

LEASE Desert Peak B WELL NO. 21-2 SHEET NO. 1

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
11-24-76	92	Sand, gravel & clay, repairing pumps. Loc: 455.8' south & 377.6' west of NE corner of Section 21-22N-27E Churchill County, Nevada. 6000' Geothermal Well. PPCo 100% - Oper. AFE PE 5513. Signal Drilling Company, Inc., - contr. MI&RJR Spudded 26" hole at 6:00 PM 11-23-76, drilled to 92' and shut down to repair pumps. Elev: GL 4600, RKB 4627.
11-25-76	105	Drilling. Finished repairing pump. Drilled to 100', circulated out & came out of hole. Ran 2jts. & lpc, 20" OD, 94#, H-40 csg, set at 95' RKB. Cemented w/200 sx class G, 3% CaCl <sub>2</sub> , 15.8#/gal. Circulated estimated 100 sx cement. Job complete at 1:30 p.m. 11-24-76. WOC 6 hrs. Nippled up, started drlg. 17 1/2" hole at 100'.
11-26-76	781	Drilling welded tuff. Mud 8.9, V40, WL 60, FC 3/32, pH 7.6, YP24, PV7, Gels 0-18, 10-31, Chl 6000. Totco, 1 1/4 Deg. 244, 1 1/4 Deg. 348, 1 1/4 Deg. 454, 1 1/4 Deg 543, 2 Deg. 673. Flow line temp. at 781', 84° F in, 102° F out.
11-27-76	1004	Circulating, preparing to run casing. Drilled 17 1/2" hole to 1004', circulating out to run csg. Mud 9.4, V34, WL50, FC 3/32, pH 7.6, YP8, PV7, Gels 0-g, 10-12, Chl 5800, Flow line temp. at 1000', 72° F in, 110° F out.
11-28-76	1004	WOC Finished circulating out, strapped out of hole. Ran 24 jts, 13 3/8" OD, 54.5#, K-55, BT&C csg, set at 1000' RKB. Cemented w/820 sx Class G, 1:1 Perlite, 40% Silica flour, 3% gel, 3/10% R-5, 3/4% D-31 at 12.6#/gal. Lost returns w/90% cement mixed. Displaced plug slowly, regained 25% returns, no cement to surface. Job complete at 3:30 p.m. 11-27-76. WOC.
11-29-76	1004	Nippling up. WOC 5 hrs. Ran 1" pipe in 20"X13 3/8" annulus to 100', circulated out water. Went to 244' RKB, tagged cement, washed out of w/water. Mixed 250 sx class G cement w/1:1 Perlite, 40% Silica flour, 2% gel, 2% CaCl <sub>2</sub> , 13.6#/gal. Circulated cement. Job complete at 3:00 p.m. 11-28-76 WOC 12 hrs. Cutoff 20" & 13/38" csg, started installing 13 3/8" braden head.

## DAILY REPORT DETAILED

LEASE Desert Peak BWELL NO. 21-2SHEET NO. 2

DATE	TOTAL DEPTH	NATURE OF WORK PERFORMED
11-30-76	1004	Testing BOP's. Installed 12" 900 x 13 3/8" SOW Bradenhead, tested head to 1100#. Installed 12" 900 Double BOP, Hydril and Grant Rotating head. Tested blind rams and casing to 1000#, thirty mins, OK. Picked up DP and finished nipling up to test Hydril and pipe rams.
12-1-76	1240	Trip to recover Totco. Fin nipling up. Tested BOP, Hydril, choke manifold valves, safety valve and Kelly cock to 1000#. PU 12 1/4" drilling assembly drilled plug, cement and float equipment. Started 12 1/4" hole at 1004'. Drilled to 1240', dropped Totco, stuck in crow's foot. Came out of hole to recover Totco. Mud 8.5, V32, WL 60, FC 3/32, pH 10.6, Chl 6800. Totco 2' at 1186'. Flow line temp 1240', 117° F in, 124° F out.
12-2-76	1695	Drilling Dacite Mud 8.6#, V 29, WL 40, FC 2/32, pH 9.0, YP-1, PV 4, Gels 0-0, 10-3, Chl 5600. Totco 2 1/4' at 1426', 2 1/2' at 1657'. Flow line temp at 1695', 120° F in, 125° F out.
12-3-76	2037	Rigging up to run 9 5/8" casing. Mud 8.8#, V36, WL 38, FC 2/32, pH 8.5, yp 2, PV 4, Chl 5800 and LGM 4#/bbl. Drilled rhyolite to 2037'. Totco 2 1/4' - 2012'. Flow line temp at 2037', 144° F in and 154° F out.
12-4-76	2037	WOC Ran 47 jts, 9 5/8" OD, 40#, K-55, R-3, BT&C casing w/Howco shoe, set casing at 2030' RKB. Circ one hr to cool hole. Pmpd in 40 bbls fresh water ahead of 775 sx Class G cement, 1:1 perlite, 40% silica flour, 2% gel, 3/4% D-31 and 1% R-11, 13.6#/gal. Circ estimated 700 cu ft good cement. Job complete at 2:30 p.m., 12-3-76.
12-5-76	2037	Nipling up BOP stack. WOC 8 1/2 hrs, picked up 12" 900 BOP stack, cut off 9 5/8" casing. Installed 9 5/8" expansion spool, tested to 2000#. Installed 10" 600 Master Gate, started nipling up BOP's.
12-6-76	2037	Testing BOP's. Finished nipling up BOP stack. Tested blind rams and 9 5/8" casing to 1200#, OK. Tested master gate, bottom pipe rams, choke line valves and safety valves to 1200#, OK. Seals on upper type "F" BOP failed. Waited on seals, replaced seals.

## DAILY REPORT DETAILED

LEASE Desert PeakWELL NO. B 21-2SHEET NO. 3

<u>DATE</u>	<u>TOTAL DEPTH</u>	<u>NATURE OF WORK PERFORMED</u>
12-7-76	2287	Drilling andesite. Finished replacing BOP seals. Tested pipe rams 1200 psi, OK. Tested Hydril w/1000 psi, OK. RIH. Bit plugged w/drill pipe rust. Made trip unplugged bit. Drilled float equipment and cement. Drilled from 2037 to 2287'.
12-8-76	2740	Drilling tuff and andesite. Drilled to 2470'. Made trip for new bit. Repaired mud line valve, drilled from 2470 to 2740.
12-9-76	2871	Drilled from 2740' to 2871'. Hit fractures at 2868'. Lost returns at 2871'. Mixed three pits mud with 20-25#/bbl LGM. Unable to get returns. POOH and cleaned pmp. Rigging up air equip. Flow line temp at 2800', 154° F, 164° F out
12-10-76	2894	Preparing to jet hole. Finished rigging up air equipment. Went in hole w/bit Attempted to circulate, 45 mins and air line parted. One hour repairing air line. Pumped in air, soap and water, had circulation on one hour. Drld to 2889', lost returns. Large fracture, hole void 2887-89'. Pumped in air, soap and water 2 hrs, no returns. Drld to 2894' w/o returns. Pulled up to 1925', jetted hole one hour, max water temp 250° F. Went in hole to TD, attempted to circ w/air, soap and water. Pulled up 2 stands, attempted to circ 5 hours, no returns. Came out of hole.
12-11-76	2937	Repairing air equipment. Went in hole w/bit #7 to 1925'. Jetted w/air 3 hrs, unable to kick off (some flashing, max temp 298° F). Went in hole to 2894', unable to circ w/air, soap and water. Drilled to 2937' without returns, cuttings staying in well bore, trying to stick. Pulled up 70' off bottom several times, wash 30-40' to bottom each time. Pulled up to 1400'. Attempted to jet well, air cooler blew out.

## DAILY REPORT DETAILED

LEASE Desert PeakWELL NO. B 21-2SHEET NO. 4

DATE	TOTAL DEPTH	NATURE OF WORK PERFORMED
12-12-76	2937	Running temperature survey. Down $7\frac{1}{2}$ repairing air equipment. Jetted well 10 hrs through DP at 1400'. Well kicked off flowed $5\frac{1}{2}$ hrs, mostly steam. Max press 60#, final press 8#. COOH. RU Agnew & Sweet, started running temperature survey.
12-13-76	2949	Picking up drill pipe. Ran Agnew and Sweet temp survey. Max temp $374^{\circ}$ F at 2800', $334^{\circ}$ at 2907'. RU Schlumberger, ran IES, FDC-GR, BHC-Sonic. ELTD 2906'. Made up Christensen Diamond CB and bit, WIH, washed 30' fill w/gel mud. Cored 2937-49' w/water, no returns. COOH, rec 35% badly broken core. WIH open-ended, picking up DP to replace bottom hole assy.
12-14-76	2949	WOC. Finished picking up DP. Went in hole open-ended to 2828'. Mixed and pumped in 550 sx Class G cement w/2% gel, 1% R-11, 14.6#/gal. Job complete at 9:00 a.m., 12-13-76. Came out of hole, WOC 9 hrs. Attempted to fill hole, unable to fill. Mixed 200 bbls 60 vis gel mud w/25#/bbl LCM. WIH open-ended to 2828'. Pumped in 200 bbls mud, followed w/300 sx Class G cement, 1% R-11. Job complete at 1:00 a.m., 12-14-76. WOC.
12-15-76	3079	Waiting on water. WOC $4\frac{1}{2}$ hrs. Mixed 400 bbls 36 vis mud. Went in hole with bit. Drilled cement 2840-88', lost returns. Washed to 2947', no returns. Drilled w/o returns, flushed hole w/mud every 20'. Pulled up into casing, waiting on water.
12-16-76	3179	Drilling, no returns. Drilled to 3111', no returns, ran out of water. Pulled up into casing. Mixed 400 bbls, 36 vis mud, filled all water tanks. Went in hole to 3111', drilling ahead w/o returns. (Drlg approx 50'/hr when on bottom, drlg smooth. Flush with mud on each connection, no drag, no fill.)

DAILY REPORT DETAILED

LEASE Desert Peak

WELL NO. B 21-2

SHEET NO. 5

DATE TOTAL DEPTH  
NATURE OF WORK PERFORMED

12-17-76	3192	Preparing to flow test. Drilled to 3192' and ran out of water. Flushed hole w/gel mud. Came out of hole. Nippled down BOP's, set on 10" tree. Ran Agnew and Sweet Temp Survey, on bottom 16 hrs after drilling. Max temp 363.2° F at 3192'. Nippled up tree and connecting flow line.																																																																																								
12-18-76	3192	Testing well. RJ Newsco, started jetting at 1:00 pm at 1000', fluid to surface at 1:11 pm, max jetting depth 1250', shut off nitrogen at 12:30 pm, well flowing. Flowed well 17 hrs.																																																																																								
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12-19-76	3192	Averaging 800-1000 BWP. * Froze in. Laying down drill pipe. Flowed well as follows:																																																																																								
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		Rigged up Agnew & Sweet. Ran Temp. Survey. 373° F at 3100', 360° at 3112' on bottom at 3112' 20 mins, 376° F.																																																																																								
12-20-76	3192	Tearing down rotary. Finished LDDP. Cleaned mud pits. Released rig at 4:00 p.m. 12-19-76. Shut in geothermal well. Open hole 2030-3192'.																																																																																								
12-21-thru 12-27-76	3192	Shut down for Christmas holiday																																																																																								
12-28-76	3192	Rigging up to test Ran Agnew and Sweet temperature survey. Max temp 391° F at 3119'.																																																																																								

DAILY REPORT, DETAILED

LEASE Desert Peak B WELL NO. 21-2 SHEET NO. 6

DATE TOTAL DEPTH  
NATURE OF WORK PERFORMED

12-29-76 3192 Tearing down rotary.  
Fin rigging up Nowsco. Started jetting well at 1:20 pm 12-28-76. Well kicked off, shut off nitrogen at 1:30 pm. Flowed as follows:

Time	WHP #	WHT °F	Lip Press	Atmos Press Hg	Remarks
12-28					
1:20pm	21#	240	1.6	25.635	
1:27					Shut off Nitrogen
1:30	40	283	10.0		
1:45	54	285	11.0		
2:00	57	285	11.0		
2:15	59	286	11.0		
2:30	59	286	11.0		
3:00	64	286	11.0		
3:30	65	287	11.0		
4:00	64	286	11.0	25.570	
5:00	64	286	11.0		
6:00	64	286	11.0		
7:00	64	286	11.0		
9:00	64	285	11.0	25.590	
11:00	64	286	11.0	25.540	
12-29					
1:00 am	64	285	11.0		
4:00	64	285	11.0	25.510	
5:00	64	285	11.0		Reserve pit dike broke.
7:30	64	285	11.0	25.490	
9:00	64	285	11.0		
10:27					Shut in.
10:30	90				
10:35	86				Total mass flow
10:40	82				averaged 456,000#/Hr.
10:45	78				
10:50	74				
10:55	71				
11:00	68				

At 1:00 AM had 0.8# draw down on well #21-1.

12-30-76 3192 Tearing down rotary.  
Rigged up Agnew and Sweet. Ran temperature survey.  
Max temp 387° F after 20 mins on bottom at 3115'.

03-19-77 3192 Shut-in.  
On 8-day reservoir limit test (3-10 to 18-77), well flowed at an average rate 288,000 pounds per hour, FWHP 84 psig, indicating a reservoir of 4,480 million barrels. Well completed as a Geothermal Well from open hole 2030-3192.

FINAL REPORT

DAILY REPORT DETAILED

LEASE Desert Peak WELL NO. 21-2 SHEET NO. 7

DATE TOTAL  
NATURE OF WORK DEPTH  
PERFORMED

DATE	TOTAL DEPTH	NATURE OF WORK PERFORMED
6-30-78	3192	Cleaning out. S. I. Geothermal well. 9 5/8" OD casing set at 2030', open hole 2030-3192. MI&RU Dixie Drilling Company. Went in hole w/2 DC & 8 1/2" bit. Stripped on 6" 900 BOP attached to 10" 600 X 6" 900 spool bolted on top of 10" 600 master gate. Went in hole w/2 7/8" DP, first weight at 781' RKB. Reamed scale to 841', free to 886'. Reamed scale to 896', began torquing up. Picked up DP, slightly stuck. Freed up DP & started reaming, bit plugged, blew nail on safety valve. Pulled out of hole, cleaned bit, went back in hole and shut down overnight.
7-01-78	3192	Cleaning out. Reamed to 931' RKB, circulating white very fine grain sandy substance. Difficult to make connection, scale settles very fast requiring lengthy circulating periods. Temperature in 124° F, out 137° F. Lost returns at 955', drilled to 966' and regained circulation. Had partial loss at 970', full returns at 971'. Drilled to 975', lost complete returns. Reamed hard and slow to 991'. Freed up and reamed to 1010' w/little weight. Ran out of water, shut down to fill water tank, shut down overnight.
7-2-78	3192	Pulling out of hole. Reamed scale from 1010' to 1030', very light weight. Reamed 1030-2005, no weight. Pumped in 3 BW every 40'. Pulled up to 900', made wiper trip to 2005'. Started laying down drill pipe. Shut down overnight.
7-03-78	3192	Shut geothermal well. Finished pulling out of hole. Laid down drill pipe. Tore down rotary, moved out all equipment at 1:00 pm 7-02-78. <u>FINAL REPORT</u>