

GLO1102

**REPORT  
of  
SUB-SURFACE  
SURVEY**

**CHEVRON U.S.A.  
44-5  
SODA LAKE UNIT**

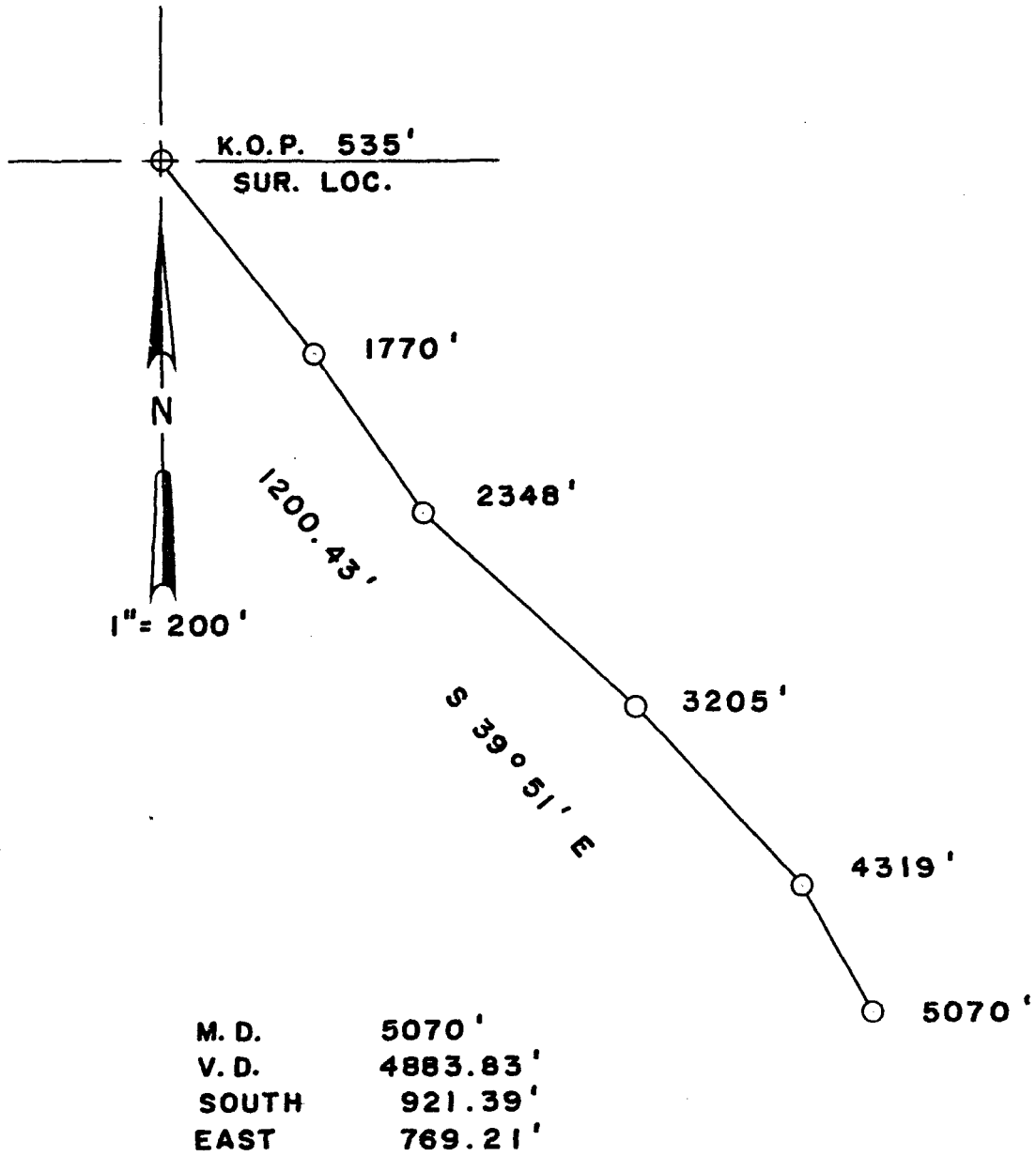
**JOB NO. B 2920**

**DATE 1-21-78**

**DIRECTIONAL DRILLING, INC.**

**BAKERSFIELD**

**Phone: 324-3574**



Lithology

Depth	Lithologic description	%	Mud In	Mud Out
0-23	No samples - ground level to KB			
23-83	No samples - conductor pipe			
83-118	Very coarse sand to very fine pebble gravel, qtz, volcanics & altered volcanics, unconsolidated, subangular to subrounded	100		
118-137	Same as before	100		
137-185	No samples			
185-215	Sand, qtz, fine to coarse, subangular to subrounded, mostly clear Siltstone, mostly qtz, poor indurated Volcanics, altered and unaltered, coarse sand to vf pebble gravel	60 30		
215-247	Sand, as above, a lot of qtz is yellow-stained, more coarse fraction than before Volcanics, as before Siltstone, very minor, as before	85 15 T		
247-278	No sample; lots of LCM & cement			
278-310	Sand, medium to vf pebbly gravel qtz. and volcanics as before Clay, soft, gummy, light tan to gray Siltstone	60 30 10	52	60
310-340	Sand, medium to v coarse, mostly qtz., some volcanics Siltstone, gray and tan	98 2	53	59
340-370	Gravel, vf pebble, qtz and volcanics, some sand Clay, gray, soft & gummy	75? 25?	53	60

Depth	Lithologic description	%	Mud In	Mud Out
370-400	Gravel, vf to fine pebble as before, some sand Siltstone, tan and gray Clay, gummy	90 10 T	53	60
400-430	Sand, medium to vc with some vf to fine gravel as before Siltstone as before Clay, soft and gummy (quite a lot of siltstone sluff)	90 5 5	53	60
430-460	Very poor sample, mostly siltstone sluff, some gummy clay and vf to fine pebble gravel		53	60
460-491	No sample			
491-522	Sand, vf to <u>vc</u> ; qtz and volcanics, Clay, gummy	90 10	54	61
522-535	Sand and gravel, as before (poor sample, lots of sluff)	100	53	61

LITHOLOGIC WELL LOG

PROSPECT Soda Lake

COUNTY Churchill

STATE Nevada

CHEVRON RESOURCES COMPANY

DATE Jan. 1, 1978

SECTION 5

TOWNSHIP 19N

WELL No. 44-5

RANGE 28E

TIME	DEPTH	LITHOLOGY	% Mud In	COMMENTS	Out
	537-552	Sand and gravel. Very poor sample, a lot of sluff.	100	50	63
	552-582	Gravel, pebble, volcanics sand. Poor sample, sluff.	50 50	50	61
	582-614	Gravel, pebble, volcanics sand. Some sluff.	75 25	50	65
	614-641	Sand, gravel, pebble, qtz. grains. Sluff, poor sample!	100		
	641-737	Sand, with lot of qtz grains. gravel. Volcanics, some sluff.	60 35 5	not recorded	
	737-768	Sand, coarse, qtz. grains Gravel	80 10	52	60
	768-799	Sand <i>as above</i> Gravel Volcanics Clay	75 20 5 TC	53	61
	799-831	Clay, gray, gummy Sand, fine and dark	80? 20?	52?	60?
	831-862	Clay, gray, soft, gummy Siltstone- gray, & pinkish & tan	70 30	55	66
	862-893	Sand and some gravel Clay, gummy, gray, soft	80 20	56	64
	893-924	Clay, gray, soft, gummy Sand and gravel	85 15	57	68
	924-956	Clay, gray, soft & gummy	100	57	68
	956-987	Clay, as above	100	58	68
Charge drilling assembly	987-997	No Sample			
	997-1027	Sand, vf to vc qtz. VRF ( <i>volcanic rx. frags.</i> ) Siltstone, green/gray, soft Clay, soft and gummy, gray	10 70 20	60	64

LITHOLOGIC WELL LOG

PROSPECT Soda Lake  
 COUNTY Churchill STATE Nevada  
 DATE 1/1/78 SECTION 5  
 TOWNSHIP 19N  
 RANGE 28E  
 WELL No. 44-5

CHEVRON RESOURCES COMPANY

TIME	DEPTH	LITHOLOGY	%	Mud In	COMMENTS	Mud Out
	1027-1058	Clay, soft and gummy, gray	100	60		65
	1058-1088	Sand, vf to vc as before Siltstone, green/gray, soft Clay, soft and gummy, gray.	10 20 70	60		67
	1088-1111	Sand, vf to vc, some stained, VRF minor pyrite Siltstone, green/gray Clay, soft and gummy, gray.	85 5 10	60		70
	1111-1146	Sand, as before Clay, soft & gummy, gray /green	80 20	60		70
	1146-1178	Sand, as before Clay, soft & gummy as before (minor sluff)	90 10	60		72
	1178-1211	Sand, about equal qtz. and VRF, also some very friable sand stone, some vf pebble gravel Siltstone and gummy clay	100 T	60		72
	1211-1240	Sand/sandstone, as before, most of sand stone is very fine-grained Some gummy clay	100 T	60		72
	1240-1270	Sand, vf to coarse and sand stone, vf, lots of altered VRF Siltstone, tan & light green	90 10	60		72
	1270-1297	Sand/gravel, uf to vf pebble gravel, some uf sand stone Clay, soft & gummy (very poor sample)	80? 20?	62		70
	1297-1326	Sand, as before w/minor sand stone Clay, gummy and soft, as before	85? 15?	62		70
	1326-1354	Sand, as before, uf to vc, qtz and VRF Clay, as before	100 T	62		70
	1354-1382	Sand, as before, vf to coarse, pyrite Clay, as before	100 T	62		70

## LITHOLOGIC WELL LOG

PROSPECT Soda LakeCOUNTY Churchill STATE NevadaCHEVRON RESOURCES COMPANYDATE 1/2/78SECTION 5TOWNSHIP 19NWELL No. 44-5RANGE 28E

TIME	DEPTH	LITHOLOGY	%	Mud In	COMMENTS	Mud Out
	1382-1430	Sand fine to coarse, some gravel,qtz Clay, a/a	100 T	not pump		67
	1430-1461	Sand, a/a, more gravel Clay, a/a	70? 30	60		68
	1461-1492	Clay, gray, soft, gummy a/a, sandy	100	60		68
	1492-1523	As above	100	60		68
	1523-1555	Clay, gray, soft, gummy, a/a, more sand	100	60		70
	1555-1586	As above	100	61		72
	1586-1617	Clay, soft, gummy, gray Sand	50 50	62		72
	1617-1646	As above		62		72
	1646-1675	As above		62		72
	1677-1706	Clay, as above Sand, as above	70 30	62		72
	1706-1737	Clay, as above Sand, as above	50 50	62		72
	1737-1770	Clay, soft, gray, gummy, sandy  *Remark - From 1430 to 1770 % is not certain because of clay.	100	64		74
	1767-1797	Clay, soft, gray, as before Sand	80? 20?	64		73
	1797-1830	Clay, soft, gray, as before Sand, qtz. VRF, vf to fine, some sand stone.	70? 30?	65		75
	1830-1860	Clay, as before Sand, as before	50? 50?	65		75
	1860-1890	Sand, vf to vc, qtz. & VRF, some pyrite, some sand stone, some secondary silica	100	65		75

LITHOLOGIC WELL LOG

CHEVRON RESOURCES COMPANY

PROSPECT Soda Lake  
 COUNTY Churchill STATE Nevada  
 DATE 1/2/78 SECTION 5  
 TOWNSHIP 19N  
 RANGE 28E  
 WELL No. 44-5

TIME	DEPTH	LITHOLOGY	%	Mud In	COMMENTS	Mud Out
	1890-1920	Sand, as before Clay, soft & gummy, gray, as before	80 20	65		75
	1920-1955	Clay, as before, soft Sand	80? 20?	67		76
	1955-1985	Sand w/some vf grained sand stone, as before Clay, as before	60? 40?	67		76
	1985-2016	Sand, as before w/vf-grained sand- stone Siltstone, gray Clay, as before	50? 30? 20?	67		76
	2016-2047	Clay, as before Sand - fine to coarse, some silt	50? 50?	68		78
	2047-2078	Clay, gray, gummy, soft as before Sand, medium to very fine, some silt. Fragments of poorly cemented sand stone.	50? 50?	68		78
	2078-2109	As above		68		78
	2109-2140	Clay, as before Sand, fine to coarse, some silt	40 60	68		78
	2140-2172	As above		68		78
	2172-2204	Sand - medium to fine and very fine, some silt Clay, as before	75 25	68		78
	2204-2236	Sand, coarse to fine Clay, as before	80 20	68		78
	2236-2264	Sand, coarse to fine Clay, as before	75 25	68		78
	2264-2295	Gravel, subrounded and rounded Sand, coarse to fine, qtz. Clay	55 45 TC	62		77
	2295-2327	Sand, coarse to fine, qtz. & volc. grains Gravel, subrounded & rounded	55 45	64		80



LITHOLOGIC WELL LOG

CHEVRON RESOURCES COMPANY

PROSPECT Soda Lake  
 COUNTY Churchill STATE Nevada  
 DATE 1/3/78 SECTION 5  
 TOWNSHIP T9N  
 RANGE 28E  
 WELL No. 44-5

TIME	DEPTH	LITHOLOGY	%	Mud In	COMMENTS	Mud Out
	2327-2356	Sand, dark (volcanics?), some qtz. Gravel, granules & fine, subrounded Clay, gray, soft, as before	60 30 10	69		80
From mud lignite	2356-2388	Sand, coarse to medium, dark, some qtz. grains Gravel, granule	70 25	69		80
	2388-2419	Sand, coarse to medium, dark, qtz. Gravel, granite Clay, gray & bluish, soft	75 20 5	70		80
	2419-2442 <i>(depth ?)</i>	Clay, brownish-grayish, soft Sand	90 10	71		81
	2442-2473	Clay & gray, soft and gummy Sand	85 15	71		81
Depth correlated with geology	2473-2502	Clay as above Sand	85 15	71		85
	2503-2532	Clay, as above Sand	85 15	71		93?
	2532-2555	Sand, medium to coarse, volcanic & qtz. grains Gravel, granules to fine, subrounded Clay as above	70 30 TC	66		75
	2555-2589	Sand, a/a Gravel, a/a Clay, a/a	60 35 5	66		76
	2589-2620	Sand a/a, some pyrite Gravel, granule	90 10	66		76
	2620-2651	Sand, coarse, qtz, pyrite Clay, soft, gummy	70 30	66		76
	2651-2682	Sand, coarse, a/a Gravel, granule Clay, gummy  Sluff	60 15 15	66		76
	2682-2714	Sand - fine to medium, some silt Clay, gray, soft, gummy	80 20			80

LITHOLOGIC WELL LOG

PROSPECT Soda Lake  
 COUNTY Churchill STATE Nevada  
 DATE 1/4/78 SECTION 5  
 TOWNSHIP 19N  
 RANGE 28E  
 WELL No. 44-5

CHEVRON RESOURCES COMPANY

TIME	DEPTH	LITHOLOGY	% Mud In	COMMENTS	Mud Out
	2714-2746	Sand - fine medium to coarse from mud? Lignite? Gravel, granule Clay, a/a	80 5 5 10		80
	2746-2778	Sand, as above Clay, as above	80 20		80
	2778-2809	Sand, medium to coarse Gravel, granule Clay	70 20 10	pump broken 66?	80
	2809-2832	Sand, as above Gravel, as above Clay, sluff	80 10 10	68?	82
	2832-2864	Sand, a/a Gravel, a/a Clay, a/a, sluff	80 10 10	68?	82
	2864-2895	Sand, medium to coarse Gravel, granule Sluff	70 30	70 OK	82
	2895-2926	Sand, fine-medium coarse Silt Gravel Clay	70 10 10 10	70 OK	80?
	2926-2958	Sand, medium to coarse-fine Gravel Silt Clay	80 5 5 10	72 OK	86
	2958-2989	Sand - fine-medium coarse Clay, gray, soft, gummy Silt Sluff	80 10 10	72	86
	2989-3018	Sand, a/a, some gravel Clay Silt Sluff	80 10 10	72	86
	3018-3049	Sand and sand stone, clear qtz. and VRF, minor pyrite, Siltstone	95 5	72	87

LITHOLOGIC WELL LOG

PROSPECT Soda Lake  
 COUNTY Churchill STATE Nevada  
 DATE 1/4/78 SECTION 5  
 TOWNSHIP 19N  
 RANGE 28E  
 WELL No. 44-5

CHEVRON RESOURCES COMPANY

TIME	DEPTH	LITHOLOGY	%	Mud In	COMMENTS	Mud Out
	3049-3081	No sample		72		90
	3081-3112	Sand/sand stone Siltstone/clay stone, tan, gray, soft but not gummy	10 90	75		91
	3112-3139	Sand/sand stone Siltstone/clay stone, tan, gray, green, soft.	10 90	78		92
	3139-3177	Sand/sandstone, minor pyrite, some secondary silica Siltstone/claystone as before	25 75	80		98
	3177-3205	Siltstone/claystone as before samples are soft to moderately indurated (some sluff) Sand as before	95 5	78		98
	3205-3236	Siltstone/claystone as before Sand	100 T	78		94
	3236-3267	Siltstone/claystone as before	100	78		94
	3256-3286	Siltstone/claystone as before (fair amount of sluff)	100	72		92
	3286-3317	Sand, vf to medium, mostly clear qtz, VRF, mostly altered siltstone/claystone as before (some sluff), more lithified than before	50 50	75		92
	3317-3348	Sand, vf to fine, qtz and VRF as before, minor pyrite Siltstone/claystone, as before (some of siltstone may be tuff?)	50 50	98		94
	3348-3381	Siltstone/claystone, mostly all tan color w/minor light gray Sand, vf to fine as before, minor pyrite, (Note: much of the siltstone has many small pyrite cubes)	95 5	77		90
	3381-3412	Siltstone/claystone, almost totally tan in color Sand, vf to fine, as before	90 10	79		94

LITHOLOGIC WELL LOG

CHEVRON RESOURCES COMPANY

PROSPECT Soda Lake  
 COUNTY Churchill STATE Nevada  
 DATE 1/5/78 SECTION 5  
 TOWNSHIP T9N  
 RANGE 28E  
 WELL No. 44-5

TIME	DEPTH	LITHOLOGY	%	Mud In	COMMENTS	Mud OUT
	3412-3442	Sand, fine to medium, qtz. Siltstone, and claystone-gray, bluish	70 30	80		95
	3442-3474	Sand, a/a Siltstone Clay, soft, gummy	70 20 10	78		90
	3474-3505	Sand, fine, medium to some fine fine grains, qtz. Claystone/siltstone, gray, Tuff - bluish	60 15 15?	77		90
	3505-3536	Claystone/siltstone; claystone is bluish gray and siltstone is tan; some pyrite Sand, vf to fine as before	100 T	75		94
	3536-3567	Claystone/siltstone, as before, some of the sample may be tuffaceous Sand, vf, minor pyrite, minor secondary silica	100 T	75		94
	3567-3608	Sand, medium to coarse sec. silica, qtz. grains Gravel, granule, subrounded and rounded Claystone/siltstone, as before Tuff?	50 30 20	60?		90
	3608-3639	Sand, fine to coarse, sec. silica a/a Gravel, granule, a/a Siltstone/Tuff Sluff	60 25 15	60?		90
	3639-3668	Gravel-fine pebble to granule, subrounded to rounded Sand, fine to coarse, sec. silica siltstone, Tuff	60 30 10	70		32
	3668-3699	Gravel, granule Sand - fine to coarse Siltstone/tuff	50 40 10	74		93
	3699-3730	Sand, fine, medium, coarse Siltstone/tuff? - gray & blue	60 40	72		93

## LITHOLOGIC WELL LOG

PROSPECT Soda Lake  
 COUNTY Churchill STATE Nevada  
 DATE 1/6/78 SECTION 5  
 TOWNSHIP 19N  
 RANGE 28E  
 WELL No. 44-5

CHEVRON RESOURCES COMPANY

TIME	DEPTH	LITHOLOGY	%	Mud In	COMMENTS	Mud Out
	3730-3761	Siltstone, gray, some blue - tuff Sand, fine to medium	70 30	80		92
	3761-3792	Sand, coarse - fine, sec. silica Siltstone Granule gravel	60 20 20	78		95
	3782-3824	Sand medium-fine a/a Siltstone Granule gravel	60 20 20	78		96
	3824-3854	Sand med-fine Siltstone	50 50		pump is not working	96
	3854-3886	Siltstone/Tuff (bluish) sand-medium to fine	60 40	72		94
	3886-3917	Sand, fine-medium coarse Sec. silica, qtz. pyrite Gravel, granule Siltstone/Tuff?	60 30 10	78		94
	3917-3947	Sand, a/a Clay, bluish Siltstone	50 25 25	79		94
	3947-3978	Sand medium to fine, some coarse Siltstone	60 40	79		94
	3978-4009	Siltstone, gray Sand, medium to coarse	60 40	79		94
	4009-4040	Sand - fine to coarse Siltstone - gray, brownish bluish tuff? sluff	60 40	79		94
	4040-4070	Siltstone a/a Sand a/a, sluff	60 40	83		94
	4070-4102	Sand - fine to medium, pyrite qtz. Granule gravel, subrounded and rounded Siltstone	60 20 20	80		94
	4102-4113	Sand - fine-medium, coarse Sec. silica Granule gravel Siltstone	70 15 15	80		96?

## LITHOLOGIC WELL LOG

PROSPECT Soda Lake  
 COUNTY Churchill STATE Nevada  
 DATE 1/6/78 SECTION 5  
 TOWNSHIP 19N  
 RANGE 28E  
 WELL No. 44-5

CHEVRON RESOURCES COMPANY

TIME	DEPTH	LITHOLOGY	%	Mud In	COMMENTS	Mud Out
	4113-4133	Sand, fine, medium. A lot of qtz. grains. (Metal pieces from the new bit)	100	76		92
	4133-4163	Sand a/a, secondary silica Siltstone, gray & bluish Sluff?	80 10	78		94
	4163-4194	Sand, bulk mostly fine, some coarse, few granule gravels Siltstone/tuff Sluff	80 20	82		96
	4194-4225	Sand, a/a Siltstone/tuff?	70 30	85		96
	4226-4257	Sand-fine to medium, sec. silica qtz. grains, occasionally few granule gravels  Siltstone/tuff -grayish & bluish & dark. Dark harder than grayish bluish Some sluff	60 40	88		98
	4257-4288	Dark siltstone? gray/bluish siltstone/tuff Sand, fine to medium	50 25 25	90		100
	4288-4317	Siltstone, gray & bluish Siltstone - dark Sand - fine to medium, sec. silica	50 30 20	90		100
	4317-4350	Sand, medium to fine, sec. silica Siltstone, dark Siltstone, grayish & bluish	60 25 15	90		100
	4351-4382	Sand, fine Siltstone, dark Siltstone, grayish & bluish	60 30 10	90		100
	4382-4411	Sand, medium & fine Siltstone, dark Siltstone, grayish & bluish	65 25 10	90		100

## LITHOLOGIC WELL LOG

PROSPECT Soda Lake  
 COUNTY Churchill STATE Nevada  
 DATE 1/7/78 SECTION 5  
 TOWNSHIP 19N  
 RANGE 28E  
 WELL No. 44-5

CHEVRON RESOURCES COMPANY

TIME	DEPTH	LITHOLOGY	%	Mud In	COMMENTS	Mud Out
	4411-4441	Sand, medium - fine Siltstone, dark Siltstone, grayish & bluish	50 25 25	92		102
	4441-4473	Sand, medium and fine composed of gypsum (2%), black grains (20%), pyrite (2%), qtz. grains (5%), siltstone (40%), silica aggregates (6%) Siltstone, gray, blue	75 25	94		104
	4473-4503	Sand, medium and fine composed of black mineral (?) (10%) qtz. grains (50%), gypsum (10%), Fe-oxides (1%), green mineral (10%) pyrite (2%), & qtz. aggregate (2%) Siltstone, gray and blue	85 15	94		104
	4503-4534	Sand, fine composed of gypsum (5%), black mineral grains (10%), qtz. grains (40%), siltstone (20%), rhyolite (3%), micas (1%), Fe-oxides (1%), green mineral grains (5%) Siltstone, gray & blue, brown	85 15	90		103
	4534-4568	Sand, fine and medium composed of gypsum (5%), calcite (2%), black mineral grains (5%), siltstone (20%), silica (?) aggregates with chlorite (?) and altered siltstone (40%), serpentine (1%), green mineral grains as above (5%), qtz. grains (12%) Siltstone, gray, blue	90 10	Pump not functioning		104
	4568-4596	Sand, medium and fine composed of same material as above Siltstone	95 5	Pump not working		105
	4596-4626	Sand, medium & fine composed of qtz. grains (25%), gypsum (5%), siltstone (35%), black mineral grains (10%), serpentine (5%), qtz. aggregates with chlorite (?) (19%) Fe-oxides (1%), pyrite (trace)	100	90		103

LITHOLOGIC WELL LOG

PROSPECT Soda Lake  
 COUNTY Churchill STATE Nevada  
 DATE 1/9/78 SECTION 5  
 TOWNSHIP T9N  
 RANGE 28E  
 WELL No. 44-5

CHEVRON RESOURCES COMPANY

TIME	DEPTH	LITHOLOGY	%	Mud In	COMMENTS	Mud Out
	4626-4657	Sand, fine composed of silica aggregate (30%), black mineral grains which are starting to show signs of alteration (10%), green mineral (5%), secondary silica (25%), siltstone (30%), gypsum (5%)	100	92		103
* <u>Thin section</u>	4657-4689	Sand, fine same as above	100	92		107
*Look at more closely	4689-4721	Sand, fine composed of siltstone (20%) some of which shows slickensides, rhyolite (45%), green mineral grains (7%), gypsum (3%), secondary silica including qtz. xtals (15%), silica aggregates (10%), black mineral grains-trace	100	92		109
	4721-4751	Sand, fine same as above	100	94		110
	4751-4786	Sand, fine composed of siltstone (40%), rhyolite (5%), silica aggregates (15%), secondary qtz. & qtz. xtals (10%), black mineral grains showing alteration (5%), green mineral grains (25%)	100	94		110
	4786-4791	Core - gray welded tuff with at least 2 sets of intersecting frac- tures which are filled with calcite, serpentine and possibly chlorite. Vesicles are filled with calcite &/or calcite rimmed with serpentine (?). Tuff appears to have an altered minerology.				
	4791-4812	Sand, fine to medium, alot of qtz. grains and sec. silica. Tuff - gray and green, sec. alter- ations	70 30	86		106
	4812-4844	Tuff, gray and green, hand, altered sand, as above	50 50	92		112



LITHOLOGIC WELL LOG

PROSPECT Soda Lake  
 COUNTY Churchill STATE Nevada  
 DATE 1/11/78 SECTION 5  
 TOWNSHIP 19N  
 WELL No. 44-5 RANGE 28E

CHEVRON RESOURCES COMPANY

TIME	DEPTH	LITHOLOGY	%	Mud In	COMMENTS	Mud Out
	4844-4876	Tuff a/a Sand a/a	80 30	10		115
	4876-4905	Tuff, gray and green, hard Siltstone, brownish Sand, fine to medium	50 40 10	100		117
	4905-4936	Tuff, welded Siltstone Clay	70 20 10	102		118
	4937-4368	Tuff, welded Clay	60	110		120
	4368-4975	Clay, soft, brown Tuff, welded	70 30	109		119
look at again *	4975-5005	Sand - fine secondary silica (qtz xtals, massive qtz) = 50%, green and gray siltstone = 20% 4 types of green minerals = 15% black mineral = 10% sulfide = 5%	100			
look at again *	5005-5026	Sand - fine and medium secondary silica (broken qtz. xtals, chalcedony a massive qtz. w/green mineral, probably chlorite) = 55% green and gray siltstone = 15% clay = 1% green mineral = 10% sulfide x 9%; basalt 10%	100			
	5058-5062	Sand - medium basalt = 35% green siltstone = 50% gray siltstone (contains fractures with chlorite) = 10% = 5% * marked absent of secondary quartz	100	1		
	5067-5069	Sand - medium composed of basalt ~ 35% green & gray siltstone ~ 60% Note: siltstone is altered to chlorite in place Claystone ~ 5%	100	104		113

Field Soda Lake Property: Truckee Carson Irrigation District  
 Well No. Soda Lake 44-5 Sec. 5 T. 19N R. 38E MD ND B.&M.  
 Location 2441.55' South, 2200.37' East from N.W. Corner Section 5 (Final). Ground Elevation 3933'  
 Elevation 4012.5 Derrick Floor D.F. is 24.5' above mat.  
 Date 6/7/78 By Chevron U.S.A., Inc.

B.D. GARRETT/ R.B. MURRAY

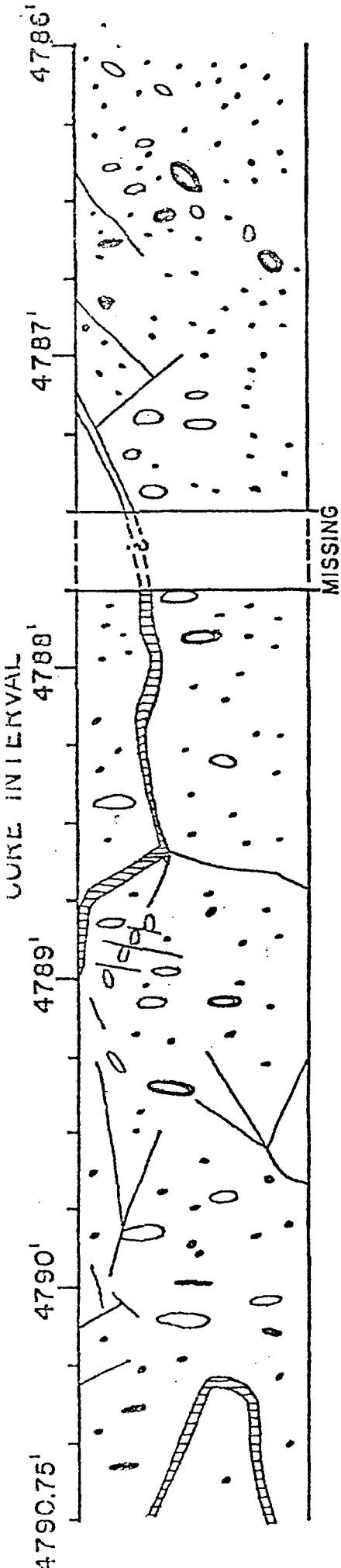
(For Operations Manager, Producing Dept.)

Drilled By CAMAY #3  
 Date Commenced Drilling 12-27-77 Date Completed Drilling 1-14-78  
 Date of Initial Production --  
 Production: Daily Average, 1st \_\_\_\_\_ Days Gravity \_\_\_\_\_ °API Pump \_\_\_\_\_  
 Oil \_\_\_\_\_ Bbls. T.P. \_\_\_\_\_ PSI Flowing \_\_\_\_\_  
 Water \_\_\_\_\_ Bbls. C.P. \_\_\_\_\_ PSI Gas Lift \_\_\_\_\_  
 Gas \_\_\_\_\_ Mcf. Bean \_\_\_\_\_ /64"

## Summary

Total Depth: 5070'  
 Casing: 10 3/4" Conductor Cemented at 83'  
7" 23# K-55 LTC Cemented at 535'  
 Casing Head: 6" - 2000 #API x 7" SOW; w/2-2" screwed outlets.  
 Tubing: 2 7/8 6.5 #J-55 Atlas Bradford GST and EUE.  
hung at 5026' consists of 155 jts.  
 Logs: Schlumberger DIL, FDL-CNL-GR-Caliper, Dipmeter  
Long spaced sonic, and temperature log.

- Prior to moving in rig, cemented 10 3/4" conductor at 57' (GL)
- 12-27-77 SPUD at 1100 w/9 7/8" bit through 10 3/4" conductor set at 83' Drill to 100' Returns around conductor. Increase mud vis. to 55 drill to 257.' Again returns around conductor.
- 12-28 Cement conductor w/ 80 sx const. cement good returns to surf. disp. w/ 10 CUFT water Pump out soft CMT 65-80'
- 12-29 Cleaned out 80-120' Drilled 9 7/8" to 535' Run 7" x 23# K55 casing to 535' Halco CMT w/128 sx type G. CMT w/ 33% silica flour. Followed w/ 100 sx type G. CMT Bumped plug w/1000 PSI. Weld on CSG HD. Tested to 1000 PSI. (7" casing detail not available)
- 12-30 Install class III BOPE.
- 12-31 Finish BOPE test to 1500 PSI, witnessed by USGS. Cut plug @ 490' drilled out plug & baffle. Cleaned out cement to shoe @ 537' Drilled 6 1/4" to 737'
- 1-01-78 RIH w/ Dyna drill oriented to 135°. Drilled from 737' - 987'. POH, layed down Dyna drill RIH w/ angle building hook up. Drilled to 1383'.
- 1-02 Cont drilling to 1445' . Hole took 60 BBLs fluid. Raised visc. to 60. Regained circ. Drilled to 2264'.
- 1-03 RIH w/ Dyna drill and orient same. Drill 2264' - 2532'. POH. RIH and drill 2532' - 2714'
- 1-04 Drill and survey 2714' - 3266'. POH.
- 1-05 RIH w/ angle dropping setup. Drill 3266' - 3578'. POH.
- 1-06 RIH w/ locked in set-up Drill 6 1/4" 3578' - 4059'.
- 1-07 Drill 6 1/4" to 4113' Trip for new bit. Ream 4090' - 4113' Drill 6 1/4" to 4410'
- 1-08 Drill 6 1/4" to 4503'. Trip for new bit. Drill 6 1/4" to 4705'
- 1-09 Drill 6 1/4" to 4778'. Core 4778' - 4791'. Recovd 3' core.
- 1-10 Drill 6 1/4" to 4975'.



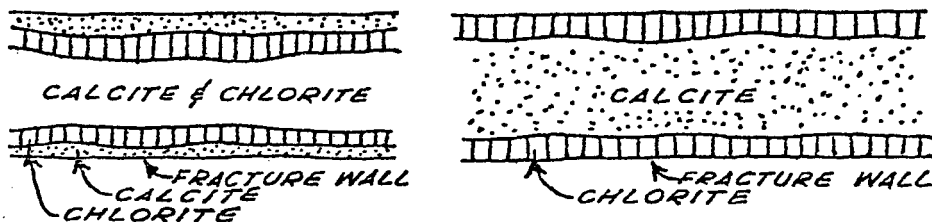
**EXPLANATION**

- GREEN MINERAL (PROBABLY CHLORITE)
- CALCITE FILLED VESICLE
- CALCITE FILLED VESICLE RIMMED WITH CHLORITE
- THIN FRACTURE
- LARGE FRACTURE-FILLED WITH CALCITE & CHLORITE, LINED WITH CALCITE
- LARGE FRACTURE-FILLED WITH CALCITE, LINED WITH CHLORITE

**GENERAL DESCRIPTION:**

*see memo from E.W. Christensen to J.L. Iovennitti 3/20/78*  
*olivine basalt*

The core is a gray, aphanitic, welded ~~latitic (?) tuff~~ displaying 2 major and several minor intersecting fractures. Fracture mineralogy consists of calcite, serpentine, chlorite and an unidentified black mineral. One of the major fractures exhibits calcite lining the fracture walls followed by a layer of chlorite, and a mixed layer of calcite and chlorite (see sketch below); the other major fracture shows the reverse paragenesis, that is, chlorite lines the fracture walls and calcite occurs in the center (see sketch).



Minor fractures display either a calcite and chlorite, or a calcite and a black mineral(?) mineralogy. Vesicles are present and are filled with calcite and/or calcite rimmed with chlorite. The core shows moderate hydrothermal alteration.

**CORE DESCRIPTION**  
**CHEVRON (SODA LAKE No. 44-5)**  
 C-SE-NW-SEC. 5-T19N-R28E  
 CHURCHILL CO., NEVADA  
 I-10-78

4726' - 4790.75'  
 J.L. IOVENITTI

- 1- 11 Wipe hole to 4255'. Circ hole from TD. Rig up.  
Schlumberger for DIL, FCD-CHL-GR, dipmeter, sonic.
- 1- 12 Run Schlumberger long spaced sonic and temperature log to TD.  
Rig Down Schlumberger. Circ. and condition mud @ TD.
- 1- 13 Drill  $6\frac{1}{4}$ " to 5070', circ. POH, lay down drill pipe.
- 1- 14 Run 5001' 2 7/8" TBG w/shoe @ 5026'. Land, secure well.  
Rig down and released rig.

TBNG DETAIL

Run 100 JTS, 3295.38' 2 7/8" x 6.5# J-55 GST  
TBNG of UNK. MFG, incl shoe, xover and floatcollar.  
Run 55 jts 1706.32' 2 7/8" x 6.5# J-55 and EUE  
TBNG incl xover. Total TBNG 5001.70' KB=+24.50'  
Shoe at 5026.20'.

# DIRECTIONAL DRILLING, INC.

SURVEY DATA SHEET

SHEET NO. **1**  
JOB NO. **B2920**

COMPANY **CHEVRON U.S.A**

ADDRESS \_\_\_\_\_

WELL **44-5**

FIELD **Soda Lake Unit**

COUNTY **Churchill**

STATE **Nevada**

COURSE LENGTH	TERMINAL DRIFT ANGLE	TERMINAL DIRECTION OF DEVIATION	AVERAGE DRIFT ANGLE	VERTICAL DEPTH		COURSE DEVIATION	AVERAGE DIRECTION OF DEVIATION	COURSE COORDINATES				TOTAL COORDINATES					
				COURSE	TOTAL			NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST		
					535		ASSUMED VERTICAL TO 535'										
131	1.30	S73E	1.30	130.96	665.96	3.43	S73E	1.00	3.28			1.00	3.28				
103	3.00	S13E	2.15	102.92	768.88	4.05	S43E	2.96	2.76			3.96	6.04				
31	5.15	S13E	4.15	30.92	799.80	2.30	S13E	2.24	0.52			6.20	6.56				
63	8.15	S23E	6.45	62.57	862.37	7.40	S28E	6.53	3.47			12.73	10.03				
63	11.15	S38E	9.45	62.09	924.46	10.67	S30°30'E	9.19	5.42			21.92	15.45				
101	13.15	S43E	12.15	98.70	1023.16	21.43	S40°30'E	16.30	13.92			38.22	29.37				
119	15.00	S43E	14.15	115.33	1138.49	29.30	S43°E	21.43	19.98			59.65	49.35				
124	16.15	S40E	15.45	119.35	1257.84	33.65	S41°30'E	25.21	22.30			84.86	71.65				
112	17.45	S39E	17°	107.11	1364.95	32.75	S39°30'E	25.27	20.83			110.13	92.48				
141	18.45	S38E	18.15	133.91	1498.86	44.16	S38°30'E	34.56	27.49			144.69	119.97				
123	19	S37E	18.45	116.47	1615.33	39.53	S37°30'E	31.36	24.07			176.05	144.04				
124	19.30	S35E	19.15	117.07	1732.40	40.88	S36E	33.07	24.03			209.12	168.07				
122	20°	S33E	19.45	114.83	1847.23	41.22	S34E	34.17	23.05			243.29	191.12				
124	20.30	S34E	20.15	116.34	1963.57	42.92	S33°30'E	35.79	23.69			279.08	214.81				
124	21.30	S34E	21.00	115.77	2079.34	44.44	S34E	36.84	24.85			315.92	239.66				
124	22.00	S33E	21.45	115.17	2194.51	45.95	S33°30'E	38.32	25.36			354.24	265.02				
84	22.00	S38E	22.00	77.88	2272.39	31.47	S35°30'E	25.62	18.27			379.86	283.20				
63	22.00	S39E	22.00	58.41	2330.80	23.60	S38°30'E	18.47	14.69			398.33	297.98				
61	22.00	S43E	22.00	56.56	2387.36	22.85	S41E	17.24	14.99			415.57	312.97				
117	20.45	S50E	21.30	108.86	2496.22	42.88	S46°30'E	29.52	31.11			445.09	344.08				
125	21.00	S50E	21.00	116.70	2612.92	44.80	S50E	28.80	27.32			473.89	378.40				
118	21.45	S50E	21.30	109.79	2722.71	43.25	S50E	27.80	33.13			501.69	411.53				
125	22	S50E	22.90	115.90	2838.61	46.83	S50E	30.10	35.87			531.79	447.40				
123	22	S51E	22.00	114.05	2952.66	46.08	S50°30'E	29.31	35.56			561.10	482.96				
125	21.30	S50E	21.45	116.70	3068.76	46.33	S50°30'E	29.47	35.75			590.57	518.71				
112	20.00	S50E	20.45	104.73	3173.49	39.68	S50E	25.51	30.39			616.08	549.10				
125	16.45	S48E	18.15	118.71	3292.20	39.15	S49E	25.69	29.55			641.77	578.65				
125	13.00	S43E	14.45	120.88	3413.08	31.83	S45°30'E	22.31	22.70			664.08	602.35				
132	12.00	S43E	12.30	128.87	3541.95	28.56	S43E	20.89	19.48			684.97	620.83				
125	12.00	S43E	12.00	122.26	3664.21	25.99	S43E	19.01	17.73			703.98	638.56				
123	11.45	S40E	11.45	120.42	3784.63	25.04	S41°30'E	18.75	16.59			722.73	655.15				
124	12.00	S37E	12.00	121.28	3905.91	25.78	S38°30'E	20.18	16.05			742.91	671.20				
124	11.45	S34E	11.45	121.40	4027.31	25.25	S35°30'E	20.56	14.66			763.47	685.86				
124	11.30	S29E	11.30	121.51	4148.82	24.73	S31°30'E	21.08	12.92			784.55	698.78				
205	11.30	S27E	11.30	200.88	4349.70	40.88	S28E	36.09	19.19			820.64	717.97				
164	11.30	S27E	11.30	160.70	4510.40	32.70	S27E	29.14	14.85			849.78	732.82				
90	11.30	S25E	11.30	88.19	4598.59	17.95	S26E	16.13	7.87			865.91	740.69				
127	12.00	S28E	11.45	124.33	4722.92	25.86	S26°30'E	23.14	11.54			889.05	752.23				
70	1300	S28E	12.30	68.34	4791.26	15.15	S28E	13.38	7.11			902.43	759.34				
95	13.00	S27E	13.00	92.57	4883.83	21.38	S27°30'E	18.96	9.87			921.39	769.21				
RE:		1200.43°					S 39°51' E										
GE ANGLE																	

NORTH    SOUTH    EAST    WEST    NORTH    SOUTH    EAST