June 6, 1989

MEMORANDUM

TO: William W. Paty, Chairperson

FROM: Manabu Tagomori, Deputy Director

SUBJECT: Dowald Staff Analysis of Proposed DBED Termination Options for the Existing HGP-A Well and Power Plant Facility

Pursuant to our review of the draft letter (attached) from Director Roger Ulveling (DBED) to Governor John Waihee concerning the future plans for HGP-A, DOWALD has prepared the following analysis and comments regarding the proposed termination options:

BACKGROUND

June 1976	The HGP-A Well was drilled to a depth of approximately 6,455 ft. Production (9 5/8") casing was cemented from the surface to approximately 2,200 ft. depth. Slotted (7") liner was set from approximately 2,100 ft. to 6,435 ft. depth.
June 1979	The Board of Land and Natural Resources granted approval of Geothermal Resource Mining Lease (GRML) S-4602 to the Research Corporation of the University of Hawaii (RCUH) for the development, operation, utilization and research of geothermal resources.
Oct. 1979	The HGP-A Well Workover and Recasing Program was completed. The original 7" slotted liner (set at 2,100' to 6435') was cut at 3,000 ft. depth and removed. The original 9 5/8" casing was re-cemented and re-tested. A 7" (solid) production casing was set and cemented within the 9 5/8" casing from the top of the existing 7" liner (approx. 2,900' depth) to the surface. The 7" casing (solid and slotted sections) was cleaned out to depth of 6,340 ft. depth.
July 1981	Start of initial production of electricity from geothermal resources at the HGP-A facility.
Aug. 1986	The Land Board approved the assignment of mining lease S-4602 from RCUH to the Natural Energy Laboratory of Hawaii (NELH).

DISCUSSION

1) The transfer of geothermal steam/brine from the leased area covered under State GRML S-4602 to an adjacent but different leased area (GRML R-2) may constitute a transfer/assignment of the mining lease which shall be subject to

the approval of the Board. (Ref. Sect. 13-183-25) The applicability of this provision to the transfer of the resource should be determined by the Division of Land Management.

2) In compliance with the provision of leases R-2 and S-4602, the construction of steam pipelines may require the approval of the Board (Lessor) for such easements or rights-of-way for joint or several use upon, through or in the leased area for steam lines.

3) Pursuant to the construction of the proposed pipelines and the provisions of lease R-2, the lessee is required to file a construction bond for a sum of not less than one hundred (100) percent of the cost of the pipeline, and as such, should provide the department with an estimate of the pipeline construction costs.

4) The terms of lease S-4602 provides for the waiver of royalty payments to the State for the duration of the lease. However, the purpose of the lease when originally granted was to engage in scientific research and investigation. As such, the transport of geothermal resources from lease S-4602 to lease R-2 may constitute a change from scientific research to commercial production and therefore require the payment of a royalty of ten (10) percent of the gross proceeds received by the Lessee (R-2) from the sale or use of such geothermal resources. (Approval/denial of the continuance of the royalty waiver provision should be further reviewed by the Division of Land Management.)

5) Under the authority of the DLNR's Administrative Rules, Chapter 13-183, the Department through the Chairperson/Board may require the following:

   a) That areas cleared and graded for drilling and production facility sites (such as the HGP-A brine percolation ponds) be kept to a reasonable number and size. (Ref. Sect. 13-183-59)

   b) That in the event of any disaster and pollution, or likelihood of either, having or capable of having a detrimental effect on public safety or the environment resulting from operations under a lease, the lessee shall suspend production operations except those which are corrective or mitigative. (Ref. Sect. 13-183-60)

   c) The Chairperson is further authorized to shut down any operations which is determined unsafe or causing pollution of the natural environment upon failure by the lessee to take timely, corrective measures previously ordered by the Chairperson. (Ref. Sect. 13-183-54)

6) Concerning the integrity of the HGP-A well, the Chairperson shall require well tests or remedial work as necessary to prevent and minimize damage to life, health, property, natural resources, geothermal resources, ground water

resources, and the environment. Tests may include casing tests, cementing tests, directional tests, or equipment tests.

If the cementing of any casing appears to be defective, or if the casing in any well appears to be defective or corroded or parted, or if there appears any underground leakage which may permit underground waste, the operator shall take appropriate measures to eliminate the hazard. If the hazard of waste cannot be eliminated, the well shall plugged and abandoned in accordance with a plugging program approved by the Chairperson. (Ref. Sect. 13-183-76)

7) All wells and appurtenances such as well head, valves, pipelines, etc. shall be operated and maintained in good working condition in order to ensure public safety and the protection of the environment.

Periodic corrosion surveillance of any well and appurtenances may be conducted by the Chairperson or authorized representative, and any leakage or hazard discovered shall be promptly corrected by the operator. If the operator fails to comply with the notice to remedy the defect in a timely fashion, the Chairperson may require or do the work necessary at the operator's expense to plug and properly abandon the well. (Ref. Sect. 13-183-80)

CONCLUSION

Based on staff's analysis of the proposed termination options, Dowald recommends the following transition plan for the HGP-A well and power plant facility:

1) Shut down of the HGP-A well and power plant as soon as practicable. The timetable for termination of all operations should take into consideration current operating commitments to HELCO, provided that all applicable regulations and lease requirements related to public safety and the protection of the environment continue to be met until such time as the suspension of all operations is feasible.

2) Upon the shut down of the HGP-A well, the lessee/operator shall be required to conduct well tests, including but not limited to, a casing caliper log, spinner surveys, and cement bond log to evaluate the integrity of the existing casing. In addition, the lessee/operator shall take appropriate action to remove the existing brine percolation ponds and provide for the reclamation/revegetation of all disturbed lands in a manner approved by the Chairperson.

3) The results of the tests identified in item (2) above, shall be submitted to the Department for review within 30 days after the completion of the tests. If it is determined that the well casing and cement bond is satisfactory (i.e. no corrosion or cracks are found), or if any defects are discovered and are properly corrected, then the HGP-A well may be approved for continued use.

(It may be advisable to contract an independent consultant such as a reservoir engineer whose specialty includes the analysis and evaluation of down-hole data to assist the Department in its review.)

4) Concerning the DBED proposal to provide geothermal resource to Puna Geothermal Venture (PGV), who would then supply brine back to the Noi'i O Puna Research Facility, it is recommended that the Department not permit the continued use of percolation ponds at the research facility, but instead require re-injection of these fluids by PGV or NELH (which would require NELH to drill their own injection well subject to State/County approvals).

5) Should negotiations between PGV and NELH result in an agreement to supply steam/brine from HGP-A to PGV (provided that the well is tested and approved), it is recommended that the lease (GRML S-4602) provision for waiver of royalties be terminated (on the assumption that the provision is not transferrable to GRML R-2) and that any State revenues received from the sale of the resource to PGV, be used for special capital improvement projects located in the Puna District, island of Hawaii. (One such project that could be considered is the construction of county water lines into areas that are dependent upon catchment water systems.)

Should you have any questions regarding the above analysis and proposed transition plan, please contact Dan Lum at Ext. 7643.

MANABU TAGOMORI

DN:dh

NAKANO
Memo (5-30-89) routed for Dept. review re: DBED options for Terminations & HGP-A.

HGPA2(DRAFT2)6/1/89

MEMORANDUM

TO: William W. Paty, Chairperson

FROM: Manabu Tagomori, Deputy Director

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c) The Chairperson is further authorized to shut down any operations which is determined unsafe or causing pollution of the natural environment upon failure by the lessee to take timely, corrective measures <u>previously</u> ordered by the Chairperson. (Ref. Sect. 13-183-54)

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CONCLUSION

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2) Upon the shut down of the HGP-A well, the lessee/operator shall be required to conduct well tests, including but not limited to, a casing caliper log, spinner surveys, and cement bond log to evaluate the integrity of the existing casing. In addition, the lessee/operator shall take appropriate action to remove the existing brine percolation ponds and provide for the reclamation/revegetation of all disturbed lands in a manner approved by the Chairperson.

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Should you have any questions regarding the above analysis and proposed transition plan, please contact Dan Lum at Ext. 7643.

MANABU TAGOMORI

Route to all Divisions for review and Comments - ASAP.

MEMORANDUM

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.

? Royalty ?
use HGP-A royalty and return benefits to the community (eg. $1400/mo. such as building county water line to the area)

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.

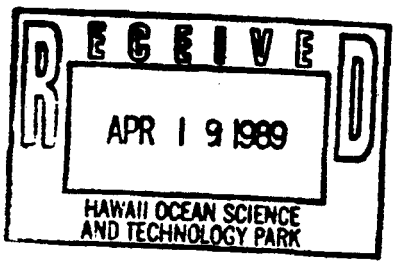
6. Strategy for Public Announcement

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.

ORMAT®

April 17, 1989
Reference No. 89084



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.

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

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 NELH.

Sincerely,

Maurice A. Richard
Hawaii Regional
Development Manager

MAR/ci

[illegible]

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

(S-4602)

Retirement of the Existing HGP-A Well and Power Plant Facility

Problem/Task: Research and Identify the Terms of the HGP-A Geothermal Resource Mining Lease (S-4602) and the Department's Admnistrative Rules Concerning the Termination of the HGP-A Project.

Outline the regulatory requirements for the surrender/assignment of the mining lease and/or the temporary shut-in or abandonment of the well.

Facts and Basic Assumptions:

1) Two senarios exist for the proposed retirement of the HGP-A facility. The first senario assumes the termination of the HGP-A project and the "surrender" of the geothermal resource mining lease (S-4602).

The second senario assumes the retirement of the power generation facility only, and considers the future use of the HGP-A well and continuance of the mining lease.

2) Senario No. 1 assumes that the HGP-A project in its entirety will be shut down, and no further activity will take place. Our regulations provide that any lessee who has complied fully with the terms of the lease, may with the consent of and under the terms and conditions set by the Board, surrender all or any part of the mining lease.

Upon any approved surrender, the lessee shall be relieved of all further obligations except for previous activities conducted on the leased lands. The lessee shall be entitled to all equipment, buildings, and plants placed on the land surrendered and the lessor may require the lessee to remove the same and restore the premises.

If such is the case, the following requirements must be met by the lessee/operator of mining lease S-4602:

a) Proper abandonment (cementing) of the HGP-A well in a manner approved/permitted by the Chairperson, including the filing of a well history report within 60 days after completion of abandonment.

b) Removal of the existing brine percolation ponds and the reclamation/restoration of all disturbed lands, insofar as it is reasonable to do so, within 90 days of the surrender of the lease, except for such alterations/improvements which may be designated for retention by the lessor or its agency having jurisdiction over said lands.

When determined by the Board or the State agency, cleared sites and roadways shall be replanted with grass, shrubs, or trees by the lessee.

3) The mining lease (S-4602) encompasses approximately 4.1 acres of State owned (Agricultural) lands. In 1984, this area of land covered under the mining lease was "grandfathered" (along with mining leases R-2 and R-3) as a geothermal resource subzone (GRS) for the duration/term of the mining lease.

Therefore, the termination/surrender of the HGP-A mining lease may constitute a revocation of the area (4.1 acres) as a geothermal resource subzone. (This situation will occur again in the future when mining leases R-2 and R-3 are either revoked, surrendered, or expired.)

One possible solution (subject to discussion) may be for the Board to designate the "grandfathered" area as a GRS, thereby eliminating the potential removal of the GRS upon the termination/expiration of the mining lease. However, such designation will require the holding of public hearings by the Board with the possiblity of mediation proceedings.

4) Senario No.2 provides for the dismantling of the electrical power generation facility only and proposes the continued use of the HGP-A well for commercial power generation and experimental direct-use applications.

The continued use of the well implies that the mining lease will remain in effect along with all applicable terms and conditions. (Regardless which senario is actually followed, removal of the brine percolation ponds and restoration of all disturbed lands not in use or proposed for use, shall be required.)

5) **Aside from the decision/plans to retire the HGP-A plant, the proposed sale of geothermal fluids for commercial purposes and the continued operation of the Noi' i O Puna Research Facility is contingent upon subsequent negotiations with Puna Geothermal Venture (PGV).**

Briefly, the plan calls for the piping of the resource from the HGP-A well to the proposed Ormat 25 MW facility. The steam will be utilized by the plant and the brine re-injected into the reservoir. The continued operation of the research facility requires that PGV supply the needed fluids to continue the direct-use experiments and that PGV also properly dispose of the spent fluids in an acceptable manner (i.e. re-injection).

6) Such an agreement concerning the transfer of geothermal resources from the leased area covered under S-4602 to an adjacent, but different leased area (GRML R-2), may require a transfer/assignment of the mining lease which shall be subject to the approval of the Board. (Section 13-183-35) The applicability of this provision to the transfer of the resource should be determined by the Division of Land Management.

7) Furthermore, in compliance with the provisions of leases S-4602 and R-2, the construction of steam/brine pipelines may require the approval of the Board (Lessor) for such easements or rights-of-way for joint or several use upon, through or in the leased area for such pipelines.

8) Pursuant to the construction of the proposed pipelines and the provisions of lease R-2, the lessee is required to file a construction bond for a sum of not less than 100% of the cost of the pipeline, and as such, should provide the department with an estimate of the cost of the pipeline construction.

9) The purpose of the HGP-A lease when originally granted was to engage in scientific research and investigation, which includes the provision for the waiver of royalty payments to the State for the duration of the lease.

The proposed transport of geothermal resources from lease S-4602 to lease R-2 constitutes a change from scientific research to commercial production, and therefore requires the payment of a royalty of 10% of the gross proceeds received by the lessee (S-4602) from the sale or use of such geothermal resources. (Amendment to the existing waiver of royalty payments for lease S-4602 may be necessary and should be further reviewed by Land Management.)

10) Pursuant to the continued use of the HGP-A well and integrity of the well casing, the Chairperson shall require well tests or remedial work as necessary to prevent and minimize damage to life, health, property, natural resources, geothermal resources, ground water resources, and the environment. Tests may include casing tests, cementing tests, directional tests, or equipment tests.

If the cementing of any casing appears to be defective, or if the casing in any well appears to be defective, corroded or parted, or if there appears any underground leakage which may permit underground waste, the operator shall take appropriate measures to eliminate the hazard. If the hazard of waste cannot be eliminated, the well shall be plugged and abandonded in accordance with a plugging program approved by the Chairperson (section 13-183-76).

11) Over and above the removal of the power plant facility, all remaining wells and appurtenances such as well head, valves, (and future pipelines), etc., shall be operated and maintained in good working condition in order to ensure public safety and the protection of the environment.

Regular well field inspections and periodic corrosion surveillance of any well and appurtenances may be conducted by the Chairperson or authorized representative, and any leakage or hazard discovered shall be promptly corrected by the operator. If the operator fails to comply with the notice to remedy the defect in a timely fashion, the Chairperson may require or do the work necessary at the operator's expense to plug and properly abandon the well (section 13-183-80).

Conclusion

Based on the above discussion of the proposed termination options, it is reasonable to assume that Senario No.2, concerning the retirement of the HGP-A plant and the proposal to sell geothermal resources to PGV, is the most likely to be pursued.

If such is the case, the lessee/operator shall be required to conduct well tests, including but not limited to, a casing caliper log, spinner surveys, cement bond log, and/or equivalent tests to evaluate the integrity of the existing casing.

In addition, the lessee/operator shall take appropriate action to remove the existing brine percolation ponds, and provide for the reclamation/revegetation of all disturbed lands (not proposed for future use in connection with the sale of resource to PGV) in a manner approved by the Chairperson.

The results of the well tests identified above, shall be submitted to the Department for review within 30 days after the completion of the tests. If it is determined that the well casing and cement bond is satisfactory (i.e. no corrosion or cracks are found), or if any defects are discovered and are properly corrected, then the HGP-A well may be approved for continued use. (It may be advisable to contract an independent consultant such as a reservoir engineer whose specialty includes the analysis and evaluation of down-hole data to assist the Department in its review.)

Lastly, should negotiations between PGV and NELH result in an agreement to supply steam/brine from HGP-A to PGV (provided that the well is tested and approved), it is recommended that the provision for waiver of royalties in mining lease S-4602 be amended, and that any State revenues received from the sale of the resource to PGV, be used for special capital improvement projects in the Puna District.

DRAFT
Special Permit No. 392 - HGP-A

On February 23 and April 27, 1978, the Hawaii County Planning Commission conducted public hearings on the application of the State Department of Planning and Economic Development's (DPED) application for a Special Permit to allow the establishment of a geothermal research facility and to conduct flow tests on approximately 4.1 acres of land at Kapoho, Puna, Hawaii, identified by Tax Map Key 1-4-1:Portion of 2. The research facility would include a power generating system and associated equipment; a research facility to test electric and non-electric applications of geothermal resources; and a visitor information center facility

The Planning Commission recommended approval of the Special Permit on June 1, 1978, subject to several conditions. On February 9, 1979, the Special Permit was issued by the State Land Use Commission subject to twelve (12) conditions of approval.

In December, 1985, the Natural Energy Laboratory of Hawaii (NELH) assumed overall management of the facility and subsequently entered into an agreement with Hawaii Electric Light Company, Inc. (HELCO) for the generation of approxiately 2.3 megawatts of power from the Hawaii Geothermal Project/Abbot (HGP-A) well.

Since that time, there have been numerous incidents and

complaints regarding the unabated or partially unabated emission of H2S (hydrogen sulfide) into the surrounding communities due to malfunctions of the primary abatement system. Although the exact levels of emission have varied from incident to incident, the effects to residents have reached levels whereby voluntary evacuation has been necessary. Occurances of these incidents were especially noted during times of periodic overhaul of the facility itself or when power transmission repair and maintenance activities directly related to the facility where undertaken.

Condition No. 6 of the Special Permit states that:

> The petitioner or its authorized representative shall be responsible in assuring that every precaution is taken to reduce any nuisance, whether it be noise or fumes, which may affect the residents and properties in the immediate area. Should it be determined by the Planning Director that these precautionary measures are not being applied, he will prepare and present a written report to the Planning Commission for its appropriate action which may involve the termination of the Special Permit.

Communications between the Planning Department and the petitioner/petitioners representatives with respect to compliance with the above condition have been initiated (July 16, 1986 and May 10, 1989). Increasing scrutiny of the

HGP-A's operational activities has arisen due to several other geothermal related petitions proposing further activities within the surrounding geothermal subzones. During a Planning Commission public hearing on a GRP request by Puna Geothermal Venture/Ormat, conducted on June 6, 1989, several Commissioners also raised strong concerns about the HGP-A plant and noted that perhaps it should be terminated. Subsequent to that hearing, the Department began initiating contact with NELH to outline their long term plans for the HPA-A facility.

By letter dated June 23, 1989, the NELH responded that for the past seven years, the plant has produced over 2 megawatts of reliable electrical energy into the HELCO power grid which services over 2,000 homes with a reliability factor of over 90%. Since contracting the operation and maintenance of the plant to HELCO, operating logs indicate that approximately 8 days of open venting has occurred over the past 7 years. The plant has been shut down once a year for major equipment maintenance and overhaul in addition to other instances when unscheduled occurances required temporary shut downs as well. However, in spite of these maintenance improvements, the NELH has acknowledged that the plant has deteriorated over time, and thus, among other considerations, the retirement of the HGP-A plant is envisioned and several termination options have been proposed. In the meantime, a stepped up maintenance and

repairs program was to be initiated to keep the facility operating safely until the most appropriate termination alternative is selected.

However, in response to numerous complaints over excessive emission of H2S by the HGP-A facility during the week of September 4-8, 1989, a meeting of representatives from Hawaii Electric Light Company, Inc. (HELCO), the Natural Energy Laboratory of Hawaii (NELH), State Department of Business and Economic Development (DBED) and the Hawaii County Civil Defense Director was organized by the Planning Director on September 11, 1989. Those in attendence were Mr. Norman Oss (President); Mr. Frank Kennedy, and Mr. William Stormont of HELCO; Mr. William Coops, Mr. Frank Hicks, and Mr. Roy Nakanishi of NELH; Mr. Leslie Matsubara, Deputy Director, DBED; and Mr. Harry Kim, Hawaii County Civil Defense Administrator.

The purpose of this meeting was to discuss 1) the immediate establishment of a communication and notification system for non-emergency but unusual periods of operation; and 2) to determine more immediate retirement options for the HGP-A facility given it's continued operational problems that are adversly impacting upon the long term potential of the geothermal industry in Hawaii. At the conclusion of that meeting, it was agreed in principal that HELCO would continue their present maintenance, repair and corrective efforts to

include installation of appropriate backup equipment and systems while all parties work towards an outside retirement date of the HGP-A facility by June, 1990 or sooner. In the interm, under the direction and coordination of the Civil Defense Administrator, all parties would immediately participate in the development of a contingency communication and notification network to coordinate information dissemination and appropriate response procedures for any malfunction or unusual operating situation which results in any abnormal elevated emmission and/or noise levels. DBED was also to explore the potential ramifications of their present direct heat application research contracts in light of the pending retirement of the HGP-A facility.

On September 13, 1989, staff investigation on complaints relating to the facility concluded that the proposed annual maintentance work was not prog essing satisfactorily and HELCO was given a 24-hour shutdown notice unless appropriate measures to hasten the installation of backup equipment and systems were initiated. HELCO responded cooperatively and the necessary work was completed within 8 hours of notification. HELCO also agreed to man the plant on a 24-hour basis until the annual overhaul was completed by the end of September, 1989.

CONCLUSION AND RECOMMENDATIONS

Based on the above chronology, the Planning Director has concluded that best efforts to keep the HGP-A facility in an operational state that minimizes the nuisance impacts to the surrounding community have not been consistently applied.

While the facility has successfully demonstrated that power generation from geothermal resources is a practical energy alternative, it was not designed nor envisioned as a long term commercial power generation system. Although it appears that the condition of the plant is basically sound, it has not been maintained to general utility standards given it's basic design limitations. One significant design limitation is the surface disposal of the silica/brine waste. According to NELH, this brine would normally be reinjected back into the reservoir for a commercial scale power plant; however, at HGP-A, the surface settling ponds are filled and overflowing. Another design limitation is the major advances in geothermal power plant technology over the past years. Extensive research, testing, and use at geothermal developments throughout the world have produced highly advanced equipment, operating systems, and construction materials which are far more sophisticated and durable in the newer commercial applications. Better operational effeciency and safety provisions have since resulted, whereas the existing HGP-A facility will continue to require extensive repairs, maintenance and mechanical upgrading in the future.

These cumulative factors have led all involved parties to conceptually agree that the long term future of the HGP-A facility is not primarily one of a commercial geothermal powerplant but rather a small scale, experimental and research type facility as it was intended to be. It could also function as an energy producing component of a larger commercial facility, and negotiations in that area have already proceeded. With these considerations, an outside timeframe to retire the facility by mid-1990 is forecast giving primary consideration to a smooth transition between HGP-A and the larger commercial entity.

The 7-year off-line venting and preventive maintenance records notwithstanding, these technical limitations and generally rundown appearance of the HGP-A facility have contributed significantly to the negative community perception of the geothermal industry in Hawaii and the ability of the various governmental agencies and utilities to responsibly manage it. From this perspective, the mere presence of the facility in it's existing physical and operational state is considered a visual nuisance and more representative of how not to successfully further any long term geothermal resource applications in the State.

Coupled with an inadequate communication and notification network for unusual operational situations, recent occurances of partially unabated or unabated releases

of H2S have created a continuing nuisance situation to surrounding Puna communities. On a case by case, individual basis, potential health impacts may have also been generated as well.

A summary assessment of the above concludes that although a phased retirement of the HGP-A geothermal facility would be preferable, more immediate solutions to mitigate the nuisance attributes of the existing powerplant operations should be given higher priority.

In view of the above, the Planning Director is recommending 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 twenty (20) 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 twenty (20) days upon receipt of this notification.

3. During the interm 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 H2S or other related emmissions.

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 attendent to the termination of operations.

DEPARTMENT OF BUSINESS
AND ECONOMIC DEVELOPMENT

JOHN WAIHEE
GOVERNOR
ROGER A. ULVELING
DIRECTOR
BARBARA KIM STANTON
DEPUTY DIRECTOR
LESLIE S. MATSUBARA
DEPUTY DIRECTOR

KAMAMALU BUILDING, 250 SOUTH KING ST., HONOLULU, HAWAII
MAILING ADDRESS: P.O. BOX 2359, HONOLULU, HAWAII 96804 TELEX: 7430250 HIDPED FAX: (808) 523-8637

December 1, 1989

MEMORANDUM

TO: The Honorable John Waihee

FROM: for Roger A. Ulveling

SUBJECT: Schedule for closing the HGP-A Well

The shut down of the HGP-A well is scheduled for December 13-14, 1989. The staff of NELH and contractors have established a timetable for assembly of the required equipment, materials, and hook-up for use by that date.

I am attaching a copy of a memorandum from Dr. Donald Thomas who is directing the well shut down for NELH. He notes the unknown factor is the condition of the required high pressure water/mud pump. It is now being overhauled and it is expected to be operating in advance of the shut down date.

The timetable is:

December 1:	High pressure pump on site
December 5:	Plumbing materials for the high pressure pump on site
December 6:	Drilling mud on site
December 8:	Plumbing and connections of high pressure pump completed
December 8:	Overhaul and service wellhead valve assembly completed
December 11:	Moth-balling equipment on site to preserve turbine generator and related equipment
December 11:	Renovation of the high pressure pump completed.

December 11-12:	Testing and adjusting of assembled equipment
December 13-14:	Shut down of HGP-A

Attachments

Bernard K. Akana
Mayor
Duane Kanuha
Director
William L. Moore
Deputy Director

Planning Department

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

CERTIFIED MAIL

December 1, 1989

COPY

William R. Coops, Managing Director
The Natural Energy Laboratory
Of Hawaii
200 South 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 portion of 2)

We have received your letter of November 20, 1989, as well as HELCO's letter of November 14, 1989, responding to the Planning Commission's action on this Special Permit. Thank you for your prompt response which was within the required ten (10) day time frame.

Based on your letter, it is our understanding that the steps necessary to shut down the well, including servicing of the well head valves, assembly of the high pressure pumps, water reservoir and piping and the obtaining of a supply of drilling mud would be ready within three (3) weeks from the date of your letter. By our calculations, this period would end on December 8, 1989, although your proposed shut down of the facility would be before late December or early January.

While HELCO's letter indicated there would be a benefit for keeping the HGP-A plant on line until the end of December, there was nothing in the letter that indicated a compelling need to keep the plant operating for electrical production purposes until that time.

The NELH response proposed a shut down process that included providing standby drilling mud and high pressure pumps as a safety precaution in the event of a leak in the well or well casing. We concur that this is a prudent measure.

However, we also understand that the high pressure mud pumps and associated equipment have been idle for some time and may require some servicing to ensure they are in working order, hence, your uncertainty in forecasting a schedule firmer than "2 to 3 weeks" to

assemble and prepare this segment of the shut down sequencing. Consequently, additional time may be required to ensure all of the equipment and supplies are available and in working order.

Based on the above, and in accordance with Condition No. 5 of the Hawaii County Planning Commission's action with respect to Special Permit No. 392, you are hereby ordered to shut down the HGP-A facility in accordance with the plan of action contained in your letter of November 20, 1989. The scheduled shut down shall follow as closely as practicable the originally proposed work schedule whereby the shut down process would be completed by December 8, 1989. However, under no circumstances shall the operation of the HGP-A well continue beyond December 22, 1989.

Please be further informed that until such time as the facility is fully shut down, Conditions 3 and 4 of the Planning Commission action shall remain in effect. Specifically, these conditions respectively require that the HGP-A facility be manned on a 24-hour basis and monitored for any unusual or elevated release of H2S or other related emissions, and that the communication and notification network, as approved by the Civil Defense, be maintained.

Should you have any questions on this matter, please call me.

Sincerely,

DUANE KANUHA
Planning Director

DK:aeb/syw

cc: Mayor's Office
HELCO
Planning Commission
Civil Defense
R & D
Councilman Russell Kokubun

bcc: Susumo Ono

University of Hawaii at Manoa

Hawaii Institute of Geophysics

MEMORANDUM

November 30, 1989

Memo To: W. Coops
Managing Director
NELH/Host Park
220 S. King St. Suite 820
Honolulu, HI 96813

From: Donald Thomas

Subject: Status and schedule for closing in the HGP-A well

In light of the recent request to accelerate the schedule for closing down the HGP-A well, the plan for shutting in the well has been revised as follows: a high pressure water/mud pump will be moved on-site and plumbed into the wellhead valve assembly. On the designated date for shutting in the well, water trucks will be contracted to stand-by at the site; a mud tank will not be used. Dry drilling mud materials will be standing by at the site but will not be pre-mixed.

The current status of the work to prepare for the shut down is as follows:

A high pressure water/mud pump has been located and moved to the site by Arakaki Mechanical Contractors. The pump has been idle for approximately six years and, in its current condition, it is not operable. A diesel mechanic is presently overhauling and repairing the engines but we will not know the extent of the necessary repairs until December 2-3.

Materials for plumbing in the high pressure water pump to the wellhead are available on the island. Installation of the line can be completed by the end of the week of December 4.

Overhaul and servicing of the wellhead valve assembly in preparation for closing in the well is scheduled to begin on December 5. This work can be completed in two to three days.

Drilling mud is now available on the Island of Hawaii and can be delivered to the site as requrired.

Materials and supplies for moth-balling equipment at the site are available locally or can be shipped from the mainland within one week of ordering.

At the present time, the work that will dictate the schedule for closing in the well appears to be the overhaul of the high pressure water pumps. If the repairs are relatively minor, work should be complete within a week or ten days and shut-down of the well could occur on or about December 13-14. If major repairs are required, an additional week would be required to obtain necessary parts from the manufacturer and shut-down could be scheduled by December 20-21.

Should you need additional information regarding the above schedule, please contact me at the HGP Facility lab (965-9840). I will advise you by telephone as work progresses.

Hawaii Electric Light Company, Inc. • PO Box 1027 • Hilo, HI 96721-1027

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

University of Hawaii at Manoa

Hawaii Institute of Geophysics

MEMORANDUM

December 13, 1989

Memo To: W.R. Coops

From: Donald Thomas

Subject: Summary of shut down program for HGP-A

The shut down program for HGP-A consisted of several weeks of preparation of the well and the site for closing in the well and for any possible problem that might accompany the shut down of the well after a production period of eight years. The key steps in the program were as follows: 1) servicing of the well head valve assembly; 2) installation of high pressure water/mud pumps at the site and connection of a "kill" line to the wellhead; 3) stockpiling of drilling mud and an adequate supply of kill water on site; 4) installation of wellhead pressure monitoring equipment; 5) contracting for the services of a well control specialist to assist with the shut down procedure.

The completion of these tasks was as follows:
1) The wellhead valves and motor operators were serviced by HELCO personnel on December 5. The wing valve delivering steam to the plant was run to a partially closed position several times to clear the valve tracks of scale material and to free up the valve stem. We chose not to run the valves to the completely closed position in order to prevent tripping the plant with consequent steam release through the rock muffler. (These measures notwithstanding, we still received a complaint due to alleged steam release.)
2) Arrangements were made with Water Resources International to lease their high pressure mud pump which was delivered to the site during the week of November 27. The pump had been idle for approximately six years and required servicing by a diesel mechanic; this work was completed on December 5. Due to delivery problems, installation of the water supply and kill lines was delayed until December 9. The pump and lines were tested on Dec. 10 and, after minor modification, were considered to be adequate to our needs.
3) Discussions with Mr. Craddick of WRI and other drilling experts indicated that, in the event of a problem with the well, it would be advisable to attempt to kill the well with water initially and, if that was not successful, to then prepare a charge of drilling mud and pump it

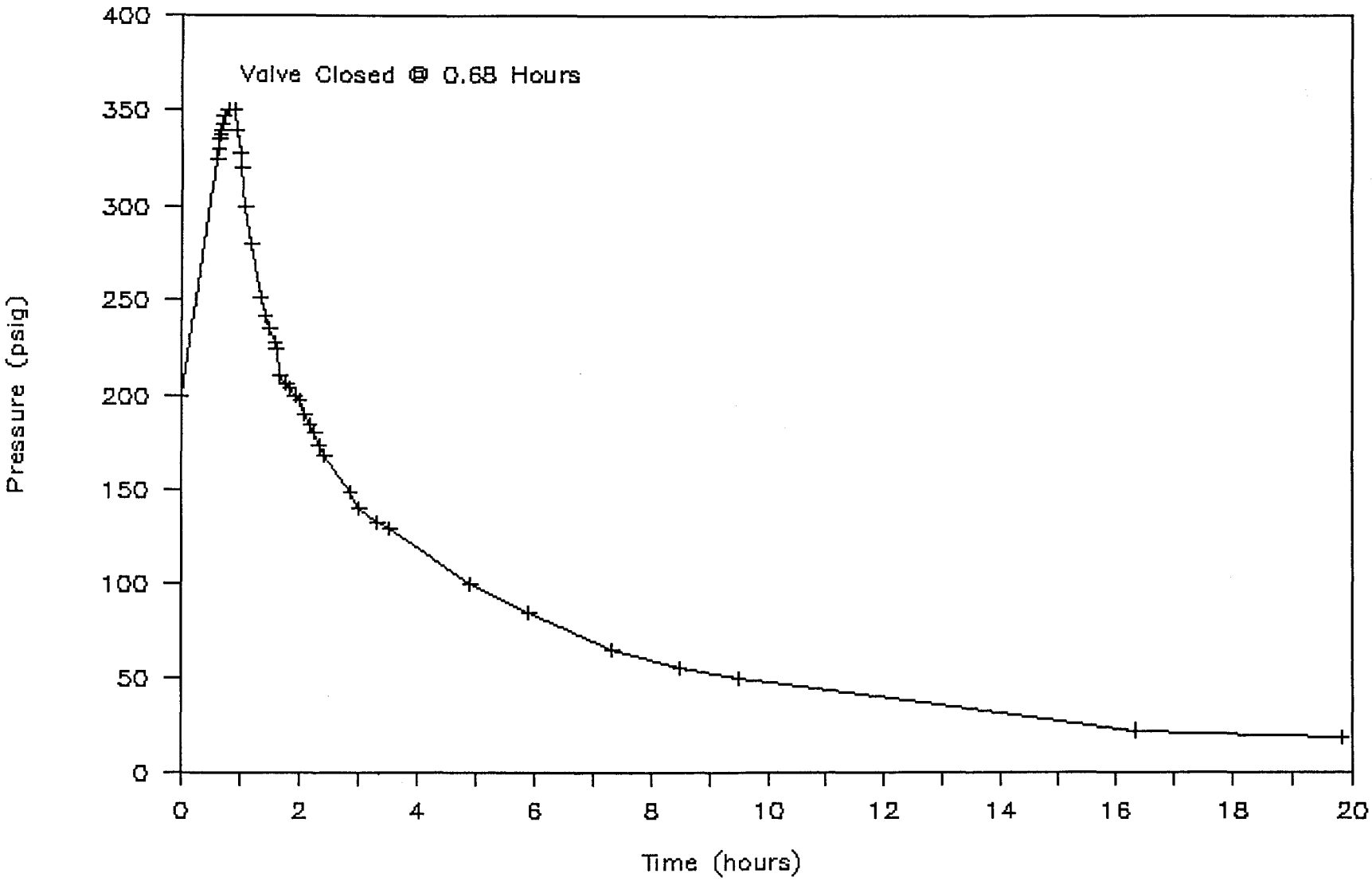
into the hole. On that basis, the 10,000 gallon 50% caustic tank was emptied into the 10% batching tanks and the 50% tank was flushed and filled with water. An adequate supply of dry mud was delivered to the site to prepare two well-bore-volumes of mixed mud on December 11.
4) A two inch line off the wellhead was overhauled and a wellhead pressure monitoring gauge was installed on the well on December 10.
5) Cudd Pressure Control Company of Woodward, Oklahoma was contracted to assist with the well shut down. This company was chosen on the basis of their experience with oil and gas wells, sour gas wells, and geothermal wells. Mr. Bobby Joe Cudd, the company president, arrived at the HGP-A site on December 11 and reviewed the preparations made for shutting in the well. He found no major deficiencies in the preparations made but was able to offer several safety-related suggestions in the approach to be taken in monitoring wellhead pressures and in restricting the flow from the well during the shut down process.

At approximately 15:30 on December 11, after restoration of power to the site (after the island-wide power black-out), the motor operated valve on the main production line was activated and the valve was closed to the extent possible with the motor operator (approximately 80% closed). The last 20% of the valve closure was done manually by the HELCO millwrights. The latter operation required about 40 minutes and the well flow was completely shut off at approximately 16:11. During the final stage of closure, the wellhead pressure gradually rose from 200 psig to about 340 psig. Following closure, the wellhead pressure rose to 350 psig over a period of about 10 minutes and then began to fall as the liquid flow began to flood the well. Within one hour the pressure had fallen to 206 psig and after about 16 hours the wellhead pressure was approximately 22 psig (see attached plot) at which time the well was considered to be completely shut down with no possibility of loss of control. Mr. Cudd was therefore released from further assistance at the well site.

At the present time there is no indication of any problem with the well. However, wellhead pressures will continue to be monitored as the HGP-A well recovers pressure and temperature after its extended production interval. Downhole temperature and pressure surveys will be conducted through the cased interval of the well after the well has had an opportunity to stabilize. If temperature anomalies are observed that may indicate leakage through the well casing, a downhole caliper log will be performed as will a cold water pump-down test to ascertain the condition of the well casing. The results of this work will be provided to you as they become available.

Should you have any questions regarding the shut down or need additional information, please contact me at your convenience.

HGP-A Shut-In Pressure vs Time



EXECUTIVE CHAMBERS

HONOLULU

JOHN WAIHEE
GOVERNOR

May 29, 1990

MEMORANDUM

TO: The Honorable Alfred Lardizabal
The Honorable John Lewin
The Honorable William Paty
The Honorable Albert Simone
The Honorable Roger Ulveling

SUBJECT: Field Monitoring of Geothermal Activities in the Puna District

During our meeting with Hawaii County Mayor Larry Tanimoto and his staff at our Capitol-For-A-Day visit in Hilo, we discussed the desirability of pooling our departmental resources, including personnel, to more effectively monitor geothermal activities in the field. I am requesting that this concept be implemented immediately.

To the extent that County of Hawaii agencies are willing to participate in this effort we should provide full cooperation and assistance to them.

The Natural Energy Laboratory of Hawaii (NELH) should explore the possibility of using part of the former HGP-A power plant structure to house the integrated monitoring team. NELH should also explore the legality of using portions of the net revenues from the sale of steam from the HGP-A well to acquire needed monitoring equipment thereby giving the team full capability to monitor and regulate geothermal activities in the Puna district.

I am designating Susumu Ono to coordinate this project.

JOHN WAIHEE

cc: The Honorable Larry Tanimoto
Dr. John Craven
Mr. Susumu Ono

NEWS RELEASE

Envision Hawaii!

dbed
DEPARTMENT OF BUSINESS
AND ECONOMIC DEVELOPMENT

June 12, 1990
(01/M1/K1/H1/I1)

Norman Reyes, 548-3156

EXPERIMENTAL GEOTHERMAL PLANT BEING DISMANTLED

The closing of the state's HGP-A demonstration geothermal electricity plant in Puna will continue this month when the equipment is dismantled, followed by the start of site restoration work including landscaping.

The plant was shut down last December by the Natural Energy Laboratory of Hawaii following a successful 7-year demonstration run. Hawaiian Electric Light Co. had been operating the plant under contract with NELH and purchasing the electricity output of about two megawatts.

The equipment is being purchased by Bechtel Corporation of San Francisco. After the equipment is dismantled Bechtel will use it overseas.

+ +

(Editors: for further information call Clare Hachmuth at NELH, Keahole Point, 329-7341)

P.O. Box 2359, Honolulu, Hawaii 96804

The Natural Energy Laboratory of Hawaii

90 FEB 7 P2:04

February 6, 1990

DEPT. OF LAND & NATURAL RESOURCES STATE OF HAWAII

Mr. William W. Paty
Chairperson
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Paty,

Thank you for your letter of January 3, 1990 requesting information regarding the closing of the HGP-A geothermal well and our plans for the future. I will respond in the same order as your request for information.

1. I have attached a copy of the report Dr. Donald Thomas prepared at our request, "Summary of shut down program for HGP-A". In addition, there is a cover letter from Dr. Thomas that provides more recent data relating to the condition of the well.

2. We have recently placed legal notices in the Honolulu and Hilo newspapers requesting proposals from interested parties to remove and purchase the major items of equipment from the HGP-A project. I have enclosed a copy of the legal notice for your reference. Once the equipment is removed, we will restore the site to as original condition as possible. Please note, however, that current plans retain the generator/turbine building with its overhead crane.

The Noi'i O Puna Research Facility will require geothermal heat and fluids in its future operation. We are negotiating with Puna Geothermal Venture for their use of the fluids and steam from the HGP-A well. As part of those negotiations, we intend to tap the supply line to PGV for our research needs and return the spent fluids and steam to PGV for their disposal in their injection well.

3. As noted in item 1) above, Dr. Thomas is scheduling a down hole logging and caliper survey of the HGP-A well. This is should be completed this week. As noted in item 2) above, we are negotiating with PGV for their use of the geothermal resource from the HGP-A well. Should we come to an early agreement, it is probable that PGV will use the steam from this well in the initial operation of their power plant.

☐ 220 South King Street, Suite 1280 * Honolulu, HI 96813 * (808) 548-7017
☐ P.O. Box 1749 * Kailua-Kona, HI 96745 * (808) 329-7341
☐ P.O. Box 2172 * Pahoa, HI 96778 * (808) 965-9699

4. We are working with the County of Hawaii Planning Department in obtaining grading permits and other necessary approvals to enable us to restore the ponds on the HGP-A site. We expect these approvals soon, and will commence the restoration work as soon as practicable.

I hope the above will be helpful to you. Thank you for your continued interest in our project.

Sincerely,

William R. Coops
Managing Director
NELH/HOST Park

facilities are needed for a growing number of visitors because of the increase in hotel rooms available on Maui. He said 2,000 new hotel rooms being built at Wailea will draw an estimated 365,000 more visitors a year to Maui.

Mayer countered that not expanding the airport will slow the tide, and argued that Maui residents are not required to support hotel builders.

"We have no obligation to help out the speculators who are building those hotels at Wailea. We have no obligation to make sure their investments are profitable. They took a chance, knowing the airport wasn't built, that there wasn't enough sewage capacity, that there wasn't enough water," he said.

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from the Army Corps of Engineers.

The hurricane passed within about 75 miles of Tutuila. It was about 350 miles south-southeast of American Samoa yesterday evening and did not appear to be weakening, said Dick Sasaki, lead forecaster for the National Weather Service in Honolulu.

The weather service observation station in Western Samoa had to close yesterday after recording gusts in excess of 100 mph, Sasaki said.

For information on the disaster, call the American Samoa office at 545-7451 between 7 a.m. and 10 p.m. Persons wishing to donate money for relief efforts can make checks out to the American Samoa Government Hurricane Fund, Prince Kuhio Federal Bldg., 300 Ala Moana, Suite 3315A, Honolulu 96813.

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Hilo, Mrs. Yoso (Jean N.) Ishizu of Laupahoehoe and Mrs. Lawrence (Joy K.) Matsui. Service 6 p.m. Wednesday at Manoa Valley Church, 2728 Haupala St. No flowers. Casual attire. Hosoi Mortuary handling arrangements.

EDA SCATENA LIPPI, 92, of Kaneohe, died Jan. 31, 1990. She was born in San Francisco. Survived by son, Robert; six grandchildren; three great-grandchildren. Friends may call 8 to 9 a.m. Wednesday at St. Ann Catholic Church; Mass 9 a.m. Burial in Califor-

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Due to the nature of the work contemplated, bidders must possess a valid State of Hawaii Contractor's license classification(s) C-5 or B.

T. Tominaga for
RUSSEL S. NAGATA
Comptroller,
State of Hawaii
(Hon. Adv.: Jan. 31; Feb. 2, 5, 1990) (A-95418)

NOTICE TO BIDDERS

SEALED BIDS to Provide Air Travel Arrangement Services for the College of Education, University of Hawaii at Manoa, Honolulu, Hawaii, in strict accordance with the Invitation for Bids, must be received at the PROCUREMENT AND PROPERTY MANAGEMENT OFFICE, 1400 LOWER CAMPUS ROAD, ROOM 15, UNIVERSITY OF HAWAII, HONOLULU, HAWAII 96822, no later than 2:30 p.m., February 13, 1990, and at that time will be publicly opened. Bids received after the time and date fixed for opening will not be considered.

The invitation may be either obtained from or examined at the above office.

All questions pertaining to this Invitation For Bids (IFB) No. 90-197 shall be directed to the buyer, Mrs. Pat Nihi, telephone (808) 948-8687.

Board of Regents
University of Hawaii
Albert J. Simone
Executive Officer
(Hon. Adv.: Feb. 2, 5, 7, 1990) (A-95488)

NOTICE TO CREDITORS OF WAILEA POINT DEVELOPMENT, INC.

WAILEA POINT DEVELOPMENT, INC. has filed a Statement of Intent to Dissolve with the Department of Commerce and Consumer Affairs, State of Hawaii on December 28, 1989.

NOTICE IS HEREBY GIVEN to all creditors of Wailea Point Development, Inc., to present their claim to the undersigned at 4000 Wailea Alanui, Kihei, Hawaii 96753 within two (2) years from the date that articles of dissolution are filed at the Department, or they shall be forever barred. (DATED: Honolulu, Hawaii, February 5, 1990.)

WAILEA POINT DEVELOPMENT, INC., a Hawaii Corporation
By Clyde A. Agner

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the work contemplated, bidders must possess a valid State of Hawaii Contractor's license classification(s) Pest Control Branch Nos. 1 and 3.

T. Tominaga for
RUSSEL S. NAGATA
Comptroller,
State of Hawaii
(Hon. Adv.: Feb. 5, 7, 9, 1990) (A-95513)

The Natural Energy Laboratory of Hawaii (NELH) will accept proposals for the removal and purchase of the major items of equipment and auxiliary items for the Hawaii Geothermal Project located in Puna, Hawaii. Major items include steam turbine, electric generator, control room module, switch gear module, air compressor, hydrogen sulfide abatement, system caustic storage tanks, etc. A complete listing of items available may be obtained from NELH, 220 S. King Street, Suite 820, Honolulu, Hawaii 96813; NELH, P.O. Box 1749, Keahole Point, Kailua-Kona, Hawaii 96745; or NELH, P.O. Box 2172, Pahoa, Hawaii 96778. Proposals will be accepted until March 15, 1990 at NELH, 220 S. King Street, Suite 820, Honolulu, Hawaii 96813.

(Hon. Adv.: Feb. 5, 7, 1990) (A-95619)

FIRST CIRCUIT COURT NOTICE

P. NO. 88-0433
Estate of ALEXANDER KAM WO YUEN, Deceased

FINAL ACCOUNT of FIRST HAWAIIAN BANK, Personal Representative, and petition for approval of same, distribution of estate and termination of appointment having been filed, all interested persons are notified that Friday, March 9, 1990, at 9:00 a.m., before the presiding Judge in Probate, 4th Fl., Kaahumanu Hale, Honolulu, Hawaii, is appointed the time and place of the hearing on said petition.

DATED: Honolulu, Hawaii, January 18, 1990.

N. ANAYA
Clerk
CADES SCHUTTE FLEMING & WRIGHT
(David C. Larsen)
Attorney for Personal Representative
(Hon. Adv.: Jan. 29; Feb. 5, 12, 1990) (A-95346)

OWNER'S NOTICE OF COMPLETION OF CONTRACT

Due to the nature of the work contemplated, bidders must possess a valid State of Hawaii Contractor's license classification(s) C-33.

T. Tominaga
For
RUSSEL S. NAGATA
Comptroller,
State of Hawaii
(Hon. Adv.: Jan. 30; Feb. 1, 5, 1990) (A-95366)

FIRST CIRCUIT COURT NOTICE

P. NO. 88-0049
ESTATE OF ALLEN Y. LYAU, Deceased

FINAL ACCOUNT OF ELLEN GLORIA LYAU KEALOHA, Personal Representative, and petition for allowance of same and determination and complete settlement of the estate having been filed, all interested persons are notified that Friday, March 16, 1990, at 9:00 o'clock a.m., before the Presiding Judge, in Probate, in his courtroom in the Kaahumanu Hale, 777 Punchbowl Street, Honolulu, Hawaii, is appointed the time and place for the hearing of said petition.

DATED: Honolulu, Hawaii, January 30, 1990.

R. HIGA
Clerk
ALANA W. LAU
Attorney for Personal Representative
(Hon. Adv.: Feb. 5, 12, 19, 1990) (A-95601)

NOTICE TO BIDDERS

SEALED PROPOSALS to provide roundtrip air transportation from Hawaii, Kauai, Lanai, Hana, Maui, and Molokai for the 1990 Department of Education's Statewide Articulation Meeting for Elementary and Secondary Mathematics and Science Teachers, Bid Proposal No. E90-105, will be received at the Department of Education, Procurement & Distribution Section, 1050 Kikowaena Place, Honolulu, Hawaii, until 2:00 p.m. February 12, 1990, at which time and place they will be publicly opened.

All proposals will be made on Department forms which can be obtained at the aforesaid place and must be filled in accordance with the accompanying instructions.

CHARLES T. TOGUCHI
Superintendent
(Hon. Adv.: Feb. 1, 5, 7, 1990) (A-95466)

OWNER'S NOTICE OF COMPLETION OF CONTRACT

1188 Bishop Street
Honolulu, Hawaii 96813
Telephone No. 523-5858
Attorney for Petitioner
(Hon. Adv.: Feb. 5, 12, 1990) (A-956

FIRST CIRCUIT COURT NOTICE

S.E. No 90-0015-2
ESTATE OF MATTHE MARR, aka MA THEW CHOO MYUNG MARR, D CEASED

All persons interest in the above estate a hereby notified that Friday, April 20, 1990, 9:30 o'clock A.M., befo the Judge presiding probate, in his cou room, Kaahumanu Ha Honolulu, Hawaii, wi order the distribution the estate and all mone on hand to those entitl thereto. Creditors are n tified that claims again the estate must be file duly verified, with t Chief Clerk of said Cou within sixty days of Fe ruary 5, 1990 which is t date of publication of th notice.

BY THE COURT,
CLYDE W. NAMUO
Chief Clerk
(Hon. Adv.: Feb. 5, 1990) (A-9551

NOTICE TO BIDDERS

SEALED PROPOSAL for FURNISHING USE TIRE CASINGS TO TH HARBORS DIVISION DEPARTMENT O TRANSPORTATION KAWAIHAE, HAWAI JOB H. C. 5233, will b received at the Contract Office, Department o Transportation, 86 Punchbowl Street, Hono lulu, Hawaii 96813, or a the Office of the Distric Engineer-Hawaii, 5 Makaala Street, Hilo, Ha wail 96720, until 2:00 p.m February 22, 1990, a which time and place they will be publicl opened and read.

Bid documents may b obtained gratis from sai offices.

Each proposal shall b on the form furnished b said Department.

The State reserves th right to reject any or a proposals and to waiv any defects in said pro posal for the best interes of the public.

EDWARD Y. HIRATA
Director of
Transportation
(Hon. Adv.: Feb. 1, 5, 1990) (A-9540

NOTICE TO CREDITORS OF CORPORATION IN DISSOLUTION

NOTICE IS HEREB

University of Hawaii at Manoa

Hawaii Institute of Geophysics

MEMORANDUM

January 8, 1990

Memo To: W. Coops
Managing Director
NELH/Host Park
220 S. King St. Suite 820
Honolulu, HI 96813

From: Donald Thomas

Subject: Information requested by DLNR

Having reviewed the DLNR request for information, it would appear that the attached summary of shut down program for HGP-A would provide the majority of the information that they were requesting in Item 1. You might also add to that memo that the water level was checked in the well on December 15, when it was found to be approximately 720 ft below ground level, and again on January 4, when the water level was found to be about 280 ft below ground level.

At its current rate of recovery, I think that we can schedule a downhole temperature and pressure survey in mid-February. By this time, the water level should be near the surface and will allow us to get a complete temperature profile. I will also attempt to arrange for a downhole caliper log of the well during this same time frame as well.

Should you need additional information to supply to DLNR, please contact me at your convenience.

University of Hawaii at Manoa

Hawaii Institute of Geophysics

MEMORANDUM

December 13, 1989

Memo To: W.R. Coops

From: Donald Thomas

Subject: Summary of shut down program for HGP-A

The shut down program for HGP-A consisted of several weeks of preparation of the well and the site for closing in the well and for any possible problem that might accompany the shut down of the well after a production period of eight years. The key steps in the program were as follows: 1) servicing of the well head valve assembly; 2) installation of high pressure water/mud pumps at the site and connection of a "kill" line to the wellhead; 3) stockpiling of drilling mud and an adequate supply of kill water on site; 4) installation of wellhead pressure monitoring equipment; 5) contracting for the services of a well control specialist to assist with the shut down procedure.

The completion of these tasks was as follows:
1) The wellhead valves and motor operators were serviced by HELCO personnel on December 5. The wing valve delivering steam to the plant was run to a partially closed position several times to clear the valve tracks of scale material and to free up the valve stem. We chose not to run the valves to the completely closed position in order to prevent tripping the plant with consequent steam release through the rock muffler. (These measures notwithstanding, we still received a complaint due to alleged steam release.)
2) Arrangements were made with Water Resources International to lease their high pressure mud pump which was delivered to the site during the week of November 27. The pump had been idle for approximately six years and required servicing by a diesel mechanic; this work was completed on December 5. Due to delivery problems, installation of the water supply and kill lines was delayed until December 9. The pump and lines were tested on Dec. 10 and, after minor modification, were considered to be adequate to our needs.
3) Discussions with Mr. Craddick of WRI and other drilling experts indicated that, in the event of a problem with the well, it would be advisable to attempt to kill the well with water initially and, if that was not successful, to then prepare a charge of drilling mud and pump it

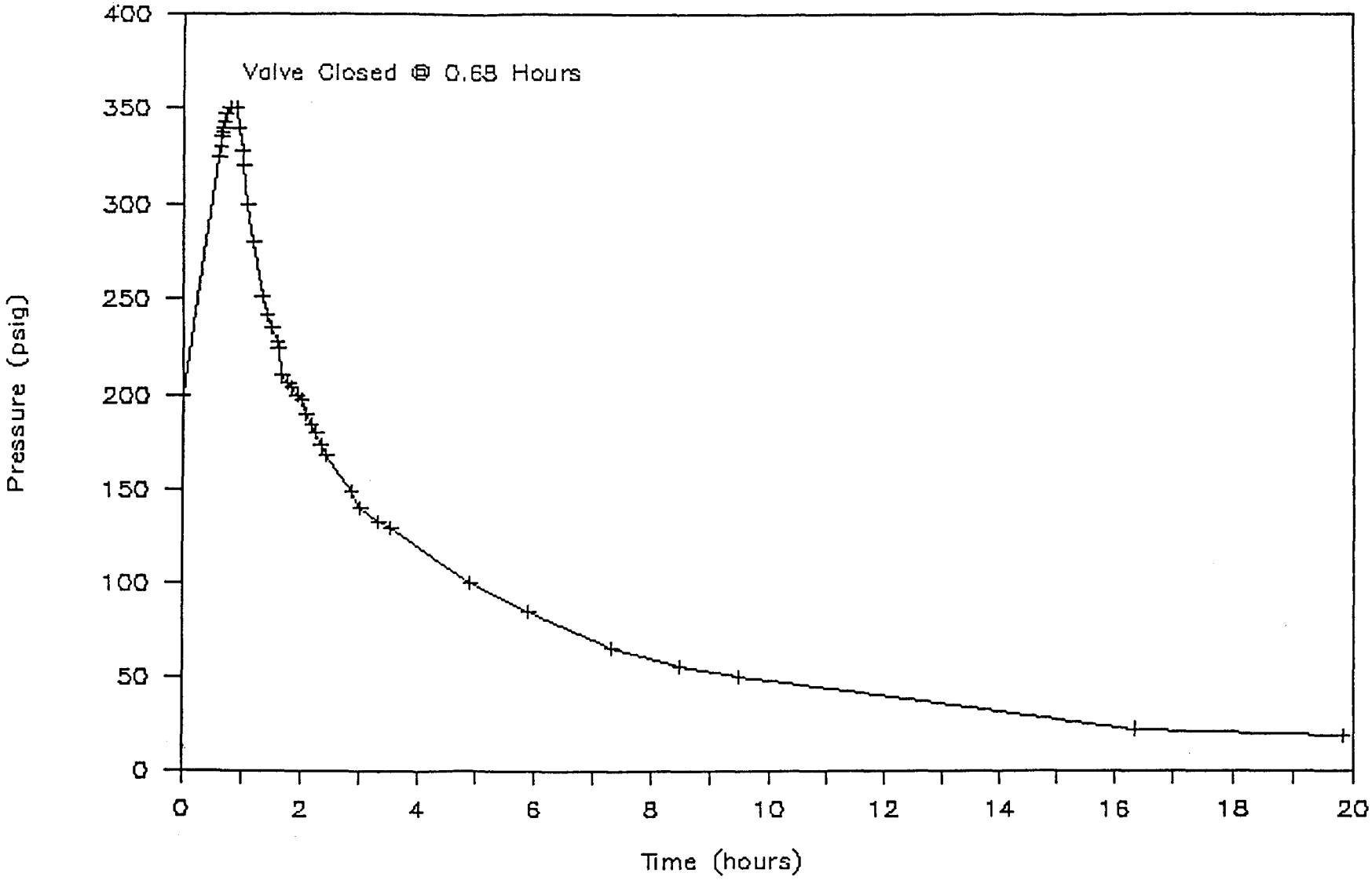
into the hole. On that basis, the 10,000 gallon 50% caustic tank was emptied into the 10% batching tanks and the 50% tank was flushed and filled with water. An adequate supply of dry mud was delivered to the site to prepare two well-bore-volumes of mixed mud on December 11.
4) A two inch line off the wellhead was overhauled and a wellhead pressure monitoring gauge was installed on the well on December 10.
5) Cudd Pressure Control Company of Woodward, Oklahoma was contracted to assist with the well shut down. This company was chosen on the basis of their experience with oil and gas wells, sour gas wells, and geothermal wells. Mr. Bobby Joe Cudd, the company president, arrived at the HGP-A site on December 11 and reviewed the preparations made for shutting in the well. He found no major deficiencies in the preparations made but was able to offer several safety-related suggestions in the approach to be taken in monitoring wellhead pressures and in restricting the flow from the well during the shut down process.

At approximately 15:30 on December 11, after restoration of power to the site (after the island-wide power black-out), the motor operated valve on the main production line was activated and the valve was closed to the extent possible with the motor operator (approximately 80% closed). The last 20% of the valve closure was done manually by the HELCO millwrights. The latter operation required about 40 minutes and the well flow was completely shut off at approximately 16:11. During the final stage of closure, the wellhead pressure gradually rose from 200 psig to about 340 psig. Following closure, the wellhead pressure rose to 350 psig over a period of about 10 minutes and then began to fall as the liquid flow began to flood the well. Within one hour the pressure had fallen to 206 psig and after about 16 hours the wellhead pressure was approximately 22 psig (see attached plot) at which time the well was considered to be completely shut down with no possibility of loss of control. Mr. Cudd was therefore released from further assistance at the well site.

At the present time there is no indication of any problem with the well. However, wellhead pressures will continue to be monitored as the HGP-A well recovers pressure and temperature after its extended production interval. Downhole temperature and pressure surveys will be conducted through the cased interval of the well after the well has had an opportunity to stabilize. If temperature anomalies are observed that may indicate leakage through the well casing, a downhole caliper log will be performed as will a cold water pump-down test to ascertain the condition of the well casing. The results of this work will be provided to you as they become available.

Should you have any questions regarding the shut down or need additional information, please contact me at your convenience.

HGP-A Shut-In Pressure vs Time



Jami,

Claire Hackmuth

329-7341 (Iona)

returned yr call.

Dan

9:50

DIVISION OF WATER AI

ROUTE

FROM:_____
FOR:_____ Your Information_____ Ir

ASARI, Leslie	____	MIYAMOTO, George
CHING, Albert	____	MIYAMOTO, Stephen
CHUCK, Robert	____	MIYASHIRO, George
FUJII, Takeo	____	MORIMATSU, Herb
HAMADA, Doris	____	MORIMOTO, George
INATSUKA, Charles	____	NAKAMA, Thomas
IMADA, Neal	____	NANBU, Lorraine
JINNAI, Richard	____	OHYE, Mitchell
KANESHIRO, Noboru	____	SAKAI, Harold
KASAMOTO, Junji	____	SAKAI, Jane
KOYANAGI, Bill	____	SAKODA, Edwin
KURASHIGE, Randall	____	SHIBUYA, Yoshihisa
LUM, Dan	____	SHIROMA, Yoshiaki
MATSUMOTO, George	____	SIAROT, Jean
MATSUO, Paul	____	TAGOMORI, Manabu
MENOR, Joseph	____	YONAMINE, Elsie

Don Thomas

7/17/90

end of this week all major equips removed - steel work left, another contractor may come in to dismantle that -

also bid package to refurbish turbine generator bldg.

type of construction to be used in replacing the destroyed structure, [illegible] cost thereof shall not exceed by more than twenty-five per cent the actual cost of the destroyed structure or the estimated cost of reproducing an identical structure, whichever may be greater. [L 1915, c 174, §3; am L 1917, c 139, §3; RL 1925, §1264; am L 1931, c 80, §1; RL 1935, §2262; RL 1945, §5872; RL 1955, §134-2]

§41-3 Additional appropriation to fund. If the monetary requirements for the repair or replacement of any building or other property, or the payment of claims found to be due under chapter 386, or for any other lawful claim or charge upon the insurance fund are at any time in excess of the total of cash, securities, and investments to the credit of the state insurance fund, the comptroller shall submit to the legislature a request for an appropriation, to be paid from the general fund, in the amount of such excess for the purpose of offsetting the excess of such liabilities. [L 1945, c 89, §1; RL 1955, §134-3; am L Sp 1959 2d, c 1, §12; HRS §41-3; am L 1980, c 98, §1]

§41-4 Insurance management. The comptroller shall appoint a risk manager, to supervise and direct the determination and treatment for the best interests of the State of all risk appertaining to its property, personnel, and operations and for this purpose, the risk manager shall:

(1) Obtain from the head of each department information and data respecting the property, personnel, and operations of the department in order to determine the potential exposure to loss from every hazard;
(2) Formulate and direct a program for the reduction of risks by the use of all technical personnel and facilities of the State; and
(3) Insure each exposure to loss by the purchase of insurance, either on a complete or excess coverage basis, or to cover the same in whole or part by the insurance fund.

cc:

dismantlement is going on —

~~stat~~ all power plant dismantled

out of state

bldg new siding
roof
landscaping

now energy study of steam

tracing or air monitoring

— July 26 —

March 14, 1983

Mr. Edward Y. Hirata
Vice President, Engineering
Hawaiian Electric Company, Inc.
Box 2750
Honolulu, HI 96840

Dear Ed:

Waiau Water Tunnel Facility

In response to your letter of March 9, 1983, we have no objections to your proceeding with the development plans for the Waiau Tunnel in conjunction with the Honolulu Board of Water Supply.

As stated in our letter of February 14, 1983, artesian wells 2357-10, [illegible] and 2357-12 that feed the Waiau Tunnel require rehabilitation work [illegible] 178 HRS. We suggest that the necessary work on [illegible] into the development plans and [illegible] to the Waiau

7/13/90

call from Rebecca Crockett,
public ~~affairs~~ affairs specialist
P.O. Box 1749 Kailua-Kona
Hi. 96745

referred to Roy Nakanishi
965-9699
to find out more re dismantling
HGP-A
said Pure Research Facility
(adjacent to plant) would contain
(outputs for research: glass, heat,
sterilization, bi-products)

Hachmuth will call next
week.

July 17, 1990

Memorandum

To: Dean

From: Janet

Subject: Further Info on Letter to Patricia Port re: HGP-A Plant

Clare Hackmuth would like to be cc:'d our response to Patricia Port, Regional Environmental Officer for the U.S. Department of the Interior.

I spoke with Rebecca Crockett, public affairs officer, and with Clare Hachmuth of the NELH, Kona, and learned that dismantling is going on, and in fact, the dismantling program was starting the day that Ms. Port was taken to see the HGP-A plant. Clare Hachmuth said that Ms. Port should have been made aware that was the case - Gerry indicated he did make her aware but she had her strong reaction anyway.

Rebecca and Clare said the entire geothermal plant is being dismantled, the equipment being moved out of state, and the building will have a new roof, new siding and landscaping, and will look very nice and will be used for non-energy studies of steam, and for housing the cooperative team of monitors as suggested by Governor Waihee.

If we need to add any more to the letter, we can check back with Clare and with her man on the site, Roy Nakanishi at 965-9699. According to Clare the dismantling will be completed July 26, 1990.

NEWS RELEASE

Envision Hawaii!

dbed
DEPARTMENT OF BUSINESS AND ECONOMIC DEVELOPMENT

June 12, 1990
(01/M1/K1/H1/I1)

Norman Reyes, 548-3156

EXPERIMENTAL GEOTHERMAL PLANT BEING DISMANTLED

The closing of the state's HGP-A demonstration geothermal electricity plant in Puna will continue this month when the equipment is dismantled, followed by the start of site restoration work including landscaping.

The plant was shut down last December by the Natural Energy Laboratory of Hawaii following a successful 7-year demonstration run. Hawaiian Electric Light Co. had been operating the plant under contract with NELH and purchasing the electricity output of about two megawatts.

The equipment is being purchased by Bechtel Corporation of San Francisco. After the equipment is dismantled Bechtel will use it overseas.

+ +

(Editors: for further information call Clare Hachmuth at NELH, Keahole Point, 329-7341)

P.O. Box 2359, Honolulu, Hawaii 96804

EXECUTIVE CHAMBERS

HONOLULU

JOHN WAIHEE
GOVERNOR

May 29, 1990

MEMORANDUM

TO: The Honorable Alfred Lardizabal
The Honorable John Lewin
The Honorable William Paty
The Honorable Albert Simone
The Honorable Roger Ulveling

SUBJECT: Field Monitoring of Geothermal Activities in the Puna District

During our meeting with Hawaii County Mayor Larry Tanimoto and his staff at our Capitol-For-A-Day visit in Hilo, we discussed the desirability of pooling our departmental resources, including personnel, to more effectively monitor geothermal activities in the field. I am requesting that this concept be implemented immediately.

To the extent that County of Hawaii agencies are willing to participate in this effort we should provide full cooperation and assistance to them.

The Natural Energy Laboratory of Hawaii (NELH) should explore the possibility of using part of the former HGP-A power plant structure to house the integrated monitoring team. NELH should also explore the legality of using portions of the net revenues from the sale of steam from the HGP-A well to acquire needed monitoring equipment thereby giving the team full capability to monitor and regulate geothermal activities in the Puna district.

I am designating Susumu Ono to coordinate this project.

JOHN WAIHEE

cc: The Honorable Larry Tanimoto
Dr. John Craven
Mr. Susumu Ono

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF THE SECRETARY
Office of Environmental Affairs
Box 36098 - 450 Golden Gate Avenue
San Francisco, California 94102
(415) 556-8200

June 27, 1990

William W. Paty, Jr., Chairman
Board of Land and Natural Resources
State of Hawaii
1151 Punchbowl Street
Honolulu, HI 96813

Dear Mr. Paty,

I am writing to you after having recently toured the geothermal facilities on Big Island with Gerald Lesperance and staff from Campbell Estates, Fish and Wildlife Service, U.S. Geological Survey, and National Park Service. I very much appreciate Mr. Lesperance's setting up this tour for our group.

I have been convening meetings among State personnel, Mr. Frank Kingery of ERC, and three bureaus of the Department of the Interior to discuss geothermal issues. As you can imagine, we have a number of environmental concerns with these projects, both those already permitted and those being planned.

We are particularly interested to see that proper mitigation of environmental problems be factored into the planning and carried out expeditiously. We also feel that long-term monitoring of the environment should commence with these projects and continue throughout their lives.

One site in particular, the State HGP-A Geothermal Powerplant site in Pahoa which is now in a state of advanced decay, was quite disturbing. It is in immediate need of cleanup and reclamation. As an outsider, I wonder if the State realizes how little confidence this site inspires in the impacts of geothermal development.

I appreciate very much the cooperation the Department of the Interior has had from the State as we discuss goethermal issues. If we can be of assistance to you in cleaning up this site, and in providing technical assistance with mitigation and monitoring in geothermal development, please contact my office.

Sincerely,

Patricia Sanderson Port
Regional Environmental Officer

The Natural Energy Laboratory of Hawaii

90 FEB 7 P2:04

February 6, 1990

DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

Mr. William W. Paty
Chairperson
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Paty,

Thank you for your letter of January 3, 1990 requesting information regarding the closing of the HGP-A geothermal well and our plans for the future. I will respond in the same order as your request for information.

1. I have attached a copy of the report Dr. Donald Thomas prepared at our request, "Summary of shut down program for HGP-A". In addition, there is a cover letter from Dr. Thomas that provides more recent data relating to the condition of the well.

2. We have recently placed legal notices in the Honolulu and Hilo newspapers requesting proposals from interested parties to remove and purchase the major items of equipment from the HGP-A project. I have enclosed a copy of the legal notice for your reference. Once the equipment is removed, we will restore the site to as original condition as possible. Please note, however, that current plans retain the generator/turbine building with its overhead crane.

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3. As noted in item 1) above, Dr. Thomas is scheduling a down hole logging and caliper survey of the HGP-A well. This is should be completed this week. As noted in item 2) above, we are negotiating with PGV for their use of the geothermal resource from the HGP-A well. Should we come to an early agreement, it is probable that PGV will use the steam from this well in the initial operation of their power plant.

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☐ P.O. Box 1749 * Kailua-Kona, HI 96745 * (808) 329-7341
☐ P.O. Box 2172 * Pahoa, HI 96778 * (808) 965-9699

4. We are working with the County of Hawaii Planning Department in obtaining grading permits and other necessary approvals to enable us to restore the ponds on the HGP-A site. We expect these approvals soon, and will commence the restoration work as soon as practicable.

I hope the above will be helpful to you. Thank you for your continued interest in our project.

Sincerely,

William R. Coops
Managing Director
NELH/HOST Park

facilities are needed for a growing number of visitors because of the increase in hotel rooms available on Maui. He said 2,000 new hotel rooms being built at Wailea will draw an estimated 365,000 more visitors a year to Maui.

Mayer countered that not expanding the airport will slow the tide, and argued that Maui residents are not required to support hotel builders.

"We have no obligation to help out the speculators who are building those hotels at Wailea. We have no obligation to make sure their investments are profitable. They took a chance, knowing the airport wasn't built, that there wasn't enough sewage capacity, that there wasn't enough water," he said.

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ng to Pa- ng on a raft with nt team from the Army Corps of Engineers.

The hurricane passed within about 75 miles of Tutuila. It was about 350 miles south-southeast of American Samoa yesterday evening and did not appear to be weakening, said Dick Sasaki, lead forecaster for the National Weather Service in Honolulu.

The weather service observation station in Western Samoa had to close yesterday after recording gusts in excess of 100 mph, Sasaki said.

For information on the disaster, call the American Samoa office at 545-7451 between 7 a.m. and 10 p.m. Persons wishing to donate money for relief efforts can make checks out to the American Samoa Government Hurricane Fund, Prince Kuhio Federal Bldg., 300 Ala Moana, Suite 3315A, Honolulu 96813.

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Hilo. Mrs. Yoso (Jean N.) Ishizu of Laupahoehoe and Mrs. Lawrence (Joy K.) Matsui. Service 6 p.m. Wednesday at Manoa Valley Church, 2728 Haupala St. No flowers. Casual attire. Hosoi Mortuary handling arrangements.

EDA SCATENA LIPPI, 92, of Kaneohe, died Jan. 31, 1990. She was born in San Francisco. Survived by son, Robert; six grandchildren; three great-

Due to the nature of the work contemplated, bidders must possess a valid State of Hawaii Contractor's license classification(s) C-5 or B.

T. Tominaga for
RUSSEL S. NAGATA
Comptroller,
State of Hawaii
(Hon. Adv.: Jan. 31; Feb. 2, 5, 1990) (A-95418)

NOTICE TO BIDDERS

SEALED BIDS to Provide Air Travel Arrangement Services for the College of Education, University of Hawaii at Manoa, Honolulu, Hawaii, in strict accordance with the Invitation for Bids, must be received at the PROCUREMENT AND PROPERTY MANAGEMENT OFFICE, 1400 LOWER CAMPUS ROAD, ROOM 15, UNIVERSITY OF HAWAII, HONOLULU, HAWAII 96822, no later than 2:30 p.m., February 13, 1990, and at that time will be publicly opened. Bids received after the time and date fixed for opening will not be considered.

The invitation may be either obtained from or examined at the above office.

All questions pertaining to this Invitation For Bids (IFB) No. 90-197 shall be directed to the buyer, Mrs. Pat Nihi, telephone (808) 948-8687.

Board of Regents
University of Hawaii
Albert J. Simone
Executive Officer
(Hon. Adv.: Feb. 2, 5, 7, 1990) (A-95488)

NOTICE TO CREDITORS OF WAILEA POINT DEVELOPMENT, INC.

WAILEA POINT DEVELOPMENT, INC. has filed a Statement of Intent to Dissolve with the Department of Commerce and Consumer Affairs, State of Hawaii on December 28, 1989.

NOTICE IS HEREBY GIVEN to all creditors of Wailea Point Development, Inc., to present their claim to the undersigned at 4000 Wailea Alanui, Kihei, Hawaii 96753 within two (2) years from the date that articles of dissolution are filed at the Department, or they shall be forever barred. (DATED: Honolulu, Hawaii, February 5, 1990.)

WAILEA POINT DEVELOPMENT, INC., a Hawaii

Due to the nature of the work contemplated, bidders must possess a valid State of Hawaii Contractor's license classification(s) Pest Control Branch Nos. 1 and 3.

T. Tominaga for
RUSSEL S. NAGATA
Comptroller,
State of Hawaii
(Hon. Adv.: Feb. 5, 7, 9, 1990) (A-95513)

The Natural Energy Laboratory of Hawaii (NELH) will accept proposals for the removal and purchase of the major items of equipment and auxiliary items for the Hawaii Geothermal Project located in Puna, Hawaii. Major items include steam turbine, electric generator, control room module, switch gear module, air compressor, hydrogen sulfide abatement, system caustic storage tanks, etc. A complete listing of items available may be obtained from NELH, 220 S. King Street, Suite 820, Honolulu, Hawaii 96813; NELH, P.O. Box 1749, Keabole Point, Kailua-Kona, Hawaii 96745; or NELH, P.O. Box 2172, Pahoa, Hawaii 96778. Proposals will be accepted until March 15, 1990 at NELH, 220 S. King Street, Suite 820, Honolulu, Hawaii 96813.

(Hon. Adv.: Feb. 5, 7, 1990) (A-95619)

FIRST CIRCUIT COURT NOTICE

P. NO. 88-0433
Estate of ALEXANDER KAM WO YUEN, Deceased

FINAL ACCOUNT of FIRST HAWAIIAN BANK, Personal Representative, and petition for approval of same, distribution of estate and termination of appointment having been filed, all interested persons are notified that Friday, March 9, 1990, at 9:00 a.m., before the presiding Judge in Probate, 4th Fl., Kaahumanu Hale, Honolulu, Hawaii, is appointed the time and place of the hearing on said petition.

DATED: Honolulu, Hawaii, January 18, 1990.

N. ANAYA
Clerk
CADES SCHUTTE FLEMING & WRIGHT
(David C. Larsen)
Attorney for Personal Representative
(Hon. Adv.: Jan. 29; Feb. 5, 12, 1990) (A-95346)

Due to the nature of the work contemplated, bidders must possess a valid State of Hawaii Contractor's license classification(s) C-33.

T. Tominaga
For
RUSSEL S. NAGATA
Comptroller,
State of Hawaii
(Hon. Adv.: Jan. 30; Feb. 1, 5, 1990) (A-95366)

FIRST CIRCUIT COURT NOTICE

P. NO. 88-0049
ESTATE OF ALLEN Y. LYAU, Deceased

FINAL ACCOUNT OF ELLEN GLORIA LYAU KEALOHA, Personal Representative, and petition for allowance of same and determination and complete settlement of the estate having been filed, all interested persons are notified that Friday, March 16, 1990, at 9:00 o'clock a.m., before the Presiding Judge, in Probate, in his courtroom in the Kaahumanu Hale, 777 Punchbowl Street, Honolulu, Hawaii, is appointed the time and place for the hearing of said petition.

DATED: Honolulu, Hawaii, January 30, 1990.

R. HIGA
Clerk
ALANA W. LAU
Attorney for Personal Representative
(Hon. Adv.: Feb. 5, 12, 19, 1990) (A-95601)

NOTICE TO BIDDERS

SEALED PROPOSALS to provide roundtrip air transportation from Hawaii, Kauai, Lanai, Hana, Maui, and Molokai for the 1990 Department of Education's Statewide Articulation Meeting for Elementary and Secondary Mathematics and Science Teachers, Bid Proposal No. E90-105, will be received at the Department of Education, Procurement & Distribution Section, 1050 Kikowaena Place, Honolulu, Hawaii, until 2:00 p.m. February 12, 1990, at which time and place they will be publicly opened.

All proposals will be made on Department forms which can be obtained at the aforesaid place and must be filled in accordance with the accompanying instructions.

CHARLES T. TOGUCHI
Superintendent
(Hon. Adv.: Feb. 1, 5, 7, 1990) (A-95466)

OWNER'S NOTICE

1188 Bishop Street
Honolulu, Hawaii 96813
Telephone No. 523-5858
Attorney for Petitioner
(Hon. Adv.: Feb. 5, 12, 1990) (A-9561

FIRST CIRCUIT COURT NOTICE

S.E. No 90-0015-2
ESTATE OF MATTHE MARR, aka MAT THEW CHOO MYUNG MARR, DE CEASED

All persons intereste in the above estate a hereby notified that Friday, April 20, 1990, 9:30 o'clock A.M., befo the Judge presiding probate, in his cour room, Kaahumanu Hal Honolulu, Hawaii, wi order the distribution the estate and all mone on hand to those entitle thereto. Creditors are n tified that claims again the estate must be file duly verified, with t Chief Clerk of said Cou within sixty days of Fe ruary 5, 1990 which is t date of publication of th notice.

BY THE COURT,
CLYDE W. NAMUO
Chief Clerk
(Hon. Adv.: Feb. 5, 1990) (A-9551

NOTICE TO BIDDER

SEALED PROPOSAL for FURNISHING USE TIRE CASINGS TO TH HARBORS DIVISIO DEPARTMENT O TRANSPORTATIO KAWAIHAE, HAWAI JOB H. C. 5233, will b received at the Contrac Office, Department Transportation, 8 Punchbowl Street, Hon lulu, Hawaii 96813, or the Office of the Distri Engineer-Hawaii, Makaala Street, Hilo, H wail 96720, until 2:00 p.m February 22, 1990, which time and plac they will be public opened and read.

Bid documents may obtained gratis from sa offices.

Each proposal shall on the form furnished said Department.

The State reserves t right to reject any or proposals and to wai any defects in said p posal for the best inter of the public.

EDWARD Y. HIRAT
Director of
Transportation
(Hon. Adv.: Feb. 1, 5, 1990) (A-954

NOTICE TO CREDITORS OF CORPORATION I

University of Hawaii at Manoa

Hawaii Institute of Geophysics

MEMORANDUM

January 8, 1990

Memo To: W. Coops
Managing Director
NELH/Host Park
220 S. King St. Suite 820
Honolulu, HI 96813

From: Donald Thomas

Subject: Information requested by DLNR

Having reviewed the DLNR request for information, it would appear that the attached summary of shut down program for HGP-A would provide the majority of the information that they were requesting in Item 1. You might also add to that memo that the water level was checked in the well on December 15, when it was found to be approximately 720 ft below ground level, and again on January 4, when the water level was found to be about 280 ft below ground level.

At its current rate of recovery, I think that we can schedule a downhole temperature and pressure survey in mid-February. By this time, the water level should be near the surface and will allow us to get a complete temperature profile. I will also attempt to arrange for a downhole caliper log of the well during this same time frame as well.

Should you need additional information to supply to DLNR, please contact me at your convenience.

University of Hawaii at Manoa

Hawaii Institute of Geophysics

MEMORANDUM

December 13, 1989

Memo To: W.R. Coops

From: Donald Thomas

Subject: Summary of shut down program for HGP-A

The shut down program for HGP-A consisted of several weeks of preparation of the well and the site for closing in the well and for any possible problem that might accompany the shut down of the well after a production period of eight years. The key steps in the program were as follows: 1) servicing of the well head valve assembly; 2) installation of high pressure water/mud pumps at the site and connection of a "kill" line to the wellhead; 3) stockpiling of drilling mud and an adequate supply of kill water on site; 4) installation of wellhead pressure monitoring equipment; 5) contracting for the services of a well control specialist to assist with the shut down procedure.

The completion of these tasks was as follows:
1) The wellhead valves and motor operators were serviced by HELCO personnel on December 5. The wing valve delivering steam to the plant was run to a partially closed position several times to clear the valve tracks of scale material and to free up the valve stem. We chose not to run the valves to the completely closed position in order to prevent tripping the plant with consequent steam release through the rock muffler. (These measures notwithstanding, we still received a complaint due to alleged steam release.)
2) Arrangements were made with Water Resources International to lease their high pressure mud pump which was delivered to the site during the week of November 27. The pump had been idle for approximately six years and required servicing by a diesel mechanic; this work was completed on December 5. Due to delivery problems, installation of the water supply and kill lines was delayed until December 9. The pump and lines were tested on Dec. 10 and, after minor modification, were considered to be adequate to our needs.
3) Discussions with Mr. Craddick of WRI and other drilling experts indicated that, in the event of a problem with the well, it would be advisable to attempt to kill the well with water initially and, if that was not successful, to then prepare a charge of drilling mud and pump it

into the hole. On that basis, the 10,000 gallon 50% caustic tank was emptied into the 10% batching tanks and the 50% tank was flushed and filled with water. An adequate supply of dry mud was delivered to the site to prepare two well-bore-volumes of mixed mud on December 11.
4) A two inch line off the wellhead was overhauled and a wellhead pressure monitoring gauge was installed on the well on December 10.
5) Cudd Pressure Control Company of Woodward, Oklahoma was contracted to assist with the well shut down. This company was chosen on the basis of their experience with oil and gas wells, sour gas wells, and geothermal wells. Mr. Bobby Joe Cudd, the company president, arrived at the HGP-A site on December 11 and reviewed the preparations made for shutting in the well. He found no major deficiencies in the preparations made but was able to offer several safety-related suggestions in the approach to be taken in monitoring wellhead pressures and in restricting the flow from the well during the shut down process.

At approximately 15:30 on December 11, after restoration of power to the site (after the island-wide power black-out), the motor operated valve on the main production line was activated and the valve was closed to the extent possible with the motor operator (approximately 80% closed). The last 20% of the valve closure was done manually by the HELCO millwrights. The latter operation required about 40 minutes and the well flow was completely shut off at approximately 16:11. During the final stage of closure, the wellhead pressure gradually rose from 200 psig to about 340 psig. Following closure, the wellhead pressure rose to 350 psig over a period of about 10 minutes and then began to fall as the liquid flow began to flood the well. Within one hour the pressure had fallen to 206 psig and after about 16 hours the wellhead pressure was approximately 22 psig (see attached plot) at which time the well was considered to be completely shut down with no possibility of loss of control. Mr. Cudd was therefore released from further assistance at the well site.

At the present time there is no indication of any problem with the well. However, wellhead pressures will continue to be monitored as the HGP-A well recovers pressure and temperature after its extended production interval. Downhole temperature and pressure surveys will be conducted through the cased interval of the well after the well has had an opportunity to stabilize. If temperature anomalies are observed that may indicate leakage through the well casing, a downhole caliper log will be performed as will a cold water pump-down test to ascertain the condition of the well casing. The results of this work will be provided to you as they become available.

Should you have any questions regarding the shut down or need additional information, please contact me at your convenience.

HGP-A Shut-In Pressure vs Time