GL02344

AREA
NV
Church
Dixie
45-14

WELL HISTORY

DIXIE FEDERAL 45-14

THERMAL POWER COMPANY

Dixie Valley Geothermal Prospect
Churchill County, Nevada

18 July 1979

Well Summary: Dixie Federal 45-14

Location: Approximate 45 Kettleman location on Section 14 T23N R35E MDB&M within Federal Geothermal Lease N-11853.

Permits: U. S. Geological Survey Permit No. 0069, approved 11-3-78
Nevada Division of Water Resources Permit No. 35792, approved 2-16-79

Drilling Dates: Spudded on 4-25-79
Suspended on 7-10-79
at 9022' Total Depth.

Casing: 20" to 120', 13 3/8" to 1330'
9 5/8" 1123 to 5398'
7" 5178' to 6290'
8½" open hole to T.D.

Brief of Operations

Peter Bawden Drilling Inc. (Rig 23) drilled hole and cemented 20" casing from 120-foot depth to surface. Alluvium-volcanics contact drilled at 1100 feet. Cemented 20" casing from 1330 feet to surface. Drilled ahead with 12 1/4" bits. Volcanics - metasediment contact drilled at 2525 feet. Hole continued in metasediments (predominately siltstone) to 4618 feet where rapidly increasing hole deviation, to maximum of 20°, and consistent eastward drift were found unacceptable. Plugged back 12 1/4" hole to 3604 feet, directionally drilled with Dynadrill turning to west. Both original hole and redrilled hole crossed a silica sealed fault zone at approximately 3800-3900 feet (no fluids encountered in either penetration).

Continued Dynadrilling to 4244 feet, got hole to 3° angle and N85°W direction at 4353 feet but hole deviation dropped and wellbore turned eastward again. Subordinated directional control to gain faster depth penetration; continued 12 1/4" hole in metasediments with mud drilling fluid to 5400 feet. Obtained Schlumberger DIL, CNL-FDL, GR Caliper and Temperature Log at 5405 feet. Placed and cemented 9 5/8" liner from 5398 to 1123 feet. Converted to water drilling fluid and drilled 8 1/2" hole to 8534 feet. Attempted same Schlumberger log suite plus DM, FIL and directional survey; obtained only FDL GR and Caliper (8543 to 5398 feet). Attempted to flow well by air lifting through open ended drill pipe at 5398 feet; obtained only surges, no continuous flow.

Ran Kuster recording thermometer to 8500-foot depth and obtained 385°F. maximum reading at bottom. This survey indicated water entry at 5830 feet which would mask a proper evaluation of zone below 8000 feet. Drilled 8 1/2" hole to 8912 feet with water. Ran multiple Schlumberger logs; obtained only CNL and IES (8916 to 5398 feet). Drilled to 9022 feet total depth while waiting on casing. Left 3 cones from bit on bottom. Placed and cemented 7" liner from 6290 to 5178 feet and thereby isolated the zone below 8000 feet. Attempted to flow well by air lifting through 3 1/2" drill string at 5000, 6300 and 7500 feet; obtained only surges. Filled well with water, cleaned out to 9022 feet and released rig. Well is suspended and accessible to 9022 feet for further evaluations and tests.

THERMAL POWER COMPANY

Dixie Valley Geothermal Prospect
Churchill County, Nevada

18 July 1979

Attempted Flow Tests: Dixie Federal 45-14

Attempts were made to cause well Dixie Federal 45-14 to flow by reducing the wellbore pressure opposing possible producing formation. Such pressure reduction was accomplished by using a Magcobar air compressor to lift the water column out of the wellbore. Three series of efforts using this method were performed.

The first attempt to "blow down" the well was on June 28, 1979. Open-ended drill pipe (OEDP) was run to 5398' and air was injected down the drill pipe. The well was free to "unload" its water column and (if possible) produce through a seven-inch line installed beneath the rotating head. After considerable air injection (almost one hour), drilling fluid followed by dark red water exited the well. The fluids were quite hot and mixed with the injected air, causing the water to surge at wellhead pressures to 200 psig. Such surges were short-lived (10-60 seconds) and caused compressor pressures to drop to 600-700 psig. After 20 minutes of slow build-up to compressor pressures of almost 1000 psi, the well would unload as before, with a blast of water followed by a blast of air. The compressor pressure would meanwhile fall rapidly and the cycle begin again. These blow-down attempts ended after 12 1/2 hours of such cycling.

Subsequent to drilling the well ahead to 8912', another attempt to blow down the well was made for four hours on July 2, 1979. OEDP was run to 5400' and the compressor started at noon. Compressor back pressures of 1000 psig and some help from the rig's drilling pumps were required to unload the well. After one hour of air injection, the well unloaded and continued to cycle as before between high injection pressures coupled with no flow to low injection pressures coupled with momentary surges of fluid. Maximum pressures and temperatures recorded were 62 psig and 232°F. The cycles again occurred roughly every 20 minutes.

The tests above, coupled with the knowledge gained from the IES, CNL, and temperature logs taken between them, led to the conclusion that a water entry existed at 5820 - 5870' and possibly 6208'. These entries were producing water almost as quickly as it could be emptied from the wellbore by the compressor, as evidenced by the 20-minute cycles of high-to-low-to-high compressor pressure. It was concluded that to test the possibly productive zones below 8000' would require their isolation from these shallower water entries. Consequently, a seven-inch liner was run successfuly to 6290'.

Subsequent to the running and testing of the seven-inch liner, the third and last series of attempts were made to cause the well to flow. Drill pipe with a 6" bit (jets removed to permit full air passage) was run to 5048', 6281', and 7500', where at each point the air compressor, sometimes in conjunction with the rig's drilling pumps, was used to unload the well of water. The plot of air compressor pressure versus time with notes concerning the surges observed and other remarks is attached. In summary, twenty-one (21) hours of blowing the well at the various intervals was attempted. Different cycles of compressor pressure and surging flow were noted than previously. The compressor pressure dropped to 150-250 psig during the unloading stages, rather than to 600-700 psig levels during the briefer unloading periods before the seven-inch liner was run. After the well was first unloaded at each depth, it took 3-4 hours of pumping before compressor pressures were again sufficient to unload what water was coming up past the bit.

The conclusions from these last attempts to flow Dixie Federal 45-14 were:

1. The massive water entry at 5820-5870' was shut off.

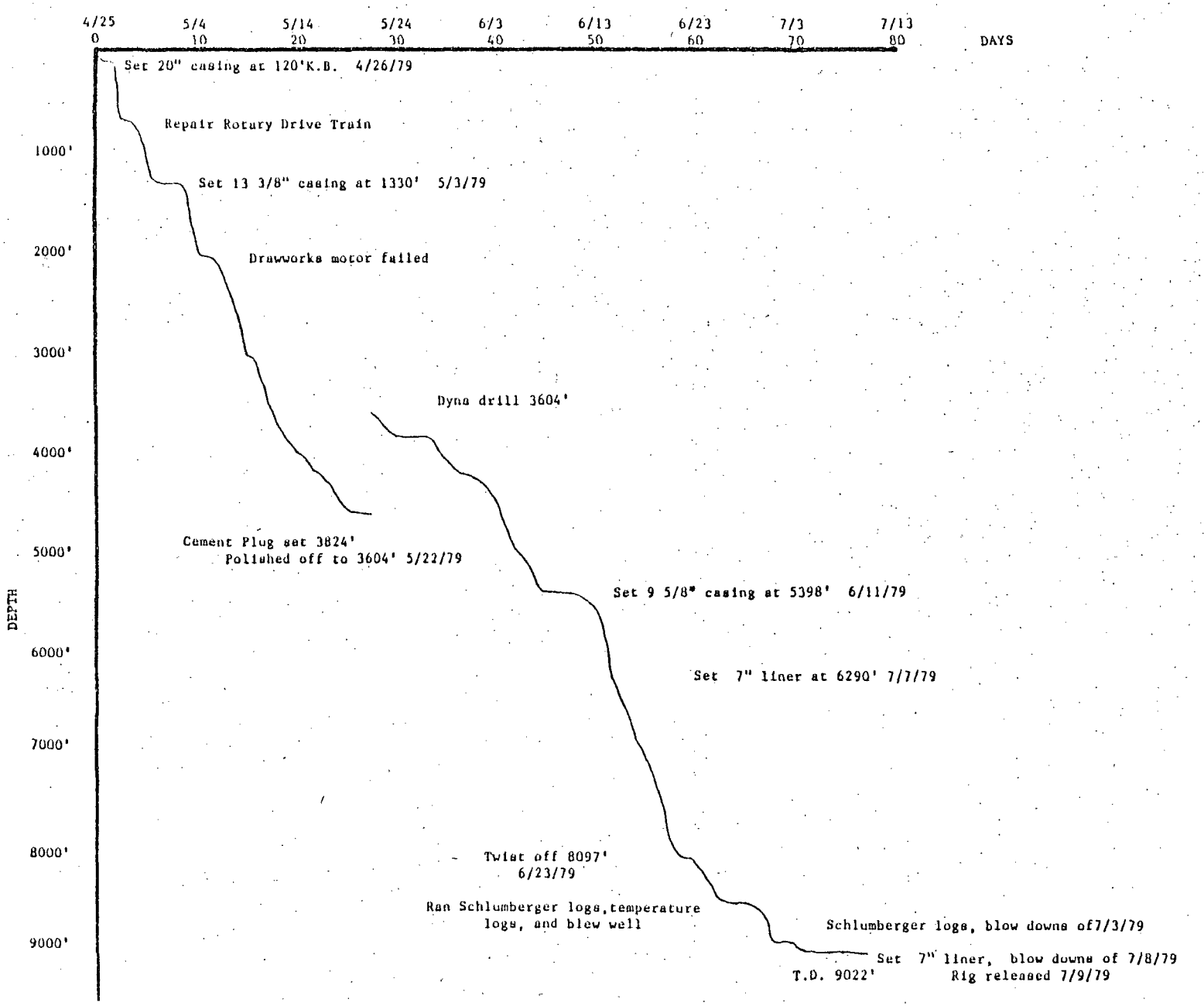
2. The compressor, with some help from the mud pumps, was able to virtually clear the wellbore of water above the point of air injection.

3. Despite evacuating water from the wellbore to as deep as 7500', the Dixie Federal 45-14 had insufficient permeability to commence flowing on its own as of 7-8-79. The possible benefits of temperature equilibration or other time adjustments within the prospective interval below 8000' may include eventual capacity to flow. This potential will be evaluated with future flow attempts.

4. There is some small liquid entry somewhere between 6290 and 9022 feet which caused the air compressor to go through very long (3-4 hour) cycles of unloading and slowly re-filling the wellbore.

THERMAL POWER CO. - SOUTHLAND ROYALITY CO.

Daily Drill Rate Dixie Federal 45-14 Churchill County, Nevada



PRESSURE SURVEYS

PRESSURE SERVICE

P.O. BOX 624

ELK GROVE, CALIFORNIA, 95624

A Line of Service

SUBSURFACE PRESSURE SURVEY

OWNER Thermal Power Co. FIELD Dixie Valley WELL NAME Dixie Federal 45-14

CASING 9-5/8" 1123-5398 ELEV. 3410' DATE: 6-29-79

LINER DESCRIPTION ZERO POINT Rig Floor 22'

Depth

TUBING DETAIL @ ZONE Meta Sediment

PUMP SHOE GAS ANCHOR INTAKE

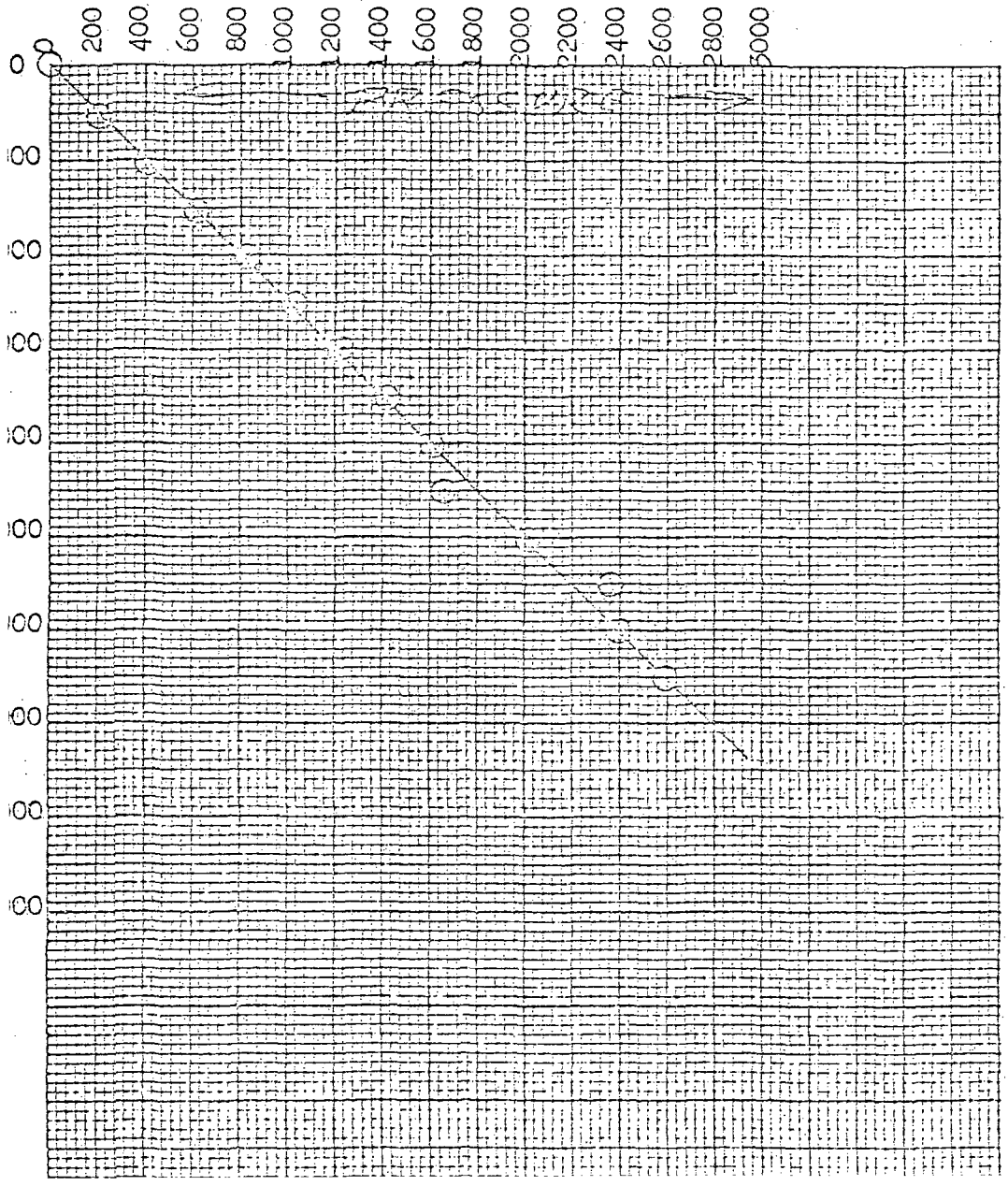
PURPOSE Temperature and pressure survey to locate fluid entry and movement. Well producing

REMARKS 20 GPM while running survey. Survey indicates entry 5830' flowing down hole more than to surface. Shook instruments vigorsly while going in hole below 5830'

PICKUP @ MAXIMUM TEMPERATURE °F @

Temperature instrument #39570 325° F to 550° F

Pressure element #42317 3000 psi calibrated @ 400° 3-6-78.



STABILIZATION PERIOD

GROSS OIL RATE B/D

NET OIL RATE B/D

FORMATION GAS MCF/D

GOR CFT/BBL

CIRCULATED GAS MCF'D

OIL DRY GRAVITY °API

BEAN SIZE

CASING PRESSURE

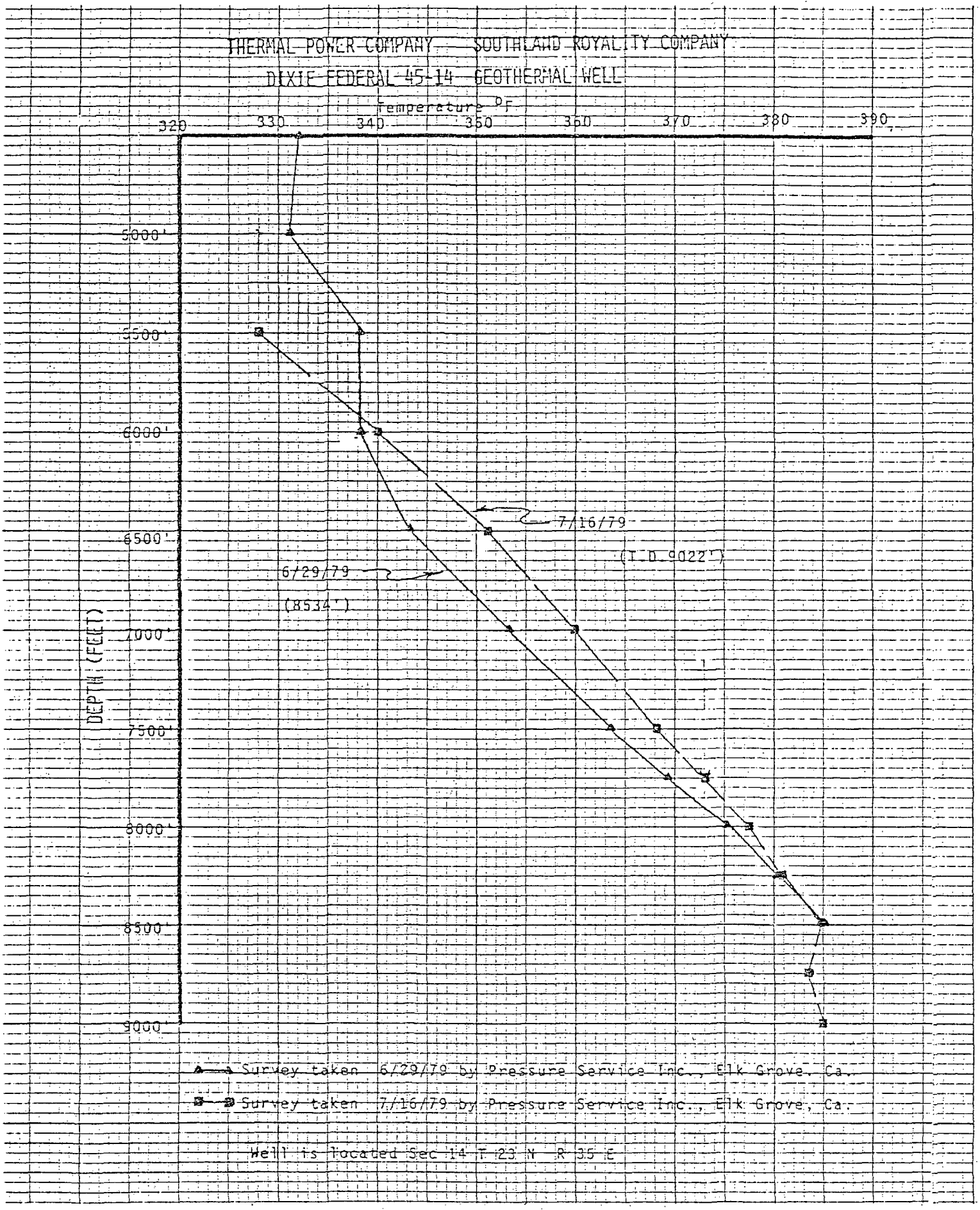
TUBING PRESSURE

DEPTH	PRESS	TEMP	GRAD. PRES
0	0		
500	204		.410
1000	412		.416
1500	617		.410
2000	824		.414
2500	1028		.408
3000	1225		.394
3500	1426		.402
4000	1618		.384
4500	1656	332.0° F.	.076
5000	2008	331.1	.704
5500	2361	338.1	.706
6000	2402	338.1	.082
6500	2592	343.3	.360
7000		353.2	
7500		363.5	
7750		369.3	
8000		375.3	
8250		380.4	
8500		385.2	

Below minimum Range of Inst.

Over Extended

TEMPERATURE SURVEY DATA


THERMAL POWER COMPANY — SOUTHLAND ROYALTY COMPANY
DIXIE FEDERAL 45-14 GEOTHERMAL WELL
Temperature °F
320
330
340
350
360
370
380
390
5000'
5500'
6000'
6500'
7000'
7500'
8000'
8500'
9000'
DEPTH (FEET)
7/16/79
(T.D. 9022')
6/29/79
(8534')
Survey taken 6/29/79 by Pressure Service Inc., Elk Grove, Ca.
Survey taken 7/16/79 by Pressure Service Inc., Elk Grove, Ca.
Well is located Sec 14 T 23 N R 35 E

Southland Royalty Company

INTER OFFICE CORRESPONDENCE

FROM: Jere Denton DATE: July 18, 1979

TO: File

SUBJECT: TPC Dixie Valley 45-14
Temperature Survey performed on July 15, 1979

Depth	New Bomb	Old Bomb
5,000'	328°	318.9°
5,500'		323.4°
6,000	340°	329.7°
6,500	351.2°	304.6°
7,000	359.9°	348.1°
7,500	368.1°	356.4°
7,750	373°	360.7°
8,000	377.5°	365.8°
8,250	380.9°	369.6°
8,500	384.6°	373.7°
8,750	383.5°	371.6°
9,000	385.9°	373.7°
9,022	385.5°	

PRESSURE SERVICE
P.O. BOX 624
ELK GROVE, CALIFORNIA, 95624
A Line of Service

RECEIVED
JUL 23 1979
TPC

SUB-SURFACE SURVEY

file

Dixie Federal

OWNER THERMAL POWER CO. FIELD Dixie Valley WELL NAME 45-14
CASING 9-5/8" 1123-5398 ELEV. 5410' DATE: 7-16-79
LINER DESCRIPTION ZERO POINT Ground + 22'
Depth
TUBING DETAIL @ ZONE Meta Sediment

PUMP SHOE GAS ANCHOR INTAKE
PURPOSE Take Bottom hole temperature and make stops as requested, try to identify fluid
REMARKS entry and temperature reversals. Possible fluid movement up hole from 8750'

ELEMENT 325° - 550° F SERIAL No. 39570 CLOCK 3 hr 15 TURN screw
ENGAGE STYLUS 10:11AM DISENGAGE STYLUS 12:45
OBS TBG. PRESS. OBS. CSG. PRESS 150 psi
COR. TBG. PRESS. COR. CSG. PRESS
PICKUP @ TIME ON BOTTOM 12:00 TIME OFF BOTTOM 12:10

Stops made @ 500' entervals above 5500' not within range of instrument.

DEPTH	TEMPERATURE
5500	328.9
6000	340.7
6500	351.3
7000	359.9
7500	368.1
7750	373.0
8000	377.5
8250	380.9
8500	384.6
8750	383.5
9000	384.9
9025	385.5

R. K. McAnally

PRESSURE SERVICE

P.O. BOX 624

ELK GROVE, CALIFORNIA, 95624

A Line of Service

SUB-SURFACE SURVEY

OWNER Thermal Power Co. FIELD Dixie Valley WELL NAME Dixie Federal 45-14

CASING 9-5/8" 1123-5593 ELEV. DATE 7-16-79

LINER DESCRIPTION ZERO POINT Ground + 22'

Depth 9,025

TUBING DETAIL @ ZONE Meta Sediment

PUMP SHOE GAS ANCHOR INTAKE

PURPOSE Take Bottom hole temperature and make stops as requested, try to identify fluid

REMARKS entry and temperature reversals. Possible fluid entry and movement up hole from 8750'

ELEMENT 200° to 534° F SERIAL No. KT 5556 CLOCK 5hr 15 TURN

ENGAGE STYLUS 2:30PM DISENGAGE STYLUS 4:45PM

OBS. TBG. PRESS. OBS. CSG. PRESS 150 psi

COR. TBG. PRESS. COR. CSG. PRESS

PICKUP @ TIME ON BOTTOM 4:00PM TIME OFF BOTTOM 4:10MP

(This instrument last calibrated June 1966 although instrument has not been used only 3 times in this period the instrument is not accurate and reads about 11° low, the temperatures below are given as read and does not include any corrections)

DEPTH	TEMPERATURE
4000	268.0
4500	294.7
5000	318.9
5500	323.4
6000	329.7
6500	340.6
7000	348.1
7500	356.4
7750	360.7
8000	365.8
8250	369.6
8500	373.7
8750	371.6
9000	373.7

R. K. McAnally

THERMAL POWER COMPANY - SOUTHLAND ROYALTY COMPANY

Dixie Federal 45-14
Temperature Survey of 7/16/79

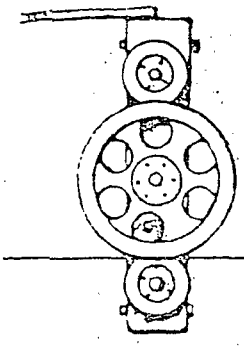
Taken by: Pressure Service, Inc., Elk Grove, CA

Total depth: 9022'

Depth	Temperature (^{o}F)
5500'	328.9
6000'	340.0
6500'	351.2
7000'	359.9
7500'	368.1
7750'	373.0
8000'	377.5
8250'	380.9
8500'	384.6
8750'	383.5
9000'	384.9
9022' (T.D.)	385.5

*Instrument utilized G.R.C. (325^{o}-550^{o}F)

LdL/pw



PRESSURE SERVICE

P.O. BOX 624

ELK GROVE, CALIFORNIA, 95624

A Line of Service

SUB-SURFACE SURVEY

Dixie Federal

OWNER Thermal Power Company FIELD Dixie Valley WELL NAME 45-14

CASING 9-5/8" 1123-5398 ELEV. DATE 8-8-79

LINER DESCRIPTION ZERO POINT Ground + 22'

Depth 9025'

TUBING DETAIL 2" Valve on top of tree. @ 2" Threaded line pipe ZONE box up.

PUMP SHOE GAS ANCHOR INTAKE

PURPOSE Temperature survey to check bottom hole temperature and for reversals.

REMARKS Found no reversals.

ELEMENT 325-550° F SERIAL No. 39570 CLOCK 3 hr. 15 TURN screw

ENGAGE STYLUS 9:20AM DISENGAGE STYLUS 12:05PM

OBS TBG PRESS. OBS. CSG. PRESS

COR. TBG. PRESS. COR. CSG. PRESS

PICKUP @ 9018' TIME ON BOTTOM 20 Min. TIME OFF BOTTOM

DEPTH	TEMPERATURE
5000	325.0
5200	328.6
5400	328.6
5600	332.0
5800	336.7
6000	341.1
6200	345.6
6400	350.0
6600	353.9
6800	357.9
7000	361.1
7200	364.0
7400	366.7
7600	370.0
7800	373.2
8000	376.3
8200	379.3
8400	381.6
8600	384.1
8800	384.9
9000	385.3
9018	386.9

R. K. McAnally

CHEMICAL ANALYSIS OF PRODUCED GEOTHERMAL FLUIDS

THERMAL POWER COMPANY - SOUTHLAND ROYALTY COMPANY

SR-2 WATER WELL
Chemical Analysis

Location: Sec. 14 T23N R35E

Performed by: Water Resources Center
Desert Research Institute
University of Nevada

ANALYSIS OF WATER WELL WATER USED TO MAKE UP DRILLING MUD ON WELL.

A) Chemical Analysis

	4/23/79 DV 15	5/15/79 DV 30
Ph	7.63 (lab)	6.89 (field)
Ca	156 Mgl	138
Mg	30	25
Na	400	400
K	30	18.6
Cl	535	575
So_4	454	426
HCO_3	200	211
SiO_2	98	105
F	4.39	4.4

B) Geothermometry

	1/3 Fudge Factor	4/3 Fudge Factor
Ca-Na-K Temperature	162°C	92°C
Silica (Quartz)	133°C	139.9°C
Silica (Mixing Model)	205°-216°C	

LdL/pw
7/12/79

THERMAL POWER COMPANY - SOUTHLAND ROYALTY COMPANY

Dixie Federal 45-14
Chemical Analysis

Location: Sec. 14 T23N R35E

Performed by: Water Resources Center
Desert Research Institute
University of Nevada

Date Collected: July 7, 1979

The following chemical analysis is incomplete and will be completed by the university as soon as possible.

ph	9.44	K+	65 mg/liter
HCO_3	6.1 mg/liter	Ca	22.5 "
CO_3	117 " "	Mg	0.01 "
Chloride	700 " "	Si	300 "
SO_4	352 " "	Ba	0.13 "
Fl	9.5 " "	Li	0.97 "
Na	610 " "		

LdL/pw
7/18/79

FILE: DIXIE FED. 1/5-14

LFE CORPORATION
Environmental Analysis Laboratories
2030 Wright Avenue
Richmond, California 94804
(415) 235-2633
(TWX) 910-382-8132

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AUG 21 1979
TPC

ANALYSIS REPORT

Customer: Thermal Power Company
601 California Street
San Francisco, California 94108

Date: August 20, 1979
Samples Received: July 13, 1979
LFE Reference No.: 05300-000-1013
Purchase Order No.:

Analysis	Units	DF-45-14 6/29 615-9-1	T 23N R35E 6/11 615-9-2
Calcium	mg/l	88	150
Magnesium	mg/l	1.1	24
Potassium	mg/l	39	18
Sodium	mg/l	460	400
Chloride	mg/l	600	520
Conductance, Spec.	µmhos/cm	3000	3000
Fluoride	mg/l	6.4	4.4
Nitrogen, Nitrate	mg N/l	< 0.10	< 0.10
pH		7.5	7.2
Phosphate - Total	mg P/l	0.15	< 0.05
Residue - Dissolved	mg/l	1600	1200
Silica - Reactive	mgSi/l	48	46
Sulfate	mg/l	250	410
Alkalinity	$mgCaCO_3$	150	170
Turbidity	NTU	410	9

George E. Austin
FOR Martha Waters, Supervisor
Environmental Laboratory

Analysis are performed according to EPA or State of California recommended methods when applicable.
LFE Environmental is a State of California Approved Laboratory for

Environmental Analysis Laboratories
2030 Wright Avenue
Richmond, California 94804
(415) 235-2633
CORPORATION (TWX) 910-382-8132

2nd REPORT

ANALYSIS REPORT

1st Report dated 8-20-79

Customer: Mr. Lou DeLeon
Thermal Power Company
601 California Street
San Francisco, CA 94108

Date: September 5, 1979
Samples Received: July 13, 1979
LFE Reference No. 05300-000-1013
Purchase Order No.:

Analysis	Units	Make-up Water 615-8-1
Gross Alpha	pCi/l	< 5
Gross Beta	pCi/l	39 ±3

Total alpha based on Pu^{239}

Total beta - Cs^{137}

RECEIVED
SEP 7 1979
TPC

George E. Dunstan
George E. Dunstan
Chemist

Analysis are performed according to EPA or State of California recommended methods when applicable.
LFE Environmental is a State of California Approved Laboratory for complete chemical, bacteriological,

WATER ANALYSIS LABORATORY -- WATER RESOURCES CENTER
DESERT RESEARCH INSTITUTE

LABORATORY REPORT
DATE: COLLECTION 9-13-79

FINAL DATA

DF 45-14

Point Type, Temp. °C		HW 94°	
Co., Twp., Rng.		Co. Twp. Rng.	
Sec., Qtrs., Seq. No.		5 Present	
Point Description		Southland Well #1	
Sample Designation Code		DV 90 (45-14)	
pH		7.13	
TDS( )			
Sp. Cond. Umhos/cm@25°C		2150	
		mg/l	epm
HCO_3^-		130.5	2.139
$CO_3^=$			
Cl^-		493	13.888
$SO_4^=$		215	4.476
F^-		7.6	0.400
NO_3^-			
H_2PO4^-			
$HPO4^-$			
$HPO4^=$			
P			
Total Anions			20.882
Na^+		410	
K^+		40	1.023
Ca^{++}		24.1	1.230
Mg^{++}		0.015	0.001
	Li	1.01	0.144
	Sr	1.06	0.024

WATER ANALYSIS LABORATORY -- WATER RESOURCES CENTER
DESERT RESEARCH INSTITUTE

LABORATORY REPORT
DATE: COLLECTION 9-13-79

	FINAL DATA mg/l	epm
Total Cations		20.257
Anions / Cations		1.030
SiO_2	325	

WATER ANALYSIS LABORATORY

DATA REPORT FORM

ROJECT: Dixie Valley DATE SAMPLE SUBMITTED: 9-13-79 DATE FINAL DATA: 9-25-79

ab o.	Sample Number	Date	Description	Analysis Cs mg/l	Al mg/l	Fe mg/l	Mn mg/l	Li mg/l	Hg mg/l	As mg/l	Sr mg/l	B mg/l	F
			DF 45-14										
/90		9-13-79	Southland Well #1	0.325	0.1	1.61	0.05	1.01		0.59	1.06	8.5	7.6

DIRECTIONAL SURVEY PLOTS
MULTI & SINGLE SHOT SURVEYS

THERMAL POWER COMPANY DECL: 17 E F:148-6 ANGLE AVERAGE
WELL: DIXIE FEDERAL 45X14 JOB NO: P-0579-S0635 PITT-WALKER
DIXIE VALLEY FIELD, NEVADA MULTI-SHOT 0-3594 & 6325-9022
ELEVATION: 3437', K. B.
WELL ASSUMED VERTICAL TO 1330
STATIONS 2626' THRU 3594', DROP MULTI-SHOT SURVEY, 17 MAY 79
STATIONS 3630' THRU 6171', SINGLE SHOT SURVEY
STATIONS 6325' THRU 9000', OPEN HOLE MULTI-SHOT, 16 JUL 79
STATION AT 9022' WAS PROJECTED.

VERTICAL SECTION CALCULATED IN PLANE OF BOTTOM HOLE CLOSURE

RECORD OF SURVEY

ANGLE AVERAGING METHOD

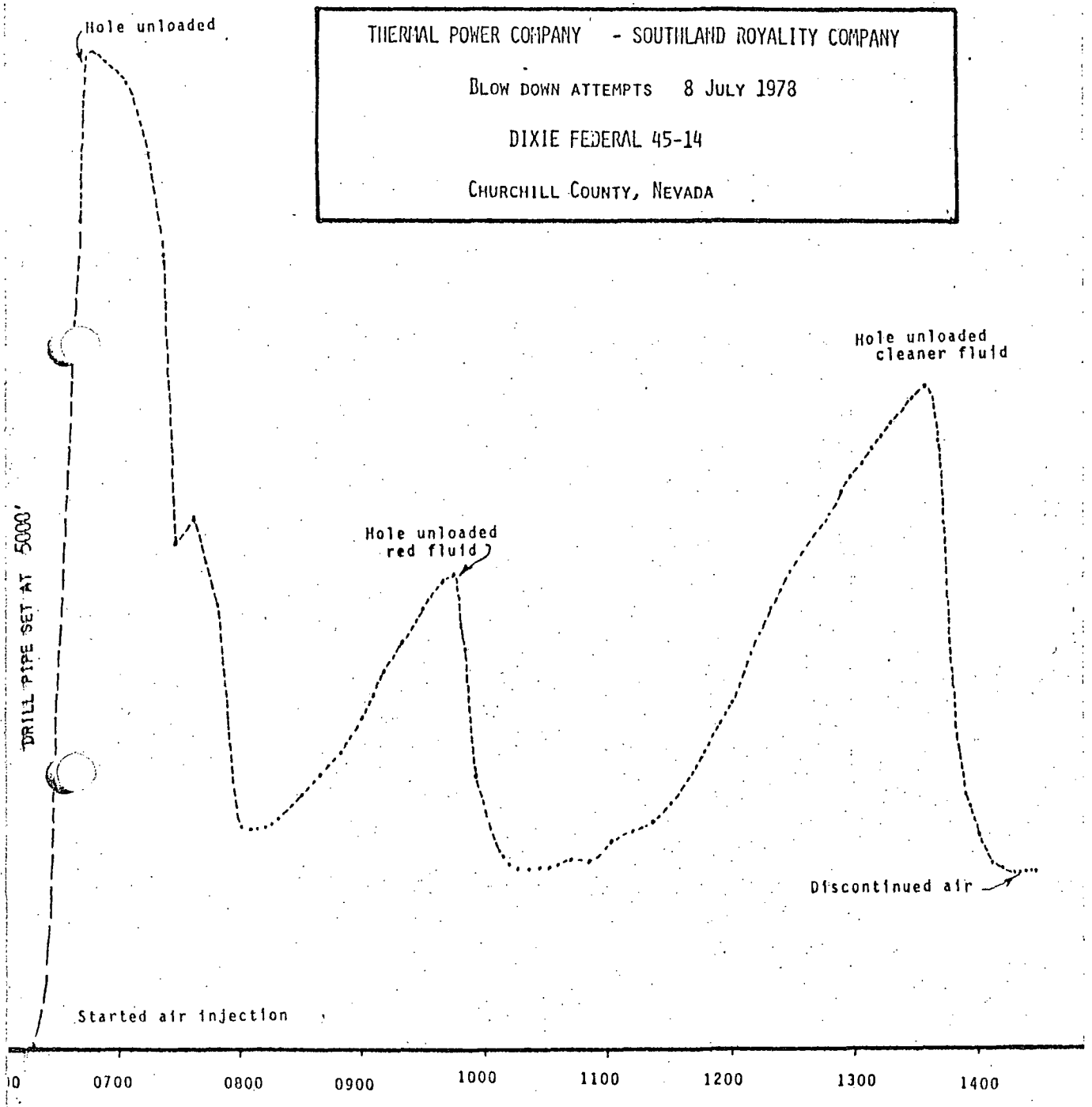
GRAFTS OF WELL TESTING
BLOW-DOWN ATTEMPTS

THERMAL POWER COMPANY - SOUTHLAND ROYALITY COMPANY

BLOW DOWN ATTEMPTS 8 JULY 1978

DIXIE FEDERAL 45-14

CHURCHILL COUNTY, NEVADA



AGNEW AND SWEET WIRELINE SERVICE

SUBSURFACE SURVEY

AGNEW AND SWEET
24 HOUR PHONE 805-327-2267
4205 ATLAS COURT
BAKERSFIELD, CALIFORNIA
93308

OWNER SOUTHLAND ROYALTIES COMPANY FIELD DIXIE VALLEY WELL NAME DIXIE FEDERAL 45-1

CASING 9-5/8" @ 4500' - 4700' ELEV. DATE September 27, 1979

LINER DESCRIPTION: ZERO POINT Mat + 20'

PERFORATIONS: MPP

TUBING DETAIL: open hole beyond 4700' DEPTH 9022' ZONE

PUMP SHOE

WELL STATUS Static SHUT IN ON PRODUCTION

SURVEYED TUB. ☐ ANN. ☐ open casing(X) ENGAGE STYLUS 11:53 am DISENGAGE STYLUS 2:39 pm

PICK UP @ 9022' TIME ON BOTTOM 2:04 pm TIME OFF BOTTOM 2:09 pm

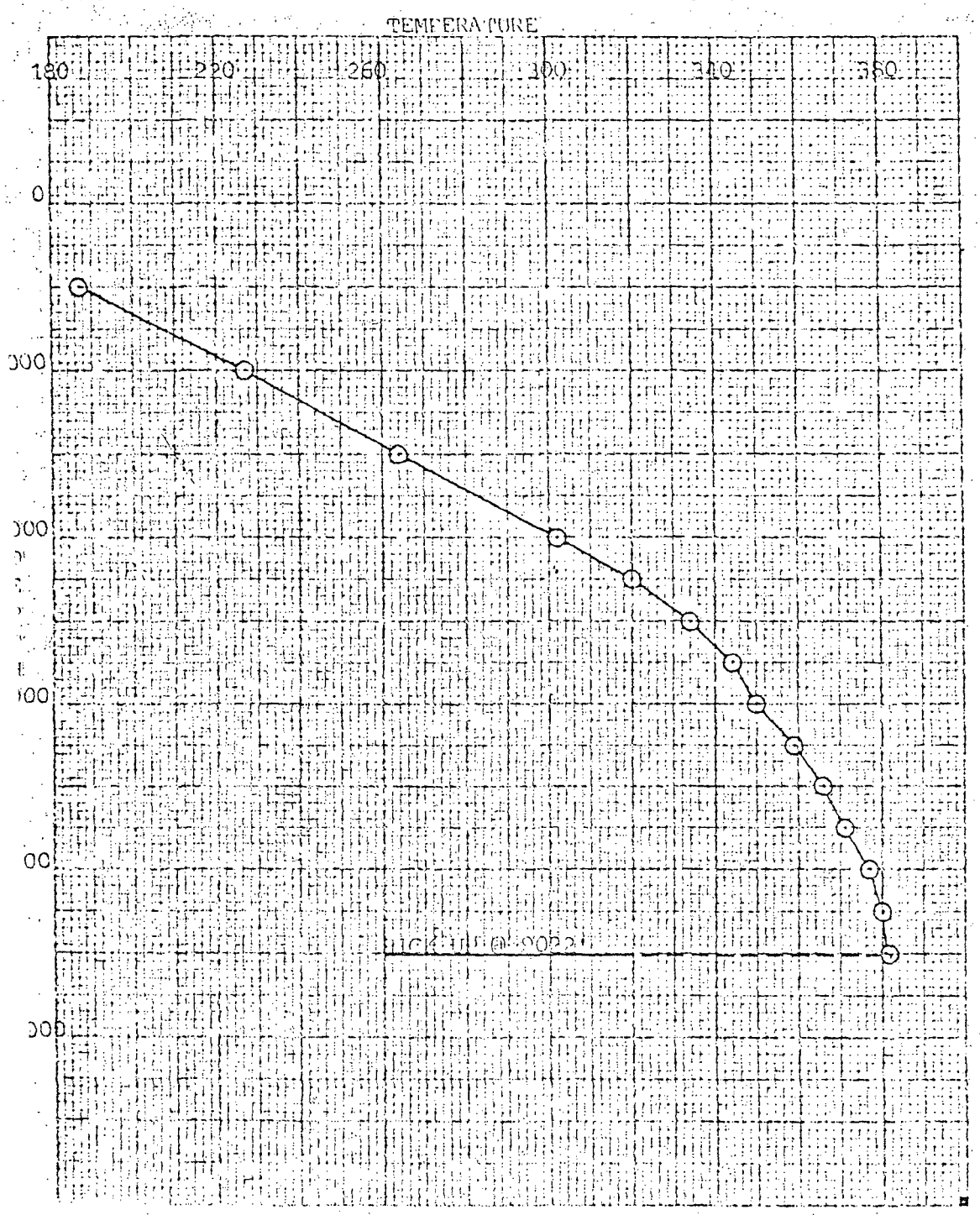
ELEMENT RANGE 99-517 SERIAL NO. 10286 CLOCK 3 hr. TURN 15

PURPOSE STATIC TEMPERATURE GRADIENT SURVEY MAX. °F 382.2 @ 9022'

REMARKS: STABILIZATION PERIOD

PRESSURES:	START	FINISH
DATE	9/27	
CASING PSI OBS	150	
CASING PSI COR	160	
TUBING PSI OBS		
TUBING PSI COR		
PRESS. STATUS	Static	

INSTRUMENT HUNG @



DEPTH	TEMP.
0	-
1000	187.1
2000	227.5
3000	264.0
4000	302.8
4500	320.5
5000	334.6
5500	344.3
6000	350.4
6500	359.2
7000	366.2
7500	371.5
8000	377.2
8500	380.8
9000	381.0
9022	382.2

BY: SUNDBERG & CRAWFORD

AGNEW AND SWEET WIRELINE SERVICE

SUBSURFACE SURVEY

AGNEW AND SWEET
24 HOUR PHONE 805-327-2267
4205 ATLAS COURT
BAKERSFIELD, CALIFORNIA
93308

OWNER SOUTHLAND ROYALTIES CO. FIELD DIXIE VALLEY WELL NAME DIXIE FEDERAL 45-14

CASING 9-5/8" @ 4500' - 4700' ELEV. DATE September 27, 1979

LINER DESCRIPTION ZERO POINT Mat +20'

PERFORATIONS: MPP

TUBING DETAIL Open hole beyond 4700' DEPTH 9022' ZONE

PUMP SHOE

WELL STATUS Static SHUT IN ON PRODUCTION

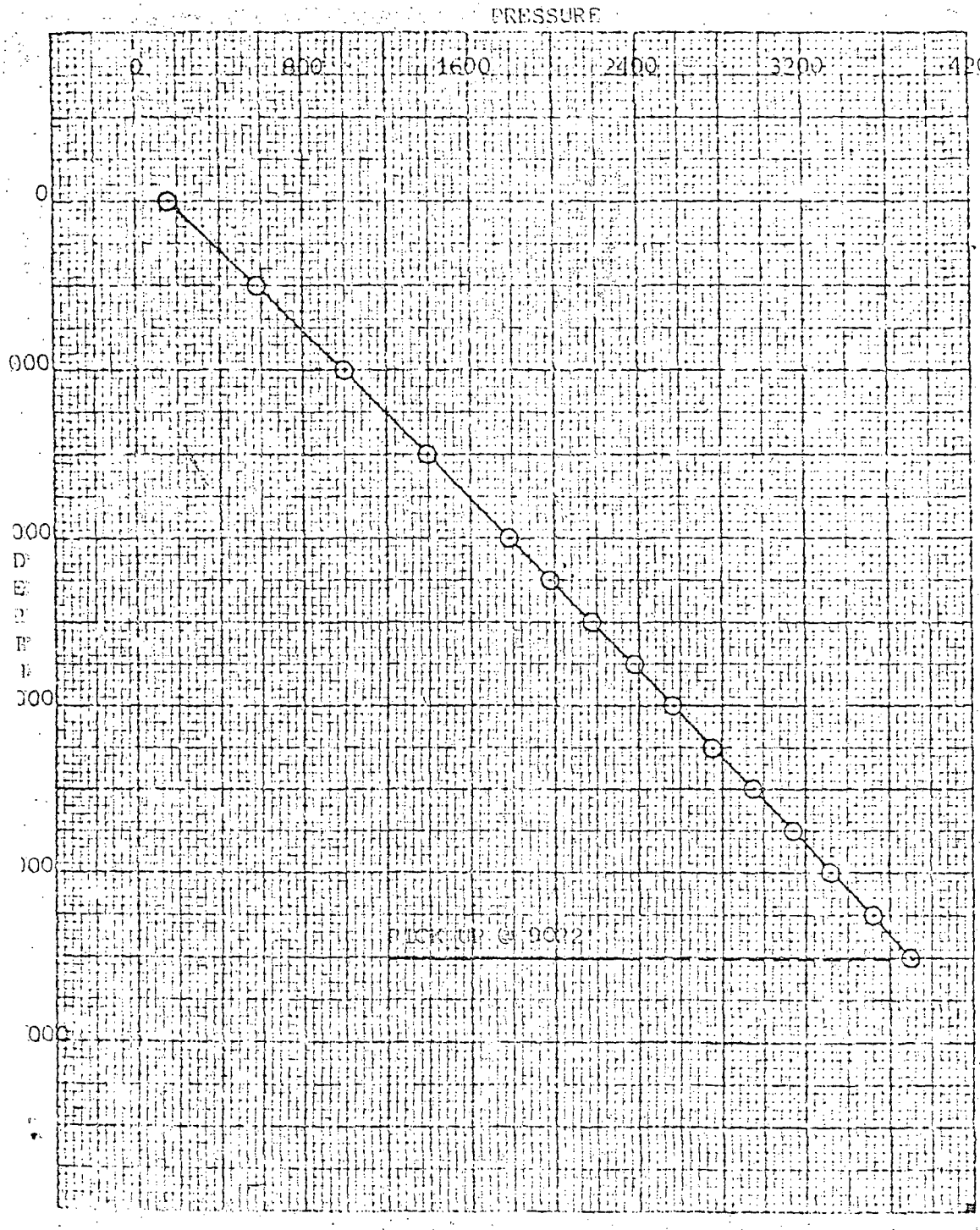
SURVEYED TUB. ☐ ANN. ☐ open casing(X) ENGAGE STYLUS 11:53 am DISENGAGE STYLUS 2:39 am

PICK UP @ 9022' TIME ON BOTTOM 2:04 pm TIME OFF BOTTOM 2:09 pm

ELEMENT RANGE 6050# SERIAL NO 12885 CLOCK 3 hr. TURN 15

PURPOSE STATIC PRESSURE GRADIENT SURVEY MAX. °F 382.2 @ 9022'

REMARKS STABILIZATION PERIOD



PRESSURES:	START	FINISH
DATE	9/27	
CASING PSI OBS	150	
CASING PSI COR	160	
TUBING PSI OBS		
TUBING PSI COR		
PRESS. STATUS	Static	

INSTRUMENT HUNG @

DEPTH	PRESS.	GRAD.
0	160	
1000	577	.417
2000	994	.417
3000	1391	.397
4000	1785	.394
4500	1975	.380
5000	2174	.398
5500	2376	.404
6000	2569	.386
6500	2758	.378
7000	2954	.392
7500	3138	.368
8000	3324	.372
8500	3520	.392
9000	3697	.354
9022	3705	.363

BY: SUNDBERG & CRAWFORD

THERMAL POWER COMPANY

DIXIE FEDERAL 45-14

Daily Drilling History
Dixie Valley, Churchill County, Nevada

DATE	DEPTH	
		Installed 70.62 cm (30") conductor pipe at 5.79m (19') prior to drill rig moving in.
4/25/79	37.80m(124')	Moved in and rigged up Peter Bawden Rig #23. Spudded well at 1600 hours. Picked up kelley, 44.45 cm (17½") bit and bottom hole assembly, drilled to 37.80m (124') w/bit #1 and 2 reamers. Picked up 67.31cm (26½") hole opener. R.I.H. and opened 44.45cm (17½") hole to 67.31cm (26½") from 12.19m (40') to 37.80m (124').
4/26/79	44.51m(146')	P.O.H. Ran 3 joints of 50.80 cm (20") 139.87 kg/m (94#/ft) H-40 buttress casing, total length 37.80m(124'). Landed shoe at 36.58m (120'KB). Halliburton cement service pumped 320 sacks Class "B" cement as slurry with 2% $CaCl_2$. Good returns to surface. CIP @ 0830 W.O.C. 12¼ hours. Cut off 50.80cm (20") casing and welded on 50.80 cm (20") bradenhead. Nippled up 50.80 cm (20") Hydril. Tested Hydril with 49.2Kg/cm^2 (700 psig) for 15 minutes. Held O.K. Drilled cement from 36.58m (120') to 37.80m (124'). Drilled 6.7m (22') of 44.45 cm (17½") hole to 44.51m (146') with mud in hole.
4/27/79	217.93m (715')	Drilled 173.43m (569') of 44.45 cm (17½") hole to 217.93m (715') with water in hole.
4/28/79	225.86m (741')	Drilled 7.92m (26') of 44.45 cm (17½") hole to 225.86m (741') with water in hole. P.O.H. Repaired rotary drive train for 20 hours.
4/29/79	298.70m (980')	Continued to repair drive train for 13 hours. R.I.H. with Bit #2 and B.H.A. Drilled 42.37m (139') of 44.45 cm (17½") hole to 298.70m (980') with water in hole.
4/30/79	402.95m (1322')	Drilled 62.79m (206') of 44.45 cm (17½") hole to 361.49m (1186') with mud in hole. P.O.H. R.I.H. with Bit #3 and B.H.A. and drilled 41.45m (136') of 44.45 cm (17½") hole to 402.95m (1322') with water in hole.
5/1/79	405.38m (1330')	Drilled 2.43m (8') of 44.45 cm (17½") hole to 405.38m (1330') with mud in hole. P.O.H. Rigged up and ran Schlumberger logging service. (Dual Induction Log) Rigged up to run casing. Ran 34 joints 33.97 cm (13 3/8"), 90.89 Kg/m (54.5 lb/ft) H-40 buttress casing. Total length 406m (1332'). Casing set 405.38m (1330') K.B. Rigged up Halliburton and circulated through casing prior to cementing. Pumped in 2.12m^3 (75 ft^3) of water followed by 940 sacks of Class "G" cement mixed with 1:1 perlite, 40% SiO_2, 3% gel and 5% CFR_2 of slurry density of 1858.3Kg/m3 (116 lb/ft^3) followed with 150 sacks of Class "G" cement with 40% SiO_2 and 5% CFR_2. Had returns throughout but no cement to surface. C.I.P. 1430 hrs. W.O.C. 9½ hours while running 2.54 cm (1") tubing to locate top of cement.

5/2/79	405.38m (1330')	Ran 2.54 cm (1") tubing in 33.97 cm (13 3/8") casing to 50.80 cm (20") annulus to 163.4m (536'). Pumped 400 sacks class "G" cement mixed with 1:1 perlite plus 40% SiO_2 and 5% CFR_2. Slurry density 1569.9Kg/m^3 (98 lb/ft^3). Followed with 150 sacks class "G" neat cement. Slurry density 1890.4Kg/cm^3 (118 lb/ft^3). 4 bbls clean cement to surface. C.I.P. 2200 hours. Pulled out 2.54 cm (1") tubing...17 joints.
5/3/79	405.38m (1330')	W.O.C. Nippled up B.O.P. Tested blind rams with 70.3Kg/m^2 (1000 psi) for 30 min. Held OK. Tested Hydrill with 49.21 Kg/cm^2 (700 psi) for 30 min. Held O.K. Picked up 33.97cm (12¼") bit and B.H.A. and found plug at 381.91m (1253'). Drilled plug and baffle seat from 381.91m (1253') to 385.88m (1266')
5/4/79	542.24m(1779')	Drilled out cement from 385.88m (1266') to shoe of 33.97cm (13 3/8") casing at 405.38m (1330'). Drilled with bit #4 for 48.46m (159') from 405.38m (1330') to 453.85m (1489') with water in hole. P.O.H. Changed bits & B.H.A. R.I.H. and drilled 118.87m (290') from 453.85m (1489') to 542.24m (1779') with water in hole.
5/5/79	632.77m (2076')	Drilled 90.53m (297') of 31.12 cm (12½") hole to 632.77m (2076') with water.
5/6/79	632.77m(2076')	Changed out electric motor on draw works.
5/7/79	676.05m (2218')	Completed installation of replacement electric motor on drawworks. Drilled 13.72m (45') of 31.12 (12¼") hole from 632.77m (2076') to 646.48m (2121') with mud in hole. P.O.H. R.I.H. with bit #6 and drilled 28.35m (93') of 31.13 cm (12¼") hole from 646.48m (2121') to 676.05m (2218') with mud.
5/8/79	769.62m(2525')	Drilled 93.58m (307') of 31.12 cm (12¼") hole to 769.62m (2525') with mud.
5/9/79	890.63m (2922')	Drilled 121.01m(397') of 31.12 cm (12¼") hole to 890.63m (2922') with mud.
5/10/79	936.96m (3074')	Drilled 34.14m (112') of 33.12cm (12¼") hole to 924.76m (3034') P.O.H. Changed out B.H.A. and bit. R.I.H. with bit #7 and drilled 12.2m (40') of 33.12 cm (12¼") hole to 936.96m (3074') with mud.
5/11/79	1017.11m(3337')	P.O.H. changed out B.H.A. and add new bit. R.I.H. with new bit and drilled 80.16m (263') of 33.12 cm (12¼") hole to 1017.11m (3337') with mud.
5/12/79	1161.90m(3812')	Drilled 51.21m (168') of 33.12 cm (12¼") hole to 1154.58m (3788') with mud in hole. P.O.H. changed bits R.I.H. and drilled 7.32m (24') of 33.12 cm (12¼") hole to 1161.90m (3812') with mud.

5/14/79	1212.19m (3977')	Drilled 50.30m (165') of 33.12 cm (12¼") hole to 1212.19m (3977') with mud.
5/15/79	1236.6m (4057')	Drilled 24.38m (80') of 33.12 cm (12¼") hole to 1236.60m (4057') with mud. Reamed from 1067.7m (3503') to 1236.58m (4057')
5/16/79	1279.25m (4197')	Drilled 42.68m (140') of 33.12 cm (12¼") hole to 1279.25m (4197') with mud.
5/17/79	1298.76m (4261')	P.O.H. R.I.H. with Bit #12, reamed from 1251.82m (4107') to 1279.25m (4197'). Drilled m (64') of 33.12 cm (12¼") hole to 1298.76m (4261') with mud.
5/18/79	1339.30m (4394')	Drilled 40.54m (133') of 33.12 cm (12¼") hole to 1339.30m (4394') with mud.
5/19/79	1381.96m (4534')	Drilled 42.68m (140') of 33.12 cm (12¼") hole to 1381.96m (4534') with mud.
5/20/79	1407.57m (4618')	P.O.H. Changed bits R.I.H. with bit #13. Reamed from 1374.95m (4511') to 1381.96m (4534'). Drilled 25.6m (84') of 33.12cm (12¼") hole to 1407.57m (4618') with mud.
5/21/79	1407.57m (4618")	P.O.H. layed down Monel D.C. R.I.H. with O.E.D.P. to 373.99m (1227'). Ran McInally Temperature survey to 1392.3m (4568'). R.I.H. to 1165.56m (3824'). Circulated mud to cool hole. Halliburton mixed and pumped thru 12.7cm (5") O.E.D.P @ 1165.56m (3824'), 8.5m^3 (300 ft^3) Class "G" cement, premixed with 45% silica flour, 0.75% CFR$_2$ and displaced with 9.77m (345 ft^3) mud, cement in place at 1435 hours. P.O.H. and W.O.C. for 6 hours.
5/22/79	1099.72m (3608')	R.I.H. with bit #14 and B.H.A. Tagged cement at 1093.62m (3588') and polished plug 4.88m (16') to 1094.5m (3604'). Circulated and W.O.C. for 9 hours. P.O.H. made up B.H.A. and bit #15. R.I.H. Drilled 1.23m (4') of 33.12cm (12¼") hole with Dynadrill to 1407.6m (4618') with mud in hole.
5/23/79	1130.81m (3710')	Dynadrilled 31.09m (102') of 33.12 cm (12¼") hole to 1130.81m (3710') with mud in hole. P.O.H.
5/24/79	1164.64m (3821')	P.O.H. Changed to bit #16 R.I.H. Dynadrilled 33.83m (111') of 33.12 cm (12¼") hole to 1164.64m (3821') with mud in hole. P.O.H.
5/25/79	1187.20m (3895')	P.O.H. Changed to bit #17 R.I.H. Dynadrilled 22.56m (74') of 33.12 cm (12¼") hole to 1187.20m (3895') with mud in hole.
5/26/79	1187.20m (3895')	P.O.H. Looked for D.P. washout. Layed down 6 19.05cm (7½") D.C. Left 1.21m (4') of Dynadrill drive shaft and bit on bottom. Ran temperature survey. R.I.H. with overshot socket to top of fish.

5/27/79	1187.81m (3897')	P.O.H. Recovered 16.81cm (6 5/8") diameter bearing race with Midway socket. Two additional runs made. Recovered shaft and bit at 2330 hr.
5/28/79	1187.81m (3897')	R.I.H. with Monel D.C. and Dynadrill. Reamed from 1160.68m (3808') to 1180m (3871'), Dynadrilled 0.61m (2') of 33.12cm (12¼") hole to 1187.81m (3897') with mud in hole. P.O.H. R.I.H. with magnet. P.O.H. Recovered metal. R.I.H. with dynadrill bit #19.
5/29/79	1241.15m (4072')	Dynadrilled 53.34m (175') of 33.12cm (12¼") hole to 1241.15m (4072') with mud in hole. P.O.H. Changed to bit #20. R.I.H.
5/30/79	1267.36m (4158')	Dynadrilled 26.22m (86') of 33.12cm (12¼") hole to 1267.36m (4158') with mud.
5/31/79	1293.57m (4244)	Dynadrilled 25.91m (85') of 33.12cm (12¼") hole to 1293.57m (4244') with mud in hole. P.O.H. Changed to bit #21.
6/1/79	1293.57m (4244')	R.I.H. Reamed from 1120.14m (3675') to 1273.76m (4179')
6/2/79	1315.22m (4315')	Continued reaming to 1293.57m (4244'). Dynadrilled 21.64m (71') of 33.12cm (12¼") hole to 1315.2m (4315') with mud.
6/3/79	1350.26m (4430')	Dynadrilled 35.05m (115') of 31.12cm (12¼") hole to 1350.26m (4430') with mud in hole. P.O.H. Breakdown B.H.A. Change to bit #23.
6/4/79	1436.52m (4713')	R.I.H. reamed from 1173.78m (3851') to 1189.94m (3904'). Dynadrilled 86.26m (283') of 31.12cm (12¼") hole to 1436.52m (4713') with mud.
6/5/79	1519.43m (4985')	Dynadrilled 82.91m (272') of 31.12cm (12¼") hole to 1519.43m (4895') with mud.
6/6/79	1546.86m (5075')	Dynadrilled 19.51m (64') of 31.12cm (12¼") hole to 1538.94m (5049') with mud in hole. P.O.H. R.I.H. with bit 22RR. Dynadrilled 7.92m (26') of 31.12cm (12¼") hole to 1546.86m (5075') with mud.
6/7/79	1595.32m (5234')	Dynadrilled 48.46m (159') of 31.12cm (12¼") hole to 1595.32m (5234') with mud.
6/8/79	1647.44m (5405')	Dynadrilled 52.12m (171') of 31.12cm (12¼") hole to 1647.44m (5405') with mud in hole. P.O.H. Preparing to run Schlumberger.
6/9/79	1647.44m (5405')	Ran Schlumberger logs. R.I.H. Circulated and conditioned mud to run casing.

6/10/79	1647.44m (5405')	Ran 33 joints of 24.45 cm (9 5/8"), 59.60 Kg/m (40 lb/ft), N-80 buttress casing followed by 70 joints, 59.60 Kg/m (40 lb/ft), K-55 buttress casing. Shoe at 1645.31m (5398') KB; float collar 1619.10m (5312') KB; D.V. collar 769.62m (2525') KB; top of liner 342.29m (1123') KB. Ran 14 centralizers and 2 cement baskets approximately every 10 joints with 3 on bottom joint and 3 on top joint. C.B.'s on joint #21 and 78. Circulated in casing for one hour before running cement. Ran 2.83m^3 (100 ft^3) flush of silica flour and gel ahead of 611 sacks of Class "G" cement mixed 1:1 with Perlite and 40% silica flour, 3% gel, 0.5% CFR$_2$. Cement slurry weight 14.1 ppg. Displaced with 49.84m^3 (1760 ft^3) of 9.1 ppg mud. Lost returns before job completed. CIP. @ 1400 hours. Waited 2 hours and pressured to 3000 psi. Ports failed to open. Waited for RTTS packer.
6/11/79	1647.44m (5405')	P.O.H. Laid down 31.11cm(12¼") D.A. and picked up 16cm (6¼") drill collars and 9cm (8") D.C. Tagged DV collar at 769.01m (2523'). Opened D.V. ports with 27,216Kg (60,000 lb) weight. Set packer at 765.05m 2510' and broke circulation and circulated for ½ hour. P.O.H. R.I.H. with E.Z.S.V. plug, set same at 767.18m (2517'). Circulated to cool hole for one hour. Pumped 2.83m^3 (100 ft^3) water ahead of 2.83m^3 (100 ft^3) silica flour -gel flush. Mixed 361 sacks class "G" cement mixed 1:1 perlite 40% silica flour 3% gel 0.5% CFR$_2$; 60% excess over hole volume or 21.66m^3 (765 ft^3) total volume. Cement slurry weight 13.7 ppg. Displaced with 6.85m^3 (242 ft^3) 9.1 ppg mud. CIP 1145. Good returns throughout job. Got 1.69m^3 (60 ft^3) excess cement to surface.
6/12/79	1647.44m (5405')	W.O.C. 11 hours. Closed blind rams, tested liner lap and rams 35.15Kg/cm^2(500 psi), 15 minutes. Held o.k. R.I.H. with bit #24 to 769.62m (2525'). Tested blind rams with 35.15Kg/cm^2(500 psi). Held o.k. Drilled E.Z.S.V. plug and DV collar. R.I.H. to 1463.04m (4800'). Pressured to 35.15Kg/cm^2(500 psi) with pipe rams closed. Held o.k. Drilled cement from float collar and guideshoe C.O. to 1647.44m (5405').
6/13/79	1730.65m (5678')	Drilled 4.87m (16') of 21.59cm (8½") hole to 1652.32m (5421') with water. P.O.H. Changed to bit #25 and B.H.A. Drilled 78.33m (257') of 21.59cm (8½") hole to 1730.65m (5678') with water.
6/14/79	1856.85m (6092')	Drilled 126.19m (414') of 21.59cm (8½") hole to 1856.84m (6092') with water.
6/15/79	1912.62m (6275')	Drilled 24.08m (79') of 21.59cm (8½") hole to 1880.92m (6171') with water. P.O.H. Change to bit #26. Drilled 31.69m (104') of 21.59cm (8½") hole to 1912.62m (6275') with water.

6/16/79	2005.58m (6580')	Drilled 92.97m (305') of 21.59cm (8½") hole to 2005.58m (6580') with water.
6/17/79	2088.79m(6853')	Drilled 82.30m (270') of 21.59cm (8½") hole to 2088.79m (6853') with water.
6/18/79	2138.17m (7015')	Drilled 25.29m (83') of 21.59cm (8½") hole to 2113.79m (6935') with water. P.O.H. Changed to bit #27 and N.B. reamer. R.I.H. reamed from 2025.7m (6646') to 2113.79m (6935'). Drilled 24.08m (79') of 21.59cm (8½") hole to 2138.17m (7015') with water.
6/19/79	2220.47m (7285')	Drilled 82.30m (270') of 21.59cm (8½") hole to 2220.47m (7285') with water.
6/20/79	2312.52m (7587')	Drilled 12.19m (40') of 21.59cm (8½") hole to 2232.66m (7325') with water. P.O.H. changed bits (#28) and B.H.A. R.I.H. Drilled 79.86m (262') of 21.59cm (8½") hole to 2312.52m (7587').
6/21/79	2435.35m (7990')	Drilled 122.83m (403') of 21.59cm (8½") hole to 2435.35m (7990') with water.
6/22/79	2467.97m (8097')	Drilled 11.28m (37') of 21.59cm (8½") hole to 2446.63m 8027') with water. P.O.H. Repaired broken rotary chain. R.I.H. with new bit (#29). Drilled 21.34m (70') of 21.59cm (8½") hole to 2467.97m (8097').
6/23/79	2467.97m (8097')	Twisted off at 2467.97m (8097'). P.O.H. Left entire drilling assembly in hole. Top of fish at 2326.54m (7633'). Dressed overshot and grapple. Picked up same, bumper sub and jars. Ran in hole to 2325.63m (7630'). Latched on fish; worked it free. P.O. slowly, recovered all of drilling assembly. Magna glowed all D.C.'s; laid down 2 w/cracked pins or boxes.
6/24/79	2512.47m (8243')	Drilled 44.51m (146') of 21.59cm (8½") hole to 2512.47m (8243') with water.
6/25/79	2559.41m (8397')	Drilled 28.65m (94') of 21.59cm (8½") hole to 2541.12m (8337') with water. P.O.H. R.I.H. with new bit #30. Drilled 15.24m (50') of 21.59cm (8½") hole to 2559.41m (8397') with water.
6/26/79	2601.16m (8534')	Drilled 44.81m (147') of 21.59cm (8½") hole to 2601.16m (8534') with water. P.O.H. Stood back B.H.A. Rigged up loggers. Running logs.
6/27/79	2601.16m (8534')	Running Schlumberger logs.
6/28/79	2601.16m (8534')	Completed Schlumberger logging. R.I.H. with O.E.D.P. to 1748/96m (5398'). Installed rotating head and 17.78cm (7") flow line to sump. Blowing well with air compressor. Repeated surges of hot water with pressure as high as 14.13Kg/cm(201 psig)
6/29/79	2601.16m (8534')	Continue to blow well. P.O.H. with O.E.D.P. Ran McInally Temperature Survey. Layed down 30 joints of bent drill pipe and slipped drilling line. R.I.H. with bit #31.

6/30/79	2624.33m (8610')	Could not circulate thru bit #31. Pulled out with plugged bit. Laid down monel collar, plugged with scale from D.P. Cleaned collar. Laid down two D.C. with cracked pin and box. Picked up 6 replacement D.C.s. R.I.H. circulating each 20 stands. Reamed from 2609.1m (8560') to 2615.18m (8580'). Drilled 26.23m (86') of 12.59cm (8½") hole to 2624.33m (8610') with water.
7/1/79	2716.38m (8912')	Drilled 92.05m (302') of 21.59cm (8½") hole to 2716.38m (8912') with water.
7/2/79	2716.38m (8912')	P.O.H. Installed rotating head. Hooked up 17.78cm (7") blow down line. R.I.H. with O.E.D.P. to 2286.0m (7500'). Blew well for 4 hours with 70.3Kg/cm^2 (1000 psig) air injection. R.I.H. with O.E.D.P. to 2716.38m (8912'). Circulating. P.O.H. Rigged up Schlumberger.
7/3/79	2716.38m (8912')	Logging with Schlumberger. Completed logging after 18 hours. Laid down reamer and stabilizer. Picked up 21.59cm (8½") bit. R.I.H. slick, circulated 10 minutes at each 20 stands.
7/4/79	2749.91m (9022')	Drilled 33.53m (110') of 21.59cm (8½") hole to 2749.91m (9022') with water. Circulated at 2749.91m (9022'). Set rotating rubber in place. P.O.H. left 3 cones in hole. R.I. with E.Z.S.V. Set at 1932.43m (6340'). Sheared off with 40,000 pound pull.
7/5/79	2749.91m (9022')	P.O. laid down, R.I.H. with O.E.D.P. tagged at 1932.43m (6340'). Circulated 1 hour to cool well. Pumped 5.66m^3 (200 ft^3) water then 62 sacks class "G" cement mixed with 40% SiO_2, 0.75% CFR2 and 0.2% HR7. Filled hole with 2.83m^2 (100 ft^3) slurry 76.3m (250') linear fill. Slurry weight = 15.5 lb/gal. Displaced with 16.99m^3 (600 ft^3) water. C.I.P. 0615. P.O.H. W.O.C. for 8 hours. Laid down 16.51cm (6¼") D.C. R.I.H. tagged top cement at 1866.6m (6124'). Drilled cement to 1923.29m (6310'). Circulated at 1923.29m (6310'). Put 6804Kg (15,000 lb) on plug - held firm. P.O.H.
7/6/79	2749.91m (9022')	P.O.H. Made up liner hanger. Ran 28 joints 17.78cm (7") 10.4Kg (23 lb.) N-80 LT&C with guide shoe and float collar. Total length 340.36m (1116.68'). Five centralizers used; 1 each on 1, 2, 3, 26 and 27th collar. Hung 17.78cm (7") liner at 1917.2m (6290') top at 1576.70m (5173'). Circulated 1 hour. Pumped 11.33m^3 (400 ft^3) of water ahead of 205 sacks class "G" cement with 40% SiO_2, 0.75% CFR2, 0.2% HR7. 9.4m^3 (332 ft^3) total slurry volume. Displaced with 21.01m^3 (742 ft^3) water at 70.3-140.6Kg/cm^2 (1000-2000 psig). C.I.P. at 1400 hours. W.O.C. for 10 hours. P.O. laid down hanger. Ran 21.59cm (8½") bit to 1576.73m (5173'); circulated out 15.24m^3 (50 ft^3) cement. P.O. laying down 12.17cm (5") D.P.

7/7/79	2749.91m (9022')	W.O.C. Laid down 12.7cm (5") drill pipe, picked up 11.43cm (4½") D.C. and 125 joints of 8.89cm (3½") drill pipe. R.I.H. to 1863.3m (6113'); tested 17.78cm (7") liner lap with 35.15 (500 psi) pressure at wellhead. Held o.k. for 15 minutes. Drilled cement below 1876.96m (6158'). Guide shoe at 1917.2m (6290') and E.Z.S.V. plug at 1932.43m (6340'). Pushed E.Z.S.V. to bottom at 2749.91m (9022').
7/8/79	2749.91m (9022')	P.O.H. to 1538.63m (5048'). Installed rotating rubber. Blew well with air compressors at 1538.63m (5048') for 7½ hours. Trying to get well to unload. R.I.H. to 1914.45m (6281'). Blew well for 2½ hours. R.I.H. to 2286m (7500'). Unloaded hole with air compressor at 2286.00m (7500').
7/9/79	2749.91m (9022')	P.O. from 2286m (7500') to 1914.45m (6281'). Waited for well to heat up for 7½ hours. Blew well for 6½ hours. Filled hole with water through D.P. and bit at 1914.48m (6281'). R.I.H. to 2749.91m (9022') tagged bottom P.O.H. Layed down D.P. and D.C.
7/10/79	2749.91m (9022')	Removed B.O.P.; installed wellhead plate with 5.08cm (2") gate outlet on 33.96cm (13 3/8") bradenhead. Cleaned out pits. Released rig at 0800.

LdL:pw

THERMAL POWER COMPANY/SOUTHLAND ROYALTY COMPANY

Dixie Federal 45-14

Drilling Fluid Daily Temperatures*

Date	Depth			
	Feet	Meters	°F	°C
4-25-79	124'	37.80	-	-
4-26-79	146'	44.51	84	29.4
4-27-79	715'	217.93	111	43.9
4-28-79	741'	225.86	-	-
4-29-79	980'	298.70	113	45.0
4-30-79	1322'	402.95	126	52.2
5-1-79	1330	405.39	126	52.2
5-2-79	1330'	405.39	Running 13 3/8" casing	
5-3-79	1330'	405.39	" "	"
5-4-79	1779'	542.24	118	47.8
5-5-79	2076'	632.76	118	47.8
5-6-79	2076'	632.76	115	46.1
5-7-79	2218'	676.05	127	52.8
5-8-79	2525'	769.62	136	57.8
5-9-79	2922'	890.63	146	63.3
5-10-79	3074'	936.96	138	58.9
5-11-79	3337'	1017.12	159	70.6
5-12-79	3620'	1103.38	160	71.1
5-13-79	3812'	1161.90	161	71.7
5-14-79	3977'	1212.19	165	73.9
5-15-79	4057'	1236.57	-	-
5-16-79	4197'	1279.25	166	74.4
5-17-79	4261'	1298.75	166	74.4
5-18-79	4394'	1339.29	167	75.0
5-19-79	4534'	1381.96	166	74.4
5-20-79	4618'	1407.57	164	73.3
5-21-79	4618'	1407.57	146 (Sidetrack)	63.3
5-22-79	3608'	1099.72	146	63.3
5-23-79	3710'	1130.81	148	64.4
5-24-79	3821'	1164.64	143	61.7
5-25-79	3895'	1187.20	156	68.9
5-26-79	3895'	1187.20	Fishing	-
5-27-79	3895'	1187.20	Fishing	-
5-28-79	3897'	1187.81	135	57.2
5-29-79	4072'	1241.15	152	66.7
5-30-79	4158'	1267.36	152	66.7
5-31-79	4244'	1293.57	154	67.8
6-1-79	4244'	1293.57	164	73.3
6-2-79	4315'	1315.21	162	72.2
6-3-79	4430'	1350.26	159	70.6
6-4-79	4713'	1436.52	164	73.3
6-5-79	4985'	1519.43	168	75.6

*Wellhead exit temperatures

6-6-79	5075'	1546.86	156	68.9
6-7-79	5234'	1595.33	170	76.7
6-8-79	5405'	1647.44	175	79.4
6-9-79	5405'	1647.44	Run logs	-
6-10-79	5405'	1647.44	Running 9-5/8" liner	
6-11-79	5405'	1647.44	Running 9-5/8" liner	
6-12-79	5405'	1647.44	" " "	
6-13-79	5678'	1730.65	150	65.6
6-14-79	6092'	1856.85	142	61.1
6-15-79	6275'	1912.62	139	59.4
6-16-79	6580'	2005.59	130	54.4
6-17-79	6853'	2088.79	157	69.4
6-18-79	7015'	2138.17	160	71.1
6-19-79	7285'	2220.47	162	72.2
6-20-79	7587'	2312.52	152	66.7
6-21-79	7990'	2435.35	167	75.0
6-22-79	8097'	2467.97	159	70.6
6-23-79	8097'	2467.97	Fishing	-
6-24-79	8243'	2512.47	151	66.1
6-25-79	8387'	2556.36	151	66.1
6-26-79	8534'	2601.17	155	68.3
6-27-79	8534'	2601.17	Running logs	-
6-28-79	8534'	2601.17	Running logs 7 testing well	-
6-29-79	8534'	2601.17	Testing well	-
6-30-79	8610'	2624.33	157	69.4
7-1-79	8912'	2716.38	155	68.3
7-2-79	8912'	2716.38	Testing well	-
7-3-79	8912'	2716.38	Running logs	-
7-4-79	9022'	2749.91	160	71.1
7-5-79	9022'	2749.91	Setting plug	-
7-6-79	9022'	2749.91	Running 7" liner	-
7-7-79	9022'	2749.91	Running 7" liner	-
7-8-79	9022'	2749.91	Testing well	-
7-9-79	9022'	2749.91	Testing well	-
7-10-79	9022' T.D.	Testing well/Released Rig		-

LdL:pw

THERMAL POWER COMPANY/SOUTHLAND ROYALTY COMPANY

DIXIE FEDERAL 45-14

Bit Record

Bit #	Size	Make/Type	In	Out	Total Drilled
1	44.45cm (17½")	Security S3J	37.80m (124')	225.86m (741')	187.76m (616')
2	44.45cm (17½")	H.T.C. DSC	225.86m (741')	361.49m (1186')	132.59m (435')
3	44.45cm (17½")	Security S83	361.49m (1186')	405.38m (1330')	43.89m (144')
4	31.12cm (12¼")	Smith SJ	405.38m (1330')	453.85m (1489')	48.46m (159')
5	31.12cm (12¼")	Security S86	453.85m (1489')	646.48m (2121')	192.63m (632')
6	31.12cm (12¼")	Smith F-3	646.48m (2121')	924.76m (3034')	278.28m (913')
7	31.12cm (12¼")	H.T.C. X-44	924.76m (3034')	936.96m (3074')	12.19m (40')
8	31.12cm (12¼")	Smith F-3	936.96m (3074')	1154.58m (3788')	217.63m (714')
9	31.12cm (12¼")	H.T.C. S-88	1154.58m (3788')	1236.58m (4057')	81.69m (268')
10	31.12cm (12¼")	H.T.C. J-44	1236.58m (4057')	1279.25m (4197')	42.67m (140')
11	31.12cm (12¼")	Smith F-4	1279.25m (4197')	1339.30m (4394')	60.05m (197')
12	31.12cm (12¼")	H.T.C. X-33	1339.30m (4394')	1387.96m (4534')	42.67m (140')
13	31.12cm (12¼")	Smith F-5	1381.96m (4534')	1407.57m (4618')	25.60m (84')
Redrill					
14	31.12cm (12¼")	Smith SC-8	1093.62m (3588')	1098.5m (3604')	4.88m (16')
15	31.12cm (12¼")	H.T.C. X-33	1098.50m (3604')	1130.81m (3710')	32.31m (106')
16	31.12cm (12¼")	Smith F-5	1130.81m (3710')	1165.10m (3821')	33.83m (111')
17	31.12cm (12¼")	H.T.C. X-33	1165.10m (3821')	1187.2m (3895')	22.56m (74')
18	31.12cm (12¼")	Reed F.P. 52	1187.20m (3895')	1187.81m (3897')	0.61m (2')
19	31.12cm (12¼")	Smith F-5	1187.81m (3897')	1241.15m (4072')	53.34m (175')
20	31.12cm (12¼")	Smith F-5	1241.15m (4072')	1293.57m (4244')	52.43m (172')
21	31.12cm (12¼")	H.T.C. J-44 Used to ream/1120.14m (3672')		1293.57m (4244')	173.43m (569')
22	31.12cm (12¼")	H.T.C. X-44	1293.57m (4244')	1350.34m (4430')	56.69m (186')
23	31.12cm (12¼")	Smith F-4	1350.39m (4430')	1539.94m (5049')	188.67m (619')
22R	31.12cm (12¼")	H.T.C. X-44	1539.94m (5049')	1647.4m (5405')	113.08m (371')
24	21.59cm (8½)	Security S4T	1647.4m (5405')	1652.3m (5421')	4.88m (16')
25	21.59cm (8½)	H.T.C. X-44	1652.3m (5421')	1880.1m (6171')	228.60m (750')
26	21.59cm (8½)	H.T.C. J-44	1880.1m (6171')	2113.79m (6935')	232.87m (764')
27	21.59cm (8½)	Security S86F	2113.79m (6935')	2232.0m (7325')	118.57m (389')
28	21.59cm (8½)	Smith S-4	2232m (7325')	2520.7m (8027')	213.97m (702')
29	21.59cm (8½)	Smith F-5	2520.7m (8027')	2540m (8337')	94.50m (310')
30	21.59cm (8½)	Reed FP 63	2540m (8337')	2601.2m (8534')	60.05m (197')
31	21.59cm (8½)	Reed FP 62	2601.16m (8534')	2523m (8912')	87.78m (288')
32	21.59cm (8½)	Smith F-5	2523m (8912')	2749.9m (9022')	33.53m (110')

LdL:pw

THERMAL POWER COMPANY

WELL DATA SHEET

Field: Dixie Valley, Churchill Nevada
Well: Dixie Federal 45-14
Date: September 1, 1979

Casing String	Hole Size (in)	Casing Specifications Size (in)	Wt. (#/ft)	Gr.	Jt.	Setting Depth (ft) From	To	Total Length	Total Wt. (lbs)	Cementing Slurry Volume (ft)	% Excess	Sks. of Cement w/o add.	Mud wt. at Csg. Pt. (lbm/gal)	Minimum Calculated Safety Factor Tension	Collapse	Burst (psi basis)
Conductor	26	20	94	H-40	Butt	0	124	124	11,656	370	60	320	9.1	127.00	8.87	2.43 (629)
Surface	17½	13 3/8	54.5	K-55	Butt	0	1332	1332	72,594	2309	100	1090	9.1	11.75	1.80	4.34 (629)
Production liner																
	12¼	9 5/8	40	K-55	Butt	1123	4012	2889	115,560	--	--	--	9.1	3.28	1.36	2.08
	12¼	9 5/8	40	N-80	Butt	4012	5398	1386	55,440	--	--	--	9.1	13.29	1.21	2.25
Total Liner	12¼	9 5/8	--	--	Butt	1123	5398	4275	171,000	2060	60	972	9.1	3.28	1.21	2.08 (2551)
7" Liner	8½	7"	23	N-80	LT&C	5173	6290	1117	25,691	332	100	205	9.1	17.20	1.29	2.13 (2972)

JMR:pw
10/10/79