Open-File Report # NM/Baca- 17

BACA PROJECT

DATA AND REPORTS

WELLS

No.	Transfer Date	Release Date	Title
1.	A	A	Summary sheet for Baca Wells No's 1-3.
2.	A	A	Baca Wells No's 4-16 summary sheet.
3.	A	A	Well summary reports and Drilling Histories--Baca Wells No's 4-16.
4.	B	B	Lithology logs--Baca Wells No's 4-16.
5.	A	A	Temperature and Pressure Surveys--Baca Wells No's 4-8 and 10-16.
	B	B	Electric logs for Baca Wells No's 10-14.

Form C-105
Adopted 10/1

NEW MEXICO OIL CONSERVATION COMMISSION

P. O. Box 2088, Santa Fe 87501

GEOTHERMAL RESOURCES WELL SUMMARY REPORT

Operator Union Oil Company of California Address Mtn. Route Box 76, Jemez Springs, NM 87

Lease Name Baca Location No. 1 Well No. Baca No. 4

Unit Letter O Sec. 12 Twp. 19N Rge 3E

Reservoir Redondo Creek County Sandoval

Commenced drilling (Deepen Well) 6/7/73

Completed drilling (Deepen Well) 6/28/73

Total depth 6378' Plugged depth 6376'

Junk None

GEOLOGICAL MARKERS	DEPTH
Caldera Fill	0' - 200'
Bandelier Tuff	200' - 5980'
Paliza Canyon Andesite	5980' - 6378'

Commenced producing Not Producing (Date)

Geologic age at total depth: Pliocene

	Static test Shut-in well head		Production Test Data								
			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
				WELL TO BE TESTED AT A LATER DATE.							

CASING RECORD (Present 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
	13-3/8"	48#	J-55	N	S	1441'	Surface	1800 CF	Surface	Visual
	9-5/8"	36#	J-55	N	S	3182'	Surface	1700 CF	Surface	Visual
4"	7"	23#&26#	K-55	N	S	6376'	3031'	---	---	Prod. Liner Not Cemented
	7"	26#	K-55	N	S	2899'	Surface	572 CF	495'	Bond Log

PERFORATED CASING

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

Gas analysis of effluent made? N/A Electrical log depths N/A Temperature log depths N/A

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.

Drilling Record

SHEET D

PAGE NO. 1

LEASE Baca WELL NO. 4 FIELD Baca Land & Cattle Co.

DATE	T.T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS
9-11-70		Finished rigging up - Drld. from 0 to 45. Set 10' of 20" conductor.
9-12-70		Drld. from 45 to 380'. (17½" hole) (with mud).
9-13-70		Drld. from 380 to 540'.
9-14-70		Drld. from 540 to 790'.
9-15-70		Drld. from 790 to 1290'.
9-16-70		Drld. from 1290' to 1442'. Ran 45 Jts. - 13-3/8" O.D. 48 - J-55 - 8 Rd. thd. casing set at 1441 feet and circulated cement.
9-17-70		WOC & nippling up.
9-18-70		Drld. from 1442 to 1722 with air. (12¼ hole).
9-19-70		Drld. from 1722 to 1994 with air. Steam and water at 1887. Increase at 1988.
9-20-70		Drld. from 1994 to 2352.
9-21-70		Drld. from 2352 to 2490. Temp. survey at 2408-BHT-380°F.
9-22-70		Drld. from 2490 to 2625. Blooie line cut out, down 17½ Hrs. repairing.
9-23-70		Drld. from 2625 5o 2808.
9-24-70		Drld. from 2808 to 3138 with air.
9-25-70		Drld. from 3138 to 3177'. Mixing mud to mud hole up, to run casing.
9-26-70		Spotted cement plug (150 Sx) at 3177'. Top plug 2782'.
9-27-70		Spotted cement plugs as follows: 150 Sx at 1832, top cement at 2780. 150 Sx at 2379, top cement 2780. 150 Sx at 2100, top cement at 2230. 100 Sx at 1839, top cement 2179.
9-28-70		Stuck drill pipe at 1838. Pulled drill pipe in two. RBIH with overshot. Ran free point. Backed off at 1811. POOH. Ran bit in hole with jars and overshot.
9-29-70		Jarred on pipe 6 hours. Ran free point. POOH, RBIH with jars and screwed into fish.
9-30-70		POOH and recovered all of fish.
10-1-70		Mixed mud - conditioned hole and drld. cement plugs.
10-2-70		Drld. from 3177 to 3182. POOH
10-3-70		Ran 9-5/8" - 5-55-88 casing - set at 3182. Cement circulated.
10-4-70		WOC and nippling up.
10-5-70		WOC.
10-6-70		Drld. 8-3/4 hole from 3182 to 3545 with air.
10-7-70		Drld. from 3545 to 4050.

24 hour period ending 8:00 AM on date shown

SHEET D

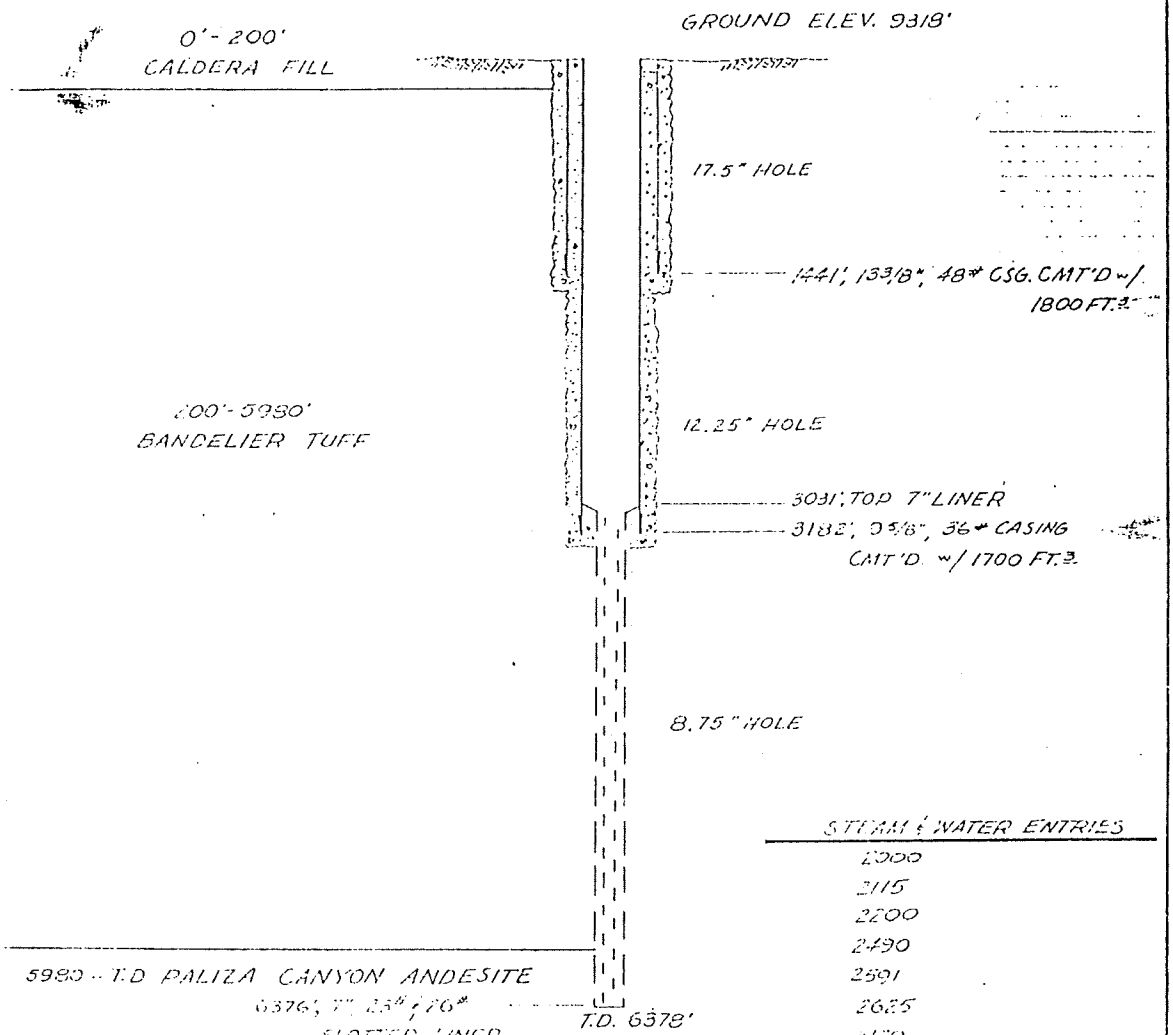
PAGE NO. 2

LEASE Baca WELL NO. 4 FIELD Baca Land & Cattle Co.

DATE*	E.T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS
10-8-70		Drld. from 4050 to 4618 with air.
10-9-70		Drld. from 4618 to 4685 with air.
10-10-70		Drld. from 4685 to 4990.
10-11-70		Drld. from 4990 to 5048. Bottom hole temp at 4820 - 523°.
10-12-70		5048 T.D. - Layed down drill pipe, drill collars, and released rig.

*Dates for 24 hour period ending at 8:00 AM on date shown.

REMEDIAL WORK 28-1



STEAM & WATER ENTRIES
2000
2115
2200
2490
2591
2625
3120
3150-3177
3710
4410-4418
4975
5021-5050

REVISED	DATE

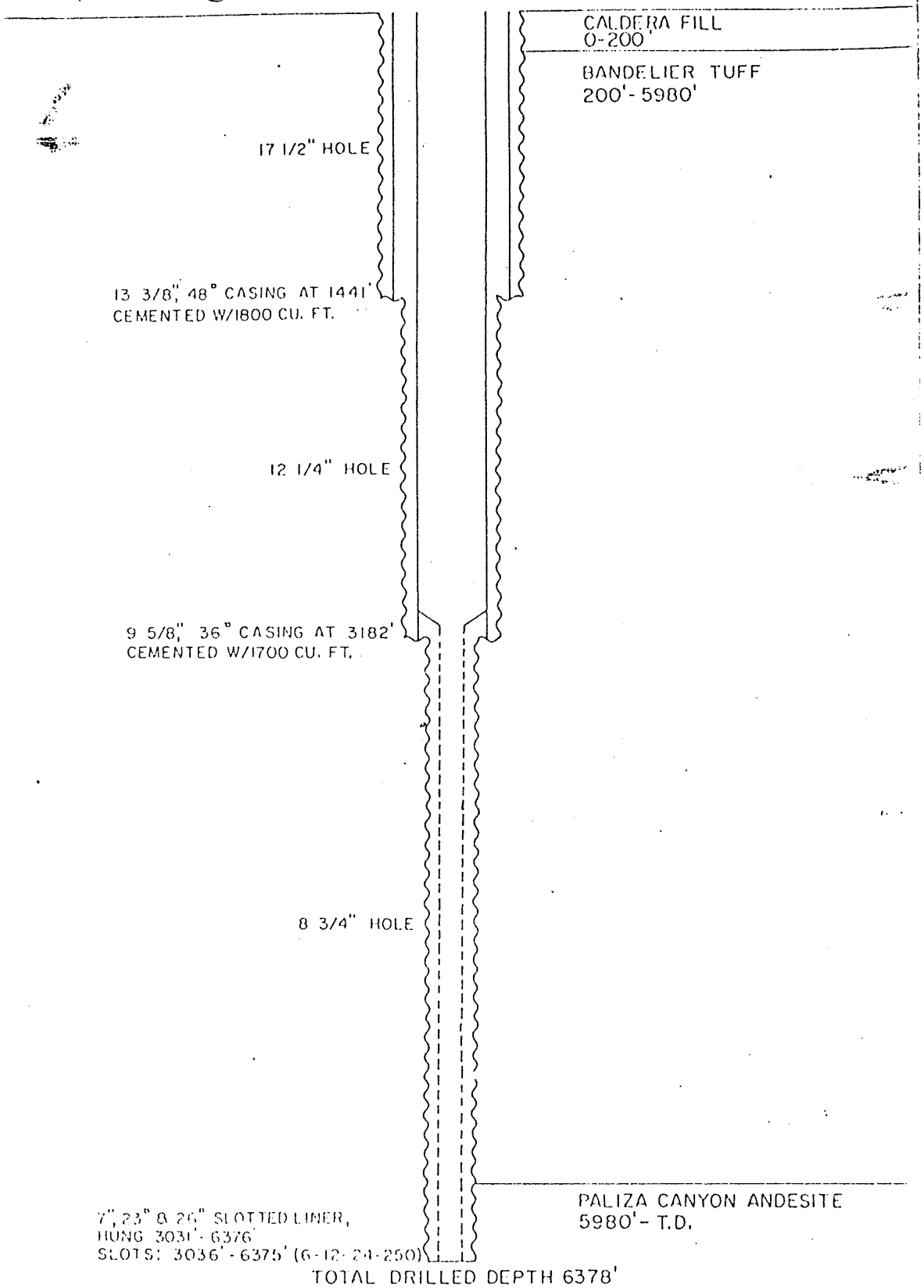
UNION OIL COMPANY OF CALIFORNIA - GEOTHERMAL DIVISION

BACA #1 CASING SCHEMATIC

BACA PROJECT NEW MEXICO

DRAWN
FOR:
BY: L.D.C.
DATE: 11-12-75
SCALE: 1"=1000'
DRAWING NUMBER 1096

FORMATION TOPS



REVISED	DATE	UNION OIL COMPANY OF CALIFORNIA - GEOTHERMAL DIVISION	DRAWN
			FOR:
			BY:
			DATE:
		BACA-4 CASING SCHEMATIC	SCALE:
			DRAWING NUMBER

DIVISION OF OIL AND GAS

Well Summary Report of Geothermal Energy Well

SUBMIT IN DUPLICATE

erator Union Oil Co. of California Well No. 7 Baca 15

, T. , R. , B. & M. Field Sandoval County.

ation 35.8777° Latitude, 106.5783° Longitude

(Give location from property or section corner, or street center lines)

Elevation of ground above sea level 9290' feet.

depth measurements taken from top of Kelly Bushing which is 18' feet above ground.

(Derrick Floor, Rotary Table or Kelly Bushing)

n compliance with Sec. 3735, of the Public Resources Code, the information given herewith is a complete and correct record of the sent condition of the well and all work done thereon, so far as can be determined from all available records.

te 1/24/74 Signed K. J. Stracke

J. C. Jones (Engineer or Geologist) (Superintendent) Title Agent (President, Secretary or Agent)

mmenced drilling 8/13/71

mpleted drilling 9/20/71

al depth 6973' Plugged depth 6973'

k NONE

mmenced producing

GEOLOGICAL MARKERS | DEPTH

Geologic age at total depth

Static test Shut-in well head		Total mass flow			Degrees of Superheat °F	Production test data					
						Separator		Steam		Water	
Temp. °F	Pres. psig	lbs / hr	Temp °F	Pres. psig		Pres. psig	Orifice	lbs / hr	Temp °F	lbs / hr	Temp. °F
WELL DID NOT FLOW - CURRENTLY BEING USED AS DISPOSAL WELL FOR WATER											
	PRODUCED WHILE TESTING										

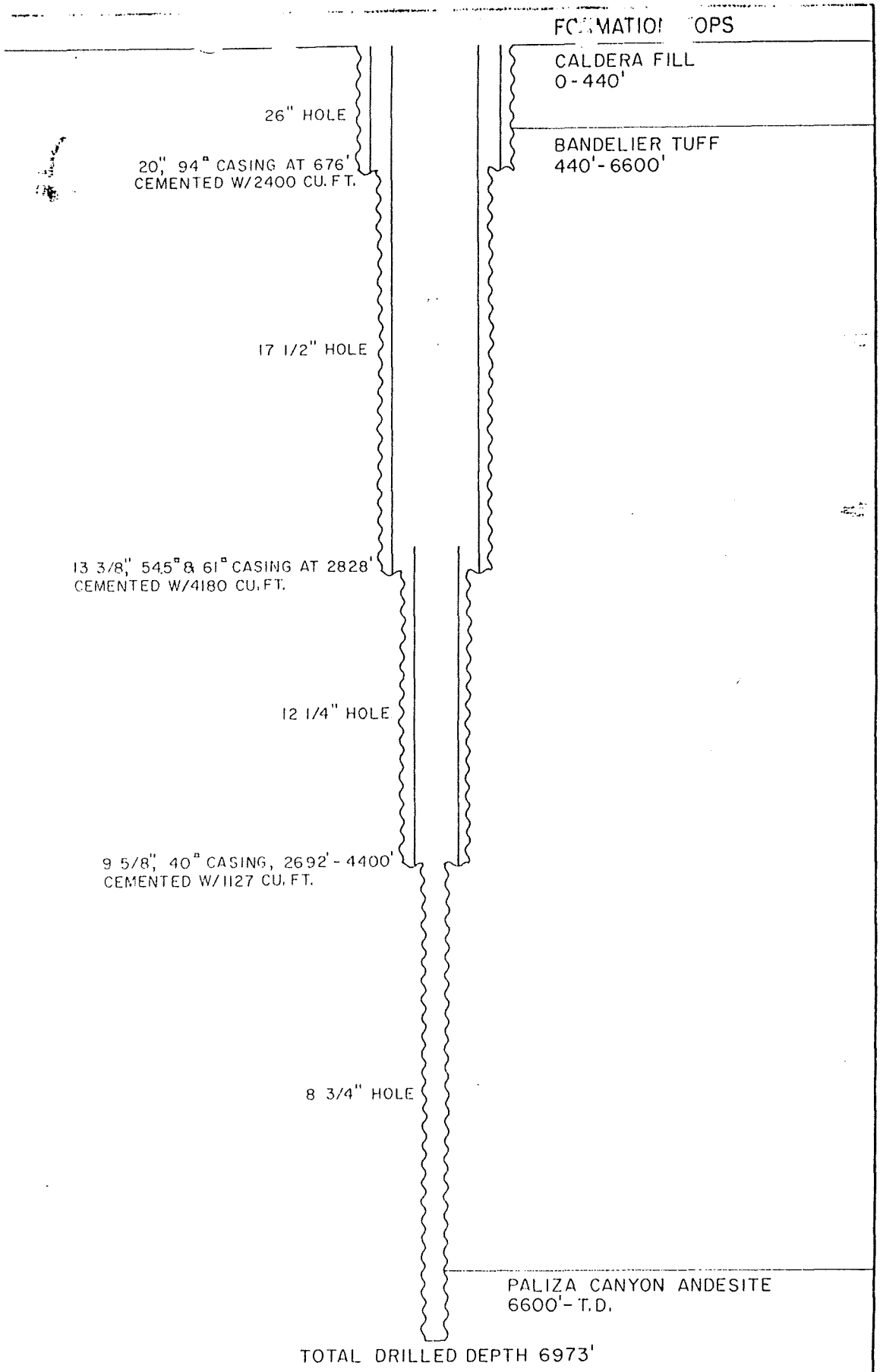
CASING RECORD (Present Hole)

"	Depth of Shoe	Top of Casing	Weight of Casing	New or Second Hand	Seamless or Lapweld	Grade of Casing	Size of Hole Drilled	Number of Sacks of Cement	Depth of Cemen of shmugh perfors
	676'	Surface	94#	N	S	H-40	26"	2400 cu.ft	
/8"	2828'	Surface	54.5&61#	N	S	K-55	17-1/2"	1180 cu.ft	
/8"	4400'	2692'	40	N	S	K-55	12-1/4"	1127 cu.ft	

PERFORATED CASING

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

analysis of effluent made? ... Electrical log depths Temperature log depths



D. PYLE
G. GRIFFEY
2-15-74
1"=600'

BACA-5 CASING SCHEMATIC

Drilling Record

Union Oil Company of California

UNION 76

SHEET D

PAGE NO. 1

LEASE Baca WELL NO. 5 FIELD Baca

DATE	F.T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS
8-13-71	67'	Made 67', Drld. 2hrs., Others 22hrs. Formation Caldera Fill. Finished rigging up - Drilled rat hole. Spudded 26" hole at 5 a.m. 8-13-71
8-14-71	236'	Made 169', Drld. 7-1/4hrs., Others 16-3/4hrs. Layed down small collars. Picked up 8-1/2" D.C. & Drilco 3 pt. reamer. Reamed from surface to 67'. Recemented conductor w/25 sx cmt. + 12-1/2% Ca Cl2. Repacked swivel. Conductor washed out again. Drlg. w/jet in cellar. Formation Caldera Fill. Deviation survey 1/4" @ 204'.
8-15-71	541'	Made 305', Drld. 22-3/4hrs., Others 1-1/4hrs. Formation Caldera Fill & Bandelier Tuff. (top of Tuff 450) Flow line temp. 109°. Lost 1 Hr. going thru pump and 1/4 Hr. Rep. mud line.
8-16-71	673'	Made 132', Drld. 18-1/2hrs., Others 5-1/2hrs. Formation Bandelier Tuff. Flow line temp. 112° Dev. survey 1/2° @ 655'. Lost 1/2hr. rep. cellar jet line - Circulated 1hr. Ran Totco 1/2hr. Strapped D.P. out of hole - pulled conductor pipe - Removed rotary table.
8-17-71	676'	Made 3', Drld. 1/4hr., Trip 3-1/4hrs., Others 20-1/2hrs. Formation Bandelier Tuff. Ran D.P. in hole - Drilled fr. 673-676'. Circ. 1hr. Pulled out of hole. R/D to run 20" casing. Ran Halliburton Guide Shoe on bottom followed by 21 jts. plus 1 piece (660.24') of 20" O.D. New - Armco - 94# SS casing - Grade H-40. Set casing at 676'. Circulated hole for 20 min. Pumped in 20 bbls. of H2O. Mixed & pumped in 1330 sks. Cl. A cement (Neat) followed by 330 sks. Cl. A cmt. w/2% CaCl2. Displaced w/220 bbls. water. Plug down 9:35 p.m. 8-17-71. Cut off 20" csg. @ 3 a.m. - Started nippling up. (circulated out 800 sks. cmt.) 20"O.D. - 94# Armco - New H-40 SS csg. 2.00 - Howco Guide shoe 648.24 - 21 jts. of above 10.00 - 1 Pc. of above 660.24 - 21 Jts. & 1 Pc of above 15.76 - Below KDB 676.00 - Depth csg. set (KDB Measurement)
8-18-71	736'	Made 60', Drld. 2-1/2hrs., Trip 4hrs., Others 17-1/2hrs. Formation Bandelier Tuff. Flow line temp. 84°. 8 a.m. 12 min. Nippled up & installed BOE - Drilled mouse hole. Went in hole. Found top of cement @ 597' - Blew hole dry - Drilled plug & 80' cement. Drilling ahead w/air (3160 cfm) injecting 12 bbls/hr. w/2 gals soap. (using 12 D.C.)
8-19-71	1109'	Made 364', Drld. 13-3/4hrs., Trip 3-1/2hrs., Others 6-3/4hrs. Formation Bandelier Tuff. Flow line temp. 100°F. Drilled from 8 a.m. - 11:15 Pulled bit up in casing. Welded on spool in cellar 6hrs. Went back to bottom and injected 96# microgel to dry hole up. Drilled approx. 60' - hole dusting. POOH - Changed bits. Ran in hole - Drilling w/air Dusting.

Drilling Record

Union Oil Company of Calif...

UNION

SHEET D

PAGE NO. 2

LEASE Baca WELL NO. 5 FIELD Baca

DATE	E.T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS
8-20-71	1480'	Made 380', Drld. 23-1/2hrs., Others 1/2hrs. Formation Bandelier Tuff. Flow line temp. 179°F. Dev. survey 3/4° @ 1352'. Hit small amount of hot water & steam at 1229'. Commenced injecting 4 gals. of soap & 1-1/2 gals. Unisteam per hour mixed with 12 bbls. of water. Drilling ahead.
8-21-71	1770'	Made 290', Drld. 21 hrs., Trip 2-1/2 hrs., Others 1/2 hr. Formation Bandelier Tuff. Flow line temp. 172°. Dev. sur. 2-1/4° @ 1667'. Mist drilling - Injecting 12 bbls. of H2O per hr. w/4 gals soap & 2-1/2 gals Unisteam.
8-22-71	2145'	Made 375', Drld. 22-3/4 hrs., Others 1-1/4 hrs. Formation Bandelier Tuff. Flow line temp. 170°F. Dev. survey 5° @ 1982; 5-1/2° @ 2107; 4-1/4° @ 2192'. Repaired bleed off line - 1/4 hr. Injected 12 bbls. water per hr. w/5 gals. soap & 2 gals Unisteam. Reduced wt. on bit from 40M to 28M @ 2023'.
8-23-71	2338'	Made 193', Drld. 11-1/2 hrs., Trip 5-1/2 hrs., Others 7 hrs. Formation Bandelier Tuff. Flow line temp. 170°F. Dev. survey 4-1/4° @ 2192', 5° @ 2265'. Rc. wt. from 28M to 20M @ 2147'. Inc. wt. on bit to 25 M @ 2223'. POOH @ 2319'. Ran temp. bomb to bridge at 1045'. Line parted & left bomb in hole. Made grapple & recovered all of line and bomb. Temp. @ 1045' was 235°F. Welded on rotating head drive 2 hrs. Went in hole - hit & drilled out 20' bridge from 1045-1065' and 60' bridge from 1682-1742'. Drilling ahead.
8-24-71	2705'	Made 367', Drld. 18-1/2 hrs., Trip 2-3/4 hrs., 2-3/4hrs Other. Formation Bandelier Tuff. Flow Line temp. 120°F. Dev. survey 3-3/4° @ 2380', 5° @ 2507', 4-1/4° @ 2705'. Ran deviation survey @ 2705' - Halliburton line broke - POOH to recover instrument and change bits. Injecting 12 bbls. of water/hr. w/5 gals soap & 2 gals Unisteam. Water increased to estimated 75 bbls/hr. w/flashing steam from 2375 to 2705'.
8-25-71	2858'	Made 153', Drld. 7 hrs., Trip 7-1/2 hrs., others 9-1/2hrs. Formation Bandelier Tuff. Flow line temp. 180°F. Injecting 14 bbls. water per hr. w/6 gals. soap & 2-1/2 gals. Unisteam. Changed stripper rubber. Ran back in hole. Bridge fr. 935-940. Drld. for 2705-2815'. Water & steam increased. Blooie line cut out under floor. POOH - Killed well - Rep. blooie line. Ran back in hole. Small bridge at 935' - fell thru - drilling ahead.
8-26-71	3090'	Made 232', Drld. 12 hrs., Trip 5-1/2 hrs., Others 6-1/2 hrs. Formation Bandelier Tuff. Flow line temp. 180°F. Drilled to 3090' - Blooie line cut out at flange under floor. Pulled up to 600' - Well flowed for 3 hrs. & died. Mixed 600 bbls. mud to pump ahead of cement. Ran back in hole after letting set for 6 hrs. No bridges. Pulled back up to 600'. Ran back in hole after 3 hrs. No bridges - Pulling out of hole to run CSG. 27 Jts. 54.50# K-55 ST&C R-3 csg. Armco 11 Jts. 61# K-55 ST&C R-3 csg. Armco
8-27-71	3090'	Made 0', Others 24 hrs. Pulled out of hole. Ran temp. bomb to 935'. Unable to go thru bridge. Ran D.P. open ended to 1135'. Ran temp. bomb to bridge at 1730'. Unable to get bomb thru bridge. POOH. Running 13-3/8" casing.

LEASE Baca WELL NO. 5 FIELD Baca

DATE	E.T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS
8-27-71	3090'	13-3/8 O.D. Armco SS csg. R-3 K-55 2.45 H. Tx. Patt. on bottom of F. collar 79.49 2 Jts. 61# 1.60 Howco Float collar 1448.97 37 Jts. of 61# 1256.40 32 Jts. of 54.50# 20.90 1 Piece of 54.50# 2809.81 Total 71 Jts. & 1 Pc. 18.00 Below KDB 2827.81 Csg. seat KDB Meas. Cmtd. 1435 sks. thermal 660 w/1 cu. ft. Perlite per sack & 1.18# CFR-2 per sack. Yield = 2.29, Retarded to 400°F + 565 sks. Thermal 660 Neat Retarded to 400°F - w/1.18# CFR-2 per sks. Yield 1.94 cu. ft./sk. Wt. 15.2 to 15.4#/gal. Ran jts. 1 thru 70 & then #72 on tally sheet & then all of 74.
8-28-71	3090'	Made 0', Others 24 hrs. Ran Texas pattern guide shoe on bottom of float followed by 2 jts. (79.49') of 13-3/8" O.D. 61# K-55 Smls. Csg. followed by 1 float collar, followed by 37 jts. 1448.97' - 61# K-55 Smls. csg. followed by 32 jts. & 1 pc. (1277.30') of 13-3/8 - 54.50# K-55 Smls. Csg. R-3 set at 2827.81' KOB measurements. Mixed & pumped in 850 bbls. of mud w/8% LCM. Mixed & pumped in 1435 sks. of Thermal 660 ctm. w/1 cu. ft. of perlite per sack (yields 2.29 cu. ft. per sk) followed by 565 sk. thermal 660 cmt. (neat) displaced w/336 bbls. of water. Circulated out 600 ft. & left 600' in csg. Pr. up to 2200 psi - Job complete 5:30 p.m. 8-27-71.
8-29-71	3090'	Made 0', Others 24 hrs. Took off Hydril, rotating head & blooie line. Repaired blooie line. Installed BOE & nippling up.
8-30-71	3090'	Made 0', Trip 3 hrs., Others 21 hrs. Finished nippling up and installing BOE at 6 p.m. - Ran D.P. in hole & found top cmt. at 2212'. Drilled hard cement for 10', then found liquid cement fr. 2222-2674'. POOH - WOC.
8-31-71	3090'	Made 0', Trip 3 hrs., 21 hr. others. WOC - 8 a.m. - 5 p.m. - Went in hole found cmet. at 2674'. Dusted w/air and 10 - 15 M without rotating fr. 2674-2684'. POOH - WOC.
9-01-71	3222'	Made 132', Drld. 11 hrs., Trip 6 hrs., Others 7 hrs. Formation Bandelier Tuff. Flow line temp. 158°F. WOC 8 a.m. - 9 a.m. - Went in hole. Drilled cmt. & float collars. Had cmt. fr. 2684' to 3000'. Cleaned out to 3090'. Blew hole for 45'. Making approx. 1/2 to 3/4 bbls. H2O per min. w/small amt. steam. POOH. Went back in hole - drilling ahead. Injecting 8 bbls. H2O/hr. w/2gals soap & 1-1/2 gals Unisteam.
9-02-71	3427'	Made 205', Drld. 11-1/4 hrs., Trip 5-1/2 hrs., Others 7-1/4 hr Formation Bandelier Tuff. Flow line temp. 158°F. Drld. to 3427' - Pulled up in csg. & let set 30 min. Went back to bottom - no bridges & no fill - POOH - Ran temp survey - BHT @ 3000-311°F. Ran Howco retainer (E-Z Drill-SV - Squeeze pkr.) on bottom of D.P. & set at 2727'. Loaded annulus w/water - pumped in 180 bbls. H2O followed by 1438 ft^3 of 1:1 Cl C Cmt & Diamix M w/1.6% R-11 & 2% D-19 Followed by 250 sk. Cl C Cmt. w/1.2% R-1 (330.5 ft^3). Displaced down DP w/43 bbls. water. D.P. stayed full - Pulled up & closed valve on retainer & dumped 25 sk. cmt. on top of retainer. Job complete 8:00 am. 9-02-71 POOH - WOC.

Baca 5 Baca

ASE WELL NO. FIELD

DATE	E.T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS
9-03-71	3427'	Made 0', Trip 6 hrs., 18 hrs. Others. WOC. 8 a.m. - 2 a.m. Went in hole to 2700'. Turned air on to unload hole. Scale of cement inside D.P. turned loose & plugged drill collars. POOH. Will unplug collars and drill out cement & retainer.
9-04-71	3427'	Made 0', Others 24 hrs. Layed down 9 plugged D.C. picked up 9 D.C. Went in hole - circulated w/water Drld. cmt. retainer from 2727-30' and cement from 2730 to 3427'. Had same amt. H2O as before squeezing.
9-05-71	3970'	Made 543', Drld. 19-1/2 hrs., Trip 2 hr., Others 2-1/2 hrs. Flow line temp. 165°F. POOH - put on new bit - went back in hole unloaded (700 psig) Drlg. ahead inc. in H2O & steam - 3860'. Injecting 8 bbls. H2O/H w/3 gals soap & 1-1/2 gals Unisteam.
9-06-71	4067'	Made 97', Drld. 4-3/4 hrs., Trip 8 hrs., 11-1/4 hrs. Others. Formation Bandelier Tuff. Flow line temp. 170°F. Drld. to 4065', POOH, ran temp. survey. Put on new bit - ran back in hole. Drld. from 4065-67' rotary table locked up (9:25 p.m.) POOH - rep. rotary table 11 hrs Ran temp. survey @ 4067'. Goingback in hole. Inj. 8 bbls. H2O/h w/3 gals soap & 1-1/2 gals. Unisteam. 2-1/2 hr. BHT - 3206 - 280 3600 - 263 4026 - 256 T.D. 4065 10 hr. BHT - 2800 - 307 3600 - 264 4025 - 269 T.D. 4067
9-07-71	4400'	Made 333', Drld. 11-1/2 hrs., Trip 4-1/2 hrs., Others 8 hrs. Formation Bandelier Tuff. Flow line temp. 185°F. Went back in hole. Drilled to 4400'. POOH. Ran temp. & pressure survey. (5 hr. C.I.) Ran back in hole to make wiper run. Preparing to run 9-5/8" liner. Poss. steam entry - 4270-80'. Very small vol. Inj. 8 bbls. wtr/hr. w/3 gals soap and 1-1/2 gals Unisteam. Well C.I. 5 Hrs. 1st Run w/both bombs Depth / Temp. / Pressure 2800' / 297 / 420 3600' / 277 / 745 4025' / 273 / 916 4375' / 269 / 1054

Drilling Record

Union Oil Company of Cal

UNION

SHEET D

PAGE NO. 5

LEASE Baca WELL NO. 5 FIELD Baca

DATE	E.T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS
9-08-71	4400'	Made 0', Trip 5 hrs., Others 19 hrs. Ran back to bottom. Circ. 9 a.m. - 2:30 p.m. POOH. Ran Baker F.S. on bottom followed by 2 jts. 9-5/8" Armco New 40# K-55 SS casing followed by Baker F.C. followed by 38 Jts. of above followed by Burns Plain Type Liner Hanger w/cmtng. slots. Total overall - 1707.76' Set at 4400'. Top of Liner 2692.24 (overlaps 13-3/8" csg for 135'. Pumped in 200 bbls. mud followed by 20 bbls H2O. Mixed & pumped in 470 sk. cl C Cmt. with 470 sk M plus 0.8% R-6. (Retarded to 300°F) (1127 ft^3 of Slurry.) (used 50% excess.) Displaced w/165 bbls. (H2O) Bumped plug - 1500 psi. Released pr - POOH - Took off setting tool - RBIH - open ended to 2750' - Washed out top of liner - POOH - WOC @ 6 a.m. 9-8-71
9-09-71	4400'	Made 0', Others 24 hrs. WOC - 8 a.m. - 9-8-71 to 1:30 a.m. 9-9-71. Ran Baker Fulbore retrievable cmt. packer on bottom of D.P. Set pkr. @ 2300 w/30 M wt. Loaded annulus - pumped in 140 bbls. H2O down D.P. followed by 293 sk. Cl C & 293 sk. Diamix M (700 ft^3) neat not retarded. Displaced w/82 bbls water - squeezed to 2000 psi - let set 15" - left 120' cmt. in 13-3/8" above top of liner. POOH.
9-10-71	4800'	Made 400', Drld. 9-3/4 hrs., Trip 1 hr., Others 13-1/4 hrs. Formation Bandelier Tuff. Flow line temp. 95°F. Went back in hole - Washed & drld. cmt. out to 2850'. POOH - P/U 14 D. collars Went back in hole. Found top of cmt. inside liner @ 3940'. Drld. out cement, F.C. & F Shoe to bottom of liner @ 4400'. Hole dry & dusting from 4400' to 4800'.
9-11-71	5170'	Made 370', Drld. 13-3/4 hrs., Trip 6-3/4 hrs., 2-1/2 hrs Other. Formation Bandelier Tuff. Flow line temp. 155°F. Hole dusted to 5010'. Started making approx. 10 gpm H2O after drilling break from 5010' to 5016'. Started injecting 6 Bbls. H2O per hr. w/3 gals soap & 1-1/2 gals Unisteam. POOH at 5065'. Ran temp. & pr. survey. Picked up 20 jts. 4-1/2 DP RBIH - Reamed 55' to bottom. Drilling ahead. Injecting 8 bbls. H2O w/2 gals. soap & 1-1/2 gals Unisteam.
9-12-71	5610'	Made 440', Drld. 15-1/2 hrs., Trip 5 hrs., Others 3-1/2 hrs. Formation Bandelier Tuff. Flow line temp. 175°F. Drld. to 5330. Large increase in wtr. fr. 5290-96' & 5306-10'. (Pess. 60 BPH) POOH - Ran temp & pr. survey - RBI hole drilling ahead. Injecting 6 bbls. H2O/hr. w/2 gals soap & 1-1/2 gals Unisteam. Survey at 5331 - 3-1/2 hrs. C.I. 10" Depth 4500, 5016 — Temp 339, 354 — Pressure 907-930 20" Depth 5300, 5315 — Temp 363, 363 — Pressure 1127-1152
9-13-71	6022'	Made 412', Drld. 12-3/4 hrs., Trip 7-3/4 hrs., Others 3-1/2hrs. Formation Bandelier Tuff. Flow line temp. 185°F. Drld. to 5683'. POOH Ran temp. survey - RBIH - Drld. to 6022'. Now POOH for bit change & temp. survey. Making est. 90 bbls. of water per hour while drlg. 4 Hr. BHT Survey @ 5683'. 4500 - 344 5300 - 362 5655 - 375 5670 - 377

LEASE Baca WELL NO. 5 FIELD Baca

DATE	E.T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS
9-14-71	6075'	Made 53', Drld. 4 hrs., Trip 8-3/4 hrs., Others 11-1/4 hrs. Formation Bandelier Tuff. Flow line temp. 225°F. Ran BHP & BHT surveys. Ran back in hole w/jet circ. sub at 4000'. Reamed 5958-6022'. Drilled 6022-27'. Unable to clean hole. Pulled up and took circ. sub out. Ran back to bottom. Drlg. ahead. Inj. 6 bbls. H20 per hr. w/4 gals soap and 1-1/2 gals Unisteam. (picked up some more 4-1/2 D.P.) BHP Test - 3-1/2 H. Cl @ 3000-399' 3-1/2 H. BHP @ 4000-794' 6-1/4 H. @ 4000-807' 7-1/2 Hr. BHT 5" - 4500'-336° 5" - 5300'-358° 5" - 5655'-368° 20" - 6000'-380° (379 to 380 in 20") 3" - 6012'-385°
9-15-71	6150'	Made 75', Drld. 4-3/4hrs., Trip 5 hrs., Others 14-1/4 hrs. Formation Bandelier Tuff. Flow line temp. 233°F. Drld. to 6107' - Bit locked up - POOH - Ran BHT. Waited 5 hrs. - Ran another BHT Survey. Ran back in hole w/1/4" circ. port at 4250'. Unloaded hole and reamed from 6022-6107' (5 hrs.) Drlg. ahead. Inj. 6 bbls. H2O/Hr. w/4 gals soap and 1-1/2 gals Unisteam. T.D. 6107 — 4-1/2 Hr. BHT 4500 - 350° 5655 - 367° 6000 - 375° 6090 - 388° 6106 - 395° T.D. 6107 — 9-1/2 Hr. BHT 342° 369° 380° 400° 405°
9-16-71	6510'	Made 360', Drld. 16-1/2 hrs., Trip 5-3/4 hrs.,Others 1-3/4 hrs. Formation Bandelier Tuff. Flow line temp. 180° & 240°F. Drld. to 6226'. POOH put on new bit. RBIH w/-1/4" Circ. port at 9370'. Unloaded hole at 5700'. Ran back to bottom. Drlg. ahead. Inj. 6 bbls H20 per Hr. w/8 gals soap & 5 gals Unisteam.
9-17-71	6621'	Made 111', Drld. 5 hrs., Trip 12-1/2 hrs., Others 6-1/2 hrs. Formation Bandelier Tuff. Flow line temp. 182°F & 225°F. Drld. to 6540' - POOH - Ran temp. survey - RBIH - Reamed 6406 to 6540'. Drld. to 6555'. POOH - changed bits RBIH. Drlg. ahead. Inj. 6 bbls H20 w/8 gals soap & 5 gals Unisteam. Circ. sub w/1-1/8" & 1-3/16" port at 4500. Temp. survey - 3-1/2 Hr. T.D. 6540' 4500'-360° 5655'-373° 6106'-386° 6520'-399° peak 406° 6540'-397°
9-18-71	6860'	Made 239', Drld. 9-3/4hrs., Trip 5-1/2hrs., Others 8-3/4hrs. Formation Paliza Canyon. Flow Line temp. 240°F. Drld. to 6793' - POOH - Ran temp. & pr. survey. Waited 5hrs. & ran temp. & Pr. surveys. Bottom of Bandelier 6600' RBIH Drlg. ahead - Inj. 8 bbls H20/hr. w/6 gals soap & 5 gals Unisteam. (Circulating sub w/1/8" & 3/16" ports at 4000.) Pr. - 3-1/2hr. BHT survey 981 4500 - 350 - 362 1583 6100 - 381 1659 6300 - 397 1734 6500 - 415 1805 6700 - 424 1847 6786 - 436 - 445* *Peak off bottom

Drilling Record

Union Oil Company of California

union 76

SHEET D

PAGE NO. 7

ASE Baca WELL NO. 5 FIELD Baca

DATE	E.T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS
)-19-71	6973'	Made 113', Drld. 6-1/2hrs., Trip 2-1/4hrs., Others 15-1/4hrs. Formation Paliza Canyon, Flow line temp. 255°F. Drld. to 6973'T.D. POOH - ran temp survey - Pr. bomb failed. Layed down D.P. (lacked 20 Jts. of D.P. & all of D.C. at 8 a.m.)
)-20-71	6973 T.D.	Others 24hrs., Formation Paliza Canyon. Finished laying down D.P. & D.C. Stripped cellar & dismantled blooie line. Off report.

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

C OTTE
MAY 27 1975

GEOTHERMAL RESOURCES WELL SUMMARY REPORT

Operator UNION OIL COMPANY OF CALIFORNIA Address P. O. Box 7600, Los Angeles, CA 90051
Lease BACA Well No. Baca No. 6
Unit P Sec. 11 Twp. 19N Rge. 3E
County Sandoval

Date Rework 3-1-75
Date Rework 4-14-75 *
4810' T.D. Plugged depth None
None
*Deepened from 3717' to 4810'
Not producing
(Date)

GEOLOGICAL MARKERS	DEPTH
Caldera Fill	0' - 500'
Bandelier Tuff	500' - T.D.

Geologic age at total depth Permian

Production Test Data

		Total Mass Flow Data					Separator Data			
Temp.	Pres. Psig.	Lbs/Hr	Temp. °F	Pres. Psig.	Enthalpy	Orifice	Water cuft/Hr	Steam Lbs/Hr	Pres. Psig.	Temp. °F

SEE ATTACHED WELL HISTORY FOR DETAILS.

CASING RECORD (Present 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
9-5/8"	36#	K55	New	S	795	Surface	500 cu.ft.		
7"	26#	K55	New	S	2585	Surface	840 sks.		

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

7" Slotted Liner pulled - not re-run.

Electrical log depths none Temperature log depths none

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 [signature] Position Dist. Drlg. Supt. Date 3-16-75

Well Completion [illegible]rd

Union Oil Company of California

UNION 76

DATE	DISTRICT
3/30/75	NEW MEXICO

PROSPECT FIELD: BACA

WELL NO.: 6 (DEEPENING)

OPERATOR: UNION OIL CO. OF CALIF.

LEASE: BACA

LOCATION: REDONDO CREEK

SECTION | T | R | B. & M.

ELEVATION: 8726' GR | LOG DATUM | UNION INTEREST | OTHER INTEREST

REASON FOR DRILLING

INCREASE STEAM PRODUCTION BY DEEPENING WELL WHOSE PREVIOUS T.D. WAS 5715'

LAT. 35.8850

DATE STARTED	DATE COMPLETED	TOTAL DEPTH	LOGGER	DRILLER M.D.	VD	COORD
3/1/75	4/19/75	7810'	[illegible]	7810'	7810'	LONG. 106.5523

DISPOSITION OF WELL	PERFORATIONS	INITIAL PRODUCTION
SHUT IN		410,000 # HC

CASING: [illegible] 775' 7 5/8" [illegible] [illegible] | PRODUCTION TESTS

CORING PROGRAM – SEE ATTACHED CORE DESCRIPTION SHEETS

FORMATIONS PENETRATED, THEIR DEPTHS AND RELATION TO SURROUNDING WELLS

FORMATION	THIS WELL (M.D.), SUBSEA COORDINATES	TOPS	OTHER WELLS – SUBSEA B-10	B-11	
ALLUVIUM		SPUD	SPUD	CALDERA FILL SPUD	
[illegible] TUFF	+8226'	500'	+8215'	+8745'	
PALIZA CANYON DACITE	+[illegible]976'	4750'	+3575'	+3765'	

SUMMARY OF STRUCTURAL SIGNIFICANCE

BASE BANDELIER-TOP ANDESITE IS AT IT'S STRUCTURAL HIGH IN B-6

GEOLOGICAL SERVICE	FROM – TO	GEOLOGICAL SERVICE	FROM – TO
RESISTIVITY LOG		CORE TYPE	
POROSITY LOG		CORE ANALYSIS	
DIPMETER		OTHER SERVICES	
OTHER TYPES			

REMARKS

NO [illegible] SERVICES PERFORMED IN THIS WELL.

Well Completion [illegible]nd

Union Oil Company of California

UNION 76

DATE	STATE
3/30/75	NEW MEXICO

PROSPECT FIELD	WELL NO
BACA	6 (DEEPENING)

OPERATOR	LEASE
UNION OIL CO. OF CALIF.	BACA

LOCATION	SECTION	T	R	B. & M.
REDONDO CREEK				

ELEVATION	LOG DATUM	UNION INTEREST	OTHER INTEREST
8726' GR			

REASON FOR DRILLING

INCREASE STEAM PRODUCTION BY DEEPENING WELL WHOSE PREVIOUS T.D. WAS 3715'

DATE STARTED	DATE COMPLETED	TOTAL DEPTH	LOGGER	DRILLER M.D.	VD	COORD
3/1/75	4/14/75	4810'	—	4810'	4810'	LAT. 35.8880 LONG. 106.5583

DISPOSITION OF WELL	PERFORATIONS	INITIAL PRODUCTION
SHUT-IN		410,000 #/HR

CASING	PRODUCTION TESTS
9 5/8" 795' TO SURF. 7"; 2455' TO SURFACE; OPEN HOLE TO T.D.	

CORING PROGRAM – SEE ATTACHED CORE DESCRIPTION SHEETS

FORMATIONS PENETRATED, THEIR DEPTHS AND RELATION TO SURROUNDING WELLS

FORMATION	THIS WELL (M.D.), SUBSEA COORDINATES	THIS WELL TOPS	OTHER WELLS – SUBSEA B-10	OTHER WELLS – SUBSEA B-11	
ALLUVIUM		SPUD	SPUD	CALDERA FILL SPUD	
BANDELIER TUFF	+8226'	500'	+8215'	+8745'	
PALIZA CANYON ANDESITE	+3976'	4750'	+3515'	+3765'	

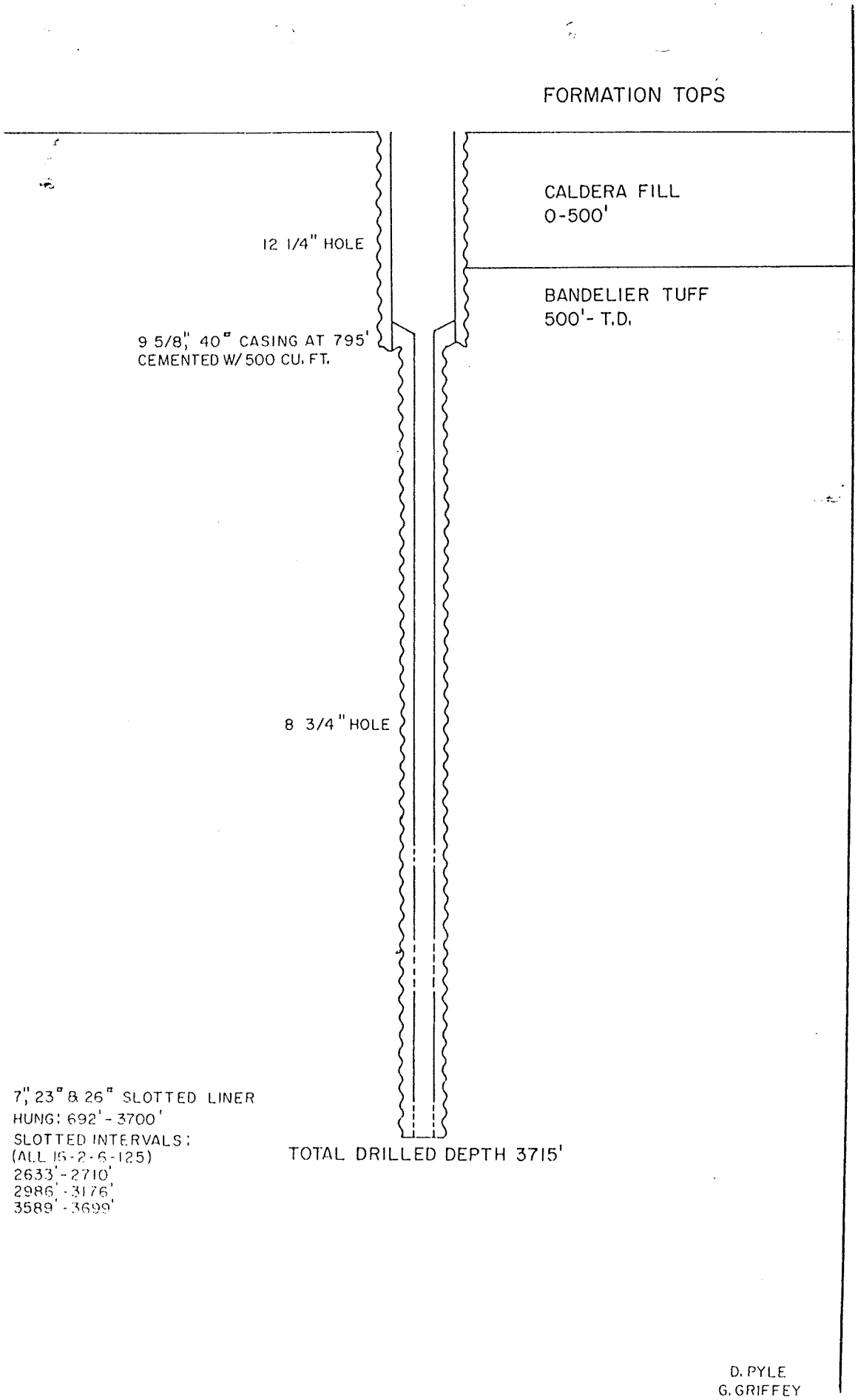
SUMMARY OF STRUCTURAL SIGNIFICANCE

BASE/BANDELIER–TOP/ANDESITE IS AT IT'S STRUCTURAL HIGH IN B-6.

GEOLOGICAL SERVICE	FROM – TO	GEOLOGICAL SERVICE	FROM – TO
RESISTIVITY LOG		CORE TYPE	
POROSITY LOG		CORE ANALYSIS	
DIPMETER		OTHER SERVICES	
OTHER TYPES			

REMARKS

No Geological Services Performed on this well.



D. PYLE
G. GRIFFEY
2-15-74
1" = 400'

BACA-6 CASING SCHEMATIC

CARL OTTE

MAY 27 1975

NEW MEXICO OIL CONSERVATION COMMISSION

P. O. Box 2088, Santa Fe 87501

GEOTHERMAL RESOURCES WELL HISTORY

Operator UNION OIL CO. OF CALIFORNIA Address P. O. Box 6854, Los Angeles, CA 90051

Lease Name Baca Well No. Baca No. 6

Unit Letter P Sec. 11 Twp. 19N Rge 3E

Reservoir 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 redrilling, 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 temperatures. (Attach additional sheets if necessary.)

Date	
1-75	Finished rigging up Loffland Rig No. 214, N.U. B.O.P.E. and tested to 500#. O.K.
2-75	Drilled rat hole and mousehole. Killed well w/water. Set Halliburton 9-5/8" RTTS. Packer at 675' and tested 9-5/8" casing, 480 psig w/water. Ran 6" bit and 7" csg. scraper on 2-7/8" drill pipe to 759'. Ran 7" spear bumper sub, and 3 - 4-3/4" D.C. on 2-7/8" D.P. and set spear at 727'. Worked 7" liner loose and P.O.H.
3-75	P.O.H. and laid down 7" liner. Recovered total of 73 jts. (3013.06') 10 jts. machine slotted 2-150-6-6 (385.22'). Installed Blooie Line and picked up 8-3/4" drilling assembly.
4-75	R.I.H. w/8-3/4" drilling assembly on 4-1/2" D.P., washed 30' to bottom and started drilling 8-3/4" hole at 3717'. Drilled to 3765'. Killed well and started trip for new bit. Location started caving in due to melting ice and frozen ground. Hole approximately 3' deep, 25' x 18' caved from under front of sub structure. Rig settled approximately 9" on drillers side and 12" on off side. P.O.H. and laid down D.P.
5-75	Cleaned out cavity under sub structure. Cut windows in sub structure and installed skid beams.
6-75	Jacked front of rig up and finished cleaning mud and debris out of cavity. Installed rebar and poured 1650 cu. ft. of Class "B" cmt. with [illegible] CaCl, in cavity.
7-75	W.O.C.
8-75	Leveled rig, installed B.O.P.s and picked up drilling assembly.
9-75	R.I.H. with 8-3/4" drilling assembly and drilled 8-3/4" hole to 3845'.

[illegible]

[illegible]

Position Dist. [illegible] Date May 22, 1975

3-10-75 Drilled 8-3/4" hole to 4024'.

3-11-75 Drilled to 4038'. P.O.H. Had left monel D.C., bottom hole reamer and 8-3/4" bit in hole. Fished for D.C.

3-12-75 Fished for monel D.C. T.D. 4038'.

3-13-75 Fished for monel D.C. T.D. 4038'.

3-14-75 Recovered all of fish; box on D.C. had broken into 3 pieces. Ran junk basket and recovered all junk.

3-15-75 Drilling 8-3/4" hole from 4038' to 4171'.

3-16-75 Drilling 8-3/4" hole from 4171' to 4349'.

3-17-75 Drilling 8-3/4" hole from 4349' to 4477'.

3-18-75 Drilling 8-3/4" hole from 4477' to 4695'.

3-19-75 Drilled 8-3/4" hole from 4695' to 4810'. P.O.H. for flow test No. 1. Tested from 13:30 to 2400.

3-20-75 Killed well. Ran monel D.C. and took directional survey at 1000' 2-1/4° N77W; 2000' - 2° N57W; 3000' - 7-3/4" N41E; 4000' - 15-1/2° N17E; 4765' - 12° N1W. Bit went to 4809'. No fill up or bridges. P.O.H. Ran Grant open hole bridge plug and attempted to set at 2655' and spotted 15 sks. frac. sand thru Grant setting tool.

3-21-75 Laid cement plug consisting of 20 sks. (24 cu. ft.) Class "B" cement at 2625'. P.O.H. 10 stds. WOC 4 hrs. R.I.H. to feel for cement. Found at 4603'. P.O.H. Flow tested well.

3-22-75 R.I.H. w/plugged D.P. Tested pipe for leaks, o.k. P.O.H. and picked up 8-3/4" drilling assembly. R.I.H. and found bridge at 4435'. Drilled from 4435' to 4445'. Hole open to 4808'. Circ. hole clean. P.O.H. Flow test well; well would not kick off.

3-23-75 Ran Grant plug to 2650'. Spotted 2000# frac. sand. Let set one hour. Felt for plug. No plug. P.O.H. and picked up 8-3/4" drlg. assembly. R.I.H. to 4805'. Circ. clean hole.

3-24-75 P.O.H. w/bit. Ran Grant rubber bridge plug (mfg. on location from 2-3/8" rotating head rubber). Pushed to 2675', spotted 1000# Frac. sand on same. Plugged D.P. w/sand. P.O.H. and unplug D.P. R.I.H. w/OEDP. Found plug at 2740'. Prep. to spot cement, well kicked and lost plug. P.O.H. Picked up 8-3/4" drilling assembly and pushed plug to 4805'. Circulated.

3-25-75 P.O.H. Picked up HOWCO 9-5/8" E-Z drill bridge plug set at 2648'. Spotted 35 sks. Class "B" cement plug, (41 cu. ft.) at 2617'. P.O.H. and picked up 8-3/4" drilling assembly. R.I.H. and found plug at 2604'. Dressed plug to 2609' and P.O.H. Laid down D.P.

3-26-75 Ran and cemented 62 Jts. (2581'), 7", 26#, K, LT&C casing at 2585' (see Casing Detail). Cemented thru shoe at 2585' w/125 cu. ft. Class "B" cement w/1 to 1 perlite, 0.5% CFR-2, 0.3% HR-7 at 13.4 PPG, followed by 200 sks. (292 cu. ft.) Class "B" 1-1 Poz. 2% Gel, 35% Silica Flour, 0.5% CFR-2, 0.4% HR-7 at 14.2 PPG. Disp. w/water at 8 BPM. Bumped plug w/2500#. No returns while cementing. Opened D.V. collar. Pumped 40 BBL's water w/no returns. Mixed and pumped 230 sks. (33.6 cu. ft.) 1-1 "G" Poz. w/35% Silica Flour, 2% Gel, 0.5% CFR-2, 3% HR-7 at 14.2 PPG. Disp. w/water at 1 BPM. Circ. to surface on last 9 BBL. of disp. Bumped plug closed D.V. ports, held O.K.

3-27-75 Cut off 7". Weld on 8" 600 series casing head and rig B.O.P.s. Picked up 2-7/8" D.P.

3-28-75 Picked up 6-1/8" bit, 4-3/4" D.C.s and 2-7/8" D.P. Drilled out D.V. collar at 1096'. Cleaned out to 1383'. P.O.H. Ran Dresser Atlas C.B.L. from 2400' to 1400', Shot 4 holes at 843'. Pressured w/water to 1500 psi. Held O.K. Perfed. 4 holes at 750'. Pumped through holes w/3-1/2 BPM at 1000 psi. Set HOWCO E-Z drill retainer at 687'. Could not circ.

3-29-75 R.I.H. w/6-1/8" drilling assembly. Drilled out HOWCO retainer. P.O.H. Attempted to circulate through perfs. at 750' at 1/2 BPM at 1200#. Re-perforated at 745', circ. w/1-3/4 BPM at 1000 psi. Returns through 7" x 9-5/8" annulus. R.I.H. w/HOWCO RBTS. Packer on 2-7/8" D.P. set at 665'. Mixed and pumped 80 sks. Class "G" cement w/40% Silica Flour, 0.1% CFR-2 at 15 PPG at 1-3/4 BPM, at 1000#, press. up to 2000 psi. Released packer reversed out. out D.P., 90 cu. ft. out of 7", 17 cu. ft. inside 7", below packer. P.O.H. WOC.

3-30-75 R.I.H. w/6-1/8" drilling assembly. Drilled cement from 675' to 725'. Circulated. Cleaned hole to 2435'. P.O.H. Ran Dresser Atlas C.B.L. to 755'. Shot 4 holes at 565'. Mixed and pumped 120 sks. Class "B" cmt. w/40% Silica Flour, w/1% CFR-2 at 266 GPM at 100 psi. No returns to surface. Well on vacuum. Released Packer. P.O.H. WOC.

3-31-75 R.I.H. w/HOWCO Rtts. Packer on 2-7/8" D.P., set at 468'. Pumped through perfs. at 567' w/50 Bbls. water. No returns to surface. Attempted to pump between 7" and 9-5/8" annulus w/Poor Boy Packoff without success. Mixed and pumped 100 sks. 1-4 Perlite Class "B" cement, w/23 Gel, 0.5% CFR-2 (227 cu. ft.). Squeezed 213 cu. ft. cement out of 7" casing. Had 14 cu. ft. (63 ft.) cmt. inside casing. Maximum pressure 3000 psi F.S.P. 2400. WOC.

4- 1-75 R.I.H. w/6-1/8" bit and drilling assembly. Drilled medium hard cmt. from 531' to 593'. P.O.H. Ran Dresser Atlas C.B.L. to 900'. R.I.H. w/6-1/8" drilling assembly. Washed and drilled cement to 2435'. P.O.H. Dresser Atlas ran gun w/CO International Perf. head. Shot one shot at 427', 443' and 504'. Released logging truck and HOWCO. R.I.H. w/6-1/8" drilling assembly. Drilled out float collar and shoe. Cleaned out to bridge plug at 2648'.

4- 2-75 P.O.H. Layed down 6-1/8" bit. Picked up 6-1/8" mill shoe. R.I.H. milling on HOWCO E-Z drill retainer at 2648' in 8-3/4" hole.

4- 3-75 P.O.H. Changed mills. Ran 6-1/8" rotary shoe. Milling on E-Z drill. Moved down hole to 4805'.

4- 4-75 Circulated conditioned hole. P.O.H. to flow test well. Well did not flow in 4 hrs. R.I.H. w/2-7/8" open ended D.P. and kicked well off w/air. Well flowed w/help of air. Average temp. 210°F pressure 5 to 8#. Used air for 4 hrs. Well trying to flow.

4- 5-75 Killed well. Pulled up to 3200'. Kicked well off w/air. Average temp. 215°F pressure 8 to 10#. Killed well. P.O.H. Well would not flow. R.I.H. w/2-7/8" D.P. open ended to 3200'. Kicked well off w/air. Stripped D.P. out of hole w/well flowing. Tested well w/8-1/2" orifice. Average temp. 235°F pressure 35 to 55#.

4- 6-75 Flow tested well through 8-1/2" orifice. Average temp. 280° to 300°F 34 to 36 psi. Killed well. R.I.H. Found bridge at 2715'. P.O.H. Picked up 6-1/8" drilling assembly. R.I.H. Drilled on bridge.

4- 7-75 Drilled on plug. Pipe torqued up and backed off. P.O.H. Had lost 2300' D.P. and drill collars. Picked up 6-1/16" od overshot. R.I.H. Could not get overshot through D.V. collar at 1096'. P.O.H.

4- 8-75 R.I.H. w/6-1/8" lead impression block to 1096'. P.O.H. Block showed a lip in D.V. tool, 5-7/8" ID. Ran tapered mill. Cleaned out obstructions. P.O.H. R.I.H. w/6-1/16" OD overshot w/3-1/2" Bumper Jars. Went through tight place at 1096-1098'.

4- 9-75 R.I.H. w/overshot to top of fish at 1460'. Caught fish. Pulled out of hole. Fish dragging 50,000 over weight of pipe. Layed down 29 jts. of damaged D.P. Recovered all of fish.

4-10-75 R.I.H. w/mill. Worked plug down hole to 4480'. Milling on same. P.O.H. Changed mill. R.I.H. Milling on junk. Could not make any hole. P.O.H. Layed down mill. R.I.H. to 2800' w/O.E.D.P. Kicked well off w/air, stripped out of hole hot. Let well flow. Average temp. 270°F, maximum pressure 35#.

4-11-75 Killed well. R.I.H. w/6-1/8" Tungsten Carbide concave mill. Milled on junk. Tried to use bumper jars to drive plug down without success. P.O.H. Changed mill. R.I.H. milled on junk. Pumped water down D.P. without air and plug moved down hole to 4580'.

4-12-75 Killed well. P.O.H. Layed mill down. Picked up 6-1/8" mill tooth bit. R.I.H. Pumped water down D.P. without air. Moved plug to 4806'. Circ. w/water and air to clean hole. P.O.H. Well would not flow. R.I.H. w/open ended 2-7/8" D.P. and kicked well off with air compressors from 2570'.

4-13-75 Well trying to flow. Stripped out hot. Let well flow 6 hrs. Bot. Temp. 280°F, max. pressure 35#. Killed well. R.I.H. w/6-1/8" bit and drilling assembly. Found bridge or plug at 4740'. Pumped water down D.P. No air. Drilled on plug approx. 5 min. Plug went to bottom at 4808'. Drilled on same 2 jts. P.O.H., laying down D.P. and collars. (See Flow Test #2)

4-14-75 Rig removed BOP's and nippled down from midnite until 0800 hrs. Rig released and put on Standby.

FLOW TEST NO. 1

DATE	TIME	WELLHEAD PRESSURE	FLOWLINE PRESS. PSIG	FLOWLINE TEMP.
3-19-75	1330-1730	0	0	190-200
	1800	11	11	233
	1900	60	60	305
	2000	60	60	305
	2100	58	58	295
	2200	55	55	300
	2300	53	53	300
	2400	55	55	300

FLOW TEST NO. 2

DATE	TIME	WELLHEAD PRESSURE	FLOWLINE PRESS. PSIG	FLOWLINE TEMP.
	0400	0	0	210
	0500	12	12	260
	0600	20	20	275
	0700	25	25	280
	0800	30	30	280
	0900	34	34	290
	1000	34	34	280

VISION OF OIL AND GAS

Well Summary Report of Geothermal Energy Well

SUBMIT IN DUPLICATE

Operator Union Oil Co. of California Well No. Baca #7

Sec. ____, T. ____, R. ____, ____ B. & M. ____ Field ____ County.

Location 35.9372° Latitude, 106.5912° Longitude

(Give location from property or section corner, or street center lines)

Elevation of ground above sea level 8724' feet.

All depth measurements taken from top of Kelly Bushing which is 14' feet above ground.

(Derrick Floor, Rotary Table or Kelly Bushing)

In compliance with Sec. 3735, of the Public Resources Code, the information given herewith is a complete and correct record of the present condition of the well and all work done thereon, so far as can be determined from all available records.

Date 1/24/74 Signed K. J. Stracke

J. C. Jones (Engineer or Geologist) ____ (Superintendent) Title Agent (President, Secretary or Agent)

Commenced drilling 7/26/72

Completed drilling 8/15/72

Total depth 5532' Plugged depth 5515'

Junk NONE

Commenced producing ____

GEOLOGICAL MARKERS	DEPTH

Geologic age at total depth ____

te	Static test Shut-in well head		Total mass flow			Degrees of Superheat °F	Production test data					
							Separator		Steam		Water	
	Temp. °F	Pres. psig	lbs / hr	Temp °F	Pres. psig		Pres. psig	Orifice	lbs / hr	Temp °F	lbs / hr	Temp
	WELL DID NOT FLOW - WILL BE USED AS TEMP. SURVEILLANCE HOLE.											

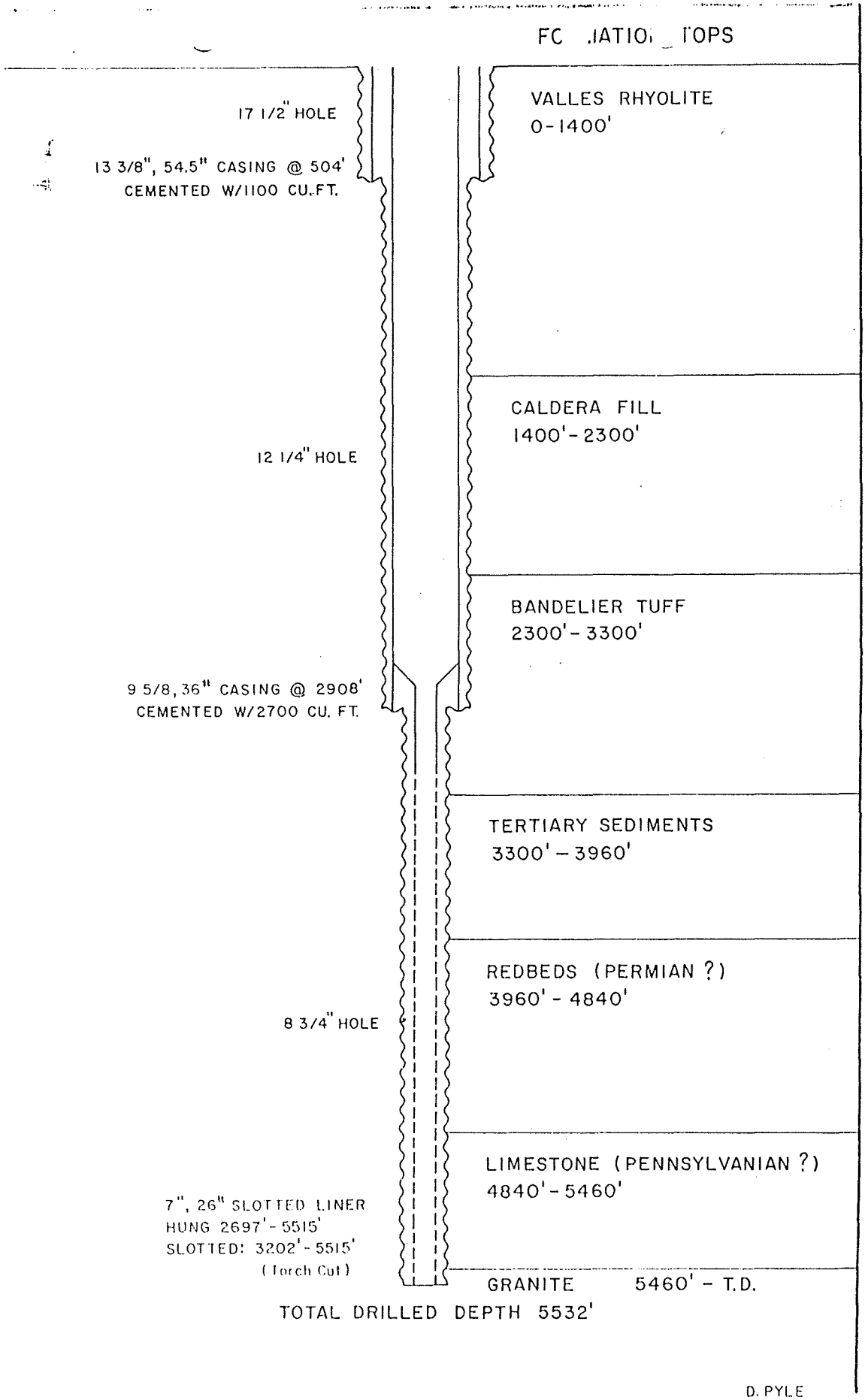
Casing Record (Present Hole)

Casing (O.D.)	Depth of Shoe	Top of Casing	Weight of Casing	New or Second Hand	Seamless or Lapweld	Grade of Casing	Size of Hole Drilled	Number of Sacks of Cement	Depth of Cut or Shrough Perf
3/8"	504	Surface	54.5#	N	S	K-55	17-1/2"	1100 cu.f	
5/8"	2909	Surface	36	N	S	K-55	12-1/4"	2700 cu.f	
	5515	2697	26	N	S	K-55	8-3/4"		

Perforated Casing

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

Analysis of effluent made? ____ Electrical log depths ____ Temperature log depths ____



BACA-7 CASING SCHEMATIC

REPORT

SHEET D

PAGE NO. 1

LEASE ___ WELL NO. 7 ___ FIELD ___

DATE	E.T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS
7-26-72		Spudded 17-1/2" hole @ 10 AM on 7-25-72. Drld. to 504 w/mud.
7-27-72		Ran Baker G.S. on bottom followed by 12 Jts. and 1 Pc. of 13-3/8 - 54.5# - K-55 - ST C Csg. set 15' below KDB at 504. Cmtd. w/790 Sx Cl C w/2% Ca Cl_2 circ. out 300 Sx. cmt.
7-28-72		Nipped up - Drld. out cmt. Drld. from 504 to 1010 with 12-1/4 bit on mud.
7-29-72		Drld. from 1010 to 1282 w/mud.
7-30-72		Drld. from 1282 to 1906 w/mud.
7-31-72		Drld. from 1906 to 2239 w/mud.
8-1-72		Drld. from 2239 to 2789 w/mud.
8-2-72		Drld. from 2789 to 2908 w/mud.
8-3-72		Ran guide shoe on bottom followed by 2 joints casing then float collar followed by 28 joints of 9-5/8 - 36# - K-55 - ST&C casing followed by changeover followed by 44 joints and 1 pc of 9-5/8-36# - K-55 - Buttress set 15' below KDB at 2908. Cemented with 755 Sx. cl C mixed with 755 Sx. natural Pozlan w/0.4% R-11. Circulated out 800 Sx. cement.
8-4-72		Nippled up. RIH w/8-3/4 bit, 3 point reamer and stabilizer. Blew hole dry. Drilled 80' cement - float collar and G.S. drld. to 3103.
8-5-72		Cir. 45 minutes @ 3103 to make connection. Drld. to 3135 - circ. 2 hours to make connection. Pipe started striking. Pulled bit up in casing. Mudded up hole.
6-72		Drld. to 3715 w/mud.
8-7-72		Drld. to 4002 w/mud. Lost 13 hours working on torque converter.
8-8-72		Lost 24 hours working on torque converter.
8-9-72		Down 11 hours repairing torque converter RIH to 3950 - unable to break circulation. Pulled up to 3700. Broke circulation - pipe stuck. Spotted 40 bls diesel and let soak 45 minutes. Pipe came free. Drilled from 4002 to 4071 with mud.
8-10-72		Drld. from 4071 to 4502 w/mud.
8-11-72		Drld. from 4502 to 4990 w/mud.
8-12-72		Drld. from 4990 to 5253 w/mud.
8-13-72		Drld. from 5253 to 5484 w/mud.
8-14-72		Drld. from 5484 to 5532 T.D. in granite. Ran 7" - 26# - 8RT - Liner. Hung liner with Burns plain type liner hanger. Top of liner 2697, bottom of liner at 5515. Slots in liner from 3202-3286; 3620-3946; 4028-4181; 4224 to 4347, 4500 to 4831 and 5081 to 5515. Metal petal cmt. baskets at 5064, 5040, 4490, 4215, 4020, 3615, 3370 and 3200.
8-15-72		RIH w/3-1/2 D.P. & 6-1/8 bit to 5515. Displaced mud w/fresh water - unloaded hole w/air. 1/2# on 8-3/4 orifice. Released rig. Flowed well with 1/2 PSI.

DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

Well Summary Report of Geothermal Energy Well

SUBMIT IN DUPLICATE

Operator Union Oil Co. of California Well No. Baca #8

Sec. ____, T. ____, R. ____, ____ B. & M. ____ Field ____ County.

Location 35.9173° Latitude, 106.5898° Longitude

(Give location from property or section corner, or street center lines)

Elevation of ground above sea level 8631' feet

All depth measurements taken from top of Kelly Bushing which is 14' feet above ground.

(Derrick Floor, Rotary Table or Kelly Bushing)

In compliance with Sec. 3735, of the Public Resources Code, the information given herewith is a complete and correct record of the present condition of the well and all work done thereon, so far as can be determined from all available records.

Date 1/24/74

Signed K. J. Stracke

J. C. Jones (Engineer or Geologist) ____ (Superintendent) Title Agent (President, Secretary or Agent)

Commenced drilling 8/16/72

Completed drilling 9/13/72

Total depth 4384' Plugged depth 4384'

Junk ____

Commenced producing ____

Geologic age at total depth ____

GEOLOGICAL MARKERS	DEPTH

n	Static test Shut-in well head		Total mass flow			Degrees of Superheat °F	Production test data						
							Separator		Steam		Water		
	Temp. °F	Pres. psig	lbs/hr	Temp °F	Pres. psig		Pres. psig	Orifice	lbs/hr	Temp °F	lbs/hr	Temp
	WELL DID NOT FLOW - WILL BE USED AS TEMP. SURVEILLANCE HOLE											

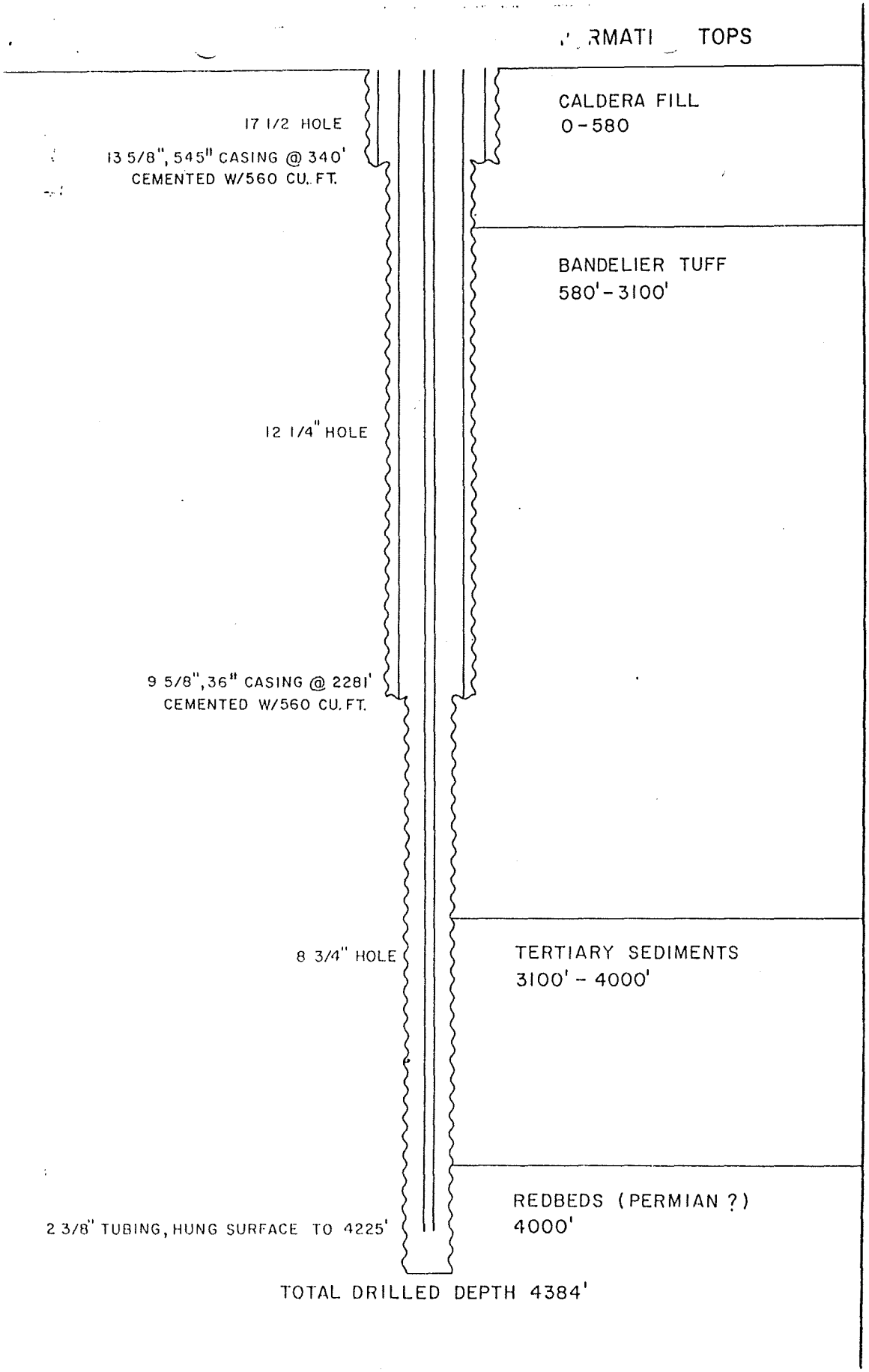
Casing Record (Present Hole)

Casing (O.D.)	Depth of Shoe	Top of Casing	Weight of Casing	New or Second Hand	Seamless or Lapweld	Grade of Casing	Size of Hole Drilled	Number of Sacks of Cement	Depth of C... if through pe...
78"	340	Surface	54.5	N	S	K-55	17-1/2"	560 cu.	[illegible]
8"	2281	Surface	36	N	S	K-55	12-1/4"	2100 cu.	[illegible]

Perforated Casing

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

... analysis of effluent water? ... Electrical log depths ____ Temperature log depths ____



D. PYLE
G. GRIFFEY
2-15-74
1" = 400'

BACA-8 CASING SCHEMATIC

LEASE Baca WELL NO. 8 FIELD

DATE*	L.I.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS
8-17-72		Spudded 17-1/2 hole with mud at 4 PM, 8-16-72. Drilled to 340'.
8-18-72		Ran 9 joints of 13-3/8 Casing. - 54.50# - ST&C - J-55 - set at 340'. Cemented with 400 Sx. cl C with 3% CAC 1/2 circulated out 100 Sx.
8-19-72		Installed BOE. Drilled from 340 to 844 w/mud. (12¼ hole)
8-20-72		Drld. from 884 to 1071' w/mud.
8-21-72		Drld. from 1071 to 1253 w/mud. Lost circulation @ 1231. Mixed 500 Bbls. mud with 30% LCM. Regained full returns.
8-22-72		Drld. from 1253 to 1514 w/mud.
8-23-72		Drld. from 1514 to 1773 w/mud.
8-24-72		Drld. from 1773 to 2030 w/mud. Turned on mud cooler at 1862. Flow line temp. decreased from 192°F to 140°F.
8-25-72		Drld. from 2030 to 2178 w/mud.
8-26-72		Drld. from 2178 to 2296 w/mud.
8-27-72		Ran temp. bomb inside D.P. to 2265. temp 298°F. Ran guide shoe on bottom and float collar 1 Jt. up. Ran 12 Jts. 9-5/8 - 36# - K-55 - Buttress followed by 40 Jts. on 1 pc of 9-5/8 - 36# - K-55 - ST&C - 8Rd Thd Csg. set at 2296. Cemented w/585 Sx Cl C mixed with 585 Sx natural pozl plus 0.4% R-11. Circulated out 500 Sx. of cement slurry.
8-28-72		WOC - Installed BOE - leveled sub - structure.
8-29-72		Drld. out cmt., F. Collar & G. Shoe. Drilled 8-3/4 hole from 2296 to 2565 w/air. Dusted the 2375, then started making approx. 20 bbls. water per hour with steam.
8-30-72		Drld. from 2565 to 2995 w/air.
8-31-72		Drld. from 2995 to 3021. Trip for bit @ 2995. RIH and found 200' of fill. C/O to bottom. Drld. 2995 to 3016. Stuck pipe. Worked pipe free. Pulled up 100 feet, worked back down and found 60' fill. Drld. from 3016 to 3021. Stuck pipe. Worked pipe free - pulled up to 2150. Mixed mud.
9-1-72		Circulated hole w/mud. RBIH and found top of fill at 2680. C/O to 2750. Bit locked up. POOH - found 3 cones missing from bit. RBIH to 2600. Unable to break circulation POOH - unplugged bit. RBIH and C/O from 2750 to 2931.
9-2-72		C/O to bottom. Drld. from 3021 to 3219 w/mud.
9-3-72		Drld. from 3219 to 3351. Trip for bit at 3351. RBIH and hit bridge at 3175. Stuck pipe. Pulled on stuck pipe for 2½ hours.
9-4-72		Spotted 50 Bbls diesel - unable to move stuck pipe. Ran free pt - found pipe stuck at 2701 (top of D. Collars) backed off - POOH - left 15 D. Collars, 3 pt reamer and 8-3/4 bit in hole. Top fish 2701 - bottom of fish 3175. P/O bumper sub. jars & 5 D. Collars. RBIH - screwed into fish. Jarred on fish 4 hours. Did not move.

*Dates for 24 hour period ending at 8:00 AM on date shown

LEASE Baca WELL NO. 8 FIELD

DATE *	E.L.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS
9-5-72		Made manuel back off and POOH. Left 6' splined maudrel on bumper sub looking up. Picked up 2 Jts. 8-1/8 wash pipe. RBIH and washed over fish from 2695 to 2755. POOH picked up 2 more jts wash pipe. RBIH and washed over fish from 2755 to 2810. POOH - layed down wash pipe. Picked up overshot and set of jars. RBIH and took hold of fish. Jarred 4:30 am to 5:00 am hold released POOH left 8-1/8" D.D. shirt from overshot in hole on top of fish.
9-6-72		RBIH with overshot, bumper sub and jars. Took hold of splined maudrel. Ran free pt. pipe free at 2784. Attempted to use string shots to back off at 2795, 2764; both failed. Ran free point and found pipe now stuck at 2500 and free at 2470. Spotted diesel and worked pipe free above fish. Ran free point free at 2730 and 2764. Fired string shot at 2730. Failed to back off. Jars and bumper sub now stuck.
9-7-72		Spotted out - worked jars free - unloaded hole w/air, jarred 15 minutes and fish came free. POOH and recovered all of fish.
9-8-72		RBIH and drilled from 3351 to 3692 w/mud.
9-9-72		Drld. from 3692 to 3902 w/mud. Started out of hole for bit at 3902. Pipe stuck @3150. Pulled on stuck pipe 1½ Hrs. Unable to move - unloaded hole w/air. Pipe came free - POOH - mixed and conditioned mud. RBIH and pipe stuck at 3890 unable to move.
9-10-72		Unloaded hole w/air. Worked pipe free. Drld from 3902 to 4261 w/mud and pipe stuck. Unable to pull loose. Unloaded hole w/air and pipe came free.
9-11-72		Drld. from 4261 to 4384. Pipe stuck at 4384. Unloaded hole w/air and freed pipe. POOH.
9-12-72		Layed down D. Collars and D. pipe. Installed tbg head.
9-13-72		Ran 3-7/8 bit on bottom, followed by sub from bit to 2-3/8 O.D. EUE - 8rd Thd Tbg. (Sub 2.0' long) followed by 134 Jts (4215') - 2-3/8 O.D. EUE - 8Rd Thd. new tubing set 10' below KDB at 4225. Unloaded hole w/air after 4 Hrs. had 6#,6" Orifice - Steam and hot water. Released rig.

*Dates for 24 hour period ending at 8:00 AM on date shown.

DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

Well Summary Report of Geothermal Energy Well

SUBMIT IN DUPLICATE

erator Union Oil Company of California Well No. Baca 19

____, T.____, R.____, ____B. & M. Field____ County.

ation 35.8825° Latitude, 106.5868° Longitude
(Give location from property or section corner, or street center lines)

Elevation of ground above sea level 8605' feet

depth measurements taken from top of Kelly Bushing which is 14' feet above ground.
(Derrick Floor, Rotary Table or Kelly Bushing)

compliance with Sec. 3735, of the Public Resources Code, the information given herewith is a complete and correct record of the nt condition of the well and all work done thereon, so far as can be determined from all available records.

1/24/74

Signed K. J. Stracke

J. C. Jones (Engineer or Geologist) (Superintendent) Title K. J. Stracke, Agent (President, Secretary or Agent)

menced drilling 9/16/72
pleted drilling 11/22/72
l depth 5303' Plugged depth Surface
6-3/4" Bit, Bit Sub, 8-6-1/8" Drill Collars Total (245') Top 4505'
menced producing

GEOLOGICAL MARKERS	DEPTH

Geologic age at total depth

Static test Shut-in well head		Total mass flow			Degrees of Superheat	Production test data					
						Separator		Steam		Water	
Temp. °F	Pres. psig	lbs / hr	Temp °F	Pres. psig	°F	Pres. psig	Orifice	lbs / hr	Temp °F	lbs / hr	Temp. °F
	WELL PLUGGED AND ABANDONED				11/22/72						

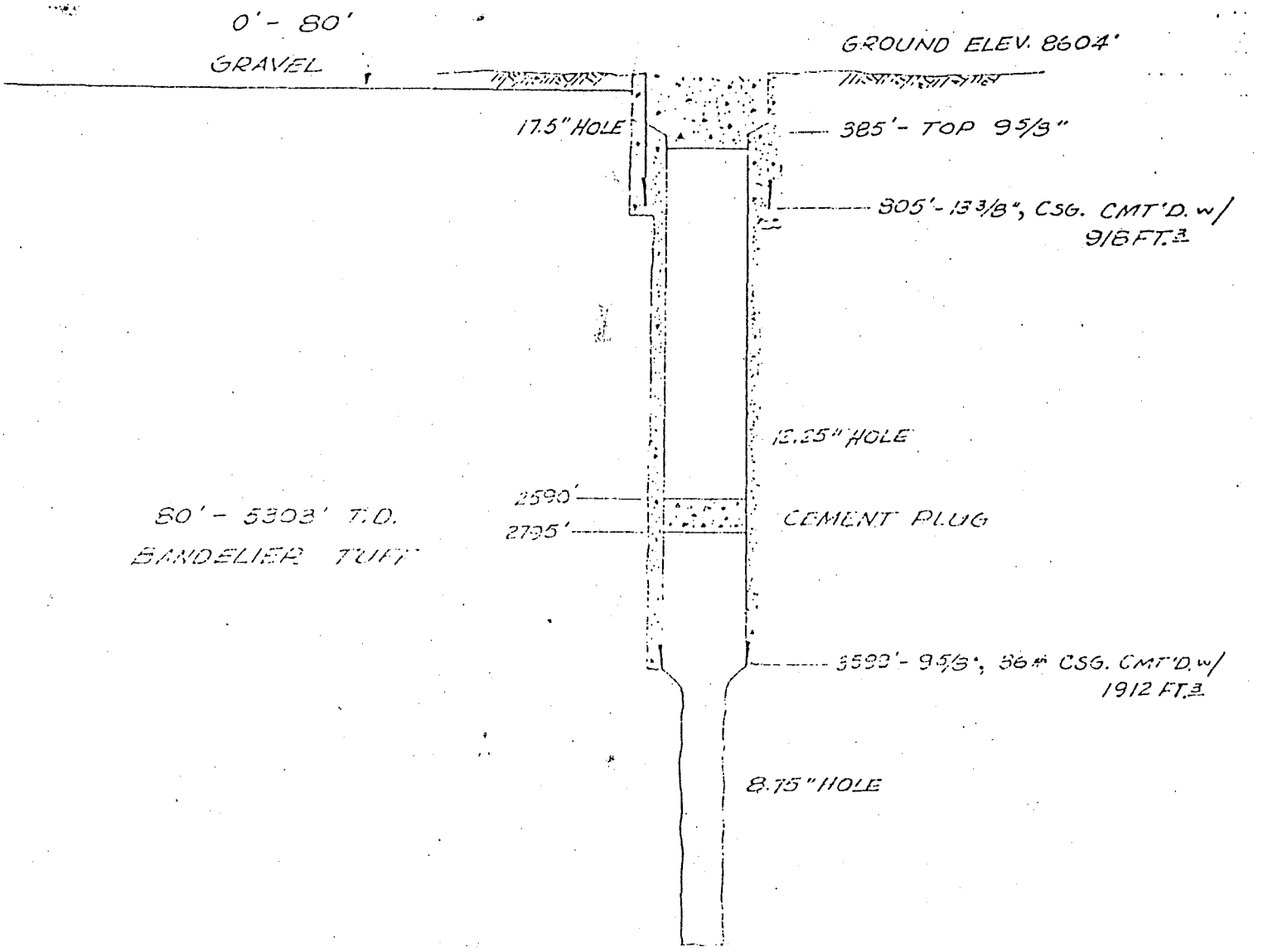
CASING RECORD (Present Hole)

Depth of Shoe	Top of Casing	Weight of Casing	New or Second Hand	Seamless or Lapweld	Grade of Casing	Size of Hole Drilled	Number of Sacks of Cement	Depth of Cementing if through perforations
805	Surface	48	N	S	H-40	17-1/2"	918 cu.ft.	
3599	385	36	N	S	K-55	12-1/4"	1912 cu.ft.	

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

lysis of effluent made? Electrical log depths Temperature log depths

FIRST COMPLETED 11-24-'77

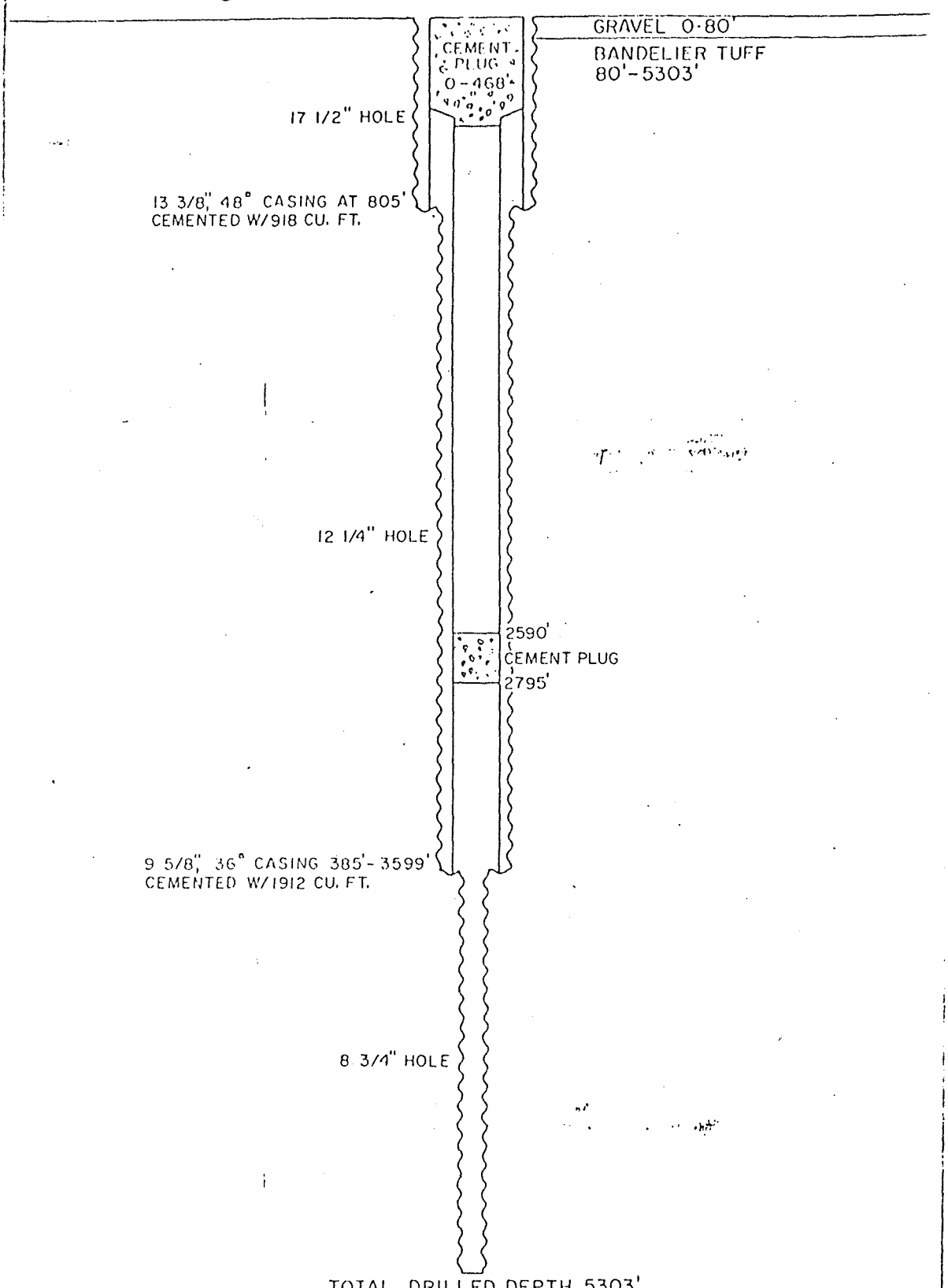


STEAM ENTRIES

5702'
4077'
5000'

REVISED	DATE	UNION 76	DRAWN
			FOR:
		UNION OIL COMPANY OF CALIFORNIA - GEOTHERMAL DIVISION	BY:
			DATE:
		EACA - 3. CASING SCHEMATIC	SCALE:
		EACA PROJECT NEW MEXICO	DRAWING NUMBER 101

FORMATION TOPS



REVISED	DATE	UNION	DRAWN
		UNION OIL COMPANY OF CALIFORNIA - GEOTHERMAL DIVISION	FOR: D. PYLE BY: G. GRILLEY DATE: 3-15-79
		BACA-9 CASING SCHEMATIC	SCALE: 1" = 500' DRAWING NUMBER

Union

LEASE Baca WELL NO. 9 FIELD

DATE *	T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS
10-6-72		Pumped in 150 Bbls. water mixed w/soap. Unable to move pipe. Spotted 50 Bbls. diesel, let soak 2 hours and unable to move. Ran free pt. Stuck in middle of 4th collar at 3025'. Free at 3005'. Backed off with 5th shot and left 310' of collars and 12-1/4 bit in hole. Top fish 3005.
10-7-72		Found pin on D.C. swelled 1/4". RBIH with D. collar on bottom, bumper sub jars, and 10 D.C. Unable to screw into fish. POOH. Layed down bottom D.C. P/U overshot with 6-1/2 grapple. RBIH - unable to catch fish. POOH - changed grapple to 7".
10-8-72		RBIH with overshot and took hold of fish. Jarred 1 hour and hold broke - POOH - left shirt, body and grapple of O.S. in hole with 9-5/8. O.D. fine thd. box looking up. P/U 10-1/4 I.D. X 10-3/4 O.D. X 4' long washover shoe. RBIH and washed over overshot and drove down over drill collar. POOH.
10-9-72		RBIH with 10" I.D. washover shoe and 12 joints (312') of 8-1/8" O.D. (7-1/8" I.D.) wash pipe. Washed over fish from 3005' to 3210'. POOH - found shoe worn slick. Built up shoe on 10-1/4 I.D. and 11-1/4 O.D.
10-10-72		RBIH washed over 1' in 8 hours. POOH. P/U 8-1/4 O.D. Cutrite shoe - RBIH and made 3' in 3 hours. Cutting inside of O.S.
10-11-72		Made 3' in 5 hours. POOH - P/U 10-3/4 O.D. shoe. RBIH. Made 4" in 4 hours. POOH. P/U 11-1/4 O.D. overshot with 9-3/4 grapple. Unable to work thru tight hole at 2940'. POOH P/U 9 5/8 overshot with 7" grapple.
10-12-72		RBIH - took hold of fish - jarred 1 hour. Unable to move. Unloaded hole with air. Jarred on fish 1 hour. Unable to move. Jarred down and broke hold. PU 65' and stuck fishing string consisting of 10 D.C. (329') jars and bumper sub and overshot. Worked pipe 2 hours. Unable to free. Unscrewed at top of collar at 2661. Unloaded hole with air. Screwed back in - unable to pull fish. Unscrewed at top of collars. POOH. P/U 358' of 8-1/8 O.D. Wash pipe with 8-1/4 cutrite shoe. RBIH and washed over to bottom of fish at 2990 with air POOH - stood wash pipe back. RBIH with D.P. open ended and screwed into fish. Jarred loose in 1 hour.
10-13-72		POOH and recovered all of fishing string. P/U 12-1/4 bit and 2-9" drill collars followed by 10-6-1/4" drill collars, with stabilizer on top of 2nd drill collar. RBIH to 2455'. Ran Totco - Instrument stopped at 2076-Dev.9°. POOH - removed rock on top of top drill collar. RBIH to 2660. Ran Totco and found dev. as follows: 9-1/2 at 2420' 12 at 2490; 12-3/4 at 2540; 15 at 2650. PU to 2433 and started side-tracked hole by running 1 to 2 tons on bit and turning rotary 90 RPM. Drld. from 2433 to 2437 in 1-1/4 hours with air.
10-14-72		Drld. side tracked hole from 2437 to 2476 with air. 9-1/4° at 2454.
10-15-72		Drld. from 2476 to 2526 with air (side tracked) 10-1/2 at 2490.
10-16-72		Drld. from 2526 to 2643 (S.T.) with air 10-1/4 at 2516, 10° at 2546.

*Dates for 24 hour period ending at 8:00 AM on date shown.

UNION

SHEET D

PAGE NO. 1

LEASE Baca WELL NO. 9 FIELD Sandoval County, New Mexico

DATE *	E.T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS
-16-72		Finished rigging up. Spudded 17-1/2" hole at 3PM on 9-15-72. Drilled to 294' with mud.
-17-72		Drilled from 294' to 399' with mud. Dev. 3° at 300.
-18-72		Drilled from 399' to 521 with mud.
-19-72		Drilled from 521' to 615' with mud. Dev 8° at 512; 11-1/2° at 567, 15° at 604'. Put on stabilizer at 615.
-20-72		Drilled from 615' to 715 with mud. Dev. 15-3/4° at 630; 15 at 673; 15° at 705'.
-21-72		Drld. from 715 to 801 with mud.
-22-72		Drld. to 805'. Ran 19 joints and 1 pc. of 13-3/8" O.D. - 48#, H-40, R-3, ST&C casing. Set 15' below KDB at 805 w/Guide Shoe on bottom and Float Collar at 765. Cemented with 406 Sx. Cl. "C" cmt. mixed with 406 Sx.Natural Pozlan (918 ft^3). Circ. out 125 Sx. cement slurry plug down 8:45P on 9-21-72.
-23-72		Nippled up. Installed BOE and Blooie Line. RIH with 12-1/4 Bit, 3 pt. reamer and stabilizer. Drld. FC, 40' cmt. and G.S. drld. to 903'. Dusting.
-24-72		Drld. from 903' to 1144' with air. Dusting. 12-3/4° at 950.
-25-72		Drld. from 1144 to 1425 with air. Dusted to 1400. Now slightly damp.
-26-72		Drld. from 1425' to 1685' with air.
-27-72		Drld. from 1685 to 1940 with air.
-28-72		Drld. from 1940' to 2360 with air. 18-1/4° at 2185'. Layed down stabilizer at 2310.
-29-72		Drld. from 2360' to 2839' with air. Water increased at 2482. Blew hole 2 hours at 2482 to clean up.
-30-72		Drld. from 2839 to 2879 w/air. 18-3/4° at 2840. 19-1/2° at 2870. Layed reamer down at 2839'.
0-1-72		Drld. from 2839 to 3238 w/air. 15-3/4 at 3080. 16-1/2 at 2990. Light hole 3003 to 3216.
0-2-72		Drld. from 3238' to 3468' w/air.
0-3-72		Drld. from 3468' to 3519'. Hole caving at 3502'. Required 4 hours working and blowing hole to drill from 3502' to 3519'. Unable to clean hole w/air at 3519'. POOH-Mixed 400 Bbls. mud. RBIH to 3000' and pumped mud in. Bit plugged - POOH to unplug bit.
0-4-72		RBIH to 2500. Pumped in 40 Bbls. fresh water and bit plugged. POOH and unplugged bit. RBIH to 800'. Mixed and pumped 1200 Bbls. mud. Hole circulated. RBIH to bridge at 3140'.
0-5-72		C/O fill from 3140' to 3340'. Pulled up to make correction at 3340 and pipe stuck. Unable to circ. w/2000 PSI. Worked stuck pipe 10 hours and unable to free. Circulated hole at 3500 PSI and 4 Bbls/min. Losing 50% of returns. Unable to work pipe loose.

*Dates for 24 hour period ending at 8:00 AM on date shown.

LEASE Baca WELL NO. 9 FIELD

DATE*	L.T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS
0-17-72		Drld. from 2643' to 3060' w/air. 9° at 2640.
0-18-72		POOH - Layed down 2-9" D.C. and stabilizer. Drld. from 3060' to 3340' w/air.
0-19-72		POOH - Mixed 1600 Bbls. Mud - RBIH and cleaned out fill from 3270' to 3340'.
0-20-72		Drld. from 3379' to 3600' with mud.
0-21-72		POOH - Ran 91 jts. - 9-5/8" - 36# - K-55 - ST&C casing followed by Burns plain type liner hanger casing would not go past 3320. Unable to pull casing. Unloaded hole w/air and worked casing free in 2 hours. Started out of hole.
0-22-72		Layed down 9-5/8 casing, mixed and ppd in 800 Bbls. mud. RBIH with 12-1/4 bit. Washed from 2750 to 3600. Cir. 1-1/2 hour. Made 2 short trips. POOH.
0-23-72		Running 9-5/8 casing.
0-24-72		Ran 91 joints (3211') of 9-5/8", 36#, -K-55, -ST&C casing with F Shoe on bottom, and F Collar 33' above, with Burns Plain Type Liner Hanger and packer for cementing on top. Set bottom of liner at 3599 with top of hanger at 385'. Hung liner. Cementing with 765 Sx Cl "C" mixed with 765 Sx. Natural pozlan (1912 ft^3) w/0.8% R-11 retarder. (4 hours pumping time at 200° F.)
0-25-72		Drld. 300' cement, FC & FS. Drld. from 3600' to 3837'. Steam and water flow at 3700. (F.L. 240°F and 25# on 8-3/4 orifice) decreased to 11# and 220°F in 10 hours.
0-26-72		Drilled from 3837' to 3910'. Started out of hole at 3910 bearing on crown sheave failed. Lost 17-1/2 hours waiting on parts.
0-27-72		Waiting on parts 18 Hrs. Finished POOH to change bits.
0-28-72		RBIH - reamed 120' to bottom. Drld. from 3910' to 4185' with air.
0-29-72		Drld. from 4185 to 4429 w/air. Unable to close master gate when out of hole at 4290.
0-30-72		Drld. from 4429 to 4619 w/air. Banjo box cut out when depth of 4619 reached. Pulled bit up in casing. Killed well with fresh water. Pulled up to 1157 and drill pipe parted in middle of joint at 787' down from surface while coming out of hole, leaving 8-3/4 bit, 10 drill collars, 15 joints and 1 pc. (12') of 4-1/2 D.P. in hole. Repaired Banjo box. Unable to close master gate (a new gate).
10-31-72		RBIH w/overshot. Found casing collapsed at 2911. POOH. RBIH open ended to 3763. Unloaded hole w/air. Unable to go below 3763. POOH - RBIH w/8-1/2" tapered mill. Milled from 2911-13. Mill free from 2913-43. Milled 2943-51.
11-1-72		Milled from 2951-57. Mill free at 2957. Ran on in hole to top of fish at 3830. POOH - found mill worn down to 8" O.D. RBIH w/overshot (8-3/8" O.D.) Unable to go below 2950. POOH.

*Dates for 24 hour period ending at 8:00 AM on date shown.

UNION

SHEET D

PAGE NO. 4

LEASE Baca WELL NO. 9 FIELD

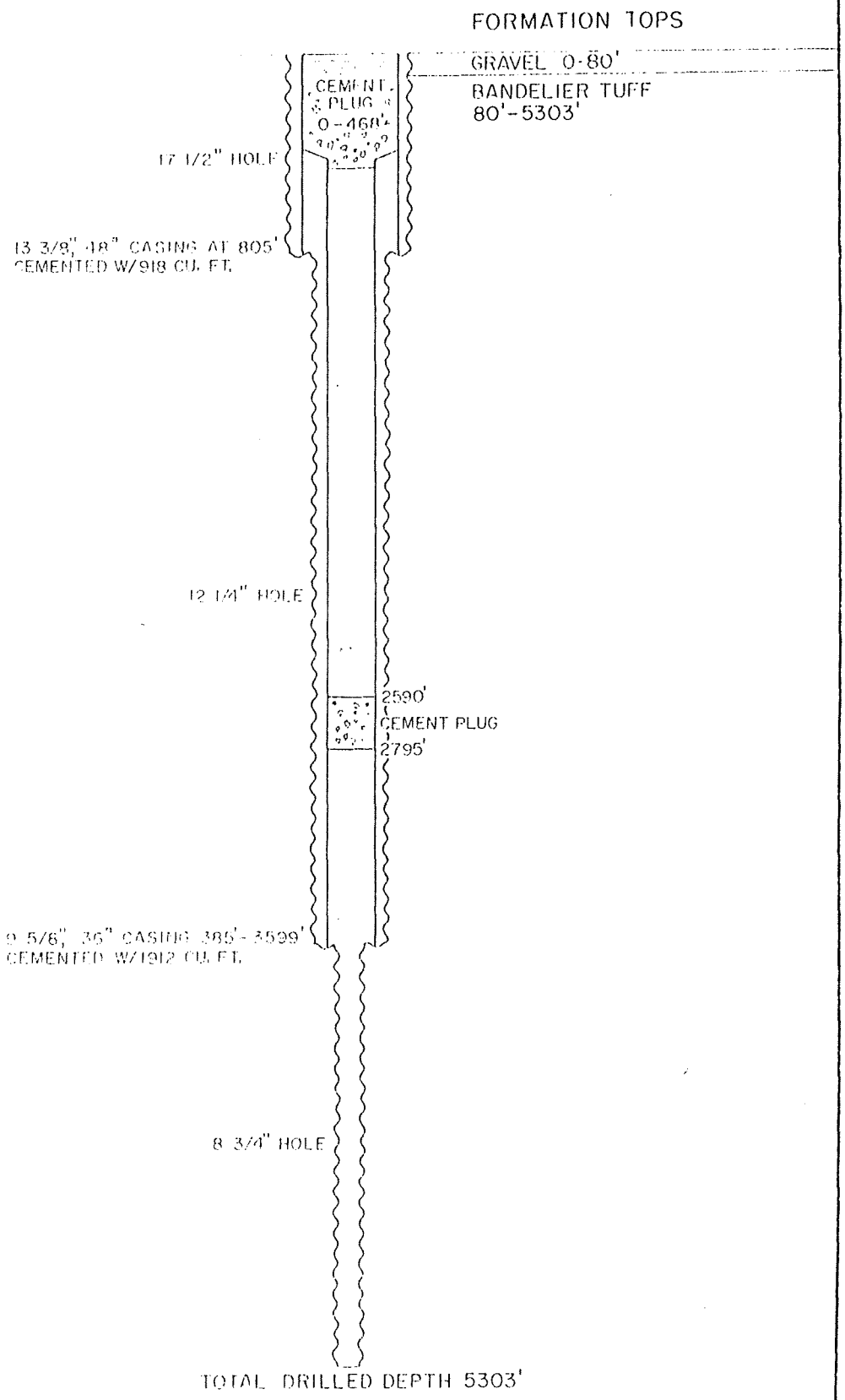
DATE *	L.I.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS
11-2-73		RBIH w/8½" tapered mill. Milled out tight place from 2945-57. POOH - RBIH w/7-5/8" O.D. overshot w/17' extension. C/O bridge from 3680-3700. Took hold of fish at 3830. Worked fish and pulled up to 3790.
11-3-73		Worked fish 2 hrs. - unable to move. Rotated 1 Hr. and unable to break hold. Mixed pit of mud.
11-4-73		Ran free point. Pipe free to float sub 3' above top of overshot. Backed off at 3785 leaving 1 ix drill pipe above float sub. RBIH with bumper sub, jars, accelerator sub, and 6 D.C. Took hold of fish. Jarred overshot down over tool jt. Picked up to 160M and fishing string came free - POOH - Rec. Tool Jt. and 1' of D.P. from top of fish.
11-5-73		RBIH with 8-1/8" O.D. overshot and found bridge at 3720. Unable to work thru bridge. POOH. RBIH w/8-3/4 bit. Cleaned out from 3720-50. Open from 3750 to top of fish at 3787. POOH RBIH w/7-5/8" O.D. overshot. Unable to go below 2950. POOH - RBIH w/8½" O.D. mill. Milled out fight place from 2950-52. Mill free below 2952.
11-6-73		POOH RBIH w/7-5/8" O.D. overshot. Cleaned out 5' to top of fish. Took hold of fish. HOld pulled loose w/10M pull. Unable to catch fish. POOH, RBIH with bit to 2900. Mixed and pumped in 1400 Bbls mud - no return.
11-7-73		Ran down to top of fish at 3785 - found no fill. Layed down all 4½ D.D. acct. of wear. Picked up 7-5/8" O.D. overshot, with 6⅛ grapple, with 30' extension, jars, accelerator sub and 6 drill collars. Picking up 4½" - 20# drill pipe.
11-8-73		RBIH. Worked extension over top of fish from 3786-3804. Noted derrick legs broke at this point. Pulled up to 2850. Layed derrick down for repair.
11-9-73		Repaired derrick. Ran back down and worked overshot over top of fish from 3786-3819. Unable to catch fish. POOH.
11-10-73		RBIH with 5-7/8" grapple in above assembly. Unable to catch float sub. POOH - picked up overshot with 4⅛' grapple - RBIH and took hold of fish at 3815. Jarred 4 Hrs. - Fish came free - POOH - Recovered all of fish except for one-half of 1 bit lone.
11-11-73		Removed BOE and installed new master gate. Inspected all drill collars. (all O.K.).
11-12-73		RBIH with 8-3/4 bit, junk sub and 10 - 6-1/8" D.C. Drld. from 4619' to 4740' w/air. Lost 4 Hrs. repairing rotary sprocket.
11-13-73		Drld. from 4740' to 4806'.
11-14-73		Drld. from 4806-5156' w/air.
11-15-73		Trip for bit at 5226'. Hit tight place in casing at 2940. Bridges and fill from 5010' 59 5226. Drilled to 5252'.
11-16-73		Trip for bit at 5303. Hit bridge at 3900'. Cleaned out and free at 3920. Hit bridge at 4920 and stuck pipe. Worked down hole to 4950 in 8 hours.

* Dates for 24 hour period ending at 8:00 AM on date shown.

Baca WELL NO. 9 FIELD

DATE*	E.T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS
1-17-73		Slipped drilling line. Worked stuck pipe unable to move.
1-18-73		Unable to keep well dead to run free pt. Made manual back off - killed well - ran casing collar locator - found back off at 3527. Screwed back together. Ran free pt. Top of collars at 4486. Free at 4475. Stuck at 4652, 4616, and 4585. Ran shot to jt. between top D.C. and 2nd D.C. at 4512. Backed off actually at 4213. POOH
1-19-73		RBIH w/Bumper sub, jars, accelerator jars and 6 D.C. Screwed into fish. Jarred fish down hole 30'. Rotated freely. Jarred back up hole 10'. Unable to move. Ran free point. Top collars now 4505 and cross over sub at 4503. Free at 4474. Stuck at 4510. Took 4 Rds. of left torque to prepare to back off at shot. Backed off manually without shooting. Recovered top drill collar, leaving 8-3/4 bit, (bit sub - 6-3/4" O.D. x 3.68' long) with 4½ reg box on bottom and 4' x hole box on top of bit sub followed by 8 - 6-1/8" drill collars (245.17') with 4½" full hole box looking up. Top of collars 4505 and top of cross over sub 4503.
1-20-72		Layed down fishing tools and drill collars. Closed master gate and attempted to pressure up casing with air. Found leak in 13-3/8 casing about 20 feet from surface. Ran water in collar and look down 13-3/8 casing with mirror, and could see water coming in thru hole in casing. Ran Halliburton SV-EZ drill bridge plus (7.62" O.D. x 3' long) on bottom of drill pipe and set at 2795. Mixed and pumped in 62 sx. cl. C cmt. mixed with 62 Sx natural pozlan with 1% R-11 retarder. Spotted on top of bridge plug. Unable to fill hole before cementing. Fluid level 1400' before and after cementing.
1-21-72		Set 9-5/8 Halliburton SV-EZ drill bridge plug at 468'. Circulated w/water above B.P. Mixed and pumped in 88 Sx cl C cmt. mixed with 88 Sx. natural pozlan with 0.5% R-11 retarder. Spotted cmt. right on top of bridge plug. Full returns while cementing.
11-22-72		Released rig.

*Dates for 24 hour period ending at 8:00 AM on date shown.



D. PYLE
G. GRIFFEY
2-15-74
1" = 500'

BACA-9 CASING SCHEMATIC

Form C-136
Adopted 10/1/

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

GEOTHERMAL RESOURCES WELL SUMMARY REPORT

Operator: Union Oil Company of California — Address: Mtn. Rt. Box 76, Jemez Springs, N.M. 8702
Lease Name: Baca Location No. 1 — Well No.: Baca 10
Unit Letter: O — Sec.: 11 — Twp.: 19N — Rge: 3E
Reservoir: Bandelier Tuff — County: Sandoval

Commenced drilling: July 5, 1973
Completed drilling: September 18, 1973
Total depth: 6001' — Plugged depth: ---
Mud: ---

GEOLOGICAL MARKERS	DEPTH
Caldera Fill	0 - 520'
Bandelier Tuff	520' - 5220'
Paliza Canyon Andesite	5220' - 5930'
Tertiary Sediments	5930' - 6001'

Commenced producing: Not Producing (Date)
Geologic age at total depth: Tertiary

Static test Shut-in well head		Production Test Data								
		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
		TO BE TESTED AT LATER DATE								

CASING RECORD (Present Hole)

Size of Casing	Weight of Casing/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
20"	94	K-55	N	S	653'	Surf.	2150 Cu. Ft.	Surf.	Visual
13-5/8"	61# 54.5#	K-55	N	S	2794'	Surf.	2441 Cu. Ft.	Surf.	Visual
9-5/8"	40# 36#	K-55	N	S	4418'	2480'	100 Cu. Ft.	2480'	Test (Liner)
9-5/8"	36#	K-55	N	S	2480'	Surf.	1965 Cu. Ft.	Surf.	Visual (Tie-ba

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

7" 23# and 26# Slotted liner hung 4278' - 6000' (Slotted intervals: 4444' - 5594' and 5761' - 5986') Jet perforated w/ 4SPF 3075' - 4195'

Analyses of Effluent made? N/A — Electrical log depths: N/A — Temperature log depths: N/A

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. Eggleston — Position: Project Coordinator — Date: 3/7/78

UNION OIL CO. OF CALIFORNIA

SHEET 7 A
PAGE NO. ____

DRILLING RECORD

LEASE Baca WELL NO. 10
FIELD Redondo Creek
LOCATION

PERMIT NO. SERIAL NO.
T.D. 6001 T.V.D.
DEVIATION (B.H.L.)
COMPANY ENGINEER

SPUD DATE 7/6/73 COMP. DATE
CONTRACTOR Calvert Wester RIG NO. 28
TYPE UNIT
DRILL PIPE DESCRIPTION 5" 19.50# 4-1/2 IF Tool Jts.
ELEVATIONS: GROUND
CSG. HEAD
ROTARY DRIVE BUSHING
APPROVED

CASING RECORD

SIZE	WEIGHT	THREAD	GRADE	DEPTH	CEMENT	LINER TOP	REMARKS
"	94#	8rd	H-40	653.	150 cu.	ft.	
3/8"	61&54.5	Buttress	K-55	2794	2441cu.	ft.	
-5/8"	40&36#	Buttress	K-55	4418	225 cu.	ft. 2480	
"	26&23	8rd	K-55	6000		4278	
-5/8"	36#	Buttress	K-55	2480	215lcu.	ft.	Tie-Back CSG.

WELLHEAD ASSEMBLY

CASING HEAD: 10" Gray 300 Ser. with 2-3" flanged outlets

MASTER VALVES: 10" WKM 300 Ser.

CHRISTMAS TREE TOP CONN:

STEAM ZONES

ESTIMATED PRODUCTION FROM EACH ZONE: 2622 - 25,000 #/hr. 3030 minor/3103 minor/3200 minor/3370 25,000 - 50,000 /3560 - 50,000 - 7,500/3713 - 50,000/ 4150 - 75000 - 100,000/4500 minor/4595 minor/4760 minor/4886 - 2500 - 50,000/ 5310 minor/5480 minor/5936 - 100,000

FLOW TEST

SHUT-IN PRESSURE: ORIFICE SIZE: 8-1/2"

DEPTH 4,180

DATE	TIME	WELLHEAD PRESSURE	FLOWLINE PRESS. PSIG	FLOWLINE TEMP. °F	FLOW LBS./HOUR
8-14-73	10:15 PM		42	285	340,000
	11:15 PM		33	260	290,000
	12:15 AM		32	265	280,000
	1:15 AM		31	270	270,000
8-13-73	10:30 PM		40	270	330,000
DEPTH 5962	11:00 PM		45	276	360,000
	11:30 PM		45	276	360,000
	12:00 PM		45	280	360,000

Drilling Record

UNION

SHEET D

PAGE NO. 1

LEASE Baca WELL NO. 10 FIELD Redondo Creek

DATE	E.T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS
7- 6-73		Finished rigging up. Started day rate at 2:00 PM. 7-6-73. Mixed mud, drilled at set rathole. Knocked hole in 30" conductor with 26" hole opener. Welded patch on conductor.
7- 7-73		Finished welding on patch. Mud circulated in cellar. Set plug of 50 sx type "A" CMT. with 3% $CaCl_2$ with OE 2" pipe at 30'. W.O.C. 3 hrs. Spudded 17-1/2" hole at 2:00 PM. Drilled to 43' and lost circulation outside of cellar. Set plug of 80 sx type "A" CMT. with 3% $CaCl_2$ with OE 2" pipe at 40'. Had good returns outside of cellar. W.O.C. 3-1/2 hrs. Drilled out CMT with 26" hole opener to 45'. Drilled 17-1/2" hole to 83'.
7- 8-73		Drilled 17-1/2" hole to 288'. Lost circulation in cellar. Set plug of 70 sx type "A" CMT with 3% $CaCl_2$ through OE DP at 42'. W.O.C. 3 hrs. RIH and located no CMT. Circulation same place in cellar. Set plug of 80 sx type "A" CMT with 3% $CaCl_2$ through OE DP at 43'. W.O.C. 3 hrs. Located hard CMT. at 24'. Drilled out CMT to 34' and lost circulation outside of cellar. Set plug of 50sx type "A" CMT with 3% $CaCl_2$ through OE DP at 34'. Pumped out fresh CMT from 21'. W.O.C. 3-1/2 hrs. Drilled out CMT with 26" hole opener from 21' to 43'. RIH with 17-1/2" bit and drilled 17-1/2" hole to 330'.
7- 9-73		Drilled 17-1/2" hole to 340'. Lost circulation outside of cellar. Set plug of 40 sx type "A" CMT with 3% $CaCl_2$ through OE DP at 30'. W.O.C. 2-1/2hrs. RIH and drilled hard CMT from 21' to 31'. Drilled 17-1/2" hole to 353'. Lost circulation and set plug of 60 sx type "A" CMT. with 3% $CaCl_2$ through OE DP at 31'. W.O.C. 2-1/2 hrs. Located no hard CMT. RIH and drilled 17-1/2" hole to 440'.
7-10-73		Drilled 17-1/2" hole to 658.
7-11-73 thru 7-13-73		Opened 17-1/2" hole to 26" hole to 611'.
7-14-73		Opened 17-1/2" hole to 26" hole to 656'. Ran and CMT'D 16 Jts, 20",94# H-40 ST&C CSG with 1500 cu. ft. type "A" CMT with 3% $CaCl_2$. Shoe at 653', F.C. at 609'. CIP at 11:59 PM. with good CMT returns to surface.
7-15-73		W.O.C. 4 hrs. Cut off conductor and 20" CSG. Welded on 20" flange and installed BOP.
7-16-73		Finished nippling up. RIH to F.C. at 609'. Unloaded hole with air. Drilled F.C., CMT, and shoe at 653'. Air drilled 17-1/2" hole to 693'.
7-17-73 thru 7-19-73		Drill 17-1/2" hole to 1391'.
7-20-73		Drilled 17-1/2" hole to 1491'. Twisted box off top of #4 DC. Ran jars, bumper sub, and overshot, and recovered fish.
7-21-73		RIH and plugged bit. Tripped to unplug bit. Drilled 17-1/2" hole to 1618'.
7-22-73 thru 7-26-73		Drilled 17-1/2" hole to 2558'.
7-27-73		Reamed from 1219' to 1257' and from 1702' to 2558'. Drilled 17-1/2" hole to 2700'.

Drilling Record

UNION

SHEET D

PAGE NO. 2

LEASE Baca WELL NO. 10 FIELD Redondo Creek

DATE	E.T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS
7-28-73		Drilled 17-1/2" hole to 2804'.
7-29-73		Mixed and pumped total of 2790 BBLS mud and lost circulation material to fill hole prior to running CSG.
7-30-73		Hole took 220 BBLS fluid in 5 hours. RIH hole with sawtooth single and located top of fill at 2775'. Set CMT plug of 175 sx type "A" CMT with 0.4% HR-7 with pipe at 2660'. WOC 8 hours. Located top of firm CMT at 2667'.
7-31-73		Drilled out CMT and fill to 2804' with no fluid loss. Ran 69 Jts, 61# and 54.4#, K-55 Buttress 13-3/8" CSG. (2796') Circulated to cool hole.
8- 1-73		CMT'D shoe at 2794' and F.C. at 2743' with 2441 cu. ft. 1 to 1 Poz mix CMT with 35% Silica Flour, 0.5% CFR-2, 0.4% HR-7. CIP at 1:30 AM. Good CMT returns to surface. WOC 8 hours. CMT fell in annulus. Cut off 20" flange and 13-3/8" CSG. RIH with 1" pipe and located top CMT at 487'. Washed with air to 552' and pumped through 1" pipe 475 cu. ft. type "A" CMT, 1-1 Poz mix with 35% Silica Flour, 0.5% CFR-2, 0.4% HR-7 and 3% calcium chloride. CIP - 10:30 PM. with good returns to surface.
8- 2-73		Welded on 13-3/8" casing head. Installed and tested B.O.E. Unloaded hole to 2,735'.
8- 3-73		Cleaned out cement from 2,755' to 2,794'. Drilled 12-1/4" hole to 3,030'. Small steam increase @ 3030'.
8- 4-73		Drilled 12-1/4" hole to 3,270' with small steam increase @ 3,103'.
8- 5-73		Drilled 12-1/4" hole to 3,447' with 20# steam increase @ 3,375'.
8- 6-73		Drilled 12-1/4" hole to 3,712' with small steam increase @ 3,712'.
8- 7-73		Hole packed off while drilling at 3,712'. Singled out three singles. Unloaded hole. Reamed and cleaned hole to 3,712'. Drilled 12-1/4" hole to 3,716'. Pulled to shoe and killed well to repair blooie line. Ran in hole to 3690'. Hole bridged and packed off. Singled out three singles and unloaded hole. Cleaned out hole to 3716'.
8- 8-73		Laid down Drill pipe and DC. Shut in well with rig on stand-by at 8:00 AM. while hardbanding drillpipe.
8- 9-73		Resumed operations at 8:00 AM. Installed 9" orifice and pressured up well to 500 PSI. Well failed to flow. Made up slick Drlg. Ass'y.
8-10-73		Picked up drill pipe to bridge at 3620'. Cleaned out bridge to 3716'. Drilled 12-1/4" hole to 3840'. Minor steam entries @ 3725' and 3800'.
8-11-73		Drilled 12-1/4" hole to 3928'. Steam increase @ 3907'.
8-12-73		Drilled 12-1/4" hole to 4040'. POH to shoe and killed well to change spool above Banjo Box. Drilled 12-1/4" hole to 4054'.
8-13-73		Drilled 12-1/4" to 4180'. Steam increase @ 4149'. Tested well.

LEASE Baca WELL NO. 10 FIELD Redondo Creek

DATE	E.T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS
8-14-73		Drilled 12-1/4" hole to 4216'. POH and killed well to replace Banjo Box and Spool.
8-15-73		Drilled 12-1/4" hole to 4322' with small steam increase at 4316'.
8-16-73		Drilled 12-1/4" hole to 4418'.
8-17-73		Reamed from 3756' to 4418'. Cleaned up well. Killed well with H_2O in preparation to run CSG.
8-18-73		Ran 47 Jts (1931.03') 9-5/8", 40# and 36#, K-55 Buttress Casing. F. Shoe at 4418', F.C. @ 4333', top of liner at 2480'. CMT'D with 100 cu. ft. 1-1 perlite, 35% Silica Flour, 2% Gel with 0.75% CFR-2, and 0.3% HR-12. CIP @ 2:30 PM.
8-19-73		Dropped DC slips in hole while laying down DC's. R.I.H. with 10-3/4" magnet to fish @ 2486'. No recovery. Made three attempts with homemade spear with no recovery.
8-20-73		Fishing for slips.
8-21-73		Fishing for slips.
8-22-73		Recovered slips. Drilled out F.S. FC, and CMT. to 4418' drilled 8-3/4" hole to 4439'.
8-23-73		Drilled 8-3/4" hole to 4559' with steam increase at 4500'and 4595'.
8-24-73		Drilled 8-3/4" hole to 4799'.
8-25-73		Drilled 8-3/4" hole to 5099'.
8-26-73		Stuck pipe at 5099'. Freed with H_2O and soap. Drilled 8-3/4" hole to 5110'.
8-27-73		Drilled 8-3/4" hole to 5169'. P.O.H. to unplug bit.
8-28-73		Drilled 8-3/4" hole to 5515'.
8-29-73		Drilled 8-3/4" hole to 5809'.
8-30-73		Drilled 8-3/4" hole to 5949'. Hole sloughing.
8-31-73		Drilled 8-3/4" hole to 5962' and stuck pipe.
9- 1-73		Worked stuck pipe and waited on Dia-log.
9- 2-73		Killed well with H_2O. Backed off collars at 5782' leaving 8-3/4" bit and 6-1/2" DC's in hole.
9- 3-73		Fished for DC's and tried to clean hole. Tested well.
9- 4-73		Fished for DC's.
9- 5-73		Recovered fish.
9- 6-73		Drilled 8-3/4" hole to6001'TD. Cleaned up hole.
9- 7-73		Ran 41 Jts. and pup of 23#,and 26# blank and perf 7" CSG. (1719'). Hung CSG with Burns Hanger @ 4278'. Gravel packed through shoe at 6000' with 100 sx 10-20 mesh sand. Blew hole dry.
9- 8-73		Dropped Baker 3-7/16" float in hole while making up float collar.

LEASE Baca WELL NO. 10 FIELD Redondo Creek

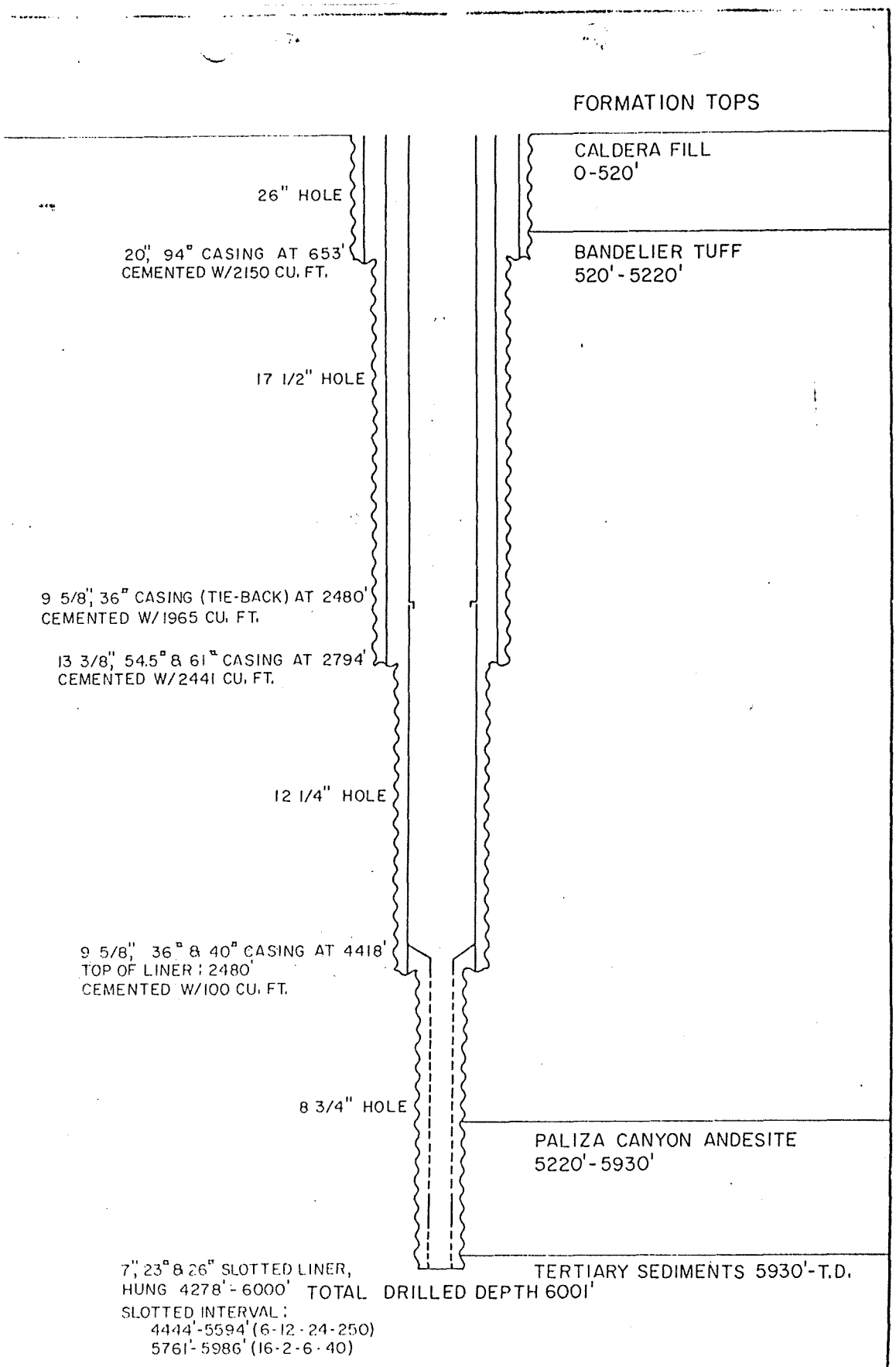
DATE	T.T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS
9- 8-73		RIH with 5" OE drill pipe and blew hole dry at 4200' with 6" orifice in flowline.
9- 9-73		Tested well with open flowline. Installed and tested with 8-1/2" orifice. Killed well and R.I.H. to 5980'. Found no bridges. Kicked well off and circulated with air.
9-10-73		Continue to test. Killed well and pulled out drill pipe.
9-11-73		Ran 60 Jts. (2496') 9-5/8", 36# Buttress Casing on Burns Tie-back recepticle hung at 2486'. with HOWCO Packer at 2445' and two CMT Baskets on Jt. below Pkr. Set Pkr. and circulation with H_2O through ports. CMT'D with 915 cu. ft. class "B" CMT. 1-1 Poz mix, 2% Gel, 35% Silica Flour, 0.5% CFR-2, and 0.4% HR-7. Displaced with H_2O. Lost returns. Finished with partial returns. Bumped plug and closed tool with 1000 PSI.
9-12-73		Ran temperature survey #2 and radioactive tracer. H_2O going past PKR. Pumped mud and LCM down annulus.
9-13-73		Pressured to 500 PSI. Held O.K. Increased pressure to 800 PSI. Held for two minutes and broke down. Pumped 165 BBLS mud and LCM. Displaced with H_2O and fluid loss decreased to 1 cu. ft. per minute. Schlumberger punched four holes in 9-5/8" Casing @ 2439' to 2440'.
9-14-73		Unable to circulate Reperf four holes 2440' to 2441'. Pumped 70 cu. ft. "B" CMT 1-1 Pozmix, 2% Gel, 35% Silica Flour, 0.5% CFR-2, 1/4# sx Flocel. CIP @ 3:10 AM. WOC 6 hours. Ran temperature log with no indication of CMT. Shot four holes at 2418' to 2421'. Pumped 1166 cu. ft. "B" CMT 1-1 Pozmix, 2% Gel, 35% Silica Flour, 0.5% CFR-2, and 1/4#/sx Flocel. CIP @ 2:50 PM. Returns throughout job. No CMT to surface. WOC 6 hours. RAn temperature log. Possible CMT at 2375'. Filled annulus with 35 BBL H_2O. Test with 850 PSI for five minutes. Test O.K.
9-15-73		Shot five holes in casing from 2362' to 2364'. Unable to circulate with 2000 PSI. Shot four holes from 2062' to 2064'. Unable to circulate with 2000 PSI. Ran acoustic bond log and shot 5 shots from 1582' to 1584'. Unable to circulate with 2000 PSI. Shot 10 shots from 1336' to 1341'. Unable to circulate with 2900 PSI. Removed BOE.
9-16-73		Ran 325 cu. ft. 20-40 sand in 9-5/8" X 13-3/8" annulus. Filled same (956 linear ft.). Welded on 10" CSG head and installed BOE. RIH to top of plug at 2391'. Unloaded hole and cleaned out CMT to 2589'.
9-17-73		Cleaned out CMT stringers from 2861' to 3427'. Blew hole clean to 4269'. Picked up 2-7/8" tubing and blew hole clean to 5988'. Laid down tubing and RIH with Drill pipe to 4269'.
9-18-73		Blew hole dry. Laid down drill pipe, removed BOE and released rig at 4:00 PM. 9-18-73.

Area Baca WELL NO. 10 FIELD Redondo Creek

DATE	T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS

Casing Detail

Jts.		Length	Top	Bottom
	20" Casing			
	20" HOWCO Guide Shoe	1.40	651.60	653.00
1	20" 94#,H-40 ST&C CSG.	41.00	610.60	
	20" HOWCO Float Collar	1.60	609.00	
15	20" 94#,H-40 ST&C CSG.	611.40	+ 2.40	
16		655.40		
	13-3/8" Casing			
	13-3/8" Halliburton Guide Shoe	1.10	2792.90	2794.00
1	13-3/8" 61# K-55 Buttress	47.30	2745.60	
	13-3/8" Halliburton Float Collar	1.70	2743.90	
18	13-3/8" 61# K-55 Buttress	733.08	2010.82	
50	13-3/8" 54.5 K-55 Buttress	2013.27	+ 2.45	
69		2796.45		
	9-5/8" Casing			
	9-5/8" Larkin Float Shoe	2.00	4416.00	4418.00
2	9-5/8" 40#	81.98	4334.02	
	9-5/8" Larkin Float Collar	1.25	4332.77	
42	9-5/8" 40#	1709.83	2622.94	
3	9-5/8" 36#	139.22	2483.72	
	9-5/8" X 13-3/8" Burns Liner Hanger	3.72	2480.00	
47	Landed below zero	2480.00 4418		
	7" Liner			
	7" HOWCO Float Shoe	1.75	5998.25	6000.00
1	7" 26# K-55 Blank LT&C	12.00	5986.25	
6	7" 26# K-55 40 Mesh LT&C	224.74	5761.51	
4	7" 26# K-55 Blank LT&C	167.01	5594.50	
27	7" 23# K-55 250 Mesh ST&C	1149.73	4444.77	
1	7" 26# K-55 40 Mesh LongC Short T	38.73	4406.04	
3	7" 26# K-55 Blank LT&C	126.70	4280.34	
1	7" Burns hanger	2.10	4278.24	
43		1719.03		
	9-5/8" Tie-Back			
	9-5/8" Burns Stab-in	3.15	2483.85	2487.00
1	9-5/8" 36# K-55 Buttress	34.65	2449.20	
	9-5/8" X over Buttress to 8rd	.70	2448.50	
	HOWCO D.V. Packer	4.05	2444.45	
	9-5/8" X over 8rd to Buttress	.70	2443.75	
59	9-5/8" 36# K-55 Buttress	2452.83	10.92	Above KB
60				



BACA-10 CASING SCHEMATIC

DEPARTMENT OF CONSERVATION

DIVISION OF OIL AND GAS

JAN 25 197

Well Summary Report of Geothermal Energy Well

SUBMIT IN DUPLICATE

Operator Union Oil Co. of California Well No. Baca #11

Sec. ____, T. ____, R. ____, B. & M. ____ Field Sandoval County.

Location 35.8950° Latitude, 106.5760° Longitude

(Give location from property or section corner, or street center lines)

Elevation of ground above sea level 9065' feet.

All depth measurements taken from top of Kelly Drive Bushing which is 17' feet above ground.

(Derrick Floor, Rotary Table or Kelly Bushing)

In compliance with Sec. 3735, of the Public Resources Code, the information given herewith is a complete and correct record of the present condition of the well and all work done thereon, so far as can be determined from all available records.

Date 1/24/74

Signed K. J. Stracke

J. C. Jones (Engineer or Geologist) (Superintendent) Title Agent (President, Secretary or Agent)

Commenced drilling 9/26/73

Completed drilling 11/13/73

Total depth 6391' Plugged depth 6926'

Bank NONE

Commenced producing

GEOLOGICAL MARKERS	DEPTH

Geologic age at total depth

	Static test Shut-in well head		Total mass flow			Degrees of Superheat °F	Production test data					
							Separator		Steam		Water	
	Temp. °F	Pres. psig	lbs/hr	Temp °F	Pres. psig		Pres. psig	Orifice	lbs/hr	Temp °F	lbs/hr	Temp. °F
/74	--		205,500	330	101	--						

Casing Record (Present Hole)

Casing No.	Depth of Shoe	Top of Casing	Weight of Casing	New or Second Hand	Seamless or Lapweld	Grade of Casing	Size of Hole Drilled	Number of Sacks of Cement	Depth of Cement if through perf.
	207	Surface	94#	N	S	H-40	26"	600 cu. ft.	
7/8"	1336	Surface	54.5#	N	S	K-55	17-1/2"	1600 cu. ft.	
7/8"	3320	Surface	36#	N	S	K-55	12-1/4"	1965 cu. ft.	
	6926	3320	26#	N	S	K-55	8-3/4"		

Perforated Casing

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

Analysis of effluent made? ____ Electrical log depths ____ Temperature log depths ____

DATE: 8/21/74 | DISTRICT:

Well Completion Record

Union Oil Company of California

UNION

PROSPECT OR FIELD: BACA GEOTHERMAL FIELD | WELL NO.: 12

OPERATOR: UOC. | LEASE: BACA

LOCATION: NEW MEXICO (SANDOVAL COUNTY) | SECTION: 14 | T: 19N | R: 3E | B. & M.:

ELEVATION: 8430' GR | LOG DATUM: 8479' KB | UNION INTEREST: | OTHER INTEREST:

REASON FOR DRILLING

TO DETERMINE SOUTHERN LIMIT OF FIELD.

DATE STARTED	DATE COMPLETED	TOTAL DEPTH	LOGGER	DRILLER M.D.	V.D.	COORD.
6/18/74	8/1/74	9212'	NONE			35°53'03" LAT. 106°58'11" LONG.

DISPOSITION OF WELL	PERFORATIONS	INITIAL PRODUCTION
SHUT-IN	SLOTTED LINER INTERMITTENTLY FROM 9170' TO 5557'	UNDETERMINED

CASING	PRODUCTION TESTS
9 5/8 CMTD 357' TO SURFACE; 7" LINER 9211'-3315' (KB)	PRESENTLY TESTING

CORING PROGRAM – SEE ATTACHED CORE DESCRIPTION SHEETS

FORMATIONS PENETRATED, THEIR DEPTHS AND RELATION TO SURROUNDING WELLS

FORMATION	THIS WELL (M.D.), SUBSEA COORDINATES DRILLED DEPTHS	OTHER WELLS – ~~SUBSEA~~ DRLD DEPTHS: BACA #5	BACA #9	
STREAM GRAVELS	TO 165'			
BANDELIER TUFF	165' TO 6460'	450'-6600'	0-5303' (T.D.)	
PALIZA CYN ANDESITE	6460' TO 7380'	6600'-6923' (TD)		
ABIQUIU TUFF (?)	7380' TO 7575'			
PERMIAN RED BEDS	7575' TO 9212' (T.D.)			

SUMMARY OF STRUCTURAL SIGNIFICANCE

STRATIGRAPHICALLY, THIS IS THE LOWEST WELL DRILLED TO DATE IN CEDAR PO CAR CANYON. IT APPARENTLY DID NOT PENETRATE THE SOUTHERN LIMIT OF THE FIELD.

GEOLOGICAL SERVICE	FROM – TO	GEOLOGICAL SERVICE	FROM – TO
RESISTIVITY LOG		CORE TYPE	
POROSITY LOG		CORE ANALYSIS	
DIPMETER		OTHER SERVICES	
OTHER TYPES	TEMP 1453 – 5495'		

REMARKS: 7 sidewall cores

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

CAREL OTTE
OCT 4 1974

GEOTHERMAL RESOURCES WELL SUMMARY REPORT

Operator UNION OIL CO. OF CALIFORNIA Address P.O. Box 6854, Santa Rosa, CA. 9540
Lease Name BACA Well No. Baca No. 12
Unit Letter ____ Sec. LATITUDE = 35.8808 & LONGITUDE = 106.5872
Reservoir ____ County Sandoval

Commenced drilling June 19, 1974
Completed drilling August 19, 1974
Total depth 9212' Plugged depth NONE
Junk NONE

GEOLOGICAL MARKERS	DEPTH
Gravel	0 - 160
Bandelier	160 - 6460
Paliza Canyon	6460 - 7575
Permian Red Beds	7575 - 9212

Commenced producing Never Produced (Date)
Geologic age at total depth: Permian

	Static test Shut-in well head		Production Test Data								
			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
			WELL WILL BE TESTED AT A LATER DATE								

CASING RECORD (Present Hole)

	Depth of Shoe	Top of Casing	Weight of Casing	New or Second Hand	Seamless or Lapweld	Grade of Casing	Size of Hole Drilled	Number of Sacks of Cement	Depth of Cement if through perfo
	247'	Surface	94#	N	S	H-40	26"	1016 cu. ft.	
3/8"	1453'	Surface	68#	N	S	K-55	17-1/2"	1709 cu. ft.	
5/8"	3540'	1270'	36#	N	S	K-55	12-1/4"	1625 cu. ft.	
	9211'	3343'	26#	N & used	S	J-55	8-3/4"	NONE	
5/8"	1270'	Surface	Tie-Back Casing						

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

3343' to 9211' - Machine perforated 16-2-6-250. See 7" liner detail for intervals.

Copy of caliper log? NO Electrical log depths 3512' (no good) Temperature log depths 1453' - 3495'

CERTIFICATION

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

Name [signature] Position District Drlg. Superintendent Date 9-3-74

[illegible] P. O. Box 2088, Santa Fe 87501

GEOTHERMAL RESOURCES WELL LOG

Operator Union Oil Company of California

Address Geothermal Division, P.O. Box 7600, Los Angeles, CA 90051

Reservoir Bandelier Tuff and Older Formations

Lease Name Baca Well No. 12 Unit Letter ___

Location: LAT: 35.8808° feet from the _____ line and

LONG: 106-5872° feet from the _____ line Section _____

Township _____ Range _____ County Sandoval

FORMATIONS PENETRATED BY WELL

DEPTH TO Formation	DEPTH TO Bottom of Formation	Thickness	Drilled or Cored	Recovery	DESCRIPTION
0'	160'	160'	Drilled		Gravel, Volcanic Debris
160'	6460'	6300'	"		Bandelier Tuff; light to dark gray, Rhyolitic, welded to non-welded
460'	7380'	920'	"		Paliza Canyon Formation; andesite, minor tuff and conglomerate
380'	7575'	195'	"		Abiquiu Tuff (?)
575'	9212' T.D.	1637'	"		"Redbeds"; Arkosic sandstone and siltstone, probably Permian, possibly some Tertiary sediments in upper portion of interval.

Attach Additional Sheets if Necessary

[illegible] this report be accompanied by copies of electric logs, directional surveys, [illegible] or chemical logs, water analyses, tests, including potential tests, and temperature surveys. (See Rule 30).

[illegible] 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 Richard P. Dondanville Richard P. Dondanville Title Sr. Geologist Date August 28, 1974

Form C-107

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

GEOTHERMAL RESOURCES WELL HISTORY

Operator Union Oil Co. of California Address P.O. Box 6854, Santa Rosa, Ca.
Lease Name Baca Well No. Baca No. 12
Unit Letter _____ Sec. _____ Twp. _____ Rge _____
Reservoir Bandelier Tuff & older Formations 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 temperatures.

Date	
9-74	Drilled mouse hole. Spud in @ 5:00 A.M., 6-19-74. Losing mud around conductor. Drilled 7-1/2" hole to 123'. Losing mud around location. Hole sloughing (boulders).
0-74	Drill 17-1/2" hole. Boulders sloughing into well bore. Drill from 123' to 144'. Washed out around conductor pipe. P.O.H. Ran O.E.D.P. (5-9/16") to 90', equalized 170 cu. ft. of class "B" cmt., w/ 10# per sx. Calseal + 2% Gel + 3% $CaCl_2$. C.I.P. @ 7:50 P.M. P.O.H. W.O.C. one hour. Hung O.E.D.P. (5-9/16") @ 30' - Equalized 40 cu. ft. of Class "B" cmt. w/ 10# per sx. Calseal + 2% Gel + 3% $CaCl_2$. C.I.P. 8:55 P.M. Had good cmt. returns around cellar. W.O.C. 2 hrs. Drill out cmt. w/ 17-1/2" bit from 35' to 40'.
1-74	Cont. to clean out cmt. w/ 17-1/2" bit and stabilizers, from 40' to 70' (left original hole and drilled new hole to 150').
2-74	Drill 17-1/2" hole to 250' - P.O.H. open 17-1/2" to 26" hole from 0' to 140'.
3-74	Cont. open 17-1/2" to 26" hole from 140' to 250'. Circulated. P.O.H. Ran 6 jts. of 20", 94#, H-40, ST&C and Buttress csg. Hung guide shoe @ 246.86'. Stab-in Float Collar @ 203.43'. Ran 4-1/2" x H.D.P. Stab into Float. Circ. Put 17 Bbls H_2O ahead. Cmtd. w/ 816 cu. ft. of Class "B" cmt. w/ 3% $CaCl_2$. (15.7 PPG) Disp w/ 3 Bbls of H_2O. No cmt. returns to surface. C.I.P. 10:40 P.M. P.O.H.
4-74	Wait on cmt. 3 hrs. Cut off 30" conductor. Weld on Flowline. Cmtd. 20" x 30" annulus thru 2" pipe hung @ 63', w/ 200 cu. ft. of Class "B" cmt. w/ 3% $CaCl_2$. C.I.P. 10:00 A.M. Pick up 17-1/2" tools - Run in, drill out Float @ 203', shoe @ 247'. Drilled 17-1/2" hole from 250' to 296'.
5-74	Cont. drilled 17-1/2" hole to 617'.

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.

Name [signature] Position District Drlg. Superintendent Date 9-3-74

Drilling Record

UNION 76

SHEET D

PAGE NO. 2

WELL NO Baca #12 FIELD

DATE	E.T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS
26-74		Cont drilled 17-1/2" hole to 818'.
27-74		Cont drilled 17-1/2" hole to 962'.
28-74		Cont drilled 17-1/2" hole to 1084'.
29-74		Cont drilled 17-1/2" hole to 1249'.
30-74		Cont drilled 17-1/2" hole to 1457' P.O.H.
1-74		Ran 37 jts. of 13-3/8", 68#, K-5, 8RD, ST&C (1456.15). Hung shoe @ 1453', Float-@ 1372'. Circ. washed out 40' Fill. cmtd. w/ 626 cu. ft. of 50-50 Poz. mix cmt. w/ 35% Silica flour + 0.5% CFR-2+ 0.1% HR-7+ 1/4 lb. per sx Floseal. Followed by 808 cu. ft. of 50-50 Poz. mix cmt. w/ 35% Silica flour + 0.5% CFR-2. Disp w/ 201 Bbls water. Bumped plug w/ 1000 PSI. C.I.P. 11:30 A.M. No cmt to surface. Hung 1" pipe @ 220', cmtd. w/ 100 cu. ft. of 50-50 Pozmix cmt, w/ 35% Silica flour. No cmt. to surface, after 5 hrs. Weld on 12" x 600 casing head.
2-74		Hung 1" pipe @ 120'. Cmtd. w/ 175 cu. ft. of Class "B" cmt. w/ 35% Silica flour. C.I.P. 1:00 A.M. Nipple up B.O.E.s test to 300 PSI. Ran 12-1/4" bit and tools. Drill out Float and shoe. Drilled 12-1/4" hole from 1457' to 1584'.
3-74		Drilled 12-1/4" hole to 2215'.
4-74		Drilled 12-1/4" hole to 2830'.
5-74		Drilled 12-1/4" hole to 3073'.
6-74		Drilled 12-1/4" hole to 3512'. Ran Dresser Atlas induction log and temp. survey. Burnt up instrument. Ran temp. survey.
7-74		Ran temp. survey - 15-1/2 hrs. - 360°. Ran temp. survey - 21 hrs. - 416°. Lay down 5-9/16" DP and 7-3/4" D.C.s.
7-8-74		Lay down D.P. & D.C.s and pick up 6" D.C.s while waiting on casing. Ran 9-5/8" casing at midnight.

WELL NO Baca #12 FIELD

DATE	E.T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS
)-74		Ran 57 jts. of 9-5/8", 36#, K-5, LT&C & ST&C, casing (2270.22) on 5-9/16" DP. Hung shoe @ 3540' - Float @ 3473' - top of liner hanger @ 1269'. Circ. cmtd. w/ 400 cu. ft. of 1-1 Perlite and cmt. w/ 40% Silica flour + 0.5% CFR-2 + 0.4% HR-7 + @% Gel. followed by 1000 cu. ft. of 50-50 Pozmix cmt. + 35% Silica flour + 0.5% CFR-2 + 0.3% HR-7. Disp. plug w/ 124 Bbls. of water. Pressure built up to 850 PSI unable to bump plug. C.I.P. 6:20 A.M. Left 900 cu. ft. inside csg. Pull out. Ran in O.E.D.P. to 1350' - circulated - no cmt. to surface. P.O.H. laying down D.P. Nipple up Grant Rotating head.
10-74		Pick up 4-1/2" X.H., 16.60#, DP. Ran 13-3/8" RTTS tools on 4-1/2" DP. Set tool @ 1176' - Broke down liner Lap from 1240' to 1453' w/ 600 PSI @ 6 Bbls. per min. Cmtd. Liner Lap from 1240' to 1453' w/ 225 Cu. Ft. of Class "B" cmt., w/ 35% Silica flour (15.8 P.P.G.) Stage cmtd. to final pressure of 600 PSI C.I.P. at 7:00 A.M. Total disp. 36 Bbls. P.O.H. install separator - Run 8-3/4" Bit. Located top of cmt. from 1225' to 1320'. Soft cement from 1982' to 2980'.
11-74		Cont. clean out cmt. from 2980' to 3486'. P.O.H. Make up drilling assembly and bit. Run in, clean out cmt. from 3486' to 3512'. Drilled 8-3/4" hole to 3742'.
12-74		Drilled 8-3/4" hole to 3996'.
13-74		Drilled 8-3/4" hole to 4280'.
14-74		Drilled 8-3/4" hole to 4428'.
15-74		Drilled 8-3/4" hole to 4579'.
16-74		Drilled 8-3/4" hole to 4722'.
17-74		Drilled 8-3/4" hole to 4946'.
18-74		Drilled 8-3/4" hole to 5160'.
19-74		Drilled 8-3/4" hole to 5333'.
20-74		Drilled 8-3/4" hole to 5553'.
21-74		Drilled 8-3/4" hole to 5788'.
22-74		Drilled 8-3/4" hole to 6061'.
23-74		Drilled 8-3/4" hole to 6223'.
24-74		Drilled 8-3/4" hole to 6323', inspected D.C.s.

WELL NO. Baca #12

DATE	E.T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS
5-74		Drilled 8-3/4" hole to 6597'. Base of Bandeliar Tuff @ 6460'.
6-74		Drilled 8-3/4" hole to 6900', losing 90 Bbls. per hr.
7-74		Drilled 8-3/4" hole to 7050', losing 80 Bbls. of water per hr.
8-74		Drilled 8-3/4" hole to 7183', losing 80 Bbls. of water per hr.
9-74		Drilled 8-3/4" hole to 7460', losing 90 Bbls. of water per hr.
0-74		Drilled 8-3/4" hole to 7696', losing 80 Bbls. of water per hr.
1-74		Drilled 8-3/4" hole to 8009'. Top of Redbed @ 7575'. Losing 115 Bbls. per hr.
-74		Drilled 8-3/4" hole to 8319', losing 125 Bbls. per hr.
-74		Drilled hole to 8485', losing 125 Bbls. per hr.
-74		Drilled 8-3/4" hole to 8860', losing 70 Bbls. per hr.
-74		Drilled 8-3/4" hole to 8999'. Lost 300# pump pressure. P.O.H. looking for wash-out. Washed out between DP and D.C.s. Dropped drill collar clamp wrench in hole. Wait on magnet. Ran in w/ magnet.
-74		Ran in w/ magnet. Work over wrench. P.O.H. recovered 70% of wrench. Run in 8-3/4" bit. Drill past iron. Drill 8-3/4" hole to 9175'. P.O.H. Stuck pipe @ 4794', work free after one hour. Pull up to 4137'. Stuck pipe.
-74		Work bit to 3555'. Stuck bit @ 3549'. Ran "Go-International" free point. Pipe free to 3509'. Ran back-off shot. Backed off D.C.s @ 3430'. Left in hole. Bit - Junk Sub, Double Reamer, 6-1/2" x 10' D.C. - Stab., - 2 D.C.s - Stab, 1 DC - Length = 119'. Ran sub, BS, Jars, screwed into fish @ 3430'. Jarred fish free. P.O.H. Lay down all tools.
-74		Run in 8-1/4" magnet. Stopped @ 3580'. P.O.H. Ran 8-3/4" bit to 3580'. Drill on iron to 3591'. P.O.H. Ran 8-1/4" impression block to 3580'. P.O.H. Ran "Go-International" collar locater from 3580' to 1000'. Shoe of Liner @ 3540'.

WELL NO Baca #12 FIELD

DATE	E.T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS
-74		Top of liner 1270'. Ran 8-3/8" concave mill. Push junk and mill to 4495'. P.O.H. Ran Go Int. junk shot. Fired on junk @ 4495'. Ran junk mill (8-1/4"). Work junk down to 9176'. Drill new hole to 9212'. Pull out hole, lay down tools.
-74		Ran in 8-3/4" bit to 3500'. Blow hole dry from 2:30 A.M. until 7:30 A.M. Hole would not flow. P.O.H. lay down 6" D.C.s. Pick up 150 jts. of 2-7/8" Eve. tubing. Ran to 4540'. Blow hole dry @ 9:30 P.M.
		Flow Charts attached.

WELL NO. Baca#12 FIELD

DATE	E.T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS				
		Time	Temp.	Press	Chloride	Compressor
-74		10:00 P.M.	210°			
		10:15	192°			
		10:30	199°			
		10:45	202°	8PSI		1
		11:25	194°	12		
		11:40	214°	20		
		11:55	270°	48		
-74		12:10A.M.	210°	20PSI		1
		12:25	210°	15		1
		12:40	190°	14		1
		12:55	204°	4		1
		1:10	194°	4		1
		1:25	200°	4		1
		1:40	194°	4		1
		1:55	194°	5		1
		2:10	194°	6		1
		2:25	200°	8		1
		2:40	210°	10		1
		2:55	208°	12		2
		3:10	205°	15		2
		3:25	198°	10		2
		3:40	192°	7		2
		3:55	179°	4		2
		4:10	172°	6		2
		4:25	180°	7		2
		4:40	180°	8		2
		4:55	180°	8		2
		5:10	150°	4		1
		5:25	148°	4		1
		5:40	144°	4		1
		5:55	180°	4		1
		6:10	137°	4		1
		6:25	182°	7		2
		6:40	170°	7		2
		6:55	172°	7		2
		7:10	174°	8		2
		7:25	182°	9		2
		7:40				2
		7:55	225°	35		2
		8:10	225°	15		2
		8:25	230°	12		2
		8:40	210°	12		2
		8:55	200°	10		2
		9:10	200°	10	300PPM	2
		9:25	195°	9		1
		9:40	195°	8		1

Drilling Record

UNION

SHEET D

PAGE NO. 7

WELL NO. Baca #13 DRLG

DATE	E.T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS				
		Time	Temp.	Press	Chloride	Compressor
10-74		9:55A.M.	150°	7		1
		10:10	150°	7	395PPM	1
		10:25	150°	7		1
		10:40	160°	6		1
		10:55	175°	5		1
		11:10	175°	3	350PPM	1
		11:25	175°	3		1
		11:40	170°	3		1
		11:55	175°	3		1
		12:10P.M.	180°	3	280PPM	1
		12:25	190°	2		1
		12:40	190°	3		1
		12:55	203°	3		1
		1:10	200°	5	400PPM	0Test
		1:25	203°	3		0 "
		1:45	206°	3		1
		2:00	210°	10		2
		2:15	200°	8		2
		2:30	220°	20		2
		2:45	250°	34		1
		3:00	205°	22	940PPM	2
		3:15	160°	15		2
		3:30	170°	16		2
		3:45	210°	13		2
		4:00	215°	12	1080PPM	2
		4:15	203°	11		2
		4:30	200°	9		2
		4:45	200°	7		2
		5:00	190°	7	650PPM	2
		5:15	185°	6		2
		5:30	185°	6		2
		5:45	180°	6		2
		6:00	169°	5	500PPM	2
		6:15	175°	5		2
		6:30	203°	4		0Test
		6:45	205°	4		0Test
		7:00	190°	7		2
		7:15	185°	7		2
		7:30	191°	7		2
		7:45	190°	7		2
		8:00	192°	8		2
		8:15	210°	14		2
		8:30	220°	24		2
		8:45	240°	40		2
		9:00	170°	17		1
		9:15	214°	14		1
		9:30	210°	12		1
		9:45	205°	10		1

Drilling Record

union

SHEET D

PAGE NO. 8

WELL NO Baca #12 FIELD

DATE	E.T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS					
		Time	Temp.	Press	Chloride	Compressor	
0-74		10:00P.M.	200°	10		1	
		10:15	193°	9		1	
		10:30	195°	9		1	
		10:45	198°	8		1	
		11:00	196°	7		1	
		11:15	180°	7		1	
		11:30	176°	6		1	
		11:45	170°	4		1	
		12:00Mid	165°	4		1	
1-74		12:01A.M.	165°	4PSI		1	
		12:15	150°	4		1	
		12:30	150°	4		1	
		12:45	160°			1	
		1:00	172°	4	800PPM	1	PH9.2
		1:15	150°	4		1	
		1:30	136	2		1	
		1:45	150°	8		1	
		2:00A.M.	182°	6	650PPM	1	PH9.2
		2:15	184°	6		1	
		2:30	185°	6		1	
		2:45	184°	6		1	
		3:00	190°	8	600PPM	1	PH9.2
		3:15	220°	24		1	
		3:30	238°	30		1	
		3:45	220°	14		1	
		4:00	200°	12	740PPM	1	PH10
		4:15	204°	12		1	
		4:30	210°	10		1	
		4:45	200°	10		1	
		5:00	200°	10	400PPM	1	PH9.1
		5:15	200°	10		1	
		5:30	200°	8		1	
		5:45	200°	8		1	
		6:00	210°	8	380PPM	1	PH9.1
		6:15	190°	6		1	
		6:30	180°	5		1	
		6:45	175°	4		1	
		7:00	167°	4	550PPM	1	PH9.
		7:15	160°	4		1	
		7:30	155°	4		1	
		7:45	170°	4		1	
		8:00	175°	3	700PPM	1	PH9.
		8:15	175°	3		1	
		8:30	170°	3		1	
		8:45	172°	3		1	
		9:00	160°	3		1	
		9:15	180°	7		1	

WELL NO Baca #12 FIELD

DATE	E.T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS					
		Time	Temp.	Press	Chloride	Compressor	
1-74		9:30A.M.	185°	8		1	
		9:45	187°	8		1	
		10:00	190°	5		1	
		10:15	190°	6		1	
		10:30	200°	13		1	
		10:45	225°	18		1	
		11:00	220°	17		1	
		11:15	203°	10		1	
		11:30	203°	10		1	
		11:45	210°	10		1	
		12:00	200°	9	850PPM	1	PH9.
		12:15P.M.	195°	8		1	
		12:30	190°	8		1	
		12:45	190°	8		1	
		1:00	190°	5PSI		1	
		1:15	175°	5		1	
		1:30	170°	4		1	
		1:45	170°	4		1	
		2:00	180°	3		1	
		2:15	185°	5		1	
		2:30	195°	5		1	
		2:45	185°	5		1	
		3:00	186°	3PSI		1	
		3:15	170°	4		1	
		3:30	172°	4		1	
		3:45	195°	5		1	
		4:00	198°	6	810PPM	1	PH9.
		4:15	202°	7		1	
		4:30	200°	5		1	
		4:45	200°	8		1	
		5:00	200°	12		1	
		5:15	252°	48		1	
		5:30	224°	16		1	
		5:45	220°	16		1	
		6:00	210°	12		1	
		6:15	210°	10		1	
		6:30	210°	10		1	
		6:45	200°	10		1	
		7:00	200°	9		1	
		7:15	205°	9		1	
		7:30	202°	7		1	
		7:45	200°	6		1	
		8:00	190°	6	740PPM	1	PH9.
		8:15	190°	5		1	
		8:30	185°	4		1	
		8:45	185°	4		1	
		9:00	180°	4		1	

Drilling Record

UNION 76

SHEET D

PAGE NO. 10

WELL NO Baca #12 FIELD

DATE	E.T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS					
		Time	Temp.	Press	Chloride	Compressor	
		9:15P.M.	180°	4		1	
		9:30	179°	4		1	
		9:45	171°	3		1	
		10:00	180°	2		1	
		10:15	176°	4		1	
		10:30	189°	4		1	
		10:45	191°	5		1	
		11:00	200°	7		1	
		11:15	200°	8		1	
		11:30	210°	9		1	
		11:45	214°	15		1	
2-74		12:00 mid.	226°	26	810PPM	1	PH 9.2
		12:15A.M.	216°	16		1	
		12:30	210°	14		1	
		12:45	210°	12		1	
		1:00	208°	10		1	
		1:15	208°	10		1	
		1:30	206°	10		1	
		1:45	208°	10		1	
						Compressor 260PSI 1124 CFM	
		2:00A.M.	206°	10PSI		1	
		2:15	202°	8PSI		1	
		2:30	200°	8		1	
		2:45	196°	6		1	
		3:00	190°	6		1	
		3:15	190°	6		1	
		3:30	190°	4		1	
		3:45	184°	6		1	
		4:00	184°	4	700PPM	1	PH 9.2
		4:15	184°	4		1	
		4:30	190°	4		1	
		5:00	194°	4		1	
		5:30	194°	4		1	
		5:45	194°	4		1	
		6:00	190°	6		1	
		6:15	190°	6		1	
		6:30	192°	6		1	
		6:45	195°	6		1	
		7:00	212°	10		1	
		7:15	244°	44		1	
		7:30	240°	25		1	
		7:45	220°	14		1	
		8:00	210°	12	1800PPM	1	PH 9.5
		8:15	208°	12		1	
		8:30	198°	10		1	
		8:45	200°	10		1	
		9:00	199°	9		1	
		9:15	200°	8		1	

Drilling Record

UNION

SHEET D

PAGE NO. 11

WELL NO. Baca #12 FIELD

DATE	E.T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS					
		Time	Temp.	Press	Chloride	Compressor	
2-74		9:30A.M.	191°	7		1	
		9:45	190°	6		1	
		10:00	189°	6		1	
		10:15	186°	5		1	
		10:30	181°	5		1	
		10:45	180°	5		1	
		11:00	180°	4	950PPM	1	PH 9.5
		11:15	180°	4			
		11:30	180°	4			
		11:45	180°	4			
		12:00noon	175°	3	960PPM		
		12:15P.M.	175°	3			
		12:30	190°	7			
		12:45	192°	7			
		1:00	192°	6			
		1:15	195°	8			
		1:30	212°	15			
		1:45	260°	48			
		2:00	214°	14			
		2:15	210°	13			
		2:30	208°	12			
		2:45	205°	11			
		3:00	205°	10			
		3:15	200°	9		1	
		3:30	200°	9		1	
		3:45	200°	8		1	
		4:00	200°	7	1380PPM	1	PH 9
		4:15	190°	6		1	
		4:30	180°	5		1	
		4:45	190°	5		1	
		5:00	190°	5		1	
		5:15	175°	4		1	
		5:30	170°	4		1	
		5:45	165°	4		1	
		6:00	169°	4		1	
		6:15	170°	4		1	
		6:30	180°	4		1	
		6:45	170°	4		1	
		7:00	170°	4		1	
		7:15	180°	5		1	
		7:30	182°	6		1	
		7:45	195°	7		1	
		8:00	205°	10	1360PPM	1	PH 9
		8:15	235°	30		1	
		8:30	240°	35		1	
		8:45	180°	12		1	
		9:00	165°	11		1	
		9:15	160°	10		1	
		9:30	150°	10		1	

Union 76

WELL NO Baca #12 FIELD

DATE	E.T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS				
		Time	Temp.	Press	Chloride	Compressor
-12-74		9:45	150°	10		1
		10:00	150°	9		1
		10:15	171°	7		
		10:30	160°	6		
		10:45	150°	5		
		11:00	150°	5		
		11:15	150°	5		
		11:30	150°	4		
		11:45	160°	4		
		12:00Mid.	166°	1460PPM		
13-74		12:15A.M.	182°	4		
		12:30	190°	4		
		12:45	164°	4		
		1:00	150°	4		
		1:15	158°	6		
		1:30	162°	6		
		1:45	168°	7		
		2:00	180°	8		
		2:15	188°	9		
		2:30	210°	20		
		2:45	220°	30		
		3:00	180°	14		
		3:15	160°	12		
		3:30	150°	12		
		3:45	155°	12		
		4:00	180°	11	1540PPM	PH 9
		4:15	200°	12		1
		4:30	180°	4		1
		4:45	190°	5		1
		5:00	190°	4		1
		5:15	180°	4		1
		5:30	170°	4		1
		5:45	170°	4		1
		6:00	150°	5		1
		6:15	122°	4		1
		6:30	180°	4		1
		6:45	190°	4		1
		7:00	190°	4		1
		7:15	190°	4		1
		7:30	189°	4		1
		7:45	168°	3		1
		8:00	160°	3		1
		8:15	175°	4		1
		8:30	200°	6		1
		8:45	190°	6		1
		9:00	188°	6		1
		9:15	190°	7		1
		9:30	210°	10		1
		9:45	240°	35		1

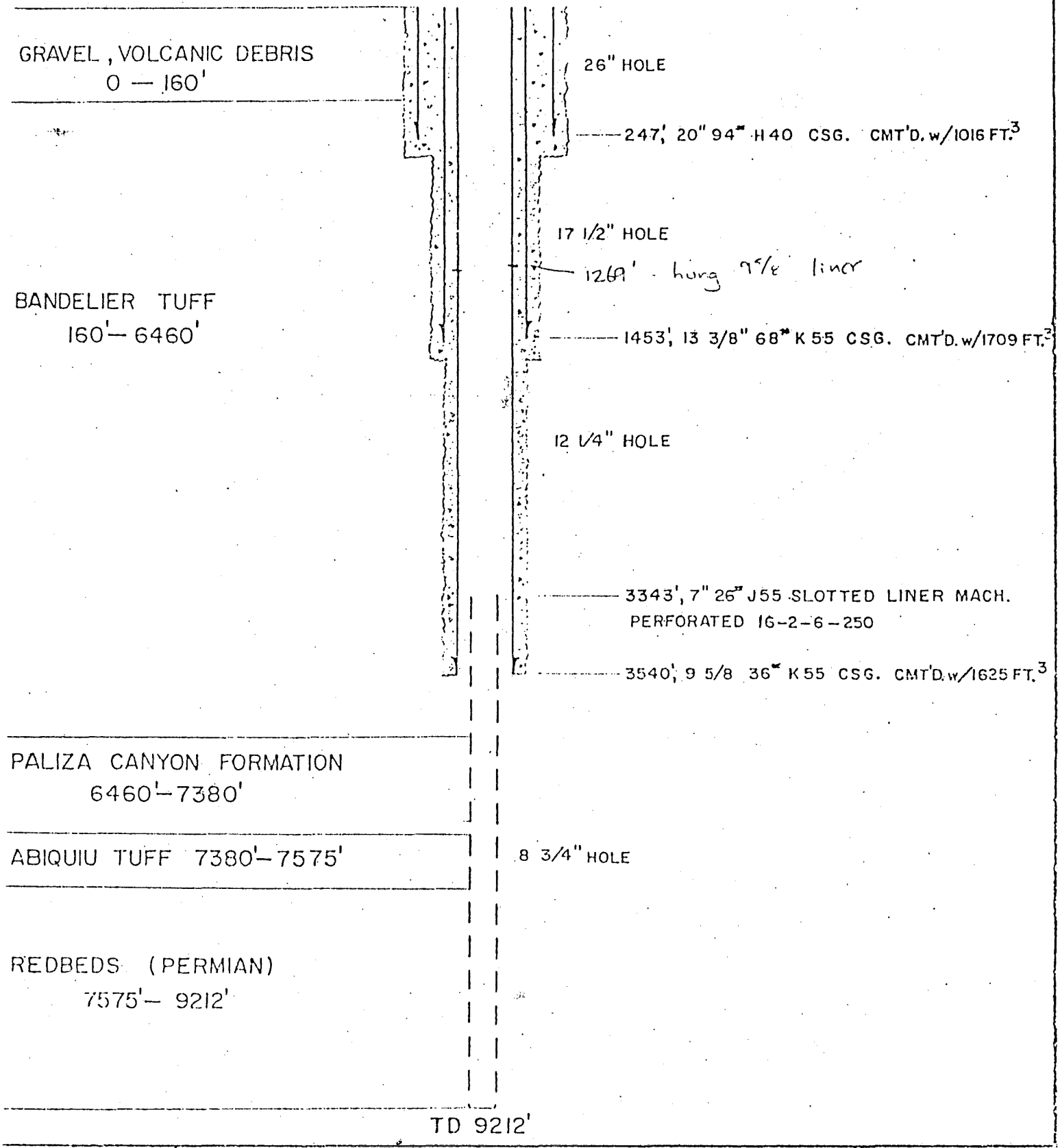
WELL NO Baca #12 FIELD

DATE	E.T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS					
		Time	Temp.	Press	Chloride	Compressor	
-74		10:00A.M.	210°	10			
		10:15	210°	10		0	
						Well flowing - no comp.	
		10:30	205°	12	1750PPM	0	PH 9.1
		10:45	205°	11		0	
		11:00	205°	10		0	
		11:15	205°	9		0	
		11:30	205°	9		0	
		11:45	203°	9		0	
		12:00noon	201°	8	1530PPM	0	PH 9
		12:15P.M.	200°	7		0	
		12:30	200°	6		0	
		12:45	200°	6		0	
		1:00	198°	5		0	
		1:15	185°	5		0	P.O.H.
		1:30	195	4		0	
		1:45	190°	3		0	
		2:00	185°	3		0	
		2:15	190°	4		0	
		2:30	175°	0		0	
		2:45	172°	4		0	
						Pump in tubing - Kill well. Pull out.	

WELL NO. Baca #12 FED

DATE	E.T.D.	DETAILS OF OPERATIONS, DESCRIPTIONS & RESULTS
13-74		Shut off air @ 10:15 A.M. Well flowing. Pull out (Float leaking). Kill well with cold water. Lay down tubing. Pick up 6-6" D.C.s. Run in.
14-74		Ran 8-3/4" bit. Clean out bridges from 7840' to 8690', solid fill from 9007' to 9212'. Circ. w/ air and water. Shut off water. Well started to flow. Had 8-1/2" orifice on Blooie-line and 6" flow line open. Had 35 PSI on Blooie-line @ 250°. Kill well with water. Pull out.
15-74		Ran 140 jts. of 7", 26#, K-55, ST&C and LT&C, Perf., and Blank, Liner length 5867.63'. Shoe @ 9211', top of Burns double set liner hanger @ 3343'. P.O.H. Ran 9-5/8" EZSV, Bridge Plug to 1290'. Set tool. P.O.H. Ran 13-3/8" RTTS. tool on 4-1/2" DP. Set tool @ 1040'. Tested 9-5/8" x 13-3/8" liner lap @ 1270' w/ 500 PSI. P.O.H. Ran 34 jts. of 9-5/8", 40#, K-55, 8RD, ST&C, R-3, casing. Length 1295.01 - Stab in @ 1270'. Float @ 1191'.
16-74		Circ. 9-5/8" csg. cmtd. w/ 562 cu. ft. of Class "B" cmt. w/ 35% Silica flour (15.7 PPC). Disp. plug w/ 92 Bbls. water. Bump plug w/ 1000 PSI. C.I.P. 2:00 A.M. Had good cmt. returns to surface. W.O.C. 4 hrs. Remove B.O.E.s. Cut off csg. Unable to install Gray Packing unit, while waiting on 10" 600 Series Head. Layed down 4-1/2" DP.
17-74		Layed down DP. Weld on 10" 600 Series Head.
18-74		Weld on head. Nipple up 12" 900 Ser. B.O.E.s. Test to 1200 PSI for 15 min. Run in 8-3/4" bit. Located top of cmt. @ 1185'. Drill out float @ 1191'. Clean out cmt. to bridge plug @ 1390'. Drilled out B.P. @ 1390'. Run into 3340'. Blow well. Well kicked off and commenced flowing. Lay down D.P.
19-74		Lay down 4-1/2" DP. Remove B.O.P.s. Rig released @ 8:30 A.M., 8-19-74.

GROUND ELEV. 8430'



VISED	DATE		DRAWN
		UNION 76	FOR:
		UNION OIL COMPANY OF CALIFORNIA - GEOTHERMAL DIVISION	BY: L.D.C.
			DATE: 3-6-75
		BACA 12 CASING SCHEMATIC	SCALE: NONE
			DRAWING NUMBER 2154

Well Completion Record

Union Oil Company of California

UNION 76

DATE	DISTRICT
11/5/74	NEW MEXICO

PROSPECT FIELD: BACA

WELL NO.: B-13

OPERATOR: UOC

LEASE: BACA LAND & CATTLE CO.

LOCATION: JEMEZ SPRINGS, N. MEX.

SECTION: | T: | R: | B. & M.:

ELEVATION: 9292' GR

LOG DATUM: 9314' (RKB)

UNION INTEREST:

OTHER INTEREST:

REASON FOR DRILLING

TO DETERMINE NORTHERN LIMIT OF FIELD

DATE STARTED	DATE COMPLETED	TOTAL DEPTH	LOGGER	DRILLER M.D.	VD	COORD
8/23/74	11/5/74	8228'	8228'	8228'		

DISPOSITION OF WELL: SHUT-IN

PERFORATIONS:

INITIAL PRODUCTION: 530,000 #/HR MAX. FLOW

CASING: 20" 215' TO SURFACE; 13 3/8" 1469' " "; 9 5/8 3500' " " ; 7" BLANK & SLOTTED LINER HUNG 3340' - 8200'

PRODUCTION TESTS: OPEN HOLE - 8½" ORIFICE 370° 75# AFTER 4 HRS.

CORING PROGRAM - SEE ATTACHED CORE DESCRIPTION SHEETS

FORMATIONS PENETRATED, THEIR DEPTHS AND RELATION TO SURROUNDING WELLS

FORMATION	THIS WELL (M.D.), SUBSEA COORDINATES	OTHER WELLS - SUBSEA B-4	B-11	B-12
BASE - BANDELIER TUFF	+3580' SUBSEA	+3338'	+3765'	+1970'
BASE PALIZA CYN FM TOP PERMIAN RED BEDS	+1202' "			+ 855'

SUMMARY OF STRUCTURAL SIGNIFICANCE

B-13, SIMILAR TO B-4 & B-11 IN THE NORTHERN PORTION OF THE FIELD, IS STRUCTURALLY HIGHER (BY 1610' ON THE BASE / BANDELIER) THAN B-12, THE MOST SOUTHERN WELL. THE PALIZA CYN FM. THICKENS BY 1263' FROM B-12 TO B-13; AND ITS BASE IS 347' HIGHER IN B-13.

GEOLOGICAL SERVICE	FROM - TO	GEOLOGICAL SERVICE	FROM - TO
RESISTIVITY LOG	1469' - 3499' 3494' - 8228'	CONV. DIAMOND CORE TYPE	#1 - 5057 - 5074' #2 - 5074' - 5084' #3 - 5054' - 5084' #4 - 5286' - 5300' #5 - 6292' - 6308'
~~POROSITY~~ SONIC-G. RAY LOG	3494' - 7240'	CORE ANALYSIS (CORE-LAB)	
NEUTRON-DENSITY ~~DIPMETER~~	3494' - 6809'	OTHER SERVICES	
TEMP. OTHER TYPES	1150' - 3499' 2640' - 8228'		

REMARKS

- Tom Slowbould [signature]

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

CAREL OTTE

JAN 14 1975

GEOTHERMAL RESOURCES WELL SUMMARY REPORT

Operator Union Oil Co. of California Address Mt. Rt.Box 76, Jemez Spr., N.M.
Lease Name Baca Location #1 Well No. 13
Unit Letter A Sec. 12 Twp. 19N Rge 3E
Reservoir County Sandoval

Commenced drilling 8-23-74
Completed drilling 10-27-74
Total depth 8228' Plugged depth 8200' 7" liner
Logs NONE

GEOLOGICAL MARKERS	DEPTH
Caldera Fill	0' - 560'
Bandalier Tuff	560' - 5712'
Paliza Canyon Fm.	5712' - 8090'
Permian Red Beds	8090' - 8228'

Commenced producing Rig Flow Test 11/3/74 (Date)
Geologic age at total depth: Permian

Static test Shut-in well head		Production Test Data								
		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.
RIG FLOW TEST THRU 8-1/2' ORIFICE - PRODUCTION TEST TO BE MADE AT A LATER DATE.										

CASING RECORD (Present Hole)

	Type of Casing	Weight of Casing	New or Second Hand	Seamless or Lapweld	Grade of Casing	Size of Hole Drilled	Number of Sacks of Cement	Depth of Cement if through perf.
12'	Surface	98#	N	Lap	H40	36"	7 yards	
211'	Surface	94#	N	S	H40	26"	694 Cu. Ft.	
3/8"1459'	Surface	68#	N	S	K55	17-1/2"	2144 Cu. Ft.	
5/8"3490'	1270	36#	N	S	K55	12-1/4"	1300 Cu. Ft.	
5/8"1270'	Surface	36#	N	S	K55	13-3/8"	750 Cu. Ft.	
8200'	3310	26#	N	S	K55-N80	8-3/4"	NONE	

PERFORATED CASING
(Size, type, location, perforated intervals, size and spacing of perforation and method.)

26# K80 and K55 Butt. Csg. perforated with 16-2-6-250' Mach. Perf. Slots; with alternating joints. See attached detail.

Hydrofracture treated? NO Electrical log depths 3500 & 7200 Temperature log depths 3500

CERTIFICATION

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

Signed Position Dist. Drlg. Sup't. Date 1/13/75

Form G-107

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

GEOTHERMAL RESOURCES WELL HISTORY

Operator Union Oil Co. of California Address Mt. Rt. Box 76, Jemez Spr., N.M.
Lease Name Baca Location #1 Well No. 13
Unit Letter A Sec. 12 Twp. 19N Rge 3E
Reservoir _____ County _____

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 temperatures.

Date

Due to the lengthy nature of the information submitted, it follows on sheet "D", pages one through six in extensive detail.

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

Signature _____ Position _____ Date _____

CASING DETAIL

BACA No. 13

NO. JTS.	DESCRIPTION	LENGTH	TOP	BOTTOM
	20" Casing Detail			
	20" HOWCO Float Shoe	2.10	209.50	211.60
	20", 94#, H-40, Pup Jt.	5.50	204.00	
5	20", 94#, H-40, Buttress	207.00	+3.00	
5		214.60		
	13-3/8" Casing			
	13-3/8" HOWCO Float Shoe	1.98	1467.18	1469.16
1	13-3/8", 68#, K-S 8RD, ST&C R-3	39.42	1427.76	
	13-3/8" HOWCO Float Collar	1.65	1426.11	
38	13-3/8", 68#, K-S, 8RD, ST&C R-3	1424.76	+3.65	
39		1472.81		
	9-5/8" Casing			
	9-5/8" HOWCO Float Shoe	2.39	3496.61	3499.00
2	9-5/8", 36#, K-S, 8RD, LT&C R-3	83.79	3412.82	
	9-5/8" HOWCO Float Collar	1.61	3411.21	
51	9-5/8", 36#, K-S, 8RD, LT&C R-3	2137.11	1274.10	
	9-5/8" x 13-3/8" Burns Liner Hanger	3.87	1270.23	
53		2228.77		
	9-5/8" Casing Tie-Back			
	Burns Stab-in 3.18 length - 2.18 Stab-in Lap	1.00	1269.00	1270.00
2	9-5/8", 36#, K-55 ST&C, 8RD	85.06	1183.94	
	9-5/8" HOWCO Super Seal, Float Collar	1.69	1182.25	
29	9-5/8", 36#, K-55, ST&C, 8RD	1203.49	+21.24	
34		1291.24		

NO. JTS.	DESCRIPTION	LENGTH	TOP	BOTTOM
	7" Casing			
	(7", 26", N-80, 8RD, ST&C, Casing)			
	(Blank & Perforated w/ 16-2-6-250)			
1	Blank	33.07	8166.93	8200.00
1	Blank	41.41	8125.52	
1	Blank	31.00	8094.52	
1	Perforated	38.77	8055.75	
1	Blank	40.98	8014.77	
1	Perforated	39.17	7975.60	
1	Blank	38.34	7937.26	
1	Perforated	41.10	7896.16	
1	Blank	40.53	7855.63	
1	Perforated	39.15	7816.48	
1	Blank	32.54	7783.94	
1	Perforated	39.28	7744.66	
1	Blank	42.91	7701.75	
1	Perforated	41.30	7660.45	
1	Blank	31.32	7629.13	
1	Perforated	38.50	7590.63	
1	Blank	32.80	7557.83	
1	Perforated	40.77	7517.06	
1	Blank	40.44	7476.62	
1	Perforated	36.48	7440.14	
1	Blank	33.54	7406.60	
1	Perforated	41.88	7364.72	
1	Blank	40.92	7323.80	
1	Perforated	37.94	7285.86	
1	Blank	40.73	7245.13	
1	Perforated	38.93	7206.20	
1	Blank	41.69	7164.51	
1	Perforated	36.93	7127.58	
1	Blank	42.08	7085.50	
1	Perforated	41.04	7044.46	
1	Blank	41.72	7002.74	
1	Perforated	38.98	6963.76	
1	Blank	40.32	6923.44	
1	Perforated	40.11	6883.28	
1	Blank	41.53	6841.75	
1	Perforated	39.15	6802.60	
1	Blank	40.54	6762.06	
1	Perforated	42.88	6719.18	

NO. JTS.	DESCRIPTION	LENGTH	TOP	BOTTOM
	7" Casing (con't)			
	(7", 26#, N-80, 8RD, ST&C Casing)			
	(Blank & Perforated w/ 16-2-6-250)			
1	Blank	40.66	6678.52	
1	Perforated	35.81	6642.71	
1	Blank	42.52	6600.19	
1	Perforated	42.60	6557.59	
1	Blank	35.61	6521.98	
1	Perforated	38.57	6483.41	
1	Blank	42.64	6440.77	
1	Perforated	41.81	6398.96	
1	Blank	39.88	6359.08	
1	Perforated	42.00	6317.08	
1	Blank	32.90	6284.18	
1	Perforated	41.83	6242.35	
1	Blank	42.81	6199.54	
1	Perforated	41.02	6158.52	
1	Blank	42.14	6116.38	
1	Perforated	42.12	6074.26	
1	Blank	41.69	6032.57	
1	Perforated	39.30	5993.27	
1	Blank	42.72	5950.55	
1	Perforated	42.26	5908.29	
1	Blank	35.28	5873.01	
1	Perforated	42.47	5630.51	
1	Blank	41.97	5788.57	
1	Perforated	41.52	5747.05	
1	Blank	40.70	5706.35	
1	Perforated	40.80	5665.55	
1	Blank	41.69	5623.86	
1	Perforated	40.70	5583.16	
1	Blank	40.20	5542.96	
1	Perforated	37.36	5505.60	
1	Blank	41.22	5464.38	
1	Perforated	36.56	5427.82	
1	Blank	41.42	5386.40	
1	Perforated	37.81	5348.59	
1	Blank	41.45	5307.14	
1	Perforated	38.98	5268.16	
1	Blank	42.32	5225.84	
1	Perforated	39.56	5186.28	
1	Blank	37.89	5148.39	

NO. JTS.	DESCRIPTION	LENGTH	TOP	BOTTOM
	7" Casing (con't)			
	(7", 26#, N-80, 8RD, ST&C Casing)			
	(Blank & Perforated w/ 16-2-6-250)			
1	Perforated	42.02	5106.37	
1	Blank	40.79	5065.58	
1	Perforated	38.18	5027.40	
1	Blank	42.01	4985.39	
1	Perforated	38.45	4946.94	
1	Blank	40.87	4906.07	
1	Perforated	37.91	4868.16	
1	Blank	42.40	4825.76	
1	Perforated	42.12	4783.64	
1	Blank	41.87	4741.77	
1	Perforated	38.41	4703.36	
1	Blank	41.23	4662.13	
1	Perforated	40.78	4621.35	
1	Blank	32.93	4588.42	
1	Perforated	39.50	4548.92	
1	Blank	35.53	4513.39	
1	Perforated	39.26	4474.13	
1	Blank	41.07	4433.06	
1	Perforated	42.20	4390.86	
1	Blank	40.99	4349.87	
1	Perforated	40.41	4309.46	
1	Blank	42.59	4266.87	
1	Perforated	39.62	4227.25	
23	Blank	887.44	3339.91	
	9-5/8" x 7" Burns Liner Hanger - Overall 1.381'	1.30	3338.51	
123		4861.49		
		3338.51		
		8200.00 T.D.		

[illegible]

	MEAS DEPTH	TOTAL VERT DEPTH	DRIFT	AZIMUTH	TOTAL COORD. N-S	E-W
	[illegible].	..	0.0	360.	0.0	0.0
	70.	70.	0.25	226.	-0.21	-0.22
	140.	140.	0.50	226.	[illegible]	-0.66
	200.	200.	0.50	226.	-1.[illegible]	-1.[illegible]
	500.	500.	1.00	226.	-4.04	-4.30
	5[illegible].	[illegible].	1.00	226.	-5.[illegible]	-5.[illegible]
	1075.	1075.	1.00	226.	-11.61	-12.02
	2470.	2471.	[illegible].00	226.	-7[illegible].[illegible]	-[illegible]2.[illegible]
	3100.	3093.	[illegible]	226.	-124.63	-129.27
1[illegible]	3500.	3489.	4.25	226.	-164.79	-170.56
11	[illegible]20.	3607.	[illegible]	226.	-17[illegible].46	-18[illegible].80
12	3920.	3[illegible]3.	12.00	233.5	-203.44	-213.01
13	4045.	4021.	14.00	233.	-236.24	-261.49
14	[illegible]250.	4225.	1[illegible].50	238.5	-264.24	-306.25
15	[illegible]50.	4411.	15.75	241.5	-291.34	-355.16
1[illegible]	[illegible].	4[illegible]16.	1[illegible]	[illegible].5	-306.4[illegible]	-387.64
17	[illegible].	4[illegible]05.	1[illegible].25	24[illegible]	-31[illegible]	-413.[illegible]
1[illegible]	[illegible].	[illegible].	15.75	243.[illegible]	-324.40	-430.92
1[illegible]	[illegible]792.	4737.	15.75	240.[illegible]	-335.25	-[illegible]47.74
[illegible]	[illegible].	[illegible].	[illegible]	[illegible]1.	[illegible]	[illegible]
21	[illegible].	[illegible].	1[illegible]	239.5	-356.56	-[illegible]97.69
[illegible]	[illegible].	5[illegible]31.	[illegible]	[illegible]37.	-37[illegible].[illegible]1	-[illegible]1[illegible]
[illegible]	[illegible].	[illegible].	[illegible]	23[illegible].	[illegible]	[illegible]
[illegible]	[illegible].	[illegible]211.	[illegible]	237.	-4[illegible].11	-[illegible].7[illegible]
[illegible]	[illegible].	[illegible].	[illegible]	[illegible].	[illegible]	-[illegible].12
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[illegible]	[illegible].	[illegible].	[illegible]	[illegible].	-[illegible]2.67	[illegible]
[illegible]	[illegible].	[illegible].	[illegible]	[illegible].	[illegible]	[illegible]
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[illegible]	[illegible].	[illegible].	[illegible].	[illegible].	[illegible]	[illegible]
[illegible]	[illegible].	[illegible].	[illegible].	[illegible].	[illegible]	[illegible]

EASTMAN OIL WELL SURVEY COMPANY

DECL. CORRECTION SHEET 1/2

COMPANY Union Oil Co. JOB NO. ________ DATE ________

WELL [illegible] 13 FIELD CREW ________

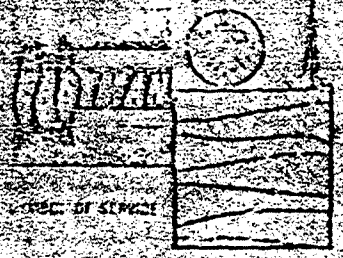
LOCATION [illegible] DISTRICT ________ COMPUTATIONS ________ FILM ________

TYPE OF SURVEY Single Shot M S ________ UNIT ________ BSL ________

SYMBOL OF SERVICE

STA. NO.	MEASURED DEPTH	COURSE LENGTH	DRIFT ANGLE	VERTICAL DEPTH	TRUE VERTICAL DEPTH	COURSE DEV.	DRIFT DIRECTION	COORDINATE DIFFERENCES NORTH	SOUTH	EAST	WEST	RECTANGULAR COORDINATES NORTH	SOUTH	EAST	WEST
1	70'		[illegible]				S 46 W								
2	[illegible]'		0°30'				″								
3	[illegible]'		[illegible]				″								
4	[illegible]'		1°–				″								
5	520'		1°–				″								
6	1075'		1°–				″								
7	[illegible]		4°				″								
8	[illegible]		[illegible]				″								
9	[illegible]		7°15'				″								
10	[illegible]		7°[illegible]				S 46 W								
11	[illegible]		10°–				S 53 W								
12	4015'		14°–				S 5[illegible] W								
13	[illegible]		19°30'				S 58 W								
14	4450		[illegible]				S 61 W								
15	4560		[illegible]				S 65 W								
16	[illegible]		[illegible]				S 62 W								
17	[illegible]		[illegible]				S [illegible] W								
18	[illegible]		15°45'				S 60 W								
[illegible]	[illegible]		[illegible]–				S 61 W								

EASTMAN OIL WELL SURVEY COMPANY



MAGNETIC CORRECTION _____ SHEET _____

COMPANY _____ JOB NO _____ DATE _____

WELL _____ FIELD CREW _____

LOCATION _____ DISTRICT _____ COMPUTATIONS _____ FILM _____

TYPE OF SURVEY _____ M S _____ UNIT _____ BBL _____

MEASURED DEPTH	COURSE LENGTH	DRIFT ANGLE	VERTICAL DEPTH	TRUE VERTICAL DEPTH	COURSE DEV.	DRIFT DIRECTION	COORDINATE DIFFERENCES NORTH	COORDINATE DIFFERENCES SOUTH	COORDINATE DIFFERENCES EAST	COORDINATE DIFFERENCES WEST	RECTANGULAR COORDINATES NORTH	RECTANGULAR COORDINATES SOUTH	RECTANGULAR COORDINATES EAST	RECTANGULAR COORDINATES WEST
						S 5 7 W								
						S 5 5 W								
5273						S 5 7 W								
						S 5 8 W								
						S 5 5 W								
						S 5 9 W								
						S 6 1 W								
						S 5 8 W								
						S 5 5 W								
						S 5 6 W								
						S 5 6 W								
						S 5 2 W								
						S 5 1 W								

DATE: 3/15/75 | DISTRICT: NEW MEXICO

Well Completion Report

Union Oil Company of California

UNION

PROSPECT FIELD: BACA | WELL NO.: 14

OPERATOR: UNION OIL CO. OF CALIF. | LEASE: BACA

LOCATION: SANDOVAL CO., NEW MEXICO | SECTION | T | R | B. & M. | LAT. 35.882500 LONG. 106.586800

ELEVATION: 8605' GR, 8627' | LOG DATUM | UNION INTEREST | OTHER INTEREST

REASON FOR DRILLING

DEVIATED HOLE ON SITE OF ABANDONED BACA #9 (ABANDONED BECAUSE OF STUCK PIPE & HAZARDOUS CONDITIONS).

(BOTTOM-HOLE LOCATION IS 603.01'N & 1477.68'W OF SURFACE COORDINATES.)

DATE STARTED	DATE COMPLETED	TOTAL DEPTH	LOGGER	DRILLER'S MD	TVD	COORD.
11/15/75	2/24/75	6824'	—	6824'	6538'	LAT. 35.882500 LONG. 106.586800

DISPOSITION OF WELL: SHUT IN

PERFORATIONS: OPEN 8 3/4" HOLE 3074' TO CMT PLUG @ 5780'

INITIAL PRODUCTION:

CASING: 20" @ 193' TO SURF, CMTD. 13 3/8 @ 1452' " " " 9 5/8 3074' TO 1371' CMTD

PRODUCTION TESTS: WELL UNABLE TO DEMONSTRATE PRODUCTION CAPACITIES AT THIS TIME.

CORING PROGRAM – SEE ATTACHED CORE DESCRIPTION SHEETS

FORMATIONS PENETRATED, THEIR DEPTHS AND RELATION TO SURROUNDING WELLS

FORMATION	THIS WELL (M-D), SUBSEA COORDINATES	THIS WELL DRILLED DEPTHS	OTHER WELLS – SUBSEA B-12	OTHER WELLS – SUBSEA B-10	
BASE BANDELIER TUFF	+2805'	5800'	+1976'	+3515'	
TOP PALIZA CYN ANDESITE	+2805'	5800'	+1970'	+3515'	
TOP SANTA FE SANDS	+2465'	6140'	NOT PRESENT	+2815'	
TOP PERMIAN RED BEDS	+1925'	6680'	+855'	NOT REACHED	

SUMMARY OF STRUCTURAL SIGNIFICANCE

B-11, LOCATED BETWEEN B-12 & B-10, IS ALSO STRUCTURALLY INTERMEDIATE BETWEEN THESE WELLS; THE STRUCTURE RISING FROM B-12 TO B-11 TO B-10.

GEOLOGICAL SERVICE	FROM – TO	GEOLOGICAL SERVICE	FROM – TO
RESISTIVITY LOG		CORE TYPE	
POROSITY LOG	3068'–5830'	CORE ANALYSIS	
DIPMETER		OTHER SERVICES	
TEMPERATURE OTHER TYPES	≈2965'–5790'		

REMARKS

Form 1369 (Rev. 8-71)

T. Standard

Form C-107
Adopted 10/1/74

CAREL OTTE

MAY 19 1975

NEW MEXICO OIL CONSERVATION COMMISSION

P. O. Box 2088, Santa Fe 87501

GEOTHERMAL RESOURCES WELL HISTORY

Operator UNION OIL CO. OF CALIFORNIA Address P.O. BOX 6854;Santa Rosa, CA. 95406

Lease Name Baca Well No. 14

Unit Letter B 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	
15-74	Rigged up rig. Drilled rathole and mousehole.
16-74	Rigged up. Worked on pump. Spudded in at 6:00 A.M. 11-16-74. Drilled 17-1/2" hole to 122'.
17-74	Drilled 17-1/2" hole to 200'. P.O.H. Opened 17-1/2" hole to 26". Hole from 20' to 161'.
18-74	Opened 17-1/2" to 26" hole from 161' to 196'. Circulated. P.O.H. Ran 5 jts. of 20" 94# H-S Buttress Csg. Circulated. Cemented shoe at 193' with 550 sacks (643 cu. ft.) of Class "B" cement with 3% CaCL2. Displaced plug with 63 BBL's of H20. C.I.P. 1315 hrs. Had good cement returns to surface. Cut off 30" conductor. Ran in hole with 17-1/2" tools. Located top of cement at 167'.
19-74	Cleaned out cement to 200'. (shoe at 193') Drilled 17-1/2" hole to 450'.
20-74	Drilled 17-1/2" hole to 605'.
21-74	Drilled 17-1/2" hole to 721'.
22-74	Drilled 17-1/2" hole to 786'.
23-74	Drilled 17-1/2" hole to 887'.
24-74	Drilled 17-1/2" hole to 983'.
25-74	Drilled 17-1/2" hole to 1066'.
26-74	Drilled 17-1/2" hole to 1158'.

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 [signature] Position District Drlg. Supt. Date 5/14/75

27-74 Drilled 17-1/2" hole to 1243'.

28-74 Drilled 17-1/2" hole to 1339'.

29-74 Drilled 17-1/2" hole to 1477'.

30-74 Drilled 17-1/2" hole to 1488'. P.O.H. Corrected figures. T.D. 1457'. Ran 37 jts of 13-3/8" 54.5#, 61#, 68#, K-S Buttress Casing and 8RD casing. Hung shoe at 1452'. Float at 1390'. Circulated. Cemented with 200 sacks (450 cu. ft.) of 1-1 perlite and cement with 40% Silica Flour, 2% Gel, 0.5% CFR-2, and 0.2% HR-7. Followed by 1000 sacks (1460 cu. ft.) of 50 - 50 poxmix cement and 2% gel, 35% Silica Flour, 0.5% CFR-2 and 14.3 PPG slurry. Displaced plug with 211 BBLs of water and mud. C.I.P. 1800 hours. Had good returns to surface. Std cmtd 4 hrs. Cut off 13-3/8" and 20" casing.

1-74 Welded on 12" - 600 Series casing head. Nippled up B.O.E.s.

2-74 Tested B.O.P.'s to 400 psi. R.I.H. with 12-1/4" tools. Cleaned out cement from 1384'. Float at 1389'. Shoe at 1452'. Cemented to 1457'. Drilled 12-1/4" hole to 1559'.

3-74 Drilled 12-1/4" hole to 1560'. P.O.H. R.I.H. with 6-3/4" turbo drill. Oriented. Drilled from 1560' to 1586'. P.O.H. R.I.H. with 12-1/4" bit and reamer. Reamed from 1560' to 1586'. Drilled to 1587'.

4-74 Drilled 12-1/4" hole to 1631'. P.O.H. R.I.H. with 6-3/4" turbo drill. Oriented. Drilled from 1631' to 1657'. P.O.H. R.I.H. with reamer.

5-74 R.I.H. Reamed from 1631' to 1657'. Drilled 12-1/4" hole to 1747'.

6-74 Drilled 12-1/4" hole to 1936'.

7-74 Drilled 12-1/4" hole to 2033'.

8-74 Drilled 12-1/4" hole to 2150'. P.O.H. R.I.H. with 6-3/4" turbo drill. Oriented.

9-74 Oriented turbo drill #3. Drilled from 2150' to 2162'. Repaired D-700 pump. P.O.H. Magnaglowed all tools. R.I.H. with 6 point reamer. Circulated and conditioned mud.

2-10-74 Circulated and conditioned mud. Raised viscosity from 28 to 43 sec. Reamed from 2150' to 2162'. P.O.H. Picked up 6-3/4" turbo drill #4. R.I.H. Rigged up eye tool to orient. Unable to get into elevators. Pulled to shoe. Waited on 4-1/2" FH. single of drill pipe. R.I.H. Oriented turbo drill.

2-11-74 thru 2-12-74 Drilled from 2172' to 2216' with 6-3/4" turbo drill using 2-1/2° kick sub. P.O.H. R.I.H. with 6 point reamer. Reamed from 2172' to 2216'. Drilled 12-1/4" hole to 2467'. P.O.H. R.I.H. with 6-3/4" turbo drill. Turbo drill would not turn. P.O.H. R.I.H. with 7-3/4" dynadrill. Tool would not turn. P.O.H. R.I.H. with dynadrill #2. Worked on pump.

2-13-74 Worked on pump. Oriented. Dynadrilled from 2467'to 2550'. Packed off drill pipe in eye tool. Pulled wire line into hole. P.O.H. Ran in 6 point reamer. Reamed from 2236' to 2370'.

2-14-74 Reamed from 2423' to 2550'. Drilled 12-1/4" hole to 2815'.

2-15-74 Drilled 12-1/4" hole to 2932'. P.O.H. R.I.H. with 6-3/4" Turbo drill. Oriented with eye tool. Turbo drilled from 2932' to 2961'. Stalled out tools. P.O.H. Twisted shaft off in turbo drill.

2-16-74 R.I.H. with 3-3/8" Bowen overshot on 11-3/4" skirt, jars, B.S., circulated. Took hole of fish. P.O.H. Recovered fish. R.I.H. with 6-3/4" turbo drill. Circulated. Oriented. DRilled from 2961' to 3004'.

2-17-74 Turbo drilled #7 from 3004' to 3020'. P.O.H. Ran 6 point reamer. Reamed from 2932' to 3020'. Drilled 12-1/4" hole to 3052'. P.O.H. R.I.H. with locked in drilling assembly. Reamed from 3020' to 3044'.

2-18-74 Reamed to 3052'. Drilled 12-1/4" hole to 3075'. Circulated. P.O.H. Ran 43 joints and pup (1702.56') of 9-5/8" 36# K-S Buttress Casing and 8RD casing. Circulated fill out of hole from 3015' to 3075'. Hung shoe at 3074'. Float at 2989'. Top of liner hanger at 1371'. Circulated. Cemented with 100 sacks (225 cu. ft.) of 1-1 perlite cement with 40% Silica Flour, 0.5% CFR-2, 0.4% HR-7, and 2% gel. Followed by 800 sacks (1168 cu. ft.) of 50-50 pozmix cmt, with 35% Silica Flour, 0.5% CFR-2, and 0.4% HR-7 and 2% Gel. Displaced plug with 145 BBLs water. C.I.P. 7:20 PM. Had good returns thru out job. Did not bump plug. Pulled 250,000 # getting cups out of liner. P.O.H. Lost in hole shear sub down, cup rubber and 2 jts of 4-1/2" XH drill pipe. 66.93 length. R.I.H. with 5-9/16" d.p.

-18-74 Cont.
Located top of fish at 2916'. Waited on fishing tools.

-19-74 Attempted to workover fish with 5-3/4" overshot without success. P.O.H. and had cement on overshot. Layed down 7" drill collar and N.U. rotating head and flowline separator. RIH with 8-5/8" O.D. x 7-1/4" I.D. washover shoe and 84' of 8-1/8" O.D. wash pipe.

-20-74 Washed over fish from 2916' to 2978'.

-21-74 Washed over fish from 2978' to 2982'.

-22-74 R.I.H. with 6-1/8" I.D. overshot. Worked over fish and chained out of hole with fish. Recovered all of fish except casing wiper plug. Displaced mud with water. Laid down 5-9/16" drill pipe. Picked up 4-1/2" drill pipe, 6" drill collar, 8-3/4" drilling assembly, and changed 7" liner to 6".

-23-74 Picked up 8-3/4" tools. Drilled out float at 2989'. Drilled out shoe at 3074'. Drilled 8-3/4" hole to 3154'.

-24-74 Drilled 8-3/4" hole to 3190'. P.O.H. R.I.H. to 3000'. Drained all mud lines. Shut down for Christmas at 1600 hours. One man on dry watch.

-25-74 Shut down 16 hours for Christmas. Checked mud lines. R.I.H. Drilled 8-3/4" hole to 3249'. (Rig back in operation at 1600 hours.)

-26-74 Drilled 8-3/4" hole to 3405'with water.

-27-74 Drilled 8-3/4" hole to 3540' with water.

-28-74 Drilled 8-3/4" hole to 3766' with water.

-29-74 Drilled 8-3/4" hole to 3951' with water.

-30-74 Drilled 8-3/4" hole to 3988'. Lost circulation. P.O.H. Hooked up air lines. R.I.H. Drilled 8-3/4" hole with water and air to 4084'.

-31-74 Drilled 8-3/4" hole to 4313'. Bit torqued up and twisted drill pipe off at 2695'. P.O.H. Left in hole 12 stds drill pipe and drill collars and tools. (length 1630')

1-75 P.O.H. R.I.H. with 6" grapple, 7-5/8" skirt, BS, and Jars. Could not get over fish. P.O.H. R.I.H. with 8-1/8" skirt, 6" spiral grapple. Unable to get over fish. P.O.H. R.I.H. with 6-1/4" grapple.

2-75 R.I.H. with 6-1/4" grapple. Worked over fish at 2695'. P.O.H. recovered fish. R.I.H. with bit and tools. Reamed from 4160' to 4313'. Drilled 8-3/4" hole to 4412'.

3-75 Drilled 8-3/4" hole to 4562'.

4-75 Drilled 8-3/4" hole to 4817'.

5-75 Drilled 8-3/4" hole to 4896'. P.O.H. Twisted off X-over sub in monel. Changed tools. R.I.H. Reamed from 4620' to 4896'.

6-75 Drilled 8-3/4" hole to 4994'. Stuck bit at 4994' while making a connection. Plugged pipe could not circulate.

7-75 Ran GO- International free point to 3000'. Burnt out wire line. P.O.H. Repaired tools. Ran free point to 2945'. No good. Re-ran to 3516'. Heated up hole to remove kelly bushing inserts. Ran string shot. Backed off drill pipe to 1904'. Pulled up and removed string float. R.I.H. screwed into fish. Ran free point. Tool failed. Ran string shot. Tried to back off drill collar at 4630'. Did not back off. Re-ran string shot at 4566'. Did not back off. Ran 2" carrier gun. Shot 4-1/2" holes at 4527'.

8-75 Circulated air and water. Blew rotating rubber. Killed well. Ran string shot. Backed off at 4501'. P.O.H. R.I.H. with jars and BS - 6 drill collars. Screwed into fish at 4501'. Unloaded hole. Jar on fish. Killed well. Ran free point to 4495'. Tool failed. Ran string shot and backed off at 4540'. (top of drill collars)

9-75 P.O.H. Layed down perforated single. R.I.H. with 5 jts. of 7-5/8" wash pipe. Repaired master clutch on rig. (15 hours.)

0-75 Repaired master clutch (8-1/2 hours). Ran 7-5/8" wash pipe. Washover fish from 4540' to 4717'. Killed well. P.O.H. Ran in screw-in sub. Screwed into fish at 4540'. Circulated.

1-75 Ran sinker bars to 4960' and free point to 4825'. Attempted back offs at 4820', 4790' and 4703'. Backed off at 4572'.

12-75 Attempted a back off at 4572'. Backed off at 4791'. Recovered (8) drill collars. R.I.H. with 7-3/8" wash pipe with tungsten shoe Washed over fish from 4791' to 4837'.

13-75 Washed over fish (1-1/2' stab blades) to 4921'. Laid down 2 jts. WO pipe. Screwed into fish at 4791', with bumper sub, jars, and drill collars. Attempted to jar fish loose, no movement. Ran free point. Found fish free to 4943'. Attempted dialog back off at 4923' without success.

14-75 Ran back off shot to bottom of stabilizer at 4923'. While working torque into pipe, movement was indicated below screw in sub. Fired shot at bottom of stabilizer. No back off. Re-ran shot, misfired. Re-ran shot, backed off screw in sub. P.O.H. Checked all joints. R.I.H. with 8-1/8" x 6-7/8" overshot with 5-3/4" subs. Engaged fish at 4791'. Attempted to back off. No success at stabilizer. Attempted backoff at 4883', Top of first collar above stabilizer. No success. Jarred on fish.

15-75 Ran sinker bars. Cleared drill pipe. R.I.H. to 4883' with back off shot, no success. R.I.H. with Cordalon back off shot. Stopped in bumper sub above fish. R.I.H. with second Cordalon shot. Backed off at top of first drill collar at 4883' above stabilizer. P.O.H. with fishing string and (3) 5-3/4" drill collars. Laid down drill collars. Top of fish at 4883'.

16-75 Repaired Hydramatic brake and over riding clutch on drawworks. Picked up WO pipe. R.I.H. with WO pipe and tungsten carbide WO shoe, jar, bumper sub and (6) 6" drill collars. Worked over fish at 4883' and down to stabilizer blade at 4918'. Milled 2-1/2 hours on blade. Laid down WO pipe. Screwed into stabilizer with screw in sub, jar, bumper sub and (6) 6" drill collars. Spudded junk inside drill pipe to 4933' to allow room for back off shot. Backed off at bottom of stabilizer at 4923'.

17-75 Back off tool shot rod left in hole. Laid down dialog tools. Recovered one 5-3/4" drill collar and 6-1/2" Drilco stabilizer. Approx. 1/4 of the buttons missing from the stabilizer. R.IH with WO pipe with 8-5/8" tungsten carbide shoe, bumper sub, jar and (6) 6" drill collars. Worked over top of fish at 4917'. Washed down over fish to 4957'. Pulled off of collars. Could not get back over top of collar after cleaning out along side of collar. R.I.H. with 2 singles drill pipe, bumper sub, jars and (6) 6" drill collars. Screwed into fish and jarred on fish without success. Backed off 1 single of drill pipe above fish, leaving new top at 4887'. P.O.H. with drill pipe.

18-75 Picked up wash pipe. R.I.H. milled over stabilizer at 4979'. Unable to washover. P.O.H. R.I.H. with 8-3/8" x 6-3/8" Diamond washover shoe. Milled on stabilizer at 4979'.

19-75 Milled on stabilizer at 4979' with Diamond washover shoe. P.O.H. Checked shoe. Re-ran shoe. Milled on stabilizer at 4979'. Unable to cut stabilizer. P.O.H.

20-75 P.O.H. Ran tungsten 8-3/8" x 6-3/4" washover shoe. Milled on stabilizer at 4979'. P.O.H. Ran screw in sub and jars, BS, (12) 6-1/4" drill collars. Screwed into top of fish at 4887'. Jarred fish free in 2 hours and 15 minutes. P.O.H. Laid down tools.

21-75 Picked up 8-3/4" tools. R.I.H. Drilled 8-3/4" hole to 5080'.

22-75 Drilled 8-3/4" hole to 5173'.

23-75 Drilled 8-3/4" hole to 5324'.

24-75 Drilled 8-3/4" hole to 5558'.

25-75 Drilled 8-3/4" hole to 5703'.

26-75 Drilled 8-3/4" hole to 5861'. (top of Andesite at 5800') P.O.H. to test Bandelier Tuff. Pressured up annulus with air to 650 psi. Opened blowline at 7:30 PM. No flow. Closed in and pressured up to 600 psi. Hole taking air.

27-75 Held air pressure at 600 psi for 6 hours. Hole took air. Tested well thru 8-1/2" orifice. Well dead in 25min. R.I.H. with 8-1/4" bit and floats. Blew well with air. Well would not flow. P.O.H. Waited on 13-3/8" RTTs tool to test liner and casing.

28-75 Waited on tools. R.I.H. with 13-3/8" RTTs tools on drill pipe. Could not get below 1364'. Set tools at 1358'. Filled annulus with H_2O. Casing leaked. Re-set tool at 1304', filled annulus with H_2O. Tested 13-3/8" casing with 600 psi. O.K. Re-set tool at 1354'. Filled annulus. Pumped in 500 psi, hole taking 4-1/2 BBLs/min. P.O.H. Ran 9-5/8" EZSV bridge plug set at 1550'. P.O.H. Ran 13-3/8" RTTS tool, set at 1210'. Pressured up annulus to 300 psi. Mixed and squeezed with 260 sacks of Class "B" cmt. (390 cu. ft.), with 35% Silica Flour, Displaced with 21 BBLs to final pressure of 400 psi. C.I.P. 0035 hrs. (1-28-75)

29-75 C.I.P. 0035 hrs. P.O.H. WOC. R.I.H. with 11" bit. Drilled out cement from 1257' to top of liner lap at 1372'. Tested 13-3/8" casing with 600 psi. P.O.H. R.I.H. 8-3/4" bit. Drilled out cement from 1372' to 1385'. R.I.H. Drilled out bridge plug at 1550'. Ran to bottom at 5830'. Blew well with air.

30-75 Blew well at 5830'. Shut off air, well dead in 25 minutes. Blew well. Pulled up to 3000'. Blew well. Well flowing. Pulled bit to 1300'. Well started to flow at 11:15 hours, then dead at 1230 hours. R.I.H. with drill pipe to 5583'. Blew well.

31-75 Blew well with open end drill pipe hung at 5583'. Pulled out with well flowing. Pulled into 13-3/8" casing. Well flowing. Tested thru 8-1/2" orifice. (per data sheet). Well flowing at 0445 hrs. Dead at 1015 hrs. Picked up 144 jts. of 2-7/8" tubing and 14 stds of 4-1/2" drill pipe to 5757'. Blew well 3-1/2 hours.

1-75 Blew well with open end tubing at 5757'. P.O.H. Ran temperature survey.

2-75 R.I.H. with 8-3/4" bit. Reamed 20'. Drilled on bridge plug 3-1/2 hours. P.O.H. Checked bit. R.I.H. Drilled on iron. Drilled 8-3/4" hole from 5861' to 5933'.

3-75 Drilled 8-3/4" hole to 6113'.

4-75 Drilled 8-3/ 4" hole to 6556'.

5-75 Drilled 8-3/4" hole to 6620'. (Tripped for plug bit)

6-75 Drilled 8-3/4" hole to 6824'. Circulated hole clean. P.O.H. to log.

7-75 Ran Schlumberger Hi Temperature log. (tool failed at 5300', max. temp. 238°F. at 4300', hole static 8 hrs.) Tripped in with drill pipe to 6327'. Circulated hole with partial returns for 45 minutes at 10-15 BPM. Lost total of 600 BBLs. P.O.H. Ran Schlumberger Sonic Log to 6200'. Tool failed at 5850'.

8-75 Tripped. Circulated hole with drill pipe at 6327'. Lost approx. 700 BBLs of water. Made short trip (31 stds). No tight hole.

9-75 Pumped a total of 3050 BBLs water thru O.E.D.P. at 6327' at 10 GPM - 850#.

10-75 P.O.H. Re-Ran Schlumberger Temperature Log to 5990'. Max. temp. 220°F. Failed at 5990'.

11-75 Schlumberger's attempt to log failed. Picked up 143 jts. of 2-7/8" tubing.

12-75 Circulated with air and water to kick well off.

13-75 Using air to circulate. Flow tested well 14-1/4 hours.

14-75 Circulated well through open end tubing with air at 5665'. Testing well. P.O.H. Stood back tubing. R.I.H. with 8-3/4" bit on drill pipe bridge at 5682'. Cleaned out to 5967'.

15-75 Cleaned out well bore to 6523' with 8-3/4" bit and drill pipe.

16-75 Cleaned out to 6824' T.D. Pulled back to 5381'. Tested well. P.O.H. with drill pipe. Tripped in with 2-7/8" tubing to 5314'. Hole unloaded sand.

17-75 Tested well with 2-7/8" tubing. Well unloaded sand. Stuck tubing and worked loose. P.O.H. Laid down tubing and tripped in with 8-3/4" bit and drill pipe. Bridged at 5760'.

18-75 R.I.H. with drill pipe and 8-3/4" bit. Circulated out sand to 6388'.

19-75 Continued to circulate out sand from 6388' to 6824'. Killed well with 50 BBLs water. P.O.H. Rigged up and ran pressure and temperature survey to 6824'. P.O.H. with survey. Temp. 529°F.

20-75 Hole static 12-1/2 hours. Re-ran pressure and temperature survey. Stuck tools at 6176'. P.O.H. Rigged up for injection. Injecting at 300 GPM. Increased to 521 GPM.

21-75 Ran pressure and temperature survey to 6100' while injecting water at an avg. rate of 496 GPM. Total water injected 6376 BBLS. Tripped in hole with drill pipe and HOWCO plug catcher to 3074'.

22-75 Finished in hole with drill pipe and HOWCO plug catcher to 6040'. Spotted plug. Plugged 5 stds drill pipe. P.O.H. R.I.H. with 12-1/4" RR bit to top of liner at 1371'. POH. R.I.H. with HOWCO 9-5/8" RTTS tool on 4-1/2" set at 1475' in 9-5/8" casing. Filled annulus with water, tested 13-3/8" casing and lap on liner to 700#. Held O.K. P.O.H. Laid tools down. Tripped in with 6" drill collar with 8-3/4" bit on drill pipe.

23-75 Finished in hole with 8-3/4" bit. Cement top at 5780'. Tested with 50,000# weight. Held O.K. P.OH. Laid down drill pipe. Removed drilling head equipment and BOP's. Installed well head equipment.

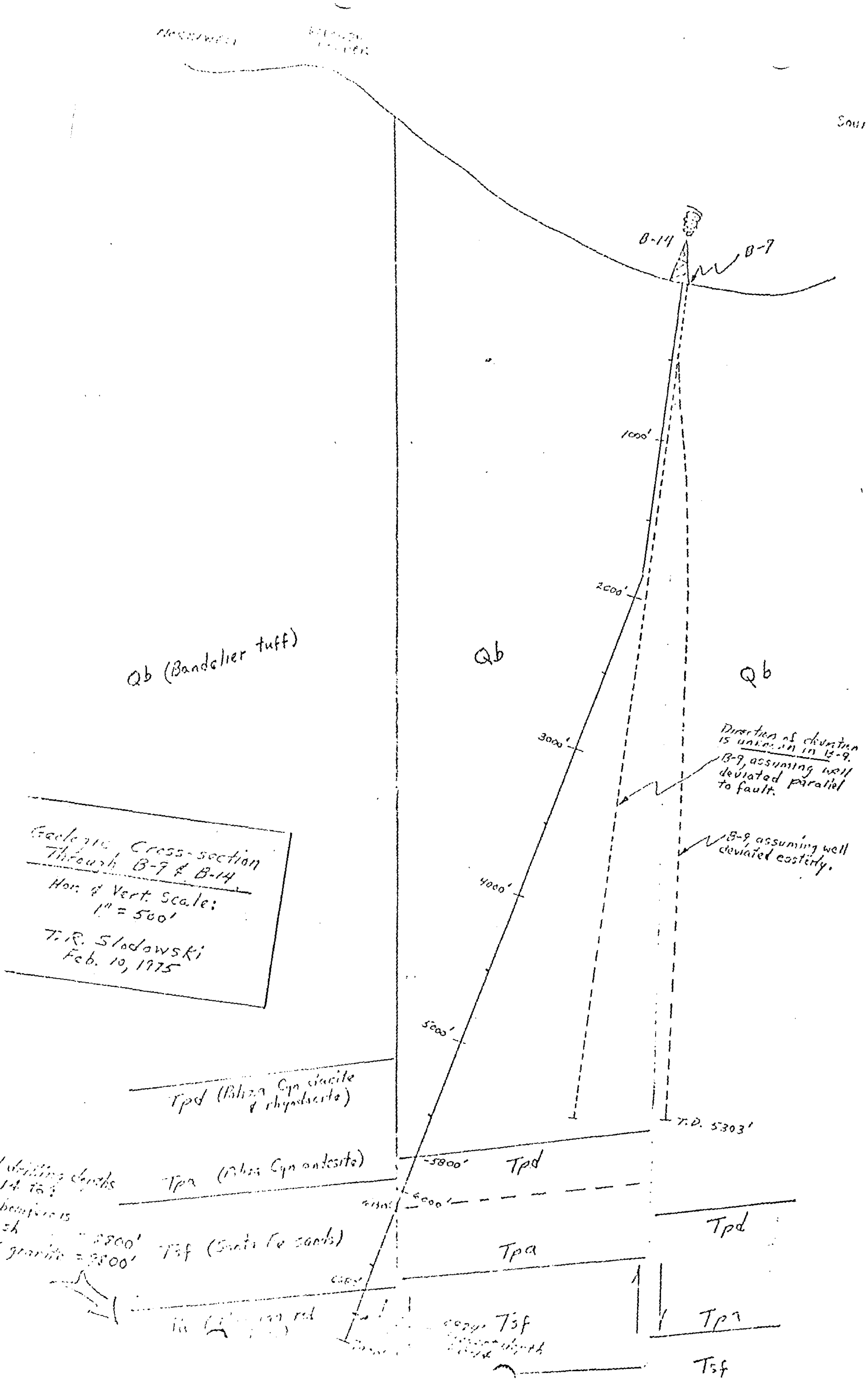
24-75 Completed installing and testing wellhead equipment. Well completed for water disposal service. Rig released at 0300 hrs. 2-24-75.

CASING DETAIL

JTS.	DESCRIPTION	LENGTH	TOP	BOTTOM
	20" CASING			
	20" Baker Float Shoe	2.00'	191.00'	193.00'
5	20" 94# HS Buttress	193.83	+2.83	
		195.83'		
	13-3/8" CASING			
	13-3/8" HOWCO Float Shoe	2.00'	1450.21	1452.21
1	13-3/8" 54.5, K-S, 8RD, Pup	21.70	1428.51	
1	13-3/8" 54.5, K-S, 8RD, Jt.	36.39	1392.12	
	13-3/8" HOWCO Float Collar	2.04	1390.08	
35	13-3/8" 54.5#, 61#, 68#, K-S Butt. & 8RD	1392.08	+2.00	
		1454.21		
	9-5/8" CASING			
	9-5/8" Baker-Flex Flow Fill-up Shoe	2.50	3071.50	3074.00
2	9-5/8" 36# K-S, 8RD ST&C, R-3	80.35	2991.15	
	9-5/8" Baker Flex Flow Fill-up Collar (Float)	1.85	2989.30	
	9-5/8" 36# K-S X-over 8RD ST&C Butt.	7.00	2982.30	
41	9-5/8" 36# K-S Buttress, R-3	1606.86	1375.44	
	9-5/8" x 13-3/8" Burns Liner Hanger w/Receptacle for Stab-in	4.00	1371.44	
		1702.56		

BACA NO. 14
Well History
May, 1975

TIME	TEMP	PRESS	RATE	PH	CHL	ALK	REMARKS
4:30	205°	2 PSI					
4:45	225	10	130,000				Pulling Drill Pipe
5:00	230	14	165,000				Pulled into 13-3/8"
5:15	275	30	270,000				8-1/2" orifice
5:30	245	16	175,000				
5:45	220	7	108,000				
6:00	220	7	108,000				
6:15	210	4	80,000				Sulfate
6:30	212	5	85,000	8.7	1300	0.1/0.3	80
6:45	245	12	150,000				
7:00	250	14	170,000				
7:15	245	18	192,000				
7:30	245	16	175,000				
7:45	242	16	175,000				
8:00	280	37	310,000	9.0	2100	.25/.75	235
8:15	280	40	330,000				
8:30	250	20	210,000	9.1	2200	.20/.50	120
8:45	250	15	170,000				
9:00	230	10	130,000				
9:15	210	5	83,000				
9:30	210	2		9.0	1500	.10/.35	75
9:45	205	2					
10:00	200	1		9.0	450	.5/1.0	10
10:15	DEAD						



SOUTHEAST
B-14
B-7
1000'
2000'
3000'
4000'
5000'
Qb (Bandelier tuff)
Qb
Qb
Direction of deviation is unknown in B-9.
B-9, assuming well deviated parallel to fault.
B-9, assuming well deviated easterly.
Geologic Cross-section Through B-7 & B-14.
Hor. & Vert. Scale: 1" = 500'
T. R. Slodowski
Feb. 10, 1975
T.D. 5303'
-5800'
Tpd
Tpa
Tsf (Santa Fe sands)
Tpd
Tpa
Tpa
Tsf

UNION GEOTHERMAL DIVISION
WELL COMPLETION RECORD

DATE	STATE OR COUNTY	A.F.E.#
8-15-75	NEW MEXICO	453003

PROSPECT / FIELD	WELL NO.
BACA	15

OPERATOR	LEASE
UNION OIL COMPANY OF CALIFORNIA	Baca Land & Cattle Company

LOCATION	SECTION	T	R	B.& M.
Lat. 35.8946, Long. 106.5803				

ELEVATION	LOG DATUM	UNION INTEREST	OTHER INTEREST
9117 GR	K.B.		

REASON FOR DRILLING
In-fill well in Redondo Canyon

GEOLOGIST	ENGINEER	DRILLING COMPANY
T. R. Slodowski	J. H. Moss	Loffland

DATE STARTED	DATE COMPLETED	TOTAL DEPTH	LOGGER	DRILLER M.D.	VD	BOTTOM HOLE COORD.
4-29-75	6-12-75	5505'		5505'	5275'	892.05'S 513.58'E

DISPOSITION OF WELL	RIG TESTS	DATE	INITIAL PRODUCTION LBS/HR
Shut-in	0 hr. 128# 35# 315° 938,000#/hr. 1 hr. 86# 24# 325° 630,000#/hr.	6-9-75	170-180,000 Dry steam

TEMPERATURE, PRESSURE, SALINITY DATA - SEE ATTACHED SHEETS

CORING PROGRAM - SEE ATTACHED CORE DESCRIPTION SHEETS

FORMATIONS PENETRATED, THEIR DEPTHS AND RELATION TO SURROUNDING WELLS

FORMATION	THIS WELL (M.D.), SUBSEA COORDINATES	TOPS	OTHER WELLS - SUBSEA		
				B-11	
Caldera fill	0-(140')	+9117		+9065'	
Bandelier tuff	(140'-5300')	+8977		+8745'	
Paliza Canyon Andesite	(5300'-5505')	+3817		+3765'	

CASING SIZE	CASING INTERVAL	SLOTS OR PERFS. INTERVALS		LOST CIRCULATION ZONE DATA DEPTH	AMOUNT BBLS	COMMENTS
"	210' to surface	open	hole	1146-1154 1211'	72 1,000	
-3/8"	1273' to surface	below	2509'	1283' 1460'	~10 bbls/hr 500	Amt. lost in prev.24h
5/8"	2509' to surface			2040' 2525'	250-300 ?	Amount lost betwwen 2040' and 2220'

LOGGING DATA AND BOTTOM HOLE TEMP. DATA

DATA	TYPE LOG RUN	I.D.	LOGGED INTERVAL	TIME SINCE CIRC.	MAX. TEMP.	COMMENTS
P/T	S-1	5505'	100-5505'	2 wks stat.	530°	(S-2 run same day
P/T	S-4	5500'	5500'	7 hrs "	463°	with same results
P/T	S-5	5500'	5500'	12 " "	477°	
P/T	S-6	5500'	5500'	32 " "	508°	
P/T	S-7	5500'	100-5500'	54 " "	518°	
P/T	S-8	5500'	5500'	09 " "	527°	
P/T	S-9	5500'	5500'	9 dys 7 hrs	531°	
P/T	S-10	5500'	100-5500'	11 " 5 "	533°	
P/T	S-11	5500'	5000-5500'	17 " 3 "	534°	
P/T	S-12	5500'	100-5500'	31 "	534°	

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, New Mexico 87025

Lease Name Baca Location No. 1 Well No. 15

Unit Letter E Sec. 12 Twp. 19N Rge 3E

Reservoir Redondo Canyon 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	
3-76	Moved rig and support equipment from Baca No. 15. Raised derrick and began rigging up air and water lines.
4-76	Completed hooking up water, air and flow lines. Installed and tested BOP stack.
5-76	Killed well with 400 bbl. fresh water. Attempted to RIH with 8-3/4" bit. Well began to flow. Pumped in 1200 bbls. water but unable to get well to go on vacuum. Changed out 8-3/4" bit for 6-1/8" bit. Stripped into to 3875' pumping water down casing-drill pipe annulus at 50 GPM with 250 psi wellhead pressure. Ran out of fresh water. Shut well in overnight to fill water storage tanks.
6-76	Killed well pumping fresh water down drill pipe. Changed over to pumping water down annulus. Began POH with 6-1/8" bit when well tried to "kick". Increased water rate into well from 50 GPM to 65 GPM. Completed pulling 6-1/8" bit. RIH with 8-3/4" bit to 5505' E.T.D. without touching any obstructions. POH with bit and rigged up to run 7" liner.
7-76	Ran 76 joints (3129.85') 7" 26# K-55 LT&C 8Rd. combination blank and slotted (1/4" X 4" - 4 Rows/ft. on 3-1/2" centers) casing on Burns off-bottom liner hanger on 2-7/8" drill pipe. Landed casing with "orange peeled" bottom at 5503' and liner hanger top at 2371'. Released setting tool from liner hanger and POH laying down 2-7/8" drill pipe. (See attached casing detail).
8-76	Closed well in and removed BOP stack. Installed Gray Tool Company's 10" - Series 600 X 6" - Series 600 offset tubing spool. Installed 6" - Series 600 BOP stack and tested same to 600 psig - OK. Rigged up to run 2-3/8" tubing. Ran 181 joints (5461.19') 2-3/8" 4.7# A-95 Hydril tubing.

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 Project Coordinator Date 1/10/77

R. O. Engebretsen

Date	Detail of Operations
9-18-76	Landed tubing in hanger on donut with barred collar at 5472'. Positioned tubing with 1/4" diameter perforations in string at 100', 1000', 2000', 3000', 4000', and 5000'. Removed BOP stack and installed 6" - Series 600 X 3" - Series 600 flanged bonnet with 3" - Series 600 valve on top. Closed well in overnight. (See attached tubing detail).
9-19-76	Rigged down to move to Baca No. 4. Released rig at 1600 hrs. 9/19/76. FINAL REPORT.

NEW MEXICO OIL CONSERVATION COMMISSION

P. O. Box 2088, Santa Fe 87501

GEOTHERMAL RESOURCES WELL HISTORY

Operator UNION OIL COMPANY OF CALIFORNIA Address Mtn. Rt. Box 76, Jemez Springs, N. M. 87025

Lease Name Baca Well No. 15

Unit Letter B Sec. 12 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	
-75	MI & RU Loffland Rig # 214. Rigged on day rate 0001 hrs. Drilled rathole and mousehole. Spudded 17-1/2" hole 1600 hrs. Drilled to 105'.
-75	Drilled 17-1/2" hole to 211'. P.O.O.H. & P.U. 26" H.O. Opened 17-1/2" hole to 26" from 0-211'.
-75	Rigged up and ran 7 jts. 20" 94# K Buttress csg. with total of 215.35'. Landed at 210'. (see casing detail). Cemented through shoe w/500 sacks of type "B" Cement, w/3% Cal. Col. (590 cu. ft.). Displaced plug w/71 bbl water - good return throughout job. C.I.P. 0800-WOC. WOC 10 hrs. R.I.H. w/17-1/2" D.A. Drill 15' cmt., shoe & drilling new hole at 1800 hrs. Drilled to 242'.
-75	Drill 17-1/2" hole to 368'. Shaft broke on rig compound @ 0645'. Shut down for repairs.
-75	Shut down for repairs.
-75	Rigged on day rate @ 14:30. P.O. & checked drilling assembly. R.I.H. Drilled 17-1/2" hole 368' - 411'.
-75	Drilled 17-1/2" hole from 411' - 680'.
-75	Drilled 17-1/2" hole from 726' - 973'.
-75	Drilled 17-1/2"hole from 973' - 1211'. Lost circulation @ 1211'. Lost approximately 1,000 bbls of mud.
-75	Drilled 17-1/2" hole w/30% returns. Lost approximately 2,000 bbls mud. Drilled from 1211' to 1283'.

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 J. C. Jones Position Project Coordinator Date 7/17/75

J. C. Jones

-75 P.O.H. laid down 17-1/2" drlg. assembly. Rig up & ran 31 jts. 13-3/8" 54.5# K-55 Buttress Casing - total 1274.58. Landed at 1273'. Mixed & pumped 345 sacks of 1-1 pearlite cement w/2% gel, 40% Silca Flour, 575 sacks of 50-50 pozmix cmt., with 2% gel, 35% Silca Flour for a total of 1510 cu. ft.
Had good return throughout job. Circ. 400 cu. ft. to reserve pit. C.I.P. 1600 WOC (after 1 hr. cement fell out of sight around casing.)

0-75 Mixed & pump 150 sacks of 50-50 pozmix cmt., with 35% Silca Flour, w/2% gel, 80 sacks of class "B" for a total of 335 cu. ft. Down annulus between 13-3/8" and 20". Estimated top of first cement at 340'. Let cement set 1 hr. It dropped out of sight. Mixed & pumped 20 sacks of class "B" cement for 21 cu. ft. Set one hour. Did not drop. Cut off casing & welded on Gray 12" 600 S.O. Starter Head & N.U.B.O.P.S. (see casing detail).

1-75 Nipple up. Test BOPS 500# + hydrostatic O.K. R.I.H. w/12-1/4" D.A. Drill Float, 37' cmt., & shoe.
Drilled new hole @ 1830 hrs. Drilled 1283' to 1338'.

2-75 Drilled 12-1/4" hole from 1283' to 1574'.

3-75 Drilled 12-1/4" hole from 1574' to 1758'. Lost approx. 400 bbls of mud.

4-75 Drilled 12-1/4" hole from 1758' to 1850'.

5-75 Drilled 12-1/4" hole from 1850' to 1981'. Lost approx. 225 bbls of mud.

6-75 Drilled 12-1/4" hole from 1981' to 2088'. Lost approx. 600 bbls of mud.

7-75 Drilled 12-1/4" hole from 2088' to 2183'. Lost approx. 325 bbls of mud.

8-75 Drilled 12-1/4" hole from 2183' to 2304'. Lost approx. 400 bbls of mud.

9-75 Drilled 12-1/4" hole from 2304' to 2412'. Lost all returns @ 2412'.
Drilled 2412' to 2459' with partial returns - major zone taking fluid 2418' - 2440'.
Drilled w/water and cotton seed hulls. Lost approximately 600 bbls of fluid.

-75 Drilled 12-1/4" hole from 2459' to 2515'. P.O.H. R.U. and ran 34 jts. 9-5/8" - 40# K Buttress Casing for total 1329'. Hung on Burns 9-5/8" + 13-3/8" liner hanger with shoe @ 2509' and hanger @ 1173'. (see casing detail).
Mixed and pumped 267 sacks class "B" cmt., 1-1 pearlite, 40% Silca Flour, .002-HR12, .005CFR2, 2% gel for a total of 154.76 cu. ft. at 14.8# per gallon. Displaced w/126 bbls of water. No return during job. C.I.P. 0300 WOC.

-75 WOC laid down 12-1/4" drlg. assembly and 5-9/16" dp. picked up 4-1/2" dp. Ran Howco RTTS packer to 1130'. Tested liner w/50 bbls of water, no pressure. Mixed and pumped 150 sacks of class "B" cement, 1-1 pearlite, 40% Silca Flour, 002 HR12, .005 Cfr2, 2% gel for a total of 332 cu. ft. AT 13.6# per gallon. Squeezed to 1000# w/316 cu. ft. cmt. past liner lap, 16 cu. ft. in 13-3/8". FSP 1000#, C.I.P. 1600.

-75 Drilled cement out of 13-3/8" to 1161', top of hanger. P.C.H. and L.D. 12-1/4" bit. Picked up 8-3/4" bit and drlg. assembly. R.I.H. cleaned out cement in 9-5/8" casing. Drill float @ 2468'. Tested casing w/1000# and hydrostatic O.K. Finish R.U. flow line separator.

-75 R.I.H. w/8-3/4" D.A. and drill shoe. Drilled new hole @ 0815'. Drilled 8-3/4" hole - 2515' to 2770' w/aerated water as circulation medium.

.75 Drilled 8-3/4" hole from 2770' to 2935'.

.75 Drilled 8-3/4" hole to 3040'.

.75 Drilled 8-3/4" hole to 3188'.

.75 Drilled 8-3/4" hole to 3395'.

.75 Drilled 8-3/4" hole to 3585'.

75 Drilled 8-3/4" hole to 3820'.

75 Drilled 8-3/4" hole to 3959'.

75 Drilled 8-3/4" hole to 4160'.

75 Drilled 8-3/4" hole 4371'.

75 Drilled 8-3/4" hole to 4547'. Changed out Grant Rotating Head.

75 Drilled 8-3/4" hole to 4731'. Using aerated water as circulation medium.

75 Drilled 8-3/4" hole to 4856'. Using aerated water as circ. medium.

75 Drilled 8-3/4" hole to 4976'. Using aerated water as circ. medium.

75 Drilled 8-3/4" hole to 5119'. Using aerated water as circ. medium.

75 Drilled 8-3/4" hole to 5275'. Using aerated water as circ. medium.

BACA NO.
Well History
June, 1975

-75 Drilled 8-3/4" hole to 5423'. Top of Andesite 5300'.

-75 Drilled 8-3/4" hole to 5505' T.D. P.O.H. Pressured well w/250# of air. Released in 15 minutes. Well came. Tested well 1-1/2 hrs. maxium pressure of 130# - minimum of 75#. Cut flow line out in three places. Shut well in for one hour. Pressure 500#. Killed well. R.I.H. w/8-3/4" bit. No fill up or bridges. P.O.H.

)-75 R.I.H. w/Howco EZ Drill Retainer. Set at 1211' and tested plug and liner lap w/750#. Held O.K. P.O.H. Ran 29 jts. of 9-5/8" K-55 Buttress Casing. Total of 1172.43'. Mixed and pumped 405 sacks of class "B" cement w/40% Silca Flour, 2% gel, .075 CFR2 @ 15.5# PPG. Total of 616 cu. ft. Displaced w/93 bbls water cir. 336 cu. ft. cement to surface. Full returns throughout job. B.P. w/750#. Float O.K. C.I.P. 2045'.

-75 WOC 10 hrs. Nippled up. Test BOPS w/1000#. Held O.K.

-75 Cleaned out cement and drilled out plugs. Chased parts of EZ drill to bottom. Drilled on junk 1 hour @ 5505' T.D. Killed well.

-75 Nippled down BOPS. Rig released @ 0400.

CASING DETAIL

JTS.	DESCRIPTION	LENGTH	TOP	BOTTOM
	20" CASING			
1	20" Baker Comb. Float Shoe	2.30'	207.7'	210.00'
7	20" 94# HS Buttress	213.05'	+5.35	207.7
		215.35'		
	13-3/8" CASING			
1	13-3/8" HOWCO Float Shoe	1.20	1271.8	127.3
1	13-3/8" 54.5#	39.56	1232.24	1271.8
1	13-3/8" HOWCO Float Collar	1.68	1230.56	1232.24
30	13-3/8" 54.5#	1232.14	+1.58	1230.56
		1274.58'		
	9-5/8" CASING			
1	9-5/8" HOWCO Float Shoe	2.25	2506.75	2509.00
1	9-5/8" 40#	39.55	2467.20	2506.75
1	HOWCO Float Collar	2.25	2464.95	2467.70
33	9-5/8" 40#	1289.65	1175.30	2464.95
1	9-5/8" Burns Liner Hanger	2.30	1173.00	1175.30
	Liner Hanger landed below zero	1173.00		
		2509.00		

CASING DETAIL

JTS.	DESCRIPTION	LENGTH	TOP	BOTTOM
	9-5/8" TIE BACK			
1	9-5/8" Burns Tie Back Sleeve	2.44'	1170.56'	1173.00'
1	9-5/8" Baker Float Collar	1.60	1168.96	1170.56
1	9-5/8" X-over Sub. Buttress Box to 8RD Pin.	1.90	1167.06	1168.96
29	9-5/8" 36#	1166.49	+.57	1167.06
		1172.43'		

WELL NO.: BACA #15

SURFACE LOCATION: 250' East from W. line & 3200' N. from South line Sec. 12 T 19N R 3E

ELEVATION: 9117.06

BOTTOM HOLE LOCATION: 763' E of W. line & 2308' N of S. line Sec. 12 T 19N R 3E

TOTAL DEPTH: 5505'

TOTAL COST: $609,900.

SPUDDED: 4-29-75

RIG RELEASED: 6-12-75

TOTAL OPERATING DAYS: 45

CASING

	SIZE	WEIGHT	TOP	BOTTOM	HOLE SIZE	AMT. CMT.
CONDUCTOR:	20"	94#	surface	210'	26"	590 cu. ft.
SURFACE:	13-3/8"	54.5#	surface	1273'	17-1/2"	1510 cu. ft.
INTERMEDIATE:	9-5/8"	36#	1173'	2509'	12-1/4"	1096 cu. ft.
LINER:	9-5/8"	40#	surface	1173'	12-1/4"	616 cu. ft.

STEAM ZONES (ESTIMATED PRODUCTION FROM EACH ZONE)

FLOW TEST

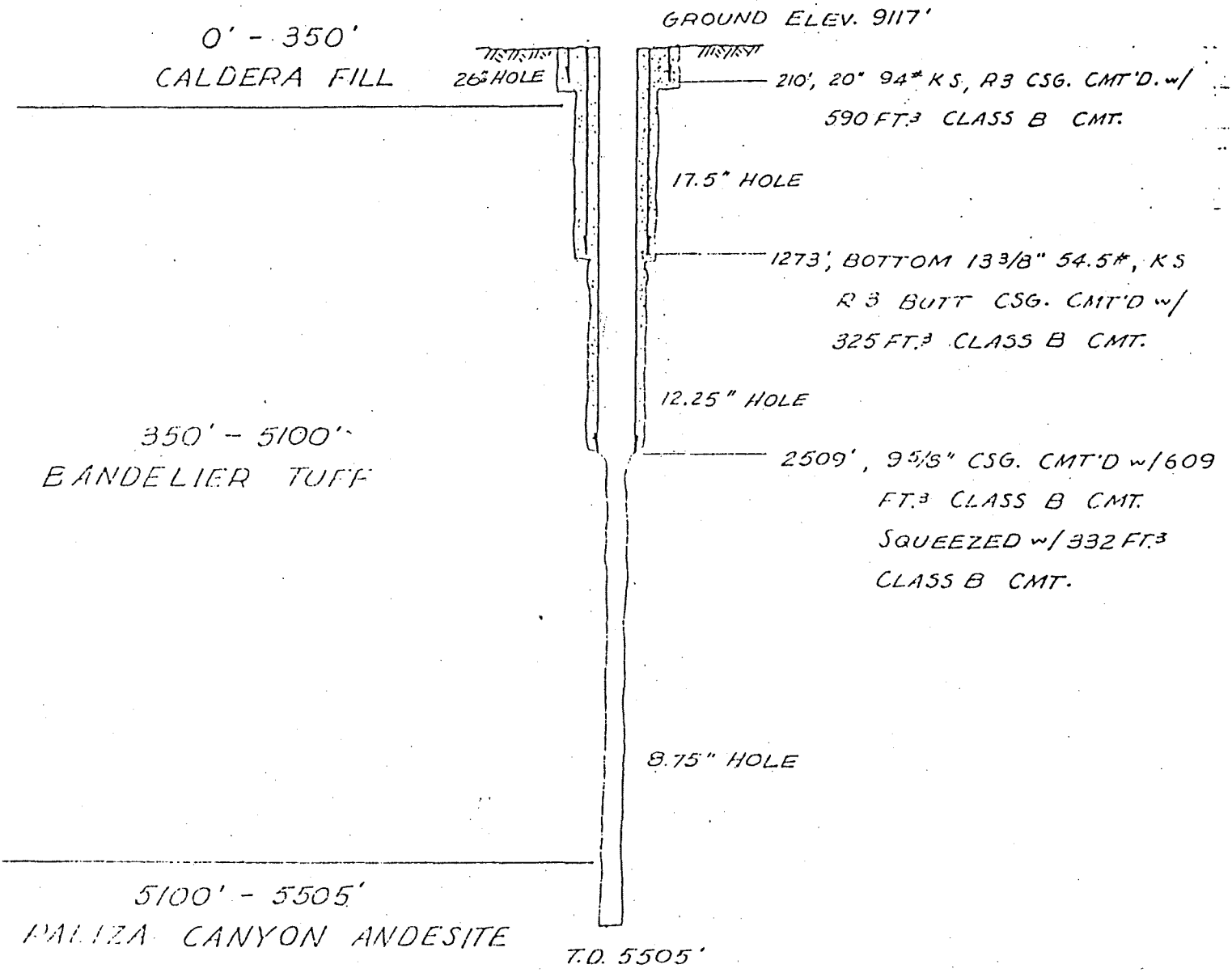
SHUT IN PRESS.: 500#

ORIFICE SIZE 8-1/2"

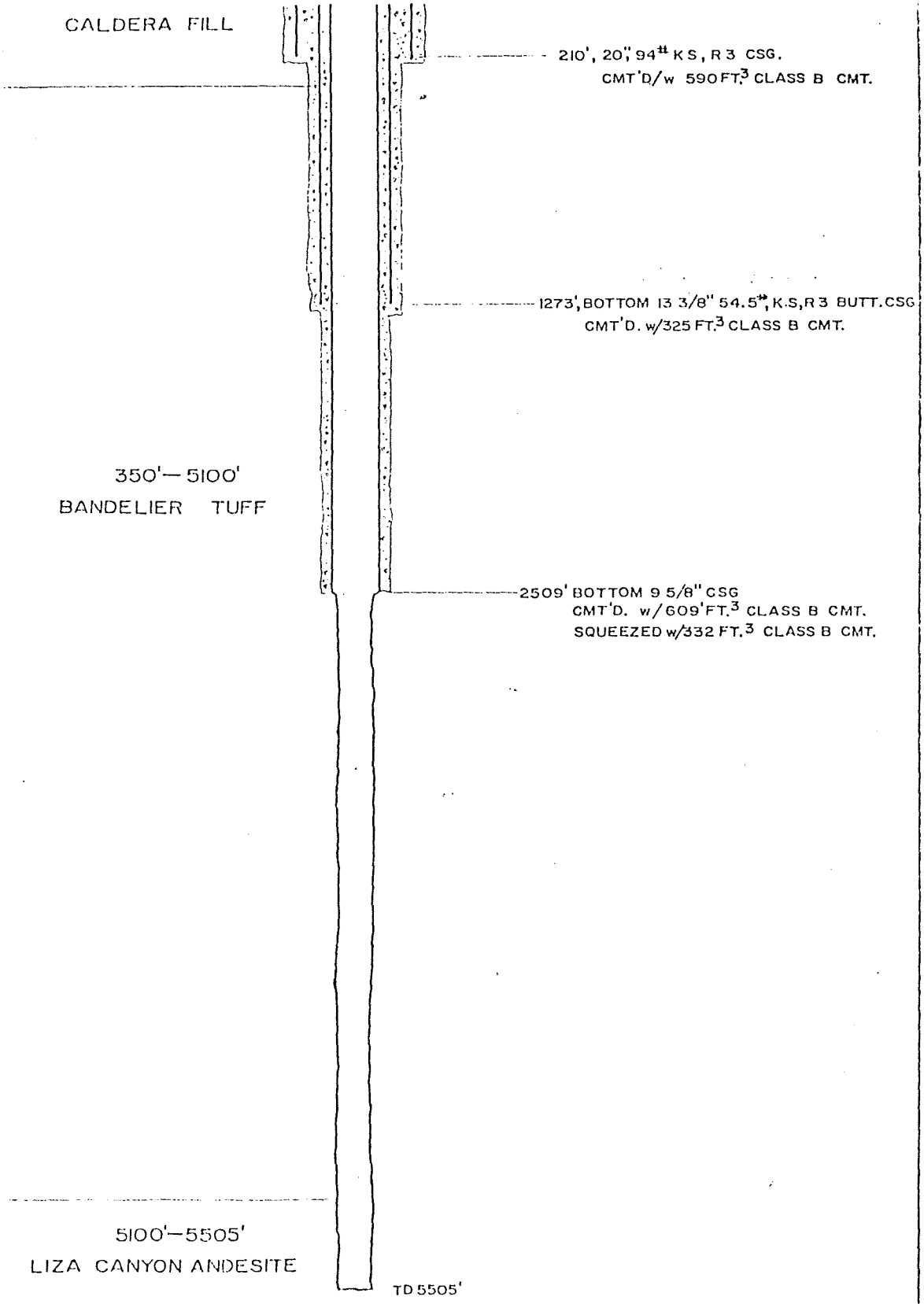
DATE	TIME	WELL HEAD PRESS.	ΔP FLOWLINE PRESS. PSIG	FLOWLINE TEMP. °F	FLOW LBS./HOUR
6/9/75	1500	128#	35#	352°F	
	1515	113#	32#	344°F	
	1530	100#	28#	335°F	
	1545	93#	28#	331°F	
	1600	86#	24#	326°F	

REMARKS:

WELL COMPLETED 13-75



REVISED	DATE	UNION 76	DRAWN
			FOR:
		UNION OIL COMPANY OF CALIFORNIA - GEOTHERMAL DIVISION	BY:
			DATE:
		BACA #5 CASING SCHEMATIC	SCALE:
			DRAWING NUMBER



REVISED	DATE		DRAWN
		UNION 76	FOR:
		UNION OIL COMPANY OF CALIFORNIA - GEOTHERMAL DIVISION	BY: L.D.C.
			DATE: 6-15-75
		BACA 15 CASING SCHEMATIC	SCALE: 1" = 500'
			DRAWING NUMBER 2175

UNION GEOTHERMAL DIVISION
WELL COMPLETION RECORD

DATE	STATE OR COUNTY	A.F.E. #
8-27-75	NEW MEXICO	453008

PROSPECT / FIELD	WELL NO.
BACA	16

OPERATOR	LEASE
UNION OIL COMPANY OF CALIFORNIA	Baca Land & Cattle Company

LOCATION	SECTION	T	R	B. & M.
Lat. 35,9037, Long. 106,5688				

ELEVATION	LOG DATUM	UNION INTEREST	OTHER INTEREST
9622' GR	K.B.		

REASON FOR DRILLING
Step-out well in Redondo Creek Area

GEOLOGIST	ENGINEER	DRILLING COMPANY
T. R. Slodowski	J. H. Moss	Loffland Rig 214

DATE STARTED	DATE COMPLETED	TOTAL DEPTH	LOGGER	DRILLER M.D.	VD	BOTTOM HOLE COORD.
6-19-75	8-21-75	7002'		7002'	6827'	41.62'S 11.30.49'W

DISPOSITION OF WELL	RIG TESTS	DATE	INITIAL PRODUCTION LBS/HR
Shut-in	See attached sheets		

TEMPERATURE, PRESSURE, SALINITY DATA - SEE ATTACHED SHEETS
Chloride conc. of drilling fluid from 1200' to T.D. - see attached sheets

CORING PROGRAM - SEE ATTACHED CORE DESCRIPTION SHEETS

FORMATIONS PENETRATED, THEIR DEPTHS AND RELATION TO SURROUNDING WELLS

FORMATION	THIS WELL (M.D.), SUBSEA COORDINATES	Tops	OTHER WELLS - SUBSEA B-11	B-13	
Caldera fill	(0-380')	spud	spud	spud	
Redondo Crk. Rhyo.	(380'-880')	+9244'	not present	not present	
Bandelier Tuff	(880'-5560')	+8742'	+8745'	+8732'	
Paliza Cyn. And.	(5560'-6880')	+4062'	+3765'	+3582'	
Tertiary sands	(6880'-7002')	+2742'	+2505'	not present	
(Fault at 6040'					

CASING SIZE	CASING INTERVAL	SLOTS OR PERFS. INTERVALS	SLOTS OR PERFS. INTERVALS	LOST CIRCULATION ZONE DATA DEPTH	AMOUNT BBLS	COMMENTS
"	193'-surf.			2169'	300 total	
				2400'	50-60/hr	
-3/8"	1215' "			2782'	30-40/hr	Complete loss of ret.
				2900'	70/hr	
				3740'	10/hr	
5/8"	2905'-1100			6880'	~600 total	on entering Tertiary sand.
				771'	~1,1000	

LOGGING DATA AND BOTTOM HOLE TEMP. DATA

DATA	TEMP. LOG RUN	T.D.	LOGGED INTERVAL	TIME SINCE CIRC.	MAX. TEMP.	COMMENTS
T/P	S-1	2160'	1000'-2144'	10 hrs.	261°	
T/P	S-2	2590'	1000'-2580'	8 "	263°	
T/P	S-3	2580'	1000'-2580'	13 "	320°	
T/P	S-4	2580'	1000'-2580'	20 "	346°	
T/P	S-5	2580'	1000'-2580'	26 "	346°?	Bomb failure?
T/P	S-6	2580'	1000'-2580'	34 "	359°	
T/P	S-7	2580'	1000'-2580'	47 "	370°	
T/P	S-8	6203'	2000'-6200'	Flowing	354°	
T/T	S-9	6203'	100' -6200'	on inject.	353&369°	Ran 2 temp. bombs- last same as used in S1-S8
T/T	S-10	6203'	100' -6200'	14 hrs.	422°	

Adopted 10/1/74

NEW MEXICO OIL CONSERVATION COMMISSION

P. O. Box 2088, Santa Fe 87501

GEOTHERMAL RESOURCES WELL HISTORY

Operator UNION OIL COMPANY OF CALIFORNIA Address Mtn. Rt. Box 76, Jemez Springs, N. M. 8702

Lease Name Baca Well No. 16

Unit Letter O Sec. 1 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	
9-75	MI & RU Loffland Rig #214. Drilled rathole and mousehole. Drilled a 17-1/2" hole to 100'.
0-75	Drilled 17-1/2" hole to 208'. Made trip for 26" hole opener. Drilled 26" hole to 208'.
1-75	Ran 6 jts. of 20", 94#, K-Buttress Casing (195.44). Cemented shoe @ 193' w/500 sacks (590 cu. ft.) of Class "B" Cement w/3% CaCL2. Good returns throughout job. Circ. 69 bbls of cement to reserve pit. C.I.P. 10:35. W.O.C. Nipple up.
2-75	Drilled 17-1/2" hole from 226' - 615'.
3-75	Drilled 17-1/2" hole from 614' - 925'. Lost returns at 771'. Lost approx. 50 bbls per hour.
4-75	Drilled 17-1/2" hole to 1040'.
5-75	Drilled 17-1/2" hole to 1172'.
6-75	Drilled 17-1/2" hole to 1216'. P.O.H. Laid down 17-1/2" drilling assembly. Ran 31 jts. of 13-3/8" 54.50# K-Buttress Csg. (1237.06'). Cemented shoe at 1215'.
7-75	Installed cement head and welded same in collar. Circulated casing. Mixed and pumped through shoe 900 sacks of Class "B" Cement with 1-1 pearlite, 2% Gel and 40% Silica Flour with a total of 1624 cu. ft. Displaced plug with 184 bbls water (1030 cu. ft.). Circ. 70 bbls cement to reserve pit. Good return throughout job. C.I.P. 1615. Cement did not fall from around casing. W.O.C. 4 hours. Nipple up.

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 Jerry O. Jones Jones, J. C. Position Project Coordinator Date 9/23/75

8-75 Cut off 13-3/8" casing and installed 12" 600 Series Gray Starting Flang. Nipple up B.O.P. stack. Tested B.O.P.S. w/5000#. PSI. Held okay. R.I.H. w/12-1/4" bit and drilled out plug, float collar and cement to shoe. Tested casing and B.O.P.S. with 800#. Held okay. Drilled 12-1/4" hole from 1216' to 1245'.

9-75 Picked up 12-1/4" drilling assembly and drilled 12-1/4" hole from 1245' to 1311'.

0-75 Drilled 12-1/4" hole to 1501'.

1-75 Drilled 12-1/4" hole to 1685'.

2-75 Drilled 12-1/4" hole to 1841'.

3-75 Drilled 12-1/4" hole to 1980'.

4-75 Drilled 12-1/4" hole to 2128'.

5-75 Drilled 12-1/4" hole to 2169'. Lost returns. P.O.H. and stood 12-1/4" drilling assembly back. Unloaded hole with air thru O.E.D.P. at 2000'. Circ. approx. 50 bbls of water with small amount of steam. Flowline temp. 150°. No pressure. Colorides in water 200 PPM. Ran temp. & pressure surveys. Well shut in 2-1/2 hrs. Unloaded hole with air. Recovered approx. 35 bbls water and very little steam. Flowline temp. 140°. Chlorides in prod. water 300 PPM. Spotted cotton seed hulls on bottom. P.O.H. Picked up 12-1/4" drilling assembly. R.I.H. Drilling with part returns and losing approx. 100 bbls drilling fluid per hr.

6-75 Drilled 12-1/4" hole from 2162' to 2387'. Losing approx. 50 to 60 bbls per hr.

7-75 Drilled 12-1/4" hole to 2518'. Losing approx. 25 bbls per hr.

8-75 Drilled 12-1/4" hole to 2582'. Gear box of #1 pump went out and unable to drill with stand by pump. P.O.H. to repair #1 pump.

9-75 Repairing pump.

0-75 R.I.H. w/12-1/4" drilling assembly 2000 hrs. Unloaded hole w/air @ 2575'. Max. temp. 175°. Shut off air compressors and well died in 4 min. Opened 1/2 hr. and no pressure, temp. 130°. Broke circ. w/water and hulls. Drilled from 2582' to 2583'.

1-75 Drilled 12-1/4" hole to 2769'. Losing 30 to 40 bbls fluid per hr.

2-75 Drilled 12-1/4" hole to 2780'. Lost complete returns. Regained circ. w/hulls and water. Drilled from 2780' to 2980'. Loosing approx. 70 bbls per hr. P.O.H. Rigged up to run 9-5/8" liner.

3-75 Ran 46 jts. of 9-5/8", 36#, K-Buttress Casing (1804.71') w/shoe at 2905'. Hanger at 1100. Pumped 175 bbls water through DP and liner to check float. Okay. Mixed and pumped through shoe 500 sks. of Class "B" 1-1 Pearlite, 40% silca flour, 2% Gel, 0.5% CFR2, and 0.5% H.R-7 (1125 cu. ft.). Displaced w/165 bbls water and had part returns for about 40 bbls. No returns at end of job. C.I.P. 09:15. R.I.H. w/12-1/4" bit. No cement on top of liner. Set RTTS packer at 1007'. Mixed and pumped 150 sks. Class "B" 1-1 pearlite w/40% silica flour, 0.5% CFR2 and 0.5% HR-7 (237 cu. ft.). No fill up. C.I.P. 2330'. W.O.C.

4-75 W.O.C. 2400' to 1045'. Mixed and pumped 200 sks. Class "B" 1-1 pearlite w/40% silca flour and 2% Gel (450 cu. ft.). Pressured to 1200# and held for 15 min. Released packer. Pulled 90 ft. D.P. Reset packer. Pressured up to 1000#. Held okay. P.O.H. R.I.H. w/12-1/4" D.A. Drilled 100'. Cement to top of liner @ 1100'.

5-75 R.I.H. w/8-3/4" bit. Drilled cement 1100'-1108'. R.I.H. to 1875'. Drilled cement to 2240'. No cement from 2240' to 2866' (float collar 2866'). Tested casing w/1000#. Held okay. Drilled float collar. No cement between float and shoe. Tested pipe w/1000# and bled to 300# in 30 seconds. P.O.H. Ran Welex Acoustic Bond Log. No cement around casing below 2800'.

5-75 Set Howco 9-5/8" RTTS packer. Packer @ 2815' could not pump through packer. P.O.H. & L.D. tools. R.I.H. w/8-3/4" bit. Drilled out shoe.

7-75 Set Howco 9-5/8" RTTS packer @2810'. Pumped through packer at rate of 4 bbls per min. @ 1200# PSI. Mixed and pumped 150 sks. of Class "B" cement w/1-1 pearlite, 40% silca flour, 2% Gel, 0.5% CFR2 and 0.2% HR-7 (337 cu. ft.). Displaced w/15 bbls water (84 cu. ft.) and squeezed to 1800#. Released packer reverse out cement. Had 175 cu. ft. cement outside of 9-5/8" casing, and 39 cu. ft. inside 9-5/8". Displaced 140 cu. ft. out of D.P. C.I.P. 01:30. P.O.H. & L.D. packer. R.I.H. w/8-3/4" bit. Drilled cement from 2619' to 2910'. P.O.H. Picked up 8-3/4" D.A., R.I.H. and drilled 8-3/4" hole from 2910' to 2945'.

-75 Drilled 8-3/4" hole from 2945' to 3156'.

-75 Drilled 8-3/4" hole to 3324'.

-75 Drilled 8-3/4" hole to 3495'.

-75 Drilled 8-3/4" hole to 3760'. Loosing circ. @ 10 BBLs per hr.

-75 Drilled 8-3/4" hole to 4020'. Loosing approx. 55 BBLs fluid per hr.

-75 Drilled 8-3/4" hole to 4160'. Installed surge tank & rotating head.

-75 Drilled 8-3/4" hole w/aerated water from 4160' to 4390'.

-75 Drilled 8-3/4" hole to 4548'.

-75 Drilled 8-3/4" hole to 4715'.

-75 Drilled 8-3/4" hole to 4898'.

·75 Drilled 8-3/4" hole to 5206'.

·75 Drilled 8-3/4" hole to 5263'.

·75 Drilled 8-3/4" hole to 5423'.

·75 Drilled 8-3/4" hole to 5780'.

75 Drilled 8-3/4" hole to 6203'.

75 Pressured hole to 450# for 1/2 hr. Blew well to atmosphere, well would not kick off. Kicked well off w/aerated water thru O.E.D.P. @ 6160'. Circ. well 1 hr. with air compressors. Shut off air compressors. Circ. approx. 800 BBLs prod. water. Max. temp. 210°. Average water 125 BBLs per. hr. Stripped D.P. out of hole w/well flowing.

75 Ran flowing pressure & temp. survey.

DEPTH	PRESS.	TEMP.
2000	13.5	249
2800	22.5	263
3000	27.0	268
3500	31.5	279
4000	38.2	286
4500	43.0	293
5000	45.0	296
5500	56.0	304
6000	74.0	320
6200	124.0	354

Killed well w/water. Mixed and pumped 700 BBLs of 12.5 ph water thru O.E.D.P. @ 5996'. Displaced w/70 BBLs fresh water. Well on vacuum. P.O.H. & shut well in.

)-75 R.I.H. w/8-3/4" D.A. Had 50' fill 6161' to 6211'. Drilled 8-3/4" hole 6211' to 6525'.

)-75 Drilled 8-3/4" hole from 6525' to 6688'.

-75 Drilled 8-3/4" hole to 7002'. T.D. P.C.H. Shut well in for build up.

:-75 Open well, no pressure. R.I.H. w/O.E.D.P. Circ. w/2 compressors @ 2500'. Recovered approx. 5 bbls water and no steam. R.I.H. to 4700' & circ. w/air, circ. approx. 500 bbls water. Well flowed @ 50# w/8-1/2" orfice in flowline. Started making sand. D.P. trying to stick, worked pipe out of hole. Flowline plugged w/sand and rocks. Repaired and cleaned flowline. Well dead. R.I.H. w/ O.E.D.P. to 3250'. Unloaded hole w/air and circ. 350 bbls water. Well flowing @ max. 80# w/8-1/2" orfice and making sand. Cut flowline out in 4 places. Killed well after 30 min. P.O.H. & repaired 12" flowline w/well shut in.

-75 Opened well, no pressure. R.I.H. w/O.E.D.P. to 2350'. Blew well w/air. Well flowed at max. 80# w/8-1/2" orfice. Declining to 20# in 1 hour. Well died from 20# in 5 minutes. R.I.H. w/8-3/4" bit and D.C.S. on 4-1/2" D.P. hit bridge @ 3000'. Cleaning out to 5430'.

-75 Washing & pushing bridge from 5800' to 6950'.

-75 Finished cleaning to 7002'. P.O.H. & P.U. & ran 93 jts. 2-7/8" EUE tubing to 2805'. Blew well w/air. Well started flowing. Flowed 1 hr. 40 min. at a max. temp. of 320°, max. pressure 107#. Well plugged off. Shut well in 4 hrs. Opened well no pressure. Blew well w/air would not flow. P.C.H. w/tubing picked up 8-3/4" bit and 4-1/2" D.P.

-75 R.I.H. w/8-3/4" bit hit bridge @ 3475. Washed to 7002'. P.O.H.

-75 R.I.H. w/2-7/8" EUE tubing to 4025'. Kicked well off w/1 air compressor. Well flowed across 8-1/2" orfice at following pressure & Δp.

TEMP.	P1	P2
230	17	9
280	47	35
320	72	44
312	60	36
215	22	12

Started making muddy water (approx. 300 bbls), & pressure dropped to 10# at P1 - P2 6# temp. 240°. Made 2350 bbls fluid in 20 hrs.

-75 Shut well in for build up. Max. shut in press. 170#. Opened well to atmosphere. Well headed @ 60# & decreased to 4# in 2 hours. Killed well and P.O.H. w/tubing. Picked up sawtooth single on bottom of 4-1/2" D.P.

-75 R.I.H. & cleaned out to 6963' w/air no water. Could not clean below 6963'. Used water and air to clean to 7000'. P.O.H. w/dp. & ran 2-7/8" tubing to 4020'. Unloaded hole w/air.

-75 Well flowed for 6 hrs. with max. temp. 250° and max. pressure 30# & declined to 13# in 6 hours. Produced 900 BBLs water. P.O.H. & L.D. 2-7/8" tubing. Set Howco RTTS 9-5/8" Packer at 2820'. Tested casing w/1000#. Casing held okay. P.O.H. & L.D. Howco Packer. R.I.H. w/sawtooth single on 4-1/2" D.P. went to 6998'. Rigged up and laid down 4-1/2" D.P.

-75 Finished laying down 4-1/2" D.P. & 6" dcs. Nippled down B.O.P.s & installed flang and valve. Rig released 1700 hrs.

CASING DETAIL

JTS.	DESCRIPTION	LENGTH	TOP	BOTTOM
	20" CASING			
1	20" HOWCO Shoe	2.10	190.9	193.00
5	20" 94#	149.94	40.96	190.9
1	Buttress to 8RD X-over	2.10	38.86	40.96
1	20" 94#	41.83	+2.97	38.86
6		195.97		
	13-3/8" CASING			
1	13-3/8" Baker	2.76	1212.24	1215.00
1	13-3/8"54.5#K55 Buttress	39.66	1172.58	1212.24
1	Baker Float Collar Mod. G Diff. float	2.08	1170.50	1172.58
30	13-3/8"54.5#K55 Buttress	1192.55	+22.05	1170.50
31		1237.05		
	9-5/8" CASING			
1	9-5/8" HOWCO Float Shoe	2.00	2903	2905
46	9-5/8" 36# K Buttress	1796.78	1106.22	2903
1	9-5/8" X 13-3/8" Burns Hanger	6.22	1100.00	1106.22
		1805.00		

SURVEY REPORT

FOOTAGE	DEVIATION	
210'	1/2°	
540'	1/4°	
814'	1/2°	
1210'	1°	
1500'	3/4°	
1830'	1°	
2125'	1-3/4°	S-2 West
2458'	2-1/2°	S-25 West
2880'	4-1/4°	S-47 West
3284'	6-1/2°	S-58 West
3740'	9-1/4°	S-68 West
4110'	11-1/4°	S-76 West
4536'	13-1/4°	S-82 West
4840'	15°	S-89 West
5233'	16-1/4°	S-88 West
5724'	19-1/2°	S-85 West
6728'	22°	S-82 West

WELL NO.: BACA #16

SURFACE LOCATION: 35.9037 Longitude 106.5688

ELEVATION: 9622.03

BOTTOM HOLE LOCATION:

TOTAL DEPTH: 7002'

TOTAL COST:

SPUDDED: 6-19-75

RIG RELEASED: 8-21-75

TOTAL OPERATING DAYS: 62 + 16

CASING

	SIZE	WEIGHT	TOP	BOTTOM	HOLE SIZE	AMT. CMT.
CONDUCTOR:	30"					
SURFACE:	20"	94#	surface	193'	26"	590 cu. ft.
INTERMEDIATE:	13-3/8"	54.50#	surface	1215'	17-1/2"	1824 cu. ft.
LINER:	9-5/8"	36#	1100'	2905	12-1/4"	1912 cu. ft.

STEAM ZONES (ESTIMATED PRODUCTION FROM EACH ZONE)

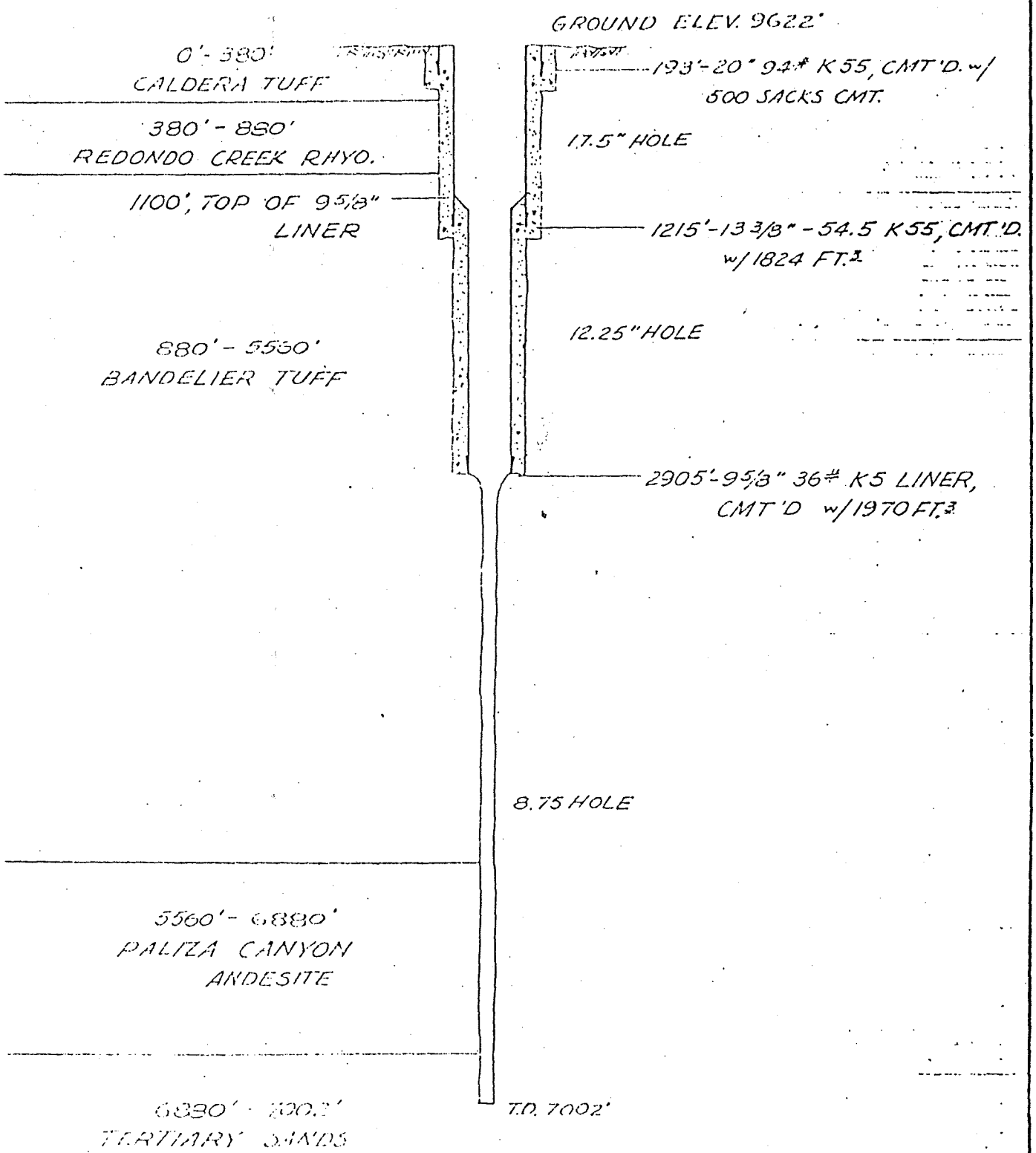
FLOW TEST

SHUT IN PRESS.: ORIFICE SIZE

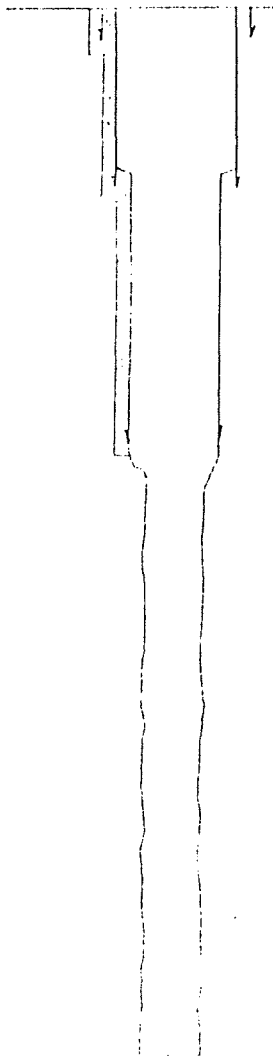
DATE	TIME	WELL HEAD PRESS.	FLOWLINE PRESS. PSIG	FLOWLINE TEMP. °F.	FLOW LBS./HOUR

REMARKS:

REVISED 8-21-75



DATE	UNION 76	DRAWN
		FOR:
	UNION OIL COMPANY OF CALIFORNIA - GEOTHERMAL DIVISION	BY: L.D.C.
		DATE: 11-12-75
	BACA 16 CASING SCHEMATIC	SCALE: 1"=1000'
		DRAWING NUMBER
	BACA PROJECT — NEW MEXICO	M-3



GROUND LEVEL· 9622'

193', 20"- 94# K-55, CMTD W/500 SACKS CMT.

1100' TOP OF 9⅝" LINER
1215', 13⅜"- 54.5# K-55, CMTD W/1824 FT³ CMT.

2905', 9⅝"- 36#- K-5 LINER, CMTD W/1970 FT³ CMT.

8¾" HOLE

7002' TD

REVISED	DATE	UNION	DRAWN
			FOR:
		UNION OIL COMPANY OF CALIFORNIA - GEOTHERMAL DIVISION	BY:
			DATE:
		BACA 18 CASING SCHEMATIC	SCALE:
			DRAWING NUMBER 2180