AMPOLEX (USA), INC.
CEDAR CANYON 22K-1/CEDAR CANYON 22K-1 SIDETRACK 1
NE SW, SECTION 22, T28N-R01W
RIO ARRIBA COUNTY, NEW MEXICO

Called Brian Wood
about Rule 111
1-2-96
Hold C-104 For new
flat Directional
Motorized ~~error~~ Survey

WELL-SITE GEOLOGIST: Greg Parsons
P.O. Box 1137
Casper, WY 82602
(307) 237-5087

Halliburton Drilling Systems

Survey Report

Date: 11/15/95
Wellpath ID: amp-sur

Measured Depth (ft)	Incl (deg.)	Drift Dir. (deg.)	Course Length (ft)	TVD (ft)	Vertical Section (ft)	Build Rate (dg/100ft)	TOTAL Rectangular Offsets (ft)	(ft)	DLS (dg/100ft)
4873.00	2.50	N 44.00 E	31.00	4853.39	352.46	1.94	77.19 N	343.98 E	2.09
4903.00	2.50	N 42.30 E	30.00	4883.36	353.56	0.00	78.14 N	344.87 E	0.25
4934.00	2.40	N 27.40 E	31.00	4914.33	354.54	-0.32	79.22 N	345.63 E	2.07
4966.00	2.20	N 18.70 E	32.00	4946.31	355.32	-0.63	80.40 N	346.13 E	1.26
4997.00	1.90	N 18.70 E	31.00	4977.29	355.91	-0.97	81.45 N	346.49 E	0.97
5029.00	1.10	N 21.00 E	32.00	5009.28	356.37	-2.50	82.23 N	346.77 E	2.51
5059.00	0.60	N 19.70 W	30.00	5039.27	356.52	-1.67	82.65 N	346.82 E	2.51
5090.00	0.50	N 53.50 W	31.00	5070.27	356.42	-0.32	82.88 N	346.65 E	1.08
5121.00	0.40	N 63.50 W	31.00	5101.27	356.25	-0.32	83.01 N	346.45 E	0.41
5152.00	0.50	N 73.10 W	31.00	5132.27	356.05	0.32	83.10 N	346.22 E	0.40
5181.00	0.50	N 55.90 W	29.00	5161.27	355.86	0.00	83.21 N	346.00 E	0.52
5213.00	0.40	N 14.60 E	32.00	5193.27	355.82	-0.31	83.40 N	345.91 E	1.64
5244.00	0.90	N 41.90 E	31.00	5224.27	356.07	1.61	83.68 N	346.10 E	1.85
5273.00	1.10	N 44.10 E	29.00	5253.26	356.49	0.69	84.05 N	346.44 E	0.70
5304.00	1.20	N 48.50 E	31.00	5284.26	357.03	0.32	84.48 N	346.89 E	0.43
5336.00	1.50	N 57.20 E	32.00	5316.25	357.72	0.94	84.93 N	347.50 E	1.13
5366.00	2.20	N 55.30 E	30.00	5346.23	358.63	2.33	85.47 N	348.30 E	2.34
5397.00	1.50	N 39.60 E	31.00	5377.22	359.52	-2.26	86.12 N	349.05 E	2.77
5428.00	1.00	N 53.10 E	31.00	5408.21	360.09	-1.61	86.60 N	349.52 E	1.86
5459.00	0.90	N 52.40 E	31.00	5439.20	360.56	-0.32	86.91 N	349.93 E	0.32
5490.00	0.50	N 8.40 W	31.00	5470.20	360.80	-1.29	87.19 N	350.11 E	2.54
5520.00	0.10	N 63.90 W	30.00	5500.20	360.79	-1.33	87.33 N	350.06 E	1.50
5552.00	0.30	N 61.10 E	32.00	5532.20	360.85	0.63	87.38 N	350.11 E	1.15
5584.00	0.80	N 84.70 E	32.00	5564.20	361.15	1.56	87.44 N	350.41 E	1.68
5615.00	1.60	N 79.40 E	31.00	5595.19	361.80	2.58	87.54 N	351.05 E	2.60
5647.00	1.20	N 54.20 E	32.00	5627.18	362.55	-1.25	87.82 N	351.76 E	2.27
5679.00	1.00	N 70.60 E	32.00	5659.18	363.14	-0.63	88.11 N	352.29 E	1.16
5709.00	1.40	N 87.60 E	30.00	5689.17	363.76	1.33	88.21 N	352.91 E	1.77
5741.00	1.90	S 74.70 E	32.00	5721.16	364.61	1.56	88.09 N	353.81 E	2.21
5772.00	2.10	N 89.70 E	31.00	5752.14	365.61	0.65	87.96 N	354.87 E	1.86
5803.00	2.50	S 81.80 E	31.00	5783.12	366.79	1.29	87.86 N	356.11 E	1.69
5835.00	2.40	N 80.20 E	32.00	5815.09	368.10	-0.31	87.88 N	357.46 E	2.41
5866.00	3.30	N 66.70 E	31.00	5846.05	369.63	2.90	88.34 N	358.92 E	3.60
5897.00	4.70	N 68.70 E	31.00	5876.97	371.77	4.52	89.15 N	360.92 E	4.54
5929.00	5.20	N 72.20 E	32.00	5908.85	374.52	1.56	90.07 N	363.53 E	1.82
5961.00	5.10	N 72.30 E	32.00	5940.72	377.38	-0.31	90.95 N	366.26 E	0.31
5992.00	4.40	N 76.20 E	31.00	5971.62	379.95	-2.26	91.65 N	368.73 E	2.49
6021.00	3.30	N 77.70 E	29.00	6000.55	381.89	-3.79	92.10 N	370.62 E	3.81
6052.00	2.90	N 81.00 E	31.00	6031.51	383.57	-1.29	92.41 N	372.27 E	1.41
6083.00	2.60	N 82.90 E	31.00	6062.47	385.05	-0.97	92.62 N	373.74 E	1.01

AMPOLEX (USA), INC.
CEDAR CANYON 22K-1/CEDAR CANYON 22K-1 SIDETRACK 1
NE SW, SECTION 22, T28N-R01W
RIO ARRIBA COUNTY, NEW MEXICO

WELL-SITE GEOLOGIST: Greg Parsons
P.O. Box 1137
Casper, WY 82602
(307) 237-5087

CONTENTS

WELL DATA

OPERATOR:	Ampolex (USA), Inc. 1050 17th Street, Suite 2500 Denver, Colorado 80265 (303) 595-9000 Geologist: Steve Fryberger
WELLS:	Cedar Canyon 22K-1 Cedar Canyon 22K-1 Sidetrack 1
SURFACE LOCATION:	NE SW (1940' FSL/1830' FWL), Section 22 T28N-R1W Rio Arriba County, New Mexico
PROJECTED LOCATION AT 6550':	98.03'N and 390.87'E
FIELD/AREA:	Wildcat
ELEVATIONS:	KB: 7196' GL: 7181'
TOTAL DEPTHS:	Cedar Canyon 22K-1 Driller: 7314' Logger: Not logged Cedar Canyon 22K-1 Sidetrack 1 Driller: 7300' Logger: 7096' (bridge)
SPUDDED:	October 19, 1995
REACHED TOTAL DEPTHS:	Cedar Canyon 22K-1 November 23, 1995 (9:00 a.m.) Cedar Canyon 22K-1 Sidetrack 1 December 4, 1995 (3:30 a.m.)
LOGGED:	Cedar Canyon 22K-1 Run 1: November 15-16, 1995 Cedar Canyon 22K-1 Sidetrack 1 Run 2: December 4-5, 1995 Run 3: December 8, 1995
SURFACE CASING:	Landed 10 joints 10 3/4" 40-lb. K-55 at 431'
INTERMEDIATE CASING:	Landed 155 joints 7 5/8" 26.4-lb. N80 and 29.7 lb. P110 at 6549'
PRODUCTION LINER:	Landed 5 1/2" at 7110'
DRILLING CONTRACTOR:	Aztec Well Service Rig no. 184 South of Aztec, New Mexico 87410 (505) 334-6191 Toolpushers: Tommy Valencia Buddy Davis

DRILLING SUPERVISOR:	Ken Melder Enmarc, Inc. 518 17th Street, Suite 1104 Denver, Colorado 80202 (303) 825-7061
DIRECTIONAL DRILLING:	Cedar Canyon 22K-1 Halliburton Drilling Systems 7197 W. Derrick Drive Mills, Wyoming 82644 (307) 265-2050 Drillers: Don Mercer Ron Welch Cedar Canyon 22K-1 Sidetrack 1 Baker Hughes Inteq 7424 W. 6 WN Road Casper, Wyoming 82604 (307) 472-0001 Driller: Butch Judge
DRILLING MUD:	APEX Engineering P.O. Box 1076 Evanston, Wyoming 82931 (800) 209-3000 Engineer: Don Durham
DRILL-STEM TESTS:	None
CORES:	None
LOGS:	Halliburton Logging Services Drawer 960 Farmington, New Mexico 87499 (505) 325-3575 Engineers: Matt Brewer John Savage
MUDLOGGING:	Rocky Mountain Geo-Engineering 2450 Industrial Blvd. Grand Junction, Colorado 81505 (970) 243-3044 Mudlogger: Liz Recks
SAMPLE STORAGE (dry cuts):	Ampolex (USA), Inc. 1050 17th Street, Suite 2500 Denver, Colorado 80265 (303) 595-9000
WELL-SITE GEOLOGIST:	Greg Parsons Consultant P.O. Box 1137 Casper, Wyoming 82602 (307) 237-5087
WELL STATUS:	Cedar Canyon 22K-1 Sidetrack 1 re-entered the 22K-1 borehole somewhere below kick-off point (6667') and is waiting on completion tools.

DRILLING CHRONOLOGY

Daily operations are described from 11:00 p.m. to 11:00 p.m. based on the IADC-API Drilling Report. Total depth (at 11:00 p.m.) and footage drilled are listed below each date.

October 19, 1995 125'/125' (TD)/(FTG)	Aztec Well Service Rig no. 184 rigged up. Drilled rat hole and mouse hole. Finished rigging up. Spudded 13 3/4" hole at 7:00 p.m. with bit 1 and drilled from grass roots to 125'.
October 20, 1995 431'/306'	Tripped out to retrieve survey tool. Tripped in with bit 1 and drilled from 125' to 431'. Circulated for surface casing and tripped out with bit 1. Ran 10 3/4" surface casing, circulated and cemented. Waited-on cement. Cut-off casing and started welding on well head.
October 21, 1995 431'/0'	Ground and welded braden head. Welded bridge head and pressure tested. Nippled-up BOP and started pressure testing.
October 22, 1995 431'/0'	Finished pressure testing. Nippled-down BOP and pulled spacer spool. Nippled-up BOP and tried to pressure test. Tested kelly and floor valve. Nippled-down hydrill. Nippled-up new hydrill. Nippled-up flow line and tested. Repaired high-drum clutch. Set wear bushing in casing head. Tripped in with bit 2 and tagged cement at 372'. Drilled cement, float, collar and shoe.
October 23, 1995 1278'/847'	Finished drilling cement, float, collar and shoe. Drilled 9 7/8" hole from 431' to 857'. Went through P-28 and switched pumps. Drilled from 857' to 1278'.
October 24, 1995 1790'/512'	Drilled from 1278' to 1364'. Circulated and tripped out with bit 2 (tight hole). Tripped in with bit 3. Washed and reamed 40' to bottom. Drilled from 1364' to 1790'.
October 25, 1995 2227'/437'	Drilled from 1790' to 2053'. Repaired chain. Drilled from 2053' to 2227'.
October 26, 1995 2379'/152'	Drilled from 2227' to 2379'. Tripped out with bit 3. Tripped in with bit 4.
October 27, 1995 2538'/159'	Drilled from 2379' to 2432'. Worked tight hole. Drilled from 2432' to 2499'. Short-tripped (tight hole) and repacked swivel. Worked-on pump. Drilled from 2499' to 2538'.
October 28, 1995 2817'/279'	Drilled from 2538' to 2817'.
October 29, 1995 3111'/294'	Drilled from 2817' to 2837'. Tripped out with bit 4. Tripped in with bit 5. Washed and reamed 70' to bottom. Drilled from 2837' to 3111'.
October 30, 1995 3275'/164'	Drilled from 3111' to 3275'. Circulated and tripped out with bit 5. Waited-on orders. Waited-on MWD tools.
October 31, 1995 3431'/156'	Waited-on MWD tools. Picked-up MWD tools and tripped in 7 stands with bit 6. Checked pulse (MWD). Finished trip in with bit 6

and washed 8' to bottom. Drilled from 3275' to 3431'.

November 1, 1995
3729'/298'
Drilled from 3431' to 3729'.

November 2, 1995
3968'/239'
Drilled from 3739' to 3823'. Repaired crown. Drilled from 3823' to 3968'.

November 3, 1995
4105'/137'
Drilled from 3968' to 3987'. Worked-on pump. Drilled from 3987' to 4000'. Worked-on pump. Drilled from 4000' to 4013'. Tripped out with bit 6. Started trip in with bit 7. Checked pulse (MWD). Worked-on brakes and drum line. Finished trip in with bit 7. Washed and reamed from 3939' to 4013'. Drilled from 4013' to 4105'.

November 4, 1995
4408'/303'
Drilled from 4105' to 4408'.

November 5, 1995
4626'/218'
Drilled from 4408' to 4520'. Worked-on pump. Drilled from 4520' to 4626'.

November 6, 1995
4900'/274'
Drilled from 4626' to 4900'.

November 7, 1995
5045'/145'
Drilled from 4900' to 4916'. Circulated and mixed pill. Tripped out with bit 7. Started trip in with bit 8. Changed oil in light plant. Finished trip in with bit 8. Washed and reamed 50' to bottom. Drilled from 4916' to 5045'.

November 8, 1995
5306'/261'
Drilled from 5045' to 5167'. Changed-out shaker screen. Drilled from 5167' to 5306'.

November 9, 1995
5383'/77'
Drilled from 5306' to 5383'. Slugged pipe and tripped out with bit 8. Started trip in with bit 9. Tested pulse (MWD). Finished trip in with bit 9. Washed and reamed 90' to bottom.

November 10, 1995
5701'/318'
Drilled from 5383' to 5701'.

November 11, 1995
5847'/146'
Drilled from 5701' to 5782'. Mixed mud and bar for gas kick. Drilled from 5782' to 5847'. Tripped out with bit 9. Changed mud motor and started trip in with bit 9 (RR). Tested pulse (MWD). Continued trip in with bit 9 (RR).

November 12, 1995
5941'/94'
Finished trip in with bit 9 (RR) and washed 60' to bottom. Drilled from 5847' to 5938'. Waited-on orders. Time drilled from 5938' to 5941'. Waited-on orders. Waited-on mud motor.

November 13, 1995
6001'/60'
Waited-on mud motor. Mixed mud and pumped pill. Tripped out with bit 9 (RR). Waited-on mud motor. Tripped in with bit 10 and washed 30' to bottom. Drilled from 5941' to 6001'.

November 14, 1995
6200'/199'
Drilled from 6001' to 6087'. Circulated gas kick. Drilled from 6087' to 6174'. Washed and reamed. Tripped-out 150' for screen in drill pipe. Tripped in and drilled from 6174' to 6200'. Started circulating for logs (Run 1).

November 15, 1995
6200'/0'

Finished circulating. Mixed and pumped pill. Tripped out with bit 10. Layed-down mud motor and MWD tools. Picked-up 3-point reamer and tripped in with bit 10. Washed and reamed 50' to bottom. Circulated for logs. Tripped out with bit 10. Rigged-up Halliburton and started logging.

November 16, 1995
6220'/20'

Finished logging. Tripped in with bit 10 and washed 40' to bottom. Waited-on orders. Drilled from 6200' to 6220'. Waited on MWD tools. Tripped out with bit 10. Picked-up mud motor and bit 10. Waited-on MWD tools.

November 17, 1995
6381'/162'

Rigged-up MWD tools. Tripped in with bit 11. Drilled from 6220' to 6381'.

November 18, 1995
6550'/169'

Drilled from 6381' to 6550'. Circulated-out samples. Short-tripped 10 stands and circulated for intermediate casing. Mixed slug and tripped out with bit 11. Layed-down 4 1/2" pipe.

November 19, 1995
6550'/0'

Pulled wear bushing. Ran 7 5/8" casing. Pumped 1st stage cement and circulated. Cemented 2nd stage with cement to surface. Nippled-down B.O.P. Cut-off casing. Nippled-up B.O.P.

November 20, 1995
6550'/0'

Waited-on cement. Nippled-up B.O.P. and pressure tested. Strapped and calipered drill pipe and collars. Picked-up collars and pipe and tripped in with bit 12. Drilled staging collar at 2749' and circulated. Picked-up drill pipe. Pulled protectors and strapped pipe. Picked-up drill pipe. Tagged cement at 6370'. Drilled 40' cement. Pressure tested B.O.P. Drilled cement and float collar.

November 21, 1995
7037'/487'

Finished drilling cement. Rigged-up air and unloaded hole. Drilled 6 3/4" hole from 6550' to 6560' with air/mist. Unloaded hole. Drilled from 6560' to 6693'. Unloaded hole. Drilled from 6693' to 7037'.

November 22, 1995
7155'/118'

Drilled from 7037' to 7067'. Changed rubber on no. 2. Blowed hole and reamed to bottom. Blowed hole and worked stuck pipe. Freed pipe. Unloaded hole and worked pipe. Drilled from 7067' to 7107'. Blowed hole (kept bridging off). Waited-on 3rd air compressor. Drilled from 7107' to 7128'. Worked pipe. Drilled from 7128' to 7155'.

November 23, 1995
7314'TD/59'

Drilled from 7155' to 7185'. Transferred fuel to air jammers. Worked pipe and tried to get to bottom. Reamed 25' to bottom. Drilled from 7185' to 7314' (total depth). Circulated-out samples. Worked pipe and tried to blow well. Layed-down 1 joint. Worked stuck pipe. Rigged-up KCl water and tried to circulate. Stuck pipe with no circulation. Worked pipe. Rigged-up free point and tried to back off at 6820'. Bent surface joint drill pipe.

November 24, 1995
7314'TD

Ran 2nd free point and backed off at 1000'. Layed-down bent joint. Screwed into fish and pumped KCl water. Tried to circulate around fish. Filled backside and circulated with partial returns and then no returns. Ran 3rd free point and

	backed off at 6686'. Tripped out with pipe. Picked-up jars and 6 drill collars. Tripped in and washed to top of fish.
November 25, 1995 7314'TD	Tried to find fish. Tripped out with no fish. Picked-up overshot and caliper and strapped in. Dog nut came off drilling line and broke face-plate bolts. Repaired rig. Continued trip in. Gas bubble came up. Circulated-out gas. Finished trip in and fished with overshot. Couldn't find top of fish. Tripped out with no fish. Picked-up 2 1/2° bent sub and hookwall overshot. Tripped in and fished.
November 26, 1995 7314'TD	Tried to find top of fish. Waited-on orders. Tripped out with no fish. Layed-down fishing tools. Tripped in open ended to set cement plug. Circulated and cemented plug. Pulled 5 stands and circulated-out cement. Tripped out.
November 27, 1995 6550'/0'	Waited-on cement. Slipped and cut 85' drilling line. Worked-on rig. Tripped in with bit 13. Drilled cement from 6402' to 6505'.
November 28, 1995 6653'/103'	Drilled cement from 6505' to 6550'. Circulated and pumped slug. Tripped out with bit 13. Picked-up MWD tools and started trip in with bit 13. Tested MWD tools. Finished trip in with bit 13. Washed to bottom and circulated-out gas. Drilled slot from 6550' to 6625'. Time drilled from 6625' to 6653'.
November 29, 1995 6758'/105'	Time drilled from 6653' to 6676'. Drilled from 6676' to 6758'. Mixed slug and tripped out with bit 13. Changed MWD tools. Tripped in with bit 14. Tested MWD tools. Started circulating out gas.
November 30, 1995 6834'/76'	Finished circulating out gas. Drilled from 6758' to 6834'. Mixed pill and tripped out with bit 14. Changed MWD tools. Started trip in with bit 14. Tested MWD tools. Finished trip in with bit 14.
December 1, 1995 6940'/106'	Circulated-out gas. Washed and reamed 60' to bottom. Drilled from 6834' to 6940'.
December 2, 1995 7030'/90'	Drilled from 6940' to 6957'. Circulated and tripped out with bit 14. Changed mud motors. Started trip in with bit 15. Tested MWD tools. Continued trip in with bit 15. Worked stuck pipe at 6880'. Washed 70' to bottom. Drilled from 6957' to 7030'.
December 3, 1995 7270'/240'	Drilled from 7030' to 7094'. Worked stuck pipe. Circulated and rotated free. Drilled from 7094' to 7270'.
December 4, 1995 7300'TD/30'	Drilled from 7270' to 7300' (total depth). Circulated-out samples. Short-tripped to intermediate casing. Tripped in to 6910' and hit bridge and/or fish. Worked pipe and circulated. Mixed slug and tripped out with bit 15. Layed-down MWD tools. Tripped in slick with bit. Tried to work around fish and circulated. Tripped out with bit. Rigged-up Halliburton and started logging (Run 2).

1995 DATE	DEPTH	WT	FV	PV	YP	GEL STR	pH	FIL	FC	Cl	Ca	SOL	COMMENTS
11/10	5555'	9.0	47	20	14	2/10	8.0	8.6	2/32	2500	80	5.0	
11/11	5840'	9.2	53	24	12	2/12	8.0	7.6	2/32	1600	40	7.0	
11/11	5875'	9.3	43	20	8	2/8	8.0	8.0	2/32	1600	120	7.0	
11/12	5940'		44	22	12	2/8	8.0	7.6	2/32	2000	360	7.0	
11/13	5965'	9.1	43	18	12	2/10	8.0	8.2	2/32	2600	240	6.0	
11/14	6150'	9.2	44	20	10	2/10	8.0	8.2	2/32	1600	120	6.0	
11/15	6200'	9.4	60	28	14	2/11	8.5	7.6	2/32	2600	80	7.0	Logs (Run 1)
11/16	6215'	9.3	44	16	10	2/10	8.0	8.0	2/32	2200	80	7.0	
11/17	6380'	9.5	48	28	14	2/9	8.0	7.6	2/32	1000	80	8.0	
11/18	6550'	9.7	44	20	14	2/11	8.0	8.0	2/32	1900	120	6.0	Intermed. Csg.
11/21	Drilling w/ Air/Mist												Air/Mist
11/22	7036'	8.6	38	10	10	2/8	7.0	12.0	2/32	16,000	360	3.0	KCl Mud
11/25	7314'	8.6	33	5	6	1/4	8.0	9.6	film	14,000	240	2.0	TD
						SIDETRACK 1							
11/27	6480'	8.6	32	5	6	1/5	11.0	16.4	film	11,000	160	2.0	KCl Mud
11/28	6636'	8.6	37	8	8	2/10	11.0	16.0	film	17,000	200	2.0	
11/29	6740'	8.6	36	8	8	2/10	11.0	22.0	2/32	15,000	160	2.0	
11/29	6758'	8.6	34	8	7	2/10	10.5	16.0	2/32	16,000	200	2.0	
11/30	6820'	8.6	34	6	6	2/6	9.5	18.4	film	13,000	320	2.0	
12/1	6900'	8.6	33	5	4	1/4	9.0	12.8	film	15,000	280	2.0	
12/2	6990'	8.6	36	10	7	1/9	9.0	9.2	film	12,000	120	2.0	
12/3	7240'	8.8	38	10	14	1/8	8.5	9.0	film	14,000	200	4.0	
12/3	7274'	8.9	39	13	12	2/10	8.5	8.0	film	19,000	440	5.0	
12/4	7300'	8.9	40	11	14	2/10	8.5	7.6	film	14,000	80	5.0	TD/Logs (Run 2)
12/5	7300'	8.9	39	12	12	2/10	8.5	7.8	film	15,000	240	5.0	
12/6	7300'	9.4	47	24	18	2/12	8.5	5.4	film	17,000	360	9.0	12/8 Logs (Run 3)

LOG SUITES

RUN NO. 1

Dual-Induction Guard Log with GR, SP and Caliper	429' - 6188'
Borehole-Compensated Sonic Log with GR and Caliper	429' - 6153'
Compensated Density/ Dual-Spaced Neutron Logs with GR and Calipers	2200' - 6184'

Remarks: The DIGL and BHC-SL tools were run in combination.

RUN NO. 2/ Sidetrack 1

Dual-Induction Guard Log with GR and SP	6549' - 6918'
Borehole-Compensated Sonic Log with GR and Caliper	6549' - 6925'
Spectral Density/ Dual-Spaced Neutron Logs with GR and Calipers	6549' - 6827'
Circumferential-Acoustic Scanning Log	6549' - 6815'

Remarks: Borehole bridges prevented logging tools from reaching total depth (7300'). Tools stopped at depths ranging from 6815' to 6930'. The top of the upper fish cemented in the borehole is 6688'. Log measurements from 6688' to 6876' were affected by this fish.

RUN NO. 3/ Sidetrack 1

Dual-Induction Guard Log with GR, SP and Caliper	6549' - 7094'
Caliper Log with GR	6549' - 7094'

Remarks: Run no. 3 was conducted after recovering the lower fish. A borehole bridge at 7091' prevented logging tools from reaching total depth (7300'). The upper fish cemented in the borehole affected log measurements from 6688' to 6876'.

December 5, 1995 7300'TD	Finished logging. Picked-up overshot and grapple and tripped in. Circulated-out gas. Washed and reamed 60' to top of lower fish. Latched onto fish and jarred loose. Chained-out with fish. Layed-down fish (12 drill collars, bit sub and bit) and fishing tools. Slipped and cut drilling line.
December 6, 1995 7300'TD	Finished cutting drilling line. Tripped in with bit. Circulated-out gas. Washed and reamed from 6940' to 7190'. Worked stuck pipe free. Washed and reamed from 7190' to 7220'. Worked stuck pipe free. Washed and reamed from 7220' to 7300'
December 7, 1995 7300'TD	Circulated and short-tripped 12 stands. Washed and reamed from 7160' to 7300'. Circulated and short-tripped 12 stands. Washed and reamed from 7140' to 7300'. Circulated and chained-out 12 stands. Circulated in casing, pumped slug and tripped out with bit.
December 8, 1995 7300'TD	Rigged-up Halliburton and logged well (Run 3). Rigged-down loggers. Rigged-up casing crew. Ran liner to 7097'. Made-up cementing head. Circulated-out gas. Washed liner to 7111', circulated and cemented. Layed-down drill pipe and drill collars.

BIT RECORD

NO.	MANUF.	TYPE	SIZE	INTERVAL	FOOTAGE	HOURS	FT/HR
1	STC	DSJ	13 3/4"	0' - 431'	431	11.0	39.2
2	Reed	HP11	9 7/8"	431' - 1364'	933	24.75	37.7
3	Reed	EHP43A	9 7/8"	1364' - 2379'	1015	52.25	19.4
4	Sec.	S82F	9 7/8"	2379' - 2837'	458	43.25	10.6
5	Hycalog	DS56H	9 7/8"	2837' - 3275'	438	24.25	18.1
6	Reed	EHP43A	9 7/8"	3275' - 4013'	560	54.75	10.2
7	Reed	EHP43A	9 7/8"	4013' - 4916'	903	79.0	11.4
8	Reed	EHP43A	9 7/8"	4916' - 5363'	467	49.75	9.4
9	Reed	EHP43A	9 7/8"	5363' - 5941'	558	49.75	11.2
10	Reed	HP51A	9 7/8"	5941' - 6220'	279	31.5	8.9
11	HTC	ATJ11H	9 7/8"	6220' - 6550'	330	29.25	11.1
12	HTC	ATJ22	6 3/4"	6550' - 7314'	764	27.5	27.8
13	STC	F2L	6 3/4"	6402'* - 6758'	356	25.75	13.8
14	Reed	HP51A	6 3/4"	6758' - 6957'	199	39.5	5.0
15	Reed	HP51A	6 3/4"	6957' - 7300'	343	35.5	9.7

* Set cement plug on top of fish.

DRILLING DATA

1995 DATE	INTERVAL	WOB (1000 lbs.)	RPM	PP	SPM
10/19	0' - 125'	All	120	320	
10/20	125' - 335'	12	120	300	101
10/20	335' - 431'	15/20	120/140	300	
10/23	431' - 553'	20	60	600	106
10/23	553' - 1278'	15	80	600	106
10/24	1278' - 1364'	15	85	600	106
10/24-25	1364' - 1930'	15	85	800	106
10/25	1930' - 1980'	15	85	700	100
10/25	1980' - 2053'	15	80	600	100
10/25	2053' - 2084'	15	85	800	106
10/26	2084' - 2270'	15	80	800	100/114
10/26	2270' - 2363'	15	60	800	114
10/26	2363' - 2379'	15	80	800	114
10/27	2379' - 2395'	15	60	800	114
10/27	2395' - 2499'	15	85	800	114
10/27	2499' - 2538'	15	80	800	100
10/28	2538' - 2598'	15	80	800/925	100/110
10/28	2598' - 2726'	20	84	800	100
10/28-29	2726' - 2837'	20	84	1000	100
10/29	2837' - 2850'	20	84	1000	110
10/29	2850' - 3000'		85	1400	70
10/29	3000' - 3111'	9/10	100	1400	70
10/30	3111' - 3260'	7/10/5	100	1400	70
10/30	3260' - 3275'	5	100	1400	70
10/31	3275' - 3431'	20/25	40	1000	110
11/1	3431' - 3520'	20/25/20/25	40	1000	110
11/1	3520' - 3729'	20/22	40	1000	110
11/2	3729' - 3800'	15/20	40	1000	110
11/2-3	3800' - 4013'	20/25	40	1000	110
11/3-4	4013' - 4212'	20	40	1000	110
11/4	4212' - 4305'	18/20	45	1000	110
11/4	4305' - 4408'	20	45	1000	110
11/5	4408' - 4544'	18	40	1000	110
11/5	4544' - 4626'	25	45	1000	110

1995 DATE	INTERVAL	WOB (1000 lbs.)	RPM	PP	SPM
11/6	4626' - 4664'	25	45	1100	110
11/6	4664' - 4710'	20	45	900	100
11/6	4710' - 4900'	25	45	900	104
11/7-8	4900' - 5306'	25	40	1000	110
11/9	5306' - 5383'	25	50	1000	110
11/10	5383' - 5474'	20	40	1000	110
11/10	5474' - 5592'	20/22	40	1000	110
11/10	5592' - 5701'	28	48	1000	110
11/10	5701' - 5847'	25	48	1000	110
11/12	5847' - 5941'	25	48	1100	110
11/13	5941' - 6001'	20/25	40	1200/1300	106
11/14	6001' - 6084'	20/25	40	1300	120
11/14	6084' - 6200'	25	40	1300	110
11/16	6200' - 6220'	10/15	110	1100	110
11/17	6220' - 6381'	5/30		1400	120
11/18	6381' - 6550'	20	50	1300	120

Ran intermediate casing and rigged-up air/mist package at 6550'

				AIR	
11/21	6550' - 6661'	5/8	65	420	
11/21	6661' - 6874'	5/8	65	400	
11/21	6874' - 7036'	5/8/10	65	400	
11/22	7036' - 7067'	5	65/120	400	
11/22	7067' - 7314'	5	120	400	

SIDETRACK 1

11/28	6567' - 6627'			1250	70
11/28-29	6627' - 6676'	Slide		1250	75
11/29	6676' - 6708'	5/8	28	1250	75
11/29	6708' - 6758'	Slide		1250	75
11/30	6758' - 6776'	6/8	28	1000	75
11/30	6776' - 6802'	Slide		1000	75
11/30	6802' - 6834'	5/7	45	1000	75
12/1	6834' - 6849'	8		1000	76
12/1	6849' - 6864'	Slide		1000	75

1995 DATE	INTERVAL	WOB (1000 lbs.)	RPM	PP	SPM
12/1	6864' - 6894'	5/10	42	1000	75
12/1	6894' - 6900'	Slide		1000	75
12/1	6900' - 6940'	5/10	44	1000	75
12/2	6940' - 6957'	5/8	50	1000	110
12/2	6957' - 6970'	5/10	44	1000	75
12/2	6970' - 7106'	5/10	44	1000	75
12/3	7106' - 7170'	Slide		1000	75
12/3	7170' - 7270'	5/10	45	1000	75
12/4	7270' - 7300'	5	50	1000	100

Halliburton Drilling Systems

Survey Report

Date: 11/15/95
Time: 7:57 am
Wellpath ID: amp-sur
Date Created: 10/31/95
Last Revision: 11/15/95

Calculated using the Minimum Curvature Method
Computed using WIN-CADDS REV2.1.0
Vertical Section Plane: N 76.19 E

Survey Reference: WELLHEAD
Vertical Section Reference: WELLHEAD
Closure Reference: WELLHEAD
TVD Reference: WELLHEAD

AMPOLEX USA,INC.
RIO ARRIBA COUNTY,NM
RIO ARRIBA COUNTY,NM
CEDAR CANYON #22-K
SURVEY

Measured Depth (ft)	Incl (deg.)	Drift Dir. (deg.)	Course Length (ft)	TVD (ft)	Vertical Section (ft)	Build Rate (dg/100ft)	TOTAL Rectangular Offsets (ft)	(ft)	DLS (dg/100ft)
114.00	1.50	N 62.00 E	0.00	114.00	0.00	0.00	0.00 N	0.00 E	0.00
172.00	1.00	N 62.00 E	58.00	171.99	1.23	-0.86	0.59 N	1.12 E	0.86
295.00	0.75	N 62.00 E	123.00	294.97	3.05	-0.20	1.48 N	2.78 E	0.20
459.00	1.75	N 62.00 E	164.00	458.93	6.52	0.61	3.16 N	5.93 E	0.61
714.00	2.00	N 62.00 E	255.00	713.79	14.60	0.10	7.07 N	13.30 E	0.10
988.00	2.50	N 85.00 E	274.00	987.59	25.15	0.18	9.84 N	23.48 E	0.37
1263.00	3.50	N 78.00 E	275.00	1262.21	39.46	0.36	12.11 N	37.66 E	0.39
1514.00	3.50	N 80.00 E	251.00	1512.74	54.77	0.00	15.03 N	52.70 E	0.05
1761.00	4.25	N 85.00 E	247.00	1759.17	71.33	0.30	17.14 N	69.24 E	0.33
2008.00	5.00	N 86.00 E	247.00	2005.37	90.98	0.30	18.68 N	89.10 E	0.31
2256.00	6.00	N 87.00 E	248.00	2252.22	114.37	0.40	20.12 N	112.83 E	0.41
2509.00	6.50	N 83.00 E	253.00	2503.72	141.57	0.20	22.55 N	140.24 E	0.26
2758.00	7.75	N 78.00 E	249.00	2750.79	172.35	0.50	27.76 N	170.66 E	0.56
3003.00	9.50	N 78.00 E	245.00	2993.01	209.07	0.71	35.40 N	206.59 E	0.71
3096.00	9.25	N 78.00 E	93.00	3084.77	224.21	-0.27	38.55 N	221.41 E	0.27
3189.00	10.00	N 78.00 E	93.00	3176.46	239.76	0.81	41.78 N	236.62 E	0.81
3251.00	10.50	N 79.60 E	62.00	3237.47	250.78	0.81	43.92 N	247.44 E	0.93
3281.00	10.40	N 78.40 E	30.00	3266.97	256.21	-0.33	44.96 N	252.78 E	0.80
3312.00	9.90	N 76.50 E	31.00	3297.49	261.67	-1.61	46.15 N	258.12 E	1.94
3343.00	9.80	N 75.30 E	31.00	3328.03	266.97	-0.32	47.44 N	263.26 E	0.74
3374.00	9.60	N 75.00 E	31.00	3358.59	272.20	-0.65	48.78 N	268.31 E	0.67
3406.00	9.70	N 72.30 E	32.00	3390.14	277.55	0.31	50.29 N	273.45 E	1.45
3437.00	9.80	N 72.20 E	31.00	3420.69	282.79	0.32	51.89 N	278.45 E	0.33
3469.00	9.50	N 74.10 E	32.00	3452.24	288.15	-0.94	53.44 N	283.59 E	1.37
3501.00	8.40	N 71.50 E	32.00	3483.85	293.12	-3.44	54.91 N	288.34 E	3.66
3532.00	7.60	N 70.00 E	31.00	3514.54	297.41	-2.58	56.33 N	292.42 E	2.67
3564.00	7.30	N 68.40 E	32.00	3546.27	301.53	-0.94	57.80 N	296.30 E	1.14

Halliburton Drilling Systems

Survey Report

Date: 11/15/95
Wellpath ID: amp-sur

Measured Depth (ft)	Incl (deg.)	Drift Dir. (deg.)	Course Length (ft)	TVD (ft)	Vertical Section (ft)	Build Rate (dg/100ft)	TOTAL Rectangular Offsets (ft)	(ft)	DLS (dg/100ft)
3596.00	7.10	N 68.00 E	32.00	3578.02	305.50	-0.63	59.29 N	300.02 E	0.64
3626.00	6.90	N 68.00 E	30.00	3607.80	309.12	-0.67	60.66 N	303.41 E	0.67
3657.00	6.80	N 69.90 E	31.00	3638.58	312.79	-0.32	61.99 N	306.86 E	0.80
3689.00	6.10	N 69.80 E	32.00	3670.37	316.36	-2.19	63.22 N	310.23 E	2.19
3720.00	5.60	N 70.50 E	31.00	3701.21	319.50	-1.61	64.30 N	313.21 E	1.63
3752.00	5.00	N 65.30 E	32.00	3733.08	322.42	-1.87	65.40 N	315.94 E	2.40
3783.00	4.70	N 64.10 E	31.00	3763.96	324.99	-0.97	66.52 N	318.31 E	1.02
3814.00	4.30	N 60.10 E	31.00	3794.87	327.35	-1.29	67.66 N	320.46 E	1.64
3845.00	3.60	N 59.00 E	31.00	3825.80	329.40	-2.26	68.74 N	322.31 E	2.27
3877.00	3.30	N 58.00 E	32.00	3857.74	331.23	-0.94	69.74 N	323.95 E	0.96
3908.00	2.90	N 53.50 E	31.00	3888.69	332.80	-1.29	70.68 N	325.34 E	1.51
3940.00	2.30	N 50.70 E	32.00	3920.66	334.13	-1.88	71.57 N	326.48 E	1.92
3971.00	2.50	N 48.20 E	31.00	3951.63	335.29	0.65	72.41 N	327.47 E	0.73
4003.00	2.20	N 40.50 E	32.00	3983.60	336.40	-0.94	73.35 N	328.39 E	1.36
4065.00	0.90	N 39.70 E	62.00	4045.58	337.76	-2.10	74.63 N	329.47 E	2.10
4096.00	1.00	N 58.30 E	31.00	4076.58	338.21	0.32	74.96 N	329.86 E	1.04
4126.00	1.40	N 82.30 E	30.00	4106.57	338.83	1.33	75.14 N	330.44 E	2.11
4157.00	1.50	N 73.70 E	31.00	4137.56	339.61	0.32	75.31 N	331.21 E	0.77
4189.00	1.20	N 47.80 E	32.00	4169.55	340.32	-0.94	75.65 N	331.86 E	2.10
4220.00	0.70	N 65.80 E	31.00	4200.55	340.79	-1.61	75.94 N	332.27 E	1.86
4251.00	0.20	S 41.70 E	31.00	4231.55	341.01	-1.61	75.98 N	332.48 E	2.15
4283.00	0.40	S 39.50 E	32.00	4263.55	341.08	0.63	75.85 N	332.59 E	0.63
4314.00	1.30	S 69.60 E	31.00	4294.54	341.42	2.90	75.65 N	332.99 E	3.14
4346.00	1.30	N 84.40 E	32.00	4326.53	342.08	0.00	75.56 N	333.69 E	1.83
4377.00	0.70	S 64.30 E	31.00	4357.53	342.57	-1.94	75.51 N	334.21 E	2.55
4408.00	0.80	S 82.80 E	31.00	4388.53	342.92	0.32	75.40 N	334.59 E	0.84
4437.00	1.70	S 69.90 E	29.00	4417.52	343.47	3.10	75.23 N	335.20 E	3.23
4469.00	1.80	S 75.70 E	32.00	4449.50	344.30	0.31	74.94 N	336.13 E	0.64
4499.00	1.00	S 59.00 E	30.00	4479.50	344.90	-2.67	74.69 N	336.81 E	2.97
4531.00	1.40	S 75.90 E	32.00	4511.49	345.45	1.25	74.45 N	337.43 E	1.66
4561.00	1.40	S 78.70 E	30.00	4541.48	346.10	0.00	74.29 N	338.15 E	0.23
4592.00	0.60	N 83.60 E	31.00	4572.48	346.61	-2.58	74.23 N	338.68 E	2.74
4624.00	0.60	N 68.70 E	32.00	4604.47	346.94	0.00	74.31 N	339.00 E	0.49
4655.00	0.90	S 68.70 E	31.00	4635.47	347.30	0.97	74.28 N	339.38 E	1.98
4685.00	1.10	N 57.40 E	30.00	4665.47	347.77	0.67	74.35 N	339.84 E	3.08
4716.00	1.30	S 86.70 E	31.00	4696.46	348.38	0.65	74.49 N	340.44 E	2.46
4747.00	1.80	N 71.00 E	31.00	4727.45	349.20	1.61	74.63 N	341.25 E	2.50
4778.00	1.50	N 37.80 E	31.00	4758.44	350.01	-0.97	75.11 N	341.96 E	3.18
4810.00	1.40	N 56.40 E	32.00	4790.43	350.70	-0.31	75.66 N	342.55 E	1.50
4842.00	1.90	N 37.50 E	32.00	4822.41	351.49	1.56	76.29 N	343.19 E	2.29

FORMATION TOPS

KB Elevation: 7196'
GL Elevation: 7181'

Cedar Canyon 22K-1

	LOG DEPTH	TRUE-VERT. DEPTH	DATUM: SEA LEVEL	INTERVAL
TERTIARY				
Animas Formation				
Ojo Alamo Sandstone	2065'	2062'	+5134'	158'
UPPER CRETACEOUS				
Kirtland Shale	2224'	2220'	+4976'	21'
Pictured Cliffs Sandstone	2245'	2241'	+4955'	114'
Lewis Shale	2359'	2355'	+4841'	2363'
Cliff House Sandstone	4738'	4718'	+2478'	38'
Menefee Formation	4776'	4756'	+2440'	222'
Point Lookout Sandstone	4998'	4978'	+2218'	234'
Mancos Shale	5232'	5212'	+1984'	1146'

Driller TD: 7314'

Cedar Canyon 22K-1 Sidetrack 1

UPPER CRETACEOUS				
Mancos Shale (continued)				
Niobrara "gray" zone*	6378'	6357'	+ 839'	234'
Niobrara "A" zone	6612'	6591'	+ 605'	137'
Niobrara "B" zone	6750'	6728'	+ 468'	244'
Niobrara "C" zone	6994'	6972'	+ 224'	---

Driller TD: 7300'

* The top of the Niobrara interval ("gray" zone) was logged only with a GR tool and is an estimate.

Note: Sidetrack 1 re-entered the 22K-1 borehole.

SAMPLE DESCRIPTIONS

Samples were examined from 2000' to 7314' (total depth). In sidetrack 1, which re-entered the 22K-1 borehole, samples were examined from 6627' to 7300' (total depth). Samples described below are lagged to their respective depth.

NSFOC: No stain, fluorescence or cut
AA: As above.

2000' - 2010'
75% Shale: gray, grayish-brown, grayish-green, green, very silty in part, carbonaceous in part, noncalcareous, blocky to platy, waxy, firm.
15% Quartz grains: translucent to milky, medium grained, trace coarse grained, subangular, moderately sorted, unconsolidated, NSFOC.
10% Siltstone: gray to grayish-green, sandy (very fine grained), slightly carbonaceous, noncalcareous, blocky, firm, grading to Sandstone in part.

2010' - 2020'
Sample: AA, with medium to coarse-grained Quartz grains.

2020' - 2030'
85% Shale: predominantly grayish-green and grayish-brown, silty in part, slightly sandy in part, noncalcareous, platy to blocky, waxy, firm.
10% Quartz grains: translucent to milky, medium to coarse grained, subangular, poorly sorted, unconsolidated, NSFOC.
5% Siltstone: gray to grayish-green, AA.

2030' - 2040'
Sample: AA, with decreasing (5%) Quartz grains.

2040' - 2050'
75% Shale: grayish-green, grayish-brown, silty in part, noncalcareous, platy to blocky, waxy, firm.
20% Siltstone: grayish-green, gray to grayish-brown, sandy (very fine grained), carbonaceous, trace glauconite, noncalcareous, blocky, firm.
5% Quartz grains: translucent, milky, medium to coarse grained, subangular, poorly sorted, unconsolidated, NSFOC.

2050' - 2070'
90% Shale: grayish-green, gray to grayish-brown, AA.
10% Siltstone: grayish-green, gray, grayish-brown, AA, grading to Sandstone in part.
Trace Quartz grains: translucent, milky, AA.

2070' - 2080'
Sample: AA, with increasing (5%) Quartz grains: translucent, milky, medium to coarse grained, subangular, poorly sorted, unconsolidated, NSFOC.

2080' - 2090'
80% Shale: grayish-green to green, gray to grayish-brown, slightly sandy in part, noncalcareous, platy to blocky, waxy, firm.
10% Quartz grains: translucent, milky, AA.
10% Siltstone: grayish-green, gray, grayish-brown, sandy (very fine grained), slightly carbonaceous in part, noncalcareous, blocky, firm, grading to Sandstone in part.

2090' - 2100'
50% Quartz grains: translucent, milky, medium grained, subangular, moderately sorted, unconsolidated, NSFOC.
40% Shale: gray, grayish-brown, grayish-green, AA.
10% Siltstone: grayish-green, gray, grayish-brown, AA.

2100' - 2120' 60% Quartz grains: translucent to milky, medium to coarse grained, subangular, poorly sorted, unconsolidated, NSFOC.
40% Shale: gray, grayish-brown, grayish-green, AA.
Trace Siltstone: grayish-green, gray, grayish-brown, AA.

2120' - 2140' 50% Shale: grayish-green, gray, grayish-brown, silty in part, non-calcareous, blocky to platy, waxy, firm.
40% Quartz grains: translucent to milky, AA.
10% Siltstone: gray to grayish-brown and grayish-green, sandy (very fine grained), slightly carbonaceous, noncalcareous, blocky to platy, firm.

2140' - 2150' 70% Quartz grains: translucent, milky, trace yellow to orange, medium to coarse grained, subangular, poorly sorted, unconsolidated, NSFOC.
30% Shale: grayish-green, gray, grayish-brown, AA.
Trace Siltstone: gray, grayish-brown, grayish-green, AA.

2150' - 2160' Sample: AA, with slightly increasing (35%) Shale.

2160' - 2170' 50% Shale: grayish-green, gray, grayish-brown, silty to slightly sandy in part, slightly carbonaceous in part, noncalcareous, blocky to platy, firm.
40% Quartz grains: translucent, milky, trace yellow to orange, AA.
10% Siltstone: gray, grayish-green, grayish-brown, sandy (very fine grained), slightly carbonaceous, noncalcareous, blocky, firm, grading to Sandstone in part.

2170' - 2180' 75% Quartz grains: translucent, milky, trace yellow to orange, AA.
25% Shale: grayish-green, gray, grayish-brown, AA.

2180' - 2190' 90% Shale: gray, grayish-green, grayish-brown, slightly carbonaceous, noncalcareous, platy to blocky, waxy, firm.
10% Quartz grains: translucent to milky, trace yellow to orange, AA.
Trace Siltstone: gray to grayish-green and grayish-brown, AA.

2190' - 2200' 90% Quartz grains: translucent to milky, trace yellow and orange, medium to coarse grained, subangular, poorly sorted, unconsolidated, NSFOC.
10% Shale: gray, grayish-green, grayish-brown, AA.

2200' - 2210' 50% Shale: gray, grayish-green, grayish-brown, AA.
45% Quartz grains: translucent, milky, trace yellow to orange, AA.
5% Siltstone: gray, grayish-green, grayish-brown, AA.

2210' - 2220' Sample: AA, with increasing (60%) Quartz grains.

2220' - 2230' 90% Shale: predominantly grayish-green to green, noncalcareous, platy to blocky, waxy, firm.
10% Quartz grains: translucent to milky, trace yellow and orange, AA.

2230' - 2240' 100% Shale: grayish-green to green and gray, noncalcareous, platy to blocky, waxy, firm.
Trace Quartz grains: translucent, milky, AA.

2240' - 2250' Sample: AA, with Shale becoming slightly sandy and very glauconitic in part.

2250' - 2260' 80% Shale: gray, grayish-green, green, slightly sandy in part, very glauconitic in part, noncalcareous, platy to blocky, waxy, firm.
15% Siltstone: gray to grayish-green, grayish-brown, sandy (very fine grained), slightly carbonaceous, trace glauconite, noncalcareous, blocky, firm, grading to Sandstone in part.
5% Quartz grains: translucent to milky, AA.
Trace Sandstone: white, salt and peppered, very fine grained, subangular, moderately sorted, noncalcareous, clay filled, poor porosity, NSFOC.

2260' - 2270' 85% Shale: gray, grayish-green, green, AA.
10% Quartz grains: translucent, milky, medium to coarse grained, subangular, poorly sorted, unconsolidated, NSFOC.
5% Sandstone: white to light gray, salt and peppered, very fine grained, moderately sorted, slightly carbonaceous, trace pyrite and green mineral, noncalcareous, clay filled, poor porosity, NSFOC.

2270' - 2290' 75% Shale: gray, grayish-brown, grayish-green, green, noncalcareous, platy to blocky, waxy, firm.
25% Sandstone: white, light gray, salt and peppered, very fine grained, carbonaceous, green mineral, noncalcareous, very clay filled, poor porosity, NSFOC.
Trace Quartz grains: translucent, milky, AA.

2290' - 2300' 95% Shale: gray to grayish-brown and grayish-green to green, AA.
5% Sandstone: white to light gray, salt and peppered, AA.
Trace Quartz grains: translucent, milky, AA.

2300' - 2310' Sample: AA, with increasing (10%) Sandstone.

2310' - 2320' 65% Shale: gray, grayish-green, green, grayish-brown, AA.
15% Sandstone: white to light gray, salt and peppered, very fine grained, moderately sorted, carbonaceous, green mineral, noncalcareous, very clay filled, poor porosity, NSFOC.
10% Siltstone: gray to grayish-green, grayish-brown, sandy (very fine grained), slightly carbonaceous, noncalcareous, blocky, firm.
10% Quartz grains: translucent, milky, medium to coarse grained, subangular, poorly sorted, unconsolidated, NSFOC.

2320' - 2330' 60% Shale: predominantly gray to grayish-green, AA.
40% Sandstone: white to light gray, salt and peppered, AA, grading to Siltstone.
Trace Quartz grains: translucent, milky, AA.

2330' - 2340' 85% Shale: gray, grayish-green, grayish-brown, noncalcareous, platy to blocky, waxy, firm.
10% Sandstone: white, light gray, salt and peppered, AA.
5% Siltstone: gray, grayish-green, grayish-brown, AA.
Trace Quartz grains: translucent, milky, AA.

2340' - 2350' 75% Shale: gray to grayish-green and grayish-brown, AA.

2340' - 2350' (continued)
15% Sandstone: white to light gray, salt and peppered, very fine grained, moderately sorted, carbonaceous, noncalcareous, clay filled, poor porosity, grading to Siltstone.
10% Siltstone: gray, grayish-green, grayish-brown, sandy (very fine grained), carbonaceous, noncalcareous, blocky, firm.

2350' - 2370'
50% Shale: gray, grayish-brown, with some grayish-green, AA.
40% Sandstone: white to light gray and salt and peppered, AA, grading to Siltstone.
10% Siltstone: gray, grayish-brown, AA.

2370' - 2380'
Post-Trip Sample (Cavings).
Sample: AA.

2380' - 2390'
80% Shale: gray, grayish-brown, noncalcareous, platy to blocky, waxy, firm.
10% Sandstone: gray, brownish-gray, salt and peppered, very fine grained, moderately sorted, carbonaceous, calcareous cement, clay filled, poor porosity, NSFOC.
10% Siltstone: gray, grayish-brown, sandy (very fine grained), carbonaceous, calcareous, blocky, firm.

2390' - 2400'
Sample: AA, with increasing (25%) Siltstone: gray to grayish-brown, AA, very sandy and very carbonaceous, grading to Sandstone in part.

2400' - 2410'
60% Shale: gray to grayish-brown, noncalcareous, platy to blocky, waxy, firm.
30% Siltstone: gray, grayish-brown, very sandy (very fine grained), carbonaceous, calcareous in part, blocky, firm, grading to Sandstone in part.
10% Sandstone: gray, grayish-brown, salt and peppered, very fine grained, moderately sorted, carbonaceous, calcareous cement, clay filled, poor porosity, NSFOC.

2410' - 2420'
60% Siltstone: gray, grayish-brown, AA.
30% Shale: gray, grayish-brown, silty in part, noncalcareous, platy to blocky, firm.
10% Sandstone: gray, grayish-brown, AA.

2420' - 2440'
70% Siltstone: gray, grayish-brown, very sandy (very fine grained), very carbonaceous, calcareous, blocky, firm, grading to Sandstone in part.
30% Shale: predominantly gray to grayish-brown, noncalcareous, platy to blocky, firm.

2440' - 2460'
50% Shale: gray to grayish-brown, AA.
50% Siltstone: gray to grayish-brown, AA.

2460' - 2490'
80% Siltstone: gray, grayish-brown, very sandy (very fine grained), carbonaceous, calcareous, blocky, firm, grading to Sandstone in part.
20% Shale: gray, grayish-brown, silty in part, calcareous, platy to blocky, firm.

2490' - 2500'
90% Siltstone: predominantly grayish-brown, AA.
10% Shale: gray to grayish-brown, AA.

Halliburton Drilling Systems

Survey Report

Date: 11/18/95
Time: 1:30 pm
Wellpath ID: amp-sur
Date Created: 10/31/95
Last Revision: 11/18/95

Calculated using the Minimum Curvature Method
Computed using WIN-CADDS REV2.1.0
Vertical Section Plane: N 75.92 E

Survey Reference: WELLHEAD
Vertical Section Reference: WELLHEAD
Closure Reference: WELLHEAD
TVD Reference: WELLHEAD

AMPOLEX USA,INC.
RIO ARRIBA COUNTY,NM
RIO ARRIBA COUNTY,NM
CEDAR CANYON #22-K
SURVEY

Measured Depth (ft)	Incl (deg.)	Drift Dir. (deg.)	Course Length (ft)	TVD (ft)	Vertical Section (ft)	Build Rate (dg/100ft)	TOTAL Rectangular Offsets (ft)	(ft)	DLS (dg/100ft)
6113.00	2.60	N 87.70 E	30.00	6092.44	386.39	0.00	92.73 N	375.10 E	0.73
6145.00	2.90	N 81.00 E	32.00	6124.40	387.90	0.94	92.89 N	376.62 E	1.37
6160.00	3.00	N 82.70 E	15.00	6139.38	388.67	0.67	92.99 N	377.39 E	0.89
6208.00	3.40	N 81.10 E	48.00	6187.31	391.34	0.83	93.37 N	380.04 E	0.85
6239.00	4.40	N 77.10 E	31.00	6218.24	393.44	3.23	93.78 N	382.11 E	3.34
6270.00	4.40	N 76.50 E	31.00	6249.14	395.82	0.00	94.33 N	384.42 E	0.15
6301.00	3.30	N 72.80 E	31.00	6280.07	397.90	-3.55	94.87 N	386.43 E	3.64
6333.00	2.20	N 65.50 E	32.00	6312.04	399.42	-3.44	95.39 N	387.87 E	3.60
6364.00	1.90	N 65.10 E	31.00	6343.02	400.51	-0.97	95.86 N	388.88 E	0.97
6395.00	1.60	N 45.90 E	31.00	6374.00	401.39	-0.97	96.37 N	389.65 E	2.11
6426.00	1.30	N 32.40 E	31.00	6404.99	402.02	-0.97	96.97 N	390.15 E	1.46
6458.00	0.70	N 26.40 E	32.00	6436.99	402.41	-1.87	97.45 N	390.43 E	1.90
6489.00	0.40	N 40.40 E	31.00	6467.99	402.62	-0.97	97.71 N	390.59 E	1.05
6510.00	0.40	N 40.60 E	21.00	6488.99	402.74	0.00	97.82 N	390.68 E	0.01
PROJECTED ANGLE AND AZIMUTH @ T.D. - 6550'									
6550.00	0.40	N 40.60 E	40.00	6528.99	402.97	0.00	98.03 N	390.87 E	0.00

Ran intermediate casing at 6550'

6653' 1 1/2°

6996' 7°

7088' 7°

SURVEY RECORD

SIDETRACK 1

SURVEY DEPTH	INCL. ANGLE	HOLE DIR.	TVD	VERT. SEC.	TOTAL COOR. NORTH	TOTAL COOR. EAST	COMMENTS
6550'	0.4	40.6	6528.00	-403.00	98.00	390.00	
6597'	1.2	15.9	6575.00	-390.24	98.60	390.24	
6610'	1.0	351.3	6587.99	-390.26	98.84	390.26	
6641'	2.0	317.6	6618.98	-389.86	99.51	389.86	
6673'	3.3	316.2	6650.95	-388.84	100.58	388.84	
6704'	3.3						Magnetic Interference
6735'	3.9						
6766'	5.5						
6798'	5.5						
6829'	5.3						
6859'	5.7						
6891'	6.1						
6922'	6.2						
6953'	6.8						
6984'	7.4						
7016'	8.0						
7048'	8.4						
7079'	8.4						
7119'	8.8						
7140'	8.6						
7172'	8.2						
7205'	7.6						
7237'	7.6						
7267'	7.5						

MUD DATA

1995 DATE	DEPTH	WT	FV	PV	YP	GEL STR	pH	FIL	FC	Cl	Ca	SOL	COMMENTS
10/19	0'	8.4	32				7.5						
10/20	432'	8.4	26				9.0			1200	680		Surface Csg.
10/21	432'	8.4	26				9.0			1200	680		
10/22	432'	8.4	26				9.0			1200	680		
10/23	1230'	8.5	38	18	14	2/8	9.0	10.8	1/32	1000	40	3.0	
10/24	1690'	9.0	40	12	8	2/6	9.0	10.2	2/32	700	40	4.0	
10/25	2100'	8.9	35	6	4	1/3	9.0	11.2	1/32	900	40	4.0	
10/26	2370'	8.9	35	6	4	1/3	8.5	14.0	1/32	1100	40	4.0	
10/27	2394'	8.9	37	9	6	1/6	9.0	8.4	1/32	1000	40	4.0	
10/27	2526'	8.9	45	16	14	2/20	9.5	6.8	2/32	900	40	4.0	
10/28	2777'	8.9	43	14	10	2/12	8.5	7.6	2/32	1000	40	4.0	
10/29	3125'	8.9	45	18	10	2/12	8.5	7.6	2/32	1100	40	4.0	
10/30	3275'	8.9	38	12	10	2/6	7.2	7.2	2/32	1200	40	4.0	
10/31	3350'	9.0	45	12	12	2/12	8.5	7.8	2/32	1200	40	5.0	
11/1	3650'	9.1	41	11	9	2/9	8.0	8.0	2/32	1400	40	5.0	
11/2	3894'	8.9	43	14	12	2/12	8.0	8.0	2/32	2100	40	4.0	
11/3	4026'	8.9	43	22	10	2/10	8.0	7.8	2/32	2500	40	4.0	
11/4	4366'	9.0	43	18	11	2/9	8.0	8.0	2/32	1700	40	5.0	
11/5	4547'	9.0	46	16	14	2/12	8.0	8.4	2/32	2200	40	5.0	
11/6	4830'	8.9	43	14	12	2/10	8.0	7.8	2/32	4400	200	4.0	
11/7	4960'	9.0	40	10	6	1/8	8.0	8.6	2/32	3100	160	5.0	
11/7	5220'	8.9	40	12	8	2/8	8.5	8.0	2/32	2400	40	4.0	
11/9	5383'	9.0	44	16	14	2/10	8.5	8.6	2/32	2300	80	5.0	

6670' - 6680' 100% Shale: dark gray, dark brownish-gray, silty to very silty, calcareous to very calcareous, blocky to platy, firm to hard.
Trace Siltstone: grayish-brown, light brown, sandy (very fine grained), carbonaceous, very calcareous, blocky, hard, NSFOC.
Abundant fossil shell fragments (Inoceramus ?).

6680' - 6700' 60% Cement.
40% Shale: dark gray, dark brownish-gray, AA.
Trace Siltstone: grayish-brown, light brown, AA.

6700' - 6710' 100% Cement.
Trace Shale and Siltstone: AA.

6710' - 6720' 65% Shale: dark gray, dark brownish-gray, silty to very silty, very calcareous, blocky to platy, firm to hard.
35% Cement.
Trace Siltstone: grayish-brown, light brown, sandy (very fine grained), carbonaceous, very calcareous, blocky, hard, NSFOC.

6720' - 6730' 90% Shale: dark gray, AA.
10% Cement.
Trace Sandstone: brown to grayish-brown, very fine grained, moderately sorted, carbonaceous, calcareous cement, very poor porosity, NSFOC.

6730' - 6750' 100% Shale: dark gray, dark brownish-gray, silty in part, calcareous to very calcareous, blocky to platy, firm to hard.
Trace Siltstone: grayish-brown, light brown, sandy (very fine grained), carbonaceous, very calcareous, blocky, hard, NSFOC.
Abundant fossil shell fragments (Inoceramus ?).

6750' - 6790' 100% Shale: dark gray, dark brownish-gray, AA.
Trace Siltstone: gray to grayish-brown, light brown, sandy (very fine grained), carbonaceous, very calcareous, blocky, hard, NSFOC, grading to Sandstone in part.

6790' - 6800' Sample: AA, with slightly increasing Siltstone.
Trace Sandstone: grayish-brown, light brown, very fine grained, moderately sorted, carbonaceous, calcareous cement, poor porosity, NSFOC.

6800' - 6810' 95% Shale: dark gray, dark brownish-gray, very silty, very calcareous, blocky to platy, firm to hard, grading to Siltstone in part.
5% Siltstone: grayish-brown, light brown, gray, sandy (very fine grained), carbonaceous, calcareous, pyritic in part, blocky, hard, NSFOC.

6810' - 6820' No Sample.

6820' - 6840' 75% Shale: dark gray, dark brownish-gray, AA.
25% Siltstone: dark gray, dark brownish-gray, sandy (very fine grained), carbonaceous, very calcareous, blocky, hard, NSFOC.

6840' - 6850' 80% Siltstone: dark gray, dark brownish-gray, AA, very sandy.
20% Shale: dark gray to dark brownish-bray, very silty, very

6840' - 6850' (continued) calcareous, blocky to platy, firm to hard, grading to Siltstone in part.
Trace Sandstone: grayish-brown, light brown, very fine grained, moderately sorted, carbonaceous, calcareous cement, poor porosity, NSFOC.

6850' - 6870' 60% Siltstone: dark gray, dark brownish-gray, very sandy in part (very fine grained), carbonaceous, very calcareous, blocky, hard, NSFOC.
40% Shale: dark gray to dark brownish-gray, AA.
Trace Sandstone: grayish-brown to light brown, AA, grading to Siltstone.

6870' - 6880' 70% Shale: dark gray to dark brownish-gray, very silty in part, very calcareous, blocky to platy, firm to hard.
30% Siltstone: dark gray to dark brownish-gray, AA.

6880' - 6890' Sample: AA.
Trace Bentonite: light brown, platy, firm, mineral fluorescence.

6890' - 6900' 80% Shale: dark gray, dark brownish-gray, AA.
10% Siltstone: dark gray to dark brownish-gray, AA.
10% Bentonite: light brown, platy, firm, mineral fluorescence.

6900' - 6910' 90% Shale: dark gray, dark brownish-gray, silty to very silty, very calcareous, blocky to platy, firm to hard.
10% Siltstone: dark gray, dark brownish-gray, sandy (very fine grained), carbonaceous, very calcareous, blocky, hard, NSFOC.
Trace Bentonite: light brown, AA.

6910' - 6920' Sample: AA, with Shale containing trace glauconite.

6920' - 6950' 90% Shale: dark gray, dark brownish-gray, silty to very silty, trace glauconite, very calcareous, blocky to platy, firm to hard.
10% Siltstone: dark gray, dark brownish-gray, AA.
Trace Sandstone: light brown, very fine grained, moderately sorted, slightly glauconitic, calcareous cement, clay filled, poor porosity, occasional yellowish-gold mineral fluorescence, NSOC.

6950' - 6960' 100% Shale: dark gray to dark brownish-gray, silty in part, very calcareous, blocky to platy, firm to hard.
Trace Siltstone: dark gray, dark brownish-gray, AA.

6960' - 6970' Sample: AA.
Trace Sandstone: light brown, very fine grained, moderately sorted, trace glauconite, calcareous cement, poor porosity, occasional yellowish-gold mineral fluorescence, NSOC.
Trace Bentonite: light brown, platy, firm, mineral fluorescence.

6970' - 6980' 100% Shale: dark gray, dark brownish-gray, silty in part, sandy and glauconitic in part, very calcareous, blocky to platy, firm to hard.
Trace Siltstone: dark gray, dark brownish-gray, sandy (very fine grained), carbonaceous, glauconitic in part, very calcareous, blocky, hard, NSFOC.

6980' - 6990' Sample: AA, with 5% Sandstone: white to light gray, light brown, very fine to medium grained, subangular, very poorly sorted, very glauconitic, pyritic, calcareous cement, poor porosity, NSFOC.

6990' - 7000' 95% Shale: dark gray, dark brownish-gray, silty in part, very sandy and very glauconitic in part, very calcareous, blocky to platy, firm to hard.
5% Sandstone: grayish-brown, trace light brown, very fine to fine grained, subangular, poorly sorted, glauconitic, argillaceous, calcareous cement, poor porosity, NSFOC.

7000' - 7020' Samples: AA, with sandy and glauconitic Shale grading to Sandstone.

7020' - 7070' No Samples.

7070' - 7120' 100% Shale: dark gray to dark brownish-gray, silty in part, very calcareous, blocky to platy, firm to hard.
Trace Siltstone: dark gray, grayish-brown to light brown, sandy (very fine grained), carbonaceous, very calcareous, blocky, hard, NSFOC.
Trace Bentonite: light brown, platy, firm, mineral fluorescence.

7120' - 7140' 100% Shale: dark gray, dark brownish-gray, silty in part, very calcareous, platy to splintery, blocky in part, firm to hard.
Trace Bentonite: light brown, AA.

7140' - 7160' No Samples.

7160' - 7220' 100% Shale: dark gray to dark brownish-gray, AA.
Trace Siltstone: dark gray, dark brownish-gray, sandy (very fine grained), carbonaceous, very calcareous, blocky, hard, NSFOC.

7220' - 7240' No Samples.

7240' - 7260' 100% Shale: dark gray, dark brownish-gray, silty in part, calcareous in part, platy to splintery, blocky in part, firm to hard.
Trace Sandstone: grayish-brown, brown, brownish-gray, very fine grained, moderately sorted, carbonaceous, calcareous and siliceous cement, quartzitic in part, poor porosity, NSFOC.
Trace Siltstone: dark gray to dark brownish-gray, AA.

7260' - 7300'TD 100% Shale: dark gray, dark brownish-gray, slightly silty in part, noncalcareous to slightly calcareous, platy to splintery, firm to hard.
Trace Siltstone: dark brownish-gray, sandy (very fine grained), carbonaceous, calcareous in part, blocky, hard, NSFOC.

SUMMARY

Ampolex (USA), Inc., drilled the Cedar Canyon 22K-1 as a southwest offset to EnRe Corp. Cedar Canyon 22G-1. Significant hydrocarbon shows in the Niobrara interval of the Upper Cretaceous Mancos Shale were encountered in some of the 4 sidetracks in the 22G-1.

Because of deviation problems associated with moderate to steep formation dips, the 22K-1 was directionally drilled below 3275'. Fractured shales made it very difficult to hold a tool face with the steering tools.

The well was logged at 6200'md, approximately 200' above the Niobrara interval. After logging, the decision was made to drill an additional 350' with drilling mud before setting intermediate casing and changing to an air/mist system. This stratigraphic section (6200'md - 6550'md) was logged only with a GR tool through casing.

Below casing, in order to minimize the plugging of formation fractures, the 22K-1 was drilled with air/mist. After reaching a total depth of 7314' in the Niobrara "C" zone, the drill pipe became stuck. The borehole was filled with KCl mud but it was necessary to freepoint and back-off the drill pipe. Two fish were left in the hole. Three unsuccessful attempts were made to recover the upper fish.

Sidetrack 1 was kicked-off above the upper fish and was directionally drilled to a total depth of 7300'md with KCl mud. Although it was not known during drilling, sidetrack 1 re-entered the 22K-1 borehole and was drilled alongside the fish.

During the second log run, borehole bridges prevented the logging tools from reaching total depth (7300'). The tools stopped at depths ranging from 6815'md to 6930'md. Log measurements from 6688'md to 6876'md were affected by the upper fish cemented in the borehole.

The lower fish, consisting of 12 drill collars, a bit sub and a bit, was recovered with an overshot after the second log run. The well was logged a third time with the Dual-Induction tools, which stopped at 7091'md. The upper fish affected these log measurements in the same interval (6688'md to 6876'md).

A production liner was run after logging and it also did not reach bottom. The liner was set at 7010'md.

Samples were examined from 2000'md in the Tertiary Animas Formation to 7314'md (total depth) in the Niobrara "C" zone. In sidetrack 1, samples were examined in the Niobrara interval from 6627'md to 7300'md (total depth). A one-person mudlogging unit was also operated over these intervals.

No significant hydrocarbon shows were observed in any of the formations penetrated above the Upper Cretaceous Mesa Verde Group. The Cliff House Sandstone, the upper formation of the Mesa Verde Group, contained clay-filled, low-porosity sandstone with no visible oil stain. The sandstone had occasional, very light yellow and dull-gold fluorescence under ultraviolet light and produced a slow to immediate, streaming cut in solvent. Total gas in this formation reached a maximum of 235 units from a background of 65 units.

The underlying Menefee Formation also contained sandstone with similar fluorescence. In solvent, the cut was slow and milky, sometimes visible only after crushing the clusters. Gas increases from sandstone and thin coal beds reached a maximum of 465 units in the Menefee Formation. No significant hydrocarbon shows were observed in the Point Lookout Sandstone, the lower formation in the Mesa Verde Group.

The Mancos Shale, including the Niobrara interval, contained no sample shows but several large gas increases were recorded. The potential productive zones in the Niobrara "A", "B" and "C" intervals contained very limy, very silty to sandy shale that graded to siltstone. Thin sandstone beds were also present.

Above the Niobrara interval, with drilling mud as the borehole fluid, gas reached maximums of 2750 units from 5764' - 5778'md, 3910 units from 6069' - 6090'md and 3500 units at 6241'md. High gas continued below this depth until intermediate casing was set at 6549'md.

The log depths for the tops of the Niobrara "A", "B" and "C" zones are 6612'md (6591'tvd/+605'), 6750'md (6728'tvd/+468') and 6994'md (6972'tvd/+224'), respectively. With air/mist as the drilling fluid, maximum gas increases were 360 units from 6722' - 6729'md and 1430 units at 6835'md. High gas continued during drilling below 6835'md through the Niobrara "B" and "C" zones to total depth at 7314'md.

Sidetrack 1, which re-entered the 22K-1 borehole and was drilled with KCl mud, encountered high gas at 6717'md. Gas reached a maximum of 8000 units at 6755'md and remained high to total depth at 7300'md.

A production liner was set for a completion in the Niobrara interval. Fracturing will be a necessary completion method to evaluate the production potential in the 22K-1 sidetrack 1.

4970' - 4980' (continued)	30% Sandstone: light brown to brown, AA, grading to Siltstone. 20% Siltstone: grayish-brown, sandy (very fine grained), carbonaceous, noncalcareous, blocky, firm. 10% Shale cavings: green. Trace Coal.
4980' - 4990'	60% Shale: dark grayish-brown, dark gray, AA. 20% Sandstone: light brown, brown, AA. 10% Siltstone: grayish-brown, AA. 10% Shale cavings: green.
4990' - 5000'	50% Shale: dark grayish-brown, grayish-brown, carbonaceous, noncalcareous, platy to blocky, firm. 30% Sandstone: light brown, gray, fine grained, very fine grained in part, subrounded to subangular, poorly sorted, carbonaceous, siliceous cement, poor porosity, dull gold mineral fluorescence, NSOC. 10% Siltstone: grayish-brown, AA. 10% Shale cavings: green.
5000' - 5010'	60% Sandstone: white to light gray and light brown, slightly salt and peppered, fine grained, very fine grained in part, subrounded to subangular, moderately to poorly sorted, carbonaceous in part, siliceous cement, clay filled in part, poor porosity, light yellow and dull gold mineral fluorescence, NSOC. 30% Shale: dark grayish-brown to grayish-brown, AA. 10% Siltstone: grayish-brown, gray, AA.
5010' - 5020'	Sample: AA, with increasing (70%) Sandstone: predominantly white to gray, salt and peppered, AA.
5020' - 5030'	75% Sandstone: white, gray, salt and peppered, fine grained, subrounded to subangular, moderately sorted, carbonaceous in part, siliceous cement, clay filled, poor porosity, light yellow and dull gold mineral fluorescence, NSOC. 25% Shale: dark grayish-brown, grayish-brown, AA.
5030' - 5040'	80% Sandstone: light brown to brown, white to gray, salt and peppered, AA. 20% Shale: dark grayish-brown, grayish-brown, AA. Trace Coal.
5040' - 5050'	65% Sandstone: predominantly white to gray, salt and peppered, very fine to fine grained, subrounded to subangular, moderately to poorly sorted, carbonaceous in part, siliceous cement, clay filled, poor porosity, occasional dull gold mineral fluorescence, NSOC. 35% Shale: dark grayish-brown, grayish-brown, carbonaceous, noncalcareous, platy to blocky, firm. Trace Coal.
5050' - 5060'	65% Sandstone: light brown to brown, white to gray, salt and peppered, AA. 25% Shale: dark grayish-brown, grayish-brown, AA. 10% Coal.
5060' - 5080'	Samples: AA, with increasing (30%) Shale.
5080' - 5100'	80% Sandstone: white, gray, light brown, salt and peppered, very

5080' - 5100' (continued)	fine to fine grained, subrounded to subangular, moderately to poorly sorted, calcareous cement in part, clay filled, poor porosity, NSFOC. 20% Shale: dark grayish-brown, grayish-brown, AA. Trace Coal.
5100' - 5110'	75% Sandstone: white, gray, light brown, salt and peppered, predominantly very fine grained, moderately sorted, carbonaceous in part, calcareous cement in part, clay filled, poor porosity, NSFOC. 20% Shale: dark grayish-brown, AA. 5% Coal.
5110' - 5120'	100% Sandstone: white to light gray, salt and peppered, very fine grained, moderately sorted, carbonaceous, calcareous cement in part, clay filled, poor porosity, NSFOC. Trace Coal and Shale: AA.
5120' - 5150'	85% Sandstone: predominantly gray, salt and peppered, AA, trace green mineral. 10% Shale: dark grayish-brown, AA. 5% Coal.
5150' - 5160'	Sample: AA, with increasing (15%) Shale.
5160' - 5180'	85% Sandstone: predominantly gray, some light brown, salt and peppered, very fine grained, moderately sorted, carbonaceous, siliceous and calcareous cement, clay filled, poor porosity, NSFOC, grading to Siltstone in part. 15% Shale: dark grayish-brown, AA.
5180' - 5200'	50% Sandstone: gray, salt and peppered, AA, grading to Siltstone. 30% Shale: dark grayish-brown, silty in part, carbonaceous, noncalcareous, platy to blocky, firm. 20% Siltstone: gray, grayish-brown, sandy (very fine grained), carbonaceous, calcareous in part, blocky, firm.
5200' - 5210'	65% Sandstone: gray, salt and peppered, very fine grained, moderately sorted, pyritic, carbonaceous, calcareous cement, clay filled, poor porosity, NSFOC, grading to Siltstone in part. 20% Siltstone: gray to grayish-brown, AA. 15% Shale: dark grayish-brown, silty and pyritic in part, carbonaceous, noncalcareous, platy to blocky, firm.
5210' - 5230'	60% Siltstone: gray to grayish-brown, sandy (very fine grained), carbonaceous, calcareous, blocky, firm. 30% Shale: grayish-brown, silty, carbonaceous, noncalcareous, platy to blocky, firm. 10% Sandstone: gray, salt and peppered, AA.
5230' - 5240'	45% Siltstone: grayish-brown to gray, AA. 35% Shale: grayish-brown, AA. 20% Sandstone: grayish-brown, brown, gray, carbonaceous, calcareous cement, clay filled, poor porosity, NSFOC.
5240' - 5250'	50% Shale: grayish-brown, silty in part, carbonaceous, noncalcareous, platy to blocky, firm.

5240' - 5250' (continued)
40% Siltstone: grayish-brown, gray, AA.
10% Sandstone: grayish-brown, brown, AA.

5250' - 5280'
80% Siltstone: brown, grayish-brown, very sandy (very fine grained), carbonaceous, calcareous, blocky, firm, grading to Sandstone.
20% Shale: grayish-brown, AA.

5280' - 5310'
Sample: AA, with increasing (35%) Shale.

5310' - 5340'
75% Siltstone: grayish-brown, brown, sandy (very fine grained), carbonaceous, calcareous, blocky, firm, grading to Sandstone in part.
25% Shale: grayish-brown, silty in part, carbonaceous, slightly calcareous, platy to blocky, firm.

5340' - 5370'
90% Siltstone: grayish-brown, AA.
10% Shale: grayish-brown, AA.

5370' - 5400'
Poor Sample.
50% Shale: grayish-brown, silty in part, carbonaceous, slightly calcareous, platy to blocky, firm.
25% Siltstone: grayish-brown, brown, AA.
25% Shale cavings: green, gray.

5400' - 5430'
60% Shale: grayish-brown, AA, very silty.
40% Siltstone: grayish-brown, AA.

5430' - 5550'
80% Siltstone: grayish-brown, sandy (very fine grained), carbonaceous, calcareous, blocky, firm, grading to Shale.
20% Shale: grayish-brown, very silty, carbonaceous, slightly calcareous, platy to blocky, firm, grading to Siltstone.

5550' - 5580'
60% Shale: grayish-brown, AA.
40% Siltstone: grayish-brown, AA.

5580' - 5610'
80% Shale: grayish-brown, very silty in part, carbonaceous, calcareous, platy to blocky, firm.
20% Siltstone: grayish-brown, AA.

5610' - 5910'
90% Shale: grayish-brown, AA.
10% Siltstone: grayish-brown, sandy (very fine grained), carbonaceous, calcareous, blocky, firm.

5910' - 6050'
90% Shale: grayish-brown, very silty in part, carbonaceous, calcareous (increasing with depth), platy to blocky, firm.
10% Siltstone: grayish-brown, sandy in part, (very fine grained), carbonaceous, calcareous, blocky, firm.

6050' - 6270'
100% Shale: dark grayish-brown, silty in part, carbonaceous, calcareous (increasing with depth), platy to blocky, firm.
Trace Siltstone: grayish-brown, AA.

6270' - 6280'
No Sample.

6280' - 6290'
100% Shale: dark grayish-brown to dark gray, silty in part, carbonaceous, calcareous, platy to blocky, firm.

6290' - 6300' Very Poor Sample.
100% Shale, Siltstone and Sandstone Cavings.

6300' - 6310' 80% Shale: dark grayish-brown, dark gray, AA.
20% Shale, Siltstone and Sandstone Cavings.

6310' - 6320' Very Poor Sample.
90% Shale, Siltstone and Sandstone Cavings.
10% Shale: grayish-brown, dark gray, AA.

6320' - 6460' 100% Shale: dark grayish-brown to dark gray, silty in part, carbonaceous in part, very calcareous, platy to blocky, firm, with occasional Shale and Siltstone Cavings.

6460' - 6550' 100% Shale: dark gray, dark grayish-brown, very silty in part, very calcareous, platy to blocky, firm, with trace (rare) white, chalky specks.
Trace Siltstone: dark gray mottled white, sandy (very fine grained), very calcareous, blocky, hard, NSFOC.

Landed 7 5/8" intermediate casing at 6549' and drilled out with air/mist.

6550' - 6600' 75% Shale: dark gray, dark grayish-brown, very silty in part, very calcareous, platy to blocky, firm.
15% Siltstone: brown, sandy (very fine grained), carbonaceous, very calcareous, blocky, hard, NSFOC, grading to Sandstone.
10% Sandstone: brown, salt and peppered, very fine grained, moderately sorted, carbonaceous, calcareous cement, poor porosity, NSFOC.

6600' - 6630' 80% Shale: dark gray to dark grayish-brown, AA.
20% Siltstone: brown, dark grayish-brown, sandy (very fine grained), carbonaceous, very calcareous, blocky, firm, NSFOC.

6630' - 6690' 95% Shale: dark gray, dark grayish-brown, silty in part, very calcareous, platy to blocky, firm.
5% Siltstone: gray to brown, sandy (very fine grained), carbonaceous, very calcareous, blocky, hard, NSFOC.
Abundant fossil shell fragments (Inoceramus ?).

6690' - 6780' 100% Shale: dark gray to dark brownish-gray, very silty in part, pyritic in part, very calcareous, blocky to platy, firm to hard.
Trace Sandstone: brown, dark gray, very fine grained, moderately sorted, carbonaceous, calcareous cement, clay filled, poor porosity, NSFOC.
Trace Siltstone: gray, brown, AA, NSFOC.
Abundant fossil shell fragments (Inoceramus ?).

6780' - 6810' Sample: AA, with Shale becoming more silty.
Trace Siltstone: dark grayish-brown, sandy (very fine grained), carbonaceous, very calcareous, blocky, hard, NSFOC.

6810' - 6840' 95% Shale: dark gray, dark grayish-brown, very silty, very calcareous, blocky to platy, firm to hard, grading to Siltstone.

6810' - 6840' (continued) 5% Siltstone: dark grayish-brown, gray to brown, sandy (very fine grained), carbonaceous, very calcareous, blocky, firm, yellow to yellowish-gold mineral fluorescence, NSOC, grading to Sandstone in part.

6840' - 6870' 50% Siltstone: dark grayish-brown, dark gray, sandy (very fine grained), carbonaceous, very calcareous, blocky, hard, NSFOC.
50% Shale: dark gray, dark grayish-brown, very silty, very calcareous, blocky to platy, firm to hard, grading to Siltstone.
Trace Sandstone: grayish-brown to dark grayish-brown, very fine grained, moderately sorted, carbonaceous, glauconitic in part, calcareous cement, clay filled, poor porosity, NSFOC.

6870' - 6890' 100% Shale: dark gray to dark grayish-brown, silty in part, very calcareous, blocky to platy, firm to hard.
Trace Siltstone: grayish-brown, brown, sandy (very fine grained), carbonaceous, very calcareous, blocky, hard, NSFOC.
Abundant fossil shell fragments (Inoceramus ?).

6890' - 6900' 100% Shale: dark gray, dark grayish-brown, AA, becoming very silty, grading to Siltstone in part.

6900' - 6920' 60% Siltstone: dark brownish-gray to dark gray, sandy (very fine grained), carbonaceous, trace glauconite, very calcareous, blocky, hard, NSFOC.
40% Shale: dark gray, dark grayish-brown, very silty, trace glauconite, very calcareous, blocky to platy, firm to hard, grading to Siltstone.

6920' - 6950' No Samples.

6950' - 6980' 90% Shale: dark gray, dark grayish-brown, silty to very silty, sandy in part (fine to medium grained), glauconitic in part (large clasts), very calcareous, blocky to platy, firm to hard.
10% Siltstone: dark brownish-gray, dark gray, AA.
Trace Sandstone: light brown to white, very fine to medium grained, subangular, poorly sorted, carbonaceous, glauconitic, calcareous cement, clay filled, poor porosity, NSFOC.

6980' - 7010' Sample: AA, with Shale becoming more sandy and glauconitic.
Trace Sandstone: dark grayish-brown, gray, very fine to medium grained, subangular, poorly sorted, carbonaceous, glauconitic, pyritic in part, calcareous cement, clay filled, poor porosity, NSFOC.

7010' - 7067' 70% Siltstone: dark grayish-brown, dark gray, sandy (very fine grained), carbonaceous, glauconitic in part, very calcareous, blocky, hard, NSFOC.
30% Shale: dark gray to dark grayish-brown, silty to very silty, sandy in part (fine to medium grained), glauconitic in part, very calcareous, blocky to platy, firm to hard, grading to Siltstone in part.

7067' - 7080' 90% Shale: dark gray, dark grayish-brown, silty to very silty, very calcareous, blocky to platy, firm to hard, grading to Siltstone in part.

7067' - 7080' (continued) 10% Siltstone: brown to dark brown, dark grayish-brown, sandy (very fine grained), carbonaceous, very calcareous, blocky, hard, NSFOC, grading to Sandstone in part.
Abundant fossil shell fragments (Inoceramus ?).

7080' - 7100' Samples: AA.
Trace Sandstone: grayish-brown, dark gray, very fine grained, moderately sorted, very carbonaceous, calcareous cement, clay filled, poor porosity, NSFOC.

7100' - 7120' No Samples.

7120' - 7130' 90% Shale: dark gray, dark grayish-brown, silty to very silty, very calcareous, blocky to platy, firm to hard, grading to Siltstone in part.
10% Siltstone: dark grayish-brown, brown, sandy (very fine grained), silty to very silty, carbonaceous, pyritic in part, very calcareous, blocky, hard, NSFOC.
Trace Sandstone: brown, very fine grained, moderately sorted, very carbonaceous, calcareous cement, clay filled, poor porosity, NSFOC.

7130' - 7250' 90% Shale: predominantly dark gray, silty in part, very calcareous, blocky, firm to hard.
10% Siltstone: dark gray to dark grayish-brown, sandy (very fine grained), carbonaceous, pyritic in part, very calcareous, blocky, hard, NSFOC.
Trace fossil shell fragments (Inoceramus ?).

7250' - 7280' Sample: AA, Shale becoming less calcareous, splintery in part.
Trace Sandstone: brown, dark grayish-brown, very fine grained, moderately sorted, carbonaceous, calcareous cement, clay filled, poor porosity, NSFOC.

7280' - 7314'TD 90% Shale: dark gray, silty in part, noncalcareous to slightly calcareous, platy to splintery, blocky in part, firm to hard.
10% Siltstone: dark grayish-brown, dark gray, sandy (very fine grained), carbonaceous, calcareous in part, blocky, hard, NSFOC.
Trace Sandstone: dark grayish-brown, AA.

Set cement plug at top of fish and kicked off with MWD tools using KCl mud.

Cedar Canyon 22K-1 Sidetrack 1

6627' - 6640' 75% Shale: dark gray, dark brownish-gray, silty in part, very calcareous, blocky to platy, firm to hard.
25% Cement.

6640' - 6650' Sample: AA, with decreasing (15%) Cement.

6650' - 6660' 95% Shale: dark gray, dark brownish-gray, AA.
5% Cement.

6660' - 6670' No Sample.

2500' - 2510' Post Short-Trip Sample (Cavings).
90% Shale: gray to grayish-brown, noncalcareous, platy to blocky, waxy, firm.
10% Siltstone: gray to grayish-brown, AA.

2510' - 2520' 90% Siltstone: grayish-brown, very sandy (very fine grained), carbonaceous, calcareous, blocky, firm, grading to Sandstone in part.
10% Shale: gray, grayish-brown, AA.

2520' - 2540' Samples: AA, with increasing Shale: predominantly grayish-brown, AA.
Abundant Bentonite: light brown, soft.

2540' - 2570' 100% Shale: gray to grayish-brown, very silty in part, carbonaceous, calcareous, platy to blocky, firm, grading to Siltstone in part.
Trace Bentonite: light brown, soft.

2570' - 2580' 80% Siltstone: grayish-brown, very sandy (very fine grained), carbonaceous, calcareous, blocky, firm.
20% Shale: gray, grayish-brown, AA.

2580' - 2590' Sample: AA, with increasing (30%) Shale: gray to grayish-brown, AA.

2590' - 2600' 40% Siltstone: gray, grayish-brown, AA.
30% Sandstone: gray, salt and peppered, very fine grained, moderately sorted, carbonaceous, calcareous cement, clay filled, poor porosity, NSFOC.
30% Shale: gray, grayish-brown, silty, calcareous, platy to blocky, firm.

2600' - 2610' 65% Siltstone: gray, grayish-brown, sandy (very fine grained), carbonaceous, calcareous, blocky, firm.
20%Shale: grayish-brown, gray, silty in part, calcareous, platy, to blocky, firm.
15% Sandstone: gray to light gray, salt and peppered, AA.

2610' - 2620' 60% Siltstone: light gray to gray, grayish-brown, sandy (very fine grained), carbonaceous, calcareous, blocky, firm, grading to Sandstone in part.
20% Sandstone: light gray to gray, salt and peppered, very fine grained, moderately sorted, carbonaceous, calcareous cement, clay filled, poor porosity, NSFOC, grading to Siltstone in part.
20% Shale: gray to grayish-brown, AA.

2620' - 2630' 50% Shale: grayish-brown, gray, silty in part, calcareous, platy to blocky, firm.
40% Siltstone: light gray, gray, grayish-brown, AA.
10% Sandstone: light gray to gray, salt and peppered, AA.

2630' - 2650' 35% Sandstone: light gray, gray, salt and peppered, very fine grained, moderately sorted, carbonaceous, calcareous cement, clay filled, poor porosity, NSFOC.
35% Siltstone: light gray to gray, grayish-brown, AA.
30% Shale: grayish-brown, gray, AA.

2650' - 2660' Sample: AA, with increasing (50%) Sandstone.

2660' - 2670' 80% Siltstone: predominantly grayish-brown, very sandy (very fine grained), carbonaceous, calcareous, blocky, firm.
10% Sandstone and 10% Shale: AA.

2670' - 2770' 90% Siltstone: grayish-brown, AA.
10% Shale: grayish-brown, gray, silty in part, calcareous, platy to blocky, firm.

2770' - 2800' 70% Shale: grayish-brown, very silty in part, carbonaceous, calcareous, platy to blocky, firm.
30% Siltstone: grayish-brown, sandy (very fine grained), carbonaceous, calcareous, blocky, firm.

2800' - 2830' 50% Shale: grayish-brown, AA.
50% Siltstone: grayish-brown, AA.

2830' - 2860' 90% Shale: grayish-brown to gray, very silty in part, carbonaceous, calcareous, platy to blocky, firm.
10% Siltstone: grayish-brown, AA.

2860' - 2950' 100% Shale: grayish-brown to gray, silty in part, AA.

2950' - 2980' No Sample.

2980' - 3070' 100% Shale: predominantly grayish-brown, very silty, carbonaceous, calcareous, platy to blocky, firm, grading to Siltstone in part.

3070' - 3370' 100% Shale: grayish-brown, very silty in part, carbonaceous, calcareous, platy to blocky, firm, grading to Siltstone in part.

3370' - 3580' 70% Shale: grayish-brown, AA.
30% Siltstone: brownish-gray, grayish-brown, gray, sandy (very fine grained), carbonaceous, calcareous, blocky, firm.

3580' - 3610' Sample: AA, with decreasing Siltstone.

3610' - 3640' 100% Shale: grayish-brown, silty in part, slightly carbonaceous, calcareous in part, platy to blocky, firm.
Trace Siltstone: brownish-gray, gray, AA.

3640' - 3700' 70% Shale: grayish-brown, AA, very silty in part.
30% Siltstone: grayish-brown to gray, sandy (very fine grained), slightly carbonaceous, calcareous in part, blocky to platy, firm.

3700' - 3820' 80% Siltstone: predominantly grayish-brown, AA.
20% Shale: grayish-brown, very silty in part, slightly carbonaceous, calcareous, platy to blocky, firm.

3820' - 3850' Sample: AA, with decreasing Siltstone.

3850' - 3910' 90% Siltstone: grayish-brown, sandy (very fine grained), carbonaceous, slightly calcareous, blocky, firm.
10% Shale: grayish-brown, AA.

3910' - 3940' 80% Siltstone: grayish-brown, AA.
20% Shale: grayish-brown, very silty in part, slightly carbonaceous, calcareous, platy to blocky, firm.

3940' - 3970' No Sample.

3970' - 4060' 60% Siltstone: grayish-brown, AA, grading to very silty Shale.
40% Shale: grayish-brown, AA.

4060' - 4150' 90% Shale: grayish-brown, very silty in part, carbonaceous, calcareous, platy to blocky, firm.
10% Siltstone: grayish-brown, AA.

4150' - 4480' 100% Shale: grayish-brown to brownish-gray, very silty in part, carbonaceous, calcareous, blocky to platy, firm, grading to Siltstone in part.

4480' - 4540' 80% Shale: grayish-brown to brownish-gray, very silty, carbonaceous, calcareous, blocky to platy, firm, grading to Siltstone.
20% Siltstone: grayish-brown, sandy (very fine grained), carbonaceous, calcareous, blocky, firm.

4540' - 4600' 50% Siltstone: grayish-brown to brownish-gray, sandy (very fine grained), carbonaceous, calcareous, blocky, firm, grading to Sandstone in part.
50% Shale: grayish-brown to brownish-gray, AA.

4600' - 4660' 80% Siltstone: grayish-brown, brownish-gray, AA.
20% Shale: grayish-brown, brownish-gray, AA.

4660' - 4690' Sample: AA, with increasing silty Shale.

4690' - 4750' 80% Shale: grayish-brown, brownish-gray, very silty in part, carbonaceous, calcareous, blocky to platy, firm, grading to Siltstone in part.
20% Siltstone: grayish-brown to brownish-gray, AA.

4750' - 4760' 40% Sandstone: grayish-brown to gray, slightly salt and peppered, very fine grained, moderately sorted, carbonaceous, trace green mineral, calcareous cement, clay filled, poor porosity, no visible oil stain, occasional very light yellow and dull gold fluorescence, slow to immediate streaming cut.
40% Shale: grayish-brown to brownish-gray, AA.
20% Siltstone: grayish-brown to brownish-gray, AA.

4760' - 4780' 50% Sandstone: grayish-brown, gray, slightly salt and peppered, AA, trace fair porosity.
30% Siltstone: grayish-brown, sandy (very fine grained), carbonaceous, calcareous, blocky, firm.
20% Shale: grayish-brown, brownish-gray, AA.

4780' - 4790' 50% Sandstone: grayish-brown to gray and light brown, slightly salt and peppered, very fine grained, trace fine grained, subangular to subrounded, moderately to poorly sorted, carbonaceous, trace green mineral, calcareous cement, clay filled, poor porosity, trace fair porosity, no visible oil stain, abundant very light yellow and dull gold fluorescence, slow milky cut after crushing.

4780' - 4790' (continued)
30% Siltstone: grayish-brown, AA.
20% Shale: grayish-brown, brownish-gray, AA.

4790' - 4800'
40% Sandstone: light brown, grayish-brown to gray, slightly salt and peppered in part, very fine to fine grained, poorly sorted, slightly carbonaceous, trace green mineral, calcareous cement, clay filled, poor porosity, trace fair porosity, no visible oil stain, occasional very light yellow and dull gold fluorescence, slow milky cut after crushing.
40% Shale: grayish-brown, silty, slightly carbonaceous, noncalcareous, platy to blocky, firm.
20% Siltstone: grayish-brown, AA.

4800' - 4810'
40% Shale: grayish-brown, silty to very silty, carbonaceous, noncalcareous, blocky to platy, firm.
35% Sandstone: predominantly light brown, AA, very carbonaceous in part.
25% Siltstone: grayish-brown, sandy (very fine grained), carbonaceous, noncalcareous, blocky, firm.
Trace Coal.

4810' - 4820'
40% Shale: grayish-brown, AA.
25% Siltstone: grayish-brown, AA.
25% Sandstone: light brown, AA.
10% Coal.

4820' - 4830'
65% Shale: dark grayish-brown, very silty in part, carbonaceous, noncalcareous, blocky to platy, firm.
25% Coal.
10% Siltstone: grayish-brown, AA.
Trace Sandstone: light brown, AA.

4830' - 4840'
65% Shale: dark grayish-brown, silty to very silty, carbonaceous, noncalcareous, blocky to platy, firm.
15% Coal.
10% Sandstone: grayish-brown, gray, light brown, salt and peppered, very fine to fine grained, subangular to subrounded, poorly sorted, carbonaceous, trace green mineral, calcareous cement, clay filled, poor porosity, trace fair porosity, no visible oil stain, trace very light yellow fluorescence, slow milky cut.
10% Siltstone: grayish-brown, AA.

4840' - 4850'
60% Shale: dark grayish-brown, AA.
20% Siltstone: grayish-brown, sandy (very fine grained), carbonaceous, calcareous in part, blocky, firm.
10% Coal.
10% Sandstone: grayish-brown, gray, light brown, salt and peppered, AA.

4850' - 4880'
60% Shale: dark grayish-brown, grayish-brown, silty in part, noncalcareous, platy to blocky, firm.
20% Coal.
20% Siltstone: grayish-brown, AA.
Trace Sandstone: grayish-brown, AA.

4880' - 4890'
60% Sandstone: grayish-brown, light brown, slightly salt and peppered, very fine grained, moderately sorted, very carbonaceous in

4880' - 4890' (continued) part, siliceous cement, clay filled, poor porosity, dull gold mineral fluorescence, NSOC.
20% Siltstone: grayish-brown, AA.
10% Coal.
10% Shale: dark grayish-brown to grayish-brown, AA.

4890' - 4910' 40% Sandstone: light brown to grayish-brown, slightly salt and peppered, AA.
30% Shale: dark grayish-brown, grayish-brown, silty in part, carbonaceous, calcareous in part, platy to blocky, firm.
20% Coal.
10% Siltstone: grayish-brown, AA.

4910' - 4920' 35% Shale: dark grayish-brown to grayish-brown, silty in part, carbonaceous, noncalcareous, platy to blocky, firm.
30% Siltstone: grayish-brown, sandy (very fine grained), carbonaceous, noncalcareous, blocky, firm.
15% Shale cavings: green.
10% Sandstone: light brown, AA.
10% Coal.

4920' - 4930' 45% Sandstone: light brown, very fine to fine grained, subrounded to subangular, poorly sorted, carbonaceous, siliceous cement, clay filled, poor porosity, trace fair porosity, yellow and dull gold mineral fluorescence, NSOC.
25% Coal.
10% Shale: dark grayish-brown to grayish-brown, AA.
10% Siltstone: grayish-brown, AA.
10% Shale cavings: green.

4930' - 4940' 50% Coal.
30% Shale: dark grayish-brown, grayish-brown, silty in part, carbonaceous, noncalcareous, platy to blocky, firm.
10% Sandstone: light brown, AA.
10% Siltstone: grayish-brown, AA.

4940' - 4950' 70% Coal.
10% Sandstone: brown, light brown, very fine grained, occasional fine grained, moderately to poorly sorted, carbonaceous, siliceous cement, clay filled, poor porosity, dull gold mineral fluorescence, NSOC.
10% Shale: dark grayish-brown, grayish-brown, AA.
10% Siltstone: grayish-brown, AA.

4950' - 4960' 40% Sandstone: light brown, brown, very fine grained, occasional fine grained, moderately to poorly sorted, carbonaceous, siliceous cement, clay filled, poor porosity, dull gold mineral fluorescence, NSOC.
30% Shale: dark grayish-brown, grayish-brown, AA.
10% Siltstone: grayish-brown, AA.
10% Coal.
10% Shale cavings: green.

4960' - 4970' Sample: AA, with increasing (50%) Sandstone.

4970' - 4980' 40% Shale: dark grayish-brown, grayish-brown, silty in part, carbonaceous, noncalcareous, platy to blocky, firm.

KB ELEV 7196'	GL ELEV 7181'	COMPANY AMPOLEX (USA), INC.	
DRILLER TD 7314' / 7300'	LOGGER TD	WELL CEDAR CANYON 22K-1/ SIDETRACK 1	FIELD WILDCAT
SPUDDED 10/19/93	LOGGED 11/15-16/93, 12/4-5/93, 12/8/93	SPOT NE SW	FOOTAGE 1940' FSL / 1830' FWL
SURFACE CSG 10 3/4" at 431'		SEC 22 T 28 N	R 01 W
INTERMEDIATE CSG 7 5/8" at 6549'			
PROD. LINER 5 1/2" at 7110'			
STATUS SIDETRACK 1 WOCT		COUNTY RIO ARRIBA	STATE NEW MEXICO

NO CORES OR TESTS

CONTRACTOR: AZTEC WELL SERVICE RIG NO. 184

SIDETRACK 1 RE-ENTERED THE 22K-1 BOREHOLE

GEOLOGIST GREG PARSONS, CASPER, WYOMING

PENETRATION RATE	LITH	STRATIGRAPHIC UNITS	SAMPLE DESCRIPTIONS

QTZ GRS-TRNSL, MLKY, MS, TR GS, SA, MOD SRTD, UNCONS, NSFOC

SH-GY TO GY-BRN, GY-GRN TO GRN, V SLTY I P, CARB I P, NONCALC, WXY, FRM

SLTST-GY-GRN, GY TO GY-BRN, SDY (VFG), SL CARB, TR GLAU, NONCALC, BLKY

QTZ GRS-TRNSL, MLKY, M-C GR, SA, P SRTD, UNCONS, NSFOC

SH-GY-BRN, GY TO GY-BRN, SLTY I P, NONCALC, BLKY-PLTY, WXY, FRM

QTZ GRS-TRNSL, MLKY, TR YEL TO ORNG, M-CG, SA, P SRTD, UNCONS, NSFOC

SH-GY-BRN, GY, GY-BRN, SLTY TO SL SDY I P, SL CARB I P, NONCALC, BLKY TO PLTY, FRM

QTZ GRS-TRNSL TO MLKY, YEL TO ORNG, AA

SH-GY-GRN TO BRN, NONCALC, SL SDY & GLAU I P, PLTY-BLKY, WXY, FRM

SS-WH, S & P, VFG, SA, MOD SRTD, NONCALC, CLY FL, P POR, NSFOC

SS-WH, LT GY, S & P, VFG, MOD SRTD, SL CARB, TR PYR & GRN MIN, NONCALC, V CLY FL, P POR, NSFOC

SH-GY TO GY-GRN, GY-BRN, NONCALC, PLTY-BLKY, WXY, FRM

SLTST-GY, GY-BRN, SDY (VFG), CARB, CALC, BLKY, FRM

SH-GY TO GY-BRN, NONCALC, PLTY-BLKY, WXY, FRM

SLTST-GY, GY-BRN, V SDY (VFG), CARB, CALC I P, BLKY, FRM, GRDG TO SS-GY TO GY-BRN, S & P, VFG & MOD SRTD, CARB, CALC CEM, CLY FL, P POR, NSFOC

SH-GY, GY-BRN, NONCALC, PLTY-BLKY, WXY, FRM, INTBD W/ SLTST-GY TO GY-BRN, AA

SLTST GRDG TO SS-GY, LT GY, S & P, VFG, MOD SRTD, CARB, CALC CEM, CLY FL, P POR, NSFOC

SLTST-GY-BRN, V SDY (VFG), CARB, CALC, BLKY, FRM, GRDG TO SS I P

SH-GY-BRN, V SLTY I P, CARB, CALC, PLTY-BLKY, FRM

SH-GY-BRN, V SLTY, CARB, CALC, PLTY-BLKY, FRM, GRDG TO SLTST I P

SH-GY-BRN, AA, GRDG TO SLTST I P

SLTST-BRN-GY, GY-BRN, GY, SDY (VFG), CARB, CALC, BLKY, FRM, INTBD W/ SH-GY-BRN, V SLTY I P, CARB, CALC, PLTY-BLKY, FRM

SH-GY-BRN, SLTY I P, SL CARB, CALC I P, PLTY-BLKY, FRM

SLTST-GY-BRN TO GY, SDY (VFG), SL CARB, CALC I P, PLTY-BLKY, FRM

SLTST-GY-BRN, SDY (VFG), CARB, SL CALC, BLKY, FRM, INTBD W/ SH-GY-BRN, V SLTY I P, SL CARB, CALC, PLTY-BLKY, FRM

SH-GY-BRN, BRN-GY, V SLTY I P, CARB, CALC, BLKY-PLTY, FRM, GRDG TO SLTST I P

SH-GY-BRN TO BRN-GY, V SLTY, CARB, CALC, BLKY-PLTY, FRM, GRDG TO SLTST-GY-BRN, SDY (VFG), CARB, CALC, BLKY, FRM

SLTST-GY-BRN TO BRN-GY, AA

SH-GY-BRN, BRN-GY, V SLTY I P, CARB, CALC, BLKY-PLTY, FRM, GRDG TO SLTST-GY-BRN, BRN-GY, AA

SLTST-GY-BRN, BRN-GY, SDY (VFG), CARB, CALC, BLKY, FRM, GRDG TO SS I P

SS-GY-BRN, GY, SL S & P, VFG, MOD SRTD, CARB, CALC CEM, CLY FL, P POR, NO G STN, V LT YEL & DUL GLD FLOR, SLO TO IMED STRMG CUT

SH-GY-BRN, BRN-GY, V SLTY, I P, CARB, SS-PRED LT BRN, V CARB, SLO MLKY CUT

COAL INTBD W/ CARB SH & SLTST

SH-DK GY-BRN, V SLTY I P, CARB, NONCALC, BLKY-PLTY, FRM

COAL

SS-GY-BRN, LT BRN, SL S & P, VFG, MOD SRTD, V CARB I P, SL CEM, CLY FL, P POR, DUL GLD MIN FLOR, NSOC

COAL

SS-LT GRY TO BRN, VFG, OCC FG, MOD TO P SRTD, CARB, P POR, MIN FLOR, NSOC

SS-WH, LT GY TO GY, LT BRN, S & P, FG, VFG I P, SH-SA, MOD TO P SRTD, CARB I P, SL CEM, CLY FL, P POR, LT YEL & DUL GLD FLOR, NSFOC

SS-WH, GY, LT BRN, S & P, VF-FG, SR-SA, MOD TO P SRTD, CALC CEM I P, CLY FL, P POR, NSFOC

SH-DK GY-BRN TO GY-BRN, CARB, NONCALC, PLTY-BLKY, FRM

SS PRED GY, S & P, VFG, MOD SRTD, CARB, TR GRN MIN, CALC CEM I P, P POR, NSFOC

SS-DK GY-LT BRN, S & P, VFG, MOD SRTD, CARB, SL & CALC CEM, CLY FL, P POR, NSFOC, GRDG TO SLTST I P

SLTST-GY TO GY-BRN, SDY (VFG), CARB, CALC, BLKY, FRM

SH-GY-BRN, SLTY I P, CARB, NONCALC, PLTY-BLKY, FRM

SLTST-BRN, GY-BRN, V SDY (VFG), CARB, CALC, BLKY, FRM, GRDG TO SS

SH-GY-BRN, AA, SL CALC

SLTST-GY-BRN, SDY (VFG), CARB, CALC, BLKY, FRM, GRDG TO SH

SH-GY-BRN, V SLTY, CARB, SL CALC, PLTY-BLKY, FRM, GRDG TO SLTST

SH-GY-BRN, V SLTY I P, CARB, CALC, PLTY-BLKY, FRM

SH-GY-BRN, AA, INCR CALC W/ DEPTH

SH-DK GY-BRN, SLTY I P, CARB, CALC (INCR W/ DEPTH), PLTY-BLKY, FRM

SH-DK GY-BRN, SLTY I P, CARB, CALC (INCR), PLTY-BLKY, FRM

SH-DK GY-BRN, DK GY, SLTY I P, CARB, CALC, PLTY-BLKY, FRM

SH-DK GY-BRN, DK GY, SLTY I P, CARB I P, V CALC, PLTY-BLKY, FRM

SLTST-DK GY MOT WH, SDY (VFG), V CALC, BLKY, HD, NSFOC

SH-DK GY, DK GY-BRN, V SLTY I P, V CALC, PLTY-BLKY, FRM, W/ TR WH CHLKY SPECS

SH-DK GY, DK GY-BRN, V SLTY I P, V CALC, PLTY-BLKY, FRM

SLTST-BRN, SDY (VFG), CARB, V CALC, BLKY, HD, NSFOC, GRDG TO SS-BRN, S & P, VFG, MOD SRTD, CARB, CALC CEM, P POR, NSFOC

SLTST-BRN, DK GY-BRN, SDY (VFG), CARB, V CALC, BLKY, HD, NSFOC

SH-DK GY, DK GY-BRN, SLTY I P, V CALC, ABNT INOC FRAGS

SLTST-GY TO BRN, SDY (VFG), CARB, V CALC, BLKY, HD, NSFOC

TR SS-BRN, DK GY, VFG, MOD SRTD, CARB, CALC CEM, CLY FL, P POR, NSFOC

SH-DK GY, DK BRN-GY, V SLTY I P, PYRIC I P, V CALC, BLKY-PLTY, FRM-HD, ABNT INOC FRAGS

TR SS-BRN, DK GY, VFG, MOD SRTD, CARB, CALC CEM, CLY FL, P POR, NS

SLTST-DK GY-BRN, SDY (VFG), CARB, V CALC, BLKY, HD, NSFOC

SH-DK GY, DK GY-BRN, SLTY, V CALC, BLKY-PLTY, FRM-HD, GRDG TO SLTST

SLTST-DK GY-BRN, DK GY, SDY (VFG), CARB, V CALC, BLKY, HD, NSFOC, W/ TR SS-GY-BRN, DK GY-BRN, VFG, MOD SRTD, CARB, GLAU I P, CALC CEM, CLY FL, P POR, NSFOC, ABNT INOC FRAGS

SLTST-DK BRN-GY, DK GY, SDY (VFG), CARB, TR GLAU, V CALC, BLKY, HD, NSFOC

SH-DK GY, DK GY-BRN, SLTY TO V SLTY, SDY I P (F-MG), GLAU I P, V CALC, BLKY-PLTY, FRM-HD, W/ TR SS-LT BRN TO WH, VF-MG, P SRTD, CARB, GLAU, PYRIC I P, CALC CEM, CLY FL, P POR, NS

TR SS-DK GY-BRN, DK VF-MG, S & P, P SRTD, CARB, GLAU, PYRIC I P, CALC CEM, CLY FL, P POR, NSFOC

SLTST-DK GY-BRN, DK GY, SDY (VFG), CARB, GLAU I P, V CALC, BLKY-HD, NS

SH-DK GY, DK GY-BRN, SLTY TO V SLTY, SDY I P (F-MG), GLAU I P, V CALC, BLKY-PLTY, FRM-HD, GRDG TO SLTST I P, ABNT INOC FRAGS, TR SS-GY-BRN, DK GY, VFG, MOD SRTD, V CARB, CALC CEM, CLY FL, P POR, NSFOC

SH-PRED DK GY, SLTY I P, V CALC, BLKY, FRM-HD

SLTST-DK GY, DK GY-BRN, SDY (VFG), CARB, PYRIC I P, V CALC, BLKY, HD, NSFOC

SH-PRED DK GY, LESS CALC, W/ TR SS-BRN, DK GY-BRN, VFG, MOD SRTD, CARB, CALC CEM, CLY FL, P POR, NSFOC

SH-DK GY, SLTY I P, NONCALC TO SL CALC, PLTY-SPLTY, BLKY I P, FRM-HD

SH-DK GY, DK BRN-GY, SLTY I P, V CALC, BLKY-PLTY, FRM-HD, ABNT INOC FRAGS

SLTST-GY-BRN, LT BRN, SDY (VFG), CARB, V CALC, BLKY, HD, NSFOC

SH-DK GY, DK BRN-GY, SLTY TO V SLTY, V CALC, BLKY-PLTY, FRM-HD, W/ TR SS-GY-BRN, GY-BRN, VFG, MOD SRTD, CARB, CALC CEM, VP POR, NSFOC

SLTST-GY-BRN, LT BRN, TR LT BRN, SDY (VFG), CARB, V CALC, BLKY, HD, NSFOC, GRDG TO SS I P

TR SS-GY-BRN, LT BRN, VFG, MOD SRTD, CARB, CALC CEM, P POR, NSFOC

SH-DK GY, DK GY-BRN, V SLTY, V CALC, BLKY-PLTY, FRM-HD, GRDG TO SLTST-DK GY, DK BRN-GY, SDY (CARB), V CALC, BLKY, HD, NSFOC

SH-DK GY, DK BRN-GY, SLTY TO V SLTY, TR GLAU, V CALC, BLKY-PLTY, FRM-HD, W/ TR SS-LT BRN, VFG, MOD SRTD, SL GLAU, CALC CEM, CLY FL, P POR, MIN FLOR, NSOC

TR SS-WH, LT GY, LT BRN, VF-MG, VP SRTD, V GLAU, PYRIC, P POR, NSFOC

TR SS-GY-BRN, TR LT BRN, VF-FG, P SRTD, GLAU, ARG, CALC CEM, P POR, NS

SH-DK GY, DK BRN-GY, SLTY I P, V SDY & V GLAU, V CALC, BLKY-PLTY, FRM-HD, GRDG TO SS

SH-DK GY, DK BRN-GY, SLTY I P, V CALC, BLKY-PLTY, FRM-HD

SLTST-DK GY, GY-BRN, LT BRN, SDY (VFG), CARB, V CALC, BLKY, HD, NSFOC

SH-DK GY, DK BRN-GY, SLTY I P, V CALC, PLTY-SPLTY, BLKY I P, FRM-HD

SLTST-DK GY, DK BRN-GY, SDY (VFG), CARB, V CALC, BLKY, HD, NSFOC

SH-DK GY, DK BRN-GY, SLTY I P, CALC I P, PLTY-SPLTY, BLKY I P, FRM-HD, W/ TR SS-GY-BRN, BRN, BRN-GY, VFG, MOD SRTD, CARB, CALC & SIL CEM, QTZIC I P, P POR, NSFOC