

Planning Department

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Bernard K. Aiona
Mayor

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October 23, 1989

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Y

Mr. Gary Mizuno, Chairman
Hawaii County Planning Commission
25 Aupuni Street
Hilo, HI 96720

Dear Mr. Mizuno:

Report to the Planning Commission
Pursuant to Condition No. 6,
Special Permit No. 382 (HGP-A)

As you know, the Commission has expressed deep concern over the continued operations of the HGP-A facility at Kapoho, Puna, Hawaii.

This facility was permitted under Special Permit No. 382 granted by the State Land Use Commission on February 9, 1979, subject to twelve (12) conditions of approval. Condition No. 6 of this permit states:

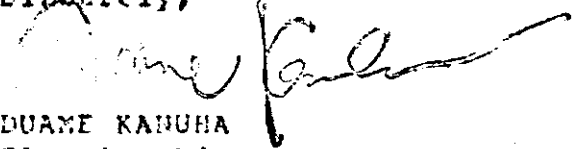
"That the Petitioner or its authorized representative shall be responsible in assuring that every precaution is taken to reduce any nuisances, whether it be noise or fumes, which may affect the residents and properties in the immediate area. Should it be determined by the Planning Director that these 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."

Over the past weeks, we have attempted to coordinate our research and investigations into a report pursuant to Condition No. 6 with the assistance of numerous governmental agencies and individuals within the surrounding community. Attached herewith are the Planning Director's findings, conclusions and proposed recommendations related to this condition which has been scheduled for the Commission's disposition at their meeting of November 7, 1989.

Mr. Gary Mizuno
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In the meantime, if there are any further questions, please do not hesitate to contact me.

Sincerely,



DUANE KANUHA
Planning Director

DK:aeb

cc: Planning Commissioners
Mayor's Office
R & D
NFLR
bcc: HELCO
DBED
✓Sus Ono

Report to the Hawaii County Planning Commission
Pursuant to Condition No. 6
Special Permit No. 382 - HGP-A
October 23, 1989

BACKGROUND

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 approximately 2.3 megawatts of power from the Hawaii Geothermal Project/Abbot (HGP-A) well.

During the establishment and operation of that facility, there have been numerous incidents and complaints regarding the unabated or partially unabated emission of H₂S (hydrogen sulfide) gas into the surrounding communities due to malfunctions of the primary

abatement system. In conjunction with these malfunctions, it sometimes became necessary to free vent the facility and excessive noise impacts were generated as well. Although the exact levels of emission have varied from incident to incident, the effects to residents have reached physical discomfort levels whereby voluntary evacuation has often been necessary. Occurrences 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 were 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 were initiated on July 16, 1988 and again on 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 HGP-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 occurrences required temporary shut downs as well. 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 considered. 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 4-10, 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 attendance 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 its continued operational problems that are adversely impacting upon the long range 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 interim, 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 emission 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 maintenance work was not progressing satisfactorily and HELCO was

inadvertently 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.

Although there have been occasional reports of confirmed H2S impacts since the recent overhaul was completed, the plant is now in better physical and operational condition than it has been for several years.

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 may have not been maintained to general utility standards given its 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 efficiency and safety provisions for commercial geothermal applications have since resulted, whereas the existing HGP-A facility will continue to require extensive maintenance, mechanical upgrading, and facility possible re-design to keep it commercially viable over the foreseeable future.

These cumulative factors have led all involved parties to conceptually agree that the long term future of the HGP-A facility is not one of a commercial geothermal powerplant, but rather a small scale, experimental and research type facility as it was intended to be. The well itself 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 HELCO's power needs, ongoing direct heat research and experimentation and any commercial geothermal entity which would utilize the steam from the facility. To this end, Puna Geothermal Venture/ORMAT has already initiated negotiations to purchase the steam resource from the HGP-A well.

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 its existing physical and operational state is considered a visual nuisance and adversely impacts potential efforts to successfully further any long term commercial geothermal resource applications in the surrounding area.

Coupled with an inadequate communication and notification network for unusual operational situations, recent occurrences 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 general findings 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. 8:

1. That the NELH and HELCO submit documentation to the Planning Director and the Planning Commission for the Provision

of backup electrical needs to replace the 2 megawatts of power presently generated by the HGP-A facility within ten (10) days upon the receipt of this notification.

2. That the NELH submit documentation to the Planning Director and Planning Commission on the feasibility of immediately terminating the HGP-A facility with respect to public safety considerations (i.e. well casing failure during shutdown or potential startup, emergency procedures during shutdown, etc) within ten (10) days upon receipt of this notification.

3. During the interim period pending receipt of the requested documentation for items 1 and 2, the HGP-A facility shall be manned on a 24-hour basis and monitored for any unusual or elevated release of H₂S or other related emissions.

4. A communication and notification network approved by the Civil Defense Administrator and the Planning Director shall be immediately implemented. This network shall include provisions and protocol for notification of emergency services personnel and local residents when a potentially high nuisance situation has or is planned to occur.

5. The Planning Director shall be authorized to act upon the findings submitted under 1 and 2 above to cause the shut down of the HGP A well along with those activities and/or operations authorized under the Special Permit which are directly related thereto. Notice of the Planning Director's action shall be provided in writing or orally with subsequent written confirmation within three (3) days to the Permittee and the

Planning Commission, and shall set forth any conditions attendant to the termination of operations

6. Pending any further hearing as may be required by the Planning Commission, the Planning Director may immediately and temporarily suspend the permit and/or operations allowed thereunder. Notice of a temporary suspension shall be provided in writing or orally with subsequent written confirmation within three (3) days to the permittee and the Planning Commission, and shall set forth the reasons for the temporary suspension. The Planning Director may reactivate the permit or operations suspended thereunder upon a subsequent finding of the permittee's compliance with the reasons for the temporary suspension. Subject to the Planning Commission's rules, the permittee may at any time request a hearing before the Planning Commission for its review and action with regard to the permit's temporary suspension or any subsequent refusal of the Planning Director to reactivate the permit or operations suspended thereunder. Referrals by the Planning Director to the Planning Commission and reviews by the Planning Commission of the Planning Director's action shall be heard at the Commission's next meeting when the matter can be placed on the Commission's agenda.