Form 3160-5
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

Carlsbad Field Office
OCD Hobbs

HOBBS OCD
APR 05 2019
RECEIVED

SUBMIT IN TRIPLICATE - Other instructions on page 2

1. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other	5. Lease Serial No. NMNM32860
	6. If Indian, Allottee or Tribe Name
	7. If Unit or CA/Agreement, Name and/or No.
2. Name of Operator CHISHOLM ENERGY OPERATING LLC Contact: JENNIFER ELROD E-Mail: jelrod@chisholmenergy.com	8. Well Name and No. BUFFALO 12-1 FED COM WCC 6H 9. API Well No. 30-025-45159-00-X1
3a. Address 801 CHERRY STREET SUITE 1200 UNIT 20 FORT WORTH, TX 76102 3b. Phone No. (include area code) Ph: 817-953-3728	10. Field and Pool or Exploratory Area BUFFALO WOLFCAMP
4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)* Sec 12 T19S R33E 125FSL 1260FWL 32.667809 N Lat, 103.621056 W Lon	11. County or Parish, State LEA COUNTY, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☐ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☒ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other Drilling Operations
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

02/01/2019-CONTACTED BLM ON BOP TEST & RESUME DRILLING

02/03/2019-TEST BOPE-CHOKE/PIPE RAMS 250 LOW-5000 HIGH, 10 MIN EA TEST, GOOD TEST. TEST ANNULAR 250 LOW-250 HIGH, 10 MIN, GOOD TEST.

02/06/2019-TEST 9.625" CSG TO 1500 PSI, 30 MIN, GOOD TEST

02/14/2019-TD PILOT HOLE @ 12311' TVD

02/15-02/19/2019-RUN OH LOGS & SIDE WALL CORES

02/20/2019-SET CMNT PLUG FROM 12288'-11127'W/410 SXS CLASS H CMNT @ 1.19 YIELD

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #459575 verified by the BLM Well Information System
For CHISHOLM ENERGY OPERATING LLC, sent to the Hobbs
Committed to AFMSS for processing by PRISCILLA PEREZ on 03/28/2019 (19PP1482SE)

Name *(Printed/Typed)* JENNIFER ELROD — Title SENIOR REGULATORY TECH

Signature (Electronic Submission) — Date 03/28/2019

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By — Title **Accepted for Record** — Date MAR 29 2019

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Jonathon Shepard
Carlsbad Field Office
Office

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

Additional data for EC transaction #459575 that would not fit on the form

32. Additional remarks, continued

02/21/2019-SET WHIPSTOCK @ 11109' DRILL LATERAL

03/22/2019-TD WELL @ 18055' (PROPOSED TD OF 21995'MD WAS CUT SHORT DUE TO FORMATION INSTABILITY)

03/25/2019-RUN 418 JTS OF 5.5", 23#, P-110 CDC CSG SET @ 18015'MD; CMNT W/496 BBLS (945 SXS) CLASS H CMNT @ 2.95 YIELD, FOLLOWED BY 346 BBLS (1520 SXS) CLASS H CMNT @ 1.28 YIELD W/ 82 BBLS(156 SXS) CMNT CIRCULATED TO SURFACE

03/27/2019-RIG RELEASED @ 22:00 HRS.

Schlumberger

Chisholm Energy Operating, LLC

Final PrA - ST02 Rev9

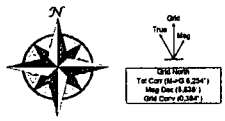
CHISHOLM ENERGY

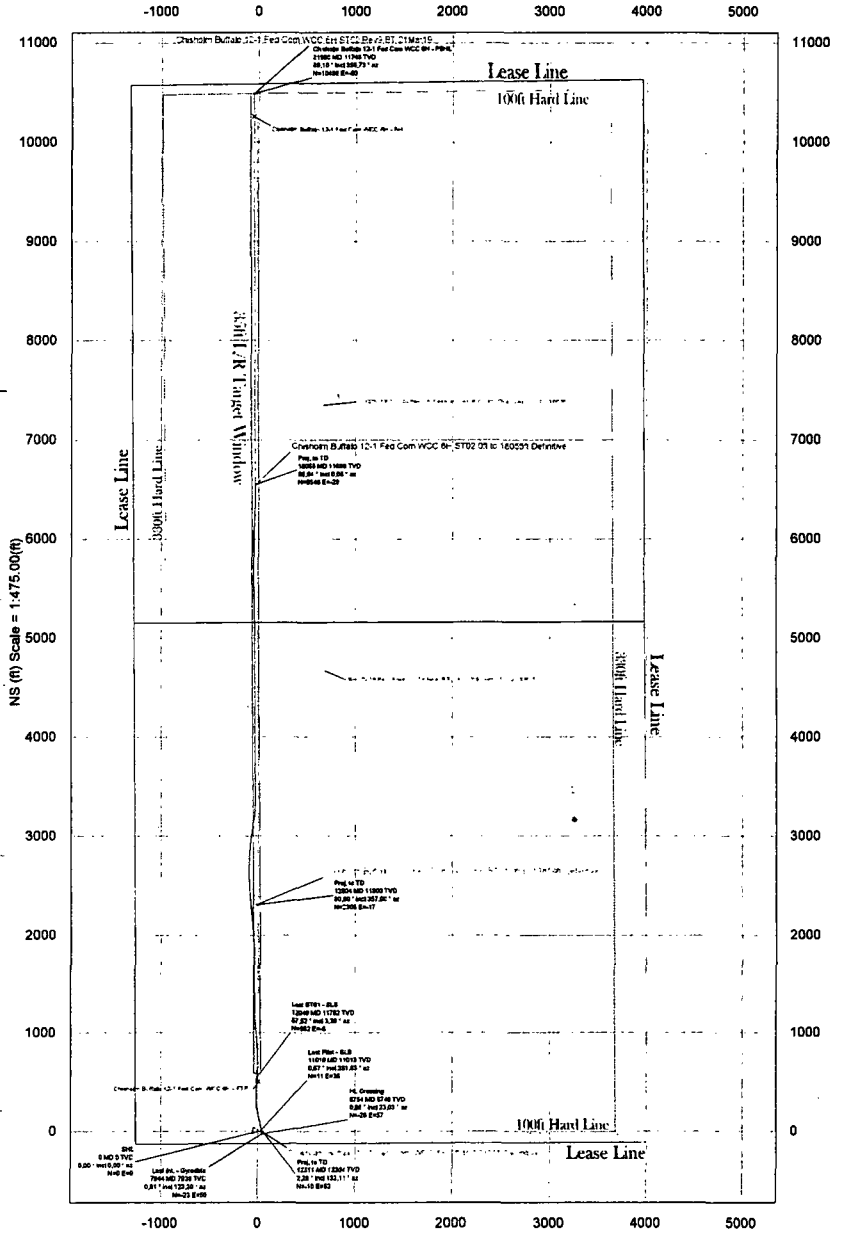
Borehole:	Well:	Field:	Structure:
ST02	Chisholm Buffalo 12-1 Fed Com WCC 6H	NM Lea County (NAD 83)	Chisholm Buffalo 12-1 Fed Com WCC 6H

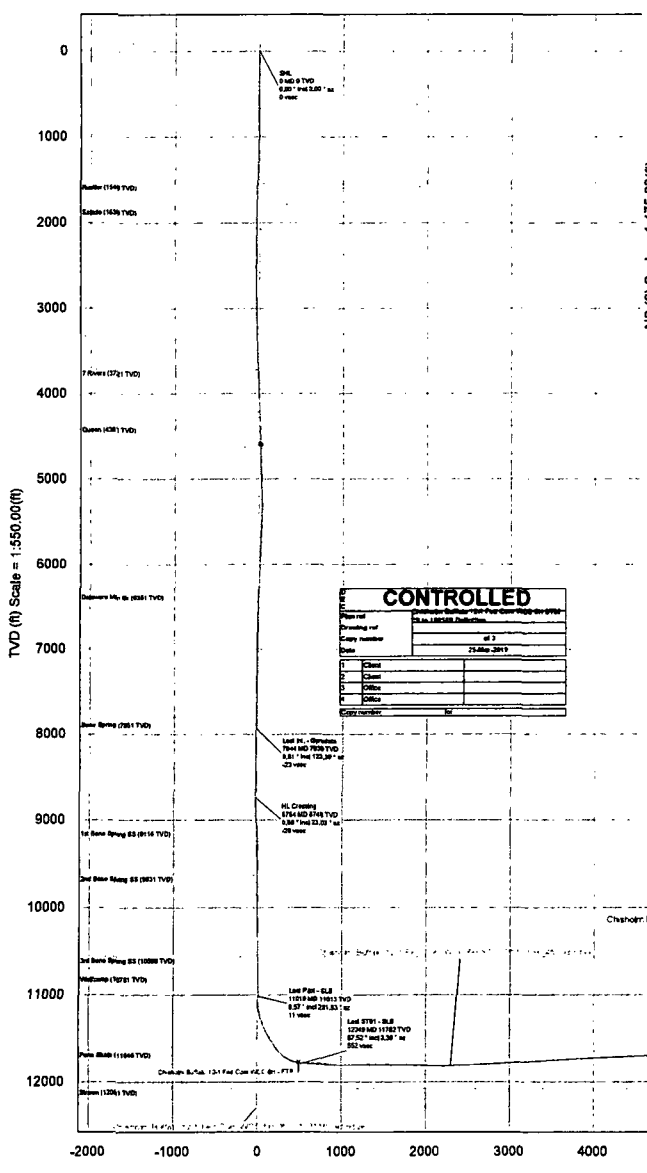
Gravity & Magnetic Parameters					Surface Location	NAD83 New Mexico State Plane, Eastern Zone, US Feet				Miscellaneous			
Model:	HDGM 2019	Dip:	60.617°	Date:	07-Mar-2019	Lat:	N 32 40 4.11	Northing:	607416.38RUS	Grid Conv:	0.3845°	Slot:	New Slot	TVD Ref:	RKB = 31ft (JDC 7)(3741.3ft above MSL)
MagDec:	6.838°	FS:	48206.181nT	Gravity FS:	998.511mgn (9.80665 Based)	Lon:	W 103 37 19.79	Easting:	760522.92RUS	Scale Fact:	0.99996411	Plan:	Chisholm Buffalo 12-1 Fed Com WCC 6H ST02 0ft to 18055ft Definitive		

Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Last Int. - Gyrodata	7944.00	0.81	123.39	7938.56	-23.25	-23.02	50.39	0.36
HL Crossing	8754.00	0.86	23.03	8748.49	-25.83	-25.56	57.16	0.72
Last Plot - SLB	11019.00	0.57	281.83	11012.67	11.07	11.24	34.84	0.45
Last ST01 - SLB	12049.00	87.52	3.39	11781.75	551.64	551.61	-7.58	11.89
Proj. to TD	18055.00	88.94	0.08	11689.59	6545.91	6545.85	-28.78	0.00







Schlumberger

CHISHOLM ENERGY

Chisholm Buffalo 12-1 Fed Com WCC 6H ST02 0ft to 18055ft Definitive Survey Report

(Def Survey)

Report Date:	March 25, 2019 - 02:53 PM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	Chisholm Energy Operating, LLC	**Vertical Section Azimuth:**	359.730 ° (Grid North)
Field:	NM Lea County (NAD 83)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Chisholm Buffalo 12-1 Fed Com WCC 6H / New Slot	**TVD Reference Datum:**	RKB = 31ft (JDC 7)
Well:	Chisholm Buffalo 12-1 Fed Com WCC 6H	**TVD Reference Elevation:**	3741.300 ft above MSL
Borehole:	ST02	**Seabed / Ground Elevation:**	3710.300 ft above MSL
UWI / API#:	Unknown / 30-025-45159-02	**Magnetic Declination:**	6.638 °
Survey Name:	Chisholm Buffalo 12-1 Fed Com WCC 6H ST02 0ft to 18055ft Definitive	**Total Gravity Field Strength:**	998.5109mgn (9.80665 Based)
Survey Date:	March 07, 2019	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	234.949 ° / 6868.336 ft / 6.392 / 0.581	**Total Magnetic Field Strength:**	48206.181 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	60.617 °
Location Lat / Long:	N 32° 40' 4.11238", W 103° 37' 15.79120"	**Declination Date:**	March 07, 2019
Location Grid N/E Y/X:	N 607415.380 ftUS, E 760522.920 ftUS	**Magnetic Declination Model:**	HDGM 2019
CRS Grid Convergence Angle:	0.3845 °	**North Reference:**	Grid North
Grid Scale Factor:	0.99996411	**Grid Convergence Used:**	0.3845 °
Version / Patch:	2.10.753.0	**Total Corr Mag North->Grid North:**	6.2539 °
		Local Coord Referenced To:	Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	Closure (ft)	Closure Azimuth (°)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	607415.38	760522.92	N 32 40 4.11	W 103 37 15.79
	151.00	0.14	149.55	151.00	-0.18	-0.16	0.09	0.18	149.55	0.09	607415.22	760523.01	N 32 40 4.11	W 103 37 15.79
	240.00	0.33	169.20	240.00	-0.51	-0.50	0.20	0.54	158.71	0.23	607414.88	760523.12	N 32 40 4.11	W 103 37 15.79
	330.00	0.37	156.08	330.00	-1.20	-1.20	0.42	1.27	160.75	0.07	607414.18	760523.34	N 32 40 4.10	W 103 37 15.79
	507.00	0.23	188.33	506.99	-1.93	-1.92	0.57	2.01	163.55	0.15	607413.46	760523.49	N 32 40 4.09	W 103 37 15.78
	601.00	0.27	216.54	600.99	-2.29	-2.29	0.41	2.32	169.87	0.14	607413.09	760523.33	N 32 40 4.09	W 103 37 15.79
	660.00	0.54	222.81	659.99	-2.60	-2.60	0.14	2.61	176.98	0.46	607412.78	760523.06	N 32 40 4.09	W 103 37 15.79
	756.00	0.84	252.96	755.99	-3.09	-3.09	-0.68	3.17	192.45	0.34	607412.29	760522.24	N 32 40 4.08	W 103 37 15.80
	883.00	1.04	254.39	882.97	-3.60	-3.61	-2.47	4.38	214.38	0.32	607411.77	760520.45	N 32 40 4.08	W 103 37 15.82
	977.00	1.55	253.97	976.95	-4.17	-4.19	-4.51	6.16	227.12	0.54	607411.19	760518.41	N 32 40 4.07	W 103 37 15.84
	1072.00	1.47	250.22	1071.92	-4.93	-4.96	-6.90	8.49	234.28	0.13	607410.42	760516.02	N 32 40 4.06	W 103 37 15.87
	1168.00	1.89	243.33	1167.88	-6.04	-6.09	-9.47	11.26	237.27	0.48	607409.29	760513.45	N 32 40 4.05	W 103 37 15.90
	1263.00	2.39	234.94	1262.81	-7.87	-7.93	-12.49	14.79	237.60	0.62	607407.45	760510.43	N 32 40 4.03	W 103 37 15.94
	1358.00	2.57	235.00	1357.72	-10.21	-10.29	-15.86	18.90	237.03	0.19	607405.09	760507.06	N 32 40 4.01	W 103 37 15.98
	1453.00	2.63	235.26	1452.62	-12.66	-12.75	-19.39	23.21	236.68	0.06	607402.63	760503.53	N 32 40 3.99	W 103 37 16.02
	1542.00	3.01	240.41	1541.51	-14.98	-15.07	-23.10	27.58	236.89	0.51	607400.31	760499.82	N 32 40 3.96	W 103 37 16.06
	1659.00	3.07	244.29	1658.35	-17.81	-17.94	-28.60	33.76	237.89	0.18	607397.44	760494.32	N 32 40 3.94	W 103 37 16.13
	1754.00	2.31	239.95	1753.24	-19.85	-20.01	-32.55	38.20	238.42	0.83	607395.37	760490.38	N 32 40 3.92	W 103 37 16.17
	1850.00	2.34	240.23	1849.17	-21.78	-21.95	-35.92	42.10	238.58	0.03	607393.43	760487.00	N 32 40 3.90	W 103 37 16.21
	1945.00	2.16	245.81	1944.09	-23.46	-23.64	-39.24	45.81	238.93	0.30	607391.74	760483.68	N 32 40 3.88	W 103 37 16.25
	2040.00	2.00	246.28	2039.03	-24.85	-25.05	-42.39	49.24	239.42	0.17	607390.34	760480.53	N 32 40 3.87	W 103 37 16.29
	2136.00	1.94	241.56	2134.97	-26.28	-26.49	-45.35	52.52	239.71	0.18	607388.89	760477.57	N 32 40 3.85	W 103 37 16.32
	2229.00	1.59	243.84	2227.93	-27.59	-27.81	-47.89	55.38	239.86	0.38	607387.57	760475.03	N 32 40 3.84	W 103 37 16.35
	2325.00	1.65	245.13	2323.89	-28.74	-28.98	-50.34	58.09	240.07	0.07	607386.40	760472.58	N 32 40 3.83	W 103 37 16.38
	2420.00	1.55	250.89	2418.85	-29.73	-29.98	-52.60	60.71	240.41	0.20	607385.41	760470.12	N 32 40 3.82	W 103 37 16.41
	2515.00	1.39	250.55	2513.82	-30.52	-30.78	-55.10	63.11	240.81	0.17	607384.60	760467.82	N 32 40 3.81	W 103 37 16.44
	2610.00	1.55	260.90	2608.79	-31.10	-31.37	-57.45	65.46	241.37	0.33	607384.01	760465.47	N 32 40 3.81	W 103 37 16.47
	2706.00	1.03	279.40	2704.77	-31.15	-31.43	-59.59	67.37	242.19	0.69	607383.95	760463.34	N 32 40 3.81	W 103 37 16.49
	2801.00	0.63	290.78	2799.76	-30.82	-31.11	-60.92	68.40	242.95	0.45	607384.27	760462.00	N 32 40 3.81	W 103 37 16.51
	2897.00	0.88	326.23	2895.75	-30.15	-30.45	-61.73	68.83	243.75	0.42	607384.94	760461.19	N 32 40 3.82	W 103 37 16.52
	2992.00	0.70	54.95	2990.75	-29.35	-29.64	-61.57	68.33	244.29	1.02	607385.74	760461.36	N 32 40 3.82	W 103 37 16.51
	3087.00	1.11	29.12	3085.73	-28.22	-28.51	-60.64	67.01	244.82	0.60	607386.87	760462.28	N 32 40 3.83	W 103 37 16.50
	3183.00	1.18	39.16	3181.72	-26.65	-26.93	-59.57	65.37	245.67	0.22	607388.45	760463.36	N 32 40 3.85	W 103 37 16.49
	3278.00	1.19	31.63	3276.69	-25.05	-25.33	-58.43	63.69	246.56	0.16	607390.05	760464.49	N 32 40 3.87	W 103 37 16.48
	3374.00	1.46	34.45	3372.67	-23.20	-23.47	-57.22	61.84	247.69	0.29	607391.91	760465.71	N 32 40 3.88	W 103 37 16.46
	3469.00	1.60	24.20	3467.64	-21.00	-21.26	-55.99	59.89	249.20	0.32	607394.12	760466.93	N 32 40 3.91	W 103 37 16.45
	3564.00	1.64	12.60	3562.60	-18.47	-18.73	-55.15	58.24	251.24	0.35	607396.65	760467.77	N 32 40 3.93	W 103 37 16.44
	3660.00	1.88	1.25	3658.55	-15.55	-15.81	-54.81	57.05	253.91	0.44	607399.57	760468.11	N 32 40 3.96	W 103 37 16.43
	3755.00	2.42	6.53	3753.49	-12.01	-12.26	-54.55	55.91	257.33	0.60	607403.12	760468.37	N 32 40 3.99	W 103 37 16.43
	3850.00	2.61	8.01	3848.39	-7.87	-8.13	-54.02	54.63	261.44	0.21	607407.25	760468.90	N 32 40 4.04	W 103 37 16.42
	3946.00	2.69	9.64	3944.29	-3.49	-3.74	-53.34	53.47	265.99	0.11	607411.64	760469.58	N 32 40 4.08	W 103 37 16.42
	4026.00	2.87	8.51	4024.20	0.34	0.09	-52.73	52.73	270.10	0.24	607415.47	760470.19	N 32 40 4.12	W 103 37 16.41
	4122.00	2.28	17.28	4120.10	4.53	4.29	-51.81	51.98	274.73	0.74	607419.67	760471.11	N 32 40 4.16	W 103 37 16.40
	4217.00	2.44	23.63	4215.02	8.18	7.95	-50.44	51.06	278.95	0.32	607423.33	760472.49	N 32 40 4.19	W 103 37 16.38
	4312.00	2.17	24.75	4309.94	11.66	11.43	-48.87	50.19	283.17	0.29	607426.81	760474.05	N 32 40 4.23	W 103 37 16.36
	4408.00	2.11	23.12	4405.88	14.93	14.71	-47.42	49.65	287.23	0.09	607430.09	760475.50	N 32 40 4.26	W 103 37 16.34
	4503.00	1.95	20.95	4500.82	18.04	17.83	-46.15	49.48	291.12	0.19	607433.21	760476.77	N 32 40 4.29	W 103 37 16.33
	4599.00	1.77	7.43	4596.77	21.04	20.82	-45.38	49.93	294.65	0.49	607436.20	760477.55	N 32 40 4.32	W 103 37 16.32
	4694.00	1.72	7.65	4691.72	23.90	23.69	-45.00	50.85	297.77	0.05	607439.07	760477.92	N 32 40 4.35	W 103 37 16.32
	4790.00	1.72	7.23	4787.68	26.76	26.55	-44.62	51.92	300.75	0.01	607441.93	760478.30	N 32 40 4.38	W 103 37 16.31
	4885.00	1.59	17.20	4882.64	29.43	29.22	-44.05	52.86	303.55	0.33	607444.60	760478.87	N 32 40 4.40	W 103 37 16.30
	4981.00	1.72	8.25	4978.60	32.12	31.92	-43.45	53.92	306.30	0.30	607447.30	760479.47	N 32 40 4.43	W 103 37 16.30
	5074.00	1.57	9.10	5071.56	34.76	34.56	-43.05	55.21	308.75	0.16	607449.94	760479.87	N 32 40 4.46	W 103 37 16.29
	5169.00	1.16	8.32	5166.53	36.99	36.79	-42.71	56.37	310.75	0.43	607452.17	760480.21	N 32 40 4.48	W 103 37 16.29
	5263.00	1.20	13.49	5260.51	38.89	38.69	-42.34	57.36	312.42	0.12	607454.07	760480.58	N 32 40 4.50	W 103 37 16.28
	5358.00	1.13	122.29	5355.50	39.35	39.16	-41.32	56.93	313.46	1.99	607454.54	760481.61	N 32 40 4.50	W 103 37 16.27
	5454.00	2.58	132.91	5451.45	37.37	37.18	-38.93	53.84	313.68	1.55	607452.56	760483.99	N 32 40 4.48	W 103 37 16.24
	5549.00	3.68	127.60	5546.31	34.03	33.87	-34.95	48.67	314.10	1.20	607449.25	760487.97	N 32 40 4.45	W 103 37 16.20
	5644.00	4.37	125.69	5641.07	30.03	29.89	-29.60	42.07	315.29	0.74	607445.27	760493.32	N 32 40 4.41	W 103 37 16.14
	5740.00	4.58	126.09	5736.76	25.61	25.50	-23.53	34.70	317.31	0.22	607440.88	760499.39	N 32 40 4.37	W 103 37 16.06
	5835.00	5.35	123.77	5831.42	20.89	20.81	-16.78	26.73	321.11	0.84	607436.19	760506.14	N 32 40 4.32	W 103 37 15.99
	5930.00	4.41	129.28	5926.08	16.08	16.03	-10.27	19.04	327.35	1.10	607431.41	760512.65	N 32 40 4.27	W 103 37 15.91
	6025.00	3.59	129.09	6020.85	11.87	11.84	-5.14	12.91	336.55	0.86	607427.22	760517.78	N 32 40 4.23	W 103 37 15.85
	6121.00	3.65	128.42	6116.65	8.05	8.05	-0.41	8.06	357.08	0.08	607423.43	760522.51	N 32 40 4.19	W 103 37 15.80
	6216.00	3.44	128.86	6211.47	4.36	4.38	4.18	6.06	43.63	0.22	607419.76	760527.10	N 32 40 4.16	W 103 37 15.74
	6312.00	3.03	126.14	6307.32	1.04	1.08	8.47	8.54	82.73	0.46	607416.46	760531.39	N 32 40 4.12	W 103 37 15.69
	6407.00	2.01	118.34	6402.23	-1.25	-1.19	11.96	12.02	95.69	1.13	607414.19	760534.88	N 32 40 4.10	W 103 37 15.65
	6502.00	2.21	118.36	6497.16	-2.92	-2.85	15.04	15.31	100.74	0.21	607412.53	760537.96	N 32 40 4.08	W 103 37 15.62
	6598.00	2.06	122.17	6593.10	-4.74	-4.65	18.13	18.72	104.39	0.22	607410.73	760541.05	N 32 40 4.07	W 103 37 15.58
	6691.00	2.10	114.05	6686.03	-6.33	-6.23	21.10	22.00	106.48	0.32	607409.15	760544.02	N 32 40 4.05	W 103 37 15.54
	6787.00	1.78	117.09	6781.98	-7.74	-7.63	24.04	25.22	107.61	0.35	607407.75	760546.96	N 32 40 4.04	W 103 37 15.51
	6882.00	1.76	122.07	6876.93	-9.20	-9.08	26.59	28.09	108.85	0.16	607406.30	760549.50	N 32 40 4.02	W 103 37 15.48
	6978.00	1.89	121.78	6972.88	-10.83	-10.69	29.18	31.08	110.13	0.14	607404.69	760552.10	N 32 40 4.00	W 103 37 15.45
	7073.00	1.92	116.17	7067.83	-12.37	-12.22	31.94	34.20	110.94	0.20	607403.16	760554.86	N 32 40 3.99	W 103 37 15.42
	7169.00	1.85	116.23	7163.78	-13.78	-13.61	34.77	37.34	111.38	0.07	607401.77	760557.69	N 32 40 3.98	W 103 37 15.39
	7264.00	1.59	122.05	7258.74	-15.17	-14.99	37.27	40.17	111.91	0.33	607400.39	760560.19	N 32 40 3.96	W 103 37 15.36
	7359.00	1.45	111.21	7353.70	-16.31	-16.13	39.50	42.67	112.21	0.34	607399.25	760562.42	N 32 40 3.95	W 103 37 15.33
	7455.00	1.37	116.84	7449.68	-17.32	-17.12	41.64	45.02	112.35	0.21	607398.26	760564.56	N 32 40 3.94	W 103 37 15.31
	7550.00	1.44	117.86	7544.65	-18.43	-18.22	43.69	47.34	112.64	0.08	607397.16	760566.61	N 32 40 3.93	W 103 37 15.28
	7645.00	1.21	133.14	7639.62	-19.68	-19.47	45.48	49.47	113.17	0.44	607395.91	760568.40	N 32 40 3.92	W 103 37 15.26
	7740.00	1.29	128.82	7734.60	-21.05	-20.82	47.04	51.45	113.68	0.13	607394.56	760569.96	N 32 40 3.90	W 103 37 15.24
	7835.00	1.22	120.39	7829.58	-22.24	-22.01	48.75	53.49	114.30	0.21	607393.37	760571.67	N 32 40 3.89	W 103 37 15.22
Last Int. - Gyrodata	7944.00	0.81	123.39	7938.56	-23.25	-23.02	50.39	55.40	114.55	0.38	607392.36	760573.31	N 32 40 3.88	W 103 37 15.20
	8090.00	0.48	121.36	8084.55	-24.15	-23.90	51.78	57.03	114.78	0.23	607391.48	760574.70	N 32 40 3.87	W 103 37 15.19
	8185.00	0.35	18.21	8179.55	-24.08	-23.84	52.21	57.39	114.54	0.69	607391.55	760575.13	N 32 40 3.87	W 103 37 15.18
	8280.00	0.25	343.70	8274.55	-23.61	-23.36	52.24	57.23	114.09	0.21	607392.02	760575.16	N 32 40 3.88	W 103 37 15.18
	8374.00	0.13	146.11	8368.55	-23.50	-23.25	52.24	57.16	113.99	0.40	607392.13	760575.16	N 32 40 3.88	W 103 37 15.18
	8469.00	0.98	124.50	8463.54	-24.05	-23.80	52.97	58.07	114.20	0.91	607391.58	760575.89	N 32 40 3.87	W 103 37 15.17
	8563.00	1.67	135.48	8557.52	-25.49	-25.23	54.60	60.15	114.81	0.78	607390.15	760577.51	N 32 40 3.86	W 103 37 15.15
	8658.00	0.79	90.31	8652.49	-26.49	-26.22	56.22	62.04	115.01	1.31	607389.16	760579.14	N 32 40 3.85	W 103 37 15.14

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	Closure (ft)	Closure Azimuth (°)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	8752.00	0.85	23.46	8746.49	-25.86	-25.59	57.15	62.61	114.12	0.96	607389.79	760580.06	N 32 40 3.86	W 103 37 15.12
	8847.00	1.49	11.55	8841.47	-24.00	-23.73	57.67	62.37	112.37	0.72	607391.65	760580.59	N 32 40 3.87	W 103 37 15.12
	9036.00	3.23	342.86	9030.31	-16.50	-16.24	56.60	58.88	106.01	1.09	607399.14	760579.52	N 32 40 3.95	W 103 37 15.13
	9131.00	2.72	344.31	9125.18	-11.77	-11.51	55.20	56.39	101.78	0.54	607403.87	760578.12	N 32 40 3.99	W 103 37 15.15
	9225.00	1.75	8.39	9219.11	-8.20	-7.94	54.81	55.38	98.24	1.41	607407.44	760577.72	N 32 40 4.03	W 103 37 15.15
	9319.00	0.90	35.86	9313.08	-6.18	-5.92	55.45	55.76	96.10	1.10	607409.46	760578.37	N 32 40 4.05	W 103 37 15.14
	9414.00	1.09	57.35	9408.07	-5.10	-4.83	56.65	56.85	94.87	0.44	607410.55	760579.56	N 32 40 4.06	W 103 37 15.13
	9508.00	0.52	68.97	9502.06	-4.47	-4.19	57.80	57.95	94.15	0.63	607411.19	760580.71	N 32 40 4.07	W 103 37 15.12
	9603.00	0.90	228.79	9597.05	-4.80	-4.53	57.64	57.81	94.50	1.47	607410.85	760580.55	N 32 40 4.06	W 103 37 15.12
	9697.00	1.16	236.20	9691.04	-5.81	-5.55	56.29	56.56	95.63	0.31	607409.83	760579.21	N 32 40 4.05	W 103 37 15.13
	9792.00	1.13	296.64	9786.02	-5.92	-5.66	54.65	54.95	95.91	1.21	607409.72	760577.57	N 32 40 4.05	W 103 37 15.15
	9887.00	1.74	316.11	9880.99	-4.45	-4.20	52.82	52.98	94.55	0.81	607411.18	760575.74	N 32 40 4.07	W 103 37 15.17
	9981.00	0.68	349.38	9974.97	-2.87	-2.63	51.73	51.79	92.91	1.31	607412.75	760574.64	N 32 40 4.08	W 103 37 15.19
	10076.00	0.64	351.61	10069.97	-1.79	-1.55	51.54	51.57	91.72	0.05	607413.83	760574.46	N 32 40 4.09	W 103 37 15.19
	10171.00	0.97	2.24	10164.96	-0.46	-0.22	51.50	51.50	90.24	0.38	607415.16	760574.42	N 32 40 4.11	W 103 37 15.19
	10265.00	1.03	338.15	10258.94	1.12	1.36	51.21	51.23	88.48	0.45	607416.74	760574.13	N 32 40 4.12	W 103 37 15.19
	10360.00	1.68	309.34	10353.92	2.80	3.04	49.82	49.91	86.51	0.97	607418.42	760572.74	N 32 40 4.14	W 103 37 15.21
	10454.00	1.63	299.64	10447.88	4.35	4.67	47.59	47.81	84.61	0.30	607419.95	760570.51	N 32 40 4.15	W 103 37 15.23
	10549.00	1.88	294.50	10542.83	5.67	5.88	45.00	45.38	82.55	0.31	607421.26	760567.92	N 32 40 4.17	W 103 37 15.26
	10643.00	1.69	293.74	10636.79	6.88	7.08	42.33	42.92	80.50	0.20	607422.46	760565.25	N 32 40 4.18	W 103 37 15.30
	10737.00	1.88	293.30	10730.74	8.06	8.25	39.64	40.49	78.24	0.20	607423.63	760562.56	N 32 40 4.19	W 103 37 15.33
	10832.00	1.46	307.46	10825.70	9.43	9.60	37.25	38.47	75.54	0.62	607424.98	760560.17	N 32 40 4.20	W 103 37 15.35
	10926.00	0.89	303.99	10919.68	10.57	10.74	35.70	37.28	73.26	0.61	607426.12	760558.61	N 32 40 4.22	W 103 37 15.37
Last Pilot - SLB	11019.00	0.57	281.83	11012.67	11.07	11.24	34.64	36.42	72.03	0.45	607426.62	760557.56	N 32 40 4.22	W 103 37 15.39
	11199.00	9.85	357.72	11191.77	26.69	26.84	33.15	42.66	51.00	5.40	607442.22	760556.07	N 32 40 4.38	W 103 37 15.40
	11246.00	14.19	353.07	11237.73	36.43	36.58	32.30	48.80	41.44	9.45	607451.96	760555.21	N 32 40 4.47	W 103 37 15.41
	11293.00	19.60	353.88	11282.69	50.00	50.15	30.76	58.83	31.52	11.52	607465.53	760553.68	N 32 40 4.61	W 103 37 15.43
	11340.00	21.78	347.62	11326.66	66.38	66.51	28.05	72.18	22.87	6.60	607481.89	760550.97	N 32 40 4.77	W 103 37 15.46
	11388.00	24.79	344.99	11370.75	84.82	84.93	23.53	88.13	15.49	6.63	607500.31	760546.45	N 32 40 4.95	W 103 37 15.51
	11435.00	28.27	348.17	11412.79	105.26	105.35	18.70	107.00	10.06	7.99	607520.73	760541.62	N 32 40 5.15	W 103 37 15.56
	11482.00	30.88	347.95	11453.66	127.98	128.04	13.90	128.80	6.19	5.56	607543.42	760536.82	N 32 40 5.38	W 103 37 15.62
	11529.00	31.35	349.42	11493.90	151.81	151.86	9.13	152.13	3.44	1.90	607567.23	760532.05	N 32 40 5.61	W 103 37 15.67
	11577.00	32.63	349.06	11534.61	176.82	176.84	4.38	176.89	1.42	2.70	607592.21	760527.30	N 32 40 5.86	W 103 37 15.73
	11625.00	32.92	349.32	11574.97	202.36	202.36	-0.49	202.36	359.86	0.67	607617.73	760522.43	N 32 40 6.11	W 103 37 15.78
	11670.00	37.13	352.09	11611.82	227.86	227.84	-4.63	227.89	358.84	10.00	607643.21	760518.29	N 32 40 6.37	W 103 37 15.83
	11717.00	42.00	356.08	11648.04	257.64	257.60	-7.66	257.72	358.30	11.68	607672.97	760515.26	N 32 40 6.66	W 103 37 15.86
	11765.00	46.31	358.25	11681.88	291.62	291.58	-9.30	291.72	358.17	13.53	607706.95	760513.62	N 32 40 7.00	W 103 37 15.88
	11797.00	53.54	358.48	11702.04	316.44	316.40	-10.01	316.56	358.19	16.35	607731.77	760512.91	N 32 40 7.24	W 103 37 15.88
	11828.00	58.41	359.31	11719.38	342.13	342.08	-10.50	342.24	358.24	15.87	607757.45	760512.42	N 32 40 7.50	W 103 37 15.89
	11860.00	63.07	359.72	11735.02	370.03	369.99	-10.73	370.14	358.34	14.61	607785.35	760512.19	N 32 40 7.77	W 103 37 15.89
	11891.00	67.92	359.90	11747.87	398.23	398.19	-10.83	398.33	358.44	15.65	607813.55	760512.09	N 32 40 8.05	W 103 37 15.89
	11923.00	71.48	0.20	11758.97	428.24	428.19	-10.80	428.33	358.56	11.16	607843.56	760512.12	N 32 40 8.35	W 103 37 15.88
	11954.00	75.21	0.07	11767.86	457.93	457.89	-10.73	458.01	358.66	12.04	607873.25	760512.19	N 32 40 8.64	W 103 37 15.88
	12017.00	83.79	2.63	11779.33	519.79	519.75	-9.25	519.84	358.98	14.19	607935.11	760513.67	N 32 40 9.26	W 103 37 15.86
Last ST01 - SLB	12049.00	87.52	3.39	11781.75	551.64	551.61	-7.58	551.66	359.21	11.89	607966.97	760515.34	N 32 40 9.57	W 103 37 15.84
	12080.00	87.15	3.12	11783.19	582.55	582.53	-5.82	582.56	359.43	1.48	607997.89	760517.10	N 32 40 9.88	W 103 37 15.81
	12111.00	86.46	2.44	11784.92	613.46	613.44	-4.32	613.46	359.60	3.12	608028.80	760518.60	N 32 40 10.18	W 103 37 15.79
	12171.00	86.63	1.52	11788.54	673.30	673.30	-2.25	673.30	359.81	1.56	608088.65	760520.67	N 32 40 10.77	W 103 37 15.76
	12265.00	86.94	358.13	11793.81	767.14	767.13	-2.53	767.14	359.81	3.62	608182.49	760520.39	N 32 40 11.70	W 103 37 15.76
	12360.00	87.08	356.77	11798.77	861.93	861.91	-6.76	861.94	359.55	1.44	608277.26	760516.16	N 32 40 12.64	W 103 37 15.80
	12454.00	89.31	355.57	11801.73	955.70	955.64	-13.03	955.73	359.22	2.69	608370.99	760509.89	N 32 40 13.57	W 103 37 15.87
	12549.00	90.55	355.87	11801.84	1050.46	1050.38	-20.12	1050.57	358.90	1.34	608465.72	760502.80	N 32 40 14.51	W 103 37 15.94
	12644.00	89.21	356.42	11802.04	1145.27	1145.16	-26.51	1145.47	358.67	1.52	608560.50	760496.41	N 32 40 15.44	W 103 37 16.01
	12738.00	90.14	359.53	11802.58	1239.21	1239.09	-29.83	1239.45	358.62	3.45	608654.42	760493.09	N 32 40 16.37	W 103 37 16.04
	12833.00	90.55	359.59	11802.00	1334.21	1334.08	-30.56	1334.43	358.69	0.44	608749.41	760492.36	N 32 40 17.31	W 103 37 16.04
	12928.00	89.79	357.98	11801.72	1429.19	1429.06	-32.57	1429.43	358.69	1.87	608844.38	760490.35	N 32 40 18.25	W 103 37 16.06
	13022.00	90.07	0.00	11801.84	1523.18	1523.04	-34.23	1523.42	358.71	2.17	608938.36	760488.69	N 32 40 19.18	W 103 37 16.07
	13117.00	89.07	358.87	11802.55	1618.18	1618.03	-35.17	1618.41	358.75	1.59	609033.35	760487.76	N 32 40 20.12	W 103 37 16.08
	13211.00	88.83	358.20	11804.27	1712.14	1711.98	-37.57	1712.39	358.74	0.76	609127.30	760485.35	N 32 40 21.05	W 103 37 16.10
	13306.00	89.90	359.07	11805.33	1807.11	1806.95	-39.83	1807.38	358.74	1.45	609222.26	760483.09	N 32 40 21.99	W 103 37 16.12
	13401.00	87.97	357.65	11807.09	1902.06	1901.88	-42.55	1902.36	358.72	2.52	609317.19	760480.37	N 32 40 22.93	W 103 37 16.14
	13495.00	87.63	356.45	11810.70	1995.89	1995.69	-47.38	1996.25	358.64	1.33	609410.99	760475.54	N 32 40 23.86	W 103 37 16.19
	13590.00	88.38	356.04	11814.01	2090.65	2090.43	-53.60	2091.11	358.53	0.90	609505.73	760469.32	N 32 40 24.80	W 103 37 16.25
	13684.00	90.10	354.92	11815.25	2184.38	2184.12	-61.01	2184.97	358.40	2.18	609599.42	760461.91	N 32 40 25.73	W 103 37 16.33
	13769.00	92.44	353.50	11813.37	2268.96	2268.66	-69.58	2269.72	358.24	3.22	609683.95	760453.34	N 32 40 26.56	W 103 37 16.43
	13864.00	92.75	354.55	11809.07	2363.39	2363.04	-79.46	2364.38	358.07	1.15	609778.33	760443.46	N 32 40 27.50	W 103 37 16.54
	13958.00	92.72	356.47	11804.58	2457.02	2456.64	-86.81	2458.18	357.98	2.04	609871.93	760436.11	N 32 40 28.42	W 103 37 16.61
	14053.00	92.92	358.40	11799.91	2551.83	2551.43	-91.06	2553.05	357.98	2.04	609966.71	760431.87	N 32 40 29.36	W 103 37 16.66
	14148.00	92.89	0.16	11795.09	2646.70	2646.30	-92.25	2647.90	358.00	1.85	610061.57	760430.68	N 32 40 30.30	W 103 37 16.66
	14243.00	92.89	1.85	11790.30	2741.56	2741.16	-90.58	2742.65	358.11	1.78	610156.43	760432.34	N 32 40 31.24	W 103 37 16.64
	14337.00	92.72	3.96	11785.70	2835.29	2834.92	-85.83	2836.22	358.27	2.25	610250.19	760437.10	N 32 40 32.17	W 103 37 16.57
	14432.00	92.79	6.20	11781.14	2929.76	2929.43	-77.42	2930.45	358.49	2.36	610344.70	760445.50	N 32 40 33.10	W 103 37 16.47
	14525.00	92.79	7.95	11776.61	3021.89	3021.61	-65.98	3022.33	358.75	1.88	610436.87	760456.94	N 32 40 34.01	W 103 37 16.33
	14620.00	92.86	10.25	11771.93	3115.50	3115.29	-50.98	3115.71	359.06	2.42	610530.55	760471.94	N 32 40 34.94	W 103 37 16.14
	14714.00	92.48	8.54	11767.55	3208.31	3208.17	-37.27	3208.38	359.33	3.96	610623.43	760485.65	N 32 40 35.86	W 103 37 15.98
	14809.00	93.86	2.21	11762.29	3302.83	3302.72	-30.03	3302.86	359.48	4.78	610717.98	760492.89	N 32 40 36.79	W 103 37 15.88
	14903.00	92.99	359.92	11756.67	3396.62	3396.53	-28.29	3396.65	359.52	2.60	610811.78	760494.63	N 32 40 37.72	W 103 37 15.86
	14997.00	93.06	359.47	11751.71	3490.49	3490.40	-28.79	3490.52	359.53	0.48	610905.64	760494.13	N 32 40 38.65	W 103 37 15.85
	15092.00	92.78	358.59	11746.87	3585.36	3585.26	-30.40	3585.39	359.51	0.97	611000.50	760492.52	N 32 40 39.59	W 103 37 15.87
	15186.00	92.89	359.73	11742.22	3679.24	3679.13	-31.77	3679.27	359.51	1.22	611094.37	760491.15	N 32 40 40.52	W 103 37 15.87
	15281.00	93.13	0.21	11737.24	3774.11	3774.00	-31.82	3774.13	359.52	0.56	611189.24	760491.10	N 32 40 41.46	W 103 37 15.87
	15375.00	92.89	359.64	11732.30	3867.98	3867.87	-31.95	3868.00	359.53	0.66	611283.10	760490.97	N 32 40 42.38	W 103 37 15.86
	15470.00	92.92	358.89	11727.49	3962.85	3962.74	-33.16	3962.88	359.52	0.79	611377.97	760489.76	N 32 40 43.32	W 103 37 15.87
	15565.00	92.62	0.09	11722.89	4057.74	4057.62	-34.01	4057.77	359.52	1.30	611472.85	760488.91	N 32 40 44.26	W 103 37 15.87
	15659.00	92.89	0.25	11718.38	4151.63	4151.51	-33.73	4151.65	359.53	0.33	611566.74	760489.19	N 32 40 45.19	W 103 37 15.86
	15753.00	92.30	359.22	11714.12	4245.53	4245.41	-34.16	4245.55	359.54	1.26	611660.63	760488.76	N 32 40 46.12	W 103 37 15.86
	15848.00	92.65	0.67	11710.02	4340.44	4340.32	-34.28	4340.46	359.55	1.57	611755.54	760488.67	N 32 40 47.06	W 103 37 15.85
	15943.00	92.58	359.65	11705.68	4435.33	4435.22	-33.99	4435.35	359.56	1.08	611850.43	760488.93	N 32 40 48.00	W 103 37 15.84
	16037.00	92.03	359.97	11701.90	4529.26	4529.15	-34.30	4529.28	359.57	0.68	611944.35	760488.62	N 32 40 48.93	W 103 37 15.84
	16131.00	91.96	359.37	11698.63	4623.20	4623.09	-34.84	4623.22	359.57	0.64	612038.29	760488.08	N 32 40 49.86	W 103 37 15.84
	16217.00	91.96	0.72	11695.69	4709.15	4709.03	-34.78	4709.16	359.58	1.57	612124.24	760488.15	N 32 40 50.71	W 103 37 15.83
	16311.00	91.96	359.71	11692.47	4803.09	4802.98	-34.42	4803.10	359.59	1.07	612218.18	760488.50	N 32 40 51.64	W 103 37 15.82
	16406.00	91.79	359.88	11689.36	4898.04	4897.93	-34.76	4898.05	359.59	0.25	612313.12	760488.16	N 32 40 52.58	W 103 37 15.81
	16500.00	91.91	358.86	11686.33	4991.98	4991.87	-35.80	4992.00	359.59	1.09	612407.06	760487.13	N 32 40 53.51	W 103 37 15.82
	16595.00	92.13	359.58	11682.98	5086.92	5086.80	-37.09	5086.94	359.58	0.79	612501.99	760485.83	N 32 40 54.44	W 103 37 15.83
	16689.00	92.19	359.27	11679.44	5180.85	5180.73	-38.03	5180.87	359.58	0.34	612595.91	760484.89	N 32 40 55.37	W 103 37 15.83
	16783.00	91.51	358.64	11676.40	5274.79	5274.66	-39.74	5274.81	359.57	0.99	612689.84	760483.18	N 32 40 56.30	W 103 37 15.84
	16877.00	89.78	359.29	11675.35	5368.77	5368.64	-41.44	5368.80	359.56	1.97	612783.82	760481.48	N 32 40 57.23	W 103 37 15.85
	16972.00	89.78	358.73	11675.71	5463.77	5463.62	-43.08	5463.79	359.55	0.59	612878.80	760479.84	N 32 40 58.17	W 103 37 15.87
	17067.00	90.06	359.80	11675.84	5558.76	5558.61	-44.47	5558.79	359.54	0.98	612973.78	760478.45	N 32 40 59.11	W 103 37 15.87
	17161.00	90.00	0.16	11675.79	5652.76	5652.61	-44.66	5652.79	359.55	0.60	613067.78	760478.26	N 32 41 0.04	W 103 37 15.87
	17256.00	89.94	359.35	11675.84	5747.76	5747.61	-45.07	5747.79	359.55	0.85	613162.77	760477.85	N 32 41 0.98	W 103 37 15.87
	17350.00	88.82	358.26	11676.86	5841.74	5841.58	-47.03	5841.77	359.54	1.66	613256.74	760475.89	N 32 41 1.91	W 103 37 15.88
	17445.00	88.99	359.11	11678.68	5936.70	5936.54	-49.21	5936.74	359.53	0.91	613351.69	760473.71	N 32 41 2.85	W 103 37 15.90
	17540.00	89.10	1.76	11680.26	6031.68	6031.51	-48.49	6031.71	359.54	2.79	613446.67	760474.43	N 32 41 3.79	W 103 37 15.88
	17634.00	89.05	4.25	11681.78	6125.50	6125.36	-43.56	6125.52	359.59	2.65	613540.51	760479.36	N 32 41 4.72	W 103 37 15.82
	17729.00	88.82	3.95	11683.54	6220.21	6220.11	-36.77	6220.21	359.66	0.40	613635.25	760486.15	N 32 41 5.66	W 103 37 15.73
	17823.00	88.99	2.73	11685.34	6314.00	6313.93	-31.30	6314.00	359.72	1.31	613729.07	760491.62	N 32 41 6.59	W 103 37 15.66
	17918.00	88.94	0.08	11687.06	6408.94	6408.87	-28.97	6408.94	359.74	2.79	613824.01	760493.95	N 32 41 7.53	W 103 37 15.63
Proj. to TD	18055.00	88.94	0.08	11689.59	6545.91	6545.85	-28.78	6545.91	359.75	0.00	613960.98	760494.14	N 32 41 8.88	W 103 37 15.61

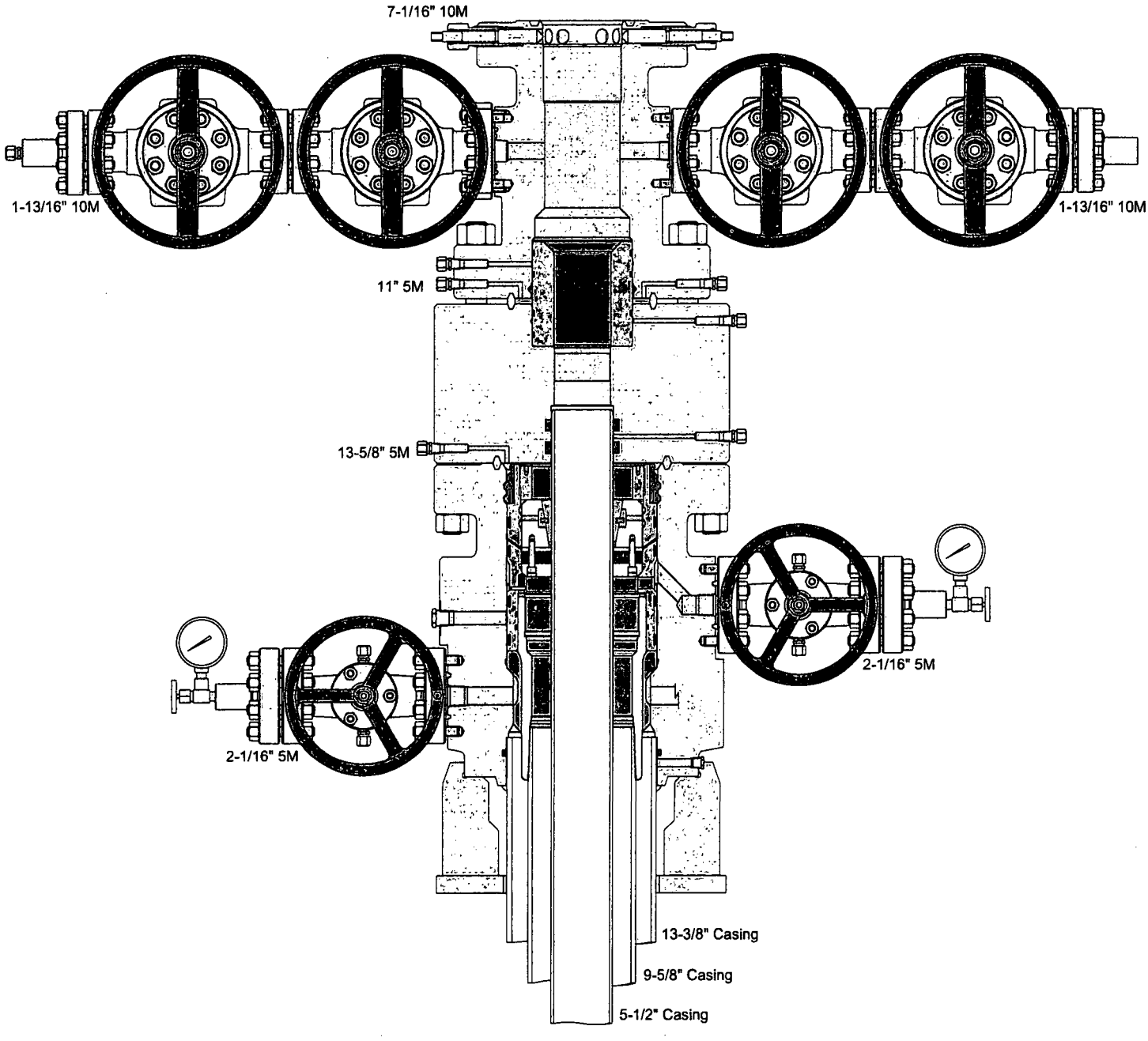
Survey Type: Def Survey

Survey Error Model: ISCWSA Rev 0 *** 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

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	Closure (ft)	Closure Azimuth (°)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
		1	0.000	31.000	1/98.425	30.000	30.000	NAL_MWD-NON_SLB-Depth Only		ST02 / Chisholm Buffalo 12-1 Fed Com WCC 6H ST02 0ft to 18055ft Definitive				
		1	31.000	31.000	Act Stns	30.000	30.000	NAL_MWD-NON_SLB-Depth Only		ST02 / Chisholm Buffalo 12-1 Fed Com WCC 6H ST02 0ft to 18055ft Definitive				
		1	31.000	7944.000	Act Stns	30.000	30.000	NAL_MWD-NON_SLB		ST02 / Chisholm Buffalo 12-1 Fed Com WCC 6H ST02 0ft to 18055ft				
		1	7944.000	18055.000	Act Stns	30.000	30.000	NAL_MWD_1.0_DEG		ST02 / Chisholm Buffalo 12-1 Fed Com WCC 6H ST02 0ft to 18055ft				


7-1/16" 10M
1-13/16" 10M
1-13/16" 10M
11" 5M
13-5/8" 5M
2-1/16" 5M
2-1/16" 5M
13-3/8" Casing
9-5/8" Casing
5-1/2" Casing

1. Geologic Formations

TVD of target	9600	Pilot hole depth	N/A
MD at TD:	17243	Deepest expected fresh water	

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone?	Hazards*
Rustler	1225		
Salado	1735		
B/Salt	5150		
Delaware	5240		
Bone Spring 1st	9150		
Bone Spring 2nd	10920		
Bone Spring 3rd	11955		
Wolfcamp	12325		

*H2S, water flows, loss of circulation, abnormal pressures, etc.

2. Casing Program

Hole Size	Casing Interval		Csg. Size	Wt (PPF)	Grade	Conn	Min SF Collapse	Min SF Burst	Min SF Tension
	From	To							
17 1/2	0	1250 TVD	13 3/8	48.0	H40	BTC	1.125	1.25	1.6
12 1/4	0	5340 TVD	9 5/8	40.0	J-55	BTC	1.125	1.25	1.6
8 3/4	0	TD	5 1/2	17.0	P110	BTC	1.125	1.25	1.6
				BLM Minimum Safety Factor			1.125	1	1.6 Dry 1.8 Wet

• All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 IILB.1.h Must have table for continengcy casing.

• Rustler top will be validated via drilling parameters (i.e. reduction in ROP) and surface casing setting depth revised accordingly if needed.

• A variance is requested for collapse rating on intermediate casing. Operator will keep pipe full while running casing.

• Int casing shoe will be selected based on drilling data, gamma, and flows experienced while drilling. Setting depth with be revised accordingly if needed.

• A variance is requested to wave the centralizer requirement for the Intermediate casing and production casing.

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specficition sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

3. Cementing Program (3-String Primary Design)

Casing	# Sks	TOC	Wt. (lb/gal)	Yld (ft3/sack)	Slurry Description
Surface	943	Surf	13.2	1.4	Lead: Class C Cement + additives
Int	591	Surf	9.0	3.3	Lead: Class C Cement + additives
	154	500' above shoe	13.2	1.4	Tail: Class H / C + additives
Int 1 Two Stage w/ DV @ TVD of Delaware	-24	Surf	9.0	3.3	1st stage Lead: Class C Cement + additives
	136	500' above shoe	13.2	1.4	1st stage Tail: Class H / C + additives
	562	Surf	9.0	3.3	2nd stage Lead: Class C Cement + additives
	136	500' above DV	13.2	1.4	2nd stage Tail: Class H / C + additives
Int 1 Intermediate Squeeze	As Needed	Surf	9.0	3.3	Squeeze Lead: Class C Cement + additives
	591	Surf	9.0	3.3	Lead: Class C Cement + additives
	154	500' above shoe	13.2	1.4	Tail: Class H / C + additives
Production	360	500' tieback	9.0	3.3	Lead: Class H /C + additives
	1580	KOP	13.2	1.4	Tail: Class H / C + additives

If a DV tool is ran the depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. Slurry weights will be adjusted based on estimated fracture gradient of the formation. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. If cement is not returned to surface during the primary cement job on the surface casing string, a planned top job will be conducted immediately after completion of the primary job.

Casing String	% Excess
Surface	50%
Intermediate	30%
Production	10%

4. Pressure Control Equipment (Three String Design)

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
Int 1	13-58"	5M	Annular	X	50% of rated working pressure
			Blind Ram	X	5M
			Pipe Ram		
			Double Ram	X	
			Other*		
Production	13-5/8"	5M	Annular	X	50% of rated working pressure
			Blind Ram	X	5M
			Pipe Ram		
			Double Ram	X	
			Other*		
			Annular (5M)		
			Blind Ram		
			Pipe Ram		
			Double Ram		
			Other*		

5. Mud Program (Three String Design)

Section	Type	Weight (ppg)
Surface	FW Gel	8.5-9
Intermediate	Brine	10-10.5
Production	WBM	8.5-9

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring

6. Logging and Testing Procedures

Logging, Coring and Testing	
X	Will run GR/CNL from TD to surface (horizontal well - vertical portion of hole). Stated logs run will be in the Completion Report and sbumitted to the BLM.
	No logs are planned based on well control or offset log information.
	Drill stem test? If yes, explain.
	Coring? If yes, explain.

Additional logs planned		Interval
	Resistivity	
	Density	
X	CBL	Production casing
X	Mud log	KOP to TD
	PEX	

7. Drilling Conditions

Condition	Specfiy what type and where?
BH pressure at deepest TVD	4493
Abnormal temperature	No

Mitigation measure for abnormal conditions. Describe. Lost circulation material/sweeps/mud scavengers.

Hydrogren Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered measured values and formations will be provided to the BLM.	
N	H2S is present
Y	H2S plan attached.

8. Other facets of operation

Is this a walking operation? Potentially

1 If operator elects, drilling rig will batch drill the surface holes and run/cement surface casing; walking the rig to next wells on the pad.
2 The drilling rig will then batch drill the intermediate sections and run/cement intermediate casing; the wellbore will be isolated with a blind flange and pressure gauge installed for monitoring the well before walking to the next well.
3 The drilling rig will then batch drill the production hole sections on the wells with OBM, run/cement production casing, and install TA caps or tubing heads for completions.

NOTE: During batch operations the drilling rig will be moved from well to well however, it will not be removed from the pad until all wells have production casing run/cemented.

Will be pre-setting casing? Potentially

1 Spudder rig will move in and batch drill surface hole.
    a. Rig will utilize fresh water based mud to drill surface hole to TD. Solids control will be handled entirely on a closed loop basis.
2 After drilling the surface hole section, the spudder rig will run casing and cement following all of the applicable rules and regulations (OnShore Order 2, all COAs and NMOCD regulations).
3 The wellhead will be installed and tested once the surface casing is cut off and the WOC time has been reached.
4 A blind flange with the same pressure rating as the wellhead will be installed to seal the wellbore. Pressure will be monitored with a pressure gauge installed on the wellhead.
5 Spudder rig operations is expected to take 4-5 days per well on a multi-well pad.
6 The NMOCD will be contacted and notified 24 hours prior to commencing spudder rig operations.
7 Drilling operations will be performed with drilling rig. At that time an approved BOP stack will be nippled up and tested on the wellhead before drilling operations commences on each well.
    a. The NMOCD will be contacted / notified 24 hours before the drilling rig moves back on to the pad with the pre-set surface casing.

Attachments

X Directional Plan
_____ Other, describe