

GEOGRAPHICAL SERVICES, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 • (714) 566-4520

DRILLING LOG AND HISTORY

Project No. 4-79 Hole No. _____ Date 8/30/79
 Geologist Walker T Driller Greg Knight Rig I.D. TKT-1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
7:00			Worked on rig at yard getting ready				
		9		10		260	
				20		270	
8:00		9	for trip to Bend	30		280	
				40		290	
9:00		9	"	50		300	
				60		310	
10:00		9	"	70		320	
				80		330	
11:00		9	"	90		340	
				100		350	
12:00	↓	10	Left yard for Bend	110		360	
				120		370	
12:00		10	"	130		380	
				140		390	
2:00		10	"	150		400	
				160		410	
3:00		10	"	170		420	
				180		430	
4:00		10	"	190		440	
				200		450	
5:00		10	"	210		460	
				220		470	
6:00	↓	10	Got to mc Donniff at 8:00	230		480	
				240		490	
				250		500	

EXPENDABLE DRILLING MATERIALS USED
 Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.
 _____ Quik-Trol (pkgs.)
 _____ Drift Foam/Quik-Foam (gals.)
 _____ Hy-Seal-N _____ Barite
 _____ Quik-Gel _____ Other
 _____ Jel-Flake _____ (describe)
 _____ Micatex C _____
 _____ Fluid-Trol _____
 _____ Cedar Fibre _____
 _____ Cottonseed Hulls _____
 _____ Wall-Nut _____
 _____ Cellophane Flakes _____
 _____ Cement _____
 _____ Lime _____

FOOTAGE:
 from _____ ft. Bit Size _____
 to _____ ft. Air _____ Mud _____

Bit No.	Changed at
	ft.
	ft.

Log Approved: _____
 Date _____

LOG REFERENCE CODE NUMBERS	
1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: _____

GEOGRAPHICAL SERVICES, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 • (714) 566-4520

DRILLING LOG AND HISTORY

Project No. 479 Hole No. 16 Date 8/31/79
 Geologist Tim Walker Driller Greg Knight Rig I.D. TKT-1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
7:00 8:00	↓	10	Drive from McDevitt to site	10		260	
				20		270	
8:00		10		30		280	
				40		290	
9:00		10		50		300	
				60		310	
10:00		10		70		320	
				80		330	
10:00		10		90		340	
				100		350	
12:00		10		110		360	
				120		370	
12:00		10		130		380	
				140		390	
2:00	10	Rigging Up and	150		400		
			160		410		
3:00	10	Getting Ready to spud	170		420		
			180		430		
4:00			190		440		
			200		450		
5:00			210		460		
			220		470		
6:00			230		480		
			240		490		
			250		500		

EXPENDABLE DRILLING MATERIALS USED
Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.
 _____ Quik-Trol (pkgs.)
 _____ Drift Foam/Quik-Foam (gals.)
 _____ Hy-Seal-N _____ Barite
 _____ Quik-Gel _____ Other
 _____ Jel-Flake _____ (describe)
 _____ Micatex C _____
 _____ Fluid-Trol _____
 _____ Cedar Fibre _____
 _____ Cottonseed Hulls _____
 _____ Wall-Nut _____
 _____ Cellophane Flakes _____
 _____ Cement _____
 _____ Lime _____

FOOTAGE:
 from _____ ft.
 to _____ ft.

Bit Size 9/8
 Air Mud _____

Bit No.	Changed at
	ft.
	ft.

Log Approved: _____
 Date _____

LOG REFERENCE CODE NUMBERS	
1 travel to site	6 logging
2 set up	7 run 5/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: _____

GEO Thermal Services, Inc.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 • (714) 566-4520

DRILLING LOG AND HISTORY

Project No. 4-79 GLASS BUTTE Hole No. 16 Date 8-31-79
 Geologist WALKER T Driller WOODS Rig I.D. TRT-1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
6:00				10	60	260	
				20	60	270	
7:00				30	60	280	
				40	60	290	
8:00		2	MOVING IN EQUIP. TO LOCATION	50		300	
				60		310	
9:00		2	UNLOADED CASING & 2"	70		320	
				80		330	
10:00		2	BLACK PIPE	90		340	
				100		350	
11:00		2 & 3	TOPPING OFF TANKER	110		360	
				120		370	
12:00		2	UNLOADED MUD & QUIK	130		380	
				140		390	
1:00	V	2	FOAM	150		400	
				160		410	
2:00	V	2	SPUDDER IN RIG	170		420	
				180		430	
3:00	V	3	DRILLING	190		440	
				200		450	
4:00	V	3		210		460	
				220		470	
5:00	V	3		230		480	
				240		490	
				250		500	

EXPENDABLE DRILLING MATERIALS USED
 Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.
 _____ Quik-Trol (pkgs.)
5 _____ Drift Foam/Quik-Foam (gals.)
 _____ Hy-Seal-N _____ Barite
 _____ Quik-Gel _____ Other
 _____ Jel-Flake _____ (describe)
 _____ Micatex C _____
 _____ Fluid-Trol _____
 _____ Cedar Fibre _____
 _____ Cottonseed Hulls _____
 _____ Wall-Nut _____
 _____ Cellophane Flakes _____
 _____ Cement _____
 _____ Lime _____

FOOTAGE:
 from 0 ft. Bit Size 9 7/8
 to 40 ft. Air Mud _____

Bit No.	Changed at	Log Approved:
EP-53	ft.	_____
174289	ft.	Date _____

LOG REFERENCE CODE NUMBERS	
1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: REPAIRING WATER PUMP ON 75 Ford H²O Truck

GEO THERMAL SERVICES, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 • (714) 566-4520

DRILLING LOG AND HISTORY

Project No. 4-79 GLASS BUTTE Hole No. 16 Date 8-31-79
 Geologist WALKER T. Driller WOODS Rig I.D. TKT-1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
6:00		3	DRILLING HARD GRAVELS	10		260	
				20		270	
7:00		3	" "	30		280	
				40		290	
8:00		3	" "	50		300	
				60		310	
9:00		3	" "	70		320	
				80		330	
10:00		3	" "	90		340	
				100		350	
11:00		3	" "	110		360	
				120		370	
12:00		3	" "	130		380	
				140		390	
1:00	↓	3	" "	150		400	
				160		410	
2:00		10	WAITING FOR BACKHOE	170		420	
				180		430	
3:00		10	TO BIG MUD PITS	190		440	
				200		450	
4:00		10		210		460	
				220		470	
5:00	↓	10		230		480	
				240		490	
				250		500	

EXPENDABLE DRILLING MATERIALS USED
Quantities

- _____ Joint, 3/4" Pipe @ 21 ft. ea.
- 4 Quik-Trol (pkgs.)
- 5 Drift Foam/Quik-Foam (gals.)
- _____ Hy-Seal-N _____ Barite REED SEPAR
- 3 Quik-Gel _____ Other (describe)
- _____ Jel-Flake _____
- _____ Micatex C _____
- _____ Fluid-Trol _____
- _____ Cedar Fibre _____
- _____ Cottonseed Hulls _____
- _____ Wall-Nut _____
- _____ Cellophane Flakes _____
- _____ Cement _____
- _____ Lime _____

FOOTAGE:

from 40 ft.
to 100 ft.

Bit Size 9 7/8
Air Mud _____

Bit No.	Changed at
<u>FD-53</u>	_____ ft.
<u>174289</u>	_____ ft.

Log Approved: _____

Date _____

LOG REFERENCE CODE NUMBERS

- | | |
|-------------------|-------------------------|
| 1 travel to site | 6 logging |
| 2 set up | 7 run 3/4" pipe |
| 3 drilling | 8 rig down & clean site |
| 4 water trip | 9 maintenance |
| 5 pull drill pipe | 10 Other (explain) |

Remarks: HOLE SAVING BAD FROM 60-100, DIDN'T
GET LARGE GRAVELS OUT WITH AIR, GOING WITH MUD
DOWN 45 PITS IN LOG

GEOHEAT SERVICES, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 • (714) 566-4520

DRILLING LOG AND HISTORY

Project No. 4-79 Hole No. 16 Date 9-1-79
 Geologist WALKER T Driller WOODS Rig I.D. TRT-1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
6:00		10	waiting for BACKHOE	10		260	
7:00		10		20		270	
8:00		10		30		280	
9:00		10		40		290	
10:00		10 3	Digging pits, hauling water,	50		300	
11:00		10 3	mixing mud	60		310	
12:00		10 3		70		320	
1:00			SHIFT CHANGE AT NOW	80		330	
2:00				90		340	
3:00				100		350	
4:00				110		360	
5:00				120		370	
				130		380	
				140		390	
				150		400	
				160		410	
				170		420	
				180		430	
				190		440	
				200		450	
				210		460	
				220		470	
				230		480	
				240		490	
				250		500	

EXPENDABLE DRILLING MATERIALS USED
Quantities

- _____ Joint, 3/4" Pipe @ 21 ft. ea.
- _____ Quik-Trol (pkgs.)
- _____ Drift Foam/Quik-Foam (gals.)
- _____ Hy-Seal-N _____ Barite REED
- _____ Quik-Gel _____ Other SER #
- _____ Jel-Flake _____ (describe)
- _____ Micatex C _____
- _____ Fluid-Trol _____
- _____ Cedar Fibre _____
- _____ Cottonseed Hulls _____
- _____ Wall-Nut _____
- _____ Cellophane Flakes _____
- _____ Cement _____
- _____ Lime _____

FOOTAGE:

from 100 ft.
to 100 ft.

Bit Size 9 1/8
Air Mud _____

Bit No.	Changed at
FP-53	_____ ft.
174289	_____ ft.

Log Approved: _____
Date _____

LOG REFERENCE CODE NUMBERS

- | | |
|-------------------|-------------------------|
| 1 travel to site | 6 logging |
| 2 set up | 7 run 3/4" pipe |
| 3 drilling | 8 rig down & clean site |
| 4 water trip | 9 maintenance |
| 5 pull drill pipe | 10 Other (explain) |

Remarks: _____

GEOGRAPHICAL SERVICES, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 • (714) 566-4520

DRILLING LOG AND HISTORY

Project No. 479 Hole No. 16 Date 9/1/79
 Geologist Tim Walker Driller Greg Knight Rig I.D. TKT-1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
12:00		3	Mixing up pits	10		260	
1:00		3	" "	20		270	
2:00		3	" "	30		280	
3:00		3	" "	40		290	
4:00		3	" "	50		300	
5:00		3	" "	60		310	
6:00		3	hit underground water Flow keeps plugging bit.	70		320	
7:00		3	Mixing gel trying to seal off water flow	80		330	
8:00		3	tripped out of hole 4 times today	90		340	
9:00		3	wants to keep plugging bit	100		350	
10:00		3	finally put rubber plugs on bit and got another joint on	110		360	
11:00		3	went to 120 and water flow keeps pushing gravel	120		370	
12:00		3	in on top of us, mixing up more mud, hole	130		380	
1:00		3	keeps filling in	140		390	
				150		400	
				160		410	
				170		420	
				180		430	
				190		440	
				200		450	
				210		460	
				220		470	
				230		480	
				240		490	
				250		500	

EXPENDABLE DRILLING MATERIALS USED
Quantities

_____	Joint, 3/4" Pipe @ 21 ft. ea.	
38	Quik-Trol (pkgs.) <u>16</u>	
_____	Drift Foam/Quik-Foam (gals.)	
_____	Hy-Seal-N	<u>1</u> Barite
77	Quik-Gel	_____ Other
_____	Jel-Flake	_____ (describe)
_____	Micatex C	<u>2 bags</u> BRAND
_____	Fluid-Trol	_____
_____	Cedar Fibre	_____
_____	Cottonseed Hulls	_____
_____	Wall-Nut	_____
_____	Cellophane Flakes	_____
_____	Cement	_____
_____	Lime	_____

FOOTAGE:
 from 100 ft.
 to 120 ft.

Bit Size 9 7/8
 Air _____ Mud

Bit No.	Changed at
<u>FB 53</u>	_____ ft.
<u>174289</u>	_____ ft.

Log Approved: _____
 Date: _____

LOG REFERENCE CODE NUMBERS

1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: _____

GEO THERMAL SERVICES, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 • (714) 566-4520

DRILLING LOG AND HISTORY

Project No. 4-79 Hole No. 16 Date 9-2-79
 Geologist WALKER T Driller WOODS Rig I.D. TKI-1

TIME AM / PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
12:00 8:00		3	DRILLING HARD GRAVELS	10		260	
1:00 7:00		3	LOTS OF GROUND WATER	20		270	
2:00 8:00		3	" "	30		280	
3:00 9:00		3	" "	40		290	
4:00 10:00		3	" "	50		300	
5:00 11:00		3	" "	60		310	
6:00 12:00		3	" "	70		320	
7:00 1:00		3	" "	80		330	
8:00 2:00		3	" "	90		340	
9:00 3:00		3	" "	100		350	
10:00 4:00		3	" "	110		360	
11:00 5:00		3	" "	120		370	
12:00 6:00		3	" "	130	61	380	
1:00 7:00		3	" "	140	61	390	
2:00 8:00		3	" "	150	61	400	
3:00 9:00		3	" "	160	61	410	
4:00 10:00		3	" "	170	61	420	
5:00 11:00		3	" "	180	61	430	
6:00 12:00		3	" "	190	61	440	
7:00 1:00		3	" "	200	61	450	
8:00 2:00		3	" "	210	61	460	
9:00 3:00		3	" "	220	61	470	
10:00 4:00		3	" "	230	61	480	
11:00 5:00		3	" "	240	61	490	
				250	61	500	

EXPENDABLE DRILLING MATERIALS USED

Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.	
<u>4</u> Quik-Trol (pkgs.)	
_____ Drift Foam/Quik-Foam (gals.)	
_____ Hy-Seal-N	_____ Barite
<u>3</u> Quik-Gel	_____ Other
_____ Jel-Flake	(describe)
_____ Micatex C	_____
_____ Fluid-Trol	_____
_____ Cedar Fibre	_____
_____ Cottonseed Hulls	_____
_____ Wall-Nut	_____
_____ Cellophane Flakes	_____
_____ Cement	_____
_____ Lime	_____

FOOTAGE: from 120 ft. to 240 ft. Bit Size 9 7/8 Air _____ Mud ✓

Bit No.	Changed at	Log Approved:
<u>FP-53</u>	_____ ft.	_____
<u>174289</u>	_____ ft.	Date _____

LOG REFERENCE CODE NUMBERS	
1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: HOLE CAVING BAD FROM 120'-160'

GEOTHERMAL SERVICE, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 • (714) 566-4520

DRILLING LOG AND HISTORY

Project No. 479 Hole No. 16 Date 9/2/79
 Geologist Tim Walker Driller Greg Kight Rig I.D. TCT-1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES				
				FT.	°F	FT.	°F	
<u>12:00</u>	↓	3	drilling Slow Obsidian?	10		260		
6:00				20		270		
1:00		30		280				
		40		290				
2:00		50	3	circulating to clean out hole	60		300	
		70				320		
3:00		80	5	pull drill pipe started reworking casing	90		340	
		100				350		
4:00		110	10	Casing went in easy	120		360	
		130				370		
5:00		140	10	" "	150		380	
		160				390		
6:00		170	10	Stand by for cement	180		400	
		190				410		
7:00		200	10	working on rig	210		420	
		220				430		
8:00		230	10		240		440	
		250				450		
9:00			10				460	
						470		
10:00			10				480	
						490		
11:00			10				500	

EXPENDABLE DRILLING MATERIALS USED
Quantities

- _____ Joint, 3/4" Pipe @ 21 ft. ea.
- _____ Quik-Trol (pkgs.)
- _____ Drift Foam/Quik-Foam (gals.)
- _____ Hy-Seal-N _____ Barite
- _____ Quik-Gel _____ Other
- _____ Jel-Flake _____ (describe)
- _____ Micatex C
- _____ Fluid-Trol
- _____ Cedar Fibre _____
- _____ Cottonseed Hulls _____
- _____ Wall-Nut _____
- _____ Cellophane Flakes _____
- _____ Cement _____
- _____ Lime _____

229 ft of 7" casing
1 casing plug

FOOTAGE:

from 230 ft.
to 240 ft.

Bit Size 9 7/8
Air _____ Mud

Bit No.	Changed at
<u>FB 53</u>	_____ ft.
_____	_____ ft.

Log Approved: _____
Date _____

LOG REFERENCE CODE NUMBERS

- | | |
|-------------------|-------------------------|
| 1 travel to site | 6 logging |
| 2 set up | 7 run 5/4" pipe |
| 3 drilling | 8 rig down & clean site |
| 4 water trip | 9 maintenance |
| 5 pull drill pipe | 10 Other (explain) |

Remarks: _____

GEOTECHNICAL SERVICE, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 • (714) 566-4520

DRILLING LOG AND HISTORY

Project No. 479 Hole No. 16 Date 9/3/79
 Geologist Tim Walker Driller Greg Knight Rig I.D. TXT-1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
<u>1:00</u>		<u>10</u>	<u>Standby for Cement</u>				
				10		260	
				20		270	
<u>1:00</u>		<u>10</u>	<u>" "</u>	30		280	
				40		290	
<u>2:00</u>		<u>10</u>	<u>" "</u>	50		300	
				60		310	
<u>3:00</u>		<u>10</u>	<u>" "</u>	70		320	
				80		330	
<u>4:00</u>		<u>10</u>	<u>" "</u>	90		340	
				100		350	
<u>5:00</u>		<u>10</u>	<u>" "</u>	110		360	
				120		370	
<u>6:00</u>		<u>10</u>	<u>" "</u>	130		380	
				140		390	
<u>7:00</u>		<u>10</u>	<u>" "</u>	150		400	
				160		410	
<u>8:00</u>		<u>10</u>	<u>" "</u>	170		420	
				180		430	
<u>9:00</u>		<u>10</u>	<u>" "</u>	190		440	
				200		450	
<u>10:00</u>		<u>10</u>	<u>" "</u>	210		460	
				220		470	
<u>11:00</u>		<u>10</u>	<u>" "</u>	230		480	
				240		490	
				250		500	

EXPENDABLE DRILLING MATERIALS USED
 Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.
 _____ Quik-Trol (pkgs.)
 _____ Drift Foam/Quik-Foam (gals.)
 _____ Hy-Seal-N _____ Barite
 _____ Quik-Gel _____ Other
 _____ Jel-Flake _____ (describe)
 _____ Micatex C _____
 _____ Fluid-Trol _____
 _____ Cedar Fibre _____
 _____ Cottonseed Hulls _____
 _____ Wall-Nut _____
 _____ Cellophane Flakes _____
 _____ Cement _____
 _____ Lime _____

FOOTAGE:
 from _____ ft. Bit Size _____
 to _____ ft. Air _____ Mud _____

Bit No.	Changed at
	ft.
	ft.

Log Approved: _____
 Date: _____

LOG REFERENCE CODE NUMBERS	
1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: _____

GEOTERMAL SERVICE, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 • (714) 566-4520

DRILLING LOG AND HISTORY

Project No. 4-79 Hole No. 16 Date 9/14/75
 Geologist Walker, J Driller Holden Rig I.D. TKT-1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
6:00		10	"	10		260	
				20		270	
7:00		10	"	30		280	
				40		290	
8:00		10	"	50		300	
				60		310	
9:00		10	"	70		320	
				80		330	
10:00		10	"	90		340	
				100		350	
11:00		10	CEMENT ARRIVED	110		360	
				120		370	
12:00		10	Standby for cement	130		380	
				140		390	
1:00		10	"	150		400	
				160		410	
2:00		10	"	170		420	
				180		450	
3:00		10	"	190		440	
				200		450	
4:00		10	"	210		460	
				220		470	
5:00		10	"	230		480	
				240		490	
				250		500	

EXPENDABLE DRILLING MATERIALS USED
 Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.
 _____ Quik-Trol (pkgs.)
 _____ Drift Foam/Quik-Foam (gals.)
 _____ Hy-Seal-N _____ Barite
 _____ Quik-Gel _____ Other
 _____ Jel-Flake _____ (describe)
 _____ Micatex C 1-7" Cement Plug
 _____ Fluid-Trol 25 lb sugar
 _____ Cedar Fibre _____
 _____ Cottonseed Hulls _____
 _____ Wall-Nut _____
 _____ Cellophane Flakes _____
280 lb Cement Load
 _____ Lime _____

FOOTAGE:
 from _____ ft. Bit Size _____
 to _____ ft. Air _____ Mud _____

Bit No.	Changed at	Log Approved: _____
	ft.	
	ft.	Date _____

LOG REFERENCE CODE NUMBERS

1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: CEMENT ARRIVED 11:00

GEOTECHNICAL SERVICE, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 • (714) 566-4520

DRILLING LOG AND HISTORY

Project No. 479 Hole No. 16 Date 9/4/79
 Geologist Tim Walker Driller Green Knight Rig I.D. TKT-1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
12:00			CASING WAS PLUGGED HAD TO GO BACK IN WITH DRILL STEM + CIRCULATE	10		260	
1:00		10	hole had caved in around casing	20		270	
2:00		10	got circulation, called for cement	30		280	
3:00	↓		hole was cemented at 3:30 PM.	40		290	
4:00			Standby for cement to dry, getting BOP ready to install on surface casing	50		300	
5:00				60		310	
6:00			digging BOP cellar	70		320	
7:00				80		330	
8:00				90		340	
9:00				100		350	
10:00				110		360	
11:00				120		370	
				130		380	
				140		390	
				150		400	
				160		410	
				170		420	
				180		430	
				190		440	
				200		450	
				210		460	
				220		470	
				230		480	
				240		490	
				250		500	

EXPENDABLE DRILLING MATERIALS USED
 Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.	_____ Barite
_____ Quik-Trol (pkgs.)	_____ Other
_____ Drift Foam/Quik-Foam (gals.)	_____ (describe)
_____ Hy-Seal-N	_____
_____ Quik-Gel	_____
_____ Jel-Flake	_____
_____ Micatex C	_____
_____ Fluid-Trol	_____
_____ Cedar Fibre	_____
_____ Cottonseed Hulls	_____
_____ Wall-Nut	_____
_____ Cellophane Flakes	_____
_____ Cement	_____
_____ Lime	_____

FOOTAGE:
 from _____ ft.
 to _____ ft.

Bit Size _____
 Air _____ Mud _____

Bit No.	Changed at
	_____ ft.
	_____ ft.

Log Approved: _____
 Date _____

LOG REFERENCE CODE NUMBERS

1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: _____

GEOTHERMAL SERVICES INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 • (714) 566-4520

DRILLING LOG AND HISTORY

Project No. 4-79 Hole No. 16 Date 9/2/79
 Geologist WALKER, T Driller HOLEMAN Rig I.D. TKT-1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
12:00	↑						
6:00		10	PUT ON BOP.	10		260	62-63
7:00		10	" "	20		270	62-64
8:00		10	" "	30		280	62-63
9:00		10	" "	40		290	62-64
10:00		10	" "	50		300	58-62
11:00		10	" "	60		310	61-64
12:00		10	" "	70		320	61-66
1:00		10	" "	80		330	61-66
2:00		10	" "	90		340	62-68
3:00		10	TRIP IN HOLE	100		350	62-68
4:00		10	TEST B.O.P.	110		360	62-66
5:00		10	" "	120		370	
6:00		10	" "	130		380	
7:00		10	" "	140		390	
8:00		10	" "	150		400	
9:00		3	Drill thru plug 230'	160		410	
10:00		3		170		420	
11:00		3		180		430	
12:00		3		190		440	
				200		450	
				210		460	
				220		470	
				230	60	480	
				240	60	490	
				250	60	500	

EXPENDABLE DRILLING MATERIALS USED
 Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.	_____ Barite
_____ Quik-Trol (pkgs.)	_____ Other
_____ Drift Foam/Quik-Foam (gals.)	(describe)
_____ Hy-Seal-N	_____
_____ Quik-Gel	_____
_____ Jel-Flake	_____
_____ Micatex C	_____
_____ Fluid-Trol	_____
_____ Cedar Fibre	_____
_____ Cottonseed Hulls	_____
_____ Wall-Nut	_____
_____ Cellophane Flakes	_____
_____ Cement	_____
_____ Lime	_____

FOOTAGE:
 from 230 ft. to 360 ft. Bit Size 6 1/4
 Air _____ Mud X
 Log Approved: _____
 Date _____

Bit No.	Changed at
<u>AF.3098</u>	_____ ft.
	_____ ft.

LOG REFERENCE CODE NUMBERS

1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: BOP TEST SUCCESSFUL mud pressure 1.28
12:00 H. MUD LOG NO LEAKAGE!

GEOTHERMAL SERVICES INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 • (714) 566-4520

DRILLING LOG AND HISTORY

Project No. 4-79 Hole No. 16 Date 4/5/79
 Geologist Walker Driller KIGHT Rig I.D. TKT-1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
12:00		3	Riolite, smooth drilling 40 vis. at suction	510	67, 69	260	IN out
1:00		3	" "	520	67, 70	270	
2:00		3	" "	530		280	
3:00		3	" "	540	67, 71	290	
4:00		3	Pink Glass + Rhyolite	550	66, 70	300	
5:00		3	Lost circulation at 500 ft.	560	67, 70	310	
6:00		3	drilling blind, no foam	570	67, 70	320	
7:00		3	Started getting with foam getting foam returned	580		330	
8:00		3	hitting hard streaks taking up scal block	590		340	
9:00		5	pull drill pipe to check bit	100		350	
10:00		5	" "	110		360	
11:00		10	bit is OK, going in hole	120		370	
		10	tripping back in hole	130		380	66°
		10	mixing gel	140		390	
				150		400	✓
				160		410	✓
				170		420	67°
				180		430	68, 67
				190		440	68, 67
				200		450	67, 68
				210		460	65, 69
				220		470	65, 69
				230		480	65, 69
				240		490	
				250		500	

EXPENDABLE DRILLING MATERIALS
Quantities

_____ Joint, 3/4" Pipe _____ ea.	_____ Barite
_____ Quik-Trol (pkgs.)	_____ Other (describe)
_____ Drift Foam/Quik-Foam (gals.)	
_____ Hy-Seal-N	
_____ Quik-Gel 23,	
_____ Jel-Flake	
_____ Micatex C	
_____ Fluid-Trol	
_____ Cedar Fibre	
_____ Cottonseed Hulls	
_____ Wall-Nut	
_____ Cellophane Flakes	
_____ Cement	
_____ Lime	

FOOTAGE: from 360 ft. to 710 ft.
 Bit Size 6 1/4
 Air _____ Mud
 Log Approved: _____
 Date _____

Bit No.	Changed at
<u>AF 3098</u>	_____ ft.
	_____ ft.

LOG REFERENCE CODE NUMBERS

1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: RHYOLITE - REDDISH & GRAY

GEOTHERMAL SERVICE INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 • (714) 566-4520

DRILLING LOG AND HISTORY

Project No. 4-79 Hole No. 16 Date 9/1/79
 Geologist Walker, T Driller H. Jensen Rig I.D. TGT-1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
1300 6:00		10 + 1	splitting last circulation	10		260	
1500 7:00		10	And mixing mud	20		270	
1700 8:00		10 + 4	"	30		280	
1900 9:00		10 + 4	"	40		290	
2100 10:00		10	"	50		300	
2300 11:00		10 + 4	"	60		310	
2500 12:00		10	"	70		320	
2700 1:00		10 + 4	"	80		330	
2900 2:00		10 + 4	"	90		340	
3100 3:00		10	"	100		350	
3300 4:00		10 + 4	"	110		360	
3500 5:00		10 + 4	"	120		370	
3700 6:00		10 + 3	"	130		380	
3900 7:00		10 + 3	"	140		390	
4100 8:00		10 + 4 + 3	"	150		400	
4300 9:00		10 + 4 + 3	"	160		410	
4500 10:00		10 + 3	"	170		420	
4700 11:00		10 + 3	"	180		430	
4900 12:00		10 + 3	"	190		440	
5100 1:00		10 + 3	"	200		450	
5300 2:00		10 + 3	"	210		460	
5500 3:00		10 + 4 + 3	"	220		470	
				230		480	
				240		490	
				250		500	

EXPENDABLE DRILLING MATERIALS USED
Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.	_____ Barite
_____ Quik-Trol (pkgs.)	_____ Other
_____ Drift Foam/Quik-Foam (gals.)	(describe)
_____ Hy-Seal-N	_____ 4 Muck GEL
<u>56</u> Quik-Gel	_____
_____ Jel-Flake	_____
_____ Micatex C	_____
_____ Fluid-Trol	_____
_____ Cedar Fibre	_____
<u>11</u> Cottonseed Hulls	_____
_____ Wall-Nut	_____
_____ Cellophane Flakes	_____
_____ Cement	_____
_____ Lime	_____

FOOTAGE:
 from 210 ft. to 740 ft. Bit Size 6 1/4
 Air _____ Mud X

Bit No.	Changed at	Log Approved:
<u>AF3098</u>	_____ ft.	_____
	_____ ft.	Date _____

LOG REFERENCE CODE NUMBERS

1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: _____

GEO THERMAL SERVICE INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 • (714) 566-4520

DRILLING LOG AND HISTORY

Project No. 4-79 Hole No. 16 Date 9/6/79
 Geologist Walker Driller Kicht Rig I.D. TKT-1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
12:00			<u>no circulation</u>				
		4, 3	drilling slow	10		260	
				20		270	
1:00		3	stopped, mixing pits	30		280	
				40		290	
2:00		4, 3	" drilling slow "	50		300	
				60		310	
3:00		4, 3	Stopped, mixing up pits	70		320	
			drilling slow, no circ.	80		330	
4:00		3	no circulation	90		340	
			mixing pits	100		350	
5:00		4, 3	no circulation	110		360	
			drilling slow	120		370	
6:00		3	no circulation	130		380	
			mixing pits	140		390	
7:00		4, 5	drilling slow	150		400	
			pulled pipe to change bit	160		410	
8:00		4, 4, 10	mixing Gel before going	170		420	
			back in hole, mixed both pits	180		430	
9:00		10, 3	" "	190		440	
			starting back in hole	200		450	
10:00		3	back on bottom	210		460	
				220		470	
11:00		3	drilling slow, some	230		480	
			structures	240		490	
				250		500	

EXPENDABLE DRILLING MATERIALS USED
 Quantities

- 3 water hauls
- Joint, 3/4" Pipe @ 21 ft. ea.
- 7 Quik-Trol (pkgs.)
- Drift Foam/Quik-Foam (gals.)
- Hy-Seal 100 lb bags Barite used
- Quik-Gel 65 total Aqua Gel other
- Jel-Flake 9 total Mud Gel (describe)
- Micater 15, 12, 20, 1, Aqua-Gel (65) bags
- Fluid-Trol 2, 1/6 Mud Gel (9) bags
- Cedar Fibre
- 24 Cottonseed Hulls 4, 4, 6, 4, 6
- Wall-Nut
- Cellophane Flakes
- Cement
- Lime

FOOTAGE:
 from 740 ft.
 to 840 ft.
 Bit Size 6 1/4
 Air _____ Mud

Bit No.	Changed at	Log Approved:
<u>AF 3098</u>	<u>820</u> ft.	_____
<u>AC 1242</u>	_____ ft.	Date _____

LOG REFERENCE CODE NUMBERS	
1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: We are mixing as much loss circulation material as possible without plugging bit. Used all the mud that was on location for last 2 pits!

GEOTHERMAL SERVICES INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 • (714) 566-4520

DRILLING LOG AND HISTORY

Project No. 4-79 Hole No. 16 Date 9/7/77
 Geologist WALKER Driller HOLDEN Rig I.D. TKT-1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
12:00							
6:00		3444	No Mud yet	10		260	
7:00		10	Stand by for Mud	20		270	
8:00		10	"	30		280	
9:00		10	"	40		290	
10:00		10	"	50		300	
11:00		10	"	60		310	
12:00		10	"	70		320	
1:00		10	"	80		330	
2:00		10	"	90		340	
3:00		10	"	100		350	
4:00		10	"	110		360	
5:00		10	"	120		370	
6:00		10	"	130		380	
7:00		10	"	140		390	
8:00		10	"	150		400	
9:00		10	"	160		410	
10:00		10	"	170		420	
11:00		10	"	180		430	
12:00		10	"	190		440	
1:00		10	"	200		450	
2:00		10 x 3	Mud	210		460	
3:00		3	"	220		470	
4:00				230		480	
5:00				240		490	
				250		500	

EXPENDABLE DRILLING MATERIALS USED

Quantities

- _____ Joint, 3/4" Pipe @ 21 ft. ea.
- _____ Quik-Trol (pkgs.)
- _____ Drift Foam/Quik-Foam (gals.)
- _____ Hy-Seal-N _____ Barite
- 40 Quik-Gel _____ Other
- _____ Jel-Flake _____ (describe)
- _____ Micatex C _____
- _____ Fluid-Trol _____
- _____ Cedar Fibre _____
- 5 Cottonseed Hulls _____
- _____ Wall-Nut _____
- _____ Cellophane Flakes _____
- _____ Cement _____
- _____ Lime _____

FOOTAGE:

from 840 ft.
to 860 ft.

Bit Size 6 1/4
Air _____ Mud 2

Bit No.	Changed at
<u>AC 1242</u>	_____ ft.
	_____ ft.

Log Approved: _____

Date _____

LOG REFERENCE CODE NUMBERS

- | | |
|-------------------|-------------------------|
| 1 travel to site | 6 logging |
| 2 set up | 7 run 3/4" pipe |
| 3 drilling | 8 rig down & clean site |
| 4 water trip | 9 maintenance |
| 5 pull drill pipe | 10 Other (explain) |

Remarks: MUD ARRIVED 10:30

GEO THERMAL SERVICE INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 • (714) 566-4520

DRILLING LOG AND HISTORY

Project No. 4-29 Hole No. 16 Date 9/2/79
 Geologist Walker Driller KICHT Rig I.D. TKT-1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
12:00			drilling slow				
		3	" "	10		260	
			" "	20		270	
1:00		4 3	" "	30		280	
			" "	40		290	
2:00		4,4 3	stopped to mix Gel back to drilling	50		300	
			" "	60		310	
3:00		3	drilling slow, some kind	70		320	
			" "	80		330	
4:00		4 3	of medium, soft formation	90		340	
			" "	100		350	
5:00		4 3	mixing Gel	110		360	
			" "	120		370	
6:00		3	drilling AGAIN!	130		380	
			" "	140		390	
7:00		3	knocking out of hole, going to try something different	150		400	
			" "	160		410	
8:00		4 3	mixing Gel	170		420	
			" "	180		430	
9:00		3	CASING plugged, had to drill out hulls	190		440	
			" "	200		450	
10:00		3	" "	210		460	
			" "	220		470	
11:00		3	" "	230		480	
			" "	240		490	
			" "	250		500	

EXPENDABLE DRILLING MATERIALS USED

Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.	_____ Barite New
<u>2</u> Quik-Trol (pkgs.)	_____ Other (describe)
_____ Drift Foam/Quik-Foam (gals.)	
_____ Hy-Seal-N	
<u>59</u> Quik-Gel <u>14, 16, 29</u>	
_____ Jel-Flake	
_____ Micatex C	
_____ Fluid-Trol	
_____ Cedar Fibre	
<u>22</u> Cottonseed Hulls <u>8, 4, 10</u>	
_____ Wall-Nut	
_____ Cellophane Flakes	
_____ Cement	
_____ Lime	

FOOTAGE:
 from ~~860~~ 860 ft.
 to 920 ft.

Bit Size 6 1/4
 Air _____ Mud

Bit No.	Changed at
<u>AC1242</u>	<u>920</u> ft.
<u>AF8472(F2)</u>	ft.

Log Approved: _____
 Date _____

LOG REFERENCE CODE NUMBERS

1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: 5006 sacks of
Go to put hulls directly down hole
on top of 5006 mud sacks. I AM (WILLING) TO
TRY ANYTHING NOW!! Cottonseed hulls
plugged off casing, had to drill out hulls.

GEOTHERMAL SERVICES INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 • (714) 566-4520

DRILLING LOG AND HISTORY

Project No. 4-79 Hole No. 16 Date 9/8/79
 Geologist WALKER Driller Holden Rig I.D. TKT-1

TIME (AM/PM) (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
12:00							
1:00		344	PUSHING PLUG & HULLS	10		260	
2:00		344	To L.C. ZONE	20		270	
3:00		3	" "	30		280	
4:00		3	" "	40		290	
5:00		3	" "	50		300	
6:00		3	" "	60		310	
7:00		3	" "	70		320	
8:00		3	" "	80		330	
9:00		3	" "	90		340	
10:00		3	DRILLING BRIDGES OUT	100		350	
11:00		3	FROM 600' - 920'	110		360	
12:00		3	" "	120		370	
1:00		3	" "	130		380	
2:00		3	" "	140		390	
3:00		3	" "	150		400	
4:00		3	" "	160		410	
5:00		3	" "	170		420	
6:00		3	" "	180		430	
7:00		3	" "	190		440	
8:00		3	" "	200		450	
9:00		344		210		460	
10:00		10.44	BACKHOE CLEANING PITS	220		470	
11:00				230		480	
				240		490	
				250		500	

EXPENDABLE DRILLING MATERIALS USED

Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.	
_____ Quik-Trol (pkgs.)	
_____ Drift Foam/Quik-Foam (gals.)	
_____ Hy-Seal-N	_____ Barite
_____ Quik-Gel	_____ Other
_____ Jel-Flake	(describe)
_____ Micatex C	
_____ Fluid-Trol	
_____ Cedar Fibre	
_____ Cottonseed Hulls	
_____ Wall-Nut	
_____ Cellophane Flakes	
_____ Cement	
_____ Lime	

FOOTAGE:
 from 920 ft.
 to 920 ft.

Bit Size 6 1/4
 Air _____ Mud

Bit No.	Changed at
<u>AF 8472</u>	_____ ft.
	_____ ft.

Log Approved: _____
 Date _____

LOG REFERENCE CODE NUMBERS

1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: PLUGGED BIT SEVERAL TIMES

GEO THERMAL SERVICES, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 (4) 566-4520

DRILLING LOG AND HISTORY

Project No. 4-79 Hole No. 16 Date 8/8/79
 Geologist Walker Driller Right Rig I.D. TKT-1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
12:00		4,4 3	mixing Gel	10		260	
1:00		3	" "	20		270	
2:00		3	drilling slow	30		280	
3:00		3		40		290	
3:00		4	5 1/2" clay, button want dia	50		300	
4:00		4	5 tripping out to change bit	60		310	
5:00		4	5 back in hole	70		320	
6:00		4,4	5 back on bottom	80		330	
7:00		4,4	5 slow drilling bit pulling up	90		340	
8:00		4	5 tripping out change bit	100		350	
9:00		4	5 go back in hole	110		360	
10:00		4	5 back on bottom	120		370	
11:00		4,4	5 slow drilling bit pulling up	130		380	
12:00		4,4	5 tripping out change bit	140		390	
1:00		4	5 go back in hole	150		400	
2:00		4	5 back on bottom	160		410	
3:00		4	5 put on drag bit	170		420	
4:00		4	3 drilling good	180		430	
5:00		4,4	3 mixing Gel	190		440	
6:00		4	3 drilling good, clay	200		450	
7:00		4	3 drilling good, clay	210		460	
8:00		4	3 drilling good, clay	220		470	
9:00		4	3 mixing Gel	230		480	
10:00		4	3 mixing Gel	240		490	
11:00		4	3 mixing Gel	250		500	

EXPENDABLE DRILLING MATERIALS USED
 Quantities

10 wtk hauls

18 Joint, 3/4" Pipe @ 21 ft. ea.

18 Quik-Trol (pkgs.) 3, 9

Drift Foam/Quik-Foam (gals.) _____

Hy-Seal-N _____ Barite _____

113 Quik-Gel 25, 30, 28, 14, 16 Other _____

Jel-Flake _____ (describe)

Micatex C 3 _____

Fluid-Trol _____

Cedar Fibre _____

10 Cottonseed Hulls 6, 4 _____

Wall-Nut _____

Cellophane Flakes _____

Cement _____

Lime _____

FOOTAGE:
 from 920 ft.
 to 1130 ft.

Bit Size 6 1/4
 Air _____ Mud

Bit No.	Changed at	Log Approved:
AF 8472	940 ft.	_____
11P 005	_____ ft.	Date _____

LOG REFERENCE CODE NUMBERS

1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: _____

GEO THERMAL SERVICES INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 • (714) 566-4520

DRILLING LOG AND HISTORY

Project No. 4-79 Hole No. 16 Date 9/9/79
 Geologist Walker Driller Holder Rig I.D. TIC-1

TIME (AM/PM) (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
12:00							
6:00		314		10		1260	
7:00		314		20		270	
7:00		314		30		280	
8:00		314		40		290	
8:00		314		50		300	
9:00		314		60		310	
10:00		3		70		320	
10:00		3		80		330	
11:00		314		90		340	
11:00		314		100		350	
12:00		3		110		360	
12:00		3		120		370	
1:00		314		130		380	
1:00		3		140		390	
2:00		3		150		400	
2:00		3		160		410	
3:00		314+4		170		420	
3:00		314+4		180		430	
4:00		3		190		440	
4:00		3		200		450	
5:00		314+4		210		460	
5:00		314+4		220		470	
				230		480	
				240		490	
				250		500	

EXPENDABLE DRILLING MATERIALS USED
 Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.	_____ Barite
<u>22</u> Quik-Trol (pkgs.)	_____ Other
_____ Drift Foam/Quik-Foam (gals.)	(describe)
_____ Hy-Seal-N	_____
<u>50</u> Quik-Gel	_____
_____ Jel-Flake	_____
_____ Micatex C	_____
_____ Fluid-Trol	_____
_____ Cedar Fibre	_____
_____ Cottonseed Hulls	_____
_____ Wall-Nut	_____
_____ Cellophane Flakes	_____
_____ Cement	_____
_____ Lime	_____

FOOTAGE:
 from 1130 ft.
 to 1260 ft.

Bit Size 6 1/4
 Air _____ Mud

Bit No.	Changed at
<u>DRAG</u>	_____ ft.
	_____ ft.

Log Approved: _____
 Date _____

LOG REFERENCE CODE NUMBERS

1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: _____

GEOTHERMAL SERVICES INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 • (714) 566-4520

DRILLING LOG AND HISTORY

374
1280

Project No. 4-79 Hole No. 16 Date 9/19/79
 Geologist WALKER Driller RIGHT Rig I.D. TKT-1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
12:00			drilling good, feels like				
6:00		443	were still in clay	10		260	
				20		270	
1:00		43	" "	30		280	
				40		290	
3:00	↓	443	Hit something hard, drag	50		300	
			bit won't go thru.	60		310	
3:00	↓	53	tripping out to change bit	70		320	
			hole was tight, clay was swelling	80		330	
4:00	↓	444, 60	water hauls	90		340	
			mixing up pit!	100		350	
5:00	↓	4410	hauling water & mixing	110		360	
			oil & tripping back in hole	120		370	
6:00	↓	443	had to run last 150 ft	130		380	
			back on bottom	140		390	
7:00	↓	443	drilling hard, feathers	150		400	
8:00	↓	443	I think we hit the	160		410	
			basalt,	170		420	
9:00	↓	443		180		430	
				190		440	
10:00	↓	44	mixing up gel!	200		450	
			drilling again	210		460	
11:00	↓	4	hard drilling	220		470	
				230		480	
				240		490	
				250		500	

EXPENDABLE DRILLING MATERIALS USED

Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.	_____ Barite
_____ Quik-Trol (pkgs.)	_____ Other
_____ Drift Foam/Quik-Foam (gals.)	(describe)
_____ Hy-Seal-N	_____
33 Quik-Gel 33, 24, 30	_____
_____ Jel-Flake	_____
_____ Micatex C	_____
_____ Fluid-Trol	_____
_____ Cedar Fibre	_____
_____ Cottonseed Hulls	_____
_____ Wall-Nut	_____
_____ Cellophane Flakes	_____
_____ Cement	_____
_____ Lime	_____

FOOTAGE:
 from 1260 ft.
 to 1320 ft.

Bit Size 6/16
 Air _____ Mud X

Bit No.	Changed at
<u>DR49</u>	<u>1310</u> ft.
<u>HP005</u>	_____ ft.

Log Approved: _____
 Date _____

LOG REFERENCE CODE NUMBERS

1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: _____

GEOTHERMAL SERVICES INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 • (714) 566-4520

*RICKEN
WILSON*

DRILLING LOG AND HISTORY

Project No. 4-79 Hole No. 16 Date 9-10-79
 Geologist ~~EUGENE CANCANELLI~~ Driller POTTER Rig I.D. TAT#1
EUGENE CANCANELLI

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
<u>12:00</u> <u>6:00</u>	/	3+4	DRILLING MOD. HARD	10		260	
7:00			3+4	1070' - HARD + FAC. LOW SV DOWN	20		270
8:00		3+4	" "	30		280	
9:00		3+4	" "	40		290	
		3+4	" "	50		300	
10:00		3+4	" "	60		310	
		5	TRIP FOR BIT	70		320	
11:00		5	CHANGE	80		330	
		5+3	" "	90		340	
12:00		3+4	DRILLING VERY SLOW	100		350	
		3+4	AIN HARD - FEW	110		360	
1:00		3+4	" "	120		370	
		3+4	" "	130		380	
2:00		3+4	" "	140		390	
		3+4	" "	150		400	
3:00	3+4	" "	160		410		
	3+4	" "	170		420		
4:00	3+4	" "	180		430		
	3+4	" "	190		440		
14:00	3+4	" "	200		450		
	3+4	" "	210		460		
15:00	3+4	" "	220		470		
	3+4	" "	230		480		
					490		
					500		

EXPENDABLE DRILLING MATERIALS USED
 Quantities

___ Joint, 3/4" Pipe @ 21 ft. ea.
 ___ Quik-Trol (pkgs.)
 ___ Drift Foam/Quik-Foam (gals.)
 ___ Hy-Seal-N _____ Barite
 ___ Quik-Gel _____ Other
 (describe)
 ___ Jel-Flake WATER LOADS
 ___ Micatex C 15 LOADS
 ___ Fluid-Trol _____
 ___ Cedar Fibre _____
 ___ Cottonseed Hulls _____
 ___ Wall-Nut _____
 ___ Cellophane Flakes _____
 ___ Cement _____
 ___ Lime _____

FOOTAGE:
 from 1450 ft.
 to 1750 ft.

Bit Size 6 1/8"
 Air _____ Mud

Bit No.	Changed at
<u>HARD 25</u>	<u>1510</u> ft.
<u>4F4320</u>	_____ ft.

Log Approved: _____
 Date _____

LOG REFERENCE CODE NUMBERS	
1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: _____

GEO THERMAL SERVICES, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 (714) 566-4520

DRILLING LOG AND HISTORY

Project No. 4-79 Hole No. 16 Date 9/10/79
 Geologist Walker Driller Holden Rig I.D. TKI-1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
12:00	↑	3+4	Drilling Hard & slow				
6:00				10		260	
7:00				20		270	
8:00				30		280	
9:00				40		290	
10:00				50		300	
11:00				60		310	
12:00				70		320	
1:00				80		330	
2:00				90		340	
3:00				100		350	
4:00				110		360	
5:00				120		370	
6:00				130		380	
7:00				140		390	
8:00	150		400				
9:00	160		410				
10:00	170		420				
11:00	180		430				
12:00	190		440				
1:00	200		450				
2:00	210		460				
3:00	220		470				
4:00	230		480				
5:00	240		490				
6:00	250		500				

EXPENDABLE DRILLING MATERIALS USED
 Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.
 _____ Quik-Trol (pkgs.)
 _____ Drift Foam/Quik-Foam (gals.)
 _____ Hy-Seal-N _____ Barite
60 Quik-Gel 20 _____ Other
 _____ Jel-Flake _____ (describe)
 _____ Micatex C 2 Con Det
 _____ Fluid-Trol 1 Barafos
 _____ Cedar Fibre _____
 _____ Cottonseed Hulls _____
 _____ Wall-Nut _____
 _____ Cellophane Flakes _____
 _____ Cement _____
 _____ Lime _____

FOOTAGE:
 from 132 ft. to 1450 ft. Bit Size 6 1/8
 Air _____ Mud

Bit No.	Changed at	Log Approved:
<u>HPO05</u>	_____ ft.	_____
_____	_____ ft.	Date _____

LOG REFERENCE CODE NUMBERS	
1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: Clay 1375'

GEOHERMAL SERVICES, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 (4) 566-4520

DRILLING LOG AND HISTORY

Project No. 4-79 Hole No. 16 Date 9/18/79
 Geologist WALKER Driller HOLDEN Rig I.D. TKT-1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
<u>12:00</u>	↑	3+4+4+4	Drilling Hazard	1605			
6:00				1610		260	
<u>1:00</u>				1620		270	
7:00				1630		280	
2:00				1640		290	
8:00				50		300	
3:00				60		310	
9:00				70		320	
4:00				80		330	
10:00				90		340	
5:00				100		350	
11:00				110		360	
6:00				120		370	
12:00				130		380	
<u>7:00</u>	140		390				
<u>8:00</u>	150		400				
<u>9:00</u>	160		410				
<u>10:00</u>	170		420				
<u>11:00</u>	180		430				
<u>12:00</u>	190		440				
<u>1:00</u>	200		450				
<u>2:00</u>	210		460				
<u>3:00</u>	220		470				
<u>4:00</u>	230		480				
<u>5:00</u>	240		490				
<u>6:00</u>	250		500				

EXPENDABLE DRILLING MATERIALS USED

Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.	_____ Barite
<u>7</u> Quik-Trol (pkgs.)	_____ Other (describe)
_____ Drift Foam/Quik-Foam (gals.)	_____
_____ Hy-Seal-N	_____
<u>15</u> Quik-Gel	_____
_____ Jel-Flake	_____
_____ Micatex C	_____
_____ Fluid-Trol	_____
_____ Cedar Fibre	_____
_____ Cottonseed Hulls	_____
_____ Wall-Nut	_____
_____ Cellophane Flakes	_____
_____ Cement	_____
_____ Lime	_____

FOOTAGE:
 from 590 ft.
 to 1640 ft.

Bit Size 6 1/8"
 Air _____ Mud X

Bit No.	Changed at	Log Approved:
<u>154322</u>	ft.	_____
	ft.	Date _____

LOG REFERENCE CODE NUMBERS

1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: Kelly Blocks Froze up

GEOTHERMAL SERVICE, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 • (714) 566-4520

*WILSON
RICKEN*

DRILLING LOG AND HISTORY

Project No. 4-29 Hole No. 16 Date 9-11-79
 Geologist EUGENE STANGANELLI Driller POTTER Rig I.D. TKT #1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
6:00		10	STANDBY FOR	10		260	
7:00		10	HELLY PALLEY	20		270	
8:00		10		30		280	
9:00		10		40		290	
10:00		10		50		300	
11:00		10		60		310	
12:00		10		70		320	
1:00		10		80		330	
2:00		10	WENT TO RECOMM	90		340	
3:00		10	FOR PART OF	100		350	
4:00		10	AIR LINES WAS A	110		360	
5:00		10	IN	120		370	
6:00		10		130		380	
7:00		10		140		390	
8:00		10		150		400	
9:00		10		160		410	
10:00		10		170		420	
11:00		10		180		430	
12:00		10		190		440	
1:00		10		200		450	
2:00		10		210		460	
3:00		10		220		470	
4:00		10		230		480	
5:00		10		240		490	
6:00		10		250		500	

EXPENDABLE DRILLING MATERIALS USED

Quantities

- _____ Joint, 3/4" Pipe @ 21 ft. ea.
- _____ Quik-Trol (pkgs.)
- _____ Drift Foam/Quik-Foam (gals.)
- _____ Hy-Seal-N _____ Barite
- _____ Quik-Gel _____ Other
- _____ Jel-Flake _____ (describe)
- _____ Micatex C 8 LOADS
- _____ Fluid-Trol WATER
- _____ Cedar Fibre _____
- _____ Cottonseed Hulls _____
- _____ Wall-Nut _____
- _____ Cellophane Flakes _____
- _____ Cement _____
- _____ Lime _____

FOOTAGE:

from 1640 ft.
to 1640 ft.

Bit Size 6 1/8"

Air _____ Mud

Bit No.	Changed at
<u>AF 43223</u>	_____ ft.
_____	_____ ft.

Log Approved: _____

Date _____

LOG REFERENCE CODE NUMBERS

- | | |
|-------------------|-------------------------|
| 1 travel to site | 6 logging |
| 2 set up | 7 run 3/4" pipe |
| 3 drilling | 8 rig down & clean site |
| 4 water trip | 9 maintenance |
| 5 pull drill pipe | 10 Other (explain) |

Remarks: _____

GEOTHERMAL SERVICES, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 (714) 566-4520

DRILLING LOG AND HISTORY

Project No. 4-79 Hole No. 16 Date 9/12/79
 Geologist WALKER Driller Holden Rig I.D. JKT-1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
12:00							
6:00		10 + 4	Standby for parts	10		260	
7:00		10 + 4	"	20		270	
8:00		10 + 4	"	30		280	
9:00		10 + 4	"	40		290	
10:00		10 + 4	"	50		300	
11:00		10 + 4	"	60		310	
12:00		10 + 4	"	70		320	
1:00		10 + 4	"	80		330	
2:00		10 + 4	"	90		340	
3:00		10	"	100		350	
4:00		10	"	110		360	
5:00		10 + 4	"	120		370	
6:00		10 + 4	"	130		380	
7:00		10	"	140		390	
8:00		10 + 4	"	150		400	
9:00		10 + 4	"	160		410	
10:00		10 + 4	"	170		420	
11:00		10 + 4	"	180		430	
12:00		10 + 4	Water Truck #1	190		440	
1:00		10 + 4	" " " #2	200		450	
2:00		9 + 4	"	210		460	
3:00		9	Rig	220		470	
4:00				230		480	
5:00				240		490	
6:00				250		500	

EXPENDABLE DRILLING MATERIALS USED
 Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.
 _____ Quik-Trol (pkgs.)
 _____ Drift Foam/Quik-Foam (gals.)
 _____ Hy-Seal-N _____ Barite
 _____ Quik-Gel _____ Other
 _____ Jel-Flake _____ (describe)
 _____ Micatex C _____
 _____ Fluid-Trol _____
 _____ Cedar Fibre _____
 _____ Cottonseed Hulls _____
 _____ Wall-Nut _____
 _____ Cellophane Flakes _____
 _____ Cement _____
 _____ Lime _____

FOOTAGE:
 from _____ ft.
 to _____ ft.

Bit Size 6/8
 Air _____ Mud _____

Bit No.	Changed at
<u>AS43227</u>	_____ ft.
	_____ ft.

Log Approved: _____
 Date _____

LOG REFERENCE CODE NUMBERS	
1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: No parts yet.

GEOTHERMAL SERVICE, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 • (714) 566-4520

DRILLING LOG AND HISTORY

*RICKEN
WILSON*

Project No. 4-79 Hole No. 16 Date 9-12-79
 Geologist EUGENE CLANONELLI Driller POTTER Rig I.D. THT#1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
6:00	/	5	TRIPPED FOR	10		260	
7:00	/	5	BIT	20		270	
8:00	/	5	" "	30		280	
9:00	/	5	" "	40		290	
10:00	/	5	" "	50		300	
11:00	/	5	" "	60		310	
12:00	/	5	" "	70		320	
1:00	/	5	" "	80		330	
2:00	/	5	" "	90		340	
3:00	/	5	" "	100		350	
4:00	/	5	" "	110		360	
5:00	/	5	" "	120		370	
6:00	/	5	" "	130		380	
7:00	/	5	" "	140		390	
8:00	/	5	" "	150		400	
9:00	/	5	" "	160		410	
10:00	/	5	" "	170		420	
11:00	/	5	" "	180		430	
12:00	/	5	" "	190		440	
1:00	/	5	" "	200		450	
2:00	/	5	" "	210		460	
3:00	/	5	" "	220		470	
4:00	/	5	" "	230		480	
5:00	/	5	" "	240		490	
6:00	/	5	" "	250		500	

EXPENDABLE DRILLING MATERIALS USED
Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.	
_____ Quik-Trol (pkgs.)	
_____ Drift Foam/Quik-Foam (gals.)	
_____ Hy-Seal-N	_____ Barite <i>(123)</i>
_____ Quik-Gel	_____ Other <i>(65)</i>
_____ Jel-Flake	_____ (describe) <i>WATER</i>
_____ Micatex C	_____ <i>14 LOADS</i>
_____ Fluid-Trol	_____
_____ Cedar Fibre	_____
_____ Cottonseed Hulls	_____
_____ Wall-Nut	_____
_____ Cellophane Flakes	_____
_____ Cement	_____
_____ Lime	_____

FOOTAGE:
 from 1640 ft. to 1790 ft. Bit Size 6 1/8"
 Air _____ Mud

Bit No.	Changed at
<u>AF4327</u>	<u>1640</u> ft.
<u>UNKNOWN</u>	_____ ft.

Log Approved: _____
 Date _____

LOG REFERENCE CODE NUMBERS

1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: _____

GEOTHERMAL SERVICES, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 (714) 566-4520

DRILLING LOG AND HISTORY

Project No. 4-79 Hole No. 16 Date 9/13/79
 Geologist WALKER Driller ~~Walker~~ Holden Rig I.D. TK-1

TIME (Circle) AM/PM	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
6:00				1800		260	
7:00		3+4+4+4	Slow & Hard	1820		270	
8:00		3+4+4	" "	1830		280	
9:00		3+4+4	" "	1840		290	
10:00		3+4+4	" "	1850		300	
11:00		3+4+4	" "	1860		310	
12:00		3+4+4	" "	1870		320	
1:00		3+4+4	" "	1880		330	
2:00		3+4+4	" "	1890		340	
3:00		3+4+4	" "	1900		350	
4:00		3+4+4	" "	1910		360	
5:00		3+4+4	" "	1920		370	
6:00		3+4+4	" "	1930		380	
7:00		3+4+4	" "	1940		390	
8:00		3+4+4	" "	1950		400	
9:00		3+4+4	" "	1960		410	
10:00		3+4+4	" "	1970		420	
11:00		3+4+4	" "	1980		430	
12:00		3+4+4	" "	1990		440	
1:00		3+4+4	Easy Pulling	2000		450	
2:00		3+4+4	Hard & Slow	210		460	
3:00		3+4+4		220		470	
4:00		3+4+4		230		480	
5:00		3+4+4		240		490	
				250		500	

EXPENDABLE DRILLING MATERIALS USED
 Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.
 _____ Quik-Trol (pkgs.)
 _____ Drift Foam/Quik-Foam (gals.)
 _____ Hy-Seal-N _____ Barite
 _____ Quik-Gel _____ Other
 _____ Jel-Flake _____ (describe)
 _____ Micatex C _____
 _____ Fluid-Trol _____
 _____ Cedar Fibre _____
 _____ Cottonseed Hulls _____
 _____ Wall-Nut _____
 _____ Cellophane Flakes _____
 _____ Cement _____
 _____ Lime _____

FOOTAGE:
 from 1790 ft.
 to 1920 ft.

Bit Size 6/4
 Air _____ Mud X

Bit No.	Changed at	Log Approved:
<u>V-3 UNKN</u>	ft.	_____
	ft.	Date _____

LOG REFERENCE CODE NUMBERS	
1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: 1860-1880 after formation

GEOTHERMAL SERVICES, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 (714) 566-4520

*RICKEN
WILSON*

DRILLING LOG AND HISTORY

Project No. 4-99 Hole No. 16 Date 9-13-99
 Geologist EUGENE CIANCANELLO Driller POTTER Rig I.D. TKT41

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
10:00		3+4	DRILLING SLOW	10		260	
				20		270	
7:00		3+4		30		280	
				40		290	
8:00		5	TRAPPED FOR BIT	50		300	
				60		310	
9:00		5+9	" "	70		320	
				80		330	
10:00		5	" "	90		340	
				100		350	
15:00		5+4	80 FT. ON BOTTOM PLUGGED BIT - WORKED	110		360	
				120		370	
18:00		5+4	TO GET AN PLUGGED TRAPPED OUT	130		380	
				140		390	
2:00		5		150		400	
				160		410	
3:00		5	CLEANED OUT JOINT FINE	170		420	
				180		430	
4:00		5	SAND WENT DOWN - PLUGGED	190		440	
				200		450	
10:00		5+4	BIT AT 200 FT. WORKED TO GET UN-	210		460	
				220		470	
11:00		5+4	PLUGGED - TRIPPING OUT RIS BROKE DOWN	230		480	
				240		490	
				250		500	

EXPENDABLE DRILLING MATERIALS USED

Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.	_____ Barite
_____ Quik-Trol (pkgs.)	_____ Other
_____ Drift Foam/Quik-Foam (gals.)	(describe)
_____ Hy-Seal-N	<u>WATER</u>
_____ Quik-Gel	<u>10 LOADS</u>
_____ Jel-Flake	_____
_____ Micatex C	_____
_____ Fluid-Trol	_____
_____ Cedar Fibre	_____
_____ Cottonseed Hulls	_____
_____ Wall-Nut	_____
_____ Cellophane Flakes	_____
_____ Cement	_____
_____ Lime	_____

FOOTAGE:
 from 1920 ft.
 to 1935 ft.

Bit Size 6 1/8"
 Air _____ Mud

Bit No.	Changed at
<u>23</u>	<u>1930</u> ft.
	ft.

Log Approved: _____
 Date _____

LOG REFERENCE CODE NUMBERS

1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: _____

GEO THERMAL SERVICES, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 (714) 566-4520

DRILLING LOG AND HISTORY

151

Project No. 7-79 Hole No. 16 Date 9/14/79
 Geologist WALKER Driller Hobden Rig I.D. TKT-1

TIME (AM/PM) (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
12:00	✓						
6:00		10	DRAWWORKS & TRANSMISSION	10		260	
1:00		10	TORN-UP, STRING DROPPED	20		270	
8:00		10	ON PREVIOUS shift NO	30		280	
8:00		10		40		290	
9:00		10	ONE HURT	50		300	
9:00		10		60		310	
10:00		10	STANDBY FOR PARTS	70		320	
10:00		10		80		330	
11:00		10		90		340	
11:00		10		100		350	
12:00		10		110		360	
12:00		10		120		370	
1:00		10	ORDERED PARTS	130		380	
1:00		10		140		390	
2:00		10		150		400	
2:00		10		160		410	
3:00		10		170		420	
3:00		10		180		430	
4:00		10		190		440	
4:00		10		200		450	
5:00		10		210		460	
5:00	✓	10		220		470	
		10		230		480	
		10		240		490	
		10		250		500	

EXPENDABLE DRILLING MATERIALS USED

Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.	_____ Barite
_____ Quik-Trol (pkgs.)	_____ Other
_____ Drift Foam/Quik-Foam (gals.)	(describe)
_____ Hy-Seal-N	_____
_____ Quik-Gel	_____
_____ Jel-Flake	_____
_____ Micatex C	_____
_____ Fluid-Trol	_____
_____ Cedar Fibre	_____
_____ Cottonseed Hulls	_____
_____ Wall-Nut	_____
_____ Cellophane Flakes	_____
_____ Cement	_____
_____ Lime	_____

FOOTAGE: from _____ ft. to _____ ft.

Bit Size _____

Air _____ Mud _____

Bit No.	Changed at
	ft.
	ft.

Log Approved: _____

Date _____

LOG REFERENCE CODE NUMBERS	
1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: 1st shift

GEOTHERMAL SERVICES, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 (714) 566-4520

DRILLING LOG AND HISTORY

Project No. 4-77 Hole No. 16 Date 9/14/79
 Geologist Walker Driller Holden Rig I.D. TK-1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
12:00	A	10	Stand-by for Parts				
6:00				10		260	
1:00				20		270	
7:00				30		280	
2:00				40		290	
8:00				50		300	
3:00				60		310	
9:00				70		320	
4:00				80		330	
10:00				90		340	
5:00				100		350	
11:00				110		360	
6:00				120		370	
12:00				130		380	
7:00				140		390	
1:00				150		400	
8:00				160		410	
2:00				170		420	
9:00				180		430	
3:00				190		440	
10:00	200		450				
11:00	210		460				
3:00	220		470				
	230		480				
	240		490				
	250		500				

EXPENDABLE DRILLING MATERIALS USED
 Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.
 _____ Quik-Trol (pkgs.)
 _____ Drift Foam/Quik-Foam (gals.)
 _____ Hy-Seal-N _____ Barite
 _____ Quik-Gel _____ Other
 _____ Jel-Flake _____ (describe)
 _____ Micatex C _____
 _____ Fluid-Trol _____
 _____ Cedar Fibre _____
 _____ Cottonseed Hulls _____
 _____ Wall-Nut _____
 _____ Cellophane Flakes _____
 _____ Cement _____
 _____ Lime _____

FOOTAGE:
 from _____ ft. Bit Size _____
 to _____ ft. Air _____ Mud _____

Bit No.	Changed at
	ft.
	ft.

Log Approved: _____
 Date _____

LOG REFERENCE CODE NUMBERS

1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: ED POTTER & CREW WENT TO SEND TO PICK-UP TRANSMISSION, 2ND SHIFT.

GEOTHERMAL SERVICE, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 • (714) 566-4520

DRILLING LOG AND HISTORY

*RICKEN
WILSON*

Project No. 4-39 Hole No. 16 Date 9-14-39
 Geologist WALTER Driller ROTTER Rig I.D. 16741

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
6:00	/	10	WENT TO RENO	10		260	
				20		270	
7:00	/	10	FOR PARTS	30		280	
				40		290	
8:00	/	10	" "	50		300	
				60		310	
9:00	/	10	" "	70		320	
				80		330	
10:00	/	10	" "	90		340	
				100		350	
11:00	/	10	" "	110		360	
				120		370	
12:00	/	10	" "	130		380	
				140		390	
1:00	/	10	" "	150		400	
				160		410	
2:00	/	10	" "	170		420	
				180		430	
3:00	/	10	" "	190		440	
				200		450	
4:00	/	10	" "	210		460	
				220		470	
5:00	/	10	" "	230		480	
				240		490	
				250		500	

EXPENDABLE DRILLING MATERIALS USED
 Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.
 _____ Quik-Trol (pkgs.)
 _____ Drift Foam/Quik-Foam (gals.)
 _____ Hy-Seal-N _____ Barite
 _____ Quik-Gel _____ Other
 _____ Jel-Flake _____ (describe)
 _____ Micatex C _____
 _____ Fluid-Trol _____
 _____ Cedar Fibre _____
 _____ Cottonseed Hulls _____
 _____ Wall-Nut _____
 _____ Cellophane Flakes _____
 _____ Cement _____
 _____ Lime _____

FOOTAGE:
 from _____ ft. Bit Size _____
 to _____ ft. Air _____ Mud _____

Bit No.	Changed at
	ft.
	ft.

Log Approved: _____
 Date _____

LOG REFERENCE CODE NUMBERS

1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: _____

GEOTHERMAL SERVICES, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 • (714) 566-4520

*RECKEN
WILSON*

DRILLING LOG AND HISTORY

Project No. 4-79 Hole No. 16 Date 9-19-79
 Geologist WALKER Driller POTTER Rig I.D. TAT #1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
12:00 6:00	<i>/</i>			10		260	
				20		270	
7:00		10	COME TO WORK	30		280	
				40		290	
2:00		10	NO PARTS PICK	50		300	
				60		310	
3:00				70		320	
				80		330	
10:00				90		340	
				100		350	
6:00				110		360	
				120		370	
8:00				130		380	
				140		390	
7:00				150		400	
				160		410	
9:00				170		420	
				180		430	
9:00				190		440	
				200		450	
10:00			210		460		
			220		470		
11:00			230		480		
			240		490		
			250		500		

EXPENDABLE DRILLING MATERIALS USED
 Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.
 _____ Quik-Trol (pkgs.)
 _____ Drift Foam/Quik-Foam (gals.)
 _____ Hy-Seal-N _____ Barite
 _____ Quik-Gel _____ Other
 _____ Jel-Flake _____ (describe)
 _____ Micatex C _____
 _____ Fluid-Trol _____
 _____ Cedar Fibre _____
 _____ Cottonseed Hulls _____
 _____ Wall-Nut _____
 _____ Cellophane Flakes _____
 _____ Cement _____
 _____ Lime _____

FOOTAGE:
 from _____ ft. Bit Size _____
 to _____ ft. Air _____ Mud _____

Bit No. _____	Changed at _____
_____	ft. _____
_____	ft. _____

Log Approved: _____
 Date _____

LOG REFERENCE CODE NUMBERS	
1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: _____

GEOTHERMAL SERVICES, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 • (714) 566-4520

DRILLING LOG AND HISTORY

Project No. 4-79 Hole No. 16 Date 9/15/75
 Geologist WALKER Driller HOLDEN Rig I.D. TKT-1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
12:00							
6:00							
10:00							
7:00		10		10		260	
2:00		10		20		270	
8:00		10		30		280	
3:00		10		40		290	
9:00		10		50		300	
10:00		10	TRANSMISSION ARRIVED	60		310	
5:00		10		70		320	
11:00		10		80		330	
6:00		10		90		340	
12:00		10		100		350	
7:00		10		110		360	
1:00		10		120		370	
8:00		10		130		380	
3:00		10		140		390	
9:00		10		150		400	
4:00		10		160		410	
10:00		10		170		420	
5:00		9	Bubble arrived	180		430	
11:00		9		190		440	
6:00		9	PULLING TRANSMISSION	200		450	
12:00		9		210		460	
7:00		9		220		470	
1:00		9	DRAWWORKS	230		480	
8:00				240		490	
3:00				250		500	

EXPENDABLE DRILLING MATERIALS USED
Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.	_____ Barite
_____ Quik-Trol (pkgs.)	_____ Other
_____ Drift Foam/Quik-Foam (gals.)	(describe)
_____ Hy-Seal-N	_____
_____ Quik-Gel	_____
_____ Jel-Flake	_____
_____ Micatex C	_____
_____ Fluid-Trol	_____
_____ Cedar Fibre	_____
_____ Cottonseed Hulls	_____
_____ Wall-Nut	_____
_____ Cellophane Flakes	_____
_____ Cement	_____
_____ Lime	_____

FOOTAGE:
 from _____ ft. to _____ ft.
 Bit Size _____
 Air _____ Mud _____

Bit No.	Changed at
	ft.
	ft.

Log Approved: _____
 Date _____

LOG REFERENCE CODE NUMBERS

1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: wanty for GREG and DRAWWORKS
2nd shift

GEOTHERMAL SERVICES, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 · (714) 566-4520

DRILLING LOG AND HISTORY

Project No. 4-79 Hole No. 16 Date 9/15/79
 Geologist WALKER Driller MOTTEN Rig I.D. TKJ-1

TIME, AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
10:00		9	DRAWWORKS	10		260	
7:00		9	" "	20		270	
2:00		9	" "	30		280	
3:00		9	" "	40		290	
3:00		10	Standby for misc.	50		300	
4:00		10	PARTS & DRAWWORKS	60		310	
5:00		10		70		320	
6:00		10		80		330	
7:00		10		90		340	
8:00		10		100		350	
9:00		10		110		360	
10:00		10		120		370	
11:00		10		130		380	
12:00		10		140		390	
1:00		10		150		400	
2:00		10		160		410	
3:00		10		170		420	
4:00		10		180		430	
5:00		10		190		440	
6:00		10		200		450	
7:00		10		210		460	
8:00		10		220		470	
9:00		10		230		480	
10:00		10		240		490	
11:00		10		250		500	

EXPENDABLE DRILLING MATERIALS USED
 Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.
 _____ Quik-Trol (pkgs.)
 _____ Drift Foam/Quik-Foam (gals.)
 _____ Hy-Seal-N _____ Barite
 _____ Quik-Gel _____ Other
 _____ Jel-Flake _____ (describe)
 _____ Micatex C _____
 _____ Fluid-Trol _____
 _____ Cedar Fibre _____
 _____ Cottonseed Hulls _____
 _____ Wall-Nut _____
 _____ Cellophane Flakes _____
 _____ Cement _____
 _____ Lime _____

FOOTAGE:
 from _____ ft. Bit Size _____
 to _____ ft. Air _____ Mud _____

Bit No.	Changed at
	ft.
	ft.

Log Approved: _____
 Date _____

LOG REFERENCE CODE NUMBERS	
1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: Ed & CREW 12-3, 4th shift

GEOTHERMAL SERVICES, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 (714) 566-4520

5

DRILLING LOG AND HISTORY

Project No. 4-79 Hole No. 16 Date 9/16/79
 Geologist WALKER Driller HOLDEN Rig I.D. TKT-1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
12:00							
6:00		10	STANDY, for Tests	10		260	
7:00		10		20		270	
				30		280	
8:00		10		40		290	
				50		300	
9:00		10		60		310	
				70		320	
10:00		10		80		330	
				90		340	
11:00		10		100		350	
				110		360	
12:00		10		120		370	
				130		380	
7:00		10	waiting for backhoe	140		390	
				150		400	
8:00		9 + 10	water tank (RED)	160		410	
				170		420	
9:00		9 + 10		180		430	
				190		440	
10:00		9 + 10		200		450	
				210		460	
11:00		9 + 10		220		470	
				230		480	
				240		490	
				250		500	

EXPENDABLE DRILLING MATERIALS USED
 Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.
 _____ Quik-Trol (pkgs.)
 _____ Drift Foam/Quik-Foam (gals.)
 _____ Hy-Seal-N _____ Barite
 _____ Quik-Gel _____ Other
 _____ Jel-Flake _____ (describe)
 _____ Micatex C _____
 _____ Fluid-Trol _____
 _____ Cedar Fibre _____
 _____ Cottonseed Hulls _____
 _____ Wall-Nut _____
 _____ Cellophane Flakes _____
 _____ Cement _____
 _____ Lime _____

FOOTAGE:
 from _____ ft. Bit Size _____
 to _____ ft. Air _____ Mud _____

Bit No.	Changed at
	ft.
	ft.

Log Approved: _____
 Date _____

LOG REFERENCE CODE NUMBERS	
1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: 5th shift, Parts covered but NO Dris shaft.

GEOTHERMAL SERVICE, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 · (714) 566-4520

DRILLING LOG AND HISTORY

612

Project No. 4-79 Hole No. 16 Date 9/16/79
 Geologist WALKER Driller ADDAN Rig I.D. TKT-1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
12:00		10+9	Backhoe arrived	10		260	
1:00		9	install transmission &	20		270	
2:00		9	Driveworks	30		280	
3:00		9	"	40		290	
4:00		9	"	50		300	
5:00		9	"	60		310	
6:00		9	"	70		320	
7:00		9	"	80		330	
8:00		9	"	90		340	
9:00		9	"	100		350	
10:00		9	"	110		360	
11:00		9	"	120		370	
12:00		9	"	130		380	
1:00		9	"	140		390	
2:00		9	"	150		400	
3:00		9	"	160		410	
4:00		9	"	170		420	
5:00		10	Standby	180		430	
6:00		10	"	190		440	
7:00		10	"	200		450	
8:00		10	"	210		460	
9:00		10	"	220		470	
10:00		10	"	230		480	
11:00		10	"	240		490	
				250		500	

EXPENDABLE DRILLING MATERIALS USED
 Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.
 _____ Quik-Trol (pkgs.)
 _____ Drift Foam/Quik-Foam (gals.)
 _____ Hy-Seal-N _____ Barite
 _____ Quik-Gel _____ Other
 _____ Jel-Flake _____ (describe)
 _____ Micatex C _____
 _____ Fluid-Trol _____
 _____ Cedar Fibre _____
 _____ Cottonseed Hulls _____
 _____ Wall-Nut _____
 _____ Cellophane Flakes _____
 _____ Cement _____
 _____ Lime _____

FOOTAGE:
 from _____ ft. Bit Size _____
 to _____ ft. Air _____ Mud _____

Bit No.	Changed at
	ft.
	ft.

Log Approved: _____
 Date _____

LOG REFERENCE CODE NUMBERS	
1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: ED to Portland for Driveshaft.

GEOTHERMAL SERVICE, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 - (714) 566-4520

*RICHEN
WILSON*

DRILLING LOG AND HISTORY

Project No. 4-29 Hole No. 16 Date 7-16-79
 Geologist WALKER Driller POPPER Rig I.D. JKT#1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
<u>12:00</u> 6:00			CAME TO WORK ALL THE PARTS WERE	10		260	
				20		270	
<u>7:00</u>			ORDERED HAD TO GET THEM AN	30		280	
				40		290	
<u>8:00</u>			GO TO PORTLAND TO PICK THEM	50		300	
				60		310	
<u>9:00</u>			UP	70		320	
				80		330	
<u>10:00</u>				90		340	
				100		350	
<u>11:00</u>				110		360	
				120		370	
<u>12:00</u>				130		380	
				140		390	
<u>1:00</u>				150		400	
				160		410	
<u>2:00</u>				170		420	
				180		430	
<u>3:00</u>				190		440	
				200		450	
<u>4:00</u>				210		460	
				220		470	
<u>5:00</u>				230		480	
				240		490	
				250		500	

EXPENDABLE DRILLING MATERIALS USED
 Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.
 _____ Quik-Trol (pkgs.)
 _____ Drift Foam/Quik-Foam (gals.)
 _____ Hy-Seal-N _____ Barite
 _____ Quik-Gel _____ Other
 _____ Jel-Flake _____ (describe)
 _____ Micatex C _____
 _____ Fluid-Trol _____
 _____ Cedar Fibre _____
 _____ Cottonseed Hulls _____
 _____ Wall-Nut _____
 _____ Cellophane Flakes _____
 _____ Cement _____
 _____ Lime _____

FOOTAGE:
 from _____ ft. Bit Size _____
 to _____ ft. Air _____ Mud _____

Bit No. _____	Changed at _____
_____	ft. _____
_____	ft. _____

Log Approved: _____
 Date _____

LOG REFERENCE CODE NUMBERS	
1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: _____

GEOTHERMAL SERVICES, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 9213. (714) 566-4520

(7th)

DRILLING LOG AND HISTORY

Project No. 4-99 Hole No. 16 Date 9/17/79
 Geologist Walker Driller Holden Rig I.D. TKT-1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
12:00		10	Standby	10		260	
1:00		10	" "	20		270	
2:00		10	" "	30		280	
3:00		10	" "	40		290	
4:00		10	" "	50		300	
5:00		10	" "	60		310	
6:00		10	" "	70		320	
7:00		10	" "	80		330	
8:00		10	" "	90		340	
9:00		10	" "	100		350	
10:00		10	" "	110		360	
11:00		10	" "	120		370	
12:00		10	" "	130		380	
1:00		8	" "	140		390	
2:00		10 + 4	" "	150		400	
3:00		10 + 4	" "	160		410	
4:00		10 + 4	" "	170		420	
5:00		10 + 4	" "	180		430	
6:00		10 + 4	" "	190		440	
7:00		10 + 4	" "	200		450	
8:00		10 + 4	" "	210		460	
9:00		10 + 4	" "	220		470	
10:00		10 + 4	" "	230		480	
11:00		10 + 4	" "	240		490	
				250		500	

EXPENDABLE DRILLING MATERIALS USED
 Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.
 _____ Quik-Trol (pkgs.)
 _____ Drift Foam/Quik-Foam (gals.)
 _____ Hy-Seal-N _____ Barite
 _____ Quik-Gel _____ Other
 _____ Jel-Flake _____ (describe)
 _____ Micatex C _____
 _____ Fluid-Trol _____
 _____ Cedar Fibre _____
 _____ Cottonseed Hulls _____
 _____ Wall-Nut _____
 _____ Cellophane Flakes _____
 _____ Cement _____
 _____ Lime _____

FOOTAGE:
 from _____ ft. Bit Size _____
 to _____ ft. Air _____ Mud _____

Bit No.	Changed at
	_____ ft.
	_____ ft.

Log Approved: _____
 Date _____

LOG REFERENCE CODE NUMBERS

1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: 7th Shift

GEOTHERMAL SERVICE, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 - (714) 566-4520

DRILLING LOG AND HISTORY

8th

Project No. 4-79 Hole No. 16 Date 9/17/79
 Geologist Walker Driller Holden Rig I.D. IRT-1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
12:00	↑	10 + 9	Stand by	10		260	
1:00		10 + 4		20		270	
2:00		10 + 9		30		280	
3:00		10		40		290	
4:00		10		50		300	
5:00		10		60		310	
6:00		10		70		320	
7:00		10		80		330	
8:00		9	Parts Arrived	90		340	
9:00		9	Install Parts	100		350	
10:00		5	Trip out	110		360	
11:00				120		370	
12:00				130		380	
1:00				140		390	
				150		400	
			160		410		
			170		420		
			180		430		
			190		440		
			200		450		
			210		460		
			220		470		
			230		480		
			240		490		
			250		500		

EXPENDABLE DRILLING MATERIALS USED
 Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.
 _____ Quik-Trol (pkgs.)
 _____ Drift Foam/Quik-Foam (gals.)
 _____ Hy-Seal-N _____ Barite
 _____ Quik-Gel _____ Other
 _____ Jel-Flake _____ (describe)
 _____ Micatex C _____
 _____ Fluid-Trol _____
 _____ Cedar Fibre _____
 _____ Cottonseed Hulls _____
 _____ Wall-Nut _____
 _____ Cellophane Flakes _____
 _____ Cement _____
 _____ Lime _____

FOOTAGE:
 from _____ ft. Bit Size _____
 to _____ ft. Air _____ Mud _____

Bit No.	Changed at
	ft.
	ft.

Log Approved: _____
 Date _____

LOG REFERENCE CODE NUMBERS	
1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: 12th still waiting on down shaft. No work yet. 8th shift.

GEO THERMAL SERVICES, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 (714) 566-4520

DRILLING LOG AND HISTORY

Project No. 4-79 Hole No. 16 Date 9-13-79
 Geologist WALKER Driller POTTER Rig I.D. TR#1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
6:00 AM	/						
	/	10	WAS AT PORTLAND	10		260	
	/			20		270	
	/	10	WAITING FOR PARTS	30		280	
	/			40		290	
	/	10	GET THEM AT 12:30	50		300	
	/			60		310	
	/	10	WENT BACK TO RIG	70		320	
	/			80		330	
	/	7	PUTTING PARTS	90		340	
	/			100		350	
	/	9	ON RIG	110		360	
	/			120		370	
	/	5	PULLED PIPE OUT	130		380	
	/			140		390	
	/	5	OF HOLE - UNPLUGGED	150		400	
	/			160		410	
	/	5	BIT TRIPPED IN	170		420	
	/			180		430	
	/	3	REAMING BACK	190		440	
	/			200		450	
	/	3	TO THE BOTTOM	210		460	
	/			220		470	
	/			230		480	
	/			240		490	
	/			250		500	

EXPENDABLE DRILLING MATERIALS USED

Quantities

- _____ Joint, 3/4" Pipe @ 21 ft. ea.
- 2 Quik-Trol (pkgs.)
- _____ Drift Foam/Quik-Foam (gals.)
- _____ Hy-Seal-N _____ Barite
- _____ Quik-Gel _____ Other
- _____ Jel-Flake _____ (describe) WALKER
- _____ Micatex C _____ 5 20 AAS
- _____ Fluid-Trol _____ 1 PARTS
- _____ Cedar Fibre _____
- _____ Cottonseed Hulls _____
- _____ Wall-Nut _____
- _____ Cellophane Flakes _____
- _____ Cement _____
- _____ Lime _____

FOOTAGE:

from 1640 ft. Bit Size 6 1/2"
 to 1900 ft. REAMED Air _____ Mud

Bit No.	Changed at	Log Approved:
<u>W397611</u>	_____ ft.	_____
	_____ ft.	Date _____

LOG REFERENCE CODE NUMBERS

- | | |
|-------------------|-------------------------|
| 1 travel to site | 6 logging |
| 2 set up | 7 run 3/4" pipe |
| 3 drilling | 8 rig down & clean site |
| 4 water trip | 9 maintenance |
| 5 pull drill pipe | 10 Other (explain) |

Remarks: 3 JOINTS OF 4 1/2" DRILL COLLAR THREADS WERE BAD

GEOTHERMAL SERVICE, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 • (714) 566-4520

DRILLING LOG AND HISTORY

Project No. 4-79 Hole No. 16 Date 9/18/78
 Geologist WALKER Driller Holder Rig I.D. TKT-1

TIME (Circle) AM/PM	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
6:00				10		260	
				20		270	
7:00				30		280	
				40		290	
8:00				50		300	
				60		310	
3:00		3+4+4	Reaming hole	70		320	
				80		330	
4:00		3+4+4		90		340	
				100		350	
5:00		3+4+4		110		360	
				120		370	
6:00		3+4+4		130		380	
				140		390	
7:00		3+4+4		150		400	
				160		410	
8:00		3+4+4	Mixing mud	170		420	
				180		430	
9:00		3+4+4	Pump mud	190		440	
				200		450	
10:00		3+4	Pump mud	210		460	
				220		470	
11:00		3+4+5	Pump	230		480	
				240		490	
				250		500	

EXPENDABLE DRILLING MATERIALS USED
Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.	_____ Barite
_____ Quik-Trol (pkgs.) <u>A+11</u>	_____ Other
_____ Drift Foam/Quik-Foam (gals.)	(describe)
_____ Hy-Seal-N	_____
<u>29</u> Quik-Gel <u>31+20+28</u>	_____
_____ Jel-Flake	_____
_____ Micatex C	<u>1 BARAFISS</u>
_____ Fluid-Trol	_____
_____ Cedar Fibre	_____
<u>5</u> Cottonseed Hulls	_____
_____ Wall-Nut	_____
_____ Cellophane Flakes	_____
_____ Cement	_____
_____ Lime	_____

FOOTAGE:
 from 1940 ft.
 to 2000 ft. TD

Bit Size 6 1/8
 Air _____ Mud X

Bit No. _____ Changed at _____ ft.
V-3 UNKNOWN ft.

Log Approved: _____
 Date _____

LOG REFERENCE CODE NUMBERS

1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: T.D. 7:30 Drilling with clean water. Mix 3 pits of Leona Mud & pump after T.D.

GEOTHERMAL SERVICE, INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 • (714) 566-4520

DRILLING LOG AND HISTORY

*RILKEN
WILSON*

Project No. 4-79 Hole No. 16 Date 9-18-79
 Geologist WALKER Driller POTTER Rig I.D. JAT#1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
12:00 6:00	/	5	COMING OUT OF HOLE	10		260	
1:00		5	AFTER TD	20		270	
2:00		5	" " "	30		280	
3:00		5	" " "	40		290	
4:00		5	" " "	50		300	
5:00		5	" " "	60		310	
6:00		10	TOOK OFF BOP	70		320	
7:00		10	" " "	80		330	
8:00		10+6	WAITING FOR LOGGER	90		340	
9:00		6+8	LOGGED - 40' LOG	100		350	
10:00		6+8	GO PAST 16 1/2'	110		360	
11:00		6+8	" " "	120		370	
12:00		6+8	" " "	130		380	
1:00		6+8	" " "	140		390	
2:00		6+8	" " "	150		400	
3:00	6+8	" " "	160		410		
4:00	6+8	" " "	170		420		
5:00	6+8	LOADED ALMOST EVERY	180		430		
6:00	6+8	THING	190		440		
7:00	6+10	STARTED RUNNING	200		450		
8:00	6+10	" " "	210		460		
9:00	10	2" BLACK PIPE	220		470		
10:00	10	" " "	230		480		
11:00	10	" " "	240		490		
12:00	10	" " "	250		500		

EXPENDABLE DRILLING MATERIALS USED
Quantities

- ___ Joint, 3/4" Pipe @ 21 ft. ea.
- ___ Quik-Trol (pkgs.)
- ___ Drift Foam/Quik-Foam (gals.)
- ___ Hy-Seal-N _____ Barite
- ___ Quik-Gel _____ Other
- ___ Jel-Flake _____ (describe)
- ___ Micatex C _____ WATER
- ___ Fluid-Trol _____ 1 LOAD
- ___ Cedar Fibre _____
- ___ Cottonseed Hulls _____
- ___ Wall-Nut _____
- ___ Cellophane Flakes _____
- ___ Cement _____
- ___ Lime _____

FOOTAGE:

from _____ ft.
to _____ ft.

Bit Size 6 1/8"
Air _____ Mud

Bit No.	Changed at
43 97611	ft.
	ft.

Log Approved: _____
Date _____

LOG REFERENCE CODE NUMBERS

- | | |
|-------------------|-------------------------|
| 1 travel to site | 6 logging |
| 2 set up | 7 run 3/4" pipe |
| 3 drilling | 8 rig down & clean site |
| 4 water trip | 9 maintenance |
| 5 pull drill pipe | 10 Other (explain) |

Remarks:

RAW 1218' 58 JOINTS
2" Pipe

GEOTHERMAL SERVICE INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 • (714) 566-4520

DRILLING LOG AND HISTORY

Project No. 4-79 Hole No. 16 Date 9/19/79
 Geologist WALKER Driller Holden Rig I.D. KT-1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
5:00	↑	7	BRIDGE fill in approx. 1500'	10		260	
6:00		7		20		270	
7:00		7		30		280	
8:00		7		40		290	
9:00	↓	7	Fill pipe with H ₂ O	50		300	
10:00	↑	8	CLEAN SITE	60		310	
11:00		8		70		320	
12:00		8		80		330	
1:00		8		90		340	
2:00		8		100		350	
3:00		8		110		360	
4:00		8		120		370	
5:00		8		130		380	
6:00		8		140		390	
7:00		8		150		400	
8:00		8		160		410	
9:00		8		170		420	
10:00		8		180		430	
11:00	↓	8		190		440	
				200		450	
				210		460	
				220		470	
				230		480	
				240		490	
				250		500	

EXPENDABLE DRILLING MATERIALS USED
 Quantities

38 Joint, 3/4" Pipe @ 21 ft. ea.
 _____ Quik-Trol (pkgs.)
 _____ Drift Foam/Quik-Foam (gals.)
 _____ Hy-Seal-N _____ Barite
 _____ Quik-Gel _____ Other
 _____ Jel-Flake _____ (describe)
 _____ Micatex C
 _____ Fluid-Trol 1-2" Paper
 _____ Cedar Fibre 1 pc 3/8" 12x12"
 _____ Cottonseed Hulls _____
 _____ Wall-Nut _____
 _____ Cellophane Flakes _____
3 Cement
 _____ Lime

FOOTAGE:
 from _____ ft. Bit Size _____
 to _____ ft. Air _____ Mud _____

Bit No.	Changed at	Log Approved:
	ft.	_____
	ft.	Date _____

LOG REFERENCE CODE NUMBERS	
1 travel to site	6 logging
2 set up	7 run <u>3/4"</u> pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: BRIDGE AT 1500' & 1750' APPROX.

GEOTHERMAL SERVICE INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 • (714) 566-4520

DRILLING LOG AND HISTORY

*REKAW
WILSON*

Project No. 4-79 Hole No. _____ Date 9-19-79
 Geologist WALKER Driller POTTER Rig I.D. JAT #1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
6:00	/	8	NOTHING LOADED SINCE WE LEFT LAST NIGHT	10		260	
				20		270	
7:00				30		280	
				40		290	
8:00				50		300	
				60		310	
9:00				70		320	
				80		330	
10:00				90		340	
				100		350	
11:00				110		360	
				120		370	
12:00				130		380	
				140		390	
13:00				150		400	
				160		410	
14:00				170		420	
				180		430	
15:00				190		440	
				200		450	
16:00				210		460	
				220		470	
17:00				230		480	
				240		490	
18:00						500	

EXPENDABLE DRILLING MATERIALS USED
 Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.
 _____ Quik-Trol (pkgs.)
 _____ Drift Foam/Quik-Foam (gals.)
 _____ Hy-Seal-N _____ Barite
 _____ Quik-Gel _____ Other
 _____ Jel-Flake _____ (describe)
 _____ Micatex C _____
 _____ Fluid-Trol _____
 _____ Cedar Fibre _____
 _____ Cottonseed Hulls _____
 _____ Wall-Nut _____
 _____ Cellophane Flakes _____
 _____ Cement _____
 _____ Lime _____

FOOTAGE:
 from _____ ft. Bit Size _____
 to _____ ft. Air _____ Mud _____

Bit No. _____	Changed at _____
_____	ft. _____
_____	ft. _____

Log Approved: _____
 Date _____

LOG REFERENCE CODE NUMBERS	
1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: _____

GEOTHERMAL SERVICE INC.

10072 WILLOW CREEK ROAD, SAN DIEGO, CALIFORNIA 92131 (714) 566-4520

DRILLING LOG AND HISTORY

RICHEN WILSON

Project No. TRAVEL Hole No. 7 Date 9-20-79
 Geologist 4-79 Driller POTTER Rig I.D. TKT#1

TIME AM/PM (Circle)	LOG	REF CODE NO.	REMARKS	DRILLING MUD/AIR RETURN TEMPERATURES			
				FT.	°F	FT.	°F
6:00			7:00 AM - 5:00 PM TRAVEL	100		260	
7:00			FROM BURNS ORG.	20		270	
8:00			TO FALLON NV.	30		280	
9:00			TOOK WATER TRIP.	40		290	
10:00			TO CARSON TO	50		300	
11:00			TRADE IT FOR	60		310	
12:00			OTHER ONE - GET	70		320	
1:00			DIDN'T GET ALL	80		330	
2:00			THINGS TRANS-	90		340	
3:00			FERED FINISH	100		350	
4:00			TOMORROW GOT BACK	110		360	
5:00			TO FALLON 10:00 PM	120		370	
				130		380	
				140		390	
				150		400	
				160		410	
				170		420	
				180		430	
				190		440	
				200		450	
				210		460	
				220		470	
				230		480	
				240		490	
				250		500	

EXPENDABLE DRILLING MATERIALS USED
Quantities

_____ Joint, 3/4" Pipe @ 21 ft. ea.
 _____ Quik-Trol (pkgs.)
 _____ Drift Foam/Quik-Foam (gals.)
 _____ Hy-Seal-N _____ Barite
 _____ Quik-Gel _____ Other
 _____ Jel-Flake _____ (describe)
 _____ Micatex C _____
 _____ Fluid-Trol _____
 _____ Cedar Fibre _____
 _____ Cottonseed Hulls _____
 _____ Wall-Nut _____
 _____ Cellophane Flakes _____
 _____ Cement _____
 _____ Lime _____

FOOTAGE:
 from _____ ft.
 to _____ ft.

Bit Size _____
 Air _____ Mud _____

Bit No.	Changed at
	_____ ft.
	_____ ft.

Log Approved: _____
 Date _____

LOG REFERENCE CODE NUMBERS

1 travel to site	6 logging
2 set up	7 run 3/4" pipe
3 drilling	8 rig down & clean site
4 water trip	9 maintenance
5 pull drill pipe	10 Other (explain)

Remarks: _____

