

HGP-A



November 14, 1989

Norman A. Oss  
President

Mr. Duane Kanuha, Planning Director  
Hawaii County Planning Department  
25 Aupuni Street, Room 109  
Hilo, HI 96720


Dear Mr. Kanuha:

SUBJECT: Special Permit No. 392  
HGP-A Geothermal Research Station

I received your letter dated November 8, 1989, regarding the decision of the Planning Commission to accept your recommendations on Special Permit No. 392, Condition No. 6. As you are probably aware, HELCO's load profile shows the months of November and December to be the highest peak periods for the entire year. Recently, we completed the installation of a 16,000 kw combustion turbine at our Keahole site. This unit is still undergoing shakedown and ownership acceptance tests which will be completed by the end of this year.

With this in mind and the fact that the HGP-A's 2,000 kw output has been a reliable source of energy for our system, it would be to our mutual benefit if the HGP-A plant could remain on line until the end of December 1989.

Sincerely,

  
Norman A. Oss  
President

NAO:FGK:cr

cc: Planning Commission  
Mayor's Office  
Sus Ono (DLNR) ✓  
NELH

U CEA

The Natural Energy Laboratory of Hawaii



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RECEIVED  
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DEPT. OF LAND & NATURAL RESOURCES  
STATE OF HAWAII

November 3, 1989

Mr. Duane Kanuha  
Planning Director  
COUNTY OF HAWAII  
25 Aupuni Street  
Hilo, Hawaii 96721

REFERENCE: SPECIAL PERMIT #392

Dear Mr. Kanuha:

On October 26, 1989, the Board of Directors of the Natural Energy Laboratory of Hawaii met. One of the items on the agenda was the request made to them by Governor Waihee that the Board take action to close the operation of the HGP-A Power plant by the end of the calendar year. After discussion, the Board passed a motion to close the plant by year end.

In the intervening week, the NELH staff have been preparing plans for the closure of the well and generation facility. Meetings have been held with interested parties, including the Hawaii Electric Light Company, operators of the HGP-A facility; Puna Geothermal Venture; tenants of the Noi'i O Puna Geothermal Research Facility. Telephone inquiries have been made to obtain information toward the goal of preparing safe and reliable procedures for the orderly closing down of this facility.

Based on information received, we intend to shut down the well in the period between the Christmas and New Year's weekends. The decision is based as follows.

There are several ongoing research programs that have invested varying amounts of money on their projects. Their major goals may be accomplished if we are able to provide them with the requisite geothermal fluids for an additional 8 week period.



Mr. Duane Kanuha  
November 3, 1989  
Page 2

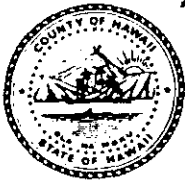
We have had several discussions with University scientists who have been associated with the well and its operation from its inception. We are convinced it is wise to provide a contingency plan in case of incident during the shutdown. While the likelihood of incident is extremely small, prudence dictates that we leave nothing to chance. This contingency plan would include having a supply of drilling mud at the site, prepared for use in the unlikely event it is required. We will be able to obtain the necessary supplies and equipment and have them on site by the shut down date.

Thank you for your assistance in this matter.

Sincerely,

William R. Coops  
Managing Director

cc: Roger Ulveling  
Sus Ono  
Don Thomas  
NELH Board of Directors



# Planning Department

25 Aupuni Street, Rm. 109 • Hilo, Hawaii 96720 • (808) 961-8288

Bernard K. Akana  
Mayor

Duane Kanuha  
Director

William L. Moore  
Deputy Director

'G-P-A'  
DBFD

November 8, 1989

C  
O  
P  
Y

CERTIFIED MAIL

Mr. William R. Coops  
Managing Director  
The Natural Energy Laboratory  
of Hawaii  
220 So. King St., Suite 1280  
Honolulu, HI 96813

Dear Mr. Coops:

Planning Commission Action  
Pursuant to Condition No. 6  
Special Permit No. 392 (HGP-A)

At their meeting of November 7, 1989, the Hawaii County Planning Commission voted to accept the Planning Director's report and recommended actions dated October 23, 1989.

Recommendations 1 and 2 of the Planning Director's report state:

- "1. That the NELH and HELCO submit documentation to the Planning Director and the Planning Commission for the provision of backup electrical needs to replace the 2 megawatts of power presently generated by the HGP-A facility within ten (10) days upon the receipt of this notification.
- "2. That the NELH submit documentation to the Planning Director and Planning Commission on the feasibility of immediately terminating the HGP-A facility with respect to public safety considerations (i.e., well casing failure during shutdown or potential startup, emergency procedures during shutdown, etc.) within ten (10) days upon receipt of this notification."

Mr. William R. Coops  
November 8, 1989  
Page 2

Please be informed that this letter constitutes formal notification with respect to the above-referenced actions. Your timely response within the required period will be greatly appreciated.

If there are any further questions, please do not hesitate to contact either myself or Mr. Rodney Nakano of my staff at 961-8288.

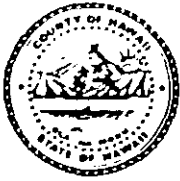
Sincerely,



DUANE KANUHA  
Planning Director

DK:aeb

cc: Planning Commission  
Mayor's Office  
R & D  
DBED  
✓ Sus Ono



# Planning Commission

Bernard K. Akana  
Mayor

25 Aupuni Street, Rm. 109 • Hilo, Hawaii 96720 • (808) 961-8288

*file  
HGP-A  
DEED*

CERTIFIED MAIL

November 8, 1989

Mr. William R. Coops  
Managing Director  
The Natural Energy Laboratory  
of Hawaii  
220 S. King Street, Suite 1280  
Honolulu, HI 96813

Dear Mr. Coops:

Special Permit No. 392  
HGP-A Geothermal Research Station  
TMK: 1-4-01: 82 (formerly por. of 2)

At its duly held meeting on November 7, 1989, the Planning Commission considered the Planning Director's report to the Planning Commission Pursuant to Condition No. 6, of Special Permit No. 392 (HGP-A) dated October 23, 1989. The Planning Commission voted to accept the Planning Director's report and to approve the Planning Director's recommendations.

The Planning Director recommended the following actions pursuant to the provisions of Special Permit No. 392, Condition No. 6:

1. That the NELH and HELCO submit documentation to the Planning Director and the Planning Commission for the provision of backup electrical needs to replace the 2 megawatts of power presently generated by the HGP-A facility within ten (10) days upon the receipt of this notification.
2. That the NELH submit documentation to the Planning Director and Planning Commission on the feasibility of immediately terminating the HGP-A facility with respect to public safety considerations (i.e. well casing failure during

Mr. William R. Coops  
November 8, 1989  
Page 2

shutdown or potential startup, emergency procedures during shutdown, etc ) within ten (10) days upon receipt of this notification.

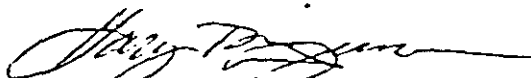
3. During the interim period pending receipt of the requested documentation for items 1 and 2, the HGP-A facility shall be manned on a 24-hour basis and monitored for any unusual or elevated release of H<sub>2</sub>S or other related emissions.
4. A communication and notification network approved by the Civil Defense Administrator and the Planning Director shall be immediately implemented. This network shall include provisions and protocol for notification of emergency services personnel and local residents when a potentially high nuisance situation has or is planned to occur.
5. The Planning Director shall be authorized to act upon the findings submitted under 1 and 2 above to cause the shut down of the HGP-A well along with those activities and/or operations authorized under the Special Permit which are directly related thereto. Notice of the Planning Director's action shall be provided in writing or orally with subsequent written confirmation within three (3) days to the Permittee and the Planning Commission, and shall set forth any conditions attendant to the termination of operations
6. Pending any further hearing as may be required by the Planning Commission, the Planning Director may immediately and temporarily suspend the permit and/or operations allowed thereunder. Notice of a temporary suspension shall be provided in writing or orally with subsequent written confirmation within three (3) days to the permittee and the Planning Commission, and shall set forth the reasons for the temporary suspension. The Planning Director may reactivate the permit or operations suspended thereunder upon a subsequent finding of the permittee's compliance with the reasons for the temporary suspension. Subject to the Planning Commission's rules, the permittee may at any time request a hearing before the Planning Commission for its review and action with regard to the permit's temporary suspension or any subsequent refusal of the Planning Director to reactivate the permit or operations suspended thereunder. Referrals by the Planning Director to the Planning Commission and reviews by the Planning Commission of the Planning Director's action shall be heard at the

Mr. William R. Coops  
November 8, 1989  
Page 3

Commission's next meeting when the matter can be placed on  
the Commission's agenda.

Please feel free to contact the Planning Department if there are  
any questions on this matter.

Sincerely,

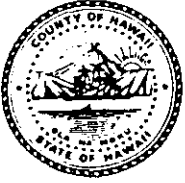


Gary Mizuno, Chairman  
Planning Commission

cc: HELCO  
DBED  
Mayor's Office

bcc: / Susumu Ono  
R & D





# Planning Department

25 Aupuni Street, Rm. 109 • Hilo, Hawaii 96720 • (808) 961-8288

GP-A  
DBED

Bernard K. Akana  
Mayor

Duane Kanuha  
Director

William L. Moore  
Deputy Director

November 8, 1989

CERTIFIED MAIL

**C** Mr. Norman Oss, President  
Hawaii Electric Light Co., Inc.  
P. O. Box 1027  
Hilo, HI 96721-1027

**O** Dear Mr. Oss:

**P**

Planning Commission Action  
Pursuant to Condition No. 6  
Special Permit No. 392 (HGP-A)

**Y**

At their meeting of November 7, 1989, the Hawaii County Planning Commission voted to accept the Planning Director's report and recommended actions dated October 23, 1989.

Recommendation 1 of the Planning Director's report states:

- "1. That the NELH and HELCO submit documentation to the Planning Director and the Planning Commission for the provision of backup electrical needs to replace the 2 megawatts of power presently generated by the HGP-A facility within ten (10) days upon the receipt of this notification."

Please be informed that this letter constitutes formal notification with respect to the above-referenced actions. Your timely response within the required period will be greatly appreciated.

If there are any further questions, please do not hesitate to contact either myself or Mr. Rodney Nakano of my staff at 961-8288.

Sincerely,

DUANE KANUHA  
Planning Director

DK:aeb

cc: Planning Commission  
Mayor's Office  
R&D  
DBED  
✓ Sus Ono  
NELH

MFMORANDUM

May 18, 1989

To: The Honorable John Waihee  
Governor

From: Roger Ulveling, Director  
Department of Business and Economic Development

Subject: Hawaii Geothermal Project/Abbot Well

1. Background

The Hawaii Geothermal Project/Abbot well has made a significant contribution to the State of Hawaii and the development of our geothermal resources. For the past seven years it has produced base load electric energy into the Hawaii Electric Light Company grid. During this time the HGP/A plant has generated over 125 million kilowatt hours of electricity, which has saved the equivalent of over 250,000 barrels of oil. The power generated has provided electricity for over 2,000 homes with a reliability factor well in excess of 90%. This reliability rating is as good as, or better than standard industry oil fired steam power plants, and better than virtually any nuclear powered generation facility. The operation of the HGP/A facility has demonstrated to the electric utility industry in Hawaii that firm base load electric power generation from geothermal sources is practical, reliable and environmentally sound.

ORMAT through its Puna Geothermal Venture has entered into an agreement with the Hawaii Electric Light Company to deliver electricity generated from their geothermal resources into HELCO'S power grid beginning late 1989 or early 1990. Accordingly, we feel it is now appropriate for us to begin planning for the retirement of the HGP/A power plant. We believe the time to retire the plant would be when PGV begins delivering power into the HELCO grid.

2. Statement of Problem

The HGP/A facility was originally designed with the short life expectancy of two years. The thought at that time was to operate the facility for two years to demonstrate the feasibility and practicability of electric power generation from geothermal fluids in Hawaii. The facility hardware (turbine generator, switching modules, etc) was owned at that time by the U.S. Department of Energy. The U.S. DOE had originally considered moving the turbine generator, electric switching and other items to another of their research facilities at the completion of our testing program. This did not come to pass, the title to the equipment was transferred to the State of Hawaii with the understanding the State would continue to operate the plant and send periodic reports to the DOE of amounts of steam, brine, and electricity generated.

The operation and maintenance of the plant was contracted to the Hawaii Electric Light Company. They continue to operate the plant today. The plant is shut down once a year for a short time for the utility to engage in major equipment maintenance and overhaul.

In spite of these overhauls and associated maintenance, the plant has deteriorated over time. Many of the pipes and valves are iron and have rusted. Vapor from the cooling tower and brine disposal ponds accelerates rusting and deterioration. Most of this is cosmetic, but some of it is more than cosmetic. Piping has been replaced during recent overhauls as required, as have some valves.

During the initial start up of the plant, there was a turbine failure. After the repairs were made and the plant restarted and connected to the HELCO power grid, there was a debt of over one million dollars. Most of this was owed to HELCO, as they carried the burden for the repair. This debt was retired after several years, partly from capital improvement project appropriations of the State of Hawaii and partly from revenue from the sale of electricity to the utility. In part due to the negative balances, and the thought that the plant would be operated for a short time period, the utility was not directed to specifically maintain the plant to general utility standards. In retrospect, that may have been a mistake. In spite of all the above, the fact we have a reliable facility seven years later speaks well of the continued attention given to the facility where it counts. Unfortunately, we can't say the same for all of the items at the plant. There are some that are unsightly and in need of attention, both replacement and painting. Last week we asked HELCO to inspect the plant and give us a list of recommendations toward the goal of insuring we have an attractive plant as well as a safe plant.

We have been assured by the management of HELCO that the probability of a major breakdown or incident in the near future (6 to 10 months) is very low. The condition of the plant is basically sound. That is not to say there may not be minor interruptions or failures. We must remember this is a research and demonstration facility that continues to provide us with valuable information regarding geothermal resources in Hawaii.

The well produces about 55,000 pounds of brine and 45,000 pounds of steam hourly. The steam is used to drive the turbine. Except for a small amount required for research activities at Noi'i O Puna, the extremely hot, silica laden brine is a waste product. In a commercial scale plant, the brine would be reinjected back into the reservoir. At HGP/A, the brine is disposed in surface ponds. The major concern of both the HELCO and the NELH is the disposal of this brine. The ponds used to dispose of the brine are filled and overflowing. We have directed HELCO to clean them out, that work is now underway. This should take care of the disposal problem for the next several months, to the time when we plan on shutting down the HGP/A plant. There is concern about the safety of the hot brine entering the ponds. They are located away from the road and easy access to them, however we are concerned about safety of the general public. We are looking into the best way of keeping the public away from them, possibly our best recourse will be to fence the ponds completely.

### 3. Operating Commitments

Power generation and customer demand from HELCO is quite tight. HELCO would like to have the two megawatts generated by the HGP/A plant delivered into their grid until such time as they have additional generation capacity on line. It will be months before HELCO has this additional capacity, October at the earliest. In addition, PGV may begin electric generation from their geothermal resources by the end of this year. We believe it is reasonable to continue the operation of the HGP/A plant until they are on line with their power.

Another reason for continuing operation of the HGP/A plant is our commitment to the researchers at the Noi'i O Puna Research Facility. We have a continuing requirement for brine and steam for the ongoing research. If we are able to operate the HGP/A facility until PGV comes on line, we will have a continuous supply of those items for our researchers. Our agreement with PGV will make provision for them to supply us with the necessary geothermal fluids for the research program.

### 4. Termination Options

#### a) Immediate Well Shutdown

The HGP/A well has been flowing continuously for over seven years. There is not agreement by the geologists as to what will happen to the well and its ability to restart and flow again if it is shut down. Some think that it will recover and be able to flow again and flash into steam, and others speculate that the well may not be able to be restarted.

Due to the uncertainty of the above, we do not think it advisable to shut the well down immediately. While shutting down the well would be a quick fix to the immediate "problem", it might send the wrong signal to the detractors of geothermal development and intensify their opposition to the orderly development of this resource. It might also signal that the State is waning in their commitment to geothermal development.

#### b) Retire HGP/A Plant and Sell Fluids to PGV

Our preferred plan is to shut down the generating plant and provide the fluids from the HGP/A well to PGV. We intend to work with PGV in establishing a point by point action plan to effect the retirement of the HGP/A power plant, and for the future of the well. Included in this plan will be restoration of the ground where the percolation ponds are located, removal of obsolete and unsightly piping and storage vessels, and a general sprucing up of the grounds. We intend to continue to operate the Noi'i O Puna Research Center. We will be supplied with the requisite fluids under agreement with PGV. Part of the negotiations with PGV will be a requirement for them to dispose of the brine in an acceptable manner.

If we follow this plan of action, we will need to look at our current method of disposing of the brine. The ponds outside the compound will probably still be required, and we are obtaining quotations to fence the ponds for the protection of the public. The issue of hydrogen sulfide and odor we believe has been adequately addressed by the plant operators. There was a recent incident that required open venting. Repairs have been made and we do not expect a repeat of this event. Environmental monitoring is continuous and records are maintained that show emissions are below required standards.

We believe we have adequate funds available to complete the required maintenance and items necessary for the orderly transition to PGV generation. General fund appropriations for plant overhaul have been made and there is a balance in the operations account held by HELCO that can be used for these purposes.

After we shut down the generation plant, we will have used equipment components, notably the turbine generator, that still have value. We have begun preliminary discussions regarding the possibility of selling the turbine generator to industry so that it may be used in generation of electricity in an existing facility utilizing steam that is now going to waste.

There may be income from the sale of HGP/A steam and brine to PGV. We do not believe that this amount will be large, but any income could go towards the continued operation and maintenance of the Noi'i O Puna Research Facility.

#### 5. Recommended Timetable

We will establish a timetable in our negotiations with PGV if the decision is made to continue the HGP/A plant until PGV comes on line. We expect that we will shut down the HGP/A plant early in 1990.

#### 6. Strategy for Public Announcement

PGV would like to have a joint announcement with the State of Hawaii of our decision to shut down the HGP/A plant on the timetable noted above, in the first week of June. They will be public hearings on their application on June 6. They believe a joint announcement shortly before will bring positive benefits that will assist them in their hearings. We concur that this will be beneficial to all parties and intend to assist in the joint announcement.

We are proud of the success of this facility. It was a success because of the cooperation of local, state and federal governments, and the hundreds of people who worked to help bring this project to fruition. We can look proudly at this success, as we plan for the future and the orderly development of this resource by the private sector.

Mr. Maurice A. Richard  
Hawaii Regional Development Manager  
Puna Geothermal Venture  
101 Aupuni Street, Suite 1014-B  
Hilo, Hawaii 96720

May 9, 1989

Dear Maurice,

Thank you for your letter of April 17, 1989. I have shared the letter with the members of the Board of Directors of the Natural Energy Laboratory of Hawaii. In addition I have discussed the contents of your letter with Roger Ulveling and Maurice Kaya of DBED. We are in general agreement on the course of action we should take for the future of the HGP/A facility.

You are correct that the HGP/A well has made a significant contribution to the State of Hawaii and the development of our geothermal resources. We agree that it is now time to begin planning for the retirement of the HGP/A power plant. We feel the appropriate time for this to happen would be when PGV begins production of electricity and delivery of power to the HELCO system.

We further concur we should begin joint planning on the future of the Abbot well. We are prepared to work with PGV in these deliberations. One of our important considerations, as noted in your letter, is we will require a continued supply of geothermal brine for our ongoing non-electric direct use research activities at the Puna Research Center.

We will need to develop a point by point action plan to effect the retirement of the HGP/A power plant and for the future of the Abbot well to effect a smooth transition. Toward this end, I request that you provide us with a draft action plan. We can use this draft as the basis of our discussions and negotiations.

I mentioned to you today in a telephone conversation that we are interested in working with PGV in making a joint press announcement regarding our negotiations and our future plans for the HGP/A facility. We thank you for your assurance that you will participate in this joint announcement. I will be in contact with you as this develops.

We look forward to working with PGV in this and we are prepared to meet with you to discuss these matters.

Sincerely,

William R. Coops  
Managing Director  
NELH/HOST Merger

cc: Roger Ulveling  
Maurice Kaya

April 17, 1989  
Reference No. 89083  
Page 2

In addition, PGV is prepared to work with you in reclaiming the disturbed acres or impacts generated during the successful seven-year operation. Mr. Arthur Lyman has also agreed to participate in this cooperative effort. The future use of the existing generation equipment would also be a matter of negotiation.

We believe the above contains the framework for future negotiations. We further recommend these negotiations begin at your earliest convenience, if we intend to fit the ABBOT well into PGV's steam requirement in late 1989 - early 1990.

When you have additional thoughts on this matter, please call me. The very best to you in your new role with NELE.

Sincerely,



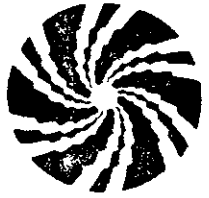
Maurice A. Richard  
Hawaii Regional  
Development Manager

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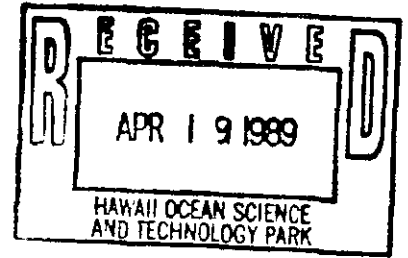
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April 17, 1989  
Reference No. 89084

# ORMAT<sup>®</sup>



Mr. William Coops  
Interim Director  
c/o Hawaii Ocean Science and Technology Park  
220 South King Street  
Suite 820  
Honolulu, Hawaii 96813



Dear Bill:

Thank you for stopping by and meeting with me at PGV's office in Hilo on April 10, 1989. Seeing you again was a pleasure and having you involved again is certainly refreshing.

Turning to business, we discussed at length the future of the HGP-A facility and you requested this letter for your use for the upcoming board meeting.

In summary, PGV strongly believes the HGP-A facility has made a significant contribution toward the advancement of geothermal development in Hawaii and the geothermal industry as a whole. All the contributions in this success story, too numerous to mention, deserves credit and rightful compliments. However, PGV now believes the facility expectations and objectives have been produced and accomplished. We therefore concur, the facility should be retired, in the near future or when appropriate.

As discussed, PGV is committed to commercial geothermal generation to meet Helco's increasing need for power. Based on this fundamental goal and restrained only by permitting limitations, PGV intends delivering power via the existing 34.5 KV interconnection facilities.

Consistent with our discussion PGV is prepared, in the spirit of cooperation, to work with you or the organization you represent toward the following mutually beneficial objectives.

PGV will work cooperatively toward the shut-down of the HGP-A plant and jointly decide the future use of the ABBOT well with the intent to dedicate the resource to PGV with the understanding that HGP-A will be compensated for this resource via a mutually acceptable formula to be negotiated, including the transfer of the existing energy contract between HGP-A and Helco, conditioned upon PGV providing brine for the ongoing direct-use research activities now in progress at the Research Center.

*Handwritten notes:*  
10/10/89  
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10/10/89  
10/10/89

## PUNA GEOTHERMAL VENTURE

- ☑ 101 Aupuni Street Suite 1014-B, Hilo, Hawaii 96720 • Telephone (808) 961-2184 • Facsimile (808) 961-3531
- ☐ 610 East Glendale Ave., Sparks, Nevada 89431-5811 • Telephone (702) 356-9111 • Facsimile (702) 356-9125