

GTHT - ____002____

WELL

Baca No. 12

NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501

SUNDRY NOTICES AND REPORTS
ON
GEOTHERMAL RESOURCES WELLS

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5. Indicate Type of Lease
State ☐ Fee ☒

5.a State Lease No.

Do Not Use This Form for Proposals to Drill or to Deepen or Plug Back to a Different Reservoir. Use "Application For Permit -" (Form G-101) for Such Proposals.)

1. Type of well Geothermal Producer <input type="checkbox"/> Temp. Observation <input type="checkbox"/> Low-Temp Thermal <input type="checkbox"/> Injection/Disposal <input checked="" type="checkbox"/>	7. Unit Agreement Name
2. Name of Operator Union Geothermal Company of New Mexico	8. Farm or Lease Name BACA Location No. 1
3. Address of Operator Mountain Route Box 76, Jemez Springs, New Mexico 87025	9. Well No. BACA-12
4. Location of Well Unit Letter <u>N</u> <u>4230</u> Feet From The <u>N</u> Line and <u>2790</u> Feet From The <u>E</u> Line, Section <u>14</u> Township <u>19N</u> Range <u>3E</u> NMPM.	10. Field and Pool, or Wildcat Redondo Canyon
15. Elevation (Show whether DF, RT, GR, etc.) 8427' Ground	12. County Sandoval

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK <input type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input type="checkbox"/>	PLUG & ABANDONMENT <input checked="" type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>		CASING TEST AND CEMENT JOB <input type="checkbox"/>	
OTHER <input type="checkbox"/>		OTHER <input type="checkbox"/>	

17. Describe Proposed or completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 203.

BACA-12 was abandoned 6/27/84 as follows:

A 9-5/8" Baker model "K" cement retainer was set at 3200'. Filled hole with drilling fluid. Displaced 88 cu.ft. of class "B" cement on top of the plug. Top of cement at 3000'. A second class "B" cement plug, 117 cu.ft. was displaced from 120' to surface. The wellhead equipment was removed and an abandonment hole marker was installed. Location reclamation as per landowners specifications will follow this summer.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED [Signature] TITLE Div. Drlg. Supt. DATE 7/10/84

APPROVED BY [Signature] TITLE DISTRICT SUPERVISOR DATE 7-19-84

CONDITIONS OF APPROVAL, IF ANY:

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2. Name of Operator Union Geothermal Company of New Mexico		8. Farm or Lease Name BACA Location No.1
3. Address of Operator Mountain Route Box 76, Jemez Springs, New Mexico 87025		9. Well No. BACA 12
4. Location of Well Unit Letter N 4230 Feet From The N Line and 2790 Feet From The E Line, Section 14 Township 19N Range 3E NMPM.		10. Field and Pool, or Wildcat Redondo Canyon
15. Elevation (Show whether DF, RT, GR, etc.) 8427' Ground		12. County Sandoval

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NOTICE OF INTENTION TO:

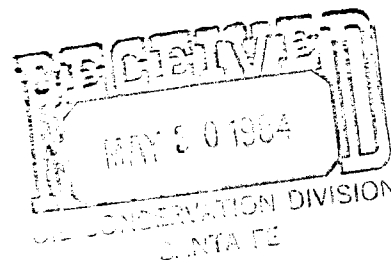
PERFORM REMEDIAL WORK ☐ PLUG AND ABANDON ☒
TEMPORARILY ABANDON ☐
PULL OR ALTER CASING ☐ CHANGE PLANS ☐
OTHER ☐

SUBSEQUENT REPORT OF:

REMEDIAL WORK ☐ ALTERING CASING ☐
COMMENCE DRILLING OPNS. ☐ PLUG & ABANDONMENT ☐
CASING TEST AND CEMENT JOB ☐
OTHER ☐

17. Describe Proposed or completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 203.

BACA-12 is currently suspended. It is proposed to set a bridge plug in the 9-5/8" casing at 3200'±. A 200 linear foot cement plug will be placed on top of the plug. The hole will be filled with drilling fluid and a second cement plug will be placed from 100'± to surface. An abandoned hole marker will be installed. Location clean-up and reclamation will follow the well work. The estimated starting date is early June, 1984.



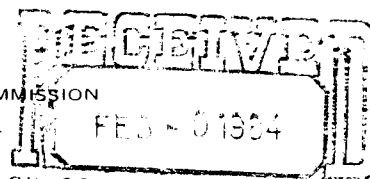
**OIL CONSERVATION COMMISSION TO BE NOTIFIED
WITHIN 24 HOURS OF BEGINNING OPERATIONS**

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED [Signature] TITLE Div. Drlg. Supt. DATE 5/29/84

APPROVED BY [Signature] TITLE DISTRICT SUPERVISOR DATE 5/30/84

NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501



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ON
GEOTHERMAL RESOURCES WELLS**

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State ☐ Fee ☒

5.a State Lease No.

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1. Type of well
Geothermal Producer ☐ Temp. Observation ☐
Low-Temp Thermal ☐ Injection/Disposal ☒

7. Unit Agreement Name

2. Name of Operator
Union Geothermal Company of New Mexico

8. Farm or Lease Name
Baca Location #1

3. Address of Operator
Mountain Route Box 76, Jemez Springs, NM

9. Well No.
Baca-12

4. Location of Well
Unit Letter N 4230 Feet From The N Line and 2790 Feet From

10. Field and Pool, or Wildcat
Redondo Canyon

The E Line, Section 14 Township 19N Range 3E NMPM.

15. Elevation (Show whether DF, RT, GR, etc.)

8427' ground

12. County
Sandoval

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK ☐ PLUG AND ABANDON ☐
TEMPORARILY ABANDON ☒
PULL OR ALTER CASING ☐ CHANGE PLANS ☐
OTHER ☐

SUBSEQUENT REPORT OF:

REMEDIAL WORK ☐ ALTERING CASING ☐
COMMENCE DRILLING OPNS. ☐ PLUG & ABANDONMENT ☐
CASING TEST AND CEMENT JOB ☐
OTHER ☐

17. Describe Proposed or completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 203.

BACA-12 was calipered in August, 1983. The casing and wellhead were found to be in good condition. Currently the well is shut-in with the wellhead secured.

We request temporary abandonment of BACA-12 pending further evaluation of the development and marketability of the geothermal resource.

AUTHORIZATION FOR MAINTENANCE IN SHUT-IN OR
TEMPORARY ABANDONMENT STATUS EXPIRES 8-14-84

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED [Signature] TITLE Div. Drlg. Supt. DATE 2/3/84

APPROVED BY [Signature] TITLE DIRECTOR DATE 2-14-84

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NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501

SUNDRY NOTICES AND REPORTS
ON
GEOTHERMAL RESOURCES WELLS

RECEIVED
JAN 18 1983
OIL CONSERVATION DIVISION
SANTA FE

5. Indicate Type of Lease State <input type="checkbox"/> Fee <input checked="" type="checkbox"/>	
5.a State Lease No.	
7. Unit Agreement Name	
8. Farm or Lease Name BACA Location #1	
9. Well No. BACA 12	
10. Field and Pool, or Wildcat Redondo Canyon	
12. County Sandoval	

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1. Type of well Geothermal Producer <input type="checkbox"/> Low-Temp Thermal <input type="checkbox"/>	Temp. Observation <input type="checkbox"/> Injection/Disposal <input checked="" type="checkbox"/>
2. Name of Operator UNION GEOTHERMAL COMPANY OF NEW MEXICO	
3. Address of Operator Post Office Box 15225, Rio Rancho, New Mexico 87174	
4. Location of Well Unit Letter <u>N</u> <u>4230</u> Feet From The <u>N</u> Line and <u>2790</u> Feet From The <u>E</u> Line, Section <u>14</u> Township <u>19N</u> Range <u>3E</u> NMPM.	

15. Elevation (Show whether DF, RT, GR, etc.)

8427' Ground

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NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK <input type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>	
OTHER <u>Casing Inspection</u> <input checked="" type="checkbox"/>	

SUBSEQUENT REPORT OF:

REMEDIAL WORK <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
COMMENCE DRILLING OPNS. <input type="checkbox"/>	PLUG & ABANDONMENT <input type="checkbox"/>
CASING TEST AND CEMENT JOB <input type="checkbox"/>	
OTHER _____ <input type="checkbox"/>	

17. Describe Proposed or completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 203.

It is proposed to make a casing caliper survey of well BACA 12 as soon as weather conditions permit (approximately mid-May).

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Don L. Ash TITLE Div. Dir. Supt. DATE 1/13/83

APPROVED BY Carl Albright TITLE DR. PCT. SUPERVISOR DATE 1/18/83

CONDITIONS OF APPROVAL, IF ANY:

UNION GEOTHERMAL COMPANY OF NEW MEXICO

WELL COMPLETION RECORD

WELL NO.: Baca 12 AFE NO.: 413702 API NO. 30-043-90031
Deepening

FIELD: Valles Caldera-Redondo Creek LEASE: BACA

OPERATOR: Union Geothermal Company of New Mexico

COUNTY: Sandoval STATE: New Mexico

LOCATION: New Mexico State Plane Co-ordinates:

1,773,160'N; 399,360'E
Projected Location: 4180'fnl, 2820'fel
Sec. 14, T19N, R3E

ELEVATION: 8427' G.L. 8451' K.B.

REASON FOR DRILLING: Exploratory: Deepen well to test
Paleozoic limestone and pre-Cambrian granite

SPUD DATE: June 27, 1981 COMPLETION DATE: September 6, 1981

TOTAL DEPTH: 10,637'

BHL: 134'N; 214'E; 10,555'VD

DRILLING COMPANY: Brinkerhoff-Signal Rig 78

GEOLOGISTS: Denton, Bodell

ENGINEERS: Blackwell, Hamblin

RIG TESTS: Production test 9/5/81:
Unloaded hole @ 4000'. Hole produced 15 gpm
H₂O while circulating with 150 psi air @
4000'. Test lasted 2 hrs.
Injection Test 9/5/81:
Injected 570 bbl H₂O @ 306 gpm and 1000 psi
standpipe pressure through 1 stand drillpipe
@ surface with pipe rams closed.

DISPOSITION OF WELL: Shut in

DRILLING FLUID USED: Aerated water 9212' to 10,637'TD

UNION GEOTHERMAL COMPANY OF NEW MEXICO

WELL COMPLETION RECORD

LITHOLOGIC DATA (Deepening)

FORMATION

INTERVAL

	This well (MD/VSS)	Baca 2 (VSS)	Baca 7 (VSS)
Abo Fm (red beds)	9212'-9220'/-750' to -758'	+5550' to +4360'	+4764' to +3884'
Magdalena Gp (L.S., Siltstone)	9220'-10220'/-758' to -1721'	+4360' to +3500'	+3884' to +3264'
Granite (Pre-Cambrian?)	10220'-10637'TD/-1721' to -2105'	+3500' to +2840'TD	+3264' to +3192'TD

CASING (Deepening)

SIZE

7" Blank

INTERVAL-KB

8895' - 3220', cemented

LOST CIRCULATION

DEPTH

3540'-9212'

REMARKS

Set 45 cement plugs to
cure L.C. while condition-
ing hole for 7" casing.

UNION GEOTHERMAL COMPANY OF NEW MEXICO

WELL COMPLETION RECORD

LOGGING (Deepening)

None conducted .

BACA 12
STANDARD SURVEY TABLE

STA	MEAS. DEPTH	VERT. DEPTH	DRIFT *****		CUMULATIVE COORDINATES	
			ANGLE	BEARING	N S(-)	E W(-)
1				N07W		
2	200	200	1.45	N07W	2.51	-0.31
3	400	400	1.92	N17E	8.36	0.20
4	600	600	2.08	N23E	14.92	2.59
5	800	800	2.33	N26E	21.94	5.79
6	1000	999	2.22	N24E	29.13	9.14
7	1200	1199	1.78	N23E	35.53	11.93
8	1400	1399	1.25	N10E	40.61	13.43
9	1600	1599	1.08	N05E	44.65	13.96
10	1800	1799	0.95	N04E	48.18	14.24
11	2000	1999	0.67	N06E	50.99	14.48
12	2200	2199	0.33	N21W	52.72	14.26
13	2400	2399	1.08	N24W	55.01	13.31
14	2600	2599	1.42	N30W	58.90	11.33
15	2800	2799	2.25	N20W	64.69	8.63
16	3000	2999	1.83	N31W	71.13	5.56
17	3200	3199	1.17	N56W	74.92	1.95
18	3400	3399	0.83	S66W	75.23	-1.52
19	3600	3599	1.25	S47W	73.22	-4.55
20	3800	3799	1.08	S34W	70.12	-7.20
21	4000	3999	1.55	S62W	67.05	-10.61
22	4200	4199	2.17	S61W	63.95	-16.31
23	4400	4398	2.97	S53W	59.08	-23.83
24	4600	4598	2.92	S53W	52.90	-32.02
25	4800	4798	2.92	S41W	45.96	-39.47
26	5000	4998	2.62	S26W	37.91	-44.79
27	5200	5197	3.33	S24W	28.50	-49.18
28	5400	5397	3.50	S14W	17.23	-53.06
29	5600	5596	4.75	S16W	3.34	-56.78
30	5800	5796	4.92	S16W	-12.86	-61.43
31	6000	5995	5.22	S18W	-29.75	-66.59
32	6200	6194	4.95	S17W	-46.65	-71.92
33	6400	6393	5.00	S14W	-63.37	-76.56
34	6600	6593	5.00	S03W	-80.61	-79.13
35	6800	6792	4.50	S04W	-97.14	-80.15

SEP 09,1981

WEIGHTING FACTOR: 0.50

BACA 12
STANDARD SURVEY TABLE

STA	MEAS. DEPTH	VERT. DEPTH	DRIFT *****		CUMULATIVE COORDINATES	
			ANGLE	BEARING	N S(-)	E W(-)
36	7000	6991	4.42	S15W	-112.47	-82.71
37	7200	7191	3.92	S06W	-126.76	-85.36
38	7400	7390	3.50	S10W	-139.57	-87.16
39	7600	7590	3.22	S04E	-151.27	-87.77
40	7800	7790	2.72	S03E	-161.60	-87.14
41	8000	7990	3.17	S07E	-171.83	-86.25
42	8200	8189	2.58	S20E	-181.58	-83.90
43	8400	8389	1.92	S41E	-188.35	-79.92
44	8600	8589	1.42	S50E	-192.42	-75.77
45	8800	8789	2.38	S74E	-195.54	-69.92
46	9000	8989	2.50	N76E	-195.69	-61.40
47	9160	9148	4.17	N62E	-192.35	-52.71
48	9212	9200	4.17	N62E	-190.58	-49.38
49	9503	9489	11.50	N39E	-165.35	-18.77
50	9754	9732	16.00	N34E	-117.39	16.71
51	10094	10054	21.50	N37E	-28.42	80.18
52	10278	10225	22.00	N40E	24.94	122.62
53	10589	10511	24.50	N40E	118.99	201.54
54	10637	10555	24.50	N40E	134.23	214.33

SEP 09,1981 WEIGHTING FACTOR: 0.50

BACA 12
MARKER COORDINATE REPORT

E-LOG MARKER	DEPTHS			COORDINATES		LAMBERT	COORDS
NAME	MEAS	VERT	SUBSEA	NS	EW	X	Y
TOPQCF	23	23	8427			399360	1773160
TOPQB	160	160	8290	2		399360	1773162
TOPTP	6460	6453	1997	-69	-77	399283	1773091
TOPTAB	7380	7370	1080	-138	-87	399273	1773021
TOPPA	7575	7565	885	-150	-88	399272	1773010
TOPPM	9220	9208	-758	-190	-49	399311	1772970
TOPPC	10220	10171	-1721	8	109	399469	1773168
TD	10637	10555	-2105	134	214	399574	1773294

SEP 09, 1981 WEIGHTING FACTOR: 0.50

BACA 12
STRATIGRAPHIC REPORT

E-LOG MARKER	MEAS. DEPTH	THICKNESS		CORR. FACT.		CONTOUR *****DIP*****		INT. AVER.	
NAME		STRT	VERT	STRAT	VERT.	ANGLE	DRIFT	DFT.	AZI.
TOPQCF	23	137	137	1.000	1.000	0.25		0.66	353
TOPQB	160	6296	6296	0.999	0.999	0.25		2.30	183
TOPTP	6460	918	918	0.997	0.997	0.25		4.40	188
TOPTAB	7380	195	195	0.998	0.999	0.25		3.39	184
TOPPA	7575	1644	1644	0.999	0.999	0.25		2.60	135
TOPPM	9220	966	966	0.966	0.966	0.25		14.80	40
TOPPC	10220	383	383	0.918	0.918	0.25		23.21	40
TD	10637					0.25			

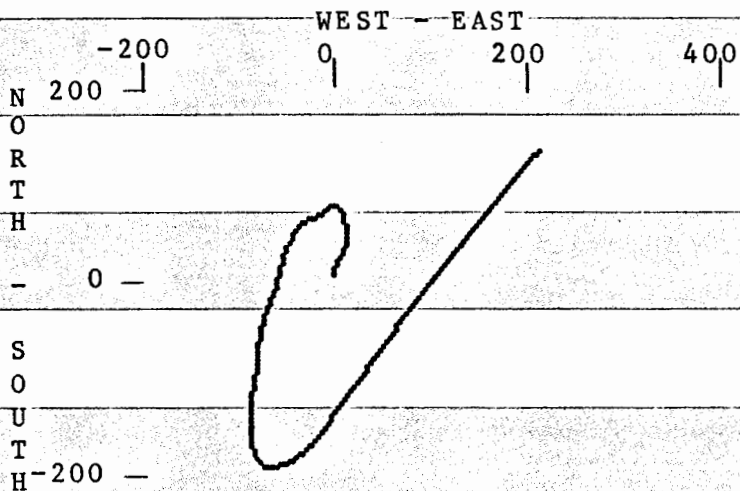
SEP 09, 1981 WEIGHTING FACTOR: 0.50

SEP 09, 1981

BACA-12

ELEV= 8450 FT, SCALE 200 FT/IN

AVE. ANGLE METHOD




SEP 09, 1981

BACA-12

ELEV= 8450 FT, SCALE 400 FT/IN

AVE. ANGLE METHOD

	WEST	EAST
N	400	400
O		
R		
T		
H		
-	0	
S		
O		
U		
T		
H	400	



SEP 09, 1981

BACA-12

ELEV= 8450 FT, SCALE 1000 FT/IN

AVE. ANGLE METHOD

	WEST	EAST
N	-1000	1000
O		
R		
T		
H		
-	0 -	
S		
O		
U		
T		
H	-1000 -	

✓

SEP 09, 1981

BACA-12

ELEV= 8450 FT, SCALE 2000 FT/IN

AVE. ANGLE METHOD

	WEST	EAST
N	-2000	2000
O		
R		
T		
H		
-	0 -	✓
S		
O		
U		
T		
H	-2000 -	

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2. Name of Operator UNION GEOTHERMAL COMPANY OF NEW MEXICO	8. Farm or Lease Name BACA LOCATION NO. 1
3. Address of Operator P. O. BOX 15225, RIO RANCHO, NEW MEXICO 87174	9. Well No. BACA 12
4. Location of Well Unit Letter <u>N</u> <u>4230</u> Feet From The <u>N</u> Line and <u>2790</u> Feet From The <u>E</u> Line, Section <u>14</u> Township <u>19N</u> Range <u>3E</u> NMPM.	10. Field and Pool, or Wildcat REDONDO CANYON
15. Elevation (Show whether DF, RT, GR, etc.) 8427' GROUND	12. County SANDOVAL

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PERFORM REMEDIAL WORK ☐ PLUG AND ABANDON ☐
TEMPORARILY ABANDON ☐
PULL OR ALTER CASING ☐ CHANGE PLANS ☐

OTHER REVISED LOCATION SURVEY ☒

SUBSEQUENT REPORT OF:

REMEDIAL WORK ☐ ALTERING CASING ☐
COMMENCE DRILLING OPNS. ☐ PLUG & ABANDONMENT ☐
CASING TEST AND CEMENT JOB ☐

OTHER ☐

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THE WELL LOCATION ABOVE HAS BEEN CORRECTED TO REFLECT MORE ACCURATE SURVEYS. ALL SURVEYS PRIOR TO THIS ARE VOID. PLEASE SEE ATTACHED FORM G-102.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Carl Ulvog TITLE District Supervisor DATE 10/4/82

APPROVED BY Carl Ulvog TITLE DISTRICT SUPERVISOR DATE 10/6/82



October 4, 1982

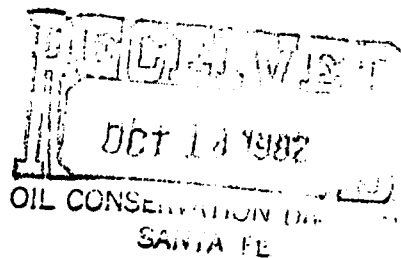
DON L. ASH

OCT 11 1982

TO: Don L. Ash

FM: Cliff Neve *CBN*

RE: BACA WELL LOCATIONS



In an effort to obtain a more exact location for each of the Baca wells, it was concluded that the easiest method would be to take measurements at right angles from appropriate section corners in the Baca Location No. 1 area. The following describes the method and assumptions used to calculate the revised well locations.

A. Map Measurements

All measurements were taken from a 1-200' composite topographical map of the Baca Location No. 1, December 1978, compiled by Bovay Engineers, Inc. of Albuquerque, New Mexico. The mapping method used was photogrammetric with control surveys tied to the N.M. state plane co-ordinate system. The map states "all section corners shown are projections only, and do not represent a cadastral survey". The assumption was made that the section corners were accurate and measurements were made to assign New Mexico state co-ordinate numbers to the appropriate section corners. These numbers are as follows:

Section corners of Section 12 T19N R3E and neighboring sections.

NE corner	$\frac{1}{12} \mid \frac{6}{7}$	N 1,782,550'
		E 407,290'
NW corner	$\frac{2}{11} \mid \frac{1}{12}$	N 1,782,630'
		E 402,240'
SW corner	$\frac{11}{14} \mid \frac{12}{13}$	N 1,777,390'
		E 402,150'

Section corners of Section 35 T20N R3E and neighboring sections.

SE corner	$\frac{35}{2} \mid \frac{36}{1}$	N 1,787,750'
		E 402,320'
SW corner	$\frac{34}{3} \mid \frac{35}{2}$	N 1,787,830'
		E 397,075'
NE corner	$\frac{26}{35} \mid \frac{25}{36}$	N 1,792,980'
		E 402,420'

These section corner co-ordinates were used to determine well locations with all measurements being made at right angles from the section corners.



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

LARRY KEHOE
SECRETARY

December 21, 1981

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-2434

Union Geothermal Company of
New Mexico
P. O. Box 15225
Rio Rancho, NM 87174

ATTENTION: Mr. R. O. Engebretsen

RE: Temporary Abandonment of
Baca Injection Wells

Dear Mr. Engebretsen:

Pursuant to your letter of November 12, 1981, requesting exception to Division Rule 705-A for the following geothermal injection wells: Baca 5-A, 12, and 14; this rule does not apply to geothermal injection wells. Please refer to the "Rules and Regulations" of the Geothermal Resources Section under Rule 303-B. The following forms; G-103, G-105, and G-106 are enclosed for your convenience.

If you have any questions regarding this matter, please do not hesitate to contact me at (505) 827-2534.

Sincerely,

A handwritten signature in cursive script, reading "Oscar A. Simpson, III".

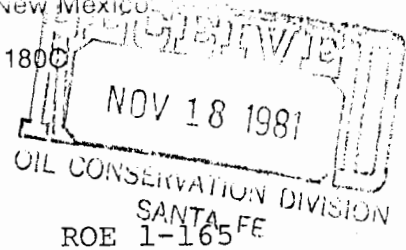
Oscar A. Simpson, III
Water Resource Specialist

OAS/dp

Enc.

Union Geothermal Company of New Mexico

4100 Southern Blvd. SE — Suite 1800
P.O. Box 15225
Rio Rancho, New Mexico 87174
Telephone (505) 897-1776



12-600.1

J. O. Engebretsen
Area Manager

November 12, 1981

Mr. Joe D. Ramey, Director
Oil Conservation Division
State of New Mexico
P. O. Box 2088
Santa Fe, New Mexico 87501

Dear Mr. Ramey:

Reference is made to your memorandum issued September 30, 1981 to all New Mexico injection well operators regarding temporary abandonment of injection wells.

Union Geothermal Company of New Mexico herewith requests an exception to Division Rule 705A with respect to our three injection wells for Union's geothermal project at the Baca Location.

The three injection wells, Baca Nos. 5A, 12 and 14, were permitted by your office in July 1975 for geothermal operation injection purposes. All three will be needed for re-injection of produced fluid in connection with the operation of the 50 Mw power plant now in its planning and development stage. Completion of the plant is scheduled for late 1983.

We are currently drilling the wells that are required for the steam supply to the power plant. Upon completion, each well is flow tested to determine its production capacity. During this flow test -- generally of 90 day duration -- it is necessary to dispose of the produced fluid. Usually only one of the three injection wells is used, as each well has injection capacity far in excess of any one producing well's effluent. Which injection well used is dictated by topographical location of the producing well and the type of interpretive data needed by the reservoir engineers. Conceivably, one or more of the injection wells might remain idle for more than six months.

505 Geothermal

E

1027303A

Mr. Joe D. Ramey, Director
Oil Conservation Div.
State of New Mexico

- 2 -

November 12, 1981

Attached are well completion schematic diagrams for each of the three injection wells. As you can see, casing strings have been run to the top of the geothermal reservoir and are cemented back to surface. This precludes the contamination of any underground fresh water sources. Consequently, cement plugs or bridge plugs should not be necessary.

I would appreciate your early consideration to this request for exemption to Rule 705A. If you have any questions on the matter, please do not hesitate to contact me.

Yours very truly,

UNION GEOTHERMAL COMPANY OF
NEW MEXICO

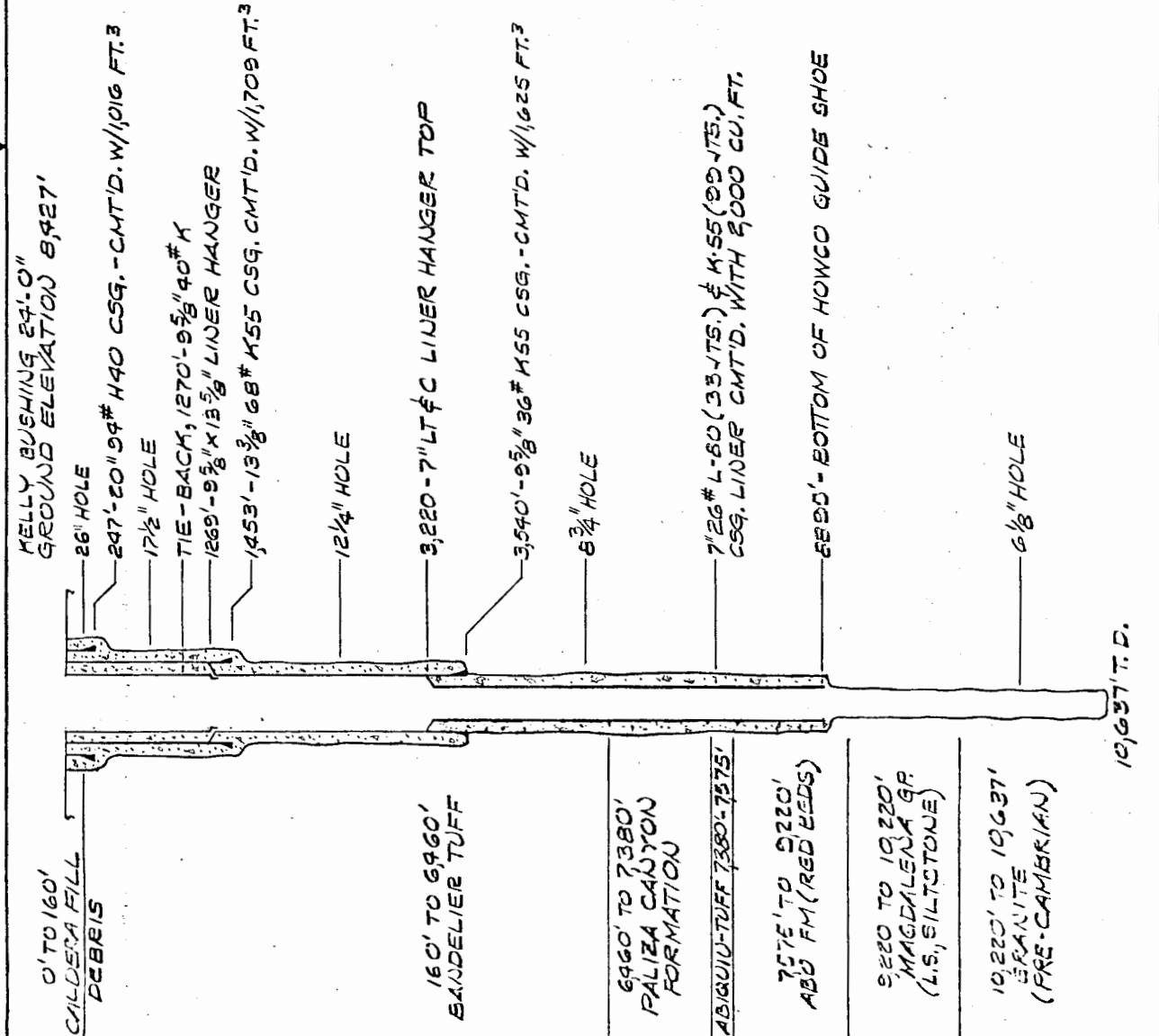

R. O. Engebretsen

ROE/rr

Attachments

cc: Carl Ulvog, w/att.

REVISIONS			
REV	DESCRIPTION	DATE	BY
1	CHECK FOR ACCURACY	3-31-80	REG
2	REDRAWN	11-13-81	8



DRILLING DETAIL			
H2O & STEAM ENTRIES	FRACTURES	LOST C.I.R.	DELG. BREAK
		3540'-9212' (567 45 CMT. PLUGS)	NONE

DATE STARTED	DATE COMPLETED	DATE STARTED	DATE COMPLETED
6-19-74	8-19-74	6-27-81	9-16-81

UNION Union Geothermal Company of New Mexico

**WELL SCHEMATIC
BACA NO. 12**

DESIGN: S. FENEZAK JR.
DRAWN: *GL*
CHECK: *GL*
DATE: 3-31-80

SIZE AFE NO. B 303005
DWG NO. RC1-DR-07
SCALE: N.T.S.

REV 2
SHEET 1 OF 1

NEW MEXICO OIL CONSERVATION COMMISSION

P. O. Box 2088, Santa Fe 87501

GEOHERMAL RESOURCES WELL SUMMARY REPORT

Operator Union Geothermal Co. of New Mexico Address Rio Rancho, NM 87174
Lease Name BACA location Well No. BACA-12 Remedial
Unit Letter Ø N Sec. 14 Twp. 19N Rge 3E
Reservoir Redondo Creek County Sandoval

Commenced drilling 08-15-81
Completed drilling 09-04-81
Total depth 10,637 Plugged depth --
Junk None
Commenced producing Not produced
(Date)

GEOLOGICAL MARKERS

DEPTH

Caldera Fill Surf. - 160'
Bandelier Tuff 160' - 6460'
Paliza Cyn Form. 6460' - 7380'
Redbeds 7575' - 10,220'
Granite 10,220' - 10,637'
Geologic age at total depth:

Date	Static test		Production Test Data									
	Shut-in well head		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	
			NOT TESTED									

CASING RECORD (Present Hole)

Size of Hole	Size of Casing	Weight of Csg/ft.	Grade of Casing	New or Used	Seamless or Lapweld	Depth of Shoe	Top of Casing	Number of Sacks Cement	Top of Cement	Cement Top Determined By
26"	20"	94#	H-40	N	S	247'	Surf	1016 ft ³	Surf	Visual
17½"	13-3/8	68#	K-55	N	S	1453'	Surf	1709 ft ³	Surf	Visual
12¼"	9-5/8	36#	K-55	N	S	3540'	Surf	1625 ft ³	Surf	Visual
8-3/4	7	26#	K-55	N	S	8895'	3220'	2010 ft ³	NOT DETERMINED	

PERFORATED CASING

(Size, top, bottom, perforated intervals, size and spacing of perforation and method.)

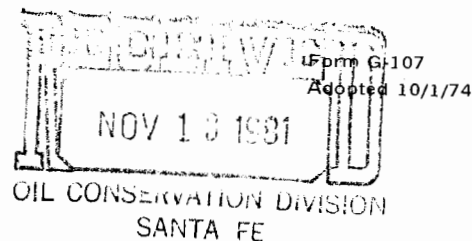
NONE

Was analysis of effluent made? NO Electrical log depths NONE Temperature log depths NONE

CERTIFICATION

I hereby certify that the information given above and the data and material attached hereto are true and complete to the best of my knowledge and belief.

Signed R.O. Engebretsen Position Area Manager Date 9/29/81
R.O. Engebretsen



NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501

GEOTHERMAL RESOURCES WELL HISTORY

Operator Union Geothermal of New Mexico Address Rio Rancho, New Mexico 87174
Lease Name Baca Location Well No. BACA-12 Remedial
Unit Letter N Sec. 14 Twp. 19N Rge 3E
Reservoir Redondo Creek County Sandoval

It is of the greatest importance to have a complete history of the well. Use this form to report a full account of all important operations during the drilling and testing of the well or during re-drilling, altering of casing, plugging, or abandonment with the dates thereof. Be sure to include such items as hole size, formation test details, amounts of cement used, top and bottom of plugs, perforation details, sidetracked junk, bailing tests, shooting, and initial production data and zone temperature. (Attach additional sheets if necessary.)

Date

Detailed Well History attached.

CERTIFICATION

I hereby certify that the information given above and the data and material attached hereto are true and complete to the best of my knowledge and belief.

Signed

R.O. Engebretsen

R.O. Engebretsen

Position

Area Manager

Date

9/29/81

06-27-81 Moved in and rigged up Brinkerhoff-Signal rig #78. Set in BOP stack.

06-28-81 Completed setting in BOP stack and flowline spool. Drilled and set rat hole. Nippled up BOPE and flow line. Function-tested BOPE. OK. Picked up BHA. Picked up 3-1/2" drill pipe.

06-29-81 Continued RIH, picking up 3-1/2" drill pipe and 4-1/2" drill pipe to fill at 7958'. Broke circulation with aerated water. Cleaned out fill from 7958' to 8853'.

06-30-81 Cleaned out fill from 8853' to 9206'. Circulated hole clean. POH to 3343'. RIH to 9206'. No fill. POH. Ran Sperry Sun Gyroscope. Surveyed hole at 200' intervals from 200' to 9160'.

07-01-81 RIH with 7" casing spear to 3343'. Engaged liner. Jarred liner free. Chained out of hole. Laid down fishing tools. Laid down 7" casing.

07-02-81 Continued to lay down 7" liner. Recovered a total of 140 joints 7" 26#. Laid down 3-1/2" drill pipe. Picked up 6" drill collars and 4-1/2" drill pipe.

07-03-81 Continued picking up 4-1/2" drill pipe to fill at 9068'. Pumped 70 bbls Gel - LCM pill. POH. RIH with OEDP to 8005'. Cooled hole. HOWCO mixed and pumped 83 cu. ft. class "H" cement with 1-1 Perlite, 3% Gel, 40% SSA-1 and 0.4% HR-7. displaced with 83 cu. ft. water. CIP at 2330 hours.

07-04-81 POH. Attempted without success to fill hole. RIH to top of cement at 9049'. POH. RIH with OEDP to 9,000'. Cooled hole. HOWCO mixed and pumped plug #2: 125 cu. ft. class "H" cement with 1-1 Perlite, 3% Gel, 40% SSA-1 and 0.4% HR-7. Displaced 112 cu. ft. water. CIP at 1500 hours. POH. RIH with slick BHA to top of cement at 9041'.

- 07-05-81 Spotted 100 bbl gel and LCM pill at 9,000'.
POH. RIH with OEDP to 8,000'. Pumped 210 bbls
Gel and LCM. RIH to 8998'. HOWCO mixed and
pumped 499 cu. ft. water followed by 125 cu. ft.
class "H" cement with 1-1 Perlite, 3% Gel, 40%
SSA-1 and 0.4% HR-7. Displaced with 112 cu. ft.
water. CIP at 0730 hours. POH to 3400'. Drill
pipe partially plugged. POH. Found 16 joints
drill pipe partially plugged with cement. Pumped
mud through fill up line while POH. Attempted to
fill hole with 670 bbls water. Pumped a total of
1170 bbls fluid. Unable to fill hole.
- 07-06-81 RIH. Cleaned out bridge from 5773' to 5790'.
RIH to cement at 9049'. POH. RIH with OEDP to
8999'. Cooled hole. Stuck drill pipe. Worked
pipe free. Pulled to 8937'. HOWCO mixed and
pumped plug #4: 125 cu. ft. class "H" cement with
1-1 Perlite, 40% SSA-1, 3% Gel and 0.4% HR-7.
Displaced with 252 cu. ft. water. CIP 1700
hours. POH to 6986'. Pumped to clear drill
pipe. Driller did not notice that pump had
popped off. WOC.
- 07-07-81 RIH to cement at 9049'. POH to 8000'.
Attempted to pump through drill pipe. Had no
pressure increase. Pump pop off bypass by open.
Attempted to pump through drill pipe with HOWCO.
Pressure increased to 3000 psi. Drill pipe
plugged with cement. POH. Laid down 48 joints
of cemented drill pipe. RIH to 8000' with rerun
#2. Production ran pressure-temperature survey.
Tool stopped at 6960'. POH. Temperature at
6960' = 351°F with top of fluid at 1700' +-.
Pipe stuck after survey. Pulled free. POH to
2982'. Pumped water to flush hole. Staged into
hole to 5967' and to 8012'. Picked up drill
pipe. Running in hole.
- 07-08-81 RIH to 9049'. Pumped water. POH. RIH with OEDP
to 8937'. HOWCO pumped 28 cu. ft. sand.
Displaced with 711 cu. ft. water. POH to 7542'.
RIH to sand at 8987'. Pumped 1100 bbls water to
cool hole. Hole did not fill. POH to 8937'.
Pumped 112 cu. ft. gel slurry, followed by 95 cu.
ft. "H" cement with 1-1 Perlite, 40% SSA-1, 3%
Gel, 0.5% CFR-2 and 0.4% HR-7. Displaced with 112

- 07-08-81 cu. ft. mud and 560 cu. ft. water. CIP at 1530 hours. WOC. RIH to cement at 8590'. Unable to fill hole.
- 07-09-81 POH to 7542'. Pumped 260 bbls water. No fill. Pumped 112 cu. ft. gel slurry. Followed by 95 cu. ft. "H" cement, with 1-l Perlite, 40% SSA-1, 3% Gel, 0.5% CFR-2, and 0.4% HR-7. Displaced with 112 cu. ft. mud and 448 cu. ft. water. CIP at 0145 hours. POH to 6149. WOC. RIH to cement at 7451'. Pumped 250 bbls water with no fill. POH to 6427'. Pumped 250 bbls water with no fill. Pumped 112 cu. ft. mud followed by 95 cu. ft. "H" cement with 1-l Perlite, 40% SSA-1, 3% Gel, 0.5% CFR-2 and 0.4% HR-7. Displaced with 112 cu. ft. mud and 364 cu. ft. water. CIP at 1200 hours. POH to 3230'. WOC. Located cement at 6270'. Pumped 250 bbls water with no fill. POH to 5218'. Pumped 250 bbls water with no fill. POH to 5218'. Pumped 140 cu. ft. mud, followed by 100 cu. ft. "H" cement with 1-l Perlite, 40% SSA-1, 3% Gel, 0.5% CFR-2, and 0.4% HR-7. Displaced with 112 cu. ft. mud and 280 cu. ft. water. CIP at 2210 hours. POH to 3231'. WOC.
- 07-10-81 WOC 7 hours total. Located cement at 5746'. Unable to fill hole. Hung OEDP at 5684'. HOWCO pumped 140 cu. ft. gel slurry, followed by 100 cu. ft. "H" cement with 1-l Perlite, 40% SSA-1, 3% Gel, 0.5% CFR-2 and 0.4% HR-7. Displaced with 112 cu. ft. mud, and 280 cu. ft. water. CIP at 0810. POH to 3231'. WOC 7 hours. RIH to cement at 5520'. Pumped 400 bbls water. Hole did not fill. POH to 4471'. Pumped 160 bbls water. Hole did not fill. Pumped 140 cu. ft. gel slurry, followed by 100 cu. ft. "H" cement with 1-l Perlite, 40% SSA-1, 3% Gel, 0.5% CFR-2 and 0.4% HR-7. Displaced with 112 cu. ft. mud and 250 cu. ft. water. CIP at 1810. POH to 3231'. WOC at 2400 hours.
- 07-11-81 WOC 7 hours total. RIH to cement at 5032'. Filled hole with 312 bbls water. Circulated, losing 250 bbls/hr. POH to 4191'. Filled hole with 120 bbls water. Pumped 140 cu. ft. gel slurry and 112 cu. ft. "H" cement with 1-l Perlite

07-11-81 Cont'd

40% SSA-1, 3% Gel, 0.5% CFR-2 and 0.4% HR-7. Displaced with 112 cu. ft. mud and 168 cu. ft. water. CIP at 0445 hours. POH to 3231'. WOC 7 hours. RIH to cement at 4522'. Filled hole with 200 bbls water. Circulated, losing 200 bbls/hr water. POH to 4006'. Cooled hole. Pumped 140 cu. ft. gel slurry, followed by 112 cu. ft. "H" cement, with 1-1 Perlite, 40% SSA-1, 3% Gel, 0.5% CFR-2 and 0.4% HR-7. Displaced with 112 cu. ft. mud and 168 cu. ft. water. POH to 3231'. WOC 7 hours. RIH to cement at 4228'. Filled hole with 95 bbls water. Circulated, losing 180 bbls./hr. POH to 3822'. Cooled hole.

07-12-81

Pumped 140 cu. ft. gel slurry, followed by 112 cu. ft. "H" cement, with 1-1 Perlite, 40% SSA-1, 3% Gel, 0.5% CFR-2 and 0.4% HR-7, displaced with 112 cu. ft. mud and 157 cu. ft. water. CIP at 0030 hours. POH to 2892'. WOC 7 hours. RIH to cement at 4006'. Filled hole with 70 bbls water. Cooled hole, losing 100 bbls/hr. POH to 3822'. Pumped 140 cu. ft. gel slurry, followed by 112 cu. ft. "H" cement with 1-1 Perlite, 40% SSA-1, 3% Gel, 0.5% CFR-2 and 0.4% HR-7. Displaced with 112 cu. ft. mud and 157 cu. ft. water. CIP at 1000 hours. WOC 7 hours. Laid down 90 joints drill pipe while WOC. RIH with OEDP to cement at 3774'. Filled hole with 40 bbls water. Circulated to cool hole, losing 35 bbls/hr. Hung OEDP at 3760'. Pumped 140 cu. ft. gel slurry, followed by 112 cu. ft. "H" cement with 1-1 Perlite, 40% SSA-1, 3% Gel, 0.5% CFR-2, and 0.4% HR-7. Displaced with 112 cu. ft. mud and 140 cu. ft. water. CIP at 1945 hours. POH. WOC.

07-13-81

WOC 7 hours. RIH with 8-3/4" bit to cement at 3544'. Filled hole. Circulated with full returns. Cleaned out cement from 3544' to 4033'. Losing 42 bbls/hr at 3941 and 60 bbls/hr at 4033'. POH. RIH with OEDP. Pumped 140 cu. ft. gel slurry, followed by 112 cu. ft. "H" cement with 1-1 Perlite, 40% SSA-1, 3% Gel, 0.5% CFR-2, and 0.4% HR-7. Displaced with 112 cu. ft. mud and 168 cu. ft. water. CIP at 2045 hours. POH. WOC 7 hours.

- 07-14-81 RIH with OEDP to cement at 3832'. Filled hole. Circulated with full returns. Tripped for drilling assembly. Cleaned out cement from 3832' to 4521', losing 25-35 bbls/hr from 3993' to 4521'.
- 07-15-81 Cleaned out cement from 4521' to 5146', losing 35 to 40 bbls/hr. Lost all returns at 5146'. Cleaned out cement with no returns from 5146' to 5156'. POH. RIH with 90' OEDP. Driller struck crown. Made repairs to bumper boards. RIH with OEDP to 5155'. Pumped 250 bbls water, 140 cu. ft. gel slurry and 106 cu. ft. "H" cement with 1-1 Perlite, 40% SSA-1, 3% Gel, 0.5% CFR-2 and 0.4% HR-7. Displaced with 112 cu. ft. mud and 269 cu. ft. water. CIP at 2000 hours. POH to 3259'. WOC.
- 07-16-81 WOC 7 hours. RIH to top of cement at 5139'. Pumped 250 bbls water. Hole filled, but broke down after 90 bbls. Circulated. Hung OEDP at 5124'. Pumped 140 cu. ft. gel slurry, 106 cu. ft. "H" cement with 1-1 Perlite, 40% SSA-1, 3% Gel, 0.5% CFR-2 and 0.4% HR-7. Displaced with 112 cu. ft. mud and 269 cu. ft. water. CIP at 0500 hours. POH to 3259. WOC 7 hours. RIH to cement at 5139'. No fill. Filled hole with 115 bbls water. Circulated, losing 250 bbls/hr. With OEDP at 5124', pumped 140 cu. ft. gel slurry, followed by 100 cu. ft. "H" cement with 1-1 Perlite, 40% SSA-1, 3% Gel, 0.5% CFR-2 and 0.4% HR-7. Displaced with 112 cu. ft. mud and 269 cu. ft. water. CIP at 1410 hours. WOC 7 hours. RIH to cement at 4972'. Filled hole with 80 bbls water. Cooled hole. Losing 180 bbls/hr. Hung OEDP at 4968'. Pumped 140 cu. ft. gel slurry, followed by 100 cu. ft. "H" cement with 1-1 Perlite, 3% Gel, 0.5% CFR-2 and 0.4% HR-7. CIP at 2300 hours. POH to 3259'. WOC.
- 07-17-81 WOC (7 hours total). RIH to cement at 4869'. Filled hole with 70 bbls water. Circulated, losing 200 bbls/hr. POH to 4284. Losing 120 bbls/hr. Pumped 140 cu. ft. gel slurry, followed by 112 cu. ft. class "H" cement with 1-1 Perlite, 40% SSA-1, 3% Gel, 0.5% CFR-2 and 0.4% HR-7. Displaced with 112 cu. ft. mud and 196 cu. ft. water. CIP 0940 hours. POH to 3259'. WOC

07-17-81 Cont'd

(7 hours total). RIH to cement at 4863'. Filled hole with 72 bbls water. Losing 250 bbls/hr. Hung OEDP at 4842'. Pumped 140 cu. ft. gel slurry, followed by 112 cu. ft. class "H" cement with 1-1 Perlite, 40% SSA-1, 3% Gel, 0.5% CFR-2 and 0.4% HR-7. Displaced with 112 cu. ft. mud and 252 cu. ft. water. CIP at 1830 hrs (plug #22). POH to 3259'. WOC at 2400 hours.

07-18-81

WOC (7 hours total). RIH to cement at 4711'. Filled hole with 83 bbls water. Circulated, losing 236 bbls/hr. Hung OEDP at 4685'. Pumped 140 cu. ft. gel slurry, followed by 112 cu. ft. class "H" cement with 40% SSA-1, 1-1 Perlite, 3% Gel, 0.5% CFR-2 and 0.4% HR-7. Displaced with 112 cu. ft. mud and 224 cu. ft. water. CIP at 0400 hours (Plug #23). POH to 3259'. WOC (7 hours total). RIH to top of cement at 4531'. Circulated, losing 96 bbls/hr. Hung OEDP at 4501'. Pumped 140 cu. ft. gel slurry, followed by 95 cu. ft. class "H" cement with 1-1 Perlite, 40% SSA-1, 3% Gel, 0.5% CFR-2 and 0.4% HR-7. Displaced with 112 cu. ft. mud and 224 cu. ft. water. CIP 1300 hours (Plug #24). POH to 3259'. WOC (7 hours total). RIH to cement at 4341'. POH to 3849'. Pumped 140 cu. ft. mud, 112 cu. ft. class "B" cement with 10 lbs/sack Gilsonite, 2% Gel, 0.5% CFR-2 and 0.4% HR-7. Displaced with 112 cu. ft. mud and 168 cu. ft. water. CIP 2200 hours (Plug #25). POH to 3259'. WOC at 2400 hours.

07-19-81

WOC (7 hours total). RIH to cement at 3846'. Circulated with full returns. WOC. RIH with 8-3/4" bit and nine 8" drill collars. Cleaned out cement from 3846' to 4373'. Hole started taking fluid at 4313' to 4373' at 84 bbls/hr rate. POH. RIH with OEDP to 4373'. Circulated. With OEDP at 4371', HOWCO pumped 140 cu. ft. mud, followed by 125 cu. ft. "B" cement with 10 lbs/sack Gilsonite, 2% Gel, 0.5% CFR-2 and 0.4% HR-7. Displaced with 112 cu. ft. mud and 202 cu. ft. water. CIP at 2400 hours, plug #26.

- 07-20-81 POH to 3631'. Filled hole, standing full. Closed rams. Squeezed away 8 bbls fluid to formation at 100 psi. POH to 3259'. WOC 7 hours. RIH to cement at 4210'. Circulated, losing 32 bbls/hr. Hung OEDP at 4188'. HOWCO pumped plug #27, 125 cu. ft. class "B" cement with 10 lbs per sack Gilsonite, 2% Gel, 0.5% CFR-2 and 0.4% HR-7. Displaced with 112 cu. ft. mud and 190 cu. ft. water. CIP at 1000 hours. POH to 3538'. Squeezed away 8 bbls water at 200 to 500 psi. POH to 3259'. WOC 7 hours. RIH to cement at 4083'. Circulated with full returns. POH. WOC. RIH with 8-3/4" bit.
- 07-21-81 Located cement at 4083'. Cleaned out cement to 4587' with good returns. Hole started taking fluid at 60 bbls/hr rate. POH. RIH with OEDP to 4587'. HOWCO pumped plug #28: 125 cu. ft. "B" cement with 10 lbs. per sack Gilsonite, 2% Gel, 0.5% CFR-2 and 0.4% HR-7. displaced with 112 cu. ft. mud and 224 cu. ft. water. CIP at 2100 hours. POH. WOC.
- 07-22-81 WOC 7 hours. RIH with OEDP to cement at 4421'. Hole taking fluid at more than 60 bbls/hr. Hung OEDP at 4406'. Pumped 125 cu. ft. "B" cement with 10 lbs per sack Gilsonite, 2% Gel, 0.5% CFR-2 and 0.4% HR-7. displaced with 112 cu. ft. mud and 202 cu. ft. water. CIP at 0730 hours. (Plug #29). POH. WOC 7 hours. RIH. Located cement at 4156'. Circulated. Hole taking 60 bbls/hr. Hung OEDP at 4156'. Pumped 125 cu. ft. "B" cement with 10 lbs per sack Gilsonite, 2% Gel, 0.5% CFR-2 and 0.4% HR-7. Displaced with 112 cu. ft. mud and 190 cu. ft. water. CIP at 1600 hours (Plug #30). POH to 3259'. Filled hole, fluid falling away. WOC 7 hours. Located cement at 3988'. Circulated. Hole taking 60 bbls an hour. Hung OEDP at 3988'. HOWCO pumped 125 cu. ft. "B" cement with 10 lbs per sack Gilsonite, 2% Gel, 0.5% CFR-2 and 0.4% HR-7. Displaced with 291 cu. ft. water. CIP at 2400 hours (Plug #31).

- 07-23-81 POH to 3259'. WOC 5 hours. Filled hole. Hole taking 52 bbls/hr. Located top of cement at 3814'. Circulated, losing 30 bbls/hr. Hung OEDP at 3814', pumped 177 cu. ft. "B" cement with 0.5% CFR-2 and 0.4% HR-7. Displaced with 269 cu. ft. water. CIP t 0930 hours (Plug #32). POH to 2793'. Squeezed away 3 bbls water with 400 psi. WOC 7 hours. RIH. Located cement at 3548'. Circulated. Closed rams. WOC 12 hours. Drilled firm cement from 3548' to 3645'. No loss of fluid.
- 07-24-81 Drilled out cement from 3645' to 4703'. The hole was taking 84 bbls/hr in the interval from 3775' to 3867'.
- 07-25-81 Drilled out cement from 4703' to 4952'. POH. Changed bits. RIH. Drilled out cement from 4952' to 5200'. Hole taking 116 bbls/hr at 5170', lost total returns at 5200'. POH. RIH with OEDP to 5200'. Pumped water, fluid level to surface, but would not circulate. With OEDP at 4200', pumped plug #33: 177 cu. ft. class "B" cement, 0.5% CFR-2 and 0.4% HR-7, and displaced with 381 cu. ft. water. CIP at 1900 hours. POH to 4270'. Filled hole, fluid falling away. POH, laying down 4-1/2" working drill pipe.
- 07-26-81 WOC for a total of 5 hours. Filled hole. Hole taking 196 bbls/hr. RIH with OEDP and tagged cement at 5080'. Circulated. Hung with OEDP at 5080' and pumped in plug #34: 125 cu. ft. class "B" cement with 0.5% CFR-2, 0.4% HR-7 and 50# Flo-Seal. Displaced with 381 cu. ft. water. POH to 4150'. Filled hole with 34 bbls water. Fluid dropping away at 196 bbls/hr. POH, laying down working drill pipe. CIP 0315 hours. WOC. RIH with 8-3/4" bit #4 to cement at 4902'. Hole taking 114 bbls/hr fluid. Cleaned out cement from 4902' to 4917'. Lost returns completely and regained partial returns. POH. RIH with OEDP to 4917'. HOWCO mixed and pumped 125 cu. ft. "B" cement with 0.5% CFR-2 and 0.4% HR-7. Displaced with 308 cu. ft. water. CIP at 1600 hours. (Plug #35). POH. Kept hole full with 80 bbls/hr. Ran Schlumberger Spinner Survey; tool failed. RIH with 8-3/4" bit to cement at 4711'.

- 07-27-81 Cleaned out cement. Lost 100 bbls/hour from 4711' to 5810'. Lost all returns at 5810'. Had intermittent returns from 5810' to 5910'. POH. RIH with OEDP.
- 07-28-81 RIH with OEDP to 5859'. Pumped 400 bbls/hr water, filling hole to within 80' of surface. Pumped 112 cu. ft. class "B" cement with 0.5% CFR-2 and 0.4% HR-7. Displaced with 437 cu. ft. water. CIP at 0240. POH. WOC 6 hours. Laid down 54 joints drill pipe. RIH with OEDP to cement at 5870'. Filled hole with 156 bbls water. Circulated, losing 220 bbls/hr. Pumped plug #37: 112 cu. ft. gel slurry, 129 cu. ft. "B" cement with 10 lbs/sack Gilsonite, 2% Gel, 0.5% CFR-2 and 0.4% HR-7. Displaced with 112 cu. ft. mud and 325 cu. ft. water. CIP at 1045 hours. POH to 3300'. WOC 6 hours. RIH to cement at 5680'. Circulated, losing 120 bbls/hr. POH. RIH with 8-3/4" bit to 5657'. Cleaned out cement stringers to 5680' and cement to 5685', losing 80 bbls/hr.
- 07-29-81 Cleaned out cement from 5685' to 6014'. Lost all returns. Cleaned out cement with no returns from 6014' to 6075'. RIH to 6270'. Cleaned out cement with no returns from 6270' to 6292'. POH. RIH with OEDP to 6119'. Circulated. Pumped 140 cu. ft. gel slurry, 123 cu. ft. "B" cement with 10 lbs/ sack Gilsonite, 2% Gel, 0.5% CFR-2 and 0.4% HR-7. Displaced with 112 cu. ft. mud and 336 cu. ft. water. CIP at 1900 hours. POH to 3255'. WOC.
- 07-30-81 WOC 6 hours. RIH to 6292'. No fill from plug #38. Hung OEDP at 6152'. Pumped plug #39: 140 cu. ft. Gel and LCM slurry, 123 cu. ft. "B" cement with 50# Flo-Seal, 0.5% CFR-2 and 0.2% HR-7. Displaced with 112 cu. ft. mud and 336 cu. ft. water. CIP at 0420 hours. POH to 3255'. WOC 7 hours. RIH to cement at 5991'. Hole filled momentarily with 100 bbls water and returns lost. Cooled hole. Pumped plug #40: 140 cu. ft. Gel and LCM slurry, 145 cu. ft. "B" cement with 0.5% CFR-2 and 0.2% HR-7. Displaced with 112 cu. ft. mud and 269 cu. ft. water. CIP at 1300 hours. POH to 3255'. WOC 7 hours. RIH to cement at 5811'. Circulated, losing 300 bbls/hr. POH at 2400 hours.

- 07-31-81 Cleaned out cement from 5811' to 6196'. RIH to top of cement plug at 6292'. Cleaned out cement from 6292' to 6308' without returns. POH. Rigged for aerated water drilling. RIH to 6139'. Attempting to break circulation at 2400 hours.
- 08-01-81 Unable to break circulation. POH 24 stands. Installed jet subs at 2232' and 1160'. RIH to 6139'. Broke circulation. Reamed from 6139' to 6308'. Cleaned out cement from 6308' to 6783'. RIH to 7170'. Cleaned out cement to 7260'. RIH to 7344'. Cleaned out cement to 7624' at 2400 hours.
- 08-02-81 Continued cleaning out cement plugs from 7624' to 7753'. RIH to 8590'. Cleaned out cement from 8590' to 8836'. RIH to 8900' (Bottom of cement plug #5 was not as deep as thought - 8937'.) Circulated. Measured out of hole with no correction. RIH with HOWCO plug catcher on 4-1/2" drill pipe to 8987'. POH to 8973'. Cooled hole with 500 bbls water. HOWCO pumped 56 cu. ft. "B" cement with 70 lbs per sack Gilsonite, 3% Gel, 0.5% CFR-2 and 0.2% HR-7. Displaced with 655 cu. ft. water. Bumped plug. CIP at 1745 hours. POH. RIH with 8-3/4" bit to 8605'.
- 08-03-81 Production Department ran P/T survey. Survey indicated fluid level at 1400' and temperature at 8500' = 496°F - static 8-1/2 hours. RIH to cement at 8837'. Cleaned out cement at 8899' with water and no returns. Broke circulation with aerated water. Cleaned out cement from 8899' to 8930'. Circulated clean. Short trip to 3540'. RIH to top of sand at 8987'. No cement below 8930?? POH to 8242'. Slipped and cut badly damaged drilling line. Continued POH. RIH with HOWCO plug catcher to 8973'. Pumped 400 bbls water to cool hole at 2400 hours.

- 08-04-81 Pumped plug #42 through OEDP: 56 cu. ft. "B" cement with 20# per sack Gilsonite, 3% Gel, 0.5% CFR-2 and 0.2% HR-7. Displaced with 672 cu. ft. water. CIP at 0045 hours. POH to 6146'. Cooled hole with 400 bbls water. HOWCO pumped plug #43 through OEDP at 6146': 112 cu. ft. "B" cement with 2-1 Perlite, 40% SSA-1, 3% Gel, 0.5% CFR-2 and 0.2% HR-7. Displaced with 459 cu. ft. water. CIP at 0300 hours. POH. WOC 8 hours. RIH to cement at 6071'. Hole would not fill. Unable to start circulation with air/water. POH. Installed jet subs.
- 08-05-81 Cleaned out cement from 6068' to 6174'. RIH to 6299'. POH to retrieve jet sub and string float. RIH to bridge at 6434'. Cleaned out from 6034' to 6528' without returns. POH. Installed jet sub. RIH to 6528'. Cleaned out to 6700' RIH to bridge at 8992'. POH. RIH with plug catcher on bottom of drill pipe to 8900'. Pumped 25 cu. ft. sand. Displaced with 225 cu. ft. water. POH to 5737'. Waited two hours for sand to settle. RIH to top of sand at 8985'. 7' of fill. Pulled drill pipe to 8900'. Pumped water to cool hole. Hung OEDP at 8970'. HOWCO pumped plug #44 consisting of 187 cu. ft. class "H" cement 1-1 Perlite, 40% Silica flour, 3% Gel, 0.5% CFR-2, and 0.4% HR-7. Bumped plug with 713 cu. ft. water. CIP 2200 hours. POH.
- 08-06-81 Continued POH. WOC total of 7 hours. RIH with saw tooth single to cement at 8575'. Circulated. Filled hole. Fluid at 175'. POH. RIH with 8-3/4" bit and stabilizer on top of first drill collar to 8575'. Circulated with air and water. Cleaned out cement from 8575' to 8816'.

- 08-07-81 Continued drilling out cement from 8816' to 8900'. Circulated hole clean with aerated water. POH to 3540'. RIH to 8900'. No fill. POH. Rigged and ran liner, consisting of 33 joints of 7" 26# L-80 LT&C casing plus 94 joints 7" 26# K-55 LT&C casing. RIH and hung on Midway 9-5/8" by 7" LT&C liner hanger at 3220'. Cooled hole for 2 hours. Cemented as follows: HOWCO mixed and pumped 337 cu. ft. Gel, 112 cu. ft. water, followed by 417 cu. ft. class "H" cement with 0.5% HR-7 and 1287 cu. ft. "H" cement with 0.4% HR-7 with 50# per sack Spherelite, 40% SSA-1, 4% Gel, 5% Lime and 0.4% CFR-2, plus 306 cu. ft. class "B" cement with 40% SSA-1, 0.5% CFR-2 and 0.4% HR-7.
- 08-08-81 Displaced cement with 505 cu. ft. water. Under displaced cement due to excessive pressure. CIP at 0130 hours. Left 879 cu. ft. cement in 7" casing. Estimated top of cement at 4100'. Fluid level at 20' below surface after CIP. POH to 2290'. Circulated with full returns. POH. Laid down Midway hanger tools. RIH with 8-3/4" bit to top of liner hanger. Circulated with full returns. Had no cement. POH. Picked up nine 4-3/4" drill collars. RIH with 6-1/8" bit to top of cement at 3230'. Cleaned out cement from 3230' to 3235'. RIH to 3473'. Circulated. POH. Laid down 4-1/2" drill pipe.
- 08-09-81 Continued to lay down 4-1/2" drill pipe. Laid down 6" drill collars. Replaced 4-1/2" drill pipe rams with 3-1/2" drill pipe rams. Picked 6-1/8" bit and 4-3/4" drill collars. RIH with 3-1/2" drill pipe to cement at 4461'. Drilled cement from 4461' to 4667'.

- 08-10-81 Drilled cement from 4667' to 4948'. Tested liner lap with 500 psi plus Hydrostatic. Lap OK. Drilled cement to 5185'. POH. Changed bit. Added 3 drill collars to assembly. RIH. Drilled cement with 6-1/8" bit rerun #7 from 5185' to 6081'.
- 08-11-81 Drilled cement with 6-1/8" rerun bit #7 from 6081' to 8254'.
- 08-12-81 Drilled cement from 8254' to 8885'. Drilled guide shoe - cleaned out cement and sand to 9225'. Hole standing full.
- 08-13-81 POH. RIH with 6" magnet and junk sub. Hole standing full of water. POH. Recovered large amounts of junk (1 large piece of Grant rotating drive bushing and miscellaneous small pieces). Made run no 2 with 6" magnet to 9225'. POH. Recovered large amount of miscellaneous broken pieces of liner hanger. Ran 6" globe junk basket. POH.
- 08-14-81 POH with 6-1/8" globe junk basket with no recovery. RIH with 6" magnet and junk sub. Worked over junk at 9225'. POH. Recovered 3 pounds junk with large piece of Grant Kelly rotating head drive bushing. RIH with 6" magnet and junk sub. Worked over junk at 9225'. Recovered 12 lb. hammer head and small pieces of junk. RIH with 6" magnet and junk sub.
- 08-15-81 Worked over junk at 9225'. POH with no recovery. RIH with 6-1/8" mill and junk sub to 9225'. Milled on junk and drilled with mill to 9231'. POH. RIH with magnet and junk sub to 9231'. Worked over junk. POH.
- 08-16-81 POH with magnet. Recovered 4" DIA x 1/2" piece of Grant rotating head drive bushing and miscellaneous small pieces of metal. RIH with rerun #8, 6-1/8" bit and junk sub to 9231'. Drilled 6-1/8" hole from 9231' to 9248'. POH. Made up 6-1/8" drilling assembly. RIH to 9225'. Reamed from 9225' to 9248'. Drilled 6-1/8" hole from 9248' to 9332'.

08-17-81 Drilled 6-1/8" hole from 9332' to 9604'.

08-18-81 Drilled 6-1/8" hole from 9604' to 9850'.

08-19-81 Drilled 6-1/8" hole from 9850' to 10,054'.

08-20-81 Drilled 6-1/8" hole from 10,054' to 10,124'.

08-21-81 Drilled 6-1/8" hole from 10,124' to 10,263'.

08-22-81 Drilled 6-1/8" hole from 10,263' to 10,369'.

08-23-81 Drilled 6-1/8" hole from 10,369' to 10,435'.

08-24-81 POH. Changed bit. Reamed from 10,375' to 10,435'. Drilled 6-1/8" hole from 10,435' to 10,466'. POH. Changed bit. RIH. Reamed from 10,398' to 10,408'.

08-25-81 Drilled 6-1/8" hole from 10,466' to 10,537'. RIH with bit and junk sub to prepare hole for diamond bit. Reamed from 10,472' to 10,537'. Drilled 6-1/8" hole from 10,537' to 10,545'.

08-26-81 Made up Ace 6-1/8" diamond bit. Drilled 6-1/8" hole from 10,545' to 10,563'.

08-27-81 POH with Ace diamond bit. Found junk to be on bottom, indicated by "O" ring and flat spot in center. Drilled 6-1/8" hole from 10,563' to 10,619'.

08-28-81 Drilled 6-1/8" hole from 10,619' to 10,627'. POH. Left cones in hole. RIH with 5-1/2" junk sub to 10,482'. Worked and washed to bottom. Circulated with full returns. Worked over junk.

- 08-29-81 POH. Recovered small pieces of cones and bearings (25% of total). RIH to 10,482'. Stuck pipe. Circulated with full returns while working stuck pipe. Freed pipe. POH. RIH with bit to 10,453'. Circulated and reamed from 10,453' to 10,616'. POH. RIH with 5-1/2" magnet.
- 08-30-81 Circulated and worked over junk. POH. Recovered small piece of cone and bearing. RIH with 5-1/2" magnet. Worked over junk at 10,627'. POH. Recovered pieces of cone and bearings. RIH with 6-1/8" junk mill. Reamed from 10,550' to 10,627'. Milled on junk at 10,627'. Swept hole with Gel.
- 08-31-81 POH. No junk in junk sub. RIH with 6" magnet to 10,627'. Worked on junk. POH to 10,604'. Set back Kelly. Stuck pipe. circulated with 100% returns. Unable to free pipe. Rigged up McCullough Wireline and Free Point. RIH to top of drill collars at 10,324'. Wireline shorted out in splice. Rigged down McCullough. Circulated.
- 09-01-81 Circulated while waiting on Wireline Services. RIH with Free Point Indicator. Wireline failed at 10,300'. POH. Burned 1200' of wireline. Ran temperature survey on production wireline.
Temperature survey results:
8000' 15 minutes 300°F maximum
8500' 11 minutes 334°F maximum
9000' 11 minutes 355°F maximum
9500' 11 minutes 381°F maximum
10,000' 11 minutes 401°F maximum
10,300' 11 minutes 415°F maximum
- POH. Circulated and waited on high temperature wireline.
- 09-02-81 Ran HOMCO Free Point Indicator to 10,170'. Free Point Indicator stopped at 10,170'. POH. RIH with sinker bar and collar locator to 10,568'. POH. Ran Free Point. Indicated pipe 65% free at top of drill collars at 10,355', 35% free at 10,386', and stuck at 10,417'. Ran back-off shots. Backed off on second attempt at 10,355'.

- 09-03-81 RIH with screw-in sub, bumper sub and jars to fish at 10,355'. Screwed into fish. Circulated. Recovered entire fish. RIH.
- 09-04-81 Drilled 6-1/8" hole from 10,627' to 10,632'. Cored from 10,632' to 10,637' (5 feet).
- 09-05-81 Recovered 38" granite core. Laid down core bbl. RIH with bit #25 to 1423'. Unloaded hole with 150 psi air pressure. Circulated with air at 100 psi. RIH to 2353'. Unloaded hole with 310 psi air. Circulated with air at 100 psi. RIH to 3381'. Unloaded hole with 570 psi air. Circulated with 150 psi air. RIH to 4033'. Unloaded hole with 580 psi air pressure. Circulated with 150 psi air. Hole making 15 GPM while circulating. Circulated one hour. Water decreased to 5 GPM after 30 minutes. Continued to make 5 GPM. POH, laying down drill pipe. RIH with one stand of 3-1/2" drill pipe. Filled hole with water. Closed pipe rams. Injected 570 bbls water at 306 GPM at 1000 psi pressure. RIH with drill collars and drill pipe. POH, laying down drill pipe.
- 09-06-81 Continued laying down drill pipe and drill collars. Removed BOP's. Released rig for moved to BACA-20 at 1800 hours.

BACA-12 Redrill

NO. JTS.	DESCRIPTION	<u>CASING DETAIL</u>		<u>TOP</u>	<u>BOTTOM</u>
		<u>LENGTH</u>			
	<u>7" LINER</u>				
1	HOWCO Guide Shoe	1.00	8894	8895	
1	7" 26#/ft L-80	41.68	8852.32	8894	
1	HOWCO Float Collar	2.00	8850.32	8852.32	
32	7" 26#/ft L-80	1330.23	7520.09	8850.32	
99	7" 26#/ft K-55	4292.23	3227.86	7520.09	
1	Midway 9-5/8" x 7" Hanger	7.86	3220	3227.86	

Union Geothermal Company of New Mexico

4100 Southern Blvd. SE — Suite 180C

P.O. Box 15225

Rio Rancho, New Mexico 87174

Telephone (505) 897-1776



ROE 1-129

B-12WF

R. O. Engebretsen
Area Manager

September 29, 1981

Mr. Carl Ulvog,
Senior Petroleum Geologist
New Mexico Oil Conservation
Division
State of New Mexico
P. O. Box 2088
Santa Fe, New Mexico 87501

Dear Mr. Ulvog:

Enclosed please find Forms G105, G106, G107 and
the Well History for Baca Well No. 12, Redondo
Creek Field, Sandoval County, New Mexico.

No electric logs were run during the deepening
of this well.

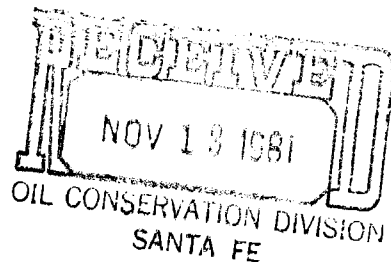
Yours very truly,

A handwritten signature in cursive script that reads "R. O. Engebretsen".

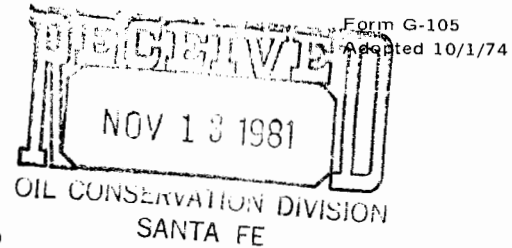
R. O. Engebretsen

ROE/rr

Enclosures



NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501



GEOTHERMAL RESOURCES WELL LOG

Operator Union Geothermal Company of New Mexico
Address P. O. Box 15225, Rio Rancho, New Mexico 87174
Reservoir Redondo Creek Field
Lease Name Baca Location No. 1 Well No. Baca No. 12 Unit Letter DN
Location: 4180 4230 feet from the North line and 2820 2790 feet from the East line Section 14
Township 19N Range 3E County Sandoval

FORMATIONS PENETRATED BY WELL

DEPTH TO		Thickness	Drilled or Cored	Recovery	DESCRIPTION
Top of Formation	Bottom of Formation				
9212'	9220'	8'	Drilled		Abo Fm. (red beds)
9220'	10,220'	963'	"		Magdalena Gp. (L.S., Siltstone)
10,220'	10,637'	384'	"		Granite (Pre-Cambrian)

Attach Additional Sheets if Necessary

This form must be accompanied by copies of electric logs, directional surveys, physical or chemical logs, water analyses, tests, and temperature surveys (See Rule 205).

CERTIFICATION

I hereby certify that the information given above and the data and material attached hereto are true and complete to the best of my knowledge and belief.

Signed R. O. Engeltretsen Position Area Manager Date 9/29/81
R. O. Engeltretsen

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Operator	1
Land Office BLM	1

NEW MEXICO OIL CONSERVATION COMMISSION

P. O. Box 2088, Santa Fe 87501

APPLICATION FOR PERMIT TO DRILL, DEEPEN,
OR PLUG BACK--GEOTHERMAL RESOURCES WELL

5. Indicate Type of Lease

STATE ☐ FEE ☒

5.a State Lease No.

N/A

7. Unit Agreement Name

N/A

8. Farm or Lease Name

Baca Location No. 1

9. Well No.

Baca No. 12

10. Field and Pool, or Wildcat

Redondo Creek

12. County

Sandoval

19. Proposed Depth

11,000'

19A. Formation

Pre-Cambrian
Granite

20. Rotary or C.T.

Rotary

21. Elevations (Show whether DF, RT, etc.)

8430 GR.

21A. Kind & Status Plug. Bond

Multiple Well

21B. Drilling Contractor

Brinkerhoff-Signal

22. Approx. Date Work will start

June 26, 1981

~~PROPOSED~~ CASING AND CEMENT PROGRAM (EXISTING)

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP
26"	20"	94#	247'	1016 CF	Surface
17-1/2"	13-3/8"	68#	1453'	1709 CF	Surface
12-1/4"	9-5/8"	36# & 40#	3540'	1625 CF	Surface
8-3/4"	7"	26#	9211'	None*	

* Combination blank and slotted production liner w/liner hanger top at 3343'.

It is proposed to deepen this well which is currently used as a water injection well in the Bandelier Tuff/Paliza Canyon Andesite zones from 3540' to 7300'. It is planned to install 12-3000# BOE plus Grant rotating head and pull the 7" slotted liner. An 8-3/4" hole will be drilled to 9400'± and 7" (blank) liner will be cemented from 3343' to 9400'±. A 6-1/8" hole will be drilled from 9400' to 11,000'± and the well completed for production testing with 5-1/2" FJ liner (slotted) from 9200' to 11,000'±.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. Give blowout preventer program, if any.

hereby certify that the information above is true and complete to the best of my knowledge and belief.

Signed R.O. Engebretsen Title Area Manager Date 6/23/81
R. O. Engebretsen
(This space for State Use)

APPROVED BY Carl Ulvog TITLE SENIOR PETROLEUM GEOLOGIST DATE 6/29/81
CONDITIONS OF APPROVAL, IF ANY:

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N. M. B. M.		
U. S. G. S.		
Operator		
Land Office		

NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501SUNDRY NOTICES AND REPORTS
ON
GEOTHERMAL RESOURCES WELLS

5. Indicate Type of Lease
State <input type="checkbox"/> Fee <input checked="" type="checkbox"/>
5.a State Lease No.

Do Not Use This Form for Proposals to Drill or to Deepen or Plug Back to a Different Reservoir. Use "Application For Permit -" (Form G-101) for Such Proposals.)

1. Type of well Geothermal Producer <input type="checkbox"/> Temp. Observation <input type="checkbox"/> Low-Temp Thermal <input type="checkbox"/> Injection/Disposal <input checked="" type="checkbox"/>	7. Unit Agreement Name
2. Name of Operator Union Oil Company of California	8. Farm or Lease Name Baca Location
3. Address of Operator Mountain Route Box 76, Jemez Springs, New Mexico 87025	9. Well No. 12
4. Location of Well Unit Letter N ^{East} 4230 1200 Feet From The North Line and 1800 ²⁷⁹⁰ Feet From The West Line, Section 14 23 Township 19N Range 3E NMPM.	10. Field and Pool, or Wildcat Redondo Creek
15. Elevation (Show whether DF, RT, GR, etc.) 8430' GR	12. County Sandoval

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK <input type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>	REMEDIAL WORK <input checked="" type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>		COMMENCE DRILLING OPNS. <input type="checkbox"/>	PLUG & ABANDONMENT <input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	CASING TEST AND CEMENT JOB <input type="checkbox"/>	
OTHER <input type="checkbox"/>		OTHER <input type="checkbox"/>	

17. Describe Proposed or completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 203.

SEE ATTACHED WELL HISTORY

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED R. O. Engebretsen TITLE Project Coordinator DATE 8/20/76

APPROVED BY Carl Ulvog TITLE SENIOR PETROLEUM GEOLOGIST DATE 8/30/76

CONDITIONS OF APPROVAL, IF ANY:

NEW MEXICO OIL CONSERVATION COMMISSION

P. O. Box 2088, Santa Fe 87501

GEOTHERMAL RESOURCES WELL HISTORY

Operator Union Oil Company of California Address Mtn. Route Box 76, Jemez Springs, N.M. 87025
 Lease Name Baca Location Well No. Baca No. 12
 Unit Letter N Q Sec. 23 Twp. 19N Rge. 3E
 Reservoir Redondo Creek County Sandoval

It is of the greatest importance to have a complete history of the well. Use this form to report a full account of all important operations during the drilling and testing of the well or during re-drilling, altering of casing, plugging, or abandonment with the dates thereof. Be sure to include such items as hole size, formation test details, amounts of cement used, top and bottom of plugs, perforation details, sidetracked junk, bailing tests, shooting, and initial production data and zone temperature. (Attach additional sheets if necessary.)

Date

- 7-13-76 Moved in Towell Well Service's service unit. Installed pipe substructure over wellhead. Set in water tanks, pumps and air compressors. Began rigging up service unit. Shut rig down at 1800 hrs. Rigged up wireline unit. Ran sinker bars to obstruction at 3680'. Ran pressure-temperature gradient survey to 3680'.
- 7-14-76 Started operations at 0730 hrs. Connected pump discharge to wellhead. Began injecting fresh water at 1030 hrs. Continued rigging up service unit while pumping water. Injected 550 bbls. fresh water on vacuum at 1½ BPM to cool hole. Rigged up wireline unit and ran temperature gradient survey to 3678'. Rigged up Go International to run 9-5/8" casing caliper tool. Unable to get caliper arms to operate properly. Picked up and ran 7" casing caliper tool. Tagged bridge at 3614'. Logged 7" casing up to top of liner at 3343'. Injected 200 bbl. fresh water while logging. Continued installing flow lines and mud system while running caliper tools. Shut rig down at 2030 hrs.
- 7-15-76 Injected 200 bbls. fresh water from 0600 to 0800 hrs. to cool hole. Ran 9-5/8" casing caliper tool to top of liner at 3343'. Tool became stuck when starting to pull for logging. Worked tool at 2000 lbs. pull for 45 minutes with no movement. Rigged up to run drill pipe and strip over logging line. Picked up 6" O.D. Bowen side-door overshot with 1-7/16" socket. Shut rig down at 1600 hrs. to unload and rack drill pipe.
- 7-16-76 Began operations at 0600 hrs. Ran side-door overshot to top logging tool at 3343'. Worked over caliper tool rope socket and pulled tool loose with 12,000 lbs. POH with caliper tool on drill pipe simultaneously spooling line on logging unit. Laid down fishing tools. Shut rig down at 1630 hrs.
- 7-17-76 Pumped 300 bbls. fresh water from 0600 to 1030 hrs. Ran 9-5/8" casing caliper tool to 3320'. Logged 9-5/8" casing up to surface. Made repeat log run from 1500' to surface. Rigged down GO-International logging equipment. Tested BOE to 500 psig. Shut rig down at 1930 hrs.

CERTIFICATION

I hereby certify that the information given above and the data and material attached hereto are true and complete to the best of my knowledge and belief.

Signed R. A. Englebert Position Project Coordinator Date 8/13/76

Date	Detail of Operations
7-18-76	Started at 0730 hrs. Picked up 8-3/4" bit and 9-5/8" casing scraper. RIH to 1520' working each stand up and down twice. Pulled scraping assembly and picked up 4-3/4" O.D. sand pump on 2-7/8" drill pipe. Ran sand pump on drill pipe to bridge at 3297'. Worked sand pump making one foot of hole. Pulled sand pump recovering one cupful of cuttings.
7-19-76	At 0730 hrs. ran sand pump on drill pipe to bridge at 3290'. Worked sand pump, POH and recovered small amount of fine grained particles. Ran 8-3/4" bit with 9-5/8" casing scraper. Scraped 9-5/8" casing without circulating from 1520' to 2519'. Pulled bit and scraper to pick up sand pump. Ran sand pump to bridge at 3250'. Worked sand pump making three feet of hole. Pulled sand pump. Shut rig down at 2000 hrs.
7-20-76	At 0700 hrs. cleaned out sand pump. Recovered one gallon cuttings scraped 1520'-2519'. Picked up bit and scraper. Scraped 9-5/8" casing from 2519' to bridge at 3233' without circulating. POH to pick up sand pump. Ran sand pump on drill pipe to 3232'. Worked sand pump then POH recovering five gallons cuttings. Picked up 6-1/8" bit with cones removed and RIH to 1600'. Shut rig down at 1900 hrs.
7-21-76	At 0700 hrs. finished RIH with drag bit to 3232'. Circulated out fill 3232'-3261' using water. Lost complete returns at 3261'. Started air with water and circulated hole clean from 3261'. Ran in to 3333' without touching bridge. Pulled out to pick up bit and scraper. Ran 8-3/4" bit and 9-5/8" casing scraper to 1650'. Shut rig down at 1700 hrs. due to severe electrical storm.
7-22-76	At 0700 hrs. finished RIH and scraped 9-5/8" casing from 3233' to top 7" liner at 3343'. POH to pick up 6-1/8" bit and 7" casing scraper. RIH and scraped 7" casing from 3343' to bridge at 3449'. POH for sand pump. Shut rig down at 1630 hrs.
7-23-76	Started operations at 0700 hrs. Finished RIH with sand pump to bridge at 3438'. Worked sand pump and POH recovering 8 gals. cuttings. Ran bit and scraper to 3438'. Started pumping air and water. Washed from 3438' to 3548'. Pulled up to 3300' and let well stand without circulating for one hour. RIH and scraped 7" casing 3548'-3630' without circulating. Pulled up to 3300' and shut rig down at 2000 hrs.
7-24-76	Began at 0700 hrs. and installed 10" by-pass line to muffler in sump. Inspected and serviced BOE. RIH to 3630'. Started pumping air and water. Washed and scraped down 7" casing from 3630' to 3742'. Circulated hole clean. Pulled up to 3300' and shut rig down at 1930 hrs.
7-25-76	Left well shut in and rig shut down for crew to have day off.
7-26-76	Started at 0700 hrs. Wellhead pressure built to 28 psig. Killed well with 60 bbl. water. RIH from 3300' and scraped 7" casing 3742'-4826'. POH to pick up sand pump. Ran sand pump to bridge at 5126'. Worked sand pump and POH recovering 8 gals. cuttings. Shut rig down at 2000 hrs.
7-27-76	Began operations at 0700 hrs. WHP=6 psig. Bled pressure off in two minutes. Picked up bit and scraper. Scraped 7" casing from 4826' to bridge at 5100'. Pulled up and installed circulating sub with 1/8" dia. port. RIH with bit to 5100' and circulating sub at 2020'. Started pumping air and water. Had fluid to surface in 20 minutes. Continued to circulate 2 1/2 hrs. but unable to wash out bridge. Pulled up and re-positioned circulating sub to be at 3000'. Began RIH when brake blocks stacked up on brake drum. Shut rig down at 1700 hrs. to obtain parts.

Date

Detail of Operations

- 7-28-76 Installed new brake blocks. RIH with bit to 5100' and circulating subs at 2030' (7/64" port) and 3500' (1/8" port). Started pumping air and water. Had fluid to surface in 20 minutes. Circulated one hour but still unable to wash through bridge at 5100'. Pulled up and changed ports in circulating subs to 3/64" at 2030' and 5/64" at 3500'. Shut rig down at 1930 hrs.
- 7-29-76 RIH with bit to 5100'. Started pumping air and water. Had fluid to surface in 30 minutes. Washed and drilled out bridge at 5100'. Scraped 7" casing without washing to bridge at 5280'. Started air and water. Unable to circulate. POH with bit and scraper. Found two water courses in bit plugged. RIH w/8-3/4" bit and 9-5/8" casing scraper to top of 7" liner at 3343'. Shut rig down at 2000 hrs.
- 7-30-76 POH with bit and scraper. Began pumping water to cool hole at 0600 hrs. Ran temperature survey to 3340' at 0900 hrs. Continued to pump water until 1130 hrs. Ran temperature survey with stops at 3750' and 3340'. Rigged up Dia-Log to run casing caliper tools. Calipered 9-5/8" casing from 3320' to surface. Calipered 7" liner from 3800' to 3340'. Picked up Halliburton retrievable bridge plug and RTTS packer. Closed well in and shut rig down at 1800 hrs.
- 7-31-76 Began cooling hole with fresh water at 0600 hrs. RIH with 9-5/8" bridge plug on RTTS packer on 2-7/8" drill pipe. Set bridge plug at 3320'. Pulled up to 3280'. Filled hole with 92 bbls. water. Closed pipe rams and pressured to 750 psig. Pressure increased to 950 psig in 15 minutes. Released pressure with no flow. Picked up bridge plug and POH with test tools. Picked up bit and scraper and RIH to bridge at 5280'. Started pumping air and water. Washed and drilled 5280'-5308'. Unable to keep both compressors on line due to high pressure. Started POH to change circulating subs and check for plugged bit. Shut rig down at 2030 hrs.
- 8- 1-76 Started at 0700 hrs. and finished POH. Cleaned out plugged bit and scraper. RIH with bit and scraper and one circulating sub (1/8" port) in string. Tagged bottom at 5308' with circulating sub at 3600'. Started pumping air and water. Fluid to surface in 50 minutes. Air pressure built to 1250 psi using only one compressor indicating bit was again plugged. Attempted for 2½ hrs. to unplug bit. POH and found bit and scraper plugged. Shut rig down at 1930 hrs.
- 8- 2-76 Bled off 4 psig WHP at 0700 hrs. RIH with bit and scraper to 5308' and circulating sub (1/16" port) at 3572'. Started pumping air and water. Washed out bridge at 5308'. Stopped circulating and scraped 7" casing from 5308' to bridge at 5550'. Broke circulation and washed out bridge. Stopped circulating and scraped 7" casing from 5550' to 5618'. Pulled up to 3320'. Shut rig down at 2000 hrs.
- 8- 3-76 At 0700 hrs. RIH to 4617'. Started pumping air and water. Bearings went out on air booster prime mover. Pulled up to 3320'. Shut rig down at 1500 hrs. waiting on arrival of new air booster.
- 8- 4-76 Set in new air booster at 0700 hrs. RIH to 4618'. Broke circulation with air and water to heat up hole. RIH to bridge at 5618'. Broke circulation with air and water. Circulated out bridge and washed and scraped to 5628'. Unable to wash deeper. Rotated pipe with considerable torque and bouncing. POH with bit and scraper. Found 9 teeth on bit were broken. Shut rig down at 1930 hrs.

8- 5-76 At 0700 hrs. RIH with 6-1/8" concave mill to 4650'. Broke circulation with air and water. Fluid to surface in 60 minutes. RIH to bridge at 5628'. Broke circulation with air and water. Fluid to surface in 80 minutes. Milled on junk one hour. Bridge began moving downhole. Stopped circulating and RIH to 6482' (unable to feel any obstruction moving after going below 5728'). Broke circulation with air and water. Fluid to surface in 115 minutes. Circulated for 25 minutes to clean hole. Pulled up one stand and shut rig down at 2100 hrs.

8- 6-76 Changed out bad kelly at 0700 hrs. RIH with 6-1/8" mill from 6482' to bridge at 8454'. Spudded on bridge but unable to move down. Drawworks low drum clutch failed. Shut rig down at 1600 hrs. to obtain repair parts.

8- 7-76 Repaired low drum clutch and strung new drilling line. POH with concave mill. Shut rig down at 2100 hrs.

8- 8-76 At 0700 hrs. RIH with 6-1/8" bit to 8455' and circulating sub at 3720'. Broke circulation with air and water. Unable to circulate through bit. Began POH to check for plugged bit. Shut rig down at 2100 hrs.

8- 9-76 At 0700 hrs. finished POH. Found two water courses in bit plugged. Installed new kelly hose. RIH with 6-1/8" bit to bridge at 8454' with circulating sub at 4650' (1/16" port). Started pumping air and water. Had fluid to surface in 2 hr. 5 minutes. Circulated additional 4 hrs. but no indication of pumping through bit. Tagged bottom at 8454'. Unable to wash deeper. Closed well in and shut rig down at 2000 hrs.

8-10-76 At 0700 hrs. broke circulation with air and water. Fluid to surface in 2 hrs. 15 minutes. Circulated additional 3 hrs. but unable to wash below 8454'. Began POH laying down drill pipe. Shut rig down at 1600 hrs.

8-11-76 Finished POH laying down drill pipe and drill collars. Closed master valve and removed BOE stack. Laid down derrick. Released rig at 1900 hrs. 8/11/76.

FINAL REPORT.

NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501

**SUNDRY NOTICES AND REPORTS
ON
GEOTHERMAL RESOURCES WELLS**

NO. OF COPIES RECEIVED		
DISTRIBUTION		
File		/
N. M. B. M.		
U. S. G. S.		
Operator		
Land Office		

5. Indicate Type of Lease	
State <input type="checkbox"/>	Fee <input checked="" type="checkbox"/>
5.a State Lease No.	

Do Not Use This Form for Proposals to Drill or to Deepen or Plug Back to a Different Reservoir. Use "Application For Permit -" (Form G-101) for Such Proposals.)

1. Type of well Geothermal Producer <input type="checkbox"/> Temp. Observation <input type="checkbox"/> Low-Temp Thermal <input type="checkbox"/> Injection/Disposal <input checked="" type="checkbox"/>		7. Unit Agreement Name
2. Name of Operator Union Oil Company of California		8. Farm or Lease Name Baca Location
3. Address of Operator Mountain Route Box 76, Jemez Springs, New Mexico 87025		9. Well No. 12
4. Location of Well Unit Letter N 4230 Feet From The North Line and 1800 Feet From East West Line, Section 23 Township 19N Range 3E NMPM.		10. Field and Pool, or Wildcat Redondo Creek
15. Elevation (Show whether DF, RT, GR, etc.) 8430' GR		12. County Sandoval

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK <input checked="" type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input type="checkbox"/>	PLUG & ABANDONMENT <input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>		CASING TEST AND CEMENT JOB <input type="checkbox"/>	
OTHER <input type="checkbox"/>		OTHER <input type="checkbox"/>	

17. Describe Proposed or completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 203.

PRESENT CONDITION

DEPTH: 9212' T. D.

CASING: 20" C 247' KB
13-3/8" C 1453' KB
9-5/8" C 1240' - 3540' KB (liner)
9-5/8" C Surface - 1240' (tie-back)
7" H 3343' - 9211' (combination blank and slotted liner)

It is proposed to move in a service unit and clean out a bridge indicated by wireline survey to exist in the 7" slotted liner at 3715'. This work is required to permit running BHP - BHT Surveys to T. D. for bottom hole monitoring in connection with reservoir evaluation.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED <u>R. O. Engbretsen</u>	TITLE Project Coordinator	DATE 7-2-76
APPROVED BY <u>Carl Ulvåg</u>	TITLE SENIOR PETROLEUM GEOLOGIST	DATE 7/8/76

CONDITIONS OF APPROVAL, IF ANY:

P. O. Box 2088, Santa Fe 87501

APPLICATION TO PLACE WELL ON INJECTION-GEOTHERMAL RESOURCES AREA

Operator Union Oil of California		Address Mtn. Rt. 80x 76, Jemez Springs, N. M. 87025	
Lease Name Baca	Well No. 12	Field Redondo Creek	County Sandoval
Location Unit Letter C N ; Well Is Located 4230 Feet From The N Line And 1800 Feet From The # E Line, Section 28 14 Township 19N Range 3E NMPM.			

CASING AND TUBING DATA

NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT	TOP OF CEMENT	TOP DETERMINED BY
Conductor Pipe	20"	247'	✓ 1016 cu. ft.	surface	visual
Surface Casing	13 3/8"	1453'	✓ 1709 cu. ft.	surface	visual
Long String	9 5/8"	3540'	✓ 2187 cu. ft.	surface	visual
Tubing LINER	7"	3343-9211'	Name, Model and Depth of Tubing Packer		
Name of Proposed Injection Formation Bandelier Tuff			Top of Formation 165'		Bottom of Formation 6460'
Is Injection Through Tubing, Casing, or Annulus? casing		Perforations or Open Hole? slotted liner		Proposed Interval(s) of Injection 3540 to 6460'	
Is This a New Well Drilled For Injection? no	If Answer Is No, For What Purpose was Well Originally Drilled? for production		Has Well Ever Been Perforated in Any Zone Other Than the Proposed Injection Zone? no perfs.		
List All Such Perforated Intervals and Sacks of Cement used to Seal Off or Squeeze Each none					
Depth of Bottom of Deepest Fresh Water Zone in This Area 200'		Is This Injection for Purpose of Pressure Maintenance or Water Disposal? (See Rules 501 and 502) water disposal			
Anticipated Daily Injection Volume unknown	Minimum -0-	Maximum 21000 bbl.	Open or Closed Type System closed	Is Injection to be by Gravity or Pressure? gravity	Approx. Pressure (psi) -0-
Answer Yes or No Whether the Following Waters are Mineralized to such a Degree as to be Unfit for Domestic, Stock, Irrigation, or Other General Use—			Water to be Injected yes	Natural Water in Injection Zone yes	Are Water Analyses Attached? no
Name and Address of Surface Owner (or Lessee, if State or Federal Land) Baca Land & Cattle Co., Abilene, Texas					
List Names and Addresses of all Operators Within One-Half (1/2) Mile of This Injection Well none					

NOTE PLAT OF AREA ON FILE WITH O.C.C.

Have Copies of this Application Been Sent to Each Operator Within One-Half Mile of this Well?	Yes <input type="checkbox"/> No <input type="checkbox"/> N.A.
Are the Following Items Attached to this Application (see Rule 503)	Plat of Area Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
	Electrical Log Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
	Diagrammatic Sketch of Well Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

(Signature)

Project Coordinator
(Title)7-17-75
(Date)

NOTE: Should waivers from all operators within one-half mile of the proposed injection well not accompany this application, the New Mexico Oil Conservation Commission will hold the application for a period of 20 days from the date of receipt by the Commission's Santa Fe office. If at the end of this period no protest has been received by the Commission, the application will be processed.

GROUND ELEV. 8450

GRAVEL, VOLCANIC DEBRIS
0 — 160'

26" HOLE

— 247', 20" 94" H40 CSG. CMT'D.W/1016 FT.³
OK

17 1/2" HOLE

9 5/8" TIEBACK 1240' TO SURFACE CMT'D.W/
562 FT.³

BANDELIER TUFF
160' — 6460'

— 1453', 13 3/8" 68" K55 CSG. CMT'D.W/1709 FT.³
OK

12 1/4" HOLE

— 3343', 7" 26" J55 SLOTTED LINER MACH.
PERFORATED 16-2-6-250

— 3540', 9 5/8" 36" K55 CSG. CMT'D.W/1825 FT.³
9 5/8" LINER HUNG @ 3540' W/ TOP OF
HANGER @ 1240' CMT'D.W/ 1400 FT.³
562

PALIZA CANYON FORMATION
6460' — 7380'


ABIQUIU TUFF 7380' — 7575'

8 3/4" HOLE

REDBEDS (PERMIAN)
7575' — 9212'

95
8 562
+ 1625
2187 OK

TD 9212'

REVISED	DATE		DRAWN
			FOR:
		UNION OIL COMPANY OF CALIFORNIA - GEOTHERMAL DIVISION	BY: L.D.C.
		BACA 12 CASING SCHEMATIC	DATE: 3-6-75
			SCALE: NONE
			DRAWING NUMBER
			2154

GEOHERMAL RESOURCES WELL LOCATION AND ACREAGE DEDICATION PLAT

All distances must be from the outer boundaries of the Section.

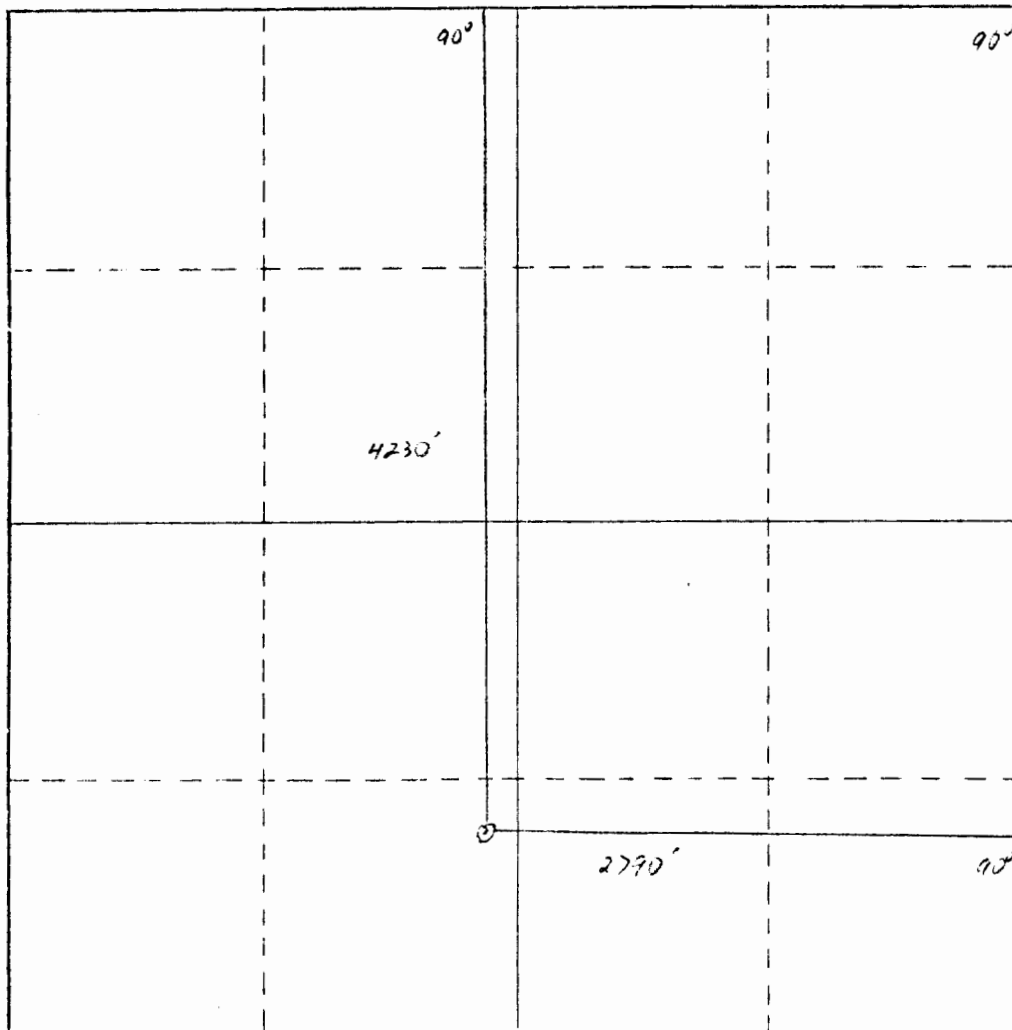
Operator UNION GEOTHERMAL COMPANY OF NEW MEXICO			Lease BACA LOCATION NO. 1		Well No. BACA 12
Unit Letter N	Section 14	Township 19N	Range 3E	County SANDOVAL	
Actual Footage Location of Well: 4230 feet from the N line and 2790 feet from the E line					
Ground Level Elev. 8427'	Producing Formation BANDELIER TUFF		Pool REDONDO CANYON		Dedicated Acreage: Acres

- Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.
- If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty). **No other operators or leases within three miles.**
- If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling, etc? **No other ownership within three miles.**

☐ Yes ☐ No If answer is "yes," type of consolidation N/A

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Commission.



CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Name Charles E. Moore
Position Geological Engineer
Company Union Oil Co. of Cal.
Date 10/4/72

I hereby certify that the well location shown on this 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.

Date Surveyed _____
Registered Professional Engineer and/or Land Surveyor _____

Certificate No. _____

CERTIFICATE OF COMPLIANCE
AND AUTHORIZATION TO PRODUCE
GEOTHERMAL RESOURCES

OWNER OR OPERATOR

Name Union Oil Co. of California
Address Mtn. Rt. Box 76, Jemez Springs, New Mexico 87025

TYPE OF WELL

Geothermal Producer ☐ Low-Temperature Thermal ☐ Injection/Disposal ☒

REASON FOR FILING

New Well ☒ Recompletion ☐
Change in Ownership ☐ Designation of Purchaser ☐
Other (Please Explain) ☐

DESCRIPTION OF WELL

Lease Name Baca Location # 1 Well No. 12 Name of Reservoir Bandelier Tuff
Kind of Lease (Fee, Fed. or State) Fee Lease Number _____

LOCATION

Unit 4230
Letter EN; 1700 feet from the West North line and
1100 2790 feet from the North East line of
Section 25 14 Township 19N Range 3E
County Sandoval

TYPE OF PRODUCT

Dry _____ Steam and Water ☒ Low Temp. Thermal Water _____

DESIGNATION OF PURCHASER OF PRODUCT

Name of Purchaser N/A
Address of Purchaser N/A
Product Will Be Used For N/A

CERTIFICATE OF COMPLIANCE

I hereby certify that all rules and regulations concerning geothermal resources wells in the State of New Mexico, as promulgated by the Oil Conservation Commission of New Mexico, have been complied with, with respect to the subject well, and that the information given above is true and complete to the best of my knowledge and belief.

Signed J. C. Jones Position Proj. Coord. Date 10/7/75
Approved _____ Position _____ Date _____