Schlumberger

OXY

Borehole:	Well:	Field:	Structure:
Original Borehole	Oxy Avogato 30-31 State Com 4H	NM Lea County (NAD 83)	Oxy Avogato 30-31 State Com 4H

Gravity & Magnetic Parameters

Model: IFR1 Dip: 60.00° Date: 08-Nov-2019

MagDec: 6.583° FS: 48035.1nT Gravity FS: 998.452mgn (9.80665 Based)

Surface Location NAD83 New Mexico State Plane, Eastern Zone, US Feet

Lat: N 32 22 10.71 Northing: 486988.8RUS Grid Conv: 0.389°

Long: W 103 36 34.66 Easting: 765694.7RUS Scale Fact: 0.99999573

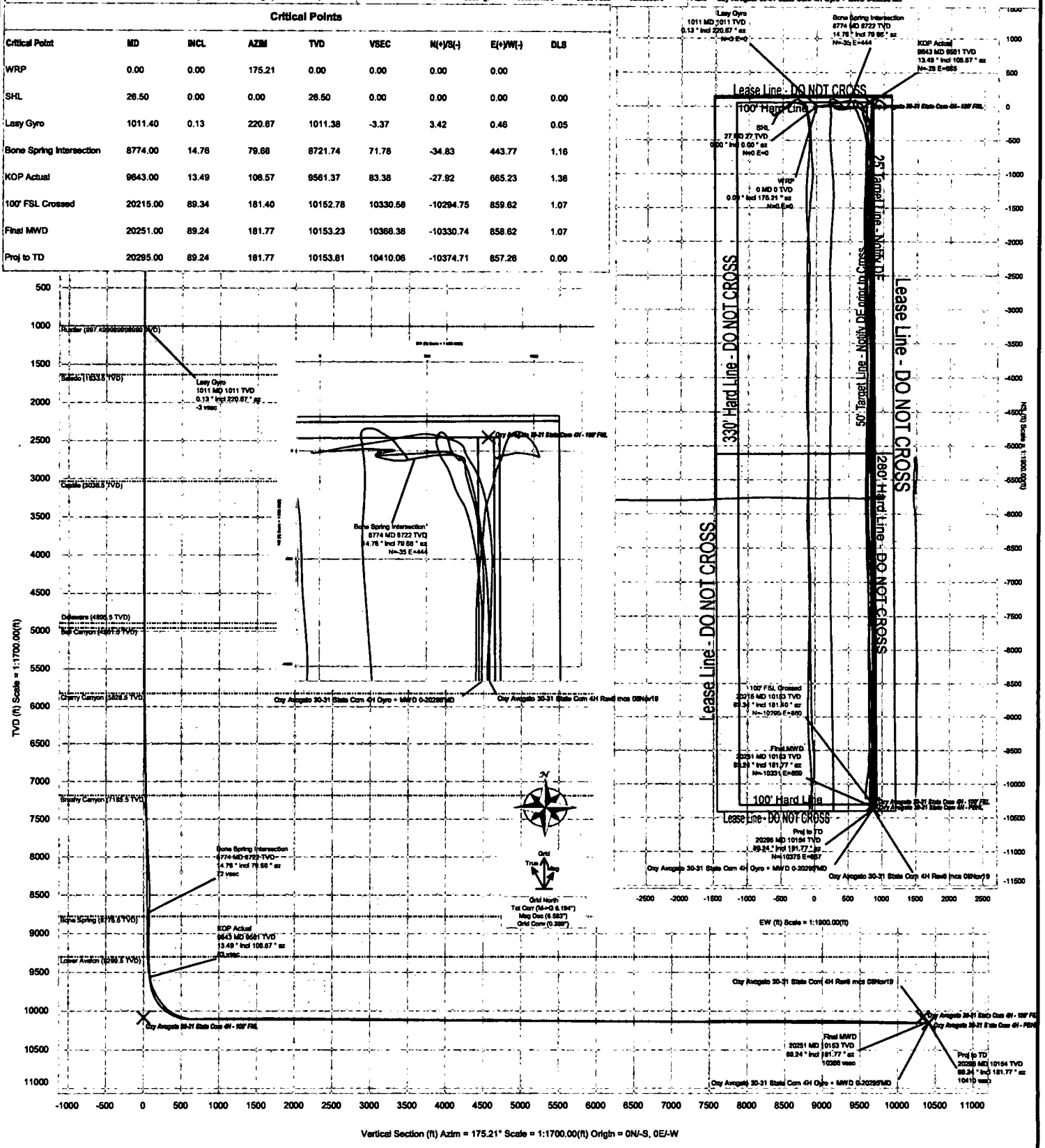
Miscellaneous

Slot: Oxy Avogato 30-31 State Com 4H TVD Ref: RKB=26.5'(3686.5ft above MSL)

Plan: Oxy Avogato 30-31 State Com 4H Gyro + MWD 0-20295MD

Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
WRP	0.00	0.00	175.21	0.00	0.00	0.00	0.00	
SHL	26.50	0.00	0.00	26.50	0.00	0.00	0.00	0.00
Lasy Gyro	1011.40	0.13	220.67	1011.38	-3.37	3.42	0.46	0.05
Bone Spring Intersection	8774.00	14.76	79.68	8721.74	71.78	-34.83	443.77	1.16
KOP Actual	9643.00	13.49	106.57	9561.37	83.38	-27.92	665.23	1.36
100' FSL Crossed	20215.00	89.34	181.40	10152.78	10330.58	-10294.75	859.62	1.07
Final MWD	20251.00	89.24	181.77	10153.23	10366.38	-10330.74	858.62	1.07
Proj to TD	20295.00	89.24	181.77	10153.81	10410.06	-10374.71	857.26	0.00



Schlumberger

Oxy Avogato 30-31 State Com 4H Gyro + MWD 0-20295'MD Survey
Geodetic Report
(Def Survey)

Report Date:	November 25, 2019 - 02:25 PM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	OXY	**Vertical Section Azimuth:**	175.209 ° (Grid North)
Field:	NM Lea County (NAD 83)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Oxy Avogato 30-31 State Com 4H / Oxy Avogato 30-31 State Com 4H	**TVD Reference Datum:**	RKB=26.5'
Well:	Oxy Avogato 30-31 State Com 4H	**TVD Reference Elevation:**	3695.500 ft above MSL
Borehole:	Original Borehole	**Seabed / Ground Elevation:**	3669.000 ft above MSL
UWI / API#:	Unknown / 30-025-45923	**Magnetic Declination:**	6.583 °
Survey Name:	Oxy Avogato 30-31 State Com 4H Gyro + MWD 0-20295'MD	**Total Gravity Field Strength:**	998.4516mgn (9.80665 Based)
Survey Date:	September 27, 2019	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	286.088 ° / 11240.617 ft / 6.808 / 1.107	**Total Magnetic Field Strength:**	48035.100 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	60.080 °
Location Lat / Long:	N 32° 22' 10.70830", W 103° 36' 24.05819"	**Declination Date:**	November 08, 2019
Location Grid N/E Y/X:	N 498968.800 ftUS, E 765684.700 ftUS	**Magnetic Declination Model:**	IFR1
CRS Grid Convergence Angle:	0.3890 °	**North Reference:**	Grid North
Grid Scale Factor:	0.99996673	**Grid Convergence Used:**	0.3890 °
Version / Patch:	2.10.782.0	**Total Corr Mag North->Grid North:**	6.1940 °
		Local Coord Referenced To:	Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
WRP	0.00	0.00	175.21	0.00	0.00	0.00	0.00	N/A	498968.80	765684.70	N 32 22 10.71	W 103 36 24.06
SHL	26.50	0.00	0.00	26.50	0.00	0.00	0.00	0.00	498968.80	765684.70	N 32 22 10.71	W 103 36 24.06
	113.80	0.18	2.53	113.80	-0.14	0.14	0.01	0.21	498968.94	765684.71	N 32 22 10.71	W 103 36 24.06
	170.10	0.47	11.79	170.10	-0.45	0.45	0.06	0.52	498969.25	765684.76	N 32 22 10.71	W 103 36 24.06
	257.00	0.50	18.17	257.00	-1.14	1.16	0.25	0.07	498969.96	765684.95	N 32 22 10.72	W 103 36 24.06
	346.60	0.51	25.84	346.59	-1.84	1.89	0.54	0.08	498970.69	765685.24	N 32 22 10.73	W 103 36 24.05
	441.10	0.55	34.42	441.09	-2.55	2.64	0.98	0.09	498971.44	765685.68	N 32 22 10.73	W 103 36 24.05
	535.70	0.26	16.76	535.69	-3.10	3.22	1.30	0.33	498972.02	765686.00	N 32 22 10.74	W 103 36 24.04
	630.20	0.13	309.97	630.19	-3.38	3.50	1.28	0.25	498972.30	765685.98	N 32 22 10.74	W 103 36 24.04
	724.80	0.11	285.43	724.79	-3.49	3.59	1.11	0.06	498972.39	765685.81	N 32 22 10.74	W 103 36 24.04
	819.20	0.17	269.45	819.18	-3.53	3.61	0.88	0.08	498972.41	765685.58	N 32 22 10.74	W 103 36 24.05
	913.80	0.14	242.47	913.78	-3.49	3.56	0.64	0.08	498972.36	765685.34	N 32 22 10.74	W 103 36 24.05
Lasy Gyro	1011.40	0.13	220.67	1011.38	-3.37	3.42	0.46	0.05	498972.22	765685.16	N 32 22 10.74	W 103 36 24.05
	1114.00	0.11	272.53	1113.98	-3.30	3.34	0.29	0.10	498972.14	765684.99	N 32 22 10.74	W 103 36 24.05
	1205.00	0.13	321.11	1204.98	-3.40	3.42	0.14	0.11	498972.22	765684.84	N 32 22 10.74	W 103 36 24.06
	1296.00	0.15	120.24	1295.98	-3.41	3.44	0.18	0.30	498972.24	765684.88	N 32 22 10.74	W 103 36 24.06
	1387.00	0.02	328.38	1386.98	-3.36	3.39	0.27	0.18	498972.19	765684.97	N 32 22 10.74	W 103 36 24.05
	1482.00	0.02	223.33	1481.98	-3.36	3.40	0.25	0.03	498972.20	765684.95	N 32 22 10.74	W 103 36 24.06
	1576.00	0.02	292.43	1575.98	-3.36	3.39	0.22	0.02	498972.19	765684.92	N 32 22 10.74	W 103 36 24.06
	1671.00	0.07	262.71	1670.98	-3.36	3.39	0.15	0.06	498972.19	765684.85	N 32 22 10.74	W 103 36 24.06
	1860.00	0.08	176.63	1859.98	-3.23	3.24	0.04	0.05	498972.04	765684.74	N 32 22 10.74	W 103 36 24.06
	2050.00	0.09	153.09	2049.98	-2.96	2.98	0.12	0.02	498971.78	765684.82	N 32 22 10.74	W 103 36 24.06
	2144.00	0.15	201.34	2143.98	-2.78	2.80	0.11	0.12	498971.60	765684.81	N 32 22 10.74	W 103 36 24.06
	2239.00	0.06	143.65	2238.98	-2.62	2.64	0.09	0.14	498971.44	765684.79	N 32 22 10.73	W 103 36 24.06
	2334.00	0.16	269.00	2333.98	-2.59	2.60	-0.03	0.23	498971.40	765684.67	N 32 22 10.73	W 103 36 24.06
	2428.00	0.04	44.42	2427.98	-2.62	2.62	-0.15	0.22	498971.42	765684.55	N 32 22 10.73	W 103 36 24.06
	2618.00	0.15	158.37	2617.98	-2.43	2.44	-0.01	0.09	498971.24	765684.69	N 32 22 10.73	W 103 36 24.06
	2713.00	0.23	129.97	2712.98	-2.17	2.20	0.18	0.13	498971.00	765684.88	N 32 22 10.73	W 103 36 24.06
	2808.00	0.19	107.32	2807.98	-1.98	2.03	0.47	0.10	498970.83	765685.17	N 32 22 10.73	W 103 36 24.05
	2902.00	0.26	119.11	2901.98	-1.80	1.88	0.81	0.09	498970.68	765685.51	N 32 22 10.73	W 103 36 24.05
	2997.00	0.25	144.76	2996.98	-1.50	1.60	1.12	0.12	498970.40	765685.82	N 32 22 10.72	W 103 36 24.05
	3091.00	0.51	98.88	3090.98	-1.23	1.37	1.65	0.41	498970.17	765686.35	N 32 22 10.72	W 103 36 24.04
	3186.00	0.57	113.61	3185.97	-0.90	1.12	2.50	0.16	498969.92	765687.20	N 32 22 10.72	W 103 36 24.03
	3281.00	0.48	133.91	3280.97	-0.38	0.65	3.22	0.22	498969.45	765687.92	N 32 22 10.71	W 103 36 24.02
	3376.00	0.21	154.59	3375.97	0.08	0.22	3.56	0.31	498969.02	765688.28	N 32 22 10.71	W 103 36 24.02
	3470.00	0.10	183.22	3469.97	0.32	-0.02	3.65	0.14	498968.78	765688.35	N 32 22 10.71	W 103 36 24.02
	3565.00	0.16	245.14	3564.97	0.45	-0.16	3.53	0.15	498968.64	765688.23	N 32 22 10.71	W 103 36 24.02
	3659.00	0.23	82.91	3658.97	0.49	-0.19	3.59	0.41	498968.61	765688.29	N 32 22 10.71	W 103 36 24.02
	3754.00	0.81	106.29	3753.96	0.72	-0.35	4.43	0.64	498968.45	765689.13	N 32 22 10.70	W 103 36 24.01
	3849.00	0.47	126.05	3848.96	1.22	-0.77	5.39	0.42	498968.03	765690.09	N 32 22 10.70	W 103 36 24.00
	3944.00	0.37	139.57	3943.95	1.72	-1.23	5.90	0.15	498967.57	765690.60	N 32 22 10.70	W 103 36 23.99
	4038.00	1.17	81.88	4037.95	1.91	-1.33	7.05	1.09	498967.47	765691.75	N 32 22 10.69	W 103 36 23.98
	4228.00	3.43	80.81	4227.78	1.37	-0.15	14.58	1.19	498968.65	765699.28	N 32 22 10.71	W 103 36 23.89
	4322.00	4.12	84.76	4321.58	1.12	0.81	20.72	0.78	498969.41	765705.42	N 32 22 10.71	W 103 36 23.82
	4417.00	4.42	92.99	4416.31	1.59	0.73	27.77	0.72	498969.53	765712.47	N 32 22 10.71	W 103 36 23.73
	4512.00	5.05	93.41	4510.99	2.68	0.29	35.60	0.68	498969.09	765720.30	N 32 22 10.71	W 103 36 23.64
	4606.00	5.51	92.96	4604.59	3.88	-0.19	44.24	0.49	498968.61	765728.94	N 32 22 10.70	W 103 36 23.54
	4701.00	5.87	90.63	4699.12	4.96	-0.48	53.65	0.45	498968.32	765738.35	N 32 22 10.70	W 103 36 23.43
	4795.00	6.02	88.49	4792.62	5.69	-0.40	63.39	0.28	498968.40	765748.08	N 32 22 10.70	W 103 36 23.32
	4890.00	6.28	87.57	4887.07	6.19	-0.05	73.56	0.29	498968.75	765758.25	N 32 22 10.70	W 103 36 23.20
	4985.00	6.89	86.77	4981.44	6.56	0.49	84.44	0.65	498969.29	765769.13	N 32 22 10.71	W 103 36 23.07
	5079.00	7.90	85.15	5074.66	6.71	1.36	96.50	1.10	498970.16	765781.20	N 32 22 10.72	W 103 36 22.93
	5174.00	9.05	84.38	5168.62	6.59	2.64	110.44	1.22	498971.44	765795.14	N 32 22 10.73	W 103 36 22.77
	5269.00	10.01	83.96	5262.31	6.31	4.24	126.09	1.01	498973.04	765810.79	N 32 22 10.74	W 103 36 22.59
	5363.00	9.88	85.32	5354.90	6.14	5.76	142.25	0.29	498974.56	765826.95	N 32 22 10.76	W 103 36 22.40
	5553.00	9.64	87.30	5542.15	6.76	7.84	174.39	0.22	498976.64	765859.08	N 32 22 10.77	W 103 36 22.02
	5647.00	9.38	87.13	5634.85	7.30	8.59	189.90	0.28	498977.39	765874.60	N 32 22 10.78	W 103 36 21.84
	5742.00	9.22	88.69	5728.61	8.02	9.15	205.24	0.31	498977.95	765889.94	N 32 22 10.79	W 103 36 21.66
	5836.00	8.48	89.98	5821.49	9.05	9.33	219.70	0.82	498978.13	765904.40	N 32 22 10.79	W 103 36 21.50
	5931.00	7.75	91.09	5915.53	10.29	9.21	233.11	0.79	498978.01	765917.80	N 32 22 10.78	W 103 36 21.34
	6026.00	7.55	93.15	6009.69	11.81	8.74	245.75	0.36	498977.54	765930.44	N 32 22 10.78	W 103 36 21.19
	6120.00	7.52	93.73	6102.88	13.58	8.00	258.05	0.09	498976.80	765942.74	N 32 22 10.77	W 103 36 21.05
	6215.00	7.59	94.34	6197.05	15.49	7.13	270.51	0.11	498975.92	765955.20	N 32 22 10.76	W 103 36 20.90
	6404.00	7.57	91.57	6384.40	18.85	5.84	295.40	0.19	498974.64	765980.09	N 32 22 10.75	W 103 36 20.61
	6499.00	7.07	91.67	6478.63	20.20	5.50	307.50	0.53	498974.30	765992.19	N 32 22 10.74	W 103 36 20.47
	6594.00	6.79	90.26	6572.93	21.36	5.30	318.96	0.34	498974.10	766003.65	N 32 22 10.74	W 103 36 20.34
	6657.00	6.37	89.96	6635.52	21.97	5.29	326.16	0.67	498974.09	766010.87	N 32 22 10.74	W 103 36 20.25
	6689.00	6.02	91.88	6667.33	22.32	5.23	329.63	1.27	498974.03	766014.32	N 32 22 10.74	W 103 36 20.21
	6783.00	4.69	93.44	6760.92	23.44	4.84	338.40	1.42	498973.64	766023.08	N 32 22 10.73	W 103 36 20.11
	6878.00	3.57	100.33	6855.67	24.77	4.08	345.18	1.29	498972.88	766029.87	N 32 22 10.73	W 103 36 20.03
	6929.00	2.84	101.86	6906.59	25.54	3.53	347.98	1.44	498972.33	766032.67	N 32 22 10.72	W 103 36 20.00
	7011.00	1.87	111.83	6988.52	26.72	2.62	351.21	1.28	498971.42	766035.90	N 32 22 10.71	W 103 36 19.96
	7089.00	0.45	265.22	7066.51	27.29	2.13	352.09	2.93	498970.93	766036.78	N 32 22 10.71	W 103 36 19.95
	7120.00	2.78	275.15	7097.49	27.16	2.19	351.22	7.54	498970.99	766035.91	N 32 22 10.71	W 103 36 19.96
	7184.00	8.21	277.53	7161.18	25.91	2.92	345.14	8.49	498971.72	766029.83	N 32 22 10.71	W 103 36 20.03
	7205.00	10.36	275.98	7181.90	25.24	3.32	341.77	10.31	498972.12	766026.46	N 32 22 10.72	W 103 36 20.07
	7239.00	14.33	274.28	7215.11	24.00	3.95	334.54	11.72	498972.75	766019.22	N 32 22 10.72	W 103 36 20.16
	7279.00	15.98	271.14	7253.72	22.66	4.43	324.09	4.61	498973.23	766008.78	N 32 22 10.73	W 103 36 20.28

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	7373.00	13.41	261.20	7344.65	22.08	3.02	300.38	3.82	498971.82	765985.07	N 32 22 10.72	W 103 36 20.56
	7468.00	10.82	246.82	7437.55	25.69	-2.21	281.30	4.20	498966.59	765965.99	N 32 22 10.67	W 103 36 20.78
	7562.00	7.63	221.70	7530.35	32.81	-10.37	269.04	5.36	498958.43	765953.73	N 32 22 10.59	W 103 36 20.92
	7657.00	4.57	208.30	7624.81	40.39	-18.48	263.17	3.62	498950.32	765947.88	N 32 22 10.51	W 103 36 20.99
	7752.00	1.39	201.33	7719.67	44.67	-22.94	261.07	3.36	498945.88	765945.76	N 32 22 10.46	W 103 36 21.02
	7793.00	0.76	171.32	7760.66	45.39	-23.68	260.93	2.01	498945.12	765945.62	N 32 22 10.46	W 103 36 21.02
	7882.00	7.79	105.26	7949.05	51.04	-28.29	273.49	3.98	498940.51	765958.18	N 32 22 10.41	W 103 36 20.87
	8077.00	12.15	104.01	8042.60	56.47	-32.41	289.41	4.59	498936.39	765974.10	N 32 22 10.37	W 103 36 20.69
	8172.00	13.30	102.88	8135.26	63.01	-37.27	309.77	1.24	498931.53	765994.46	N 32 22 10.32	W 103 36 20.45
	8266.00	12.70	101.75	8226.85	69.23	-41.78	330.42	0.69	498927.02	766015.11	N 32 22 10.27	W 103 36 20.21
	8361.00	12.91	95.27	8319.49	74.06	-44.88	351.22	1.53	498923.92	766035.90	N 32 22 10.24	W 103 36 19.97
	8456.00	12.83	89.43	8412.11	76.69	-45.75	372.33	1.37	498923.05	766057.02	N 32 22 10.23	W 103 36 19.72
	8550.00	12.52	82.19	8503.83	76.92	-44.26	392.86	1.72	498924.54	766077.55	N 32 22 10.24	W 103 36 19.48
	8645.00	12.85	78.48	8596.51	75.14	-40.76	413.42	0.93	498928.05	766098.10	N 32 22 10.28	W 103 36 19.24
	8739.00	14.38	79.08	8687.87	72.67	-36.46	435.12	1.63	498932.34	766119.81	N 32 22 10.32	W 103 36 18.99
Bone Spring Intersection	*8774.00*	*14.76*	*79.66*	*8721.74*	*71.78*	*-34.83*	*443.77*	*1.18*	*498933.97*	*766128.46*	*N 32 22 10.33*	*W 103 36 18.89*
	8834.00	15.41	80.59	8779.67	70.39	-32.16	459.16	1.16	498936.64	766143.84	N 32 22 10.36	W 103 36 18.71
	8929.00	15.25	81.08	8871.29	68.48	-28.16	483.95	0.22	498940.64	766168.64	N 32 22 10.40	W 103 36 18.42
	9023.00	15.06	81.33	8962.02	66.76	-24.40	508.24	0.21	498944.40	766192.92	N 32 22 10.43	W 103 36 18.13
	9118.00	14.89	82.35	9053.80	65.32	-20.91	532.54	0.33	498947.89	766217.22	N 32 22 10.47	W 103 36 17.85
	9213.00	15.06	84.72	9145.57	64.60	-18.15	556.92	0.67	498950.65	766241.60	N 32 22 10.49	W 103 36 17.57
	9307.00	15.13	88.35	9236.33	65.17	-16.68	581.35	1.01	498952.12	766266.03	N 32 22 10.50	W 103 36 17.28
	9402.00	14.79	92.53	9328.11	67.40	-16.85	605.85	1.19	498951.95	766290.53	N 32 22 10.50	W 103 36 17.00
	9497.00	15.07	99.34	9419.91	71.96	-19.39	630.16	1.87	498949.41	766314.83	N 32 22 10.47	W 103 36 16.71
	9587.00	14.20	105.42	9507.00	78.63	-24.23	652.34	1.96	498944.57	766337.02	N 32 22 10.42	W 103 36 16.45
KOP Actual	9643.00	13.49	106.57	9561.37	83.36	-27.92	665.23	1.36	498940.88	766349.90	N 32 22 10.39	W 103 36 16.30
	9737.00	16.13	172.52	9652.83	100.53	-44.10	677.52	17.16	498924.70	766362.19	N 32 22 10.23	W 103 36 16.16
	9832.00	26.85	176.42	9741.10	135.26	-78.70	680.58	11.38	498890.11	766365.26	N 32 22 9.88	W 103 36 16.13
	9927.00	32.66	165.25	9823.60	182.04	-124.97	688.46	8.43	498843.83	766373.14	N 32 22 9.43	W 103 36 16.04
	10022.00	38.73	163.25	9900.72	238.41	-178.27	703.57	6.51	498790.54	766388.24	N 32 22 8.90	W 103 36 15.87
	10116.00	45.48	163.64	9970.43	298.07	-238.64	721.50	7.16	498730.17	766406.17	N 32 22 8.30	W 103 36 15.67
	10211.00	60.76	171.57	10027.35	373.12	-312.64	737.22	17.41	498656.17	766421.89	N 32 22 7.57	W 103 36 15.49
	10306.00	67.38	171.76	10066.88	458.34	-397.12	749.59	6.95	498571.69	766434.27	N 32 22 6.73	W 103 36 15.35
	10345.00	74.51	171.71	10081.61	495.11	-433.58	754.89	18.33	498535.24	766439.56	N 32 22 6.37	W 103 36 15.29
	10401.00	77.25	173.58	10095.27	549.36	-487.43	761.83	5.87	498481.39	766446.51	N 32 22 5.83	W 103 36 15.21
	10496.00	90.40	179.79	10105.48	643.52	-581.47	767.22	15.29	498387.35	766451.89	N 32 22 4.90	W 103 36 15.16
	10559.00	90.77	180.26	10104.84	706.29	-644.47	767.19	0.95	498324.36	766451.86	N 32 22 4.28	W 103 36 15.16
	10655.00	90.53	181.14	10103.75	801.84	-740.45	766.02	0.95	498228.37	766450.69	N 32 22 3.33	W 103 36 15.19
	10747.00	90.67	182.13	10102.78	893.26	-832.41	763.39	1.09	498136.42	766448.07	N 32 22 2.42	W 103 36 15.22
	10842.00	90.74	181.02	10101.62	987.67	-827.36	760.78	1.17	498041.47	766445.45	N 32 22 1.48	W 103 36 15.26
	10935.00	91.22	180.01	10100.02	1080.25	-1020.35	759.95	1.20	497948.49	766444.62	N 32 22 0.56	W 103 36 15.28
	11028.00	89.95	178.82	10099.08	1172.99	-1113.33	760.90	1.87	497855.51	766445.57	N 32 21 59.64	W 103 36 15.28
	11121.00	90.12	177.67	10099.02	1265.86	-1206.29	763.74	1.25	497762.56	766448.42	N 32 21 58.72	W 103 36 15.25
	11215.00	90.12	177.52	10098.82	1359.78	-1300.20	767.69	0.16	497668.64	766452.36	N 32 21 57.79	W 103 36 15.21
	11401.00	90.05	176.97	10098.55	1545.66	-1485.99	776.63	0.30	497482.86	766461.30	N 32 21 55.95	W 103 36 15.12
	11494.00	90.23	177.37	10098.32	1638.61	-1578.87	781.22	0.47	497389.98	766465.89	N 32 21 55.03	W 103 36 15.08
	11587.00	89.57	177.74	10098.48	1731.53	-1671.79	785.19	0.81	497297.07	766469.86	N 32 21 54.11	W 103 36 15.04
	11680.00	89.50	178.38	10099.24	1824.41	-1764.73	788.34	0.69	497204.13	766473.01	N 32 21 53.19	W 103 36 15.01
	11867.00	89.64	179.28	10100.64	2011.03	-1951.69	792.15	0.49	497017.18	766476.83	N 32 21 51.34	W 103 36 14.98
	11960.00	89.37	179.21	10101.44	2103.79	-2044.67	793.38	0.30	496924.20	766478.05	N 32 21 50.42	W 103 36 14.97
	12054.00	89.26	179.55	10102.57	2197.54	-2138.66	794.40	0.38	496830.21	766479.07	N 32 21 49.49	W 103 36 14.97
	12146.00	89.37	179.30	10103.67	2289.28	-2230.65	795.32	0.30	496738.23	766479.99	N 32 21 48.58	W 103 36 14.96
	12333.00	89.50	179.28	10105.51	2475.80	-2417.63	797.64	0.07	496551.26	766482.31	N 32 21 46.73	W 103 36 14.95
	12426.00	89.16	178.54	10106.60	2568.60	-2510.60	799.41	0.88	496458.29	766484.08	N 32 21 45.81	W 103 36 14.94
	12520.00	89.43	178.77	10107.75	2662.42	-2604.57	801.61	0.38	496364.32	766486.28	N 32 21 44.88	W 103 36 14.92
	12613.00	89.43	178.77	10108.68	2755.24	-2697.54	803.61	0.00	496271.35	766488.28	N 32 21 43.96	W 103 36 14.90
	12799.00	89.33	178.56	10110.69	2940.89	-2883.48	807.94	0.13	496085.42	766492.61	N 32 21 42.12	W 103 36 14.87
	12893.00	89.47	178.43	10111.68	3034.73	-2977.44	810.41	0.20	495991.46	766495.08	N 32 21 41.19	W 103 36 14.85
	12986.00	89.40	178.33	10112.59	3127.58	-3070.40	813.04	0.13	495898.51	766497.71	N 32 21 40.27	W 103 36 14.82
	13080.00	89.57	178.18	10113.44	3221.44	-3164.36	815.90	0.24	495804.56	766500.57	N 32 21 39.34	W 103 36 14.80
	13175.00	89.54	178.18	10114.18	3316.31	-3259.30	818.92	0.03	495709.61	766503.59	N 32 21 38.40	W 103 36 14.77
	13270.00	89.13	180.26	10115.28	3411.07	-3354.28	820.21	2.23	495614.63	766504.88	N 32 21 37.46	W 103 36 14.76
	13365.00	89.37	180.77	10116.52	3505.65	-3449.27	819.36	0.59	495519.65	766504.03	N 32 21 36.52	W 103 36 14.78
	13554.00	89.47	180.11	10118.44	3693.86	-3638.26	817.91	0.35	495330.67	766502.58	N 32 21 34.65	W 103 36 14.81
	13649.00	89.30	180.49	10119.46	3788.48	-3733.25	817.41	0.44	495235.68	766502.08	N 32 21 33.71	W 103 36 14.82
	13743.00	89.57	181.28	10120.38	3882.01	-3827.23	815.96	0.89	495141.70	766500.63	N 32 21 32.78	W 103 36 14.85
	13838.00	89.26	181.54	10121.35	3976.45	-3922.20	813.62	0.43	495046.74	766498.29	N 32 21 31.84	W 103 36 14.88
	13933.00	89.61	181.91	10122.29	4070.83	-4017.15	810.76	0.54	494951.79	766495.43	N 32 21 30.91	W 103 36 14.92
	14122.00	89.26	181.21	10124.15	4258.66	-4206.07	805.61	0.41	494762.88	766490.29	N 32 21 29.04	W 103 36 15.00
	14217.00	91.60	181.60	10123.44	4353.09	-4301.03	803.29	2.50	494667.92	766487.96	N 32 21 28.10	W 103 36 15.03
	14311.00	90.74	180.90	10121.52	4446.55	-4394.99	801.24	1.18	494573.97	766485.91	N 32 21 27.17	W 103 36 15.07
	14406.00	89.92	181.34	10120.97	4541.04	-4489.97	799.38	0.98	494478.99	766484.05	N 32 21 26.23	W 103 36 15.09
	14501.00	89.88	181.06	10121.06	4635.53	-4584.95	797.39	0.30	494384.02	766482.06	N 32 21 25.29	W 103 36 15.13
	14596.00	89.33	180.90	10121.63	4730.04	-4679.93	795.76	0.70	494289.04	766480.44	N 32 21 24.35	W 103 36 15.15
	14690.00	89.33	180.11	10122.73	4823.63	-4773.92	794.94	0.84	494195.05	766479.61	N 32 21 23.42	W 103 36 15.17
	14785.00	89.78	180.29	10123.46	4918.27	-4868.92	794.60	0.51	494100.06	766479.28	N 32 21 22.48	W 103 36 15.18
	14880.00	89.37	179.04	10124.17	5012.98	-4963.91	795.16	1.38	494005.07	766479.83	N 32 21 21.54	W 103 36 15.18
	15070.00	87.71	176.48	10129.01	5202.71	-5153.68	802.61	1.61	493815.30	766487.29	N 32 21 19.66	W 103 36 15.11
	15259.00	89.54	177.11	10133.55	5391.57	-5342.32	813.21	1.03	493626.67	766497.88	N 32 21 17.79	W 103 36 15.00
	15353.00	90.43	177.56	10133.57	5485.51	-5436.21	817.58	1.06	493532.78	766502.25	N 32 21 16.86	W 103 36 14.96
	15448.00	89.88	178.26	10133.31	5580.40	-5531.15	821.05	0.94	493437.85	766505.72	N 32 21 15.92	W 103 36 14.92
	15542.00	90.57	179.55	10132.94	5674.20	-5625.13	822.84	1.56	493343.87	766507.51	N 32 21 14.99	W 103 36 14.91
	15637.00	89.76	179.01	10132.67	5768.96	-5720.12	824.04	1.02	493248.88	766508.71	N 32 21 14.05	W 103 36 14.91
	15731.00	89.55	178.47	10133.24	5862.78	-5814.10	826.10	0.62	493154.91	766510.77	N 32 21 13.12	W 103 36 14.89
	15826.00	89.21	177.71	10134.27	5957.65	-5909.04	829.27	0.88	493059.97	766513.94	N 32 21 12.18	W 103 36 14.86
	15921.00	90.62	178.14	10134.41	6052.54	-6003.97	832.71	1.55	492965.04	766517.38	N 32 21 11.24	W 103 36 14.83
	16016.00	89.89	179.42	10133.98	6147.35	-6098.95	834.73	1.55	492870.07	766519.40	N 32 21 10.30	W 103 36 14.81
	16110.00	90.38	179.42	10133.76	6241.10	-6192.94	835.68	0.52	492776.08	766520.35	N 32 21 9.37	W 103 36 14.81
	16205.00	90.00	178.88	10133.45	6335.87	-6287.93	837.09	0.70	492681.09	766521.76	N 32 21 8.43	W 103 36 14.80
	16300.00	90.00	178.71	10133.45	6430.69	-6382.91	839.09	0.18	492586.12	766523.76	N 32 21 7.49	W 103 36 14.78
	16395.00	89.41	180.21	10133.94	6525.42	-6477.90	839.98	1.70	492491.13	766524.65	N 32 21 6.55	W 103 36 14.78
	16489.00	89.45	182.11	10134.87	6618.91	-6571.87	838.08	2.02	492397.16	766522.75	N 32 21 5.63	W 103 36 14.81
	16584.00	89.24	183.25	10135.96	6713.09	-6666.76	833.64	1.22	492302.28	766518.31	N 32 21 4.69	W 103 36 14.87
	16678.00	89.14	183.13	10137.29	6806.17	-6760.60	828.41	0.17	492208.43	766513.08	N 32 21 3.76	W 103 36 14.94
	16773.00	88.90	180.92	10138.91	6900.48	-6855.53	825.05	2.34	492113.52	766509.72	N 32 21 2.82	W 103 36 14.98
	16868.00	89.72	178.16	10140.06	6995.19	-6950.51	825.82	3.03	492018.54	766510.49	N 32 21 1.88	W 103 36 14.98
	16962.00	87.80	176.67	10142.09	7089.10	-7044.38	830.05	2.59	491924.67	766514.72	N 32 21 0.95	W 103 36 14.94
	17057.00	90.51	174.55	10143.49	7184.07	-7139.08	837.32	3.62	491829.97	766521.99	N 32 21 0.01	W 103 36 14.86
	17152.00	91.06	175.62	10142.19	7279.06	-7233.72	845.46	1.27	491735.34	766530.13	N 32 20 59.08	W 103 36 14.78
	17247.00	91.14	175.94	10140.37	7374.04	-7328.44	852.45	0.35	491640.62	766537.12	N 32 20 58.14	W 103 36 14.70
	17325.00	92.68	175.74	10137.77	7451.98	-7406.19	858.11	1.99	491562.87	766542.78	N 32 20 57.37	W 103 36 14.64
	17341.00	93.09	175.66	10136.96	7467.96	-7422.13	859.31	2.61	491546.94	766543.98	N 32 20 57.21	W 103 36 14.63
	17436.00	93.12	179.75	10131.81	7562.71	-7516.89	863.10	4.30	491452.17	766547.77	N 32 20 56.27	W 103 36 14.59
	17531.00	88.93	180.55	10130.11	7657.32	-7611.85	862.85	4.49	491357.22	766547.52	N 32 20 55.33	W 103 36 14.60
	17625.00	89.03	180.76	10131.79	7750.88	-7705.83	861.78	0.25	491263.24	766546.45	N 32 20 54.40	W 103 36 14.62
	17720.00	90.61	181.39	10132.09	7845.38	-7800.81	860.00	1.79	491168.26	766544.67	N 32 20 53.46	W 103 36 14.65
	17815.00	89.99	180.46	10131.59	7939.91	-7895.80	858.46	1.18	491073.28	766543.13	N 32 20 52.52	W 103 36 14.68
	17910.00	89.99	180.48	10131.60	8034.51	-7990.79	857.68	0.02	490978.29	766542.35	N 32 20 51.58	W 103 36 14.69

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	18004.00	91.33	180.58	10130.52	8128.09	-8084.78	856.82	1.43	490884.30	768541.49	N 32 20 50.65	W 103 36 14.71
	18099.00	89.44	180.08	10129.88	8222.71	-8179.77	856.27	2.06	490789.32	768540.94	N 32 20 49.71	W 103 36 14.72
	18194.00	89.72	179.13	10130.58	8317.43	-8274.77	856.92	1.04	490694.33	768541.59	N 32 20 48.77	W 103 36 14.72
	18288.00	89.44	179.17	10131.27	8411.20	-8368.75	858.32	0.30	490600.34	768542.99	N 32 20 47.84	W 103 36 14.72
	18383.00	89.72	179.55	10131.97	8505.95	-8463.74	859.38	0.50	490505.35	768544.05	N 32 20 46.90	W 103 36 14.71
	18477.00	89.68	180.24	10132.46	8599.83	-8557.74	859.55	0.74	490411.36	768544.22	N 32 20 45.97	W 103 36 14.72
	18572.00	91.03	181.21	10131.87	8694.19	-8652.73	858.35	1.75	490316.38	768543.02	N 32 20 45.03	W 103 36 14.74
	18667.00	90.54	182.37	10130.57	8788.55	-8747.67	855.38	1.33	490221.44	768540.05	N 32 20 44.10	W 103 36 14.78
	18761.00	90.54	182.57	10129.68	8881.79	-8841.58	851.33	0.21	490127.53	768536.00	N 32 20 43.17	W 103 36 14.83
	18856.00	89.51	182.07	10129.64	8976.06	-8936.50	847.49	1.21	490032.61	768532.16	N 32 20 42.23	W 103 36 14.89
	18951.00	89.10	181.65	10130.79	9070.41	-9031.44	844.40	0.62	489937.67	768529.07	N 32 20 41.29	W 103 36 14.93
	19046.00	88.79	181.51	10132.54	9164.81	-9126.39	841.78	0.36	489842.73	768526.45	N 32 20 40.35	W 103 36 14.97
	19140.00	88.65	180.49	10134.64	9258.31	-9220.35	840.14	1.10	489748.77	768524.81	N 32 20 39.42	W 103 36 15.00
	19235.00	88.51	178.66	10137.00	9353.00	-9315.32	840.85	1.93	489653.81	768525.52	N 32 20 38.48	W 103 36 14.99
	19330.00	88.69	177.62	10139.32	9447.84	-9410.24	843.93	1.11	489558.89	768528.60	N 32 20 37.54	W 103 36 14.97
	19425.00	89.44	178.96	10140.87	9542.77	-9505.12	846.42	1.05	489464.02	768533.09	N 32 20 36.60	W 103 36 14.92
	19519.00	89.20	177.46	10141.98	9636.70	-9599.00	853.00	0.59	489370.14	768537.67	N 32 20 35.67	W 103 36 14.88
	19614.00	88.96	178.20	10143.51	9731.59	-9693.92	856.59	0.82	489275.22	768541.26	N 32 20 34.73	W 103 36 14.84
	19708.00	89.07	178.52	10145.12	9825.43	-9787.86	859.28	0.36	489181.28	768543.95	N 32 20 33.80	W 103 36 14.82
	19803.00	88.96	179.07	10146.76	9920.23	-9882.83	861.28	0.59	489088.32	768545.95	N 32 20 32.86	W 103 36 14.80
	19898.00	89.62	179.69	10147.93	10014.97	-9977.82	862.31	0.95	488991.34	768546.98	N 32 20 31.92	W 103 36 14.80
	19992.00	89.03	180.17	10149.04	10108.65	-10071.81	862.42	0.81	488897.35	768547.09	N 32 20 30.99	W 103 36 14.80
	20087.00	88.72	180.65	10150.91	10203.24	-10166.79	861.74	0.60	488802.37	768546.41	N 32 20 30.05	W 103 36 14.82
	20182.00	89.44	181.06	10152.43	10297.76	-10261.76	860.33	0.87	488707.40	768545.00	N 32 20 29.11	W 103 36 14.84
100' FSL Crossed	*20215.00*	*89.34*	*181.40*	*10152.78*	*10330.58*	*-10294.75*	*859.62*	*1.07*	*488674.41*	*768544.29*	*N 32 20 28.79*	*W 103 36 14.85*
Final MWD	20251.00	89.24	181.77	10153.23	10366.36	-10330.74	858.62	1.07	488638.43	768543.29	N 32 20 28.43	W 103 36 14.87
Proj to TD	20295.00	89.24	181.77	10153.81	10410.06	-10374.71	857.26	0.00	488594.45	768541.93	N 32 20 28.00	W 103 36 14.89

Survey Type: Def Survey

Survey Error Model: ISCWSA Rev 3 *** 3-D 95.000% Confidence 2.7955 sigma

Survey Program:

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	1	0.000	26.500	1/98.425	30.000	30.000	GYD_GC+DROP+OH-Depth Only	Original Borehole / Oxy Avogato 30-31 State Com 4H Gyro + MWD 0-20295'MD
	1	26.500	26.500	Act Stns	30.000	30.000	GYD_GC+DROP+OH-Depth Only	Original Borehole / Oxy Avogato 30-31 State Com 4H Gyro + MWD 0-20295'MD
	1	26.500	1011.400	Act Stns	30.000	30.000	GYD_GC+DROP+OH	Original Borehole / Oxy Avogato 30-31 State Com 4H Gyro + MWD
	1	1011.400	20295.000	Act Stns	30.000	30.000	A010Mb_MWD+IFR1+SAG+MS	Original Borehole / Oxy Avogato 30-31 State Com 4H Gyro + MWD 0-20295'MD