day drilling schedule," he added.

The new well, which intersects the same fracture zone as KS-8, should produce more power because of its larger diameter, Morris said.

"KS-9 appears to be a substantial well. KS-9 was targeted to the same area as KS-8, which was estimated to be capable of producing up to 17 megawatts ... our estimations are that KS-9 should exceed the productivity of KS-8," he said.

That amount of electricity could power about 17,000 Big Island homes.

PGV has yet to fulfill its contract to provide Hawaii Electric Light Co. with 25 megawatts of power.

PGV plans to begin drilling operations on another production well, KS-10, by early next week, Morris said. The revised production schedule is being maintained, he added.

"We expect to have the plant up and running by the end of March," Morris said.

-Hawaii Tribune - Herald, Tuesday, January 26, 1993

Why geothermal

I'm writing to get some anger out!

Why do we need geothermal?

We could use the wind, the ocean, and the sun for all the power we need for life.

We live in the most perfect place to use the wind, the sun, and the ocean, to power our needs for energy.

We have all of these resources all year round.

All of these would power all of us for life and it wouldn't harm us or the wildlife, or the land, the plants, and the drinking water.

Geothermal power is costing the taxpayers a lot of money, hurting the environment, and causing a lot of people to get sick.

Geothermal is causing great damage to the Big Island and the community. We don't even get to use the power generated by geothermal here, they want to send it to Honolulu!

Why can't the people there use sun, wind and ocean power too?

The old Hawaiians say, "Pele will not rest until they get off of her land with their drills and leave her alone."

Geothermal please leave. We don't need you or want you here!

Debbie Gilchrist
Hilo

-Hawaii Tribune - Herald, Sunday, January 24, 1993

PGV says well drilling completed

Puna Geothermal Venture said late Friday that it has successfully completed drilling at its KS-9 production well.

The well was drilled to a depth of about 4,600 feet. Further tests will be necessary to measure the quantity of the heat source, said PGV General Manager Steve Morris.

"KS-9 appears to be a substantial well," Morris said.

"KS-9 was targeted to the same area as KS-8 which was estimated to be capable of producing up to 17 megawatts."

If anything, the production capability of KS-9 should be even greater than KS-8 because it has a larger diameter, he said.

At the current rate, Morris said, PGV should have a sizeable portion of its contracted 25 megawatts available to Helco consumers by the end of March.

PGV now expects to move its drill rig to KS-10, another production well, next week.

In the fall, a series of leaks from KS-8 forced the company to shut down the well, causing PGV's delay in producing power.

Opponents of geothermal development are to meet with Mayor Steve Yamashiro tomorrow in an effort to stop production.

Geothermal worker overcome by gas

HILO — A worker at the Puna Geothermal Venture development site was temporarily overcome with hydrogen sulfide gas Jan. 22, the Big Island Rainforest Action Group said yesterday.

Group spokesman James Albertini asked, "Why is this information only coming out now, a week after the event?"

"What are we supposed to report?" responded Venture Vice President Steven Morris. "What's the news?"

Appropriate state and county agencies were notified, he said. There were no readings of elevated gas levels at the perimeter of the company area, he said, and the worker returned to his job.

Geothermal wins reprieve on Big Island

By Rod Thompson

Big Island correspondent

HILO — The Hawaii County Council yesterday voted against joining the other three counties in seeking legislative approval for county control of geothermal subzones.

It nixed a proposal that would ask the Legislature for the power to strip areas of their geothermal subzone designation. If such action were taken, existing geothermal development could continue, but no new geothermal activity could be started in that area.

The proposal was made last year by Honolulu Councilman Steve Holmes at a meeting of the Hawaii State Association of Counties. Despite Hawaii County turning the idea down, the other counties could still ask the Legislature to proceed.

In joining the 7-2 majority of the Hawaii County Council against the idea yesterday, Association of Counties second vice president Takashi Domingo said approval of the change would send a negative signal to geothermal developers.

In 1984 the state declared three geothermal subzones on the Big Island, all on Kilauea's east rift. It also declared a fourth subzone on Maui.

In the Kapoho subzone on the Big Island, 61 residents have sought unsuccessfully to have their homes withdrawn from the zone, saying they were never notified when their homes were first put into it.

The Holmes proposal would allow the counties to designate present geothermal areas as off limits to geothermal development by changing zoning or general plan descriptions of the area, provided the present areas are in urban, rural or agricultural designation.

The counties currently have no control over geothermal activities in conservation areas, and that exclusion of county power would continue under Holmes' proposal.

Independent Democrat Helene Hale argued against turning down the proposal, saying it would be turning down "home rule" for the counties. She was joined by Green Party member Keiko Bonk-Abramson.

Handwritten notes:
 30
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Council rejects geothermal proposal

HILO, Hawaii — The Hawaii County Council yesterday refused to endorse a proposal for state legislation to require a county General Plan amendment for any geothermal drilling activity.

Councilwoman Helene Hale, who represents the Puna district where geothermal energy is being developed, unsuccessfully argued to endorse the measure through the Hawaii State Association of Counties.

The Council majority, howev-

er, voted to delete the proposal from the list of measures it would support during the coming Legislature. Hale and Councilwoman Keiko Bonk-Abramson cast the only votes against deletion.

Hale said the reluctance of the Council to involve itself in the geothermal dispute is among the reasons Puna residents are so against any further drilling or commercial development.

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Hawaii Electric Light Company, Inc.

Keahole-Kailua 69 kV and Keahole-Keamuku 69/138 kV Transmission Line Projects

DIV. OF WATER &
LAND DEVELOPMENT

January 1993

KEAHOLE-KAILUA 69 kV TRANSMISSION LINE ROUTING STUDY COMPLETED

Hawaii Electric Light Company, Inc. (HELCO) has completed the first phase of a routing study to site a new 7-mile-long, 69 kV transmission line between the Keahole Generating Station, located near the Keahole Airport, and the Kailua Substation, located in Kailua-Kona. When constructed, the Keahole-Kailua transmission line will establish a third transmission line between Keahole and Kailua to increase overall system reliability, and to meet the growing demand for power in West Hawaii.

The Keahole-Kailua study area shown on page 2 was narrowed down to four main north-south corridors:

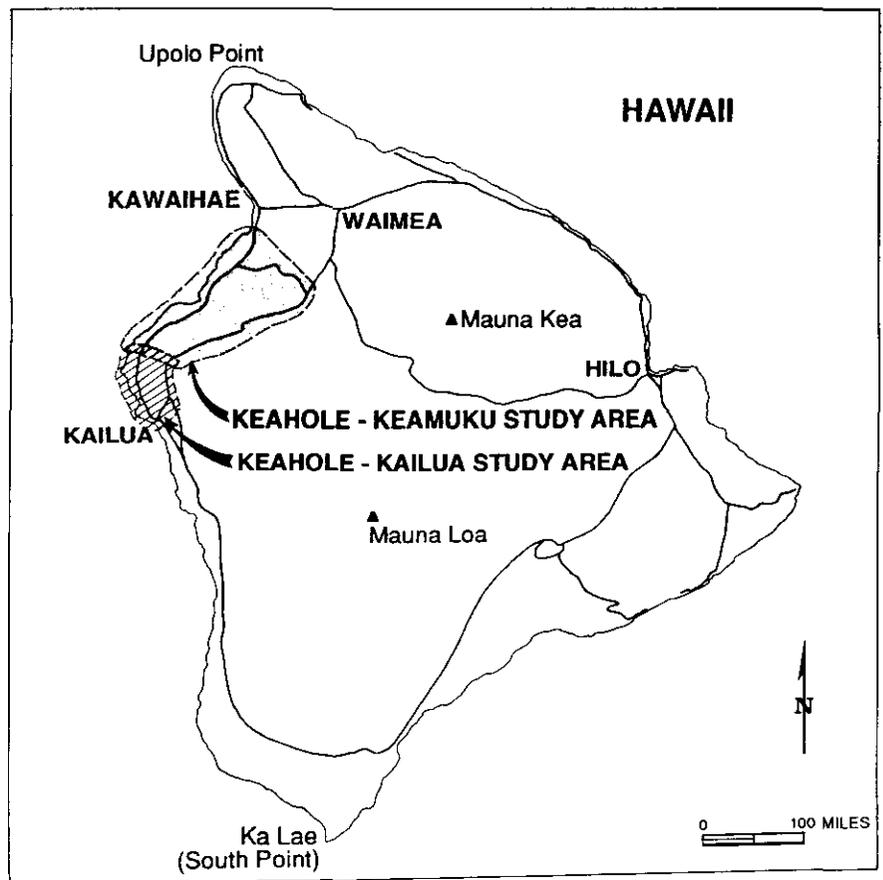
- The mauka side of Queen Kaahumanu Highway
- The makai side of Queen Kaahumanu Highway
- A mid-level corridor mauka of Queen Kaahumanu Highway
- Mamalahoa Highway/Palani Road

Community workshop
rescheduled to
February 9, 1993, 6 p.m.
King Kamehameha Hotel

Four variations of the Mamalahoa Highway/Palani Road corridor included options to use mauka-makai connections through the Hamanamana, Ooma, Kaloko, and Honokohau areas.

HELCO has completed a preliminary study and ranking of the four alternative corridors. The corridors were evaluated based on environmental and land use information, which included land ownership, land regulation, existing land use, proposed land use, visual resources, biological resources, geological resources and cultural resources.

A sensitivity analysis based on these factors was used to com-



Geo asset fund meeting June 1

The county Planning Department will hold a public meeting to meet with the community on coming up with a new set of rules pertaining to the county's geothermal asset fund.

The meeting will be held at 7:30 p.m. on June 1 at the Pahoehoe Neighborhood Facility. All interested parties are invited to attend.

Planning Director Virginia Goldstein said the first order of business will be to establish a working group to carry out the instructions of the Planning Commission.

Last week, the commission asked that the community and the department come up with rules that address more of the concerns raised by area residents.

Copies of several drafts of the current proposed set of rules, drafted by the Yamashiro administration without input from residents, will be available at the meeting.

For information call 961-8288.

A fund of more than \$500,000 has been collected from the state and Puna Geothermal Venture for the asset fund, which has remain untapped because of the lack of rules.



—T-H photo by William Ing

AGAINST GEOTHERMAL — About a dozen members of the Big Island Rainforest Action Group and neighbors of the Puna Geothermal Venture power plant in Pohoiki protested outside the County Building yesterday. Inside, the Planning Commission voted 7-0 to have the Planning Department meet with residents to come up with new rules for the geothermal asset fund.

happening," said Leilani Estates resident Geoffrey Last.

the talks with the Inouye administration, said commissioners would probably not want the responsibility for disseminating

the fund anyway.

Commission Chairman Do-

See ASSET FUND, Page 8

Rules back to drawing board

come up with. The commission has to date an elected, panel is yet the creation of would likely re- is vote of the and possibly ion on the part

of the state Legislature, county officials said.

Commission Vice Chairman Wilton Wong presented a list of proposals to address other concerns raised by the residents. Among those suggestions turning complete authority of the fund over to an appointed panel

and waiving a \$50 filing fee.

Prior to yesterday's meeting, about a dozen members of the Big Island Rainforest Action Group and PGM neighbors protested on the sidewalk of Aupuni Street at the County Building where the commission was meeting.

PGV mulling more wells

Puna Geothermal Venture is considering drilling additional wells at its Pohoiki facility.

PGV Project Manager Steve Morris yesterday said the firm is currently weighing the costs of drilling the wells against the benefits — primarily a boost in production capability.

PGV currently has two resource wells providing geothermal steam and three injection wells used to return geothermal brine underground.

Morris said if it occurs, the drilling would follow repairs on well KS-9, which should occur sometime this summer. That well contains an obstruction which resulting in the trapping last year of a probe routinely sent down the well to record heat and pressure.

Morris said additional work is also needed to accommodate larger quantities of brine now coming from KS-10. Morris said the replacement of much of the steam by liquid brine is a function of underground hydraulics and does not indicate a weakening of the steam source.

PGV currently has county approval for four more wells. The project would require additional drilling permits from the state Department of Land and Natural Resources.

The PGV plant, which is under contract to provide Hawaii Electric Light Co. with 25 megawatts of electricity, is currently producing about 17 megawatts. Morris said the reduction is temporary and partly the result of "throttling back" of KS-9 until the obstruction and trapped tool can be cleared.

According to Army Curtis of Helco, the reduction is not a problem for the utility because of a reduced demand at this time of the year.

—By Dave Smith



United States Department of the Interior

MINERALS MANAGEMENT SERVICE
Washington, DC 20240



AUG 12 1993

DIV. OF WATER RESOURCES
LAND DEVELOPMENT

53 AUG 17 10:32

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Dear Colleague:

In November 1991, the Outer Continental Shelf (OCS) Policy Committee, an advisory group to the Secretary of the Interior, established a subcommittee to examine the development potential of OCS sand and gravel resources and the role of the Department of the Interior's Minerals Management Service (MMS). I believe you will be interested in the Committee's resolution and final report titled, "U.S. Outer Continental Shelf Sand and Gravel Resources: Programs, Issues and Recommendations," and the Secretary's response (Enclosures 1-3).

The study resulted in seven main findings--basically that the OCS contains abundant sand and gravel resources, and that there is a near-term and growing need for these resources for coastal restoration and construction aggregates. However, certain issues related to information needs, national policy and legislative intent, and public perception must be addressed for the appropriate design of a Federal program. The recommendations encourage resource and environmental information collection, establishment of mechanisms to foster cooperation and build public confidence in the program, and development of an improved legal regime for marine nonfuel minerals.

Within the MMS, the Office of International Activities and Marine Minerals (INTERMAR) is charged with providing policy direction for management of nonfuel mineral resources on the OCS. The focus of INTERMAR's Marine Minerals Program is to encourage the judicious exploration, development, and extraction of mineral resources from Federal waters. Currently, INTERMAR has 12 cooperative projects involving 18 States. A majority of these projects are studies on sand, gravel, and shell resources for coastal restoration/wetlands enhancement and construction aggregates.

The basic strategy being taken by INTERMAR is to work with the State Geological Survey or other agencies within individual coastal States on projects identified by them, while coordinating closely with other Federal, State and local agencies, academia, industry, and the public. I believe this partnership approach is working well and that the high quality products being produced not only benefit individual States but the Nation as a whole.

I appreciate the strong leadership role you have been demonstrating and look forward to continuing or initiating future work in the years ahead. Should you have suggestions or questions on the report or other INTERMAR activities, please contact me at:

Office of International Activities and Marine Minerals
Mail Stop 4030
381 Elden Street
Herndon, Virginia 22070
(703) 787-1300

Sincerely,


ACTING FOR Carolita U. Kallaur
Program Director
Office of International Activities
and Marine Minerals

3 Enclosures



United States Department of the Interior

MINERALS MANAGEMENT SERVICE

Washington, DC 20240

Done 24, 1993



Memorandum

To: Secretary

Through: *Acting* Assistant Secretary - Land and Minerals Management

*1st Sgt Tom Allen
6-29-93*

From: Acting Director, Minerals Management Service

Subject: Transmittal of Policy Committee Resolution and Report

Discussion: Attached for your review are a resolution and report, "U.S. Outer Continental Shelf Sand and Gravel Resources: Programs, Issues and Recommendations," from the Outer Continental Shelf (OCS) Policy Committee.

The Policy Committee established a subcommittee at its November 19, 1991, meeting charged with examining the development potential of OCS sand and gravel resources and the role of the Minerals Management Service.

The subcommittee completed its work and had a full discussion of the draft report at the Policy Committee meeting held in October 1992. Some changes were recommended and incorporated, and the full Committee has since conducted a mail vote on the report. There are 34 members eligible to vote: 29 approved the report, 2 abstained, and 3 members did not respond.

Some of the findings of the Committee's were:

- Sand and gravel are essential resources for the expanding populations in the coastal areas of the United States.
- The OCS contains abundant sand and gravel resources to meet the near-term and growing need for beach nourishment and construction aggregate.
- If a Federal marine mining program is to be well-designed, a national policy and legislative intent must be developed and public perception and environmental information needs must be addressed.

The Committee made a number of recommendations to address these findings. These included:

- Resource and environmental information should be collected through a modified Environmental Studies Program.
- Mechanisms to foster cooperation and build public confidence in the program should be instituted.
- New legislation should be developed to allow a workable policy and appropriate regulations for managing offshore hard minerals resources.

I recommend that you send the attached proposed response to the Chairman of the OCS Policy Committee, Dr. Robert Jordan.

151 Carolita U. Kallaur

Carolita U. Kallaur

2 Attachments

bcc: Secretary's Surname MMS/OCLA
Secretary's Read File (2) AD/OMM
ES (2), AS/LM (2) Offshore Chron (1)/(2)
OCL, PMB OABS Chron
MMS Gen. File INTERMAR (5)
MMS Dir. Chron Sand & Gravel Subcomm

LMS:OABS:MS4110:THolman:jmc:X1211:6/9/93:oabs\subcmte\report.tmt
LMS:DIR:MS0100:BMiddleton:myd:x3500:6/22/93:DIR\BMID\M-Trans.sec

RESOLUTION

Whereas, the OCS Policy Committee on November 19, 1991 authorized the formation of a subcommittee charged with examining the development potential of OCS sand and gravel resources and the role of the Minerals Management Service; and

Whereas, the OCS is a vital national resource reserve containing vast quantities of sand and gravel potentially useful for purposes such as beach nourishment and as a supply source for construction aggregate; and

Whereas, several coastal States have expressed a growing interest in the use of offshore sand to curtail coastal erosion and forestall wetlands loss through replenishment of beaches and barrier islands; and

Whereas, there is a growing concern in the United States that onshore supply sources for sand and gravel important for construction aggregates are diminishing or otherwise inaccessible (especially in and near coastal metropolitan areas); and

Whereas, the Subcommittee of the OCS Policy Committee has prepared a report which discusses potential benefits that could be derived from development of OCS sand and gravel, and makes recommendations on the steps which should be taken to ensure that environmentally acceptable development of these resources is practicable if and when such development serves the public interest;

Now therefore be it resolved, that the Report of the Subcommittee on Sand and Gravel Resources of the OCS Policy Committee be approved and adopted by the Policy Committee; and

Further, be it resolved, that the Report of the Subcommittee be transmitted to the Secretary of the Department of the Interior with this resolution; and

Further, be it resolved, that the Policy Committee urges the Secretary to take early action to implement the recommendations of the Subcommittee Report.



THE SECRETARY OF THE INTERIOR
WASHINGTON

JUL 28 1993

Dr. Robert Jordan
Chairman, OCS Policy Committee
Delaware Geological Survey
University of Delaware, DGS Building
Newark, Delaware 19716

Dear Dr. Jordan:

I appreciated receiving the Outer Continental Shelf Policy Committee's resolution and report, "U.S. Outer Continental Shelf Sand and Gravel Resources: Programs, Issues and Recommendations."

The Committee has made some good points about the future need for sand and gravel resources and the wisdom of planning ahead. I agree that reliable scientific information and public input are vital to making sound resource management decisions. I also believe that communication with involved constituencies is essential to reaching consensus on issues.

I would like to express my sincere appreciation to the Committee for developing this report. We will be carefully reviewing the recommendations in developing a departmental position on offshore sand and gravel resources.

Sincerely,

Ethics Board clears Mizuno, Kokubun again

□ But members ask help with conflicts, ambiguities in law

By Crystal Kua
Tribune-Herald

The Board of Ethics wants "ambiguities" and "conflicts" it sees in the county ethics code and other sections of the County Charter to be cleared up by an independent panel appointed by the mayor.

Chairman David Ramos said the board is mainly seeking clarification in two areas — post-employment activities of former county employees and the legality of keeping confidential an advisory opinion rendered by the board.

The three-member board voted to ask the mayor to form a task force to clarify these issues.

The board made its decision while considering challenges to the post-employment activities of former County Council Chairman Russell Kokubun and former Managing Director Barry Mizuno.

Puna resident Bob Lerro contends that Kokubun violated the ethics code when he accepted a position with Hilo Main Street, an agency which goes before the Council for funding purposes.

Lerro also alleges that Kokubun violated the board's order by representing Hilo Main Street and addressing members of the County Council during a housing agency meeting less than a year after he left his county post.

Geothermal opponent Jim Albertini contends that former county Managing Director Barry Mizuno violated the ethics code when he took a job with Puna Geothermal Venture because Mizuno, as the county's second-in-command, was a party to

many government dealings with PGV.

Albertini specifically questions a letter Mizuno wrote in September on behalf of PGV to a state official on how much royalties should be given to the county and state from geothermal development. The letter was written less than a year after Mizuno left the county.

Yesterday, Albertini also brought up written testimony by the environmental group Life of the Land, which questioned Mizuno's actions in the determination of geothermal royalties.

The board yesterday, however, found that there was no conflict of interest in either case.

Board members for a few minutes went into a closed session for "attorney-client" discussion.

When they came out of the closed session, they voted to stand by their previous opinions on Mizuno and Kokubun.

That's when they also called for the mayor to appoint a task force to look into clarifying the ethics laws.

The post-employment law has been controversial because different people have had different interpretations of what it means.

Attorney Chris Yuen, who represents Kokubun, shed some light on the subject yesterday by giving the board some background on the intent of the law.

Yuen was a deputy corporation counsel and legal adviser to the Ethics Board at the time the county was formulating the law.

Yuen said that the county did not want to be as restrictive in its post-employment rules as the state.

If the county had adopted the same rules as the state, it would affect the former county employee's ability to find a job outside of government on this

ETHICS: Mizuno, Kokubun cleared again

From Page 1

island, Yuen said. "You are not going to be able to work on this island for a year," he said.

That's why the county law says that the employee cannot be involved in "specific matters" he was involved in while with the county.

In Kokubun's case, when he went before the housing agency last year, it was to consider a new application for funding and not one that he had considered previously while on the Council, Yuen said.

Ramos said the board also wants clarification on whether an advisory opinion can remain confidential.

In Mizuno's case, he requested a closed hearing in November 1992 for the board to consider his petition.

But the advisory opinion which gave Mizuno the green light to take the financial manager's job with PGV has not been made public because Mizuno has asked that it be kept confidential. Mizuno later revealed the board's decision to re-

porters, however, but not the written report.

The Big Island Press Club has challenged the board's decision not to release the document, saying that the opinion is official action taken by the board and therefore must be released to the public.

Ramos said the board disagrees with the Press Club's interpretation of the law. He also said that the board believes two sections of the County Charter — one dealing with open meetings and one dealing with the

board's rendering of advisory opinions — are conflicting.

Albertini has also asked for a copy of the advisory opinion from the Ethics Board.

Albertini has asked the state Office of Information Practices for a formal opinion on whether an advisory opinion by the Ethics Board is a public document, attorney Mimi Horiuchi said.

"The Ethics Board actions (yesterday) are a disgrace," Albertini said. "It says that government and the public trust are for sale."

HAWAII TRIBUNE-HERALD

1-13-94

Mizuno, Kokubun cleared of ethics allegations

By JASON ARMSTRONG
West Hawaii Today

HILO — A former county managing director and past council chairman Wednesday were again cleared of alleged ethical conflicts stemming from jobs they took soon after leaving public office.

Barry Mizuno, who held the county's second-highest post under then-Mayor Lorraine Inouye, and Russell Kokubun, past council chair, did not violate county conduct standards, the Board of Ethics unanimously ruled.

Mizuno became financial manager for Puna Geothermal Venture nine days after leaving office in December 1992. However, he earlier requested and received the Ethics Board's confidential

opinion authorizing the job transfer.

Members cited that earlier opinion as the basis for their 3-0 vote Wednesday against the complaint raised by anti-geothermal activist Jim Albertini.

"We already decided there was no conflict," Chairman David Ramos said following the board's brief closed-door session with county attorneys.

Members rejected Albertini's argument that Mizuno violated a provision that requires former government officials to wait a year before lobbying for specific proposals they considered while in office.

Kokubun, who resigned as council chair in June 1992 to mount an unsuccessful mayoral bid, was accused of vio-

lating the same provision because of testimony he presented last May before council members comprising the Housing Agency.

Kokubun discussed a proposed county funding request that included moines for the Hilo Main Street Program. Kokubun is project director of the non-profit program, which he previously approved financing for.

Puna resident Bob Lerro, an applicant for the job Kokubun received, filed a complaint alleging the former Puna representative's testimony posed a conflict of interest.

Lerro's initial complaint, filed last year after Kokubun took the Hilo Main

Street position, was unanimously denied by the Ethics Board in March 1993. The opinion did order Kokubun to wait the full year before lobbying the council, which Lerro said was not done.

However, board members disagreed and unanimously ruled that Kokubun followed the opinion despite his appearance before local lawmakers.

The determining factor, the three members said, was that Kokubun testified about a budget that was for a year different than those had voted on.

Kokubun said he "respects the process" that allows for complaints against public officials who accept private-sector jobs "mainly because I have nothing to hide."

Hawaii Tribune - Herald, Wednesday January 12, 1994

Geothermal plant online again

Puna Geothermal Venture announced yesterday afternoon it had completed repairs and had restarted its 25-megawatt power plant.

PGV shut down its generating facility Sunday night to replace a five-foot section of reinjection piping, the site of an H₂S leak Sunday morning. Another small leak during the shutdown Monday evening had several nearby residents complaining they smelled the gas again.

According to a PGV statement issued yesterday, the section of pipe that prompted the shutdown had been patched in November after a "pin-hole leak" developed, while permanent pipe was fabricated.

PGV shuts down plant to repair a leak in faulty pipe

□ H2S readings fall within limit; Helco expects no problem

By Jim Witty
Tribune-Herald

Puna Geothermal Venture was to shut down its 25-megawatt generating facility last night to replace a five-foot section of reinjection piping, the site of a hydrogen sulfide leak yesterday morning.

According to Big Island Civil Defense chief Harry Kim, the highest H2S level registered at a Lanipuna monitoring site yesterday was between 4 and 5 parts per billion (at 25 parts per billion on an hourly average, area residents must be notified, said Kim).

"Leak? What leak?" said PGV spokesman Steve Morris last night when asked about the incident. "It's hardly what I would call a leak. OK, I'll call it a leak ... That sounds high to me."

Morris said the H2S level ranged between 2 and 4 parts per billion during the leak (the same figures quoted by Deputy Health Department Director Bruce Anderson).

Kim said the highest reading recorded at the source was between 20 and 30 parts per billion.

In a release sent to the Tribune-Herald yesterday, Morris announced a "scheduled maintenance shutdown" for last night and mentioned nothing about a leak.

Morris explained later that a five-foot section of pipe had been temporarily patched while permanent replacement piping was being fabricated.

"We've had some minor problems with it," he said. "... This has been an ongoing thing. We scheduled (maintenance) a couple days ago ... It's being coordinated with Helco. They'll have

their units ready to go on when this goes off."

But Anderson said the decision to shut down the facility last night was made yesterday morning after the leaks had occurred.

"The Health Department was notified at 9:45 a.m. by PGV that they had small leaks in the condensate reinjection header," said Anderson. "After consultation with the Department of Health, they decided (yesterday) morning to shut down at 9 p.m."

Anderson said that PGV originally planned to replace the offending section of pipe in February during a regularly scheduled maintenance.

"This is an unacceptable situation we feel needs to be corrected," said Anderson. "It needs to be corrected immediately."

Anderson said he planned to check the computer printouts today to make sure there were no violations.

Area resident and outspoken geothermal critic Aurora Martinovich said she "got slapped in the face with PGV stench" shortly before 7 yesterday morning. She said she smelled it until about 8:30 a.m.

Morris estimated the repairs will take about two days.

Hawaii Electric Light Co. official Bill Stormont said the utility has sufficient generation reserves to take up the slack for the downed unit.

Meanwhile, Martinovich, who has long lobbied for a permanent H2S monitor near her Lanipuna Gardens home, claimed monitors were slow in arriving on the scene.

"My question is, why won't they give us a monitor?" Martinovich said.

Kim said he's in favor of "expanding the air monitoring program in Puna" and that Mayor Steve Yamashiro is exploring the issue.

Minor gas leaks still occurring

□ Kim critical of a lack of information provided residents

Another hydrogen sulfide leak from the Puna Geothermal facility had nearby residents complaining again last night about gas wafting their way.

County Geothermal Compliance Coordinator Jim Moulds said the alarm at the PGV plant sounded at 7:34 p.m., warning that an H₂S level of five parts per billion had been reached.

"At 8:02, they got zeroes (on the monitors) everywhere," said Moulds.

But Civil Defense chief Harry Kim said he received a half-dozen calls from Leilani Estates residents later last night complaining that they still smelled the gas.

"It's stinking over here again," reported area resident Aurora Martinovich.

PGV officials could not be reached for comment last night.

"A major problem here is a lack of communication and information from PGV to residents," said Kim.

He was on his way to the area last night to "see if I can detect the H₂S. The main thing is to let the residents know, to communicate with the residents."

Moulds said that workers were "opening up some piping down near the well site" when the leak occurred last night.

PGV shut down its 25-megawatt generating facility Sunday night to replace a five-foot section of reinjection piping, the site of an H₂S leak Sunday morning.

West Hawaii Today, Monday, January 10, 1994.

PGV shuts down for repairs

Puna Geothermal Venture said it planned to close down its 25 megawatt facility Sunday night for maintenance.

The shutdown was required to replace a section of reinjection piping, Steven Morris, PGV's vice president and general manager, said Sunday afternoon.

The company expected the work to take about two days, Morris said.

Kim said the highest reading recorded at the source Sunday was between 20 and 30 parts per billion.

According to Deputy Health Department Director Bruce Anderson, it was decided shortly after the leak Sunday morning to shut down the plant. He said that PGV originally planned to replace the offending section of pipe in February during a regularly scheduled maintenance.

In a release sent to the Tribune-Herald Sunday, PGV spokesman Steve Morris announced a "scheduled maintenance shutdown" for Sunday night. It mentioned nothing about a leak.

—By Jim Witty.

Geothermal power flows again on Big Isle

By Hugh Clark

Advertiser Big Island Bureau

HILO, Hawaii — Big Island electrical operations were back to normal yesterday after a three-day emergency shutdown of Puna Geothermal Venture's power plant at Pohoiki.

Hawaii Electric Light Co. officials said the geothermal project resumed supplying their utility system with power shortly after 4 p.m. Tuesday and reserve units that had been fired up to provide power in the interim were phased out.

By yesterday morning, Puna Geothermal's plant was supplying 27 megawatts of energy,

NEIGHBOR ISLE NEWS

two more than required under its contract. Meanwhile, engineers tested the stability of the production well and facilities following repairs.

That review was expected to last for about eight hours, said a HELCO spokesman.

The repairs involved replacing a 5-foot section of pipe that takes spent geothermal fluids from the turbines to the plant's reinjection well.

A pinhole leak was discovered in the pipe in November. Replacement was done this

week, after a permanent pipe was fabricated, according to Steve Morris, vice president of Puna Geothermal.

County and state regulators received complaints both Sunday and Monday from nearby residents concerned about odor from hydrogen sulfide gas from the pipe.

Although the smell was noticeable, PGV and state health officials both said the project did not exceed emission limits.

State officials said print-outs from automatic monitoring units would be reviewed to ensure no violations occurred.

3-8-94

Estate eyes new geo firm

Officials talk to a potential successor to True Geothermal

By Gordon Y.K. Pang
Tribune-Herald

A Campbell Estate official said yesterday that the trust is negotiating to have another geothermal developer take over for True-Mid Pacific Geothermal Venture in Wao Kele o Puna.

Russ Alger, director of Hawaii asset management for

Campbell, said the estate is at the bargaining table with "a developer with substantial experience in geothermal" to replace True, which announced over the weekend that it was pulling out of Hawaii because of "marketing problems."

Alger's comments came the same day anti-geothermal activists held press conferences on two islands proclaiming "victory for Hawaiians and native rainforests" over True's intentions.

Alger refused to say who Campbell is negotiating with. The estate approached the prospective developer about taking over and discussions have taken place for several months, he said. Others were also been interested in the project but negotiations are taking place only with the one, he said.

Any of the permits granted to True would transfer over to a new developer, he said. Asked if the two sides are close to an agreement, Alger replied: "I certainly hope so." One potential developer is Puna Geothermal Venture, which has been operating a 25-megawatt facility in Pohoiki

for the last 11 months. PGV has often discussed the possibility of increasing its output. PGV project manager Steve Morris did not return calls yesterday.

Palikapu Dedman, spokesman for the Pele Defense Fund, said he's skeptical of Alger's comments.

"Does (the prospective developer) know he gets 10 years of litigation and native Hawaiian rights issues that come with it?" he asked. "I don't know who these people are that Campbell is so excited about but they're

going to have a lot of problems."

If the resource at Wao Kele were as good as True proclaimed, it would not have walked away, Dedman said. "If it was such a plus thing, they would not have left. Nobody's going to gamble like that and nobody in their right mind is going to try and do that ..."

Dedman, along with the Big Island Rainforest Action Group and the Oahu Rainforest Action Group, called on state and fed-

See GEO,
Page 12

GEO: Campbell eyes a successor to True

From Page 1

eral leaders to give "regulatory oversight for ... clean-up and restoration activities."

The groups are calling for, among other things, complete well plugging and abandonment of True's exploratory wells and reforestation of the forest.

"Certainly, if there were no

more geothermal on the site, we would have to look at what conditions there are," Alger said. "But that's not the direction we're heading in."

The groups are also demanding the revocation of permits given to True for its project. Al-

ger said those permits go with the land, not the developer.

True has drilled exploratory wells on the site but has never gone into production. Opponents claimed the project was destroying a precious lowland area while supporters said it was en-

croaching on only a small portion of the forest. Activists also said the project infringed upon the gathering rights of native Hawaiians.

Some of the issues, as Dedman pointed out, are still in litigation.

[Handwritten notes and signatures]

True Geo abandons Wao Kele

□ Drilling company ends plan to tap rain forest energy source

By Gordon Y.K. Pang
Tribune-Herald

True/Mid-Pacific Geothermal Venture on Friday announced that it is pulling out of its beleaguered exploration project above Pahoa High School, citing what it described as "marketing problems."

So ends a 13-year odyssey that has brought Wyoming-based partners True Geothermal Energy Co. and Mid-Pacific Geothermal more grief than success.

On the flip side, Friday's announcement can be seen as a victory for the Pele Defense Fund and the Big Island Rainforest Action Group. In their efforts to derail the True project, the two groups helped organize a number of protests, including one in March 1990 during which

In September, Kawada denied rumors that the venture was pulling out despite acknowledging that five of eight employees on the site were being transferred to another project.

More importantly on Friday, there was no word on whether fee owner Campbell Estate intended to find another geothermal developer.

Gov. John Waihee said in a prepared release he hoped "another qualified company will be found to pick up where True/Mid Pacific is leaving off."

Jennifer Perry of the Kapoho Community Association, which has opposed geothermal development in lower Puna, said she's wary of the pullout and wondered aloud if Campbell is already lining up another geothermal company.

Kawada said he didn't know of Campbell's plans. He said True could either sell plant and equipment at the site to some other developer or simply "move everything back to Wao Kele."

Drilling firm abandons geo quest

producing 25 megawatts of power at its Poholiki site for nearly a year, the True site had no proven steam resource. As a result, the developer's project started out and ended as an exploratory one.

Drilling began in November 1989 and a steam resource was found a year later. The company said it wanted to drill another hole to see if it could find a more potent resource. But for reasons that have never been fully explained, True then agreed to contract its drill rig and about a dozen workers to PGV for its needs.

Kawada had said while True had been given grading and grubbing permits from state and county agencies for its own sec-

The court also ruled in that case, brought by Pele Defense Fund, that native Hawaiians had firm rights to enter undeveloped private property to hunt, gather and perform other religious and cultural practices.

Kawada, this past fall, said True was in the process of negotiating with PDF over what the ruling would mean at Wao Kele.

In the 1985 land swap, the state exchanged 27,800 acres of ceded lands in Wao Kele for 25,800 acres upslope in Kaunalea owned by Campbell.

Kawada said yesterday there were "no major impediments" from the outside had True made a decision to continue with the project.

There also continued to be problems between True and the state DLNR, which neither side ever was eager to discuss.

In September 1992, the Hawaii Supreme Court ruled that the 1985 land swap between the state and Campbell which led to True's development at Wao Kele was valid.

But even that bit of silver lining for True was clouded.

Geothermal opponents want land returned

Ask firm to restore area

By Hugh Clark

Advertiser Big Island Bureau

HILO, Hawaii — Anti-geothermal forces, exuberant after True Geothermal announced Friday that it's pulling out of Hawaii, yesterday demanded the reversal of the 1985 land swap that enabled its Puna operations.

The state exchanged its Wao Kele O Puna property, a natural area reserve, for Campbell Estate land in Kahauale'a, nearer Hawaii Volcanoes National Park, and True Geothermal began drilling on Campbell's new land.

Now that the Wyoming-based True Geothermal is calling it quits, Ralph "Palikapu" Dedman, head of the Pele Defense Fund, said he wants the land swap reversed.

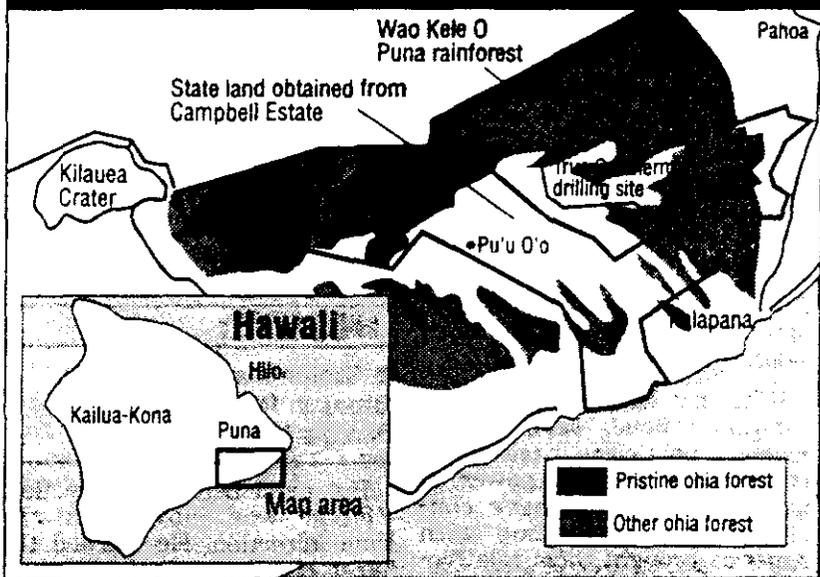
And Jim Albertini, chief spokesman for the Big Island Rain Forest Action group, said he wants True Geothermal forced to restore the Wao Kele forest area and close-in wells already drilled.

Both were exuberant at a sidewalk press conference at the Hawaii County Building yesterday, claiming victory in a fight that once led to protests with more than 1,000 people and 150 arrests for trespassing. It was also litigated all the way to the U.S. Supreme Court.

Dedman, a Hawaiian spokesman from Ka'u who is serving a felony sentence for drug growing, said in his role as a Pele Defense spokesman he wants the Hawaii Volcanoes National Park to bite the bullet by purchasing the 25,800 acres of former Campbell Estate land the state received in 1985 in exchange for the 27,786-acre lower parcel.

No thanks, replied acting na-

The 1985 geothermal land swap



SOURCE: KILAUEA, The Newest Land on Earth—Bishop Museum Press

Advertiser graphic



Albertini



Dedman

tional park superintendent Jim Martin. While the park service is neutral about geothermal development, he said, it believes the swap worked out by prior managers and environmental groups is in the best interest of the park.

Albertini, an anti-war activist who moved to the Big Island about 10 years ago, said his group is pleased, but wants the wells drilled by True in the early 1990s closed in properly — even if it requires returning drilling rigs to the site.

When Hank True announced late Friday that his firm is pulling out of Puna, its project had been at a standstill for nearly three years.

But Campbell Estate officials yesterday said they still believe the project is a good idea and they would oppose any attempt to reverse the land swap, which Dedman's group has failed to nullify in court.

Russ Alger, director of Hawaiian assets management for Campbell, said "we know there is a resource there," and he thinks the estate will try to realize benefits from it.

He said talks are under way

Jim Albertini, chief spokesman for the Big Island Rain Forest Action group, said he wants True Geothermal forced to restore the Wao Kele forest area and close-in wells already drilled.

with another tenant he declined to identify.

Allan Kawada, True's Hawaii project coordinator, said the company was losing money in Hawaii, and decided to concentrate on its oil and gas projects, Kawada said. He said the protesters were not a factor in that decision.

Kawada refused to say how much money had been lost, or how much the company had spent.

The anti-geothermal groups also oppose Puna Geothermal Venture, which continues to supply the Big Island with geothermal power from its site farther north, on former papaya land.

Drilling for geothermal energy should continue

ANTI-GEOTHERMAL activists are celebrating the decision by the True/Mid-Pacific joint venture to shut down its geothermal operations on the Big Island. They want the Campbell Estate, which owns the land, to abandon geothermal development, clean up the drilling site and give the land to native Hawaiians. The estate exchanged land with the state government a decade ago so the project could proceed. But the decision of the two Wyoming companies to end their project after 13 years of operations isn't the end of geothermal development here. The state administration isn't giving up — nor should it.

Geothermal energy is alive and well at another project, operated by Puna Geothermal Venture, which for nearly a year has been delivering 25 megawatts of power to Big Island residents. This is solid proof that geothermal is a practical source of energy for the Big Island, a workable alternative to imported oil. The state has been trying to reduce Hawaii's dependence on oil, which is by far the biggest source of electricity for the islands and makes the state vulnerable to oil embargoes and spills.



John Waihee

As for the True/Mid-Pacific project, the managing partner of True Geothermal said the company remained optimistic that "a geothermal steam resource in commercial quantity does exist." The Campbell Estate says it intends to continue the project and is talking

with potential replacement developers. An estate spokesman said the existing well will be used either by a replacement company, or by the state for monitoring. He said it was very unlikely that the well will be plugged and abandoned, as the anti-geothermal activists propose.

Governor Waihee, whose administration has maintained support for geothermal despite startup problems and determined opposition, said he still believes geothermal is an important source of energy for Hawaii. He expressed hope that another qualified company will be found to continue the project.

Geothermal is a proved energy source that is used in many other places to provide electricity. It has proved itself in Hawaii, too. The True/Mid-Pacific pullout is a setback for geothermal development, but it should not and apparently will not be the end of the story.

Geothermal energy

True pulls out of project

True Geothermal Energy's withdrawal from its Big Island project is another blow to once-ambitious plans to export geothermal power to Maui and Oahu. But it isn't necessarily a knockout punch.

Gov. John Waihee and landowner Campbell Estate say they hope another developer can be found to tap geothermal steam and liquids from the Wao Kele O Puna rainforest.

That remains to be seen.

The Pele Defense Fund, Big Island Rainforest Action Group and others who opposed the project have called on the state to dismantle the geothermal project, and undo the 1985 land swap that allowed it to begin.

Neither the state nor landowner Campbell Estate seems to be in a hurry to accede to such demands, and that's best.

When True signed on to the project in the early 1980s, America was just emerging from the second Arab oil embargo. Fear of oil dependency made geothermal look promising at the time.

Using super-hot subterranean steam to spin electricity-producing generators was supposed to be a clean, cheap way to meet Hawaii's energy needs. So grand was the plan that it called for sending electricity via undersea cables to Maui and Oahu.

But native Hawaiians said the geothermal development amounted to an assault on the volcano goddess Pele. Environmentalists charged that True's project would destroy Hawaii's last large lowland rainforest.

Since then, interest in alternative energy has waned and — witness the problems at the smaller Puna geothermal Venture project — geothermal energy has not been a painless panacea.

Still, geothermal is worth pursuing. There could be another oil crisis.

In the meantime, True's pullout offers an opportunity for both sides in the geothermal debate to try to iron out their differences with less urgency.

Anti-geothermal groups seek return of Puna land

By BEN DIPIETRO
Associated Press Writer

HONOLULU — A coalition of environmental groups want Campbell Estate to return ceded lands in the Wao Kele O Puna rain forest on the Big Island now that True/Mid Pacific Geothermal Venture is shutting operations.

The estate says it has no intention of reversing the swap, and will continue to develop geothermal in the area.

The Pele Defense Fund, Big Island Rainforest Action Group, the Sierra Club Legal Defense Fund and other groups say the 1985 land swap with the state that gave Campbell Estate 27,800 acres of forest land in exchange for 25,800 acres of estate land in Kahauale'a should be rescinded.

The land swap was sought specifically for geothermal exploration and development, and should be rescinded now that True Geothermal hasn't renewed its lease for the land and is closing its Hawaii operation, the groups said Monday.

"It was a swap for the purpose of geothermal development and that's not happening now," said Palikapu Dedman, president of the Pele Defense Fund. "The land should go back to ceded lands. It should be set aside for the native Hawaiians, for the general public, for the future. It's a good opportunity for the state to turn this around."

Campbell Estate is negotiating with another company to take over operations at the site, Russ Alger, the estate's director of asset management in Hawaii, said Monday. He wouldn't name the company, but said they had substantial experience in geothermal.

"The state's goal for geothermal is the same as it's always been," Alger said. "We're just going to continue with what had been the state's plan all along."

Gov. John Waihee said after True's announcement on Friday that he hoped another company could be found to continue development at the site.

Strong opposition will keep away other potential investors or partners, Dedman said.

"The governor should realize he's dealing with a smarter group of native Hawaiians, a smarter community, more organized people, national and international attention on this issue," Dedman said. "Whoever inherits this new geothermal project that he thinks is going to happen cannot carry all this baggage."

A lawsuit challenging the land swap on grounds it violates native Hawaiian land rights is set for September.

True/Mid-Pacific Geothermal closing operation

Local and wire sources

A joint venture that began developing geothermal energy in Hawaii 13 years ago is closing down its operation on the Big Island.

"Marketing problems" were cited as the reason when True/Mid-Pacific Geothermal Venture made the announcement Friday.

The departure does not affect rival Puna Geothermal Venture, which began supplying 25 megawatts of electricity to the island's power grid last year.

True/Mid-Pacific, a joint venture of True Geothermal Energy Co. and Mid-Pacific Geothermal Inc., both based in Casper, Wyo., began geothermal operations in Hawaii in 1981.

Drilling began in the Wao Kele O Puna rainforest in 1989, and a geother-

mal steam resource was discovered the following year.

"Although True Geothermal planned to drill a series of geothermal wells to develop a commercial steam resource in

"...after looking at the time and resources we have already invested and our commitments elsewhere, we believe that we can use our resources to better economic advantage in our other ventures."

— Hank True

the project area, marketing problems kept the project from making satisfactory progress," according to a joint statement issued by True and Mid-

Pacific officials.

"We are optimistic that a geothermal steam resource in commercial quantity does exist," said Hank True, managing partner of True Geothermal. "We had hoped to complete the exploration and development to prove that.

"However, after looking at the time and resources we have already invested and our commitments elsewhere, we believe that we can use our resources to better economic advantage in our other ventures," True said.

The exact timetable for closing down operations has yet to be decided, he said.

Gov. John Waihee said he regretted True/Mid-Pacific's decision, but understood the business considerations.

"I want to express our appreciation

for the many years the company devoted to proving that geothermal resources exist in the Puna District," Waihee said in a written statement. "Their efforts to date will make the task of the next developer easier."

Waihee said that despite True/Mid-Pacific's departure, he still believes geothermal energy is an important source of energy.

"The experience we have had with Puna Geothermal Venture, which has been supplying 25 megawatts of power to the people of the Big Island for the better part of a year now; demonstrates the enormous potential of this resource on the island," Waihee said. "I hope that another qualified company will be found to pick up where True/Mid-Pacific is leaving off."

Hope springs for geothermal's foes

□ They vow to continue fight after 2 companies drop project

By Devi Sen Laskar
Star-Bulletin

Since Friday, Palikapu Dedman has been hopeful that Hawaiian volcano goddess Pele will continue to dance on Kilauea's Middle East Rift without threat of her rain forest being drilled for alternative energy sources.

In a news conference yesterday, native Hawaiian and environmental groups hailed a decision Friday by two Wyoming companies to stop developing geothermal energy on the Big Island.

The company cited marketing problems.

Dedman, head of the Pele Defense Fund, said: "It's a great day for us, it's been a hard 10 years, but I think we've learned that native rights exist. . . . Spiritually, we did prevail."

The departure doesn't affect rival Puna Geothermal Venture in the lower rift area, which began supplying 25 megawatts of electricity to the island's power grid last year.

Now, geothermal opponents want the Campbell Estate to clean up and return the land to native Hawaiians on the Big Island. Campbell swapped upper rift land for a parcel of the state's middle rift land nearly a decade ago so Mid-Pacific Geothermal Inc. and True Geothermal Energy Co. could develop geothermal energy.

Landowner Campbell Estate does not plan to throw away its investment. "The state policy has been to seek alternatives to imported oil," said Russell Alger, director of Hawaii Asset Management Co., a division of Campbell Estate. "The experience has been positive enough to continue this venture. We're talking with potential replacement developers right now."

Drilling began in the Wao Kele O Puna rain forest in 1989, and a geothermal steam resource was discov-

Well enough

The rain forest support groups and their native Hawaiian supporters will submit a letter to Gov. John Waihee, the state Legislature and the U.S. Environmental Protection Agency asking for regulatory oversight to:

- **Plug:** and abandon the wells, including comprehensive groundwater analysis and site reclamation.
- **Reforest:** all denuded areas, especially with native plants, including access road and secondary field roads.
- **Revoke:** all state development permits and mining leases for Campbell Estate and True/Mid-Pacific.
- **Provide:** access to Wao Kele O Puna for environmental and cultural research of the federal Environmental Impact Statement process as well as traditional gathering by local Hawaiians.
- **Order:** Campbell Estate to stop clearing hapuu fern.
- **Return:** Wao Kele O Puna to protected status through state, federal or private means.
- **Abandon:** the 500 megawatt geothermal/cable project by the state Legislature and the federal government, and return state appropriations and repeal obsolete laws.

ered the following year.

Gov. John Waihee said earlier that he regretted True/Mid-Pacific's decision to close its Big Island operations after 13 years, but said that the company has paved the way for future development.

Annie Szvetcz, spokeswoman for the Oahu Rainfo-

rest Action Group, disagreed.

"The deepest pockets of Wyoming's biggest landowner and the best public relations support of the state cannot force steam out of dry hole," she said. "There is absolutely no evidence that the state has an energy policy that really kicks the oil addiction."

Transportation fuel needs "dictate our state's oil imports, and energy efficiency for all energy services is the first way to protect Hawaii's economy and environment," Szvetcz said.

True Geothermal "opened a wound in the volcanic rain forest to drill into Pele, we conducted rituals to heal that wound," Dedman said. "Today, we see that our diligence and persistence made an impact.

"We knew that there was nothing in our volcano for True. One of our biggest worries was that, as wildcat oil drillers, True might have dug up the whole forest looking for Pele's energy which is not for them to develop," Dedman said. "They dug in five different directions and found nothing."

He said geothermal drilling would have destroyed traditional hunting and gathering in the forest.

"That would have destroyed the traditional lifestyle of the Puna Hawaiians who go there to hunt pigs and gather native plants for traditional medicine and hula," said Dedman.

The Pele Defense Fund plans to meet with Waihee and Campbell Estate to work out a plan to give the Wao Kele O Puna rain forest the same status as Kahoolawe, now a cultural reserve held as a trust for eventual transfer to a sovereign Hawaiian nation.

"It's time to look ahead at the potential for restoration and protection for Wao Kele O Puna," said Jim Albertini of the Big Island Rainforest Action Group.

That restoration will have to wait until Campbell Estate has given up on geothermal power. The existing well will "either be used by a replacement company or by the state as a monitoring device for geothermal energy," Alger said. "The existing well has value, and it is very unlikely that the well will be plugged and abandoned."

Geothermal field use may resume

By JASON ARMSTRONG

West Hawaii Today

PUNA — True/Mid-Pacific Geothermal Venture has voluntarily abandoned its 13-year pursuit of energy development, yet geothermal exploration may resume in the Wao Kele O Puna rainforest.

The Wyoming-based drilling company last week announced it had terminated its 65-year lease with the Campbell Estate in order to consolidate its holdings on the Mainland.

"For us, it was an intentional business decision based on the economic factors and where we could make a greater profit," said Allan Kawada, True project coordinator. "Until recently, we wanted to continue."

While True workers will soon begin dismantling the drilling rigs — a process expected to last between six months and a year — for likely shipment back to the Mainland, existing wells will remain.

It would be a "mistake" for the Campbell Estate not to negotiate a new lease with another geothermal developer, Kawada said.

"It doesn't necessarily mean we're shutting it down," he said of the operation. "We feel that the work that we've done opens the door for another entity to come in."

Campbell is reportedly finalizing a lease agreement with another energy producer to resume geothermal

development on its 27,800-acre Wao Kele parcel.

The company's name and other details of the ongoing negotiations have not been released by estate officials. Russ Alger, director of Hawaii asset management for Campbell, did not return phone messages left Tuesday at his Honolulu office.

Geothermal opponents, meanwhile, have vowed to renew unsuccessful efforts to reverse a controversial 1985 land swap in which the state exchanged the 27,800 acres of ceded Wao Kele lands with Campbell for its 25,800-acre Kahaualea parcel.

"We will work with the (state) Board of Land and Natural Resources and Campbell Estate to return Wao Kele O Puna and Kahaualea to their original and protected status," said Palikapu Dedman, Pele Defense Fund president.

Kawada rejected opponents' claims that True abandoned its project because of community resentment and costly legal battles.

"If that were the case, we would have left years ago," he said, while adding the company is currently busier than it had been in five years.

True is a drilling company primarily involved with gas and oil exploration, Kawada said. Its development of geothermal energy is entirely based in Hawaii and the company will no longer have any local involvement once the pullout is complete, he added.

Environmental groups push for reversal of geothermal land swap

By BEN DIPIETRO
The Associated Press

HONOLULU — A coalition of environmental groups want Campbell Estate to return ceded lands in the Wao Kele O Puna rain forest on the Big Island now that True/Mid Pacific Geothermal Venture is shutting down its operations.

The estate says it has no intention of reversing the swap and will continue to develop geothermal in the area.

The Pele Defense Fund, Big Island Rainforest Action Group, the Sierra Club Legal Defense Fund and other groups say the 1985 land swap with the state that gave Campbell Estate 27,800 acres of forest land in exchange for 25,800 acres of estate land in Kahauale'a should be rescinded.

The land swap was sought specifically for geothermal exploration and development and should be rescinded now that True Geothermal hasn't renewed its lease for the land and is closing its Hawaii operation, the groups said Monday.

"It was a swap for the purpose of geothermal development, and that's not happening now," said Palikapu Dedman, president of the Pele Defense Fund. "The land should go back to ceded lands. It should be set aside for the Native Hawaiians, for the general public, for the future. It's a good opportunity for the state to turn this around."

Campbell Estate is negotiating with another company to take over operations at the site, said Russ Alger, the estate's director of asset management in Hawaii, on Monday. He wouldn't name the company, but said they had substantial experience in geothermal.

"The state's goal for geothermal is the same as it's always been," Alger said. "We're just going to continue with what had been the state's plan all along."

Gov. John Waihee said after True's announcement on Friday he hopes another company can be found to continue development at the site.

Strong opposition will keep away other potential investors or partners, Dedman said.

"The governor should realize he's dealing with a smarter group of Native Hawaiians, a smarter community, more organized people, national and international attention on this issue," Dedman said.

A lawsuit challenging the land swap on grounds it violates Native Hawaiian land rights is set for September.

The anti-geothermal groups want the forest lands returned to their natural status so that Native Hawaiians use them for traditional cultural and religious ceremonies, and to hunt pigs and gather native plants for traditional medicines and hula.

The forest area sits along the east rift zone of Kilauea Volcano, which has been in near-constant eruption since 1982.

"They dug in five different directions and found nothing. If we had not confronted them, the last remaining large expanse of lowland tropical rain forest in Hawaii would have been destroyed," Dedman said.

The groups say state permits require the company to do a complete reforestation and cleanup of debris and wastes, and complete plugging and abandonment of all wells. They want all permits revoked that allow for geothermal work in the forest.

Eventually, they want the area classified a cultural reserve, like the island of Kahoolawe, and to be held in trust for transfer to a sovereign Hawaiian nation entity once one is re-established.

"We're gonna meet with the governor and see what can be done with these lands. Campbell Estate should sit down with Native Hawaiians and start to talk about the best use of these lands," Dedman said.

Allan Kawada, True's Hawaii project coordinator, said the company is meeting with the state Department of Land and Natural Resources to discuss its obligations.

True is a subsidiary of Wyoming-based True Co., which is primarily concerned with oil and gas ventures. It was losing money in Hawaii and decided to concentrate on its oil and gas projects, Kawada said.

Kawada refused to say how much money had been lost, or how much the company had spent. The anti-geothermal coalition said shutdown of the project would save taxpayers billions of dollars.

"Mainly it was looking at profitability of the project and at our operations on Mainland. Not that geothermal can't be successful on Hawaii — it can be — it's just that the business choices that we have made take us back to our ventures in the Rocky Mountains," Kawada said.

"The opposition hasn't been a factor in our decision to leave. If opposition was successful, we would have left a long time ago. The opposition has been there from day one and we've been here for 13 years."



LOCAL WIRE

Birmingham, Ala., Water Works Board will spend \$70 million to buy the city's Industrial Water System, organized in 1958 as the city's principal water supplier.

The move reflects the growing capability of the Water Works Board, the IWS's biggest customer, to serve both domestic and industrial water needs in the metro area.

An Army Corps of Engineers official has recommended that Sheridan, Wyo., not be allowed to triple the size of its Twin Lakes Reservoir to increase water supplies. The recommendation from a district engineer to the agency's division commander, who will make the final call, would force the city to find another supply.

The district official claims the project would cause unacceptable wetlands and wildlife damage. He also identified less harmful options, including use of nearby agricultural reservoirs, which city officials claim are too expensive in light of an offer by the state to pay three-quarters of the Twin Lakes project cost.

Southwest Georgia water suppliers voiced concerns over future supplies during a recent workshop to discuss the status of a regional water resources study by Alabama, Georgia and Florida.

Most attendees at the Albany, Ga., workshop wanted to know whether water systems along the Flint River would get their fair share in light of demands by Florida oyster harvesters for sufficient freshwater flows to protect oyster beds.

The study evolved from a lawsuit Alabama filed in 1990 opposing an Army Corps of Engineers plan to channel more water from three federal reservoirs in north Georgia to metro Atlanta. Alabama demanded that the corps examine the effects of such a move on downstream water users.

Texas Water Development Board recently approved total of \$61.7 million in grants and loans to improve local water and sewer systems. Biggest winner: El Paso County Lower Valley Water District Authority, which got \$45.7 million loan/grant package to build wastewater collection systems and extend water lines to two cities.

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WATERWEEK

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January 31, 1994

ONE STEP AHEAD

SDWA rhetoric heated up last week as Rep. Henry Waxman, D-Calif., leveled a broadside in a *Washington Post* editorial at "extremists in the drinking water supply industry" who "stubbornly insist that the law's health standards ... should be rolled back."

He added: "Their rhetoric on unfunded mandates may sound populist, but their ideological intransigence ignores public safety and will only lead to legislative stalemate."

In blasting the industry-backed Slattery-Bliley bill, Waxman avoided taking on a broad coalition of state and local elected officials who back H.R.3392 and oppose unfunded mandates.

Counterpoint on unfunded mandates issue can be found in recent administration push to get federal agencies to comply with President Clinton's 1993 intergovernmental partnership order and comments by Sen. Bob Graham, D-Fla., in introducing a revised Clean Water Act bill.

In a Jan. 11 memo, Office of Management and Budget Director Leon Panetta spelled out guidance calling on agencies to estimate and justify costs of unfunded mandates to state and local governments. OMB will review all proposed regulatory actions that contain unfunded mandates before agencies can act, and agencies are to add such analysis to the rule's public docket and preamble.

Graham was singing the same tune last week when he offered his rewrite of the CWA and wetlands bills introduced last year by Sens. Max Baucus, D-Mont., and John Chafee, R-R.I. (see details in DC WATCH on page 4).

One of the bill's main objectives he noted was to "provide regulatory relief from mandates that cannot be met."

Water service now back on in wake of massive LA quake

Struggle is now over to restore water service to thousands of Southern California residents cut off during the Jan. 17 earthquake that shattered the extensive network of pipelines supplying drinking water to the San Fernando Valley.

All of the 660,000 Los Angeles Department of Water and Power customers now have water service, and the boil-water notice for remaining parts of the San Fernando Valley (where the earthquake was centered) was expected to be lifted this week. Water districts supplied by the Metropolitan Water District of Southern California, which suffered damage to its facilities in the valley, were also returned to service.

Initially, more than 100,000 people in the valley were without water. The number dropped substantially over the next few days, and complete service was restored by Jan. 27.

LADWP officials estimate damage to the water system at \$40 million. Federal aid is expected to pick up most of the tab. Long-term repairs in some areas could take

months to complete (see feature story page 3).

Lack of safe water forced a run on bottled water in the area. Unlimited potable water was distributed at schools and other sites in the valley during the days following the quake.

The quake initially cut off all outside sources of water and power to Los Angeles, shutting down pump stations and treatment facilities, including LADWP's ozonation plant in Sylmar, as well as secondary chlorination sites. Lack of adequate disinfection combined with dozens of main breaks and more than 1,000 reported leaks to prompt a boil-water notice for nearly the entire valley.

Effects of the problems were felt throughout the LADWP service area because water from the valley supplies all the city's major reservoirs. To offset the loss, LADWP relied on connections with MWD and existing supplies in the reservoirs.

Utility officials are now reviewing their response to the quake and developing improvements. Next week: Planning for the "Big One."

QUAKE NOTES

- In some cases, water was run backwards from the outer areas of the LADWP system to its core because of damage at the treatment plant in Sylmar.
- MWD's Jensen treatment plant, 5 miles from the quake's epicenter, was undergoing expansion during the time of the quake. The last time the plant was under construction: the Sylmar quake of 1971.
- Shockwaves from the quake scattered equipment like pickup sticks at the Jensen plant. The only survivors: personal computers, which are held to their tables by velcro straps.

WATERWEEK reader survey, see page 8

BULLETIN BOARD

Risk assessment is capturing congressional interest again, this time with Sen. Max Baucus, D-Mont., lauding a new National Academy of Sciences study that said EPA's method for determining risk was sound but could be improved. Baucus, who has called for radon risk assessment in his SDWA reauthorization proposal, said the NAS report "underscores the need to better inform the public" about environmental risks.

The NAS report, required under the Clean Air Act, recommended that EPA generally retain its approach to assessing health risks because of limitations on time, scientific knowledge and available data. But NAS also said EPA should provide the public with a better description of the uncertainties in its estimates of risk.

Congressional hearings on risk assessment before the House Government Operations Committee were set to begin this week. Committee Chair John Conyers, D-Mich., had called for risk hearings during last fall's debate on the EPA cabinet-elevation bill.

WATERWEEK will make corrections and clarifications to any of its news articles. If you find a factual error, phone the editor at 303-347-6263.

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□ D.C. water alert blamed on human, equipment flaws

Latest assessment by the Army Corps of Engineers blames the recent water alert in Washington, D.C., on human and equipment failures. Corps officials on Jan. 18 announced findings confirming earlier assertions that errors by treatment plant operators allowed a turbidity breakthrough that led to EPA issuing a three-day boil-water alert affecting about 1 million people.

Corps officials, aided by water officials from Newport News, Va., concluded that in addition to failure by operators to increase the alum dosage to control rising turbidity, supervisors also violated their own procedures by not telling EPA fast enough. (Plant officials met the EPA demand for notice of a turbidity violation by the end of the next business day but violated plant procedure requiring EPA notice by the beginning of the business day.)

Also to blame:

- The plant's capacity to add alum was hobbled by the fact that engineers several months earlier had installed a substitute alum diffuser instead of fixing a clogged diffuser.
- The plant did not have enough polymer on hand when operators needed to enhance filtration in the face of rising turbidity.
- Poor communication between workers and management.

□ ASDWA members get earful of SDWA politics

Attendees at last week's winter meeting of the Association of State Drinking Water Administrators got an earful of SDWA politics as Congress returned for its second session.

Biggest deal was a preview of House battle in the persons of Greg Wetstone, key aide to Rep. Henry Waxman, D-Calif., and Shaun McGrath, staff member of Rep. Jim Slattery, D-Kan., sponsor of a SDWA bill (H.R.3392) backed by a coalition of water suppliers and state and local officials that seeks changes to the standard-setting process.

Wetstone made it clear that Waxman remains adamantly opposed to the "very controversial" bill (see more in ONE STEP AHEAD on page 1) and urged ASDWA to back away from it or risk losing the widely supported SDWA fixes—including billions for a new loan fund to help smaller systems comply—outlined by the Clinton administration.

"I think if you continue to advocate these issues, there won't be legislation," Wetstone said, adding later that "the reality is there's no legislation if we don't mark up a bill."

For his part, McGrath challenged Waxman's characterization of H.R.3392 as an effort by water suppliers to save money at the expense of public health, arguing that the bill aims to avoid huge expenditures for standards that offer little or no health protection.

Noting wide support for the bill among state and local officials, McGrath said, "This is not just a drinking water industry issue." He said ASDWA should see Waxman's criticisms as a challenge "to get out there and define the problem."

Also heard from:

- EPA Water Office boss Robert Perciasepe, who gave a nod to affordability and risk assessment issues but urged all parties to "coalesce" behind a SDWA bill that can move quickly.
- Tom Sliter, high-ranking Senate Environment Committee staffer, who said the committee considers SDWA reauthorization a "repair" job to fix funding and "regulatory overkill" problems. He said the committee plans to mark up a SDWA bill in March.

FIELD NOTES

Perseverance paid off in Buckhorn, Ky., for two mothers who feared barium was poisoning the drinking water at their children's school.

Brenda Daniel and Milda Estep took to the telephone last fall to track down test results from the well serving 530 students at Buckhorn School in a remote, mountainous part of Eastern Kentucky.

Last April, a routine state test showed 3.4 mg/L of barium in the Buckhorn School's water (the federal standard is 2 mg/L). But nothing was done until Estep and Daniel started asking questions. As a result, state officials did more testing last November, found barium levels of about 2.7 mg/L and issued a warning against drinking or cooking with the water. The school has since started using bottled water.

State drinking water officials admit they dropped the ball on the case, which was lost in the shuffle of switching to a new computer system. But the parents' ire was raised more by the lack of response from school officials. Even after the problem was confirmed by new tests, the school superintendent said, "Barium has been in that water since the beginning of time. If we thought our youngsters were in any danger, then they would not have been drinking that water."

Turns out the barium problem is nothing new. Several years ago the school district made efforts to remove it using a water softener, but ongoing maintenance problems led to sporadic protection.

The parents' crusade, which made the state's major newspapers, garnered the attention of the governor, who visited the area and vowed to make funds available to help resolve the problem. The result is that construction begins this spring on a new water pipe from the city of Hazard to serve the entire community of Buckhorn.

The cost, estimated at \$350,000, will be shared by the state, the Army Corps of Engineers, the Perry school system and other local agencies. The bulk of the money—\$250,000—will come from the state's share of federal grant money for infrastructure improvements.

EPA pressures Colorado to sue over city's filtration violation

Pressure from EPA has prompted Colorado to file a lawsuit against the city of Colorado Springs for failure to comply with the filtration requirements of the surface water treatment rule. Penalties for the violations could run as high as \$100,000.

The suit, filed Jan. 14, claims Colorado Springs Utilities failed to provide filtered water last September to about 14,000 people in the southwest portion of the city. The city supplies the rest of its 300,000 customers with filtered water year-round, but those living in the South Suburban and Bear Creek areas must rely on local, unfiltered supplies during high demand periods from May to October.

City and state officials are now negotiating a consent order that will require the city to build a pipeline to provide filtered water to the South Suburban area by 1996. The Bear Creek area will be served year-round by city water once a new pump station, now under construction, is finished. The city will also be required to reduce demand from the rest of its system so it can continue to serve South Suburban during the peak-demand months.

State officials say they were reluctant to pursue legal action against Colorado Springs because the city was working on options to provide filtered water and there was no evidence of health problems. The drinking water in both areas goes through sedimentation and chlorination, but not filtration.

The city's plans to build a filter plant in the southwest area were scrapped last year after residents in the area vehemently opposed its

location. The city then switched to its \$30-million pipeline plan, which will pump 12 mgd of raw water from the area to the city's existing treatment plant and return 24 mgd of treated water by November 1996.

Although city and state officials felt their agreement was solid, EPA did not. The agency has made unfiltered water systems serving more than 10,000 people a national enforcement priority, and EPA officials continue to push for the strength of court orders rather than administrative actions. After last year's filtration deadline of June 30 passed, EPA Re-

gion 8 issued a notice of violation to the state that the agency would take enforcement action if the state did not. EPA threatened to levy fines of \$25,000 per day for ongoing violations in both areas if the state did not take the city to court.

Another Western city, Twin Falls, Idaho, is taking a different path to solve its filtration problems: switching to groundwater.

The city, which now taps a local creek for its water, has been under a compliance order with EPA Region 10 since last October. It has until June 1 to have its new system operational. City officials say meeting that deadline could be hard because of delays in attaining necessary permits to install a new collection system in a neighboring county.

Twin Falls plans to spend \$2.5-\$3 million for four capped diversion structures that will allow the city to tap the local aquifer. The water will then be piped across the Snake River to a new treatment plant where it will be chlorinated before being pumped up the canyon wall and into the city's storage system.

- Colorado has filed a lawsuit against the city of Colorado Springs claiming it violated filtration requirements for the surface water treatment rule.
- EPA Region 8 threatened to take enforcement action if the state did not.
- Negotiations for a court-approved consent order are ongoing.

STATE BY STATE

Kansas. Lawmakers in the House have passed two bills seen as significant steps toward preserving the state's water supply.

One would allow the state to use bonds or idle funds to buy water from federal reservoirs. The second bill establishes a loan fund—but no appropriation—for water supply system improvements.

Montana. More than 400 written comments have poured in on proposed rules to protect the state's groundwater and surface water, and some will require additional public comment. State water quality officials are now reviewing the comments on proposed changes to the state's nondegradation policy, designed to protect Montana's purest waters from pollution, and should make recommendations in March.

Washington. Environmentalists and municipalities are worried about a state move to relax rules to protect water supplies and allow permitting of a new copper mine.

The state Department of Environmental Quality has proposed amending 1977 rules that bar new pollution discharges into three rivers that provide drinking water for Eugene, Springfield, Salem and others. Since 1977, DEQ has granted or renewed at least 70 discharge permits on the rivers. DEQ is now seeking a compromise.

Florida. The Audubon Society is calling for a network of reservoirs to expand South Florida's water supply as part of a plan to clean up the Everglades. The group is also calling for a moratorium on development in those regions in western Dade, Broward and Palm Beach counties where marshes could be linked.

North Dakota. A plan to bring Missouri River water to southwestern North Dakota could set an example for other rural water projects nationwide. The Southwest Water Pipeline project is unique because it uses money from the federal Soil Conservation Service's Small Watershed Program, the first time such a funding source has been tapped for rural water supplies.

□ CAP fuels water-market transfers in Arizona

The water-transfer market continues to heat up for the Central Arizona Project on both the agricultural and municipal sides.

Officials from the Central Arizona Water Conservation District, the CAP's operator, have announced that six irrigation districts served by CAP have opted out of their take-or-pay contracts and will instead buy water on an as-needed basis. The deal keeps the irrigation districts solvent and helps reduce the CAWCD's obligation for CAP repayment to the federal government.

In other CAP news, the town of Payson has sold its allocation of CAP water to a Scottsdale developer for \$5 million. The city will use all but \$325,000 of the \$5 million paid by Southwest Community Resources Inc. to develop future water resources. The \$325,000 will go into an environmental trust fund controlled by Payson.

□ Water search continues in southeast Virginia

The search for 30 mgd of new water for Virginia's Lower Peninsula continues in the wake of the recent federal appeals court ruling upholding EPA's veto of James City County's Ware Creek project.

While JCC officials await a response (due within weeks) to their petition for the full appellate court to review the Ware Creek decision, the region's other water suppliers this week will begin reviewing a draft environmental impact statement on their preferred regional reservoir in King William County.

Led by Newport News, the region's biggest water system, the effort by the Regional Raw Water Study Group to build a 28-mgd reservoir on Cohoke Creek will see the Army Corps of Engineers issue a DEIS Feb. 4 and begin public hearings March 8. The RRWSG, which has spent \$5 million so far to develop a regional supply while JCC pursued its 9-mgd Ware Creek project, is optimistic it will get a permit by late 1995 to build the project. Also in the works: a 6-mgd project to treat brackish groundwater.

The RRWSG has asked JCC officials to rejoin its effort to build the King William project, which would store water pumped from the Mattaponi River. JCC was a member of the RRWSG until the group threw its support behind the King William project.

□ Salmonella problems studied in Missouri, Wyoming

State and federal officials are investigating *Salmonella* occurrence in water systems in Missouri and Wyoming.

In Missouri, state health and natural resources officials continue their investigation of a late-1993 outbreak of salmonellosis linked to the unchlorinated water supply in the small community of Gideon.

State investigators, aided by EPA experts and town officials, suspect pigeons roosting on poorly maintained water towers as the likely cause of contamination but continue to search the town for possible distribution system or backflow problems. City, meanwhile, has drained suspect private water tower, cleaned and disinfected its two tanks and begun chlorinating its water.

Situation in Wyoming involves long-troubled mobile home park near Cheyenne. Separate enforcement actions by state Department of Environmental Quality and by EPA Region 8 stem from December discovery of *Salmonella* contamination of a well and that most homes are served by well water and drain their raw sewage to open basins.

DEQ long ago ordered the park to hook up to city water and sewer lines and has Feb. 3 court date to force compliance.

RULES & REGS

Big push is coming from EPA and AWWA to help water suppliers comply with the demands of the information collection rule, by far the biggest nationwide effort of its kind ever undertaken.

As suppliers await ICR proposal in the *Federal Register* (now due in early February), AWWA and EPA officials met last week to coordinate plans to make sure affected suppliers are trained and ready to collect and report reams of water quantity, quality and treatment data directly to EPA by the time the rule kicks in later this year.

Leading EPA's implementation effort is Al Stevens of the Technical Support Division at EPA's research center in Cincinnati. Focus there is on firming up monitoring methods and a laboratory-approval program and on developing a computerized data-collection system specifically for ICR use.

Word is that progress remains slow on these troublesome fronts, especially developing the critical data system. As of last week, TSD had yet to send the job off to the designated contractor.

Spearheading AWWA's effort will be Mike McGuire, who will direct a \$300,000 contract funded by AWWA and the Water Industry Technical Action Fund to field test the data system and put together a team of experts to help utilities use it. Also look for education and training effort by AWWA to get the word out on implementing the ICR.

EPA wants nominations to fill five vacant seats on the National Drinking Water Advisory Council. Nominations must be in by Feb. 10 to Charlene Shaw, USEPA Office of Ground Water and Drinking Water (4601), 401 M St. SW, Washington, DC 20460.

Also at EPA: EPA boss Carol Browner has formed a new Science Policy Council to ID and help solve the agency's highest-priority science issues. Chair is Deputy Administrator Robert Sussman, and members include reps from various EPA programs, including R&D, water and indoor air. Browner's Science Advisor William Raub will chair a steering committee of career scientists.

Los Angeles quake crushes city's water distribution system

"We didn't have a water supply problem, it was a water distribution problem."

That's how one Los Angeles water utility official sized up the massive struggle to restore water service to hundreds of thousands of Southern Californians rattled by the Jan. 17 earthquake.

Damage to the water distribution system run by the Los Angeles Department of Water and Power was staggering in the San Fernando Valley, where the quake was centered. Aqueducts providing raw

water cracked, treatment plants shut down, storage tanks ruptured and water mains snapped.

While initial raw-water supplies were interrupted on the west side, both the LADWP and the Metropolitan Water District of Southern California were able

to provide enough water to their plants within two days. The problem was there was no place for treated water to go.

Damage report:

■ LADWP's First and Second Los Angeles Aqueducts, which carry Owens Valley water to the city, were damaged on the north side of the valley. A 10-ft diameter concrete pipe in the First Aqueduct was still out of commission last week. The Second Aqueduct was operational by Jan. 25.

■ MWD's California Aqueduct, which brings State Water Project water to its Jensen Filtration Plant in Granada Hills, was damaged at the inlet to the plant, forcing MWD officials to rely solely on stored water to supply their emergency connection with Los Angeles.

■ Power outages shut down all

operations at LADWP pumping stations serving higher elevations of the valley and the Santa Monica Mountains, but normal operations to all stations were restored by Jan. 20. Eight of the 20 storage tanks linked to the pumping stations sustained damage.

■ LADWP's biggest problems in restoring service were caused by major ruptures in the system's main trunklines. Three of four trunks in the valley running east-west suffered major damage, and a all trunks in the area sustained some damage.

Delays in repairing the Granada Trunkline meant that about 2,000 of the LADWP's 660,000 customers were still without water service late last week.

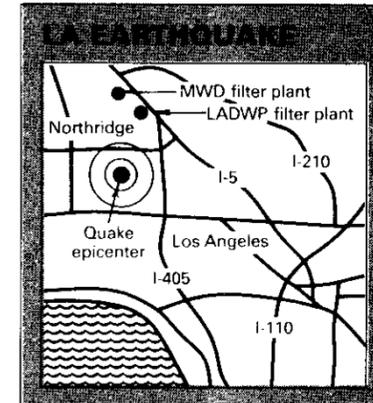
■ Crews from LADWP were supplemented by workers from eight other water agencies in the

area, all working around the clock to repair the hundreds of leaks in smaller distribution lines. As of last week, crews had repaired nearly 800 leaks. Officials expected to deal with more than a thousand leaks once lines were re-pressurized.

■ LADWP's 600-mgd LA Aqueduct Filtration Plant sustained minor damage and was shut down for a time. It was operating at half capacity within two days of the quake.

■ Chlorination stations suffered minor damage, but the power outage and resulting equipment malfunctions led to a boil-water order for the western part of the city. LADWP continued to run a chlorine residual of about double its typical level of 1.5 mg/L.

■ MWD's Jensen plant was down for three days following the quake until an intake was repaired.





D.C. WATCH

Clinton pinpointed SDWA reauthorization among his top environmental priorities during his State of the Union speech last week, but there's still a good chance the SDWA will slip this year as the Clean Water Act gains momentum and key players maneuver through health care minefield during an election year.

Senate, in fact, is ready to move quickly on its CWA bill, with Senate Environment Committee Chair Max Baucus, D-Mont., last week calling it his top priority and predicting committee markup by late February.

CWA bill introduced last year by Baucus and Sen. John Chafee, R-R.I., has been reshaped by Sen. Bob Graham, D-Fla., who held months of CWA hearings as chair of the Subcommittee on Clean Water, Fisheries and Wildlife. His substitute bill (S.1114) also includes a revised, and controversial, version of the 1993 Baucus-Chafee wetlands bill (S.1304).

Although Baucus praised Graham's rewrite as a "first step" toward a consensus measure, both Baucus and Chafee reportedly are concerned about wetlands protection provisions making it easier for states to take control of the permit program (and harder for EPA to veto state decisions) and prohibiting feds from "taking" private property sans compensation.

CWA also has budget leverage over SDWA because its state revolving loan program already exists, a critical factor as appropriators further tighten federal belt and avoid new spending programs, especially unauthorized spending in this election year.

Although broad support exists in Congress and the White House for a SDWA loan fund, budget factors alone could sidetrack SDWA this year. Also to consider: Aggressive CWA backers seek a big hike in SRF funds for FY95 (Graham bill authorizes \$2.5 billion/year with deficit-reduction trigger for more), and the EPA budget must compete with rapidly rising medical costs of the Veterans Administration.

Look for additional clues in Clinton's 1995 budget, due Feb. 7, and in the progress of bill elevating EPA to cabinet status.

Illinois survey chief won't face criminal charges

No criminal charges will be filed against Illinois Water Survey Chief John O'Connor, who was suspended last May after state officials began investigating allegations of sexual harassment, discrimination and misuse of state property.

Prosecutors in Champaign County, where survey offices are located, recently said they failed to find enough evidence in an investigation by the Illinois State Police to bring charges against O'Connor.

The action comes on the heels of a decision late last year by the state Central Management Services department to dismiss sexual harassment allegations against O'Connor, who has been on paid leave during the investigation. Report from CMS on its investigation of other charges against O'Connor will go to the state Board of Natural Resources and Conservation, which oversees the water survey, for final action.

O'Connor, who has claimed all along the charges against him were politically motivated and groundless, has filed a federal lawsuit demanding his job back and unspecified damages.

Denver settles reverse-discrimination suit

Denver Water will pay more than \$350,000 to settle a reverse-sexual discrimination case filed by an employee who claimed he was denied a position because he was male.

Denver Water directors approved the settlement late last year, ending a five-year battle that resulted in a \$481,000 judgment against Denver Water in 1993.

The award came after a jury found that Ken Notari, an assistant valve operator for Denver Water, was denied equal protection under the law after he failed to win a safety position that instead went to a woman.

The final settlement gives Notari \$245,177 (half the jury award plus interest), \$11,000 in back pay and a job as a safety and security coordinator effective Feb. 1. Denver Water also will pay \$105,000 in attorney fees.

Business leaders recommend streamlined MWD

Final recommendations from an independent task force urge the Metropolitan Water District of Southern California to streamline its bureaucracy and improve relations with competing water users as the state economy and water resources continue to shrink.

MWD directors six months ago created the task force of 27 business leaders to examine MWD operations and suggest ways the giant water supplier can improve its business practices and cope with the region's dwindling supply of water.

At the top of the list of 99 recommendations was a call for MWD to follow the private sector and increase productivity and cut costs in the face of protracted economic recession.

And in a related matter, a new report on Bay-area water supplies found that even with aggressive conservation, demand in San Francisco, Santa Clara and Solano counties will outstrip supply by 2010.

Report from the Committee for Water Policy Consensus predicts biggest problems in rapidly growing Solano County, where water shortages of at least 15 percent could occur even under wet weather conditions.



UPDATE

A decision will likely be made by summer whether Las Vegas Valley Water District may pump an average of 113,000 acre-ft/year from the Virgin River.

State Engineer Mike Turnipseed will decide after reviewing public comments from recent hearings on the district's proposal. Turnipseed recently told new Advisory Board on Natural Resources that 21 protesters offered "low pressure" opposition. Yet to come: hearings on another district plan to pump an average of 180,000 acre-ft/year from several rural river basins.

Portland Water Bureau is a beneficiary of a new pact between EPA and Boeing Co. calling for Boeing to hasten cleanup of contamination threatening PWB's backup water supply.

Under the consent order, Boeing agreed to move faster toward removing chemical contaminants from groundwater moving from a Boeing plant toward a PWB wellfield along the Columbia River.

Washington state water suppliers are among major water users who would face much higher fees to obtain new water rights under a plan recently presented to state lawmakers.

Plan from a task force set up last year to improve the permit process calls for dramatic change to 1917 fee structure that kept application costs at about 2 percent the cost of processing them. Result is a three-year backlog of applications.

New fees would be tied to volume of water used and complexity of granting a permit. Larger users such as cities and irrigators could face 100-fold or greater increases in permit costs.

Denver Water would have to get all water-rate hikes approved by the Colorado Public Utilities Commission under a bill sponsored by Denver's suburban customers.

Proponents claim the bill will give suburbanites, who buy almost half of Denver's water supply, more control over their rates, which are higher than those charged to Denver residents. Legislation follows decision by a Denver district judge last year upholding Denver's rate structure in the face of a challenge by suburban customers.

Virginia Beach looks to cut deeper into water consumption

Virginia's most populous city is considering tougher water-saving measures for residents caught in a three-way squeeze of booming population, dry weather and continued delays in the city's search for new supplies.

Virginia Beach water officials will ask City Council Feb. 8 to approve additional conservation measures, including replacing the current flat-rate structure with an inverted-block rate and stricter enforcement of mandatory restrictions that have been in effect since 1992.

Scarce regional water supplies prompted the city to begin searching for new sources in the 1970s. In the early 1980s, the city settled on the Gaston Lake project, a 76-mile pipeline to carry up to 60 mgd and provide relief by 1996.

In the meantime the city implemented several basic conservation measures—low-flow plumbing, leak detection, public education—designed to hold off a supply crisis. Although the program held consumption down, the city's fast growth (up 40 percent since 1983 to 410,000) kept overall demand on the rise until 1992, when the city began mandatory water restrictions.

As a result, per capita water consumption dropped 10 percent—from 87 to 78 gpd—but overall consumption has stayed at just over 30 mgd.

That's still bad financial news for the city because it buys its water from neighboring Norfolk under a contract that carries a heavy surcharge for use beyond an annual average of 30 mgd. If residents continue to use as much water as they have in the past five months, Virginia Beach could owe Norfolk a penalty of about \$1.1 million by July.

Even if the city meets its monthly targets for the remainder of its fiscal year, it would have an average annual consumption of 30.9 mgd and owe Norfolk an extra \$526,000.

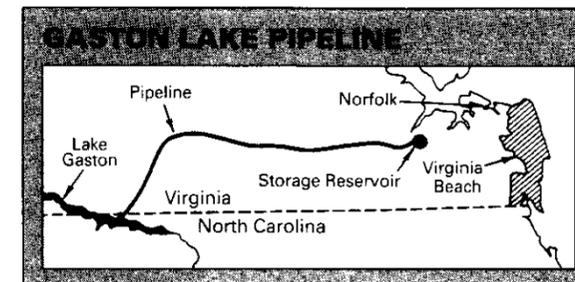
In addition to rate changes, the city is considering hiring water cops to beef up enforcement and impose

surcharges if rationing is required.

Meanwhile, the Gaston pipeline continues to face legal challenges from North Carolina that could delay it for years. The pipeline would tap Lake Gaston, which sits on the Virginia-North Carolina border, at a cost of about \$142 million. City officials say it will take two to three years to complete.

Although the Army Corps of Engineers issued a permit for the project in 1984, the pipeline has been delayed by a series of lawsuits filed by North Carolina and others over adverse environmental impacts. The Tar Heel state claims the project would hurt the state's striped bass population, reduce water available to farmers, diminish hydroelectric capacity and harm wetlands. A series of rulings by district and appeals courts, ending in 1992, upheld the Corps' findings of no significant impacts.

North Carolina continues its opposition to the project under the auspices of the Coastal Zone Management Act. The state is seeking a CZMA review of the project both from the Federal Regulatory Energy Commission and the National Oceanographic and Atmospheric Administration.



Want More Information?

This brochure was produced by the

Earth Science Laboratory
University of Utah Research Institute
391 Chipeta Way, Suite C
Salt Lake City, Utah 84108
(801) 524-3422

UURI would be happy to furnish additional information on geothermal energy or answer questions. Other sources of information on geothermal energy are:

Geothermal Resources Council
2001 Second Street #5
Davis, CA 95616
(916) 758-2360

Earth Energy Association
777 North Capitol Street, Suite 805
Washington, D.C. 20002-4226
(202) 289-0868

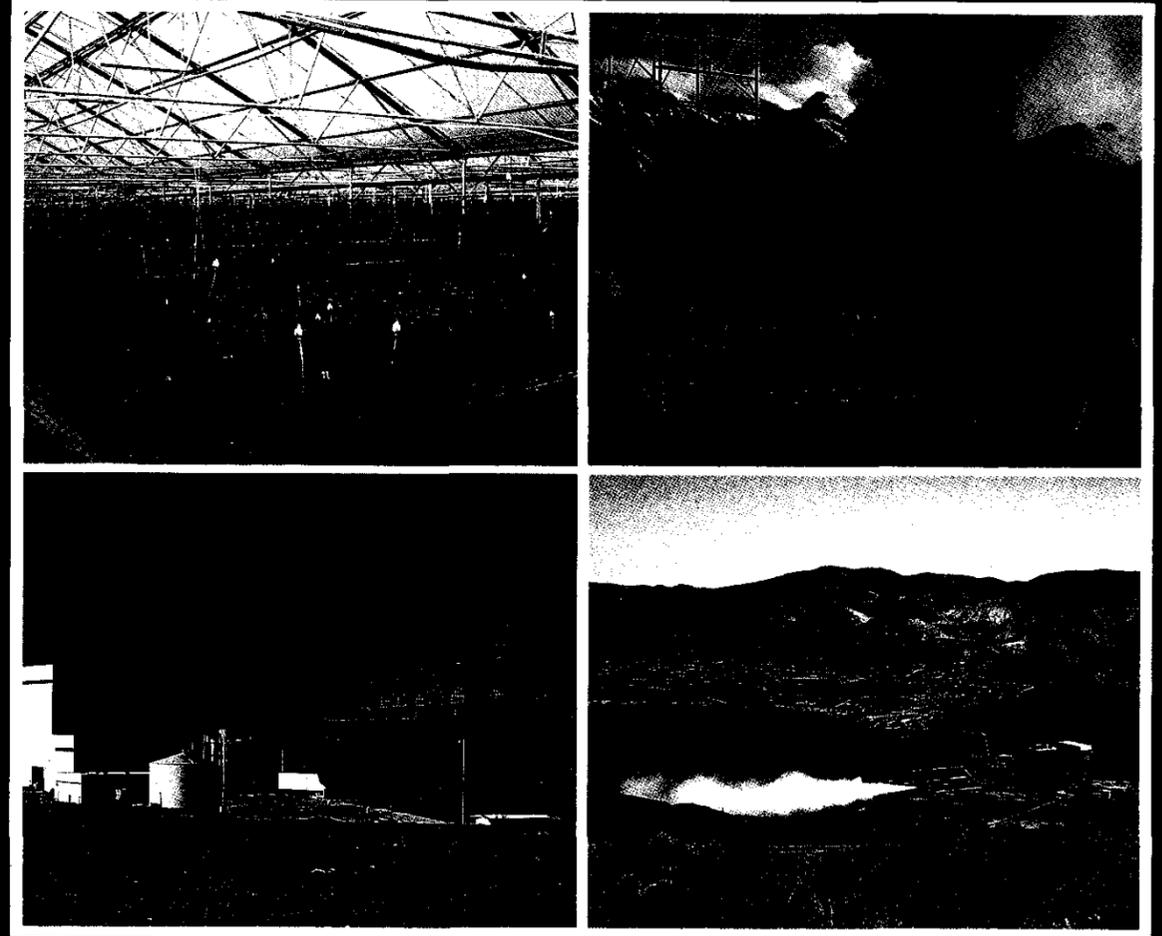
Geothermal Division
U.S. Department of Energy
1000 Independence Ave. S.W.
Washington, DC 20585
(202) 586-5340

Geothermal Education Office
664 Hilary Drive
Tiburon, CA 94920
(800) 866-4GEO

International Ground-Source Heat
Pump Association
101 Industrial Building
Stillwater, OK 74078-0532
(405) 744-5175

Geo-Heat Center
Oregon Institute of Technology
3201 Campus Drive
Klamath Falls, OR 97601-8801
(503) 885-1750

Geothermal Energy



Geothermal energy is a domestic energy resource with cost, reliability and environmental advantages over other energy sources. Geothermal energy contributes both to energy supply, with electrical power generation and direct-heat uses, and to reduced energy demand, with savings in electricity and natural gas through

Geothermal energy is renewable heat energy from deep in the earth.

use of geothermal heat pumps to heat and cool buildings.

Only a small fraction of our geothermal reserves are in use today. Much more could be brought on line in the short term with appropriate incentives.

What is Geothermal Energy?

Geothermal energy is renewable heat energy from deep in the earth. Heat is brought to the near-surface by deep circulation of ground water and by intrusion, into the earth's crust, of molten magma originating from great depth. The various thermal regimes in the earth give rise to a classification of geothermal resource types.

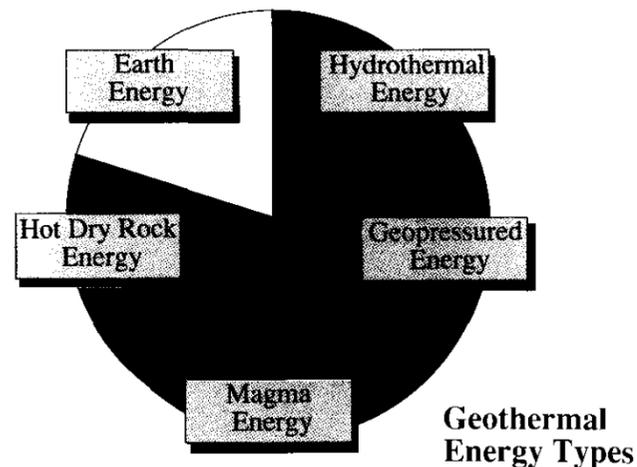
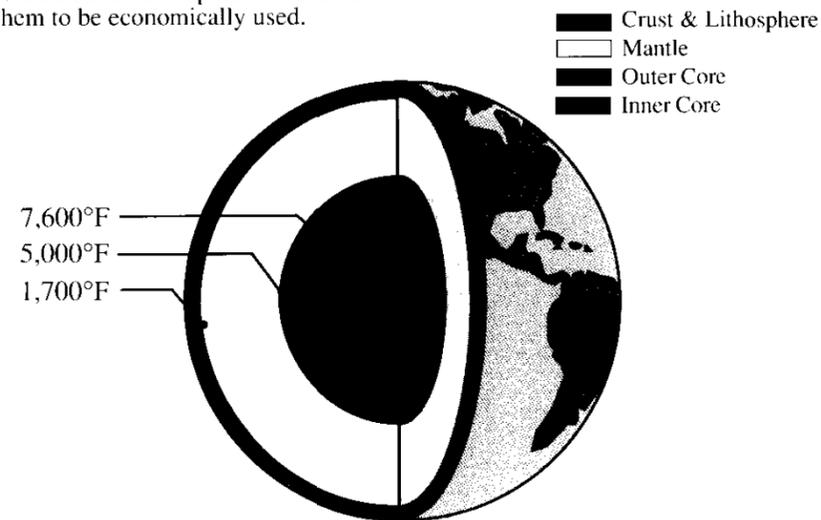
Geopressured, hot dry rock and magma energy all require further research and development to enable them to be economically used.

- *Hydrothermal energy, geopressured energy, and magma energy* all result from the concentration of earth's heat in discrete regions of the subsurface by geologic processes.

- *Earth energy* is thermal energy at the normal temperature of the shallow ground, without enhancement due to geologic processes. It is found everywhere across the United States and the world and can be tapped by geothermal heat pumps.

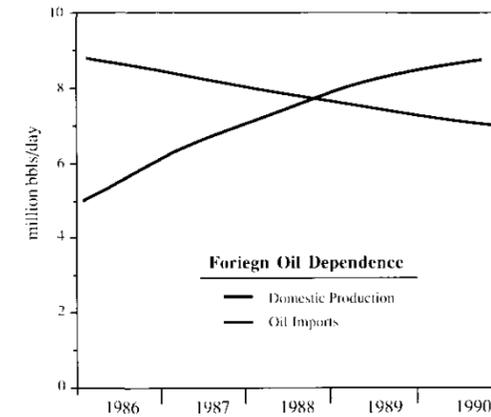
- *Hot dry rock energy* occurs at depths of 5 to 10 miles beneath the surface everywhere. It also occurs at shallower depths in areas of thermal enhancement due to geologic processes.

Naturally occurring hot water and steam form the hydrothermal energy resource. Its use is economic today at a number of high-grade sites. A modest industry generates electrical power and supplies heat for direct uses from hydrothermal resources. Many more hydrothermal resources could be used if better technology were available and if their development were actively promoted by the government and utilities.



Geothermal Energy – Enhanced Energy Security and Reduced Trade Deficit

In the U.S., we experienced a rapid increase in oil imports during the last half of the 1980s, with a corresponding drop in domestic production. Approximately half of our trade deficit results from oil imports, which now amount to nearly half of the oil we use. We are becoming more and more dependent on foreign energy supplies, especially for transportation fuels. If this high level of imports were cut, we could keep more cash at home and create thousands of jobs in our society.



Geothermal Energy – The Low-Cost Alternative

The real cost of energy in the U.S. is not at all reflected in what we pay at the gas pump or on our utility bills. Some of the true costs of energy, using today's fuel mix, are hidden. If the costs of corrosion damage, health impacts, crop losses, radioactive waste, military expenditures to protect foreign oil sources, and direct economic subsidies were totalled and

added to the energy bills we see, the price would astound us.

The answer to decreasing the true cost of energy is not to hide part of the cost but to alter our energy-use patterns and fuel sources to bring in much more alternative energy and conservation. Accelerated development of sustainable resources and

conservation is the lowest-cost option in some cases, even with the hidden subsidies for the conventional energies. If hidden subsidies were made visible in energy pricing, geothermal energy would be seen for what it really is -- the energy bargain of the century.

Conclusions

Geothermal energy and the other sustainable energies have compelling advantages compared to conventional energy sources. These advantages include (1) much less environmental damage, (2) reduced total energy demand with geothermal heat pumps, and (3) increased energy security for our country with less requirement for expensive imported energy. The actual cost of geothermal energy today is much less than that of our present energy sources, if hidden costs are included. We should all support use of clean geothermal energy and other domestic, alternative energies.

Geothermal Energy Advantages

- Less environmental impact
- Reduced energy demand
- Increased energy security
- Favorable net cost

Cover Photos

Upper left: Premium quality roses are grown in greenhouses heated with geothermal fluids at Utah Roses.

Lower left: Utah Power & Light's Blundell geothermal power plant, Roosevelt Hot Springs, Ut.

Upper right: Flow test at a geothermal wellhead in a winter Cascade Mountain setting - Meager Creek, B.C.

Lower right: An early flow test of the geothermal resource at Steamboat Springs, Nv.

Geothermal Energy – Net Positive Environmental Impact

Modern society's activities throughout the world generate and release unacceptable quantities of climate- and biosphere-modifying air pollution. The competing goals of increased energy production for continued worldwide social development and of mitigating release of atmosphere-polluting gases are not compatible using today's fuel mix, which relies heavily on coal and petroleum.

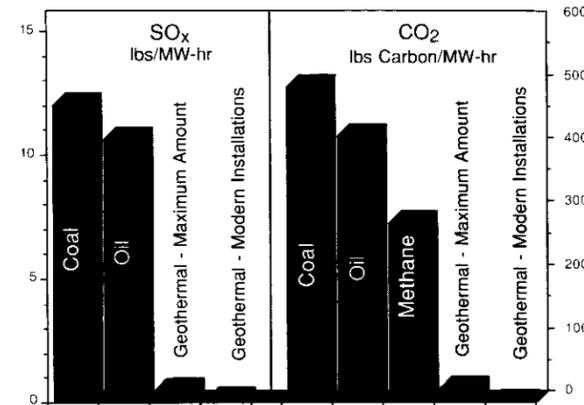
In the United States, electric utilities now account for 70 percent of our sulfur dioxide emissions (the main cause of acid precipitation), 33 percent of our nitrogen-oxide emissions (that combine photochemically with vaporized hydrocarbons to form ground-level

Development of geothermal energy has a large net positive impact on the environment compared with development of conventional energy sources.

ozone), 20 percent of the releases of gases linked to the atmospheric greenhouse effect, and 50 percent of all nuclear waste. Making it possible for utilities to use alternative-energy resources economically would help mitigate the many environmental problems associated with this generation of wastes.

Development of geothermal energy has a large net positive impact on the environment compared with development of conventional energy sources. Modern geothermal power plants operating on hydrothermal resources have extremely low levels of SO_x, CO₂, NO_x and particulate emissions.

Geothermal power plants have sulfur-emissions rates that average only a few percent of those from fossil-fuel alternatives. The Clean Air Act Amendments of 1990 require



Technology	Land Occupied (square meters per gigawatt-hour, over 30 years)
Coal ¹	3,642
Solar Thermal	3,561
Photovoltaics	3,237
Wind ²	1,335
Geothermal	404

¹ Includes coal mining

² Land actually occupied by turbines and service roads

lower sulphur emissions to reduce environmental damage from acid precipitation. Clearly, geothermal energy is a preferred alternative to fossil fuels in this regard.

Geothermal energy use reduces emissions of greenhouse gases. The newest generation of geothermal power plants emits only 0.3 lb of carbon per megawatt-hour (MW-hr) of electricity generated. This figure compares with 282 lb/MW-hr of carbon for a plant operating on natural gas, 418 lb/MW-hr of carbon for a plant operating on #6 fuel oil and 497 lb/MW-hr of carbon for a plant using bituminous coal.

Nitrogen oxide emissions are much lower in geothermal power plants than in fossil power plants. Nitrogen oxides combine with hydrocarbon

vapors in the atmosphere to produce ozone, a gas having a high level of chemical reactivity. Although ozone is needed high in the atmosphere to protect us from damaging ultraviolet radiation from the sun, ozone at ground level causes substantial environmental damage, including adverse health effects in humans.

There are other environmental advantages to geothermal energy. Geothermal power plants require very little land, taking up only a fraction of that needed for other energy sources. Other land uses can mingle with geothermal plants with little interference or fear of accidents. Increased use of domestic, alternative energy resources would also reduce the need to transport petroleum, thereby reducing chances of an oil spill.

What Does Geothermal Energy Contribute?

Geothermal energy is here today -- it is not merely a hope for the future. The production of geothermal energy in the U.S. currently ranks third in alternative energy sources, following hydroelectric power and biomass energy. As a result of geothermal production today, consumption of exhaustible fossil fuels is offset, along with the release of acid-rain and greenhouse gases that are caused by fossil-fuel use. Today's geothermal energy use in the United States alone is equivalent to the burning of about 60 million barrels of oil each year, while worldwide geothermal energy use is equivalent

to the burning of about 150 million barrels of oil per year.

The production of geothermal energy in the U.S. currently ranks third in alternative energy sources.

For comparison, the U.S. Strategic Petroleum Reserve contains about 600 million barrels of oil, an amount that could be replaced every four

years with the oil saved by worldwide geothermal use.

Geothermal resources can contribute greatly to the world's energy needs, both on the supply side and on the demand side. Although most geothermal electrical power generation will be restricted to the western U.S., until deep hot dry rock resources can be tapped, geothermal heat pumps can be installed virtually anywhere, bringing the benefits of geothermal energy to all parts of our Nation.

Geothermal Energy – Increasing Our Energy Supply

With current technology and at present energy prices, geothermal energy is economically viable in some areas where the heat is concentrated by geological processes. Hot water and steam exist at many subsurface locations in the western U.S. in the form of hydrothermal systems. These hydrothermal systems can be tapped by existing well-drilling and energy-conversion technology to generate electricity or to produce hot water for direct use.

For generation of electricity, hot water, at temperatures ranging from about 300°F to more than 700°F, is brought from the underground reservoir to the surface through production wells. Steam is separated from the liquid and fed to a turbine engine, which turns a generator. The geothermal fluid is then injected back into peripheral parts of the reservoir to help maintain reservoir pressure. Some high-temperature resources yield steam directly from the reservoir rather than water, and this steam is fed straight to the turbines.

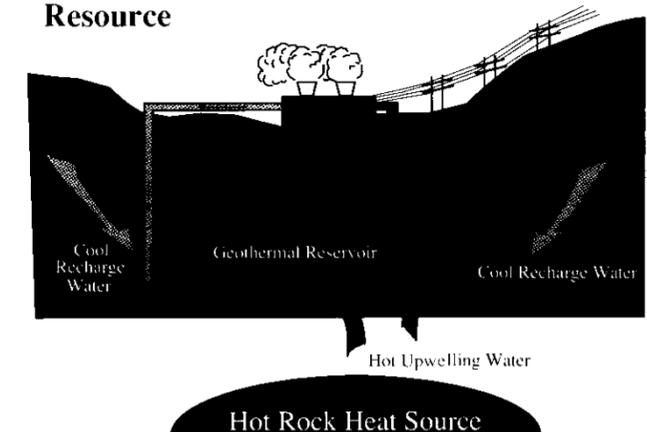
If the reservoir is to be used for direct-heat application, the geothermal water is usually fed to a heat exchanger before being injected back into the earth. Water heated in the heat exchanger is used for home heating, greenhouse heating,

vegetable drying and a wide variety of other uses.

Current Production

Geothermal energy is found in many places on the earth, and its worldwide utilization is growing rapidly. Approximately 5,700 megawatts of electricity (MWe) are currently being generated in some 20 countries from geothermal energy, and there are 11,300 thermal megawatts (MWt) of installed capacity worldwide for direct-heat applications at inlet temperatures above 95°F.

Hydrothermal Resource



5,700 megawatts of electricity are currently being generated from geothermal energy in 20 countries, and 11,300 thermal megawatts are being used for direct applications.

In the United States, the geothermal industry has an installed electrical capacity of 2,900 MWe, while geothermal direct applications have a total installed capacity in excess of 700 (MWt). All of this energy is supplied by hydrothermal resources.

Since a typical nuclear power plant produces about 1,000 MWe, worldwide electrical production from geothermal energy is equivalent to that from 6 nuclear plants.

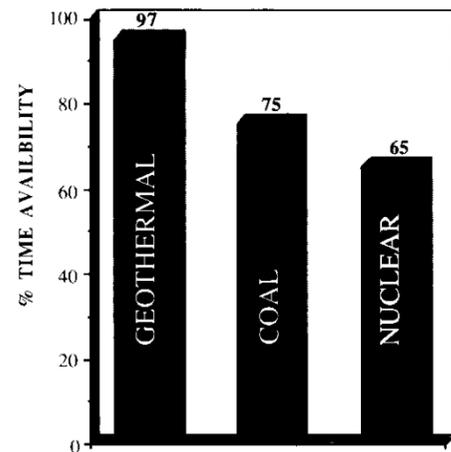
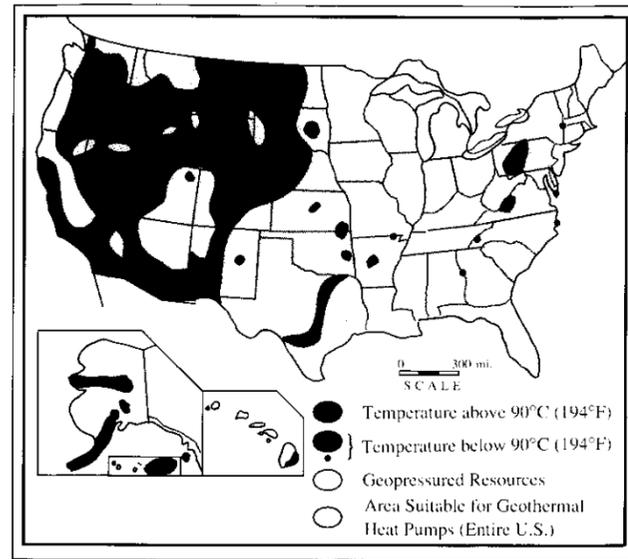
The resource base for the renewable energies -- geothermal, solar, biomass and wind -- is much larger than the total resource base in coal, oil, gas, and uranium (nuclear power).

Reserves

There is a very large geothermal resource base in the U.S., much of which can not yet be economically developed. In fact, the resource base for the renewable energies -- geothermal, solar, biomass and wind -- is much larger than the total resource base in coal, oil, gas, and uranium (nuclear power).

Reserves of hydrothermal energy in the U.S. are difficult to quantify because insufficient exploration work has been undertaken. However, the United States Geological Survey estimates that geothermal energy from identified U.S. hydrothermal systems could supply thousands of megawatts more electrical power than current production. In addition, they estimate that 5 times this amount may be available from undiscovered hydrothermal resources in the U.S.

Low- to moderate-temperature geothermal resources, suitable for direct-heat application, are widely distributed throughout the western and mid-western United States, and occur in isolated places in the East.



It is estimated that more than 7,800 MWt could be installed in district heating systems in the U. S. using identified resources, and that the ultimate potential is much larger.

Of course, since geothermal heat pumps use the normal temperature of the earth at shallow depths (0 to 200 feet), they can be used virtually anywhere.

Flexibility and Reliability
Systems for use of hydrothermal energy have proven to be

extremely reliable and flexible. Hydrothermal electric power plants are on line an average of 97% of the time, whereas nuclear plants average only 65% and coal plants only 75% on-line time. Geothermal plants are modular, and can be installed in power increments to fit needs. Both baseline and peaking power can be generated. Construction time can be as little as 6 months for plants in the range 0.5 to 10 MWe and as little as 2 years for clusters of plants totalling 250 MWe or more.

Geothermal Energy – Providing Energy Conservation

No active technology for home heating and air conditioning is more efficient than the geothermal heat pump (GHP). Geothermal heat pumps are significantly more efficient than air-source heat pumps, central air conditioners and gas furnaces. GHPs use normal-temperature earth or groundwater for heating during the winter, cooling during the summer and supplying hot-water year around.

No active technology for home heating and air conditioning is more efficient than the geothermal heat pump.

The heat pump itself operates on the same principal as the home refrigerator, which is actually a one-way heat pump. The GHP, however, can move heat in either direction. In the winter, heat is removed from the earth and delivered into the home or building (heating mode). In the summer, heat is removed from the home or building and delivered for storage into the earth (air-conditioning mode). On either cycle, culinary water is heated and stored, supplying all or part of the function of a separate hot-water heater. Because electricity is used only to transfer heat, not to produce it, the GHP will deliver 3 to 4 times more energy than it consumes. It can be effectively used over a wide range of earth temperatures.

Installation

The GHP unit sits inside the home or building, at the site of a normal gas furnace. In a typical installation, a loop of plastic pipe is placed in a vertical drill hole from one hundred to several hundred feet deep and the hole is backfilled with clay. A water/ antifreeze solution is circulated through the loop and through the heat pump for removing heat from or transferring heat to the ground. There is no consumptive use of ground-water whatsoever, nor is there any contact between the solution in the

plastic pipe and the earth or groundwater.

An alternative installation is sometimes carried out by placing the loop of plastic pipe in a horizontal trench and backfilling with soil. Either installation easily conforms to local construction and well-drilling regulations. Typical loop installations are warranted for 50 years.

Large Potential for Reduction in Demand for Electricity

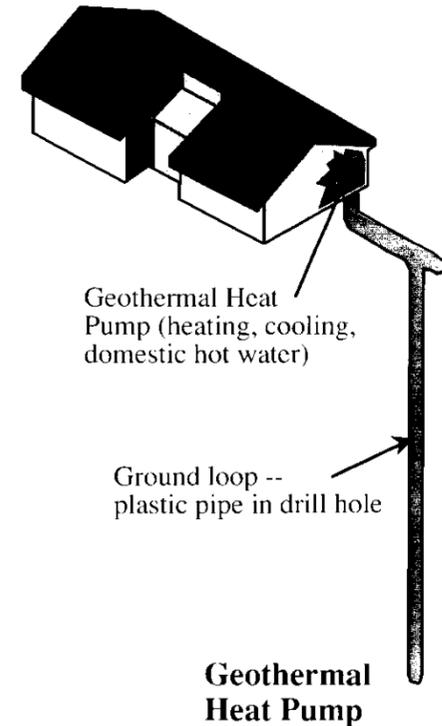
The U.S. lags behind other countries in taking advantage of heat-pump technology. Sweden has deferred construction of two nuclear power plants by using GHPs to reduce electrical power needs. Canadian growth in GHPs since 1986 has exceeded 50% per year. However, we in the U.S. are catching on.

More than 100,000 electrically powered geothermal heat pumps have been installed in homes and buildings in the U.S. to mid-1990. Additional installations are being actively promoted by investor-owned utilities and rural electrical cooperatives as a

In a 1988 survey of geothermal heat pump buyers, 97% said that they were satisfied with their purchase and would buy again.

means of promoting energy efficiency and better managing demand.

GHPs can cut 1 to 5 kilowatts (KW) of required peak generating capacity per residential installation. There are an estimated 25 million homes in the U.S. that have central air conditioning without access to natural gas. Replacement of these units alone with GHPs over the next several decades



is not unreasonable. The savings would be 24,000 to 48,000 MWe in peak summer demand and 48,000 to 96,000 MWe in peak winter demand. This rough estimate illustrates what could be done in only one sector -- homes in the U.S. with electrical central air conditioning. It does not include new home construction or electrical energy used in heating and cooling buildings in the industrial or public sectors. In addition, the development of natural-gas powered GHPs is possible, and would result in great savings in gas.

PGV to test on Monday

□ Anti-geothermal groups say they'll demonstrate at site

By Gordon Y.K. Pang
Tribune-Herald

Puna Geothermal Venture will clean out its KS-9 production well on Monday, PGV vice president Steve Morris said yesterday.

Anti-geothermal forces vowed to demonstrate at the plant when the clean-out occurs and they reiterated that point this morning.

Morris said there should not be hydrogen sulfide released into the air. "Some of the steam will rise out of the muffler in the form of a plume," he said. "There will be some residual, but it will be abated steam."

Brine coming from the well will flow through an abatement system and into a cyclonic muffler. "Most of the steam will condense and then flow into the lined pond," he said.

The procedure will be similar to the one that was done for KS-8 in August, Morris said. That clean-out was followed by a 10-day flow test. No flow test is planned for KS-9, he said.

Morris said PGV is not yet announcing the time of the Monday clean-out. PGV opponents said they expect the procedure to take place in the early morning.

PGV has "high expectations" for KS-9, Morris said, and the well could end up providing more than half of the 25 megawatts the company is under contract to provide to Helco.

"We'll know a little more after the clean-out," Morris said.

PGV workers are currently connecting piping between the well and the plant itself. The process should take seven to eight weeks at which time the power should begin to flow, he said.

Meanwhile, things appear to be moving smoothly at the KS-10 production well, where drilling began last week. That well should be able to come online in another 12 to 16 weeks "or sooner," Morris said.

Those living in the area continue to raise objections about the clean-out of KS-9.

"We'll protest, take any step to protect ourselves," said Lanipuna Gardens resident Aurora Martinovich. "It's either getting poisoned or stopping them. They may be hung up for quite a long time."

Asked to explain what the opponents have in mind, Martinovich replied: "I think there'll be more than just walking and trespassing. We have a lot of creative minds. But it will be non-violent."

Jenny Perry of the Kapoho Community Association ques-

See PGV,
Page 10

Handwritten notes:
Puna Geothermal Venture
KS-9
KS-10
KS-8
KS-7
KS-6
KS-5
KS-4
KS-3
KS-2
KS-1
KS-0

PGV: Demonstrators will attend flow test

From Page 1

tioned the procedure.

"For us, we think this is the first time they will be attempting to clean out a well through the cyclonic muffler," Perry said. While Morris may technically be correct that KS-8 had a clean-out in August, she said, he failed to mention that KS-8 was also the well which experienced a blowout in June 1991.

"That got the rock and grit out of the well bore (of KS-8)," she said.

The KCA has been searching various PGV permits for procedures concerning a clean-out and have come up with nothing, Perry said.

Meanwhile, representatives from eight different community

and environmental groups lobbied unsuccessfully to have Mayor Steve Yamashiro to intervene with the clean-out.

In the first formal meeting between the new mayor, a one-time PGV attorney, and the opponents, Yamashiro said he does not intend to stop any upcoming PGV actions allowed under existing county permits.

He said, he would, however, consider other concerns raised by opponents. Yamashiro has been an unwavering supporter of geothermal development in lower Puna but has added he would address concerns of the residents.

Other concerns raised at the meeting, including a request for review of PGV's geothermal re-

source permit and emergency response plan, were met coolly by Yamashiro.

"We will review what actions were taken to see whether or not they were appropriate," he said. "We will look at your requests and we will formulate responses."

Yamashiro also took the opportunity to further reinforce his position on the subject with his guests.

"I was for development of this resource, I did feel strongly that this resource is necessary for our island," he said. "I said that I would take steps to provide mitigation for the residents as is necessary and that is what we may do. If there is a violation of

the permit or non-compliance, we will look at that."

Yamashiro said he and his Planning Department are looking seriously at "relocation of people in certain zones" and promised to continue to hear other concerns of those living near the Pohoiki plant.

Martinovich said that during the meeting "he acknowledged the non-compatibility with some residents. He said it doesn't matter, whether it's safe or not, they're going to go ahead and we just have to leave."

Adrian Barber of BIRAG was less kind to the new mayor.

"He stonewalled us, gave us lawyer's answers," Barber said. "It was like talking to a robot."

HIGA goes to court as intervenor

□ Anti-geo groups seek to stop all projects in Puna

By Gordon Y.K. Pang
Tribune-Herald

Leaders of the Big Island's pro-geothermal movement are taking to the courts and enlisting the help of a mainland lobbying group in their efforts.

The Hawaii Island Geothermal Alliance said it is seeking intervenor status in a lawsuit filed in the First Circuit Court in Honolulu by anti-geothermal forces against the state in connection with its original plan which included shipping geothermal energy from the Big Island to Oahu via underground cable. That plan was referred to by the environmental groups as the Hawaii Geothermal Project.

The suit — filed by the Sierra Club Defense Fund, Big Island Rainforest Action Group and a host of other environmental groups opposed to geothermal in lower Puna — seeks a halt to all development of the energy source until an environmental impact statement is completed for the HGP.

But according to HIGA chairwoman June Curtiss, "the underwater cable project is dead and HIGA never supported it ... Why should there be a moratorium on on-island power projects that already have undergone thorough environmental scrutiny?"

State officials, including Gov. John Waihee, have all made statements indicating the cable project has all been scuttled. Other state-sponsored geothermal projects, however, including the University of Hawaii's scientific observation hole (SOH) project, are on hold pending related litigation.

Curtiss predicts that if the suit is successful and a moratorium is called, "geothermal is dead for at least 25 years because power companies will fill current and projected power demands by burning foreign oil and coal."

This is HIGA's first foray into the courts in its three years of existence. Claiming to represent "45,000 energy-starved residents," Curtiss said the organization "felt compelled to (enter the legal process) to protect the environmental, health and economic rights of 'little guys' who need reliable, safe electric power."

"There's a strong belief that HIGA and its members are not truly being heard by the court with the present defendants," said Bill Cook, HIGA spokesman. "We feel that intervention by HIGA will bring to bear our concerns, one of which is we need reliable, affordable power."

Listed as co-intervenor to HIGA is the Mountain States Legal Foundation, "dedicated to individual liberty, the right to own and use property, limited government and the free enterprise system," according to material provided by Denver-based non-profit organization.

Its primary activity is "litigation in defense of the principles for which it was created," the brochure said.

Geo opponents to protest PGV's new tests

By ROBIN M. JONES
West Hawaii Today

HILO — Geothermal opponents said they are organizing another non-violent protest and act of civil disobedience when Puna Geothermal Venture tests its new production well.

Members of the Peie Defense Fund and the Puna Gardens Association announced plans to gather at the site to protest flow testing of the well, which should be supplying power in another two months.

"Flow testing KS-9 threatens residents with imminent harm," said defense fund spokesman Robert Petricci.

Steven Morris, vice president and general manager of the Pohoiki plant, said, however, that PGV will not conduct flow

tests on the new well.

Instead, the resource will be pumped directly into the power plant that has been sitting idle since KS-8 was shut down in early November, a short time after the plant began producing power on Oct. 23.

Morris said a four-hour test will be done in place of the longer flow tests. The scheduled procedure should take place sometime in the next week when drilling is completed, Morris added.

Currently, workers have reached a depth of 4,200 feet and are near completion of a seven-inch casing that lines the well. After the casing is completed to the current depth, which should have been done Tuesday, drilling will resume until a

depth of 5,500 feet is reached, Morris said.

Morris said flow tests will not be necessary on the new well because the plant is known to be capable of accepting the resource and "we are ready to operate the power plant." PGV hopes to resume delivering power to Hawaii Electric Light Co. by late March, and Morris said he is confident that time table can be met.

The flow tests have also been abandoned because PGV is modifying its procedures to accommodate the plant's surroundings, he added.

Last year during flow tests of well KS-8, several dozen residents and opponents of the geothermal activities in lower Puna complained of adverse affects from

the tests. They also gathered to protest the tests. Petricci, who was arrested for trespassing during the protests, recently was acquitted of the charges stemming from that protest and arrest.

"After a decade of continuous toxic emissions, the time has come and the courts have recognized that the residents have the right to use civil disobedience as a means of self-protection," Petricci said of his acquittal.

Due to leaks and other problems, the tests were stopped a couple of times before they were able to be completed without further incident.

A meeting to organize the protest is scheduled for 7 p.m. Wednesday at the Pahoia Community Center.

West Hawaii Today, Friday, January 29, 1993

Mayor supports geothermal

Big Island Mayor Stephen Yamashiro said while original assumptions about the safety of geothermal development in residential neighborhoods may be incorrect, he has no plans to halt geothermal development.

Yamashiro told geothermal opponents in a meeting Monday that he has no intention of delaying actions at Puna Geothermal Venture.

The mayor said if the geothermal plant proves to be incompatible near residents, then residents should be relocated. He said individuals may have to make sacrifices for the greater good of the community, and that the Big Island really needs the electricity the plant will provide once it is operating.

There have been numerous health and safety problems at the Puna Geothermal plant that have delayed its timetable for delivering power.

Opponents are planning acts of civil disobedience to stop the plant from cleaning a well later this week.

PGV says no geo plant leak

□ BIRAG charges
that minor injury
incident was hushed

By Jim Witty
Tribune-Herald

An anti-geothermal group charged Puna Geothermal Venture last week with trying to cover up a Jan. 22 incident when a worker was overcome by hydrogen sulfide gas.

Company officials, however, said the event was reported to state and county officials and dismissed it as a minor episode. "There was no leak," said PGV spokesman Steve Morris.

According to Hawaii County Civil Defense spokesman Bruce Butts, a "bubble of steam" came up into the worker's face. An ambulance was called but was cancelled en route. The worker returned to work the same day, the company said.

Morris said the worker was overcome when fluid trapped in a section of drill pipe was released.

But Jim Albertini of the Big Island Rainforest Action Group said he smells a rat along with the telltale rotten egg odor of hydrogen sulfide.

"This latest incident is another example of people being officially kept in the dark," said Albertini. Why is this information only coming out now, a week after the event? ... The whole situation with geothermal is a disgrace and a threat to the community."

See PGV,
Page 10

PGV: Firm denies coverup of a plant leak

From Page 1

The state Department of Health said hydrogen sulfide readings momentarily spiked near the KS-9 rig, but were negligible elsewhere.

Drilling on the KS-9 well recently concluded but the well has to be cleaned out before PGV can move ahead. Morris said he hopes the plant will be operational by the end of March. PGV has been hampered by a number of problems, including a blowout of KS-8 and several regulatory roadblocks. The company was to have been delivering 25 megawatts of electric power to Hawaii Electric Light Co. by late 1991 but has been unable to do so.

Yamashiro to state: take geothermal stand

By Joan Conrow
Special to The Advertiser

HILO, Hawaii — Big Island Mayor Steven Yamashiro yesterday said the state Health Department's wavering stand on geothermal power is hindering the county's ability to make energy plans.

"They are impacting us tremendously," Yamashiro said.

Yamashiro said he has been kept in the dark about whether the department is going to lift the ban against Puna Geothermal Venture imposed Monday.

The shutdown was ordered after the project emitted excessive levels of noxious hydrogen sulfide gas while workers cleaned debris from a well.

At a meeting with state officials Wednesday, Yamashiro said he was told the ban would be lifted. But later that evening, state Health Director John Lewin ordered the operation closed indefinitely until he had more assurances that technical and communications problems had been resolved.

Meanwhile, Yamashiro said, Puna Geothermal had published an ad in a local newspaper stating that the procedure would begin today.

"All of these things just lead to more confusion with the public," he said. "We need clear lines of authority and communication with regard to this process."

Jennifer Castleberry, a Health Department spokeswoman, said yesterday afternoon that there had been no change in the department's position to keep the ban in place.



Lewin

Yamashiro

Yamashiro said his administration has taken the position that geothermal is needed on the Big Island, and that policy is intertwined with pressing county decisions on expanding oil-burning power plants and the future of Hilo Coast Processing, an energy-producing plantation that is phasing out its sugar operation.

"Until DOH or somebody clearly lets us know what their policy is (on geothermal), we

can't make these decisions in a vacuum," he said.

Yamashiro said he doesn't mind that the state Department of Health, rather than Hawaii County, has the final decision over whether geothermal development will be allowed to proceed.

"That doesn't bother me so much as whether they're going to make it or not," he said.

In related news, Big Island Civil Defense chief Harry Kim said the peak levels of hydrogen sulfide emitted Monday reached 250,000 parts per billion, a figure much higher than the 672 ppb peak reported by the Health Department.

The allowable level under the company's state permit is 25 parts per billion.

Kim said he is becoming increasingly frustrated at the reluctance of state and county officials to "recognize that a potentially lethal situation hap-

pened out there Monday morning. We need to develop a plan to ensure safety and protect emergency personnel and the people out there. And I can't do it."

Yamashiro said rather than attempting to guarantee that no noise or odors will be emitted during various procedures, he would be more comfortable finding places for residents to stay while those operations are under way.

And if the policy decision ultimately is made to proceed with geothermal, he said, "we should look at relocation, buffer zones and easing the stress of those people out there."

But many nearby residents, particularly those who purchased their property before geothermal development began, have opposed relocation and suggestions that they either leave their homes or endure noise and odors.

Give geothermal a chance, Matsuura says

By Thomas Kaser
Advertiser Staff Writer

Geothermal development on the Big Island will have its "nuisances," such as Monday's venting of noxious hydrogen sulfide fumes, but it offers great promise for energy self-sufficiency and should be given a chance, Big Island Sen. Richard Matsuura said on the Senate floor yesterday.

Responding to a speech in which Sen. Andrew Levin of the Big Island's Puna District

said geothermal has been a painful "pipe dream" for Puna residents, Matsuura — a longtime geothermal supporter — said he will be the first to call for shutting down Puna Geothermal Venture's well field "if it doesn't perform as we have been promised."

"But give (Puna Geothermal) a chance to finish the job. We are at a critical point, and this resource has great economic promise in providing energy self-sufficiency for the Big Island and the state," he said.

Matsuura, whose district also includes a portion of Puna, acknowledged that excessive hydrogen-sulfide "spikes" were emitted from Puna Geothermal's KS-9 production well Monday.

"I'm asking you to give these developers a chance to develop geothermal in the safest way possible. Once the drilling is done and the project is connected up, you're going to be surprised. You're going to wonder what the big fuss was about," he said.

*Call 3
File 12*

Handwritten signatures and notes on the right margin, including names like Matsuura, Castleberry, and others.

Levin calls for an end to PGM operation

Puna Geothermal Venture should be sent packing, according to State Sen. Andy Levin.

"It isn't fit for man or beast," Levin fumed in an interview. "The noble experiment didn't work."

Levin termed what the Puna community has endured "outrageous."

Taking to the Senate floor, Levin begged his colleagues to hear the pleas of the people affected by the geothermal work.

The people of Hawaii were, in effect, sold a bill of goods 12 years ago, according to Levin.

"The people of Hawaii were told that a new, clean source of energy was about to bless our state," Levin said. "Geothermal energy had proven itself around the world, and we were now going to tap our resource, under the Puna dis-

trict, and meet the electricity needs of Puna, the whole Big Island, the whole state."

One developer after the next has proven they cannot control geothermal energy, Levin charged.

"The people of my district are hurting," he said. "My constituents are being driven out of their homes by noise and by fumes."

"And when they object, they are somehow deemed the bad guys."

Levin blasted the claims once made for geothermal — that it would eliminate dependency on foreign oil, drive down electricity rates, and be pollution-free.

"The promise that electric rates would drop was never true," Levin said. "The notion that geothermal was pollution-free was strictly a pipe dream."

He said the idea of a cable

to serve Oahu was ditched long ago. "Pacific Resources tells us geothermal won't even reduce the need to import oil," Levin added.

"Yet still we continue to allow drilling within a few yards of the nearest residence."

Levin said geothermal experience elsewhere in the world is irrelevant to the experience in Hawaii.

"Our resource is hotter, more toxic, and under more pressure," he said.

Levin said the only comparable geothermal project, in Iceland, is also having "terrible problems."

"I ask you: what is the great prize that makes all this sacrifice worthwhile?" Levin asked.

Levin said he is not sure that geothermal development must be halted altogether in Hawaii, but that development without a buffer zone has got to go.

The reason officials are reluctant to admit the lack of a buffer zone, Levin said, is that "it would be a multi-million dollar proposition to create that buffer."

Levin questioned the accuracy of measures of hydrogen sulfide emission publicly stated by Steve Morris, Venture vice president.

"Can you imagine what it will be like when people aren't paying close attention?" Levin asked.

Levin decried the fact that police officers had to say they will not respond to future incidents at the geothermal site because they could not take the fumes.

Levin said he has called for state and county meetings to discuss the problem.

—By Cell Sinnex

Levin blasts geothermal

□ Puna residents need some protection, he says

By Helen Altom

Star-Bulletin

A Big Island senator says it's time for government to back away from geothermal development and protect Puna's people from hydrogen sulfide hazards.

Sen. Andrew Levin (Kau-Kona) said he agrees with Hawaii Civil Defense Director Harry Kim that government's failure to protect residents from geothermal development problems is "totally unacceptable and totally irresponsible."

Promises 12 years ago that the development would reduce reliance on foreign oil, lower electric rates and produce pollution-free power haven't materialized, Levin said, speaking on the Senate floor yesterday.

"Now it is 1993, and the people of my district are hurting," he said. "One developer after another has proven that they cannot control the resource."

"My constituents are being driven out of their homes by noise and by fumes. And when they object, they are somehow deemed the bad guys."

He noted seven people were arrested Monday "trying to get their government to pay attention to their plight."

Monday the state Health Department ordered Puna Geothermal Venture to halt operations until it resolves excessive hydrogen sulfide and communications problems.

Hydrogen sulfide gas was emitted at levels more than six times higher than allowed.

Two workers were overcome by the gas, Levin said. He said police had to abandon their posts because they couldn't stand the fumes and they won't respond to future incidents.



Andrew Levin

He said Civil Defense is saying it can't assure the community's health and safety. "Monday was the worst situation with respect to hazards to the people that we have ever encountered," he said.

Levin said he isn't asking that geothermal be stopped, but "maybe we need to wait for the development of better technology."

At least a buffer zone should be required to protect residents, he said, but that has been resisted because "no one wants to spend the money."

Levin asked his colleagues to understand what Puna residents are going through and help find a solution.

He called for a legislative briefing by the Health Department, Department of Land and Natural Resources and county Civil Defense.

He also proposes a Big Island meeting involving county and state agencies to review Monday's excessive emissions at the geothermal development.

BIRAG protest set for morning

The Big Island Rainforest Action Network said residents living in the area of the Puna Geothermal Venture plant in Pohoiki will be demonstrating in front of the plant tomorrow at 7 a.m.

Protesters will meet in front of the HGP-A center's visitor parking lot, according to Jim Albertini of BIRAG.

The protest is slated to coincide with a well clean-out at PGM's KS-9 production well. The clean-out is one of the last procedures necessary before production begins at the plant.

Albertini is urging the public to join in the protest.

~~West Hawaii Today, Sunday, February 7, 1993-~~

Anti-geo protest in Hilo

About 15 anti-geothermal activists walked the streets in front of the state's new Big Island Environmental Health office Friday to protest activity planned for Monday at Puna Geothermal Venture.

The demonstration, which proceeded without incident, was held to protest a scheduled four-hour "clean-out" of the Kapoho State-9 geothermal well, said Jim Albertini, spokesman for the Big Island Rainforest Action Group.

The well is slated to be brought on line as PVG's main source of geothermal energy next month. The \$120 million project, designed to relieve the Big Island's energy crunch, has been faced with numerous delays along with grassroots protest and regulatory complications for nearly two years.

Police in Puna said they were prepared for another confrontation between demonstrators and PVG on Monday.

Toxic gas leak forces close of geothermal well

□ Hydrogen sulfide levels are 'pretty high' in neighboring subdivision

■ Gas danger debated

A-6

By Rod Thompson

Big Island correspondent

KAPOHO, Hawaii.— A wave of hydrogen sulfide gas rolled over parts of Puna yesterday, forcing Puna Geothermal Venture to halt cleaning of a geothermal well after 30 minutes.

Hydrogen sulfide levels reached 672 parts per billion in the Lanipuna Gardens subdivision, neighboring the geothermal development.

"That's pretty high," said Civil Defense deputy Bruce Butts.

Puna Geothermal Vice President Steve Morris said the company had planned to halt the cleaning even before the trouble started.

Deputy state Health Director Bruce Anderson said the company won't be allowed to resume the cleaning until it corrects the problem. The company faces fines of up to \$10,000 per day for exceeding its permitted gas levels, he said.

Two workers temporarily were overcome by gas at the drill site. The company said one was overcome by hydrogen sulfide and given oxygen, and a second worker was affected but required no treatment.

Seven protesters were arrested for trespassing, including Nancy Campbell, 22, of Pahoa, and veteran protester Robert Petricci, 37, of Leilani Estates. The two climbed a company water tower and had to be removed by a "cherry picker" truck.

The others charged with trespassing yesterday were Brenda Amick, 32, and Mark A. Kinderman, 28, both of Kapoho; Holit Bat-Edit, 49, of Mountain View; Dennis Gregory, 44, of Kalapana; and Gordon Hooehuli, 26, of Pahoa.

The company has planned to clean out its new KS-9 well by venting steam through

See **GEOTHERMAL**, Page A-6

GEOTHERMAL: Protest results in seven arrests

Continued from Page A-1

a muffler and gas scrubber.

The equipment was required when the company was banned from open venting without pollution controls, following a blowout of a well in 1991.

But the scrubber failed yesterday, apparently because it was full of water, Anderson said. It is designed to work with steam and gas, he said.

Petricci and Campbell began climbing the water tower in protest at 5:45 a.m., Petricci said. That was hours before the cleaning started and hours before anyone even noticed the two were on the tower with a banner reading "Stop Poisoning Us," he said.

After he was arrested and charged, Petricci was returning to the site about 9:15 a.m. when residents started reported gas smells, he said.

Health Department workers remained inside a building at the site drinking coffee, he said. So Petricci said he climbed over a barbed wire fence, went inside the building and screamed at them until they went to take readings.

Anderson said he didn't know exactly what happened. But he said Petricci is "loud and abrasive," implying that officials tend to discount what he says.

The Health Department building has automatic monitoring equipment, which does not need to be constantly tended, Anderson said. But the workers should go outside to take additional readings if there's a problem, he said.

State senator says it may be time to halt geothermal development

By BRUCE DUNFORD
The Associated Press

HONOLULU — It may be time to halt geothermal development on the Big Island, at least until the technology catches up to where it can be done in a safe manner, state Sen. Andrew Levin said Wednesday.

Levin represents the district where Puna Geothermal Venture (PGV) is drilling wells and building a power plant. He asked for a special briefing of senators by state and county officials on the status of geothermal development.

It comes in the wake of more problems this week at the PGV project.

Sen. Matt Matsunaga, chairman of the Science, Technology and Economic Development Committee, said he would arrange the hearing.

"The people of my district are hurting. One developer after another has proven they cannot control the resource," Levin told his colleagues. "My constituents are being driven out of their homes by noise and by fumes, and when they object, they

are somehow being deemed to being the bad guys."

PGV's operations were ordered shut down by the state Department of Health on Tuesday after a well-cleaning procedure Monday released levels of hydrogen sulfide six times the levels allowed by its permit.

Levin said he was told by "reliable sources" that the level on PGV's own monitors at one time exceeded the allowable level by many thousands of times and that Hawaii County Civil Defense officials call it the worst hazard situation yet at the trouble-plagued project.

"This all occurs when the company knows it is under the greatest scrutiny," Levin said. "Can you imagine what it's going to be like when people aren't paying close attention?"

Paul Aki, head of the Health Department's clean air branch, said PGV has lost credibility because of the latest incident.

Most of the major benefits envisioned when the quest for geothermal energy began in Hawaii a dozen

years ago have not materialized, Levin said.

The plan to cut the state's dependence on oil with a cable linking geothermal power to Oahu "has long since been put on hold. The promise that electric rates would drop was never true. The promise that geothermal was pollution-free was strictly a pipe dream," he said.

"I ask you: What is the great prize that makes all this sacrifice worthwhile?" Levin said.

"Our geothermal resources are different. It is hotter, it's more toxic and it's under more pressure," and according to scientists the only other geothermal development with geological conditions similar to Hawaii's is in Iceland, "and it too is having terrible problems," Levin said.

"Our developers obviously cannot handle our problems. Either they are incompetent or the resource is too difficult to handle with modern technology. In either case, the conclusion has to be the same. We've got to protect our people," he said.

Geothermal headaches

GEOTHERMAL energy promises to supply the Big Island, if not the entire state, with electric power, but fulfillment of the promise is a long, frustrating time in coming. In the latest setback, Puna Geothermal Venture was forced to halt cleaning of a geothermal well Monday by the release of hydrogen sulfide gas at levels more than six times higher than permitted by government standards. The state Health Department ordered the company to halt operations until it resolves the problem.

The incident prompted Sen. Andrew Levin, who represents the Big Island, to call for state action to protect Puna residents from noxious emissions from the geothermal project. Levin said he wasn't proposing to stop geothermal development, but suggested that perhaps it should await introduction of better technology. At least, he said, a buffer zone should be established to protect residents.

As a supporter of geothermal energy as an important alternative to fossil fuels, the Star-Bulletin has been awaiting the start of commercial production of energy in Puna with almost as much anticipation as the blackout-plagued residents of the Big Island. The accidents and other problems with the geothermal project have been discouraging. We remain confident, however, that these problems will be solved. Until they are, the state and county must not hesitate to take whatever measures are needed to protect the health of nearby residents.

Puna Geothermal capped as health hazard

□ The shutdown came after a well spewed a near-lethal dose of gas

By Rod Thompson

Big Island correspondent

HILO — Puna Geothermal Venture has more explaining to do before it can resume work on its KS-9 well, which exposed workers to near-lethal concentrations of hydrogen sulfide gas on Monday.

"We will not allow start-up until we are sure that the health of nearby residents is protected," said state Health Department spokeswoman Jennifer Castleberry. She didn't know when permission to begin work would

be given.

State Sen. Richard Matsuura said yesterday if the power plant and well field at Pohoiki can't be made to perform as promised, it will be shut down "and I'll be the first to call for it."

He defended geothermal development, however, and said it's bound to cause some nuisances.

On Wednesday, state Sen. Andy Levin revealed that workers at the geothermal project site were exposed to gas levels of 250,000 parts per billion, bordering on a lethal dose.

Lanipuna Gardens subdivision was exposed to 672 parts per billion of the gas, a level the Health Department called a "serious nuisance."

Puna Geothermal Venture had been starting a four-hour well clean out. Most of the hydrogen sulfide in the geothermal steam was supposed to be

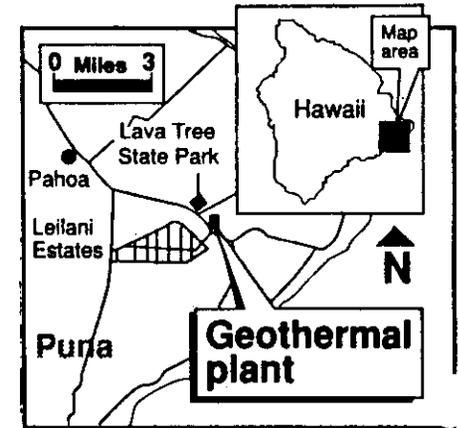
removed by a chemical scrubber, but it failed.

The Health Department is still investigating why, using both its own staff and outside experts under contract, Castleberry said.

"Our main concern is the communication problem," Castleberry said. Health officials had earlier said that their air monitoring team was slow in monitoring hydrogen sulfide because Puna Geothermal delayed the start of the well clean out and then failed to tell the department when they started.

Civil Defense chief Harry Kim complained the company didn't tell him about the gas problem until almost two hours after it started.

And state officials told him the company could resume work, then never told him when they changed their mind, Kim said.



Castleberry said more monitoring would be nice, but the two stationary and four portable monitors the department now has are enough if Puna Geothermal communicates properly.

The Associated Press contributed to this report.

Geo well has the power, firm says

State says Puna Venture will be fined for violating permit

By Joan Conrow

Special to The Advertiser

HILO, Hawaii — Puna Geothermal Venture officials yesterday said the well that was closed by the state Health Department earlier this week could produce enough steam to run its power plant.

Engineering models indicate that well KS-9 could meet the entire steam requirement of the 25-megawatt powerplant, said company spokesman Steve Morris. The \$120 million project is trying to produce electricity through the use of underground steam and heat.

But the Health Department has ordered Puna Geothermal to halt activities at the well indefinitely following the release Monday of excessive levels of noxious hydrogen sulfide gas during a clean out and venting operation.

Morris confirmed that a monitor 50 yards downwind from the well did detect a single reading of hydrogen sulfide at 250,000 parts per billion, although that figure dropped to 1,000 to 2,000 ppb with-



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in a few minutes.

The Health Department, which begins its monitoring at the fence line that separates the project from nearby residences, reported a peak reading of 672 ppb and an hourly average of 150 ppb. The company's permit allows average hourly emissions of only 25 ppb.

Department spokeswoman Jennifer Castleberry yesterday said Puna Geothermal will be fined for violating its permit. Fines of up to \$10,000 are possible, although a final figure has not been determined, she said.

Morris said the company will proceed with building permanent piping for the well while it waits for the department's

approval to resume the clean out operations.

The company also is continuing to drill well KS-10 and still expects to begin operating its power plant by the end of March, despite the most recent delays, Morris said.

Meanwhile, the Big Island Rainforest Action Group yesterday called on Mayor Steve Yamashiro to take a stand against allowing Puna Geothermal to proceed with the clean-out and to support a halt to all activities at the Pohoiki site until an independent investigation of the company's operations can be made.

The group said it would stage a protest at Yamashiro's office Tuesday morning if the mayor refuses the request.

Yamashiro could not be reached for comment yesterday. But he said earlier this week that his administration supports geothermal and he believes residents should be given a place to stay away from the well site while operations are under way that could cause odor and noise problems.

7 geothermal protesters are arrested

By Joan Conrow

Special to The Advertiser

HILO, Hawaii — Opponents of geothermal development vowed to continue the protests that yesterday got seven people arrested at Puna. Geothermal Venture's Pohoiki drilling site.

"There's a lot of scared people out here and we're gonna fight," said Robert Petricci. He already had been arrested eight times for protesting against geothermal, and he was arrested again yesterday.

But like the three other men and three women who were arrested for trespassing yesterday, he paid his bail and immediately returned to the Pohoiki facility to protest Puna Geothermal's planned four-hour cleaning of its production well.

Later in the morning, the state Department of Health ordered Puna Geothermal not to resume the cleaning operation after hydrogen sulfide emissions exceeded permitted levels.

Petricci said he was disappointed when Steven Morris of Puna Geothermal called him last night to tell him the company hoped to resume its cleaning operations today.

Petricci said he would continue to protest.

About 50 people joined him at yesterday's demonstration.

The protest, which was planned by the Big Island Rainforest Action Group, was highly publicized, but police Lt. Dale Fergerstrom said officers did not go out to the Pohoiki facility until they were called for a trespassing complaint.

He said the protesters were peaceful and caused no property damage to the \$120 million facility.

Petricci said the protests are effective for keeping the issue before the public, but opponents also are continuing to fight geothermal on other fronts, including several lawsuits and appeals to state and federal agencies.

HON. ADVERTISER
2-11-92

PGV ordered to stop cleanout after gas leak

By ROBIN M. JONES
West Hawaii Today

HILO — The state Department of Health ordered Puna Geothermal Venture to discontinue scheduled well cleanout procedures Monday morning after hydrogen sulfide leaks overcame two workers and were recorded at high levels in near-by neighborhoods.

H₂S emissions were recorded at 150 parts per billion on an hourly average in the LaniPuna Gardens subdivision on the perimeter of the Pohoiki plant. At one point,

the emissions were recorded at levels as high as 672 ppb. PGV is allowed emissions of 25 ppb on an hourly average.

"Two workers had been knocked down because of the hydrogen sulfide," said Health Department spokeswoman Jennifer Castleberry.

One worker was given oxygen at the site to offset the effects of the gas. But they did not require medical attention, added Bruce Butts, Hawaii County Civil Defense assistant administrator.

Butts said he knew of no other serious

effects of the uncontrolled emissions although his office received several calls from people in Pohoiki and Opihikao who said they were forced to flee their homes because the smell was so extreme.

Hydrogen sulfide smells like rotten eggs and has a tendency to cause eye and respiratory irritation at levels much higher than the hourly averages recorded Monday, said Bruce Anderson, Department of Health deputy director. He said the levels recorded at the perimeter of the plant would be considered a "serious odor nuisance

problem" that could cause headaches and nausea but "we wouldn't expect serious symptoms."

Some nearby residents were reported to have suffered vomiting. But Anderson discounted the report saying "there are a number of people who claim they get sick every time there is a release."

The cleanout procedure of the Kapoho State-9 well was scheduled to begin at 7 a.m. and last about four hours. But less than

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...PGV testing is halted by health officials

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30 minutes into the procedure, which did not begin until 9:15, the process had to be stopped due to the emissions.

Once Civil Defense began receiving complaints about the odor and learned of the downed workers Harry Kim, Civil Defense administrator, contacted the Department of Health to request that PGV not be allowed to resume the process, Butts said.

A little after noon the order was received from the DOH, he added.

PGV will be allowed to resume the process once the cause of the leak is determined and a means of preventing more leaks is established, Anderson said. "Until we identify the problem, we will not let them start back up."

Steven Morris, PGV vice president and general manager, said the leak, which was abated quickly, was likely caused by a gas bubble that was allowed to escape and bypassed the hydrogen sulfide abatement system.

He added that PGV is ready to resume the cleanout process but

first needs to sit down and discuss the remedied problem with DOH and get the department's permission before continuing. Morris is confident the cleanout will resume today and last three to four hours.

A press release from PGV said the well cleanout was planned to continue later in the day Monday, but Morris said equipment adjustment took more time than had been planned. Anderson nixed agreed with Morris that the process will likely resume today.

During the cleanout and prior to its beginning, about 50 people protested the process and several were arrested.

Robert Petricci, a long-time opponent of geothermal development in Puna and a resident in a subdivision close to the plant, scrambled over a fence and climbed a 35-foot tall water tower to hold up a banner saying "Stop Poisoning Us." He and his companion on the tower, Nancy Campbell, were removed by police who had to go up in a ladder truck and cherry-picker basket to get the two down before

arresting them for trespassing.

A total of seven protesters entered the grounds and were arrested. They had to post \$25 in bail before being released. Many returned to the site once released, but they did not continue to trespass, said officer Dale Fergerstrom.

Petricci said he "fully expects to be acquitted in court," because we have every right to try to stop the process. "I would say I'm fairly justified in my actions," he said. "They don't have the right to release this stuff into the air." He added that "it was very obvious (the leak) was going to happen. There has never been a test when there wasn't a problem."

Anderson admitted that PGV "seems to have had more than its share of shakedown problems. But hopefully they will soon get through this very difficult development stage."

Morris said this problem has not altered the time frame for delivering power to Hawaii Electric Light Co., which should happen before April.

PGV remains closed

Police officers forced to retreat; new concerns aired

By Gordon Y.K. Pang
Tribune-Herald

Puna Geothermal Venture's 25-megawatt facility in Pohoiki remained shut down today amid new concerns about the power plant raised by both county and state officials.

Meanwhile, Puna police confirmed that at least five officers at the PGV site to arrest tres-

passing protesters during Monday's well-cleaning suffered from heavy hydrogen sulfide inhalation and had to move away from the drilling site.

The Department of Health, after urgings from county Civil Defense officials, ordered the four-hour clean-out stopped on Monday after hydrogen sulfide levels shot up to 672 parts per billion just outside PGV's boundaries, the highest levels officially recorded in the four-year history of the project.

The hourly average between 9 and 10 a.m. was 125 ppb. Health Department rules allow

for up to 25 ppb on an hourly average.

PGV blamed the release, which lasted up to 15 minutes, on a bubble of concentrated H₂S steam which apparently had trapped itself at the top of the KS-9 production well which was being cleaned out.

State and county officials were continuing to meet this morning to determine what PGV has to do before it is allowed to continue operations.

Both Paul Aki, head of the Health Department's clean air branch, and Civil Defense Administrator Harry Kim expressed

grave concerns not only about the technical aspects of the mishap on Monday, but also a breakdown in communications.

Health Department monitoring personnel, who apparently got tired of waiting outdoors for the cleanout to occur after a two-hour delay and had retreated to their office at the former HGP-A site, weren't informed by PGV that the procedure was starting, Aki said. Nor, he said, were they told that there were elevated levels of H₂S.

Instead, the monitors were informed by protester Bob Petricci, who scaled a fence and

yelled at them to take action after smelling the gas and seeing the plume.

Meanwhile, Kim said he wasn't informed by PGV until 11:07 a.m. Monday about the elevated levels which he believes began at 9:20. Kim said he then immediately called the Health Department, which ordered PGV to cease operations.

Kim said his office responded to two calls shortly before 9:30 a.m. from families living in the area who said they were getting

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PGV: Police officers suffer from gas blast

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sick from the fumes. Kim said he called PGV, the health monitors and county geothermal coordinator Jim Moulds, who was also on site, and was told "there was no problem."

Kim said that in all, he received about 10 calls from as far away as Kehena from residents saying they smelled H₂S.

Aki could not be reached for comment this morning. But Kim said that at the end of yesterday's meeting, "he informed PGV he does not anticipate his review would be completed by today."

Kim described Monday's H₂S incident "an extremely critical

situation" in terms of the reliability of PGV's technology and responsiveness to government and the public.

It was yet another occasion, he said, "where residents had to notify the government that something was happening."

There needs to be a "re-orientation" by the state and county about their approach to PGV, Kim said. "We've got a goddamn problem and we damn well better address it. We're jeopardizing the health and welfare of the people and we need to wake up to it before a critical situation develops here."

He added that the safety of employees, residents and even

police officers were jeopardized on Monday.

Puna Police Lt. Dale Fergersstrom said he, Capt. James Correa and at least three other officers on hand to arrest demonstrators trespassing at the site were exposed to gas.

"All complained of throat and eye irritation," Fergersstrom said. "For some of the guys, they had difficulty breathing and had to leave the area."

Some felt the irritations for only a few minutes or up to an hour, others had sore throats for as long as six hours, he said.

Fergersstrom said that when the H₂S release occurred at KS-9, most of the officers af-

fected were in the vicinity of the KS-8 production well nearby.

Some were hit directly by the steam cloud, he said.

Besides the two families outside the plant which reported illnesses to Civil Defense and the Hawaii Tribune-Herald, PGV said two employees were also affected by the gas.

One of the workers, Fergersstrom said, was lying down and needed to inhale oxygen.

Kim said he believes that by the time all of the readings come in, the Health Department will probably find that hydrogen sulfide levels may have been much higher than 672 ppb.

Protesters arrested at PGV

Residents claim hydrogen sulfide is leaking from plant

By Gordon Y.K. Pang
Tribune-Herald

POHOIKI — Sixteen people and possibly more trekked through the gates of Puna Geothermal Venture's power

plant this morning.

Meanwhile, three people at a home nearby the plant reported becoming ill soon after a scheduled well cleanout began just before 9:30 a.m. and police confirmed reports that a PGV worker became overcome by geothermal gasses.

The protesters, most if not all of whom were arrested, were demonstrating against a scheduled four-hour cleanout of the KS-9

production well. Another crowd of about 40 people stood holding protest signs outside the parking lot of the HGP-A plant next door to PGV.

The cleanout began shortly before 9:30, according to those watching the plant, although there was no official word from PGV. It had been scheduled to begin at 7, according to a classified advertisement run in yesterday's Tribune-Herald.

While PGV vice president Steve Morris had earlier stated that only "abated steam" and no hydrogen sulfide gas would be emitted from the test, witnesses said they saw plumes of smoke coming from the plant.

Jo West said she, her husband Jim and a friend visiting from Hilo all got sick after smelling the gas.

"It hit us real bad, real fast," West said. She said she threw

up and that she, her husband and friend Randi Black still had sore throats, sick stomachs and headaches 45 minutes after the episode began.

"It's still kind of stinky here, it was a rotten egg smell at first, and then it kept getting sicker and stronger. It was like ammonia."

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Page 10

PROTESTERS: More arrests made at PGV

From Page 1

West said neither the Health Department nor PGV had returned her calls. West said she didn't know what the trio would do next.

"I have no idea, should we move? We're here in limbo. We're just scared."

Sgt. Gabriel Malani of Puna police confirmed a report that a worker had been knocked "into a daze" by hydrogen sulfide. He said officers at the scene told him "the PGV employee was overcome by H2S gas."

No other information on that report was available.

Big Island Rainforest Action Group spokesman John Valen-

zuela said he and others also smelled the noxious egg-smelling substance.

"It's not only hydrogen sulfide, but also a burning plastic smell," he said.

Robert Amato, another protester, said he saw "this big white gas coming from the water tower" and drove three miles to a preschool at Nanawale Estates to "warn them" of the gas.

The confrontations began at about 6:45 a.m. Leilani Estates resident Bob Petricci and Nancy Campbell, also a lower Puna resident, entered PGV property and climbed atop a 35-ft. water tank near the plant.

They hoisted a banner sign which read "Stop Poisoning Us."

"We're kind of blocking the ladder so they can't get up here," Petricci informed supporters via walkie-talkie.

After about an hour, however, Puna police sent up a ladder truck with a cherry-picker basket and brought the two down to the ground, where they were arrested for trespassing.

At least 14 others are believed to have gone through the gates as of 10 a.m. and more were expected.

"We've had six arrests over a span of an hour and a half," Malani said. "It's going to be one

of those long days," Malani said. "There are two or three every half hour, I guess that's their strategy."

Malani said no names of those arrested would be released until operations were completed for the day. Those booked were charged with criminal trespassing, a petty misdemeanor, and allowed to go free on \$25 bail.

Those believed arrested, according to Valenzuela, were Petricci, Campbell, Gordon Hoohuli of Lanipuna Gardens, Holit Batedit of New York and Brenda Arnick and Mark Kindermann, both of Waawaa.

PGV may be allowed to restart cleanout today

By **ROBIN M. JONES**
West Hawaii Today

HILO — Puna Geothermal Venture did not receive authorization to resume the cleanout procedures of its Kapoho State-9 production well Tuesday, but may be allowed to proceed with the process today, state officials said.

Following an uncontrolled release of hydrogen sulfide during the scheduled cleanout Mon-

day morning, PGV was ordered by the state Department of Health not to resume the process until the state could be assured that a similar incident would not happen when the process is continued.

Health official Bruce Anderson said Monday PGV would not be allowed to resume until the incident was thoroughly investigated, its cause pinpointed and assurances given that it will not hap-

pen again.

Tuesday afternoon PGV officials met with Department of Health officials and Hawaii county officials, including Planning Department personnel and Civil Defense administrators, to clarify what happened during a cleanout that had to be cut short due to the uncontrolled release of hydrogen sulfide emissions.

The Department of Health officials did not plan to give the

authorization to resume the cleanout process during the meeting, said Jennifer Castleberry, Department of Health spokeswoman. They were not planning to make any decisions. They first wanted to hear what had happened and make the decision later, she added.

The officials are expected to continue the meeting early today, and authorization for the well cleanout may be given then,

Castleberry said, adding that the state officials are being cautious and want to be assured there will not be another "public health threat" similar to the one that resulted from the hydrogen sulfide leak Monday morning.

Several residents living near the Pohoiki plant reported to Hawaii County Civil Defense that they detected a strong odor from

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...PGV may be given go-ahead today

From Page 1A

the release and several had to flee their homes due to the gas. At least one resident was reported to have suffered vomiting after breathing the emissions.

The leak happened almost immediately after the cleanout began at about 9:15 a.m., two hours later than its scheduled commencement time. The emissions were recorded at levels as high as 672 parts per billion. The hourly average at a monitoring station in the LaniPuna Gardens subdivision near the Puna plant was about 150 ppb. The allowable hourly average limit is 25 ppb.

PGV stopped the cleanout about 30 minutes into the four-hour process to tighten bolts and make other necessary equipment adjustments.

PGV officials notified Civil Defense that the cleanout had

been halted to make the adjustments, said Bruce Butts, Civil Defense assistant administrator.

Several minutes later, Civil Defense was informed that high levels of hydrogen sulfide had been recorded at a fixed monitoring station outside the plant's perimeter, Butts added.

Civil Defense was also informed that two PGV workers had been overwhelmed by the gas. One had to be given oxygen, But neither required medical attention, Butts said.

After receiving all of that information, Civil Defense Administrator Harry Kim asked that the Department of Health not allow PGV to immediately continue the cleanout.

The Health Department obliged and a little after noon ordered PGV to halt the cleanout process until the situation could be assessed and remedied.

PGV issued a statement Tuesday morning saying the cleanout would not resume immediately. "We plan to meet with government officials today to explain yesterday's event," said Steven Morris, PGV vice president and general manager. "We are hopeful to resume the cleanout procedure soon, but it will not be today."

Morris said Monday that a bubble of hydrogen sulfide could have caused the emissions.

Residents who gathered to protest the cleanout said the emissions were almost expected.

"There has never been a test when there hasn't been a problem," said Robert Petricci, one of seven protesters arrested for trespassing. "It was very obvious this was going to happen," he added.

Six others were arrested for entering the Pohoiki plant grounds. They were arrested were released after they paid \$25 bail.

2-11-93

Geothermal well shut down after gas blowout

Hydrogen sulfide level soars; worker treated

By Joan Conrow

Special to The Advertiser

HILO, Hawaii — The state Department of Health yesterday halted testing of Puna Geothermal Venture's production well after hydrogen sulfide emissions rose far beyond permitted amounts.

Two workers were knocked off their feet by the blast of pressure from the well. One was given oxygen, according to Puna Geothermal vice president Steven Morris, but the other man reportedly required no treatment.

State Health Department officials in Honolulu said they had no other reports of injuries, but Big Island Civil Defense

chief Harry Kim said residents of two homes near the well complained of nausea and were evacuated.

The testing also prompted a demonstration outside the gates of the Pohoiki drilling site, and seven people were arrested on trespassing charges after climbing a fence at the facility, said police Lt. Dale Fergerstrom. (See story, Page A2.)

Emissions of the noxious gas reached a peak of 672 parts per billion in the half-hour the well was opened yesterday to clean out drilling debris, officials said. The hourly average was 150 ppb, said Jennifer Castleberry, Health Department spokeswoman. A maximum 25 parts per billion over an hour is allowed under the permit the Health Department issued for the project.

The shutdown meant new delays for the \$120 million project, which has been plagued for two years by technical problems and community protests.

INSIDE:

■ Seven anti-geothermal demonstrators arrested / PAGE A2

After ordering Puna Geothermal not to resume the testing, the Health Department began working with the Civil Defense Agency to investigate the incident.

Morris attributed the high emissions to a "gas bubble that is fairly common when you open a well." He said the company injected caustic soda into the pipe carrying the geothermal fluids so it could mix with and neutralize the steam, but that failed to abate the high levels of acid gas.

"We've re-evaluated our abatement process and will do it a little differently next time," he said. "It's not a major technical problem."

Kim said he was concerned that Puna

Geothermal did not report the high emissions to the Civil Defense Agency until nearly two hours after the hydrogen sulfide was released.

Puna Geothermal began cleaning the well about 9:15 a.m., the same time Kim said he was first called by residents complaining about the strong rotten-egg smell.

Morris said the company's first priority was controlling the emission, the highest levels of which occurred during the first 10 minutes. The well remained open for 30 minutes to heat up the line, Morris said, then was shut as planned to tighten bolts and make other adjustments. It was not reopened.

Morris said he would meet with Health Department officials today and hoped they would allow work to resume this afternoon. Castleberry said it was "a possibility" the go-ahead would be given tomorrow.

Lewin holds to off-again-on-again

By Joan Conrow

Special to The Advertiser

HILO, Hawaii — For a while yesterday, it appeared Puna Geothermal Venture might resume operations as early as tomorrow, but in a double-reverse, state health officials last night said the project will remain closed indefinitely.

Jennifer Castleberry, spokeswoman for the department, said Health Director Dr. Jack Lewin "is not comfortable at this time about lifting the ban. He needs a lot more assurances that nearby residents will not be affected."

The department on Monday ordered Puna Geothermal to stop cleaning production well KS-9 after hydrogen sulfide was released at levels six times higher than those allowed un-

der its state permit.

On Tuesday, Paul Aki, chief of the department's clean air branch, said it would take some time for Puna Geothermal to resolve major technical and communication problems.

But yesterday, after a meeting of state health officials, Mayor Steve Yamashiro, county planners and a representative of the state business and economic development department, word was out that Puna Geothermal might be allowed to resume clean-out operations tomorrow.

After the meeting, state Deputy Health Director Bruce Anderson said Puna Geothermal had "effectively addressed the technical problems" that led to Monday's trouble.

He said Puna Geothermal had devised a new procedure for abating hydrogen sulfide emissions and had

On the inside:

Puna senator blasts geothermal "pipe dream."
Story on Page A2

agreed to improve communications notifying neighbors with newspaper ads and by telephone before resuming the clean-out.

The company also would provide a site with refreshments for neighbors who want to leave their homes before the procedure resumed, Anderson said.

While Anderson said the clean-out operation could resume as early as tomorrow, he stressed that no final approval had been given and Lewin had to evaluate the proposed new conditions before the ban could be

geothermal ban

lifted.

Castleberry, speaking later last night, said Lewin wants more assurances from Puna Geothermal and more time to fully analyze the issues and discuss them with his staff before he will consider lifting the ban.

"He's concerned about all these instances," she said. "They just keep happening. He needs more assurances that people will not be harmed."

Two workers were knocked to the ground by the pressured gas that was emitted from the well during Monday's cleaning operation, and one required oxygen after being exposed to fumes. Six Puna police officers, including a captain and lieutenant, also reported that they had been exposed to hydrogen sulfide and suffered eye irritation and sore throats. And several area residents complained of

nausea and vomiting.

Although Anderson has said that exposure to the fumes poses no health risks, even at the levels emitted Monday, Castleberry said the department is "concerned about anybody who has adverse health effects."

Lewin's reluctance to lift the ban means additional delays for Puna Geothermal, which was contracted to provide 25 megawatts of power for Hawaii Electric Light Co. from October 1991 but has not. The \$120 million project is intended to use underground steam and heat to generate electricity.

The company also may face fines or other penalties because of Monday's release of hydrogen sulfide, Anderson said. The department is continuing to investigate, he said.

Puna residents 'are hurting'

Sen. Levin blasts geothermal, urges better technology

By Thomas Kaser
Advertiser Staff Writer

Geothermal development has been a failure and a "pipe dream" that is causing more pain to Puna residents than most politicians realize, Big Island Sen. Andrew Levin said in a floor speech yesterday.

"I don't know that we have to stop geothermal altogether. Maybe we need to wait for the development of better technology," said Levin, who represents the Puna district.

"At the very least, we must say no to (geothermal) development that has no buffer zone protecting residents."

Responding to this week's threat by the state Health Department to shut down Puna Geothermal Venture's KS-9 production well until technical and communication problems are solved, Levin urged his colleagues to "understand the magnitude of what has happened" and "listen to the pleas of the people who are affected" by geothermal development.

"When geothermal began, we were informed that a new, clean source of energy was about to bless our state. Geothermal energy had proven itself around the world, and we were going to tap our resource under the Puna District to meet the electricity needs of Puna, the whole Big Island, and the whole state.

"We were told we would not have to depend on foreign oil, our electric rates would surely go down, and the power source was pollution-free.

"Now it is 1993, and the people of my district are hurting. One developer after another has proven he cannot control the resources. My constituents are being driven out of their homes by noise and fumes. And when they object, they are deemed to be the bad guys."



Levin

He said the notion of an undersea cable carrying geothermal power to Maui and Oahu "has long since been put on hold; the promise that electric rates would drop was never true; and the notion that geothermal is pollution-free was strictly a pipe dream."

Geothermal may work elsewhere, he said, but it won't work in Hawaii because the Big Island's geothermal field is hotter, more toxic, and under more pressure.

"I'm told there is only one other geothermal development that is geologically comparable to ours; it is in Iceland, and it, too, is having terrible problems.

"Our (geothermal) developers obviously cannot handle our problems. Either they

are incompetent or the resource is too difficult to handle with modern technology. In either case, they're not protecting our people."

Levin noted that Puna Geothermal Venture's permit allows the company to release hydrogen sulfide at no more than an average of 25 parts per billion (ppb) over an hour.

But on Monday the hourly average was 150 ppb, with a peak emission of 672 ppb.

"And I'm told by reliable sources that Puna Geothermal's monitors picked up not 672 ppb but 250,000 ppb on the site.

"This all occurs when the company knows it is under the greatest scrutiny. Can you imagine what it's going to be like when people aren't paying close attention?"

Even the state Health Department "seems to be at the end of its rope" over geothermal, Levin said, "but the Health Department does not run the government; the governor and this Legislature do.

"This cannot go on; government must not let it go on."

Levin said he has asked that the Senate be briefed on the entire geothermal development project by the Health Department, the Department of Land and Natural Resources, and the Big Island Civil Defense Department.

State shuts off Puna

By Joan Conrow

Special to The Advertiser

HILO, Hawaii — The state Department of Health yesterday said Puna Geothermal Venture will be shut down indefinitely until it solves technical and communication problems.

The company was ordered to stop cleaning debris from production well KS-9 Monday after it released noxious hydrogen sulfide gas at levels more than six times the amount allowed under its state permit.

Two workers were knocked down when the highly pressurized acid gas was released up the well from far below the earth's surface. The cleaning was halted after a half-hour Monday, but Puna Geothermal officials said

there were no major technical problems and hoped to resume operations as early as that afternoon.

Paul Aki, chief of the Health Department's clean-air branch, said Puna Geothermal has lost credibility and will have to work hard to regain the department's trust after this latest incident.

"This is not the first time this has happened," Aki said of the excessive hydrogen sulfide emissions, "so we don't want to hear this is a new learning experience. We can't go on getting new learning experiences for each project."

The breakdown in communications that occurred Monday is even more serious than the technical problems, Aki said.

Neither Civil Defense officials nor the Health Department's air-quality monitors were notified that Puna Geothermal had begun cleaning the well and that high levels of hydrogen sulfide were emitted almost immediately, he said.

As a result, one of the residents who had gathered to protest the cleaning operation had to climb a barbed-wire fence outside the monitors' office and notify them that the operation was beginning.

Aki said the monitors by that time had already noticed the plume of steam coming from the well and were preparing to go outside. But he acknowledged that their lack of preparedness did not sit well with residents, who are wary of the depart-

Geothermal

ment's ability to enforce permit requirements at the project.

"It's bad when you have to hear about it from the community," he said.

Puna Geothermal officials had no explanation for the communication failure when they met with state and county officials yesterday afternoon, Aki said. But the company did present a new procedure for abating hydrogen sulfide emissions.

"We need to see if it's going to work or not," Aki said. "They presented us with a revised procedure last time and it didn't work. We have credibility here at stake."

Aki said it was impossible to tell how long it would take for Puna Geothermal to reassure the Health

Department that it has finally resolved the two main problems that have plagued the \$120 million project for the past two years.

"It's difficult to predict the technical side, but if we can overcome our communication problem, that's a major point," he said.

Steve Morris of Puna Geothermal said in a statement, "We hope the matter will be resolved shortly."

Still, yesterday's developments dealt another setback to Puna Geothermal Venture's hopes to provide electricity to energy-strapped Hawaiian Electric Light Co. The project, using underground steam and heat to generate electricity, was contracted to begin providing 25 megawatts of power from October 1991.



—T-H photo by William Ing

SKEPTICAL OBSERVERS — Protesters watch yesterday's geothermal flow testing from the HGP-A compound. Seven were arrested for trespassing, a petty misdemeanor.

Leaks close PGV plant

□ Worker, residents sickened by gas; protesters arrested

By Gordon Y.K. Pang
Tribune-Herald

Puna Geothermal Venture's attempts to produce energy hit another setback yesterday when a scheduled four-hour well-cleaning was halted indefinitely by the Health Department and Civil Defense.

Hydrogen sulfide levels reached spikes of 672 parts per billion near the plant, several times the amount allowed by state permits, officials said.

The elevated levels lingered for about 15 minutes, according to both PGV and the Health Department, and came out to an hourly average of 150 parts per billion, or six times the level allowed by the state.

In related matters, seven people who entered the Pohoiki plant site as a protest to the well-cleaning were arrested and charged with simple trespass by Puna police.

And PGV officials confirmed that two workers were "exposed" to hydrogen sulfide but said only one required on-site treatment.

Deputy Health Director Bruce Anderson said the cleanout would not be allowed to continue until at least tomorrow, and only if the state is satisfied with PGV's assurances that the problem won't occur again.

Anderson said blame for the release centers on two problems.

Hydrogen sulfide gas apparently accumulated at the top of the KS-9 well which released when the clean-out began.

"They need to determine a way to effectively mitigate that release and remove the hydrogen sulfide," Anderson said.

He added that it is believed that there was a large amount of water in the well which may have inhibited the abatement system.

PGV shut down the well about 45 minutes into the cleanout to tighten bolts and "re-pack an expansion spool," project manager Steve Morris said, as part of routine procedures.

At that point, Health Department and Civil Defense officials raised concerns about the elevated levels of H₂S and stopped PGV from going further, Morris said.

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—T-H photo by William Ing

TESTING'S PAU — PGV security chief Richard Dodds informs protester Jim Albertini that plans for further flow tests have been scuttled for the rest of the day. The tests were stopped after about 45 minutes.

PGV: Geo plant shut down after gas leaks

From Page 1

Morris refused to speculate on whether the incident was a major setback for the troubled project.

"We're still very optimistic (the plant) will be on-line with a substantial amount of power by the end of March," he said. "Anytime you have a change in plans, that's not good, but we're moving forward and our goal is to get on-line by the end of March. I'm optimistic we'll get there."

Meanwhile, the Big Island Rainforest Action Group accused Health Department monitors of sitting around while the cleanout occurred.

"They were sitting around drinking coffee, eating doughnuts and making jokes while people were choking and vomiting in Puna," said BIRAG spokesman Jim Albertini. It wasn't until a protester witnessing the scene hopped the fence and began yelling at

them that the monitors took action, he said.

Anderson said he wasn't aware of the episode. Albertini said he was told that the monitors hadn't been informed by PGV of the new start-up time for the cleanout after a two-hour delay.

Morris confirmed that two employees were "exposed" to H₂S during the cleanout. One required treatment which consisted of inhaling oxygen. The other man refused treatment, he said.

Protesters at the scene said one man appeared unconscious for a period. Morris denied that happened.

Civil Defense meanwhile reported two complaints, including one from Jim and Jo West. The latter said the smells coming from the plant made her vomit while she, her husband and a friend visiting their

home all got sore throats and suffered dizziness and queasy stomachs.

Anderson, as he has done in the past, downplayed the effect of the levels of hydrogen sulfide going into the community.

"Exposure to these levels present a serious odor nuisance problem to residents," he said, adding that he doesn't know the levels the Wests were exposed to.

He cited the Occupational Safety and Hazard standards which give no documented health effects from exposure to H₂S of less than 10,000 ppb over a continuous five-day, eight-hour work period.

"At this point in time, with the heightend community concern, any illnesses can be attributable to geothermal," he said, adding that the illnesses may be "psychogenic in nature."

Anderson said the state is

"frustrated" by PGV's continuing problems but feels that situations have been satisfactorily addressed as they've occurred.

"This is a new problem, it wasn't anticipated," he said. "It's part of the learning process."

Anderson said the department is investigating to see if PGV should be fined for permit infractions.

Seven demonstrators were arrested and charged with trespassing on PGV property yesterday: Nancy Campbell, 22, of Pahoa; Robert Petricci, 37, of Leilani Estates; Holita Bat-Edit, 49, of Mountain View; Gordon Hoohuli, 26, of Pahoa; Brenda S. Amick, 32, of Kapoho; Mark A. Kindermann, 28, of Kapoho; and Dennis Gregory, 44, of Kalapana.

All were released on \$25 bail.

Lethal H2S levels released

□ Confusion over when geo plant can re-start expressed

By Gordon Y.K. Pang
Tribune-Herald

On-site monitors at Puna Geothermal Venture's power plant picked up hydrogen sulfide readings as high as 250,000 parts per billion, a potentially "lethal" dosage, when steam was released from a production well Monday, Civil Defense Administrator Harry Kim said this morning.

Kim said the levels were

picked up by monitors in the area of the KS-9 production well where two PGV employees inhaled the H2S gas. Ten police officers in the vicinity of the nearby KS-8 well at the time also reported feeling ill effects.

"I got this from the meeting (with government and PGV officials) on Tuesday," he said.

Meanwhile, state Sen. Andrew Levin said on the floor of the Legislature practically the same thing.

"I am told by reliable sources that PGV's monitors picked up 250,000 ppb 'on site,' where one of its workers was downed and required oxygen," Levin said.

Health Department officials this morning said they were aware of the reports of the high levels. They said they were concerned and looking into the matter, but added that the Health Department permit applies only to off-site levels.

Deputy Health Director Bruce Anderson said while there was no imminent health threat to residents, there may have been some danger to the two PGV employees affected. One, which required oxygen, was wearing his mask improperly.

Anderson said the levels were "in the range where you might expect severe respiratory stress

... and could be lethal in some circumstances."

The Health Department's acknowledgement this morning contradicted statements made by Paul Aki, chief of the Health Department's Clean Air Branch to the Tribune-Herald yesterday. He said the highest reading found was off-site and was 672 ppb, or 125 parts per billion on an hourly average, about six times the 25 ppb allowed by state permit.

Asked this morning if the high on-site reading was correct, PGV general manager Steve Morris said, "If you mean right at the well head, you may have

got that right."

Morris said the reading was mentioned at meetings on Tuesday but that he doesn't know whether it came from PGV's own monitors or not.

"I'd have to go and check the meeting notes," he said.

The Occupational Safety and Health Administration said H2S begins to be a safety concern when people are exposed to 10,000 parts per billion constantly over eight hours a day,

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PGV: Lethal levels of H2S were released

From Page 1

five days a week.

The Health Department shut down the clean-out Monday when the high levels of H2S were detected. PGV attributed the release to a steam cloud building at the top of the KS-9 well. Prior to the clean-out on Monday, PGV officials had given assurances that only "clean steam" would be released during the procedure.

Meanwhile, whether Puna Geothermal Venture will be allowed to restart the clean-out of its KS-9 production well remained an unanswered question this morning.

A legal advertisement running in today's Tribune-Herald gives public notice that the clean-out would restart at 8 a.m. tomorrow.

Kim said he'd heard from Aki and Deputy Health Director Bruce Anderson yesterday afternoon that PGV was on again, only to learn this morning that Lewin had called start-up off again.

Department of Health spokeswoman Jennifer Castleberry also said this morning that PGV did not have DOH approval to start up again.

"My understanding is that during yesterday's meeting, there was a lot of discussion about lifting the ban and PGV needs to give sufficient notice to residents," Castleberry said when queried about the ad.

Castleberry said the state knew the ad was running, but added that she was unclear as to whether PGV was given author-

ity to run it.

"In the event that approval was given, they needed to notify nearby residents that they were going to start up," she said. "The approval has not been given and therefore the ad is moot."

She said she was certain, however, that no go-ahead was given to officials of the troubled power company.

"The ultimate decision lies with the director of health and the director of health hasn't given the go-ahead," she said. Health Director John Lewin "needs a lot more assurances that there aren't going to be more problems and that the health of nearby residents is protected."

Castleberry said besides assur-

ances that the incident wouldn't happen again, Lewin wants guarantees that PGV's poor track record in communicating mishaps to the Health Department and county Civil Defense is improved.

Castleberry did not rule out the possibility that the Health Department would give PGV the go-ahead this afternoon to restart in the morning.

"We're not going to rule that out," she said. "But it's very doubtful PGV can comply with all of our conditions to start up."

Lewin was to meet with Deputy Health Director Bruce Anderson, Clean Air Branch chief Paul Aki and other staffers this afternoon, she said, "but at this point, we have no time frame on when they can start."

New rules set for PGV

□ DOH wants an on-site monitor at the geothermal well

By Jim Witty
Tribune-Herald

The Department of Health will now require a state inspector be on-site when Puna Geothermal Venture cleans out or starts up a well.

That proviso is part of a set of additional conditions imposed upon the beleaguered company

yesterday by the DOH.

New conditions include:

- Better notification by the developer of hydrogen sulfide releases.

- Providing a comfortable site for residents to go to during such operations.

- Phoning every resident within 3,500 feet that clean-out activities will resume; issue a press release describing in detail the planned activities.

The DOH announcement came in the wake of last week's clean-out gone awry. The proce-

cedure was ordered stopped when hydrogen sulfide readings spiked at the site. DOH said it intends to fine PGV \$10,000 for allowing hydrogen sulfide levels to soar to 672 parts per billion near the plant or 150 ppb on an hourly average, six times the maximum allowable average of 25 ppb.

"Believe it or not, DOH still thinks geothermal is a viable Big Island energy alternative to fossil fuels," said DOH Director John Lewin in a release. "However, how that resource is deve-

loped in terms of safety to workers and impacts on neighboring communities is critical. We must assure effective communication and levy fines should these new communication standards not be met."

PGV is already required to notify the community of start-up and clean-out plans 24 hours in advance.

While monitoring stations at the PGV property line record hydrogen sulfide levels there, DOH now wants to be notified when high levels at the well

head are likely to produce 5 ppb there, said Lewin.

While the state Department of Land and Natural Resources has had an on-site inspector during operations, the DOH has not. DLNR's jurisdiction encompasses the underground resource and the wellhead; DOH oversees air and noise emissions.

Lewin said PGV is expected to sign an agreement on the permit revisions this week.

"I believe what they're asking
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PGV: Health Department sets new rules

From Page 1

for is reasonable," said PGV vice president Steve Morris this morning. "Most of these things they're asking for are already in place. It's just a formalization."

Morris said the company has always had an "open door policy" to the DOH and the addition of an on-site inspector is "not an issue."

In a related incident, about two dozen Puna residents

jammed Mayor Steve Yamashiro's office yesterday calling for an immediate halt to all geothermal activity.

The mayor met with the group for about 45 minutes but the residents failed to win any concessions.

According to Big Island Rainforest Action Group spokesman Jim Albertini, the group wanted

Yamashiro to "take a stand against PGV being allowed to resume the cleanout of its KS-9 well and support a complete halt to all activity ... until a comprehensive, independent investigation of all PGV operations is completed and reviewed with public hearings in Puna."

Yamashiro favors voluntary relocation of nearby residents.

Monday, PGV announced the drilling of its KS-10 production well was stalled at 200 feet where a drill bit was lost in the 26-inch hole. Drilling of a parallel hole to bypass the lost bit will delay completion of KS-10 by about 10 days, said Morris. The delay is not expected to affect the scheduled power plant start up at the end of March, he said.

Matsuura: Geo bound to cause 'nuisances'

□ But if it doesn't perform, he'll call for it to be stopped

HONOLULU (AP) — State Sen. Richard Matsuura says if the Puna Geothermal Venture's power plant and well field at Pohoiki can't be made to perform as promised, it will be shut down "and I'll be the first to call for it."

However, he went on to de-

pend geothermal development, saying its bound to cause some nuisances.

Matsuura, a strong supporter of geothermal energy development, commented on the Senate floor yesterday in response to this week's release of excessive levels of toxic hydrogen sulfide emissions during a cleanout process of a new production well.

On Wednesday, Sen. Andrew Levin called for the state to consider halting geothermal development if it cannot be done in a

safe manner.

Hawaii County Civil Defense Administrator Harry Kim said hydrogen sulfide emissions on the ground at PGV's KS-9 well reached potentially lethal levels Monday.

The emissions were 250,000 parts per billion, thousands of times higher than the level allowed by the company's permit from the state Department of Health.

The state Health Department ordered a halt to the cleanout

operation.

"What happened at PGV in Pohoiki Monday will not be tolerated for a very long time," Matsuura said.

"I think that what we need to understand is that in the development of the geothermal resource you have to understand there are risks," Matsuura said.

"And I'm not making no bones, there are nuisances that is associated with geothermal development," he said.

Morris: PGV on line by April

Puna Geothermal Venture General Manager Steve Morris on Friday said work will continue on some work at PGV's Pohoiki plant which is expected to resume electrical generation by the end of March.

A clean-out of recently drilled geothermal well KS-9 was halted on Monday by the state Department of Health shortly after the four-hour procedure began when extremely high levels of hydrogen sulfide gas were released.

On Friday Morris confirmed that a PGV monitor about 50 yards downwind from the well registered hydrogen sulfide levels of 250,000 parts per billion. Monitors on the facility's perimeter registered an hourly average level six times that allowed under PGV's permit.

A DOH spokeswoman on Friday refused to say when PGV would be allowed to resume the procedure.

Morris said that in the meantime, plant workers would install permanent piping to be used to conduct geothermal steam to the power generation plant.

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March / Enthal/Hansen / Sp / ... / ...
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State stopping geothermal cleanout indefinitely

By ROBIN M. JONES
West Hawaii Today

HILO — According to two county officials, Puna Geothermal Venture was told by the state Department of Health Wednesday that it could resume its well cleanout procedure, but that information was later denied by state officials.

The \$130 million Pohoiki geothermal plant was ordered to stop cleaning the drilling debris from its new KS-9 production well Monday after hydrogen sulfide emissions were recorded at levels more than six times the allowable limits.

PGV was told at about noon Wednesday that the state-

imposed ban on the cleanout of the KS-9 well was being lifted immediately, two officials confirmed.

But at about 5:30 p.m. Wednesday, Jennifer Castleberry, Department of Health spokeswoman, said "no official decision has been made" about lifting the ban. And it is "too premature to

say when" it might be lifted.

"The final decision lies with the (Department of Health) director, and he needs to be fully assured that there aren't going to be reoccurring problems," she said. "He needs much more assurances before the ban can be lifted, and his patience is wearing thin."

Castleberry said the confusion about whether the ban had been lifted was due to the ongoing discussions between PGV, the state officials and county officials. "There was discussion about lifting the ban, but there

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...State stops geo cleanout indefinitely

From Page 1A

has been no decision to lift it."

A county Planning Department official, who requested his name not be used, confirmed the ban had been lifted but also said he'd heard the Department of Health had second thoughts after lifting the ban.

At least one Hawaii County official expressed dismay and disappointment when he was told the ban had been lifted so quickly.

Hawaii County Civil Defense Administrator Harry Kim said he had been told following a Tuesday evening meeting that the Department of Health did not envision lifting the ban anytime soon. The officials wanted to review what they had been told during the meeting and would make a decision sometime in the future.

But then he received the call about noon Wednesday saying that the ban would be lifted effective immediately.

Kim said that during the meeting Tuesday, he had made it clear he felt that under the current system, his department is unable to do its job of monitoring,

notifying and protecting the public. He said he still feels "the system is ineffective and we cannot do our job." He said he just hopes his concerns are addressed.

"We too are concerned," Castleberry said. "We have got to make sure the public is protected." She added that the high emissions readings coupled with the plant's close proximity to residents make the situation all the more problematic. "We have some reservations."

PGV officials were told that before the ban would be lifted, they had to explain what had caused the hydrogen sulfide leak and how it would be prevented from occurring again.

"There are going to be some steps that PGV is going to have to take to assure us that no more problems will occur," Castleberry said adding that the health department also would like PGV to establish a place for nearby residents to wait out future procedures that could result in problems.

Steven Morris, PGV vice president and general manager, said Monday a trapped hydrogen

sulfide bubble that bypassed the abatement system could have been the cause of the release. He did not return phone calls Wednesday to comment.

The planning department official said he and other planning department officials are confident PGV will not have the same problem again. He said PGV has never had an identical problem twice.

"But it's been problem after problem," Castleberry said.

The planning official conceded, however, that he would bet no one would say he is 100 percent confident that there would not be another hydrogen sulfide leak.

Almost immediately after the 9:15 a.m. start of the scheduled four-hour cleanout process, hydrogen sulfide began spewing from the well and was recorded at levels as high as 672 parts per billion. The hourly average recorded at a monitoring station in a subdivision near the plant was about 150 ppb. The hourly limit allowed under the state permit is 25 ppb.

PGV awaiting go-ahead by state officials to resume KS-9 operation

By ROBIN M. JONES
West Hawaii Today

HILO — Although it will be a while before Puna Geothermal Venture resumes cleanout procedures at well KS-9, company officials said the delay will not affect its projected startup date.

Steven Morris, PGV vice president and general manager, said Hawaii Electric Light Co. will be receiving geothermal power from the plant before April, unless the current shutdown continues until the end of March, or the date the plant is scheduled to be back online.

The well cleanout "has never been on the critical path to our start up," Morris said. It is not as if each day the ban on the cleanout continues the startup date is delayed a day, he added.

PGV is also investigating bypassing the step, Morris said.

Almost immediately upon beginning Monday's scheduled four-hour clean out of the plant's new production well, hydrogen sulfide emissions were released, overcoming two PGV workers and sickening nearby residents. Police at the Pohoiki site were also affected by the release.

About 30 minutes into the 9:15 a.m. cleanout, PGV stopped the process to make necessary equipment adjustments. During the interruption, PGV was ordered by the state Department of Health (DOH) not to continue cleaning drilling debris from the well.

The DOH handed down the order on the request of Hawaii County Civil Defense Administrator Harry Kim, who made the plea after receiving complaints of the uncontrolled emissions, which forced people to leave their homes.

Health Director John Lewin, who will make the final decision when the operation can resume, has not decided when that authorization will be made, said DOH spokesman Jennifer Castleberry.

Lewin needs more information and assurances that PGV will not have a similar occurrence once it resumes the process, she said.

...PGV awaiting OK by health officials

From Page 1A

Big Island Rainforest Action Group members asked that it never be allowed to resume operations. Group spokesman Jim Albertini said, "BIRAG has requested Lewin stand firm in not allowing PGV to reopen its KS-9 well. No more next time for PGV."

Sen. Andy Levin (D—Puna, Ka'u, South Kona) said it should remain closed at least until PGV can thoroughly explain what caused the most recent problem at the \$130 million Puna plant.

"I absolutely support and am calling for a continuation of the current closure until the outstanding issues can be resolved," he said. Levin added that if PGV cannot stop having so many problems, of which this was just the latest in a series, he will push to have the plant closed permanently.

Levin is calling for government officials to get together and discuss what went wrong, what can be done to prevent future problems and whether the industry should be allowed to continue. He is also asking that PGV not be allowed to resume the cleanout procedure until the officials can

come up with some answers, he said.

Levin said he is getting frustrated with the situation and is beginning to think the developer is totally incompetent or the resource too volatile for modern technology. Either way, he said, people can't be expected to continue putting up with the problems.

Even officials of the Hawaii Island Geothermal Alliance, a lobbying organization supporting geothermal development on the Big Island, said the problems must be remedied.

"These kinds of problems have to be corrected," HIGA Executive Director Bill Cook said. "This type of thing can't be tolerated indefinitely."

Morris said the problem will not happen again. "The technical aspects of the problem have been solved," he said. The problem was resolved almost immediately after the hydrogen sulfide was released, he added.

The emissions were allowed to escape because of inefficient abatement caused by too much water combined with the hydrogen sulfide at the top of the well, he said. "It was a momentary situation that was stabilized very

quickly," he said.

Before the situation was stabilized, however, enough hydrogen sulfide escaped to register at 672 parts per billion at a monitoring station in a neighborhood near the plant.

The reading dropped quickly to an hourly average of 150 ppb. The limit allowed under the state permit is 25 ppb on an hourly average.

Readings of as high as 250,000 ppb were reported to have been taken on the site near well KS-9, but Morris said he would not comment on that.

Morris said the cleanout procedure will be modified when it is allowed to be resumed. Morris said he is not sure how long it will be before he is given authorization to continue, but work will proceed at the plant as long as there are other things to be accomplished.

He said PGV officials will also continue discussions with state and county officials.

Cook said PGV should be allowed to continue moving ahead. The Big Island is still in desperate need of alternative energy, and neither he nor HIGA have lost confidence in PGV and the geothermal industry.

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Mayor meets Puna protesters

Anti-geothermal group gets no satisfaction

By Joan Conrow
Special to The Advertiser

HILO, Hawaii — About two dozen Puna residents crowded into Mayor Steve Yamashiro's office yesterday and demanded an immediate halt to all geothermal activity.

Yamashiro met with the angry, frustrated group for about 45 minutes after they had stood with signs and literature outside his office for nearly an hour.

But it quickly became apparent that the group wasn't satisfied with Yamashiro's assurances that the state Department of Health is working with Puna Geothermal Venture to resolve the problems of excessive hydrogen sulfide emissions that led to the closure of a production well last Monday.

The residents also weren't happy with Yamashiro's support for relocating residents who no longer want to live

near Puna Geothermal's \$130 million steam-to-electricity project in Pohoiki.

"No way in the world are they going to move me off my land," said Adrian Barber, a Lanipuna Gardens resident who said he has suffered from severe headaches, ringing in his ears and bad dreams since the Feb. 8 release of noxious hydrogen sulfide gas.

"They have no right to intrude on my life with their toxic fumes. How come the government is moving me off my land to make way for private industry?"

Yamashiro and Bruce Anderson, the state Health Department's deputy director for environmental programs, have said that residents need to be better informed of Puna Geothermal's activities and that they should be given a place to stay while procedures are under way that could cause noise or odor problems.

But many of those who crowded into Yamashiro's office yesterday said they do not trust Puna Geothermal to give them adequate warning because even the Health Department and Civil Defense Agency weren't notified before the clean-out began Feb. 8.

With tears coursing down his cheeks, Robert Amato pleaded with Yamashiro to stop geothermal "before someone dies."

He said pregnant women and young children were among the protesters exposed to high hydrogen sulfide levels outside the plant's gates when last Monday's clean-out began unexpectedly.

Robert Petricci, who has been arrested eight times while protesting geothermal energy development, said temporary relocation is impractical because it takes 60 to 90 days to drill a well and high hydrogen sulfide emissions are possible during that process.

Many residents asked Yamashiro to relocate the project, rather than the people, or at least hold off on continued operations until an independent investigation into Puna Geothermal's activities can be completed.

"We think this is a very moderate request," said Jim Albertini of the Big Island Rainforest Action Group.

But Yamashiro said the county does not believe it has "a legal basis to kick them (Puna Geothermal) out" and has accepted the Health Department's assurances that the excessive emissions were "not a lethal situation."

"We're not disputing it's an industrial use that may not be compatible with the homes," he said. "That's why it's important to move forward with voluntary relocation and buffer zones. I still say it's a good form of energy that we need for this island."

Puna Geothermal facing

By Joan Conrow

Special to The Advertiser

HILO, Hawaii — Puna Geothermal Venture would face fines if it fails to notify neighbors and the state Health Department the next time it releases excessive hydrogen sulfide.

That's one of the conditions the Health Department yester-

Geothermal protesters confront Yamashiro, demand halt to operations. Page A4

day said it will impose on the company before it can restart its Pohoiki project.

The state ordered Puna Geothermal's KS-9 production well shut down on Feb. 8 after high

levels of hydrogen sulfide gas were released while the well was being cleaned out.

The new conditions deal primarily with improving communications between the developer, government officials and residents before and during well cleaning and start-up activities.

The rules allow the department to fine the company if it violates communication and notification provisions, said Health Department spokeswoman Jennifer Castleberry. Currently, fines can be assessed only if emission limits are exceeded.

"Believe it or not, DOH still thinks geothermal is a viable Big Island energy alternative to fossil fuels," said Health Director Jack Lewin in a written statement.

stiff conditions

"However, how that resource is developed in terms of safety to workers and impacts on neighboring communities is critical. We must assure effective communication and levy fines should these new communication standards not be met."

The new rules would include requirements that Puna Geothermal:

- Notify the Health Department if hydrogen sulfide emissions are expected to exceed 5 parts per billion at the fence line that separates the plant from neighboring homes.

- Allow a Health Department inspector at the wellhead to monitor emissions and operations.

- Provide a comfortable site for residents who wish to relocate during such operations.

- Telephone every resident

who can be reached within 3,500 feet of the project and any others who wish to be notified before resuming clean-out or start-up activities.

Puna Geothermal vice president Steve Morris said his company and the state were "very close to an agreement on communications. There are a couple issues we need to resolve."

However, he said, Puna Geothermal will not resume the clean-out of KS-9 and instead will work toward starting up the project power plant, which produces electricity using underground steam and heat tapped by the well.

The \$130 million project should be providing electric power by the end of March, he said. It has been under contract to provide Hawaii Electric Light Co. with 25

megawatts of power since October 1991, but so far has produced no energy.

Some soil and debris still may be present in the well because the scheduled four-hour clean-out on Feb. 8 was halted after about 30 minutes, he said. Those materials will be picked up by the power plant's separators.

The company decided to move ahead and risk additional maintenance on its separators rather than wait for the Health Department to lift the ban on the clean-out, he said.

Meanwhile, the project suffered another setback yesterday while drilling well KS-10, a back-up to KS-9, when a drill bit "twisted itself off" when it hit hard rock at a depth of about 200 feet and could not be retrieved, Morris said.

Geothermal fans push to

By Helen Altom
Star-Bulletin

Supporters of the Big Island's troubled geothermal development have pounced on a bill providing for relocation of nearby homeowners as a solution to much of the friction.

With near-lethal concentrations of hydrogen sulfide gas released from Puna Geothermal Venture's KS-9 well Feb. 8, geothermal issues drew a big crowd to a Senate hearing Friday.

State, county and union officials urged passage of a bill establishing procedures to relocate homeowners meeting certain criteria, with some changes suggested.

But people in the area would rather see the industry relocate.

Opposition came from Lani Puna Gardens Community Association, which fought a similar measure last year.

"No one should be forced to sell their homes because a dangerous and unnecessary industrial project has moved in next door," Aurora Martinovich said.

The relocation bill was one of a number of geothermal-related bills considered by the Science, Technology and Economic Development Committee, headed by Sen. Matt Matsunaga, and the Public Safety Commit-

tee, chaired by Sen. Stan Koki.

Big Island Mayor Stephen K. Yamashiro, in a written statement, said the county is at a point "where the reality of the conversion from a raw resource into electrical energy on a commercial scale is imminent."

But he said the development has been slowed by continued opposition from some area residents. "Relocation presents a means to resolve this conflict."

Yamashiro said, however, that allowing resale of the homes and property without restrictions would defeat the purpose of the relocation to minimize residential uses near the geothermal facility.

He said the bill should include provisions for disclosures to potential buyers of the property, waivers by the buyers and the Department of Land and Natural Resources' ability to place noise or nuisance easements on the properties as they're bought and resold.

Fred Galdones, Hawaii Division director, ILWU Local 142, said the union was "disappointed" with Puna Geothermal Venture's performance this week.

He also disagreed with comments made Wednesday by Big Island Sen. Andy Levin "that Hawaii's geothermal resource is too

relocate homeowners

“
*No one should be forced
to sell their homes
because a dangerous and
unnecessary industrial
project has moved in
next door.*

”

Aurora Martinovich,
Lani Puna Gardens Community Association

with sugar's shutdown.

Noting strong community opposition to the relocation proposal last year, Martinovich asked the legislators, "Why . . . are you attempting to force the state to consider this high cost program again? . . ."

"Our lives and our children's lives will continue in our community well beyond any hopes or economic incentives of PGV or any developer."

Opinions also were sharply divided on a bill containing a "drop dead" clause for geothermal subzones if the land department doesn't revise them every five years.

Opponents argued that it is unfair and possibly unconstitutional because the law only allows geothermal development in a geothermal subzone.

Removal of the designation would mean the development must be stopped, said Allan Kawada, Hawaii Project Coordinator for True Geothermal Energy Company.

Jane Hedtke, Kapoho Community Association president, urged the bill's passage. She cited "conflicts in the rezoning and assessing of land areas to accommodate the geothermal industry" despite continuing air quality and noise problems.

hot, too toxic or otherwise unmanageable with modern control technology."

With Hamakua sugar layoffs looming, the island needs investors in diversified agriculture, light industry and other employment opportunities, he said.

Galdones also pointed out that the island will probably lose an additional 10 megawatts of electricity, now provided by Hamakua,

Health Department will fine PGV

By ROBIN M. JONES
West Hawaii Today

HILO — The state Department of Health will fine Puna Geothermal Venture for violating conditions of its permits last week when it released high levels of hydrogen sulfide during a well cleanout procedure.

"We will definitely fine them," said Jennifer Castleberry, Health Department spokeswoman. "They were in violation of their permit." But the amount of the fine has yet to be determined, she said Tuesday afternoon.

PGV can be fined up to \$10,000 per day for permit violations. Its state-issued permit was violated briefly Feb. 8, when hydrogen sulfide was recorded at an off-site monitoring station at levels as high as 672 parts

per billion (ppb) and 150 ppb on an hourly average. State officials said the release may have reached as high as 250,00 ppb near well KS-9. Under PGV's permit conditions, it is allowed releases of 25 ppb on an hourly average.

Steven Morris, PGV vice president and general manager, said he could not comment on the fine because he had not been officially notified by the Health Department that a fine was being considered or what the penalty might be.

Castleberry said, however, that a fine is forthcoming as soon as the department can determine what the amount should be. She also said PGV will be given a list of conditions it must meet before the Health Department will give the company permission to do any cleanout or startup activity.

The list will consist of conditions for

notifying the state and county officials in the case of similar future problems, Castleberry said. Hawaii County Civil Defense and the state Health Department faulted PGV for not notifying them sooner about the uncontrolled release and the high levels of the noxious gas.

During the release, two PGV workers were overcome by the fumes but needed no medical attention before going back to work.

Morris said that although the incident was problematic and the emissions a nuisance to the surrounding community, the incident was not significant, and PGV is moving ahead with other work on production well KS-9. The company will also

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...Department of Health will fine PGV

From Page 1A

forego completion of the well cleanout, he said.

Waiting for the Health Department's approval to continue the process could delay other work that needs to be done, he said.

PGV will construct permanent well piping while foregoing the cleanout. Morris said the two processes cannot be done simul-

taneously and waiting to begin the pipe work could delay the date set to begin supplying HELCO with power.

Despite last week's occurrence, PGV officials are optimistic they will be able to start supplying power before April, Morris said.

The change in plans could have an affect on future processes at

the plant, Morris said. "Potentially, we may end up having to clean some power plant equipment differently," but discontinuing the cleanout will likely not have any significant effect.

"It's not an 100 percent optimal way to do it," he added. But to keep to the proposed startup date, it is necessary, he said.

New conditions for Puna Geo Venture

By ROBIN M. JONES
West Hawaii Today

HILO — Puna Geothermal Venture will pay fines if it fails to adhere to new notification and communication conditions under revisions to the state-issued permit, the state Department of Health said.

According to the new conditions, PGV will be required to better notify the Department of Health of significant hydrogen sulfide leaks or any abnormal situations, or risk paying up to \$25,000 for each violation.

PGV will also be required to follow new procedures before and during cleanouts and startups. PGV will be required to have a Department of Health inspector at the wellhead during those activities and provide a comfortable location for residents to go if they wish not to remain in their homes during those activities.

In addition, PGV must telephone every resident within 3,500 feet and all others who wish to be notified that cleanout activities will resume, issue a press release describing in detail the activities planned and make the release available to residents.

PGV is already required to publish a notification in local newspapers of the startup and cleanout activities, but the Health Department wants to bolster that requirement to assure residents

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...New rules are imposed upon PGV work

From Page 1A
are aware of the planned activities at the Pohoiki plant.

Many of the rules are not actually new but are instead being formalized by adding them to the company's permits, said Jennifer Castleberry, Department of Health spokeswoman.

She said the department has hashed out the rules over and over again with PGV, but the company has failed to adhere to the rules satisfactorily. Now with them added to the permit, the Health Department will be able to fine PGV if it fails to comply, she said.

Adding the rules and the few new conditions to the permit is a response to last week's hydrogen sulfide leak during cleanout of production well KS-9.

The Health Department ordered PGV not to resume the cleanout after the department was informed that hydrogen sulfide

levels were recorded as high as 672 parts per billion and 150 ppb on an hourly average. PGV is allowed releases of 25 ppb on an hourly average.

PGV will also be required to enter into an agreement with the state Department of Health and Department of Land and Natural Resources and the county "spelling out who contacts whom in an extraordinary event."

PGV is already required to notify the state and county about unusual events and hydrogen sulfide leaks, but the Health Department and the Hawaii County Civil Defense faulted PGV on its delayed notification during the recent leak.

Castleberry said her department "needs to be notified in a timely manner" of any problems, and that did not happen last week. She said the added changes will stress again that the department "needs to be made aware of any levels that can pose a nuisance"

to nearby residents.

Castleberry said PGV has not shown any objections to the new rules or the possibility of paying fines for failure to adhere to the rules.

Steven Morris, PGV vice president and general manager, could not be reached for comment Wednesday.

The Health Department and the state Attorney General's office have not yet decided the amount PGV will be fined for its hydrogen sulfide leak last week, Castleberry said.

That decision may not come for weeks, maybe even months, which is how long it could take the AG's office to draw up the formal notice of violation, she added.

According to changes made last year to the permit, PGV can be fined up to \$25,000, for the permit violation, not the \$10,000 originally thought, Castleberry said.

PGV will proceed with other work at KS-9 well

By KARIN STANTON
West Hawaii Today

Puna Geothermal Venture will proceed with work on well KS-9 despite having testing stopped indefinitely by state health officials, company officials said Friday.

PGV is postponing completion of the clean-out flow, as ordered by the Department of Health, but will proceed with construction of the permanent well piping to ensure operations begin in March, PGV Vice President Steven Morris said in a prepared statement Friday. Work also is

continuing on well KS-10.

An activist organization announced plans Friday to protest outside Mayor Stephen Yamashiro's office at 10 a.m. Tuesday if the mayor does not speak out against PGV activities.

Big Island Rainforest Action Group has demanded the mayor take a stand against PGV being allowed to restart the clean-out of well KS-9 and that he support a complete halt of all PGV activity, including drilling of well KS-10 until an independent investigation is completed and reviewed at

public hearings in Puna, BIRAG spokesman Jim Albertini said in a prepared statement Friday.

The mayor's office had no comment Saturday.

Enough data was collected in the 30 minutes of testing Monday to warrant finishing the project, Morris said.

Although it is restricted from performing further tests, the company is relying on reservoir engineering models to confirm the potential of the well, Morris said, and they indicate the well could be capable of

meeting the entire steam requirement of the 25-megawatt power plant.

The hydrogen sulfide gas released during the 30-minute test Monday morning happened over a two- to four-minute period preceding the steam production, Morris said.

Light winds kept the release "concentrated in a relatively narrow band," according to the statement. A PGV port

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...PGV to continue work on KS-9 well

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monitor, less than 50 yards from the well at ground level, recorded a single reading level of 250 parts per million (ppm), Morris said, which dropped to 1 to 2 ppm within minutes.

The Department of Health monitoring station recorded a peak level of 672 ppm for nine minutes and an hourly average of about 150 ppm, Morris said.

Two PGV workers were exposed to the gas, but resumed duties without medical treatment.

The release was the result of inadequate mixing with sodium hydroxide in the flow line, Morris said, and a revised procedure for sodium hydroxide injection has been established for future clean-outs.

A deformation in the outer casing near the wellhead will be

corrected by replacing the section of casing, Morris said. This work will be done while permanent production piping continues.

BIRAG members also are calling on the Civil Defense to formulate an emergency response plan to protect residents, PGV workers and county personnel.

Civil Defense Administrator Harry Kim was unavailable for comment Saturday afternoon.

Puna Geothermal to phone neighbors

□ State issues some new orders

By Rod Thompson
Big Island correspondent

HILO — Before Puna Geothermal Venture can resume operations, it must call anyone who wants information about upcoming well-cleaning and provide a temporary relocation site with refreshments for neighbors who want to leave the area.

Those were among new requirements placed on the company yesterday by the state Department of Health after the release of a dense concentration of hydrogen sulfide gas during a Feb. 8 well-cleaning.

The company did not immediately respond publicly to the Health Department, but the department said it expects the developer to sign the new requirements this week.

Investigation of last week's gas release is continuing, and the company faces fines of up to \$25,000 per day for exceeding the amount of hydrogen sulfide it was permitted to vent into the air, the department said.

That's an increase in the potential amount of the fine, which the department earlier said would be up to \$10,000 per day.

The company cleans a well after drilling is done and before beginning other activities such as measuring steam pressure and flow from the well.

Past well-cleanings have released pollutants directly into the air. The Feb. 8 cleaning was supposed to avoid that, using new equipment, but the equipment failed.

The Health Department has been angered by Puna Geothermal's failure to communicate properly, especially since better communications were required after previous company problems.

The company is already required to put a notice in a newspaper and send letters to residents within 3,500 feet of the plant before cleaning wells.

Now the company also will have to telephone residents within 3,500 feet "and others who wish to be notified," the department said.

The company also must issue a press release "describing in

Loss of drill bit slows work on getting new well on line

Star-Bulletin staff

KAPOHO, Hawaii — While attention focused on one Puna Geothermal Venture well, the company had bad news about another one yesterday.

The company has lost a drill bit, stuck at the 200-foot depth of the KS-10 well, it said. The company tried to get it out but couldn't and will have to "surface sidetrack" the problem, it said.

The phrase apparently means the company must start from scratch on the well, meaning 10 days' work has been lost. But the company said the delay would not affect the scheduled start-up of the power plant in March.

The action took place while cleaning of the KS-9 well has been on hold because of a large release of hydrogen sulfide last week. Drilling of KS-10 had been permitted to continue.

detail their planned activities." The department also demands an inspector at the plant. But it still backs geothermal energy. "Believe it or not, DOH still thinks geothermal is a viable Big Island energy alternative to fossil fuels," said Health Director John Lewin.

“
DOH still thinks
geothermal is a
viable Big Island
energy
alternative to
fossil fuels.
”

John Lewin,
Health director

Star-Bulletin

Wednesday, February 17, 1993



By Rod Thompson, Star-Bulletin

Robert Amato and other geothermal protesters ask Mayor Stephen Yamashiro to stop geothermal development on the Big Island.

Puna residents ired by mayor's failure to halt geothermal operation

HILO (AP) — Angry Puna residents left unsatisfied after a 45-minute meeting Tuesday with Big Island Mayor Steve Yamashiro, who refused their request to order an immediate halt to all work at the Puna Geothermal Venture well site in Pohoiki.

The mayor told the demonstrators state health officials are working with the company to improve health and safety at the plant and in neighboring residential areas.

The protesters told the mayor and state Health Deputy Director Bruce Anderson they weren't happy with tougher restrictions that require Puna Geothermal to give them better warning about leaks and other problems that occur at the plant. They cited the many times the company has failed to keep that promise, despite its assurances.

Also, the state Health Department said Tuesday that Puna Geothermal must allow the state to

do more site inspections and improve community notification procedures before it can resume operations.

The plant was shut last week after hydrogen sulfide leaked during a well cleaning.

Protesters also lashed at the mayor for comments last week that he supported moving residents who didn't want to live near the plant.

"No way in the world are they going to move me off my land," said Adrian Barber. The Lanipuna Gardens subdivision resident said he's suffered health and mental problems since last week's leak. "They have no right to intrude on my life with their toxic fumes."

Yamashiro told the group the state and county have no legal right to kick PGV off its land.

"We're not disputing it's an industrial use that may not be compatible with the homes," the mayor said. "That's why it's important

to move forward with voluntary relocation and buffer zones. I still say it's a good form of energy that we need for this island."

The Health Department guidelines require that one of its officials be present during well cleanings and when wells are restarted, and that the company provide a relocation site for residents choosing to leave while work is in progress.

A revised permit was drafted by the department and the state attorney general's office. The company must sign an agreement with the state and Hawaii County, accepting the terms of the new permit, before it can resume work.

Measures required to improve communication include notifying residents within 3,500 feet of the site that the cleanout has resumed and issuing a detailed news release of planned activities.

Puna Geothermal also will be required to report a release of hydrogen sulfide exceeding five parts per billion at the property line.

Yamashiro: PGV a go or not?

□ DOH says it will fine PGV \$10,000 for Monday's leak

By Gordon Y.K. Pang
Tribune-Herald

Mayor Steve Yamashiro expressed frustration with the state Department of Health over the handling of the Puna Geothermal Venture situation and suggested it's fish-or-cut-bait time.

"A decision has to be made," he said. "If the decision is that geothermal is needed, then it should continue. If it's not needed, then we should inform the developer. I think there's enough information out there to act and they should act."

PGV's four-hour clean-out of its KS-9 production well was ordered stopped on Monday when readings of 672 parts per billion of hydrogen sulfide were picked up from a fixed monitor in Lanipuna Gardens.

The reading came out to 150 ppb, six times the allowed 25 ppb. Deputy Health Director Bruce Anderson said yesterday that DOH intends to fine PGV \$10,000 for the offense, the maximum allowed.

The big question remains when PGV will be allowed the venting again. According to several sources, there is infighting in the Health Department.

That apparently led to the

mixed signals given by the department in the middle of the week. PGV officials were apparently given enough indication by the Health Department that things were going their way to be confident enough to place an advertisement in yesterday's Tribune-Herald giving public notice that the clean-out would continue today.

But Health Department spokeswoman Jennifer Castleberry, responding to reporters' queries about rumors circulating at around noon Wednesday, began telling reporters late that afternoon that no approvals had been given for restart of the clean-out.

Asked to clarify the confusion on Wednesday, DOH clean air branch chief Paul Aki said "they're talking about it upstairs."

"It seems like a breakdown in communications," Yamashiro said. "It's hard for us to comment when we don't know what those people in high places are thinking."

Yamashiro said he's willing to expedite emergency rules for the county's geothermal asset fund if it is agreed that there should be relocation of nearby residents when a four-hour clean-out of its KS-9 production well can continue.

Opponents have been critical of the county's asset fund, which currently contains

\$500,000 from PGV coffers, because of the Planning Department's failure to come up with rules for it. Planning Department officials this morning said the latest draft is being reviewed by county attorneys.

Yamashiro said so far, he hasn't heard back from the Health Department.

"If geothermal is going to be the energy source of choice, we should provide for relocation during the test phase, find alternative places where they can go," the mayor said.

Royalties collected by the state from geothermal sources could also be used to help those in need, Yamashiro said.

"Instead of fighting over who should pay and getting bogged down in all that, let's concentrate on the problem," the mayor said. "Right now we have testing that may need to go on and there are concerns within the community. We should take steps to address those concerns."

The Health Department's Castleberry said this morning that top officials met late yesterday to discuss PGV but came to no conclusions. "They decided they're going to talk some more, work on some conditions PGV would have to agree to before they can start up."

Castleberry said the communications issue continues to be a nagging point with the department.

On Monday, PGV did not inform either the Health Department or Civil Defense of the high concentrations of H₂S until more than an hour after the venting. PGV has been criticized for failing to inform government officials of previous mishaps as well.

"It's at the point of our frustrations," she said. "It's something we have agreed to time and time again and they haven't always been forthcoming so we're going to make sure that does not happen again."

Castleberry again refused to give a timetable for start-up.

In related news, the Big Island Rainforest Action Group said it will protest the mayor's office on Tuesday if Yamashiro does not take a stand against PGV being allowed to restart its clean-out. Additionally, spokesman Jim Albertini said, BIRAG wants Yamashiro to halt all geothermal activity.

Meanwhile, Yamashiro said he would not comment on difficulties experienced by 10 county police officers who said they were gassed near the well site while they were arresting protesters.

Yamashiro said he has not heard anything formal from either the officers, their commanders or the union, but only from the newspaper. "When they tell me I will make a comment," he said.

Press Release Big Island Rainforest Action Group (BIRAG) P.O. Box AB
Kurtistown, HI 96760 Ph. 966-7622 Contact person Jim Albertini

Re: Incident at PGV: Release of H2S

"People in the Kapoho area knew something was up. Their noses told them so," said Jim Albertini of BIRAG.

According to Albertini, "BIRAG has now confirmed that an incident at PGV involving the release of H2S gas did occur on Friday, January 22nd around 2 PM. A PGV worker was temporarily overcome by the gas and an ambulance was called at 1:52 pm according to Fire Dept. logs."

According to Albertini, "Ed Yamamoto of the Dept. of Health reports that levels of H2S reached 200 ppb at the "ponds" on the PGV site. No reading at the well head was available. Yamamoto said winds were blowing from the south at the time toward the Kapoho area, but DOH has no monitor in that area. The closest monitor was in Nanawale and no readings were picked up there."

According to Albertini, "this latest incident is another example of people being officially kept in the dark. Why is this information only coming out now, a week after the event? The whole situation with geothermal is a disgrace and a threat to community health and safety."

Albertini said, "PGV is on the eve of testing its KS-9 well yet,
- no penalties for the flow test disaster of KS-8 in August of 1992 have been imposed;
- the 25 ppb H2S standard is completely unacceptable to the community
- Harry Kim has still not approved an emergency response plan
- and there has been no public participation in the permit process for PGV to operate well KS-9 as called for in Act 240 of the 1992 Legislature."

According to Albertini, "is there any wonder why there is so much anger in the community over geothermal?" Albertini concluded by saying, "even this latest incident at PGV had to be reported to the media by BIRAG, instead of PGV or public officials."

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DIV. OF WATER &
LAND DEVELOPMENT

Puna geothermal taps its financial manager

HILO — Puna Geothermal Venture has announced the appointment of Barry Mizuno as financial manager.

Mizuno was managing director of Hawaii County in former Mayor Lorraine Inouye's administration.

A certified public accountant, Mizuno will be responsible for all financial aspects of the company's geothermal development including accounting and long-range planning, the company said.

Mizuno was appointed county finance director in the administration of Mayor Bernard Akana.

He moved to the Big Island in 1983, serving for five years as chief financial officer for Hamakua Sugar Co.

Before that he worked in Honolulu for Deloitte Haskins and Sells, Hawaiian Electric and Theo Davies.

Mizuno was born on Kauai. He graduated from Central Washington University with a degree in business administration.

West Hawaii Today, Thursday, December 17, 1992

Mizuno to work for PGV

Puna Geothermal Venture has hired a former high-ranking county official as its new financial manager, company vice president Steve Morris announced in a prepared release Wednesday.

Barry Mizuno, deputy managing director with the former Mayor Lorraine Inouye administration, began work at PGV Tuesday, Morris said.

The 44-year-old is responsible for all financial aspects of the company, including accounting and long-rang fiscal planning, Morris said.

"I am pleased to have Mr. Mizuno join our project," Morris said. "He brings with him a wealth of experience in finance, government and management."

Mizuno, a certified public accountant, recently finished a two-year term as the second in command behind Inouye. He also was county director of finance, after serving as chief fiscal officer for Hamakua Sugar Co. from 1983 to 1988.

Mizuno, prior to his relocation to the Big Island in 1983, worked with several Honolulu companies, including Hawaiian Electric, in various financial capacities.

BIG ISLE BUSINESS BRIEFS

Grand jury examining Riviera, Ooma II projects

A federal grand jury investigating alleged corruption subpoenaed files from the state Land Use Commission regarding Hawaiian Riviera Resort and Kahala Capital Corp. Both Hawaiian Riviera and Kahala Capital appeared before the commission seeking approvals to build separate Big Island resorts. Hawaiian Riviera was approved in May but developer Charles Chidiac of Palace Development turned over the property in July to a Norwegian bank to cancel a \$24.4 million debt. Kahala Capital is proposing Ooma II, a 217-acre resort in Keahole. Chairman Norbert Schlei resigned last month after being indicted in a criminal case alleging he conspired to sell counterfeit Japanese securities.

Council OKs huge development plan

The Hawaii County Council gave preliminary approval to a \$60 million project between Hapuna and Waikoloa that will take 25 years to develop. Nansay Hawaii plans to develop 68 housing units, commercial space and six golf courses on 270 acres. The project passed by an 8-1 vote.

Geothermal, railway get energy commission nod

Geothermal energy and a rapid transit system linking Milua-Kona and Hilo were recommended this month by the county Energy Advisory Commission. The 18-member commission, created by former Mayor Lorraine Inouye in June

1991, endorsed the two controversial topics. The commission supports geothermal energy provided that rigid standards are instituted to ensure safety and health. The proposed \$196 million, 70-mile monorail system between Keahole Airport and Hilo is a better alternative than widening existing highways, according to the commission.

PGV drills well; state drills PGV

Puna Geothermal Venture has begun drilling a new well, and PGV is being fined \$9,300 by the state Health Department. Drilling for a new production well in Pohoiki is expected to take 60 days and reach 1,000 feet. The well, KS-9, will replace the nearby KS-8 well, which was shut down last month because it leaked hydrogen sulfide during its first 10 days in operation. Meanwhile, PGV was fined for releasing more than allowable levels of hydrogen sulfide into the air near Puna by well KS-1A in October.

State fines architect, real estate agent

The state Department of Commerce & Consumer Affairs issued \$500 fines to two Big Island businesswomen. Architect Virginia B. MacDonald of Volcano was fined for misconduct and misrepresentation in the practice of architecture by acting as a contractor without a contractor's license. Kona real estate broker Marilyn S. Knutson was fined for misrepresenting the square footage of a property.

DEC. 17 1992

Council OK's Puako community

By JASON ARMSTRONG
West Hawaii Today

HILO — The County Council gave final approval for the Puako residential golf community Wednesday following a four-hour debate that included a failed attempt to defer the proposal to the Planning Committee for further review.

Members approved the 1,270-acre golfing complex by a 7-2 vote, allowing Nansay Hawaii Inc. to proceed with development plans pending the expected signing of the bill by Mayor Steve Yamashiro.

Majority members based their decision for approval on claims from Nansay that development of the barren land will create \$68 million in additional county tax revenues and 2,500 new jobs during the next 20 years.

"The county gets an immediate tax benefit by (higher assessed) tax values," Vice Chairman Brian De Lima said.

The uninhabited parcel currently does not benefit Hawaii County, he said.

"This is junk land," De Lima said. "Queen (Kaahumanu) Highway is nothing."

Councilwomen Helene Hale and Keiko Bonk-Abramson voted against the proposal to build 2,658 residential lots and six golf courses due to uncertain economic conditions.

"I think six golf courses is far too many in these days of world-wide economic recession," Hale said. "I see this as creating problems that we have not foreseen."

Bonk-Abramson objected to the use of gated communities, despite guarantees from Nansay officials that public access to park facilities will be maintained, because she endured a "humiliating" experience in one locked Hawaii Island subdivision.

She also said she believed the proposed affluent homes will be beyond the means of most local residents and new jobs will be low-paying service-industry positions.

North Kona representative Jim Rath, who gained support from Hale and Bonk-Abramson in his bid to defer the proposal back to committee level, eventually approved an amended bill.

"We're giving them a gift of \$300

From Page 1A

million in unearned land value. That's not good business," Rath said, prior to his vote of approval. He, too, objected to the proposed use of gates.

Members amended the 100-plus page bill to include safeguards for annual increases in real property tax assessments, mandates that Nansay provide 168 daily rounds of municipally-priced play on "reasonably maintained golf courses" and a restriction prohibiting ohana, or second dwellings, on the lots.

South Kona Councilman Keola Childs expressed concern that nearby users of well water will be impacted by additional demands for underground water and also questioned possible development of a state-mandated buffer zone.

Members unanimously passed his amendment prohibiting future

construction on the unplanned-zoned buffer area and additional suggestions for grammatical wording changes.

Members also passed an amendment, suggested by Rath, which will require Nansay to pay the County Council, not the Planning Department, monetary fees if it sells any portion of the property.

The developer has proposed building a 26-acre public park and a five-mile bicycle-pedestrian path inside the residential golfing community. It also will be required to pay \$749,000 for fire services, \$325,000 for police services, \$6.29 million for roadway improvements and \$366,000 for solid waste facilities.

Councilman Bob Rosehill, who voted for approval, asked Nansay

officials how they will address the problem created by additional solid wastes.

"To date, we have not developed a plan," Christine Barada, project manager, said.

A handful of residents employed in the collapsing sugar industry testified in favor of the project because they said it will help provide needed jobs.

The County Council also unanimously approved five department heads with the Yamashiro administration.

Those confirmed include: Virginia Goldstein as planning director; Donna Kiyosaki as public works director; Diane Quitiquit as director for the Department of Research and Development; Nelson Tsuji as fire chief; and Nelson Yoshida as director for Parks and Recreation.

Commission defers fining Y. Y. Valley

By **ELOISE AGUIAR**
News Editor

KAILUA — The Water Commission last week deferred three decisions related to construction of Royal Hawaiian Country Club in Maunawili Valley.

The commission put off deciding the amount to fine golf course developer Y.Y. Valley Corp. for not having the proper building permit for a bridge. It also delayed a decision on whether to issue an after-the-fact permit for the project and on whether to grant a permit for a second bridge.

The actions pleased Save Mount Olomana Association (SMOA) members. SMOA president Andrew Yanoviak said the commission is rethinking how it should act regarding Y.Y. Valley Corp.

Golf course spokeswoman Ruth Ann Becker, however, said the commission's action is not a setback for the developer. Y. Y. Valley had approval for the bridge, she noted, but after an inspection of the project, DLNR's Water Resource management Division decided a permit may be needed.

Work on the project had been halted until a decision could be reached.

"Now the staff is recommending, and the commission approved, Royal be allowed to complete the rest of the bridge, which is up on the top, not down in the stream," Becker said. "So that's going to be done and they (the Water Commission) still have to decide: Do they (Y.Y. Valley) need a permit or if it is

in their (the commission's) jurisdiction?"

However, DLNR deputy director Rae Lui said the decision is in the jurisdiction of the Water Commission and Y.Y. Valley will need a permit for the bridge abutment in the stream bed. The rest of the bridge did not require a DLNR permit, Lui said.

There is controversy over the interpretation of stream permit rules, she said, noting that a stream channel alteration permit is needed when any construction occurs within the stream bed. Yanoviak's group contends the stream bed should include the flood plain, but Lui said the Water Commission has decided that it doesn't.

"It keeps coming up, but in my opinion the commission has already decided a permit isn't needed (for construction in the flood plain)," she said.

Since the commission has decided a permit was required for Y.Y. Valley's stream bed work, the agency must now consider a fine and whether to issue an after-the-fact permit. DLNR staff was asked to calculate how many days the fine was to be in effect and make a recommendation on how much to charge per day, Lui said.

Staff members have recommended a small fine, according to SMOA president Andrew Yanoviak, but the environmental group believes the developer should pay much more.

"The DLNR staff is proposing that the golf course developer be fined a token \$16,000 to compensate the state for extra staff time required to investigate this

matter," Yanoviak said last week.

"According to prevailing statutes, the developer could be fined in excess of \$400,000 at the maximum fine of \$1,000 per day. SMOA has recommended a fine of at least \$1 million because of substantial negative environmental impacts."

The commission also post-

poned a decision on a stream channel alteration permit for a new bridge. Becker said the delay does not affect the next phase of the golf course project.

In the meantime, Yanoviak said he has urged DLNR to file a written request with Y.Y. Valley asking that all concerned parties get together and work out their differences.



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**SCLDF Enters Fray Over
Cantara Loop Spill**

At 10 p.m. on July 14, 1991, a mile-long Southern Pacific train derailed on the treacherous Cantara Loop section of track north of Redding, California, spilling 19,000 gallons of a concentrated herbicide known as metam sodium into the Upper Sacramento River. Hundreds of thousands of fish and wildlife, including most of the river's prize native trout, were killed. The drinking water supply for millions of Californians was also jeopardized. This was the sixty-third derailment on this section of track over the last sixteen years. A derailment in 1976 had also spilled toxic chemicals into the river, killing thousands of native trout.

To redress the environmental harm caused by the metam sodium spill, on October 5, 1992, staff attorney Steve Volker filed suit in federal court on behalf of a host of environmental organizations. The suit seeks to impose liability on Southern Pacific and associated defendants for damage to public resources, and requests creation of a fund for restoration of the river's flora and fauna. The suit also seeks to stop Southern Pacific from using the Cantara Loop unless and until it is made safe, and to reform its handling of toxic substances such as metam sodium.

In Brief

Sierra Club Legal Defense Fund

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**SIERRA CLUB
LEGAL DEFENSE FUND**

In Brief

A Quarterly Newsletter
on Environmental Law

Autumn 1992

An Agenda for the Next President

Michael Traynor, the former president of the Sierra Club Legal Defense Fund (see page 9), delivered a post-election address to the Seattle City Club November 5. The following is based on a draft prepared before the election was held.

As a key player in a position of major influence, President X has an excellent opportunity to initiate change for the better.

He can begin with the Cabinet. The president's Cabinet has enormous power for a group not accountable to Congress and not elected by the people. Therefore, it behooves the president to take special care to appoint people who have an understanding of and concern for environmental issues. This is true not only of



New battles over Chelan and Stehekin, see page 6. Illustration by Carl Dennis Buell.

**News Flash:
Formosa Pulls Out of
Wallace, Louisiana**

As this newsletter was set to go to press, news reached us that the Formosa Chemicals and Fibre Corporation had abandoned plans to build a massive rayon and pulp plant in the town of Wallace on the banks of the Mississippi in Louisiana. Many residents of Wallace, a civil-war-era town inhabited mainly by African Americans, had opposed the plant and were being assisted by lawyers from the Legal Defense Fund's New Orleans office. A full report will follow next issue.

the "environmental" agencies—the Departments of Interior and Agriculture and the Environmental Protection Agency—but of them all: Transportation, Commerce, State and the rest. The environment has never been an important consideration for the Attorney General or the Secretary of State. We can no longer afford such blinders.

The president must appoint people who will take a broader, longer range view of their responsibilities than have the bureaucrats of the past twelve years, people who will con-

sider more than immediate economic considerations in their decisions and who will uphold and enforce this country's environmental laws and champion measures to strengthen them.

For the past twelve years, we've had Secretaries of the Interior and Agriculture, chiefs of the Forest Service, and directors of the Bureau of Land Management, and other high-ranking stewards of our public lands who have shown more interest in opening those lands for extractive

Please turn to page 10.

Julie McDonald: If it Concerns Trees, She Wrote the Script

Rick Sutherland, the new director of the Sierra Club Legal Defense Fund, was prowling around Julie McDonald's office, telephone receiver stuck in his ear.

"Brock wants you to come back to Washington to help write the nif-ma regs," he said, "can you go?"

"For how long?" Julie asked.

Rick held up three fingers.

"Three weeks?"

"No. Three months."

And so Julie McDonald, graduate of Stanford and the Boalt Hall School of Law at Berkeley, began a long and distinguished specialty in national forest law. It was early 1977. The Legal Defense Fund boasted of two offices and a half-dozen lawyers.

The "nif-ma" mentioned above is the National Forest Management Act of 1976, which rewrote the law governing the U.S. Forest Service. McDonald and others spent the better part of 1978 hammering out regulations that would determine how the government would manage the nation's publicly owned forests for the next fifty years.

It was heavy going, but rewarding. Once the regulations were adopted in January of '79, McDonald and colleagues from The Wilderness Society and the Natural Resources Defense Council hit the road to conduct training sessions for Forest Service



Julie McDonald: wrist injury not in the line of duty, mending fast.

personnel and wrote guidelines for conservationists across the country, teaching them how to participate in what is admittedly a very complicated process. If followed carefully and in good faith, however, it could lead to master plans that would find the forests perpetually producing a reliable supply of timber while at the same time protecting wildlife and streams, recreation and beauty, and leaving plenty of wilderness and other roadless areas unlogged.

Then Ronald Reagan became president. Such forest-management plans as had been drafted were withdrawn.

McDonald and her colleagues spent much of the next decade fighting off attempts to open roadless areas to exploration for oil, gas, and geothermal deposits. Geothermal was her piece of the action, and she succeeded in fending off attempts to open tracts around California's Mono Lake and Oregon's Crater Lake to drilling—all without litigation.

Finally the forest plans began to reemerge. Some were bad, some were awful. McDonald helped challenge the first forest plan for the Santa Fe National Forest and saw the plan withdrawn. Later, she led the challenge to the Sequoia plan, an extremely thorny matter that took two years to settle. In odd moments, she litigated cases involving agricultural water, a nuclear power plant, and urban sprawl.

And she found time to marry and have children. She now works three days a week, balancing career with family, which includes husband Tom Parry and sons Skyler (8) and Trevor (5).

These days she is plunging into the murky areas of law concerning air pollution and lead contamination, not to mention ancient forests on private land.

But when anyone has a question about fighting the Forest Service, it's Julie's phone that rings.

clean air restrictions have led to the innovative and successful practice of turning the byproducts of acid rain-removing scrubbers into construction materials. Because no one else has devised comparable technologies, Japan and Germany have achieved a competitive edge.

Contrast that with the Competitiveness Council's delay of funding for the four years of research and devel-

We need a Secretary of State who recognizes that environmental problems do not end at the U.S. border.

opment on clean air technologies called for in the 1990 amendments to the Clean Air Act. Here is an example not only of the beneficial reconciliation that is possible between environmental protection and economics, but also of the dubious and short-term benefits of delaying implementation of environmental regulations under the guise of boosting a stagnant economy.

Then there is the widespread misconception with which we have been harangued over the past year that environmental protection wipes out hundreds of thousands of jobs and sabotages the economy. The president would do well to dispell this myth once and for all. It will not be easy. There is a pervasive attitude in the business community that, as expressed in the conservative Albertine Letter, "Growth and progress will only prevail over environmental regulations if the business community uses the media to show the American people that they can't have it both ways."

First is the idea that growth and progress must prevail over environmental regulations. As already mentioned, environmental restoration offers business opportunities aplenty; it likely will be one of the fastest-growing "industries" of the coming decades. Further, with the urgent need for the development of recycling technologies, alternative sources of fuel and energy, facilities for mass transit, innovative

agricultural practices, and parks and recreation opportunities, the potential job market in "environmentally friendly" fields is only as limited as the imagination.

We need a national program to demonstrate this, and to begin educating and training people so we can get the ball rolling. What do we envision? Perhaps an agency similar to the WPA of the 1930s. A Green Peace Corps to help Eastern Europe and the former Soviet Union. Or, again, an innovative program of cooperation between government and the private sector. However we choose to accomplish it, to get this process moving will be to preserve our land, air, water, and resources, and to improve our overall quality of life.

Second is our long-held conception of growth and progress. We need to take a hard look at it and ask ourselves if it is still relevant when set against the reality of limited resources and an exploding world population. Must growth and progress always equal new factories, new roads, newly cleared land, and new labor-saving devices? Cannot progress equal a renewed concern for preserving the vast diversity that promotes ecological stability and for safeguarding what remains of this country's magnificent wild places, that we may pass our land along to future generations in better shape than we received it? In our relentless preoccupation with newer, faster, better, and easier, we have lost sight of the conservation ethics of our parents and grandparents. It is time we reexamined those ethics and recognized their wisdom.

We need a president who is unafraid to confront this country's mistakes and put righting environmental wrongs at the top of his agenda.

President X needs to be honest and courageous. If it's George Bush, he no longer has to fear displeasing the people who would reelect him. If it's Bill Clinton, he's got a golden opportunity to get it right from the start.

YOUR BEQUEST to SCLDF may extend the life of this forest for another 400 years—



—Maybe even longer.

For information on including SCLDF in your estate plans, please call Elizabeth Ulmer, Director of Planned Giving, at (202) 667-4500, or write to her at 1531 P St. NW, Suite 200, Washington, D.C. 20005.

Congress '92: No Disasters, Few Victories for Ancient Forests

The session of Congress just concluded was, from an environmentalist point of view, a bit like a 1950s pro football game: great defense, not much offense.

The good news was that the Sierra Club Legal Defense Fund and other groups were able to defeat repeated last-minute attempts to bypass court injunctions, undermine existing laws, and otherwise limit citizen and judicial oversight of logging on our national forests.

The bad news was that Congress

again failed to adopt comprehensive legislation to protect the dwindling ancient forest ecosystems of the Pacific Northwest and northern California. Until such legislation is enacted, our national forests will continue to be threatened by short-sighted efforts to turn them into tree farms.

Scientists estimate that just ten percent of the nation's ancient forest ecosystems remain after decades of excess clearcutting on public and private lands. Only a series of suits brought by the Legal Defense Fund

has stopped, for the time being, the liquidation of these vitally important reservoirs of biological diversity.

Yet those successes have led some members of Congress to try and bar future lawsuits challenging forest mismanagement. For the third year in a row, however, environmentalists led by the Legal Defense Fund have defeated those efforts. The result: our court victories remain intact and our right to go to court is protected.

Next year: all the above plus the Endangered Species Act.

The Curious Saga of Fisheating Creek

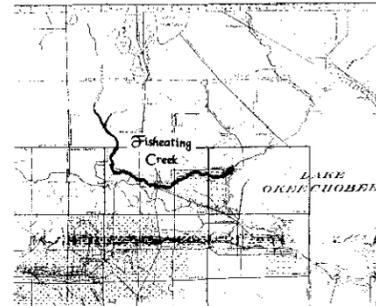
South Florida doesn't have waterbodies and waterways—it has plumbing. A massive engineering project, unequalled anywhere in the world, has turned hundreds of miles of streams into ditches, lakes into concrete-dammed reservoirs, and tens of thousands of acres of former Everglades into diked, dammed, and polluted "Water Conservation Areas," all monitored and controlled from the comfort of a computer-filled room in downtown West Palm Beach.

Except for Fisheating Creek. Fifty-one miles of cypress-shrouded river, it is so pristine that the description penned in the diary of an explorer in 1842 still describes the creek today—"a beautiful stream, clear, with a beautiful white sandy bottom," bordered by cypress trees "draped in moss to the very ground," home to "multitudes of feathered choristers."

For the next 150 years, people in Glades County treated the creek as their own—in pioneer times as a public highway plied by fur traders, trappers, alligator hunters, and fishermen, and in later years as an idyllic recreation spot visited by canoeists from all over the country. That is, until late 1988, when Lykes Brothers, Incorporated, owner of all the land in Glades County adjacent to the creek—a quarter of a million acres, or two-thirds of the entire county—posted threatening NO TRESPASSING signs, barred public access to the creek, and felled 40 cypress trees across its course to make their point.

Three and a half years later, the heated battle over the right of the people to ply the waters of Fisheating Creek finally arrived in the Federal

District Court. The path had Lykes Brothers, Incorporated, what it wanted. Fisheating Creek about its met company was environment history—221 deep and wide



Legal Defense on years of scrawled across the map by sailors of the 1800s and the onion skin papers of the spent endle hours travel search of eye old enough when people on the creek about it in a Lykes Brothers lawsuit against a mars Cowbone had been the channel.

It was Barbara McQuivey, the hydrologist, who dragged the Danube into the remnants of Cowbone indicated the

uses than they have in preservation; who have emphasized mining, grazing, and logging over recreation and wildlife; and who have exhibited, as one federal judge noted, "a deliberate and systematic refusal to comply with the laws protecting wildlife." One does not need to be a deep ecologist to recognize that this relentless emphasis on the short-term

One does not need to be a deep ecologist to recognize that this relentless emphasis on the short term is not just irresponsible—it is insane.

in our management of this country's resources is not just irresponsible—it is insane.

Recent leaders have allowed our old growth forests to be clearcut in ways that destroy the soil on which future forests must grow, then have looked the other way as the centuries-old trees have been sold overseas, bringing huge profits to a few timber barons. They have allowed sediment and debris from such cuts to rush into our rivers, suffocating fisheries and fishing communities. They have allowed waste water from our cities, factories, and farms to be subjected to the most cursory of treatments, to be released subsequently into rivers and oceans. And they have allowed our air, land, and water to become suffused with chemicals, toxins, and hazardous wastes that wreak havoc with public health.

It's past time the White House set a new example. From now on, every government agency must be not only well versed in environmental law, each must also be committed to upholding and enforcing the law and considering the environmental ramifications of each and every project and action it approves.

We need Secretaries of the Interior and Agriculture who recognize that what unspoiled wilderness, wild and scenic rivers, and old growth forests

we have left are more valuable intact than they are clearcut, strip mined, and overgrazed.

We need a Secretary of Transportation who recognizes that the infrastructure we have now is more than sufficient, that what we need to concentrate on is repairing existing roads, not building unnecessary new ones. We need strong leadership to steer the country away from its accustomed reliance on the automobile—a reliance that contributes to degraded air quality and overuse of resources—and toward comfortable, efficient, and dependable mass transit systems.

We need a Secretary of Energy who will recognize the folly of our dependence on dwindling oil supplies and will abandon ill-advised schemes—such as drilling for oil in the Arctic National Wildlife Refuge or expanding the nuclear power industry—in favor of a focus on encouraging—and funding—research into safe, renewable sources of energy. This is an ideal opportunity for the government to promote and nurture the much celebrated potential of partnership between the country's private and public sectors.

We need a Secretary of Defense who will not only exhibit a strong commitment to cleaning up the hazardous wastes left behind at decommissioned military bases, but also, in the interest of preserving jobs that might otherwise be lost as a result of the cold war's end, will expand the military's scope to encompass environmental restoration. Farmland, forestland, and fisheries are in desperate need of efforts to restore them to productivity, offering another ideal opportunity for partnership between public and private sectors.

We need a Secretary of State who recognizes that environmental problems do not end at the U.S. border. And we need an Attorney General who is firmly committed to prosecuting those who disobey environmental laws.

Above and beyond staffing his Cabinet with secretaries who are

knowledgeable environmentalists would be wise on Environment to a place of administration.

In contrast to competitiveness, an executive branch the country's consciously inclined the Council or was created by planned federal that they comp laws. But over this council has legitimate influence restoring information council to the president would balance, to use executive decisions.

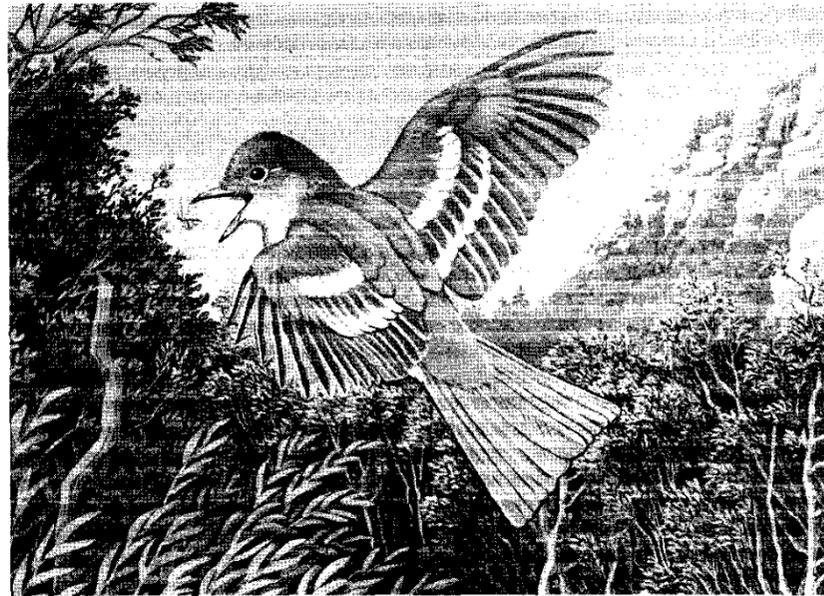
It's past time the White House set a new example. Every government agency must be not only well versed in environmental law, each must also be committed to upholding and enforcing the law and considering the environmental ramifications of each and every project and action it approves.

Speaking of the Council, it is curious in recent years, established as the primary "environmental" and environmentalism have been cast as a shallow analysis.

For just one example, actually can go enhance one another. Japan and Germany strengthened relations and have recent years onment for technological cause of environmental. Both have moved United States in such new technology.

The Japanese efficient power in the world. In

Victories



Fish and Wildlife Service Acts on Southwest Willow Flycatcher Petition

After much stalling, the Fish and Wildlife Service has announced, in response to a notice of intent to sue from staff attorney Mark Hughes, that the riparian southwest willow flycatcher may deserve a spot on the federal endangered species list, and it is investigating that prospect. After years of grazing and removal of vegetation along river banks, riparian

habitat is the most endangered habitat in the southwest. Its decline has caused the decline of scores of species, among them the flycatcher, whose population has plunged to less than 600. Hughes sent his notice letter on behalf of the Biodiversity Legal Foundation, and both will be watching Fish and Wildlife to be sure it adequately provides for the bird.

Judge Rebuffs Lujan, Upholds Standing to Sue

A year ago, at the end of a 15-year wilderness study process, Interior Secretary Manuel Lujan abruptly dropped five invaluable wilderness study areas in Colorado, Utah, and Nevada from his recommendations to the President of areas worthy of permanent preservation. His excuse was information contained in a last minute report filed by the U.S. Geological Survey attributing unreasonably high dollar values to mineral

deposits allegedly present in the areas.

Staff attorneys Drew Caputo and Lori Potter promptly took Lujan to court, demanding that he release the report as a supplemental environmental impact statement under the National Environmental Policy Act. The government tried to have the case dismissed, charging that our client lacked standing to sue and the court lacked jurisdiction to hear the case. In September we received a very favorable ruling not only upholding all our arguments but also setting an important precedent with regard to stand-

ing that will be highly conducive to defeating future standing challenges.

New Orleans Goes After "Produced" Water

Produced water is petrobrine for the brine that shares space with oil and gas deposits and rises to the surface when the said deposits are pumped out.

It's evil stuff, this produced water, capable of killing plants and other organisms even in small amounts. In most places it's injected back where it came from. Along the Gulf coast in certain places, however, it has been dumped directly into bayous and marshes and other sensitive and fragile coastal repositories. Recently staff attorney Robert Wiygul set out to do something about the problem.

First, he notified Texaco that it was looking at a Clean Water Act lawsuit if it didn't clean up its act in Louisiana, specifically if it didn't apply for a discharge permit from the Environmental Protection Agency. Such a permit would severely limit the extent to which Texaco would be allowed to contaminate land and water with its brine. Texaco, which had been pushing legislation in Baton Rouge that would have allowed it to continue discharging produced water indefinitely in some places, hemmed a bit, hawed a little, and then decided that it would rather switch than fight. It dropped the legislation, agreed to abide by the Clean Water Act, and plunked down \$30,000 that the Sierra Club's Delta Chapter will pass on to grassroots groups in Louisiana for water quality research and public education.

Meanwhile, Wiygul has shifted his sights to Greenhill Petroleum, another Louisiana discharger, and Texas' American Exploration Company, which dumps its nasty brine into Galveston Bay.

"There are plenty more of these suits to come," Wiygul said, "unless the industry cleans up its act."