

GEOHERMAL INFORMATION FILE (GIF)

SUBJECT: PUNA GEOTHERMAL VENTURE (PGV)/ORMAT ENERGY SYSTEMS

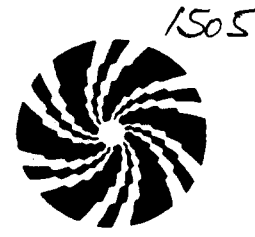
INDEX TO DOCUMENTS:

- 1) Letter from PGV to Chairperson William Paty Requesting Approval of Amendment to Plan of Operation for the 25 MW Puna Geothermal Venture Project (1/19/89).
- 2) Copy of PGV's Geothermal Resource Permit Application Amendment for the Puna Geothermal Venture Project dated March 1989, which was accepted as the technical document for Applicant's Plan of Operations (3/29/89).
- 3) BLNR's Board Submittal Approving Amendment to Plan of Operations for 25 MW Geothermal Project (3/10/89).
- 4) Application for Geothermal Well Modification Permit for Geothermal Well Kapoho State #1-A (5/30/89).
- 5) Letter from Chairperson Paty to Planning Director Duane Kanuha Commenting on the Application for Geothermal Resource Permit submitted by PGV (6/5/89).
- 6) Geothermal Well Modification Permit issued to PGV (6/16/89).
- 7) Application for Permit to Drill Geothermal Well Kapoho State # 3 (7/10/89).

5.040
D. Low

RECEIVED

ORMAT®



20 3503 JUL 10 A 9: 38

June 30, 1989
Reference No. 89241

DIV. OF WATER &
LAND DEVELOPMENT



Mr. William W. Paty, Jr.
Chairperson
Board of Land and Natural Resources
State of Hawaii
Department of Land and Natural Resources
Kalanimoku Building
1151 Punchbowl Street
Honolulu, Hawaii 96813

COPIES

00 JUN 27 PM 2:31

RECEIVED

Re: Application for Permit to Drill Geothermal Well Kapoho
State 3 - State Geothermal Mining Lease R-2

Dear Mr. Paty:

In accordance with the Department of Land and Natural Resources Administrative Rules, Title 13, Chapter 183-65, Puna Geothermal Venture hereby submits the enclosed application for a permit to drill geothermal well Kapoho State 3, to be drilled from proposed wellpad E of the Puna Geothermal Venture Project, as approved in the Plan of Operation on March 10, 1989 by the Board of Land and Natural Resources.

Your timely consideration and approval of this application would be appreciated. Please do not hesitate to contact this office if you have any questions, or desire any additional information, regarding this request.

Sincerely,

Maurice A. Richard
Hawaii Regional
Development Manager

Enclosure

cc:
D. Carey, EMA w/enclosure

PUNA GEOTHERMAL VENTURE

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

**APPLICATION FOR PERMIT TO DRILL PROPOSED GEOTHERMAL WELL
KAPOHO STATE 3 ON RESERVED LANDS, KAPOHO, PUNA, HAWAII**

Complying with Department of Land and Natural Resources (DLNR) Administrative Rule, Title 13, Chapter 183, Subchapter 65, Puna Geothermal Venture (PGV) herewith makes application for Permit to Drill for approval by the Hawaii Board of Land and Natural Resources.

1. Applicant:

Puna Geothermal Venture
101 Aupuni Street
Suite 1014-B
Hilo, Hawaii 96720
(808) 961-2184

PUNA GEOTHERMAL VENTURE

06/30/89

Maurice Richard
By: Maurice Richard
Hawaii Regional Development Manager
Puna Geothermal Venture

Owner of Mining Rights:

Kapoho Land Partnership

Land Owner:

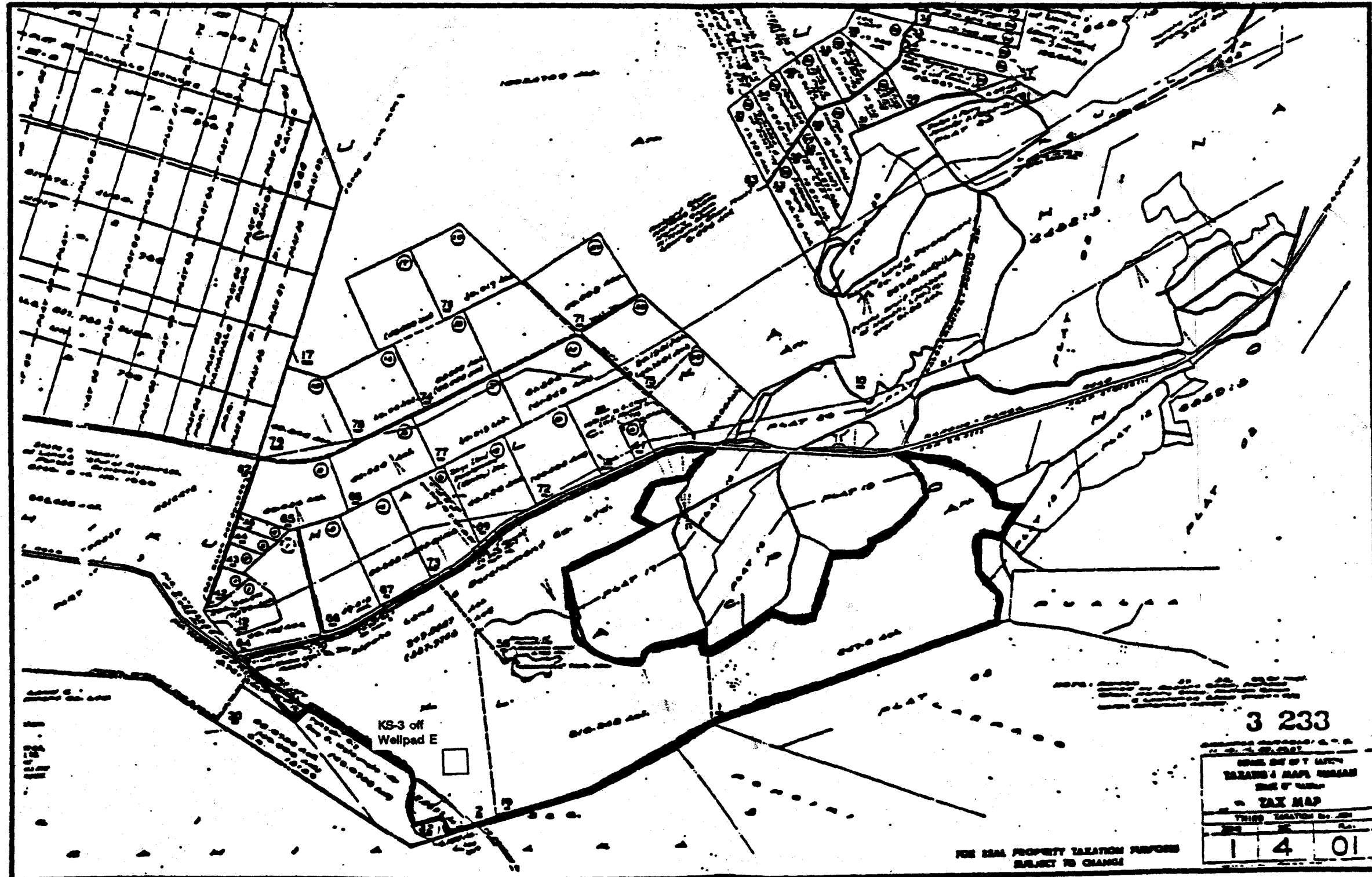
Kapoho Land and Development Company, Limited

2. Proposed well designation: Kapoho State 3 (KS-3) off Wellpad E.
3. The enclosed tax key map, Attachment I, designates the approximate location of the drillsite for KS-3 off Wellpad E located on State Geothermal Mining Lease R-2. The elevation at Wellpad E is approximately 620 feet above mean sea level. A survey of the wellpads for the PGV Project is being prepared at this time. The survey data will be submitted when it becomes available.
4. The proposed PGV Project geothermal well KS-3 has been designed to maximize the possibility of intersecting, below approximately 4,000 feet, near-vertical fractures which are generally aligned along the axis of the Lower East Rift Zone (LERZ) and

**Application for Permit to Drill
Kapoho State 3 Well
June 29, 1989**

which carry geothermal fluids for the purpose of providing geothermal resources to power the PGV Project power plant, previously approved in the Plan of Operation approved March 10, 1988, by the Board of Lands and Natural Resources.

5. A detailed Well Drilling and Completion Program, a Drillsite Plan, and a Vertical Section of the Well for the KS-3 well are contained in Attachments II, III, and IV, respectively.
6. A multi-well drilling bond (\$250,000) has previously been filed with the State of Hawaii.
7. Puna Geothermal Venture agrees to perform such drilling as outlined in this application and agrees to maintain the well in accordance with Title 13, Chapter 183, State of Hawaii, and all Federal and County geothermal regulations.



3 233

STATE OF HAWAII		
DEPARTMENT OF LAND AND NATURAL RESOURCES		
TAX MAP		
TRIM	SECTION	BLK.
1	4	01

FOR REAL PROPERTY TAXATION PURPOSES
SUBJECT TO CHANGE

Attachment II - Well Drilling and Completion Program

1. Well Design

The planned production well design is shown in Attachment IV.

2. Drilling Program

- 2.1 Prepare 10 ft. x 10 ft. x 8 ft. deep cement-rebar wellhead cellar on existing location. Set 30-inch conductor pipe through cellar floor.**
- 2.2 Move in Drilling Contractor's rig; drill and set rathole.**
 - (a) Notify Hawaii Board of Land and Natural Resources (BLNR) 24 hours prior to commencement of drilling.**
 - (b) Confirm compliance with all permit requirements.**
- 2.3 Spud hole with 17½ inch bit and mud drilling fluid; drill into top 20 feet of ground water zone. Stop and sample ground water.**
- 2.4 Drill ahead to 800 foot depth. Open hole to 26 inch. Control loss of circulation (LOC) with loss circulation material (LCM); cement severe lost circulation zones if required.**
- 2.5 Run 20 inch, 94 pound K-55 Buttress coupled casing to 1000 feet. Single stage cement with 40 percent silica flour; use appropriate excess slurry. Be prepared to cement the 20-30 inch annulus with from the surface. Hold casing in tension during annular cement job. Wait on cement (WOC) 8 hours.**

**ATTACHMENT II
Kapoho State 3
June 29, 1989**

- 2.6 Install 20 inch blow-out prevention equipment (BOPE) consisting of 20" casing head flange with 2 each 3" outlets for kill line and blow down line, 20" annular preventer and top mating flange and pitcher nipple assembly. Notify the Chairman of the BLNR in advance of the BOP test so that a designated representative can witness the test.**

Test BOP assembly to 500 psig. Enter test results on contractor and operator daily reports.

- 2.7 Install mud logging service before drilling out 20" casing. Record: continuous mud in and out temperatures, H₂S, CH₄, CO₂, lithology, and drilling rate. Have pit level indicator and intercom to driller stations. Catch four sets of 50 gram dry sample every 20 feet. Make daily copies of the mud log, keeping one copy up to date and available on site.**

- 2.8 Drill 17½ inch hole to 2200 foot depth with mud drilling fluid. Survey wellbore every 200 feet, or on bit change. Use LCM or cement to control LOC as necessary.**

- 2.9 Run 13 3/8 inch, 61 pound K-55 NEW VAM casing to 2200 feet. Cement with 2200 cubic feet cement mixed 1:1 perlite, 40% silica flour, followed by 320 cubic feet cement mixed with 40% silica flour (note; provides for 100% excess). WOC 12 hours. If annular cement placement (top job) is needed hold casing in tension until final WOC is finished (i.e. do not release casing until cement is set at surface).**

- 2.10 Install 13 5/8 inch BOPE consisting of the following items: 13 3/8" 900# casing head flange, 13 5/8" 3000 psi double gate BOP, 3000 psi double gate BOP, 3000 psi annular preventer, mating flange and riser with pitcher nipple.**

**ATTACHMENT II
Kapoho State 3
June 29, 1989**

Hook up kill lines and blow down lines. Casing head welding to be performed with pre- and post-flange heating by a certified welder.

Notify the Chairman of the BLNR in advance of BOP test so that a designated representative can witness the test.

Pressure test BOP assembly to 1000 psig. Record results on contractor and operator's daily reports.

Confirm drill site location and operation of all H₂S safety equipment. Put all drill site personnel through H₂S safety review including equipment downing by each person.

- 2.11 Drill out cement with 12¼ inch mill tooth bit. Pull out of hole, pick up button bit and drill 12¼ inch hole to 2500 feet with mud. Run deviation survey every 200 feet.
- 2.12 Pull out of hole and pick up 12¼ inch directional type button bit, mud motor, 4° bent sub, monel drill collar and additional collars and drill pipe as needed. Build angle at 2-3° per 100 feet in desired direction for approximately 100 - 200 feet with mud motor. Pull out of hole and pick up bottom hole assembly with 12¼ inch button bit, near bit reamer, 2 each 9" drill collars, string stabilizer, shock sub, additional 9" and 8" drill collars, heavy weight drill pipe as needed. Build hole angle to 16° and hold to 4000 feet TVD. Run deviation and direction surveys as necessary (every 20 to 100 feet). Keep mud motor on location and use as necessary to maintain angle and hole direction. Maximum dog leg to be 2°/100 feet. Use soft banded drill pipe for drill pipe that is located inside the 13 3/8 inch casing. Ream hole as necessary as judged by several short trips and deviation data. Use LCM or cement to control LOC as necessary.

**ATTACHMENT II
Kapoho State 3
June 29, 1989**

2.13 Run 9 5/8 inch, 47 pound, C-90, VAM-AF (or equivalent) casing to bottom of 12¼ inch hole (± 4000 ft). Use centralizers every 120 feet through deviated portion of hole. Cement with 1850 cubic feet cement mixed with 1:1 perlite, 40% silica flour followed by 100 cubic feet cement mixed with 40% silica flour (provides for 100% excess). Wait on cement 12 hours. If annular (top) job is needed, hold casing tension until cement is set to surface.

2.14 Install wellhead assembly and BOPE.

If aerated mud or aerated water drilling is planned, wellhead and BOP will consist of 13 3/8" x 9 5/8", 900# WKM type S expansion spool (or equivalent), 10" 900# gate valve, 10" 3000 psi single gate BOP with steel pipe ram, 10" 3000 psi banjo box with 10" 3000 psi hydraulically actuated throttle valve on banjo box side outlet, 10" 3000 psi x 13 3/8" 3000 psi spool, 13 3/8" 3000 psi double gate BOP with steel pipe ram and blind ram, 13 3/8" 3000 psi annular preventer, and rotating head on top.

If mud or water drilling is planned, assembly will consist of 13 5/8" x 9 5/8" expansion spool, 10" valve as above, 10" x 13 3/8" spool and 13 3/8" double gate BOP and 13 3/8" annular preventer, mating flange and riser with pitcher nipple.

Notify the BLNR and test BOP.

2.15 Pick up 8½" mill tooth bit and drill out cement from casing. Pull out of hole, pick up bottom hole drilling assembly. Drill 8½" hole with aerated mud or aerated water (or mud/water) to ± 7000 feet. Take directional surveys

**ATTACHMENT II
Kapoho State 3
June 29, 1989**

approximately every 100-150 feet. Condition hole and make several short trips to insure no fill on bottom of hole.

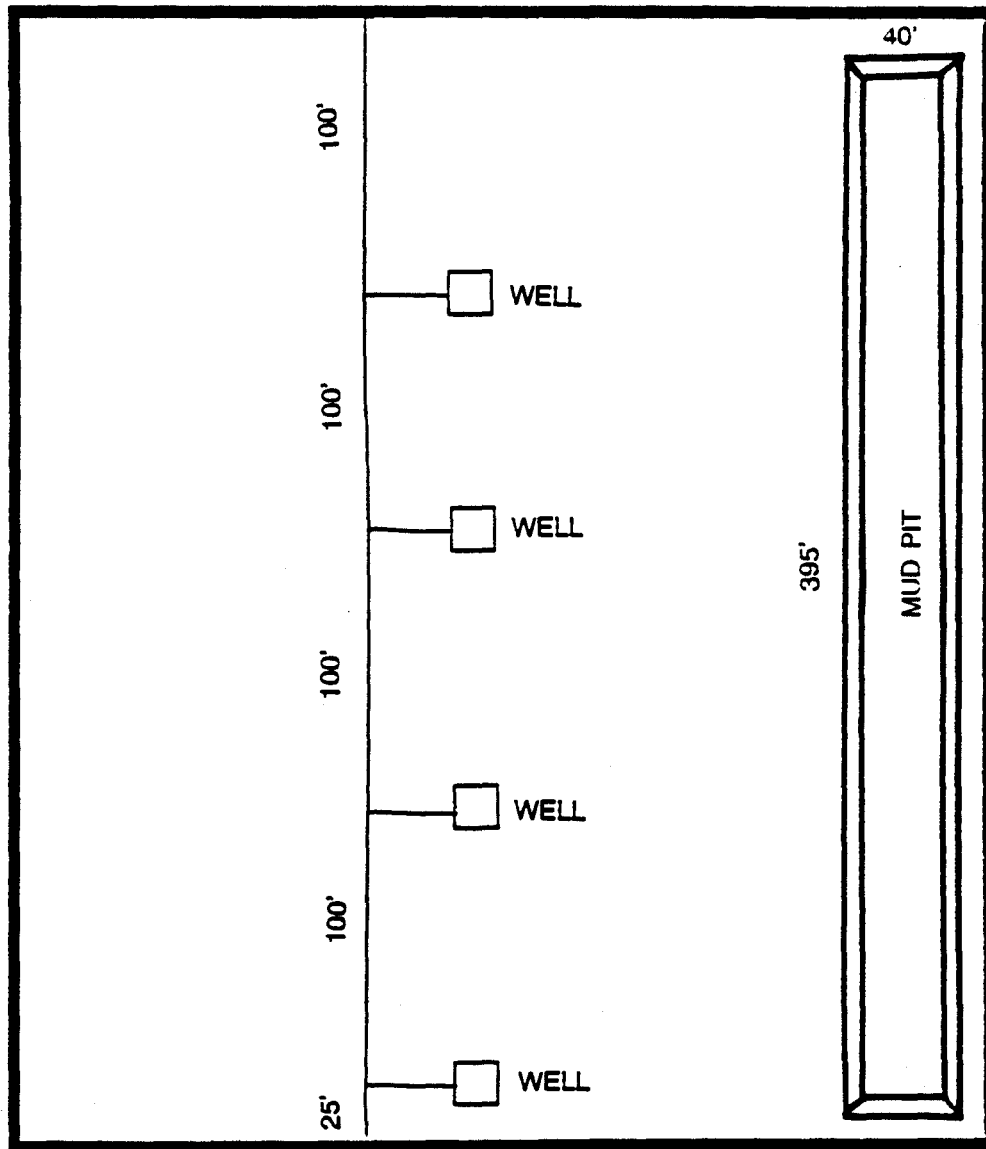
- 2.16 Pull out of hole and pick up ± 3070 feet of 7" 29#/ft-L80 BT&C slotted casing with double slip liner hanger and 7" tieback set on top, and 7" guide shoe on bottom. Casing to be slotted from 4000'- 6950'. Set liner hanger at ± 3880 feet (120' above bottom of 9 5/8" casing). Leave approximately 50' of open hole below bottom of casing for thermal expansion and debris.
- 2.17 Run in hole with 3 1/2" drill-pipe and circulate out mud with water.
- 2.18 Rig down BOP and nipple up wellhead consisting of [expansion spool and one 900# 10" gate valve were attached in (2.14) above] 1 additional 900# 10" gate valve, 10" 900# flow tee with 900# 10" gate valve on side outlet and 3" 900# swab valve on top of tee.

ENVIRONMENTAL MANAGEMENT ASSOCIATES

TITLE: Wellsite Plan

DATE: 06-28-89

ATTACHMENT III

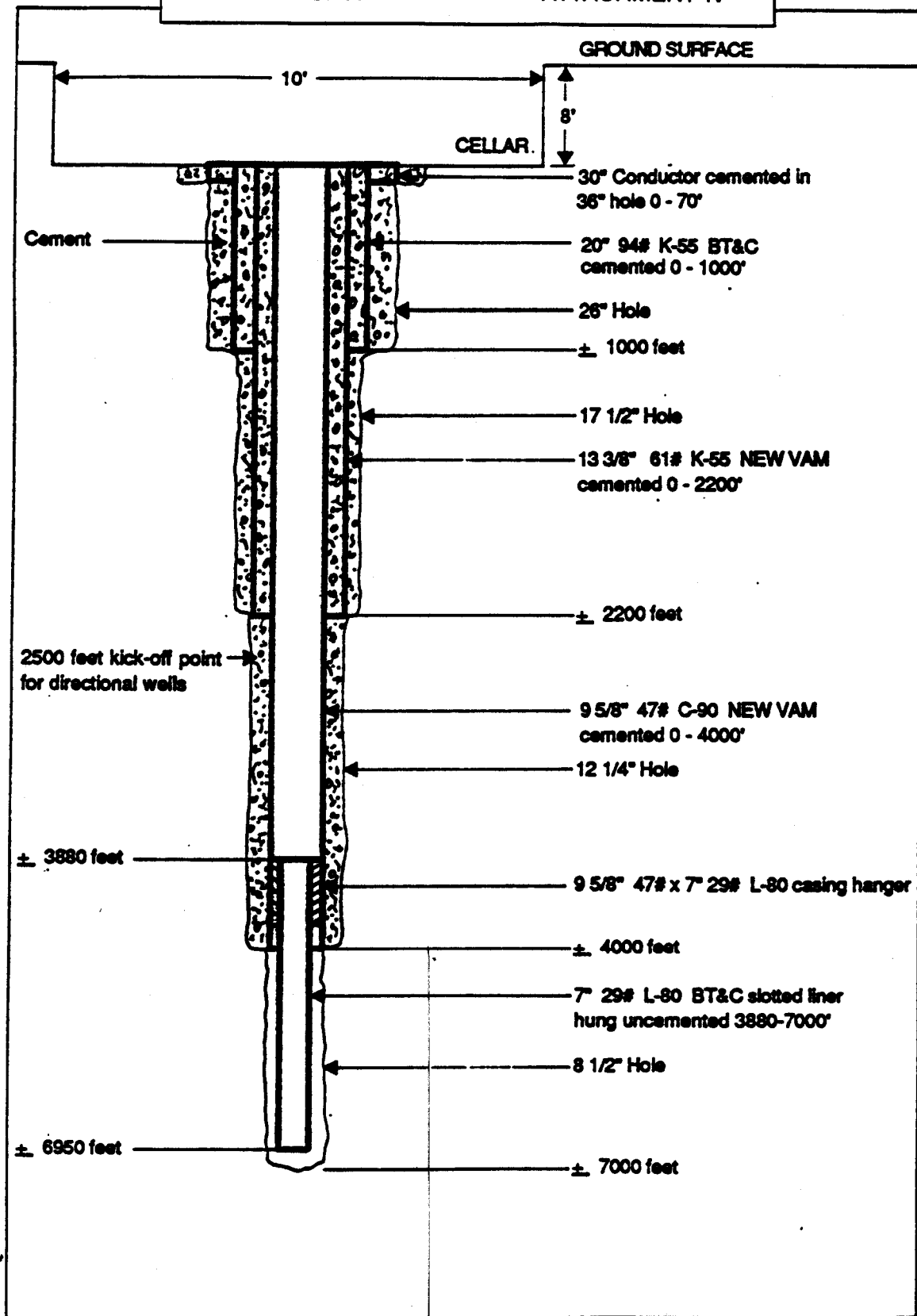


ENVIRONMENTAL MANAGEMENT ASSOCIATES

TITLE: Vertical Section of the Well

DATE: 06-28-89

ATTACHMENT IV





COPY

LIBERT K. LANDGRAF
DEPUTY

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P. O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
CONSERVATION AND
ENVIRONMENTAL AFFAIRS
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

GEOHERMAL WELL MODIFICATION PERMIT

**Kapoho State 1-A
Puna, Hawaii**

**TO: Puna Geothermal Venture
101 Aupuni Street, Suite 1014-B
Hilo, Hawaii 96720**

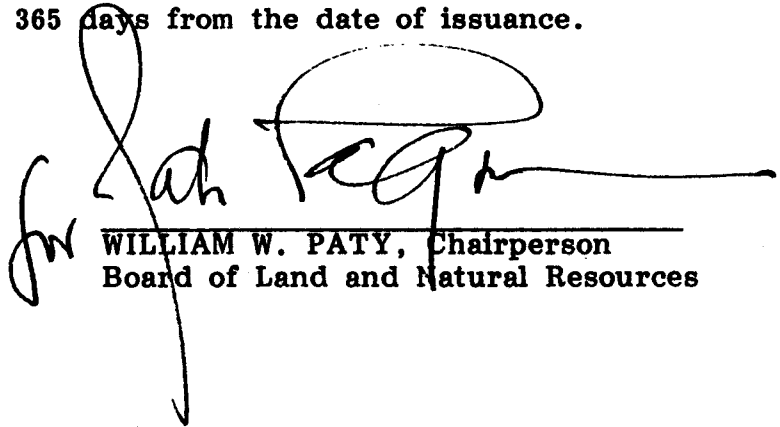
Your application dated May 22, 1989, for a permit to modify Geothermal Well Kapoho State 1-A, is approved:

**Well Designation: Kapoho State 1-A
Location: TMK 1-4-01:02, Kapoho, Puna, Hawaii
Mining Rights: Kapoho Land Partnership, under State Geothermal
Resource Mining Lease R-2
Subleased to: Puna Geothermal Venture
Operator: ORMAT/AMOR VIII Corporation
Ground Elevation: 619 ft.
Total Depth: 6,505 feet**

You are hereby granted permission to modify Geothermal Well Kapoho State 1-A by installing a temporary cement plug in the wellbore casing. Modification of the well shall be completed in accordance with the following conditions:

- (1) The 150-foot cement plug shall be set in the 9-5/8" casing from a depth of 3,800 feet to 3,650 feet. A sinker bar shall be run into the casing to the top of the cement plug to verify the depth of the cement.
- (2) Class "G" cement shall be used in the plugging operations and shall contain a high temperature resistant admix.
- (3) After it has been verified that the cement plug has been set to the approved depth and thickness, the operator shall conduct a casing pressure test to evaluate the integrity of the casing string. Minimum casing test pressure shall be approximately one-third of the manufacturer's rated internal yield pressure and shall be applied for a period of thirty minutes.

- (4) If a drop of more than ten percent of the casing test pressure is recorded, the operator shall then run a caliper log and/or other appropriate well test to evaluate if the casing is defective and if corrective measures will be required before commencing any further operations.
- (5) A well completion report and an as-built drawing of the well modification shall be filed with the Department within six months after completion of the well modification.
- (6) A well test report showing the results of the prescribed casing tests conducted, shall be submitted to the Department for review within sixty days after completion.
- (7) The applicant shall obtain the Chairperson's approval prior to the execution of any contemplated changes in the modification program.
- (8) All work shall be performed in compliance with the Department's Administrative Rules (Chapter 13-183), and all other applicable Federal, State, and County laws, ordinances, rules and regulations.
- (9) The applicant, its successors and assigns, shall indemnify and hold the State of Hawaii harmless from and against any loss, liability, claim or demand for property damage, personal injury and death arising out of any act or omission of the applicant, assigns, officers, employees, contractors and agents under this permit or relating to or connected with the granting of this permit.
- (10) The applicant shall notify the Division of Water and Land Development, in writing, of the date of the start of work.
- (11) The bond covering the well shall remain in full force and effect until the well is properly abandoned and the surface properly restored.
- (12) This permit shall expire 365 days from the date of issuance.


WILLIAM W. PATY, Chairperson
Board of Land and Natural Resources

6-11-89
Date of Issuance

JOHN WAIHEE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P. O. BOX 621
HONOLULU, HAWAII 96809

WILLIAM W. PATY, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

LIBERT K. LANDGRAF
DEPUTY

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
CONSERVATION AND
ENVIRONMENTAL AFFAIRS
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

JUN 5 1989

Mr. Duane Kanuha
Director
Planning Department
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Dear Mr. Kanuha:

Thank you for the opportunity to review and comment on the application for a Geothermal Resource Permit submitted by Puna Geothermal Venture (PGV).

We have no major objections regarding the 25 MW geothermal project proposed for the island of Hawaii, but would like to offer the following comments:

- 1) The PGV application states that up to a maximum of 500 gallons per minute (720,000 gal/day) of water may be required for re-injection operations to maintain injection flow and to provide a sufficient quantity of fluid to absorb the noncondensable gases. It is indicated that this supplemental water may be supplied by one or two wells developed near the plant site.

The applicant (PGV) should be advised that pursuant to the Department of Land and Natural Resources' Administrative Rules, Chapter 13-168, a well construction and pump installation permit, in addition to a well completion report will be required for the construction of any proposed water well. Furthermore, the applicant shall be required to comply with all other applicable regulations identified within that chapter.

- 2) Pursuant to PGV's proposal to re-inject geothermal fluids and noncondensable gases back into the geothermal reservoir, and in response to community concerns regarding potential impacts to the ground water aquifer down gradient from the site, it is recommended that if water wells are to be developed, that they be strategically sited within the project area so that they may serve as monitor wells as well as sources of supplemental water.

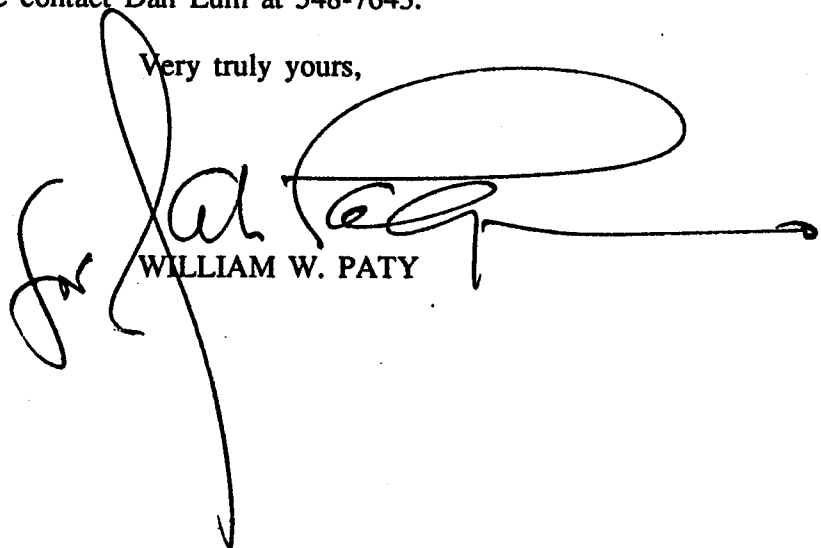
Placement of these supply wells down gradient from the injection well sites will allow for periodic sampling of the existing ground water aquifer and the monitoring of the proposed injection operations.

JUN 5 1989

- 3) It is further recommended that the applicant file monthly reports of re-injection data, including but not limited to, quantity of fluids injected, chemical composition, and any changes in injection pressures which may indicate that the injected fluid is no longer confined to the intended zone of injection.
- 4) All work shall be performed in accordance with the Department of Land and Natural Resources' Administrative Rules (Chapters 13-183 and 13-184), and all other applicable Federal, State, and County laws, ordinances, rules and regulations pertaining to the lands and permittee's operations including, but not limited to, all water and air pollution control laws, and those relating to the environment.
- 5) If any unanticipated sites or remains of historic or prehistoric interest (such as shell, bone, or charcoal deposits, human burials, rock or coral alignments, paving, or walls) are encountered during the applicants operation, the applicant shall stop work and contact the State Historic Preservation Office at 548-7460 or 548-6408 immediately.

Thank you again for the opportunity to comment on the subject application and should you have any questions, please contact Dan Lum at 548-7643.

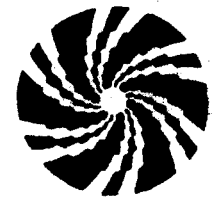
Very truly yours,



WILLIAM W. PATY

W
C. Sano

ORMAT®



May 22, 1989
Reference No. 89141S

RECEIVED
MAY 30 9:52

DEPARTMENT OF LAND & NATURAL RESOURCES
STATE OF HAWAII

8

Mr. William Paty
Chairman
Board of Land and Natural Resources
Kalanimoku Building, #130
1151 Punchbowl Street
Honolulu, Hawaii 96813

Subject: Well Modification Permit Request

Reference: Geothermal Well: Kapoho State #1-A
Geothermal Resources Mining Lease R-2
Location TMK 1-4-01:02 Kapoho, Puna District,
Hawaii County Leased to Kapoho Land Partnership

Dear Mr. Chairman:

A Department of Land and Natural Resources (DLNR) permit exists for the drilling and completion of the reference well. Since the conclusion of drilling and flow testing in 1985, Kapoho State #1-A has been maintained in a shut-in status with periodical gas cap ventings and incineration or burning of the exhausted gases. Puna Geothermal Venture (PGV) has closely monitored this well and complied with DLNR reporting requirements.

Puna Geothermal Venture herewith submits a Well Modification Permit request consistent with Chapter 183 of Title 13, Subchapter 183-65-4.

The attached work description and well casing configuration drawing including the approximate location of the proposed cement plug is attached for reference.

In brief, the PGV request is based on a technical need to periodically service the wellhead assembly to maintain a high standard of reliability and integrity. This routine servicing process is also timed to fit within the overall 30 MW development schedule and expected County permitting approvals and related requirements now in progress.

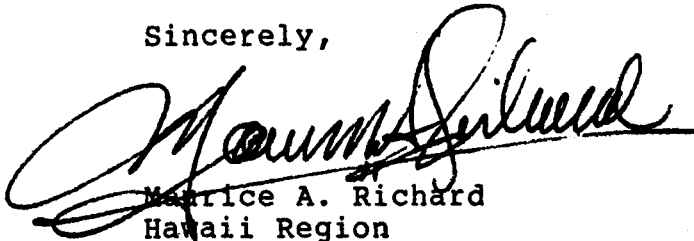
PUNA GEOTHERMAL VENTURE

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

May 22, 1989
Reference No. 89141
Page 2

Your early consideration and approval will be appreciated.
Please contact the Hilo office of Puna Geothermal Venture if
you or your staff have any questions about the above request.

Sincerely,

A handwritten signature in cursive script, appearing to read "Maurice A. Richard". The signature is written in dark ink and is positioned above the typed name.

Maurice A. Richard
Hawaii Region
Development Manager

Attachment

MAR/ci

11 May 1989

Program to Temporarily Suspend KS-1A with Cement Plug

1) Purpose of Work

It will be at least a minimum of a year before KS-1A is needed for production service. Therefore PGV has decided to temporarily suspend the well by setting a 150 foot cement plug in the casing at 3000 feet. This will eliminate the need for further gas burns and will permit the wellhead to be serviced and the condition of the production casing to be checked in preparation for putting the well in service.

2) Plan of Work

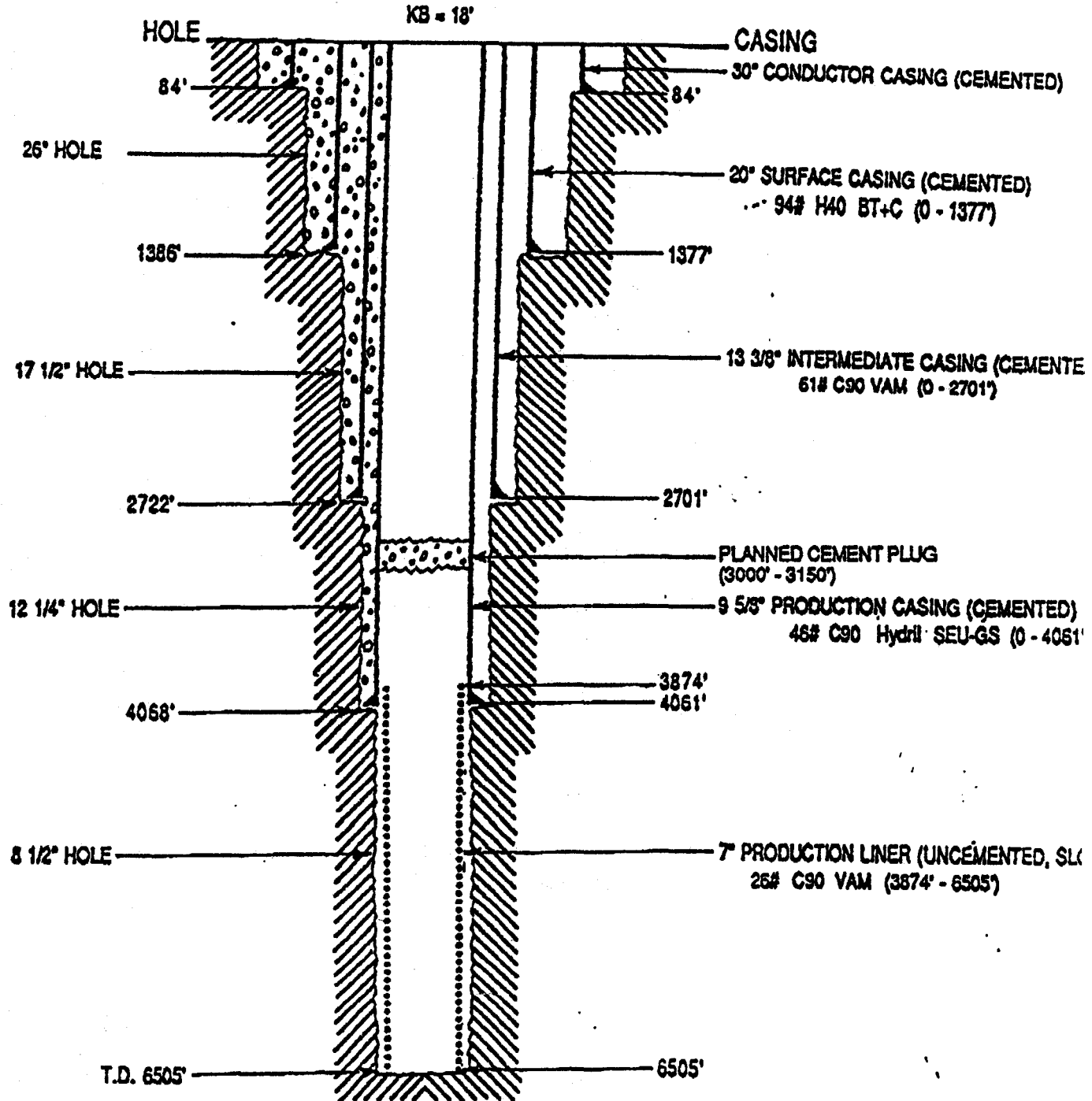
The design of KS-1A showing the planned cement plug is shown in the attached figure. The setting depth of 3000 feet was chosen in order that the reservoir pressure beneath the plug will be balanced by the pressure exerted by the column of water in the wellbore above the plug. A rig will not be needed to carry out the work.

The operation is planned as follows :

1. Run sinker bar to 4500 feet.
2. Run a static pressure and temperature survey to 4500 feet.
3. Nipple-up pump to 3" side valve and kill well by slowly pumping cold water.
4. With the well killed run an 8" gauge ring to 3500 feet. Continue to pump water to maintain kill.
5. Run temperature survey to 4000 feet while maintaining kill to assess wellbore temperatures for cement slurry design.
6. Insert 9 5/8" bottom wiper plug through wellhead.
7. Pump 75 gallons (25 liner feet) water on top of plug.
8. Mix 60 cu ft (150 liner feet) geothermal cement and drop on top of water.
9. Insert top wiper plug and displace cement plug to 3000 feet with water (220 barrels).
10. Wait on cement 24 hours.
11. Run sinker bar to top of cement to check depth.
12. Shut-in wellhead and secure.

The operation is anticipated to take a total of 5 to 7 days.

KAPOHO STATE #1A WELL



Planned Cement Plug in KS-1A

State of Hawaii
DEPARTMENT OF LAND AND NATURAL RESOURCES
Division of Water and Land Development
Honolulu, Hawaii

March 10, 1989

Chairperson and Members
Board of Land and Natural Resources
State of Hawaii
Honolulu, Hawaii

Gentlemen:

Approval of Amendment to
Plan of Operations for 25 MW Geothermal Project,
State Mining Lease No. R-2, Kapoho, Puna, Hawaii

As required by State Mining Lease No. R-2 and Administrative Rules 13-183, Puna Geothermal Venture, sublessee, has submitted for Board approval an amendment to Plan of Operations for a geothermal project involving a 25 Megawatt power plant and associated well field.

The amended 25 MW project will be located in the Kapoho section of the Kilauea Lower East Rift Geothermal Resource Subzone in Puna, Hawaii, and will sell geothermal produced electricity to Hawaii Electric Light Co. for use on the Island of Hawaii. The amendments to the original Plan of Operations (December 1986) will reduce potential environmental impacts through the use of back-pressure steam turbines, air-cooled binary cycle steam turbines, and the injection of spent geothermal fluids and gases back into the geothermal reservoir at depth.

The completion date of the first phase which will produce 12.5 MW of electricity is expected to be late 1989. The second phase which will produce an additional 12.5 MW is expected to be completed by mid 1990.

RECOMMENDATION:

That the Board approve the amendment to Plan of Operations submitted by Puna Geothermal Venture for a 25 MW geothermal project on State Mining Lease No. R-2, subject to the following conditions:

- (1) That Puna Geothermal Venture comply with all applicable statutes, ordinances, rules and regulations of the Federal, State, and County governments.
- (2) Other terms and conditions as may be prescribed by the Chairperson.

Respectfully submitted,


MANABU TAGOMORI
Manager-Chief Engineer

APPROVED FOR SUBMITTAL


WILLIAM W. PATY, Chairperson

Approved by the Board of
Land & Natural Resources
at the meeting held on

ITEM D-1

MAR