

COUNTY Graham AREA _____ LEASE NO. _____

WELL NAME _____

LOCATION _____ SEC _____ TWP _____ RANGE _____ FOOTAGE _____
 STATUS _____ TOTAL _____
 ELEV _____ GR _____ KB _____ SPUD DATE _____ COMP. DATE _____ DEPTH _____

CONTRACTOR Kent Carson, G.R.L. Construction, 203-5th St., Safford
85546

CASING SIZE _____ DEPTH _____ CEMENT _____ LINER SIZE & DEPTH _____ DRILLED BY ROTARY _____
 DRILLED BY CABLE TOOL _____

Bureau of Geology & Mineral Technology
 University of Arizona
 2045 N. Forbes Blvd., Ste. 106
 Tucson, AZ 85705

*All wells Completed
 Dec 1981*

List of 200' temperature gradient test holes in Graham County, 15 miles south of Safford, Arizona:

PERMIT NO.	HOLE NO.	LOCATION	FOOTAGE	API NO.
779	HF-10	8S-26E-31 SE SW SE	100' FSL, 1600' FEL	02-009-20006 - <i>6-160-160</i>
780	HF- 5	-34 SW SW SW	100' FSL, 300' FWL	-20007 - 0-210-213
781	HF- 1	9S-26E- 8 SE NE NW	1100' FNL, 1400' FWL	-20008 - 0-200-206
782	HF- 3	- 9 NW NW NW	100' FNL, 100' FWL	-20009 - 0-200-200
783	HF- 4	- 9 SW NW SW	1500' FSL, 100' FWL	-20010 - 0-210-210
784	HF- 6	-10 SW SE NW	2400' FNL, 1200' FWL	-20011 - 0-180-200
785	HF- 7	-15 SW SE NW	2400' FNL, 1500' FWL	-20012 - 0-210-213
786	HF- 2	-17 NE NW NW	100' FNL, 1200' FWL	-20013 - 0-200-200

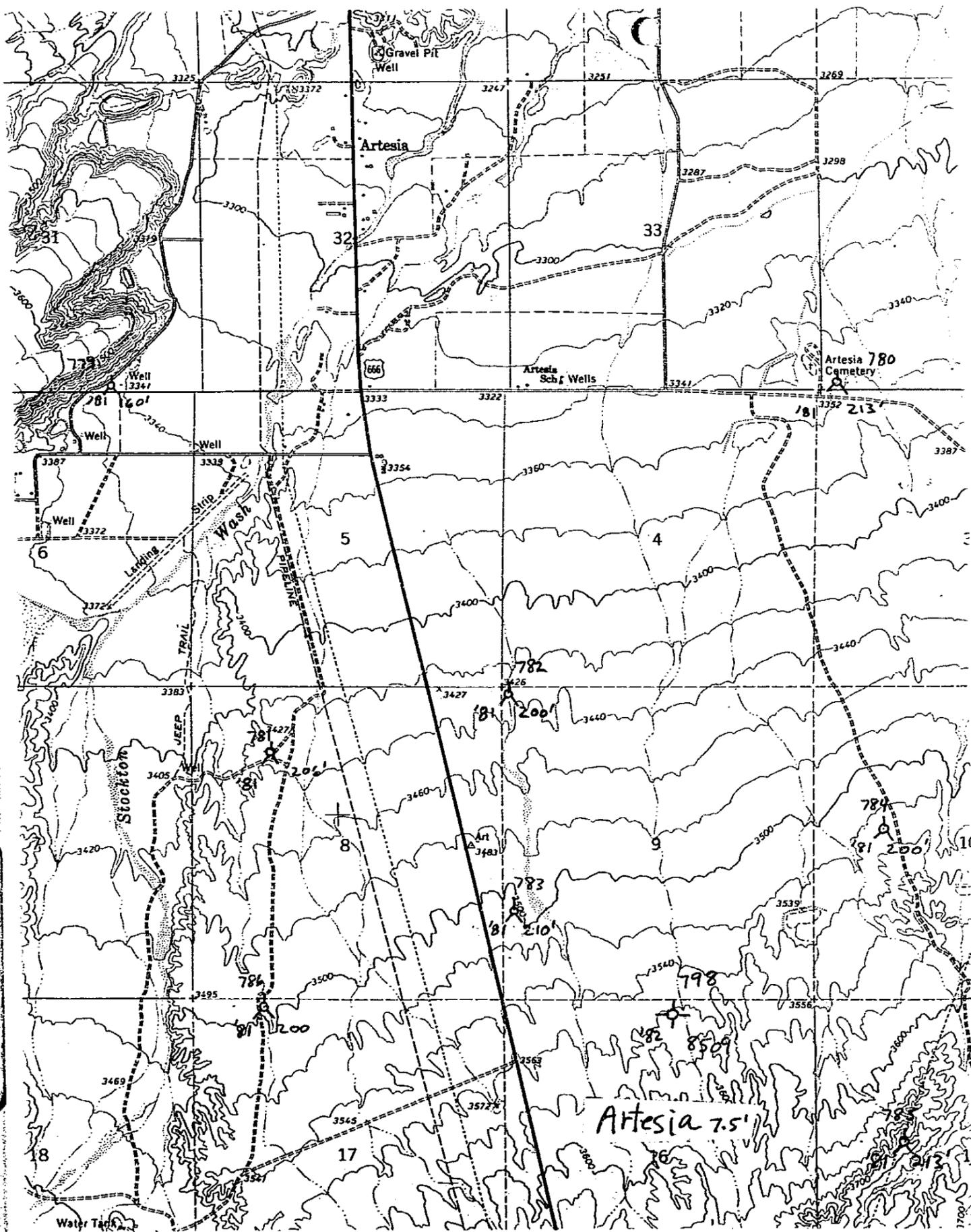
ELECTRIC LOGS	PERFORATED INTERVALS	PROD. INTERVALS	SAMPLE LOG
			SAMPLE DESCRP.
			SAMPLE NO. <u>1834</u>
			CORE ANALYSIS
			DSTs

REMARKS _____ APP. TO PLUG _____
 PLUGGING REP. _____
 COMP. REPORT _____

WATER WELL ACCEPTED BY _____

BOND CO. N/A BOND NO. _____
 DATE _____
 BOND AMT. \$ _____ CANCELLED _____ ORGANIZATION REPORT N/A
 FILING RECEIPT 2174 LOC. PLAT x WELL BOOK x PLAT BOOK x
 API NO. _____ DATE ISSUED 11-18-81 DEDICATION N/A

PERMIT NUMBER _____



MEMO TO FILES:
R.A. Ybarra

P/N 779

On Dec. 14, 1981, A.K. Doss and I met with Jim Witcher, geologist with the Bureau of Geology and Mineral Technology, in Safford. We drove out ^{to} the location where we witnessed the drilling of well HF-10, one of an eight well program to monitor heat ~~to~~ flow conditions. The project area is about 15 miles south of Safford.

The drilling contractor, GRL Construction, spudded at 9:30 a.m. and drilled with air to about 50 feet where they started losing circulation. They switched over to foam and drilled ahead to 160 feet where again they lost circulation because of wet sands. Unable to regain circulation, ~~they~~ ^{the} geologist decided to run the 1 1/4-inch PVC pipe to 150 feet.

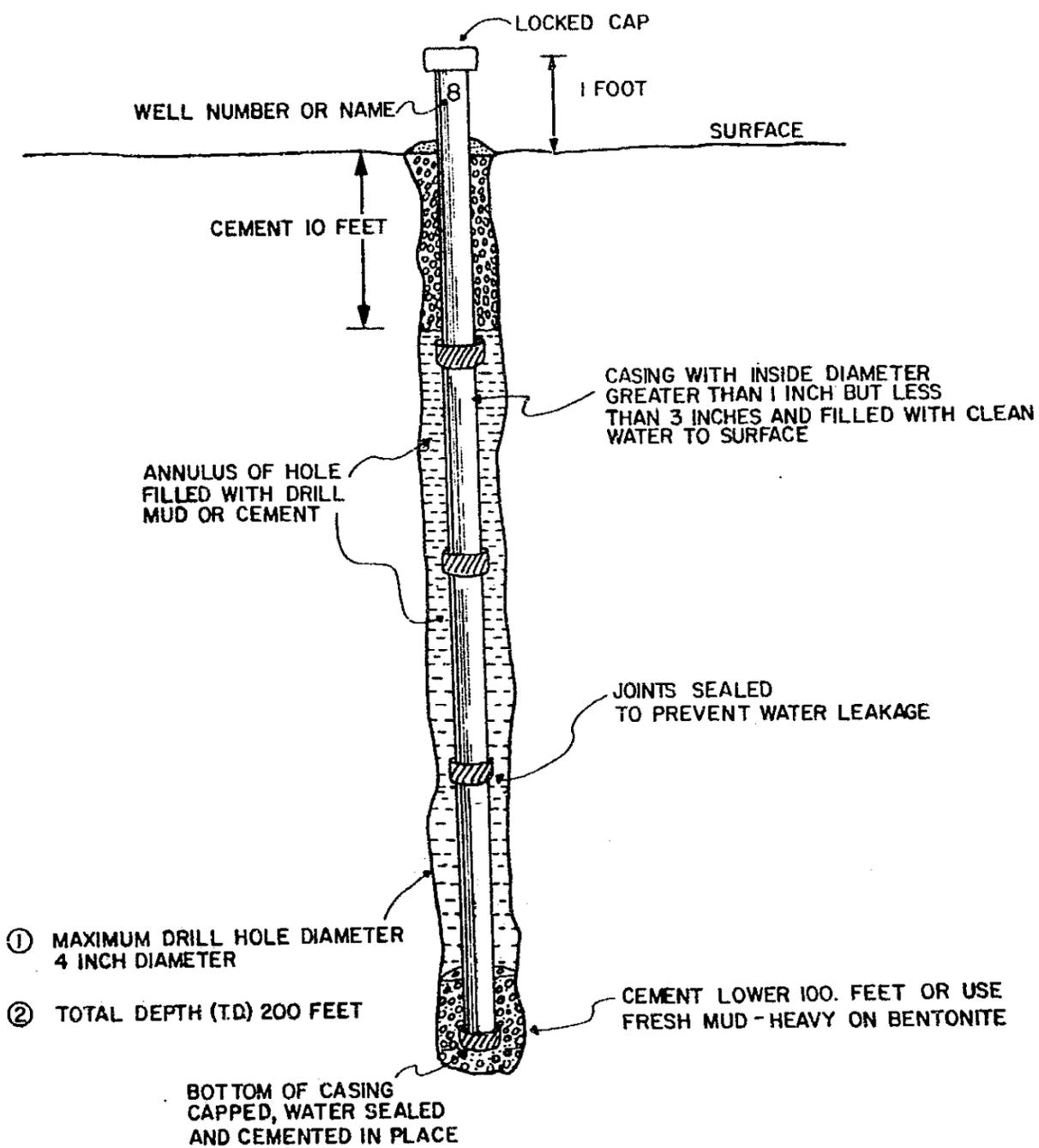
When back-filling around the PVC pipe the annulus bridged. ~~After much effort~~ ^{they used} using several joints of PVC and galvanized pipe and air to ^{try to} clear the bridged area. After much effort they managed to correct the problem to an acceptable condition. To verify this condition,

they took resistivity readings at various depths and the results indicated a condition suitable for the purposes of the study.

this well was not completed on this day, but on our way back to Safford we stopped by to view a completed well (HF-5).

P/N 780 Well HF-5 was completed with 1 1/4-inch PVC pipe at 20 feet and cemented with a mud gel and cement mix to fill to 10 feet below the surface. An outer string of 6-inch steel pipe was at 10 feet was cemented to the surface with approx. 14 inches of pipe above surface. The well was equipped with a locked cap to prevent vandalism and to provide quick access. ~~to the well~~. The area around well was noticeably clean.

COMPLETION OF HEAT FLOW HOLE



WELL COMPLETION OR RECOMPLETION REPORT AND WELL LOG RECEIVED

GEOHERMAL RESOURCE WELL

DESIGNATE TYPE OF COMPLETION:

NEW WELL WORK OVER DEEPEN PLUG BACK SAME RESERVOIR DIFFERENT RESERVOIR DRY STEAM WATER 1982

DESCRIPTION OF WELL AND LEASE **O & G CONS. COMM.**

OPERATOR **ARIZONA BUREAU OF GEOLOGY AND MINERAL TECHNOLOGY (ABGMT)** ADDRESS **845 N. PARK AVE. TUCSON, ARIZONA 85719**

FEDERAL, STATE OR INDIAN LEASE NUMBER OR NAME OF LEASOR **SLD# 23-60553 (SP. LAND USE) DWR# 55-50149 (EXEMPT MAIL)** WELL NUMBER **HF10** FIELD & RESERVOIR **ARTESIA**

LOCATION **SL 100 EL 1600** COUNTY **GRAHAM**

SEC. TWP-RANGE OR BLOCK & SURVEY **SE 1/4, SW 1/4, SE 1/4, SEC 31, T. 8 S., R. 26 E.**

DATE SPUNDED **15 DEC. 1981** DATE TOTAL DEPTH REACHED **15 DEC. 1981** DATE COMPLETED, READY TO PRODUCE **N/A** ELEVATION (DE. BKB AT OR CD.) **3345** FEET ELEVATION OF CASING **3346** FEET

TOTAL DEPTH **160** P.B.T.D. **200 FEET** AIRDRILLED (INTERVAL) _____ FLUIDDRILLED (INTERVAL) _____

PRODUCING INTERVAL (S) FOR THIS COMPLETION **NONE - COMPLETED AS HEAT FLOW HOLE** ROTARY TOOLS USED (INTERVAL) **0-160** CABLE TOOLS USED (INTERVAL) **N/A**

WAS THIS WELL DIRECTIONALLY DRILLED? **NO** WAS DIRECTIONAL SURVEY MADE? **NO** WAS COPY OF DIRECTIONAL SURVEY FILED? **N/A** DATE FILED **N/A**

TYPE OF ELECTRICAL, TEMPERATURE, CEMENT BOND OR OTHER LOGS RUN (CHECK LOGS FILED WITH THE COMMISSION) **TEMPERATURE** DATE FILED **MAY 1982**

CASING RECORD

CASING (REPORT ALL STRINGS SET IN WELL-CONDUCTOR, SURFACE, INTERMEDIATE, PRODUCING, ETC.)						
PURPOSE	SIZE HOLE DRILLED	SIZE CASING SET	WEIGHT (LB./FT.)	DEPTH SET	SACKS CEMENT	AMT. PULLED
SURFACE	4 IN.	N 4 IN.	IRON PIPE	10 FEET		NONE
TEMP. LOG	4 IN.	1 IN.	PVC 200 PSI	150 FEET		NONE

TUBING RECORD **N/A** LINER RECORD **N/A**

SIZE IN.	DEPTH SET FT.	PACKER SET AT FT.	SIZE IN.	TOP FT.	BOTTOM FT.	SACKS CEMENT	SCREEN (FT.)

PERFORATION RECORD **N/A** ACID, SHOT, FRACTURE, CEMENT SQUEEZE RECORD **N/A**

NUMBER PER FT.	SIZE & TYPE	DEPTH INTERVAL	AMT. & KIND OF MATERIAL USED	DEPTH INTERVAL

INITIAL PRODUCTION

DATE	N/A STATIC TEST SHUT IN WELL HEAD	ANALYSES OF FLUIDS & GASES N/A						SEPARATOR DATA N/A			
		TOTAL MASS FLOW DATA N/A						WATER CUFT/HR	STEAM LBS/HR	PRES. PSIG.	TEMP. °F
TEMP. °F	PRES. PSIG.	LBS/HR	TEMP. °F	PRES. PSIG.	ENTHALPY	ORIFICE					

CERTIFICATE: I, THE UNDERSIGNED, UNDER THE PENALTY OF PERJURY, STATE THAT I AM THE **Geologist** OF THE **ABGMT** (COMPANY), AND THAT I AM AUTHORIZED BY SAID COMPANY TO MAKE THIS REPORT; AND THAT THIS REPORT WAS PREPARED UNDER MY SUPERVISION AND DIRECTION AND THAT THE FACTS STATED THEREIN ARE TRUE, CORRECT AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DATE **14 MAY 1982**

SIGNATURE *James C. Witten*
James C. Witten

PERMIT NO. **779**

STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION
WELL COMPLETION OR RECOMPLETION REPORT AND WELL LOG
FILE ONE COPY
FORM NO. G-1

DETAIL OF FORMATIONS PENETRATED

FORMATION	TOP	BOTTOM	DESCRIPTION*
			WATER AT 95 FEET (ELEV. 3250') 2/8/02

* SHOW ALL IMPORTANT ZONES OF POROSITY, DETAIL OF ALL CORES, AND ALL DRILL-STEM TESTS, INCLUDING DEPTH INTERVAL TESTED, CUSHION USED, TIME TOOL OPEN, FLOWING AND SHUT-IN PRESSURES, AND RECOVERIES.

INSTRUCTIONS:

ATTACH DRILLERS LOG OR OTHER ACCEPTABLE LOG OF WELL.

THIS WELL COMPLETION OR RECOMPLETION REPORT AND WELL LOG SHALL BE FILED WITH THE STATE OF ARIZONA OIL & GAS CONSERVATION COMMISSION NOT LATER THAN THIRTY DAYS AFTER PROJECT COMPLETION.

FORM NO. G-4

RECEIVED

WELL HF10 DATE 2/8/82 ELEVATION 3345 JUN 7 1982
 LOCATION D-8-26-31DCD LOGGING SYSTEM NMSU A1 O & G CONS. COMM.
 CABLE RESISTANCE (K OHM) 206

DEPTH (FEET)	RESISTANCE (K OHMS)	TEMPERATURE °C	GRADIENT °C/KM	DRAILLERS LOG, REMARKS, ETC.
30	92.71	22.37		IRIGATION WELL 300 FEET
35	92.35	22.47	65.6	NORTHEAST OF HF10 PUMPING
40	92.16	22.52	32.8	29°C WATER
45	91.61	22.63	104.9	SILT, CLAY
50	90.75	22.93	161.0	SILT, CLAY
55	90.33	23.06	85.3	SAND, GRAVEL
60	89.84	23.21	98.4	"
65	89.38	23.34	85.3	"
70	89.02	23.45	72.2	"
75	88.66	23.56	72.2	"
80	88.34	23.65	59.1	"
85	87.81	23.81	104.9	"
90	87.57	23.88	45.9	"
95	87.12	24.02	91.9	"
100	86.44	24.23	137.8	"
105	85.09	24.64	269.0	"
110	82.75	25.38	485.6	" WATER
115	81.92	25.65	177.2	"
120	81.67	25.73	52.5	"
125	81.36	25.83	65.6	"
130	81.14	25.90	45.9	"
135	81.00	25.95	32.8	"
140	80.49	26.11	104.9	"
145	80.03	26.27	104.9	SAND, GRAVEL
150				
155				
160				
165				
170				
175				
180				
185				
190				
195				
200				
205				
210				
215				
BOTTOM 149.6	79.78	26.35		

1231 150 SHEET SQUARE
 1232 150 SHEET SQUARE
 1233 150 SHEET SQUARE
 1234 150 SHEET SQUARE
 NATIONAL

**APPLICATION FOR PERMIT TO DRILL OR RE-ENTER
GEOTHERMAL RESOURCES WELL**

RECEIVED

APPLICATION TO DRILL

RE-ENTER OLD WELL

NOV 6 1981

O & G CONS. COMM.

NAME OF COMPANY OR OPERATOR

ARIZONA BUREAU OF GEOLOGY AND MINERAL TECHNOLOGY (ABGMT), UNIVERSITY OF ARIZONA

ADDRESS 2045 N. FORBES BLVD. SUITE 106 CITY TUCSON, ARIZONA STATE 85705

DRILLING CONTRACTOR

KENT LARSON, GRL CONSTRUCTION 203 5TH STREET

ADDRESS SAFFORD, ARIZONA 85546

DESCRIPTION OF WELL AND LEASE

FEDERAL STATE OR INDIAN LEASE NUMBER, OR IF FEE LEASE, NAME OF LESSOR

WELL NUMBER
HF10

ELEVATION (GROUND)
3345 FEET

NEAREST DISTANCE FROM PROPOSED LOCATION TO PROPERTY OR LEASE LINE:

N/A

FEET

DISTANCE FROM PROPOSED LOCATION TO NEAREST DRILLING COMPLETED OR APPLIED-FOR WELL ON THE SAME LEASE:

N/A

FEET

NUMBER OF ACRES IN LEASE:

N/A

NUMBER OF WELLS ON LEASE, INCLUDING THIS WELL COMPLETED IN OR DRILLING TO THIS RESERVOIR:

N/A

IF LEASE, PURCHASED WITH ONE OR MORE WELLS DRILLED, FROM WHOM PURCHASED:

N/A

WELL LOCATION (GIVE FOOTAGE FROM SECTION LINES)

5L100' EL 1600'

SECTION-TOWNSHIP-RANGE OR BLOCK AND SURVEY

SE 1/4, SW 1/4, SE 1/4, SEC 31, T. 8S., R. 26E.

DEDICATION (COMPLY WITH RULE G-105)

< 1 ACRE

FIELD AND RESERVOIR (IF WILDCAT, SO STATE)

TEMPERATURE GRADIENT TEST

COUNTY

GRAHAM COUNTY

DISTANCE, IN MILES, AND DIRECTION FROM NEAREST TOWN OR POST OFFICE

15 MILES SOUTH OF SAFFORD, ARIZONA

PROPOSED DEPTH:

200 FEET

ROTARY OR CABLE TOOLS

ROTARY

APPROX. DATE WORK WILL START

23 NOVEMBER 1981

BOND STATUS AMOUNT

ORGANIZATION REPORT

ON FILE N/A OR ATTACHED

FILING FEE OF \$25.00

ATTACHED

REMARKS: SEE ATTACHED DIAGRAM DESCRIBING HOLE COMPLETION

CERTIFICATE: I, THE UNDERSIGNED, UNDER THE PENALTY OF PERJURY, STATE THAT I AM THE GEOLOGIST

OF THE ABGMT (COMPANY), AND THAT I AM AUTHORIZED BY SAID COMPANY TO MAKE THIS REPORT; AND THAT THIS REPORT WAS PREPARED UNDER MY SUPERVISION AND DIRECTION AND THAT THE FACTS STATED THEREIN ARE TRUE, CORRECT AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

John C. Utter
SIGNATURE

3 NOVEMBER 1981
DATE

PERMIT NUMBER: 779

APPROVAL DATE: 11-18-81

APPROVED BY: *[Signature]*

NOTICE:

BEFORE SENDING IN THIS FORM BE SURE THAT YOU HAVE GIVEN ALL INFORMATION REQUESTED. MUCH UNNECESSARY CORRESPONDENCE WILL THUS BE AVOIDED.

STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION

APPLICATION TO DRILL OR RE-ENTER

FILE TWO COPIES

FORM NO. G-3

(COMPLETE REVERSE SIDE)

- OPERATOR SHALL OUTLINE THE DEDICATED ACREAGE FOR GEOTHERMAL RESOURCES WELLS ON THE PLAT.
- A REGISTERED PROFESSIONAL ENGINEER OR LAND SURVEYOR REGISTERED IN THE STATE OF ARIZONA OR APPROVED BY THE COMMISSION SHALL SHOW ON THE PLAT THE LOCATION OF THE WELL AND CERTIFY THIS INFORMATION IN THE SPACE PROVIDED.
- ALL DISTANCES SHOWN ON THE PLAT MUST BE FROM THE OUTER BOUNDARIES OF THE SECTION.
- IS THE OPERATOR THE ONLY OWNER IN THE DEDICATED ACREAGE OUTLINED ON THE PLAT BELOW? YES _____ NO X
- IF THE ANSWER TO QUESTION FOUR IS "NO" HAVE THE INTERESTS OF ALL THE OWNERS BEEN CONSOLIDATED BY COMMUNITIZATION AGREEMENT OR OTHERWISE? YES _____ NO X. IF ANSWER IS "YES" TYPE OF CONSOLIDATION _____
- IF THE ANSWER TO QUESTION FOUR IS "NO", LIST ALL THE OWNERS AND THEIR RESPECTIVE INTERESTS BELOW:

Owner <u>STATE OF ARIZONA</u>	Land Description <u>SE 1/4, SW 1/4, SE 1/4, SEC 31, T.8S., R.26E.</u>
<div style="display: flex; justify-content: space-between;"> <div style="width: 50%; border: 1px dashed black; height: 200px; position: relative;"> <div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%); font-size: 48px; font-weight: bold;">31</div> </div> <div style="width: 45%; padding: 5px;"> <p style="text-align: center; margin-top: 0;">CERTIFICATION</p> <p>I hereby certify that the information above is true and complete to the best of my knowledge and belief.</p> <p style="text-align: center;"><i>James C. Witcher</i></p> <p>Name <u>James C. WITCHER</u></p> <p>Position <u>ASSISTANT GEOLOGIST</u></p> <p>Company <u>ABGNT</u></p> <p>Date <u>3 NOVEMBER 1981</u></p> </div> </div>	
<p>I hereby certify that the well location shown on the plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.</p>	
<p>Date Surveyed _____</p> <p>Registered Professional Engineer and/or Land Surveyor _____</p>	
<p>Certificate No. _____</p>	

PROPOSED CASING PROGRAM

Size of Casing	Weight	Grade & Type	Top	Bottom	Cementing Depths	Sacks Cement
<u>1 1/4 INCH</u>	<u>SCHWABE 40</u>	<u>PVC</u>	<u>0'</u>	<u>200'</u>	<u>0-10 FEET CEMENT</u> <u>10-200 FEET MIXTURE OF GEL AND CEMENT</u>	<u>LESS THAN 5</u>



PERMIT TO DRILL

This constitutes the permission and authority from the
OIL AND GAS CONSERVATION COMMISSION,
STATE OF ARIZONA,

To: Arizona Bureau of Geology and Mineral Technology
(OPERATOR)

to drill a well to be known as

HP-10

(WELL NAME)

located 100' from south line, 1600' from east line (SE/4 SW/4 SE/4)

Section 31 Township 8 South Range 26 East, Graham County, Arizona.

The N/A of said

Section, Township and Range is dedicated to this well.

Said well is to be drilled substantially as outlined in the attached Application and must be drilled in full compliance with all applicable laws, statutes, rules and regulations of the State of Arizona.

Issued this 18th day of November, 19 81.

OIL AND GAS CONSERVATION COMMISSION

By [Signature]
EXECUTIVE SECRETARY

PERMIT N^o 779

RECEIPT NO. 2174
API NO. 02-009-20006

State of Arizona
Oil & Gas Conservation Commission
Permit to Drill

FORM NO. 27

MEMO TO FILES:
R.A. Ybarra

they took resistivity readings at various depths and the results indicated a condition suitable for the purposes of the study.

this well was not completed on this day, but on our way back to Safford we stopped by to view a completed well (HF-5).

P/N 780 Well HF-5 was completed with 1 1/4-inch PVC pipe at 210 feet and cemented with mud gel and cement mix to fill to 10 feet below the surface. An outer string of 6-inch steel pipe was at 10 feet was cemented to the surface with approx. 14 inches of pipe above surface. The well was equipped with a locked cap to prevent vandalism and to provide quick access to the well. The area around well was noticeably clean.

several joints of PVC and grout were
and air to ^{try to} clear the bridged area. After much effort they managed to correct the problem to an acceptable condition. To verify this condition,

P/N 779

On Dec. 16, 1981, A.K. Doss and I met with Jim Witcher, geologist with the Bureau of Geology and Mineral Technology, in Safford. We drove out ^{to} the location where where we witnessed the drilling of well HF-10, one of an eight well program to monitor heat ~~to~~ flow conditions. The project area is about 15 miles south of Safford.

The drilling contractor, GRL Construction, spudded at 9:30 a.m. and drilled with air to about 50 feet where they started losing circulation. They switched over to foam and drilled ahead to 160 feet where again they lost circulation because of wet sands. Unable to regain circulation, ~~they~~ ^{the} geologist decided to run the 1 1/4-inch PVC pipe to 150 feet.

When backfilling around the PVC pipe the annulus bridged. ~~After much effort~~ ^{they used} ~~using~~ several joints of PVC and galvanized pipe and air to ^{try to} clear the bridged area. After much effort they managed to correct the problem to an acceptable condition. To verify this condition,

WELL COMPLETION OR RECOMPLETION REPORT AND WELL LOG

RECEIVED

GEOHERMAL RESOURCE WELL

JUN 7 1982

DESIGNATE TYPE OF COMPLETION:
 NEW WELL WORK OVER DEEPEN PLUG BACK SAME RESERVOIR DIFFERENT RESERVOIR DRY STEAM HOT O & G CONS. COMM.

DESCRIPTION OF WELL AND LEASE

OPERATOR ARIZONA BUREAU OF GEOLOGY AND MINERAL TECHNOLOGY (ABGMT) ADDRESS 845 N. PARK AV., TUCSON, ARIZONA 85719

FEDERAL, STATE OR INDIAN LEASE NUMBER OR NAME OF LESSOR BLM # AZ-040-1-B-49 (NOT INTENT) WELL NUMBER HFS FIELD & RESERVOIR ARTESIA
 LEASE # 55-501408 (EXEMPT WELL)

LOCATION SL 100 WL 300 COUNTY GRAHAM

SEC. TWP-RANGE OR BLOCK & SURVEY SW 1/4, SW 1/4, SW 1/4, SEC 34, T. 8 S., R. 26 E.

DATE SPUNDED 9 DEC. 1981 DATE TOTAL DEPTH REACHED 9 DEC. 1981 DATE COMPLETED, READY TO PRODUCE N/A ELEVATION (DE. RES. RT. OR (R)) 3360 FEET ELEVATION OF CASING 3361 FEET

TOTAL DEPTH 213 P.B.T.D. 200 FEET AIRDRILLED (INTERVAL) FLUIDDRILLED (INTERVAL)

PRODUCING INTERVAL (S) FOR THIS COMPLETION NONE - COMPLETED AS HEAT FLOW HOLE ROTARY TOOLS USED (INTERVAL) 0-213 CABLE TOOLS USED (INTERVAL) N/A

WAS THIS WELL DIRECTIONALLY DRILLED? No WAS DIRECTIONAL SURVEY MADE? No WAS COPY OF DIRECTIONAL SURVEY FILED? N/A DATE FILED N/A

TYPE OF ELECTRICAL, TEMPERATURE, CEMENT BOND OR OTHER LOGS RUN (CHECK LOGS FILED WITH THE COMMISSION) TEMPERATURE DATE FILED MAY 1982

CASING RECORD

CASING (REPORT ALL STRINGS SET IN WELL-CONDUCTOR, SURFACE, INTERMEDIATE, PRODUCING, ETC.)

PURPOSE	SIZE HOLE DRILLED	SIZE CASING SET	WEIGHT (LB./FT.)	DEPTH SET	SACKS CEMENT	AMT. PULLED
SURFACE	4 IN.	2 1/2 IN.	IRON PIPE	10 FEET		NONE
TEMP. LOG	4 IN.	1 IN.	PVC 200 PSI	213 FEET		NONE

TUBING RECORD N/A LINER RECORD N/A

SIZE IN.	DEPTH SET FT.	PACKER SET AT FT.	SIZE IN.	TOP FT.	BOTTOM FT.	SACKS CEMENT	SCREEN (FT.)

PERFORATION RECORD N/A ACID, SHOT, FRACTURE, CEMENT SQUEEZE RECORD N/A

NUMBER PER FT.	SIZE & TYPE	DEPTH INTERVAL	AMT. & KIND OF MATERIAL USED	DEPTH INTERVAL

INITIAL PRODUCTION

DATE	N/A STATIC TEST SHUT IN WELL HEAD	ANALYSES OF FLUIDS & GASES N/A						SEPARATOR DATA N/A				
		TEMP. °F	PRES. PSIG.	LBS/HR	TEMP. °F	PRES. PSIG.	ENTHALPY	ORIFICE	WATER CUFT/HR	STEAM LBS/HR	PRES. PSIG.	TEMP. °F

CERTIFICATE: I, THE UNDERSIGNED, UNDER THE PENALTY OF PERJURY, STATE THAT I AM THE GEOLOGIST OF THE ABGMT (COMPANY), AND THAT I AM AUTHORIZED BY SAID COMPANY TO MAKE THIS REPORT; AND THAT THIS REPORT WAS PREPARED UNDER MY SUPERVISION AND DIRECTION AND THAT THE FACTS STATED THEREIN ARE TRUE, CORRECT AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DATE 14 MAY 1982

SIGNATURE James C. Witcher
 JAMES C. WITCHER

PERMIT NO. 780

STATE OF ARIZONA
 OIL & GAS CONSERVATION COMMISSION
 WELL COMPLETION OR RECOMPLETION REPORT AND WELL LOG
 FILE ONE COPY

FORM No. G-1

DETAIL OF FORMATIONS PENETRATED

FORMATION	TOP	BOTTOM	DESCRIPTION*
			WATER AT 102 FEET (ELEV. 3258') 2/8/82

* SHOW ALL IMPORTANT ZONES OF POROSITY, DETAIL OF ALL CORES, AND ALL DRILL-STEM TESTS, INCLUDING DEPTH INTERVAL TESTED, CUSHION USED, TIME TOOL OPEN, FLOWING AND SHUT-IN PRESSURES, AND RECOVERIES.

INSTRUCTIONS:

ATTACH DRILLERS LOG OR OTHER ACCEPTABLE LOG OF WELL.

THIS WELL COMPLETION OR RECOMPLETION REPORT AND WELL LOG SHALL BE FILED WITH THE STATE OF ARIZONA OIL & GAS CONSERVATION COMMISSION NOT LATER THAN THIRTY DAYS AFTER PROJECT COMPLETION.

FORM NO. G-4

RECEIVED

WELL HFS DATE 2/8/82 ELEVATION 3360 JUN 7 1982
 LOCATION D-8-26-34 REC LOGGING SYSTEM NMSU A1 O & G CONS. COMM.
 CABLE RESISTANCE (K OHM) 0.06

DEPTH (FEET)	RESISTANCE (K OHMS)	TEMPERATURE °C	GRADIENT °C/KM	DRAWERS LOG, REMARKS, ETC.
30	75.41	21.60		SAND
35	95.72	21.51	-59.1	CLAY
40	95.74	21.50	-6.6	"
45	95.58	21.55	32.8	"
50	95.39	21.60	32.8	"
55	95.16	21.67	45.9	"
60	94.99	21.71	26.3	"
65	94.70	21.80	65.6	"
70	94.46	21.87	45.9	"
75	94.19	21.94	45.9	"
80	93.93	22.02	52.5	CLAY
85	93.68	22.09	45.9	SILTY CLAY
90	93.43	22.16	45.9	SAND
95	93.10	22.25	59.1	"
100	92.78	22.34	59.1	"
105	92.49	22.43	59.1	"
110	92.32	22.48	32.8	SILTY CLAY
115	92.08	22.55	45.9	"
120	91.85	22.61	39.4	"
125	91.64	22.67	39.4	"
130	91.41	22.72	32.8	"
135	91.17	22.81	59.1	SILTY CLAY
140	90.96	22.87	39.4	"HARD ROCK"
145	90.73	22.94	45.9	SILTY CLAY
150	90.49	23.10	104.9	"
155	90.16	23.11	6.6	"
160	89.87	23.20	59.1	"
165	89.49	23.31	72.8	"
170	89.49	23.31	0	"
175	89.21	23.39	52.5	"
180	89.16	23.41	13.1	"
185	89.08	23.43	13.1	"
190	88.96	23.47	26.3	"
195	88.61	23.57	65.6	"
200	88.36	23.65	52.5	"
205	88.12	23.72	45.9	"
210	87.89	23.79	45.9	SILTY CLAY
215				
BOTTOM 213	87.83	23.81		

42 SHEETS 10 SHEETS 1 SQUARE
 42 SHEETS 10 SHEETS 1 SQUARE
 NATIONAL

**APPLICATION FOR PERMIT TO DRILL OR RE-ENTER RECEIVED
GEOHERMAL RESOURCES WELL**

APPLICATION TO DRILL

RE-ENTER OLD WELL NOV 6 1981

O & G CONS. COMM.

NAME OF COMPANY OR OPERATOR <i>ARIZONA BUREAU OF GEOLOGY AND MINERAL TECHNOLOGY (ABGMT) UNIVERSITY OF ARIZONA</i>		
ADDRESS <i>2045 N. FORBES BLVD. SUITE 106 TUCSON, ARIZONA 85705</i>		
DRILLING CONTRACTOR <i>KENT LARSON, ORL CONSTRUCTION 202 5TH STREET</i>		
ADDRESS <i>SAFFORD, ARIZONA 85546</i>		
DESCRIPTION OF WELL AND LEASE		
FEDERAL, STATE OR INDIAN LEASE NUMBER, OR IF FEE LEASE, NAME OF LESSOR <i>N/A</i>	WELL NUMBER <i>HF5</i>	ELEVATION (GROUND) <i>3360 FEET</i>
NEAREST DISTANCE FROM PROPOSED LOCATION TO PROPERTY OR LEASE LINE: <i>N/A</i> FEET	DISTANCE FROM PROPOSED LOCATION TO NEAREST DRILLING, COMPLETED OR APPLIED-FOR WELL ON THE SAME LEASE: <i>N/A</i> FEET	
NUMBER OF ACRES IN LEASE: <i>N/A</i>	NUMBER OF WELLS ON LEASE, INCLUDING THIS WELL, COMPLETED IN OR DRILLING TO THIS RESERVOIR: <i>N/A</i>	
IF LEASE, PURCHASED WITH ONE OR MORE WELLS DRILLED, FROM WHOM PURCHASED: NAME ADDRESS <i>N/A</i>		
WELL LOCATION (GIVE FOOTAGE FROM SECTION LINES) <i>5100' WL300'</i>	SECTION-TOWNSHIP-RANGE OR BLOCK AND SURVEY <i>SW1/4, SW1/4, SW1/4, SEC 34, T.8S., R.26E.</i>	DEDICATION (COMPLY WITH RULE G-105) <i>< 1 ACRE</i>
FIELD AND RESERVOIR (IF WILDCAT, SO STATE) <i>TEMPERATURE GRADIENT TEST</i>	COUNTY <i>GRAHAM COUNTY</i>	
DISTANCE, IN MILES, AND DIRECTION FROM NEAREST TOWN OR POST OFFICE <i>15 MILES SOUTH OF SAFFORD, ARIZONA</i>		
PROPOSED DEPTH: <i>200 FEET</i>	ROTARY OR CABLE TOOLS <i>ROTARY</i>	APPROX. DATE WORK WILL START <i>23 NOVEMBER 1981</i>
BOND STATUS AMOUNT	ORGANIZATION REPORT OR FILE <i>N/A</i> OR ATTACHED	FILING FEE OF \$25.00 ATTACHED
REMARKS: <i>SEE ATTACHED DIAGRAM DESCRIBING HOLE COMPLETION</i>		
<p>CERTIFICATE: I, THE UNDERSIGNED, UNDER THE PENALTY OF PERJURY, STATE THAT I AM THE <u><i>GEOLOGIST</i></u></p> <p>OF THE <u><i>ABGMT</i></u> (COMPANY), AND THAT I AM AUTHORIZED BY SAID COMPANY TO MAKE THIS REPORT; AND THAT THIS REPORT WAS PREPARED UNDER MY SUPERVISION AND DIRECTION AND THAT THE FACTS STATED THEREIN ARE TRUE, CORRECT AND COMPLETE TO THE BEST OF MY KNOWLEDGE.</p> <p align="right"><i>John C. Usher</i> SIGNATURE</p> <p align="right"><i>3 NOVEMBER 1981</i> DATE</p>		
PERMIT NUMBER: <u><i>780</i></u>	STATE OF ARIZONA OIL & GAS CONSERVATION COMMISSION APPLICATION TO DRILL OR RE-ENTER FILE TWO COPIES	
APPROVAL DATE: <u><i>11-18-81</i></u>	FORM NO. G-3	
APPROVED BY: <i>[Signature]</i>	(COMPLETE REVERSE SIDE)	
NOTICE: BEFORE SENDING IN THIS FORM BE SURE THAT YOU HAVE GIVEN ALL INFORMATION REQUESTED. MUCH UNNECESSARY CORRESPONDENCE WILL THUS BE AVOIDED.		

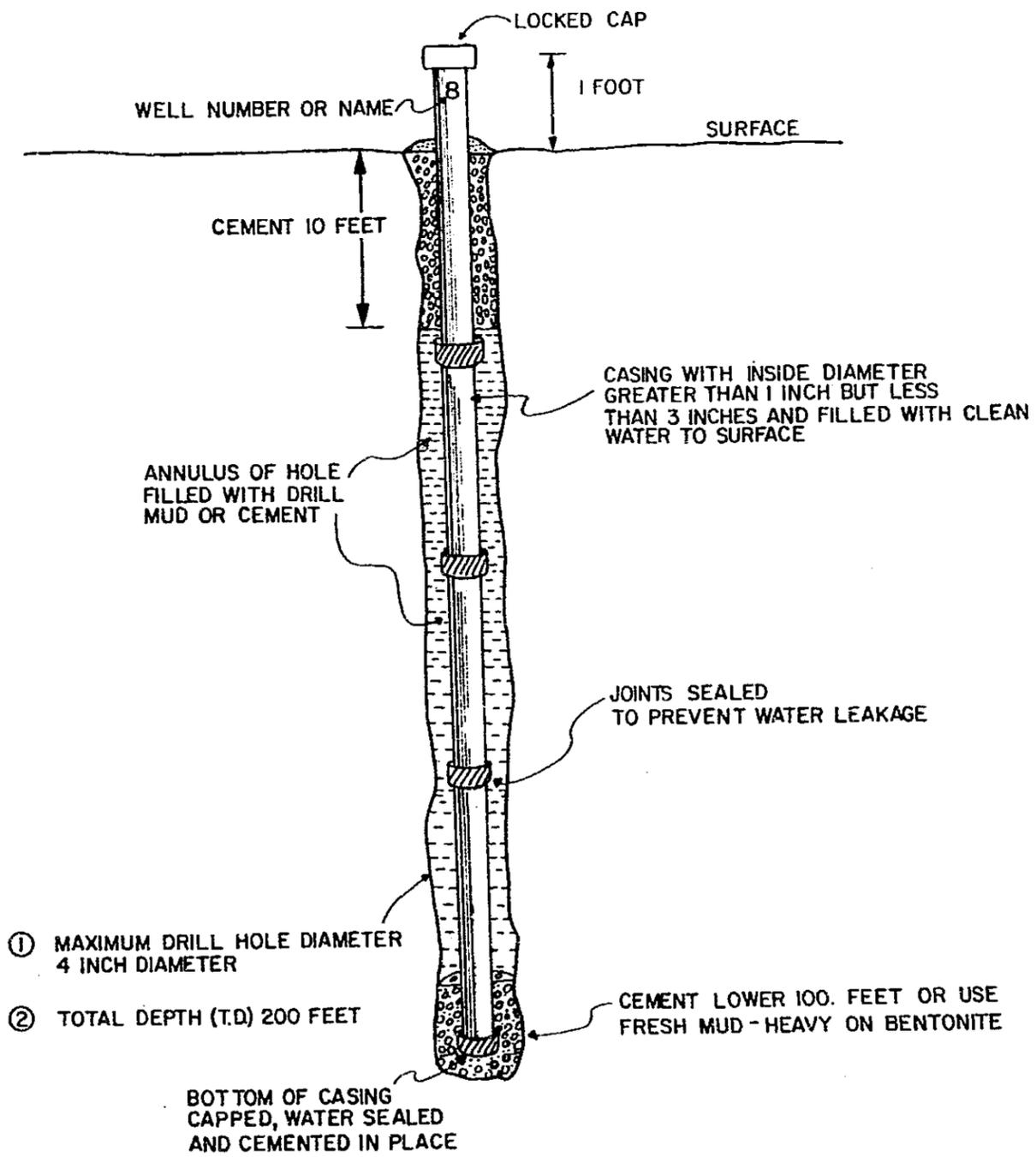
1. OPERATOR SHALL OUTLINE THE DEDICATED ACREAGE FOR GEOTHERMAL RESOURCES WELLS ON THE PLAT.
2. A REGISTERED PROFESSIONAL ENGINEER OR LAND SURVEYOR REGISTERED IN THE STATE OF ARIZONA OR APPROVED BY THE COMMISSION SHALL SHOW ON THE PLAT THE LOCATION OF THE WELL AND CERTIFY THIS INFORMATION IN THE SPACE PROVIDED.
3. ALL DISTANCES SHOWN ON THE PLAT MUST BE FROM THE OUTER BOUNDARIES OF THE SECTION.
4. IS THE OPERATOR THE ONLY OWNER IN THE DEDICATED ACREAGE OUTLINED ON THE PLAT BELOW? YES _____ NO
5. IF THE ANSWER TO QUESTION FOUR IS "NO" HAVE THE INTERESTS OF ALL THE OWNERS BEEN CONSOLIDATED BY COMMUNITIZATION AGREEMENT OR OTHERWISE? YES _____ NO . IF ANSWER IS "YES" TYPE OF CONSOLIDATION _____
6. IF THE ANSWER TO QUESTION FOUR IS "NO", LIST ALL THE OWNERS AND THEIR RESPECTIVE INTERESTS BELOW:

Owner U.S. BUREAU OF LAND MANAGEMENT	Land Description SW¹/₄, SW¹/₄, SW¹/₄, SEC 34, T. 8 S., R. 26 E.
34	<p style="text-align: center;">CERTIFICATION</p> <p>I hereby certify that the information above is true and complete to the best of my knowledge and belief.</p> <p style="text-align: right;"><i>James C. Witcher</i> Name JAMES C. WITCHER Position ASSISTANT GEOLOGIST Company ABGMT Date 3 NOVEMBER 1981</p> <p>I hereby certify that the well location shown on the plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.</p> <p>Date Surveyed _____ Registered Professional Engineer and/or Land Surveyor _____</p> <p>Certificate No. _____</p>

PROPOSED CASING PROGRAM

Size of Casing	Weight	Grade & Type	Top	Bottom	Cementing Depths	Sacks Cement
1 1/4 inch	SCHEDULE 40	PVC	0'	200'	0-10 FEET CEMENT 10-200 FEET MIXTURE OF GEL SAND AND CEMENT	LESS THAN 5

COMPLETION OF HEAT FLOW HOLE





PERMIT TO DRILL

This constitutes the permission and authority from the
OIL AND GAS CONSERVATION COMMISSION,
STATE OF ARIZONA,

To: Arizona Bureau of Geology and Mineral Technology
(OPERATOR)

to drill a well to be known as
HP-5

(WELL NAME)

located 100' from south line, 300' from west line (SW/4 SW/4 SW/4)

Section 34 Township 8 South Range 26 East, Graham County, Arizona.

The N/A of said
Section, Township and Range is dedicated to this well.

Said well is to be drilled substantially as outlined in the attached Application and must be drilled
in full compliance with all applicable laws, statutes, rules and regulations of the State of Arizona.

Issued this 18th day of November, 19 81.

OIL AND GAS CONSERVATION COMMISSION

By


EXECUTIVE SECRETARY

PERMIT No 780

RECEIPT NO. 2174
API NO. 02-009-20007

State of Arizona
Oil & Gas Conservation Commission
Permit to Drill

FORM NO. 27

RECEIVED

JUN 7 1982

WELL COMPLETION OR RECOMPLETION REPORT AND WELL LOG

GEOHERMAL RESOURCE WELL

DESIGNATE TYPE OF COMPLETION:

NEW WELL WORK OVER DEEPEN PLUG BACK SAME RESERVOIR DIFFERENT RESERVOIR DRY STEAM WATER DRY O & G CONS. COMM.

DESCRIPTION OF WELL AND LEASE

OPERATOR ARIZONA BUREAU OF GEOLOGY AND MINERAL TECHNOLOGY (ABGMT) ADDRESS 845 N. PARK AVE. TUCSON, ARIZONA 85719

FEDERAL, STATE OR MINERAL LEASE NUMBER OR NAME OF LESSOR WELL NUMBER FIELD & RESERVOIR DWR# 55-501484 (EXEMPT WELL) HFI ARTESIA

LOCATION NL 1100 WL 1400 COUNTY GRAHAM

SEC. TWP-RANGE OR BLOCK & SURVEY SW 1/4, NE 1/4, NW 1/4 SEC 8 T. 9 S., R. 26 E.

DATE SPUDDED 10 DEC 1981 DATE TOTAL DEPTH REACHED 14 DEC 1981 DATE COMPLETED, READY TO PRODUCE N/A ELEVATION (OF RKB, RT. OF GR.) 3430 ELEVATION OF CASING 3431 FEET

TOTAL DEPTH 206 P.B.T.D. 200 FEET AIRDRILLED (INTERVAL) FLUIDRILLED (INTERVAL)

PRODUCING INTERVAL (S) FOR THIS COMPLETION NONE - COMPLETED AS HEAT FLOW HOLE ROTARY TOOLS USED (INTERVAL) 0-206 CABLE TOOLS USED (INTERVAL) N/A

WAS THIS WELL DIRECTIONALLY DRILLED? NO WAS DIRECTIONAL SURVEY MADE? NO WAS COPY OF DIRECTIONAL SURVEY FILED? N/A DATE FILED N/A

TYPE OF ELECTRICAL, TEMPERATURE, CEMENT BOND OR OTHER LOGS RUN (CHECK LOGS FILED WITH THE COMMISSION) TEMPERATURE DATE FILED MAY 1982

CASING RECORD

CASING (REPORT ALL STRINGS SET IN WELL-CONDUCTOR, SURFACE, INTERMEDIATE, PRODUCING, ETC.)

Table with columns: PURPOSE, SIZE HOLE DRILLED, SIZE CASING SET, WEIGHT (LB./FT.), DEPTH SET, SACKS CEMENT, AMT. PULLED. Rows include SURFACE and Temp. LOG.

TUBING RECORD N/A LINER RECORD N/A

Table with columns: SIZE IN., DEPTH SET FT., PACKER SET AT FT., SIZE IN., TOP FT., BOTTOM FT., SACKS CEMENT, SCREEN (FT.).

PERFORATION RECORD N/A ACID, SHOT, FRACTURE, CEMENT SQUEEZE RECORD N/A

Table with columns: NUMBER PER FT., SIZE & TYPE, DEPTH INTERVAL, AMT. & KIND OF MATERIAL USED, DEPTH INTERVAL.

INITIAL PRODUCTION

Table for initial production data including DATE, STATIC TEST, ANALYSES OF FLUIDS & GASES, TOTAL MASS FLOW DATA, and SEPARATOR DATA.

CERTIFICATE: I, THE UNDERSIGNED, UNDER THE PENALTY OF PERJURY, STATE THAT I AM THE GEOLOGIST OF THE ABGMT (COMPANY). AND THAT I AM AUTHORIZED BY SAID COMPANY TO MAKE THIS REPORT; AND THAT THIS REPORT WAS PREPARED UNDER MY SUPERVISION AND DIRECTION AND THAT THE FACTS STATED THEREIN ARE TRUE, CORRECT AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DATE 14 MAY 1982 SIGNATURE James C. Witcher

PERMIT NO. 781 STATE OF ARIZONA OIL & GAS CONSERVATION COMMISSION WELL COMPLETION OR RECOMPLETION REPORT AND WELL LOG FILE ONE COPY FORM NO. G-4

DETAIL OF FORMATIONS PENETRATED

FORMATION	TOP	BOTTOM	DESCRIPTION*
			WATER AT 92 FEET (EQU. 3338') 2/8/62

* SHOW ALL IMPORTANT ZONES OF POROSITY, DETAIL OF ALL CORES, AND ALL DRILL-STEM TESTS, INCLUDING DEPTH INTERVAL TESTED, CUSHION USED, TIME TOOL OPEN, FLOWING AND SHUT-IN PRESSURES, AND RECOVERIES.

INSTRUCTIONS:

ATTACH DRILLERS LOG OR OTHER ACCEPTABLE LOG OF WELL.

THIS WELL COMPLETION OR RECOMPLETION REPORT AND WELL LOG SHALL BE FILED WITH THE STATE OF ARIZONA OIL & GAS CONSERVATION COMMISSION NOT LATER THAN THIRTY DAYS AFTER PROJECT COMPLETION.

FORM NO. G-4

RECEIVED

WELL HFI DATE 2/8/82 ELEVATION 3430 JUN 7 1982

LOCATION D-9-26-B PAC LOGGING SYSTEM ANISU A1 O & G CONS. COMM.

CABLE RESISTANCE (K OHM) 0.06

DEPTH (FEET)	RESISTANCE (K OHMS)	TEMPERATURE °C	GRADIENT °C/KM	DRILLER'S LOG, REMARKS, ETC
30	88.70	23.54		SAND
35	87.61	23.87	216.5	"
40	87.05	24.04	111.5	"
45	86.58	24.19	78.4	"
50	85.85	24.41	144.4	"
55	84.94	24.69	185.7	"
60	84.16	24.94	164.0	"
65	83.18	25.25	203.4	"
70	82.32	25.52	177.2	"
75	81.36	25.83	203.4	"
80	80.47	26.12	190.3	"
85	79.72	26.36	157.5	"
90	78.92	26.63	177.2	SAND
95	77.99	26.94	203.4	SAND, GRAVEL, "ROCK" INTERBEDDED 5' LAYERS
100	77.64	27.06	78.7	"
105	77.19	27.21	78.4	"
110	76.66	27.39	118.1	"
115	76.25	27.53	91.7	"
120	75.79	27.69	104.9	"
125	75.49	27.79	65.6	"
130	75.07	27.94	90.4	"
135	74.72	28.06	78.7	"
140	74.40	28.17	72.2	"
145	74.14	28.27	65.6	"
150	73.88	28.36	59.1	"
155	73.67	28.43	45.9	"
160	73.46	28.51	52.5	"
165	73.28	28.57	39.4	"
170	73.14	28.62	32.8	"
175	73.02	28.67	32.8	"
180	72.90	28.71	26.3	"
185	72.80	28.74	19.7	"
190	72.62	28.80	39.4	"
195	72.44	28.87	45.9	"
200	72.23	28.95	52.5	"
205	72.00	29.03	52.5	SAND, GRAVEL, "ROCK" INTERBEDDED 5' LAYERS
210				
215				
BOTTOM 206	72.00	29.03		

41321 20 SHEETS 250MM
2338 20 SHEETS 250MM
NATIONAL



**APPLICATION FOR PERMIT TO DRILL OR RE-ENTER
GEOTHERMAL RESOURCES WELL**

RECEIVED

APPLICATION TO DRILL

RE-ENTER OLD WELL #OV 6 1981

O & G CONS. COMM.

NAME OF COMPANY OR OPERATOR

ARIZONA BUREAU OF GEOLOGY AND MINERAL TECHNOLOGY (ABGMT) UNIVERSITY OF ARIZONA
ADDRESS 2045 N. FORBES BLVD. SUITE 106 TUCSON ARIZONA 85705

DRILLING CONTRACTOR

KENT LARSON, GRL CONSTRUCTION 203 5TH STREET
ADDRESS SAFFORD, ARIZONA 85546

DESCRIPTION OF WELL AND LEASE

FEDERAL, STATE OR INDIAN LEASE NUMBER, OR IF FEE LEASE, NAME OF LESSOR	WELL NUMBER	ELEVATION (GROUND)
N/A	HFI	3430 FEET
NEAREST DISTANCE FROM PROPOSED LOCATION TO PROPERTY OR LEASE LINE:	DISTANCE FROM PROPOSED LOCATION TO NEAREST DRILLING, COMPLETED OR APPLIED-FOR WELL ON THE SAME LEASE:	
N/A FEET	N/A FEET	
NUMBER OF ACRES IN LEASE:	NUMBER OF WELLS ON LEASE, INCLUDING THIS WELL, COMPLETED IN OR DRILLING TO THIS RESERVOIR:	
N/A	N/A	

IF LEASE, PURCHASED WITH ONE OR MORE WELLS DRILLED, FROM WHOM PURCHASED: NAME ADDRESS
N/A

WELL LOCATION (GIVE FOOTAGE FROM SECTION LINES) SECTION-TOWNSHIP-RANGE OR BLOCK AND SURVEY DEDICATION (COMPLY WITH RULE G-105)
NL 1100' WL 1400' SW 1/4 NE 1/4 NW 1/4 SEC 8, T. 9S, R. 26E < 1 ACRE

FIELD AND RESERVOIR (IF WILDCAT, SO STATE) COUNTY
TEMPERATURE GRADIENT TEST GRAHAM COUNTY

DISTANCE, IN MILES, AND DIRECTION FROM NEAREST TOWN OR POST OFFICE
15 MILES SOUTH OF SAFFORD, ARIZONA

PROPOSED DEPTH:	ROTARY OR CABLE TOOLS	APPROX. DATE WORK WILL START
200 FEET	ROTARY	23 NOVEMBER 1981
BOND STATUS	ORGANIZATION REPORT	FILING FEE OF \$25.00
AMOUNT	ON FILE N/A OR ATTACHED	ATTACHED

REMARKS: SEE ATTACHED DIAGRAM DESCRIBING HOLE COMPLETION

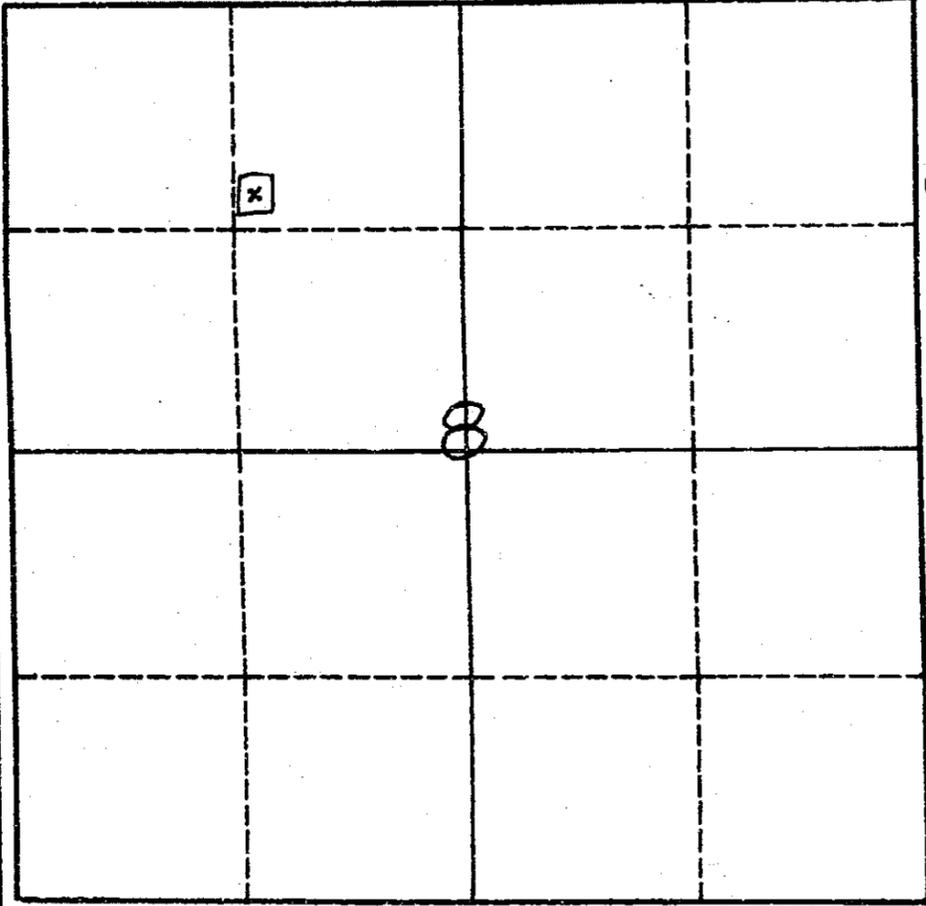
CERTIFICATE: I, THE UNDERSIGNED, UNDER THE PENALTY OF PERJURY, STATE THAT I AM THE GEOLOGIST OF THE ABGMT (COMPANY), AND THAT I AM AUTHORIZED BY SAID COMPANY TO MAKE THIS REPORT; AND THAT THIS REPORT WAS PREPARED UNDER MY SUPERVISION AND DIRECTION AND THAT THE FACTS STATED THEREIN ARE TRUE, CORRECT AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

[Signature]
SIGNATURE
3 NOVEMBER 1981
DATE

PERMIT NUMBER: 781
APPROVAL DATE: 11-18-81
APPROVED BY: *[Signature]*
NOTICE:
BEFORE SENDING IN THIS FORM BEURE THAT YOU HAVE GIVEN ALL INFORMATION REQUESTED. MUCH UNNECESSARY CORRESPONDENCE WILL THUS BE AVOIDED.

STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION
APPLICATION TO DRILL OR RE-ENTER
FILE TWO COPIES
FORM NO. G-3

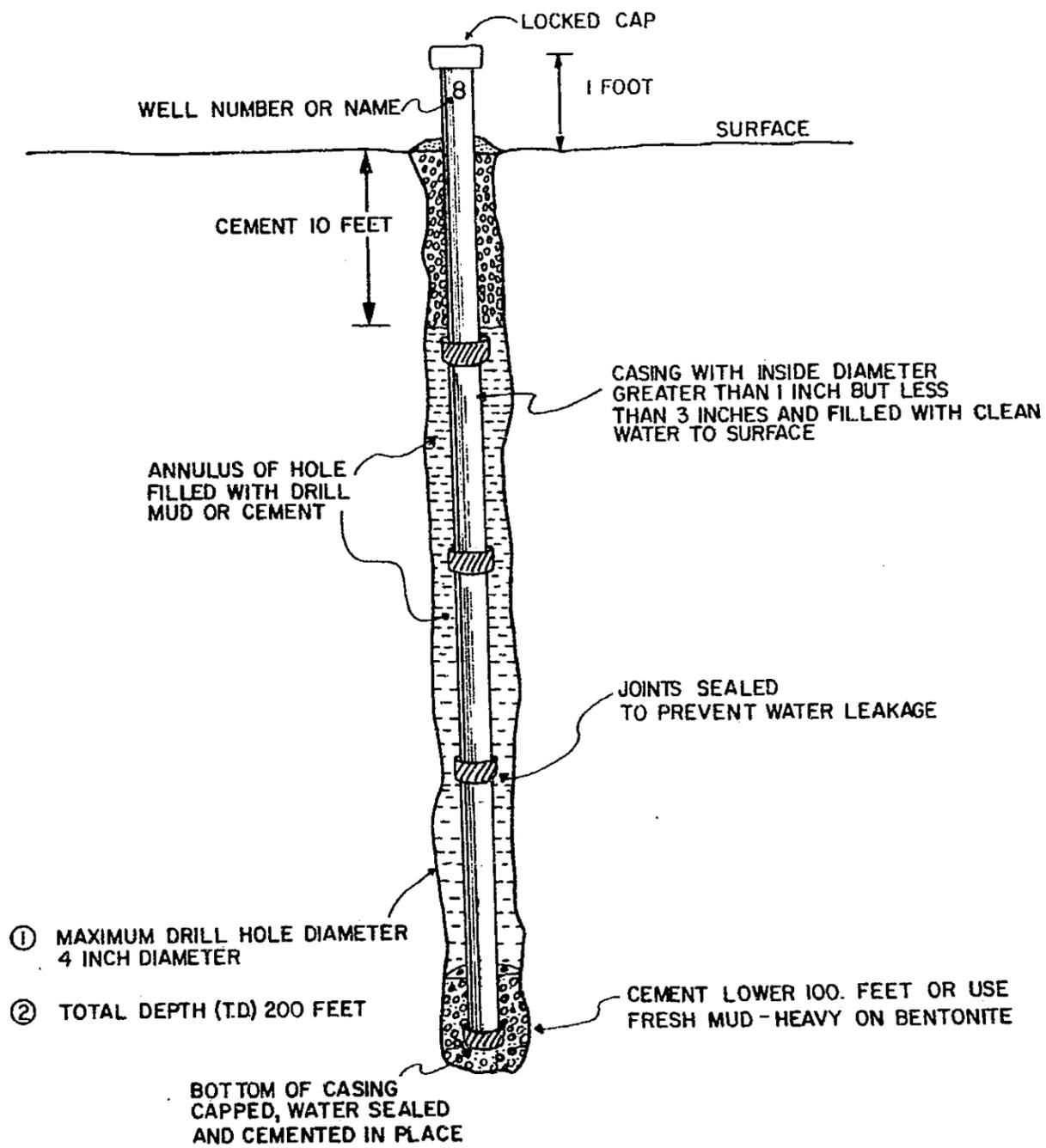
1. OPERATOR SHALL OUTLINE THE DEDICATED ACREAGE FOR GEOTHERMAL RESOURCES WELLS ON THE PLAT.
2. A REGISTERED PROFESSIONAL ENGINEER OR LAND SURVEYOR REGISTERED IN THE STATE OF ARIZONA OR APPROVED BY THE COMMISSION SHALL SHOW ON THE PLAT THE LOCATION OF THE WELL AND CERTIFY THIS INFORMATION IN THE SPACE PROVIDED.
3. ALL DISTANCES SHOWN ON THE PLAT MUST BE FROM THE OUTER BOUNDARIES OF THE SECTION.
4. IS THE OPERATOR THE ONLY OWNER IN THE DEDICATED ACREAGE OUTLINED ON THE PLAT BELOW? YES _____ NO X
5. IF THE ANSWER TO QUESTION FOUR IS "NO" HAVE THE INTERESTS OF ALL THE OWNERS BEEN CONSOLIDATED BY COMMUNITIZATION AGREEMENT OR OTHERWISE? YES _____ NO X. IF ANSWER IS "YES" TYPE OF CONSOLIDATION _____
6. IF THE ANSWER TO QUESTION FOUR IS "NO", LIST ALL THE OWNERS AND THEIR RESPECTIVE INTERESTS BELOW:

Owner <u>STATE OF ARIZONA</u>	Land Description <u>SW 1/4, NE 1/4, NW 1/4, SEC 8, T. 9 S., R. 26 E</u>
	<p style="text-align: center;">CERTIFICATION</p> <p>I hereby certify that the information above is true and complete to the best of my knowledge and belief.</p> <p style="text-align: center;"><i>[Signature]</i></p> <p>Name <u>JAMES C. WITCHEL</u></p> <p>Position <u>ASSISTANT GEOLOGIST</u></p> <p>Company <u>ABGMT</u></p> <p>Date <u>3 NOVEMBER 1981</u></p> <p>I hereby certify that the well location shown on the plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.</p> <p>Date Surveyed _____</p> <p>Registered Professional Engineer and/or Land Surveyor _____</p> <p>Certificate No. _____</p>

PROPOSED CASING PROGRAM

Size of Casing	Weight	Grade & Type	Top	Bottom	Cementing Depths	Sacks Cement
<u>1/4 INCH</u>	<u>SCHEDULE 40</u>	<u>PVC</u> <u>C</u>	<u>0'</u>	<u>200'</u>	<u>0-10 FEET CEMENT</u> <u>10-200 FEET MIXTURE OF MUD AND CEMENT</u>	<u>LESS THAN 5</u>

COMPLETION OF HEAT FLOW HOLE





PERMIT TO DRILL

This constitutes the permission and authority from the
OIL AND GAS CONSERVATION COMMISSION,
STATE OF ARIZONA,

To: Arizona Bureau of Geology and Mineral Technology
(OPERATOR)

to drill a well to be known as
HF-1

(WELL NAME)

located 1100' from north line, 1400' from west line (SE/4 NE/4 NW/4)

Section 8 Township 9 South Range 26 East, Graham County, Arizona.

The N/A of said
Section, Township and Range is dedicated to this well.

Said well is to be drilled substantially as outlined in the attached Application and must be drilled
in full compliance with all applicable laws, statutes, rules and regulations of the State of Arizona.

Issued this 18th day of November, 19 81.

OIL AND GAS CONSERVATION COMMISSION

By [Signature]
EXECUTIVE SECRETARY

PERMIT No 781

RECEIPT NO. 2174

API NO. 02-009-20008

State of Arizona
Oil & Gas Conservation Commission
Permit to Drill

FORM NO. 27

WELL COMPLETION OR RECOMPLETION REPORT AND WELL LOG

GEOTHERMAL RESOURCE WELL

DESIGNATE TYPE OF COMPLETION:

NEW WELL WORK OVER DEEPEN PLUG BACK SAME RESERVOIR DIFFERENT RESERVOIR DRY STEAM HOT W/CONS. COMM. DRY

JUN 7 1982

DESCRIPTION OF WELL AND LEASE

OPERATOR ARIZONA BUREAU OF GEOLOGY AND MINERAL TECHNOLOGY (ABGMT) ADDRESS 845 N. PARK AVE. TUCSON, ARIZONA 85719

FEDERAL, STATE OR INDIAN LEASE NUMBER OR NAME OF LESSOR BLM# AZ-040-1-B-49 (NOT INTENT) DW# 55-501486 (EXEMPT WELL) WELL NUMBER HF3 FIELD & RESERVOIR ARTESIA

LOCATION NL100 WL100 COUNTY GRAHAM

SEC. TWP-RANGE OR BLOCK & SURVEY NW 1/4, NW 1/4, NW 1/4 SEC 9, T. 9 S., R. 26 E.

DATE SPUNDED 1 DEC. 1981 DATE TOTAL DEPTH REACHED 2 DEC. 1981 DATE COMPLETED, READY TO PRODUCE N/A ELEVATION (DF, REF. RT. OR (GB)) 3430 FEET ELEVATION OF CASING 3431 FEET

TOTAL DEPTH 200 P.B.T.D. 200 FEET AIRDRILLED (INTERVAL) _____ FLUIDDRILLED (INTERVAL) _____

PRODUCING INTERVAL (S) FOR THIS COMPLETION NONE - COMPLETED AS HEAT FLOW HOLE ROTARY TOOLS USED (INTERVAL) 0-200 CABLE TOOLS USED (INTERVAL) _____

WAS THIS WELL DIRECTIONALLY DRILLED? NO WAS DIRECTIONAL SURVEY MADE? NO WAS COPY OF DIRECTIONAL SURVEY FILED? N/A DATE FILED N/A

TYPE OF ELECTRICAL, TEMPERATURE, CEMENT BOND OR OTHER LOGS RUN (CHECK LOGS FILED WITH THE COMMISSION) TEMPERATURE DATE FILED MAY 1982

CASING RECORD

CASING (REPORT ALL STRINGS SET IN WELL-CONDUCTOR, SURFACE, INTERMEDIATE, PRODUCING, ETC.)						
PURPOSE	SIZE HOLE DRILLED	SIZE CASING SET	WEIGHT (LB./FT.)	DEPTH SET	SACKS CEMENT	AMT. PULLED
<u>SURFACE</u>	<u>4 IN.</u>	<u>N 4 IN.</u>	<u>IRON PIPE</u>	<u>10 FEET</u>		<u>NONE</u>
<u>Temp. LOG</u>	<u>4 IN.</u>	<u>1 IN.</u>	<u>PVC 200 PSI</u>	<u>184 FEET</u>		<u>NONE</u>

TUBING RECORD N/A LINER RECORD N/A

SIZE IN.	DEPTH SET FT.	PACKER SET AT FT.	SIZE IN.	TOP FT.	BOTTOM FT.	SACKS CEMENT	SCREEN (FT.)

PERFORATION RECORD N/A ACID, SHOT, FRACTURE, CEMENT SQUEEZE RECORD N/A

NUMBER PER FT. _____ SIZE & TYPE _____ DEPTH INTERVAL _____ AMT. & KIND OF MATERIAL USED _____ DEPTH INTERVAL _____

INITIAL PRODUCTION

DATE	ANALYSES OF FLUIDS & GASES	TOTAL MASS FLOW DATA				SEPARATOR DATA						
		TEMP. °F	PRES. PSIG.	LBS./HR	TEMP. °F	PRES. PSIG.	ENTHALPY	ORIFICE	WATER CUFT/HR	STEAM LBS/HR	PRES. PSIG.	TEMP. °F
<u>N/A</u>	<u>STATIC TEST SHUT IN WELL HEAD</u>											

CERTIFICATE: I, THE UNDERSIGNED, UNDER THE PENALTY OF PERJURY, STATE THAT I AM THE Geologist OF THE ABGMT (COMPANY), AND THAT I AM AUTHORIZED BY SAID COMPANY TO MAKE THIS REPORT; AND THAT THIS REPORT WAS PREPARED UNDER MY SUPERVISION AND DIRECTION AND THAT THE FACTS STATED THEREIN ARE TRUE, CORRECT AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DATE 14 MAY 1982 SIGNATURE James C. Witcher

PERMIT NO. 782 STATE OF ARIZONA OIL & GAS CONSERVATION COMMISSION WELL COMPLETION OR RECOMPLETION REPORT AND WELL LOG FILE ONE COPY FORM NO. G-4

DETAIL OF FORMATIONS PENETRATED

FORMATION	TOP	BOTTOM	DESCRIPTION*
			WATER AT 100 FEET (ELEV. 3330') 2/8/82

* SHOW ALL IMPORTANT ZONES OF POROSITY. DETAIL OF ALL CORES, AND ALL DRILL-STEM TESTS, INCLUDING DEPTH INTERVAL TESTED, CUSHION USED, TIME TOOL OPEN, FLOWING AND SHUT-IN PRESSURES, AND RECOVERIES.

INSTRUCTIONS:

ATTACH DRILLERS LOG OR OTHER ACCEPTABLE LOG OF WELL-

THIS WELL COMPLETION OR RECOMPLETION REPORT AND WELL LOG SHALL BE FILED WITH THE STATE OF ARIZONA OIL & GAS CONSERVATION COMMISSION NOT LATER THAN THIRTY DAYS AFTER PROJECT COMPLETION.

FORM NO. G-4

RECEIVED

WELL HF3 DATE 2/8/82 ELEVATION 3430 JUN 7 1982
 LOCATION D-9-26-9BBB LOGGING SYSTEM NMSU A1 O & G CONS. COMM.
 CABLE RESISTANCE (K OHM) 0.06

DEPTH (FEET)	RESISTANCE (K OHMS)	TEMPERATURE °C	GRADIENT °C/KM	DRILLER'S LOG, REMARKS, ETC
30	90.41	23.04		SAND, SILT, CLAY
35	90.32	23.07	19.7	"
40	90.04	23.15	52.5	"
45	89.38	23.34	124.7	"
50	89.00	23.46	78.7	"
55	88.30	23.67	137.8	"
60	87.21	24.00	216.5	"
65	86.68	24.16	104.9	SAND, SILT, CLAY
70	85.89	24.40	157.5	SILT, CLAY
75	85.12	24.64	157.5	"
80	84.76	24.75	72.2	"
85	83.72	25.08	216.5	"
90	83.37	25.19	72.2	"
95	82.81	25.37	118.1	"
100	81.73	25.71	223.1	"
105	81.21	25.88	111.6	"
110	80.59	26.08	131.2	"
115	79.88	26.31	150.9	"
120	79.39	26.48	111.6	"
125	79.03	26.59	72.2	"
130	78.31	26.83	157.5	SILT, CLAY
135	77.85	26.99	104.9	COARSE SAND, PEBBLES WATER?
140	77.30	27.18	124.7	"
145	76.78	27.35	111.6	"
150	76.25	27.53	118.1	"
155	75.86	27.67	91.9	"
160	75.24	27.88	137.8	"
165	74.67	28.08	131.2	"
170	74.03	28.31	150.9	"
175	73.05	28.65	223.1	"
180	72.49	28.85	131.2	COARSE SAND, PEBBLES
185				
190				
195				
200				
205				
210				
215				
BOTTOM 184	72.19	28.96		

42,381 50 SHEETS 1 SQUARE
 42,382 100 SHEETS 1 SQUARE
 42,389 200 SHEETS 1 SQUARE
 NATIONAL

**APPLICATION FOR PERMIT TO DRILL OR RE-ENTER
GEOHERMAL RESOURCES WELL**

RECEIVED

APPLICATION TO DRILL

RE-ENTER OLD WELL **NOV 6 1981**

O & G CONS. COMM.

NAME OF COMPANY OR OPERATOR

ARIZONA BUREAU OF GEOLOGY AND MINERAL TECHNOLOGY (ABGMT) UNIVERSITY OF ARIZONA

ADDRESS **2045 N. FORBES BLVD. SUITE 106 TUCSON ARIZONA 85705**

DRILLING CONTRACTOR

KENT CARSON, GRL CONSTRUCTION 203 5TH STREET

ADDRESS **SAFFORD, ARIZONA 85546**

DESCRIPTION OF WELL AND LEASE

FEDERAL, STATE OR INDIAN LEASE NUMBER, OR IF FEE LEASE. NAME OF LESSOR	WELL NUMBER	ELEVATION (GROUND)
N/A	HF3	3430 FEET

NEAREST DISTANCE FROM PROPOSED LOCATION TO PROPERTY OR LEASE LINE:	DISTANCE FROM PROPOSED LOCATION TO NEAREST DRILLING, COMPLETED OR APPLIED-FOR WELL ON THE SAME LEASE:
N/A FEET	N/A FEET

NUMBER OF ACRES IN LEASE:	NUMBER OF WELLS ON LEASE, INCLUDING THIS WELL, COMPLETED IN OR DRILLING TO THIS RESERVOIR:
N/A	N/A

IF LEASE, PURCHASED WITH ONE OR MORE WELLS DRILLED, FROM WHOM PURCHASED:	NAME	ADDRESS
N/A		

WELL LOCATION (GIVE FOOTAGE FROM SECTION LINES)	SECTION-TOWNSHIP-RANGE OR BLOCK AND SURVEY	DEDICATION (COMPLY WITH RULE G-105)
NL100' WL100'	NW1/4, NW1/4, NW1/4 SEC 9, T.9S., R.26E.	1/4 ACRE

FIELD AND RESERVOIR (IF WILDCAT, SO STATE)	COUNTY
TEMPERATURE GRADIENT TEST	GRAHAM COUNTY

DISTANCE, IN MILES, AND DIRECTION FROM NEAREST TOWN OR POST OFFICE
15 MILES SOUTH OF SAFFORD, ARIZONA

PROPOSED DEPTH:	ROTARY OR CABLE TOOLS	APPROX. DATE WORK WILL START
200 FEET	ROTARY	23 NOVEMBER 1981

BOND STATUS AMOUNT	ORGANIZATION REPORT ON FILE N/A OR ATTACHED	FILING FEE OF \$25.00 ATTACHED
--------------------	---	--------------------------------

REMARKS: SEE ATTACHED DIAGRAM DESCRIBING HOPE COMPLETION

CERTIFICATE: I, THE UNDERSIGNED, UNDER THE PENALTY OF PERJURY, STATE THAT I AM THE GEOLOGIST OF THE ABGMT (COMPANY), AND THAT I AM AUTHORIZED BY SAID COMPANY TO MAKE THIS REPORT; AND THAT THIS REPORT WAS PREPARED UNDER MY SUPERVISION AND DIRECTION AND THAT THE FACTS STATED THEREIN ARE TRUE, CORRECT AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

Jan C. Withers
SIGNATURE

3 NOVEMBER 1981
DATE

PERMIT NUMBER: 782

APPROVAL DATE: 11-18-81

APPROVED BY: *[Signature]*

NOTICE:
BEFORE SENDING IN THIS FORM BE SURE THAT YOU HAVE GIVEN ALL INFORMATION REQUESTED. MUCH UNNECESSARY CORRESPONDENCE WILL THUS BE AVOIDED.

STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION

APPLICATION TO DRILL OR RE-ENTER

FILE TWO COPIES

FORM NO. G-3

(COMPLETE REVERSE SIDE)

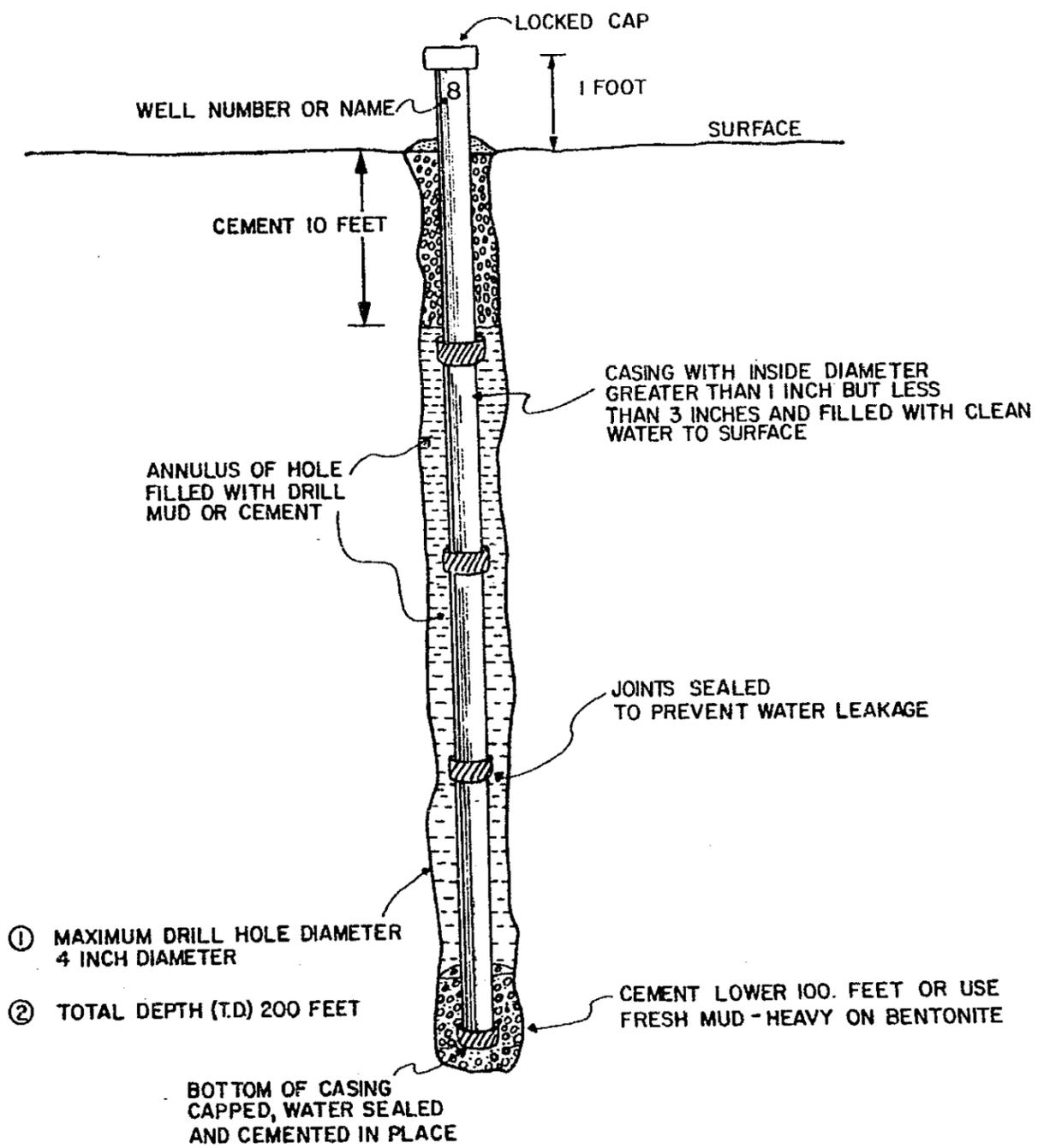
1. OPERATOR SHALL OUTLINE THE DEDICATED ACREAGE FOR GEOTHERMAL RESOURCES WELLS ON THE PLAT.
2. A REGISTERED PROFESSIONAL ENGINEER OR LAND SURVEYOR REGISTERED IN THE STATE OF ARIZONA OR APPROVED BY THE COMMISSION SHALL SHOW ON THE PLAT THE LOCATION OF THE WELL AND CERTIFY THIS INFORMATION IN THE SPACE PROVIDED.
3. ALL DISTANCES SHOWN ON THE PLAT MUST BE FROM THE OUTER BOUNDARIES OF THE SECTION.
4. IS THE OPERATOR THE ONLY OWNER IN THE DEDICATED ACREAGE OUTLINED ON THE PLAT BELOW? YES _____ NO X
5. IF THE ANSWER TO QUESTION FOUR IS "NO" HAVE THE INTERESTS OF ALL THE OWNERS BEEN CONSOLIDATED BY COMMUNITIZATION AGREEMENT OR OTHERWISE? YES _____ NO X. IF ANSWER IS "YES" TYPE OF CONSOLIDATION _____
6. IF THE ANSWER TO QUESTION FOUR IS "NO", LIST ALL THE OWNERS AND THEIR RESPECTIVE INTERESTS BELOW:

Owner <u>U.S. BUREAU OF LAND MANAGEMENT</u>	Land Description <u>NW 1/4, NW 1/4, NW 1/4, SEC 9, T. 9 S., R. 26 E.</u>
	<p style="text-align: center;">CERTIFICATION</p> <p>I hereby certify that the information above is true and complete to the best of my knowledge and belief.</p> <p style="text-align: center;"><i>James P. Witcher</i> Name <u>JAMES P. WITCHER</u></p> <p style="text-align: center;">Position <u>ASSISTANT GEOLOGIST</u></p> <p style="text-align: center;">Company <u>ABGMT</u></p> <p style="text-align: center;">Date <u>3 NOVEMBER 1981</u></p> <p>I hereby certify that the well location shown on the plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.</p> <p style="text-align: center;">Date Surveyed _____</p> <p style="text-align: center;">Registered Professional Engineer and/or Land Surveyor _____</p> <p style="text-align: center;">Certificate No. _____</p>

PROPOSED CASING PROGRAM

Size of Casing	Weight	Grade & Type	Top	Bottom	Cementing Depths	Sacks Cement
<u>1 1/4 INCH</u>	<u>SCHEDULE 40</u>	<u>PVC</u>	<u>0'</u>	<u>200'</u>	<u>0-10 FEET CEMENT</u> <u>10-200 FEET MIXTURE OF GEL MUD AND CEMENT</u>	<u>LESS THAN 5</u>

COMPLETION OF HEAT FLOW HOLE





PERMIT TO DRILL

This constitutes the permission and authority from the
OIL AND GAS CONSERVATION COMMISSION,
STATE OF ARIZONA,

To: Arizona Bureau of Geology and Mineral Technology
(OPERATOR)

to drill a well to be known as

HF-3

(WELL NAME)

located 100' from north line, 100' from west line (NE/4 NW/4 NW/4)

Section 9 Township 9 South Range 26 East, Graham County, Arizona.

The N/A of said
Section, Township and Range is dedicated to this well.

Said well is to be drilled substantially as outlined in the attached Application and must be drilled
in full compliance with all applicable laws, statutes, rules and regulations of the State of Arizona.

Issued this 18th day of November, 1981

OIL AND GAS CONSERVATION COMMISSION

By [Signature]

EXECUTIVE SECRETARY

PERMIT N^o 782

RECEIPT NO. 2174

API NO. 02-009-20009

State of Arizona
Oil & Gas Conservation Commission
Permit to Drill

FORM NO. 27

RECEIVED

WELL COMPLETION OR RECOMPLETION REPORT AND WELL LOG JUN 7 1982

GEOTHERMAL RESOURCE WELL

O & G CONS. COMM.

DESIGNATE TYPE OF COMPLETION:

NEW WELL WORK OVER DEEPEN PLUG BACK SAME RESERVOIR DIFFERENT RESERVOIR DRY STEAM HOT WATER DRY

DESCRIPTION OF WELL AND LEASE

OPERATOR ARIZONA BUREAU OF GEOLOGY AND MINERAL TECHNOLOGY (ABGMT) ADDRESS 845 N. PARK AVE., TUCSON, ARIZONA 85719

FEDERAL, STATE OR MINERAL LEASE NUMBER OR NAME OF LESSOR IF THE LEASE BLM # A2-040-1-B-49 (AUT. INTENT) DWR # 55-501487 (EXEMPT WELL) WELL NUMBER HF4 FIELD & RESERVOIR ARTESIA

LOCATION SL 1500 WL 100 COUNTY GRAHAM

SEC. TWP-RANGE OR BLOCK & SURVEY SW 1/4, NW 1/4, SW 1/4, SEC 9, T. 9S., R. 26E.

DATE SPUDDED 2 DEC 1981 DATE TOTAL DEPTH REACHED 3 DEC 1981 DATE COMPLETED, READY TO PRODUCE N/A ELEVATION (OF, EEB, RT, OR GR) FEET 3510 ELEVATION OF CASING FEET 3511

TOTAL DEPTH 210 P.B.T.D. 200 FEET AIRDRILLED (INTERVAL) FLUIDDRILLED (INTERVAL)

PRODUCING INTERVAL (S) FOR THIS COMPLETION NONE - COMPLETED AS HEAT FLOW HOLE ROTARY TOOLS USED (INTERVAL) 0-210 CABLE TOOLS USED (INTERVAL) N/A

WAS THIS WELL DIRECTIONALLY DRILLED? NO WAS DIRECTIONAL SURVEY MADE? NO WAS COPY OF DIRECTIONAL SURVEY FILED? N/A DATE FILED N/A

TYPE OF ELECTRICAL, TEMPERATURE, CEMENT BOND OR OTHER LOGS RUN (CHECK LOGS FILED WITH THE COMMISSION) TEMPERATURE DATE FILED MAY 1982

CASING RECORD

CASING (REPORT ALL STRINGS SET IN WELL-CONDUCTOR, SURFACE, INTERMEDIATE, PRODUCING, ETC.)

PURPOSE	SIZE HOLE DRILLED	SIZE CASING SET	WEIGHT (LB./FT.)	DEPTH SET	SACKS CEMENT	AMT. PULLED
SURFACE	4 IN.	2 1/2 IN.	IRON PIPE	10 FEET		NONE
TEMP. LOG	4 IN.	1 IN.	PVC 200 PSI	197 FEET		NONE

TUBING RECORD N/A

LINER RECORD N/A

SIZE IN.	DEPTH SET FT.	PACKER SET AT FT.	SIZE IN.	TOP FT.	BOTTOM FT.	SACKS CEMENT	SCREEN (FT.)

PERFORATION RECORD N/A

ACID, SHOT, FRACTURE, CEMENT SQUEEZE RECORD N/A

NUMBER PER FT.	SIZE & TYPE	DEPTH INTERVAL	AMT. & KIND OF MATERIAL USED	DEPTH INTERVAL

INITIAL PRODUCTION

DATE	N/A STATIC TEST SHUT IN WELL HEAD	ANALYSES OF FLUIDS & GASES N/A						SEPARATOR DATA N/A			
		TOTAL MASS FLOW DATA N/A									
TEMP. °F	PRES. PSIG.	LBS/HR	TEMP. °F	PRES. PSIG.	ENTHALPY	ORIFICE	WATER CUFT/HR	STEAM LBS/HR	PRES. PSIG.	TEMP. °F	

CERTIFICATE: I, THE UNDERSIGNED, UNDER THE PENALTY OF PERJURY, STATE THAT I AM THE GEOLOGIST OF THE ABGMT (COMPANY), AND THAT I AM AUTHORIZED BY SAID COMPANY TO MAKE THIS REPORT; AND THAT THIS REPORT WAS PREPARED UNDER MY SUPERVISION AND DIRECTION AND THAT THE FACTS STATED THEREIN ARE TRUE, CORRECT AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DATE 14 MAY 1982

SIGNATURE James C. Witchel

PERMIT NO. 783

FORM No. G-4

STATE OF ARIZONA OIL & GAS CONSERVATION COMMISSION WELL COMPLETION OR RECOMPLETION REPORT AND WELL LOG FILE ONE COPY

DETAIL OF FORMATIONS PENETRATED

FORMATION	TOP	BOTTOM	DESCRIPTION*
			WATER AT 82 FEET (3428' ELEV.) 2/8/82

* SHOW ALL IMPORTANT ZONES OF POROSITY. DETAIL OF ALL CORES, AND ALL DRILL-STEM TESTS, INCLUDING DEPTH INTERVAL TESTED, CUSHION USED, TIME TOOL OPEN, FLOWING AND SHUT-IN PRESSURES, AND RECOVERIES.

INSTRUCTIONS:

ATTACH DRILLERS LOG OR OTHER ACCEPTABLE LOG OF WELL.

THIS WELL COMPLETION OR RECOMPLETION REPORT AND WELL LOG SHALL BE FILED WITH THE STATE OF ARIZONA OIL & GAS CONSERVATION COMMISSION NOT LATER THAN THIRTY DAYS AFTER PROJECT COMPLETION.

FORM NO. G-4

RECEIVED

WELL HF4 DATE 2/2/82 ELEVATION 3510 JUN 7 1982
 LOCATION D-7-26-9-CBC LOGGING SYSTEM NMSU A1 O & G CONS. COMM.
 CABLE RESISTANCE (K OHM) 0.06

DEPTH (FEET)	RESISTANCE (K OHMS)	TEMPERATURE °C	GRADIENT °C/KM	DRILLER'S LOG, REMARKS, ETC.
30	30.32	23.06		MEDIUM SAND
35	90.08	23.13	45.9	"
40	89.47	23.32	124.7	"
45	88.93	23.48	104.9	"
50	88.49	23.61	85.3	"
55	87.81	23.81	131.2	"
60	86.69	24.15	223.1	"
65	85.92	24.39	157.5	"
70	84.96	24.69	196.9	"
75	84.31	24.89	131.2	"
80	83.56	25.13	157.5	"
85	82.79	25.37	157.5	"
90	82.22	25.55	118.1	"
95	81.65	25.74	124.7	"
100	80.85	26.00	170.6	"
105	80.47	26.12	78.7	"
110	79.57	26.41	190.3	"
115	79.11	26.57	104.9	"
120	78.44	26.79	144.4	"
125	77.56	27.09	196.9	"
130	77.10	27.24	98.4	"
135	76.63	27.40	104.9	"
140	76.02	27.61	137.8	"
145	75.45	27.81	131.2	"
150	75.08	27.94	85.3	"
155	74.45	28.16	144.4	"
160	73.92	28.34	118.1	"
165	73.40	28.53	124.7	"
170	72.83	28.73	131.2	"
175	72.20	28.96	150.9	MEDIUM SAND
180	71.59	29.18	144.4	COARSE SAND
185	71.14	29.34	104.9	"
190	70.71	29.50	104.9	"
195	70.27	29.66	104.9	COARSE SAND
200				
205				
210				
215				
BOTTOM 197	70.17	29.70		

42381 50 SHEETS SQUARE
 42382 50 SHEETS SQUARE
 42383 50 SHEETS SQUARE
 42384 50 SHEETS SQUARE
 NATIONAL

**APPLICATION FOR PERMIT TO DRILL OR RE-ENTER
GEOTHERMAL RESOURCES WELL**

APPLICATION TO DRILL

RE-ENTER OLD WELL

NOV 6 1981

O & G CONS. COMM.

NAME OF COMPANY OR OPERATOR

ARIZONA BUREAU OF GEOLOGY AND MINERAL TECHNOLOGY (ABGMT) UNIVERSITY OF ARIZONA

ADDRESS 2045 N. FORBES BLVD. SUITE 106 TUCSON ARIZONA 85705

DRILLING CONTRACTOR

KENT LARSON, GRL CONSTRUCTION 203 5TH STREET

ADDRESS SAFFORD, ARIZONA 85546

DESCRIPTION OF WELL AND LEASE

FEDERAL, STATE OR INDIAN LEASE NUMBER, OR IF FEE LEASE, NAME OF LESSOR	WELL NUMBER	ELEVATION (GROUND)
N/A	HF4	3510 FEET

NEAREST DISTANCE FROM PROPOSED LOCATION TO PROPERTY OR LEASE LINE:	DISTANCE FROM PROPOSED LOCATION TO NEAREST DRILLING COMPLETED OR APPLIED-FOR WELL ON THE SAME LEASE:
N/A FEET	N/A FEET

NUMBER OF ACRES IN LEASE:	NUMBER OF WELLS ON LEASE, INCLUDING THIS WELL. COMPLETED IN OR DRILLING TO THIS RESERVOIR:
N/A	N/A

IF LEASE, PURCHASED WITH ONE OR MORE WELLS DRILLED, FROM WHOM PURCHASED:	NAME	ADDRESS
N/A		

WELL LOCATION (GIVE FOOTAGE FROM SECTION LINES)	SECTION-TOWNSHIP-RANGE OR BLOCK AND SURVEY	DEDICATION (COMPLY WITH RULE G-105)
SL 1500' WL 100'	SW/4, NW/4, SW/4, sec 9, T. 9S, R. 26E.	1/4 ACRE

FIELD AND RESERVOIR (IF WILDCAT, SO STATE)	COUNTY
TEMPERATURE GRADIENT TEST	GRAHAM COUNTY

DISTANCE, IN MILES, AND DIRECTION FROM NEAREST TOWN OR POST OFFICE

15 MILES SOUTH OF SAFFORD, ARIZONA

PROPOSED DEPTH:	ROTARY OR CABLE TOOLS	APPROX. DATE WORK WILL START
200 FEET	ROTARY	23 NOVEMBER 1981

BOND STATUS	ORGANIZATION REPORT	FILING FEE OF \$25.00
AMOUNT	ON FILE N/A OR ATTACHED	ATTACHED

REMARKS: SEE ATTACHED DIAGRAM DESCRIBING HOLE COMPLETION

CERTIFICATE: I, THE UNDERSIGNED, UNDER THE PENALTY OF PERJURY, STATE THAT I AM THE GEOLOGIST OF THE ABGMT (COMPANY), AND THAT I AM AUTHORIZED BY SAID COMPANY TO MAKE THIS REPORT; AND THAT THIS REPORT WAS PREPARED UNDER MY SUPERVISION AND DIRECTION AND THAT THE FACTS STATED THEREIN ARE TRUE, CORRECT AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

Jan C. Wetch
SIGNATURE

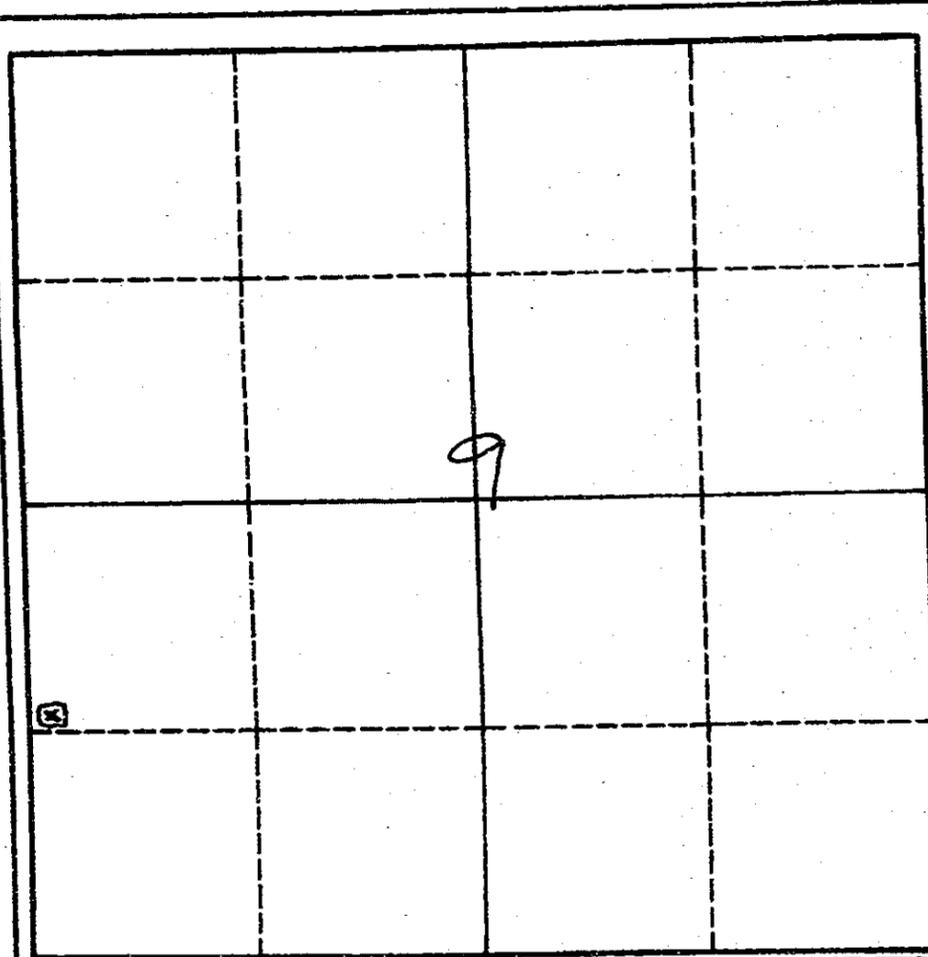
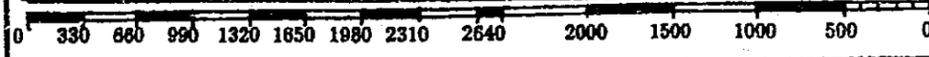
3 NOVEMBER 1981
DATE

PERMIT NUMBER: 783
APPROVAL DATE: 11-18-81
APPROVED BY: *[Signature]*

NOTICE:
BEFORE SENDING IN THIS FORM BE SURE THAT YOU HAVE GIVEN ALL INFORMATION REQUESTED. MUCH UNNECESSARY CORRESPONDENCE WILL THUS BE AVOIDED.

STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION
APPLICATION TO DRILL OR RE-ENTER
FILE TWO COPIES
FORM NO. G-3

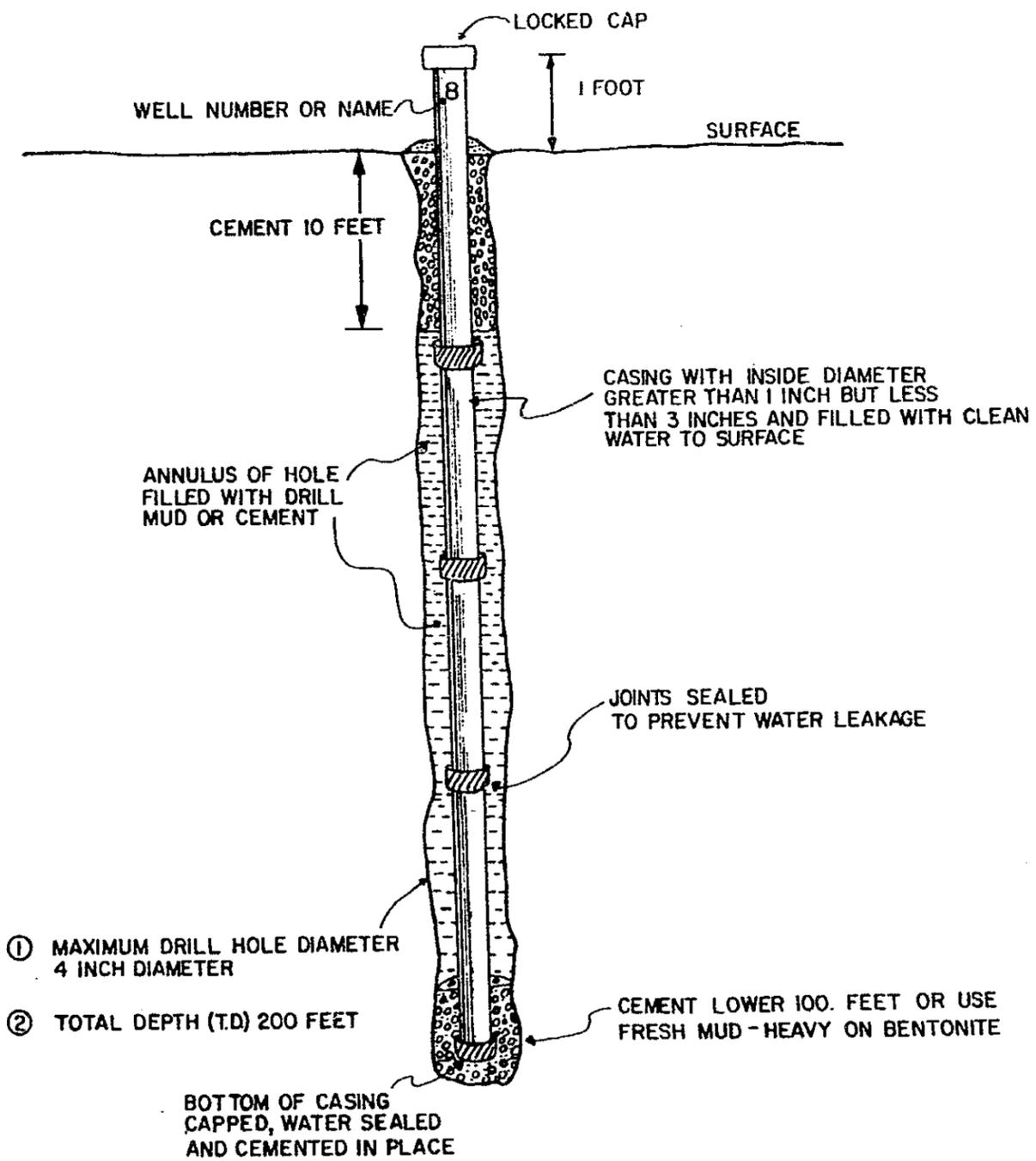
1. OPERATOR SHALL OUTLINE THE DEDICATED ACREAGE FOR GEOTHERMAL RESOURCES WELLS ON THE PLAT.
2. A REGISTERED PROFESSIONAL ENGINEER OR LAND SURVEYOR REGISTERED IN THE STATE OF ARIZONA OR APPROVED BY THE COMMISSION SHALL SHOW ON THE PLAT THE LOCATION OF THE WELL AND CERTIFY THIS INFORMATION IN THE SPACE PROVIDED.
3. ALL DISTANCES SHOWN ON THE PLAT MUST BE FROM THE OUTER BOUNDARIES OF THE SECTION.
4. IS THE OPERATOR THE ONLY OWNER IN THE DEDICATED ACREAGE OUTLINED ON THE PLAT BELOW? YES _____ NO
5. IF THE ANSWER TO QUESTION FOUR IS "NO" HAVE THE INTERESTS OF ALL THE OWNERS BEEN CONSOLIDATED BY COMMUNITIZATION AGREEMENT OR OTHERWISE? YES _____ NO IF ANSWER IS "YES" TYPE OF CONSOLIDATION _____
6. IF THE ANSWER TO QUESTION FOUR IS "NO", LIST ALL THE OWNERS AND THEIR RESPECTIVE INTERESTS BELOW:

Owner <i>U.S. BUREAU OF LAND MANAGEMENT</i>	Land Description <i>SW 1/4, NW 1/4, SW 1/4, sec 9, T. 9 S., R. 26 E.</i>
	<p style="text-align: center;">CERTIFICATION</p> <p>I hereby certify that the information above is true and complete to the best of my knowledge and belief.</p> <p style="text-align: center;"><i>[Signature]</i></p> <p>Name <i>JAMES C. WITCHEN</i></p> <p>Position <i>ASSISTANT GEOLOGIST</i></p> <p>Company <i>ABGNT</i></p> <p>Date <i>3 NOVEMBER 1981</i></p> <p>I hereby certify that the well location shown on the plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.</p> <p>Date Surveyed</p> <p>Registered Professional Engineer and/or Land Surveyor</p> <p>Certificate No.</p>
	

PROPOSED CASING PROGRAM

Size of Casing	Weight	Grade & Type	Top	Bottom	Cementing Depths	Sacks Cement
<i>1 1/2 INCH</i>	<i>40</i>	<i>PVC</i>	<i>0'</i>	<i>200'</i>	<i>0-10 FEET CEMENT 10-200 FEET MIXTURE OF GALVANIZED CEMENT</i>	<i>LESS THAN 5</i>

COMPLETION OF HEAT FLOW HOLE





PERMIT TO DRILL

This constitutes the permission and authority from the
OIL AND GAS CONSERVATION COMMISSION,
STATE OF ARIZONA,

To: Arizona Bureau of Geology and Mineral Technology
(OPERATOR)

to drill a well to be known as

HF-4

(WELL NAME)

located 1500' from south line, 100' from west line (SW/4 NW/4 SW/4)

Section 9 Township 9 South Range 26 East, Graham County, Arizona.

The N/A of said
Section, Township and Range is dedicated to this well.

Said well is to be drilled substantially as outlined in the attached Application and must be drilled
in full compliance with all applicable laws, statutes, rules and regulations of the State of Arizona.

Issued this 18th day of November, 19 81.

OIL AND GAS CONSERVATION COMMISSION

By [Signature]

EXECUTIVE SECRETARY

PERMIT N^o 783

RECEIPT NO. 2174
API NO. 02-009-20010

State of Arizona
Oil & Gas Conservation Commission
Permit to Drill

FORM NO. 27

WELL COMPLETION OR RECOMPLETION REPORT AND WELL LOG

RECEIVED

JUN 7 1982

GEOTHERMAL RESOURCE WELL

DESIGNATE TYPE OF COMPLETION:

NEW WELL WORK OVER DEEPEN PLUG BACK SAME RESERVOIR DIFFERENT RESERVOIR DRY STEAM HOT WATER CONS. D.

DESCRIPTION OF WELL AND LEASE

OPERATOR ARIZONA BUREAU OF GEOLOGY AND MINERAL TECHNOLOGY (ABGMT) ADDRESS 845 N. PARK AVE. TUCSON, ARIZONA 85719

FEDERAL, STATE OR LEASE NUMBER OR NAME OF LESSOR WELL NUMBER FIELD & RESERVOIR
 BLM # AZ-040-1-15-49 (M.T. INTENT) HFG6 ARTESIA
 DWR # 55-501489 (EXEMPT WELL)

LOCATION NL 2400 WL 1200 COUNTY GRAHAM

SEC. TWP-RANGE OR BLOCK & SURVEY SW 1/4, SE 1/4, NW 1/4, SEC 10, T. 9S., R. 26E.

DATE SPUNDED 4 DEC 1981 DATE TOTAL DEPTH REACHED 4 DEC 1981 DATE COMPLETED, READY TO PRODUCE N/A ELEVATION (DF, RKB, RT, OR GR) 3535 FEET ELEVATION OF CASING 3536 FEET

TOTAL DEPTH 200 P.B.T.D. 200 FEET AIRDRILLED (INTERVAL) FLUIDRILLED (INTERVAL)

PRODUCING INTERVAL (S) FOR THIS COMPLETION NONE - COMPLETED AS HEAT FLOW HOLE ROTARY TOOLS USED (INTERVAL) 0-200 CABLE TOOLS USED (INTERVAL) N/A

WAS THIS WELL DIRECTIONALLY DRILLED? NO WAS DIRECTIONAL SURVEY MADE? NO WAS COPY OF DIRECTIONAL SURVEY FILED? N/A DATE FILED N/A

TYPE OF ELECTRICAL, TEMPERATURE, CEMENT BOND OR OTHER LOGS RUN (CHECK LOGS FILED WITH THE COMMISSION) TEMPERATURE DATE FILED MAY 1982

CASING RECORD

PURPOSE	SIZE HOLE DRILLED	SIZE CASING SET	WEIGHT (LB./FT.)	DEPTH SET	SACKS CEMENT	AMT. PULLED
SURFACE	4 IN.	4 IN.	IRON PIPE	10 FEET		NONE
TEMP. LOG	4 IN.	1 IN.	PVC 200 PSI	155 FEET		NONE

TUBING RECORD N/A LINER RECORD N/A

SIZE IN.	DEPTH SET FT.	PACKER SET AT FT.	SIZE IN.	TOP FT.	BOTTOM FT.	SACKS CEMENT	SCREEN (FT.)

PERFORATION RECORD ACID, SHOT, FRACTURE, CEMENT SQUEEZE RECORD

NUMBER PER FT.	SIZE & TYPE	DEPTH INTERVAL	AMT. & KIND OF MATERIAL USED	DEPTH INTERVAL

INITIAL PRODUCTION

DATE	ANALYSES OF FLUIDS & GASES	SEPARATOR DATA
N/A	N/A	N/A

DATE	TEMP. °F	PRES. PSIG.	LBS/HR	TEMP. °F	PRES. PSIG.	ENTHALPY	ORIFICE	WATER CUFT/HR	STEAM LBS/HR	PRES. PSIG.	TEMP. °F

CERTIFICATE: I, THE UNDERSIGNED, UNDER THE PENALTY OF PERJURY, STATE THAT I AM THE GEOLOGIST

OF THE ABGMT (COMPANY), AND THAT I AM AUTHORIZED BY SAID COMPANY TO MAKE THIS REPORT; AND THAT THIS REPORT WAS PREPARED UNDER MY SUPERVISION AND DIRECTION AND THAT THE FACTS STATED THEREIN ARE TRUE, CORRECT AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DATE 14 MAY 1982 SIGNATURE JAMES C. WITCHEL

PERMIT NO. 784 STATE OF ARIZONA OIL & GAS CONSERVATION COMMISSION WELL COMPLETION OR RECOMPLETION REPORT AND WELL LOG FILE ONE COPY FURN. NO. G-4

DETAIL OF FORMATIONS PENETRATED

FORMATION	TOP	BOTTOM	DESCRIPTION*
			WATER AT 105 FEET (ELEV. 3430') 2/8/82

* SHOW ALL IMPORTANT ZONES OF POROSITY, DETAIL OF ALL CORES, AND ALL DRILL-STEM TESTS, INCLUDING DEPTH INTERVAL TESTED, CUSHION USED, TIME TOOL OPEN, FLOWING AND SHUT-IN PRESSURES, AND RECOVERIES.

INSTRUCTIONS:

ATTACH DRILLERS LOG OR OTHER ACCEPTABLE LOG OF WELL.

THIS WELL COMPLETION OR RECOMPLETION REPORT AND WELL LOG SHALL BE FILED WITH THE STATE OF ARIZONA OIL & GAS CONSERVATION COMMISSION NOT LATER THAN THIRTY DAYS AFTER PROJECT COMPLETION.

**APPLICATION FOR PERMIT TO DRILL OR RE-ENTER
GEOHERMAL RESOURCES WELL**

RECEIVED

APPLICATION TO DRILL

RE-ENTER OLD WELL

NOV 6 1981

O & G CONS. COMM.

NAME OF COMPANY OR OPERATOR

ARIZONA BUREAU OF GEOLOGY AND MINERAL TECHNOLOGY (ABGMT) UNIVERSITY OF ARIZONA

ADDRESS 2045 N. FORBES BLVD. SUITE 106 CITY TUCSON, ARIZONA STATE 85705

DRILLING CONTRACTOR

KENT LARSON, GRL CONSTRUCTION 203 5TH STREET

ADDRESS SAFFORD, ARIZONA 85546

DESCRIPTION OF WELL AND LEASE

FEDERAL, STATE OR INDIAN LEASE NUMBER, OR IF FEE LEASE, NAME OF LESSOR	WELL NUMBER	ELEVATION (GROUND)
N/A	HF6	3535 FEET

NEAREST DISTANCE FROM PROPOSED LOCATION TO PROPERTY OR LEASE LINE:	DISTANCE FROM PROPOSED LOCATION TO NEAREST DRILLING, COMPLETED OR APPLIED-FOR WELL ON THE SAME LEASE:
N/A FEET	N/A FEET

NUMBER OF ACRES IN LEASE:	NUMBER OF WELLS ON LEASE, INCLUDING THIS WELL, COMPLETED IN OR DRILLING TO THIS RESERVOIR:
N/A	N/A

IF LEASE, PURCHASED WITH ONE OR MORE WELLS DRILLED, FROM WHOM PURCHASED:	NAME	ADDRESS
	N/A	

WELL LOCATION (GIVE FOOTAGE FROM SECTION LINES)	SECTION-TOWNSHIP-RANGE OR BLOCK AND SURVEY	DEDICATION (COMPLY WITH RULE G-105)
NL 2400' WL 1200'	SW 1/4, SE 1/4, NW 1/4, SEC 10, T. 9 S., R. 26 E.	< 1 ACRE

FIELD AND RESERVOIR (IF WILDCAT, SO STATE)	COUNTY
TEMPERATURE GRADIENT TEST	GRAHAM COUNTY

DISTANCE, IN MILES, AND DIRECTION FROM NEAREST TOWN OR POST OFFICE

15 MILES SOUTH OF SAFFORD, ARIZONA

PROPOSED DEPTH:	NOTARY OR CABLE TOOLS	APPROX. DATE WORK WILL START
200 FEET	ROTARY	23 NOVEMBER 1981

BOND STATUS	ORGANIZATION REPORT	FILING FEE OF \$25.00
AMOUNT	ON FILE N/A OR ATTACHED	ATTACHED

REMARKS: SEE ATTACHED DIAGRAM DESCRIBING HOLE COMPLETION

CERTIFICATE: I, THE UNDERSIGNED, UNDER THE PENALTY OF PERJURY, STATE THAT I AM THE Geologist OF THE ABGMT (COMPANY), AND THAT I AM AUTHORIZED BY SAID COMPANY TO MAKE THIS REPORT; AND THAT THIS REPORT WAS PREPARED UNDER MY SUPERVISION AND DIRECTION AND THAT THE FACTS STATED THEREIN ARE TRUE, CORRECT AND COMPLETE TO THE BEST OF MY KNOWLEDGE.


 SIGNATURE
 3 NOVEMBER 1981
 DATE

PERMIT NUMBER: 784

APPROVAL DATE: 11-18-81

APPROVED BY: 

NOTICE:
BEFORE SENDING IN THIS FORM BE SURE THAT YOU HAVE GIVEN ALL INFORMATION REQUESTED. MUCH UNNECESSARY CORRESPONDENCE WILL THUS BE AVOIDED.

STATE OF ARIZONA
 OIL & GAS CONSERVATION COMMISSION
 APPLICATION TO DRILL OR RE-ENTER
 FILE TWO COPIES
 FORM NO. G-3

1. OPERATOR SHALL OUTLINE THE DEDICATED ACREAGE FOR GEOTHERMAL RESOURCES WELLS ON THE PLAT.
2. A REGISTERED PROFESSIONAL ENGINEER OR LAND SURVEYOR REGISTERED IN THE STATE OF ARIZONA OR APPROVED BY THE COMMISSION SHALL SHOW ON THE PLAT THE LOCATION OF THE WELL AND CERTIFY THIS INFORMATION IN THE SPACE PROVIDED.
3. ALL DISTANCES SHOWN ON THE PLAT MUST BE FROM THE OUTER BOUNDARIES OF THE SECTION.
4. IS THE OPERATOR THE ONLY OWNER IN THE DEDICATED ACREAGE OUTLINED ON THE PLAT BELOW? YES _____ NO
5. IF THE ANSWER TO QUESTION FOUR IS "NO" HAVE THE INTERESTS OF ALL THE OWNERS BEEN CONSOLIDATED BY COMMUNITIZATION AGREEMENT OR OTHERWISE? YES _____ NO IF ANSWER IS "YES" TYPE OF CONSOLIDATION _____
6. IF THE ANSWER TO QUESTION FOUR IS "NO", LIST ALL THE OWNERS AND THEIR RESPECTIVE INTERESTS BELOW:

Owner <u>U.S. BUREAU OF LAND MANAGEMENT</u>	Land Description <u>SW 1/4, SE 1/4, NW 1/4, SEC. 10, T. 9S., R. 22E.</u>
	<p style="text-align: center;">CERTIFICATION</p> <p>I hereby certify that the information above is true and complete to the best of my knowledge and belief.</p> <p style="text-align: center;"><i>James C. Witcher</i></p> <p>Name <u>JAMES C. WITCHER</u></p> <p>Position <u>ASSISTANT GEOLOGIST</u></p> <p>Company <u>ARBMT</u></p> <p>Date <u>3 NOVEMBER 1981</u></p> <p>I hereby certify that the well location shown on the plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.</p> <p>Date Surveyed _____</p> <p>Registered Professional Engineer and/or Land Surveyor _____</p> <p>Certificate No. _____</p>

PROPOSED CASING PROGRAM

Size of Casing	Weight	Grade & Type	Top	Bottom	Cementing Depths	Sacks Cement
<u>1 1/4 INCH</u>	<u>SCHEDULE 40</u>	<u>PVC</u>	<u>0'</u>	<u>200'</u>	<u>0-10 FEET CEMENT</u> <u>10-200 FEET MIXTURE OF GEL MUD AND CEMENT</u>	<u>LESS THAN 5</u>



PERMIT TO DRILL

This constitutes the permission and authority from the
OIL AND GAS CONSERVATION COMMISSION,
STATE OF ARIZONA,

To: Arizona Bureau of Geology and Mineral Technology
(OPERATOR)

to drill a well to be known as

HP-6
(WELL NAME)

located 2400' from north line, 1200' from west line (SW/4 SE/4 NW/4)

Section 10 Township 9 South Range 26 East, Graham County, Arizona.

The N/A of said
Section, Township and Range is dedicated to this well.

Said well is to be drilled substantially as outlined in the attached Application and must be drilled
in full compliance with all applicable laws, statutes, rules and regulations of the State of Arizona.

Issued this 18th day of November, 19 81.

OIL AND GAS CONSERVATION COMMISSION

By [Signature]
EXECUTIVE SECRETARY

PERMIT No 784

RECEIPT NO. 2174
API NO. 02-009-20011

State of Arizona
Oil & Gas Conservation Commission
Permit to Drill

FORM NO. 27

WELL COMPLETION OR RECOMPLETION REPORT AND WELL LOG

RECEIVED

JUN 7 1982

GEOHERMAL RESOURCE WELL

DESIGNATE TYPE OF COMPLETION:

NEW WELL WORK OVER DEEPEN PLUG BACK SAME RESERVOIR DIFFERENT RESERVOIR DRY STEAM HOT DRY GAS COMB.

DESCRIPTION OF WELL AND LEASE

OPERATOR ARIZONA BUREAU OF GEOLOGY AND MINERAL TECHNOLOGY (ABGMT) ADDRESS 845 N. PARK AVE. TUCSON, ARIZONA 85719

FEDERAL, STATE OR LEASE NUMBER OR NAME OF LESSOR WELL NUMBER FIELD & RESERVOIR
 STATE LEASE # 84-040-1-E-49 (NOT INTENT) WELL NUMBER 4F7 FIELD & RESERVOIR ARTESIA
 DNR # 55-501490 (EXEMPT WELL)

LOCATION NL 2400 WL 1500 COUNTY GRAHAM

SEC. TWP-RANGE OR BLOCK & SURVEY SW 1/4, SE 1/4, NW 1/4, SEC 15, T. 9 S., R 26 E.

DATE SPUDDED 7 DEC. 1981 DATE TOTAL DEPTH REACHED 7 DEC. 1981 DATE COMPLETED, READY TO PRODUCE N/A ELEVATION (OF RKB RT. OR GR) 3690 FEET ELEVATION OF CASING 3691 FEET

TOTAL DEPTH 213 P.B.T.D. 200 FEET AIRDRILLED (INTERVAL) FLUIDRILLED (INTERVAL)

PRODUCING INTERVAL (S) FOR THIS COMPLETION NONE - COMPLETED AS HEAT FLOW HOLE ROTARY TOOLS USED (INTERVAL) 0-213 CABLE TOOLS USED (INTERVAL) N/A

WAS THIS WELL DIRECTIONALLY DRILLED? NO WAS DIRECTIONAL SURVEY MADE? NO WAS COPY OF DIRECTIONAL SURVEY FILED? N/A DATE FILED N/A

TYPE OF ELECTRICAL, TEMPERATURE, CEMENT BOND OR OTHER LOGS RUN (CHECK LOGS FILED WITH THE COMMISSION) TEMPERATURE DATE FILED MAY 1982

CASING RECORD

CASING (REPORT ALL STRINGS SET IN WELL-CONDUCTOR, SURFACE, INTERMEDIATE, PRODUCING, ETC.)						
PURPOSE	SIZE HOLE DRILLED	SIZE CASING SET	WEIGHT (LB./FT.)	DEPTH SET	SACKS CEMENT	AMT. PULLED
SURFACE	4 IN.	2 1/2 IN.	IRON PIPE	10 FEET		NONE
TEMP. LOG	4 IN.	1 IN.	PVC 200 PSI	211 FEET		NONE

TUBING RECORD N/A LINER RECORD N/A

SIZE IN.	DEPTH SET FT.	PACKER SET AT FT.	SIZE IN.	TOP FT.	BOTTOM FT.	SACKS CEMENT	SCREEN (FT.)

PERFORATION RECORD N/A ACID, SHOT, FRACTURE, CEMENT SQUEEZE RECORD N/A

NUMBER PER FT.	SIZE & TYPE	DEPTH INTERVAL	AMT. & KIND OF MATERIAL USED	DEPTH INTERVAL

INITIAL PRODUCTION

DATE	N/A STATIC TEST SHUT IN WELL HEAD	ANALYSES OF FLUIDS & GASES N/A									
		TOTAL MASS FLOW DATA N/A					SEPARATOR DATA N/A				
TEMP. °F	PRES. PSIG.	LBS./HR	TEMP. °F	PRES. PSIG.	ENTHALPY	ORIFICE	WATER CUFT/HR	STEAM LBS/HR	PRES. PSIG.	TEMP. °F	

CERTIFICATE: I, THE UNDERSIGNED, UNDER THE PENALTY OF PERJURY, STATE THAT I AM THE GEOLOGIST OF THE ABGMT (COMPANY), AND THAT I AM AUTHORIZED BY SAID COMPANY TO MAKE THIS REPORT; AND THAT THIS REPORT WAS PREPARED UNDER MY SUPERVISION AND DIRECTION AND THAT THE FACTS STATED THEREIN ARE TRUE, CORRECT AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DATE 14 MAY 1982 SIGNATURE James C. Witteren

PERMIT NO. 785 STATE OF ARIZONA OIL & GAS CONSERVATION COMMISSION WELL COMPLETION OR RECOMPLETION REPORT AND WELL LOG FILE ONE COPY FORM NO. G-1

DETAIL OF FORMATIONS PENETRATED

FORMATION	TOP	BOTTOM	DESCRIPTION*
			WATER AT 125 FEET (ELEV 3565') 2/8/02

* SHOW ALL IMPORTANT ZONES OF POROSITY, DETAIL OF ALL CORES, AND ALL DRILL-STEM TESTS, INCLUDING DEPTH INTERVAL TESTED, CUSHION USED, TIME TOOL OPEN, FLOWING AND SHUT-IN PRESSURES, AND RECOVERIES.

INSTRUCTIONS:

ATTACH DRILLERS LOG OR OTHER ACCEPTABLE LOG OF WELL.

THIS WELL COMPLETION OR RECOMPLETION REPORT AND WELL LOG SHALL BE FILED WITH THE STATE OF ARIZONA OIL & GAS CONSERVATION COMMISSION NOT LATER THAN THIRTY DAYS AFTER PROJECT COMPLETION.

FORM NO. G-4

RECEIVED

WELL HF7 DATE 3/8/82 ELEVATION 3690 JUN 7 1982
 LOCATION D-9-26-15 BDC LOGGING SYSTEM NMSU A1 O & G CONS. COMM.
 CABLE RESISTANCE (K OHMS) 0.06

DEPTH (FEET)	RESISTANCE (K OHMS)	TEMPERATURE °C	GRADIENT °C/KM	DIAL LOG, REMARKS, ETC
30	93.13	22.24		COARSE SAND
35	93.31	22.19	-32.0	"
40	93.19	22.23	26.3	"
45	92.81	22.33	65.6	"
50	92.32	22.43	98.4	"
55	91.84	22.62	91.9	"
60	91.43	22.74	78.7	"
65	90.98	22.87	85.3	COARSE SAND
70	90.54	23.00	85.3	CLAY
75	90.13	23.12	78.7	"
80	89.66	23.26	91.9	"
85	89.23	23.39	85.3	"
90	88.86	23.50	72.2	CLAY
95	88.46	23.62	78.7	SAND
100	87.96	23.77	78.4	"
105	87.53	23.90	85.3	"
110	87.12	24.02	78.7	SAND
115	86.69	24.15	85.3	CLAY
120	86.25	24.29	91.9	SAND
125	85.85	24.41	78.7	SAND
130	85.48	24.53	78.7	CLAY
135	85.10	24.67	72.2	"
140	84.74	24.76	78.7	"
145	84.40	24.86	65.6	"
150	84.01	24.98	78.7	CLAY
155	83.69	25.09	72.2	SILT, SANDY CLAY
160	83.31	25.21	78.7	"
165	82.94	25.32	72.2	"
170	82.57	25.44	78.7	"
175	82.20	25.56	78.7	"
180	81.84	25.67	72.2	"
185	81.48	25.79	78.7	"
190	81.08	25.92	85.3	"
195	80.67	26.06	91.9	"
200	80.31	26.17	72.2	"
205	79.96	26.29	78.7	"
210	79.67	26.71	275.6	SILT, SANDY CLAY
215				
BOTTOM 211	79.66	26.72		

23 389 458 SHEETS SQUARE
 23 389 458 SHEETS SQUARE
 NATIONAL

APPLICATION FOR PERMIT TO DRILL OR RE-ENTER RECEIVED GEOHERMAL RESOURCES WELL		
APPLICATION TO DRILL <input checked="" type="checkbox"/>	RE-ENTER OLD WELL <input type="checkbox"/>	NOV 6 1981 O & G CONS. COMM.
NAME OF COMPANY OR OPERATOR <i>ARIZONA BUREAU OF GEOLOGY AND MINERAL TECHNOLOGY (ABGMT) UNIVERSITY OF ARIZONA</i>		
ADDRESS <i>2045 N. FORBES BLVD SUITE 106 TUCSON, ARIZONA 85705</i>		
DRILLING CONTRACTOR <i>KENT LARSON, GRL CONSTRUCTION 203 5TH STREET</i>		
ADDRESS <i>SAFFORD, ARIZONA 85546</i>		
DESCRIPTION OF WELL AND LEASE		
FEDERAL, STATE OR INDIAN LEASE NUMBER, OR IF FEE LEASE, NAME OF LESSOR <i>N/A</i>	WELL NUMBER <i>HF7</i>	ELEVATION (GROUND) <i>3690 FEET</i>
NEAREST DISTANCE FROM PROPOSED LOCATION TO PROPERTY OR LEASE LINE: <i>N/A</i> FEET	DISTANCE FROM PROPOSED LOCATION TO NEAREST DRILLING, COMPLETED OR APPLIED-FOR WELL ON THE SAME LEASE: <i>N/A</i> FEET	
NUMBER OF ACRES IN LEASE: <i>N/A</i>	NUMBER OF WELLS ON LEASE, INCLUDING THIS WELL, COMPLETED IN OR DRILLING TO THIS RESERVOIR: <i>N/A</i>	
IF LEASE, PURCHASED WITH ONE OR MORE WELLS DRILLED, FROM WHOM PURCHASED: NAME ADDRESS <i>N/A</i>		
WELL LOCATION (GIVE FOOTAGE FROM SECTION LINES) <i>NL 2400' WL 1500'</i>	SECTION-TOWNSHIP-RANGE OR BLOCK AND SURVEY <i>SW 1/4, SE 1/4, NW 1/4, SEC 15, T. 9S., R. 26 E.</i>	DEDICATION (COMPLY WITH RULE G-105) <i>2 ACRES</i>
FIELD AND RESERVOIR (IF WILDCAT, SO STATE) <i>TEMPERATURE GRADIENT TEST</i>	COUNTY <i>GRAHAM COUNTY</i>	
DISTANCE, IN MILES, AND DIRECTION FROM NEAREST TOWN OR POST OFFICE <i>15 MILES SOUTH OF SAFFORD, ARIZONA</i>		
PROPOSED DEPTH: <i>200 FEET</i>	ROTARY OR CABLE TOOLS <i>ROTARY</i>	APPROX. DATE WORK WILL START <i>23 NOVEMBER 1981</i>
BOND STATUS AMOUNT	ORGANIZATION REPORT ON FILE <i>N/A</i> OR ATTACHED	FILING FEE OF \$25.00 ATTACHED
REMARKS: <i>SEE ATTACHED DIAGRAM DESCRIBING HOLE COMPLETION</i>		
<p>CERTIFICATE: I, THE UNDERSIGNED, UNDER THE PENALTY OF PERJURY, STATE THAT I AM THE <u><i>Geologist</i></u></p> <p>OF THE <u><i>ABGMT</i></u> (COMPANY), AND THAT I AM AUTHORIZED BY SAID COMPANY TO MAKE THIS REPORT; AND THAT THIS REPORT WAS PREPARED UNDER MY SUPERVISION AND DIRECTION AND THAT THE FACTS STATED THEREIN ARE TRUE, CORRECT AND COMPLETE TO THE BEST OF MY KNOWLEDGE.</p> <p style="text-align: right;"><i>Jan C. White</i> SIGNATURE</p> <p style="text-align: right;"><i>3 NOVEMBER 1981</i> DATE</p>		
PERMIT NUMBER: <i>785</i>	APPROVAL DATE: <i>11-18-81</i>	STATE OF ARIZONA OIL & GAS CONSERVATION COMMISSION APPLICATION TO DRILL OR RE-ENTER FILE TWO COPIES FORM NO. G-3
APPROVED BY: <i>[Signature]</i>	NOTICE: BEFORE SENDING IN THIS FORM BE SURE THAT YOU HAVE GIVEN ALL INFORMATION REQUESTED. MUCH UNNECESSARY CORRESPONDENCE WILL THUS BE AVOIDED.	

(COMPLETE REVERSE SIDE)

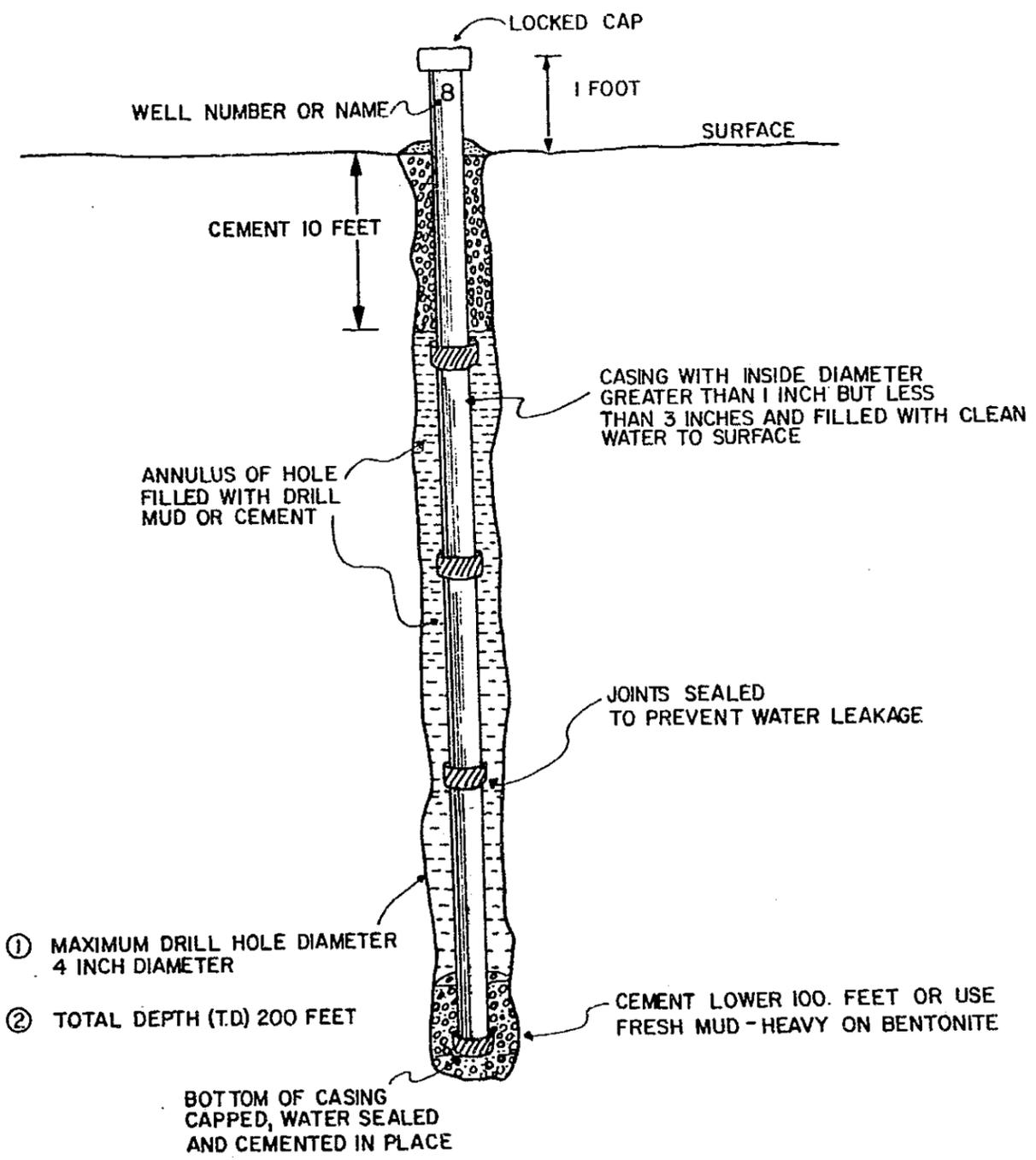
1. OPERATOR SHALL OUTLINE THE DEDICATED ACREAGE FOR GEOTHERMAL RESOURCES WELLS ON THE PLAT.
2. A REGISTERED PROFESSIONAL ENGINEER OR LAND SURVEYOR REGISTERED IN THE STATE OF ARIZONA OR APPROVED BY THE COMMISSION SHALL SHOW ON THE PLAT THE LOCATION OF THE WELL AND CERTIFY THIS INFORMATION IN THE SPACE PROVIDED.
3. ALL DISTANCES SHOWN ON THE PLAT MUST BE FROM THE OUTER BOUNDARIES OF THE SECTION.
4. IS THE OPERATOR THE ONLY OWNER IN THE DEDICATED ACREAGE OUTLINED ON THE PLAT BELOW? YES _____ NO
5. IF THE ANSWER TO QUESTION FOUR IS "NO" HAVE THE INTERESTS OF ALL THE OWNERS BEEN CONSOLIDATED BY COMMUNITIZATION AGREEMENT OR OTHERWISE? YES _____ NO IF ANSWER IS "YES" TYPE OF CONSOLIDATION _____
6. IF THE ANSWER TO QUESTION FOUR IS "NO", LIST ALL THE OWNERS AND THEIR RESPECTIVE INTERESTS BELOW:

Owner <i>U.S. BUREAU OF LAND MANAGEMENT</i>	Land Description <i>SW 1/4, SE 1/4, NW 1/4, SEC 15, T.9S., R.26E.</i>
	<p style="text-align: center;">CERTIFICATION</p> <p>I hereby certify that the information above is true and complete to the best of my knowledge and belief.</p> <p><i>James C. Witcher</i> Name <i>JAMES C. WITCHER</i> Position <i>ASSISTANT GEOLOGIST</i> Company <i>ABG&M</i> Date <i>3 NOVEMBER 1981</i></p> <p>I hereby certify that the well location shown on the plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.</p> <p>Date Surveyed _____ Registered Professional Engineer and/or Land Surveyor _____</p> <p>Certificate No. _____</p>

PROPOSED CASING PROGRAM

Size of Casing	Weight	Grade & Type	Top	Bottom	Cementing Depths	Sacks Cement
<i>1 1/4 INCH</i>	<i>40</i>	<i>PVC</i>	<i>0'</i>	<i>200'</i>	<i>0-10 FEET CEMENT 10-200 FEET MIXTURE OF GEL MUD AND CEMENT</i>	<i>LESS THAN 5</i>

COMPLETION OF HEAT FLOW HOLE



- ① MAXIMUM DRILL HOLE DIAMETER 4 INCH DIAMETER
- ② TOTAL DEPTH (T.D.) 200 FEET



PERMIT TO DRILL

This constitutes the permission and authority from the
OIL AND GAS CONSERVATION COMMISSION,
STATE OF ARIZONA,

To: Arizona Bureau of Geology and Mineral Technology
(OPERATOR)

to drill a well to be known as

HP-7
(WELL NAME)

located 2400' from north line, 1500' from west line (SW/4 SE/4 NW/4)

Section 15 Township 9 South Range 26 East, Graham County, Arizona.

The N/A of said
Section, Township and Range is dedicated to this well.

Said well is to be drilled substantially as outlined in the attached Application and must be drilled
in full compliance with all applicable laws, statutes, rules and regulations of the State of Arizona.

Issued this 18th day of November, 19 81.

OIL AND GAS CONSERVATION COMMISSION

By [Signature]
EXECUTIVE SECRETARY

PERMIT N^o 785

RECEIPT NO. 2174
API NO. 02-009-20012

State of Arizona
Oil & Gas Conservation Commission
Permit to Drill

FORM NO. 27

WELL COMPLETION OR RECOMPLETION REPORT AND WELL LOG

RECEIVED
JUN 7 1982

GEOHERMAL RESOURCE WELL
DESIGNATE TYPE OF COMPLETION:

NEW WELL WORK OVER DEEPEN PLUG BACK SAME RESERVOIR DIFFERENT RESERVOIR DRY STEAM HOT DRY COMM. DRY

OPERATOR ARIZONA BUREAU OF GEOLOGY AND MINERAL TECHNOLOGY (ABGMT) ADDRESS 845 N. PARK AVE. TUCSON, ARIZONA 85719

FEDERAL, STATE OR ~~INDIAN~~ LEASE NUMBER OR NAME OF LESSOR SLD# 23-60553 (SP. LAND USE) WELL NUMBER H72 FIELD & RESERVOIR ARTESIA
DWR# 55-501485 (EXEMPT WELL)

LOCATION NL100 WL1200 COUNTY GRAHAM

SEC. TWP-RANGE OR BLOCK & SURVEY NE 1/4, NW 1/4, NW 1/4, SEC 17, T. 9 S., R. 26 E.

DATE SPUNDED 9 DEC. 1981 DATE TOTAL DEPTH REACHED 10 DEC. 1981 DATE COMPLETED, READY TO PRODUCE N/A ELEVATION (OF, REB, RT, OR GR.) FEET 3495 ELEVATION OF CASING FEET 3496

TOTAL DEPTH 200 P.B.T.D. 200 FEET AIRDRILLED (INTERVAL) _____ FLUIDDRILLED (INTERVAL) _____

PRODUCING INTERVAL (S) FOR THIS COMPLETION NONE - COMPLETED AS HEAT FLOW HOLE ROTARY TOOLS USED (INTERVAL) 0-200 CABLE TOOLS USED (INTERVAL) N/A

WAS THIS WELL DIRECTIONALLY DRILLED? NO WAS DIRECTIONAL SURVEY MADE? NO WAS COPY OF DIRECTIONAL SURVEY FILED? N/A DATE FILED N/A

TYPE OF ELECTRICAL, TEMPERATURE, CEMENT BOND OR OTHER LOGS RUN (CHECK LOGS FILED WITH THE COMMISSION) TEMPERATURE DATE FILED MAY 1982

CASING RECORD
CASING (REPORT ALL STRINGS SET IN WELL-CONDUCTOR, SURFACE, INTERMEDIATE, PRODUCING, ETC.)

PURPOSE	SIZE HOLE DRILLED	SIZE CASING SET	WEIGHT (LB./FT.)	DEPTH SET	SACKS CEMENT	AMT. PULLED
SURFACE	4 IN.	2 1/2 IN.	IRON PIPE	10 FEET		NONE
TEMP. LOG	4 IN.	1 IN.	PVC 200 PSI	195 FEET		NONE

TUBING RECORD				LINER RECORD			
SIZE IN.	DEPTH SET FT.	PACKER SET AT FT.	SIZE IN.	TOP FT.	BOTTOM FT.	SACKS CEMENT	SCREEN (FT.)

PERFORATION RECORD				ACID, SHOT, FRACTURE, CEMENT SQUEEZE RECORD			
NUMBER PER FT.	SIZE & TYPE	DEPTH INTERVAL	AMT. & KIND OF MATERIAL USED	DEPTH INTERVAL			

INITIAL PRODUCTION											
DATE	N/A STATIC TEST SHUT IN WELL HEAD	ANALYSES OF FLUIDS & GASES						SEPARATOR DATA			
		TOTAL MASS FLOW DATA									
TEMP. °F	PRES. PSIG.	LBS./HR.	TEMP. °F	PRES. PSIG.	ENTHALPY	ORIFICE	WATER CUFT/HR.	STEAM LBS/HR.	PRES. PSIG.	TEMP. °F	

CERTIFICATE: I, THE UNDERSIGNED, UNDER THE PENALTY OF PERJURY, STATE THAT I AM THE GEOLOGIST OF THE ABGMT (COMPANY), AND THAT I AM AUTHORIZED BY SAID COMPANY TO MAKE THIS REPORT; AND THAT THIS REPORT WAS PREPARED UNDER MY SUPERVISION AND DIRECTION AND THAT THE FACTS STATED THEREIN ARE TRUE, CORRECT AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

DATE 14 MAY 1982 SIGNATURE James C. Witcher

PERMIT NO. 786 STATE OF ARIZONA OIL & GAS CONSERVATION COMMISSION. WELL COMPLETION OR RECOMPLETION REPORT AND WELL LOG FILE ONE COPY FORM No. G-4

DETAIL OF FORMATIONS PENETRATED

FORMATION	TOP	BOTTOM	DESCRIPTION*
			WATER AT 115 FEET (ELEV. 3380') 2/8/02

* SHOW ALL IMPORTANT ZONES OF POROSITY, DETAIL OF ALL CORES, AND ALL DRILL-STEM TESTS, INCLUDING DEPTH INTERVAL TESTED, CUSHION USED, TIME TOOL OPEN, FLOWING AND SHUT-IN PRESSURES, AND RECOVERIES.

INSTRUCTIONS:

ATTACH DRILLERS LOG OR OTHER ACCEPTABLE LOG OF WELL.

THIS WELL COMPLETION OR RECOMPLETION REPORT AND WELL LOG SHALL BE FILED WITH THE STATE OF ARIZONA OIL & GAS CONSERVATION COMMISSION NOT LATER THAN THIRTY DAYS AFTER PROJECT COMPLETION.

FORM NO. G-4

RECEIVED

JUN 7 1982

O & G CONS. COMM.

WELL HF2 DATE 2/8/82 ELEVATION 3495

LOCATION P-9-26-17BBA LOGGING SYSTEM VMSU A1

CABLE RESISTANCE (K OHM) 0.06

DEPTH (FEET)	RESISTANCE (K OHMS)	TEMPERATURE °C	GRADIENT °C/KM	DRAWERS LOG, REMARKS, ETC.
30	95.58	21.55		AIR?
35	95.00	21.71	104.9	MEDIUM SAND
40	95.25	21.65	-39.4	"
45	95.39	21.60	-32.8	"
50	95.33	21.62	13.1	"
55	95.15	21.67	32.8	"
60	94.96	21.72	32.8	"
65	94.76	21.78	39.4	"
70	94.56	21.84	37.4	"
75	94.38	21.89	32.8	"
80	94.16	21.95	37.4	"
85	93.94	22.01	39.4	"
90	93.73	22.07	39.4	"
95	93.57	22.12	32.8	"
100	93.41	22.17	32.8	"
105	93.26	22.21	26.3	"
110	93.11	22.25	26.3	"
115	92.96	22.29	26.3	"
120	92.81	22.34	32.8	"
125	92.65	22.38	26.3	"
130	92.54	22.41	32.8	MEDIUM SAND
135	92.39	22.46	32.8	GRAVEL, PEBBLES
140	92.24	22.50	26.3	SAND
145	92.06	22.55	32.8	"HARD ROCK"
150	91.90	22.60	32.8	SAND
155	91.75	22.64	26.3	"
160	91.60	22.69	32.8	"HARD ROCK"
165	91.46	22.73	26.3	"
170	91.30	22.77	26.3	SAND
175	91.13	22.83	39.4	"
180	90.98	22.87	26.3	"
185	90.82	22.92	32.8	"
190	90.69	22.95	19.7	SAND
195	90.58	22.99	26.3	"HARD ROCK"
200				
205		65-115'	MEAN	31.37 °C/KM ± 5.55
210				
215				
BOTTOM 195	90.58	22.99		

42 SHEETS SQUARE
43 SHEETS SQUARE
44 SHEETS SQUARE
NATIONAL

**APPLICATION FOR PERMIT TO DRILL OR RE-ENTER
GEOTHERMAL RESOURCES WELL**

RECEIVED

APPLICATION TO DRILL

RE-ENTER OLD WELL

NOV 6 1981

O & G CONS. COMM.

NAME OF COMPANY OR OPERATOR

ARIZONA BUREAU OF GEOLOGY AND MINERAL TECHNOLOGY (ABGMT) UNIVERSITY OF ARIZONA
ADDRESS 2045 N. FORBES BLVD. SUITE 106 TUCSON ARIZONA 85705

DRILLING CONTRACTOR

KENT LARSON, ORL CONSTRUCTION 203 5TH STREET
ADDRESS SAFFORD, ARIZONA 85546

DESCRIPTION OF WELL AND LEASE

FEDERAL, STATE OR INDIAN LEASE NUMBER, OR IF FEE LEASE, NAME OF LESSOR	WELL NUMBER	ELEVATION (GROUND)
N/A	HF2	3495 FEET

NEAREST DISTANCE FROM PROPOSED LOCATION TO PROPERTY OR LEASE LINE:	DISTANCE FROM PROPOSED LOCATION TO NEAREST DRILLING, COMPLETED OR APPLIED-FOR WELL ON THE SAME LEASE:
N/A FEET	N/A FEET

NUMBER OF ACRES IN LEASE:	NUMBER OF WELLS ON LEASE, INCLUDING THIS WELL, COMPLETED IN OR DRILLING TO THIS RESERVOIR:
N/A	N/A

IF LEASE, PURCHASED WITH ONE OR MORE WELLS DRILLED, FROM WHOM PURCHASED:	NAME	ADDRESS
	N/A	

WELL LOCATION (GIVE FOOTAGE FROM SECTION LINES)	SECTION-TOWNSHIP-RANGE OR BLOCK AND SURVEY	DEDICATION (COMPLY WITH RULE G-105)
NL100' WL1200'	NE 1/4, NW 1/4, NW 1/4 sec 17, T.9S, R.26E.	1/2 ACRE

FIELD AND RESERVOIR (IF WILDCAT, SO STATE)	COUNTY
TEMPERATURE GRADIENT TEST	GRAHAM COUNTY

DISTANCE, IN MILES, AND DIRECTION FROM NEAREST TOWN OR POST OFFICE

15 MILES SOUTH OF SAFFORD, ARIZONA

PROPOSED DEPTH:	ROTARY OR CABLE TOOLS	APPROX. DATE WORK WILL START
200 FEET	Rotary	23 NOVEMBER 1981

BOND STATUS AMOUNT	ORGANIZATION REPORT ON FILE N/A OR ATTACHED	FILING FEE OF \$25.00 ATTACHED
--------------------	---	--------------------------------

REMARKS: SEE ATTACHED DIAGRAM DESCRIBING HOLE COMPLETION

CERTIFICATE: I, THE UNDERSIGNED, UNDER THE PENALTY OF PERJURY, STATE THAT I AM THE GEOLOGIST OF THE ABGMT (COMPANY), AND THAT I AM AUTHORIZED BY SAID COMPANY TO MAKE THIS REPORT; AND THAT THIS REPORT WAS PREPARED UNDER MY SUPERVISION AND DIRECTION AND THAT THE FACTS STATED THEREIN ARE TRUE, CORRECT AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

John C. Wether
SIGNATURE
3 NOVEMBER 1981
DATE

PERMIT NUMBER: 786
APPROVAL DATE: 11-18-81
APPROVED BY: *[Signature]*
NOTICE:
BEFORE SENDING IN THIS FORM BE SURE THAT YOU HAVE GIVEN ALL INFORMATION REQUESTED. MUCH UNNECESSARY CORRESPONDENCE WILL THUS BE AVOIDED.

STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION
APPLICATION TO DRILL OR RE-ENTER
FILE TWO COPIES
FORM NO. G-3

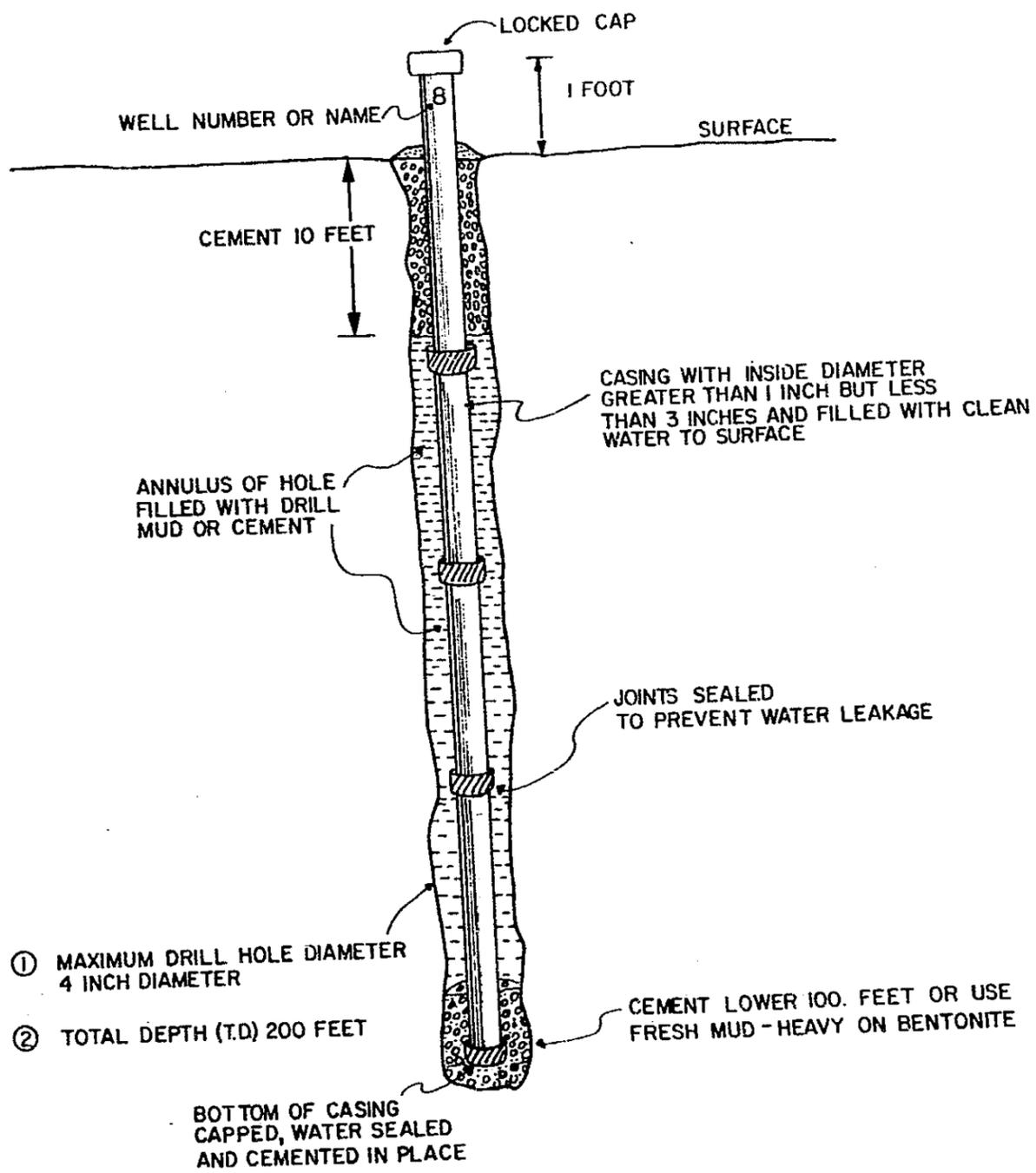
1. OPERATOR SHALL OUTLINE THE DEDICATED ACREAGE FOR GEOTHERMAL RESOURCES WELLS ON THE PLAT.
2. A REGISTERED PROFESSIONAL ENGINEER OR LAND SURVEYOR REGISTERED IN THE STATE OF ARIZONA OR APPROVED BY THE COMMISSION SHALL SHOW ON THE PLAT THE LOCATION OF THE WELL AND CERTIFY THIS INFORMATION IN THE SPACE PROVIDED.
3. ALL DISTANCES SHOWN ON THE PLAT MUST BE FROM THE OUTER BOUNDARIES OF THE SECTION.
4. IS THE OPERATOR THE ONLY OWNER IN THE DEDICATED ACREAGE OUTLINED ON THE PLAT BELOW? YES _____ NO
5. IF THE ANSWER TO QUESTION FOUR IS "NO" HAVE THE INTERESTS OF ALL THE OWNERS BEEN CONSOLIDATED BY COMMUNITIZATION AGREEMENT OR OTHERWISE? YES _____ NO IF ANSWER IS "YES" TYPE OF CONSOLIDATION _____
6. IF THE ANSWER TO QUESTION FOUR IS "NO", LIST ALL THE OWNERS AND THEIR RESPECTIVE INTERESTS BELOW:

Owner STATE OF ARIZONA	Land Description NE 1/4, NW 1/4, NW 1/4, SEC 17, T. 9 S., R. 26 E.
	<p style="text-align: center;">CERTIFICATION</p> <p>I hereby certify that the information above is true and complete to the best of my knowledge and belief.</p> <p style="text-align: center;"><i>James C. Witchel</i> (Name) JAMES C. WITCHEL Position ASSISTANT GEOLOGIST Company ABGMT Date 3 NOVEMBER 1981</p> <p>I hereby certify that the well location shown on the plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.</p> <p>Date Surveyed _____ Registered Professional Engineer and/or Land Surveyor _____</p> <p>Certificate No. _____</p>

PROPOSED CASING PROGRAM

Size of Casing	Weight	Grade & Type	Top	Bottom	Cementing Depths	Sacks Cement
1 1/4 inch	58 POUNDS 40	PVC (0'	200'	0-10 FEET CEMENT 10-200 FEET MIXTURE MUD AND CEMENT	LESS THAN 5

COMPLETION OF HEAT FLOW HOLE





PERMIT TO DRILL

This constitutes the permission and authority from the
OIL AND GAS CONSERVATION COMMISSION,
STATE OF ARIZONA,

To: Arizona Bureau of Geology and Mineral Technology
(OPERATOR)

to drill a well to be known as

HF-2

(WELL NAME)

located 100' from north line, 1200' from west line (NE/4 NW/4 NW/4)

Section 17 Township 9 South Range 26 East, Graham County, Arizona.

N/A

The _____ of said
Section, Township and Range is dedicated to this well.

Said well is to be drilled substantially as outlined in the attached Application and must be drilled
in full compliance with all applicable laws, statutes, rules and regulations of the State of Arizona.

Issued this 18th day of November, 1981.

OIL AND GAS CONSERVATION COMMISSION

By [Signature]
EXECUTIVE SECRETARY

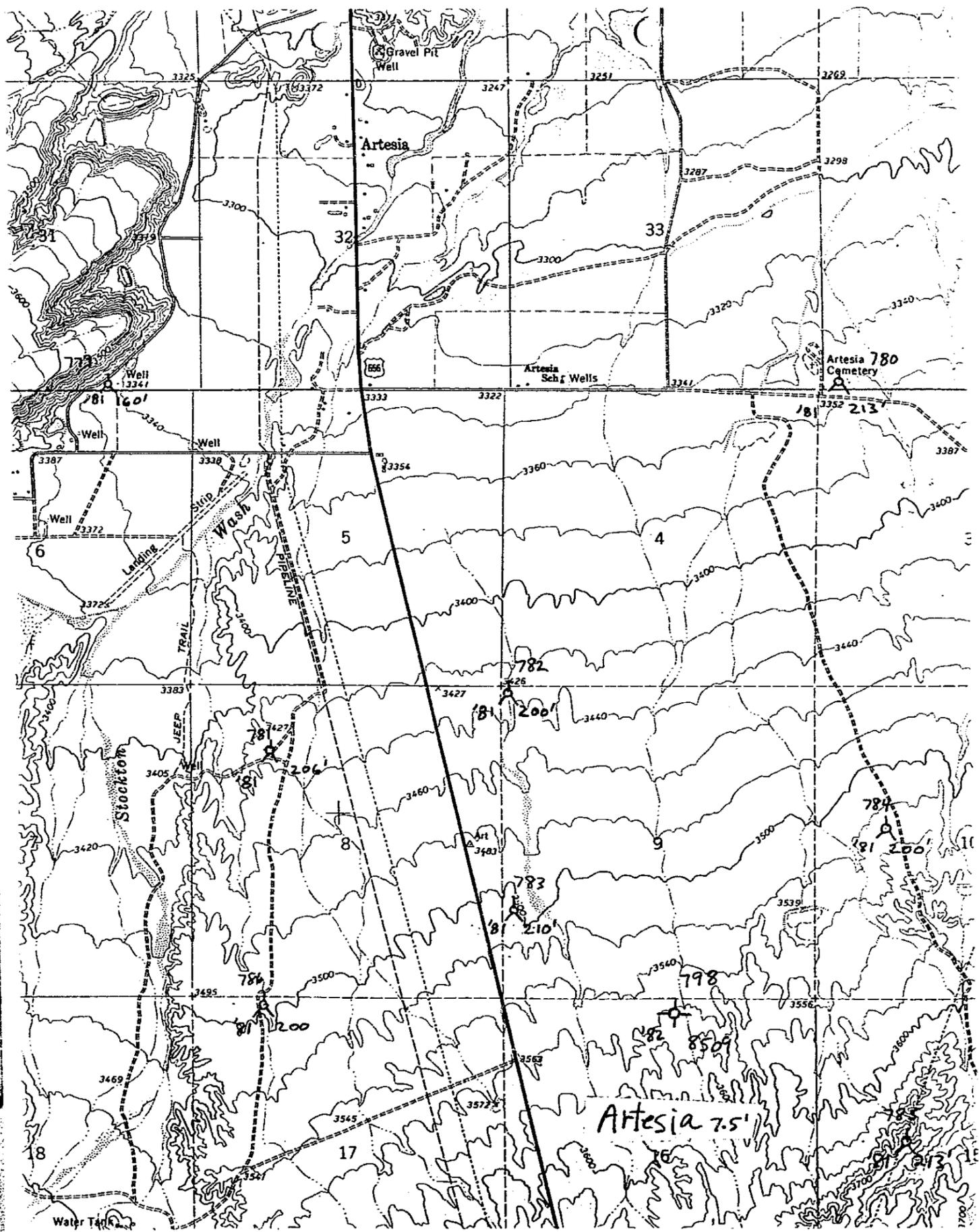
PERMIT N^o 786

RECEIPT NO. 2174

API NO. 02-009-20013

State of Arizona
Oil & Gas Conservation Commission
Permit to Drill

FORM NO. 27



UNIVERSITY OF ARIZONA
PURCHASING DEPARTMENT

X MAIN CAMPUS (602) 626-1747
P.O. DRAWER 40370 • TUCSON, ARIZONA 85717
HEALTH SCIENCES CENTER (602) 626-6714
TUCSON, ARIZONA 85724

CONTRACT OR QUOTE NUMBER
BUYERS NAME

PURCHASE ORDER NUMBER

501748

PURCHASE ORDER
WITH CHECK



SHIP MATERIAL TO:
UNIVERSITY OF ARIZONA

CENTRAL RECEIVING
21ST STREET AND WARREN AVE
TUCSON, AZ 85724
P.O. C 501748

VENDOR INSTRUCTIONS

- 1 - AFTER SHIPMENT, COMPLETE THE BELOW CHECK FOR THE CORRECT AMOUNT AND DEPOSIT.
- 2 - FILL IN APPLICABLE SPACES ON CHECK. (AMOUNTS SHOWN ON PURCHASE ORDER MAY BE ESTIMATED AMOUNTS.)
- 3 - DO NOT SUBMIT INVOICES TO U of A.
- 4 - MAKE ONLY ONE SHIPMENT AGAINST THIS ORDER. REDUCE TO MEET \$200 LIMIT IF NECESSARY. DO NOT BACKORDER.
- 5 - SINCE THIS IS A CASH TRANSACTION, WE EXPECT A CASH DISCOUNT.
- 6 - THIS ORDER MUST BE SHIPPED PRE-PAID. TRANSPORTATION CHARGES ARE TO BE ADDED ON TO AMOUNT OF CHECK AND WILL NOT BE PAID SEPARATELY.

LINE	QUANTITY	UNIT	NOTIFY US AT ONCE IF YOU CANNOT FURNISH	UNIT PRICE	EST AMOUNT
01	8	EA	FILING FEE- APPLICATION FOR PERMIT TO DRILL GEOTHERMAL RESOURCES WELL	25.00	200.00
			ATTN: A.K. Doss		
DELIVERY DATE				ESTIMATED TOTAL	200.00

DETACH THIS PORTION BEFORE DEPOSITING THE BELOW CHECK.
NOTICE TO VENDOR:
THIS FORM IS A COMBINED PURCHASE ORDER/CHECK. THE PURPOSE OF THE FORM IS (1) TO ELIMINATE PAPERWORK FOR BOTH PURCHASER AND VENDOR, (2) TO EXPEDITE PURCHASING AND DELIVERY. THE PURCHASING/INVOICING/PAYING PROCESS IS COMPLETED AS SOON AS VENDOR SHIPS GOODS AND DEPOSITS THE CHECK.

UNIVERSITY OF ARIZONA

DO NOT COMPLETE SHADED AREAS

PURCHASE REQUISITION

RECEIVED PAGE 1 OF 1
NOV 6 1981 187513

DATE November 3, 1981

SUGGESTED VENDOR SECTION:

NAME Arizona Oil & Gas Conservation Commission
ADDRESS Attn: A.K. Doss, 1645 W. Jefferson
CITY, STATE, ZIP Phoenix, AZ 85007

ORDERED BY INFORMATION:

O & G CONS. COMM.

NAME Jim Witcher
DEPT. NAME BCMT/Geothermal Group PHONE 6/4391

DELIVER TO INFORMATION:

DEPT. NAME Geothermal Group - BCMT
BLDG. 2045 N. Forbes Blvd., Suite ROOM # 106
STREET (if Applicable) Tucson, AZ 85705

NAME _____
ADDRESS _____
CITY, STATE, ZIP _____

NAME _____
ADDRESS _____
CITY, STATE, ZIP _____

NAME _____
ADDRESS _____
CITY, STATE, ZIP _____

TECHNICAL QUESTIONS Jim Witcher PHONE 6/4391
ADMIN. QUESTIONS Asaiene PHONE 6/4391
DATE REQUIRED ASAP

PURCHASING USE ONLY			
P. O. TYPE	<input type="checkbox"/>	<input type="checkbox"/>	
SOFT ENCUMB	<input type="checkbox"/>	CHECK W/ORDER	<input type="checkbox"/>
CHECK ORDER	<input type="checkbox"/>	REQ. IS ORDER	<input type="checkbox"/>
P.O. #	RCVING CODE	FOB	
TERMS	QUOTE	DISCOUNT	
TAX	D-DATE	VENDOR #	
VENDOR NAME	BUYER		

LINE NO.	OBJECT CODE	QUANT.	UNIT	DESCRIPTION	UNIT PRICE	ESTIMATED AMOUNT	NO TAX	QUOTED UNIT PRICE
	7419,0-00	8	1	Filing Fee - Application for permit to drill Geothermal Resources Well	25.00	\$200.00		

THIS PROJECT TERMINATES ON 1-15-82

AUTHORIZED FUNDS ARE AVAILABLE IN THE ACCOUNT AND THE MERCHANDISE OR SERVICE REQUESTED IS FOR BONA FIDE BUSINESS PURPOSES OF THE ACCOUNT CHARGED AND NO OTHER LIKE EQUIPMENT IS AVAILABLE IN DEPT. FOR THIS PROJECT.

EST. TOTAL \$200.00

NAME	AUTHORIZED SIGNATURE	DATE
Bureau of Geology & Mineral Technology	Larry D. Fellows	
Mines	William P. Cosart	
FUND ACCOUNTANT		
PURCHASING SIGNATURE		

ACCOUNT NUMBER 875198

Claudia Stone
ACCOUNT REPRESENTATIVE C. Stone

November 18, 1981

James C. Witcher
Geothermal Section
Bureau of Geology & Mineral Technology
University of Arizona
2045 N. Forbes Blvd., Ste. 106
Tucson, Arizona

Dear Mr. Witcher:

Enclosed are approved applications for permit to drill and permits for the eight temperature gradient test holes in Graham County.

If we may be of any service, please advise.

Sincerely,

A. K. Doss
Executive Director

/os
Enc.