



7327 West Barton Road
Casper, WY 82604
(307)-472-6621 Fax (307) 472-5439

Survey Certification

Operator	Oasis Petroleum
Well Name & No.	Lewis Federal 5300 11-31 3B
API #	33-053-06548
County & State	McKenzie County, ND
SDI Job #	OP.05419
Rig	Nabors B21
Survey Date	22-Jan-2019

I, Seth M. Burstad, having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 0 feet to a measured depth of 2743 feet is true and correct as determined from all available records.

Seth Burstad

Signature

22-Jan-2019

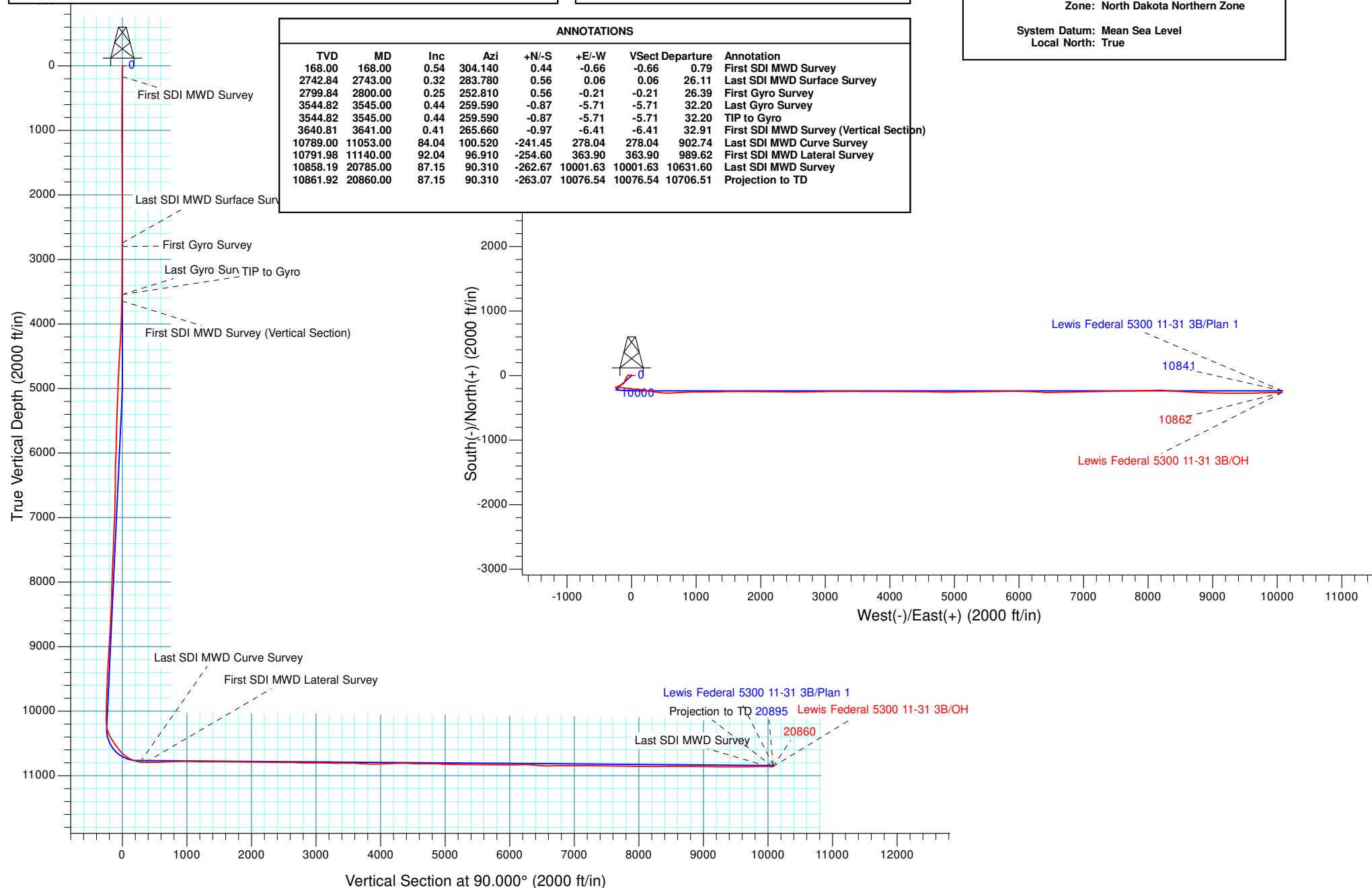
Date

Seth M. Burstad
Rockies Region Well Planner
Scientific Drilling - Rocky Mountain District

WELL DETAILS: Lewis Federal 5300 11-31 3B							
Northing 393129.76	GL 2110' & KB 25 @ 2135.00ft (Nabors B21)	Easting 1209541.15	Latitude 48° 2' 8.980 N	Longitude 103° 36' 11.110 W	2110.00		

Design: OH (Lewis Federal 5300 11-31 3B/OH)							
Created By: Seth Burstad							

PROJECT DETAILS: McKenzie County, ND							
Geodetic System: US State Plane 1983							
Datum: North American Datum 1983							
Ellipsoid: GRS 1980							
Zone: North Dakota Northern Zone							
System Datum: Mean Sea Level							
Local North: True							





Oasis Petroleum

McKenzie County, ND
Lewis Federal
Lewis Federal 5300 11-31 3B

OH

Design: OH

Standard Survey Report

22 January, 2019



www.scientificdrilling.com



Company:	Oasis Petroleum	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Project:	McKenzie County, ND	TVD Reference:	GL 2110' & KB 25' @ 2135.00ft (Nabors B21)
Site:	Lewis Federal	MD Reference:	GL 2110' & KB 25' @ 2135.00ft (Nabors B21)
Well:	Lewis Federal 5300 11-31 3B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Casper District

Project	McKenzie County, ND		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	North Dakota Northern Zone		

Site	Lewis Federal, Site Center: Lewis Federal 5300 11-31 2B				
Site Position:		Northing:	393,162.02 usft	Latitude:	48° 2' 9.300 N
From:	Lat/Long	Easting:	1,209,545.85 usft	Longitude:	103° 36' 11.060 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	-2.31 °

Well	Lewis Federal 5300 11-31 3B, 1083' FNL 262' FWL Sec 31 T153N R100W				
Well Position	+N/-S +E/-W	0.00 ft 0.00 ft	Northing: Easting:	393,129.75 usft 1,209,541.15 usft	Latitude: Longitude:
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:
					2,110.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	11/5/2018	7.88	72.70	55,778

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:		Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
		0.00	0.00	0.00	90.000

Survey Program	Date	1/22/2019		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
168.00	2,743.00	Survey #1 - Surface (OH)	MWD+HDGM	OWSG MWD + HDGM
2,800.00	3,545.00	Survey #2 - Surface (GYRO) (OH)	GYRO-NS	Gyrocompass Gyro
3,641.00	11,053.00	Survey #3 - Vertical / Curve (OH)	MWD+HDGM	OWSG MWD + HDGM
11,140.00	20,785.00	Survey #4 - Lateral (OH)	MWD+HDGM	OWSG MWD + HDGM

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
168.00	0.54	304.140	168.00	0.44	-0.66	-0.66	0.32	0.32	0.00
First SDI MWD Survey									
261.00	0.29	4.550	261.00	0.92	-1.00	-1.00	0.51	-0.27	64.96
355.00	0.61	316.070	354.99	1.52	-1.33	-1.33	0.50	0.34	-51.57
447.00	0.80	325.270	446.99	2.40	-2.03	-2.03	0.24	0.21	10.00
537.00	0.85	323.540	536.98	3.46	-2.79	-2.79	0.06	0.06	-1.92
626.00	0.24	338.370	625.97	4.16	-3.25	-3.25	0.70	-0.69	16.66

Company:	Oasis Petroleum	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Project:	McKenzie County, ND	TVD Reference:	GL 2110' & KB 25' @ 2135.00ft (Nabors B21)
Site:	Lewis Federal	MD Reference:	GL 2110' & KB 25' @ 2135.00ft (Nabors B21)
Well:	Lewis Federal 5300 11-31 3B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Casper District

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/S (ft)	+E/W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
725.00	0.62	348.620	724.97	4.88	-3.43	-3.43	0.39	0.38	10.35	
815.00	0.79	346.470	814.96	5.96	-3.67	-3.67	0.19	0.19	-2.39	
905.00	0.81	323.760	904.95	7.08	-4.19	-4.19	0.35	0.02	-25.23	
996.00	0.96	344.770	995.94	8.33	-4.77	-4.77	0.39	0.16	23.09	
1,086.00	0.84	322.190	1,085.93	9.58	-5.38	-5.38	0.41	-0.13	-25.09	
1,176.00	0.07	75.770	1,175.93	10.11	-5.73	-5.73	0.97	-0.86	126.20	
1,266.00	0.67	154.080	1,265.93	9.65	-5.44	-5.44	0.73	0.67	87.01	
1,357.00	0.70	123.650	1,356.92	8.87	-4.75	-4.75	0.40	0.03	-33.44	
1,447.00	0.98	127.920	1,446.91	8.09	-3.68	-3.68	0.32	0.31	4.74	
1,539.00	0.99	134.820	1,538.90	7.05	-2.50	-2.50	0.13	0.01	7.50	
1,629.00	0.87	147.210	1,628.89	5.92	-1.58	-1.58	0.26	-0.13	13.77	
1,719.00	1.33	137.890	1,718.87	4.57	-0.51	-0.51	0.55	0.51	-10.36	
1,810.00	0.75	144.370	1,809.85	3.31	0.55	0.55	0.65	-0.64	7.12	
1,903.00	0.24	97.420	1,902.85	2.79	1.09	1.09	0.66	-0.55	-50.48	
1,996.00	0.20	174.020	1,995.85	2.60	1.31	1.31	0.30	-0.04	82.37	
2,089.00	0.26	120.440	2,088.85	2.33	1.50	1.50	0.23	0.06	-57.61	
2,183.00	0.34	205.730	2,182.85	1.97	1.57	1.57	0.44	0.09	90.73	
2,276.00	0.30	175.010	2,275.85	1.48	1.47	1.47	0.19	-0.04	-33.03	
2,370.00	0.39	219.140	2,369.84	0.99	1.29	1.29	0.29	0.10	46.95	
2,463.00	0.14	209.480	2,462.84	0.64	1.03	1.03	0.27	-0.27	-10.39	
2,557.00	0.03	250.320	2,556.84	0.53	0.95	0.95	0.13	-0.12	43.45	
2,650.00	0.38	267.070	2,649.84	0.51	0.62	0.62	0.38	0.38	18.01	
2,743.00	0.32	283.780	2,742.84	0.56	0.06	0.06	0.13	-0.06	17.97	
Last SDI MWD Surface Survey										

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			Comment
		+N/S (ft)	+E/W (ft)		
168.00	168.00	0.44	-0.66	First SDI MWD Survey	
2,743.00	2,742.84	0.56	0.06	Last SDI MWD Surface Survey	
2,800.00	2,799.84	0.56	-0.21	First Gyro Survey	
3,545.00	3,544.82	-0.87	-5.71	Last Gyro Survey	
11,140.00	10,791.98	-254.60	363.90	First SDI MWD Lateral Survey	

Checked By: _____ Approved By: _____ Date: _____

Directional Survey Certification

Operator: OASIS PETROLEUM NORTH AMERICA LLC.

Well Name: LEWIS FEDERAL 5300 11-31 3B

API Number: 33-053-06548-00-00

County & State: McKenzie County, North Dakota

Job Number: RM0519GDM387

Run Date: 1/6/2019

Surveyor: Clifton Miech

I, Robert Steele, having personal knowledge of all of the facts, hereby certify that the attached directional survey run from the measured depth of 2743.00 feet to a measured depth of 3545.00 feet is true and correct as determined from all available records.



Robert Steele
Survey Specialist XI Gyrodata, Inc.

A Gyrodata Directional Survey

FINAL DEFINITIVE COPY

for

OASIS PETROLEUM NORTH AMERICA LLC

Lease: LEWIS FEDERAL Well: 5300 11-31 3B, 13 3/8" casing
Location: Nabors B21, McKenzie County, ND

Job Number: RM0119GMSW111

Run Date: 06 Jan 2019

Report Generated: 18 Nov 2019 04:14

Surveyor: Clifton Miech, Zachary Lodge, Austin Maxwell, Brian Enloe

Calculation Method: MINIMUM CURVATURE

Survey Latitude: 48.035810 deg. N

Longitude: 103.602608 deg. W

Azimuth Correction:

Gyro: Bearings are Relative to True North

Depth Reference: Rotary Table

Air Gap (RKB to Ground / RKB to MSL): 25.00

Ground Elevation (Ground to MSL / MSL to Mudline): 2118.00

Vertical Section Calculated from Well Head Location

Closure Calculated from Well Head Location

Horizontal Coordinates Calculated from Well Head Location

A Gyrodata Directional Survey

OASIS PETROLEUM NORTH AMERICA LLC

Lease: LEWIS FEDERAL Well: 5300 11-31 3B, 13 3/8" casing

Location: Nabors B21, Mackenzie County, ND

Job Number: RM0119GMSW111

MEASURED DEPTH feet	INCL deg.	AZIMUTH deg.	DOGLEG SEVERITY deg./ 100 ft.	VERTICAL DEPTH feet	CLOSURE DIST. AZIMUTH feet deg.	HORIZONTAL COORDINATES feet
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2743 TO 3545 FT RATE GYROSCOPIC MULTISHOT RUN INSIDE 13 3/8" CASING

ALL MEASURED DEPTHS AND COORDINATES REFERENCED TO NABORS B21 WITH AN R.K.B. OF 25 FT
TIE-IN DATA PROVIDED BY PREVIOUS SCIENTIFIC DRILLING SURVEY DATED JAN.6, 2019.

2650.00	0.38	267.07	0.01	2649.84	0.8 53.3	0.47 N	0.63 E
2743.00	0.32	283.78	0.13	2742.84	0.5 7.7	0.52 N	0.07 E
2800.00	0.25	252.81	0.29	2799.84	0.6 338.5	0.52 N	0.20 W
2900.00	0.48	279.36	0.28	2899.84	1.0 302.3	0.52 N	0.83 W
3000.00	0.67	258.42	0.28	2999.83	1.9 284.6	0.47 N	1.81 W
3100.00	0.44	255.96	0.23	3099.83	2.8 275.4	0.26 N	2.76 W
3200.00	0.42	237.60	0.14	3199.82	3.4 269.5	0.03 S	3.44 W
3300.00	0.42	253.99	0.12	3299.82	4.1 265.5	0.33 S	4.10 W
3400.00	0.33	248.64	0.10	3399.82	4.8 263.6	0.53 S	4.72 W
3500.00	0.47	245.50	0.14	3499.82	5.4 261.4	0.81 S	5.36 W
3545.00	0.44	259.59	0.26	3544.81	5.8 260.9	0.91 S	5.70 W

Final Station Closure: Distance: 5.77 ft Az: 260.88 deg.



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Casper, WY 82604
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Survey Certification

Operator	Oasis Petroleum
Well Name & No.	Lewis Federal 5300 11-31 3B
API #	33-053-06548
County & State	McKenzie County, ND
SDI Job #	OP.05419
Rig	Nabors B21
Survey Date	22-Jan-2019

I, Seth M. Burstad, having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 3545 feet to a measured depth of 20860 feet is true and correct as determined from all available records.

Seth Burstad

Signature

22-Jan-2019

Date

Seth M. Burstad
Rockies Region Well Planner
Scientific Drilling - Rocky Mountain District

WELL DETAILS: Lewis Federal 5300 11-31 3B

Northing 393129.76	GL 2110' & KB 25 @ 2135.00ft (Nabors B21)	2110.00
Easting 1209541.15	Latitude 48° 2' 8.980 N	Longitude 103° 36' 11.110 W

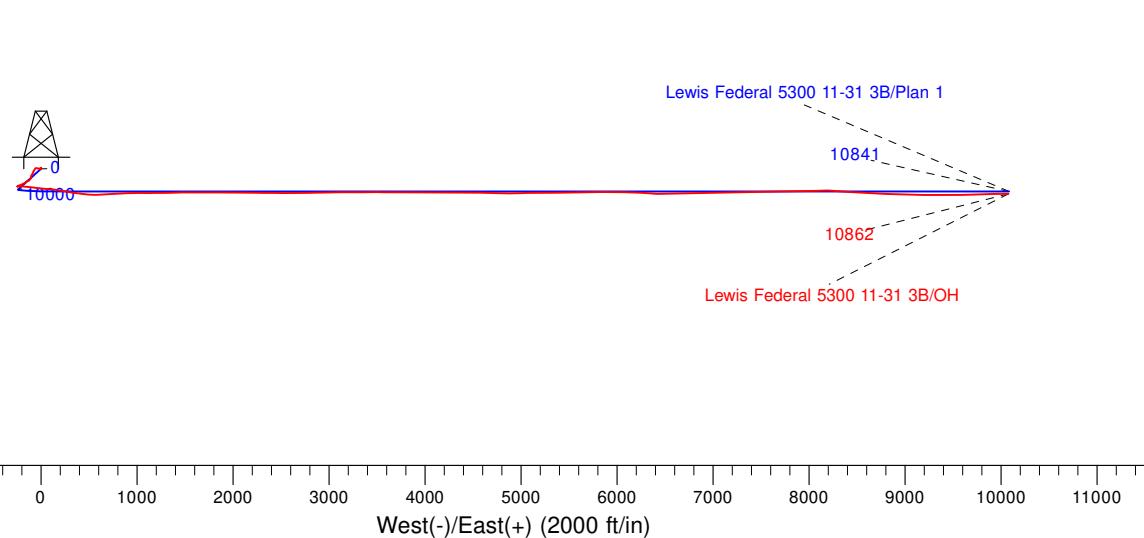
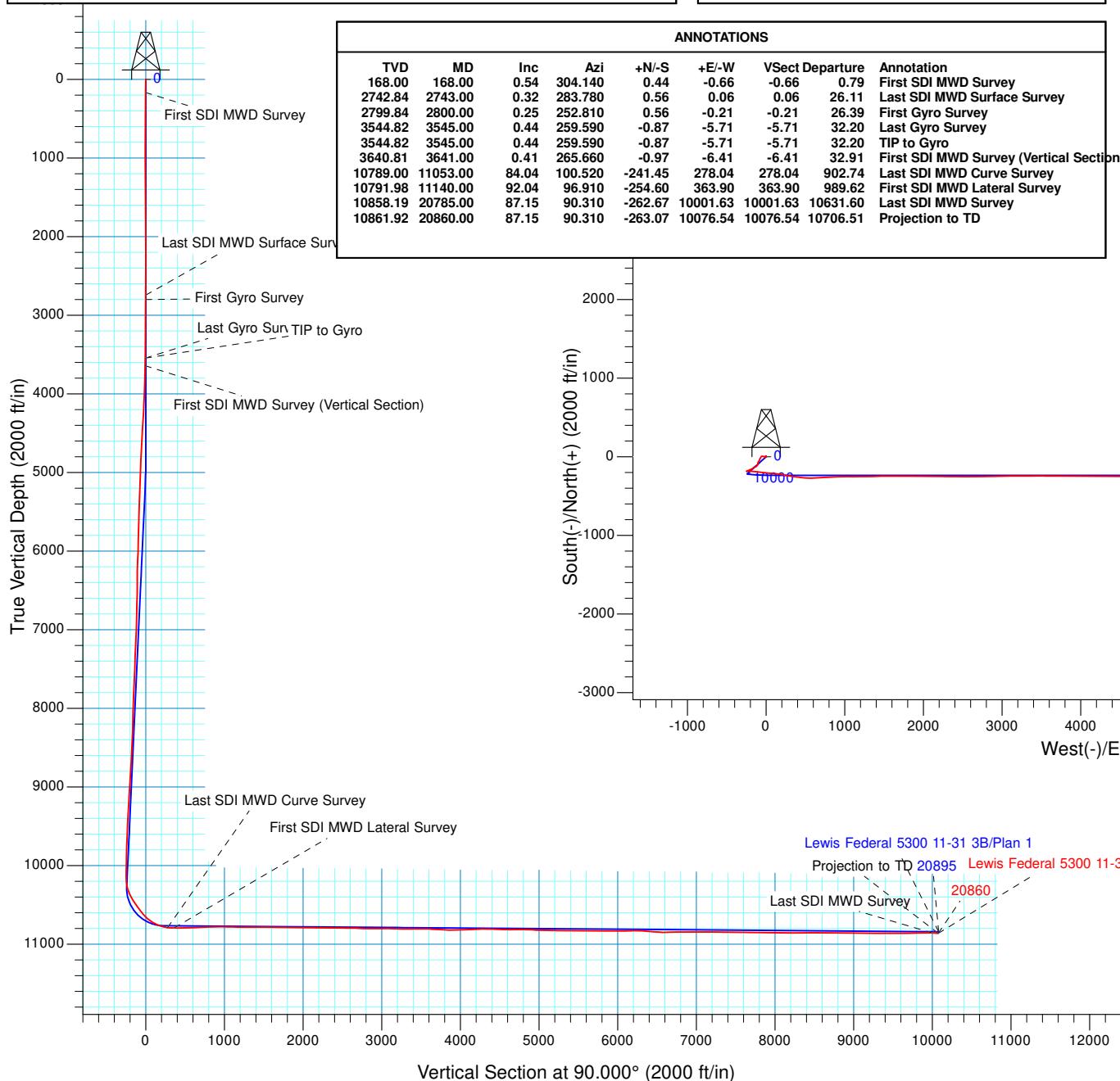
Design: OH (Lewis Federal 5300 11-31 3B/OH)

Created By: Seth Burstad

PROJECT DETAILS: McKenzie County, ND

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: North Dakota Northern Zone

System Datum: Mean Sea Level
Local North: True





Oasis Petroleum

McKenzie County, ND
Lewis Federal
Lewis Federal 5300 11-31 3B

OH

Design: OH

Standard Survey Report

22 January, 2019



www.scientificdrilling.com



Company:	Oasis Petroleum	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Project:	McKenzie County, ND	TVD Reference:	GL 2110' & KB 25' @ 2135.00ft (Nabors B21)
Site:	Lewis Federal	MD Reference:	GL 2110' & KB 25' @ 2135.00ft (Nabors B21)
Well:	Lewis Federal 5300 11-31 3B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Casper District

Project	McKenzie County, ND		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	North Dakota Northern Zone		

Site	Lewis Federal, Site Center: Lewis Federal 5300 11-31 2B				
Site Position:		Northing:	393,162.02 usft	Latitude:	48° 2' 9.300 N
From:	Lat/Long	Easting:	1,209,545.85 usft	Longitude:	103° 36' 11.060 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	-2.31 °

Well	Lewis Federal 5300 11-31 3B, 1083' FNL 262' FWL Sec 31 T153N R100W				
Well Position	+N/-S +E/-W	0.00 ft	Northing: Easting:	393,129.75 usft 1,209,541.15 usft	Latitude: Longitude:
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:
					48° 2' 8.980 N 103° 36' 11.110 W 2,110.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	11/5/2018	7.88	72.70	55,778

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:		Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
		0.00	0.00	0.00	90.000

Survey Program	Date	1/22/2019		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
168.00	2,743.00	Survey #1 - Surface (OH)	MWD+HDGM	OWSG MWD + HDGM
2,800.00	3,545.00	Survey #2 - Surface (GYRO) (OH)	GYRO-NS	Gyrocompass Gyro
3,641.00	11,053.00	Survey #3 - Vertical / Curve (OH)	MWD+HDGM	OWSG MWD + HDGM
11,140.00	20,860.00	Survey #4 - Lateral (OH)	MWD+HDGM	OWSG MWD + HDGM

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
3,545.00	0.44	259.590	3,544.82	-0.87	-5.71	-5.71	0.26	-0.07	31.31
Last Gyro Survey - TIP to Gyro									
3,641.00	0.41	265.660	3,640.81	-0.97	-6.41	-6.41	0.06	-0.03	6.32
First SDI MWD Survey (Vertical Section)									
3,672.00	0.35	227.310	3,671.81	-1.04	-6.59	-6.59	0.83	-0.19	-123.71
3,766.00	1.41	265.050	3,765.80	-1.33	-7.96	-7.96	1.23	1.13	40.15
3,859.00	2.07	263.160	3,858.76	-1.63	-10.77	-10.77	0.71	0.71	-2.03

Company:	Oasis Petroleum	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Project:	McKenzie County, ND	TVD Reference:	GL 2110' & KB 25' @ 2135.00ft (Nabors B21)
Site:	Lewis Federal	MD Reference:	GL 2110' & KB 25' @ 2135.00ft (Nabors B21)
Well:	Lewis Federal 5300 11-31 3B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Casper District

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/S (ft)	+E/W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
3,953.00	2.65	271.610	3,952.68	-1.77	-14.62	-14.62	0.72	0.62	8.99	
4,046.00	2.50	287.080	4,045.59	-1.12	-18.71	-18.71	0.76	-0.16	16.63	
4,140.00	2.33	287.920	4,139.50	0.07	-22.49	-22.49	0.18	-0.18	0.89	
4,233.00	2.79	274.450	4,232.41	0.83	-26.54	-26.54	0.81	0.49	-14.48	
4,326.00	3.79	266.050	4,325.26	0.79	-31.87	-31.87	1.19	1.08	-9.03	
4,420.00	3.52	280.150	4,419.07	1.09	-37.81	-37.81	1.00	-0.29	15.00	
4,513.00	3.32	296.150	4,511.90	2.78	-43.03	-43.03	1.04	-0.22	17.20	
4,608.00	3.47	289.230	4,606.74	4.94	-48.22	-48.22	0.46	0.16	-7.28	
4,703.00	3.99	255.250	4,701.55	5.04	-54.13	-54.13	2.35	0.55	-35.77	
4,798.00	4.11	230.690	4,796.32	2.04	-59.96	-59.96	1.82	0.13	-25.85	
4,893.00	3.76	212.640	4,891.10	-2.74	-64.28	-64.28	1.35	-0.37	-19.00	
4,988.00	4.17	206.210	4,985.87	-8.46	-67.48	-67.48	0.64	0.43	-6.77	
5,083.00	3.49	210.520	5,080.66	-14.05	-70.47	-70.47	0.78	-0.72	4.54	
5,178.00	3.11	213.800	5,175.50	-18.68	-73.38	-73.38	0.45	-0.40	3.45	
5,272.00	3.68	210.860	5,269.33	-23.39	-76.34	-76.34	0.63	0.61	-3.13	
5,367.00	4.27	209.400	5,364.11	-29.09	-79.64	-79.64	0.63	0.62	-1.54	
5,462.00	3.68	203.480	5,458.88	-34.96	-82.59	-82.59	0.76	-0.62	-6.23	
5,557.00	3.35	202.510	5,553.70	-40.32	-84.87	-84.87	0.35	-0.35	-1.02	
5,652.00	3.92	199.740	5,648.51	-45.95	-87.03	-87.03	0.63	0.60	-2.92	
5,746.00	3.49	206.210	5,742.31	-51.54	-89.38	-89.38	0.64	-0.46	6.88	
5,841.00	3.24	212.420	5,837.15	-56.40	-92.10	-92.10	0.46	-0.26	6.54	
5,935.00	3.53	209.590	5,930.98	-61.16	-94.95	-94.95	0.36	0.31	-3.01	
6,021.00	4.32	212.130	6,016.78	-66.20	-97.98	-97.98	0.94	0.92	2.95	
6,116.00	4.88	210.580	6,111.47	-72.71	-101.94	-101.94	0.60	0.59	-1.63	
6,210.00	3.85	199.950	6,205.20	-79.12	-105.05	-105.05	1.39	-1.10	-11.31	
6,303.00	3.13	185.940	6,298.03	-84.58	-106.38	-106.38	1.19	-0.77	-15.06	
6,396.00	3.29	184.170	6,390.88	-89.77	-106.83	-106.83	0.20	0.17	-1.90	
6,490.00	3.02	191.330	6,484.74	-94.88	-107.52	-107.52	0.51	-0.29	7.62	
6,583.00	2.96	193.640	6,577.62	-99.62	-108.56	-108.56	0.14	-0.06	2.48	
6,677.00	2.41	211.570	6,671.51	-103.66	-110.17	-110.17	1.06	-0.59	19.07	
6,770.00	2.82	216.370	6,764.42	-107.17	-112.55	-112.55	0.50	0.44	5.16	
6,863.00	2.73	212.460	6,857.31	-110.88	-115.10	-115.10	0.23	-0.10	-4.20	
6,957.00	3.13	218.710	6,951.18	-114.77	-117.90	-117.90	0.54	0.43	6.65	
7,050.00	3.18	213.880	7,044.04	-118.90	-120.93	-120.93	0.29	0.05	-5.19	
7,143.00	3.19	223.590	7,136.90	-122.91	-124.15	-124.15	0.58	0.01	10.44	
7,237.00	2.70	248.740	7,230.78	-125.61	-128.02	-128.02	1.46	-0.52	26.76	
7,330.00	2.71	249.530	7,323.68	-127.17	-132.12	-132.12	0.04	0.01	0.85	
7,424.00	2.57	246.150	7,417.58	-128.80	-136.13	-136.13	0.22	-0.15	-3.60	
7,517.00	1.97	255.090	7,510.50	-130.05	-139.58	-139.58	0.75	-0.65	9.61	
7,611.00	2.10	249.720	7,604.44	-131.07	-142.76	-142.76	0.25	0.14	-5.71	
7,704.00	3.18	242.570	7,697.34	-132.85	-146.64	-146.64	1.21	1.16	-7.69	
7,798.00	2.91	244.250	7,791.21	-135.08	-151.11	-151.11	0.30	-0.29	1.79	
7,891.00	2.74	239.410	7,884.10	-137.24	-155.15	-155.15	0.31	-0.18	-5.20	

Company:	Oasis Petroleum	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Project:	McKenzie County, ND	TVD Reference:	GL 2110' & KB 25' @ 2135.00ft (Nabors B21)
Site:	Lewis Federal	MD Reference:	GL 2110' & KB 25' @ 2135.00ft (Nabors B21)
Well:	Lewis Federal 5300 11-31 3B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Casper District

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
7,985.00	1.96	235.940	7,978.02	-139.28	-158.41	-158.41	0.84	-0.83	-3.69	
8,078.00	1.52	230.920	8,070.98	-140.95	-160.69	-160.69	0.50	-0.47	-5.40	
8,171.00	1.44	235.240	8,163.95	-142.40	-162.61	-162.61	0.15	-0.09	4.65	
8,265.00	2.04	229.530	8,257.90	-144.16	-164.85	-164.85	0.66	0.64	-6.07	
8,358.00	2.01	225.210	8,350.84	-146.38	-167.27	-167.27	0.17	-0.03	-4.65	
8,451.00	2.57	234.410	8,443.77	-148.74	-170.12	-170.12	0.72	0.60	9.89	
8,544.00	3.68	242.800	8,536.63	-151.32	-174.47	-174.47	1.29	1.19	9.02	
8,638.00	4.30	246.640	8,630.40	-154.10	-180.39	-180.39	0.72	0.66	4.09	
8,731.00	4.39	247.400	8,723.13	-156.85	-186.87	-186.87	0.11	0.10	0.82	
8,824.00	4.07	244.470	8,815.88	-159.64	-193.14	-193.14	0.42	-0.34	-3.15	
8,918.00	3.95	241.700	8,909.65	-162.61	-199.00	-199.00	0.24	-0.13	-2.95	
9,011.00	3.82	243.100	9,002.44	-165.53	-204.58	-204.58	0.17	-0.14	1.51	
9,105.00	3.49	246.340	9,096.25	-168.09	-210.00	-210.00	0.41	-0.35	3.45	
9,198.00	3.01	248.910	9,189.10	-170.11	-214.87	-214.87	0.54	-0.52	2.76	
9,292.00	3.59	247.440	9,282.94	-172.13	-219.89	-219.89	0.62	0.62	-1.56	
9,386.00	3.30	248.320	9,376.77	-174.25	-225.12	-225.12	0.31	-0.31	0.94	
9,481.00	2.90	252.100	9,471.63	-176.00	-229.95	-229.95	0.47	-0.42	3.98	
9,575.00	2.31	249.480	9,565.53	-177.40	-233.98	-233.98	0.64	-0.63	-2.79	
9,670.00	2.13	251.570	9,660.46	-178.63	-237.45	-237.45	0.21	-0.19	2.20	
9,765.00	2.30	232.600	9,755.39	-180.34	-240.64	-240.64	0.79	0.18	-19.97	
9,860.00	2.46	219.190	9,850.31	-183.08	-243.44	-243.44	0.61	0.17	-14.12	
9,954.00	1.65	225.410	9,944.25	-185.60	-245.68	-245.68	0.89	-0.86	6.62	
10,049.00	0.90	230.900	10,039.23	-187.03	-247.23	-247.23	0.80	-0.79	5.78	
10,143.00	0.45	331.380	10,133.22	-187.17	-247.98	-247.98	1.15	-0.48	106.89	
10,206.00	2.74	83.570	10,196.20	-186.78	-246.61	-246.61	4.67	3.63	178.08	
10,237.00	6.77	90.400	10,227.09	-186.71	-244.04	-244.04	13.10	13.00	22.03	
10,268.00	11.63	90.870	10,257.68	-186.77	-239.09	-239.09	15.68	15.68	1.52	
10,299.00	15.88	90.190	10,287.78	-186.83	-231.72	-231.72	13.72	13.71	-2.19	
10,331.00	19.88	89.680	10,318.23	-186.82	-221.90	-221.90	12.51	12.50	-1.59	
10,362.00	24.28	89.890	10,346.95	-186.78	-210.25	-210.25	14.20	14.19	0.68	
10,394.00	27.62	91.430	10,375.72	-186.95	-196.25	-196.25	10.65	10.44	4.81	
10,425.00	27.59	91.400	10,403.19	-187.30	-181.89	-181.89	0.11	-0.10	-0.10	
10,457.00	30.13	93.170	10,431.21	-187.93	-166.46	-166.46	8.37	7.94	5.53	
10,488.00	32.93	96.170	10,457.64	-189.26	-150.31	-150.31	10.35	9.03	9.68	
10,520.00	32.84	96.430	10,484.51	-191.17	-133.04	-133.04	0.52	-0.28	0.81	
10,552.00	35.04	95.640	10,511.06	-193.05	-115.27	-115.27	7.01	6.88	-2.47	
10,583.00	37.03	97.850	10,536.12	-195.20	-97.17	-97.17	7.67	6.42	7.13	
10,615.00	36.54	97.650	10,561.75	-197.78	-78.18	-78.18	1.58	-1.53	-0.63	
10,646.00	38.79	96.620	10,586.29	-200.13	-59.38	-59.38	7.54	7.26	-3.32	
10,678.00	41.36	97.130	10,610.77	-202.60	-38.93	-38.93	8.10	8.03	1.59	
10,709.00	41.92	96.370	10,633.94	-205.02	-18.48	-18.48	2.43	1.81	-2.45	
10,741.00	45.61	95.140	10,657.05	-207.23	3.54	3.54	11.83	11.53	-3.84	
10,772.00	49.29	94.940	10,678.01	-209.23	26.29	26.29	11.88	11.87	-0.65	
10,803.00	53.11	94.530	10,697.43	-211.22	50.36	50.36	12.37	12.32	-1.32	

Company:	Oasis Petroleum	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Project:	McKenzie County, ND	TVD Reference:	GL 2110' & KB 25' @ 2135.00ft (Nabors B21)
Site:	Lewis Federal	MD Reference:	GL 2110' & KB 25' @ 2135.00ft (Nabors B21)
Well:	Lewis Federal 5300 11-31 3B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Casper District

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
10,834.00	57.69	93.170	10,715.03	-212.93	75.81	75.81	15.21	14.77	-4.39	
10,865.00	61.64	94.970	10,730.68	-214.84	102.49	102.49	13.69	12.74	5.81	
10,896.00	65.17	95.680	10,744.56	-217.41	130.09	130.09	11.57	11.39	2.29	
10,928.00	68.76	98.020	10,757.08	-220.93	159.32	159.32	13.08	11.22	7.31	
10,959.00	71.32	99.850	10,767.66	-225.46	188.10	188.10	9.95	8.26	5.90	
10,990.00	74.45	100.000	10,776.78	-230.56	217.28	217.28	10.11	10.10	0.48	
11,022.00	78.44	100.050	10,784.28	-235.98	247.90	247.90	12.47	12.47	0.16	
11,053.00	84.04	100.520	10,789.00	-241.45	278.04	278.04	18.13	18.06	1.52	
Last SDI MWD Curve Survey										
11,140.00	92.04	96.910	10,791.98	-254.60	363.90	363.90	10.09	9.20	-4.15	
First SDI MWD Lateral Survey										
11,171.00	90.90	98.880	10,791.18	-258.86	394.59	394.59	7.34	-3.68	6.35	
11,202.00	90.64	97.420	10,790.76	-263.25	425.28	425.28	4.78	-0.84	-4.71	
11,233.00	90.00	96.170	10,790.59	-266.92	456.06	456.06	4.53	-2.06	-4.03	
11,294.00	89.53	91.980	10,790.84	-271.25	516.89	516.89	6.91	-0.77	-6.87	
11,325.00	89.46	91.590	10,791.11	-272.22	547.87	547.87	1.28	-0.23	-1.26	
11,356.00	89.93	87.910	10,791.28	-272.09	578.87	578.87	11.97	1.52	-11.87	
11,387.00	92.04	87.640	10,790.75	-270.88	609.84	609.84	6.86	6.81	-0.87	
11,418.00	92.28	87.550	10,789.58	-269.58	640.79	640.79	0.83	0.77	-0.29	
11,510.00	92.84	86.340	10,785.47	-264.68	732.56	732.56	1.45	0.61	-1.32	
11,602.00	93.72	86.030	10,780.20	-258.57	824.21	824.21	1.01	0.96	-0.34	
11,633.00	91.61	88.550	10,778.76	-257.11	855.14	855.14	10.60	-6.81	8.13	
11,664.00	91.68	87.640	10,777.87	-256.08	886.11	886.11	2.94	0.23	-2.94	
11,695.00	90.37	89.510	10,777.32	-255.31	917.09	917.09	7.36	-4.23	6.03	
11,787.00	89.30	89.220	10,777.58	-254.29	1,009.08	1,009.08	1.21	-1.16	-0.32	
11,878.00	87.72	89.730	10,779.95	-253.46	1,100.04	1,100.04	1.82	-1.74	0.56	
11,970.00	87.92	89.250	10,783.45	-252.64	1,191.97	1,191.97	0.56	0.22	-0.52	
12,062.00	90.10	89.120	10,785.04	-251.33	1,283.95	1,283.95	2.37	2.37	-0.14	
12,154.00	90.37	88.950	10,784.66	-249.78	1,375.93	1,375.93	0.35	0.29	-0.18	
12,246.00	90.57	89.590	10,783.91	-248.61	1,467.92	1,467.92	0.73	0.22	0.70	
12,339.00	90.27	89.560	10,783.23	-247.92	1,560.92	1,560.92	0.32	-0.32	-0.03	
12,433.00	88.73	89.720	10,784.05	-247.33	1,654.91	1,654.91	1.65	-1.64	0.17	
12,528.00	89.50	90.280	10,785.51	-247.33	1,749.89	1,749.89	1.00	0.81	0.59	
12,623.00	88.76	90.690	10,786.96	-248.13	1,844.88	1,844.88	0.89	-0.78	0.43	
12,718.00	89.53	90.180	10,788.37	-248.85	1,939.87	1,939.87	0.97	0.81	-0.54	
12,814.00	89.30	91.140	10,789.35	-249.96	2,035.85	2,035.85	1.03	-0.24	1.00	
12,909.00	89.33	89.970	10,790.49	-250.88	2,130.84	2,130.84	1.23	0.03	-1.23	
13,003.00	89.93	90.040	10,791.10	-250.89	2,224.84	2,224.84	0.64	0.64	0.07	
13,098.00	89.06	90.590	10,791.93	-251.41	2,319.83	2,319.83	1.08	-0.92	0.58	
13,193.00	90.10	90.580	10,792.63	-252.38	2,414.82	2,414.82	1.09	1.09	-0.01	
13,288.00	88.39	90.300	10,793.88	-253.11	2,509.81	2,509.81	1.82	-1.80	-0.29	
13,383.00	90.07	90.030	10,795.16	-253.38	2,604.80	2,604.80	1.79	1.77	-0.28	
13,478.00	87.79	89.860	10,796.93	-253.29	2,699.77	2,699.77	2.41	-2.40	-0.18	

Company:	Oasis Petroleum	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Project:	McKenzie County, ND	TVD Reference:	GL 2110' & KB 25' @ 2135.00ft (Nabors B21)
Site:	Lewis Federal	MD Reference:	GL 2110' & KB 25' @ 2135.00ft (Nabors B21)
Well:	Lewis Federal 5300 11-31 3B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Casper District

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
13,573.00	87.99	89.440	10,800.43	-252.71	2,794.71	2,794.71	0.49	0.21	-0.44	
13,668.00	90.00	87.910	10,802.10	-250.51	2,889.66	2,889.66	2.66	2.12	-1.61	
13,762.00	91.37	88.720	10,800.97	-247.75	2,983.61	2,983.61	1.69	1.46	0.86	
13,857.00	89.33	89.900	10,800.39	-246.61	3,078.59	3,078.59	2.48	-2.15	1.24	
13,952.00	87.82	89.430	10,802.75	-246.05	3,173.56	3,173.56	1.66	-1.59	-0.49	
14,046.00	88.29	90.740	10,805.94	-246.19	3,267.50	3,267.50	1.48	0.50	1.39	
14,141.00	90.10	88.730	10,807.28	-245.75	3,362.48	3,362.48	2.85	1.91	-2.12	
14,235.00	91.31	90.000	10,806.12	-244.71	3,456.47	3,456.47	1.87	1.29	1.35	
14,330.00	89.43	91.470	10,805.51	-245.93	3,551.45	3,551.45	2.51	-1.98	1.55	
14,424.00	86.75	90.190	10,808.64	-247.29	3,645.38	3,645.38	3.16	-2.85	-1.36	
14,519.00	87.25	90.720	10,813.61	-248.04	3,740.24	3,740.24	0.77	0.53	0.56	
14,582.00	86.45	89.900	10,817.08	-248.38	3,803.15	3,803.15	1.82	-1.27	-1.30	
14,614.00	86.61	90.390	10,819.01	-248.46	3,835.09	3,835.09	1.61	0.50	1.53	
14,645.00	88.69	89.940	10,820.28	-248.55	3,866.06	3,866.06	6.86	6.71	-1.45	
14,676.00	91.21	89.820	10,820.31	-248.49	3,897.06	3,897.06	8.14	8.13	-0.39	
14,708.00	91.67	89.550	10,819.51	-248.31	3,929.05	3,929.05	1.67	1.44	-0.84	
14,803.00	91.78	89.680	10,816.65	-247.67	4,024.00	4,024.00	0.18	0.12	0.14	
14,897.00	92.41	90.420	10,813.21	-247.76	4,117.94	4,117.94	1.03	0.67	0.79	
14,992.00	91.37	89.760	10,810.08	-247.91	4,212.88	4,212.88	1.30	-1.09	-0.69	
15,087.00	92.65	90.120	10,806.75	-247.81	4,307.82	4,307.82	1.40	1.35	0.38	
15,181.00	87.02	91.740	10,807.02	-249.33	4,401.77	4,401.77	6.23	-5.99	1.72	
15,276.00	87.32	90.770	10,811.71	-251.41	4,496.63	4,496.63	1.07	0.32	-1.02	
15,370.00	90.67	91.480	10,813.36	-253.25	4,590.58	4,590.58	3.64	3.56	0.76	
15,464.00	89.93	90.760	10,812.86	-255.09	4,684.56	4,684.56	1.10	-0.79	-0.77	
15,558.00	89.16	91.320	10,813.61	-256.80	4,778.54	4,778.54	1.01	-0.82	0.60	
15,653.00	87.96	89.350	10,816.00	-257.35	4,873.50	4,873.50	2.43	-1.26	-2.07	
15,747.00	86.65	88.690	10,820.42	-255.75	4,967.38	4,967.38	1.56	-1.39	-0.70	
15,842.00	88.96	87.930	10,824.06	-252.95	5,062.27	5,062.27	2.56	2.43	-0.80	
15,937.00	90.20	89.500	10,824.75	-250.82	5,157.23	5,157.23	2.11	1.31	1.65	
16,032.00	89.36	89.890	10,825.12	-250.31	5,252.23	5,252.23	0.97	-0.88	0.41	
16,127.00	89.40	90.230	10,826.14	-250.41	5,347.23	5,347.23	0.36	0.04	0.36	
16,222.00	88.86	89.420	10,827.59	-250.12	5,442.21	5,442.21	1.02	-0.57	-0.85	
16,316.00	88.46	88.910	10,829.79	-248.75	5,536.18	5,536.18	0.69	-0.43	-0.54	
16,411.00	89.63	87.540	10,831.37	-245.81	5,631.11	5,631.11	1.90	1.23	-1.44	
16,505.00	91.00	89.290	10,830.85	-243.21	5,725.07	5,725.07	2.36	1.46	1.86	
16,600.00	90.44	90.380	10,829.66	-242.94	5,820.06	5,820.06	1.29	-0.59	1.15	
16,663.00	90.60	90.360	10,829.09	-243.34	5,883.06	5,883.06	0.26	0.25	-0.03	
16,695.00	88.86	90.400	10,829.24	-243.55	5,915.05	5,915.05	5.44	-5.44	0.13	
16,789.00	89.43	90.080	10,830.64	-243.95	6,009.04	6,009.04	0.70	0.61	-0.34	
16,883.00	90.70	91.920	10,830.53	-245.59	6,103.02	6,103.02	2.38	1.35	1.96	
16,914.00	91.11	92.100	10,830.04	-246.68	6,134.00	6,134.00	1.44	1.32	0.58	
16,946.00	92.35	92.310	10,829.08	-247.91	6,165.96	6,165.96	3.93	3.88	0.66	
16,978.00	91.41	93.400	10,828.03	-249.50	6,197.90	6,197.90	4.50	-2.94	3.41	
17,009.00	88.16	93.240	10,828.14	-251.29	6,228.85	6,228.85	10.50	-10.48	-0.52	

Company:	Oasis Petroleum	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Project:	McKenzie County, ND	TVD Reference:	GL 2110' & KB 25' @ 2135.00ft (Nabors B21)
Site:	Lewis Federal	MD Reference:	GL 2110' & KB 25' @ 2135.00ft (Nabors B21)
Well:	Lewis Federal 5300 11-31 3B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Casper District

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
17,041.00	87.92	92.760	10,829.24	-252.97	6,260.78	6,260.78	1.68	-0.75	-1.50	
17,073.00	88.63	93.090	10,830.20	-254.60	6,292.73	6,292.73	2.45	2.22	1.03	
17,104.00	87.39	93.630	10,831.28	-256.42	6,323.65	6,323.65	4.36	-4.00	1.74	
17,136.00	86.48	92.680	10,832.99	-258.18	6,355.56	6,355.56	4.11	-2.84	-2.97	
17,167.00	85.34	93.250	10,835.20	-259.77	6,386.44	6,386.44	4.11	-3.68	1.84	
17,199.00	84.02	92.710	10,838.17	-261.43	6,418.26	6,418.26	4.45	-4.13	-1.69	
17,262.00	84.60	89.160	10,844.42	-262.45	6,480.93	6,480.93	5.68	0.92	-5.63	
17,293.00	86.21	88.420	10,846.90	-261.80	6,511.82	6,511.82	5.71	5.19	-2.39	
17,325.00	88.79	88.170	10,848.29	-260.85	6,543.77	6,543.77	8.10	8.06	-0.78	
17,356.00	89.20	88.240	10,848.84	-259.88	6,574.75	6,574.75	1.34	1.32	0.23	
17,451.00	91.34	88.190	10,848.39	-256.92	6,669.70	6,669.70	2.25	2.25	-0.05	
17,545.00	91.14	89.420	10,846.36	-254.96	6,763.66	6,763.66	1.33	-0.21	1.31	
17,640.00	90.27	89.590	10,845.19	-254.14	6,858.64	6,858.64	0.93	-0.92	0.18	
17,735.00	89.60	88.890	10,845.29	-252.88	6,953.63	6,953.63	1.02	-0.71	-0.74	
17,829.00	90.13	88.630	10,845.52	-250.84	7,047.61	7,047.61	0.63	0.56	-0.28	
17,924.00	91.10	88.380	10,844.50	-248.37	7,142.57	7,142.57	1.05	1.02	-0.26	
17,975.00	89.16	88.760	10,844.38	-247.09	7,193.55	7,193.55	3.88	-3.80	0.75	
18,018.00	89.43	88.110	10,844.91	-245.92	7,236.53	7,236.53	1.64	0.63	-1.51	
18,112.00	89.90	89.220	10,845.46	-243.73	7,330.51	7,330.51	1.28	0.50	1.18	
18,208.00	88.66	90.300	10,846.67	-243.33	7,426.49	7,426.49	1.71	-1.29	1.13	
18,302.00	88.42	89.220	10,849.06	-242.93	7,520.46	7,520.46	1.18	-0.26	-1.15	
18,397.00	89.06	88.870	10,851.15	-241.35	7,615.42	7,615.42	0.77	0.67	-0.37	
18,491.00	89.77	88.380	10,852.11	-239.09	7,709.39	7,709.39	0.92	0.76	-0.52	
18,585.00	90.50	88.020	10,851.89	-236.14	7,803.34	7,803.34	0.87	0.78	-0.38	
18,680.00	89.43	88.550	10,851.95	-233.30	7,898.30	7,898.30	1.26	-1.13	0.56	
18,774.00	89.16	88.890	10,853.10	-231.20	7,992.27	7,992.27	0.46	-0.29	0.36	
18,870.00	89.43	89.010	10,854.28	-229.44	8,088.25	8,088.25	0.31	0.28	0.13	
18,964.00	88.69	90.130	10,855.83	-228.74	8,182.23	8,182.23	1.43	-0.79	1.19	
19,058.00	89.80	94.140	10,857.07	-232.24	8,276.13	8,276.13	4.43	1.18	4.27	
19,152.00	90.44	93.700	10,856.87	-238.66	8,369.91	8,369.91	0.83	0.68	-0.47	
19,247.00	91.31	93.380	10,855.42	-244.53	8,464.72	8,464.72	0.98	0.92	-0.34	
19,341.00	89.56	94.470	10,854.70	-250.96	8,558.49	8,558.49	2.19	-1.86	1.16	
19,436.00	89.56	93.580	10,855.43	-257.63	8,653.25	8,653.25	0.94	0.00	-0.94	
19,531.00	89.33	92.960	10,856.35	-263.05	8,748.09	8,748.09	0.70	-0.24	-0.65	
19,626.00	88.69	91.720	10,858.00	-266.93	8,843.00	8,843.00	1.47	-0.67	-1.31	
19,721.00	89.36	91.110	10,859.61	-269.27	8,937.95	8,937.95	0.95	0.71	-0.64	
19,816.00	90.23	90.890	10,859.95	-270.93	9,032.94	9,032.94	0.94	0.92	-0.23	
19,911.00	90.67	90.060	10,859.21	-271.72	9,127.93	9,127.93	0.99	0.46	-0.87	
20,006.00	90.07	90.170	10,858.59	-271.91	9,222.93	9,222.93	0.64	-0.63	0.12	
20,101.00	88.93	91.080	10,859.42	-272.94	9,317.92	9,317.92	1.54	-1.20	0.96	
20,195.00	89.26	90.710	10,860.91	-274.41	9,411.89	9,411.89	0.53	0.35	-0.39	
20,290.00	89.23	89.670	10,862.16	-274.73	9,506.88	9,506.88	1.10	-0.03	-1.09	
20,385.00	90.00	88.750	10,862.80	-273.42	9,601.87	9,601.87	1.26	0.81	-0.97	

Company:	Oasis Petroleum	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Project:	McKenzie County, ND	TVD Reference:	GL 2110' & KB 25' @ 2135.00ft (Nabors B21)
Site:	Lewis Federal	MD Reference:	GL 2110' & KB 25' @ 2135.00ft (Nabors B21)
Well:	Lewis Federal 5300 11-31 3B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Casper District

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/S (ft)	+E/W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
20,479.00	91.11	88.620	10,861.89	-271.26	9,695.84	9,695.84	1.19	1.18	-0.14	
20,574.00	91.74	87.720	10,859.52	-268.23	9,790.76	9,790.76	1.16	0.66	-0.95	
20,669.00	90.47	87.800	10,857.69	-264.52	9,885.67	9,885.67	1.34	-1.34	0.08	
20,763.00	89.67	89.900	10,857.58	-262.63	9,979.64	9,979.64	2.39	-0.85	2.23	
20,785.00	87.15	90.310	10,858.19	-262.67	10,001.63	10,001.63	11.61	-11.45	1.86	
Last SDI MWD Survey										
20,860.00	87.15	90.310	10,861.92	-263.07	10,076.54	10,076.54	0.00	0.00	0.00	
Projection to TD										

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/S (ft)	+E/W (ft)		
168.00	168.00	0.44	-0.66	First SDI MWD Survey	
2,743.00	2,742.84	0.56	0.06	Last SDI MWD Surface Survey	
2,800.00	2,799.84	0.56	-0.21	First Gyro Survey	
3,545.00	3,544.82	-0.87	-5.71	Last Gyro Survey	
3,545.00	3,544.82	-0.87	-5.71	TIP to Gyro	
3,641.00	3,640.81	-0.97	-6.41	First SDI MWD Survey (Vertical Section)	
11,053.00	10,789.00	-241.45	278.04	Last SDI MWD Curve Survey	
11,140.00	10,791.98	-254.60	363.90	First SDI MWD Lateral Survey	
20,785.00	10,858.19	-262.67	10,001.63	Last SDI MWD Survey	
20,860.00	10,861.92	-263.07	10,076.54	Projection to TD	

Checked By: _____ Approved By: _____ Date: _____



AUTHORIZATION TO PURCHASE AND TRANSPORT OIL FROM LEASE – FORM 8

INDUSTRIAL COMMISSION OF NORTH DAKOTA

OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 5698 (03-2000)

Received

Well File No.

30188

TH

NOV 12 2019

ND Oil & Gas Division

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.

PLEASE SUBMIT THE ORIGINAL.

Well Name and Number LEWIS FEDERAL 5300 11-31 3B	Qtr-Qtr LOT1	Section 153	Township 100	Range 0	County McKenzie
Operator Oasis Petroleum North America LLC	Telephone Number (281) 404-9573		Field BAKER		
Address 1001 Fannin, Suite 1500	City Houston			State TX	Zip Code 77002

Name of First Purchaser Oasis Petroleum Marketing LLC	Telephone Number (281) 404-9627	% Purchased 100%	Date Effective August 4, 2019		
Principal Place of Business 1001 Fannin, Suite 1500	City Houston	State TX	Zip Code 77002		
Field Address	City	State	Zip Code		
Names of Transporter Hiland Crude, LLC	Telephone Number (918) 588-5000	% Transported 95%	Date Effective August 4, 2019		
Address 8811 South Yale Avenue, Suite 200	City Tulsa	State OK	Zip Code 74137		

The above named producer authorizes the above named purchaser to purchase the percentage of oil stated above which is produced from the lease designated above until further notice. The oil will be transported by the above named transporter.

Other First Purchasers Purchasing From This Lease	% Purchased	Date Effective August 4, 2019
Other First Purchasers Purchasing From This Lease	% Purchased	Date Effective August 4, 2019
Other Transporters Transporting From This Lease Power Energy Logistics, LLC	% Transported 5%	Date Effective August 4, 2019
Other Transporters Transporting From This Lease	% Transported	Date Effective August 4, 2019
Comments		

I hereby swear or affirm that all transporters of Bakken Petroleum System oil, listed above implement or adhere to a tariff specification as stringent as the Commission's VPCR₄ requirement. 13.7 VPCR₄ Tariff Specification DAPL Tariff Authority

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records.		Date November 5, 2019
Signature 	Printed Name Claudia Arguelles	Title Contracts Administrator

Above Signature Witnessed By:

Signature 	Printed Name Kenzie Buchanan	Witness Title Scheduler
---------------	---------------------------------	----------------------------

FOR STATE USE ONLY		
Date Approved NOV 15 2019	NDIC CTB NO 20190	
By 		
Title Oil & Gas Production Analyst		



WELL COMPLETION OR RECOMPLETION REPORT - FORM 6

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 2468 (04-2010)

RECEIVED
SEP 17 2018

Well File No.
30188

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.

PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

Designate Type of Completion

- Oil Well EOR Well Recompletion Deepened Well Added Horizontal Leg Extended Horizontal Leg
 Gas Well SWD Well Water Supply Well Other:

Well Name and Number Lewis Federal 5300 11-31 3B			Spacing Unit Description Sec. 31/32 T153N R100W			
Operator Oasis Petroleum North America		Telephone Number (281) 404-9591	Field Baker			
Address 1001 Fannin, Suite 1500			Pool Bakken			
City Houston	State TX	Zip Code 77002	Permit Type	<input type="checkbox"/> Wildcat	<input checked="" type="checkbox"/> Development	<input type="checkbox"/> Extension

LOCATION OF WELL

At Surface 1083 F N L	262 F WL	Qtr-Qtr Lot 1	Section 31	Township 153 N	Range 100 W	County McKenzie
Spud Date January 3, 2019	Date TD Reached January 22, 2019	Drilling Contractor and Rig Number Nabors B21		KB Elevation (Ft) 2135	Graded Elevation (Ft) 2110	

Type of Electric and Other Losses Run (See Instructions)

MWD/GR from KOP to TD; CBL from int. TD to surface

CASING & TUBULARS RECORD (Report all strings set in well)

PERFORATION & OPEN HOLE INTERVALS

PRODUCTION

Current Producing Open Hole or Perforated Interval(s), This Completion, Top and Bottom, (MD Ft) Lateral 1- 11184' to 20797'								Name of Zone (If Different from Pool Name)	
Date Well Completed (SEE INSTRUCTIONS) August 4, 2019								Well Status (Producing or Shut-In) producing	
Date of Test 08/09/2019	Hours Tested 24	Choke Size 18 /64	Production for Test		Oil (Bbls) 1569	Gas (MCF) 1979	Water (Bbls) 1141	Oil Gravity-API (Corr.) °	Disposition of Gas Sold
Flowing Tubing Pressure (PSI)		Flowing Casing Pressure (PSI)		Calculated 24-Hour Rate	Oil (Bbls) 1569	Gas (MCF) 1979	Water (Bbls) 1141	Gas-Oil Ratio 1261	
1600									

GEOLOGICAL MARKERS

PLUG BACK INFORMATION

CORES CUT

Top (Ft)	Bottom (Ft)	Formation	Top (Ft)	Bottom (Ft)	Formation

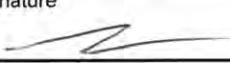
Drill Stem Test

Well Specific Stimulation

Date Stimulated 06/20/2019	Stimulated Formation Bakken		Top (Ft) 11184	Bottom (Ft) 20797	Stimulation Stages 40	Volume 329963	Volume Units Barrels
Type Treatment Sand Frac	Acid %	Lbs Proppant 6006140			Maximum Treatment Pressure (PSI) 9015	Maximum Treatment Rate (BBLS/Min) 73.0	
Details 100 Mesh: 3588450 40/70 White: 1511380 40/70 CRC: 906310							
Date Stimulated	Stimulated Formation		Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units
Type Treatment	Acid %	Lbs Proppant			Maximum Treatment Pressure (PSI)	Maximum Treatment Rate (BBLS/Min)	
Details							
Date Stimulated	Stimulated Formation		Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units
Type Treatment	Acid %	Lbs Proppant			Maximum Treatment Pressure (PSI)	Maximum Treatment Rate (BBLS/Min)	
Details							
Date Stimulated	Stimulated Formation		Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units
Type Treatment	Acid %	Lbs Proppant			Maximum Treatment Pressure (PSI)	Maximum Treatment Rate (BBLS/Min)	
Details							
Date Stimulated	Stimulated Formation		Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units
Type Treatment	Acid %	Lbs Proppant			Maximum Treatment Pressure (PSI)	Maximum Treatment Rate (BBLS/Min)	
Details							

ADDITIONAL INFORMATION AND/OR LIST OF ATTACHMENTS

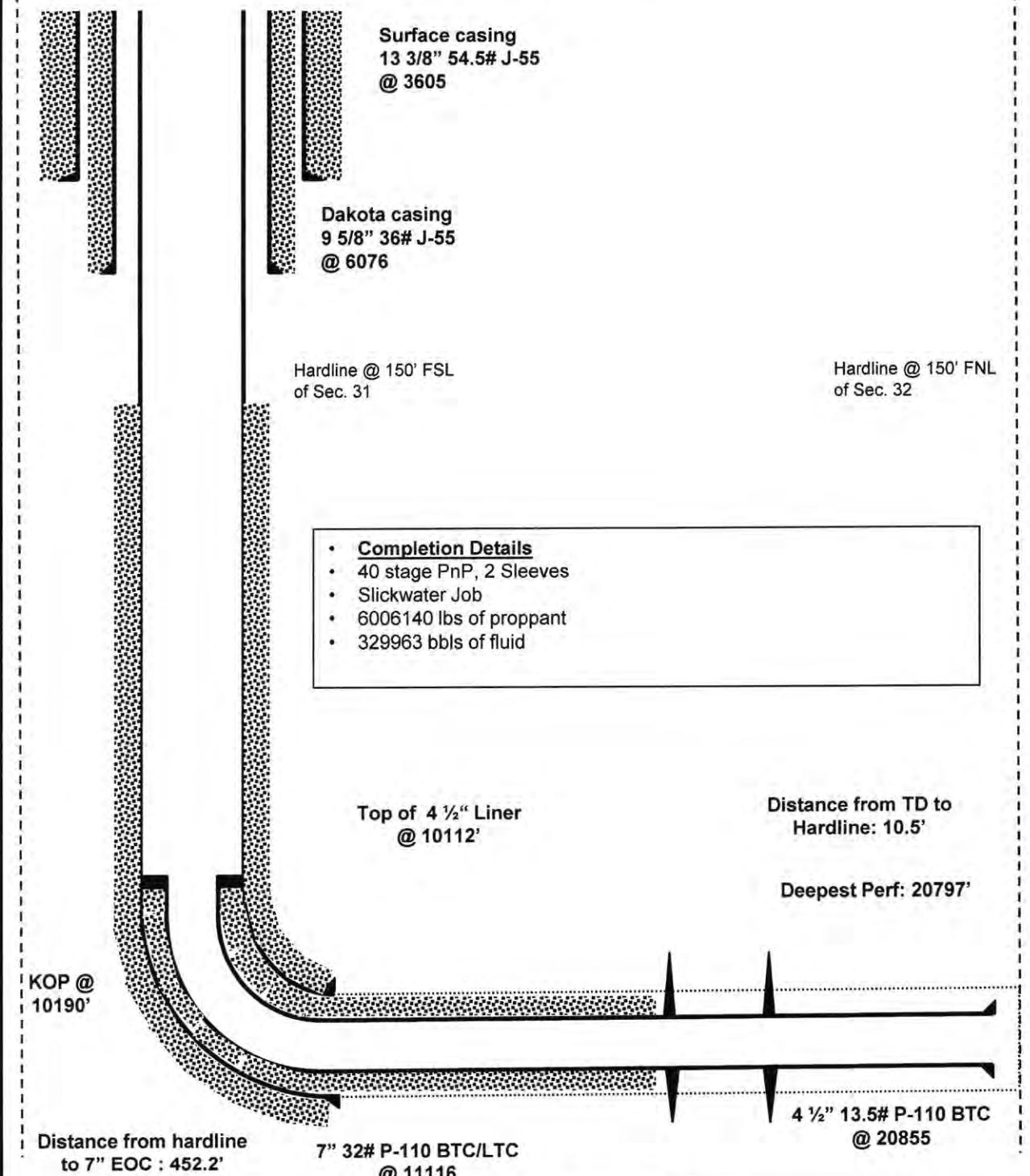
This report provides frac data.

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records.	Email Address jswenson@oasispetroleum.com	Date 09/13/2019
Signature 	Printed Name Jennifer Swenson	Title Regulatory Specialist

ELEVATION: 2110' GL

Lewis Federal 5300 11-31 3B
Wellbore Schematic

FORMATION: Bakken



OASIS PETROLEUM NA LLC

Lewis Federal 5300 11-31 3B

Wellbore: T153N-R100W Sec. 31 & 32

SHL: 1083' FNL & 262' FEL T153N-R100W Sec. 31

McKenzie County, North Dakota

Received



SUNDY NOTICES AND REPORTS ON WELLS - FORM 4

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 5749 (09-2006)

SEP 16 2019

Well File No.
30188

ND Oil & Gas
Division

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.

PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

<input type="checkbox"/> Notice of Intent	Approximate Start Date
<input checked="" type="checkbox"/> Report of Work Done	Date Work Completed August 4, 2019
<input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.	Approximate Start Date

- | | |
|--|---|
| <input type="checkbox"/> Drilling Prognosis | <input type="checkbox"/> Spill Report |
| <input type="checkbox"/> Redrilling or Repair | <input type="checkbox"/> Shooting |
| <input type="checkbox"/> Casing or Liner | <input type="checkbox"/> Acidizing |
| <input type="checkbox"/> Plug Well | <input type="checkbox"/> Fracture Treatment |
| <input checked="" type="checkbox"/> Supplemental History | <input type="checkbox"/> Change Production Method |
| <input type="checkbox"/> Temporarily Abandon | <input type="checkbox"/> Reclamation |
| <input checked="" type="checkbox"/> Other | <u>Change well status to CONFIDENTIAL</u> |

Well Name and Number
Lewis Federal 5300 11-31 3B

Footages 1083 F N L	262 F W L	Qtr-Qtr LOT1	Section 31	Township 153 N	Range 100 W
Field Baker	Pool Bakken			County McKenzie	

24-HOUR PRODUCTION RATE

	Before		After
Oil	Bbls	Oil	Bbls
Water	Bbls	Water	Bbls
Gas	MCF	Gas	MCF

Name of Contractor(s)

Address

City

State

Zip Code

DETAILS OF WORK

Effective immediately, we request CONFIDENTIAL STATUS for the above referenced well.

Date of First Production August 4, 2019.

off confidential 2/4/20

Company Oasis Petroleum North America LLC	Telephone Number 713-770- 6570	
Address 1001 Fannin, Suite 1500		
City Houston	State TX	Zip Code 77002
Signature <i>Jasmine Crawford</i>	Printed Name Jasmine Crawford	
Title Regulatory Specialist	Date September 13, 2019	
Email Address jcrawford@oasispetroleum.com		

FOR STATE USE ONLY

<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date <i>9/17/19</i>	
By <i>Ally Steele</i>	
Title Petroleum Resource Specialist	

Industrial Commission of North Dakota
Oil and Gas Division

Well or Facility No
30188

Verbal Approval To Purchase and Transport Oil Tight Hole No

OPERATOR

Operator OASIS PETROLEUM NORTH AMERICA LL	Representative Mike Haase	Rep Phone (701) 570-6752
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WELL INFORMATION

Well Name LEWIS FEDERAL 5300 11-31 3B	Inspector Richard Dunn
Well Location QQ Sec Twp Rng	County MCKENZIE
LOT1 31 153 N 100 W	Field BAKER
Footages 1083 Feet From the N Line	Pool BAKKEN
262 Feet From the W Line	
Date of First Production Through Permanent Wellhead	8/4/2019
	This Is Not The First Sales

PURCHASER / TRANSPORTER

Purchaser OASIS PETROLEUM MARKETING LLC	Transporter HILAND CRUDE, LLC
---	---

TANK BATTERY

Single Well Tank Battery Number : 130188-01

SALES INFORMATION **This Is Not The First Sales**

ESTIMATED BARRELS TO BE SOLD	ACTUAL BARRELS SOLD	DATE
15000	BBLS	8/7/2019
	BBLS	

DETAILS

Must also forward Forms 6 & 8 to State prior to reaching 15000 Bbl estimate or no later than required time frame for submitting those forms.

Start Date **8/4/2019**
Date Approved **8/22/2019**
Approved By **Richard Dunn**



WELL COMPLETION OR RECOMPLETION REPORT - FORM 6

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 2468 (04-2010)

RECEIVED

FEB 27 2019

Well File No.
30188

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.

PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

ND O&G GAS DIVISION

Designate Type of Completion							
<input checked="" type="checkbox"/> Oil Well	<input type="checkbox"/> EOR Well	<input type="checkbox"/> Recompletion	<input type="checkbox"/> Deepened Well	<input type="checkbox"/> Added Horizontal Leg	<input type="checkbox"/> Extended Horizontal Leg		
<input type="checkbox"/> Gas Well	<input type="checkbox"/> SWD Well	<input type="checkbox"/> Water Supply Well	<input type="checkbox"/> Other:				
Well Name and Number Lewis Federal 5300 11-31 3B				Spacing Unit Description Sec. 31/32 T153N R100W			
Operator Oasis Petroleum North America		Telephone Number (281) 404-9591		Field Baker			
Address 1001 Fannin, Suite 1500				Pool Bakken			
City Houston	State TX	Zip Code 77002	Permit Type <input type="checkbox"/> Wildcat <input checked="" type="checkbox"/> Development <input type="checkbox"/> Extension				

LOCATION OF WELL

At Surface 1083 F N L	Qtr-Qtr 262 F WL	Lot 1	Section 31	Township 153 N	Range 100 W	County McKenzie
Spud Date January 3, 2019	Date TD Reached January 22, 2019	Drilling Contractor and Rig Number Nabors B21			KB Elevation (Ft) 2135	Graded Elevation (Ft) 2110

Type of Electric and Other Logs Run (See Instructions)

MWD/GR from KOP to TD; CBL from int. TD to surface

CASING & TUBULARS RECORD (Report all strings set in well)

Well Bore	String Type	Size (Inch)	Top Set (MD Ft)	Depth Set (MD Ft)	Hole Size (Inch)	Weight (Lbs/Ft)	Anchor Set (MD Ft)	Packer Set (MD Ft)	Sacks Cement	Top of Cement
Surface Hole	Surface	13 3/8	0	3609	17 1/2	54.5			2070	
Vertical Hole	Intermediate	9 5/8	0	6075	13 1/2	36			1540	
Vertical Hole	Intermediate	7	0	11114	8 3/4	32			743	
Lateral1	Liner	4 1/2	10112	20855	6	13.5			490	

PERFORATION & OPEN HOLE INTERVALS

Well Bore	Well Bore TD Drillers Depth (MD Ft)	Completion Type	Open Hole/Perforated Interval (MD,Ft)		Kick-off Point (MD Ft)	Top of Casing Window (MD Ft)	Date Perfd or Drilled	Date Isolated	Isolation Method	Sacks Cement
			Top	Bottom						
Lateral1	20860	Perforations			10190					

PRODUCTION

Current Producing Open Hole or Perforated Interval(s), This Completion, Top and Bottom, (MD Ft)				Name of Zone (If Different from Pool Name)				
Lateral 1-								
Date Well Completed (SEE INSTRUCTIONS)			Producing Method	Pumping-Size & Type of Pump				Well Status (Producing or Shut-In)
Date of Test	Hours Tested	Choke Size 1/64	Production for Test	Oil (Bbls)	Gas (MCF)	Water (Bbls)	Oil Gravity-API (Corr.)	Disposition of Gas
Flowing Tubing Pressure (PSI)	Flowing Casing Pressure (PSI)		Calculated 24-Hour Rate	Oil (Bbls)	Gas (MCF)	Water (Bbls)	Gas-Oil Ratio	

GEOLOGICAL MARKERS

PLUG BACK INFORMATION

CORES CUT

Top (Ft)	Bottom (Ft)	Formation	Top (Ft)	Bottom (Ft)	Formation

Drill Stem Test

Well Specific Stimulation

Date Stimulated	Stimulated Formation		Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units Barrels
Type Treatment	Acid %	Lbs Proppant	Maximum Treatment Pressure (PSI)			Maximum Treatment Rate (BBLS/Min)	
Details							
Date Stimulated	Stimulated Formation		Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units
Type Treatment	Acid %	Lbs Proppant	Maximum Treatment Pressure (PSI)			Maximum Treatment Rate (BBLS/Min)	
Details							
Date Stimulated	Stimulated Formation		Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units
Type Treatment	Acid %	Lbs Proppant	Maximum Treatment Pressure (PSI)			Maximum Treatment Rate (BBLS/Min)	
Details							
Date Stimulated	Stimulated Formation		Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units
Type Treatment	Acid %	Lbs Proppant	Maximum Treatment Pressure (PSI)			Maximum Treatment Rate (BBLS/Min)	
Details							
Date Stimulated	Stimulated Formation		Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units
Type Treatment	Acid %	Lbs Proppant	Maximum Treatment Pressure (PSI)			Maximum Treatment Rate (BBLS/Min)	
Details							

ADDITIONAL INFORMATION AND/OR LIST OF ATTACHMENTS

This is a preliminary completion report. A supplemental report will be filed upon first production of the well.

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records.	Email Address jswenson@oasispetroleum.com	Date 02/20/2019
Signature 	Printed Name Jennifer Swenson	Title Regulatory Specialist



Oasis Petroleum North America, LLC

Lewis Federal 5300 11-31 3B

1,083' FNL & 262' FWL

Lot 1 Section 31, T153N, R100W

Baker Field / Middle Bakken

McKenzie County, North Dakota

BOTTOM HOLE LOCATION:

263.07' south & 10,076.54' east of surface or approx.

1,346.07' FNL & 184.20' FEL; Lot 4 Sec. 32, T153N, R100W

Prepared for:

Shea Cook
Oasis Petroleum North America, LLC
1001 Fannin Suite 1500
Houston, TX 77002

Prepared by:

Dillon Johnson, Michelle Baker
PO Box 80507; Billings, MT 59108
(406) 259-4124
geology@sunburstconsulting.com
www.sunburstconsulting.com

Oasis Petroleum North America, LLC

Lewis Federal 5300 11-31 3B

Well Evaluation



Figure 1. Nabors drilling rig #B21 at the Oasis Petroleum NA, LLC Lewis Federal 5300 11-31 3B; January 2019, McKenzie County, North Dakota (All photos by Dillon Johnson unless noted otherwise).

Introduction

The Oasis Petroleum NA, LLC Lewis Federal 5300 11-31 3B is located in Baker Field of the Williston Basin [Lot 1 Section 31, T153N, R100W]. The subject well lies approximately 8 miles south of the town of Williston, in the Indian Hills prospect of McKenzie County, North Dakota (**Figure 1**). The Lewis Federal 5300 11-31 3B is the second of three wells to be drilled on the Lewis Federal 5300 11-31 pad. Due to tight hole conditions the Lewis Federal 5300 11-31 4B was plugged and abandoned. This pad is set up as a 1,280-acre laydown spacing unit, with 500' N/S and 100' E/W drilling setbacks. The subject well is permitted to drill east from the surface location in Section 31 into Section 32. The well consists of a single Middle Bakken Member lateral, targeting a silty sandstone facies, with intent to intersect porosity and fracture trends enhancing reservoir quality.

Engineering Operations Overview

The Lewis Federal 5300 11-31 3B was spud on January 3, 2019. The surface hole was drilled with one 17.5" assembly to a depth of 3,605'. The complete BHA accomplishments can be found in an appendix to this report. The 13 3/8" surface casing was set to a depth of 3,600'. Due to the presence of several salt water disposal wells in the immediate area the decision was made to set a 9 5/8" isolation casing string through the Inyan Kara and into the Swift. The isolation portion was drilled without issue to a depth of 6,090'. The 9 5/8" casing was then set to a depth of 6,075'. The remainder of the vertical hole was completed with two 8.75" assemblies. The first vertical assembly drilled to a depth of 8,427' before being replaced due to low ROP, the second vertical assembly drilled to a depth of 10,190' (KOP). The curve assembly consisted of two 8.75" assemblies. The first assembly, a Reed TKC56 PDC bit (#5), attached to a 2.38° NOV mud motor and Scientific Drilling MWD tools drilled to a depth of 11,039' before a trip was required due to low build rates. The second curve BHA consisted of a Security F30T tri-cone bit, a 2.50° NOV mud motor and Scientific drilling MWD tools. The curve was successfully landed at 11,132' MD and 10,790' TVD, approximately 32' below the Upper Bakken Shale on 15 January 2019. Seven inch diameter 32# P-110 intermediate casing was set to 11,116' MD at landing. The lateral was completed using two 6" assemblies. The first lateral assembly drilled to a depth of 16,675' before a trip was required due to an MWD failure. The second lateral assembly drilled to a depth of 17,009' before another MWD failure occurred. Due to the short footage between the first and second lateral trips the bit and motor were not replaced after the second trip. The lateral reached a total depth of 20,860' on January 22, 2019.

Offset Control

Offset well data can be found in the ‘Control Data’ section appended to this report. Offset wells were essential in providing control, making it possible to develop a prognosis of formation tops and curve landing target depth. The three primary offsets were, the *Oasis Wade Federal 5300 41-30 8T3*, the *Oasis Lewis Federal 5300 31-31H*, and the *Oasis Gramma Federal 5300 41-31T*. By referencing the gamma signature of these offsets and using formation thicknesses, a model was formed for the target interval pinpointing a strategic landing. Formation thicknesses expressed by gamma ray signatures in these offset wells were compared to gamma data collected during drilling operations in to successfully land the curve.

Geology

Sample evaluation began in the Otter Formation at 8,200’ measured depth (MD). Lagged samples were caught by Sunburst personnel in 30’ intervals through the vertical and curve, and 50’ intervals in the lateral. Rock samples were evaluated under wet and dry conditions using a stereo zoom binocular microscope for the identification of lithology including the presence of porosity and oil. Only observed prospective intervals are described here, but detailed lithological descriptions for all formations are provided in the ‘Lithology’ appendix.

The **Mission Canyon Formation** [Mississippian, Madison Group] was logged at 9,455’ MD, 9,446’ TVD (-7,311’ MSL). The Mission Canyon Formation is described as cream, tan, light gray, and light brown gray in color. Samples are predominately microcrystalline and are a firm lime mudstone. The limestone has an earthy, rarely crystalline texture. Also noted in several samples are rare fossil fragments. The limestone is argillaceous in part throughout this interval. In certain areas possible intercrystalline porosity was noted but there was no significant oil staining observed in samples. Throughout the Mission Canyon gas shows are promising, with an average background gasses ~120u with gas shows peaking at 316u.



Figure 2. Wet sample cuttings of limestone from the Mission Canyon.

The Bakken Formation

The Upper Bakken Shale Member [Mississippian] was recorded at 10,897’ MD, 10,745’ TVD (-8,610’ MSL). Entry into this member is characterized by high gamma counts (>300 API), elevated background gas and increased rates of penetration. While drilling through the Upper Bakken Shale, a background gas of 880u was observed, as well as a survey gas of 1917u. The distinct black shale is carbonaceous and *petroliferous*, as well as hard and platy. Minerals including disseminated/nodular pyrite and trace calcite fracture fill was observed.

The Middle Bakken Member [Mississippian-Devonian] was entered at 10,931' MD, 10,758' TVD (-8,623' MSL). Samples in the Middle Bakken are predominantly a light to medium gray, light brown, and occasionally cream silty sandstone. The silty sandstone is fine to very fine grained, friable to occasionally firm. The Middle Bakken typically contained sub-round to sub-angular grains. Samples are smooth, moderately sorted and poorly cemented by calcite. Rare to trace quantities of disseminated and nodular pyrite is present as was *trace to fair intergranular porosity*. Trace to rare *light-medium brown, spotty oil stain* was visible in many of these samples. While drilling the Middle Bakken background gasses ranged from ~300 to 4500 units while several shows exceeded 5000u. After the trip the trip at 16,675' gas was vented through the gas buster. This venting resulted in a constant 1'-8' flare until reaching TD.



Figure 3. Wet sample cuttings of silty sandstone from the Middle Bakken.

Geosteering

Structure maps provided by Oasis projected that the structure would be a consistent down dip averaging 0.55° down over the course of the lateral. The steering team anticipated the structure to be slightly steeper (-0.8°) in the first 3,000' and soften to a -0.4° for the remainder of the lateral. Due to the low build rates through the curve, the wellbore landed very low in the Middle Bakken and as a result the gamma signatures throughout the Middle Member were cataloged. Upon reaching casing point it became apparent that the gamma signature was very similar to that of the Lewis Federal 5300 31-31H. Since this offset well had the thinnest Middle Bakken (~36') of the three offsets, it was determined to steer ahead with an anticipated 36' Middle Bakken, and not a 40' interval that was previously anticipated. The target interval was defined by proximity to the shales and not by an ideal porosity interval. The 16' target began 10' below the Upper Bakken Shale and extended to 10' above the Lower Bakken Shale. Before drilling out of the 7" casing, it was determined that the cool C marker in the lower half of the target interval was going to be the most consistent steering guide (**Figure 4**). Due to the wellbore remaining in the upper portion of the target interval for a majority of the lateral, the cool C marker was rarely contacted. Over the course of the lateral the warm B marker and a slightly cool marker near the top of the target interval proved to be the most beneficial. After the trip at 16,675' the wellbore began to build inclination on rotation faster than anticipated and drilled within ~3' of the Upper Bakken Shale. To avoid contact with the Upper Member a stop card was pulled, and

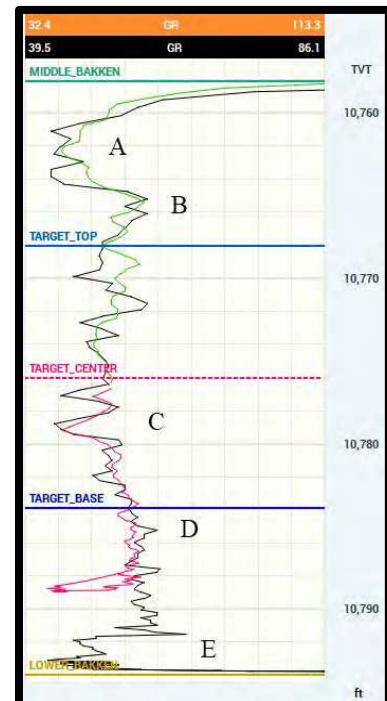


Figure 4. Target definition for the Oasis Petroleum, Lewis Federal 5300 11-31 3B.

time drilling was utilized. Regardless of position in zone the assembly consistently built inclination on rotation. There did not appear to be any noticeable hard streaks or intervals that were more or less favorable in relation to ROP.

The Lewis Federal 5300 11-31 3B had an estimated overall formation dip of approximately -0.53° . Penetration rates, gas shows, gamma ray data, and sample observations were utilized to keep the wellbore in the preferred stratigraphic position within the target zone. Using offset well data provided by Oasis representatives, projected porosity zones were identified and used as preferred drilling areas.

The lateral was drilled in less than 5 days from casing exit to total depth, with two lateral assembly. A total depth of 20,860' MD was achieved at 05:30 hours CST on January 22, 2019. The wellbore was completed 84% within target, opening 9,744' (measurement taken from uncased lateral portion) of potentially productive reservoir rock.

Hydrocarbon Shows

Gas was continuously recorded from 103' to the completion of the lateral, along with the monitoring of free oil at the possum belly and shakers. In the closed mud system, hydrostatic conditions were maintained near balance, this allowed gas and fluid gains from the well to be evaluated. During the vertical, gas shows ranging from 10 to 316 units were noted, against a 10.25 to 12.85 pound per gallon (ppg) diesel-invert, mud weight. Background concentrations in the lateral ranged from 300 to 4500 units, against a 9.6-9.8 ppg saltwater gel drilling fluid (**Figure 6**). Due to the use of the gas buster from the first trip at 16,675' to 20,860' (TD) gas shows were significantly higher prior to 16,675'. There were two trips during the lateral. These trips resulted in trip gasses of 7438u and 2728u. Upon circulating a bottoms up after the trip, 20'-30' flares were observed. Chromatography of gas revealed typical concentrations of methane, ethane and propane characteristic of the Middle Bakken (**Figure 5**). Sample cuttings were examined for hydrocarbon "cut" by immersion of trichloroethylene and inspection under a UV fluoroscope. *Fluorescent cuts were generally pale yellow in color and had a diffuse habit at a slow to moderate speed.*

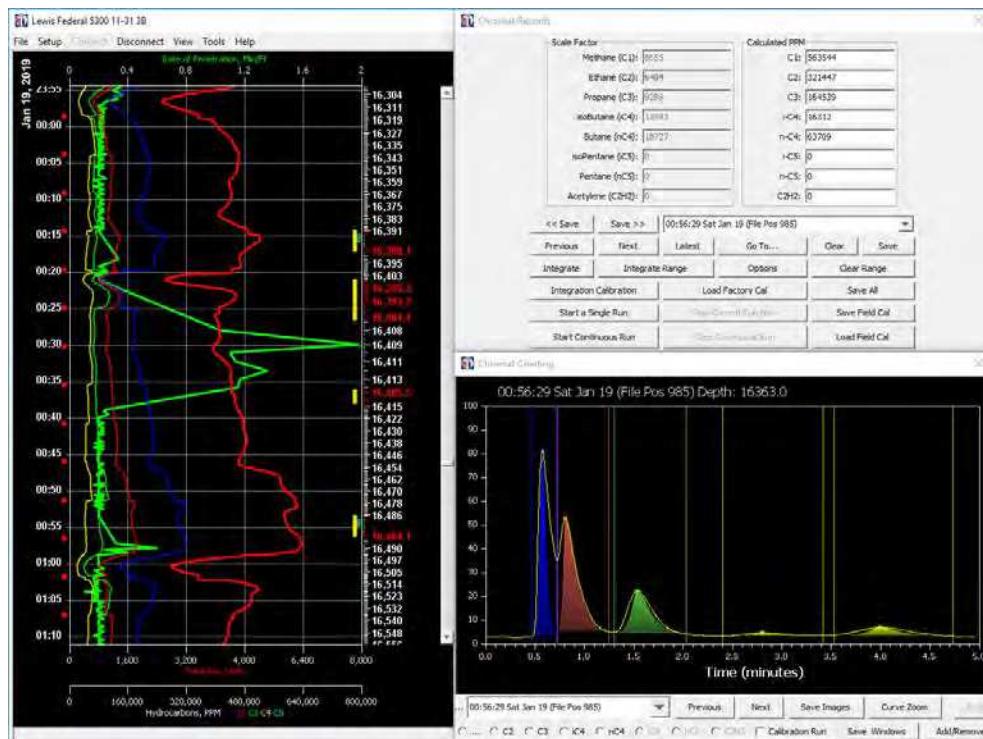


Figure 5. Screen shot of gas chromatography portraying total gas values and C₁-C₄ values, shown in parts per million.

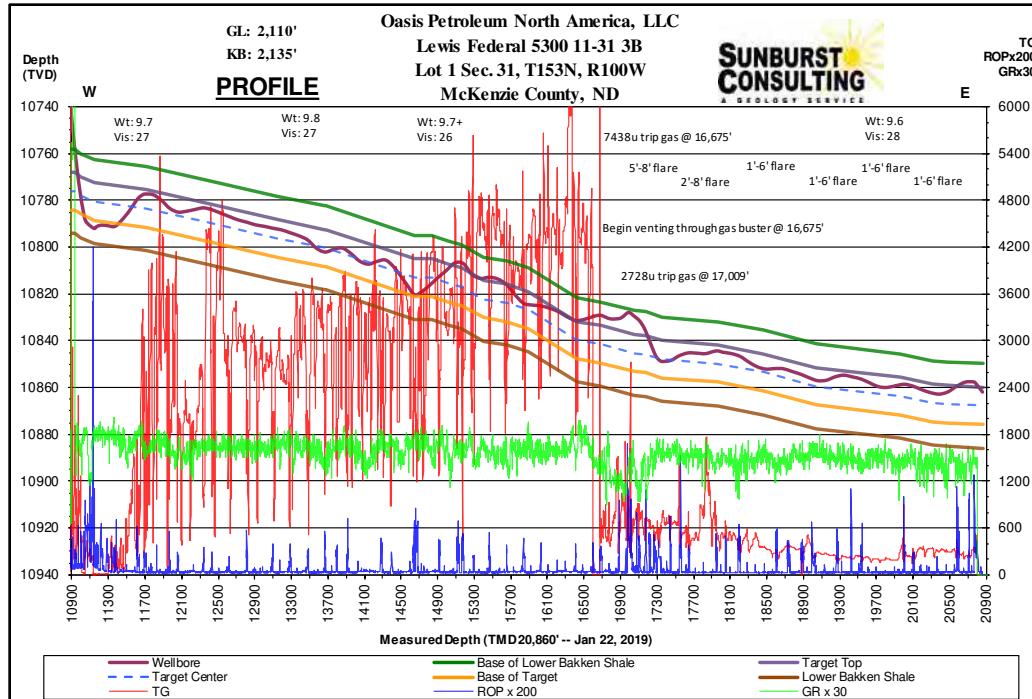


Figure 6. Cross-sectional profile of the Lewis Federal 5300 11-31 3B displaying stratigraphic position, total gas, rate of penetration and gamma values.

Summary

The *Lewis Federal 5300 11-31 3B* is a well in Oasis Petroleum's horizontal Middle Bakken Member development program, in the Indian Hill prospect of McKenzie County, North Dakota. The project was drilled from surface casing to total depth in 19 days. A total depth of 20,860' MD was achieved at 05:30 hours CST on 22 January 2019. The well-site team worked together to maintain the wellbore in the desired target interval for 84% within target, opening 9,744' of potentially productive reservoir rock.

Samples in the Middle Bakken Member are predominantly light to medium gray, light brown and occasionally cream silty sandstone. The silty sandstone is composed of fine to very fine grained, sub-rounded and occasionally sub-angular, moderately sorted quartz grains. Primary cement is calcite and rare quantities of disseminated and nodular pyrite are present. Poor to fair intergranular porosity contains trace to rare light-medium brown, spotty oil stain. The overall hydrocarbon "cuts", gas and hydrocarbon shows were encouraging and indicate an oil and gas rich system in the Middle Bakken Member.

The well should be regarded as an engineering and geological success based on the combination of:

- Maximum exposure to the target
- Minimal days from re-entry to total depth
- No side-tracks, shale strikes, or collision with existing wellbores

The *Oasis Petroleum North America, LLC, Lewis Federal 5300 11-31 3B* awaits completion operations to determine its ultimate production potential and commercial value.

Respectfully,
Dillon Johnson
 Lead Well Site Geologist & Geosteering Consultant
 Sunburst Consulting, Inc.
 22 January 2019

WELL DATA SUMMARY

<u>OPERATOR:</u>	Oasis Petroleum North America, LLC
<u>ADDRESS:</u>	1001 Fannin Suite 1500 Houston, TX 77002
<u>WELL NAME:</u>	Lewis Federal 5300 11-31 3B
<u>API #:</u>	33-053-06548
<u>WELL FILE #:</u>	30188
<u>SURFACE LOCATION:</u>	1,083' FNL & 262' FWL Lot 1 Section 31, T153N, R100W
<u>FIELD/ OBJECTIVE:</u>	Baker Field / Middle Bakken
<u>COUNTY, STATE:</u>	McKenzie County, North Dakota
<u>RESERVATION:</u>	N/A
<u>BASIN:</u>	Williston Basin
<u>WELL TYPE:</u>	Horizontal Development
<u>ELEVATION:</u>	GL: 2,110' KB: 2,135'
<u>SPUD DATE:</u>	January 3, 2019
<u>BOTTOM HOLE LOCATION:</u>	263.07' south & 10,076.54' east of surface or approx. 1,346.07' FNL & 184.20' FEL; Lot 4 Sec. 32, T153N, R100W
<u>CLOSURE COORDINATES:</u>	Closure Azimuth: 91.50° Closure Distance: 10,079.97'
<u>TOTAL DEPTH / DATE:</u>	20,860' on January, 2019 84% within target interval
<u>TOTAL DRILLING DAYS:</u>	19 days
<u>PUMP INFO:</u>	Stroke length - 12" Liner I.D. - 6" for surface; 5.0" for vertical, curve and lateral

COMPANY MEN: Doug Rakstad, Rudy Salivar, Ian Anderson, B. Houge, M. Ziegler

COMPANY GEOLOGIST: Shea Cook

WELLSITE GEOLOGISTS: Dillon Johnson, Michelle Baker

ROCK SAMPLING: 30' from 8,200' - 11,110'
50' from 11,150' - 20,800'

SAMPLE CUTS: Trichloroethylene

GAS DETECTION: Terra SLS, Inc. TGC - total gas w/ chromatograph
Serial Number(s): ML-466

DIRECTIONAL DRILLERS: RPM Consulting, Pat's Consulting
Christopher Bohn, Patrick Bidegaray, Mike Crow, Willem Zylstra

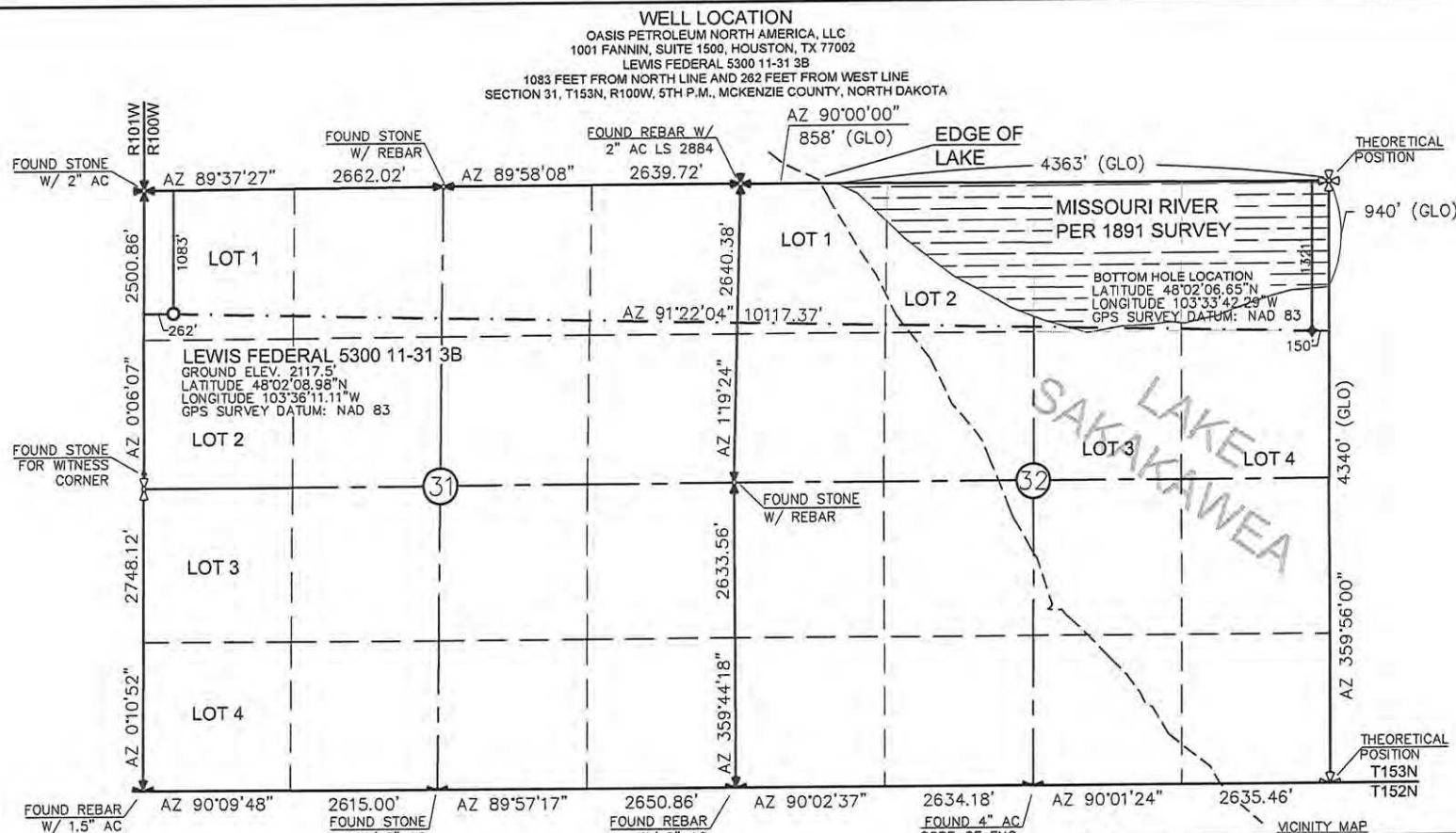
MWD: Scientific Drilling
James Swartz, Steve Gray

CASING: Surface: 13 3/8" 54.5# J-55 set to 3,600'
Isolation: 9 5/8" 36# J-55 set to 6,075'
Intermediate: 7" 32# set to 11,116'

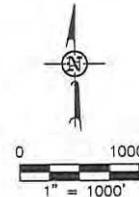
KEY OFFSET WELLS: **Oasis Petroleum North America, LLC**
Wade Federal 5300 41-30 8T2
Lot 4 Sec. 30, T153N, R100W
McKenzie County, ND
NDIC: 28558
KB: 2,077'

Oasis Petroleum North America, LLC
Lewis Federal 5300 31-31H
Lot 3 Sec. 31, T153N, R100W
McKenzie County, ND
NDIC: 20314
KB: 2,185'

Oasis Petroleum North America, LLC
Gramma Federal 5300 41-31T
SW SW Sec. 31, T153N, R100W
McKenzie County, ND
NDIC: 23350
KB: 2,182'



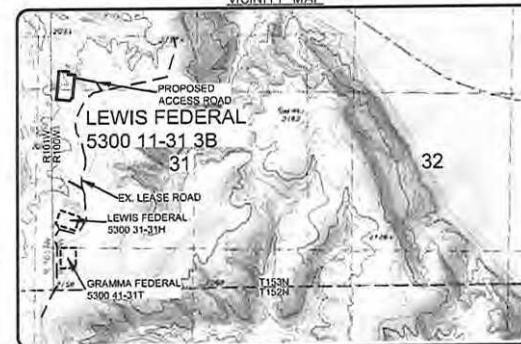
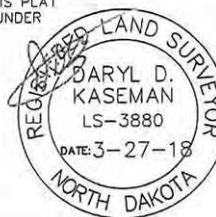
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CONTROL POINT 705 WITH AN ELEVATION OF 2158.3'
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OF JOHN LEE OF OASIS PETROLEUM. I CERTIFY THAT THIS PLAT
CORRECTLY REPRESENTS WORK PERFORMED BY ME OR UNDER
MY SUPERVISION AND IS TRUE AND CORRECT TO
THE BEST OF MY KNOWLEDGE AND BELIEF.

DARYL D. KASEMAN
LS-3880



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Project No.	Ref No.	By	Description
SECTION 31, T153N, R100W, 5TH P.M., MCKENZIE COUNTY, NORTH DAKOTA			
Check by:	Date:		
Project No.: 51726183	Check by: D.M.	Date: MARCH 2018	

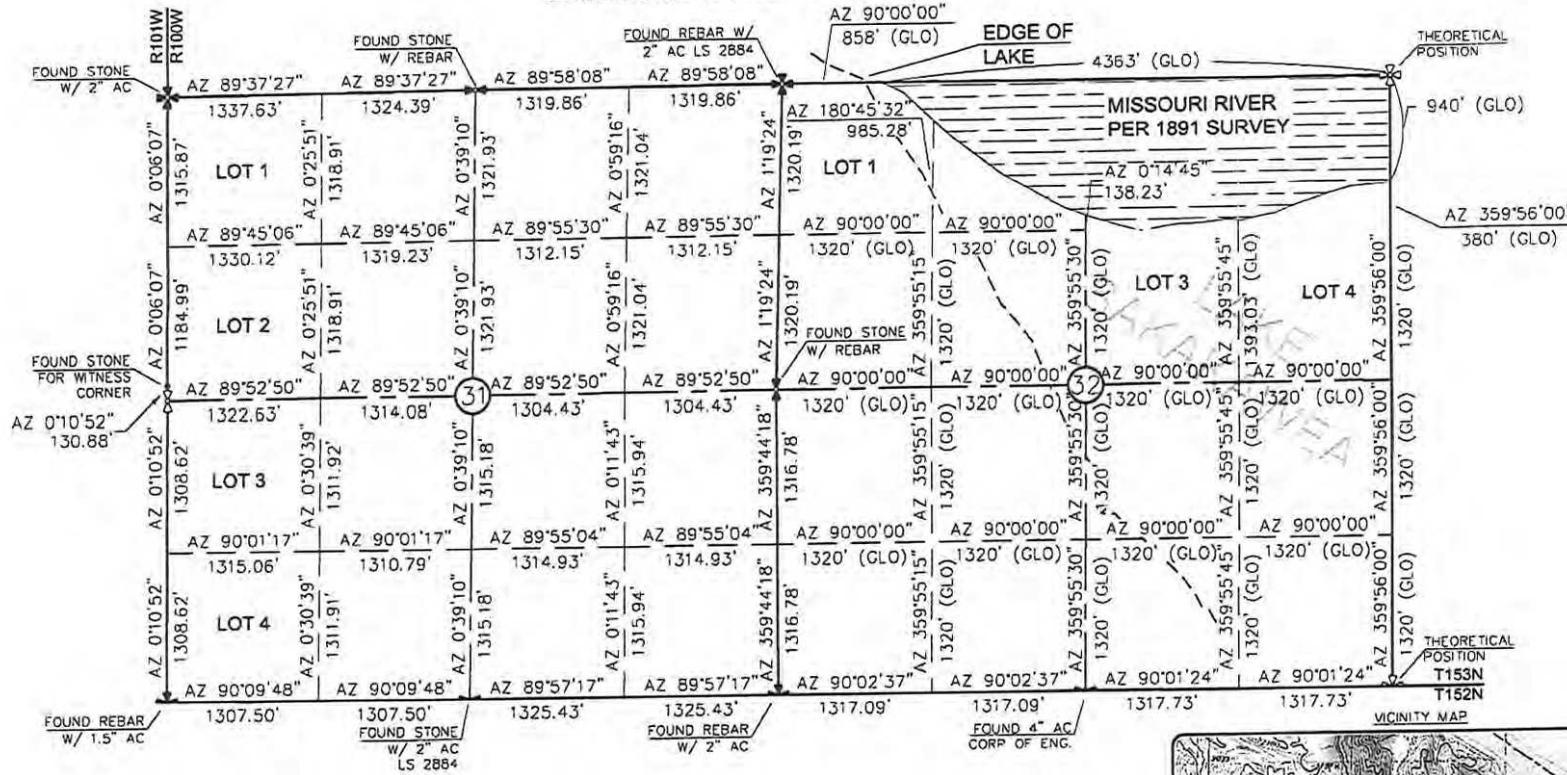
Interstate Engineering, Inc.
Box 618
426 Main Street
Mandan, ND 58540
Ph: (701) 433-5617
Fax: (701) 433-5618
www.interstateeng.com
Office hours are Monday, from 8am until 4pm Central Time.

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SECTION BREAKDOWN
ASIS PETROLEUM NORTH AMERICA, LLC
FANNIN, SUITE 1500, HOUSTON, TX 77002

"LEWIS PROPERTY 5303 11-31-38"
1005 FEET FROM NORTH LINE AND 233 FEET FROM WEST LINE
SECTION 31, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



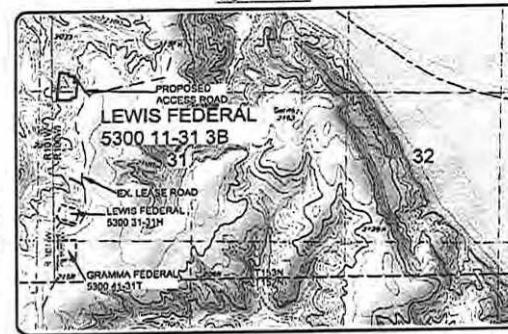
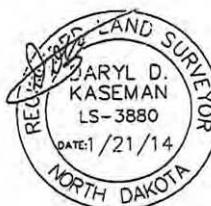
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0 100

 1" = 1000'

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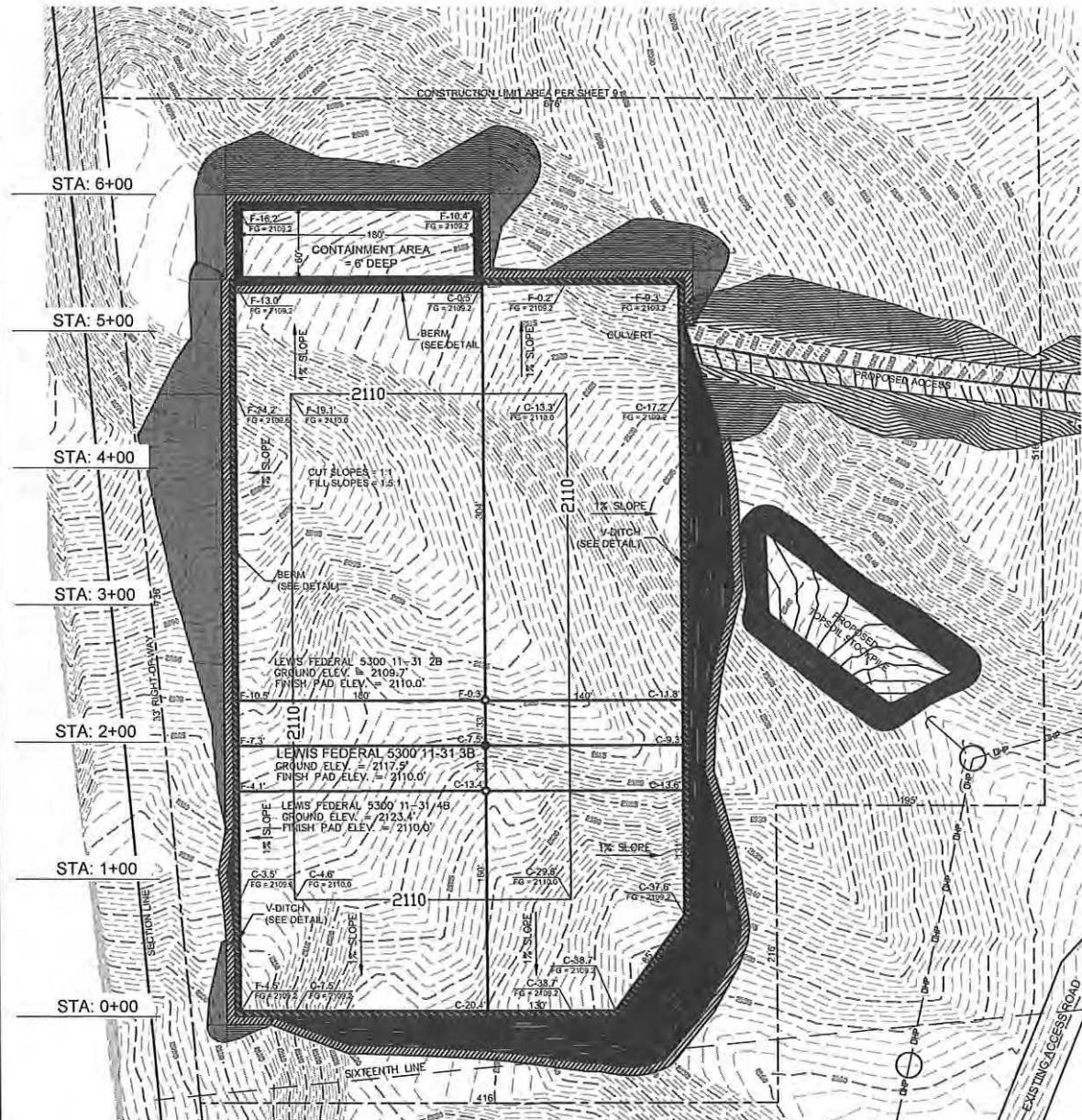
Supplier	Part No.	QTY	Description
OASIS PETROLEUM NORTH AMERICA, LLC			
SECTION BREAK TUBE			
SECTIONS 31 & 115M, RUHN			
MCKENZIE COUNTY, NORTH DAKOTA			
			Project #: 55-2525313
			Date: 05-2014
Hartford Engineering, Inc.			D-Buy By: D.E.M.
P.O. Box 648			C-E Buy By: D.E.M.
425 East Main Street			
Sheriff, Alabama 35270			
Fax: (205) 352-1111			
Phone: (205) 352-1118			
www.hartfordeng.com			

PAD LAYOUT

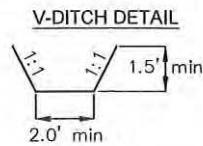
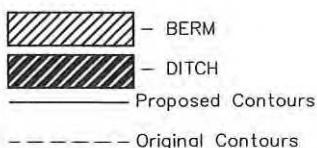
OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
LEWIS FEDERAL 5300 11-31 3B

1083 FEET FROM NORTH LINE AND 262 FEET FROM WEST LINE
SECTION 31, T153N, R100W, 5TH P.M., MCKENZIE COUNTY, NORTH DAKOTA

THIS DOCUMENT WAS ORIGINALLY
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KASEMAN, PLS, REGISTRATION
NUMBER 3880 ON 3-27-18
AND THE ORIGINAL DOCUMENTS
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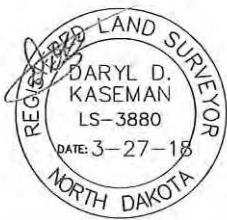


NOTE: Pad dimensions shown are to usable area, the v-ditch and berm areas shall be built to the outside of the pad dimensions.



NOTE: All utilities shown are preliminary only, a complete utility location is recommended before construction.

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P.O. Box 648
425 East Main Street
Sidney, Montana 59270

OASIS PETROLEUM NORTH AMERICA, LLC
PAD LAYOUT
SECTION 31, T153N, R100W, 5TH P.M.,
MCKENZIE COUNTY, NORTH DAKOTA

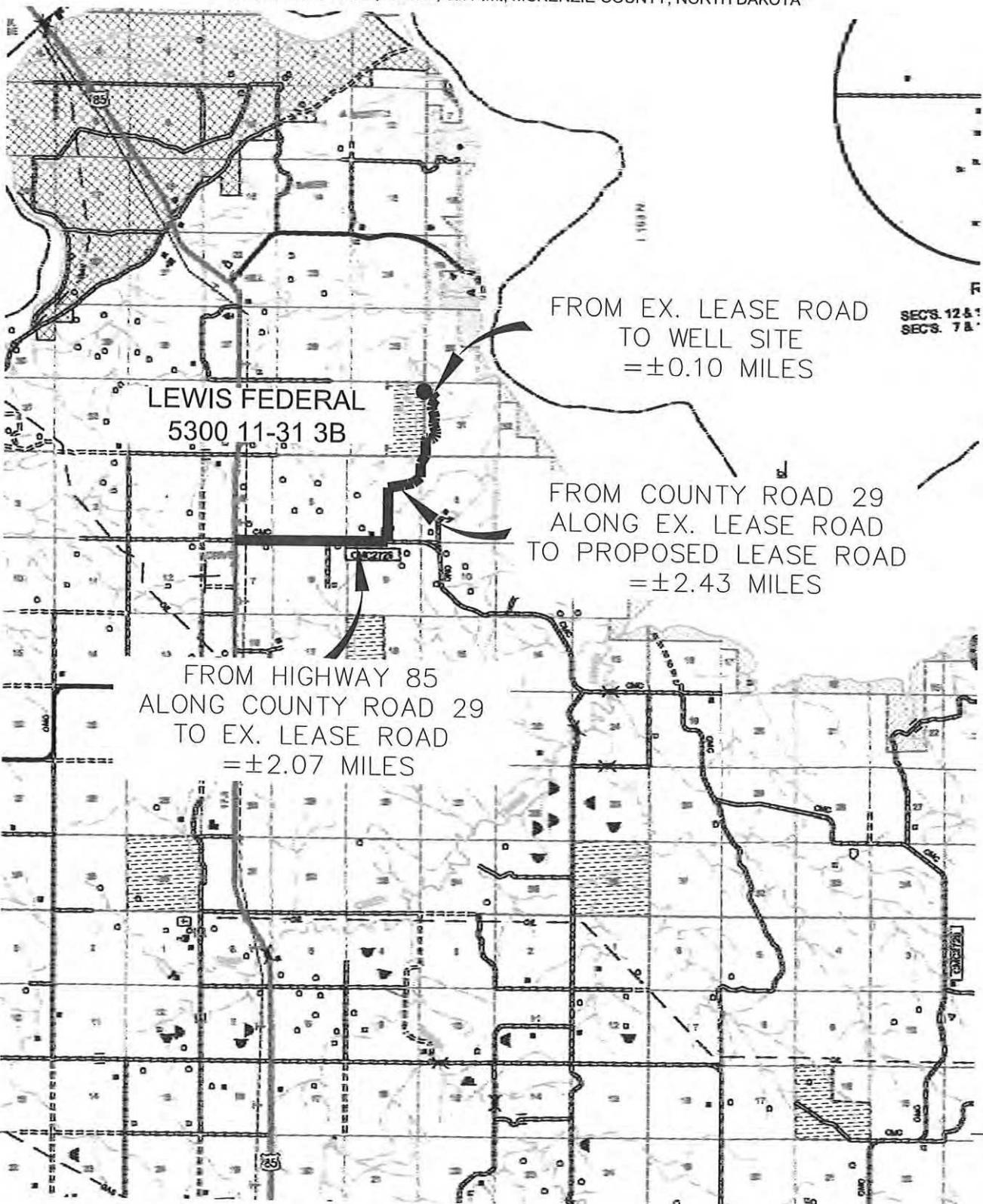
Ph (406) 433-5617
Fax (406) 433-5618
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COUNTY ROAD MAP

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002

"LEWIS FEDERAL 5300 11-31 3B"

1005 FEET FROM NORTH LINE AND 233 FEET FROM WEST LINE
SECTION 31, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



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SCALE: 1" = 2 MILE

7/9



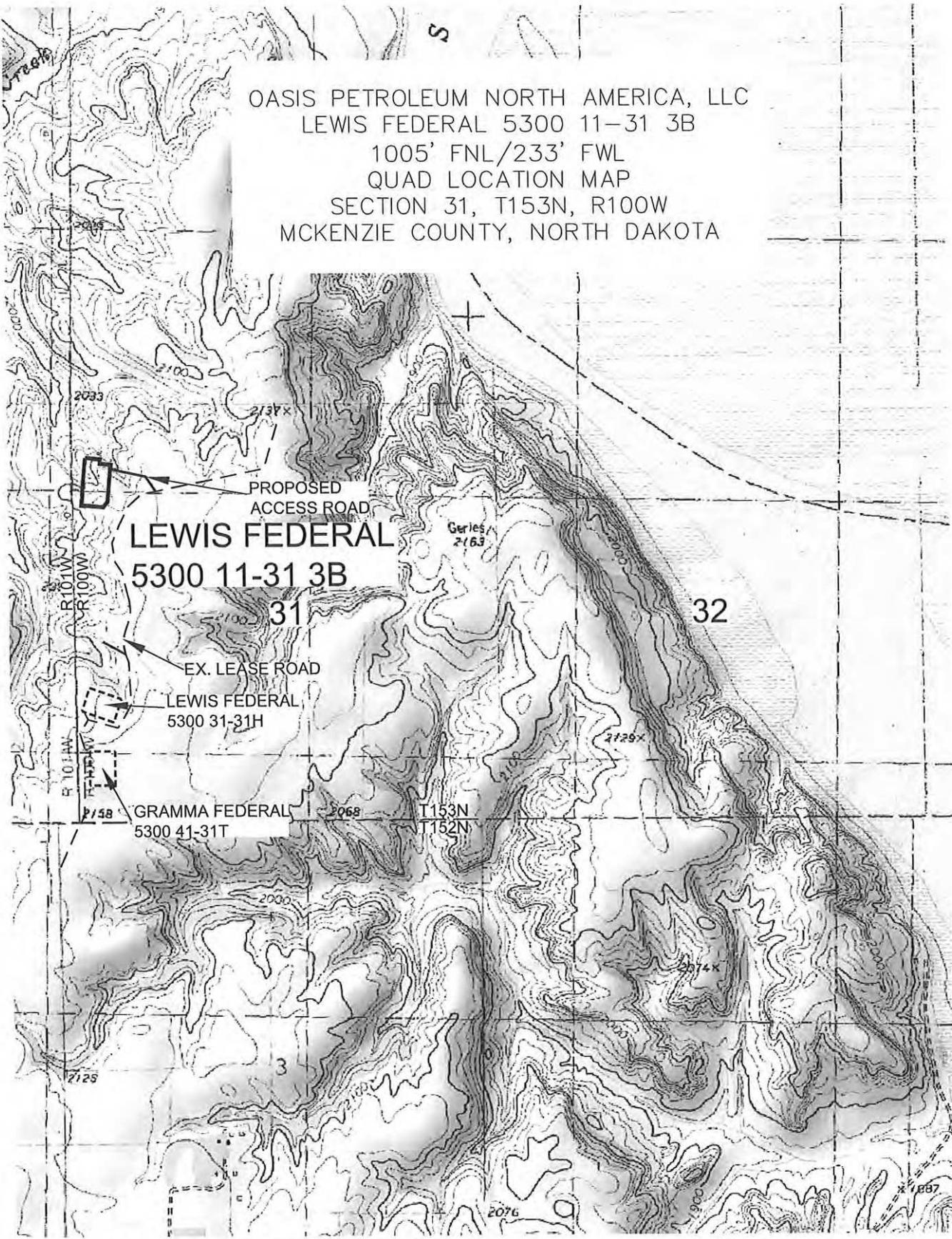
SHEET NO.

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Sidney, Montana 59270
Ph (406) 433-5617
Fax (406) 433-5618
www.interstateeng.com
Other offices in Minnesota, North Dakota and South Dakota

OASIS PETROLEUM NORTH AMERICA, LLC
COUNTY ROAD MAP
SECTION 31, T153N, R100W
MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.H.H. Project No.: S13-09-378.02
Checked By: D.D.K. Date: JAN. 2014

Revision No.	Date	By	Description
REV 1	12/3/14	B.H.H.	REMOVED PIT FROM PAD



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6/9



SHEET NO.

Interstate Engineering, Inc.
 P.O. Box 648
 425 East Main Street
 Sidney, Montana 59270
 Ph (406) 433-5617
 Fax (406) 433-5618
www.Interstateeng.com
Other offices in Minnesota, North Dakota and South Dakota

OASIS PETROLEUM NORTH AMERICA, LLC
 QUAD LOCATION MAP
 SECTION 31, T153N, R100W
 MCKENZIE COUNTY, NORTH DAKOTA

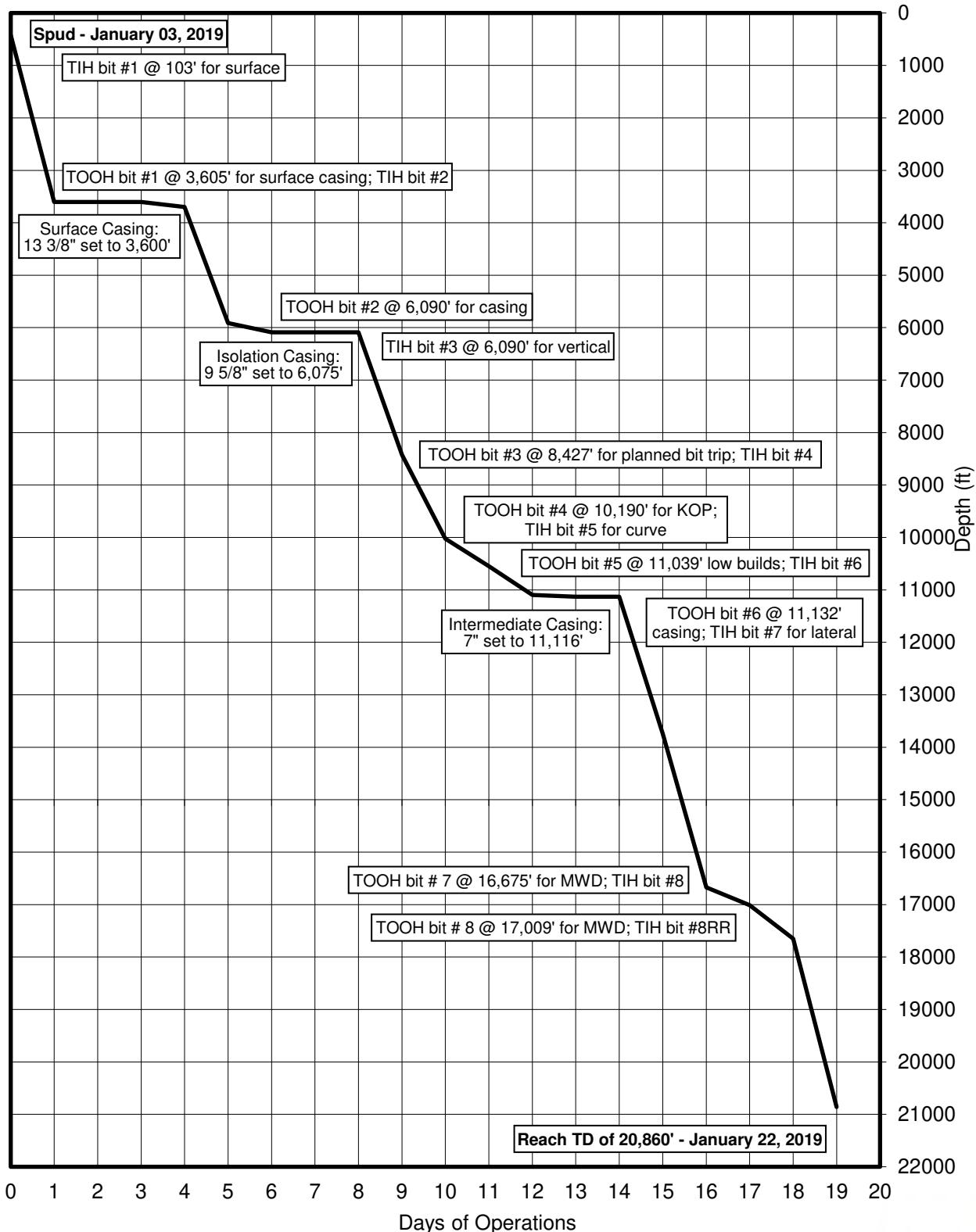
Drawn By: B.H.H. Project No.: S13-09-378.02
 Checked By: D.D.K. Date: JAN, 2014

Revision No.	Date	By	Description
REV 1	12/3/14	B.H.H.	REMOVED PIT FROM PAD

TIME VS. DEPTH

Oasis Petroleum North America, LLC

Lewis Federal 5300 11-31 3B



MORNING REPORT SUMMARY

Rig Contractor: Nabors B21									Tool Pushers: Todd Miller, Matt Piehl										
Day	Date 2019	Depth (0600 Hrs)	24 Hr Footage	Bit #	WOB (Klbs) RT	RPM (RT)	WOB (Klbs) MM	RPM (MM)	PP	SPM 1	SPM 2	SPM 3	GPM	24 Hr Activity Summary					
0	1/3	421'	318'	1	3	55	-	109	750	54	54	54	679	Skid rig from Lewis Federal 11-31 4B to Lewis Federal 11-31 3B; prepare rig for drilling; rig up catwalk, mud line, floor equipment, and cellar equipment; rig accepted at 13:00 hours on 01/02/2019; clean mud tanks, bear traps, dress shakers; rig up cellar; strap and gather BHA; pick up BHA; spud well on 01/03/2019; rotary drill from 103'-421'.					-
1	1/4	3,605'	3,184'	1	15	75	-	147	3850	73	73	73	917	Rotary drill from 421'-1,780'; circulate and condition mud ring; rig service; rotary drill from 1,780'-2,341'; circulate and condition mud ring; rig service; rotary drill from 2,341'-3,605' (casing depth); circulate and condition; TOOH.					Pierre
2	1/5	3,605'	0'	1	-	-	-	-	-	-	-	-	-	TOOH; rack back collars; inspect BHA; ream BHA down; TIH reaming; ream and wash tight spot; circulate and condition bottoms up 2x; displace 800 bbls of fresh water until hole and shakers come clean; TOOH; PJSA, lay down BHA; lay down drill collars; lay down BHA; PJSA to run casing; rig up to run casing; run casing.					Pierre
3	1/6	3,605'	0'	-	-	-	-	-	-	-	-	-	-	Run casing; rig down casing crew; circulate and condition bottoms until shakers are clean; prejob safety meeting with cementers; rig up Halliburton; primary cementing; PJSA; working as directed by operator, rig down cementers, clean cellar out, cut off casing and conductor, install well head.					Pierre
4	1/7	3,700'	95'	2	15	45	10	150	3600	75	75	75	654	Install well head; nipple up BOP; test BOP; pressure test casing shoe; rig down testers; install wear busing; safety meeting with wireline crew; rig up wireline gyro tool; shoot surveys; rig down wireline; pick up BHA; TIH; drill cement out of surface casing, tag float at 3,555' and shoe at 3,600'; rotate ahead to 3,620'; FIT using 14 EMW held 470 psi; rotary drilling from 3,620'-3,700'.					Pierre
5	1/8	5,910'	2,210'	2	20	45	10	158	4800	79	79	79	689	Rotary drilling from 3,700'-4,395'; service rig; rotary drilling from 4,395'-5,910'.					Swift
6	1/9	6,090'	180'	2	20	45	-	158	4800	79	79	79	689	Rotary drilling from 5,910'-6,090'; PJSA on tripping with high winds, flow check (no flow); short trip and back ream F/ 6,090'-5,400' and TIH f/ 5,400'-6,090'; PJSA on tripping with high winds, flow check (no flow); short trip and back ream F/ 6,090'-5,400'; spot pill, spot LCM sweep across Dakota; PJSA on TOOH in high winds; flow check, no flow, floor hands change clothes; TOOH F/ 4,200'-5,700'; service rig; flow check, no flow; safety stand down on service loop, looking up, proper hand signals; TOOH; lay down BHA; install/remove wear bushing, wear was broken; PJSA to rig up casers; rig up to run casing; install remove wear bushing; service top drive; run casing.					Swift
7	1/10	6,090'	0'	-	-	-	-	-	-	-	-	-	-	Run casing; PJSA with Noble for rig down; lay down 3rd party tools; circulate and condition bottoms up; wait on Halliburton; service rig; wait on Halliburton; PJSA with Halliburton cement; rig up cementers; primary cementing; safety inspection to rig down cementer; rig down cementers; pull landing joint, install packoff; install/remove wear bushing; trip in hole.					Swift
8	1/11	6,090'	0'	-	-	-	-	-	-	-	-	-	-	Trip in hole; cut drill line; service rig; wait on cement, circ and condition mud; Circulate and condition, get chemicals in and cut mud weight to 10 ppg; TOOH; pick up BHA; service top drive; PJSA to rig up wireline; rig up loggers; cased hole logs; PJSA rig down loggers; rig down loggers.					Swift

MORNING REPORT SUMMARY

Rig Contractor: Nabors B21									Tool Pushers: Todd Miller, Matt Piehl									
Day	Date 2019	Depth (0600 Hrs)	24 Hr Footage	Bit #	WOB (Klbs) RT	RPM (RT)	WOB (Klbs) MM	RPM (MM)	PP	SPM 1	SPM 2	SPM 3	GPM	24 Hr Activity Summary				
9	1/12	8,427'	2,337'	3	50	45	25	153	4850	79	79	79	637	Prejob safety meeting; pressure test casing shoe to 1500 psi; pick up BHA; TIH; remove trip nipple, install rotating head rubber; test MWD tool; drill cement out of casing, tag float at 6,033' and shoe at 6,075'; rotary drill ahead to 6,090'; FIT; rotary drill from 6,090'-6,932'; rig service; rotary drill from 6,932'-8,427'; service rig; pump dry job.				Kibbey
10	1/13	10,022'	1,595'	4	45	45	25	176	4050	66	66	66	567	TOOH; lay down BHA; pick up BHA; TIH; rotary drill from 8,892'-10,022'; BOP drill; rig service.				Lodgepole
11	1/14	10,550'	528'	5	55	20	20	185	3950	73	73	73	637	Rotary drill from 10,022'-10,190'; TD vertical; TOOH, strap out; lay down BHA; pick up BHA; TIH; ream salts; rig service; orientate curve slide drilling, rotating as needed, from 10,190'-10,513'; Kelly hose blew; down time waiting on Nabors hotshot with replacement Kelly hose; TOOH to shoe; replace hose; test hose; TIH; slide drilling, rotating as needed, from 10,513'-10,550'.				Lodgepole
12	1/15	11,098'	548'	6	55	20	75	135	3950	80	80/-	465	-	Slide drilling, rotating as needed, from 10,550'-11,039'; rig service; TOOH due to insufficient build rates; laydown BHA; pick up new bit and 2.5 degree motor; TIH; slide drilling, rotating as needed, from 11,039'-11,098'.				Middle Bakken
13	1/16	11,132'	34'	6	43	15	-	160	2900	92	92/-	551	595	Drill F/11,098'-11,132'; short trip; orient the tool high side, 40'/min as per Oasis; circulate and condition 2 bottoms up; TOOH, orient tool high side through curve @ 40'/min; remove rotating head, install trip nipple; PJSA for BHA; lay down BHA; install/remove wear bushing; service rig; working as directed by operator, clean rig floor; PJSA with casers; rig up to run casing; run casing; service rig.				Middle Bakken
14	1/17	11,132'	0'	7	-	-	-	-	-	-	-	-	-	Pre job safety w/ Noble; lay down 2nd party tools R/D Noble; C&C; pre job safety with Halliburton; pic up 2nd party tools R/U Halliburton; primary cementing; pre job safety with Halliburton; lay down 3rd party tools R/D Halliburton; lay down 2nd party tools L/D landing JT/casing elevators/slips; working as directed by operator install Cactus packoff; install/remove wear bushing and change quill to 4"; working as directed by operator clean rig floor and get ready to P/U BHA; service rig obm yes; pre job safety to pick up BHA; pick up BHA; pick up drill pipe; pressure test CSG/Shoe/2500 PSI for 30 min; cut drilling live/15 wraps; working as directed by operator put 145 joints on catwalk/and strapped; pick up drill pipe				Middle Bakken
15	1/18	13,743'	2,611'	7	28	45	40	276	4500	55	-	55	325	Pick up drill pipe remove TN install RHR; drilling cement & plug @10,951' float @11,115'; C&C B/U for FIT; FIT @ 11,147' MW 9.7 PPG EMW 13ppg 1850 psi; rotary drilling F/11,132'-11,739'; service rig; rotary drilling F/11,739'-13,755'; service top drive.				Middle Bakken
16	1/19	16,675'	2,932'	7	28	50	40	276	4700	55	55	-	325	Rotary drilling F/13,743'-14,200'; safety stand down on oasis incidents; rotary drilling F/14,200'-15,256'; service rig; rotary drilling F/15,256'-16,675'; wait on 3rd party tools, trouble shoot MWD; TOOH, pull rotating head; TOOH; service rig.				Middle Bakken

MORNING REPORT SUMMARY

Rig Contractor: Nabors B21									Tool Pushers: Todd Miller, Matt Piehl									
Day	Date 2019	Depth (0600 Hrs)	24 Hr Footage	Bit #	WOB (Klbs) RT	RPM (RT)	WOB (Klbs) MM	RPM (MM)	PP	SPM 1	SPM 2	SPM 3	GPM	24 Hr Activity Summary				
17	1/20	17,009'	334'	8	28	45	60	272	3900	55	-	55	325	TOOH; PJSA for BHA; lay down BHA; pick up BHA; TIH, remove trip nipple, install rotating head, 235'/min as per Oasis; Working as directed by operator, relog gamma; circulate gas through choke; relog gamma; service rig; Drill F/16,675'-16,974'; slide drilling/trouthing F/16,964'-16,979'; slide drilling F/16979'-17009'; wait on 3rd party; troubleshoot MWD; circulate and condition, pump dry job; PJSA to TOOH; TOOH; PJSA, lay down BHA; lay down BHA; wait on 3rd party, wait on MWD tools.				Middle Bakken
18	1/21	17,650'	641'	8RR	22	45	32	275	4700	55	-	55	325	Waiting on 3rd party tools MWD; pick up BHA; TIH remove TN, Install RHR, test MWD tool; cut drilling line 11 wraps; TIH; service rig; working as directed by operator clean out mud leg and gas buster; C&C B/U for gas;C&C; working as directed by operator/relog gamma/shoot surveys, slide drilling F/17,009-17,025'; rotary drilling F/17,025'-17,100' slide drilling F/17,100'-17,115' drill F/17,115'-17,650'; service top drive.				Middle Bakken
19	1/22	20,860'	3,210'	8RR	28	50	45	276	4500	55	-	55	325	Rotary drilling F/17,620'-19,416'; service rig; rotary drilling F/19,416'-21,860'; service rig; circulate and condition.				Middle Bakken

DAILY MUD SUMMARY

Chemical Company: Reliable Drilling Fluids LLC						Mud Engineer: S. Zimmermann					Fresh water in surface; Diesel invert in vertical/curve; Salt water in lateral										
Date 2019	Mud Depth	Mud WT (ppg)	VIS (sec/qt)	PV (cP)	YP (lbs/100 ft ²)	Gels (lbs/100 ft ²)	600/300	Oil/H ₂ O (ratio)	Oil/H ₂ O (%)	Cake (API/HTHP)	Solids (%)	Cor. Solids (%)	Alk	pH	Excess Lime (lb/bbl)	Cl ⁻ (mg/L)	LGS/ HGS (%)	Salinity (ppm)	Electrical Stability	Mud loss (bbls)	Mud Gain (bbls)
01/03	103'	8.3	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/04	3,605'	9.85	47	6	26	16/22/29	38/32	-	0/86	-	14	13.95	7.5	7.5	0	1.1k	13.95/0	-	-	-	-
01/05	3,605'	9.9	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/06	3,605'	9.85	47	6	26	16/22/29	38/32	-	0/86	-	14	13.95	7.5	7.5	0	1.1k	13.95/0	-	-	-	-
01/07	5,340'	12.1	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/08	6,090'	12.85	54	30	13	11/17/21	73/43	71/29	55/22	3	23	20.27	1.9	-	2.46	45k	3.89/16.38	252108	359	-	-
01/09	6,090'	12.85	54	30	13	11/17/21	73/43	71/29	55/22	3	23	20.27	1.9	-	2.46	45k	3.89/16.38	252108	359		
01/10	6,090'	11.15	41	12	7	7/10/14	31/19	78/22	66/19	2	15	13.01	1.7	-	2.2	33k	2.22/10.79	222535	388	-	-
01/11	6,090'	10.3	42	10	7	7/10/13	27/17	79/21	68/18	2	14	11.94	1.9	-	2.46	34k	2.95/8.99	237392	559	-	-
01/12	8,427'	10.4	45	14	9	9/13/16	37/23	80/20	68/17	3	15	12.94	2.4	-	3.11	34k	4.21/8.73	247894	924	-	-
01/13	10,190'	10.25	44	11	8	8/11/15	30/19	85/15	72/13	3	15	13.3	2.1	-	2.72	28k	4.7/8.6	261967	580	-	-
01/14	10,840'	10.45	46	9	8	9/13/16	26/17	82/18	69/15	3	16	14.12	1.9	-	2.46	31k	5.43/8.69	254058	498	-	-
01/15	11,132'	10.25	40	11	8	8/12/16	30/19	82/18	69/15	3	16	14.12	1.8	-	2.33	31k	5.64/8.48	302663	529	-	-
01/16	Change from OBM to salt water																				
01/17	11,185'	9.8	28	2	1	1/1/1	5/3	-	1/90	-	9	0.64	0.1	8.5	0	171k	0.64/0	-	-	-	-
01/18	13,743'	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/19	16,675'	9.6	28	2	1	1/1/1	5/3	-	0/91	-	9	0.19	0.1	8.5	0	178k	1.73/-	-	-	-	-
01/20	17,009'	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/21	19,000'	9.6	28	2	1	1/1/1	5/3	-	0/91	-	9	0.19	0.1	8.5	0	178k	0.19/0	-	-	-	-

BOTTOM HOLE ASSEMBLY RECORD

Bit Data											Motor Data						Reason For Removal
Bit #	Size (in.)	Type	Make	Model	Depth In	Depth Out	Footage	Hours	Σ hrs	Vert. Dev.	Make	Model	Lobe	Stage	Bend	Rev/Gal	
1	17 1/2	PDC	Ulterra	36992	103'	3,605'	3,502'	24.0	24	Surface	Stickman	Predator	5/6	6.0	2.0°	0.16	TD surface
2	12 1/4	PDC	Ulterra	41164	3,605'	6,090'	2,485'	30.0	54	Vertical	Stickman	Predator	5/6	6.0	2.0°	0.16	Run Isolation casing
3	8 3/4	PDC	Smith	XS616	6,090'	8,427'	2,337'	15.0	69	Vertical	NOV	-	7/8	5.7	1.50°	0.24	Planned bit trip
4	8 3/4	PDC	Varel	FY616P-F	8,427'	10,190'	1,763'	16.0	85	Vertical	Predator	-	7/8	5.7	1.50°	0.31	TD vertical
5	8 3/4	PDC	Reed	TK 56	10,190'	11,039'	849'	14.5	99.5	Curve	NOV	-	7/8	5.0	2.12°	0.29	Low build rates
6	8 3/4	Tri-cone	Smith	F30T	11,039'	11,132'	93'	5.5	105	Curve	NOV	-	7/8	5.0	2.50°	0.28	TD curve
7	6	PDC	Security	GTD54HE	11,132'	16,675'	5,543'	38.0	143	Lateral	Discovery	-	7/8	10.6	1.50°	0.85	MWD failure
8	6	PDC	Reed	TKC 53	16,675'	17,009'	334'	4.0	147	Lateral	Discovery	-	7/8	10.6	1.50°	0.85	MWD failure
8RR	6	PDC	Reed	TKC 53	17,009'	20,860'	3,851'	26.0	173	Lateral	Discovery	-	7/8	10.6	1.50°	0.85	TD lateral



PLAN VIEW

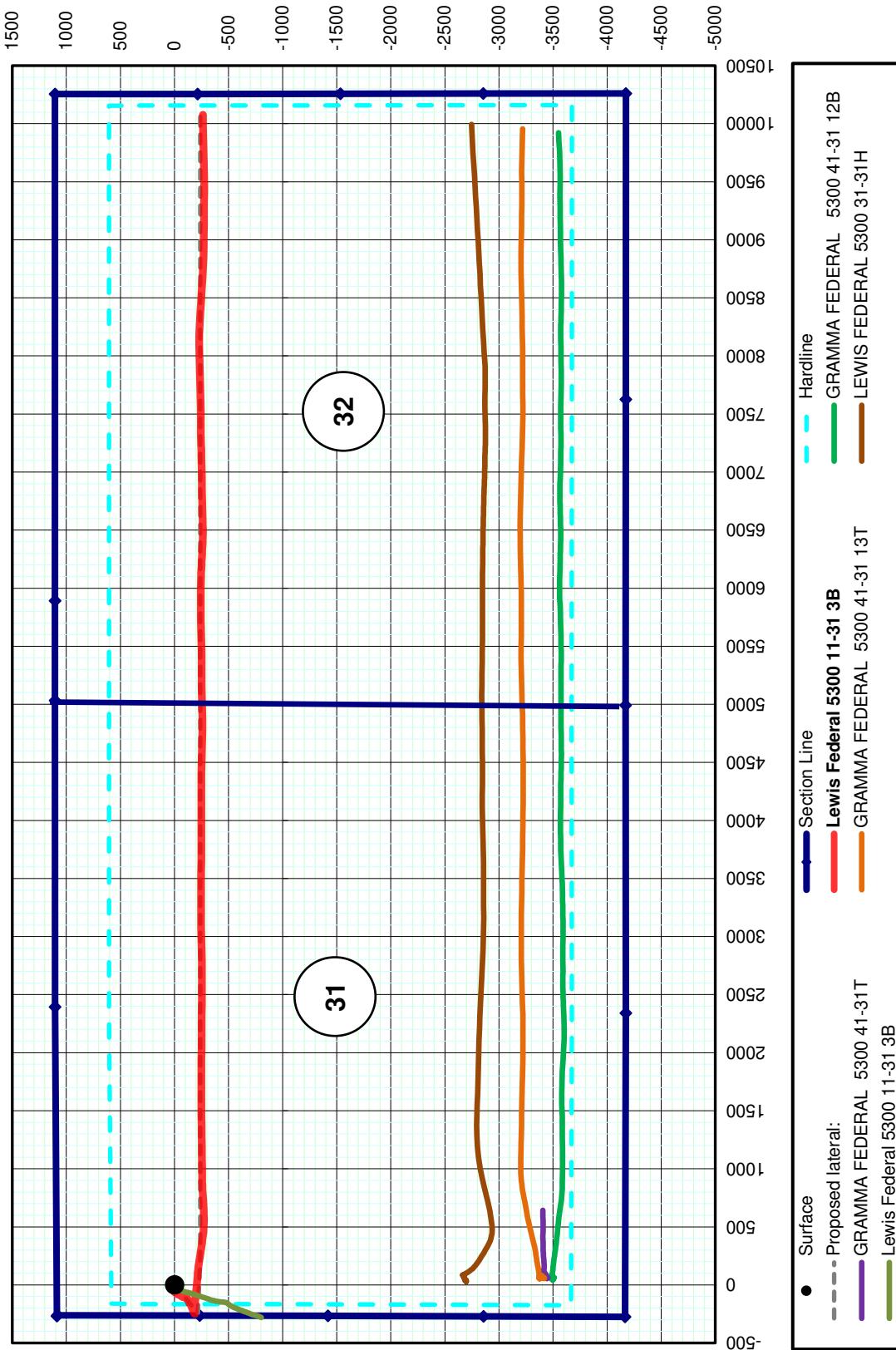
Note: 1,280 acre laydown
spacing unit with 500' N/S
& 100' E/W setbacks

Oasis Petroleum North America, LLC
Lewis Federal 5300 11-31 3B
1,083' FNL & 262' FWL
Lot 1 Sec. 31, T153N, R100W

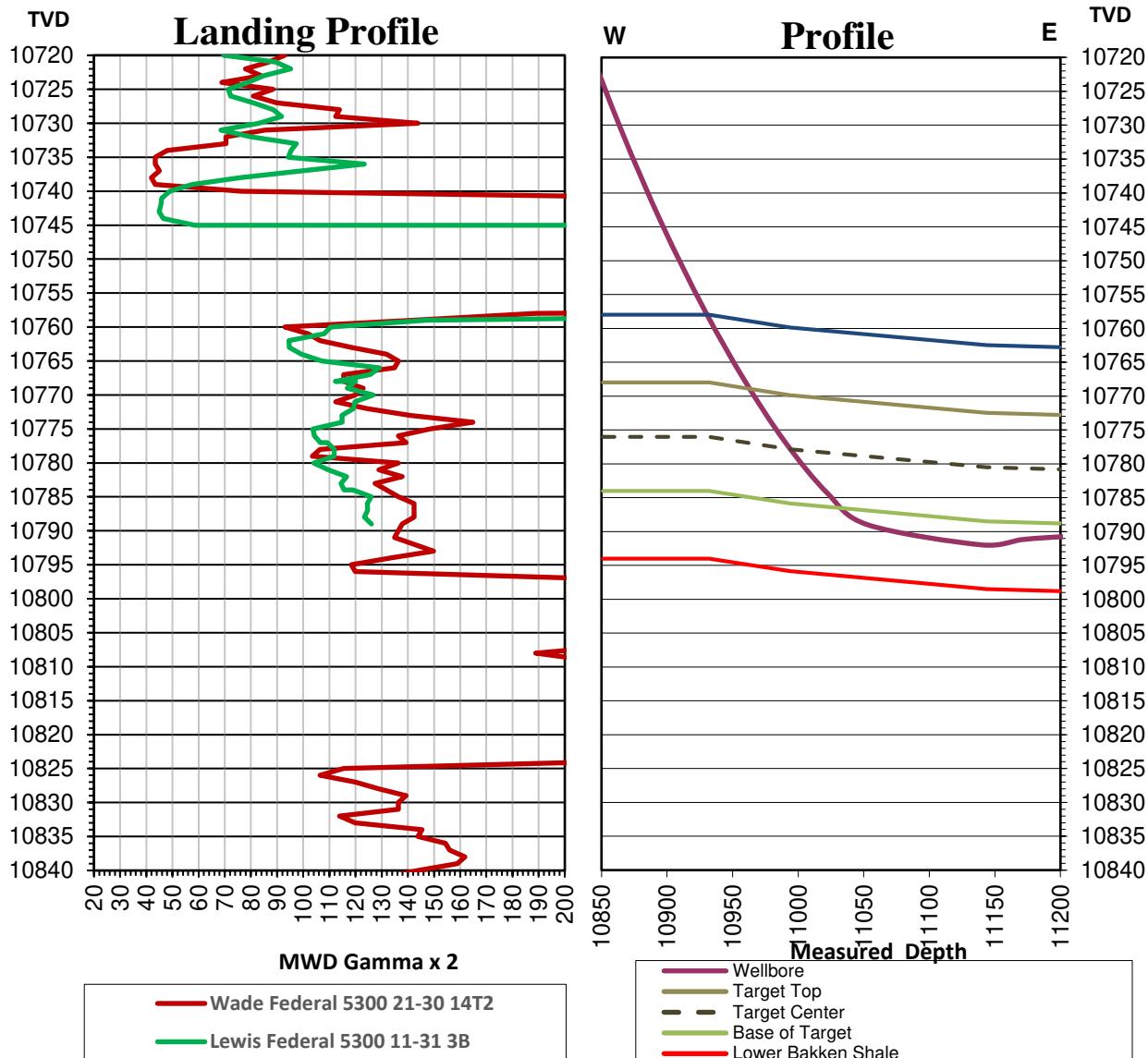


Bottom Hole Location

236.07' S & 10,076.54' E
of surface location or
1,346.07' FNL & 184.20' FEL
Lot 4 Sec. 32, T153N, R100W



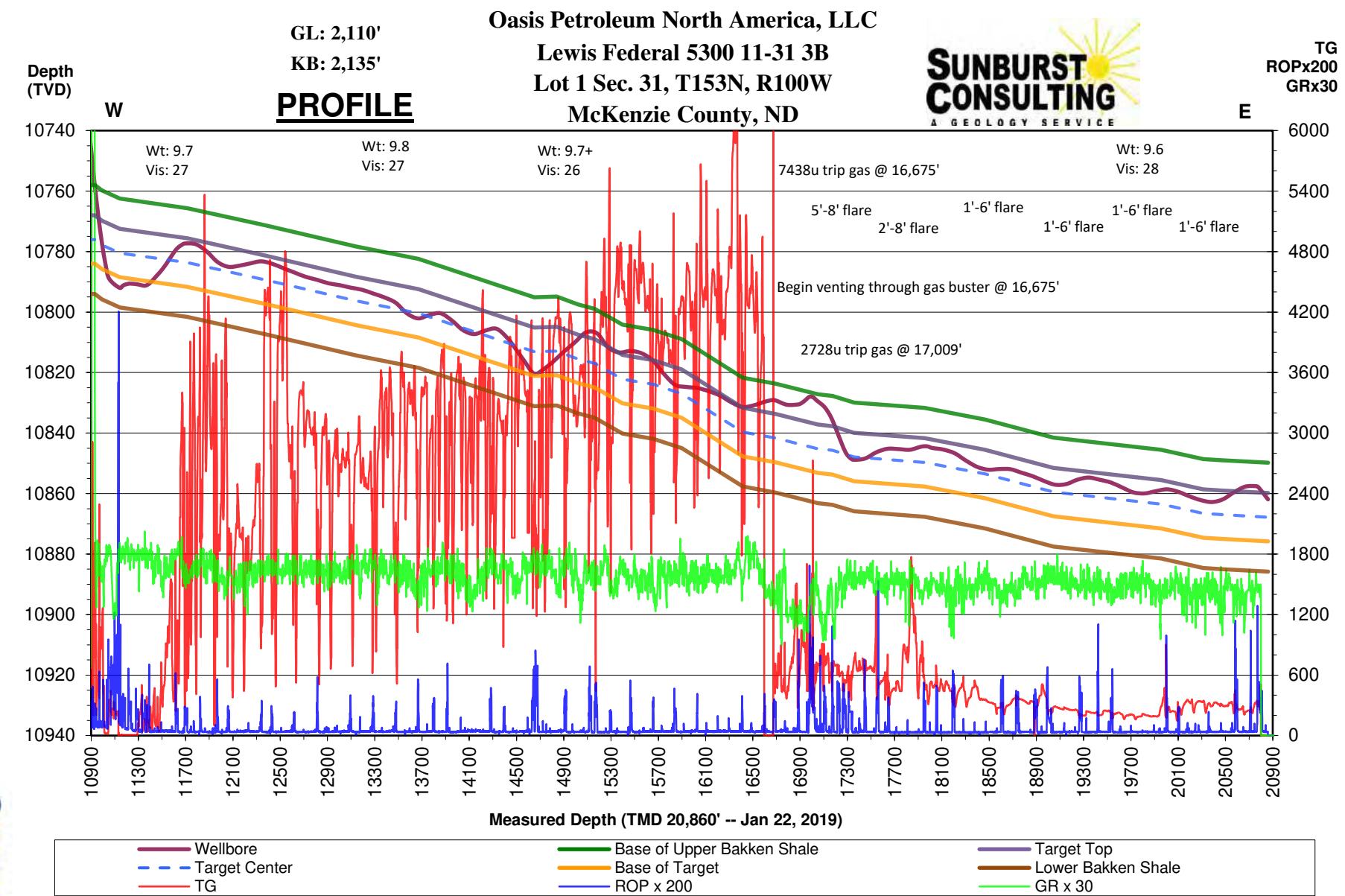
Lewis Federal 5300 11-31 3B
257' FNL & 1,817' FEL
Lot 1 Sec. 31, T153N, R100W
McKenzie County, ND



LANDING PROJECTION

Formation/ Zone:	Proposed Landing Target From:			
	Wade Federal 5300 41-30 8T2	Lewis Federal 5300 31-31H	Gramma Federal 5300 41-31T	Average of Offset Wells
Pierre	-	10,744'	-	10,744'
Greenhorn	10,767'	10,801'	-	10,784'
Mowry (Dakota Group)	10,764'	10,787'	-	10,776'
Inyan Kara (Dakota Group)	10,733'	10,747'	-	10,740'
Swift (Base Dakota Group)	10,754'	10,802'	-	10,778'
Rierdon	10,740'	10,859'	-	10,799'
Dunham Salt	10,741'	10,857'	-	10,799'
Dunham Salt Base	10,734'	10,793'	-	10,763'
Pine Salt	10,765'	10,768'	-	10,767'
Pine Salt Base	10,783'	10,749'	-	10,766'
Opeche Salt	10,786'	10,764'	-	10,775'
Opeche Salt Base	10,773'	10,749'	-	10,761'
Amsden	10,788'	10,758'	-	10,773'
Tyler	10,774'	10,748'	-	10,761'
Otter/Base Minnelusa	10,777'	10,751'	-	10,764'
Kibbey "Lime"	10,774'	10,753'	10,765'	10,764'
Charles Salt	10,781'	10,753'	10,767'	10,767'
Base Last Salt	10,778'	10,764'	10,781'	10,774'
Mission Canyon	10,769'	10,761'	10,773'	10,768'
Lodgepole	10,770'	10,768'	10,781'	10,773'
Lodgepole A	10,772'	10,774'	10,788'	10,778'
Lodgepole B	10,764'	10,756'	10,765'	10,762'
Lodgepole C	10,774'	10,776'	10,795'	10,782'
Lodgepole D	10,773'	10,783'	10,780'	10,779'
Lodgepole E	10,778'	10,782'	10,784'	10,781'
Lodgepole F	10,778'	10,783'	10,783'	10,782'
False Bakken	10,781'	10,784'	10,782'	10,782'
Upper Bakken	10,782'	10,781'	10,783'	10,782'
Middle Bakken	10,779'	10,779'	10,779'	10,779'

Current Landing Target (21' below the base of the UBS): **10,779'**



WELL

Lewis Federal 5300 11-31 3B



API	TYPEWELL	FIELD	INTERPRETER	DATE	VS AZIMUTH
33-053-06548	Lewis Federal 5300 31-31H	Baker	D. Johnson, C. Kyler	1/22/2019 6:44 AM	91.35°



Last Surveys					
MD	INCL	AZIM	TVD	VS	DLS
20,669.0	90.47	87.8	10,857.7	9,889.2	1.3
20,763.0	89.67	89.9	10,857.6	9,983.1	2.4

Last Segment Dip
89.88°

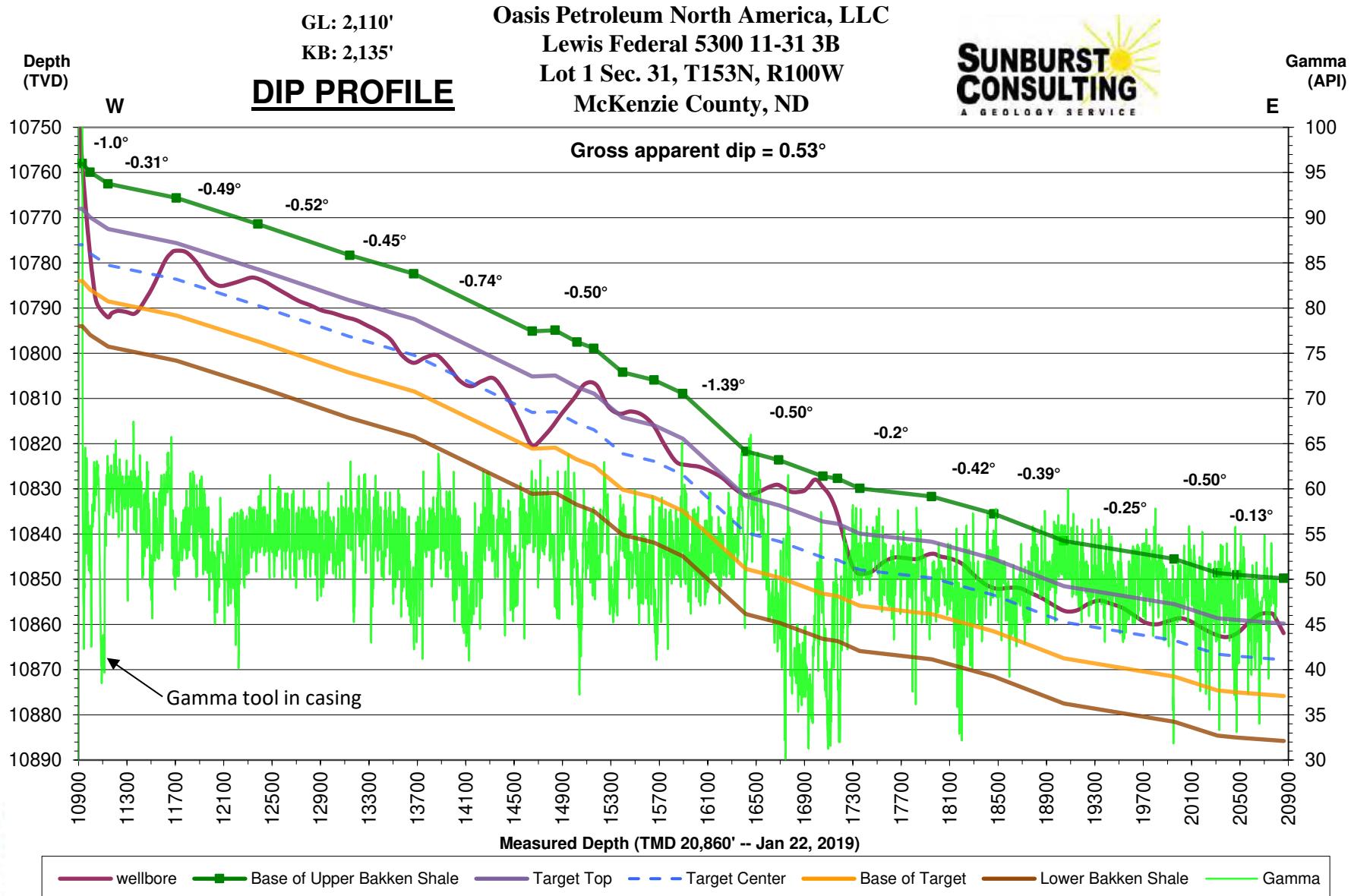
COMMENTS

Subsurface Structure Points - Lewis Federal 5300 11-31 3B

GL: 2,110'

KB: 2,135'

Measured Depth	Base of Upper Bakken Shale (TVD)	Target Top (TVD)	Target Center (TVD)	Base of Target (TVD)	Lower Bakken Shale (TVD)	Dip	Up/Down
10,931.00'	10758.00	10768.00	10776.00	10784.00	10784.00		
10,995.00'	10759.90	10769.90	10777.90	10785.90	10785.90	-1.70°	Down
11,144.00'	10762.50	10772.50	10780.50	10788.50	10788.50	-1.00°	Down
11,709.00'	10765.60	10775.60	10783.60	10791.60	10791.60	-0.31°	Down
12,382.00'	10771.40	10781.40	10789.40	10797.40	10797.40	-0.49°	Down
13,142.00'	10778.30	10788.30	10796.30	10804.30	10804.30	-0.52°	Down
13,670.00'	10782.40	10792.40	10800.40	10808.40	10808.40	-0.44°	Down
14,649.00'	10795.10	10805.10	10813.10	10821.10	10821.10	-0.74°	Down
14,842.00'	10794.90	10804.90	10812.90	10820.90	10820.90	0.06°	Up
15,020.00'	10797.50	10807.50	10815.50	10823.50	10823.50	-0.84°	Down
15,158.00'	10798.90	10808.90	10816.90	10824.90	10824.90	-0.58°	Down
15,397.00'	10804.20	10814.20	10822.20	10830.20	10830.20	-1.27°	Down
15,657.00'	10805.90	10815.90	10823.90	10831.90	10831.90	-0.37°	Down
15,894.00'	10808.90	10818.90	10826.90	10834.90	10834.90	-0.73°	Down
16,416.00'	10821.70	10831.70	10839.70	10847.70	10847.70	-1.40°	Down
16,688.00'	10823.60	10833.60	10841.60	10849.60	10849.60	-0.40°	Down
17,053.00'	10827.20	10837.20	10845.20	10853.20	10853.20	-0.57°	Down
17,174.00'	10827.70	10837.70	10845.70	10853.70	10853.70	-0.24°	Down
17,358.00'	10829.90	10839.90	10847.90	10855.90	10855.90	-0.69°	Down
17,951.00'	10831.70	10841.70	10849.70	10857.70	10857.70	-0.17°	Down
18,465.00'	10835.50	10845.50	10853.50	10861.50	10861.50	-0.42°	Down
19,045.00'	10841.50	10851.50	10859.50	10867.50	10867.50	-0.59°	Down
19,955.00'	10845.50	10855.50	10863.50	10871.50	10871.50	-0.25°	Down
20,313.00'	10848.60	10858.60	10866.60	10874.60	10874.60	-0.50°	Down
20,474.00'	10849.00	10859.00	10867.00	10875.00	10875.00	-0.14°	Down
20,860.00'	10849.80	10859.80	10867.80	10875.80	10875.80	-0.12°	Down



Operator:	Oasis Petroleum North America, LLC
Well:	Lewis Federal 5300 11-31 3B
Surface Coordinates:	1,083' FNL & 262' FWL
Surface Location:	Lot 1 Sec. 31, T153N, R100W
County, State:	McKenzie County, ND
Bottom Hole Location:	236.07' S & 10,076.54' E of surface location or 1,346.07' FNL & 184.20' FEL Lot 4 Sec. 32, T153N, R100W



Kick-off: 1/13/2019
Finish: 1/22/2019

Directional Supervision:
Scientific Drilling
RPM Consulting

GL: 2,110'
KB: 2,135'

Minimum Curvature Method (SPE-3362)

[North and East are positive and South and West are negative]

Vertical Section Azimuth: 91.35
DLS/

No.	MD	INC	TRUE			E-W	SECT	100
			AZM	TVD	N-S			
Tie	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	168.00	0.54	304.14	168.00	0.44	-0.66	-0.67	0.32
2	261.00	0.29	4.55	261.00	0.92	-1.00	-1.02	0.51
3	355.00	0.61	316.07	354.99	1.52	-1.33	-1.36	0.50
4	447.00	0.80	325.27	446.99	2.40	-2.03	-2.09	0.24
5	537.00	0.85	323.54	536.98	3.46	-2.79	-2.87	0.06
6	626.00	0.24	338.37	625.97	4.16	-3.25	-3.35	0.70
7	725.00	0.62	348.62	724.97	4.88	-3.43	-3.55	0.39
8	815.00	0.79	346.47	814.96	5.96	-3.67	-3.81	0.19
9	905.00	0.81	323.76	904.95	7.08	-4.19	-4.36	0.35
10	996.00	0.96	344.77	995.94	8.33	-4.77	-4.97	0.39
11	1086.00	0.84	322.19	1085.93	9.58	-5.38	-5.60	0.41
12	1176.00	0.07	75.77	1175.93	10.11	-5.73	-5.96	0.97
13	1266.00	0.67	154.08	1265.93	9.65	-5.44	-5.67	0.73
14	1357.00	0.70	123.65	1356.92	8.87	-4.75	-4.96	0.40
15	1447.00	0.98	127.92	1446.91	8.09	-3.68	-3.87	0.32
16	1539.00	0.99	134.82	1538.90	7.05	-2.50	-2.67	0.13
17	1629.00	0.87	147.21	1628.89	5.92	-1.58	-1.72	0.26
18	1719.00	1.33	137.89	1718.87	4.57	-0.51	-0.62	0.55
19	1810.00	0.75	144.37	1809.85	3.31	0.55	0.47	0.65
20	1903.00	0.24	97.42	1902.85	2.79	1.09	1.03	0.66
21	1996.00	0.20	174.02	1995.85	2.60	1.31	1.24	0.30
22	2089.00	0.26	120.44	2088.85	2.33	1.50	1.45	0.23
23	2183.00	0.34	205.73	2182.85	1.97	1.57	1.52	0.44
24	2276.00	0.30	175.01	2275.85	1.48	1.47	1.43	0.19
25	2370.00	0.39	219.14	2369.84	0.99	1.29	1.26	0.29
26	2463.00	0.14	209.48	2462.84	0.64	1.03	1.02	0.27
27	2557.00	0.03	250.32	2556.84	0.53	0.95	0.94	0.13
28	2650.00	0.38	267.07	2649.84	0.51	0.62	0.61	0.38
29	2743.00	0.32	283.78	2742.84	0.56	0.06	0.05	0.13
30	2800.00	0.25	252.81	2799.84	0.56	-0.21	-0.23	0.29
31	2900.00	0.48	279.36	2899.84	0.56	-0.83	-0.85	0.28
32	3000.00	0.67	258.42	2999.83	0.51	-1.82	-1.83	0.28
33	3100.00	0.44	255.96	3099.83	0.30	-2.77	-2.77	0.23
34	3200.00	0.42	237.60	3199.83	0.01	-3.45	-3.45	0.14
35	3300.00	0.42	253.99	3299.82	-0.29	-4.11	-4.10	0.12



Operator:	Oasis Petroleum North America, LLC
Well:	Lewis Federal 5300 11-31 3B
Surface Coordinates:	1,083' FNL & 262' FWL
Surface Location:	Lot 1 Sec. 31, T153N, R100W
County, State:	McKenzie County, ND
Bottom Hole Location:	236.07' S & 10,076.54' E of surface location or 1,346.07' FNL & 184.20' FEL Lot 4 Sec. 32, T153N, R100W



Kick-off: 1/13/2019
Finish: 1/22/2019

Directional Supervision:
Scientific Drilling
RPM Consulting

GL: 2,110'
KB: 2,135'

Minimum Curvature Method (SPE-3362)

[North and East are positive and South and West are negative]

Vertical Section Azimuth: 91.35
DLS/

No.	MD	INC	AZM	TVD	N-S	E-W	SECT	100
36	3400.00	0.33	248.64	3399.82	-0.49	-4.73	-4.72	0.10
37	3500.00	0.47	245.50	3499.82	-0.77	-5.37	-5.35	0.14
38	3545.00	0.44	259.59	3544.82	-0.87	-5.71	-5.69	0.26
39	3641.00	0.41	265.66	3640.81	-0.97	-6.41	-6.39	0.06
40	3672.00	0.35	227.31	3671.81	-1.04	-6.59	-6.57	0.83
41	3766.00	1.41	265.05	3765.80	-1.33	-7.96	-7.92	1.23
42	3859.00	2.07	263.16	3858.76	-1.63	-10.77	-10.72	0.71
43	3953.00	2.65	271.61	3952.68	-1.77	-14.62	-14.58	0.72
44	4046.00	2.50	287.08	4045.59	-1.12	-18.71	-18.68	0.76
45	4140.00	2.33	287.92	4139.50	0.07	-22.49	-22.48	0.18
46	4233.00	2.79	274.45	4232.41	0.83	-26.54	-26.56	0.81
47	4326.00	3.79	266.05	4325.26	0.79	-31.87	-31.88	1.19
48	4420.00	3.52	280.15	4419.07	1.09	-37.81	-37.82	1.00
49	4513.00	3.32	296.15	4511.90	2.78	-43.03	-43.09	1.04
50	4608.00	3.47	289.23	4606.74	4.94	-48.22	-48.32	0.46
51	4703.00	3.99	255.25	4701.55	5.04	-54.13	-54.23	2.35
52	4798.00	4.11	230.69	4796.32	2.04	-59.96	-59.99	1.82
53	4893.00	3.76	212.64	4891.10	-2.74	-64.28	-64.19	1.35
54	4988.00	4.17	206.21	4985.87	-8.46	-67.48	-67.26	0.64
55	5083.00	3.49	210.52	5080.66	-14.05	-70.47	-70.12	0.78
56	5178.00	3.11	213.80	5175.50	-18.68	-73.38	-72.92	0.45
57	5272.00	3.68	210.86	5269.33	-23.39	-76.34	-75.77	0.63
58	5367.00	4.27	209.40	5364.10	-29.09	-79.64	-78.94	0.63
59	5462.00	3.68	203.48	5458.88	-34.96	-82.59	-81.75	0.76
60	5557.00	3.35	202.51	5553.70	-40.32	-84.87	-83.90	0.35
61	5652.00	3.92	199.74	5648.51	-45.95	-87.03	-85.92	0.63
62	5746.00	3.49	206.21	5742.31	-51.54	-89.38	-88.14	0.64
63	5841.00	3.24	212.42	5837.15	-56.40	-92.10	-90.74	0.46
64	5935.00	3.53	209.59	5930.98	-61.16	-94.95	-93.48	0.36
65	6021.00	4.32	212.13	6016.78	-66.20	-97.98	-96.39	0.94
66	6116.00	4.88	210.58	6111.47	-72.71	-101.94	-100.20	0.60
67	6210.00	3.85	199.95	6205.20	-79.12	-105.05	-103.16	1.39
68	6303.00	3.13	185.94	6298.03	-84.58	-106.38	-104.35	1.19
69	6396.00	3.29	184.17	6390.88	-89.77	-106.83	-104.69	0.20
70	6490.00	3.02	191.33	6484.74	-94.88	-107.52	-105.25	0.51
71	6583.00	2.96	193.64	6577.62	-99.62	-108.56	-106.19	0.14



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County, State:	McKenzie County, ND
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Kick-off: 1/13/2019
Finish: 1/22/2019

Directional Supervision:
Scientific Drilling
RPM Consulting

GL: 2,110'
KB: 2,135'

Minimum Curvature Method (SPE-3362)

[North and East are positive and South and West are negative]

Vertical Section Azimuth: 91.35 DLS/

No.	MD	INC	AZM	TVD	N-S	E-W	SECT	100
72	6677.00	2.41	211.57	6671.51	-103.66	-110.17	-107.70	1.06
73	6770.00	2.82	216.37	6764.42	-107.17	-112.55	-109.99	0.50
74	6863.00	2.73	212.46	6857.31	-110.88	-115.10	-112.45	0.23
75	6957.00	3.13	218.71	6951.18	-114.77	-117.90	-115.17	0.54
76	7050.00	3.18	213.88	7044.04	-118.90	-120.93	-118.09	0.29
77	7143.00	3.19	223.59	7136.90	-122.91	-124.15	-121.22	0.58
78	7237.00	2.70	248.74	7230.78	-125.61	-128.02	-125.02	1.46
79	7330.00	2.71	249.53	7323.68	-127.17	-132.12	-129.09	0.04
80	7424.00	2.57	246.15	7417.58	-128.80	-136.13	-133.06	0.22
81	7517.00	1.97	255.09	7510.50	-130.05	-139.58	-136.48	0.75
82	7611.00	2.10	249.72	7604.44	-131.07	-142.76	-139.63	0.25
83	7704.00	3.18	242.57	7697.34	-132.85	-146.64	-143.47	1.21
84	7798.00	2.91	244.25	7791.21	-135.08	-151.11	-147.88	0.30
85	7891.00	2.74	239.41	7884.10	-137.24	-155.15	-151.87	0.31
86	7985.00	1.96	235.94	7978.02	-139.28	-158.41	-155.09	0.84
87	8078.00	1.52	230.92	8070.98	-140.95	-160.69	-157.32	0.50
88	8171.00	1.44	235.24	8163.95	-142.40	-162.61	-159.21	0.15
89	8265.00	2.04	229.53	8257.90	-144.16	-164.85	-161.41	0.66
90	8358.00	2.01	225.21	8350.84	-146.38	-167.27	-163.77	0.17
91	8451.00	2.57	234.41	8443.77	-148.74	-170.12	-166.57	0.72
92	8544.00	3.68	242.80	8536.63	-151.32	-174.47	-170.86	1.29
93	8638.00	4.30	246.64	8630.40	-154.10	-180.39	-176.71	0.72
94	8731.00	4.39	247.40	8723.13	-156.85	-186.87	-183.13	0.11
95	8824.00	4.07	244.47	8815.88	-159.64	-193.14	-189.32	0.42
96	8918.00	3.95	241.70	8909.65	-162.61	-199.00	-195.11	0.24
97	9011.00	3.82	243.10	9002.44	-165.53	-204.58	-200.63	0.17
98	9105.00	3.49	246.34	9096.25	-168.09	-210.00	-205.98	0.41
99	9198.00	3.01	248.91	9189.10	-170.11	-214.87	-210.80	0.54
100	9292.00	3.59	247.44	9282.94	-172.13	-219.89	-215.77	0.62
101	9386.00	3.30	248.32	9376.77	-174.25	-225.12	-220.95	0.31
102	9481.00	2.90	252.10	9471.63	-176.00	-229.95	-225.74	0.47
103	9575.00	2.31	249.48	9565.53	-177.40	-233.98	-229.74	0.64
104	9670.00	2.13	251.57	9660.46	-178.63	-237.45	-233.18	0.21
105	9765.00	2.30	232.60	9755.39	-180.34	-240.64	-236.32	0.79
106	9860.00	2.46	219.19	9850.31	-183.08	-243.44	-239.06	0.61
107	9954.00	1.65	225.41	9944.25	-185.60	-245.68	-241.24	0.89

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Kick-off: 1/13/2019
Finish: 1/22/2019

Directional Supervision:
Scientific Drilling
RPM Consulting

GL: 2,110'
KB: 2,135'

Minimum Curvature Method (SPE-3362)

[North and East are positive and South and West are negative]

Vertical Section Azimuth: 91.35 DLS/

No.	MD	INC	AZM	TVD	N-S	E-W	SECT	100
108	10049.00	0.90	230.90	10039.23	-187.03	-247.23	-242.76	0.80
109	10143.00	0.45	331.38	10133.22	-187.17	-247.98	-243.51	1.15
110	10206.00	2.74	83.57	10196.20	-186.78	-246.61	-242.14	4.67
111	10237.00	6.77	90.40	10227.09	-186.71	-244.04	-239.58	13.10
112	10268.00	11.63	90.87	10257.68	-186.77	-239.09	-234.62	15.68
113	10299.00	15.88	90.19	10287.78	-186.83	-231.72	-227.25	13.72
114	10331.00	19.88	89.68	10318.23	-186.82	-221.90	-217.43	12.51
115	10362.00	24.28	89.89	10346.95	-186.78	-210.25	-205.79	14.20
116	10394.00	27.62	91.43	10375.72	-186.95	-196.25	-191.79	10.65
117	10425.00	27.59	91.40	10403.19	-187.30	-181.89	-177.42	0.11
118	10457.00	30.13	93.17	10431.21	-187.93	-166.46	-161.98	8.37
119	10488.00	32.93	96.17	10457.64	-189.26	-150.31	-145.81	10.35
120	10520.00	32.84	96.43	10484.51	-191.17	-133.04	-128.50	0.52
121	10552.00	35.04	95.64	10511.06	-193.05	-115.27	-110.69	7.01
122	10583.00	37.03	97.85	10536.12	-195.20	-97.17	-92.54	7.67
123	10615.00	36.54	97.65	10561.75	-197.78	-78.18	-73.50	1.58
124	10646.00	38.79	96.62	10586.29	-200.13	-59.38	-54.65	7.54
125	10678.00	41.36	97.13	10610.77	-202.60	-38.93	-34.15	8.10
126	10709.00	41.92	96.37	10633.94	-205.02	-18.48	-13.64	2.43
127	10741.00	45.61	95.14	10657.05	-207.23	3.54	8.42	11.83
128	10772.00	49.29	94.94	10678.01	-209.23	26.29	31.21	11.88
129	10803.00	53.11	94.53	10697.43	-211.22	50.36	55.32	12.37
130	10834.00	57.69	93.17	10715.03	-212.93	75.81	80.81	15.21
131	10865.00	61.64	94.97	10730.68	-214.84	102.49	107.52	13.69
132	10896.00	65.17	95.68	10744.56	-217.41	130.09	135.17	11.57
133	10928.00	68.76	98.02	10757.08	-220.93	159.32	164.48	13.08
134	10959.00	71.32	99.85	10767.66	-225.46	188.10	193.36	9.95
135	10990.00	74.45	100.00	10776.78	-230.56	217.28	222.65	10.11
136	11022.00	78.44	100.05	10784.28	-235.98	247.90	253.40	12.47
137	11053.00	84.04	100.52	10789.00	-241.45	278.04	283.65	18.13
138	11140.00	92.04	96.91	10791.98	-254.60	363.90	369.80	10.09
139	11171.00	90.90	98.88	10791.18	-258.86	394.59	400.58	7.34
140	11202.00	90.64	97.42	10790.76	-263.25	425.28	431.36	4.78
141	11233.00	90.00	96.17	10790.59	-266.92	456.06	462.22	4.53
142	11294.00	89.53	91.98	10790.84	-271.25	516.89	523.14	6.91
143	11325.00	89.46	91.59	10791.11	-272.22	547.87	554.14	1.28



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Bottom Hole Location:	236.07' S & 10,076.54' E of surface location or 1,346.07' FNL & 184.20' FEL Lot 4 Sec. 32, T153N, R100W



Kick-off: 1/13/2019
Finish: 1/22/2019

Directional Supervision:
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Minimum Curvature Method (SPE-3362)

[North and East are positive and South and West are negative]

Vertical Section Azimuth: 91.35

TRUE

DLS/

No.	MD	INC	AZM	TVD	N-S	E-W	SECT	100
144	11356.00	89.93	87.91	10791.28	-272.09	578.87	585.12	11.97
145	11387.00	92.04	87.64	10790.75	-270.88	609.84	616.05	6.86
146	11418.00	92.28	87.55	10789.58	-269.58	640.79	646.96	0.83
147	11510.00	92.84	86.34	10785.47	-264.68	732.56	738.60	1.45
148	11602.00	93.72	86.03	10780.20	-258.57	824.21	830.07	1.01
149	11633.00	91.61	88.55	10778.76	-257.11	855.14	860.96	10.60
150	11664.00	91.68	87.64	10777.87	-256.08	886.11	891.89	2.94
151	11695.00	90.37	89.51	10777.32	-255.31	917.09	922.85	7.36
152	11787.00	89.30	89.22	10777.58	-254.29	1009.08	1014.79	1.21
153	11878.00	87.72	89.73	10779.95	-253.46	1100.04	1105.71	1.82
154	11970.00	87.92	89.25	10783.45	-252.64	1191.97	1197.60	0.56
155	12062.00	90.10	89.12	10785.04	-251.33	1283.95	1289.51	2.37
156	12154.00	90.37	88.95	10784.66	-249.78	1375.93	1381.43	0.35
157	12246.00	90.57	89.59	10783.91	-248.61	1467.92	1473.37	0.73
158	12339.00	90.27	89.56	10783.23	-247.92	1560.92	1566.32	0.32
159	12433.00	88.73	89.72	10784.05	-247.33	1654.91	1660.27	1.65
160	12528.00	89.50	90.28	10785.51	-247.33	1749.89	1755.24	1.00
161	12623.00	88.76	90.69	10786.96	-248.13	1844.88	1850.21	0.89
162	12718.00	89.53	90.18	10788.37	-248.85	1939.87	1945.19	0.97
163	12814.00	89.30	91.14	10789.35	-249.96	2035.85	2041.18	1.03
164	12909.00	89.33	89.97	10790.49	-250.88	2130.84	2136.16	1.23
165	13003.00	89.93	90.04	10791.10	-250.89	2224.84	2230.13	0.64
166	13098.00	89.06	90.59	10791.93	-251.41	2319.83	2325.11	1.08
167	13193.00	90.10	90.58	10792.63	-252.38	2414.82	2420.10	1.09
168	13288.00	88.39	90.30	10793.88	-253.11	2509.81	2515.07	1.82
169	13383.00	90.07	90.03	10795.16	-253.38	2604.80	2610.04	1.79
170	13478.00	87.79	89.86	10796.93	-253.29	2699.77	2704.99	2.41
171	13573.00	87.99	89.44	10800.43	-252.71	2794.71	2799.88	0.49
172	13668.00	90.00	87.91	10802.10	-250.51	2889.66	2894.76	2.66
173	13762.00	91.37	88.72	10800.97	-247.75	2983.61	2988.62	1.69
174	13857.00	89.33	89.90	10800.39	-246.61	3078.59	3083.55	2.48
175	13952.00	87.82	89.43	10802.75	-246.05	3173.56	3178.47	1.66
176	14046.00	88.29	90.74	10805.94	-246.19	3267.50	3272.39	1.48
177	14141.00	90.10	88.73	10807.28	-245.75	3362.48	3367.34	2.85
178	14235.00	91.31	90.00	10806.12	-244.71	3456.47	3461.27	1.87
179	14330.00	89.43	91.47	10805.51	-245.93	3551.45	3556.26	2.51



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Vertical Section Azimuth: 91.35

DLS/

No.	MD	INC	AZM	TVD	N-S	E-W	SECT	100
180	14424.00	86.75	90.19	10808.64	-247.29	3645.38	3650.19	3.16
181	14519.00	87.25	90.72	10813.61	-248.04	3740.24	3745.05	0.77
182	14582.00	86.45	89.90	10817.08	-248.38	3803.15	3807.94	1.82
183	14614.00	86.61	90.39	10819.01	-248.46	3835.09	3839.88	1.61
184	14645.00	88.69	89.94	10820.28	-248.55	3866.06	3870.84	6.86
185	14676.00	91.21	89.82	10820.31	-248.49	3897.06	3901.83	8.14
186	14708.00	91.67	89.55	10819.51	-248.31	3929.05	3933.81	1.67
187	14803.00	91.78	89.68	10816.65	-247.67	4024.00	4028.72	0.18
188	14897.00	92.41	90.42	10813.21	-247.76	4117.94	4122.63	1.03
189	14992.00	91.37	89.76	10810.08	-247.91	4212.88	4217.55	1.30
190	15087.00	92.65	90.12	10806.75	-247.81	4307.82	4312.46	1.40
191	15181.00	87.02	91.74	10807.02	-249.33	4401.77	4406.42	6.23
192	15276.00	87.32	90.77	10811.71	-251.41	4496.63	4501.30	1.07
193	15370.00	90.67	91.48	10813.36	-253.25	4590.58	4595.27	3.64
194	15464.00	89.93	90.76	10812.86	-255.09	4684.56	4689.27	1.10
195	15558.00	89.16	91.32	10813.61	-256.80	4778.54	4783.27	1.01
196	15653.00	87.96	89.35	10816.00	-257.35	4873.50	4878.21	2.43
197	15747.00	86.65	88.69	10820.42	-255.75	4967.38	4972.03	1.56
198	15842.00	88.96	87.93	10824.06	-252.95	5062.27	5066.82	2.56
199	15937.00	90.20	89.50	10824.75	-250.82	5157.23	5161.71	2.11
200	16032.00	89.36	89.89	10825.12	-250.31	5252.23	5256.67	0.97
201	16127.00	89.40	90.23	10826.14	-250.41	5347.23	5351.64	0.36
202	16222.00	88.86	89.42	10827.59	-250.12	5442.21	5446.59	1.02
203	16316.00	88.46	88.91	10829.78	-248.75	5536.18	5540.50	0.69
204	16411.00	89.63	87.54	10831.37	-245.81	5631.11	5635.34	1.90
205	16505.00	91.00	89.29	10830.85	-243.21	5725.07	5729.21	2.36
206	16600.00	90.44	90.38	10829.66	-242.94	5820.06	5824.17	1.29
207	16663.00	90.60	90.36	10829.09	-243.34	5883.06	5887.16	0.26
208	16695.00	88.86	90.40	10829.24	-243.55	5915.05	5919.15	5.44
209	16789.00	89.43	90.08	10830.64	-243.95	6009.04	6013.12	0.70
210	16883.00	90.70	91.92	10830.53	-245.59	6103.02	6107.11	2.38
211	16914.00	91.11	92.10	10830.04	-246.68	6134.00	6138.11	1.44
212	16946.00	92.35	92.31	10829.08	-247.91	6165.96	6170.09	3.93
213	16978.00	91.41	93.40	10828.03	-249.50	6197.90	6202.06	4.50
214	17009.00	88.16	93.24	10828.14	-251.29	6228.85	6233.04	10.50
215	17041.00	87.92	92.76	10829.24	-252.97	6260.78	6265.01	1.68



Operator:	Oasis Petroleum North America, LLC
Well:	Lewis Federal 5300 11-31 3B
Surface Coordinates:	1,083' FNL & 262' FWL
Surface Location:	Lot 1 Sec. 31, T153N, R100W
County, State:	McKenzie County, ND
Bottom Hole Location:	236.07' S & 10,076.54' E of surface location or 1,346.07' FNL & 184.20' FEL Lot 4 Sec. 32, T153N, R100W



Kick-off: 1/13/2019
Finish: 1/22/2019

Directional Supervision:
Scientific Drilling
RPM Consulting

GL: 2,110'
KB: 2,135'

Minimum Curvature Method (SPE-3362)

[North and East are positive and South and West are negative]

Vertical Section Azimuth: 91.35

DLS/

No.	MD	INC	AZM	TVD	N-S	E-W	SECT	100
216	17073.00	88.63	93.09	10830.20	-254.60	6292.73	6296.98	2.45
217	17104.00	87.39	93.63	10831.28	-256.42	6323.65	6327.94	4.36
218	17136.00	86.48	92.68	10832.99	-258.18	6355.56	6359.88	4.11
219	17167.00	85.34	93.25	10835.20	-259.77	6386.44	6390.79	4.11
220	17199.00	84.02	92.71	10838.17	-261.43	6418.26	6422.63	4.45
221	17262.00	84.60	89.16	10844.41	-262.45	6480.93	6485.31	5.68
222	17293.00	86.21	88.42	10846.90	-261.80	6511.82	6516.18	5.71
223	17325.00	88.79	88.17	10848.29	-260.85	6543.77	6548.10	8.10
224	17356.00	89.20	88.24	10848.84	-259.88	6574.75	6579.05	1.34
225	17451.00	91.34	88.19	10848.39	-256.92	6669.70	6673.90	2.25
226	17545.00	91.14	89.42	10846.36	-254.96	6763.66	6767.79	1.33
227	17640.00	90.27	89.59	10845.19	-254.14	6858.64	6862.73	0.93
228	17735.00	89.60	88.89	10845.29	-252.88	6953.63	6957.66	1.02
229	17829.00	90.13	88.63	10845.52	-250.84	7047.61	7051.57	0.63
230	17924.00	91.10	88.38	10844.50	-248.37	7142.57	7146.44	1.05
231	17975.00	89.16	88.76	10844.38	-247.09	7193.55	7197.38	3.88
232	18018.00	89.43	88.11	10844.91	-245.92	7236.53	7240.32	1.64
233	18112.00	89.90	89.22	10845.46	-243.73	7330.51	7334.21	1.28
234	18208.00	88.66	90.30	10846.67	-243.33	7426.49	7430.17	1.71
235	18302.00	88.42	89.22	10849.06	-242.93	7520.46	7524.10	1.18
236	18397.00	89.06	88.87	10851.15	-241.35	7615.42	7619.00	0.77
237	18491.00	89.77	88.38	10852.11	-239.09	7709.39	7712.88	0.92
238	18585.00	90.50	88.02	10851.89	-236.14	7803.34	7806.74	0.87
239	18680.00	89.43	88.55	10851.94	-233.30	7898.30	7901.60	1.26
240	18774.00	89.16	88.89	10853.10	-231.20	7992.27	7995.50	0.46
241	18870.00	89.43	89.01	10854.28	-229.44	8088.25	8091.41	0.31
242	18964.00	88.69	90.13	10855.82	-228.74	8182.23	8185.35	1.43
243	19058.00	89.80	94.14	10857.06	-232.24	8276.13	8279.31	4.43
244	19152.00	90.44	93.70	10856.87	-238.66	8369.91	8373.21	0.83
245	19247.00	91.31	93.38	10855.42	-244.53	8464.72	8468.13	0.98
246	19341.00	89.56	94.47	10854.70	-250.96	8558.49	8562.03	2.19
247	19436.00	89.56	93.58	10855.43	-257.63	8653.25	8656.92	0.94
248	19531.00	89.33	92.96	10856.35	-263.05	8748.09	8751.86	0.70
249	19626.00	88.69	91.72	10857.99	-266.93	8843.00	8846.83	1.47
250	19721.00	89.36	91.11	10859.61	-269.27	8937.95	8941.82	0.95
251	19816.00	90.23	90.89	10859.95	-270.93	9032.94	9036.81	0.94



Operator:	Oasis Petroleum North America, LLC
Well:	Lewis Federal 5300 11-31 3B
Surface Coordinates:	1,083' FNL & 262' FWL
Surface Location:	Lot 1 Sec. 31, T153N, R100W
County, State:	McKenzie County, ND
Bottom Hole Location:	236.07' S & 10,076.54' E of surface location or 1,346.07' FNL & 184.20' FEL Lot 4 Sec. 32, T153N, R100W



Kick-off: 1/13/2019
 Finish: 1/22/2019

Directional Supervision:
 Scientific Drilling
 RPM Consulting

GL: 2,110'
 KB: 2,135'

Minimum Curvature Method (SPE-3362)

[North and East are positive and South and West are negative]

Vertical Section Azimuth: 91.35 DLS/

No.	MD	TRUE				N-S	E-W	SECT	100
		INC	AZM	TVD	DLS/				
252	19911.00	90.67	90.06	10859.20	-271.72	9127.93	9131.80	0.99	
253	20006.00	90.07	90.17	10858.59	-271.91	9222.93	9226.77	0.64	
254	20101.00	88.93	91.08	10859.42	-272.94	9317.92	9321.76	1.54	
255	20195.00	89.26	90.71	10860.90	-274.41	9411.89	9415.75	0.53	
256	20290.00	89.23	89.67	10862.16	-274.73	9506.88	9510.72	1.10	
257	20385.00	90.00	88.75	10862.79	-273.42	9601.87	9605.65	1.26	
258	20479.00	91.11	88.62	10861.88	-271.26	9695.84	9699.54	1.19	
259	20574.00	91.74	87.72	10859.52	-268.23	9790.76	9794.36	1.16	
260	20669.00	90.47	87.80	10857.69	-264.52	9885.67	9889.16	1.34	
261	20763.00	89.67	89.90	10857.57	-262.63	9979.64	9983.06	2.39	
262	20785.00	87.15	90.31	10858.18	-262.67	10001.63	10005.05	11.61	
PTB	20860.00	87.15	90.31	10861.91	-263.07	10076.54	10079.94	0.00	



FORMATION TOPS & STRUCTURAL RELATIONSHIPS

Operator: Well Name: Location: Elevation:	Subject Well:								Offset Wells:		
	Oasis Petroleum North America, LLC Lewis Federal 5300 11-31 3B 1,083' FNL & 262' FWL Lot 1 Section 31, T153N, R100W										
	GL: 2,110'		Sub: 25'		KB: 2,135'				Dip To Wade Federal 5300 41-30 8T2	Dip To Lewis Federal 5300 31-31H	Dip To Gramma Federal 5300 41-31T
	Formation/ Marker	Prog. Top	Prog. Datum (MSL)	Driller's Depth Top (MD)	Driller's Depth Top (TVD)	Datum (MSL)	Interval Thickness	Thickness to Target			
Pierre	1,985'	150'	1,929'	1,929'	206'	2,697'	8,847'	56'	-	24'	-
Greenhorn	4,617'	-2,482'	4,628'	4,626'	-2,491'	401'	6,150'	-9'	4'	-33'	-
Mowry (Dakota Group)	5,025'	-2,890'	5,029'	5,027'	-2,892'	399'	5,749'	-2'	7'	-19'	-
Inyan Kara (Dakota Group)	5,449'	-3,314'	5,429'	5,426'	-3,291'	482'	5,350'	23'	38'	21'	-
Swift (Base Dakota Group)	5,895'	-3,760'	5,912'	5,908'	-3,773'	535'	4,868'	-13'	17'	-34'	-
Rierdon	6,414'	-4,279'	6,448'	6,443'	-4,308'	486'	4,333'	-29'	31'	-91'	-
Dunham Salt	6,927'	-4,792'	6,935'	6,929'	-4,794'	49'	3,847'	-2'	30'	-89'	-
Dunham Salt Base	6,963'	-4,828'	6,984'	6,978'	-4,843'	284'	3,798'	-15'	37'	-25'	-
Pine Salt	7,259'	-5,124'	7,268'	7,262'	-5,127'	51'	3,514'	-3'	6'	0'	-
Pine Salt Base	7,318'	-5,183'	7,319'	7,313'	-5,178'	123'	3,463'	5'	-12'	19'	-
Opeche Salt	7,437'	-5,302'	7,442'	7,436'	-5,301'	15'	3,340'	1'	-15'	4'	-
Opeche Salt Base	7,462'	-5,327'	7,457'	7,451'	-5,316'	242'	3,325'	11'	-2'	19'	-
Amsden	7,658'	-5,523'	7,700'	7,693'	-5,558'	143'	3,083'	-35'	-17'	10'	-
Tyler	7,843'	-5,708'	7,843'	7,836'	-5,701'	230'	2,940'	7'	-3'	20'	-
Otter/Base Minnelusa	8,060'	-5,925'	8,073'	8,066'	-5,931'	344'	2,710'	-6'	-6'	17'	-
Kibbey "Lime"	8,412'	-6,277'	8,417'	8,410'	-6,275'	150'	2,366'	2'	-3'	15'	5'
Charles Salt	8,558'	-6,423'	8,567'	8,560'	-6,425'	681'	2,216'	-2'	-10'	15'	3'
Base Last Salt	9,240'	-7,105'	9,250'	9,241'	-7,106'	205'	1,535'	-1'	-7'	4'	-11'
Mission Canyon	9,446'	-7,311'	9,455'	9,446'	-7,311'	569'	1,330'	0'	2'	7'	-3'
Lodgepole	10,012'	-7,877'	10,025'	10,015'	-7,880'	78'	761'	-3'	1'	0'	-11'
Lodgepole A	10,085'	-7,950'	10,103'	10,093'	-7,958'	53'	683'	-8'	-1'	-6'	-18'
Lodgepole B	10,159'	-8,024'	10,156'	10,146'	-8,011'	70'	630'	13'	7'	12'	5'
Lodgepole C	10,209'	-8,074'	10,226'	10,216'	-8,081'	194'	560'	-7'	-3'	-8'	-25'
Lodgepole D	10,403'	-8,268'	10,433'	10,410'	-8,275'	171'	366'	-7'	-2'	-15'	-10'
Lodgepole E	10,539'	-8,404'	10,640'	10,581'	-8,446'	71'	195'	-42'	-7'	-14'	-14'
Lodgepole F	10,641'	-8,506'	10,733'	10,652'	-8,517'	83'	124'	-11'	-7'	-15'	-13'
False Bakken	10,719'	-8,584'	10,874'	10,735'	-8,600'	10'	41'	-16'	-10'	-16'	-12'
Upper Bakken	10,727'	-8,592'	10,897'	10,745'	-8,610'	13'	31'	-18'	-11'	-13'	-13'
Middle Bakken	10,743'	-8,608'	10,931'	10,758'	-8,623'	10'	18'	-15'	-8'	-11'	-9'
Target Top	10,755'	-8,620'	10,961'	10,768'	-8,633'	8'	8'	-13'	-6'	-9'	-7'
Target Landing	10,764'	-8,629'	10,988'	10,776'	-8,641'	8'	0'	-12'	-5'	-8'	-6'
Target Base	10,773'	-8,638'	11,021'	10,784'	-8,649'	-	-8'	-11'	-4'	-7'	-5'
Lower Bakken	10,783'	-8,648'	-	-	-	-	-	-	-	-	-

CONTROL DATA

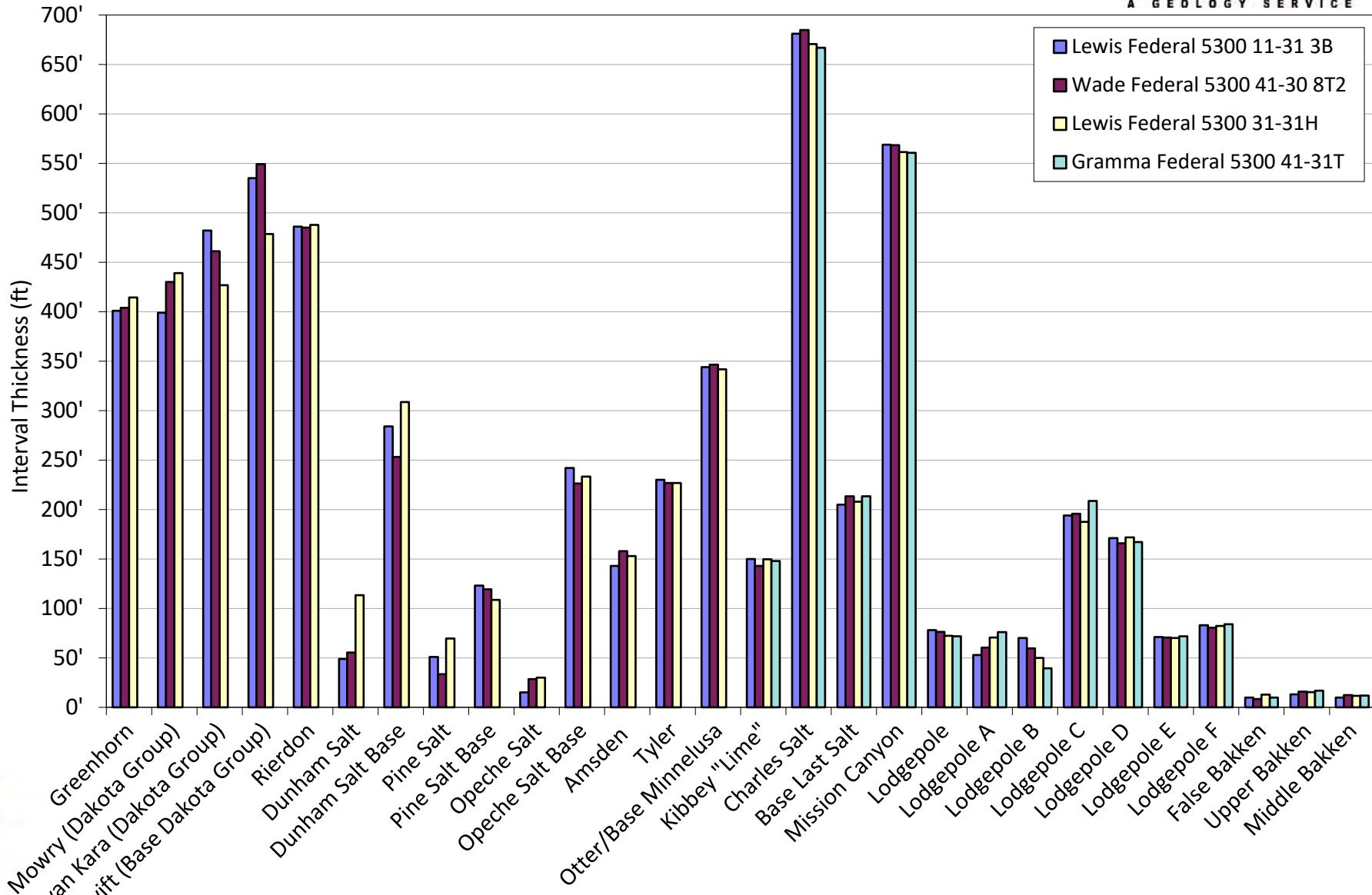
Operator:	Oasis Petroleum North America, LLC				Oasis Petroleum North America, LLC				Oasis Petroleum North America, LLC				
	Well Name:	Wade Federal 5300 41-30 8T2			Location:	Lewis Federal 5300 31-31H			Well Name:	Gramma Federal 5300 41-31T			
Elevation:	KB: 2,077'	NDIC: 28558			Lot 4 Sec. 30, T153N, R100W	McKenzie County, ND	0.4 miles N of subject well	Lot 3 Sec. 31, T153N, R100W	McKenzie County, ND	0.5 miles S of subject well	SW SW Sec. 31, T153N, R100W	McKenzie County, ND	0.7 miles S of subject well
Formation/ Zone	Driller's (TVD)	Datum (MSL)	Interval	Thickness to Target	Driller's (TVD)	Datum (MSL)	Interval	Thickness to Target	E-Log (TVD)	Datum (MSL)	Interval	Thickness to Target	
Pierre	-	-	-	-	2,003'	182'	2,640'	8,815'	-	-	-	-	
Greenhorn	4,572'	-2,495'	404'	6,141'	4,643'	-2,458'	414'	6,175'	-	-	-	-	
Mowry (Dakota Group)	4,976'	-2,899'	430'	5,737'	5,058'	-2,873'	439'	5,760'	-	-	-	-	
Inyan Kara (Dakota Group)	5,406'	-3,329'	461'	5,307'	5,497'	-3,312'	427'	5,321'	-	-	-	-	
Swift (Base Dakota Group)	5,867'	-3,790'	549'	4,846'	5,924'	-3,739'	478'	4,894'	-	-	-	-	
Rierdon	6,416'	-4,339'	485'	4,297'	6,402'	-4,217'	488'	4,416'	-	-	-	-	
Dunham Salt	6,901'	-4,824'	55'	3,812'	6,890'	-4,705'	113'	3,928'	-	-	-	-	
Dunham Salt Base	6,957'	-4,880'	253'	3,756'	7,003'	-4,818'	309'	3,815'	-	-	-	-	
Pine Salt	7,210'	-5,133'	33'	3,503'	7,312'	-5,127'	70'	3,506'	-	-	-	-	
Pine Salt Base	7,243'	-5,166'	119'	3,470'	7,382'	-5,197'	109'	3,436'	-	-	-	-	
Opeche Salt	7,363'	-5,286'	29'	3,350'	7,490'	-5,305'	30'	3,328'	-	-	-	-	
Opeche Salt Base	7,391'	-5,314'	226'	3,322'	7,520'	-5,335'	233'	3,298'	-	-	-	-	
Amsden	7,618'	-5,541'	158'	3,095'	7,753'	-5,568'	153'	3,065'	-	-	-	-	
Tyler	7,775'	-5,698'	227'	2,938'	7,906'	-5,721'	227'	2,912'	-	-	-	-	
Otter/Base Minnelusa	8,002'	-5,925'	346'	2,711'	8,133'	-5,948'	342'	2,685'	-	-	-	-	
Kibbey "Lime"	8,349'	-6,272'	143'	2,364'	8,475'	-6,290'	150'	2,343'	8,462'	-6,280'	148'	2,355'	
Charles Salt	8,492'	-6,415'	685'	2,221'	8,625'	-6,440'	671'	2,193'	8,610'	-6,428'	667'	2,207'	
Base Last Salt	9,176'	-7,099'	213'	1,537'	9,295'	-7,110'	208'	1,523'	9,277'	-7,095'	214'	1,540'	
Mission Canyon	9,390'	-7,313'	568'	1,323'	9,503'	-7,318'	561'	1,315'	9,490'	-7,308'	561'	1,327'	
Lodgepole	9,958'	-7,881'	76'	755'	10,065'	-7,880'	72'	753'	10,051'	-7,869'	72'	766'	
Lodgepole A	10,034'	-7,957'	60'	679'	10,137'	-7,952'	71'	681'	10,122'	-7,940'	76'	695'	
Lodgepole B	10,095'	-8,018'	60'	618'	10,208'	-8,023'	50'	610'	10,198'	-8,016'	39'	619'	
Lodgepole C	10,155'	-8,078'	196'	558'	10,258'	-8,073'	187'	560'	10,238'	-8,056'	209'	579'	
Lodgepole D	10,350'	-8,273'	166'	363'	10,445'	-8,260'	172'	373'	10,447'	-8,265'	167'	370'	
Lodgepole E	10,516'	-8,439'	71'	197'	10,617'	-8,432'	70'	201'	10,614'	-8,432'	72'	203'	
Lodgepole F	10,587'	-8,510'	80'	126'	10,687'	-8,502'	82'	131'	10,686'	-8,504'	84'	131'	
False Bakken	10,667'	-8,590'	8'	46'	10,769'	-8,584'	13'	49'	10,770'	-8,588'	10'	47'	
Upper Bakken	10,676'	-8,599'	16'	37'	10,782'	-8,597'	15'	36'	10,779'	-8,597'	17'	38'	
Middle Bakken	10,692'	-8,615'	12'	21'	10,797'	-8,612'	12'	21'	10,796'	-8,614'	12'	21'	
Target Top	10,704'	-8,627'	9'	9'	10,809'	-8,624'	9'	9'	10,808'	-8,626'	9'	9'	
Target Landing	10,713'	-8,636'	9'	0'	10,818'	-8,633'	9'	0'	10,817'	-8,635'	9'	0'	
Target Base	10,722'	-8,645'	14'	-9'	10,827'	-8,642'	11'	-9'	10,826'	-8,644'	7'	-9'	
Lower Bakken	10,736'	-8,659'	-	-23'	10,838'	-8,653'	-	-20'	10,833'	-8,651'	-	-16'	

Projected Depth



INTERVAL THICKNESS

Oasis Petroleum North America, LLC - Lewis Federal 5300 11-31 3B



LITHOLOGY

Oasis Petroleum North America, LLC

Lewis Federal 5300 11-31 3B

Sunburst geologists caught 20' sample intervals from 3,470'-4,780'; 30' sample intervals from 8,200' to 11,110'; and 50' sample intervals to the TD of the lateral at 20,860'. 10' spot samples were caught through the vertical, curve, and lateral as needed. Formation tops and lithologic markers have been inserted into the sample descriptions below for reference. Samples were examined wet and dry under a binocular microscope. Sample fluorescent cuts are masked by invert mud through intermediate casing. Quantifiers in order of increasing abundance are trace, rare, occasional, common and abundant.

Vertical Log Descriptions:

MD / TVD (MSL Datum)

Drilling in the Pierre Formation [Upper Montana Group]

- 3,470-3,480 SHALE: gray, firm, blocky, earthy, no visible porosity, no visible oil stain
4,580-4,600 SHALE: light-medium gray, firm, occasional soft, sub platy, rare sub blocky, earthy texture, trace disseminated pyrite, no visible porosity, no visible oil stain
4,600-4,620 SHALE: light-medium gray, firm, occasional soft, sub platy, rare sub blocky, earthy texture, trace disseminated pyrite, no visible porosity, no visible oil stain

Greenhorn [Upper Colorado Group]

4,628' MD / 4,626' TVD (-2,491')

- 4,620-4,640 SHALE: medium gray, firm, rare soft, sub platy, rare sub blocky, earthy texture, trace disseminated pyrite, no visible porosity, no visible oil stain; trace LIMESTONE: mudstone, light gray, cream, rare medium gray, trace dark gray, microcrystalline, earthy texture, firm, occasional friable, earthy texture, calcareous, trace intercrystalline porosity, no visible oil stain
4,640-4,660 SHALE: medium-dark gray, friable, occasional firm, sub platy, common sub blocky, earthy texture, trace disseminated pyrite, no visible porosity, no visible oil stain; trace LIMESTONE: mudstone, off white, cream, light gray, microcrystalline, earthy texture, firm, occasional friable, earthy texture, calcareous, trace intercrystalline porosity, no visible oil stain
4,660-4,680 SHALE: medium gray, friable, sub platy, common sub blocky, earthy texture, no visible porosity, no visible oil stain; very trace LIMESTONE: mudstone, cream, light-medium gray, microcrystalline, earthy texture, firm, trace friable, earthy texture, calcareous, trace intercrystalline porosity, no visible oil stain
4,680-4,700 SHALE: medium gray, firm, sub platy, rare sub blocky, earthy texture, no visible porosity, no visible oil stain; very trace LIMESTONE: mudstone, light gray, microcrystalline, earthy texture, firm, trace friable, earthy texture, calcareous, occasional disseminated pyrite, possible intercrystalline porosity, no visible oil stain
4,700-4,720 SHALE: light-medium gray, firm, occasional friable, trace hard, sub platy, rare sub blocky, earthy texture, trace disseminated pyrite, no visible porosity, no visible oil stain
4,720-4,740 SHALE: medium gray, firm, sub platy, rare sub blocky, earthy texture, no visible porosity, no visible oil stain; trace LIMESTONE: mudstone, off white, cream, microcrystalline, earthy texture, firm, earthy texture, calcareous, rare disseminated pyrite, possible intercrystalline porosity, no visible oil stain
4,740-4,760 SHALE: light-medium gray, firm, sub platy, rare sub blocky, earthy texture, no visible porosity, no visible oil stain; trace LIMESTONE: mudstone, cream, occasional light gray, rare light-medium brown gray, microcrystalline, earthy texture, firm, rare friable, earthy texture, calcareous, rare disseminated pyrite, possible intercrystalline porosity, no visible oil stain
4,760-4,780 SHALE: medium gray, firm, sub platy, common sub blocky, earthy texture, trace disseminated pyrite, no visible porosity, no visible oil stain

Drilling in the Otter Formation [Mississippian Big Snowy Group]

- 8,200-8,230 SILTSTONE: light red orange, gray, firm, sub blocky, calcite cement, well cemented, no visible porosity, no visible oil stain; common SILTY SANDSTONE: gray, trace off white, very fine-fine grained, sub rounded, moderately sorted, calcite cement, poorly cemented, no visible porosity, no visible oil stain
8,230-8,260 SILTSTONE: light red orange, gray, firm, sub blocky, calcite cement, well cemented, no visible porosity, no visible oil stain; common SILTY SANDSTONE: gray-light gray, trace off white, very fine-fine grained, sub rounded, moderately sorted, calcite cement, poorly cemented, no visible porosity, no visible oil stain

8,260-8,290 SILTSTONE: light red orange, gray, firm, sub blocky, calcite cement, well cemented, no visible porosity, no visible oil stain; common SILTY SANDSTONE: light gray-gray, trace off white, very fine-fine grained, sub rounded, moderately sorted, calcite cement, poorly cemented, no visible porosity, no visible oil stain

8,290-8,320 SILTSTONE: light red orange, gray, firm, sub blocky, calcite cement, well cemented, no visible porosity, no visible oil stain; common SILTY SANDSTONE: gray, trace off white, very fine-fine grained, sub rounded, moderately sorted, calcite cement, poorly cemented, no visible porosity, no visible oil stain

8,320-8,350 SILTSTONE: light red orange, gray, firm, sub blocky, calcite cement, well cemented, no visible porosity, no visible oil stain; common SILTY SANDSTONE: gray, trace off white, very fine-fine grained, sub rounded, moderately sorted, calcite cement, poorly cemented, no visible porosity, no visible oil stain

8,350-8,380 SILTSTONE: light red orange, gray, firm, sub blocky, calcite cement, well cemented, no visible porosity, no visible oil stain; common SILTY SANDSTONE: gray, trace off white, very fine-fine grained, sub rounded, moderately sorted, calcite cement, poorly cemented, no visible porosity, no visible oil stain

8,380-8,410 No sample

Kibbey "Lime" [Mississippian Big Snowy Group]

8,417' MD / 8,410' TVD (-6,275')

8,410-8,440 LIMESTONE: mudstone, light-medium gray, common cream, trace dark gray, firm, rare friable, microcrystalline, dense, earthy texture, no visible porosity

8,440-8,470 SILTSTONE: dark orange, firm, sub blocky, calcite cement, poorly-moderately cemented, no visible porosity; rare SILTY SANDSTONE: light gray, cream, trace medium gray, very fine grained, firm, calcareous, poorly-moderately cemented, no visible porosity

8,470-8,500 SILTSTONE: dark orange, firm, trace friable, sub blocky, calcite cement, poorly-moderately cemented, no visible porosity; rare SILTY SANDSTONE: light-medium gray, very fine grained, friable, calcareous, poorly-moderately cemented, no visible porosity, no visible oil stain; trace ANHYDRITE off white, microcrystalline, soft, chalky, massive, anhedral, amorphous; no visible porosity, no visible oil stain

8,500-8,530 SILTSTONE: red brown, dark rounded, firm, sub blocky, calcite cement, poorly-moderately cemented, no visible porosity; trace SILTY SANDSTONE: light-medium gray, very fine grained, friable, calcareous, poorly-moderately cemented, no visible porosity, no visible oil stain

8,530-8,560 SILTSTONE: orange brown, soft, blocky-sub platy, calcite cement, well sorted, no visible porosity

Charles Formation [Mississippian Madison Group]

8,567' MD / 8,560' TVD (-6,425')

8,560-8,590 LIMESTONE: mudstone, cream, light gray, microcrystalline, firm, earthy texture, no visible porosity, no visible oil stain; rare SALT: translucent, common milky white, firm, hard, crystalline, massive, anhedral, no visible porosity

8,590-8,620 SALT: translucent, common milky white, firm, hard, crystalline, massive, anhedral, no visible porosity; rare LIMESTONE: mudstone, light-medium gray, common tan, microcrystalline, firm, trace friable, earthy texture, no visible porosity, no visible oil stain

8,620-8,650 SALT: translucent, common milky white, firm, hard, crystalline, massive, anhedral, no visible porosity

8,650-8,680 SALT: translucent, common milky white, firm, hard, crystalline, massive, anhedral, no visible porosity; rare LIMESTONE: mudstone, cream, rare light-medium gray, trace light brown gray, microcrystalline, firm, earthy texture, no visible porosity, no visible oil stain

8,680-8,710 SALT: milky white, rare translucent firm, hard, crystalline, massive, anhedral, no visible porosity

8,710-8,740 SALT: translucent, common milky white, firm, hard, crystalline, massive, anhedral, no visible porosity

8,740-8,770 SALT: translucent, common milky white, firm, hard, crystalline, massive, anhedral, no visible porosity; rare LIMESTONE: mudstone, light-medium gray, common tan, microcrystalline, firm, trace friable, earthy texture, no visible porosity, no visible oil stain

8,770-8,800 ARGILLACEOUS LIMESTONE: mudstone, medium-dark gray, light gray, rare cream, microcrystalline, firm, earthy texture, occasional crystalline texture, no visible porosity; occasional SALT: translucent-transparent, common milky white, firm, hard, crystalline, massive, anhedral, no visible porosity

8,800-8,830 SALT: translucent-transparent, common milky white, firm, hard, crystalline, massive, anhedral, no visible porosity; ARGILLACEOUS LIMESTONE: mudstone, medium-dark gray, light gray, rare cream, microcrystalline, firm, earthy texture, occasional crystalline texture, no visible porosity

8,830-8,860 SALT: translucent-transparent, common milky white, firm, hard, crystalline, massive, anhedral, no visible porosity; ARGILLACEOUS LIMESTONE: mudstone, medium-dark gray, light gray, rare cream, microcrystalline, firm, earthy texture, occasional crystalline texture, no visible porosity

8,860-8,890 LIMESTONE: mudstone, medium-light gray, light brown gray, tan, earthy texture, firm, dolomitic in part, argillaceous in part, no visible porosity; rare ANHYDRITE: milky white, cream, rare light gray, microcrystalline, soft, amorphous, no visible porosity; rare SALT: as above

8,890-8,920 SALT: translucent-transparent, common milky white, firm, hard, crystalline, massive, anhedral, no visible porosity; LIMESTONE: mudstone, medium gray, light gray, earthy texture, firm, argillaceous in part, no visible porosity; rare ANHYDRITE: milky white, cream, rare light gray, microcrystalline, soft, amorphous, no visible porosity

8,920-8,950 SALT: translucent-transparent, rare milky white, firm, hard, crystalline, massive, anhedral, no visible porosity; very trace ANHYDRITE: as above

8,950-8,980 SALT: translucent-transparent, common milky white, firm, hard, crystalline, massive, anhedral, no visible porosity; trace LIMESTONE: mudstone, medium gray, light gray, earthy texture, firm, argillaceous in part, no visible porosity; very trace ANHYDRITE: milky white, cream, rare light gray, microcrystalline, soft, amorphous, no visible porosity

8,980-9,010 ARGILLACEOUS LIMESTONE: mudstone, light brown gray-light gray, medium gray, cream, microcrystalline, firm, dense, earthy texture, rare crystalline texture, no visible porosity; DOLOMITE: mudstone, tan, light brown gray rare light-medium gray, friable, common firm, crystalline texture, no visible porosity, no visible oil stain; SALT: translucent-transparent, white-clear, firm, hard, crystalline, massive, anhedral, no visible porosity

9,010-9,040 DOLOMITE: mudstone, tan, light brown gray rare light-medium gray, friable, common firm, crystalline texture, no visible porosity, no visible oil stain; ANHYDRITE: milky white, microcrystalline, soft, amorphous, no visible porosity, no visible oil stain; rare SALT: as above; rare ARGILLACEOUS LIMESTONE: as above

9,040-9,070 SALT: translucent-transparent, white-clear, firm, hard, crystalline, massive, anhedral, no visible porosity; rare ARGILLACEOUS LIMESTONE: mudstone, light brown gray-light gray, cream, microcrystalline, firm, dense, earthy texture, rare crystalline texture, no visible porosity; trace ANHYDRITE: milky white, cream, rare light gray, microcrystalline, soft, amorphous, no visible porosity

9,070-9,100 LIMESTONE: mudstone, medium-light gray, light brown gray, tan, earthy texture, friable, common firm, no visible porosity; occasional ANHYDRITE: milky white, cream, rare light gray, microcrystalline, soft, amorphous, no visible porosity; rare SALT: translucent-transparent, white-clear, firm, hard, crystalline, massive, anhedral, no visible porosity

9,100-9,130 LIMESTONE: mudstone, light brown gray, gray, tan, earthy-crystalline texture, friable-firm, no visible porosity; occasional ANHYDRITE: milky white, cream, rare light gray, microcrystalline, soft, amorphous, no visible porosity

9,130-9,160 LIMESTONE: mudstone, tan, cream, light-medium gray, microcrystalline, firm, dense-banded, crystalline texture, argillaceous in part, no visible porosity; occasional ANHYDRITE: off white, tan, microcrystalline, firm-soft, massive, amorphous, no visible porosity; rare DOLOMITE: mudstone, tan, light brown gray, microcrystalline, firm-hard, dense-banded, crystalline-sucrosic texture, argillaceous in part, no visible porosity

9,160-9,190 LIMESTONE: mudstone, tan, cream, light-medium gray, microcrystalline, firm, dense-banded, crystalline texture, argillaceous in part, no visible porosity; occasional ANHYDRITE: off white, tan, microcrystalline, firm-soft, massive, amorphous, no visible porosity

9,190-9,220 SALT: translucent-transparent, white-clear, firm, hard, crystalline, massive, anhedral, no visible porosity; rare LIMESTONE: mudstone, light brown gray-light gray, cream, microcrystalline, firm, dense, earthy texture, argillaceous in part, crystalline texture, no visible porosity

9,220-9,250 SALT: translucent-transparent, white-clear, firm, hard, crystalline, massive, anhedral, no visible porosity

Base of Last Salt [Charles Formation]

9,250' MD / 9,241' TVD (-7,106')

9,250-9,280 LIMESTONE-ARGILLACEOUS LIMESTONE: mudstone, tan, light-medium gray, rare dark gray, microcrystalline, firm, trace friable, dense, earthy texture, rare crystalline texture, no visible porosity, no visible oil stain

9,280-9,310 LIMESTONE: mudstone, tan, cream, light-medium gray, microcrystalline, firm, trace friable, dense, earthy texture, common crystalline texture, argillaceous in part, no visible porosity, no visible oil stain

- 9,310-9,340 LIMESTONE: mudstone, light-medium gray, occasional cream, rare tan, microcrystalline, firm, trace friable, dense, earthy-crystalline texture, argillaceous in part, no visible porosity, no visible oil stain
- 9,340-9,370 LIMESTONE: mudstone, light-medium gray, occasional cream, rare tan, microcrystalline, firm, trace friable, dense, earthy-crystalline texture, argillaceous in part, no visible porosity, no visible oil stain
- 9,370-9,400 LIMESTONE: mudstone, light-medium gray, occasional cream, rare tan, microcrystalline, firm, trace friable, dense, earthy-crystalline texture, argillaceous in part, no visible porosity, no visible oil stain
- 9,400-9,430 LIMESTONE: mudstone, tan, cream, microcrystalline, firm, trace friable, dense, earthy texture, common crystalline texture, argillaceous in part, no visible porosity, no visible oil stain
- 9,430-9,460 LIMESTONE: mudstone, off white-light gray, microcrystalline, firm-friable, dense, earthy-crystalline texture, argillaceous in part, no visible porosity, no visible oil stain

Mission Canyon /Mississippian Madison Group1

9.455' MD / 9.446' TVD (-7,311')

- 9,460-9,490 LIMESTONE: mudstone, dark cream-off white, common tan-light brown, microcrystalline, firm, dense, earthy-crystalline texture, argillaceous in part, trace free clear calcite, possible intercrystalline porosity, no visible oil stain
- 9,490-9,520 LIMESTONE: mudstone, dark cream-off white, common tan-light brown, microcrystalline, firm, dense, earthy-crystalline texture, argillaceous in part, trace free clear calcite, possible intercrystalline porosity, no visible oil stain
- 9,520-9,550 LIMESTONE: mudstone, tan, cream, light-medium gray, microcrystalline, firm, trace friable, dense, earthy texture, common crystalline texture, argillaceous in part, no visible porosity, no visible oil stain
- 9,550-9,580 LIMESTONE: mudstone, tan, cream, light-medium gray, microcrystalline, firm, trace friable, dense, earthy texture, common crystalline texture, argillaceous in part, no visible porosity, no visible oil stain
- 9,580-9,610 LIMESTONE: mudstone, cream-gray, gray-brown, microcrystalline, firm-hard, dense-banded, crystalline texture, argillaceous in part, no visible porosity, no visible oil stain
- 9,610-9,640 LIMESTONE: mudstone, dark cream-off white, common tan-light brown, microcrystalline, firm, dense, earthy-crystalline texture, argillaceous in part, trace free clear calcite, possible intercrystalline porosity, no visible oil stain
- 9,640-9,670 LIMESTONE: mudstone, cream, tan-light brown, microcrystalline, firm, dense, earthy-crystalline texture, argillaceous in part, trace free clear calcite, possible intercrystalline porosity, no visible oil stain
- 9,670-9,700 LIMESTONE: mudstone, cream-gray, light brown, microcrystalline, firm, trace friable, dense-banded, earthy-crystalline texture, argillaceous in part, no visible porosity, no visible oil stain
- 9,700-9,730 LIMESTONE: mudstone, cream-gray, light brown, microcrystalline, firm, trace friable, dense-banded, earthy-crystalline texture, argillaceous in part, no visible porosity, no visible oil stain
- 9,730-9,760 LIMESTONE: mudstone, brown-gray brown, rare gray, microcrystalline, firm, dense, earthy-crystalline texture, no visible porosity, no visible oil stain
- 9,760-9,790 LIMESTONE: mudstone, brown-gray brown, rare gray, microcrystalline, firm, dense, earthy-crystalline texture, no visible porosity, no visible oil stain
- 9,790-9,820 LIMESTONE: mudstone, cream-gray, light brown, microcrystalline, firm, trace friable, dense-banded, earthy-crystalline texture, argillaceous in part, no visible porosity, no visible oil stain
- 9,820-9,850 LIMESTONE: mudstone, cream-gray, light brown, microcrystalline, firm, trace friable, dense-banded, earthy-crystalline texture, argillaceous in part, no visible porosity, no visible oil stain
- 9,850-9,880 LIMESTONE: mudstone, cream-tan, rare light brown, trace light gray, microcrystalline, firm, trace friable, dense-banded, crystalline texture, no visible porosity, no visible oil stain
- 9,880-9,910 LIMESTONE: mudstone, cream-tan, rare light brown, trace light gray, microcrystalline, firm, trace friable, dense-banded, crystalline texture, no visible porosity, no visible oil stain
- 9,910-9,940 LIMESTONE: mudstone, cream, light brown, microcrystalline, firm, trace friable, dense, crystalline texture, argillaceous in part, no visible porosity, no visible oil stain
- 9,940-9,970 LIMESTONE: mudstone, light-medium, cream, tan, microcrystalline, firm, trace friable, dense, crystalline texture, occasional earthy texture, no visible porosity, no visible oil stain

9,970-10,000 LIMESTONE: mudstone, light-medium, cream, tan, microcrystalline, firm, trace friable, dense, crystalline texture, occasional earthy texture, no visible porosity, no visible oil stain

10,000-10,030 LIMESTONE-ARGILLACEOUS LIMESTONE: mudstone, medium-light gray, light brown, rare tan, dark gray, microcrystalline, firm, occasional friable dense, earthy texture, trace disseminated pyrite, no visible porosity, no visible oil stain

Lodgepole Formation /Mississippian Madison Group

10,025' MD / 10,015' TVD (-7,880')

10,030-10,060 ARGILLACEOUS LIMESTONE: mudstone, trace wackestone, medium-dark gray, common light gray, rare cream, microcrystalline, firm, trace friable, dense, earthy texture, rare disseminated pyrite, no visible porosity, no visible oil stain

10,060-10,090 ARGILLACEOUS LIMESTONE: mudstone, occasional wackestone, medium-dark gray, common light brown gray, rare cream, microcrystalline, firm, dense, earthy texture, rare disseminated pyrite, no visible porosity, no visible oil stain

10,090-10,190 No sample

Horizontal Log Descriptions:

MD / TVD (MSL Datum)

10,190-10,210 ARGILLACEOUS LIMESTONE: mudstone, occasional wackestone, medium-light gray, rare light brown gray, microcrystalline, firm, dense, earthy texture, rare disseminated pyrite, no visible porosity, no visible oil stain

10,210-10,240 ARGILLACEOUS LIMESTONE: mudstone, occasional wackestone, light-medium gray, rare light brown gray, microcrystalline, firm, dense, earthy texture, rare disseminated pyrite, no visible porosity, no visible oil stain

10,240-10,270 ARGILLACEOUS LIMESTONE: mudstone, occasional wackestone, medium-light gray, rare light brown gray, microcrystalline, firm, dense, earthy texture, rare disseminated pyrite, no visible porosity, no visible oil stain

10,270-10,300 ARGILLACEOUS LIMESTONE: mudstone, rare wackestone, light gray, rare light brown gray, microcrystalline, firm, dense, earthy texture, rare disseminated pyrite, no visible porosity, no visible oil stain

10,300-10,330 ARGILLACEOUS LIMESTONE: mudstone, occasional wackestone, medium-light gray, microcrystalline, firm, dense, earthy texture, rare disseminated pyrite, no visible porosity, no visible oil stain

10,330-10,360 ARGILLACEOUS LIMESTONE: mudstone, occasional wackestone, medium-light gray, rare light brown gray, microcrystalline, firm, dense, earthy texture, rare disseminated pyrite, no visible porosity, no visible oil stain

10,360-10,390 ARGILLACEOUS LIMESTONE: mudstone, rare wackestone, light-medium gray, trace light brown gray, microcrystalline, firm, dense, earthy texture, rare disseminated pyrite, no visible porosity, no visible oil stain

10,390-10,420 ARGILLACEOUS LIMESTONE: mudstone, occasional wackestone, medium-light gray, rare light brown gray, microcrystalline, firm, dense, earthy texture, rare disseminated pyrite, no visible porosity, no visible oil stain

10,420-10,450 ARGILLACEOUS LIMESTONE: mudstone, rare wackestone, light-medium gray, trace light brown gray, microcrystalline, firm, dense, earthy texture, rare disseminated pyrite, no visible porosity, no visible oil stain

10,450-10,480 ARGILLACEOUS LIMESTONE: mudstone, rare wackestone, light-medium gray, microcrystalline, firm, dense, earthy texture, rare disseminated pyrite, no visible porosity, no visible oil stain

10,480-10,510 No sample

10,510-10,540 ARGILLACEOUS LIMESTONE: mudstone, occasional wackestone, dark gray, occasional light brown gray, rare light-medium gray, trace cream, microcrystalline, firm, trace hard, dense, earthy texture, trace disseminated pyrite, no visible porosity, no visible oil stain

10,540-10,570 ARGILLACEOUS LIMESTONE: mudstone, occasional wackestone, dark gray, occasional light brown gray, rare light-medium gray, trace cream, microcrystalline, firm, trace hard, dense, earthy texture, trace disseminated pyrite, no visible porosity, no visible oil stain

10,570-10,600 ARGILLACEOUS LIMESTONE: mudstone, occasional wackestone, light brown gray, medium-dark gray, rare cream, microcrystalline, firm, dense, earthy texture, trace disseminated pyrite, no visible porosity, no visible oil stain

10,600-10,630 ARGILLACEOUS LIMESTONE: mudstone, occasional wackestone, light brown gray, medium-dark gray, rare cream, microcrystalline, firm, dense, earthy texture, trace disseminated pyrite, no visible porosity, no visible oil stain

10,630-10,660 ARGILLACEOUS LIMESTONE: mudstone, rare wackestone, cream, tan, light brown gray, rare, medium-light gray, microcrystalline, firm, rare friable, dense, earthy texture, trace disseminated pyrite, no visible porosity, no visible oil stain

10,660-10,690 ARGILLACEOUS LIMESTONE: mudstone, rare wackestone, cream, tan, light brown gray, rare, medium-light gray, microcrystalline, firm, rare friable, dense, earthy texture, trace disseminated pyrite, no visible porosity, no visible oil stain

10,690-10,720 ARGILLACEOUS LIMESTONE: mudstone, rare wackestone, light gray, medium-dark gray, rare light brown gray, microcrystalline, firm, dense, earthy texture, trace disseminated pyrite, no visible porosity, no visible oil stain

10,720-10,750 ARGILLACEOUS LIMESTONE: mudstone, rare wackestone, light gray, medium-dark gray, rare light brown gray, microcrystalline, firm, dense, earthy texture, trace disseminated pyrite, no visible porosity, no visible oil stain

10,750-10,780 ARGILLACEOUS LIMESTONE: mudstone, rare wackestone, medium-dark gray, light brown gray, microcrystalline, firm, dense, earthy texture, rare disseminated pyrite, no visible porosity, no visible oil stain

10,780-10,810 ARGILLACEOUS LIMESTONE: mudstone, rare wackestone, medium-dark gray, light brown gray, microcrystalline, firm, dense, earthy texture, rare disseminated pyrite, no visible porosity, no visible oil stain

10,810-10,840 ARGILLACEOUS LIMESTONE: mudstone, occasional wackestone, dark gray, medium gray brown, medium-light gray, trace cream, microcrystalline, firm, rare hard, dense, earthy texture, rare disseminated pyrite, no visible porosity, no visible oil stain

10,840-10,870 ARGILLACEOUS LIMESTONE: mudstone, trace wackestone, cream, tan, light brown gray, microcrystalline, firm, occasional friable, dense, earthy texture, no visible porosity, no visible oil stain

False Bakken /Lodgepole Formation] **10.874' MD / 10.735' TVD (-8.600')**

10,870-10,900 SHALE: black, hard, brittle, blocky, carbonaceous, petroliferous, pyritic, no visible porosity, possible fracture porosity, dark brown even oil stain

Upper Bakken Shale Member /Mississippian-Bakken Formation] **10.897' MD / 10.745' TVD (-8.610')**

10,900-10,930 SHALE: black, hard, brittle, blocky, carbonaceous, petroliferous, pyritic, no visible porosity, possible fracture porosity, dark brown even oil stain

Middle Bakken Member /Mississippian-Devonian Bakken Formation] **10.931' MD / 10.758' TVD (-8.623')**

10,930-10,960 SILTY SANDSTONE: light-medium gray, light brown gray, occasional cream, rare dark gray, firm, friable, fine grained, sub rounded, occasional sub angular, moderately poorly sorted, calcite cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain

10,960-10,990 SILTY SANDSTONE: light gray, light brown gray, light brown, firm, friable, fine grained, sub rounded, moderately poorly sorted, calcite cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain

10,990-11,020 No sample

11,039-11,050 SILTY SANDSTONE: light-medium brown, gray, firm, friable, fine grained, sub rounded, moderately poorly sorted, calcite cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain

11,050-11,080 SILTY SANDSTONE: light-medium brown, gray, firm-friable, fine grained, sub rounded, moderately poorly sorted, calcite cement, moderately cemented, common disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain

111,080-11,110 SILTY SANDSTONE: light gray, light gray brown, friable, fine grained, sub rounded, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain

11,132-11,150 SILTY SANDSTONE: light gray, medium-dark gray, rare light brown gray, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

11,150-11,200 SILTY SANDSTONE: light gray, medium-dark gray, rare light brown gray, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

11,200-11,250 SILTY SANDSTONE: light-medium gray, occasional light brown gray, rare dark gray, firm, trace hard, fine grained, sub rounded, trace sub angular, moderately-poorly sorted, calcite cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

11,250-11,300 SILTY SANDSTONE: light-medium gray, occasional dark gray, firm, fine grained, sub rounded, trace sub angular, moderately-poorly sorted, calcite cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

11,300-11,350 SILTY SANDSTONE: light-medium gray, occasional dark gray, firm, fine grained, sub rounded, trace sub angular, moderately-poorly sorted, calcite cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

11,350-11,400 SILTY SANDSTONE: light-medium gray, rare off white, trace dark gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

11,400-11,450 SILTY SANDSTONE: light-medium gray, rare off white, trace dark gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

11,450-11,500 SILTY SANDSTONE: off white, light-medium gray, light brown gray, firm, fine grained, sub rounded, rare sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

11,500-11,550 SILTY SANDSTONE: off white, light-medium gray, light brown gray, firm, fine grained, sub rounded, rare sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

11,550-11,600 SILTY SANDSTONE: light gray, medium-dark gray, rare light brown gray, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

11,600-11,650 SILTY SANDSTONE: light brown gray, light brown, medium-light gray, rare cream, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

11,650-11,700 SILTY SANDSTONE: off white, light-medium gray, light brown gray, firm, fine grained, sub rounded, rare sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

11,700-11,750 SILTY SANDSTONE: light gray, medium-dark gray, rare light brown gray, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

11,750-11,800 SILTY SANDSTONE: light brown gray, light brown, medium-light gray, rare cream, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

11,800-11,850 SILTY SANDSTONE: light brown gray, light brown, medium-light gray, rare cream, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

11,850-11,900 SILTY SANDSTONE: light gray, medium-dark gray, rare light brown gray, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

11,900-11,950 SILTY SANDSTONE: light gray, medium-dark gray, rare light brown gray, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

11,950-12,000 SILTY SANDSTONE: light gray, medium-dark gray, rare light brown gray, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

12,000-12,050 SILTY SANDSTONE: light gray, medium-dark gray, rare light brown gray, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

12,050-12,100 SILTY SANDSTONE: light gray, medium-dark gray, rare light brown gray, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

12,100-12,150 SILTY SANDSTONE: light gray, medium-dark gray, rare light brown gray, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

12,150-12,200 SILTY SANDSTONE: light gray, medium-dark gray, rare light brown gray, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

12,200-12,250 SILTY SANDSTONE: light brown gray, light brown, medium-light gray, rare cream, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

12,250-12,300 SILTY SANDSTONE: light brown gray, light brown, medium-light gray, rare cream, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

12,300-12,350 SILTY SANDSTONE: light brown gray, light brown, medium-light gray, cream, firm, hard, fine grained, sub rounded, rare sub angular, moderately sorted, calcite cement, moderately-poorly cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace brown spotty oil stain; slow pale green-yellow diffuse cut fluorescence

12,350-12,400 SILTY SANDSTONE: light brown gray, light brown, medium-light gray, cream, firm, hard, fine grained, sub rounded, rare sub angular, moderately sorted, calcite cement, moderately-poorly cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace brown spotty oil stain; slow pale green-yellow diffuse cut fluorescence

12,400-12,450 SILTY SANDSTONE: light gray, medium-dark gray, rare light brown gray, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

12,450-12,500 SILTY SANDSTONE: light gray, medium-dark gray, rare light brown gray, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

12,500-12,550 SILTY SANDSTONE: light gray, medium-dark gray, rare light brown gray, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

12,550-12,600 SILTY SANDSTONE: light gray, medium-dark gray, rare light brown gray, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

12,600-12,650 SILTY SANDSTONE: light brown gray, light brown, medium-light gray, cream, firm, hard, fine grained, sub rounded, rare sub angular, moderately sorted, calcite cement, moderately-poorly cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace brown spotty oil stain; slow pale green-yellow diffuse cut fluorescence

12,650-12,700 SILTY SANDSTONE: light brown gray, light brown, medium-light gray, cream, firm, hard, fine grained, sub rounded, rare sub angular, moderately sorted, calcite cement, moderately-poorly cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace brown spotty oil stain; slow pale green-yellow diffuse cut fluorescence

12,700-12,750 SILTY SANDSTONE: light brown gray, light brown, medium-light gray, cream, firm, hard, fine grained, sub rounded, rare sub angular, moderately sorted, calcite cement, moderately-poorly cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace brown spotty oil stain; slow pale green-yellow diffuse cut fluorescence

12,750-12,800 SILTY SANDSTONE: light brown gray, light brown, medium-light gray, cream, firm, hard, fine grained, sub rounded, rare sub angular, moderately sorted, calcite cement, moderately-poorly cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace brown spotty oil stain; slow pale green-yellow diffuse cut fluorescence

12,800-12,850 SILTY SANDSTONE: light brown gray, light brown, medium-light gray, rare cream, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace

disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

12,850-12,900 SILTY SANDSTONE: light brown gray, light brown, medium-light gray, rare cream, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

12,900-12,950 SILTY SANDSTONE: light brown gray, light brown, medium-light gray, cream, firm, hard, fine grained, sub rounded, rare sub angular, moderately sorted, calcite cement, moderately-poorly cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace brown spotty oil stain; slow pale green-yellow diffuse cut fluorescence

12,950-13,000 SILTY SANDSTONE: light brown gray, light brown, medium-light gray, rare cream, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

13,000-13,050 SILTY SANDSTONE: light brown gray, light brown, medium-light gray, rare cream, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

13,050-13,100 SILTY SANDSTONE: light brown gray, light brown, medium-light gray, rare cream, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

13,100-13,150 SILTY SANDSTONE: light gray, medium-dark gray, rare light brown gray, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

13,150-13,200 SILTY SANDSTONE: light gray, medium-dark gray, rare light brown gray, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

13,200-13,250 SILTY SANDSTONE: light brown-gray, medium-dark gray, rare light brown gray, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

13,250-13,300 SILTY SANDSTONE: light brown-gray, medium-dark gray, rare light brown gray, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

13,300-13,350 SILTY SANDSTONE: light brown-gray, medium-dark gray, rare light brown gray, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

13,350-13,400 SILTY SANDSTONE: light brown-gray, medium-dark gray, rare light brown gray, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

13,400-13,450 SILTY SANDSTONE: medium-dark gray, rare light brown gray, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

13,450-13,500 SILTY SANDSTONE: medium-dark gray, rare light brown gray, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

13,500-13,550 SILTY SANDSTONE: light brown-gray, medium-dark gray, rare light brown gray, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

13,550-13,600 SILTY SANDSTONE: light brown-gray, medium-dark gray, rare light brown gray, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

13,600-13,650 SILTY SANDSTONE: light brown, light brown gray, light-medium gray, off white, cream, firm, trace hard, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

13,650-13,700 SILTY SANDSTONE: light brown, light brown gray, light-medium gray, off white, cream, firm, trace hard, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

13,700-13,750 SILTY SANDSTONE: light brown gray, occasional medium-light gray, rare light brown gray, trace dark gray, firm, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

13,750-13,800 SILTY SANDSTONE: light brown gray, occasional light brown gray, rare medium-light gray, trace dark gray, firm, fine grained, sub rounded, moderately-poorly sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

13,800-13,850 SILTY SANDSTONE: light brown gray, occasional light brown gray, rare medium-light gray, trace dark gray, firm, fine grained, sub rounded, moderately-poorly sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

13,850-13,900 SILTY SANDSTONE: light brown gray, occasional light-medium gray, firm, fine grained, sub rounded, moderately-poorly sorted, calcite cement, moderately-poorly cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderate pale yellow diffuse cut fluorescence

13,900-13,950 SILTY SANDSTONE: light brown gray, occasional light-medium gray, firm, fine grained, sub rounded, moderately-poorly sorted, calcite cement, moderately-poorly cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderate pale yellow diffuse cut fluorescence

13,950-14,000 SILTY SANDSTONE: medium-light gray, common light brown, rare cream, firm, occasional hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately-poorly cemented,

trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderate pale yellow diffuse cut fluorescence

14,000-14,050 SILTY SANDSTONE: medium-light gray, common light brown, rare cream, firm, occasional hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately-poorly cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderate pale yellow diffuse cut fluorescence

14,050-14,100 SILTY SANDSTONE: light gray, off white, rare light brown gray, firm, rare hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately-poorly cemented, trace disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow-light green diffuse cut fluorescence

14,100-14,150 SILTY SANDSTONE: light gray, off white, rare light brown gray, firm, rare hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately-poorly cemented, trace disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow-light green diffuse cut fluorescence

14,150-14,200 SILTY SANDSTONE: light gray, off white, rare light brown gray, firm, rare hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately-poorly cemented, trace disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow-light green diffuse cut fluorescence

14,200-14,250 SILTY SANDSTONE: light brown gray, light brown, rare medium-light gray, trace off white, firm, fine-very fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately-poorly cemented, trace disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow-light green diffuse cut fluorescence

14,250-14,300 SILTY SANDSTONE: light brown gray, light brown, rare medium-light gray, trace off white, firm, fine-very fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately-poorly cemented, trace disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow-light green diffuse cut fluorescence

14,300-14,350 SILTY SANDSTONE: light brown gray, light brown, rare medium-light gray, trace off white, firm, fine-very fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately-poorly cemented, trace disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow-light green diffuse cut fluorescence

14,350-14,400 SILTY SANDSTONE: light-medium gray, occasional light brown gray, rare dark gray, firm, trace hard, fine grained, sub rounded, trace sub angular, moderately-poorly sorted, calcite cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

14,400-14,450 SILTY SANDSTONE: light-medium gray, occasional light brown gray, rare dark gray, firm, trace hard, fine grained, sub rounded, trace sub angular, moderately-poorly sorted, calcite cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

14,450-14,500 SILTY SANDSTONE: off white, light brown, rare light-medium gray, firm, fine grained, sub rounded, trace sub angular, moderately-poorly sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderate pale yellow diffuse cut fluorescence

14,500-14,550 SILTY SANDSTONE: off white, light brown, rare light-medium gray, firm, fine grained, sub rounded, trace sub angular, moderately-poorly sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderate pale yellow diffuse cut fluorescence

14,550-14,600 SILTY SANDSTONE: light brown, occasional light brown gray, rare medium-light gray, trace cream, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderate pale yellow diffuse cut fluorescence

14,600-14,650 SILTY SANDSTONE: light brown, occasional light brown gray, rare medium-light gray, trace cream, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderate pale yellow diffuse cut fluorescence

14,650-14,700 SILTY SANDSTONE: light gray, light brown gray, firm, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

14,700-14,750 SILTY SANDSTONE: light gray, light brown gray, firm, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

14,750-14,800 SILTY SANDSTONE: light gray, light brown gray, firm, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

14,800-14,850 SILTY SANDSTONE: off white, light gray, occasional light brown, trace medium-dark gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

14,850-14,900 SILTY SANDSTONE: off white, light gray, occasional light brown, trace medium-dark gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

14,900-14,950 SILTY SANDSTONE: off white, light gray, occasional light brown, trace medium-dark gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

14,950-15,000 SILTY SANDSTONE: light-medium gray, light brown gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcite cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderate pale yellow diffuse cut fluorescence

15,000-15,050 SILTY SANDSTONE: light-medium gray, light brown gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcite cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderate pale yellow diffuse cut fluorescence

15,050-15,100 SILTY SANDSTONE: light brown, tan, light-medium gray, rare off white, firm, fine grained, sub rounded, trace sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderate pale yellow diffuse cut fluorescence

15,100-15,150 SILTY SANDSTONE: light brown, tan, light-medium gray, rare off white, firm, fine grained, sub rounded, trace sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderate pale yellow diffuse cut fluorescence

15,150-15,200 SILTY SANDSTONE: light brown, tan, light-medium gray, rare off white, firm, fine grained, sub rounded, trace sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderate pale yellow diffuse cut fluorescence

15,200-15,250 SILTY SANDSTONE: light brown, tan, light-medium gray, rare off white, firm, fine grained, sub rounded, trace sub angular, moderately-poorly sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderate pale yellow diffuse cut fluorescence

15,250-15,300 SILTY SANDSTONE: light-medium gray, light brown gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcite cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderate pale yellow diffuse cut fluorescence

15,300-15,350 SILTY SANDSTONE: light-medium gray, light brown gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcite cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderate pale yellow diffuse cut fluorescence

15,350-15,400 SILTY SANDSTONE: light-medium gray, light brown gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcite cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderate pale yellow diffuse cut fluorescence

15,400-15,450 SILTY SANDSTONE: light-dark gray, gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderate pale yellow diffuse cut fluorescence

15,450-15,500 SILTY SANDSTONE: light-dark gray, gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderate pale yellow diffuse cut fluorescence

15,500-15,550 SILTY SANDSTONE: light-dark gray, gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderate pale yellow diffuse cut fluorescence

15,550-15,600 SILTY SANDSTONE: light-dark gray, gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderate pale yellow diffuse cut fluorescence

15,600-15,650 SILTY SANDSTONE: light-medium brown-gray, gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; moderate pale yellow diffuse cut fluorescence

15,650-15,700 SILTY SANDSTONE: light-medium brown-gray, gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; moderate pale yellow diffuse cut fluorescence

15,700-15,750 SILTY SANDSTONE: light-medium brown-gray, gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; moderate pale yellow diffuse cut fluorescence

15,750-15,800 SILTY SANDSTONE: light-medium brown-gray, gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; moderate pale yellow diffuse cut fluorescence

trace intergranular porosity, trace light-medium brown spotty oil stain; moderate pale yellow-grain diffuse cut fluorescence

16,500-16,550 SILTY SANDSTONE: light-medium gray, gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; moderate pale yellow-grain diffuse cut fluorescence

16,550-16,600 SILTY SANDSTONE: light-medium gray, gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; moderate pale yellow-grain diffuse cut fluorescence

16,600-16,650 No sample

16,650-16,700 No sample

16,700-16,750 SILTY SANDSTONE: medium gray, brown-gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; moderate pale yellow-grain diffuse cut fluorescence

16,750-16,800 SILTY SANDSTONE: medium gray, brown-gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; moderate pale yellow-grain diffuse cut fluorescence

16,800-16,850 SILTY SANDSTONE: medium gray, brown-gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; moderate pale yellow-grain diffuse cut fluorescence

16,800-16,850 SILTY SANDSTONE: medium gray, brown-gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; moderate pale yellow-grain diffuse cut fluorescence

16,900-16,950 SILTY SANDSTONE: dark gray, brown-gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; moderate pale yellow-grain diffuse cut fluorescence

16,950-17,000 SILTY SANDSTONE: dark gray, brown-gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; moderate pale yellow-grain diffuse cut fluorescence

17,020-17,040 SILTY SANDSTONE: dark gray, brown-gray, tan, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; moderate pale yellow-grain diffuse cut fluorescence

17,040-17,060 SILTY SANDSTONE: dark gray, brown-gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; moderate pale yellow-grain diffuse cut fluorescence

17,000-17,050 SILTY SANDSTONE: dark gray, brown-gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; moderate pale yellow-grain diffuse cut fluorescence

17,060-17,080 SILTY SANDSTONE: dark gray, dark brown-gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; moderate pale yellow-grain diffuse cut fluorescence

17,080-17,100 SILTY SANDSTONE: dark gray, dark brown-gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; moderate pale yellow-grain diffuse cut fluorescence

17,050-17,100 SILTY SANDSTONE: dark gray, brown-gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; moderate pale yellow-grain diffuse cut fluorescence

17,100-17,120 SILTY SANDSTONE: dark gray, brown-gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; moderate pale yellow-grain diffuse cut fluorescence

17,120-17,150 SILTY SANDSTONE: dark gray, brown-gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; moderate pale yellow-grain diffuse cut fluorescence

17,150-17,200 SILTY SANDSTONE: dark brown-gray, tan-gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderate pale yellow-grain diffuse cut fluorescence

17,200-17,250 SILTY SANDSTONE: dark brown-gray, tan-gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderate pale yellow-grain diffuse cut fluorescence

17,250-17,300 SILTY SANDSTONE: light-dark gray, gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderate pale yellow diffuse cut fluorescence

17,300-17,350 SILTY SANDSTONE: light-dark gray, gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderate pale yellow diffuse cut fluorescence

17,350-17,400 SILTY SANDSTONE: light-dark gray, gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderate pale yellow diffuse cut fluorescence

17,400-17,450 SILTY SANDSTONE: light-dark gray, gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderate pale yellow diffuse cut fluorescence

17,450-17,500 SILTY SANDSTONE: light-dark gray, gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderate pale yellow diffuse cut fluorescence

17,500-17,550 SILTY SANDSTONE: light-medium gray, light brown gray, occasional off white, rare dark gray, firm, fine grained, sub rounded, trace sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderate pale yellow diffuse cut fluorescence

17,550-17,600 SILTY SANDSTONE: light-medium gray, light brown gray, occasional off white, rare dark gray, firm, fine grained, sub rounded, trace sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderate pale yellow diffuse cut fluorescence

17,600-17,650 Sample moderately contaminated with lube; SILTY SANDSTONE: light brown gray, light-medium gray, firm, fine-very fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

17,650-17,700 Sample moderately contaminated with lube; SILTY SANDSTONE: light brown gray, light-medium gray, firm, fine-very fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

17,700-17,750 Sample moderately contaminated with lube; SILTY SANDSTONE: light brown gray, light-medium gray, firm, fine-very fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

17,750-17,800 Sample moderately contaminated with lube; SILTY SANDSTONE: off white, light gray, rare light brown gray, trace dark gray, firm, fine-very fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

17,800-17,850 Sample moderately contaminated with lube; SILTY SANDSTONE: off white, light gray, rare light brown gray, trace dark gray, firm, fine-very fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

17,850-17,900 Sample moderately contaminated with lube; SILTY SANDSTONE: off white, light gray, rare light brown gray, trace dark gray, firm, fine-very fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

17,900-17,950 Sample moderately contaminated with lube; SILTY SANDSTONE: light brown, light brown gray, occasional light-medium gray, rare off white, trace dark gray, firm, fine-very fine grained, sub rounded, rare sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

17,950-18,000 Sample moderately contaminated with lube; SILTY SANDSTONE: light brown, light brown gray, occasional light-medium gray, rare off white, trace dark gray, firm, fine-very fine grained, sub rounded, rare sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

18,000-18,050 Sample moderately contaminated with lube; SILTY SANDSTONE: light brown, light brown gray, occasional light-medium gray, rare off white, trace dark gray, firm, fine-very fine grained, sub rounded, rare sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

18,050-18,100 Sample moderately contaminated with lube; SILTY SANDSTONE: light brown gray, light brown, firm, fine-very fine grained, sub rounded, rare sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

18,100-18,150 Sample moderately contaminated with lube; SILTY SANDSTONE: light brown gray, light brown, firm, fine-very fine grained, sub rounded, rare sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

18,150-18,200 Sample moderately contaminated with lube; SILTY SANDSTONE: light brown gray, light brown, firm, fine-very fine grained, sub rounded, rare sub angular, moderately sorted, calcite cement, moderately cemented,

rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

18,200-18,250 Sample moderately contaminated with lube; SILTY SANDSTONE: light brown gray, occasional light brown, rare medium-light gray, trace off white, firm, fine-very fine grained, sub rounded, rare sub angular, moderately sorted, calcite cement, moderately-poorly cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

18,250-18,300 Sample moderately contaminated with lube; SILTY SANDSTONE: light brown gray, occasional light brown, rare medium-light gray, trace off white, firm, fine-very fine grained, sub rounded, rare sub angular, moderately sorted, calcite cement, moderately-poorly cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

18,300-18,350 Sample moderately contaminated with lube; SILTY SANDSTONE: light brown gray, occasional light brown, rare medium-light gray, trace off white, firm, fine-very fine grained, sub rounded, rare sub angular, moderately sorted, calcite cement, moderately-poorly cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

18,350-18,400 Sample moderately contaminated with lube; SILTY SANDSTONE: medium-light gray, occasional light brown gray, trace dark gray, firm, fine-very fine grained, sub rounded, rare sub angular, moderately sorted, calcite cement, moderately-poorly cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

18,400-18,450 Sample moderately contaminated with lube; SILTY SANDSTONE: medium-light gray, occasional light brown gray, trace dark gray, firm, fine-very fine grained, sub rounded, rare sub angular, moderately sorted, calcite cement, moderately-poorly cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

18,450-18,500 Sample moderately contaminated with lube; SILTY SANDSTONE: medium-light gray, occasional light brown gray, trace dark gray, firm, fine-very fine grained, sub rounded, rare sub angular, moderately sorted, calcite cement, moderately-poorly cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

18,500-18,550 Sample moderately contaminated with lube; SILTY SANDSTONE: off white, tan, light gray, rare light brown gray, trace dark gray, firm, fine-very fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

18,550-18,600 Sample moderately contaminated with lube; SILTY SANDSTONE: off white, tan, light gray, rare light brown gray, trace dark gray, firm, fine-very fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

18,600-18,650 Sample moderately contaminated with lube; SILTY SANDSTONE: off white, tan, light gray, rare light brown gray, trace dark gray, firm, fine-very fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

18,650-18,700 Sample moderately contaminated with lube; SILTY SANDSTONE: light brown, medium-light gray, rare off white, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

18,700-18,750 Sample moderately contaminated with lube; SILTY SANDSTONE: light brown, medium-light gray, rare off white, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

18,750-18,800 Sample moderately contaminated with lube; SILTY SANDSTONE: light brown, medium-light gray, rare off white, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

18,800-18,850 Sample moderately contaminated with lube; SILTY SANDSTONE: light brown gray, occasional light brown, rare medium-dark gray, firm, fine grained, sub rounded, rare sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

18,850-18,900 Sample moderately contaminated with lube; SILTY SANDSTONE: medium-light gray, light brown, rare cream, firm, fine grained, sub rounded, rare sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; contaminated cut fluorescence

18,900-18,950 Sample moderately contaminated with lube; SILTY SANDSTONE: medium-light gray, light brown, rare cream, firm, fine grained, sub rounded, rare sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; contaminated cut fluorescence

18,950-19,000 Sample moderately contaminated with lube; SILTY SANDSTONE: medium-light gray, light brown, rare cream, firm, fine grained, sub rounded, rare sub angular, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; contaminated cut fluorescence

19,000-19,050 Sample moderately contaminated with lube; SILTY SANDSTONE: light brown gray, common light brown, rare medium gray, firm, fine grained, sub rounded, rare sub angular, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; contaminated cut fluorescence

19,050-19,100 Sample moderately contaminated with lube; SILTY SANDSTONE: light brown gray, common light brown, rare medium gray, firm, fine grained, sub rounded, rare sub angular, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; contaminated cut fluorescence

19,100-19,150 Sample moderately contaminated with lube; SILTY SANDSTONE: light brown gray, occasional light brown, rare medium-light gray, trace off white, firm, fine-very fine grained, sub rounded, rare sub angular, moderately sorted, calcite cement, moderately-poorly cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

19,150-19,200 Sample moderately contaminated with lube; SILTY SANDSTONE: light brown gray, common light brown, rare medium gray, firm, fine grained, sub rounded, rare sub angular, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; contaminated cut fluorescence

19,200-19,250 Sample moderately contaminated with lube; SILTY SANDSTONE: light-medium gray, off white, firm, fine-very fine grained, sub rounded, moderately sorted, calcite cement, moderately-poorly cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

19,250-19,300 Sample moderately contaminated with lube; SILTY SANDSTONE: light-medium gray, off white, firm, fine-very fine grained, sub rounded, moderately sorted, calcite cement, moderately-poorly cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

19,300-19,350 Sample moderately contaminated with lube; SILTY SANDSTONE: light-medium gray, off white, firm, fine-very fine grained, sub rounded, moderately sorted, calcite cement, moderately-poorly cemented, rare

disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

20,500-20,550 Sample moderately contaminated with lube; SILTY SANDSTONE: light-medium gray, off white, firm, fine-very fine grained, sub rounded, moderately sorted, calcite cement, moderately-poorly cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

20,550-20,600 Sample moderately contaminated with lube; SILTY SANDSTONE: light-medium gray, off white, firm, fine-very fine grained, sub rounded, moderately sorted, calcite cement, moderately-poorly cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

20,600-20,650 Sample moderately contaminated with lube; SILTY SANDSTONE: light-medium gray, off white, firm, fine-very fine grained, sub rounded, moderately sorted, calcite cement, moderately-poorly cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

20,650-20,700 Sample moderately contaminated with lube; SILTY SANDSTONE: light-medium gray, off white, firm, fine-very fine grained, sub rounded, moderately sorted, calcite cement, moderately-poorly cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

20,700-20,750 Sample moderately contaminated with lube; SILTY SANDSTONE: light-medium gray, off white, firm, fine-very fine grained, sub rounded, moderately sorted, calcite cement, moderately-poorly cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence

20,750-20,800 Sample moderately contaminated with lube; SILTY SANDSTONE: light-medium gray, off white, firm, fine-very fine grained, sub rounded, moderately sorted, calcite cement, moderately-poorly cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; contaminated cut fluorescence



SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 5749 (09-2006)

RECEIVED

JAN - 4 2019

Well File No.

30188

ND O&G & GAS DIVISION

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.

PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

Notice of Intent

Approximate Start Date

January 3, 2019

Report of Work Done

Date Work Completed

Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.

Approximate Start Date

Drilling Prognosis

Spill Report

Redrilling or Repair

Shooting

Casing or Liner

Acidizing

Plug Well

Fracture Treatment

Supplemental History

Change Production Method

Temporarily Abandon

Reclamation

Other

Waiver from tubing/packer requirement

Well Name and Number

Lewis Federal 5300 11-31 3B

Footages	1003	262	Qtr-Qtr	Section	Township	Range
1005 F N L	233	F W L	LOT 1	31	153 N	100 W

Field Baker	Pool Bakken	County McKenzie
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24-HOUR PRODUCTION RATE

	Before		After
Oil	Bbls	Oil	Bbls
Water	Bbls	Water	Bbls
Gas	MCF	Gas	MCF

Name of Contractor(s)

Address	City	State	Zip Code
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DETAILS OF WORK

Oasis Petroleum North America LLC requests a variance to NDAC 43-02-03-21 for the tubing/packer requirement: Casing, tubing, and cementing requirements during the completion period immediately following the upcoming fracture stimulation.

The following assurances apply:

1. the well is equipped with new 29# and 32# casing at surface with an API burst rating of 11,220 psi;
2. The Frac design will use a safety factor of 0.85 API burst rating to determine the maximum pressure;
3. Damage to the casing during the frac would be detected immediately by monitoring equipment;
4. The casing is exposed to significantly lower rates and pressures during flowback than during the frac job;
5. The frac fluid and formation fluids have very low corrosion and erosion rates;
6. Production equipment will be installed as soon as possible after the well ceases flowing;
7. A 300# gauge will be installed on the surface casing during the flowback period

Company Oasis Petroleum North America LLC	Telephone Number 281-404-9436
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Address 1001 Fannin, Suite 1500

City Houston	State TX	Zip Code 77002
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Signature 	Printed Name Jennifer Swenson
---------------	---

Title Regulatory Specialist	Date January 3, 2019
---------------------------------------	--------------------------------

Email Address jswenson@oasispetroleum.com

FOR STATE USE ONLY

<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
-----------------------------------	--

Date

By

Title PETROLEUM ENGINEER



SUNDY NOTICES AND REPORTS ON WELLS FORM 4
INDUSTRIAL COMMISSION OF NORTH DAKOTA

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 5749 (09-2006)

Received

Well File No.
30188

JAN - 3 2019

**PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.
PLEASE SUBMIT THE ORIGINAL AND ONE COPY.**

<input checked="" type="checkbox"/> Notice of Intent	Approximate Start Date December 15, 2018
<input type="checkbox"/> Report of Work Done	Date Work Completed
<input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.	Approximate Start Date

ND Oil & Gas Division

- | | |
|---|---|
| <input type="checkbox"/> Drilling Prognosis | <input type="checkbox"/> Spill Report |
| <input type="checkbox"/> Redrilling or Repair | <input type="checkbox"/> Shooting |
| <input checked="" type="checkbox"/> Casing or Liner | <input type="checkbox"/> Acidizing |
| <input type="checkbox"/> Plug Well | <input type="checkbox"/> Fracture Treatment |
| <input type="checkbox"/> Supplemental History | <input type="checkbox"/> Change Production Method |
| <input type="checkbox"/> Temporarily Abandon | <input type="checkbox"/> Reclamation |
| <input type="checkbox"/> Other | |

Well Name and Number Lewis Federal 5300 11-31 3B													
Footages		Qtr-Qtr		Section		Township		Range					
1005 F N L		233 F W L		Lot 1		31		153 N					
Field				Pool				County					
Baker				Bakken				McKenzie					

24-HOUR PRODUCTION RATE			
Before		After	
Oil	Bbls	Oil	Bbls
Water	Bbls	Water	Bbls
Gas	MCF	Gas	MCF

Name of Contractor(s)			
Address	City	State	Zip Code

DETAILS OF WORK

Oasis Petroleum respectfully requests to amend the surface casing depth to 3600' MD (previously 4900') due to potential flowback in the Dakota formation. In order to counteract projected flowback at surface, Oasis needs to increase mud weight, and lowering the surface casing point will allow this to be performed safely.

Attached are revised drill plans reflecting the amended casing points, cement volumes, and other related volumes.

No DU tool will be used per Jennifer.

Company Oasis Petroleum North America LLC		Telephone Number 281-404-9436
Address 1001 Fannin St, Suite 1500		
City Houston		State TX
Zip Code 77002		
Signature 	Printed Name Jennifer Swenson	
Title Regulatory Specialist	Date January 3, 2019	
Email Address jswenson@oasispetroleum.com		

FOR STATE USE ONLY	
<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date	1-3-2019
By	D. Burns
Title	DAVID BURNS Engineering Technician

Oasis Petroleum
Well Summary
Lewis Federal 5300 11-31 3B
Section 31 T153N R100W
McKenzie County, ND

SURFACE CASING AND CEMENT DESIGN

Size	Interval	Weight	Grade	Coupling	I.D.	Drift
13-3/8"	0' - 3600'	54.5	J-55	STC	12.615"	12.459"

Interval	Description	Collapse (psi) / a	Burst (psi) / b	Tension (1000 lbs) / c
0' - 3600'	13-3/8", 54.5#, J-55, LTC, 8rd	1130 / 0.67	2730 / 1.12	514 / 1.90

API Rating & Safety Factor

- a) Collapse based on full casing evacuation with 9 ppg fluid on backside (3600' setting depth).
- b) Burst pressure based on 13 ppg fluid with no fluid on backside (3600' setting depth).
- c) Based on string weight in 9 ppg fluid at 3600' TVD plus 100k# overpull. (Buoyed weight equals 169k lbs.)

Cement volumes are based on 13-3/8" casing set in 17-1/2 " hole with 60% excess to circulate cement back to surface.

Mix and pump the following slurry.

Pre-flush (Spacer): 20 bbls fresh water

Lead Slurry: **1281 sks** (662 bbls), 11.5 lb/gal, 2.97 cu. Ft./sk Varicem Cement with 0.125 il/sk Lost Circulation Additive

Tail Slurry: **300 sks** (62 bbls), 13.0 lb/gal, 2.01 cu.ft./sk Varicem with .125 lb/sk Lost Circulation Agent

Oasis Petroleum
Well Summary
Lewis Federal 5300 11-31 3B
Section 31 T153N R100W
McKenzie County, ND

Contingency INTERMEDIATE CASING AND CEMENT DESIGN

Size	Interval	Weight	Grade	Coupling	I.D.	Drift
9-5/8"	0' - 6016'	36	J-55	LTC	8.921"	8.765"

Interval	Description	Collapse (psi) / a	Burst (psi) / b	Tension (1000 lbs) / c
0' - 6016'	9-5/8", 36#, J-55, LTC, 8rd	2020 / 2.25	3520 / 1.36	453 / 1.60

API Rating & Safety Factor

- a) Collapse based on full casing evacuation with 10.4 ppg fluid on backside (6016' setting depth).
- b) Burst pressure calculated from a gas kick coming from the production zone (Bakken Pool) at 9,000psi and a subsequent breakdown at the 9-5/8" shoe, based on a 15.2#/ft fracture gradient. Backup of 9 ppg fluid..
- c) Tension based on string weight in 10.4 ppg fluid at 6016' TVD plus 100k# overpull. (Buoyed weight equals 182k lbs.)

Cement volumes are based on 9-5/8" casing set in 12-1/4 " hole with 10% excess to circulate cement back to surface.

Pre-flush (Spacer): **20 bbls** Chem wash

Lead Slurry: **545 sks** (281 bbls), 2.90 ft3/sk, 11.5 lb/gal Conventional system with 94 lb/sk cement, 4% D079 extender, 2% D053 expanding agent, 2% CaCl2 and 0.250 lb/sk D130 lost circulation control agent.

Tail Slurry: **612 sks** (126 bbls), 1.16 ft3/sk 15.8 lb/gal Conventional system with 94 lb/sk cement, 0.25% CaCl2, and 0.250 lb/sk lost circulation control agent

Oasis Petroleum
Well Summary
Lewis Federal 5300 11-31 3B
Section 31 T153N R100W
McKenzie County, ND

INTERMEDIATE CASING AND CEMENT DESIGN

Size	Interval	Weight	Grade	Coupling	I.D.	Drift**
7"	0' - 11045'	32	HCP-110	BTC/LTC	6.094"	6.000***

**Special Drift 7"32# to 6.0"

Interval	Length	Description	Collapse	Burst	Tension
			(psi) a	(psi) b	(1000 lbs) / c
0' - 5000'	5000'	7", 32#, HCP-110, BTC, 8rd	11820 / 2.11*	12460 / 1.28	897 / 2.24
5000' - 11045'	6045'	7", 32#, HCP-110, LTC, 8rd	11820 / 1.06**	12460 / 1.30	

API Rating & Safety Factor

- a) *Assume full casing evacuation with 10 ppg fluid on backside. **Assume full casing evacuation with 1.2 psi/ft equivalent fluid gradient across salt intervals.
- b) Burst pressure based on 9000 psig max press for stimulation plus 10.2 ppg fluid in casing and 9 ppg fluid on backside-to 10765' TVD.
- c) Based on string weight in 10 ppg fluid, (299k lbs buoyed weight) plus 100k lbs overpull.

Cement volumes are estimates based on 7" casing set in an 8-3/4" hole with 30% excess.

Mix and pump the following slurry

Pre-flush (Spacer): **100 bbls** Saltwater
20 bbls Tuned Spacer III

Lead Slurry: **218 sks** (101 bbls), 11.8 ppg, 2.55 cu. ft./sk Econocem Cement with .3% Fe-2 and .25 lb/sk Lost Circulation Additive

Tail Slurry: **568 sks** (166 bbls), 14.0 ppg, 1.55 cu. ft./sk Extendcem System with .2% HR-5 Retarder and .25 lb/sk Lost Circulation Additive

Oasis Petroleum
Well Summary
Lewis Federal 5300 11-31 3B
Section 31 T153N R100W
McKenzie County, ND

PRODUCTION LINER

Size	Interval	Weight	Grade	Coupling	I.D.	Drift
4-1/2"	10226' - 20895'	13.5	P-110	GB CD BTC	3.920"	3.795"

Interval	Length	Description	Collapse (psi) a	Burst (psi) b	Tension (1000 lbs) c
10226' - 20895'	10669	4-1/2", 13.5 lb, P-110, GB CD BTC	10670 / 1.99	12410 / 1.28	443 / 1.98

API Rating & Safety Factor

- a) Based on full casing evacuation with 9.5 ppg fluid on backside @ 10841' TVD.
- b) Burst pressure based on 9000 psi treating pressure with 10.2 ppg internal fluid gradient and 9 ppg external fluid gradient @ 10841' TVD.
- c) Based on string weight in 9.5 ppg fluid (Buoyed weight: 123k lbs.) plus 100k lbs overpull.

Cement volumes are estimates based on 4-1/2" casing hung from 7" casing, and into 6" OH. 20% excess.
 Mix and pump the cement slurry. Follow cement with liner dart and then saltwater displacement

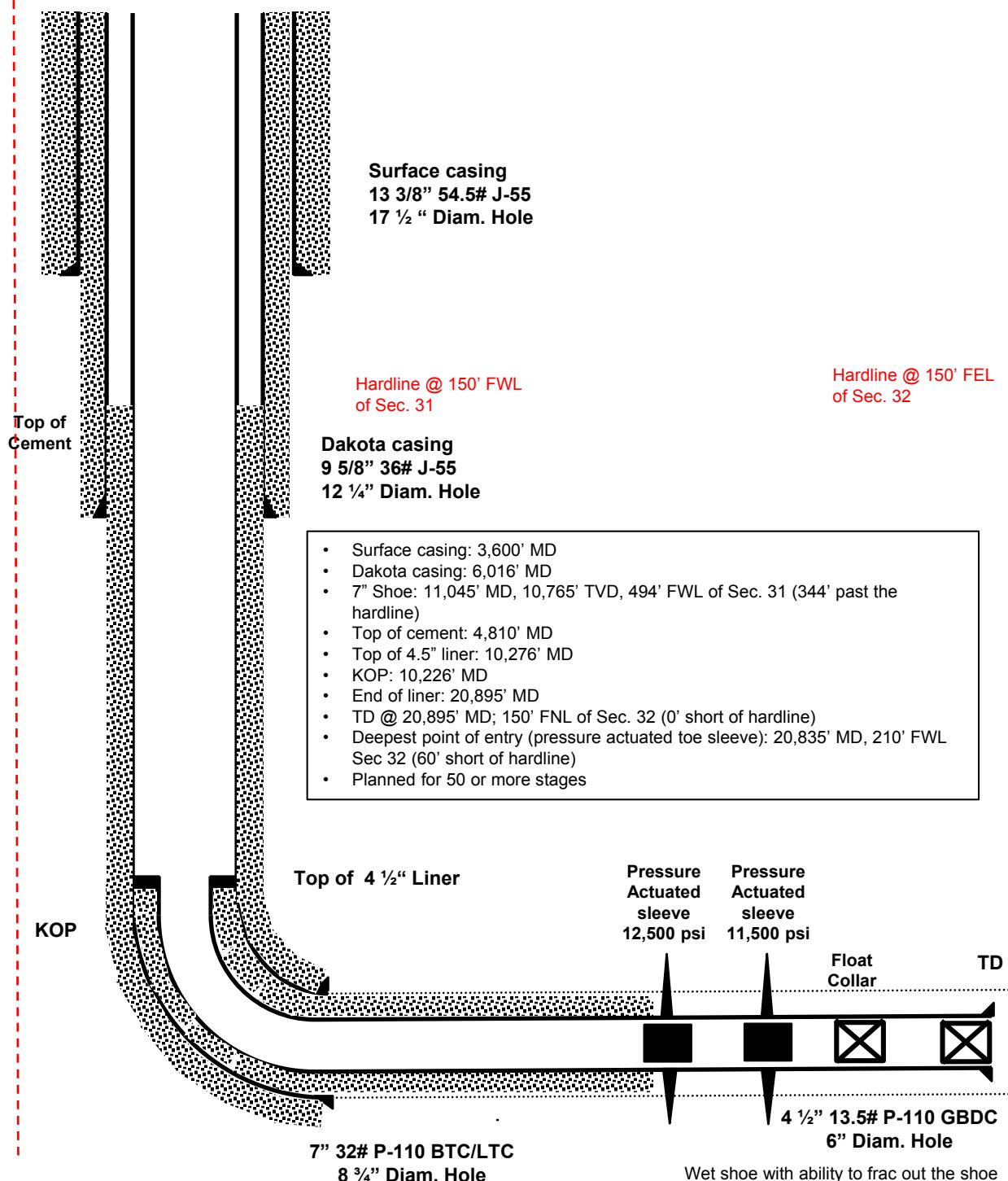
Pre-flush (Spacer):	20 bbls Viscous spacer
Cement Slurry:	726 sks (197 bbls), 14.3ppg, 1.52 cu/ft/sk conventional system with 20% silica flour
Displacement	272 bbls Based on 53 ft shoe track and 4" drill pipe from surface to top of liner 4" DP: 0ft to 10226ft @ 0.011bbl/ft 4.5" casing: 10226ft to 20842ft; 0.0149bbl/ft

DRILLING PLAN								
OPERATOR	Oasis Petroleum			COUNTY/STATE	McKenzie Co., ND			
WELL NAME	Lewis Federal 5300 11-31 3B			RIG	-			
WELL TYPE	Middle Bakken			Surface Location (survey plat):	1083' FNL			
LOCATION	T153N R100W S31 NWNW			262' FWL				
EST. T.D.	20,895'			FINISH PAD ELEV:	2,110'			
TOTAL LATERAL:	9,850'			KB ELEV:	2,135'			
MARKER	TVD	Subsea TVD	LOGS:	Type	Interval			
Pierre	NDIC MAP	1,985	OH Logs: Triple Combo	GR/Resistivity	KOP to Kibbey (or min run of 1800' whichever is greater)			
Greenhorn		4,596		GR	Bottom of surface casing			
Mowry (Dakota Group)		5,010		CND	To surface			
Inyan Kara (Dakota Group)		5,432			Through Dakota Group (Inyan Kara Sands)			
Swift (Base Dakota Group)		5,855	CBL/GR:		Above top of cement/GR to base of casing			
Rierdon		6,371						
Dunham Salt		6,898	MWD GR:		KOP to lateral TD			
Dunham Salt Base		6,955						
Pine Salt		7,262						
Pine Salt Base		7,323						
Opeche Salt		7,441	Surf:		3 deg. max., 1 deg / 100'; svry every 500'			
Opeche Salt Base		7,467	Prod:		5 deg. max., 1 deg / 100'; svry every 100'			
Amsden		7,663						
Tyler		7,851						
Otter/Base Minnelusa		8,069						
Kibbey Lime		8,416						
Charles Salt		8,562						
Base Last Salt		9,233						
Mission Canyon		9,447						
Lodgepole		10,006						
False Bakken		10,720						
Upper Bakken Shale		10,730						
Middle Bakken		10,746						
Target Top		10,756						
Target Landing		10,765						
Target Base		10,774						
Lower Bakken		10,784						
-		-						
-		-						
-		-						
-		-						
-		-						
-		-						
Est. Average Dip Rate:	89.58							
Max. Anticipated BHP:	4,698'							
MUD:	Interval	Type	WT	Vis	WL	Remarks		
Surface:	0' -	3,600'	FW/Gel Lime Sweeps	8.4-9.0	28-32	NC	Circ Mud Tanks	
Intermediate:	3,600' -	11,045'	Invert	9.5-10.4	40-50	30+HtHp	Circ Mud Tanks	
Laterals:	11,045' -	20,895'	Salt Water	9.8-10.2	28-32	NC	Circ Mud Tanks	
CASING:	Size	Wt ppf	Hole	Depth	Cement	WOC	Remarks	
Surface:	13-3/8"	54.5#	17-1/2"	4,900'	To Surface	12 hours	150' into Pierre	
Intermediate: (Dakota)	9-5/8"	36#	12-1/4"	6,016'	To Surface	24 hours	Set Casing across Dakota	
Intermediate:	7"	32#	8-3/4"	11,045'	4810	24 hours	200' above Mowry	
Production Liner:	4.5"	13.5#	6"	20,895'	10226		50' above KOP	
PROBABLE PLUGS, IF REQ'D:								
OTHER:	MD	TVD	FNL/FSL	FEL/FWL	S-T-R	AZI		
Surface:	3,600'	3,600'	1083 FNL	262 FWL	Sec 31 T153N R100W	-		
KOP:	10,276'	10,266'	1300 FNL	21 FWL	Sec 31 T153N R100W	-		
EOC:	11,045'	10,765'	1321 FNL	494 FWL	Sec 31 T153N R100W	90.0		
Casing Point:	11,045'	10,765'	1321 FNL	494 FWL	Sec 31 T153N R100W	90.0		
TD:	20,895'	10,841'	1321 FNL	150 FEL	Sec 32 T153N R100W	90.0		
Comments:								
Request waiver of open hole logs. Justification well: Lewis Federal 5300 31-31H (33053034330000) ~0.54 miles S of SHL								
The above open hole logs will be run if Oasis does not submit and receive an approved logging waiver from the NDIC.								
Currently planned for 50 stages. No frac string planned. 4-1/2" cemented liner completed using plug & perf method								
Oasis Petroleum does not use Diesel Fuel, as defined by the US EPA in the list below, in our hydraulic fracture operations.								
68334-30-5 (Primary Name: Fuels, diesel) 68476-34-6 (Primary Name: Fuels, diesel, No. 2) 68476-30-2 (Primary Name: Fuel oil No. 2)								
68476-31-3 (Primary Name: Fuel oil, No. 4) 8008-20-6 (Primary Name: Kerosene)								
Geology: LRH				Engineering: TR 4/12/18				
Revision: Revision 2:				Revision: Revision 2:				

ELEVATION: 2,110' SL

Lewis Federal 5300 11-31 3B Proposed Wellbore Schematic

FORMATION: Bakken



OASIS PETROLEUM NA LLC

Lewis Federal 5300 11-31 3B

Wellbore: T153N-R100W Sec. 31 & 32

SHL: 1083' FNL & 262' FWL T153N-R100W Sec. 31

Williams County, North Dakota

Updated: 4-12-2018 TR



SUNDY NOTICES AND REPORTS ON WELLS - FORM 4.
INDUSTRIAL COMMISSION OF NORTH DAKOTA

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 5749 (09-2006)

FORM 4.
Received

Well File No.
30188

OCT 18 2018

**PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.
PLEASE SUBMIT THE ORIGINAL AND ONE COPY.**

<input checked="" type="checkbox"/> Notice of Intent	Approximate Start Date December 15, 2018
<input type="checkbox"/> Report of Work Done	Date Work Completed
<input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.	Approximate Start Date

ND Oil & Gas
Division

- | | |
|---|---|
| <input type="checkbox"/> Drilling Prognosis | <input type="checkbox"/> Spill Report |
| <input type="checkbox"/> Redrilling or Repair | <input type="checkbox"/> Shooting |
| <input checked="" type="checkbox"/> Casing or Liner | <input type="checkbox"/> Acidizing |
| <input type="checkbox"/> Plug Well | <input type="checkbox"/> Fracture Treatment |
| <input type="checkbox"/> Supplemental History | <input type="checkbox"/> Change Production Method |
| <input type="checkbox"/> Temporarily Abandon | <input type="checkbox"/> Reclamation |
| <input type="checkbox"/> Other | |

Well Name and Number Lewis Federal 5300 11-31 3B													
Footages		Qtr-Qtr		Section		Township		Range					
1005	F	N	L	233	F	W	L	Lot 1	31	153	N	100	W
Field			Pool			County							
Baker			Bakken			McKenzie							

24-HOUR PRODUCTION RATE			
Before		After	
Oil	Bbls	Oil	Bbls
Water	Bbls	Water	Bbls
Gas	MCF	Gas	MCF

Name of Contractor(s)			
Address	City	State	Zip Code

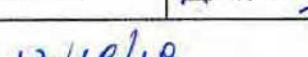
DETAILS OF WORK

Oasis Petroleum respectfully requests to amend the surface casing depth to 4900' MD (previously 2135') due to potential flowback in the Dakota formation. In order to counteract projected flowback at surface, Oasis needs to increase mud weight, and lowering the surface casing point will allow this to be performed safely. Oasis will also perform a two-stage cementing job using a DV tool set at approximately 2200'. A CBL will be run on 13-3/8" casing.

Attached are revised drill plans reflecting the amended casing points, cement volumes, and other related volumes.

* * OASIS May not drill into and/or set 13³/₈" casing into the Dakota Group.

Company Oasis Petroleum North America LLC		Telephone Number 281-404-9436
Address 1001 Fannin St, Suite 1500		
City Houston		State TX
Zip Code 77002		
Signature 	Printed Name Jennifer Swenson	
Title Regulatory Specialist	Date December 17, 2018	
Email Address jswenson@oasispetroleum.com		

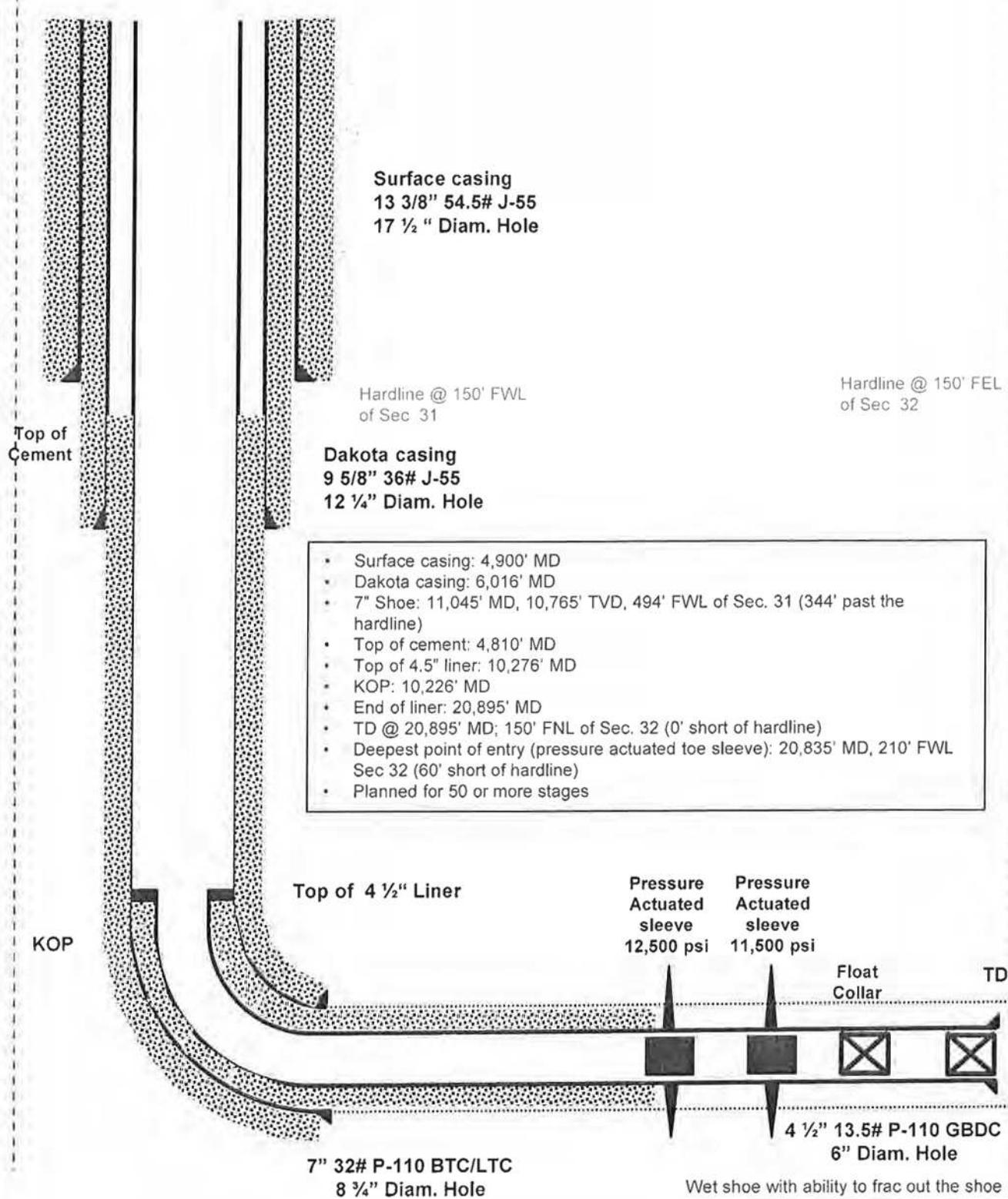
FOR STATE USE ONLY	
<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved 
Date	12/18/18
By	
Title	Mineral Resources Permit Manager

DRILLING PLAN							
OPERATOR	Oasis Petroleum		COUNTY/STATE	McKenzie Co., ND			
WELL NAME	Lewis Federal 5300 31-31H		RIG				
WELL TYPE	Middle Bakken						
LOCATION	T153N R100W S31 NWNW	Surface Location (Survey Plat): 1053' FNL	Surf FWL				
EST. T.D.	20,895'		FINISH PAD ELEV:	2,110'	Sub Height:	25'	
TOTAL LATERAL	9,250'		KB ELEV:	2,135'			
MARKER	TVD	Subsea TVD	LOGS:	Type	Interval		
Pierre	NDIC MAP	1,985	150	OH Logs: Triple Combo	KOP to Kibbey (or min run of 1800' whichever is greater)		
Greenhorn		4,596	-2,461'	GR/Resistivity	Bottom of surface casing		
Mowry (Dakota Group)		5,010	-2,875'	GR	To surface		
Inyan Kara (Dakota Group)		5,432	-3,297'	CND	Through Dakota Group (Inyan Kara Sands)		
Swift (Base Dakota Group)		5,855	-3,720'	CBL/GR:	Above top of cement/GR to base of casing		
Rierdon		6,371	-4,230'	MWD GR:	KOP to lateral TD		
Dunham Salt		6,698	-4,763'				
Dunham Salt Base		6,955	-4,820'				
Pine Salt		7,262	-5,127'				
Pine Salt Base		7,323	-5,188'	Surf	3 deg. max., 1 deg / 100'; surv every 500'		
Opencore Salt		7,441	-5,306'	Prod:	5 deg. max., 1 deg / 100'; surv every 100'		
Opencore Salt Base		7,467	-5,332'				
Amsden		7,663	-5,528'				
Tyler		7,651	-5,710'				
Otter/Base Minnelusa		8,069	-5,934'				
Kibbey Lime		8,416	-6,281'				
Charles Salt		8,562	-6,427'				
Base Last Salt		9,233	-7,098'				
Mission Canyon		9,447	-7,312'	Core Planned?	NO		
Lodgepole		10,006	-7,871'	Core Type:			
False Bakken		10,720	-8,585'	Formations/Depths:			
Upper Bakken Shale		10,730	-8,588'				
Middle Bakken		10,746	-8,611'				
Target Top		10,756	-8,621'				
Target Landing		10,765	-8,630'				
Target Base		10,774	-8,639'				
Lower Bakken		10,784	-8,649'				
Est. Average Dip Rate:	4.6%						
Max. Anticipated BHP:	4,600'						
MUD:	Interval	Type	WT	Vis	WL	Remarks	
Surface:	0'	4,900' FW/Gel Lime Sweeps	8-4-9.0	28-32	NC	Circ Mud Tanks	
Intermediate:	4,900' -	Invert	9-5-10.4	40-50	30+HHp	Circ Mud Tanks	
Lateral:	11,045' -	Salt Water	9-8-10.2	28-32	NC	Circ Mud Tanks	
CASING:	Size	Wt ppf	Hole	Depth	Cement	WOC	Remarks
Surface:	13-3/8"	54.5#	17-1/2"	4,900'	To Surface	12 hours	150' into Pierre
Intermediate: (Dakota)	9-5/8"	36#	12-1/4"	6,016'	To Surface	24 hours	Set Casing across Dakota
Intermediate:	7"	32#	8-3/4"	11,045'	4810	24 hours	200' above Mowry
Production Liner:	4.5"	13.5#	6"	20,895'	10226		50' above KOP
PROBABLE PLUGS, IF REQ'D:							
OTHER:	MD	TVD	FNL/FSI	FEL/FWL	S-T-R	AZI	
Surface:	4,900'	4,900'	1083 FNL	262 FWL	Sec 31 T153N R100W		
KOP:	10,276'	10,266'	1300 FNL	21 FWL	Sec 31 T153N R100W		
EOC:	11,045'	10,765'	1321 FNL	494 FWL	Sec 31 T153N R100W	90.0	
Casing Point:	11,045'	10,765'	1321 FNL	494 FWL	Sec 31 T153N R100W	90.0	
TD:	20,895	10,841	1321 FNL	150 FEL	Sec 32 T153N R100W	90.0	
Comments:							
Request waiver of open hole logs. Justification well: Lewis Federal 5300 31-31H (3305303433000) ~0.54 miles S of SHL							
The above open hole logs will be run if Oasis does not submit and receive an approved logging waiver from the NDIC							
Currently planned for 50 stages. No frac string planned. 4-1/2" cemented liner completed using plug & perf method							
Oasis Petroleum does not use Diesel Fuel, as defined by the US EPA in the list below, in our hydraulic fracture operations.							
68334-30-5 (Primary Name: Fuels, diesel) 68476-34-6 (Primary Name: Fuels, diesel, No. 2) 68476-30-2 (Primary Name: Fuel oil No. 2)							
68476-31-3 (Primary Name: Fuel oil, No. 4) 8008-20-6 (Primary Name: Kerosene)							
OASIS		Geology:	LRH	4/3/2018	Engineering:	TR 4/12/18	
		Revision:			Revision:		
		Revision 2			Revision 2		

ELEVATION: 2,110' SL

**Lewis Federal 5300 11-31 3B
Proposed Wellbore Schematic**

FORMATION: Bakken



OASIS PETROLEUM NA LLC

Lewis Federal 5300 11-31 3B

Wellbore: T153N-R100W Sec. 31 & 32

SHL: 1083' FNL & 262' FWL T153N-R100W Sec. 31

Williams County, North Dakota
Updated: 4-12-2018 TR

Oasis Petroleum
Well Summary
Lewis Federal 5300 11-31 3B
Section 31 T153N R100W
McKenzie County, ND

SURFACE CASING AND CEMENT DESIGN

Size	Interval	Weight	Grade	Coupling	I.D.	Drift
13-3/8"	0' - 4900'	54.5	J-55	STC	12.615"	12.459"

Interval	Description	Collapse (psi) / a	Burst (psi) / b	Tension (1000 lbs) / c
0' - 4900'	13-3/8", 54.5#, J-55, LTC, 8rd	1130 / 0.49	2730 / 0.82	514 / 1.55

API Rating & Safety Factor

- a) Collapse based on full casing evacuation with 9 ppg fluid on backside (4900' setting depth)
- b) Burst pressure based on 13 ppg fluid with no fluid on backside (4900' setting depth)
- c) Based on string weight in 9 ppg fluid at 4900' TVD plus 100k# overpull (Buoyed weight equals 230k lbs)

Cement volumes are based on 13-3/8" casing set in 17-1/2 " hole with 60% excess to circulate cement back to surface.

Mix and pump the following slurry

Pre-flush (Spacer): 20 bbls fresh water

Lead Slurry: 1779 sks (919 bbls), 11.5 lb/gal, 2.97 cu ft /sk Varicem Cement with 0.125 gal/sk Lost Circulation Additive

Tail Slurry: 300 sks (62 bbls), 13.0 lb/gal, 2.01 cu ft /sk Varicem with 125 lb/sk Lost Circulation Agent

Oasis Petroleum
Well Summary
Lewis Federal 5300 11-31 3B
Section 31 T153N R100W
McKenzie County, ND

Contingency INTERMEDIATE CASING AND CEMENT DESIGN

Size	Interval	Weight	Grade	Coupling	I.D.	Drift
9-5/8"	0' - 6016'	36	J-55	LTC	8.921"	8.765"

Interval	Description	Collapse (psi) / a	Burst (psi) / b	Tension (1000 lbs) / c
0' - 6016'	9-5/8", 36#, J-55, LTC, 8rd	2020 / 2.25	3520 / 1.36	453 / 1.60

API Rating & Safety Factor

- a) Collapse based on full casing evacuation with 10.4 ppg fluid on backside (6016' setting depth)
- b) Burst pressure calculated from a gas kick coming from the production zone (Bakken Pool) at 9,000psi and a subsequent breakdown at the 9-5/8" shoe, based on a 15 2#/ft fracture gradient Backup of 9 ppg fluid
- c) Tension based on string weight in 10.4 ppg fluid at 6016' TVD plus 100k# overpull. (Buoyed weight equals 182k lbs)

Cement volumes are based on 9-5/8" casing set in 12-1/4 " hole with 10% excess to circulate cement back to surface

Pre-flush (Spacer): 20 bbls Chem wash

Lead Slurry: 569 sks (294 bbls), 2.90 ft3/sk, 11.5 lb/gal Conventional system with 94 lb/sk cement, 4% D079 extender, 2% D053 expanding agent, 2% CaCl2 and 0.250 lb/sk D130 lost circulation control agent

Tail Slurry: 612 sks (126 bbls), 1.16 ft3/sk 15.8 lb/gal Conventional system with 94 lb/sk cement, 0.25% CaCl2, and 0.250 lb/sk lost circulation control agent

Oasis Petroleum
Well Summary
Lewis Federal 5300 11-31 3B
Section 31 T153N R100W
McKenzie County, ND

INTERMEDIATE CASING AND CEMENT DESIGN

Size	Interval	Weight	Grade	Coupling	I.D.	Drift**
7"	0' - 11045'	32	HCP-110	BTC/LTC	6.094"	6.000***

**Special Drift 7"32# to 6.0"

Interval	Length	Description	Collapse (psi) a	Burst (psi) b	Tension (1000 lbs) / c
0' - 5000'	5000'	7" 32#, HCP-110, BTC, 8rd	11820 / 2 11*	12460 / 1.28	897 / 2.24
5000' - 11045'	6045'	7", 32#, HCP-110, LTC, 8rd	11820 / 1.06**	12460 / 1.30	

API Rating & Safety Factor

- a) *Assume full casing evacuation with 10 ppg fluid on backside. **Assume full casing evacuation with 1.2 psi/ft equivalent fluid gradient across salt intervals
- b) Burst pressure based on 9000 psig max press for stimulation plus 10 2 ppg fluid in casing and 9 ppg fluid on backside-to 10765' TVD
- c) Based on string weight in 10 ppg fluid, (299k lbs buoyed weight) plus 100k lbs overpull

Cement volumes are estimates based on 7" casing set in an 8-3/4" hole with 30% excess
Mix and pump the following slurry

Pre-flush (Spacer): 100 bbls Saltwater
 20 bbls Tuned Spacer III

Lead Slurry: 218 sks (101 bbls), 11.8 ppg, 2.55 cu. ft./sk Econocem Cement with 3% Fe-2 and 25 lb/sk Lost Circulation Additive

Tail Slurry: 568 sks (166 bbls), 14.0 ppg, 1.55 cu. ft./sk Extendcem System with 2% HR-5 Retarder and 25 lb/sk Lost Circulation Additive

Oasis Petroleum
Well Summary
Lewis Federal 5300 11-31 3B
Section 31 T153N R100W
McKenzie County, ND

PRODUCTION LINER

Size	Interval	Weight	Grade	Coupling	I.D.	Drift
4-1/2"	10226' - 20895'	13.5	P-110	GB CD BTC	3.920"	3.795"

Interval	Length	Description	Collapse	Burst	Tension
10226' - 20895'	10669	4-1/2", 13.5 lb, P-110, GB CD BTC	(psi) a 10670 / 1.99	(psi) b 12410 / 1.28	(1000 lbs) c 443 / 1.98

API Rating & Safety Factor

- a) Based on full casing evacuation with 9.5 ppg fluid on backside @ 10841' TVD
- b) Burst pressure based on 9000 psi treating pressure with 10.2 ppg internal fluid gradient and 9 ppg external fluid gradient @ 10841' TVD.
- c) Based on string weight in 9.5 ppg fluid (Buoyed weight: 123k lbs) plus 100k lbs overpull.

Cement volumes are estimates based on 4-1/2" casing hung from 7" casing, and into 6" OH 20% excess
 Mix and pump the cement slurry Follow cement with liner dart and then saltwater displacement

Pre-flush (Spacer):	20 bbls Viscous spacer
Cement Slurry:	726 sks (197 bbls), 14.3ppg, 1.52 cu/ft/sk conventional system with 20% silica flour
Displacement	272 bbls Based on 53 ft shoe track and 4" drill pipe from surface to top of liner 4" DP: 0ft to 10226ft @ 0.011 bbl/ft 4.5" casing: 10226ft to 20842ft; 0.0149 bbl/ft



SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 5749 (09-2006)

Received

Well File No.
30188

DEC 12 2018

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.
PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

<input checked="" type="checkbox"/> Notice of Intent	Approximate Start Date December 11, 2018
<input type="checkbox"/> Report of Work Done	Date Work Completed
<input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.	Approximate Start Date

ND Oil & Gas Division

- | | |
|---|---|
| <input type="checkbox"/> Drilling Prognosis | <input type="checkbox"/> Spill Report |
| <input type="checkbox"/> Redrilling or Repair | <input type="checkbox"/> Shooting |
| <input type="checkbox"/> Casing or Liner | <input type="checkbox"/> Acidizing |
| <input type="checkbox"/> Plug Well | <input type="checkbox"/> Fracture Treatment |
| <input type="checkbox"/> Supplemental History | <input type="checkbox"/> Change Production Method |
| <input type="checkbox"/> Temporarily Abandon | <input type="checkbox"/> Reclamation |
| <input checked="" type="checkbox"/> Other | APD Renewal |

Well Name and Number Lewis Federal 5300 11-31 3B						
Footages 1083	262	Qtr-Qtr 1005 F N L	Lot 1	Section 31	Township 153 N	Range 100 W
Field Baker	Pool Bakken	County McKenzie				

24-HOUR PRODUCTION RATE

	Before	After	
Oil	Bbls	Oil	Bbls
Water	Bbls	Water	Bbls
Gas	MCF	Gas	MCF

Name of Contractor(s)			
Address		City	State
			Zip Code

DETAILS OF WORK

Oasis Petroleum requests the above referenced well be renewed. There are no planned changes to the current drill plan.

Please use the credit card on file for the \$100.00 application processing fee.

Permit Expires 12/11/19.

Company Oasis Petroleum North America LLC		Telephone Number 281-404-9436	
Address 1001 Fannin St, Suite 1500			
City Houston		State TX	Zip Code 77002
Signature 	Printed Name Jennifer Swenson		
Title Regulatory Specialist	Date December 11, 2018		
Email Address jswenson@oasispetroleum.com			

FOR STATE USE ONLY

<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date 12/12/18	
By Alice D. Webber	
Title Engineering Technician	



Oil and Gas Division

Lynn D. Helms - Director

Bruce E. Hicks - Assistant Director

Department of Mineral Resources

Lynn D. Helms - Director

North Dakota Industrial Commission

www.dmr.nd.gov/oilgas/

30188

November 13, 2018

OASIS PETRO NO AMER
1001 FANNIN STE 1500
HOUSTON, TX 77002

RE: LEWIS FEDERAL 5300 11-31 3B
LOT1 Sec. 31-153N-100W
MCKENZIE COUNTY
WELL FILE NO. 30188

Gentlemen:

The records and files of the Industrial Commission indicate that the above referenced permit will expire December 11, 2018.

Permits to drill are only valid for one year in the State of North Dakota. If you would like to renew for another year, please submit a Form 4 along with the \$100.00 filing fee. Alternatively, you may elect to send in a Form 4 cancelling the permit. If you have any questions, please contact Todd Holweger.

Sincerely,


Rachel Morris
Administrative Assistant



SUNDRY NOTICES AND REPORTS ON WELLS - FORM Received

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 5749 (09-2006)

APR 18 2018

Well File No.
30188

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.
PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

ND Oil & Gas Division

<input checked="" type="checkbox"/> Notice of Intent	Approximate Start Date April 30, 2018
<input type="checkbox"/> Report of Work Done	Date Work Completed
<input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.	
Approximate Start Date	

<input type="checkbox"/> Drilling Prognosis	<input type="checkbox"/> Spill Report
<input type="checkbox"/> Redrilling or Repair	<input type="checkbox"/> Shooting
<input type="checkbox"/> Casing or Liner	<input type="checkbox"/> Acidizing
<input type="checkbox"/> Plug Well	<input type="checkbox"/> Fracture Treatment
<input type="checkbox"/> Supplemental History	<input checked="" type="checkbox"/> Change Production Method
<input type="checkbox"/> Temporarily Abandon	<input type="checkbox"/> Reclamation
<input type="checkbox"/> Other	SHL and BHL Changes

Well Name and Number Lewis Federal 5300 11-31 3B					
Footages		Qtr-Qtr	Section	Township	Range
1005 F N L		233 F W L	LOT1	31	153 N 100 W
Field Baker	Pool Bakken			County McKenzie	

24-HOUR PRODUCTION RATE			
Before	After		
Oil	Bbls	Oil	Bbls
Water	Bbls	Water	Bbls
Gas	MCF	Gas	MCF

Name of Contractor(s)			
Address		City	State
			Zip Code

DETAILS OF WORK

Oasis Petroleum respectfully requests the following changes to the above referenced permitted well:

SHL change: 1083' FNL & 262' FWL Lot 1 Sec. 31 T153N R100W (Previously 1005' FNL & 233' FWL Lot 1 Sec. 31 T153N R100W)

BHL change: 1321' FNL & 150' FEL LOT4 Sec. 32 T153N R100W (Previously 998' FNL & 210' FEL NENE Sec. 32 T153N R100W)

Oasis must submit plat of production CTB within 30 days of 4-24-2018.

TD Change: 20895' MD / 10841' TVD (Previously 20610' MD / 10844' TVD)

Please see attached supporting documents.

Must run a CBL on the 9-5/8" intermediate string which is proposed to isolate the Dakota Group prior to running 7" casing.

The East 150' setback is based on a production liner cemented in the lateral with a wet shoe and the ability to frac out the shoe.

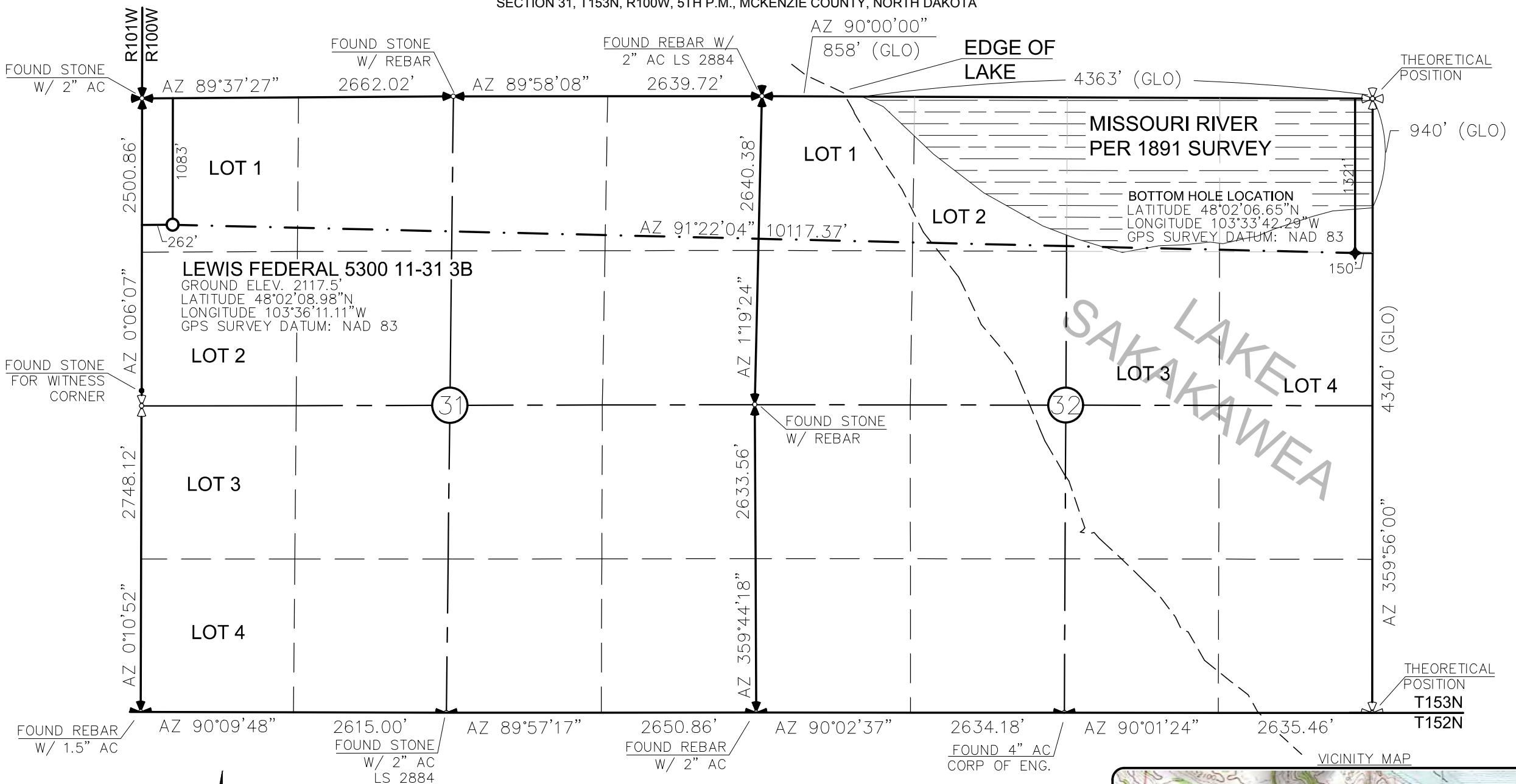
Company Oasis Petroleum North America LLC	Telephone Number 281-404-9494	
Address 1001 Fannin, Suite 1500		
City Houston	State TX	Zip Code 77002
Signature <i>Sadie Goodrum</i>	Printed Name Sadie Goodrum	
Title Regulatory Specialist II	Date April 18, 2018	
Email Address sgoodrum@oasispetroleum.com		

FOR STATE USE ONLY	
<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date 4/24/2018	
By <i>Dan Price</i>	
Title Engineering Tech.	

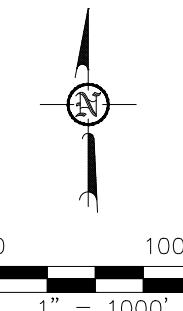
WELL LOCATION

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
LEWIS FEDERAL 5200-11-21-2B

LEWIS, FEDERAL 3300 11-31-38
1083 FEET FROM NORTH LINE AND 262 FEET FROM WEST LINE
SECTION 31, T153N, R100W, 5TH P.M., MCKENZIE COUNTY, NORTH DAKOTA



THIS DOCUMENT WAS ORIGINALLY
ISSUED AND SEALED BY DARYL D.
KASEMAN, PLS, REGISTRATION
NUMBER 3880 ON 3-27-18
AND THE ORIGINAL DOCUMENTS
ARE STORED AT THE OFFICES OF
INTERSTATE ENGINEERING, INC.

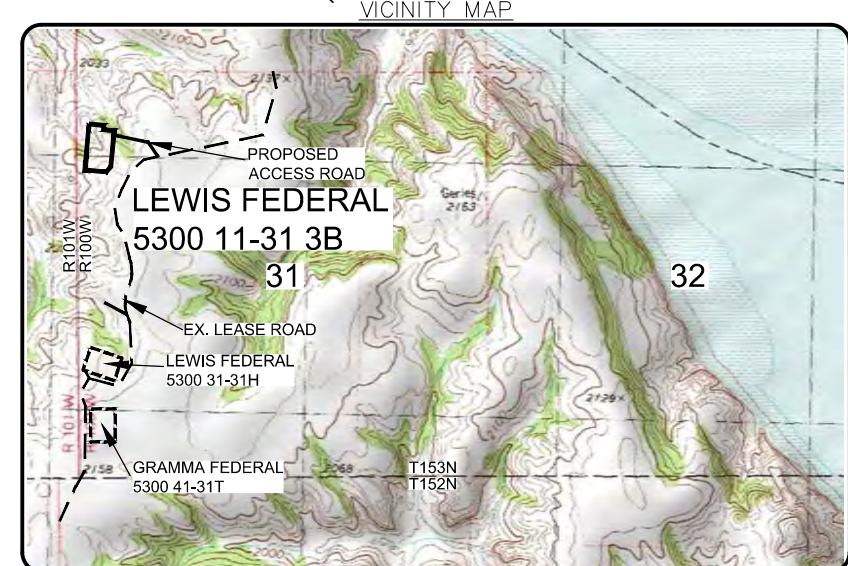
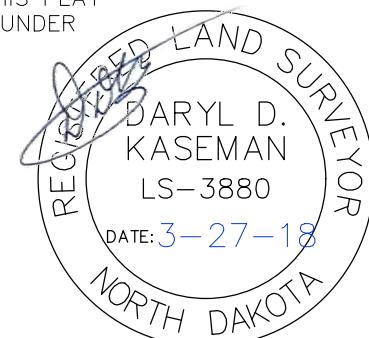


 — MONUMENT — RECOVERED
 — MONUMENT — NOT RECOVERED

STAKED ON 3/26/18
VERTICAL CONTROL DATUM WAS BASED UPON
CONTROL POINT 705 WITH AN ELEVATION OF 2158.3'

THIS SURVEY AND PLAT IS BEING PROVIDED AT THE REQUEST OF JOHN LEE OF OASIS PETROLEUM. I CERTIFY THAT THIS PLAT CORRECTLY REPRESENTS WORK PERFORMED BY ME OR UNDER MY SUPERVISION AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

DARYL D. KASEMAN LS-3880



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INTERSTATE
ENGINEERING

1/9

SECTION 31, T153N, R100W, 5TH P.M.,		MCKENZIE COUNTY, NORTH DAKOTA	
Drawn By:	J.D.M.	Project No.:	S17-09-183
Checked By:	D.D.K.	Date:	MARCH 2018

INTERSTATE ENGINEERING
425 East Main Street
Sidney, Montana 59270
Ph (406) 433-5617
Fax (406) 433-5618
www.interstateeng.com

DRILLING PLAN										
OPERATOR	Oasis Petroleum			COUNTY/STATE	McKenzie Co., ND					
WELL NAME	Lewis Federal 5300 11-31 3B			RIG	-					
WELL TYPE	Middle Bakken									
LOCATION	T153N R100W S31 NWNW	Surface Location (survey plat): 1083' FNL		262' FWL						
EST. T.D.	20,895'			FINISH PAD ELEV:	2,110'	Sub Height: 25' <td data-kind="ghost"></td>				
TOTAL LATERAL:	9,850'			KB ELEV:	2,135'					
MARKER	NDIC MAP	TVD	Subsea TVD	LOGS:	Type	Interval				
Pierre		1,985	150'	OH Logs:	Triple Combo	KOP to Kibbey (or min run of 1800' whichever is greater)				
Greenhorn		4,596	-2,461'		GR/Resistivity	Bottom of surface casing				
Mowry (Dakota Group)		5,010	-2,875'		GR	To surface				
Inyan Kara (Dakota Group)		5,432	-3,297'		CND	Through Dakota Group (Inyan Kara Sands)				
Swift (Base Dakota Group)		5,855	-3,720'	CBL/GR:		Above top of cement/GR to base of casing				
Rierdon		6,371	-4,236'							
Dunham Salt		6,898	-4,763'	MWD GR:		KOP to lateral TD				
Dunham Salt Base		6,955	-4,820'							
Pine Salt		7,262	-5,127'	DEVIATION:						
Pine Salt Base		7,323	-5,188'		Surf:	3 deg. max., 1 deg / 100'; svry every 500'				
Opecche Salt		7,441	-5,306'		Prod:	5 deg. max., 1 deg / 100'; svry every 100'				
Opecche Salt Base		7,467	-5,332'	DST'S:						
Amsden		7,663	-5,528'							
Tyler		7,851	-5,716'	Core:						
Otter/Base Minnelusa		8,069	-5,934'		Core Planned?	NO				
Kibbey Lime		8,416	-6,281'		Core Type:	-				
Charles Salt		8,562	-6,427'		Formations/Depths:					
Base Last Salt		9,233	-7,098'	MUDLOGGING:						
Mission Canyon		9,447	-7,312'		Company:	TBD				
Lodgepole		10,006	-7,871'		Starting Depth:	Begin 200' above Kibbey				
False Bakken		10,720	-8,585'		Sample Protocol:	30' samples in curve, 50' samples in lateral				
Upper Bakken Shale		10,730	-8,595'	BOP:						
Middle Bakken		10,746	-8,611'							
Target Top		10,756	-8,621'							
Target Landing		10,765	-8,630'							
Target Base		10,774	-8,639'							
Lower Bakken		10,784	-8,649'							
-		-	-							
-		-	-							
-		-	-							
-		-	-							
-		-	-							
-		-	-							
Est. Average Dip Rate:	89.58									
Max. Anticipated BHP:	4,698'									
MUD:	Interval	Type	WT	VIS	WL	Remarks				
Surface:	0' -	2,135'	FW/Gel Lime Sweeps	8.4-9.0	28-32	NC	Circ Mud Tanks			
Intermediate:	2,135' -	11,045'	Invert	9.5-10.4	40-50	30+HHhp	Circ Mud Tanks			
Lateral:	11,045' -	20,895'	Salt Water	9.8-10.2	28-32	NC	Circ Mud Tanks			
CASING:	Size	Wt pdf	Hole	Depth	Cement	WOC	Remarks			
Surface:	13-3/8"	54.5#	17-1/2"	2,135'	To Surface	12 hours	150' into Pierre			
Intermediate: (Dakota)	9-5/8"	36#	12-1/4"	5,955'	To Surface	24 hours	Set Casing across Dakota			
Intermediate:	7"	32#	8-3/4"	11,045'	4810	24 hours	200' above Mowry			
Production Liner:	4.5"	13.5#	6"	20,895'	10226		50' above KOP			
PROBABLE PLUGS, IF REQ'D:										
OTHER:	MD	TVD	FNL/FSL	FEL/FWL	S-T-R	AZI				
Surface:	2,135'	2,135'	1083 FNL	262 FWL	Sec 31 T153N R100W	-	Survey Company:			
KOP:	10,276'	10,266'	1300 FNL	21 FWL	Sec 31 T153N R100W	-	Build Rate: 12 deg /100'			
EOC:	11,045'	10,765'	1321 FNL	494 FWL	Sec 31 T153N R100W	90.0				
Casing Point:	11,045'	10,765'	1321 FNL	494 FWL	Sec 31 T153N R100W	90.0				
TD:	20,895'	10,841'	1321 FNL	150 FEL	Sec 32 T153N R100W	90.0				
Comments:										
Request waiver of open hole logs. Justification well: Lewis Federal 5300 31-31H (3305303433000) ~0.54 miles S of SHL										
The above open hole logs will be run if Oasis does not submit and receive an approved logging waiver from the NDIC.										
Currently planned for 50 stages. No frac string planned. 4-1/2" cemented liner completed using plug & perf method										
Oasis Petroleum does not use Diesel Fuel, as defined by the US EPA in the list below, in our hydraulic fracture operations.										
68334-30-5 (Primary Name: Fuels, diesel) 68476-34-6 (Primary Name: Fuels, diesel, No. 2) 68476-30-2 (Primary Name: Fuel oil No. 2)										
68476-31-3 (Primary Name: Fuel oil, No. 4) 8008-20-6 (Primary Name: Kerosene)										
Geology: LRH		4/3/2018		Engineering: TR 4/12/18						
Revision:		Revision:		Revision:						
Revision 2:		Revision 2:		Revision 2:						

Oasis Petroleum
Well Summary
Lewis Federal 5300 11-31 3B
Section 31 T153N R100W
McKenzie County, ND

SURFACE CASING AND CEMENT DESIGN

Size	Interval	Weight	Grade	Coupling	I.D.	Drift
13-3/8"	0' - 2135'	54.5	J-55	STC	12.615"	12.459"

Interval	Description	Collapse (psi) / a	Burst (psi) / b	Tension (1000 lbs) / c
0' - 2135'	13-3/8", 54.5#, J-55, LTC, 8rd	1130 / 1.13	2730 / 1.89	514 / 2.56

API Rating & Safety Factor

- a) Collapse based on full casing evacuation with 9 ppg fluid on backside (2135' setting depth).
- b) Burst pressure based on 13 ppg fluid with no fluid on backside (2135' setting depth).
- c) Based on string weight in 9 ppg fluid at 2135' TVD plus 100k# overpull. (Buoyed weight equals 100k lbs.)

Cement volumes are based on 13-3/8" casing set in 17-1/2 " hole with 60% excess to circulate cement back to surface.

Mix and pump the following slurry.

Pre-flush (Spacer): **20 bbls** fresh water

Lead Slurry: **720 sks** (372 bbls), 11.5 lb/gal, 2.97 cu. Ft./sk Varicem Cement with 0.125 gal/sk Lost Circulation Additive

Tail Slurry: **300 sks** (62 bbls), 13.0 lb/gal, 2.01 cu.ft./sk Varicem with .125 lb/sk Lost Circulation Agent

Oasis Petroleum
Well Summary
Lewis Federal 5300 11-31 3B
Section 31 T153N R100W
McKenzie County, ND

Contingency INTERMEDIATE CASING AND CEMENT DESIGN

Size	Interval	Weight	Grade	Coupling	I.D.	Drift
9-5/8"	0' - 5955'	36	J-55	LTC	8.921"	8.765"

Interval	Description	Collapse	Burst	Tension
		(psi) / a	(psi) / b	(1000 lbs) / c
0' - 5955'	9-5/8", 36#, J-55, LTC, 8rd	2020 / 2.29	3520 / 1.38	453 / 1.61

API Rating & Safety Factor

- a) Collapse based on full casing evacuation with 10.4 ppg fluid on backside (5955' setting depth).
- b) Burst pressure calculated from a gas kick coming from the production zone (Bakken Pool) at 9,000psi and a subsequent breakdown at the 9-5/8" shoe, based on a 15.2#/ft fracture gradient. Backup of 9 ppg fluid..
- c) Tension based on string weight in 10.4 ppg fluid at 5955' TVD plus 100k# overpull. (Buoyed weight equals 180k lbs.)

Cement volumes are based on 9-5/8" casing set in 12-1/4 " hole with 10% excess to circulate cement back to surface.

Pre-flush (Spacer): 20 bbls Chem wash

Lead Slurry: **517 sks** (267 bbls), 2.90 ft3/sk, 11.5 lb/gal Conventional system with 94 lb/sk cement, 4% D079 extender, 2% D053 expanding agent, 2% CaCl2 and 0.250 lb/sk D130 lost circulation control agent.

Tail Slurry: **594 sks** (123 bbls), 1.16 ft3/sk 15.8 lb/gal Conventional system with 94 lb/sk cement, 0.25% CaCl2, and 0.250 lb/sk lost circulation control agent

Oasis Petroleum
Well Summary
Lewis Federal 5300 11-31 3B
Section 31 T153N R100W
McKenzie County, ND

INTERMEDIATE CASING AND CEMENT DESIGN

Size	Interval	Weight	Grade	Coupling	I.D.	Drift**
7"	0' - 11045'	32	HCP-110	BTC/LTC	6.094"	6.000***

**Special Drift 7"32# to 6.0"

Interval	Length	Description	Collapse (psi) a	Burst (psi) b	Tension (1000 lbs) / c
0' - 5000'	5000'	7", 32#, HCP-110, BTC, 8rd	11820 / 2.11*	12460 / 1.28	897 / 2.24
5000' - 11045'	6045'	7", 32#, HCP-110, LTC, 8rd	11820 / 1.06**	12460 / 1.30	

API Rating & Safety Factor

- a) *Assume full casing evacuation with 10 ppg fluid on backside. **Assume full casing evacuation with 1.2 psi/ft equivalent fluid gradient across salt intervals.
- b) Burst pressure based on 9000 psig max press for stimulation plus 10.2 ppg fluid in casing and 9 ppg fluid on backside-to 10765' TVD.
- c) Based on string weight in 10 ppg fluid, (299k lbs buoyed weight) plus 100k lbs overpull.

Cement volumes are estimates based on 7" casing set in an 8-3/4" hole with 30% excess.

Mix and pump the following slurry

Pre-flush (Spacer): **100 bbls** Saltwater
20 bbls Tuned Spacer III

Lead Slurry: **218 sks** (101 bbls), 11.8 ppg, 2.55 cu. ft./sk Econocem Cement with .3% Fe-2 and .25 lb/sk Lost Circulation Additive

Tail Slurry: **568 sks** (166 bbls), 14.0 ppg, 1.55 cu. ft./sk Extendcem System with .2% HR-5 Retarder and .25 lb/sk Lost Circulation Additive

Oasis Petroleum
Well Summary
Lewis Federal 5300 11-31 3B
Section 31 T153N R100W
McKenzie County, ND

PRODUCTION LINER

Size	Interval	Weight	Grade	Coupling	I.D.	Drift
4-1/2"	10226' - 20895'	13.5	P-110	GB CD BTC	3.920"	3.795"

Interval	Length	Description	Collapse	Burst	Tension
10226' - 20895'	10669	4-1/2", 13.5 lb, P-110, GB CD BTC	(psi) a 10670 / 1.99	(psi) b 12410 / 1.28	(1000 lbs) c 443 / 1.98

API Rating & Safety Factor

- a) Based on full casing evacuation with 9.5 ppg fluid on backside @ 10841' TVD.
- b) Burst pressure based on 9000 psi treating pressure with 10.2 ppg internal fluid gradient and 9 ppg external fluid gradient @ 10841' TVD.
- c) Based on string weight in 9.5 ppg fluid (Buoyed weight: 123k lbs.) plus 100k lbs overpull.

Cement volumes are estimates based on 4-1/2" casing hung from 7" casing, and into 6" OH. 20% excess.

Mix and pump the cement slurry. Follow cement with liner dart and then saltwater displacement

Pre-flush (Spacer): **20 bbls** Viscous spacer

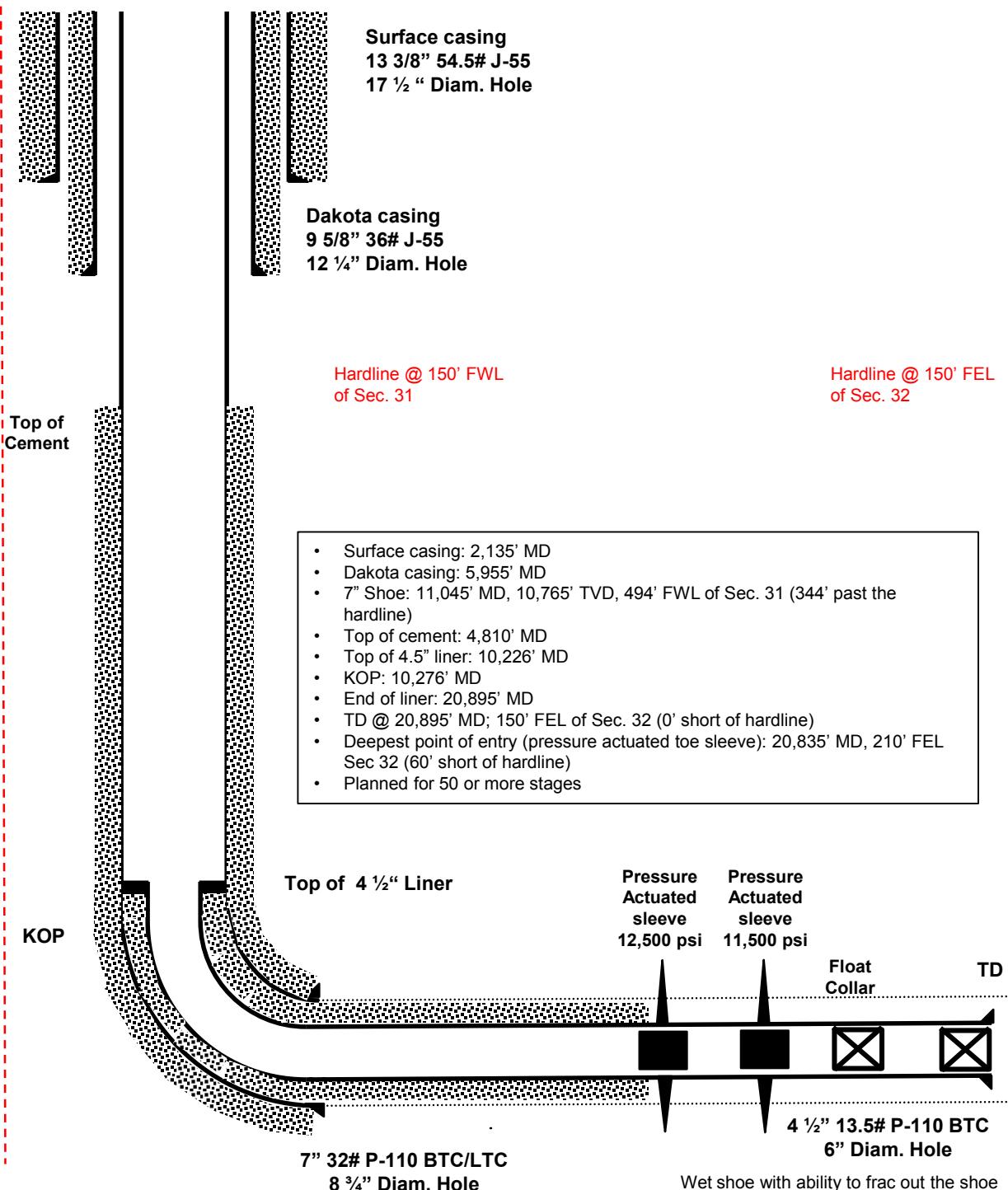
Cement Slurry: **726 sks** (197 bbls), 14.3ppg, 1.52 cu/ft/sk conventional system with
20% silica flour

Displacement **272 bbls** Based on 53 ft shoe track and 4" drill pipe from surface to top of liner
4" DP: 0ft to 10226ft @ 0.011bbl/ft
4.5" casing: 10226ft to 20842ft; 0.0149bbl/ft

ELEVATION: 2,110' SL

Lewis Federal 5300 11-31 3B
Proposed Wellbore Schematic

FORMATION: Bakken



OASIS PETROLEUM NA LLC

Lewis Federal 5300 11-31 3B

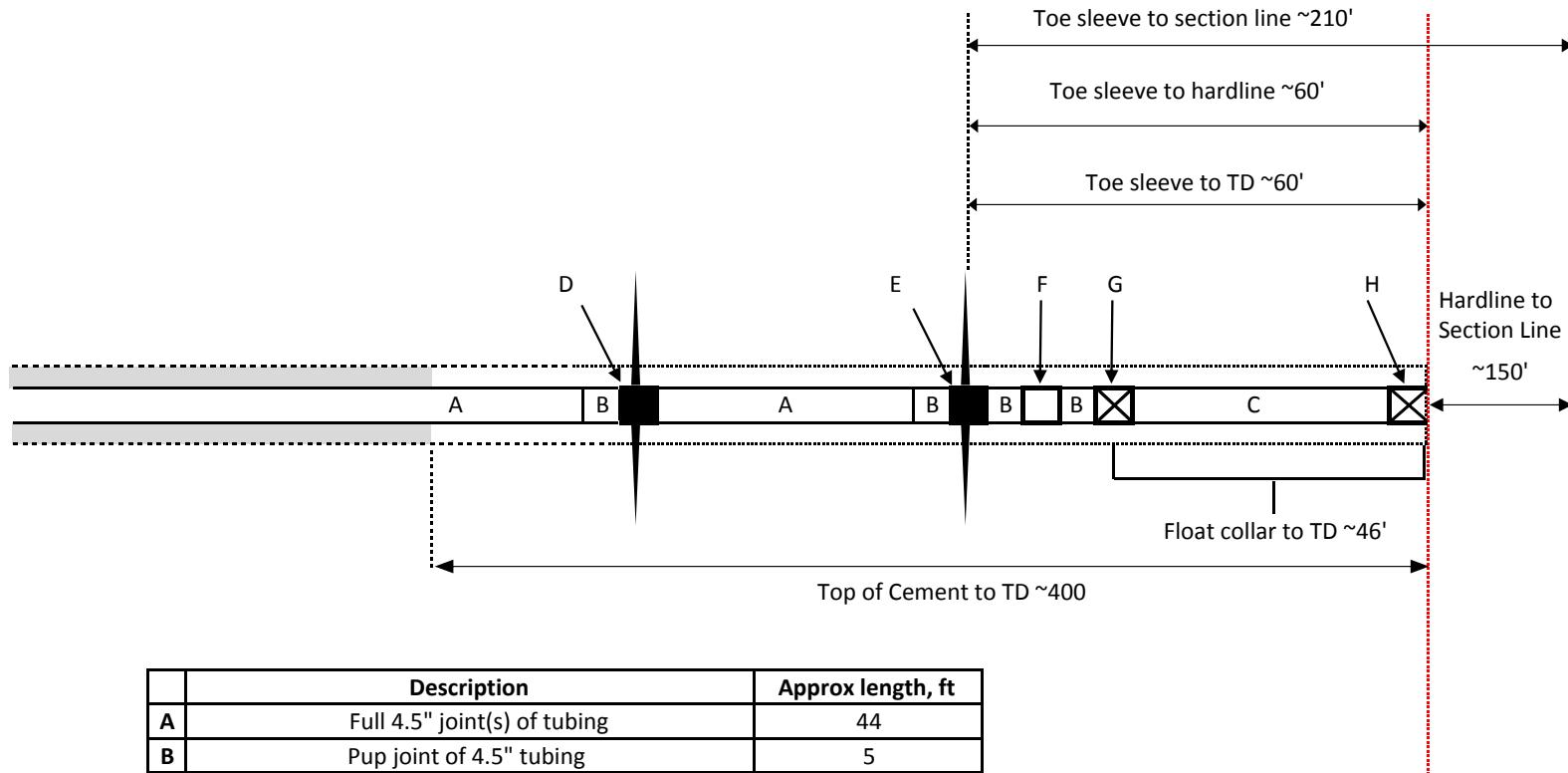
Wellbore: T153N-R100W Sec. 31 & 32

SHL: 1083' FNL & 262' FWL T153N-R100W Sec. 31

Williams County, North Dakota

Updated: 4-12-2018 TR

Lewis Federal 5300 11-31 3B planned toe completion

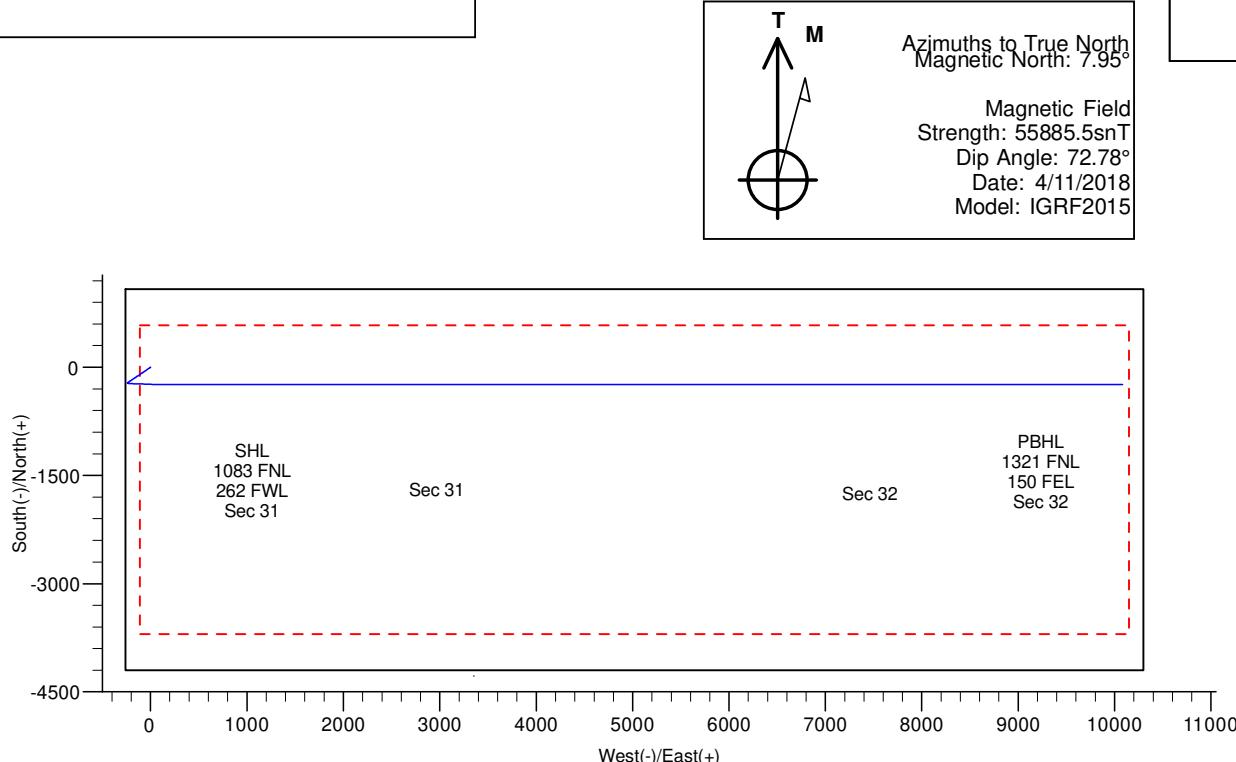


	Description	Approx length, ft
A	Full 4.5" joint(s) of tubing	44
B	Pup joint of 4.5" tubing	5
C	Full 4.5" joint of tubing, with NO cement	44
D	Pressure actuated sleeve, 12,500psi absolute	7
E	Pressure actuated sleeve, 11,500psi absolute	5
F	Landing collar	2
G	Float collar	2
H	Float shoe	2

*First stage to be pumped out of sleeves labeled "D" and "E." Acid used as necessary to break down formation

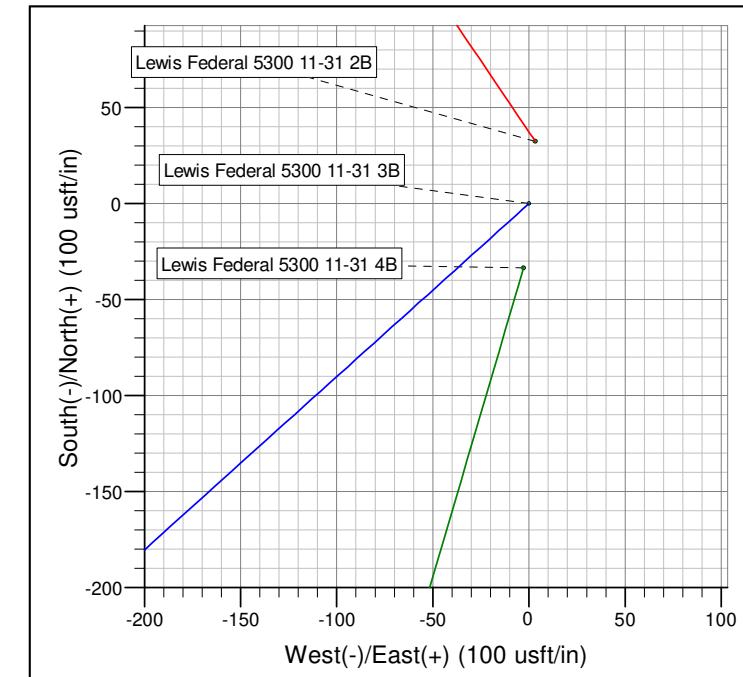
*Diagram not to scale

Project: Indian Hills
 Site: 153N-100W-31/32
 Well: Lewis Federal 5300 11-31 3B
 Wellbore: Lewis Federal 5300 11-31 3B
 Design: Design #1



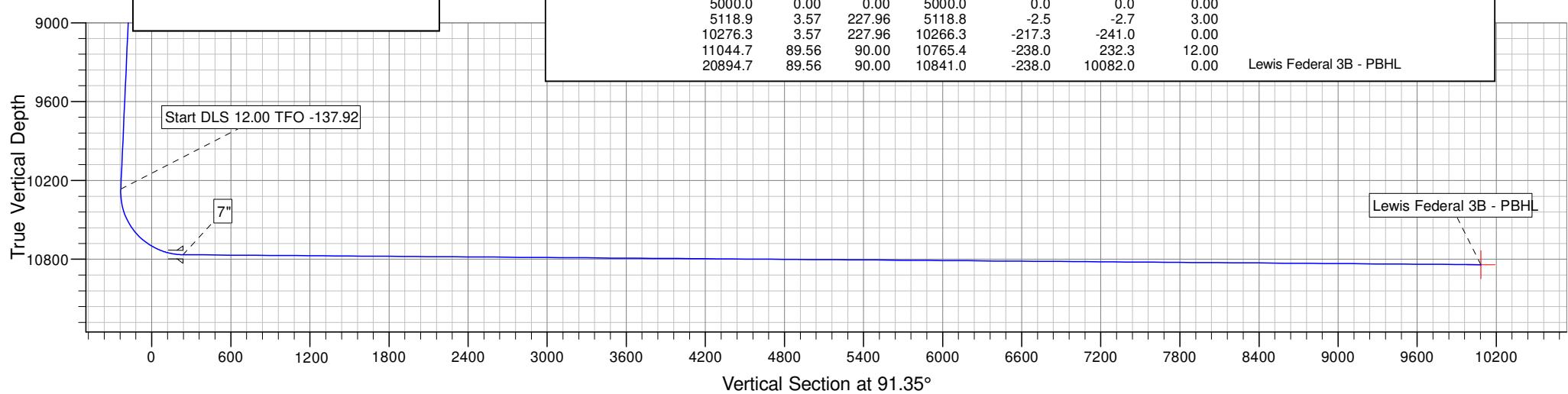
WELL DETAILS: Lewis Federal 5300 11-31 3B

Northing 393129.76	Ground Level: 2110.0	Easting 1209541.15	Latitude 48° 2' 8.980 N	Longitude 103° 36' 11.110 W
-----------------------	----------------------	-----------------------	----------------------------	--------------------------------



CASING DETAILS			
TVD	MD	Name	Size
2135.0	2135.0	13 3/8"	13.375
5953.3	5955.0	9 5/8"	9.625
10765.4	11044.7	7"	7.000

SECTION DETAILS							
MD	Inc	Azi	TVD	+N/S	+E/W	Dleg	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	
5000.0	0.00	0.00	5000.0	0.0	0.0	0.00	
5118.9	3.57	227.96	5118.8	-2.5	-2.7	3.00	
10276.3	3.57	227.96	10266.3	-217.3	-241.0	0.00	
11044.7	89.56	90.00	10765.4	-238.0	232.3	12.00	
20894.7	89.56	90.00	10841.0	-238.0	10082.0	0.00	Lewis Federal 3B - PBHL



Oasis

Indian Hills

153N-100W-31/32

Lewis Federal 5300 11-31 3B

Lewis Federal 5300 11-31 3B

Lewis Federal 5300 11-31 3B

Plan: Design #1

Standard Planning Report

12 April, 2018

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Company:	Oasis	TVD Reference:	WELL @ 2135.0usft
Project:	Indian Hills	MD Reference:	WELL @ 2135.0usft
Site:	153N-100W-31/32	North Reference:	True
Well:	Lewis Federal 5300 11-31 3B	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lewis Federal 5300 11-31 3B		
Design:	Design #1		

Project	Indian Hills		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	North Dakota Northern Zone		

Site	153N-100W-31/32			
Site Position:		Northing:	390,397.86 usft	Latitude:
From:	Lat/Long	Easting:	1,209,464.32 usft	Longitude:
Position Uncertainty:	0.0 usft	Slot Radius:	13.200 in	Grid Convergence:

Well	Lewis Federal 5300 11-31 3B, DEV				
Well Position	+N/-S +E/-W	2,732.8 usft -33.3 usft	Northing: Easting:	393,129.76 usft 1,209,541.15 usft	Latitude: Longitude:
Position Uncertainty		2.0 usft	Wellhead Elevation:		Ground Level:

Wellbore	Lewis Federal 5300 11-31 3B				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	4/11/2018	7.95	72.78	55,886

Design	Design #1				
Audit Notes:					
Version:					
		Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:		Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
		0.0	0.0	0.0	91.35

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
5,118.9	3.57	227.96	5,118.8	-2.5	-2.7	3.00	3.00	0.00	227.96	
10,276.3	3.57	227.96	10,266.3	-217.3	-241.0	0.00	0.00	0.00	0.00	
11,044.7	89.56	90.00	10,765.4	-238.0	232.3	12.00	11.19	-17.95	-137.92	
20,894.7	89.56	90.00	10,841.0	-238.0	10,082.0	0.00	0.00	0.00	0.00	Lewis Federal 3B - PE

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Company:	Oasis	TVD Reference:	WELL @ 2135.0usft
Project:	Indian Hills	MD Reference:	WELL @ 2135.0usft
Site:	153N-100W-31/32	North Reference:	True
Well:	Lewis Federal 5300 11-31 3B	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lewis Federal 5300 11-31 3B		
Design:	Design #1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/S (usft)	+E/W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00	
Start Build 3.00										
5,100.0	3.00	227.96	5,100.0	-1.8	-1.9	-1.9	3.00	3.00	0.00	
5,118.9	3.57	227.96	5,118.8	-2.5	-2.7	-2.7	3.00	3.00	0.00	
Start 5157.5 hold at 5118.9 MD										
5,200.0	3.57	227.96	5,199.8	-5.9	-6.5	-6.4	0.00	0.00	0.00	
5,300.0	3.57	227.96	5,299.6	-10.0	-11.1	-10.9	0.00	0.00	0.00	
5,400.0	3.57	227.96	5,399.4	-14.2	-15.7	-15.4	0.00	0.00	0.00	
5,500.0	3.57	227.96	5,499.2	-18.4	-20.4	-19.9	0.00	0.00	0.00	
5,600.0	3.57	227.96	5,599.0	-22.5	-25.0	-24.4	0.00	0.00	0.00	
5,700.0	3.57	227.96	5,698.8	-26.7	-29.6	-29.0	0.00	0.00	0.00	
5,800.0	3.57	227.96	5,798.6	-30.9	-34.2	-33.5	0.00	0.00	0.00	
5,900.0	3.57	227.96	5,898.4	-35.0	-38.8	-38.0	0.00	0.00	0.00	
5,955.0	3.57	227.96	5,953.3	-37.3	-41.4	-40.5	0.00	0.00	0.00	
9 5/8"										
6,000.0	3.57	227.96	5,998.2	-39.2	-43.5	-42.5	0.00	0.00	0.00	
6,100.0	3.57	227.96	6,098.0	-43.3	-48.1	-47.0	0.00	0.00	0.00	
6,200.0	3.57	227.96	6,197.8	-47.5	-52.7	-51.6	0.00	0.00	0.00	
6,300.0	3.57	227.96	6,297.6	-51.7	-57.3	-56.1	0.00	0.00	0.00	
6,400.0	3.57	227.96	6,397.4	-55.8	-61.9	-60.6	0.00	0.00	0.00	
6,500.0	3.57	227.96	6,497.2	-60.0	-66.5	-65.1	0.00	0.00	0.00	
6,600.0	3.57	227.96	6,597.1	-64.2	-71.2	-69.6	0.00	0.00	0.00	
6,700.0	3.57	227.96	6,696.9	-68.3	-75.8	-74.2	0.00	0.00	0.00	
6,800.0	3.57	227.96	6,796.7	-72.5	-80.4	-78.7	0.00	0.00	0.00	
6,900.0	3.57	227.96	6,896.5	-76.7	-85.0	-83.2	0.00	0.00	0.00	
7,000.0	3.57	227.96	6,996.3	-80.8	-89.6	-87.7	0.00	0.00	0.00	
7,100.0	3.57	227.96	7,096.1	-85.0	-94.3	-92.2	0.00	0.00	0.00	
7,200.0	3.57	227.96	7,195.9	-89.2	-98.9	-96.8	0.00	0.00	0.00	
7,300.0	3.57	227.96	7,295.7	-93.3	-103.5	-101.3	0.00	0.00	0.00	
7,400.0	3.57	227.96	7,395.5	-97.5	-108.1	-105.8	0.00	0.00	0.00	
7,500.0	3.57	227.96	7,495.3	-101.7	-112.7	-110.3	0.00	0.00	0.00	
7,600.0	3.57	227.96	7,595.1	-105.8	-117.4	-114.8	0.00	0.00	0.00	
7,700.0	3.57	227.96	7,694.9	-110.0	-122.0	-119.4	0.00	0.00	0.00	
7,800.0	3.57	227.96	7,794.7	-114.2	-126.6	-123.9	0.00	0.00	0.00	
7,900.0	3.57	227.96	7,894.5	-118.3	-131.2	-128.4	0.00	0.00	0.00	
8,000.0	3.57	227.96	7,994.3	-122.5	-135.8	-132.9	0.00	0.00	0.00	
8,100.0	3.57	227.96	8,094.1	-126.7	-140.5	-137.4	0.00	0.00	0.00	
8,200.0	3.57	227.96	8,194.0	-130.8	-145.1	-142.0	0.00	0.00	0.00	
8,300.0	3.57	227.96	8,293.8	-135.0	-149.7	-146.5	0.00	0.00	0.00	
8,400.0	3.57	227.96	8,393.6	-139.2	-154.3	-151.0	0.00	0.00	0.00	
8,500.0	3.57	227.96	8,493.4	-143.3	-158.9	-155.5	0.00	0.00	0.00	
8,600.0	3.57	227.96	8,593.2	-147.5	-163.6	-160.0	0.00	0.00	0.00	
8,700.0	3.57	227.96	8,693.0	-151.7	-168.2	-164.6	0.00	0.00	0.00	
8,800.0	3.57	227.96	8,792.8	-155.8	-172.8	-169.1	0.00	0.00	0.00	
8,900.0	3.57	227.96	8,892.6	-160.0	-177.4	-173.6	0.00	0.00	0.00	
9,000.0	3.57	227.96	8,992.4	-164.2	-182.0	-178.1	0.00	0.00	0.00	
9,100.0	3.57	227.96	9,092.2	-168.3	-186.7	-182.6	0.00	0.00	0.00	
9,200.0	3.57	227.96	9,192.0	-172.5	-191.3	-187.2	0.00	0.00	0.00	
9,300.0	3.57	227.96	9,291.8	-176.7	-195.9	-191.7	0.00	0.00	0.00	
9,400.0	3.57	227.96	9,391.6	-180.8	-200.5	-196.2	0.00	0.00	0.00	
9,500.0	3.57	227.96	9,491.4	-185.0	-205.1	-200.7	0.00	0.00	0.00	
9,600.0	3.57	227.96	9,591.2	-189.2	-209.8	-205.2	0.00	0.00	0.00	
9,700.0	3.57	227.96	9,691.1	-193.3	-214.4	-209.8	0.00	0.00	0.00	

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Company:	Oasis	TVD Reference:	WELL @ 2135.0usft
Project:	Indian Hills	MD Reference:	WELL @ 2135.0usft
Site:	153N-100W-31/32	North Reference:	True
Well:	Lewis Federal 5300 11-31 3B	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lewis Federal 5300 11-31 3B		
Design:	Design #1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
9,800.0	3.57	227.96	9,790.9	-197.5	-219.0	-214.3	0.00	0.00	0.00	
9,900.0	3.57	227.96	9,890.7	-201.7	-223.6	-218.8	0.00	0.00	0.00	
10,000.0	3.57	227.96	9,990.5	-205.8	-228.2	-223.3	0.00	0.00	0.00	
10,100.0	3.57	227.96	10,090.3	-210.0	-232.9	-227.8	0.00	0.00	0.00	
10,200.0	3.57	227.96	10,190.1	-214.1	-237.5	-232.4	0.00	0.00	0.00	
10,276.3	3.57	227.96	10,266.3	-217.3	-241.0	-235.8	0.00	0.00	0.00	
Start DLS 12.00 TFO -137.92										
10,300.0	2.40	175.43	10,289.9	-218.3	-241.5	-236.3	12.00	-4.94	-222.05	
10,400.0	12.42	100.90	10,389.1	-222.4	-230.7	-225.4	12.00	10.02	-74.53	
10,500.0	24.30	95.28	10,483.8	-226.4	-199.6	-194.2	12.00	11.88	-5.62	
10,600.0	36.26	93.24	10,570.0	-230.0	-149.4	-143.9	12.00	11.96	-2.04	
10,700.0	48.23	92.12	10,643.9	-233.0	-82.3	-76.8	12.00	11.98	-1.13	
10,800.0	60.22	91.35	10,702.2	-235.4	-1.4	4.2	12.00	11.98	-0.77	
10,900.0	72.21	90.75	10,742.5	-237.1	89.9	95.5	12.00	11.99	-0.60	
11,000.0	84.20	90.22	10,762.9	-237.9	187.6	193.2	12.00	11.99	-0.52	
11,044.7	89.55	90.00	10,765.4	-238.0	232.2	237.8	12.00	11.99	-0.50	
Start 9850.0 hold at 11044.7 MD - 7"										
11,100.0	89.56	90.00	10,765.8	-238.0	287.5	293.1	0.01	0.01	0.00	
11,200.0	89.56	90.00	10,766.6	-238.0	387.5	393.1	0.00	0.00	0.00	
11,300.0	89.56	90.00	10,767.3	-238.0	487.5	493.0	0.00	0.00	0.00	
11,400.0	89.56	90.00	10,768.1	-238.0	587.5	593.0	0.00	0.00	0.00	
11,500.0	89.56	90.00	10,768.9	-238.0	687.5	693.0	0.00	0.00	0.00	
11,600.0	89.56	90.00	10,769.6	-238.0	787.5	792.9	0.00	0.00	0.00	
11,700.0	89.56	90.00	10,770.4	-238.0	887.5	892.9	0.00	0.00	0.00	
11,800.0	89.56	90.00	10,771.2	-238.0	987.5	992.9	0.00	0.00	0.00	
11,900.0	89.56	90.00	10,771.9	-238.0	1,087.5	1,092.8	0.00	0.00	0.00	
12,000.0	89.56	90.00	10,772.7	-238.0	1,187.5	1,192.8	0.00	0.00	0.00	
12,100.0	89.56	90.00	10,773.5	-238.0	1,287.5	1,292.8	0.00	0.00	0.00	
12,200.0	89.56	90.00	10,774.2	-238.0	1,387.5	1,392.7	0.00	0.00	0.00	
12,300.0	89.56	90.00	10,775.0	-238.0	1,487.5	1,492.7	0.00	0.00	0.00	
12,400.0	89.56	90.00	10,775.8	-238.0	1,587.5	1,592.7	0.00	0.00	0.00	
12,500.0	89.56	90.00	10,776.5	-238.0	1,687.5	1,692.7	0.00	0.00	0.00	
12,600.0	89.56	90.00	10,777.3	-238.0	1,787.5	1,792.6	0.00	0.00	0.00	
12,700.0	89.56	90.00	10,778.1	-238.0	1,887.5	1,892.6	0.00	0.00	0.00	
12,800.0	89.56	90.00	10,778.8	-238.0	1,987.5	1,992.6	0.00	0.00	0.00	
12,900.0	89.56	90.00	10,779.6	-238.0	2,087.5	2,092.5	0.00	0.00	0.00	
13,000.0	89.56	90.00	10,780.4	-238.0	2,187.5	2,192.5	0.00	0.00	0.00	
13,100.0	89.56	90.00	10,781.1	-238.0	2,287.5	2,292.5	0.00	0.00	0.00	
13,200.0	89.56	90.00	10,781.9	-238.0	2,387.5	2,392.4	0.00	0.00	0.00	
13,300.0	89.56	90.00	10,782.7	-238.0	2,487.5	2,492.4	0.00	0.00	0.00	
13,400.0	89.56	90.00	10,783.4	-238.0	2,587.5	2,592.4	0.00	0.00	0.00	
13,500.0	89.56	90.00	10,784.2	-238.0	2,687.5	2,692.3	0.00	0.00	0.00	
13,600.0	89.56	90.00	10,785.0	-238.0	2,787.5	2,792.3	0.00	0.00	0.00	
13,700.0	89.56	90.00	10,785.7	-238.0	2,887.5	2,892.3	0.00	0.00	0.00	
13,800.0	89.56	90.00	10,786.5	-238.0	2,987.5	2,992.2	0.00	0.00	0.00	
13,900.0	89.56	90.00	10,787.3	-238.0	3,087.5	3,092.2	0.00	0.00	0.00	
14,000.0	89.56	90.00	10,788.1	-238.0	3,187.5	3,192.2	0.00	0.00	0.00	
14,100.0	89.56	90.00	10,788.8	-238.0	3,287.5	3,292.2	0.00	0.00	0.00	
14,200.0	89.56	90.00	10,789.6	-238.0	3,387.5	3,392.1	0.00	0.00	0.00	
14,300.0	89.56	90.00	10,790.4	-238.0	3,487.5	3,492.1	0.00	0.00	0.00	
14,400.0	89.56	90.00	10,791.1	-238.0	3,587.4	3,592.1	0.00	0.00	0.00	
14,500.0	89.56	90.00	10,791.9	-238.0	3,687.4	3,692.0	0.00	0.00	0.00	
14,600.0	89.56	90.00	10,792.7	-238.0	3,787.4	3,792.0	0.00	0.00	0.00	
14,700.0	89.56	90.00	10,793.4	-238.0	3,887.4	3,892.0	0.00	0.00	0.00	

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Company:	Oasis	TVD Reference:	WELL @ 2135.0usft
Project:	Indian Hills	MD Reference:	WELL @ 2135.0usft
Site:	153N-100W-31/32	North Reference:	True
Well:	Lewis Federal 5300 11-31 3B	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lewis Federal 5300 11-31 3B		
Design:	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
14,800.0	89.56	90.00	10,794.2	-238.0	3,987.4	3,991.9	0.00	0.00	0.00
14,900.0	89.56	90.00	10,795.0	-238.0	4,087.4	4,091.9	0.00	0.00	0.00
15,000.0	89.56	90.00	10,795.7	-238.0	4,187.4	4,191.9	0.00	0.00	0.00
15,100.0	89.56	90.00	10,796.5	-238.0	4,287.4	4,291.8	0.00	0.00	0.00
15,200.0	89.56	90.00	10,797.3	-238.0	4,387.4	4,391.8	0.00	0.00	0.00
15,300.0	89.56	90.00	10,798.0	-238.0	4,487.4	4,491.8	0.00	0.00	0.00
15,400.0	89.56	90.00	10,798.8	-238.0	4,587.4	4,591.8	0.00	0.00	0.00
15,500.0	89.56	90.00	10,799.6	-238.0	4,687.4	4,691.7	0.00	0.00	0.00
15,600.0	89.56	90.00	10,800.3	-238.0	4,787.4	4,791.7	0.00	0.00	0.00
15,700.0	89.56	90.00	10,801.1	-238.0	4,887.4	4,891.7	0.00	0.00	0.00
15,800.0	89.56	90.00	10,801.9	-238.0	4,987.4	4,991.6	0.00	0.00	0.00
15,900.0	89.56	90.00	10,802.6	-238.0	5,087.4	5,091.6	0.00	0.00	0.00
16,000.0	89.56	90.00	10,803.4	-238.0	5,187.4	5,191.6	0.00	0.00	0.00
16,100.0	89.56	90.00	10,804.2	-238.0	5,287.4	5,291.5	0.00	0.00	0.00
16,200.0	89.56	90.00	10,804.9	-238.0	5,387.4	5,391.5	0.00	0.00	0.00
16,300.0	89.56	90.00	10,805.7	-238.0	5,487.4	5,491.5	0.00	0.00	0.00
16,400.0	89.56	90.00	10,806.5	-238.0	5,587.4	5,591.4	0.00	0.00	0.00
16,500.0	89.56	90.00	10,807.3	-238.0	5,687.4	5,691.4	0.00	0.00	0.00
16,600.0	89.56	90.00	10,808.0	-238.0	5,787.4	5,791.4	0.00	0.00	0.00
16,700.0	89.56	90.00	10,808.8	-238.0	5,887.4	5,891.4	0.00	0.00	0.00
16,800.0	89.56	90.00	10,809.6	-238.0	5,987.4	5,991.3	0.00	0.00	0.00
16,900.0	89.56	90.00	10,810.3	-238.0	6,087.4	6,091.3	0.00	0.00	0.00
17,000.0	89.56	90.00	10,811.1	-238.0	6,187.4	6,191.3	0.00	0.00	0.00
17,100.0	89.56	90.00	10,811.9	-238.0	6,287.4	6,291.2	0.00	0.00	0.00
17,200.0	89.56	90.00	10,812.6	-238.0	6,387.4	6,391.2	0.00	0.00	0.00
17,300.0	89.56	90.00	10,813.4	-238.0	6,487.4	6,491.2	0.00	0.00	0.00
17,400.0	89.56	90.00	10,814.2	-238.0	6,587.4	6,591.1	0.00	0.00	0.00
17,500.0	89.56	90.00	10,814.9	-238.0	6,687.4	6,691.1	0.00	0.00	0.00
17,600.0	89.56	90.00	10,815.7	-238.0	6,787.4	6,791.1	0.00	0.00	0.00
17,700.0	89.56	90.00	10,816.5	-238.0	6,887.4	6,891.0	0.00	0.00	0.00
17,800.0	89.56	90.00	10,817.2	-238.0	6,987.3	6,991.0	0.00	0.00	0.00
17,900.0	89.56	90.00	10,818.0	-238.0	7,087.3	7,091.0	0.00	0.00	0.00
18,000.0	89.56	90.00	10,818.8	-238.0	7,187.3	7,191.0	0.00	0.00	0.00
18,100.0	89.56	90.00	10,819.5	-238.0	7,287.3	7,290.9	0.00	0.00	0.00
18,200.0	89.56	90.00	10,820.3	-238.0	7,387.3	7,390.9	0.00	0.00	0.00
18,300.0	89.56	90.00	10,821.1	-238.0	7,487.3	7,490.9	0.00	0.00	0.00
18,400.0	89.56	90.00	10,821.8	-238.0	7,587.3	7,590.8	0.00	0.00	0.00
18,500.0	89.56	90.00	10,822.6	-238.0	7,687.3	7,690.8	0.00	0.00	0.00
18,600.0	89.56	90.00	10,823.4	-238.0	7,787.3	7,790.8	0.00	0.00	0.00
18,700.0	89.56	90.00	10,824.1	-238.0	7,887.3	7,890.7	0.00	0.00	0.00
18,800.0	89.56	90.00	10,824.9	-238.0	7,987.3	7,990.7	0.00	0.00	0.00
18,900.0	89.56	90.00	10,825.7	-238.0	8,087.3	8,090.7	0.00	0.00	0.00
19,000.0	89.56	90.00	10,826.4	-238.0	8,187.3	8,190.6	0.00	0.00	0.00
19,100.0	89.56	90.00	10,827.2	-238.0	8,287.3	8,290.6	0.00	0.00	0.00
19,200.0	89.56	90.00	10,828.0	-238.0	8,387.3	8,390.6	0.00	0.00	0.00
19,300.0	89.56	90.00	10,828.8	-238.0	8,487.3	8,490.6	0.00	0.00	0.00
19,400.0	89.56	90.00	10,829.5	-238.0	8,587.3	8,590.5	0.00	0.00	0.00
19,500.0	89.56	90.00	10,830.3	-238.0	8,687.3	8,690.5	0.00	0.00	0.00
19,600.0	89.56	90.00	10,831.1	-238.0	8,787.3	8,790.5	0.00	0.00	0.00
19,700.0	89.56	90.00	10,831.8	-238.0	8,887.3	8,890.4	0.00	0.00	0.00
19,800.0	89.56	90.00	10,832.6	-238.0	8,987.3	8,990.4	0.00	0.00	0.00
19,900.0	89.56	90.00	10,833.4	-238.0	9,087.3	9,090.4	0.00	0.00	0.00
20,000.0	89.56	90.00	10,834.1	-238.0	9,187.3	9,190.3	0.00	0.00	0.00
20,100.0	89.56	90.00	10,834.9	-238.0	9,287.3	9,290.3	0.00	0.00	0.00

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Company:	Oasis	TVD Reference:	WELL @ 2135.0usft
Project:	Indian Hills	MD Reference:	WELL @ 2135.0usft
Site:	153N-100W-31/32	North Reference:	True
Well:	Lewis Federal 5300 11-31 3B	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lewis Federal 5300 11-31 3B		
Design:	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/S (usft)	+E/W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
20,200.0	89.56	90.00	10,835.7	-238.0	9,387.3	9,390.3	0.00	0.00	0.00
20,300.0	89.56	90.00	10,836.4	-238.0	9,487.3	9,490.2	0.00	0.00	0.00
20,400.0	89.56	90.00	10,837.2	-238.0	9,587.3	9,590.2	0.00	0.00	0.00
20,500.0	89.56	90.00	10,838.0	-238.0	9,687.3	9,690.2	0.00	0.00	0.00
20,600.0	89.56	90.00	10,838.7	-238.0	9,787.3	9,790.2	0.00	0.00	0.00
20,700.0	89.56	90.00	10,839.5	-238.0	9,887.3	9,890.1	0.00	0.00	0.00
20,800.0	89.56	90.00	10,840.3	-238.0	9,987.3	9,990.1	0.00	0.00	0.00
20,894.7	89.56	90.00	10,841.0	-238.0	10,082.0	10,084.8	0.00	0.00	0.00
TD at 20894.7									

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/S (usft)	+E/W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
- hit/miss target										
- Shape										
Lewis Federal 3B - PBH	0.00	0.00	10,841.0	-238.0	10,082.0	392,485.74	1,219,605.37	48° 2' 6.604 N	103° 33' 42.755 W	
- plan hits target center										
- Point										

Casing Points									
Measured Depth (usft)	Vertical Depth (usft)			Name			Casing Diameter (in)	Hole Diameter (in)	
2,135.0	2,135.0 13 3/8"						13.375	17.500	
5,955.0	5,953.3 9 5/8"						9.625	12.250	
11,044.7	10,765.4 7"						7.000	8.750	

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Company:	Oasis	TVD Reference:	WELL @ 2135.0usft
Project:	Indian Hills	MD Reference:	WELL @ 2135.0usft
Site:	153N-100W-31/32	North Reference:	True
Well:	Lewis Federal 5300 11-31 3B	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lewis Federal 5300 11-31 3B		
Design:	Design #1		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,985.0	1,985.0	Pierre			
4,596.0	4,596.0	Greenhorn			
5,010.0	5,010.0	Mowry (Dakota Group)			
5,432.7	5,432.0	Inyan Kara (Dakota Group)			
5,856.5	5,855.0	Swift (Base Dakota Group)			
6,373.5	6,371.0	Rierdon			
6,901.5	6,898.0	Dunham Salt			
6,958.6	6,955.0	Dunham Salt Base			
7,266.2	7,262.0	Pine Salt			
7,327.4	7,323.0	Pine Salt Base			
7,445.6	7,441.0	Opeche Salt			
7,471.6	7,467.0	Opeche Salt Base			
7,668.0	7,663.0	Amsden			
7,856.4	7,851.0	Tyler			
8,074.8	8,069.0	Otter/Base Minnelusa			
8,422.5	8,416.0	Kibbey Lime			
8,568.8	8,562.0	Charles Salt			
9,241.1	9,233.0	Base Last Salt			
9,455.5	9,447.0	Mission Canyon			
10,015.6	10,006.0	Lodgepole			
10,838.5	10,720.0	False Bakken			
10,863.4	10,730.0	Upper Bakken Shale			
10,911.9	10,746.0	Middle Bakken			
10,953.6	10,756.0	Target Top			
11,029.5	10,765.0	Target Landing			
12,170.1	10,774.0	Target Base			
13,472.3	10,784.0	Lower Bakken			

Plan Annotations

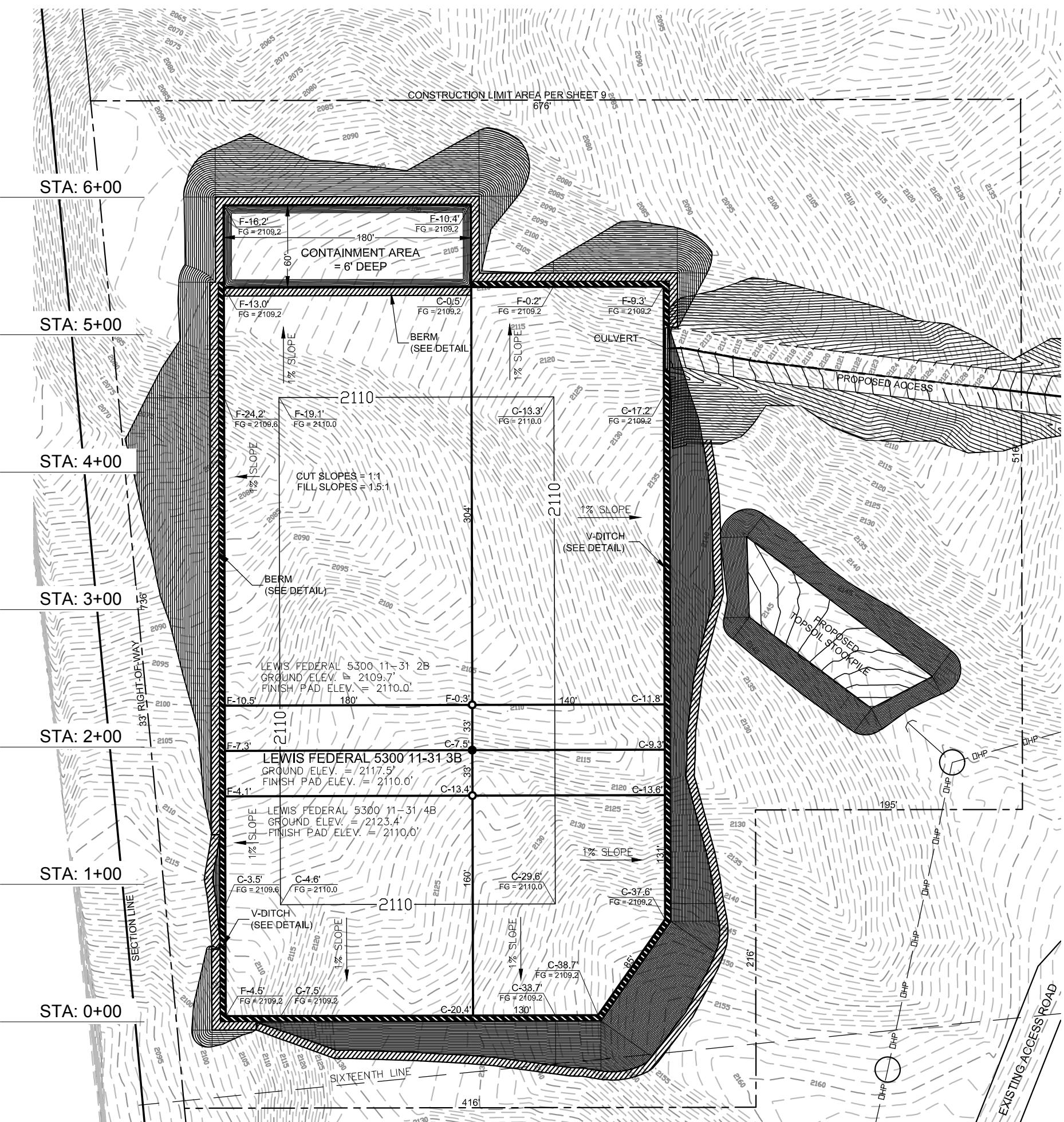
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			Comment
		+N/-S (usft)	+E/-W (usft)		
5,000.0	5,000.0	0.0	0.0		Start Build 3.00
5,118.9	5,118.8	-2.5	-2.7		Start 5157.5 hold at 5118.9 MD
10,276.3	10,266.3	-217.3	-241.0		Start DLS 12.00 TFO -137.92
11,044.7	10,765.4	-238.0	232.3		Start 9850.0 hold at 11044.7 MD
20,894.7	10,841.0	-238.0	10,082.0		TD at 20894.7

PAD LAYOUT

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
LEWIS FEDERAL 5300 11-31 3B

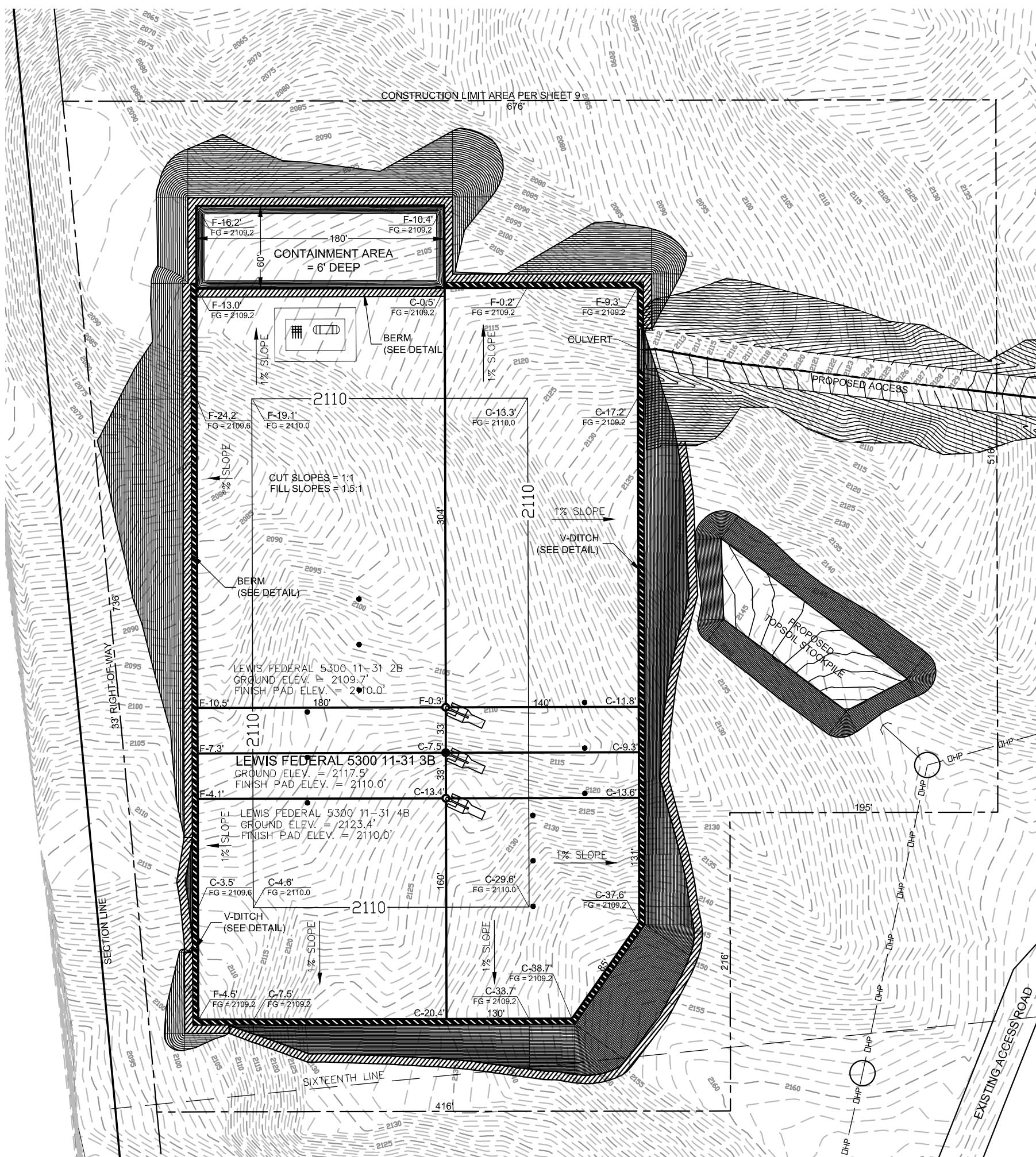
1083 FEET FROM NORTH LINE AND 262 FEET FROM WEST LINE
SECTION 31, T153N, R100W, 5TH P.M., MCKENZIE COUNTY, NORTH DAKOTA

THIS DOCUMENT WAS ORIGINALLY
ISSUED AND SEALED BY DARYL D.
KASEMAN, PLS, REGISTRATION
NUMBER 3880 ON 3-27-18
AND THE ORIGINAL DOCUMENTS
ARE STORED AT THE OFFICES OF
INTERSTATE ENGINEERING, INC.



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KASEMAN, PLS, REGISTRATION
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AND THE ORIGINAL DOCUMENTS
ARE STORED AT THE OFFICES OF
INTERSTATE ENGINEERING, INC.

PRODUCTION LAYOUT
OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
LEWIS FEDERAL 5300 11-31 3B
1083 FEET FROM NORTH LINE AND 262 FEET FROM WEST LINE
SECTION 31, T153N, R100W, 5TH P.M., MCKENZIE COUNTY, NORTH DAKOTA



NOTE: Pad dimensions shown are to
usable area, the v-ditch and berm
areas shall be built to the outside of
the pad dimensions.

NOTE: All utilities shown are preliminary only, a complete
utilities location is recommended before construction.

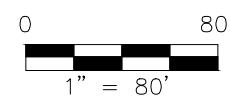
© 2018, INTERSTATE ENGINEERING, INC.

4/9



Interstate Engineering, Inc.
P.O. Box 648
425 East Main Street
Sidney, Montana 59270
Ph (406) 433-5617
Fax (406) 433-5618
www.interstateeng.com

Revision No.	Date	By	Description
S17-09-183	MARCH 2018	D.D.K.	OASIS PETROLEUM NORTH AMERICA, LLC PRODUCTION LAYOUT SECTION 31, T153N, R100W, 5TH P.M., MCKENZIE COUNTY, NORTH DAKOTA Drawn By: J.D.M. Project No.: S17-09-183 Checked By: D.D.K. Date: MARCH 2018





SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 5749 (09-2006)

Received

Well File No.
30188

DEC 19 2017

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.
PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

<input checked="" type="checkbox"/> Notice of Intent	Approximate Start Date November 22, 2018
<input type="checkbox"/> Report of Work Done	Date Work Completed
<input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.	Approximate Start Date

ND Oil & Gas	
Division	
<input type="checkbox"/> Drilling Prognosis	<input type="checkbox"/> Spill Report
<input type="checkbox"/> Redrilling or Repair	<input type="checkbox"/> Shooting
<input type="checkbox"/> Casing or Liner	<input type="checkbox"/> Acidizing
<input type="checkbox"/> Plug Well	<input type="checkbox"/> Fracture Treatment
<input type="checkbox"/> Supplemental History	<input type="checkbox"/> Change Production Method
<input type="checkbox"/> Temporarily Abandon	<input type="checkbox"/> Reclamation
<input checked="" type="checkbox"/> Other	APD Renewal

Well Name and Number Lewis Federal 5300 11-31 3B					
Footages	1005 F N L	233 F W L	Qlr-Qtr Lot 1	Section 31	Township 153 N
Field	Baker	Pool			Range 100 W
		Bakken			County McKenzie

24-HOUR PRODUCTION RATE			
Before		After	
Oil	Bbls	Oil	Bbls
Water	Bbls	Water	Bbls
Gas	MCF	Gas	MCF

Name of Contractor(s)

Address

City

State

Zip Code

DETAILS OF WORK

Oasis Petroleum requests the above referenced well be renewed. There are no planned changes to the current drill plan.

Please use the credit card on file for the \$100.00 application processing fee.

See attached gas capture plan.

cc \$100.00 12/21/17 the

INV#58318

Company Oasis Petroleum North America LLC	Telephone Number 281-404-9436	
Address 1001 Fannin St, Suite 1500		
City Houston	State TX	Zip Code 77002
Signature 	Printed Name Jennifer Swenson	
Title Regulatory Specialist	Date December 19, 2017	
Email Address iswenson@oasispetroleum.com		

FOR STATE USE ONLY	
<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date 12/19/17	
By 	
Title Engineering Technician	

GAS CAPTURE PLAN AFFIDAVIT

STATE OF TEXAS §
 §
COUNTY OF HARRIS §

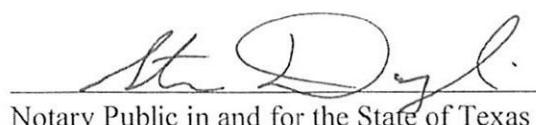
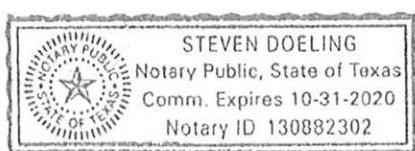
Robert Eason, being duly sworn, states as follows:

1. I am employed by Oasis Petroleum North America LLC (“Oasis”) as Marketing Manager, I’m over the age of 21 and have personal knowledge of the matters set forth in this affidavit.
2. This affidavit is submitted in conjunction with the Application for Permit to Drill for the Lewis Federal 5300 11-31 3B well, with a surface location in Lot 1 of Section 31, Township 153 North, Range 100 West, McKenzie County, North Dakota (the “Well”).
3. Oasis currently anticipates that gas to be produced from the Well will be gathered by Hiland Partners (the “Gathering Company”). Oasis has advised the Gathering Company of its intent to drill the Well and has advised the Gathering Company that it currently anticipates that the Well will be completed in ~ December 2018, with an initial gas production rate of approximately 1,200 mcf/day.



Robert H. Eason
Marketing Manager

Subscribed and sworn to before me this 7th day of December, 2017.



Notary Public in and for the State of Texas

GAS CAPTURE PLAN – OASIS PETROLEUM

Lewis Federal 5300 11-31 3B

Section 31-T153N-R100W

Baker Field

McKenzie County, North Dakota

Anticipated first flow date	~ December 2018
Gas Gatherer:	Kinder Morgan
Gas to be processed at*:	Hiland Operated Watford City Plant
Maximum Daily Capacity of Existing Gas Line*:	36,000 MCFD
Current Throughput of Existing Gas Line*:	26,600 MCFD
Anticipated Daily Capacity of Existing Gas Line at Date of First Gas Sales*:	36,000 MCFD
Anticipated Throughput of Existing Gas Line at Date of First Gas Sales*:	24,500 MCFD
Gas Gatherer's Issues or Expansion Plans for the Area*:	No expansion plans in this area.
Gas Plant Capacity:	95,000 MCFD
Map:	Attached
Affidavit:	Attached
*Provided by Gatherer	

Flowback Strategy

Total Number of Wells at Location:	10	
Multi-Well Start-up Plan:		Initial production from the 1st new well at the CTB is anticipated in December 2017 with each following well making 1 st production every 5th day thereafter.

Estimated Flow Rate:	<u>Lewis Federal 5300 11-31 3B</u>		<u>Lewis 5300 11-31 CTB (10 wells)</u>	
	<u>MCFD</u>	<u>BOPD</u>	<u>MCFD</u>	<u>BOPD</u>
30 Days:	743	743	4,703	4,851
60 Days:	564	564	6,422	6,609
180 Days:	324	324	3,175	3,277

Oasis Flaring Percentage

	Statewide	Baker Field
Oasis % of Gas Flared:	13%	1%

*Flared percentage reflects November 2017 with estimated 14 day flowback exemptions

Alternatives to Flaring

The installation of a temporary gas liquification unit recovering >50% of C3+ NGLs for an estimated reduction in flared volumes of ~30%.

Gas Capture Plan - Detail View
LEWIS FEDERAL 5300 11-31 3B
Section 31 T153N R100W
McKenzie County, North Dakota

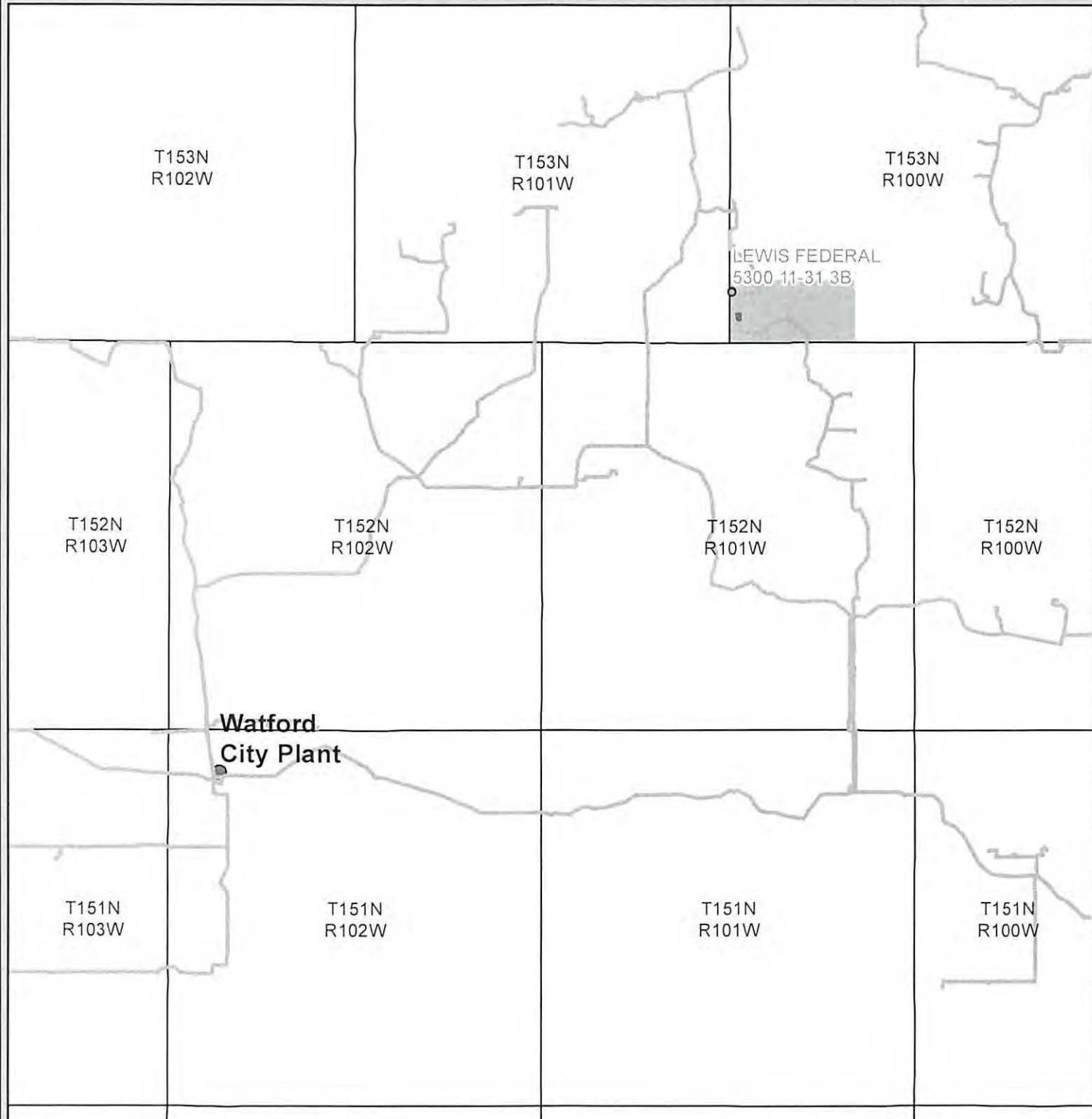


- CTB Outline
- Proposed Well
- Hiland Gas Line
- Oneok Gas Line

Gas Gatherer: Hiland Partners, LP
Gas to be processed at: Watford City Plant

OASIS
PETROLEUM

Gas Capture Plan - Overview
LEWIS FEDERAL 5300 11-31 3B
Section 31 T153N R100W
McKenzie County, North Dakota



CTB Outline

Hiland Gas Line

Processing Plant

Gas Gatherer: Hiland Partners, LP
Gas to be processed at: Watford City Plant

OASIS
PETROLEUM



Oil and Gas Division

Lynn D. Helms - Director

Bruce E. Hicks - Assistant Director

Department of Mineral Resources

Lynn D. Helms - Director

North Dakota Industrial Commission

www.dmr.nd.gov/oilgas/

30188

November 13, 2017

OASIS PETRO NO AMER
1001 FANNIN STE 1500
HOUSTON, TX 77002

RE: LEWIS FEDERAL 5300 11-31 3B
LOT1 Sec. 31-153N-100W
MCKENZIE COUNTY
WELL FILE NO. 30188

Gentlemen:

The records and files of the Industrial Commission indicate that the above referenced permit will expire December 12, 2017.

Permits to drill are only valid for one year in the State of North Dakota. If you would like to renew for another year, please submit a Form 4 along with the \$100.00 filing fee. Alternatively, you may elect to send in a Form 4 cancelling the permit. If you have any questions, please contact Todd Holweger.

Sincerely,

Rachel Morris
Administrative Assistant



SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 5749 (09-2006)

Received

Well File No.
30188

NOV 23 2016

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.
PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

ND Oil & Gas Division

<input checked="" type="checkbox"/> Notice of Intent	Approximate Start Date December 11, 2016
<input type="checkbox"/> Report of Work Done	Date Work Completed
<input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.	
Approximate Start Date	

<input type="checkbox"/> Drilling Prognosis	<input type="checkbox"/> Spill Report
<input type="checkbox"/> Redrilling or Repair	<input type="checkbox"/> Shooting
<input type="checkbox"/> Casing or Liner	<input type="checkbox"/> Acidizing
<input type="checkbox"/> Plug Well	<input type="checkbox"/> Fracture Treatment
<input type="checkbox"/> Supplemental History	<input type="checkbox"/> Change Production Method
<input type="checkbox"/> Temporarily Abandon	<input type="checkbox"/> Reclamation
<input checked="" type="checkbox"/> Other	APD Renewal

Well Name and Number
Lewis Federal 5300 11-31 3B

Footages	Qtr-Qtr	Section	Township	Range	
1005 F N L	233 F W L	Lot 1	31	153 N	100 W
Field	Pool	County			
Baker	Bakken	McKenzie			

24-HOUR PRODUCTION RATE	
Before	After
Oil	Bbls
Water	Bbls
Gas	MCF
	Gas
	MCF

Name of Contractor(s)

Address	City	State	Zip Code
---------	------	-------	----------

DETAILS OF WORK

Oasis Petroleum requests the above referenced well be renewed. There are no planned changes to the current drill plan.

Please use the credit card on file for the \$100.00 application processing fee.

See attached gas capture plan.

Dmr# 50042
Permit Expires 12/11/17. CC \$100.00 12/14/16 th

Company Oasis Petroleum North America LLC	Telephone Number 281-404-9436	
Address 1001 Fannin St, Suite 1500		
City Houston	State TX	Zip Code 77002
Signature 	Printed Name Jennifer Swenson	
Title Regulatory Specialist	Date November 22, 2016	
Email Address jswenson@oasispetroleum.com		

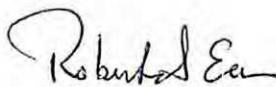
FOR STATE USE ONLY	
<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date 12/12/16	
By 	
Title Engineering Technician	

GAS CAPTURE PLAN AFFIDAVIT

STATE OF TEXAS §
 §
COUNTY OF HARRIS §

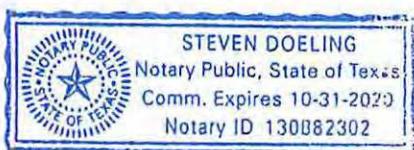
Robert Eason, being duly sworn, states as follows:

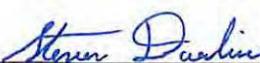
1. I am employed by Oasis Petroleum North America LLC ("Oasis") as Marketing Manager, I'm over the age of 21 and have personal knowledge of the matters set forth in this affidavit.
2. This affidavit is submitted in conjunction with the Application for Permit to Drill for the Lewis Federal 5300 11-31 3B well, with a surface location in Lot 1 of Section 31, Township 153 North, Range 100 West, McKenzie County, North Dakota (the "Well").
3. Oasis currently anticipates that gas to be produced from the Well will be gathered by Hiland Partners (the "Gathering Company"). Oasis has advised the Gathering Company of its intent to drill the Well and has advised the Gathering Company that it currently anticipates that the Well will be completed in ~ December 2017, with an initial gas production rate of approximately 1200 mcf/day.



Robert H. Eason
Marketing Manager

Subscribed and sworn to before me this 15th day of November, 2016.




Notary Public in and for the State of Texas

GAS CAPTURE PLAN – OASIS PETROLEUM

Lewis Federal 5300 11-31 3B

Section 31-T153N-R100W

Baker Field

McKenzie County, North Dakota

Anticipated first flow date	~ December 2017
Gas Gatherer:	Kinder Morgan
Gas to be processed at*:	Hiland Operated Watford City Plant
Maximum Daily Capacity of Existing Gas Line*:	36,000 MCFD
Current Throughput of Existing Gas Line*:	36,000 MCFD
Anticipated Daily Capacity of Existing Gas Line at Date of First Gas Sales*:	36,000 MCFD
Anticipated Throughput of Existing Gas Line at Date of First Gas Sales*:	31,275 MCFD
Gas Gatherer's Issues or Expansion Plans for the Area*:	No expansion plans in this area.
Gas Plant Capacity:	95,000 MCFD
Map:	Attached
Affidavit:	Attached
*Provided by Gatherer	

Flowback Strategy

Total Number of Wells at Location:	10
Multi-Well Start-up Plan:	Initial production from the 1st new well at the CTB is anticipated in December 2017 with each following well making 1 st production every 5th day thereafter.

Estimated Flow Rate:	<u>Lewis Federal 5300 11-31 3B</u>		<u>Lewis 5300 11-31 CTB (10 wells)</u>	
	<u>MCFD</u>	<u>BOPD</u>	<u>MCFD</u>	<u>BOPD</u>
30 Days:	743	743	4,703	4,851
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180 Days:	324	324	3,175	3,277

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	Statewide	Baker Field
Oasis % of Gas Flared:	12%	10%

*Flared percentage reflects October 2016

Alternatives to Flaring

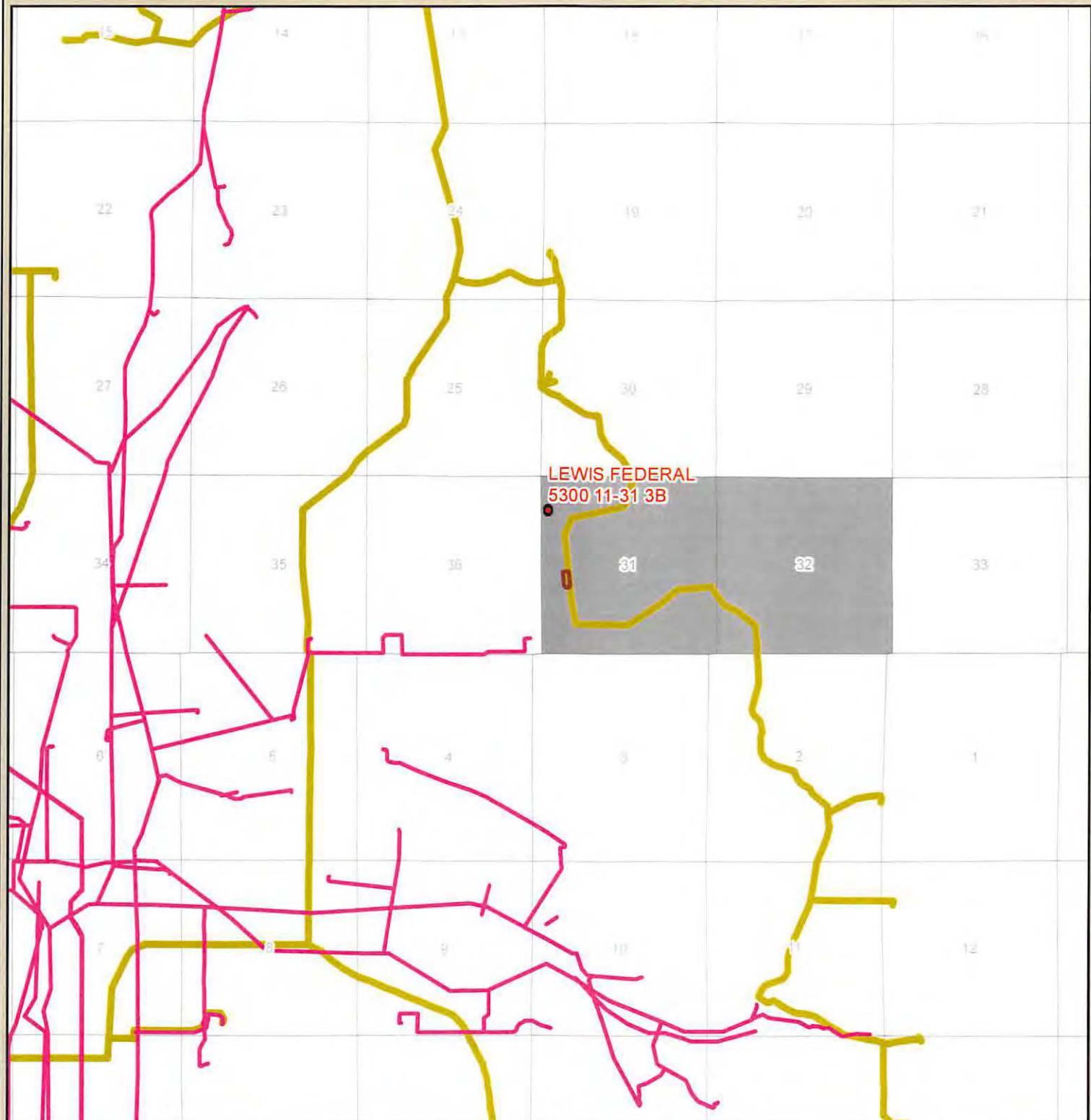
The installation of a temporary gas liquification unit recovering >50% of C3+ NGLs for an estimated reduction in flared volumes of ~30%.

Gas Capture Plan - Detail View

LEWIS FEDERAL 5300 11-31 3B

Section 31 T153N R100W

McKenzie County, North Dakota

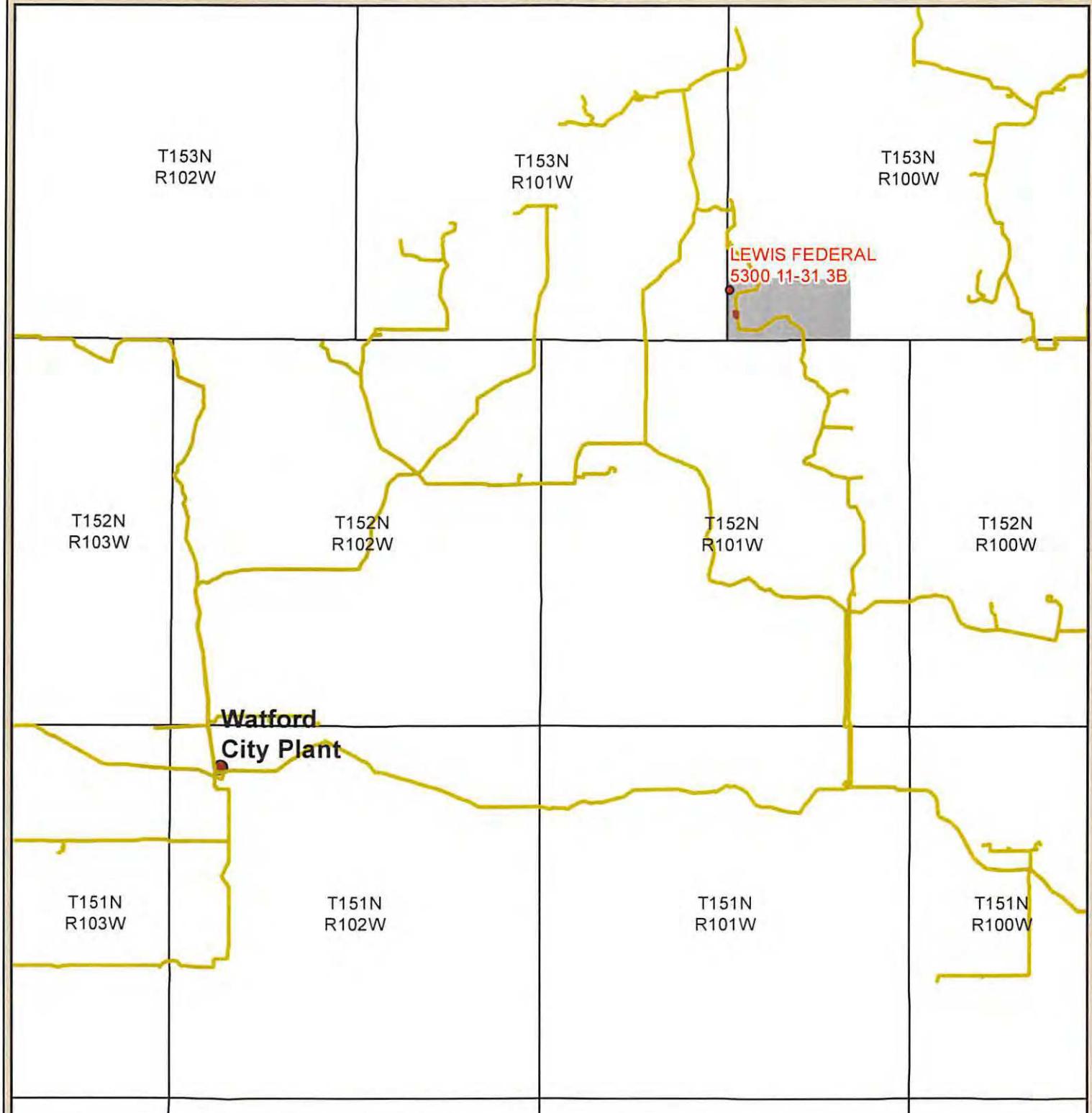


- CTB Outline
- Proposed Well
- Hiland Gas Line
- Oneok Gas Line

Gas Gatherer: Hiland Partners, LP
Gas to be processed at: Watford City Plant



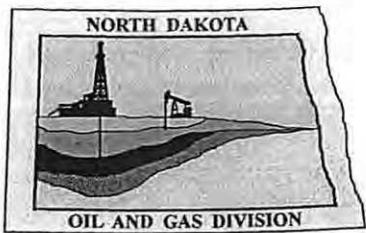
Gas Capture Plan - Overview
LEWIS FEDERAL 5300 11-31 3B
Section 31 T153N R100W
McKenzie County, North Dakota



- CTB Outline
- Hiland Gas Line
- Processing Plant

Gas Gatherer: Hiland Partners, LP
Gas to be processed at: Watford City Plant





Oil and Gas Division

Lynn D. Helms - Director

Bruce E. Hicks - Assistant Director

Department of Mineral Resources

Lynn D. Helms - Director

North Dakota Industrial Commission

www.dmr.nd.gov/oilgas/

30188

November 7, 2016

OASIS PETRO NO AMER
1001 FANNIN STE 1500
HOUSTON, TX 77002

RE: LEWIS FEDERAL 5300 11-31 3B
LOT1 Sec. 31-153N-100W
MCKENZIE COUNTY
WELL FILE NO. 30188

Gentlemen:

The records and files of the Industrial Commission indicate that the above referenced permit will expire December 11, 2016.

Permits to drill are only valid for one year in the State of North Dakota. If you would like to renew for another year, please submit a Form 4 along with the \$100.00 filing fee. Alternatively, you may elect to send in a Form 4 cancelling the permit. If you have any questions, please contact Todd Holweger.

Sincerely,

Rachel Morris
Administrative Assistant



SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 5749 (09-2006)

Well File No.
30188



PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.
PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

<input checked="" type="checkbox"/> Notice of Intent	Approximate Start Date December 11, 2015	<input type="checkbox"/> Drilling Prognosis	<input type="checkbox"/> Spill Report
<input type="checkbox"/> Report of Work Done	Date Work Completed	<input type="checkbox"/> Redrilling or Repair	<input type="checkbox"/> Shooting
<input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.	Approximate Start Date	<input type="checkbox"/> Casing or Liner	<input type="checkbox"/> Acidizing
		<input type="checkbox"/> Plug Well	<input type="checkbox"/> Fracture Treatment
		<input type="checkbox"/> Supplemental History	<input type="checkbox"/> Change Production Method
		<input type="checkbox"/> Temporarily Abandon	<input type="checkbox"/> Reclamation
		<input checked="" type="checkbox"/> Other	APD Renewal

Well Name and Number
Lewis Federal 5300 11-31 3B

Footages	Qtr-Qtr	Section	Township	Range
1005 F N L	233 F W L	Lot 1	31	153 N 100 W
Field Baker	Pool Bakken		County McKenzie	

24-HOUR PRODUCTION RATE

Before		After	
Oil	Bbls	Oil	Bbls
Water	Bbls	Water	Bbls
Gas	MCF	Gas	MCF

Name of Contractor(s)

Address	City	State	Zip Code

DETAILS OF WORK

Oasis Petroleum requests the above referenced well be renewed. There are no planned changes to the current drill plan.

Please use the credit card on file for the \$100.00 application processing fee.

See attached gas capture plan.

Permit Expires 12/11/16. CC 100.00 12-14-15 KB

Company Oasis Petroleum North America LLC	Telephone Number (281) 404-9652	
Address 1001 Fannin St, Suite 1500		
City Houston	State TX	Zip Code 77002
Signature 	Printed Name Victoria Siemieniewski	
Title Regulatory Specialist	Date December 1, 2015	
Email Address vsiemieniewski@oasispetroleum.com		

FOR STATE USE ONLY

<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date 12/11/15	
By 	
Title Engineering Technician	

GAS CAPTURE PLAN AFFIDAVIT

STATE OF TEXAS §
 §
COUNTY OF HARRIS §

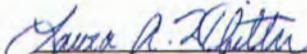
Robert Eason, being duly sworn, states as follows:

1. I am employed by Oasis Petroleum North America LLC ("Oasis") as Marketing Manager, I'm over the age of 21 and have personal knowledge of the matters set forth in this affidavit.
2. This affidavit is submitted in conjunction with the Application for Permit to Drill for the Lewis Federal 5300 11-31 3B well, with a surface location in the NW NW of Section 31, Township 153 North, Range 100 West, McKenzie County, North Dakota (the "Well").
3. Oasis currently anticipates that gas to be produced from the Well will be gathered by Hiland Partners (the "Gathering Company"). Oasis has advised the Gathering Company of its intent to drill the Well and has advised the Gathering Company that it currently anticipates that the Well will be completed in November 2016, with an initial gas production rate of approximately 983 mcf/day.



Robert H. Eason
Marketing Manager

Subscribed and sworn to before me this 1st day of December, 2015.



Notary Public in and for the State of Texas



GAS CAPTURE PLAN – OASIS PETROLEUM

Lewis Federal 5300 11-31 3B

Section 31-T153N-R100W

Baker Field

McKenzie County, North Dakota

Anticipated first flow date	Nov-16
Gas Gatherer:	Hiland Partners
Gas to be processed at*:	Watford City Plant
Maximum Daily Capacity of Existing Gas Line*:	91,500 MCFD
Current Throughput of Existing Gas Line*:	70,000 MCFD
Anticipated Daily Capacity of Existing Gas Line at Date of First Gas Sales*:	91,500 MCFD
Anticipated Throughput of Existing Gas Line at Date of First Gas Sales*:	82,000 MCFD
Gas Gatherer's Issues or Expansion Plans for the Area*:	There are no plans for expansion at this time.
Map:	Attached
Affidavit:	Attached

*Provided by Gatherer

Flowback Strategy

Total Number of Wells at Location:	7	
Multi-Well Start-up Plan:		Initial production from the 1st new well at the CTB is anticipated November 2016 with each following well making 1st production every 5th day thereafter
Estimated Flow Rate:		
	<u>Lewis Federal 5300 11-31 3B</u>	<u>Lewis Federal 5300 31-32 CTB (7 wells)</u>
	<u>MCFD</u>	<u>BOPD</u>
30 Days:	705	783
60 Days:	565	627
180 Days:	345	384

Oasis Flaring Percentage

	Statewide	Baker Field
Oasis % of Gas Flared:	9%	25%

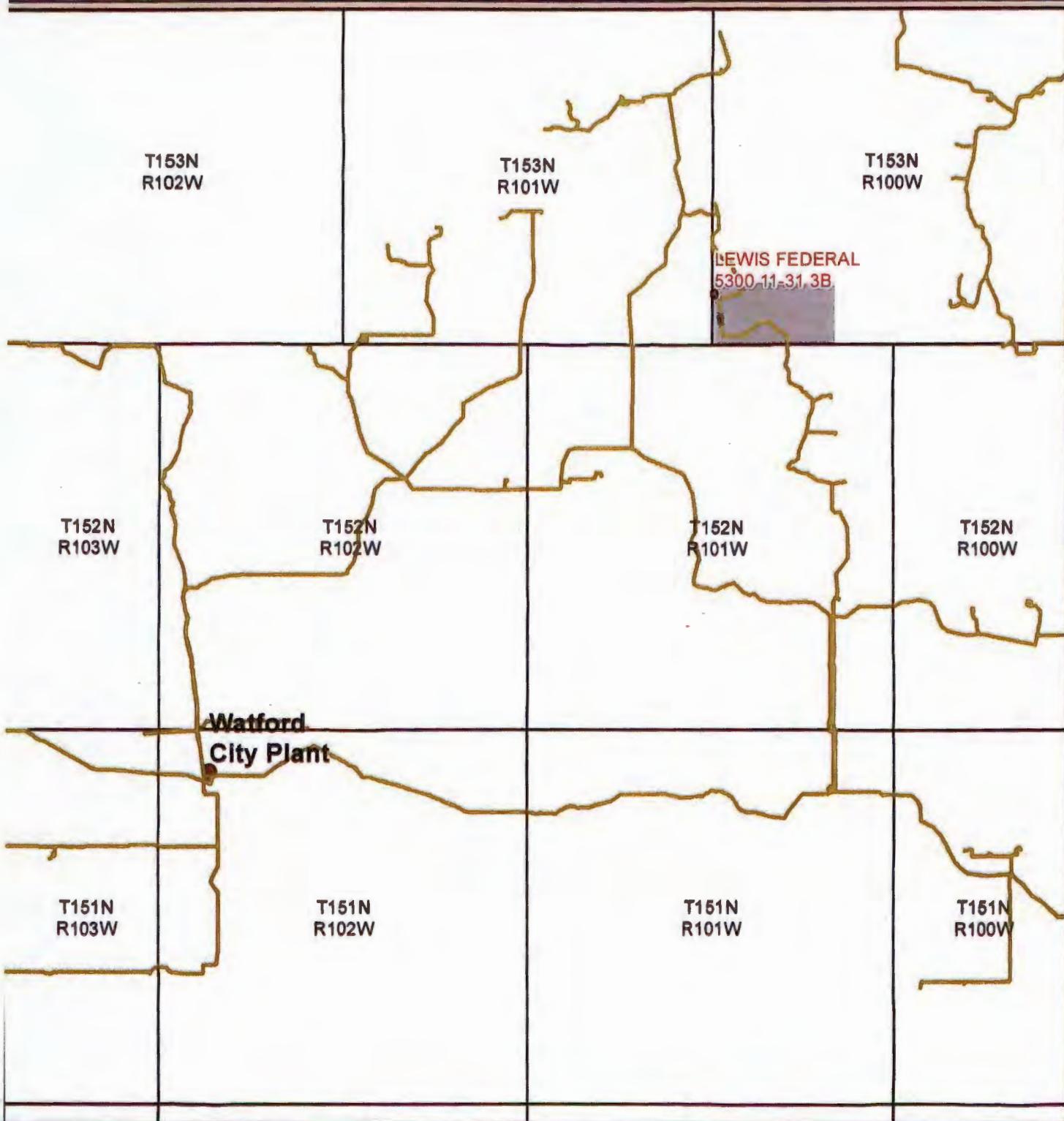
*Flared percentage reflects October 2015

Alternatives to Flaring

The installation of a temporary gas liquification unit recovering >50% of C3+ NGLs for an estimated reduction in flared volumes of ~30%

Source: Oasis Marketing (281) 404-9661

Gas Capture Plan - Overview
LEWIS FEDERAL 5300 11-31 3B
Section 31 T153N R100W
McKenzie County, North Dakota



CTB Outline

Hiland Gas Line

● Processing Plant

Gas Gatherer: Hiland Partners, LP
Gas to be processed at: Watford City Plant

OASIS
PETROLEUM

Gas Capture Plan - Detail View
LEWIS FEDERAL 5300 11-31 3B
Section 31 T153N R100W
McKenzie County, North Dakota



- CTB Outline
- Proposed Well
- Hiland Gas Line
- Oneck Gas Line

Gas Gatherer: Hiland Partners, LP
Gas to be processed at: Watford City Plant





Oil and Gas Division

Lynn D. Helms - Director Bruce E. Hicks - Assistant Director

Department of Mineral Resources

Lynn D. Helms - Director

North Dakota Industrial Commission

www.dmr.nd.gov/oilgas

30188

November 9, 2015

OASIS PETRO NO AMER
1001 FANNIN STE 1500
HOUSTON, TX 77002

RE: LEWIS FEDERAL 5300 11-31 3B
LOT1 Sec. 31-153N-100W
MCKENZIE COUNTY
WELL FILE NO. 30188

Gentlemen:

The records and files of the Industrial Commission indicate that the above referenced permit will expire December 11, 2015.

Permits to drill are only valid for one year in the State of North Dakota. If you would like to renew for another year, please submit a Form 4 along with the \$100.00 filing fee. Alternatively, you may elect to send in a Form 4 cancelling the permit. If you have any questions, please contact Todd Holweger.

Sincerely,

Rachel Morris
Administrative Assistant



Oil and Gas Division 30188

Lynn D. Helms - Director Bruce E. Hicks - Assistant Director

Department of Mineral Resources

Lynn D. Helms - Director

North Dakota Industrial Commission

www.dmr.nd.gov/oilgas/

BRANDI TERRY
OASIS PETROLEUM NORTH AMERICA LLC
1001 FANNIN STE 1500
HOUSTON, TX 77002 USA

Date: 12/15/2014

RE: CORES AND SAMPLES

Well Name: **LEWIS FEDERAL 5300 11-31 3B** Well File No.: **30188**
Location: **LOT1 31-153-100** County: **MCKENZIE**
Permit Type: **Development - HORIZONTAL**
Field: **BAKER** Target Horizon: **BAKKEN**

Dear BRANDI TERRY:

North Dakota Century Code Section 38-08-04 provides for the preservation of cores and samples and their shipment to the State Geologist when requested. The following is required on the above referenced well:

- 1) All cores, core chips and samples must be submitted to the State Geologist as provided for under North Dakota Century Code: Section 38-08-04 and North Dakota Administrative Code: Section 43-02-03-38.1.
- 2) Samples: The Operator is to begin collecting sample drill cuttings no lower than the:
Base of the Last Charles Salt
 - Sample cuttings shall be collected at:
 - o 30' maximum intervals through all vertical and build sections.
 - o 100' maximum intervals through any horizontal sections.
 - Samples must be washed, dried, placed in standard sample envelopes (3" x 4.5"), packed in the correct order into standard sample boxes (3.5" x 5.25" x 15.25").
 - Samples boxes are to be carefully identified with a label that indicates the operator, well name, well file number, American Petroleum Institute (API) number, location and depth of samples; and forwarded in to the state core and sample library within 30 days of the completion of drilling operations.
- 3) Cores: Any cores cut shall be preserved in correct order, boxed in standard core boxes (4.5", 4.5", 35.75"), and the entire core forwarded to the state core and samples library within 180 days of completion of drilling operations. Any extension of time must have approval on a Form 4 Sundry Notice.

All cores, core chips, and samples must be shipped, prepaid, to the state core and samples library at the following address:

**ND Geological Survey Core Library
2835 Campus Road, Stop 8156
Grand Forks, ND 58202**

North Dakota Century Code Section 38-08-16 allows for a civil penalty for any violation of Chapter 38 08 not to exceed \$12,500 for each offense, and each day's violation is a separate offense.

Sincerely

Stephen Fried
Geologist



SUNDRY NOTICES AND REPORTS ON WELLS

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 5749 (09-2006)



Well File No.
30188

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.
PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

<input checked="" type="checkbox"/> Notice of Intent	Approximate Start Date November 1, 2014
<input type="checkbox"/> Report of Work Done	Date Work Completed
<input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.	
Approximate Start Date	

<input type="checkbox"/> Drilling Prognosis	<input type="checkbox"/> Spill Report
<input type="checkbox"/> Redrilling or Repair	<input type="checkbox"/> Shooting
<input type="checkbox"/> Casing or Liner	<input type="checkbox"/> Acidizing
<input type="checkbox"/> Plug Well	<input type="checkbox"/> Fracture Treatment
<input type="checkbox"/> Supplemental History	<input type="checkbox"/> Change Production Method
<input type="checkbox"/> Temporarily Abandon	<input type="checkbox"/> Reclamation
<input checked="" type="checkbox"/> Other	Waiver to rule Rule 43-02-03-31

Well Name and Number
Lewis Federal 5300 11-31 3B

Lot 1

Footages 1005 F N L	Qtr-Qtr 233 F W L	Section 31	Township 153 N	Range 100 W
Field Bakken	Pool Bakken	County McKenzie		

24-HOUR PRODUCTION RATE

	Before		After
Oil	Bbls	Oil	Bbls
Water	Bbls	Water	Bbls
Gas	MCF	Gas	MCF

Name of Contractor(s)

Address

City

State

Zip Code

DETAILS OF WORK

Oasis Petroleum respectfully requests a waiver to Rule 43-02-03-31 in regards to running open hole logs for the above referenced well. Justification for this request is as follows:

#20314

The Lewis Federal 5300 31-31H 2,850' S of surface location located within a mile of the subject well.

If this exception is approved, Oasis Petroleum will run a CBL on the intermediate string, and we will also run GR to surface. Oasis Petroleum will also submit two digital copies of each cased hole log and a copy of the mud log containing MWD gamma ray.

Company Oasis Petroleum North America LLC	Telephone Number 281-404-9563	
Address 1001 Fannin, Suite 1500		
City Houston	State TX	Zip Code 77002
Signature <i>Heather McCowan</i>	Printed Name Heather McCowan	
Title Heather McCowan	Date March 25, 2014	
Email Address hmccowan@oasispetroleum.com		

FOR STATE USE ONLY

<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date <i>12-11-2014</i>	
By <i>Stephen Fried</i>	
Title Stephen Fried Geologist	



SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFSN 5749 (09-2006)

Well File No.
30188



PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.
PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

Notice of Intent

Approximate Start Date
December 16, 2014

Report of Work Done

Date Work Completed

Notice of Intent to Begin a Workover Project that may Qualify
for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.

Approximate Start Date

- Drilling or Propulsion
- Redrilling or Repair
- Casing or Liner
- Plug Well
- Supplemental History
- Temporarily Abandon
- Other

Offsite Cutting Pit Request

- Spill Report
- Shooting
- Acidizing
- Fracture Treatment
- Change Production Method
- Reclamation

Well Name and Number

Lewis Federal 5300 11-31 3B

Footages 1005 F N L	233 F W L	Qtr-Qtr NWNW	Section 31	Township 153 N	Range 100 W
Field Baker	Pool Bakken	County McKenzie			

24-HOUR PRODUCTION RATE

	Before		After
Oil	Bbls	Oil	Bbls
Water	Bbls	Water	Bbls
Gas	MCF	Gas	MCF

Name of Contractor(s)

Address	City	State	Zip Code
---------	------	-------	----------

DETAILS OF WORK

Oasis Petroleum respectfully requests approval to utilize an off-site drill cuttings pit for the above well. See attached off-site cutting pit plat and landowner agreement. Cuttings from the following wells are also planned to be disposed of in the same pit:

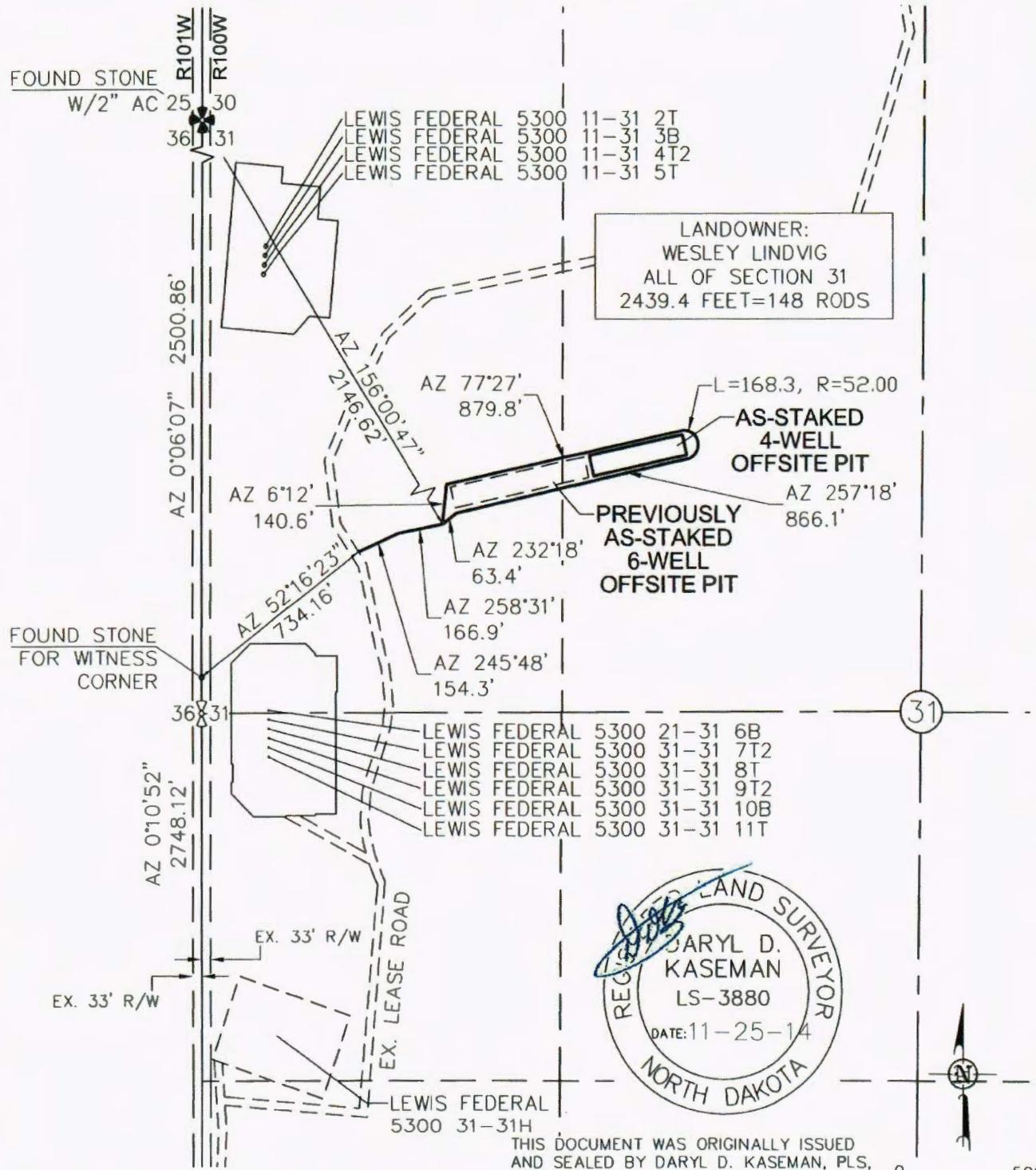
Lewis Federal 5300 11-31 2T (File No. 30189)
Lewis Federal 5300 11-31 4T2 (File No. 30187)
Lewis Federal 5300 11-31 5T (File No. 30186)

Company Oasis Petroleum North America LLC	Telephone Number (281) 404-9500	
Address 1001 Fannin Suite 1500		
City Houston	State TX	Zip Code 77002
Signature 	Printed Name Victoria Siemieniewski	
Title Regulatory Specialist	Date December 15, 2014	
Email Address vsiemieniewski@oasispetroleum.com		

FOR STATE USE ONLY

<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date 12-16-14	
By 	
Title CJW	

ACCESS APPROACH
 OASIS PETROLEUM NORTH AMERICA, LLC
 1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
 "AS-STAKED OFFSITE PIT FOR LEWIS FEDERAL 5300 11-31 2T, 3B, 4T2, 5T"
 SECTION 31, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



NOTE: All utilities shown are preliminary only, a complete utilities location is recommended before construction.

© 2014, INTERSTATE ENGINEERING, INC.

3/3
SHEET NO.



INTERSTATE
ENGINEERING

Professional's you need, people you trust

Interstate Engineering, Inc.
 P.O. Box 648
 425 East Main Street
 Sidney, Montana 59270
 Ph (406) 433-5617
 Fax (406) 433-5618
www.interstateeng.com

Other offices in Minnesota, North Dakota and South Dakota

OASIS PETROLEUM NORTH AMERICA, LLC
 ACCESS APPROACH
 SECTION 31, T153N, R100W

MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: J.D.M. Project No: S13-09-378.06
 Checked By: D.D.K. Date: NOV. 2014

Reorder No.	Date	By	Description

OFF-SITE PIT AGREEMENT

In consideration of the sum of [REDACTED] paid by Oasis Petroleum North America LLC ("Oasis") the undersigned surface owners, Wesley and Barbara Lindvig, husband and wife, whose address is 14075 41st St. NW, Alexander, ND 5883 for themselves and their heirs, successors, administrators and assigns, hereby acknowledge the receipt and sufficiency of said payment in full and complete settlement for and as a release of all claim for loss, damage or injury to the hereafter described surface property arising out of the off-site cuttings pit, in which the cuttings from the Lewis Federal 5300 11-31 2T, Lewis Federal 5300 11-31 3B, Lewis Federal 5300 11-31 4T2, Lewis Federal 5300 11-31 5T wells will be buried, located on the approximately two and one half (2.5) acre tract of land identified on the plat attached hereto as Exhibit "A" and which is situated on the following described real property located in McKenzie County, State of North Dakota, towit:

Township 153 North, Range 100 West, 5th P.M.
Section 31: SE/4NW/4

The undersigned knows that Oasis Petroleum North America LLC is the operator and will be drilling the Lewis Federal 5300 11-31 2T, Lewis Federal 5300 11-31 3B, Lewis Federal 5300 11-31 4T2, Lewis Federal 5300 11-31 5T wells. The undersigned further states that they are fully aware that the cuttings generated from the drilling of the Lewis Federal 5300 11-31 2T, Lewis Federal 5300 11-31 3B, Lewis Federal 5300 11-31 4T2, Lewis Federal 5300 11-31 5T wells will be buried in the pit on the above described location.

Dated this 9th day of December, 2014.

SURFACE OWNER(S)

Wesley Lindvig
Wesley Lindvig

Barbara L. Lindvig
Barbara Lindvig

ACKNOWLEDGMENT INDIVIDUAL

State of North Dakota)

)

County of McKenzie)

BE IT REMEMBERED, That on this 9 day of ~~November~~^{December}, 2014 before me, a Notary Public, in and for said County and State, personally appeared Wesley and Barbara Lindvig, husband and wife, to me known to be the identical persons described in and who executed the within and foregoing instrument and acknowledged to me to that they executed the same as their free and voluntary act and deed for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my official signature and affixed my notarial seal, the day and year last above written.

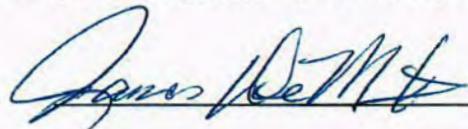
My Commission expires:

JAMES DEMORRETT

Notary Public

State of North Dakota

My Commission Expires Aug. 16, 2018



Notary Public



SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 5749 (09-2006)

Well File No. 30188

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.
PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

<input checked="" type="checkbox"/> Notice of Intent	Approximate Start Date November 1, 2014	<input type="checkbox"/> Drilling Prognosis	<input type="checkbox"/> Spill Report
<input type="checkbox"/> Report of Work Done	Date Work Completed	<input type="checkbox"/> Redrilling or Repair	<input type="checkbox"/> Shooting
<input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.	Approximate Start Date	<input type="checkbox"/> Casing or Liner	<input type="checkbox"/> Acidizing
		<input type="checkbox"/> Plug Well	<input type="checkbox"/> Fracture Treatment
		<input type="checkbox"/> Supplemental History	<input type="checkbox"/> Change Production Method
		<input type="checkbox"/> Temporarily Abandon	<input type="checkbox"/> Reclamation
		<input checked="" type="checkbox"/> Other	Suspension of Drilling

Well Name and Number Lewis Federal 5300 11-31 3B					
Footages	Qtr-Qtr	Section	Township	Range	
1005 F N L 233 F WL	NWNW	31	153 N	100 W	
Field	Pool		County		
	Bakken		McKenzie		

24-HOUR PRODUCTION RATE			
Before		After	
Oil	Bbls	Oil	Bbls
Water	Bbls	Water	Bbls
Gas	MCF	Gas	MCF

Name of Contractor(s) Advanced Energy Services	Address	City	State	Zip Code
--	---------	------	-------	----------

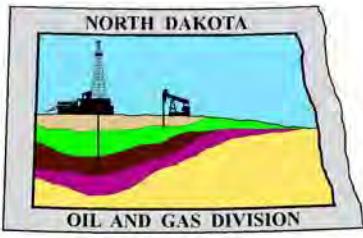
DETAILS OF WORK

Oasis Petroleum North America LLC requests permission for suspension of drilling for up to 90 days for the referenced well under NDAC 43-02-03-55. Oasis Petroleum North America LLC intends to drill the surface hole with freshwater based drilling mud and set surface casing with a small drilling rig and move off within 3 to 5 days. The casing will be set at a depth pre-approved by the NDIC per the Application for Permit to Drill NDAC 43-02-03-21. No saltwater will be used in the drilling and cementing operations of the surface casing. Once the surface casing is cemented, a plug or mechanical seal will be placed at the top of the casing to prevent any foreign matter from getting into the well. A rig capable of drilling to TD will move onto the location within the 90 days previously outlined to complete the drilling and casing plan as per the APD. The undersigned states that this request for suspension of drilling operations in accordance with the Subsection 4 of Section 43-02-03-55 of the NDAC, is being requested to take advantage of the cost savings and time savings of using an initial rig that is smaller than the rig necessary to drill a well to total depth but is not intended to alter or extend the terms and conditions of, or suspend any obligation under, any oil and gas lease with acreage in or under the spacing or drilling unit for the above-referenced well. Oasis Petroleum North America LLC understands NDAC 43-02-03-31 requirements regarding confidentiality pertaining to this permit. The drilling pit will be fenced immediately after construction if the well pad is located in a pasture (NDAC 43-02-03-19 & 19.1). Oasis Petroleum North America LLC will plug and abandon the well and reclaim the well site if the well is not drilled by the larger rotary rig within 90 days after spudding the well with the smaller drilling rig.

Oasis must notify NDIC Field Inspector Richard Dunn @701-770-3554 with spud and TD.

Company Oasis Petroleum North America LLC	Telephone Number (281) 404-9563	
Address 1001 Fannin, Suite 1500		
City Houston	State TX	Zip Code 77002
Signature 	Printed Name HEATHER MCCOWAN	
Title REGULATORY ASSISTANT	Date March 25, 2014	
Email Address hmccowan@oasispetroleum.com		

<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date 12/11/2014	
By David Burns	
Title Engineering Tech.	



Oil and Gas Division

Lynn D. Helms - Director

Bruce E. Hicks - Assistant Director

Department of Mineral Resources

Lynn D. Helms - Director

North Dakota Industrial Commission

www.oilgas.nd.gov

December 11, 2014

Heather McCowan
Regulatory Assistant
OASIS PETROLEUM NORTH AMERICA LLC
1001 Fannin Suite 1500
Houston, TX 77002

**RE: HORIZONTAL WELL
LEWIS FEDERAL 5300 11-31 3B
LOT1 Section 31-153N-100W
McKenzie County
Well File # 30188**

Dear Heather:

Pursuant to Commission Order No. 23752, approval to drill the above captioned well is hereby given. The approval is granted on the condition that all portions of the well bore not isolated by cement, be no closer than the **500' setback** from the north & south boundaries and **200' setback** from the east & west boundaries within the 1280 acre spacing unit consisting of Sections 31 & 32 T153N R100W.

PERMIT STIPULATIONS: Effective June 1, 2014, a covered leak-proof container (with placard) for filter sock disposal must be maintained on the well site beginning when the well is spud, and must remain on-site during clean-out, completion, and flow-back whenever filtration operations are conducted. OASIS PETRO NO AMER must contact NDIC Field Inspector Richard Dunn at 701-770-3554 prior to location construction.

Drilling pit

NDAC 43-02-03-19.4 states that "a pit may be utilized to bury drill cuttings and solids generated during well drilling and completion operations, providing the pit can be constructed, used and reclaimed in a manner that will prevent pollution of the land surface and freshwaters. Reserve and circulation of mud system through earthen pits are prohibited. All pits shall be inspected by an authorized representative of the director prior to lining and use. Drill cuttings and solids must be stabilized in a manner approved by the director prior to placement in a cuttings pit."

Form 1 Changes & Hard Lines

Any changes, shortening of casing point or lengthening at Total Depth must have prior approval by the NDIC. The proposed directional plan is at a legal location. Based on the azimuth of the proposed lateral the maximum legal coordinate from the well head is: 10089 E.

Location Construction Commencement (Three Day Waiting Period)

Operators shall not commence operations on a drill site until the 3rd business day following publication of the approved drilling permit on the NDIC - OGD Daily Activity Report. If circumstances require operations to commence before the 3rd business day following publication on the Daily Activity Report, the waiting period may be waived by the Director. Application for a waiver must be by sworn affidavit providing the information necessary to evaluate the extenuating circumstances, the factors of NDAC 43-02-03-16.2 (1), (a)-(f), and any other information that would allow the Director to conclude that in the event another owner seeks revocation of the drilling permit, the applicant should retain the permit.

Permit Fee & Notification

Payment was received in the amount of \$100 via credit card .The permit fee has been received. It is requested that notification be given immediately upon the spudding of the well. This information should be relayed to the Oil & Gas Division, Bismarck, via telephone. The following information must be included: Well name, legal location, permit number, drilling contractor, company representative, date and time of spudding. Office hours are 8:00 a.m. to 12:00 p.m. and 1:00 p.m. to 5:00 p.m. Central Time. Our telephone number is (701) 328-8020, leave a message if after hours or on the weekend.

Survey Requirements for Horizontal, Horizontal Re-entry, and Directional Wells

NDAC Section 43-02-03-25 (Deviation Tests and Directional Surveys) states in part (that) the survey contractor shall file a certified copy of all surveys with the director free of charge within thirty days of completion. Surveys must be submitted as one electronic copy, or in a form approved by the director. However, the director may require the directional survey to be filed immediately after completion if the survey is needed to conduct the operation of the director's office in a timely manner. Certified surveys must be submitted via email in one adobe document, with a certification cover page to certsurvey@nd.gov.

Survey points shall be of such frequency to accurately determine the entire location of the well bore.

Specifically, the Horizontal and Directional well survey frequency is 100 feet in the vertical, 30 feet in the curve (or when sliding) and 90 feet in the lateral.

Surface casing cement

Tail cement utilized on surface casing must have a minimum compressive strength of 500 psi within 12 hours, and tail cement utilized on production casing must have a minimum compressive strength of 500 psi before drilling the plug or initiating tests.

Logs

NDAC Section 43-02-03-31 requires the running of (1) a suite of open hole logs from which formation tops and porosity zones can be determined, (2) a Gamma Ray Log run from total depth to ground level elevation of the well bore, and (3) a log from which the presence and quality of cement can be determined (Standard CBL or Ultrasonic cement evaluation log) in every well in which production or intermediate casing has been set, this log must be run prior to completing the well. All logs run must be submitted free of charge, as one digital TIFF (tagged image file format) copy and one digital LAS (log ASCII) formatted copy. Digital logs may be submitted on a standard CD, DVD, or attached to an email sent to digitallogs@nd.gov

Thank you for your cooperation.

Sincerely,

David Burns
Engineering Technician



APPLICATION FOR PERMIT TO DRILL HORIZONTAL WELL - FORM 1H

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 54269 (08-2005)

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.

PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

Type of Work New Location	Type of Well Oil & Gas	Approximate Date Work Will Start 11 / 1 / 2014	Confidential Status No
Operator OASIS PETROLEUM NORTH AMERICA LLC		Telephone Number 281-404-9563	
Address 1001 Fannin Suite 1500		City Houston	State TX Zip Code 77002

Notice has been provided to the owner of any permanently occupied dwelling within 1,320 feet. This well is not located within five hundred feet of an occupied dwelling.

WELL INFORMATION (If more than one lateral proposed, enter data for additional laterals on page 2)

Well Name LEWIS FEDERAL			Well Number 5300 11-31 3B				
Surface Footages 1005 F N L 233 F W L		Qtr-Qtr LOT1	Section 31	Township 153 N	Range 100 W	County McKenzie	
Longstring Casing Point Footages 997 F N L 749 F W L		Qtr-Qtr LOT1	Section 31	Township 153 N	Range 100 W	County McKenzie	
Longstring Casing Point Coordinates From Well Head 8 N From WH 516 E From WH		Azimuth 91.98 °	Longstring Total Depth 11046 Feet MD 10760 Feet TVD				
Bottom Hole Footages From Nearest Section Line 998 F N L 210 F E L		Qtr-Qtr LOT4	Section 32	Township 153 N	Range 100 W	County Williams	
Bottom Hole Coordinates From Well Head 7 N From WH 10079 E From WH		KOP Lateral 1 10283 Feet MD	Azimuth Lateral 1 90 °	Estimated Total Depth Lateral 1 20610 Feet MD 10844 Feet TVD			
Latitude of Well Head 48 ° 02 ' 09.74 "	Longitude of Well Head -103 ° 36 ' 11.59 "	NAD Reference NAD83		Description of Spacing Unit: Sections 31 & 32 T153N R100W (Subject to NDIC Approval)			
Ground Elevation 2104 Feet Above S.L.	Acres in Spacing/Drilling Unit 1280	Spacing/Drilling Unit Setback Requirement 500 Feet N/S 200 Feet E/W		Industrial Commission Order 23752			
North Line of Spacing/Drilling Unit 10522 Feet	South Line of Spacing/Drilling Unit 10535 Feet	East Line of Spacing/Drilling Unit 5280 Feet		West Line of Spacing/Drilling Unit 5248 Feet			
Objective Horizons Bakken						Pierre Shale Top 1984	
Proposed Surface Casing	Size 9 - 5/8 "	Weight 36 Lb./Ft.	Depth 2100 Feet	Cement Volume 1184 Sacks	NOTE: Surface hole must be drilled with fresh water and surface casing must be cemented back to surface.		
Proposed Longstring Casing	Size 7 - "	Weight(s) 29/32 Lb./Ft.	Longstring Total Depth 11046 Feet MD 10760 Feet TVD		Cement Volume 794 Sacks	Cement Top 4885 Feet	Top Dakota Sand 5385 Feet
Base Last Charles Salt (If Applicable) 9230 Feet		NOTE: Intermediate or longstring casing string must be cemented above the top Dakota Group Sand.					
Proposed Logs Triple Combo: KOP to Kibby GR/Res to BSC GR to surf CND through the Dakota							
Drilling Mud Type (Vertical Hole - Below Surface Casing) Invert				Drilling Mud Type (Lateral) Salt Water Gel			
Survey Type in Vertical Portion of Well MWD Every 100 Feet		Survey Frequency: Build Section 30 Feet		Survey Frequency: Lateral 90 Feet		Survey Contractor Ryan	

NOTE: A Gamma Ray log must be run to ground surface and a CBL must be run on intermediate or longstring casing string if set.

Surveys are required at least every 30 feet in the build section and every 90 feet in the lateral section of a horizontal well. Measurement inaccuracies are not considered when determining compliance with the spacing/drilling unit boundary setback requirement except in the following scenarios: 1) When the angle between the well bore and the respective boundary is 10 degrees or less; or 2) If Industry standard methods and equipment are not utilized. Consult the applicable field order for exceptions.

If measurement inaccuracies are required to be considered, a 2° MWD measurement inaccuracy will be applied to the horizontal portion of the well bore. This measurement inaccuracy is applied to the well bore from KOP to TD.

REQUIRED ATTACHMENTS: Certified surveyor's plat, horizontal section plat, estimated geological tops, proposed mud/cementing plan, directional plot/plan, \$100 fee.

See Page 2 for Comments section and signature block.

COMMENTS, ADDITIONAL INFORMATION, AND/OR LIST OF ATTACHMENTS**Documents forwarded by email: Drill plan with drilling fluids, Well Summary with casing/cement plans, Directional Plan & Plot, Plats****Lateral 2**

KOP Lateral 2 Feet MD	Azimuth Lateral 2 °	Estimated Total Depth Lateral 2 Feet MD Feet TVD			KOP Coordinates From Well Head From WH From WH		
Formation Entry Point Coordinates From Well Head From WH		Bottom Hole Coordinates From Well Head From WH			From WH		
KOP Footages From Nearest Section Line F L		Qtr-Qtr	Section	Township N	Range W	County	
Bottom Hole Footages From Nearest Section Line F L		Qtr-Qtr	Section	Township N	Range W	County	

Lateral 3

KOP Lateral 3 Feet MD	Azimuth Lateral 3 °	Estimated Total Depth Lateral 3 Feet MD Feet TVD			KOP Coordinates From Well Head From WH From WH		
Formation Entry Point Coordinates From Well Head From WH		Bottom Hole Coordinates From Well Head From WH			From WH		
KOP Footages From Nearest Section Line F L		Qtr-Qtr	Section	Township N	Range W	County	
Bottom Hole Footages From Nearest Section Line F L		Qtr-Qtr	Section	Township N	Range W	County	

Lateral 4

KOP Lateral 4 Feet MD	Azimuth Lateral 4 °	Estimated Total Depth Lateral 4 Feet MD Feet TVD			KOP Coordinates From Well Head From WH From WH		
Formation Entry Point Coordinates From Well Head From WH		Bottom Hole Coordinates From Well Head From WH			From WH		
KOP Footages From Nearest Section Line F L		Qtr-Qtr	Section	Township N	Range W	County	
Bottom Hole Footages From Nearest Section Line F L		Qtr-Qtr	Section	Township N	Range W	County	

Lateral 5

KOP Lateral 5 Feet MD	Azimuth Lateral 5 °	Estimated Total Depth Lateral 5 Feet MD Feet TVD			KOP Coordinates From Well Head From WH From WH		
Formation Entry Point Coordinates From Well Head From WH		Bottom Hole Coordinates From Well Head From WH			From WH		
KOP Footages From Nearest Section Line F L		Qtr-Qtr	Section	Township N	Range W	County	
Bottom Hole Footages From Nearest Section Line F L		Qtr-Qtr	Section	Township N	Range W	County	

I hereby swear or affirm the information provided is true, complete and correct as determined from all available records.

Date

3 / 25 / 2014**ePermit**Printed Name
Heather McCowanTitle
Regulatory Assistant**FOR STATE USE ONLY**

Permit and File Number 30188	API Number 33 - 053 - 06548
Field BAKER	
Pool BAKKEN	Permit Type DEVELOPMENT

FOR STATE USE ONLY

Date Approved 12 / 11 / 2014
By David Burns
Title Engineering Technician

WELL LOCATION PLAT
ASIS PETROLEUM NORTH AMERICA, LLC
FANNIN, SUITE 1500, HOUSTON, TX 77002

OASIS PETROLEUM NORTH AMERICA, LLC

001 FANNIN, SUITE 1500, HOUSTON, TX 77002

"LEWIS FEDERAL 5300 11-31 3B"

1005 FEET FROM NORTH LINE AND 233 FEET FROM WEST LINE
SECTION 31, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

FOUND STONE W/ 2" AC

**R101W
R100W**

FOUND REBAR W/ REBAR 2662.02' AZ 89°37'27"

FOUND REBAR W/ 2" AC LS 2884 2639.72' AZ 89°58'08"

FOUND STONE FOR WITNESS CORNER AZ 0°06'07"

FOUND REBAR W/ 1.5" AC AZ 90°09'48"

FOUND STONE W/ 2" AC 2615.00'

FOUND REBAR W/ 2" AC 2650.86'

FOUND 4" AC CORP OF ENG. AZ 90°02'37"

FOUND STONE W/ 2" AC 2634.18'

FOUND REBAR W/ 2" AC 2635.46'

EDGE OF LAKE 4363' (GLO)

MISSOURI RIVER PER 1891 SURVEY

THEORETICAL POSITION 940' (GLO)

THEORETICAL POSITION 998' (GLO)

THEORETICAL POSITION 210' (GLO)

THEORETICAL POSITION 4340' (GLO)

THEORETICAL POSITION AZ 359°56'00"

THEORETICAL POSITION T153N T152N

LOT 1

LOT 2

LOT 3

LOT 4

LOT 1

LOT 2

LOT 3

LOT 4

LEWIS FEDERAL 5300 11-31 3B
GROUND ELEV. 2104.0
LATITUDE 48°02'09.74"N
LONGITUDE 103°36'11.59"W
GPS SURVEY DATUM: NAD 83

SAKAKAWEA

31

32

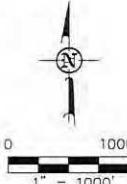
FOUND STONE W/ REBAR 2640.38'

FOUND STONE W/ REBAR 2633.56'

FOUND STONE W/ REBAR AZ 359°44'18"

VICINITY MAP

THIS DOCUMENT WAS ORIGINALLY
ISSUED AND SEALED BY DARYL D.
KASEMAN, PLS. REGISTRATION NUMBER
3880 ON 1/21/14 AND THE
ORIGINAL DOCUMENTS ARE STORED AT
THE OFFICES OF INTERSTATE
ENGINEERING, INC.



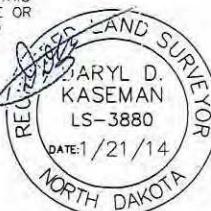
  - MONUMENT - RECOVERED
 - MONUMENT - NOT RECOVERED

STAKED ON 1/14/14
VERTICAL CONTROL DATUM WAS BASED UPON
CONTROL POINT 705 WITH AN ELEVATION OF 2158.3'
THIS SURVEY AND PLAT IS BEING PROVIDED AT THE REQUEST
OF ERIC BAYES OF OASIS PETROLEUM. I CERTIFY THAT THIS PLAT
CORRECTLY REPRESENTS WORK PERFORMED BY ME OR
UNDER MY SUPERVISION AND IS TRUE AND CORRECT TO
THE BEST OF MY KNOWLEDGE AND BELIEF.

THIS SURVEY AND PLAT IS BEING PROVIDED AT THE REQUEST OF ERIC BAYES OF OASIS PETROLEUM. I CERTIFY THAT THIS PLAT CORRECTLY REPRESENTS WORK PERFORMED BY ME OR UNDER MY SUPERVISION AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

THIS SURVEY AND PLAT IS BEING PROVIDED AT THE REQUEST OF ERIC BAYES OF OASIS PETROLEUM. I CERTIFY THAT THIS PLAT CORRECTLY REPRESENTS WORK PERFORMED BY ME OR UNDER MY SUPERVISION AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.


BARRY D. KLAGSMAN, L.S., 7020



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INTERSTATE
ENCLOSING

1/8

OASIS PETROLEUM NORTH AMERICA, LLC		Date:	By:
WELL LOCATION PLAT		Direction:	
SECTION 31, 1153N, R100W			
MCKENZIE COUNTY, NORTH DAKOTA			
Drawn By:	B.L.K.	Project No.:	513-520-7852
Checked By:	D.O.S.	Date:	JUN 2014

Interstate Engineering, Inc.
P.O. Box 648
425 East Main Street
Sidney, Montana 59270
Ph (406) 433-5617
Fax (406) 433-5618
www.interstateeng.com
Other offices in Missoula, North Dakota and South Dakota



Oil and Gas Division

Lynn D. Helms - Director

Bruce E. Hicks - Assistant Director

Department of Mineral Resources

Lynn D. Helms - Director

North Dakota Industrial Commission

www.oilgas.nd.gov

April 9, 2014

**RE: Filter Socks and Other Filter Media
Leakproof Container Required
Oil and Gas Wells**

Dear Operator,

North Dakota Administrative Code Section 43-02-03-19.2 states in part that all waste material associated with exploration or production of oil and gas must be properly disposed of in an authorized facility in accord with all applicable local, state, and federal laws and regulations.

Filtration systems are commonly used during oil and gas operations in North Dakota. The Commission is very concerned about the proper disposal of used filters (including filter socks) used by the oil and gas industry.

Effective June 1, 2014, a container must be maintained on each well drilled in North Dakota beginning when the well is spud and must remain on-site during clean-out, completion, and flow-back whenever filtration operations are conducted. The on-site container must be used to store filters until they can be properly disposed of in an authorized facility. Such containers must be:

- leakproof to prevent any fluids from escaping the container
- covered to prevent precipitation from entering the container
- placard to indicate only filters are to be placed in the container

If the operator will not utilize a filtration system, a waiver to the container requirement will be considered, but only upon the operator submitting a Sundry Notice (Form 4) justifying their request.

As previously stated in our March 13, 2014 letter, North Dakota Administrative Code Section 33-20-02.1-01 states in part that every person who transports solid waste (which includes oil and gas exploration and production wastes) is required to have a valid permit issued by the North Dakota Department of Health, Division of Waste Management. Please contact the Division of Waste Management at (701) 328-5166 with any questions on the solid waste program. Note oil and gas exploration and production wastes include produced water, drilling mud, invert mud, tank bottom sediment, pipe scale, filters, and fly ash.

Thank you for your cooperation.

Sincerely,

Bruce E. Hicks

Assistant Director

DRILLING PLAN							
OPERATOR	Oasis Petroleum			COUNTY/STATE	McKenzie Co., ND		
WELL NAME	Lewis Federal 5300 11-31 3B			RIG	N/A		
WELL TYPE	Horizontal Middle Bakken			LOCATION	NW NW 31-153N-100W		
EST. T.D.	Surface Location (survey plat): 1005' FNL 20,610'			GROUND ELEV:	2,112'	Sub Height: 22'	
TOTAL LATERAL:	9,566'			KB ELEV:	2,134'		
MARKER	TVD	Subsea TVD	LOGS:	Type	Interval		
Pierre	NDIC MAP	1,984	150	OH Logs: Request Log waiver based on the Lewis Federal 5300 31-31H 2,850' S of surface location			
Greenhorn		4,584	-2,450	CBL/GR: Above top of cement/GR to base of casing			
Mowry		4,997	-2,863	MWD GR: KOP to lateral TD			
Dakota		5,385	-3,251				
Rierdon		6,347	-4,213	DEVIATION:	Surf: 3 deg. max., 1 deg / 100'; svry every 500' Prod: 5 deg. max., 1 deg / 100'; svry every 100'		
Dunham Salt		6,877	-4,743				
Dunham Salt Base		6,947	-4,813				
Pine Salt		7,249	-5,115				
Pine Salt Base		7,314	-5,180				
Opeche Salt		7,380	-5,246				
Opeche Salt Base		7,471	-5,337				
Amsden		7,693	-5,559				
Tyler		7,841	-5,707				
Otter/Base Minnelusa		8,065	-5,931	DST'S:	None planned		
Kibbey Lime		8,408	-6,274				
Charles Salt		8,561	-6,427	CORES:	None planned		
Base Last Salt		9,230	-7,096				
Mission Canyon		9,446	-7,312				
Lodgepole		9,987	-7,853				
False Bakken		10,716	-8,582				
Upper Bakken Shale		10,728	-8,594	MUDLOGGING:	Two-Man: Begin 200' above Kibbey 30' samples in curve and lateral		
Middle Bakken (Top of Target)		10,755	-8,621				
Middle Bakken (Base of target)		10,765	-8,631				
Lower Bakken Shale		10,780	-8,646				
Threeforks		10,810	-8,676				
Est. Dip Rate:	-0.50			BOP:	11" 5000 psi blind, pipe & annular		
Max. Anticipated BHP:	4671			Surface Formation:	<i>Glacial till</i>		
MUD:	Interval	Type	WT	Vis	WL	Remarks	
Surface:	0' -	2,100' FW/Gel - Lime Sweeps	8.4-9.0	28-32	NC	Circ Mud Tanks	
Intermediate:	2,100' -	11,044' Invert	9.5-10.4	40-50	30+Hthp	Circ Mud Tanks	
Laterl:	11,044' -	20,610' Salt Water	9.8-10.2	28-32	NC	Circ Mud Tanks	
CASING:	Size	Wt ppf	Hole	Depth	Cement	WOC	Remarks
Surface:	9-5/8"	36#	13-1/2"	2,100'	To Surface	12	100' into Pierre
Intermediate:	7"	29/32#	8-3/4"	11,044'	4885	24	500' above Dakota
Production Liner:	4.5"	11.6#	6"	20,610'	TOL @ 10,233'		50' above KOP
PROBABLE PLUGS, IF REQ'D:							
OTHER:	MD	TVD	FNL/FSL	FEL/FWL	S-T-R	AZI	
Surface:	2,100	2,100	1005' FNL	233' FWL	31-T153N-R100W		Survey Company:
KOP:	10,283'	10,283'	980' FNL	258' FWL	31-T153N-R100W		Build Rate: 12 deg /100'
EOC:	11,029'	10,760'	996' FNL	731' FWL	31-T153N-R100W		
Casing Point:	11,044'	10,760'	997' FNL	746' FWL	31-T153N-R100W		
Middle Bakken Lateral TD:	20,610'	10,844'	998' FNL	210' FEL	32-T153N-R100W		
Comments:	Request Log waiver based on the Lewis Federal 5300 31-31H 2,850' S of surface location						
No Frac String							
35 packers & 15 Sleeves							
Oasis Petroleum does not use diesel fuel, as defined by the US EPA in the list below, in our hydraulic fracture operations.							
68334-30-5	Fuels, diesel						
68476-34-6	Fuels, diesel, No. 2						
68476-34-6	Fuel oil No. 2						
68476-31-3	Fuel Oil No. 4						
8008-20-6	Kerosene						
Geology: NAG	1/22/2014			Engineering: A. Soto 3/13/14			



Oasis Petroleum
Well Summary
Lewis Federal 5300 11-31 3B
Sec. 31 T153N R100W
McKenzie County, North Dakota

SURFACE CASING AND CEMENT DESIGN

Size	Interval	Weight	Grade	Coupling	I.D.	Drift	Make-up Torque (ft-lbs)		
							Minimum	Optimum	Max
13-3/8"	0' to 2100	54.5	J-55	STC	12.615"	12.459"	4,100	5,470	6,840

Interval	Description	Collapse	Burst	Tension
		(psi) a	(psi) b	(1000 lbs) c
0' to 2100	13-3/8", 54.5#, J-55, STC, 8rd	1400 / 2.04	2730 / 2.76	689 / 3.45

API Rating & Safety Factor

- a) Based on full casing evacuation with 9 ppg fluid on backside (2100' setting depth).
- b) Burst pressure based on 9 ppg fluid with no fluid on backside (2100' setting depth).
- c) Based on string weight in 9 ppg fluid at 2100' TVD plus 100k# overpull. (Buoyed weight equals 99k lbs.)

Cement volumes are based on 9-5/8" casing set in 13-1/2" hole with **40%** excess to circulate cement back to surface.
Mix and pump the following slurry.

Pre-flush (Spacer): 10 bbls fresh water

Lead Slurry: **884 sks** (313 bbls) Conventional system with 75 lb/sk cement, 2% extender, 10% expanding agent, 2% CaCl2 and 0.5 lb/sk lost circulation control agent

Tail Slurry: **300 sks** (62 bbls) Conventional system with 94 lb/sk cement, 0.2% CaCl2, and .3 lb/sk lost circulation control agent

Oasis Petroleum
Well Summary
Lewis Federal 5300 11-31 3B
Sec. 31 T153N R100W
McKenzie County, North Dakota

CONTINGENCY INTERMEDIATE CASING AND CEMENT DESIGN

Intermediate Casing Design

Size	Interval	Weight	Grade	Coupling	I.D.	Drift	Make-up Torque (ft-lbs)		
							Minimum	Optimum	Max
9-5/8"	0' - 6400'	40	L-80	LTC	8.835"	8.75"**	5,450	7,270	9,090

**Special Drift

Interval	Description	Collapse	Burst	Tension
		(psi) a	(psi) b	(1000 lbs) c
0' - 6400'	9-5/8", 40#, HCP-110, LTC, 8rd	3090 / 3.71*	5750 / 1.24	837 / 3.86

API Rating & Safety Factor

- a) Burst pressure calculated from a gas kick coming from the production zone (Bakken Pool) at 9,000psi and a subsequent breakdown at the 9-5/8" shoe, based on a 13.5#/ft fracture gradient. Backup of 9 ppg fluid.
- b) Collapse pressure based on 11.5ppg fluid on backside and 9ppg fluid inside of casing.
- c) Yield based on string weight in 10 ppg fluid, (217k lbs buoyed weight) plus 100k lbs overpull.

Cement volumes are estimates based on 7" casing set in an 8-3/4" hole with **30%** excess.

Pre-flush (Spacer): **20 bbls** Chem wash

Lead Slurry: **592 sks** (210 bbls) Conventional system with 75 lb/sk cement, 0.5lb/sk lost circulation, 10% expanding agent, 2% extender, 2% CaCl₂, 0.2% anti foam, and 0.4% fluid loss

Tail Slurry: **521 sks** (108 bbls) Conventional system with 94 lb/sk cement, 0.3% anti-settling agent, 0.3% fluid loss agent, 0.3 lb/sk lost circulation control agent, 0.2% anti foam, and 0.1% retarder

Oasis Petroleum
Well Summary
Lewis Federal 5300 11-31 3B
Sec. 31 T153N R100W
McKenzie County, North Dakota

INTERMEDIATE CASING AND CEMENT DESIGN

Size	Interval	Weight	Grade	Coupling	I.D.	Drift	Make-up Torque (ft-lbs)		
							Minimum	Optimum	Max
7"	0' - 6677'	29	P-110	LTC	6.184"	6.059"	5,980	7,970	9,960
7"	6677' - 10283'	32	HCP-110	LTC	6.094"	6.000***	6,730	8,970	11210
7"	10283' - 11044'	29	P-110	LTC	6.184"	6.059"	5,980	7,970	9,960

**Special Drift

Interval	Description	Collapse (psi) a	Burst (psi) b	Tension (1000 lbs) c
0' - 6677'	7", 29#, HCP-110, LTC, 8rd	8530 / 2.43*	11220 / 1.19	797 / 2.09
6677' - 10283'	7", 32#, HCP-110, LTC, 8rd	11820 / 2.20*	12460 / 1.29	
6677' - 10283'	7", 32#, HCP-110, LTC, 8rd	11820 / 1.05**	12460 / 1.29	
10283' - 11044'	7", 32#, HCP-110, LTC, 8rd	8530 / 1.52*	11220 / 1.15	

API Rating & Safety Factor

- a. *Assume full casing evacuation with 10 ppg fluid on backside. **Assume full casing evacuation with 1.2 psi/ft equivalent fluid gradient across salt intervals.
- b. Burst pressure based on 9000 psig max press for stimulation plus 10.2 ppg fluid in casing and 9 ppg fluid on backside-to 10760' TVD.
- c. Based on string weight in 10 ppg fluid, (280k lbs buoyed weight) plus 100k lbs overpull.

Cement volumes are estimates based on 7" casing set in an 8-3/4" hole with 30% excess.

Pre-flush (Spacer): **20 bbls** Chem wash
70 bbls 10.6# Scavenger

Lead Slurry: **187 sks** (85 bbls) Conventional system with 24 lb/sk cement, 54lb/sk extender, 3% KCl, 0.5% viscosifier, 0.2% anti foam, 0.5lb/sk lost circulation

Tail Slurry: **607 sks** (168 bbls) Conventional system with 94 lb/sk cement, 3% KCl, 35% Silica, 0.2% fluid loss agent, 0.5 lb/sk lost circulation control agent and 0.4% retarder

Oasis Petroleum
Well Summary
Lewis Federal 5300 11-31 3B
Sec. 31 T153N R100W
McKenzie County, North Dakota

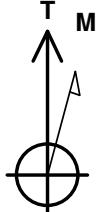
PRODUCTION LINER

Size	Interval	Weight	Grade	Coupling	I.D.	Drift	Estimated Torque
4-1/2"	10233' - 20610'	11.6	P-110	BTC	4.000"	3.875"	4,500psi

Interval	Description	Collapse	Burst	Tension	Condition
		(psi) a	(psi) b	(1000 lbs) c	
10233' - 20610'	4-1/2", 11.6 lb, P-110, BTC, 8rd	7560 / 1.40	10690 / 1.10	385 / 1.88	New

API Rating & Safety Factor

- a) Based on full casing evacuation with 9.5 ppg fluid on backside @ 10844' TVD.
- b) Burst pressure based on 9000 psi treating pressure with 10.2 ppg internal fluid gradient and 9 ppg external fluid gradient @ 10844' TVD.
- c) Based on string weight in 9.5 ppg fluid (Buoyed weight: 107k lbs.) plus 100k lbs overpull.


 Azimuths to True North
 Magnetic North: 8.16°
 Magnetic Field Strength: 56474.1nT
 Dip Angle: 72.94°
 Date: 3/11/2014
 Model: IGRF200510

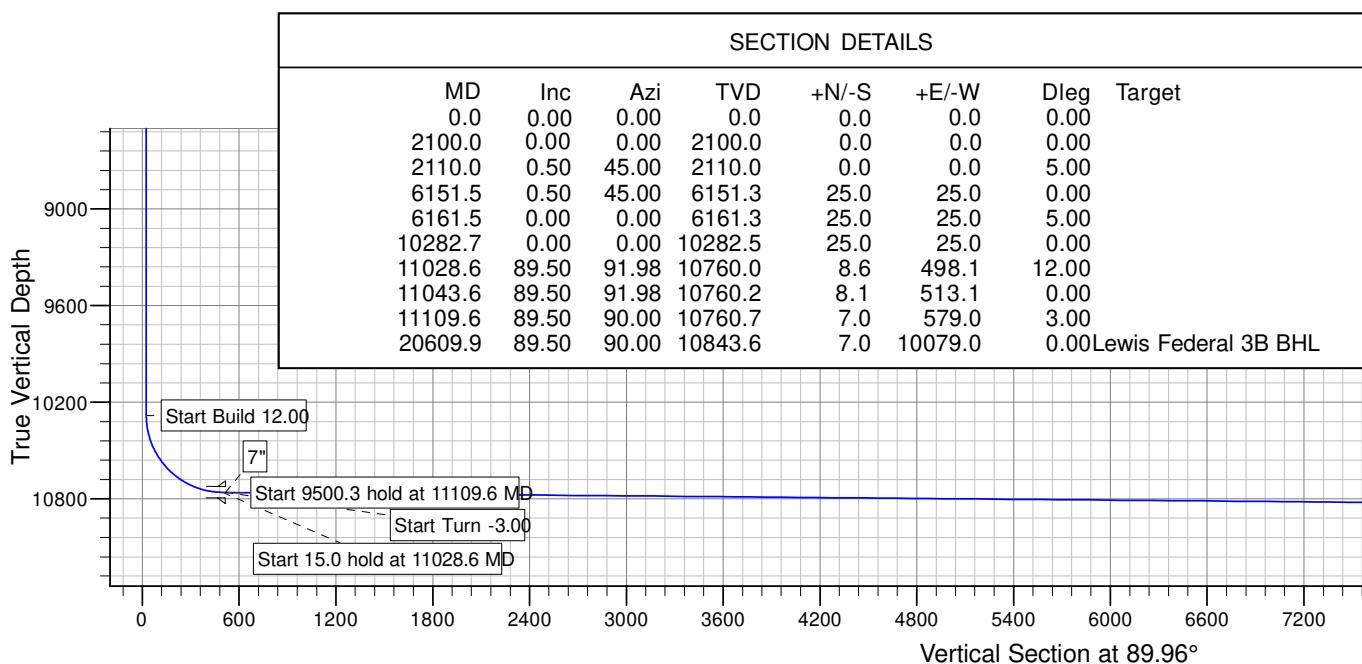
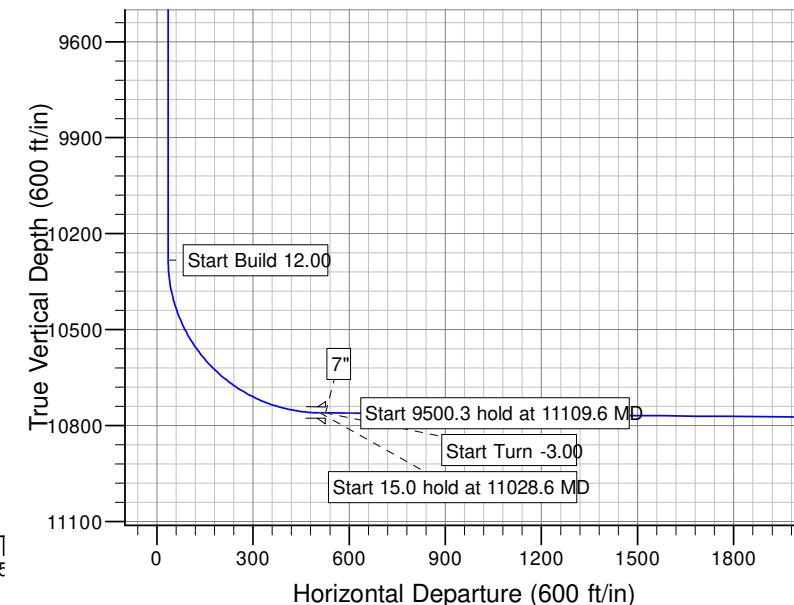
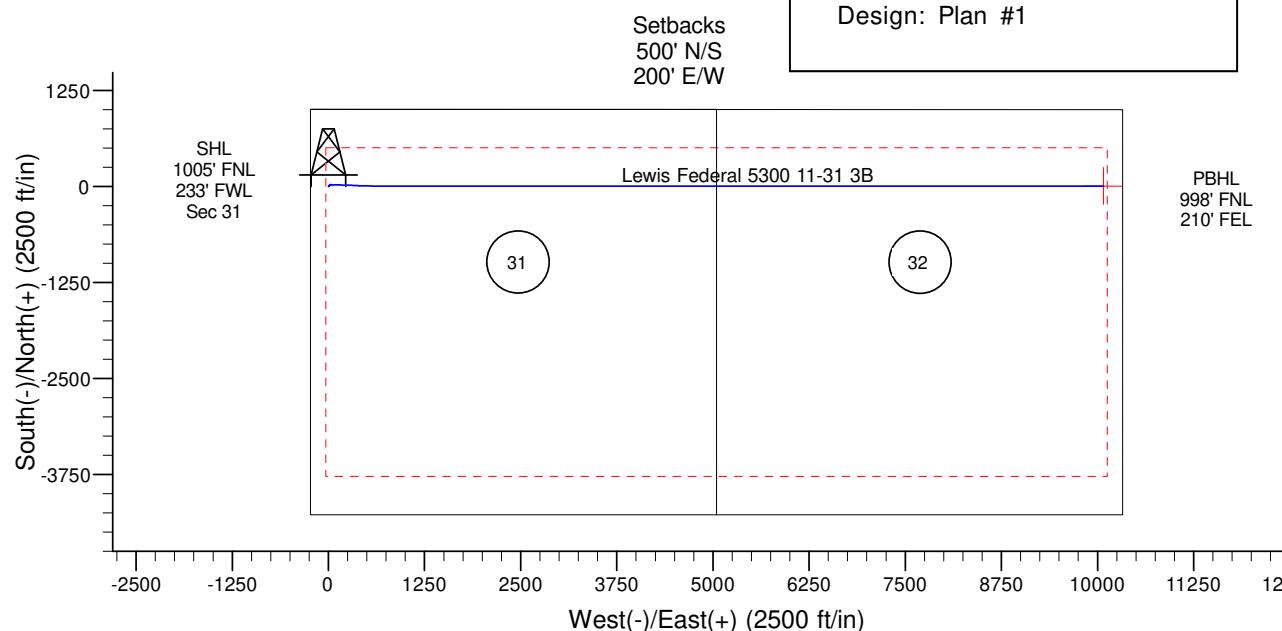


Project: Indian Hills
 Site: 153N-100W-31/32
 Well: Lewis Federal 5300 11-31 3B
 Wellbore: Lewis Federal 5300 11-31 3B
 Design: Plan #1

SITE DETAILS: 153N-100W-31/32

Site Centre Latitude: 48° 1' 42.010 N
 Longitude: 103° 36' 10.620 W

Positional Uncertainty: 0.0
 Convergence: -2.31
 Local North: True



CASING DETAILS

TVD	MD	Name	Size
2100.0	2100.0	9 5/8"	9.625
10760.211046.0		7"	7.000
10843.620609.9		4 1/2	4.500

Oasis

**Indian Hills
153N-100W-31/32
Lewis Federal 5300 11-31 3B**

Lewis Federal 5300 11-31 3B

Plan: Plan #1

Standard Planning Report

14 April, 2014

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Company:	Oasis	TVD Reference:	WELL @ 2134.0ft (Original Well Elev)
Project:	Indian Hills	MD Reference:	WELL @ 2134.0ft (Original Well Elev)
Site:	153N-100W-31/32	North Reference:	True
Well:	Lewis Federal 5300 11-31 3B	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lewis Federal 5300 11-31 3B		
Design:	Plan #1		

Project	Indian Hills	
Map System:	US State Plane 1983	
Geo Datum:	North American Datum 1983	
Map Zone:	North Dakota Northern Zone	

Site	153N-100W-31/32
Site Position:	Northing: 390,399.32 ft
From:	Easting: 1,209,468.83 ft
Position Uncertainty:	Slot Radius: 13.200 in

Well	Lewis Federal 5300 11-31 3B
Well Position	+N/-S 2,809.8 ft Northing: 393,209.49 ft Latitude: 48° 1' 42.010 N
	+E/-W -65.9 ft Easting: 1,209,516.17 ft Longitude: 103° 36' 10.620 W
Position Uncertainty	0.0 ft Wellhead Elevation: Ground Level: 2,112.0 ft

Wellbore	Lewis Federal 5300 11-31 3B
Magnetics	Model Name IGRF200510 Sample Date 3/11/2014 Declination (°) 8.16 Dip Angle (°) 72.94 Field Strength (nT) 56,474

Design	Plan #1
Audit Notes:	
Version:	
Phase: PROTOTYPE Tie On Depth: 0.0	
Vertical Section: Depth From (TVD) (ft) +N/-S (ft) +E/-W (ft) Direction (°)	
0.0 0.0 0.0 89.96	

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00
2,110.0	0.50	45.00	2,110.0	0.0	0.0	5.00	5.00	0.00	45.00	
6,151.5	0.50	45.00	6,151.3	25.0	25.0	0.00	0.00	0.00	0.00	
6,161.5	0.00	0.00	6,161.3	25.0	25.0	5.00	-5.00	0.00	180.00	
10,282.7	0.00	0.00	10,282.5	25.0	25.0	0.00	0.00	0.00	0.00	
11,028.6	89.50	91.98	10,760.0	8.6	498.1	12.00	12.00	0.00	91.98	
11,043.6	89.50	91.98	10,760.2	8.1	513.1	0.00	0.00	0.00	0.00	
11,109.6	89.50	90.00	10,760.7	7.0	579.0	3.00	0.00	-3.00	-90.00	
20,609.9	89.50	90.00	10,843.6	7.0	10,079.0	0.00	0.00	0.00	0.00	Lewis Federal 3B BHI

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Company:	Oasis	TVD Reference:	WELL @ 2134.0ft (Original Well Elev)
Project:	Indian Hills	MD Reference:	WELL @ 2134.0ft (Original Well Elev)
Site:	153N-100W-31/32	North Reference:	True
Well:	Lewis Federal 5300 11-31 3B	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lewis Federal 5300 11-31 3B		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/S (ft)	+E/W (ft)	Vertical Section (ft)	Dogleg Rate ('/100ft)	Build Rate ('/100ft)	Turn Rate ('/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,984.0	0.00	0.00	1,984.0	0.0	0.0	0.0	0.00	0.00	0.00
Pierre									
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
9 5/8"									
2,110.0	0.50	45.00	2,110.0	0.0	0.0	0.0	5.00	5.00	0.00
2,200.0	0.50	45.00	2,200.0	0.6	0.6	0.6	0.00	0.00	0.00
2,300.0	0.50	45.00	2,300.0	1.2	1.2	1.2	0.00	0.00	0.00
2,400.0	0.50	45.00	2,400.0	1.8	1.8	1.8	0.00	0.00	0.00
2,500.0	0.50	45.00	2,500.0	2.4	2.4	2.4	0.00	0.00	0.00
2,600.0	0.50	45.00	2,600.0	3.1	3.1	3.1	0.00	0.00	0.00
2,700.0	0.50	45.00	2,700.0	3.7	3.7	3.7	0.00	0.00	0.00
2,800.0	0.50	45.00	2,800.0	4.3	4.3	4.3	0.00	0.00	0.00
2,900.0	0.50	45.00	2,900.0	4.9	4.9	4.9	0.00	0.00	0.00
3,000.0	0.50	45.00	3,000.0	5.5	5.5	5.5	0.00	0.00	0.00
3,100.0	0.50	45.00	3,100.0	6.1	6.1	6.1	0.00	0.00	0.00
3,200.0	0.50	45.00	3,200.0	6.8	6.8	6.8	0.00	0.00	0.00
3,300.0	0.50	45.00	3,300.0	7.4	7.4	7.4	0.00	0.00	0.00
3,400.0	0.50	45.00	3,400.0	8.0	8.0	8.0	0.00	0.00	0.00
3,500.0	0.50	45.00	3,499.9	8.6	8.6	8.6	0.00	0.00	0.00
3,600.0	0.50	45.00	3,599.9	9.2	9.2	9.2	0.00	0.00	0.00
3,700.0	0.50	45.00	3,699.9	9.8	9.8	9.8	0.00	0.00	0.00
3,800.0	0.50	45.00	3,799.9	10.5	10.5	10.5	0.00	0.00	0.00
3,900.0	0.50	45.00	3,899.9	11.1	11.1	11.1	0.00	0.00	0.00
4,000.0	0.50	45.00	3,999.9	11.7	11.7	11.7	0.00	0.00	0.00
4,100.0	0.50	45.00	4,099.9	12.3	12.3	12.3	0.00	0.00	0.00
4,200.0	0.50	45.00	4,199.9	12.9	12.9	12.9	0.00	0.00	0.00
4,300.0	0.50	45.00	4,299.9	13.5	13.5	13.6	0.00	0.00	0.00
4,400.0	0.50	45.00	4,399.9	14.2	14.2	14.2	0.00	0.00	0.00
4,500.0	0.50	45.00	4,499.9	14.8	14.8	14.8	0.00	0.00	0.00
4,584.1	0.50	45.00	4,584.0	15.3	15.3	15.3	0.00	0.00	0.00
Greenhorn									
4,600.0	0.50	45.00	4,599.9	15.4	15.4	15.4	0.00	0.00	0.00
4,700.0	0.50	45.00	4,699.9	16.0	16.0	16.0	0.00	0.00	0.00
4,800.0	0.50	45.00	4,799.9	16.6	16.6	16.6	0.00	0.00	0.00

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Company:	Oasis	TVD Reference:	WELL @ 2134.0ft (Original Well Elev)
Project:	Indian Hills	MD Reference:	WELL @ 2134.0ft (Original Well Elev)
Site:	153N-100W-31/32	North Reference:	True
Well:	Lewis Federal 5300 11-31 3B	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lewis Federal 5300 11-31 3B		
Design:	Plan #1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/S (ft)	+E/W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
4,900.0	0.50	45.00	4,899.9	17.2	17.2	17.3	0.00	0.00	0.00	
4,997.1	0.50	45.00	4,997.0	17.8	17.8	17.9	0.00	0.00	0.00	
Mowry										
5,000.0	0.50	45.00	4,999.9	17.9	17.9	17.9	0.00	0.00	0.00	
5,100.0	0.50	45.00	5,099.9	18.5	18.5	18.5	0.00	0.00	0.00	
5,200.0	0.50	45.00	5,199.9	19.1	19.1	19.1	0.00	0.00	0.00	
5,300.0	0.50	45.00	5,299.9	19.7	19.7	19.7	0.00	0.00	0.00	
5,385.1	0.50	45.00	5,385.0	20.2	20.2	20.3	0.00	0.00	0.00	
Dakota										
5,400.0	0.50	45.00	5,399.9	20.3	20.3	20.3	0.00	0.00	0.00	
5,500.0	0.50	45.00	5,499.9	20.9	20.9	21.0	0.00	0.00	0.00	
5,600.0	0.50	45.00	5,599.9	21.6	21.6	21.6	0.00	0.00	0.00	
5,700.0	0.50	45.00	5,699.9	22.2	22.2	22.2	0.00	0.00	0.00	
5,800.0	0.50	45.00	5,799.9	22.8	22.8	22.8	0.00	0.00	0.00	
5,900.0	0.50	45.00	5,899.9	23.4	23.4	23.4	0.00	0.00	0.00	
6,000.0	0.50	45.00	5,999.9	24.0	24.0	24.1	0.00	0.00	0.00	
6,100.0	0.50	45.00	6,099.8	24.7	24.7	24.7	0.00	0.00	0.00	
6,151.5	0.50	45.00	6,151.3	25.0	25.0	25.0	0.00	0.00	0.00	
6,161.5	0.00	0.00	6,161.3	25.0	25.0	25.0	5.00	-5.00	0.00	
6,200.0	0.00	0.00	6,199.8	25.0	25.0	25.0	0.00	0.00	0.00	
6,300.0	0.00	0.00	6,299.8	25.0	25.0	25.0	0.00	0.00	0.00	
6,347.2	0.00	0.00	6,347.0	25.0	25.0	25.0	0.00	0.00	0.00	
Rierdon										
6,400.0	0.00	0.00	6,399.8	25.0	25.0	25.0	0.00	0.00	0.00	
6,500.0	0.00	0.00	6,499.8	25.0	25.0	25.0	0.00	0.00	0.00	
6,600.0	0.00	0.00	6,599.8	25.0	25.0	25.0	0.00	0.00	0.00	
6,700.0	0.00	0.00	6,699.8	25.0	25.0	25.0	0.00	0.00	0.00	
6,800.0	0.00	0.00	6,799.8	25.0	25.0	25.0	0.00	0.00	0.00	
6,877.2	0.00	0.00	6,877.0	25.0	25.0	25.0	0.00	0.00	0.00	
Dunham Salt										
6,900.0	0.00	0.00	6,899.8	25.0	25.0	25.0	0.00	0.00	0.00	
6,947.2	0.00	0.00	6,947.0	25.0	25.0	25.0	0.00	0.00	0.00	
Dunham Salt Base										
7,000.0	0.00	0.00	6,999.8	25.0	25.0	25.0	0.00	0.00	0.00	
7,100.0	0.00	0.00	7,099.8	25.0	25.0	25.0	0.00	0.00	0.00	
7,200.0	0.00	0.00	7,199.8	25.0	25.0	25.0	0.00	0.00	0.00	
7,249.2	0.00	0.00	7,249.0	25.0	25.0	25.0	0.00	0.00	0.00	
Pine Salt										
7,300.0	0.00	0.00	7,299.8	25.0	25.0	25.0	0.00	0.00	0.00	
7,314.2	0.00	0.00	7,314.0	25.0	25.0	25.0	0.00	0.00	0.00	
Pine Salt Base										
7,380.2	0.00	0.00	7,380.0	25.0	25.0	25.0	0.00	0.00	0.00	
Opecche Salt										
7,400.0	0.00	0.00	7,399.8	25.0	25.0	25.0	0.00	0.00	0.00	
7,471.2	0.00	0.00	7,471.0	25.0	25.0	25.0	0.00	0.00	0.00	
Opecche Salt Base										
7,500.0	0.00	0.00	7,499.8	25.0	25.0	25.0	0.00	0.00	0.00	
7,600.0	0.00	0.00	7,599.8	25.0	25.0	25.0	0.00	0.00	0.00	
7,693.2	0.00	0.00	7,693.0	25.0	25.0	25.0	0.00	0.00	0.00	
Amsden										
7,700.0	0.00	0.00	7,699.8	25.0	25.0	25.0	0.00	0.00	0.00	
7,800.0	0.00	0.00	7,799.8	25.0	25.0	25.0	0.00	0.00	0.00	
7,841.2	0.00	0.00	7,841.0	25.0	25.0	25.0	0.00	0.00	0.00	
Tyler										

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Company:	Oasis	TVD Reference:	WELL @ 2134.0ft (Original Well Elev)
Project:	Indian Hills	MD Reference:	WELL @ 2134.0ft (Original Well Elev)
Site:	153N-100W-31/32	North Reference:	True
Well:	Lewis Federal 5300 11-31 3B	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lewis Federal 5300 11-31 3B		
Design:	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/S (ft)	+E/W (ft)	Vertical Section (ft)	Dogleg Rate ('/100ft)	Build Rate ('/100ft)	Turn Rate ('/100ft)
7,900.0	0.00	0.00	7,899.8	25.0	25.0	25.0	0.00	0.00	0.00
8,000.0	0.00	0.00	7,999.8	25.0	25.0	25.0	0.00	0.00	0.00
8,065.2	0.00	0.00	8,065.0	25.0	25.0	25.0	0.00	0.00	0.00
Otter/Base Minnelusa									
8,100.0	0.00	0.00	8,099.8	25.0	25.0	25.0	0.00	0.00	0.00
8,200.0	0.00	0.00	8,199.8	25.0	25.0	25.0	0.00	0.00	0.00
8,300.0	0.00	0.00	8,299.8	25.0	25.0	25.0	0.00	0.00	0.00
8,400.0	0.00	0.00	8,399.8	25.0	25.0	25.0	0.00	0.00	0.00
8,408.2	0.00	0.00	8,408.0	25.0	25.0	25.0	0.00	0.00	0.00
Kibbey Lime									
8,500.0	0.00	0.00	8,499.8	25.0	25.0	25.0	0.00	0.00	0.00
8,561.2	0.00	0.00	8,561.0	25.0	25.0	25.0	0.00	0.00	0.00
Charles Salt									
8,600.0	0.00	0.00	8,599.8	25.0	25.0	25.0	0.00	0.00	0.00
8,700.0	0.00	0.00	8,699.8	25.0	25.0	25.0	0.00	0.00	0.00
8,800.0	0.00	0.00	8,799.8	25.0	25.0	25.0	0.00	0.00	0.00
8,900.0	0.00	0.00	8,899.8	25.0	25.0	25.0	0.00	0.00	0.00
9,000.0	0.00	0.00	8,999.8	25.0	25.0	25.0	0.00	0.00	0.00
9,100.0	0.00	0.00	9,099.8	25.0	25.0	25.0	0.00	0.00	0.00
9,200.0	0.00	0.00	9,199.8	25.0	25.0	25.0	0.00	0.00	0.00
9,230.2	0.00	0.00	9,230.0	25.0	25.0	25.0	0.00	0.00	0.00
Base Last Salt									
9,300.0	0.00	0.00	9,299.8	25.0	25.0	25.0	0.00	0.00	0.00
9,400.0	0.00	0.00	9,399.8	25.0	25.0	25.0	0.00	0.00	0.00
9,446.2	0.00	0.00	9,446.0	25.0	25.0	25.0	0.00	0.00	0.00
Mission Canyon									
9,500.0	0.00	0.00	9,499.8	25.0	25.0	25.0	0.00	0.00	0.00
9,600.0	0.00	0.00	9,599.8	25.0	25.0	25.0	0.00	0.00	0.00
9,700.0	0.00	0.00	9,699.8	25.0	25.0	25.0	0.00	0.00	0.00
9,800.0	0.00	0.00	9,799.8	25.0	25.0	25.0	0.00	0.00	0.00
9,900.0	0.00	0.00	9,899.8	25.0	25.0	25.0	0.00	0.00	0.00
9,987.2	0.00	0.00	9,987.0	25.0	25.0	25.0	0.00	0.00	0.00
Lodgepole									
10,000.0	0.00	0.00	9,999.8	25.0	25.0	25.0	0.00	0.00	0.00
10,100.0	0.00	0.00	10,099.8	25.0	25.0	25.0	0.00	0.00	0.00
10,200.0	0.00	0.00	10,199.8	25.0	25.0	25.0	0.00	0.00	0.00
10,282.7	0.00	0.00	10,282.5	25.0	25.0	25.0	0.00	0.00	0.00
10,300.0	2.08	91.98	10,299.8	25.0	25.3	25.3	12.00	12.00	0.00
10,325.0	5.08	91.98	10,324.8	24.9	26.9	26.9	12.00	12.00	0.00
10,350.0	8.08	91.98	10,349.6	24.8	29.7	29.8	12.00	12.00	0.00
10,375.0	11.08	91.98	10,374.3	24.7	33.9	33.9	12.00	12.00	0.00
10,400.0	14.08	91.98	10,398.7	24.5	39.3	39.3	12.00	12.00	0.00
10,425.0	17.08	91.98	10,422.7	24.3	46.0	46.1	12.00	12.00	0.00
10,450.0	20.08	91.98	10,446.4	24.0	54.0	54.0	12.00	12.00	0.00
10,475.0	23.08	91.98	10,469.7	23.7	63.2	63.2	12.00	12.00	0.00
10,500.0	26.08	91.98	10,492.4	23.3	73.6	73.6	12.00	12.00	0.00
10,525.0	29.08	91.98	10,514.6	22.9	85.1	85.2	12.00	12.00	0.00
10,550.0	32.08	91.98	10,536.1	22.5	97.8	97.9	12.00	12.00	0.00
10,575.0	35.08	91.98	10,556.9	22.0	111.7	111.7	12.00	12.00	0.00
10,600.0	38.07	91.98	10,577.0	21.5	126.6	126.6	12.00	12.00	0.00
10,625.0	41.07	91.98	10,596.3	20.9	142.5	142.5	12.00	12.00	0.00
10,650.0	44.07	91.98	10,614.7	20.4	159.4	159.4	12.00	12.00	0.00
10,675.0	47.07	91.98	10,632.2	19.7	177.2	177.2	12.00	12.00	0.00
10,700.0	50.07	91.98	10,648.7	19.1	195.9	196.0	12.00	12.00	0.00
10,725.0	53.07	91.98	10,664.2	18.4	215.5	215.5	12.00	12.00	0.00

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Company:	Oasis	TVD Reference:	WELL @ 2134.0ft (Original Well Elev)
Project:	Indian Hills	MD Reference:	WELL @ 2134.0ft (Original Well Elev)
Site:	153N-100W-31/32	North Reference:	True
Well:	Lewis Federal 5300 11-31 3B	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lewis Federal 5300 11-31 3B		
Design:	Plan #1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/S (ft)	+E/W (ft)	Vertical Section (ft)	Dogleg Rate ('/100ft)	Build Rate ('/100ft)	Turn Rate ('/100ft)	
10,750.0	56.07	91.98	10,678.7	17.7	235.9	235.9	12.00	12.00	0.00	
10,775.0	59.07	91.98	10,692.1	17.0	257.0	257.0	12.00	12.00	0.00	
10,800.0	62.07	91.98	10,704.4	16.2	278.7	278.7	12.00	12.00	0.00	
10,825.0	65.07	91.98	10,715.6	15.5	301.1	301.1	12.00	12.00	0.00	
10,826.1	65.21	91.98	10,716.0	15.4	302.1	302.1	12.00	12.00	0.00	
False Bakken										
10,850.0	68.07	91.98	10,725.5	14.7	324.0	324.0	12.00	12.00	0.00	
10,856.9	68.90	91.98	10,728.0	14.4	330.4	330.4	12.00	12.00	0.00	
Upper Bakken Shale										
10,875.0	71.07	91.98	10,734.2	13.9	347.4	347.4	12.00	12.00	0.00	
10,900.0	74.07	91.98	10,741.7	13.0	371.3	371.3	12.00	12.00	0.00	
10,925.0	77.07	91.98	10,747.9	12.2	395.5	395.5	12.00	12.00	0.00	
10,950.0	80.07	91.98	10,752.9	11.3	419.9	419.9	12.00	12.00	0.00	
10,963.5	81.69	91.98	10,755.0	10.9	433.2	433.2	12.00	12.00	0.00	
Middle Bakken (Top of Target)										
10,975.0	83.07	91.98	10,756.6	10.5	444.6	444.7	12.00	12.00	0.00	
11,000.0	86.07	91.98	10,758.9	9.6	469.5	469.5	12.00	12.00	0.00	
11,025.0	89.07	91.98	10,760.0	8.8	494.5	494.5	12.00	12.00	0.00	
11,028.6	89.50	91.98	10,760.0	8.6	498.1	498.1	12.00	12.00	0.00	
11,043.6	89.50	91.98	10,760.2	8.1	513.1	513.1	0.00	0.00	0.00	
11,046.0	89.50	91.91	10,760.2	8.0	515.5	515.5	3.00	0.00	-3.00	
7"										
11,109.6	89.50	90.00	10,760.7	7.0	579.0	579.0	3.00	0.00	-3.00	
11,200.0	89.50	90.00	10,761.5	7.0	669.4	669.5	0.00	0.00	0.00	
11,300.0	89.50	90.00	10,762.4	7.0	769.4	769.4	0.00	0.00	0.00	
11,400.0	89.50	90.00	10,763.3	7.0	869.4	869.4	0.00	0.00	0.00	
11,500.0	89.50	90.00	10,764.1	7.0	969.4	969.4	0.00	0.00	0.00	
11,600.0	89.50	90.00	10,765.0	7.0	1,069.4	1,069.4	0.00	0.00	0.00	
11,700.0	89.50	90.00	10,765.9	7.0	1,169.4	1,169.4	0.00	0.00	0.00	
11,800.0	89.50	90.00	10,766.8	7.0	1,269.4	1,269.4	0.00	0.00	0.00	
11,900.0	89.50	90.00	10,767.6	7.0	1,369.4	1,369.4	0.00	0.00	0.00	
12,000.0	89.50	90.00	10,768.5	7.0	1,469.4	1,469.4	0.00	0.00	0.00	
12,100.0	89.50	90.00	10,769.4	7.0	1,569.4	1,569.4	0.00	0.00	0.00	
12,200.0	89.50	90.00	10,770.2	7.0	1,669.4	1,669.4	0.00	0.00	0.00	
12,300.0	89.50	90.00	10,771.1	7.0	1,769.4	1,769.4	0.00	0.00	0.00	
12,400.0	89.50	90.00	10,772.0	7.0	1,869.4	1,869.4	0.00	0.00	0.00	
12,500.0	89.50	90.00	10,772.9	7.0	1,969.4	1,969.4	0.00	0.00	0.00	
12,600.0	89.50	90.00	10,773.7	7.0	2,069.4	2,069.4	0.00	0.00	0.00	
12,700.0	89.50	90.00	10,774.6	7.0	2,169.4	2,169.4	0.00	0.00	0.00	
12,800.0	89.50	90.00	10,775.5	7.0	2,269.4	2,269.4	0.00	0.00	0.00	
12,900.0	89.50	90.00	10,776.4	7.0	2,369.4	2,369.4	0.00	0.00	0.00	
13,000.0	89.50	90.00	10,777.2	7.0	2,469.4	2,469.4	0.00	0.00	0.00	
13,100.0	89.50	90.00	10,778.1	7.0	2,569.4	2,569.4	0.00	0.00	0.00	
13,200.0	89.50	90.00	10,779.0	7.0	2,669.4	2,669.4	0.00	0.00	0.00	
13,300.0	89.50	90.00	10,779.8	7.0	2,769.4	2,769.4	0.00	0.00	0.00	
13,400.0	89.50	90.00	10,780.7	7.0	2,869.4	2,869.4	0.00	0.00	0.00	
13,500.0	89.50	90.00	10,781.6	7.0	2,969.4	2,969.4	0.00	0.00	0.00	
13,600.0	89.50	90.00	10,782.5	7.0	3,069.4	3,069.4	0.00	0.00	0.00	
13,700.0	89.50	90.00	10,783.3	7.0	3,169.4	3,169.4	0.00	0.00	0.00	
13,800.0	89.50	90.00	10,784.2	7.0	3,269.3	3,269.4	0.00	0.00	0.00	
13,900.0	89.50	90.00	10,785.1	7.0	3,369.3	3,369.3	0.00	0.00	0.00	
14,000.0	89.50	90.00	10,786.0	7.0	3,469.3	3,469.3	0.00	0.00	0.00	
14,100.0	89.50	90.00	10,786.8	7.0	3,569.3	3,569.3	0.00	0.00	0.00	
14,200.0	89.50	90.00	10,787.7	7.0	3,669.3	3,669.3	0.00	0.00	0.00	
14,300.0	89.50	90.00	10,788.6	7.0	3,769.3	3,769.3	0.00	0.00	0.00	

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Company:	Oasis	TVD Reference:	WELL @ 2134.0ft (Original Well Elev)
Project:	Indian Hills	MD Reference:	WELL @ 2134.0ft (Original Well Elev)
Site:	153N-100W-31/32	North Reference:	True
Well:	Lewis Federal 5300 11-31 3B	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lewis Federal 5300 11-31 3B		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/S (ft)	+E/W (ft)	Vertical Section (ft)	Dogleg Rate ('/100ft)	Build Rate ('/100ft)	Turn Rate ('/100ft)
14,400.0	89.50	90.00	10,789.4	7.0	3,869.3	3,869.3	0.00	0.00	0.00
14,500.0	89.50	90.00	10,790.3	7.0	3,969.3	3,969.3	0.00	0.00	0.00
14,600.0	89.50	90.00	10,791.2	7.0	4,069.3	4,069.3	0.00	0.00	0.00
14,700.0	89.50	90.00	10,792.1	7.0	4,169.3	4,169.3	0.00	0.00	0.00
14,800.0	89.50	90.00	10,792.9	7.0	4,269.3	4,269.3	0.00	0.00	0.00
14,900.0	89.50	90.00	10,793.8	7.0	4,369.3	4,369.3	0.00	0.00	0.00
15,000.0	89.50	90.00	10,794.7	7.0	4,469.3	4,469.3	0.00	0.00	0.00
15,100.0	89.50	90.00	10,795.6	7.0	4,569.3	4,569.3	0.00	0.00	0.00
15,200.0	89.50	90.00	10,796.4	7.0	4,669.3	4,669.3	0.00	0.00	0.00
15,300.0	89.50	90.00	10,797.3	7.0	4,769.3	4,769.3	0.00	0.00	0.00
15,400.0	89.50	90.00	10,798.2	7.0	4,869.3	4,869.3	0.00	0.00	0.00
15,500.0	89.50	90.00	10,799.0	7.0	4,969.3	4,969.3	0.00	0.00	0.00
15,600.0	89.50	90.00	10,799.9	7.0	5,069.3	5,069.3	0.00	0.00	0.00
15,700.0	89.50	90.00	10,800.8	7.0	5,169.3	5,169.3	0.00	0.00	0.00
15,800.0	89.50	90.00	10,801.7	7.0	5,269.3	5,269.3	0.00	0.00	0.00
15,900.0	89.50	90.00	10,802.5	7.0	5,369.3	5,369.3	0.00	0.00	0.00
16,000.0	89.50	90.00	10,803.4	7.0	5,469.3	5,469.3	0.00	0.00	0.00
16,100.0	89.50	90.00	10,804.3	7.0	5,569.3	5,569.3	0.00	0.00	0.00
16,200.0	89.50	90.00	10,805.1	7.0	5,669.3	5,669.3	0.00	0.00	0.00
16,300.0	89.50	90.00	10,806.0	7.0	5,769.3	5,769.3	0.00	0.00	0.00
16,400.0	89.50	90.00	10,806.9	7.0	5,869.2	5,869.3	0.00	0.00	0.00
16,500.0	89.50	90.00	10,807.8	7.0	5,969.2	5,969.2	0.00	0.00	0.00
16,600.0	89.50	90.00	10,808.6	7.0	6,069.2	6,069.2	0.00	0.00	0.00
16,700.0	89.50	90.00	10,809.5	7.0	6,169.2	6,169.2	0.00	0.00	0.00
16,800.0	89.50	90.00	10,810.4	7.0	6,269.2	6,269.2	0.00	0.00	0.00
16,900.0	89.50	90.00	10,811.3	7.0	6,369.2	6,369.2	0.00	0.00	0.00
17,000.0	89.50	90.00	10,812.1	7.0	6,469.2	6,469.2	0.00	0.00	0.00
17,100.0	89.50	90.00	10,813.0	7.0	6,569.2	6,569.2	0.00	0.00	0.00
17,200.0	89.50	90.00	10,813.9	7.0	6,669.2	6,669.2	0.00	0.00	0.00
17,300.0	89.50	90.00	10,814.7	7.0	6,769.2	6,769.2	0.00	0.00	0.00
17,400.0	89.50	90.00	10,815.6	7.0	6,869.2	6,869.2	0.00	0.00	0.00
17,500.0	89.50	90.00	10,816.5	7.0	6,969.2	6,969.2	0.00	0.00	0.00
17,600.0	89.50	90.00	10,817.4	7.0	7,069.2	7,069.2	0.00	0.00	0.00
17,700.0	89.50	90.00	10,818.2	7.0	7,169.2	7,169.2	0.00	0.00	0.00
17,800.0	89.50	90.00	10,819.1	7.0	7,269.2	7,269.2	0.00	0.00	0.00
17,900.0	89.50	90.00	10,820.0	7.0	7,369.2	7,369.2	0.00	0.00	0.00
18,000.0	89.50	90.00	10,820.9	7.0	7,469.2	7,469.2	0.00	0.00	0.00
18,100.0	89.50	90.00	10,821.7	7.0	7,569.2	7,569.2	0.00	0.00	0.00
18,200.0	89.50	90.00	10,822.6	7.0	7,669.2	7,669.2	0.00	0.00	0.00
18,300.0	89.50	90.00	10,823.5	7.0	7,769.2	7,769.2	0.00	0.00	0.00
18,400.0	89.50	90.00	10,824.3	7.0	7,869.2	7,869.2	0.00	0.00	0.00
18,500.0	89.50	90.00	10,825.2	7.0	7,969.2	7,969.2	0.00	0.00	0.00
18,600.0	89.50	90.00	10,826.1	7.0	8,069.2	8,069.2	0.00	0.00	0.00
18,700.0	89.50	90.00	10,827.0	7.0	8,169.2	8,169.2	0.00	0.00	0.00
18,800.0	89.50	90.00	10,827.8	7.0	8,269.2	8,269.2	0.00	0.00	0.00
18,900.0	89.50	90.00	10,828.7	7.0	8,369.2	8,369.2	0.00	0.00	0.00
19,000.0	89.50	90.00	10,829.6	7.0	8,469.2	8,469.2	0.00	0.00	0.00
19,100.0	89.50	90.00	10,830.5	7.0	8,569.1	8,569.1	0.00	0.00	0.00
19,200.0	89.50	90.00	10,831.3	7.0	8,669.1	8,669.1	0.00	0.00	0.00
19,300.0	89.50	90.00	10,832.2	7.0	8,769.1	8,769.1	0.00	0.00	0.00
19,400.0	89.50	90.00	10,833.1	7.0	8,869.1	8,869.1	0.00	0.00	0.00
19,500.0	89.50	90.00	10,833.9	7.0	8,969.1	8,969.1	0.00	0.00	0.00
19,600.0	89.50	90.00	10,834.8	7.0	9,069.1	9,069.1	0.00	0.00	0.00
19,700.0	89.50	90.00	10,835.7	7.0	9,169.1	9,169.1	0.00	0.00	0.00
19,800.0	89.50	90.00	10,836.6	7.0	9,269.1	9,269.1	0.00	0.00	0.00

Oasis Petroleum

Planning Report

Database: OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Company: Oasis	TVD Reference:	WELL @ 2134.0ft (Original Well Elev)
Project: Indian Hills	MD Reference:	WELL @ 2134.0ft (Original Well Elev)
Site: 153N-100W-31/32	North Reference:	True
Well: Lewis Federal 5300 11-31 3B	Survey Calculation Method:	Minimum Curvature
Wellbore: Lewis Federal 5300 11-31 3B		
Design: Plan #1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/S (ft)	+E/W (ft)	Vertical Section (ft)	Dogleg Rate ('/100ft)	Build Rate ('/100ft)	Turn Rate ('/100ft)	
19,900.0	89.50	90.00	10,837.4	7.0	9,369.1	9,369.1	0.00	0.00	0.00	
20,000.0	89.50	90.00	10,838.3	7.0	9,469.1	9,469.1	0.00	0.00	0.00	
20,100.0	89.50	90.00	10,839.2	7.0	9,569.1	9,569.1	0.00	0.00	0.00	
20,200.0	89.50	90.00	10,840.1	7.0	9,669.1	9,669.1	0.00	0.00	0.00	
20,300.0	89.50	90.00	10,840.9	7.0	9,769.1	9,769.1	0.00	0.00	0.00	
20,400.0	89.50	90.00	10,841.8	7.0	9,869.1	9,869.1	0.00	0.00	0.00	
20,500.0	89.50	90.00	10,842.7	7.0	9,969.1	9,969.1	0.00	0.00	0.00	
20,609.9	89.50	90.00	10,843.6	7.0	10,079.0	10,079.0	0.00	0.00	0.00	
4 1/2 - Lewis Federal 3B BHL										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/S (ft)	+E/W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude	
- hit/miss target										
- Shape										
Lewis Federal 3B BHL	0.00	0.00	10,843.9	7.0	10,079.0	392,810.37	1,219,587.29	48° 2' 9.782 N	103° 33' 43.277 W	
- plan misses target center by 0.3ft at 20609.9ft MD (10843.6 TVD, 7.0 N, 10079.0 E)										
- Point										

Casing Points										
Measured Depth (ft)	Vertical Depth (ft)	Name				Casing Diameter (in)	Hole Diameter (in)			
2,100.0	2,100.0 9 5/8"					9.625	13.500			
11,046.0	10,760.2 7"					7.000	8.750			
20,609.9	10,843.6 4 1/2					4.500	6.000			

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Company:	Oasis	TVD Reference:	WELL @ 2134.0ft (Original Well Elev)
Project:	Indian Hills	MD Reference:	WELL @ 2134.0ft (Original Well Elev)
Site:	153N-100W-31/32	North Reference:	True
Well:	Lewis Federal 5300 11-31 3B	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lewis Federal 5300 11-31 3B		
Design:	Plan #1		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,984.0	1,984.0	Pierre				
4,584.1	4,584.0	Greenhorn				
4,997.1	4,997.0	Mowry				
5,385.1	5,385.0	Dakota				
6,347.2	6,347.0	Rierdon				
6,877.2	6,877.0	Dunham Salt				
6,947.2	6,947.0	Dunham Salt Base				
7,249.2	7,249.0	Pine Salt				
7,314.2	7,314.0	Pine Salt Base				
7,380.2	7,380.0	Opeche Salt				
7,471.2	7,471.0	Opeche Salt Base				
7,693.2	7,693.0	Amsden				
7,841.2	7,841.0	Tyler				
8,065.2	8,065.0	Otter/Base Minnelusa				
8,408.2	8,408.0	Kibbey Lime				
8,561.2	8,561.0	Charles Salt				
9,230.2	9,230.0	Base Last Salt				
9,446.2	9,446.0	Mission Canyon				
9,987.2	9,987.0	Lodgepole				
10,826.1	10,716.0	False Bakken				
10,856.9	10,728.0	Upper Bakken Shale				
10,963.5	10,755.0	Middle Bakken (Top of Target)				



STATEMENT

This statement is being sent in order to comply with NDAC 43-02-03-16 (Application for permit to drill and recomplete) which states (in part that) "confirmation that a legal street address has been requested for the well site, and well facility if separate from the well site, and the proposed road access to the nearest existing public road". On the date noted below a legal street address was requested from the appropriate county office.

McKenzie County

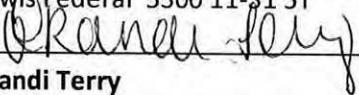
Aaron Chisolm – McKenzie County Dept.

Lewis Federal 5300 11-31 2T

Lewis Federal 5300 11-31 3B

Lewis Federal 5300 11-31 4T2

Lewis Federal 5300 11-31 5T


Brandi Terry

Regulatory Specialist

Oasis Petroleum North America, LLC

Hello Dave,

Below is the comments from construction regarding the wells on fill as requested. Page 4 of the plats shows the production layout. We only have pumping units planned for onsite with production going to an offsite CTB. Please let me know if you need further information on the CTB.

Once permits have been received, I will work with Cody Vanderbusch to get approval on the offsite pit. He has requested well file numbers be issued prior to submitting a sundry. With the sundry, we will include a landowner agreement and plat showing the offsite cutting pit. If for any reason the pit is not approved, we will haul cuttings to an appropriate disposal or work with the NDIC for another solution.

Sincerely,

Victoria Siemieniewski
Regulatory Specialist
Direct: 281-404-9652



From: Damon Jorgensen
Sent: Monday, November 24, 2014 4:44 PM
To: Victoria Siemieniewski
Cc: James Demorrett; Kristy Aasheim; Josh.Schmierer@interstateeng.com; Thomas Osen; Karyme Martin
Subject: RE: Lewis Federal 5300 11-31 2T, 3B, 4T2, 5T Well Pad

Victoria,

Regarding the question of geotech: While there are places in the Indian Hills field where glacial till overburden is present, this area is comprised primarily of bedrock clays, sandy clays and layers of sandstone. During construction this material is placed, compacted in lifts, and tested to ensure proper compaction has been achieved. Any material (coal, topsoil, large rocks/sandstone, etc) encountered during construction is removed and kept out of the compacted fill sections of the pad. Having successfully constructed numerous pads with extensive fill sections in this area, some with fills over 45', we feel confident in our supervision and seasoned contractors that the additional time and expense associated with formal geotechnical review of each pad is not warranted at this time.

Josh, Remove the pit and have the plats updated. produce an offsite pit plat. I'm assuming you have already gotten with facilities and have the production facility info Victoria needs (see comments below)....?

If there is anything else, please let me know.

Thanks



Damon Jorgensen
Construction Superintendent
701.577.1687 Office
701.400.1353 Mobile

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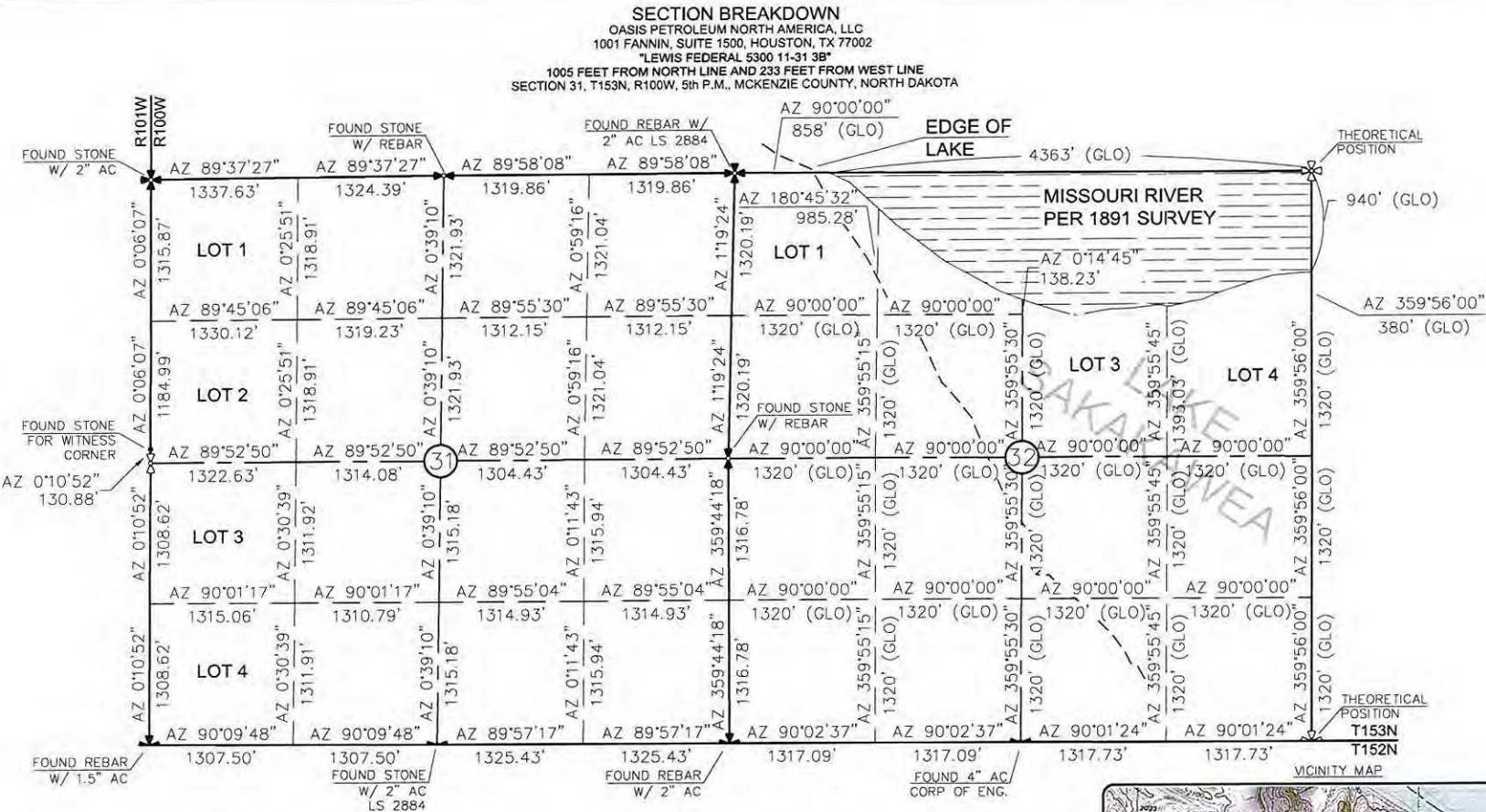
Reference No.	Date
Section No.	By
Project No.	Location
Sheet No.	Page No.

Project No.	Date
Section No.	By
Sheet No.	Page No.

Project No.	Date
Section No.	By
Sheet No.	Page No.



2/8
SHEET NO.



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0 1000
1" = 1000'

— MONUMENT — RECOVERED
X — MONUMENT — NOT RECOVERED

ALL AZIMUTHS ARE BASED ON G.P.S. OBSERVATIONS. THE ORIGINAL SURVEY OF THIS AREA FOR THE GENERAL LAND OFFICE (G.L.O.) WAS 1897. THE CORNERS FOUND ARE AS INDICATED AND ALL OTHERS ARE COMPUTED FROM THOSE CORNERS FOUND AND BASED ON G.L.O. DATA. THE MAPPING ANGLE FOR THIS AREA IS APPROXIMATELY 0'03".

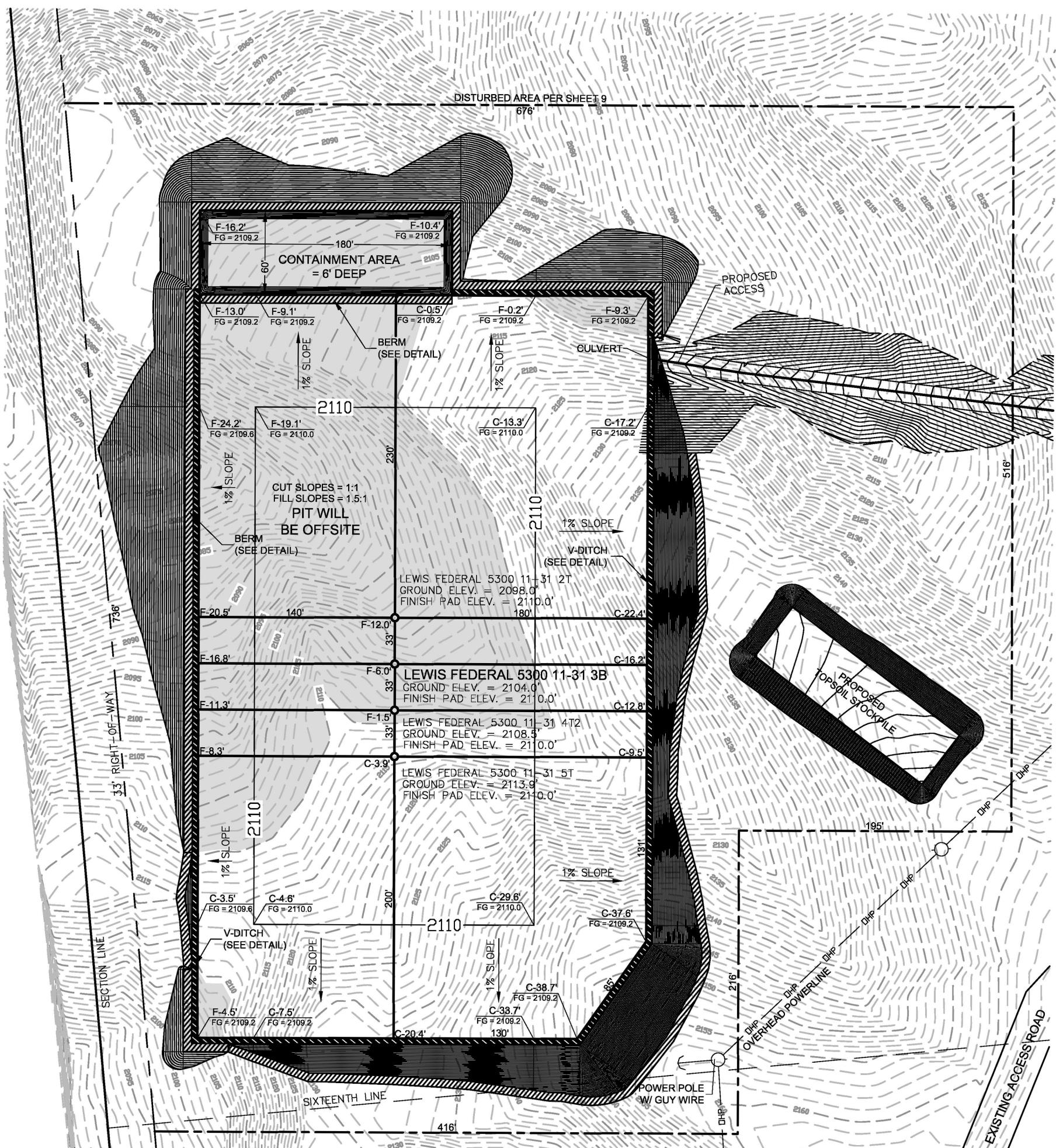


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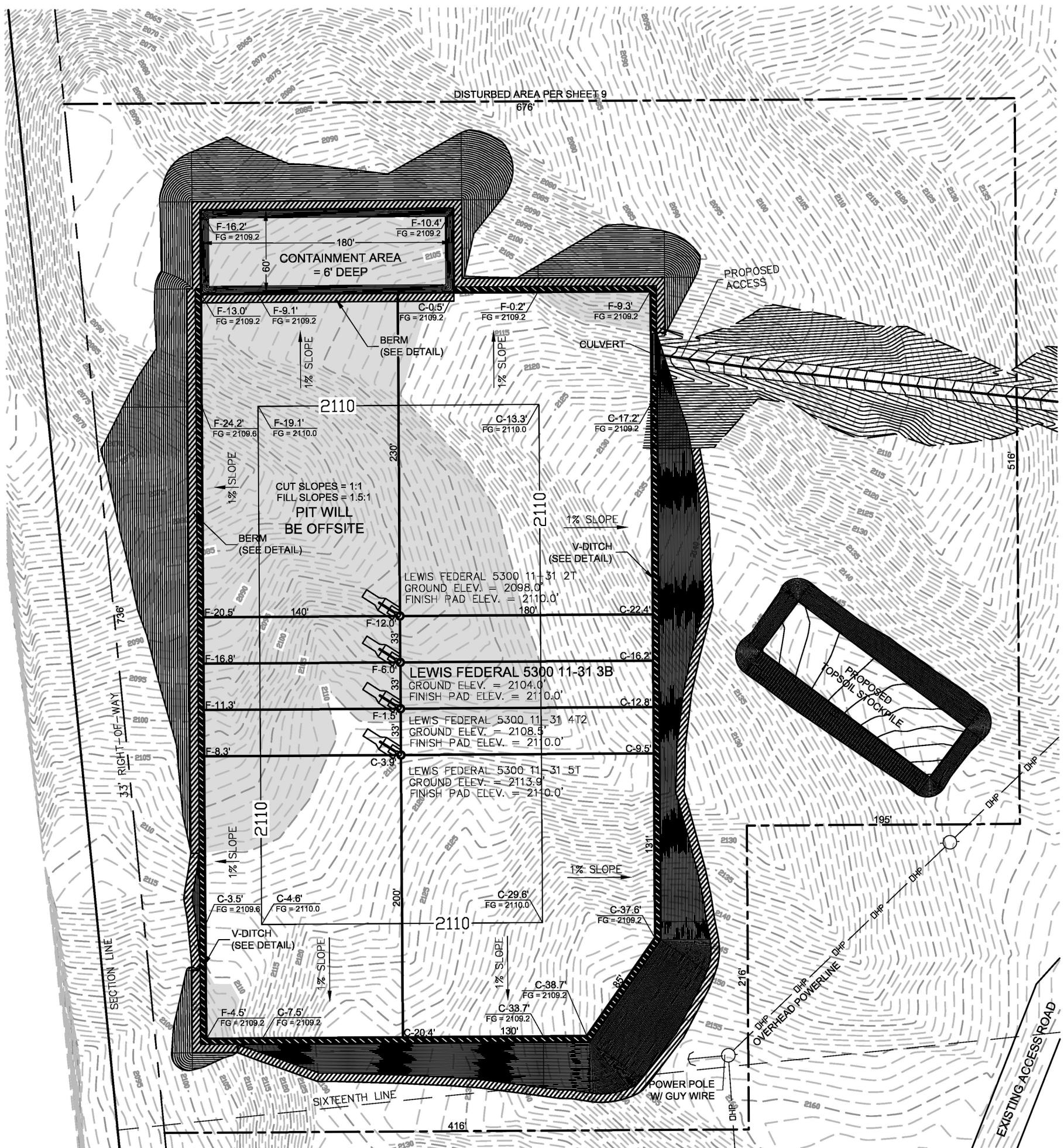
PAD LAYOUT

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"LEWIS FEDERAL 5300 11-31 3B"
1005 FEET FROM NORTH LINE AND 233 FEET FROM WEST LINE
SECTION 31, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

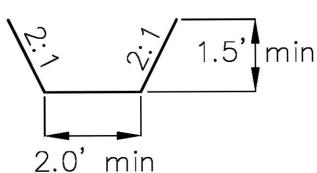


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PRODUCTION LAYOUT
OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"LEWIS FEDERAL 5300 11-31 3B"
1005 FEET FROM NORTH LINE AND 233 FEET FROM WEST LINE
SECTION 31, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



V-DITCH DETAIL



The diagram illustrates two types of terrain features: BERM and DITCH. Each feature is represented by a shaded rectangular area with diagonal hatching. Below each shaded area is a label: 'BERM' for the top one and 'DITCH' for the bottom one. To the right of the 'DITCH' label is the text 'Proposed Contours'. At the bottom of the diagram is a dashed horizontal line labeled 'Original Contours'.

NOTE: Pad dimensions shown are to usable area, the v-ditch and berm areas shall be built to the outside of the pad dimensions.

NOTE: All utilities shown are preliminary only, a complete utilities location is recommended before construction.

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A circular stamp with the following text:
RECEIVED
MARYL D.
KASEMAN
LS-3880
DATE: 12/6/14
NORTH DAKOTA LAND SURVEYOR



A scale bar diagram consisting of a horizontal line divided into four equal segments by three vertical tick marks. Below the line, the text "1'' = 80'" is written.

4/9



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OASIS PETROLEUM NORTH AMERICA, LLC
PRODUCTION LAYOUT

MCKENZIE COUNTY, NORTH DAKOTA

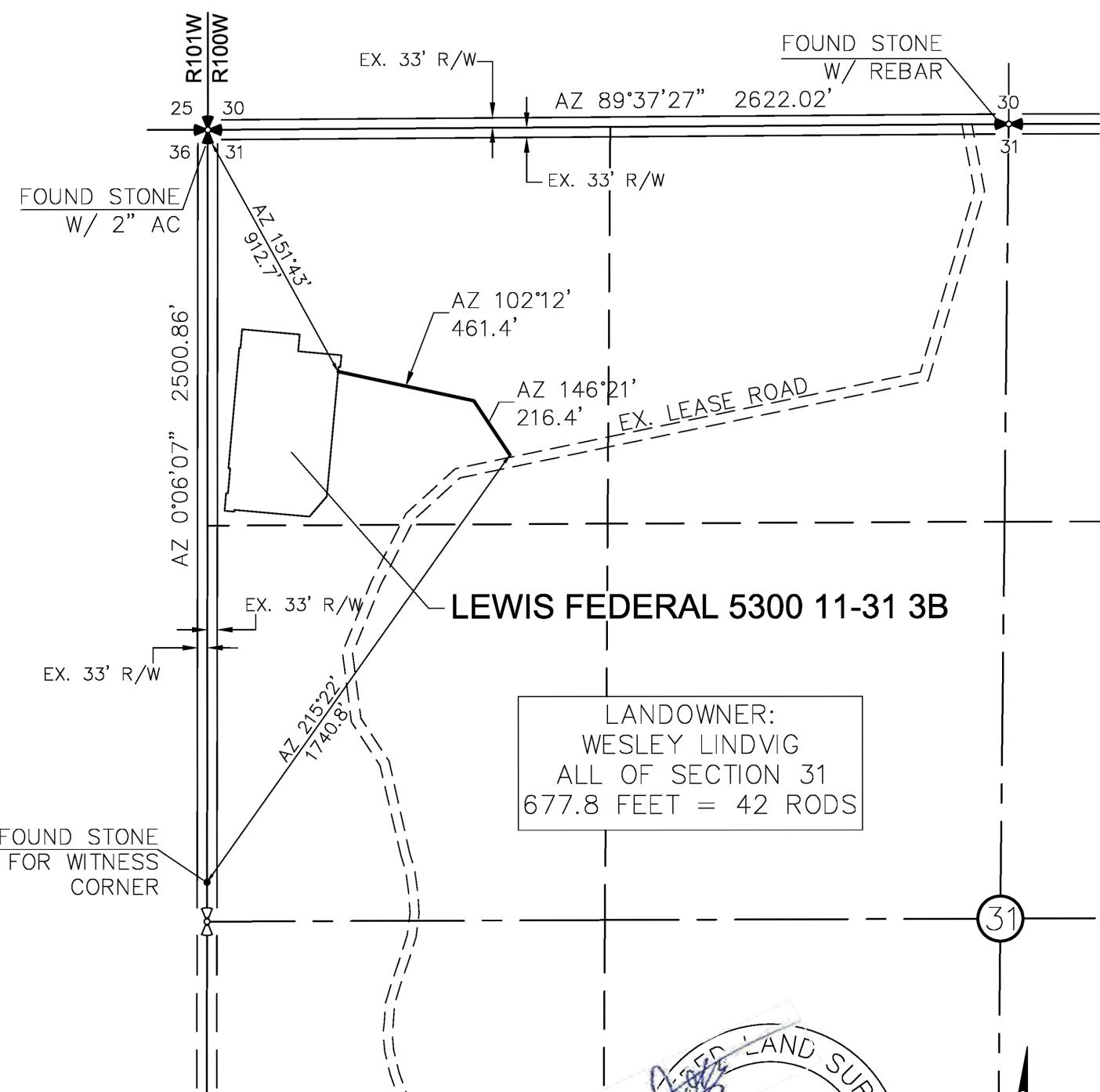
Revision No.	Date	By	Description
REV 1	12/3/14	BHH	REMOVED PIT FROM PAD

ACCESS APPROACH

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002

"LEWIS FEDERAL 5300 11-31 3B"

1005 FEET FROM NORTH LINE AND 233 FEET FROM WEST LINE
SECTION 31, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



0
500
1" = 500'

NOTE: All utilities shown are preliminary only, a complete utilities location is recommended before construction.

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Other offices in Minnesota, North Dakota and South Dakota

OASIS PETROLEUM NORTH AMERICA, LLC
ACCESS APPROACH

SECTION 31, T153N, R100W

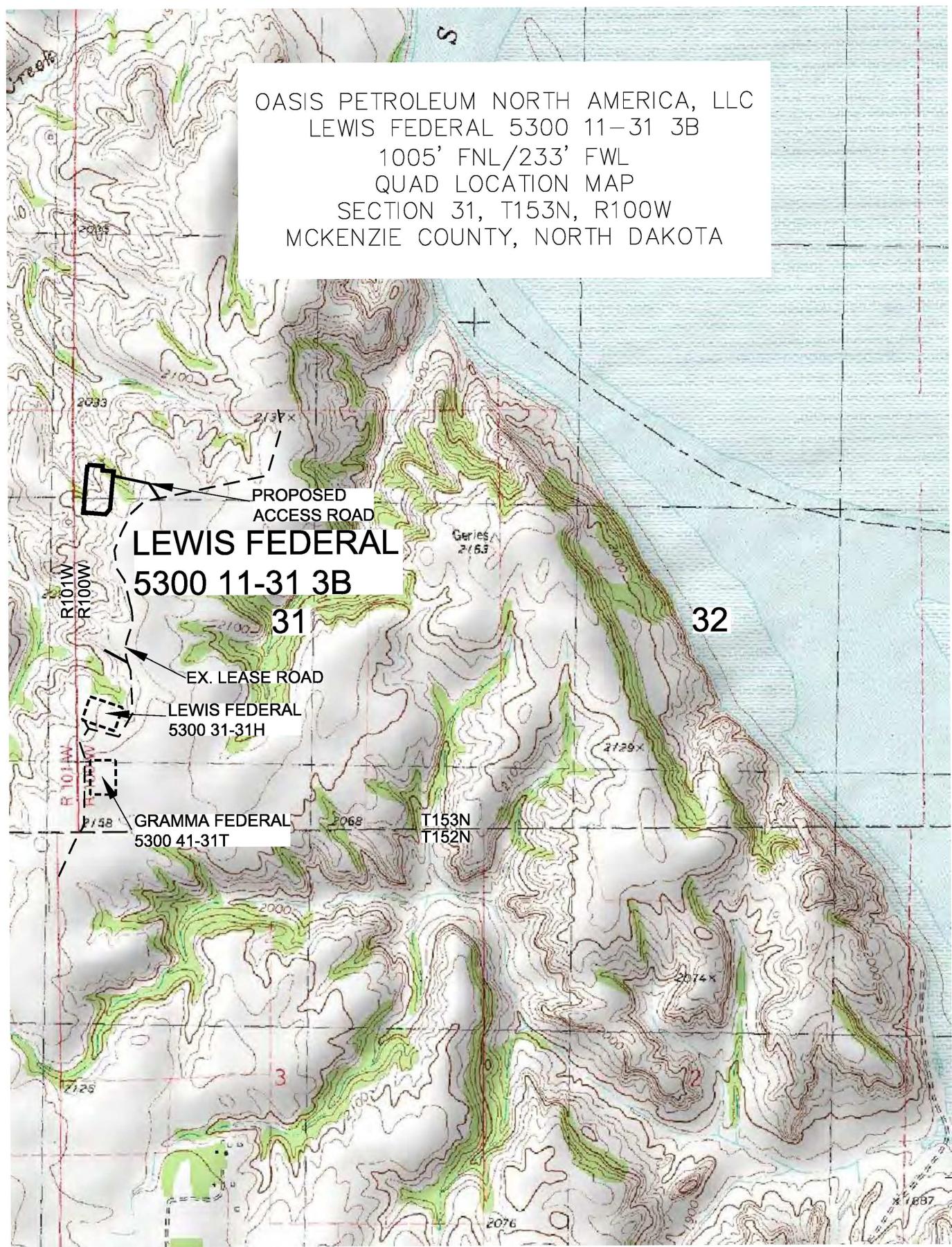
MCKENZIE COUNTY, NORTH DAKOTA

Revision No.	Date	By	Description
REV 1	12/3/14	B.H.H.	REMOVED PIT FROM PAD

Drawn By: B.H.H. Project No.: S13-09-378.02

Checked By: D.D.K. Date: JAN. 2014

OASIS PETROLEUM NORTH AMERICA, LLC
LEWIS FEDERAL 5300 11-31 3B
1005' FNL/233' FWL
QUAD LOCATION MAP
SECTION 31, T153N, R100W
MCKENZIE COUNTY, NORTH DAKOTA



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6/9



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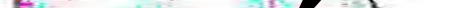
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<p>Interstate Engineering, Inc. P.O. Box 648 425 East Main Street Sidney, Montana 59270 Ph. (406) 433-5617 Fax (406) 433-5618 www.interstateeng.com</p> <p>Other offices in Minnesota, North Dakota and South Dakota</p>	<p>OASIS PETROLEUM NORTH AMERICA, LLC QUAD LOCATION MAP SECTION 31, T153N, R100W</p> <p>MCKENZIE COUNTY, NORTH DAKOTA</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Drawn By:</td> <td style="width: 33%;">B.H.H.</td> <td style="width: 33%;">Project No.:</td> </tr> <tr> <td>Checked By:</td> <td>D.D.K.</td> <td>Date:</td> </tr> </table> <p>S13-09-378.02</p> <p>JAN. 2014</p>	Drawn By:	B.H.H.	Project No.:	Checked By:	D.D.K.	Date:
Drawn By:	B.H.H.	Project No.:					
Checked By:	D.D.K.	Date:					

Revision No.	Date	By	Description
REV 1	12/3/14	BHJ	REMOVED PIT FROM PAD

COUNTY ROAD MAP
OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"LEWIS FEDERAL 5300 11-31 3B"
1005 FEET FROM NORTH LINE AND 233 FEET FROM WEST LINE
SECTION 31, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

 FROM EX. LEASE ROAD
TO WELL SITE
 ± 0.10 MILES

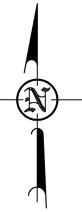
**LEWIS FEDERAL
5300 11-31 3B**

FROM EX. LEASE ROAD
TO WELL SITE
 \pm 0.10 MILES

SEC'S. 125
SEC'S. 7B

FROM HIGHWAY 85
ALONG COUNTY ROAD 29
TO EX. LEASE ROAD
=±2.07 MILES

FROM COUNTY ROAD 29
ALONG EX. LEASE ROAD
TO PROPOSED LEASE ROAD
=±2.43 MILES



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SCALE: 1" = 2 MILE

7/9



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OASIS PETROLEUM NORTH AMERICA, LLC
COUNTY ROAD MAP
SECTION 31, T153N, R100W
MCKENZIE COUNTY, NORTH DAKOTA

Revision No.	Date	By	Description
REV 1	12/3/14	BHH	REMOVED PIT FROM PAD

Oasis

Indian Hills

153N-100W-31/32

Lewis Federal 5300 11-31 3B

Lewis Federal 5300 11-31 3B

Plan #1

Anticollision Report

11 March, 2014

Oasis Petroleum

Anticollision Report

Company:	Oasis	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Project:	Indian Hills	TVD Reference:	WELL @ 2134.0usft (Original Well Elev)
Reference Site:	153N-100W-31/32	MD Reference:	WELL @ 2134.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	Lewis Federal 5300 11-31 3B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 3B	Database:	OpenWellsCompass - EDM Prod
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference	Plan #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.0 usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	3/11/2014		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	20,640.4	Plan #1 (Lewis Federal 5300 11-31 3B)		MWD MWD - Standard

Site Name	Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
153N-100W-31/32							
Lewis Federal 5300 11-31 2T - Lewis Federal 5300 11-31		2,100.0	2,100.0	32.5	23.4	3.550 CC	
Lewis Federal 5300 11-31 2T - Lewis Federal 5300 11-31		20,640.9	20,803.1	454.6	-123.9	0.786 Level 1, ES, SF	
Lewis Federal 5300 11-31 4T2 - Lewis Federal 5300 11-3		2,100.0	2,100.0	33.6	24.4	3.667 CC	
Lewis Federal 5300 11-31 4T2 - Lewis Federal 5300 11-3		20,640.9	20,756.3	118.5	-31.6	0.789 Level 1, ES, SF	
Lewis Federal 5300 11-31 5T - Lewis Federal 5300 11-31		2,100.0	2,100.0	66.1	57.0	7.216 CC	
Lewis Federal 5300 11-31 5T - Lewis Federal 5300 11-31		20,640.9	20,812.3	502.4	-80.6	0.862 Level 1, ES, SF	

Offset Design 153N-100W-31/32 - Lewis Federal 5300 11-31 2T - Lewis Federal 5300 11-31 2T - Plan #1											Offset Site Error:	0.0 usft	
Survey Program: 0-MWD											Offset Well Error:	0.0 usft	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference Offset (usft)	Semi Major Axis Offset (usft)	Highside Toolface (")	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	4.79	32.4	2.7	32.5				
100.0	100.0	100.0	100.0	0.1	0.1	4.79	32.4	2.7	32.5	32.4	0.18	185.596	
200.0	200.0	200.0	200.0	0.3	0.3	4.79	32.4	2.7	32.5	31.9	0.62	52.074	
300.0	300.0	300.0	300.0	0.5	0.5	4.79	32.4	2.7	32.5	31.5	1.07	30.286	
400.0	400.0	400.0	400.0	0.8	0.8	4.79	32.4	2.7	32.5	31.0	1.52	21.352	
500.0	500.0	500.0	500.0	1.0	1.0	4.79	32.4	2.7	32.5	30.6	1.97	16.488	
600.0	600.0	600.0	600.0	1.2	1.2	4.79	32.4	2.7	32.5	30.1	2.42	13.429	
700.0	700.0	700.0	700.0	1.4	1.4	4.79	32.4	2.7	32.5	29.7	2.87	11.327	
800.0	800.0	800.0	800.0	1.7	1.7	4.79	32.4	2.7	32.5	29.2	3.32	9.795	
900.0	900.0	900.0	900.0	1.9	1.9	4.79	32.4	2.7	32.5	28.8	3.77	8.627	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	4.79	32.4	2.7	32.5	28.3	4.22	7.708	
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	4.79	32.4	2.7	32.5	27.9	4.67	6.967	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	4.79	32.4	2.7	32.5	27.4	5.12	6.355	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	4.79	32.4	2.7	32.5	27.0	5.57	5.842	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	4.79	32.4	2.7	32.5	26.5	6.02	5.406	
1,500.0	1,500.0	1,500.0	1,500.0	3.2	3.2	4.79	32.4	2.7	32.5	26.1	6.47	5.030	
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	4.79	32.4	2.7	32.5	25.6	6.92	4.703	
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	4.79	32.4	2.7	32.5	25.2	7.37	4.416	
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	4.79	32.4	2.7	32.5	24.7	7.82	4.162	
1,900.0	1,900.0	1,900.0	1,900.0	4.1	4.1	4.79	32.4	2.7	32.5	24.3	8.27	3.936	
2,000.0	2,000.0	2,000.0	2,000.0	4.4	4.4	4.79	32.4	2.7	32.5	23.8	8.72	3.733	
2,100.0	2,100.0	2,100.0	2,100.0	4.6	4.6	4.79	32.4	2.7	32.5	23.4	9.17	3.550 CC	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Oasis Petroleum

Anticollision Report

Company:	Oasis	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Project:	Indian Hills	TVD Reference:	WELL @ 2134.0usft (Original Well Elev)
Reference Site:	153N-100W-31/32	MD Reference:	WELL @ 2134.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	Lewis Federal 5300 11-31 3B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 3B	Database:	OpenWellsCompass - EDM Prod
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design 153N-100W-31/32 - Lewis Federal 5300 11-31 2T - Lewis Federal 5300 11-31 2T - Plan #1													Offset Site Error:	0.0 usft		
Survey Program: 0-MWD															Offset Well Error:	0.0 usft
References		Offset		Semi Major Axis			Distance									
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/S (usft)	Centre +E/W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning			
2,110.0	2,110.0	2,109.7	2,109.7	4.6	4.6	-40.26	32.5	2.7	32.5	23.3	9.21	3.534				
2,200.0	2,200.0	2,199.7	2,199.7	4.8	4.8	-41.26	33.3	2.7	32.7	23.1	9.61	3.407				
2,300.0	2,300.0	2,299.7	2,299.7	5.0	5.0	-42.36	34.1	2.7	33.0	22.9	10.05	3.279				
2,400.0	2,400.0	2,399.7	2,399.7	5.2	5.3	-43.45	35.0	2.7	33.2	22.7	10.49	3.163				
2,500.0	2,500.0	2,499.7	2,499.7	5.5	5.5	-44.52	35.9	2.7	33.4	22.5	10.94	3.057				
2,600.0	2,600.0	2,599.7	2,599.7	5.7	5.7	-45.57	36.7	2.7	33.7	22.3	11.38	2.960				
2,700.0	2,700.0	2,699.7	2,699.7	5.9	5.9	-46.61	37.6	2.7	34.0	22.1	11.82	2.872				
2,800.0	2,800.0	2,799.7	2,799.7	6.1	6.2	-47.63	38.5	2.7	34.2	22.0	12.27	2.790				
2,900.0	2,900.0	2,899.7	2,899.7	6.3	6.4	-48.63	39.4	2.7	34.5	21.8	12.71	2.715				
3,000.0	3,000.0	2,999.7	2,999.7	6.6	6.6	-49.62	40.2	2.7	34.8	21.7	13.16	2.646				
3,100.0	3,100.0	3,099.7	3,099.7	6.8	6.8	-50.59	41.1	2.7	35.1	21.5	13.61	2.582				
3,200.0	3,200.0	3,199.7	3,199.7	7.0	7.1	-51.54	42.0	2.7	35.5	21.4	14.05	2.523				
3,300.0	3,300.0	3,299.7	3,299.6	7.2	7.3	-52.47	42.9	2.7	35.8	21.3	14.50	2.468				
3,400.0	3,400.0	3,399.7	3,399.6	7.4	7.5	-53.39	43.7	2.7	36.1	21.2	14.94	2.417				
3,500.0	3,499.9	3,499.7	3,499.6	7.7	7.7	-54.29	44.6	2.7	36.5	21.1	15.39	2.369				
3,600.0	3,599.9	3,599.7	3,599.6	7.9	8.0	-55.18	45.5	2.7	36.8	21.0	15.84	2.325				
3,700.0	3,699.9	3,699.7	3,699.6	8.1	8.2	-56.04	46.3	2.7	37.2	20.9	16.28	2.284				
3,800.0	3,799.9	3,799.7	3,799.6	8.3	8.4	-56.89	47.2	2.7	37.6	20.8	16.73	2.245				
3,900.0	3,899.9	3,899.7	3,899.6	8.6	8.6	-57.72	48.1	2.7	37.9	20.8	17.18	2.209				
4,000.0	3,999.9	3,999.7	3,999.6	8.8	8.9	-58.54	49.0	2.7	38.3	20.7	17.63	2.175				
4,100.0	4,099.9	4,099.7	4,099.6	9.0	9.1	-59.34	49.8	2.7	38.7	20.7	18.07	2.143				
4,200.0	4,199.9	4,199.7	4,199.6	9.2	9.3	-60.12	50.7	2.7	39.1	20.6	18.52	2.113				
4,300.0	4,299.9	4,299.7	4,299.6	9.4	9.5	-60.89	51.6	2.7	39.5	20.6	18.97	2.085				
4,400.0	4,399.9	4,399.7	4,399.6	9.7	9.8	-61.64	52.4	2.7	40.0	20.5	19.42	2.058				
4,500.0	4,499.9	4,499.7	4,499.6	9.9	10.0	-62.37	53.3	2.7	40.4	20.5	19.86	2.033				
4,600.0	4,599.9	4,599.7	4,599.6	10.1	10.2	-63.09	54.2	2.7	40.8	20.5	20.31	2.010				
4,700.0	4,699.9	4,699.7	4,699.6	10.3	10.4	-63.80	55.1	2.7	41.3	20.5	20.76	1.987				
4,800.0	4,799.9	4,799.7	4,799.6	10.6	10.7	-64.49	55.9	2.7	41.7	20.5	21.21	1.966				
4,900.0	4,899.9	4,899.7	4,899.5	10.8	10.9	-65.16	56.8	2.7	42.1	20.5	21.65	1.946				
5,000.0	4,999.9	4,999.7	4,999.5	11.0	11.1	-65.82	57.7	2.7	42.6	20.5	22.10	1.928				
5,100.0	5,099.9	5,099.7	5,099.5	11.2	11.3	-66.47	58.6	2.7	43.1	20.5	22.55	1.910				
5,200.0	5,199.9	5,199.6	5,199.5	11.5	11.6	-67.10	59.4	2.7	43.5	20.5	23.00	1.893				
5,300.0	5,299.9	5,299.6	5,299.5	11.7	11.8	-67.72	60.3	2.7	44.0	20.6	23.45	1.877				
5,400.0	5,399.9	5,399.6	5,399.5	11.9	12.0	-68.33	61.2	2.7	44.5	20.6	23.89	1.862				
5,500.0	5,499.9	5,499.6	5,499.5	12.1	12.2	-68.92	62.0	2.7	45.0	20.6	24.34	1.847				
5,600.0	5,599.9	5,599.6	5,599.5	12.3	12.5	-69.50	62.9	2.7	45.4	20.7	24.79	1.833				
5,700.0	5,699.9	5,699.6	5,699.5	12.6	12.7	-70.07	63.8	2.7	45.9	20.7	25.24	1.820				
5,800.0	5,799.9	5,799.6	5,799.5	12.8	12.9	-70.62	64.7	2.7	46.4	20.7	25.69	1.808				
5,900.0	5,899.9	5,899.6	5,899.5	13.0	13.1	-71.17	65.5	2.7	46.9	20.8	26.14	1.796				
6,000.0	5,999.9	5,999.6	5,999.5	13.2	13.4	-71.70	66.4	2.7	47.4	20.9	26.58	1.784				
6,100.0	6,099.8	6,099.6	6,099.5	13.5	13.6	-72.22	67.3	2.7	47.9	20.9	27.03	1.774				
6,151.5	6,151.3	6,150.9	6,150.9	13.6	13.7	-72.49	67.7	2.7	48.2	20.9	27.26	1.768				
6,161.5	6,161.3	6,161.1	6,160.9	13.6	13.7	-72.49	67.8	2.7	48.3	21.0	27.29	1.769				
6,200.0	6,199.8	6,199.6	6,199.5	13.7	13.8	-72.31	68.2	2.7	48.6	21.1	27.45	1.769				
6,300.0	6,299.8	6,299.6	6,299.5	13.9	14.0	-72.84	69.0	2.7	49.3	21.5	27.90	1.769				
6,400.0	6,399.8	6,399.6	6,399.5	14.1	14.2	-72.39	69.9	2.7	50.1	21.8	28.34	1.769				
6,500.0	6,499.8	6,499.6	6,499.4	14.3	14.5	-75.96	70.8	2.7	50.9	22.1	28.79	1.769				
6,600.0	6,599.8	6,599.6	6,599.4	14.6	14.7	-75.53	71.6	2.7	51.7	22.5	29.23	1.768				
6,700.0	6,699.8	6,699.6	6,699.4	14.8	14.9	-75.12	72.5	2.7	52.5	22.8	29.68	1.768				
6,800.0	6,799.8	6,799.6	6,799.4	15.0	15.1	-74.72	73.4	2.7	53.3	23.2	30.12	1.769				
6,900.0	6,899.8	6,899.6	6,899.4	15.2	15.4	-74.34	74.3	2.7	54.1	23.5	30.57	1.769				
7,000.0	6,999.8	6,999.6	6,999.4	15.5	15.6	-73.96	75.1	2.7	54.9	23.9	31.02	1.769				
7,100.0	7,099.8	7,099.6	7,099.4	15.7	15.8	-73.60	76.0	2.7	55.7	24.2	31.46	1.769				

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Oasis Petroleum

Anticollision Report

Company:	Oasis	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Project:	Indian Hills	TVD Reference:	WELL @ 2134.0usft (Original Well Elev)
Reference Site:	153N-100W-31/32	MD Reference:	WELL @ 2134.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	Lewis Federal 5300 11-31 3B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 3B	Database:	OpenWellsCompass - EDM Prod
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design 153N-100W-31/32 - Lewis Federal 5300 11-31 2T - Lewis Federal 5300 11-31 2T - Plan #1													Offset Site Error:	0.0 usft		
Survey Program: 0-MWD															Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance									
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/S (usft)	Centre +E/W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning			
7,200.0	7,199.8	7,199.6	7,199.4	15.9	16.0	-23.24	76.9	2.7	56.5	24.6	31.91	1.770				
7,300.0	7,299.8	7,299.6	7,299.4	16.1	16.3	-22.90	77.8	2.7	57.3	24.9	32.35	1.770				
7,400.0	7,399.8	7,399.6	7,399.4	16.3	16.5	-22.56	78.6	2.7	58.1	25.3	32.80	1.770				
7,500.0	7,499.8	7,499.6	7,499.4	16.6	16.7	-22.24	79.5	2.7	58.9	25.6	33.25	1.771				
7,600.0	7,599.8	7,599.6	7,599.4	16.8	16.9	-21.92	80.4	2.7	59.7	26.0	33.69	1.772				
7,700.0	7,699.8	7,699.6	7,699.4	17.0	17.2	-21.61	81.2	2.7	60.5	26.4	34.14	1.772				
7,800.0	7,799.8	7,799.6	7,799.3	17.2	17.4	-21.31	82.1	2.7	61.3	26.7	34.59	1.773				
7,900.0	7,899.8	7,900.1	7,899.8	17.5	17.6	-21.21	82.4	2.7	61.6	26.6	35.02	1.759				
8,000.0	7,999.8	8,000.1	7,999.8	17.7	17.8	-21.21	82.4	2.7	61.6	26.1	35.46	1.737				
8,100.0	8,099.8	8,100.1	8,099.8	17.9	18.1	-21.21	82.4	2.7	61.6	25.7	35.91	1.715				
8,200.0	8,199.8	8,200.1	8,199.8	18.1	18.3	-21.21	82.4	2.7	61.6	25.2	36.36	1.694				
8,300.0	8,299.8	8,300.1	8,299.8	18.3	18.5	-21.21	82.4	2.7	61.6	24.8	36.80	1.674				
8,400.0	8,399.8	8,400.1	8,399.8	18.6	18.7	-21.21	82.4	2.7	61.6	24.3	37.25	1.654				
8,500.0	8,499.8	8,500.1	8,499.8	18.8	19.0	-21.21	82.4	2.7	61.6	23.9	37.70	1.634				
8,600.0	8,599.8	8,600.1	8,599.8	19.0	19.2	-21.21	82.4	2.7	61.6	23.5	38.14	1.615				
8,700.0	8,699.8	8,700.1	8,699.8	19.2	19.4	-21.21	82.4	2.7	61.6	23.0	38.59	1.596				
8,800.0	8,799.8	8,800.1	8,799.8	19.5	19.6	-21.21	82.4	2.7	61.6	22.6	39.04	1.578				
8,900.0	8,899.8	8,900.1	8,899.8	19.7	19.8	-21.21	82.4	2.7	61.6	22.1	39.49	1.560				
9,000.0	8,999.8	9,000.1	8,999.8	19.9	20.1	-21.21	82.4	2.7	61.6	21.7	39.93	1.542				
9,100.0	9,099.8	9,100.1	9,099.8	20.1	20.3	-21.21	82.4	2.7	61.6	21.2	40.38	1.525				
9,200.0	9,199.8	9,200.1	9,199.8	20.3	20.5	-21.21	82.4	2.7	61.6	20.8	40.83	1.509				
9,300.0	9,299.8	9,300.1	9,299.8	20.6	20.7	-21.21	82.4	2.7	61.6	20.3	41.28	1.492	Level 3	Level 3		
9,400.0	9,399.8	9,400.1	9,399.8	20.8	21.0	-21.21	82.4	2.7	61.6	19.9	41.72	1.476	Level 3	Level 3		
9,500.0	9,499.8	9,500.1	9,499.8	21.0	21.2	-21.21	82.4	2.7	61.6	19.4	42.17	1.461	Level 3	Level 3		
9,600.0	9,599.8	9,600.1	9,599.8	21.2	21.4	-21.21	82.4	2.7	61.6	19.0	42.62	1.445	Level 3	Level 3		
9,700.0	9,699.8	9,700.1	9,699.8	21.5	21.6	-21.21	82.4	2.7	61.6	18.5	43.07	1.430	Level 3	Level 3		
9,800.0	9,799.8	9,800.1	9,799.8	21.7	21.9	-21.21	82.4	2.7	61.6	18.1	43.51	1.416	Level 3	Level 3		
9,900.0	9,899.8	9,900.1	9,899.8	21.9	22.1	-21.21	82.4	2.7	61.6	17.6	43.96	1.401	Level 3	Level 3		
10,000.0	9,999.8	10,000.1	9,999.8	22.1	22.3	-21.21	82.4	2.7	61.6	17.2	44.41	1.387	Level 3	Level 3		
10,100.0	10,099.8	10,100.1	10,099.8	22.4	22.5	-21.21	82.4	2.7	61.6	16.7	44.86	1.373	Level 3	Level 3		
10,200.0	10,199.8	10,200.1	10,199.8	22.6	22.8	-21.21	82.4	2.7	61.6	16.3	45.31	1.360	Level 3	Level 3		
10,282.7	10,282.5	10,282.7	10,282.5	22.8	23.0	-21.21	82.4	2.7	61.6	15.9	45.68	1.349	Level 3	Level 3		
10,300.0	10,299.8	10,300.1	10,299.8	22.8	23.0	-113.44	82.4	2.7	61.7	15.9	45.78	1.348	Level 3	Level 3		
10,325.0	10,324.8	10,325.0	10,324.8	22.9	23.1	-114.69	82.4	2.7	62.4	16.5	45.87	1.359	Level 3	Level 3		
10,350.0	10,349.6	10,349.8	10,349.6	22.9	23.1	-116.88	82.4	2.7	63.6	17.7	45.94	1.385	Level 3	Level 3		
10,375.0	10,374.3	10,374.7	10,374.4	23.0	23.2	-119.58	82.6	3.1	65.6	19.6	45.98	1.426	Level 3	Level 3		
10,400.0	10,398.7	10,399.6	10,399.4	23.0	23.2	-121.94	83.3	4.6	68.3	22.3	45.99	1.485	Level 3	Level 3		
10,425.0	10,422.7	10,424.7	10,424.3	23.1	23.3	-123.88	84.5	7.3	71.6	25.7	45.97	1.559				
10,450.0	10,446.4	10,449.9	10,449.1	23.1	23.3	-125.40	86.3	11.2	75.6	29.7	45.91	1.647				
10,475.0	10,469.7	10,475.2	10,473.8	23.2	23.4	-126.51	88.6	16.3	80.2	34.4	45.83	1.750				
10,500.0	10,492.4	10,500.6	10,498.2	23.3	23.4	-127.25	91.4	22.6	85.3	39.6	45.73	1.865				
10,525.0	10,514.6	10,526.0	10,522.2	23.3	23.5	-127.65	94.8	30.1	90.9	45.3	45.62	1.992				
10,550.0	10,536.1	10,551.5	10,545.8	23.4	23.6	-127.75	98.8	38.7	97.0	51.5	45.52	2.131				
10,575.0	10,556.9	10,576.9	10,568.9	23.5	23.6	-127.59	103.2	48.6	103.5	58.1	45.42	2.280				
10,600.0	10,577.0	10,602.4	10,591.4	23.6	23.7	-127.21	108.2	59.5	110.5	65.2	45.35	2.438				
10,625.0	10,596.3	10,627.9	10,613.2	23.7	23.8	-126.63	113.6	71.5	118.0	72.7	45.31	2.604				
10,650.0	10,614.7	10,653.4	10,634.3	23.8	23.8	-125.89	119.5	84.5	125.8	80.5	45.30	2.777				
10,675.0	10,632.2	10,678.8	10,654.5	23.9	23.9	-125.02	125.9	98.5	134.0	88.7	45.34	2.955				
10,700.0	10,648.7	10,704.3	10,673.9	24.1	24.0	-124.03	132.7	113.5	142.6	97.1	45.44	3.138				
10,725.0	10,664.2	10,729.7	10,692.4	24.2	24.1	-122.95	139.9	129.4	151.5	105.9	45.59	3.324				
10,750.0	10,678.7	10,755.1	10,709.9	24.4	24.2	-121.78	147.5	146.1	160.8	115.0	45.80	3.511				
10,775.0	10,692.1	10,780.4	10,726.4	24.5	24.4	-120.55	155.4	163.7	170.4	124.3	46.07	3.699				
10,800.0	10,704.4	10,805.8	10,741.8	24.7	24.5	-119.26	163.7	182.0	180.3	133.9	46.41	3.885				

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Oasis Petroleum

Anticollision Report

Company:	Oasis	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Project:	Indian Hills	TVD Reference:	WELL @ 2134.0usft (Original Well Elev)
Reference Site:	153N-100W-31/32	MD Reference:	WELL @ 2134.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	Lewis Federal 5300 11-31 3B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 3B	Database:	OpenWellsCompass - EDM Prod
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design 153N-100W-31/32 - Lewis Federal 5300 11-31 2T - Lewis Federal 5300 11-31 2T - Plan #1												Offset Site Error:	0.0 usft		
Survey Program: 0-MWD												Offset Well Error:	0.0 usft		
Reference				Offset				Semi Major Axis				Distance			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/S (usft)	Centre +E/W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
10,825.0	10,715.5	10,831.1	10,756.2	24.9	24.6	-117.93	172.3	201.0	190.5	143.7	46.81	4.069			
10,850.0	10,725.5	10,856.5	10,769.4	25.2	24.8	-116.56	181.3	220.7	200.9	153.6	47.27	4.250			
10,875.0	10,734.2	10,881.9	10,781.5	25.4	25.0	-115.15	190.5	241.1	211.5	163.8	47.78	4.428			
10,900.0	10,741.7	10,907.3	10,792.3	25.7	25.2	-113.73	200.0	262.0	222.4	174.1	48.34	4.601			
10,925.0	10,747.9	10,932.7	10,802.0	25.9	25.4	-112.28	209.7	283.4	233.4	184.5	48.95	4.769			
10,950.0	10,752.9	10,958.2	10,810.4	26.2	25.6	-110.82	219.6	305.3	244.6	195.0	49.59	4.932			
10,975.0	10,756.5	10,983.8	10,817.5	26.5	25.8	-109.35	229.8	327.7	255.9	205.6	50.28	5.090			
11,000.0	10,758.9	11,009.6	10,823.4	26.8	26.1	-107.88	240.1	350.6	267.3	216.3	50.98	5.243			
11,025.0	10,760.0	11,035.4	10,827.8	27.2	26.4	-106.41	250.7	373.8	278.7	227.0	51.71	5.390			
11,028.6	10,760.0	11,039.1	10,828.4	27.2	26.4	-106.20	252.2	377.1	280.4	228.6	51.82	5.411			
11,043.6	10,760.1	11,054.8	10,830.3	27.4	26.6	-106.16	258.6	391.2	287.2	235.1	52.15	5.507			
11,109.6	10,760.7	11,122.3	10,833.2	28.4	27.4	-104.75	286.4	452.7	315.1	261.2	53.98	5.838			
11,200.0	10,761.5	11,222.8	10,834.1	29.8	28.7	-103.05	325.2	545.3	349.2	292.4	56.79	6.149			
11,300.0	10,762.4	11,338.9	10,835.2	31.6	30.6	-101.69	363.8	654.8	381.9	321.5	60.34	6.328			
11,400.0	10,763.2	11,459.6	10,836.4	33.6	32.7	-100.74	396.9	770.9	408.8	344.5	64.34	6.354			
11,500.0	10,764.1	11,584.3	10,837.6	35.7	35.2	-100.09	423.3	892.7	429.7	360.9	68.76	6.249			
11,600.0	10,765.0	11,712.1	10,838.8	37.9	37.8	-99.68	442.0	1,019.1	444.1	370.6	73.55	6.038			
11,700.0	10,765.9	11,841.8	10,840.0	40.2	40.7	-99.47	452.4	1,148.3	452.0	373.3	78.67	5.746			
11,800.0	10,766.7	11,962.2	10,841.1	42.6	43.4	-99.44	454.4	1,268.7	453.5	369.8	83.75	5.415			
11,900.0	10,767.6	12,062.2	10,842.1	45.0	45.7	-99.45	454.4	1,368.7	453.6	365.0	88.51	5.124			
12,000.0	10,768.5	12,162.2	10,843.0	47.5	48.1	-99.46	454.4	1,468.7	453.6	360.2	93.38	4.857			
12,100.0	10,769.3	12,262.2	10,843.9	50.1	50.5	-99.47	454.4	1,568.7	453.6	355.2	98.35	4.612			
12,200.0	10,770.2	12,362.2	10,844.9	52.6	53.0	-99.47	454.4	1,668.7	453.6	350.2	103.40	4.387			
12,300.0	10,771.1	12,462.2	10,845.8	55.3	55.6	-99.48	454.4	1,768.7	453.6	345.1	108.53	4.180			
12,400.0	10,772.0	12,562.2	10,846.8	57.9	58.2	-99.49	454.4	1,868.7	453.6	339.9	113.72	3.989			
12,500.0	10,772.8	12,662.2	10,847.7	60.6	60.8	-99.50	454.4	1,968.7	453.6	334.7	118.96	3.813			
12,600.0	10,773.7	12,762.2	10,848.7	63.3	63.4	-99.51	454.4	2,068.7	453.6	329.4	124.25	3.651			
12,700.0	10,774.6	12,862.2	10,849.6	66.0	66.1	-99.52	454.4	2,168.7	453.6	324.1	129.58	3.501			
12,800.0	10,775.5	12,962.2	10,850.5	68.7	68.7	-99.53	454.4	2,268.7	453.7	318.7	134.94	3.362			
12,900.0	10,776.3	13,062.2	10,851.5	71.5	71.4	-99.54	454.4	2,368.7	453.7	313.3	140.34	3.233			
13,000.0	10,777.2	13,162.2	10,852.4	74.2	74.2	-99.54	454.4	2,468.7	453.7	307.9	145.77	3.112			
13,100.0	10,778.1	13,262.2	10,853.4	77.0	76.9	-99.55	454.4	2,568.7	453.7	302.5	151.23	3.000			
13,200.0	10,778.9	13,362.2	10,854.3	79.8	79.6	-99.56	454.4	2,668.7	453.7	297.0	156.70	2.895			
13,300.0	10,779.8	13,462.2	10,855.3	82.6	82.4	-99.57	454.4	2,768.7	453.7	291.5	162.20	2.797			
13,400.0	10,780.7	13,562.2	10,856.2	85.4	85.2	-99.58	454.4	2,868.7	453.7	286.0	167.72	2.705			
13,500.0	10,781.6	13,662.2	10,857.1	88.2	87.9	-99.59	454.4	2,968.7	453.7	280.5	173.25	2.619			
13,600.0	10,782.4	13,762.2	10,858.1	91.0	90.7	-99.60	454.4	3,068.7	453.7	275.0	178.80	2.538			
13,700.0	10,783.3	13,862.2	10,859.0	93.9	93.5	-99.60	454.4	3,168.7	453.8	269.4	184.36	2.461			
13,800.0	10,784.2	13,962.2	10,860.0	96.7	96.3	-99.61	454.4	3,268.7	453.8	263.8	189.93	2.389			
13,900.0	10,785.1	14,062.2	10,860.9	99.5	99.2	-99.62	454.4	3,368.7	453.8	258.3	195.52	2.321			
14,000.0	10,785.9	14,162.2	10,861.8	102.4	102.0	-99.63	454.4	3,468.6	453.8	252.7	201.11	2.256			
14,100.0	10,786.8	14,262.2	10,862.8	105.2	104.8	-99.64	454.4	3,568.6	453.8	247.1	206.72	2.195			
14,200.0	10,787.7	14,362.2	10,863.7	108.1	107.6	-99.65	454.4	3,668.6	453.8	241.5	212.33	2.137			
14,300.0	10,788.5	14,462.2	10,864.7	110.9	110.5	-99.66	454.4	3,768.6	453.8	235.9	217.95	2.082			
14,400.0	10,789.4	14,562.2	10,865.6	113.8	113.3	-99.67	454.4	3,868.6	453.8	230.3	223.58	2.030			
14,500.0	10,790.3	14,662.2	10,866.6	116.7	116.2	-99.67	454.4	3,968.6	453.9	224.6	229.22	1.980			
14,600.0	10,791.2	14,762.2	10,867.5	119.5	119.0	-99.68	454.4	4,068.6	453.9	219.0	234.86	1.932			
14,700.0	10,792.0	14,862.2	10,868.4	122.4	121.9	-99.69	454.4	4,168.6	453.9	213.4	240.51	1.887			
14,800.0	10,792.9	14,962.2	10,869.4	125.3	124.7	-99.70	454.4	4,268.6	453.9	207.7	246.17	1.844			
14,900.0	10,793.8	15,062.2	10,870.3	128.2	127.6	-99.71	454.4	4,368.6	453.9	202.1	251.82	1.802			
15,000.0	10,794.7	15,162.2	10,871.3	131.0	130.5	-99.72	454.4	4,468.6	453.9	196.4	257.49	1.763			
15,100.0	10,795.5	15,262.2	10,872.2	133.9	133.3	-99.73	454.4	4,568.6	453.9	190.8	263.16	1.725			
15,200.0	10,796.4	15,362.2	10,873.2	136.8	136.2	-99.74	454.4	4,668.6	453.9	185.1	268.83	1.689			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Oasis Petroleum

Anticollision Report

Company:	Oasis	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Project:	Indian Hills	TVD Reference:	WELL @ 2134.0usft (Original Well Elev)
Reference Site:	153N-100W-31/32	MD Reference:	WELL @ 2134.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	Lewis Federal 5300 11-31 3B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 3B	Database:	OpenWellsCompass - EDM Prod
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design 153N-100W-31/32 - Lewis Federal 5300 11-31 2T - Lewis Federal 5300 11-31 2T - Plan #1													Offset Site Error:	0.0 usft
Survey Program: 0-MWD													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore +N/S (usft)	Centre +E/W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
15,300.0	10,797.3	15,462.2	10,874.1	139.7	139.1	-99.74	454.4	4,768.6	453.9	179.4	274.51	1.654		
15,400.0	10,798.1	15,562.2	10,875.0	142.6	141.9	-99.75	454.4	4,868.6	454.0	173.8	280.19	1.620		
15,500.0	10,799.0	15,662.2	10,876.0	145.5	144.8	-99.76	454.4	4,968.6	454.0	168.1	285.87	1.588		
15,600.0	10,799.9	15,762.2	10,876.9	148.3	147.7	-99.77	454.4	5,068.6	454.0	162.4	291.55	1.557		
15,700.0	10,800.8	15,862.2	10,877.9	151.2	150.6	-99.78	454.4	5,168.6	454.0	156.8	297.24	1.527		
15,800.0	10,801.6	15,962.2	10,878.8	154.1	153.5	-99.79	454.4	5,268.6	454.0	151.1	302.94	1.499	Level 3	
15,900.0	10,802.5	16,062.2	10,879.8	157.0	156.3	-99.80	454.4	5,368.6	454.0	145.4	308.63	1.471	Level 3	
16,000.0	10,803.4	16,162.2	10,880.7	159.9	159.2	-99.80	454.4	5,468.6	454.0	139.7	314.33	1.444	Level 3	
16,100.0	10,804.3	16,262.2	10,881.6	162.8	162.1	-99.81	454.4	5,568.6	454.0	134.0	320.03	1.419	Level 3	
16,200.0	10,805.1	16,362.2	10,882.6	165.7	165.0	-99.82	454.4	5,668.5	454.1	128.3	325.73	1.394	Level 3	
16,300.0	10,806.0	16,462.2	10,883.5	168.6	167.9	-99.83	454.4	5,768.5	454.1	122.6	331.43	1.370	Level 3	
16,400.0	10,806.9	16,562.2	10,884.5	171.5	170.8	-99.84	454.4	5,868.5	454.1	116.9	337.14	1.347	Level 3	
16,500.0	10,807.7	16,662.2	10,885.4	174.4	173.7	-99.85	454.4	5,968.5	454.1	111.2	342.84	1.324	Level 3	
16,600.0	10,808.6	16,762.2	10,886.4	177.3	176.6	-99.86	454.4	6,068.5	454.1	105.6	348.55	1.303	Level 3	
16,700.0	10,809.5	16,862.2	10,887.3	180.2	179.5	-99.87	454.4	6,168.5	454.1	99.9	354.26	1.282	Level 3	
16,800.0	10,810.4	16,962.2	10,888.2	183.1	182.4	-99.87	454.4	6,268.5	454.1	94.2	359.97	1.262	Level 3	
16,900.0	10,811.2	17,062.2	10,889.2	186.0	185.3	-99.88	454.4	6,368.5	454.1	88.5	365.69	1.242	Level 2	
17,000.0	10,812.1	17,162.2	10,890.1	188.9	188.2	-99.89	454.4	6,468.5	454.2	82.8	371.40	1.223	Level 2	
17,100.0	10,813.0	17,262.2	10,891.1	191.8	191.1	-99.90	454.4	6,568.5	454.2	77.0	377.12	1.204	Level 2	
17,200.0	10,813.9	17,362.2	10,892.0	194.7	194.0	-99.91	454.4	6,668.5	454.2	71.3	382.83	1.186	Level 2	
17,300.0	10,814.7	17,462.2	10,892.9	197.6	196.9	-99.92	454.4	6,768.5	454.2	65.6	388.55	1.169	Level 2	
17,400.0	10,815.6	17,562.2	10,893.9	200.5	199.8	-99.93	454.4	6,868.5	454.2	59.9	394.27	1.152	Level 2	
17,500.0	10,816.5	17,662.2	10,894.8	203.5	202.7	-99.93	454.4	6,968.5	454.2	54.2	399.99	1.136	Level 2	
17,600.0	10,817.3	17,762.2	10,895.8	206.4	205.6	-99.94	454.4	7,068.5	454.2	48.5	405.71	1.120	Level 2	
17,700.0	10,818.2	17,862.2	10,896.7	209.3	208.5	-99.95	454.4	7,168.5	454.2	42.8	411.43	1.104	Level 2	
17,800.0	10,819.1	17,962.2	10,897.7	212.2	211.4	-99.96	454.4	7,268.5	454.2	37.1	417.16	1.089	Level 2	
17,900.0	10,820.0	18,062.2	10,898.6	215.1	214.3	-99.97	454.4	7,368.5	454.3	31.4	422.88	1.074	Level 2	
18,000.0	10,820.8	18,162.2	10,899.5	218.0	217.2	-99.98	454.4	7,468.5	454.3	25.7	428.61	1.060	Level 2	
18,100.0	10,821.7	18,262.2	10,900.5	220.9	220.1	-99.99	454.4	7,568.5	454.3	20.0	434.33	1.046	Level 2	
18,200.0	10,822.6	18,362.2	10,901.4	223.8	223.0	-100.00	454.4	7,668.5	454.3	14.2	440.06	1.032	Level 2	
18,300.0	10,823.5	18,462.2	10,902.4	226.7	225.9	-100.00	454.4	7,768.5	454.3	8.5	445.78	1.019	Level 2	
18,400.0	10,824.3	18,562.2	10,903.3	229.7	228.8	-100.01	454.4	7,868.5	454.3	2.8	451.51	1.006	Level 2	
18,500.0	10,825.2	18,662.2	10,904.3	232.6	231.7	-100.02	454.4	7,968.4	454.3	-2.9	457.24	0.994	Level 1	
18,600.0	10,826.1	18,762.2	10,905.2	235.5	234.6	-100.03	454.4	8,068.4	454.3	-8.6	462.97	0.981	Level 1	
18,700.0	10,826.9	18,862.2	10,906.1	238.4	237.5	-100.04	454.4	8,168.4	454.4	-14.3	468.69	0.969	Level 1	
18,800.0	10,827.8	18,962.2	10,907.1	241.3	240.5	-100.05	454.4	8,268.4	454.4	-20.1	474.42	0.958	Level 1	
18,900.0	10,828.7	19,062.2	10,908.0	244.2	243.4	-100.06	454.4	8,368.4	454.4	-25.8	480.15	0.946	Level 1	
19,000.0	10,829.6	19,162.2	10,909.0	247.1	246.3	-100.06	454.4	8,468.4	454.4	-31.5	485.88	0.935	Level 1	
19,100.0	10,830.4	19,262.2	10,909.9	250.1	249.2	-100.07	454.4	8,568.4	454.4	-37.2	491.61	0.924	Level 1	
19,200.0	10,831.3	19,362.2	10,910.9	253.0	252.1	-100.08	454.4	8,668.4	454.4	-42.9	497.34	0.914	Level 1	
19,300.0	10,832.2	19,462.2	10,911.8	255.9	255.0	-100.09	454.4	8,768.4	454.4	-48.6	503.07	0.903	Level 1	
19,400.0	10,833.1	19,562.2	10,912.7	258.8	257.9	-100.10	454.4	8,868.4	454.4	-54.4	508.81	0.893	Level 1	
19,500.0	10,833.9	19,662.2	10,913.7	261.7	260.8	-100.11	454.4	8,968.4	454.5	-60.1	514.54	0.883	Level 1	
19,600.0	10,834.8	19,762.2	10,914.6	264.6	263.8	-100.12	454.4	9,068.4	454.5	-65.8	520.27	0.874	Level 1	
19,700.0	10,835.7	19,862.2	10,915.6	267.6	266.7	-100.13	454.4	9,168.4	454.5	-71.5	526.00	0.864	Level 1	
19,800.0	10,836.5	19,962.2	10,916.5	270.5	269.6	-100.13	454.4	9,268.4	454.5	-77.2	531.73	0.855	Level 1	
19,900.0	10,837.4	20,062.2	10,917.5	273.4	272.5	-100.14	454.4	9,368.4	454.5	-83.0	537.47	0.846	Level 1	
20,000.0	10,838.3	20,162.2	10,918.4	276.3	275.4	-100.15	454.4	9,468.4	454.5	-88.7	543.20	0.837	Level 1	
20,100.0	10,839.2	20,262.2	10,919.3	279.2	278.3	-100.16	454.4	9,568.4	454.5	-94.4	548.93	0.828	Level 1	
20,200.0	10,840.0	20,362.2	10,920.3	282.1	281.2	-100.17	454.4	9,668.4	454.5	-100.1	554.67	0.819	Level 1	
20,300.0	10,840.9	20,462.2	10,921.2	285.1	284.2	-100.18	454.4	9,768.4	454.6	-105.8	560.40	0.811	Level 1	
20,400.0	10,841.8	20,562.2	10,922.2	288.0	287.1	-100.19	454.4	9,868.4	454.6	-111.6	566.13	0.803	Level 1	
20,500.0	10,842.7	20,662.2	10,923.1	290.9	290.0	-100.19	454.4	9,968.4	454.6	-117.3	571.87	0.795	Level 1	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Oasis Petroleum

Anticollision Report

Company:	Oasis	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Project:	Indian Hills	TVD Reference:	WELL @ 2134.0usft (Original Well Elev)
Reference Site:	153N-100W-31/32	MD Reference:	WELL @ 2134.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	Lewis Federal 5300 11-31 3B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 3B	Database:	OpenWellsCompass - EDM Prod
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design 153N-100W-31/32 - Lewis Federal 5300 11-31 2T - Lewis Federal 5300 11-31 2T - Plan #1													Offset Site Error:	0.0 usft
Survey Program: 0-MWD													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/S (usft)	Centre +E/W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
20,600.0	10,843.5	20,762.2	10,924.1	293.8	292.3	-100.20	454.4	10,068.4	454.6	-122.4	576.99	0.788	Level 1	
20,640.9	10,843.9	20,803.1	10,924.4	294.6	293.1	-100.21	454.4	10,109.2	454.6	-123.9	578.53	0.786	Level 1, ES, SF	

Oasis Petroleum

Anticollision Report

Company:	Oasis	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Project:	Indian Hills	TVD Reference:	WELL @ 2134.0usft (Original Well Elev)
Reference Site:	153N-100W-31/32	MD Reference:	WELL @ 2134.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	Lewis Federal 5300 11-31 3B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 3B	Database:	OpenWellsCompass - EDM Prod
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design 153N-100W-31/32 - Lewis Federal 5300 11-31 4T2 - Lewis Federal 5300 11-31 4T2 - Plan #1												Offset Site Error:	0.0 usft		
Survey Program: 0-MWD		Distance												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis				Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/S (usft)	Centre +E/W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			Warning
0.0	0.0	0.0	0.0	0.0	0.0	-174.20	-33.4	-3.4	33.6						
100.0	100.0	100.0	100.0	0.1	0.1	-174.20	-33.4	-3.4	33.6	33.4	0.18	191.709			
200.0	200.0	200.0	200.0	0.3	0.3	-174.20	-33.4	-3.4	33.6	33.0	0.62	53.789			
300.0	300.0	300.0	300.0	0.5	0.5	-174.20	-33.4	-3.4	33.6	32.5	1.07	31.283			
400.0	400.0	400.0	400.0	0.8	0.8	-174.20	-33.4	-3.4	33.6	32.1	1.52	22.055			
500.0	500.0	500.0	500.0	1.0	1.0	-174.20	-33.4	-3.4	33.6	31.6	1.97	17.031			
600.0	600.0	600.0	600.0	1.2	1.2	-174.20	-33.4	-3.4	33.6	31.2	2.42	13.871			
700.0	700.0	700.0	700.0	1.4	1.4	-174.20	-33.4	-3.4	33.6	30.7	2.87	11.701			
800.0	800.0	800.0	800.0	1.7	1.7	-174.20	-33.4	-3.4	33.6	30.3	3.32	10.117			
900.0	900.0	900.0	900.0	1.9	1.9	-174.20	-33.4	-3.4	33.6	29.8	3.77	8.911			
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-174.20	-33.4	-3.4	33.6	29.4	4.22	7.962			
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	-174.20	-33.4	-3.4	33.6	28.9	4.67	7.196			
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-174.20	-33.4	-3.4	33.6	28.5	5.12	6.564			
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-174.20	-33.4	-3.4	33.6	28.0	5.57	6.034			
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-174.20	-33.4	-3.4	33.6	27.6	6.02	5.584			
1,500.0	1,500.0	1,500.0	1,500.0	3.2	3.2	-174.20	-33.4	-3.4	33.6	27.1	6.47	5.196			
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	-174.20	-33.4	-3.4	33.6	26.7	6.92	4.858			
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	-174.20	-33.4	-3.4	33.6	26.2	7.37	4.562			
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	-174.20	-33.4	-3.4	33.6	25.8	7.82	4.299			
1,900.0	1,900.0	1,900.0	1,900.0	4.1	4.1	-174.20	-33.4	-3.4	33.6	25.3	8.27	4.066			
2,000.0	2,000.0	2,000.0	2,000.0	4.4	4.4	-174.20	-33.4	-3.4	33.6	24.9	8.72	3.856			
2,100.0	2,100.0	2,100.0	2,100.0	4.6	4.6	-174.20	-33.4	-3.4	33.6	24.4	9.17	3.667 CC			
2,110.0	2,110.0	2,109.8	2,109.8	4.6	4.6	140.79	-33.5	-3.4	33.7	24.5	9.21	3.657			
2,200.0	2,200.0	2,199.8	2,199.8	4.8	4.8	140.61	-34.0	-2.8	34.8	25.2	9.56	3.637			
2,300.0	2,300.0	2,299.8	2,299.8	5.0	4.9	140.41	-34.6	-2.2	36.0	26.0	9.96	3.615			
2,400.0	2,400.0	2,399.8	2,399.8	5.2	5.1	140.24	-35.3	-1.6	37.2	26.9	10.36	3.593			
2,500.0	2,500.0	2,499.8	2,499.8	5.5	5.3	140.07	-35.9	-1.0	38.5	27.7	10.77	3.572			
2,600.0	2,600.0	2,599.8	2,599.8	5.7	5.5	139.91	-36.5	-0.3	39.7	28.5	11.18	3.551			
2,700.0	2,700.0	2,699.8	2,699.7	5.9	5.7	139.76	-37.1	0.3	40.9	29.3	11.59	3.531			
2,800.0	2,800.0	2,799.8	2,799.7	6.1	5.9	139.62	-37.7	0.9	42.2	30.1	12.00	3.511			
2,900.0	2,900.0	2,899.8	2,899.7	6.3	6.1	139.49	-38.3	1.5	43.4	31.0	12.42	3.492			
3,000.0	3,000.0	2,999.7	2,999.7	6.6	6.3	139.37	-39.0	2.1	44.6	31.8	12.84	3.474			
3,100.0	3,100.0	3,099.7	3,099.7	6.8	6.5	139.25	-39.6	2.7	45.8	32.6	13.26	3.456			
3,200.0	3,200.0	3,199.7	3,199.7	7.0	6.7	139.14	-40.2	3.4	47.1	33.4	13.69	3.439			
3,300.0	3,300.0	3,299.7	3,299.7	7.2	6.9	139.03	-40.8	4.0	48.3	34.2	14.11	3.423			
3,400.0	3,400.0	3,399.7	3,399.7	7.4	7.1	138.93	-41.4	4.6	49.5	35.0	14.54	3.407			
3,500.0	3,499.9	3,499.7	3,499.7	7.7	7.3	138.84	-42.0	5.2	50.8	35.8	14.97	3.392			
3,600.0	3,599.9	3,599.7	3,599.6	7.9	7.5	138.75	-42.7	5.8	52.0	36.6	15.40	3.377			
3,700.0	3,699.9	3,699.7	3,699.6	8.1	7.7	138.66	-43.3	6.4	53.2	37.4	15.83	3.363			
3,800.0	3,799.9	3,799.7	3,799.6	8.3	7.9	138.58	-43.9	7.1	54.5	38.2	16.26	3.350			
3,900.0	3,899.9	3,899.7	3,899.6	8.6	8.1	138.50	-44.5	7.7	55.7	39.0	16.69	3.337			
4,000.0	3,999.9	3,999.7	3,999.6	8.8	8.4	138.42	-45.1	8.3	56.9	39.8	17.12	3.324			
4,100.0	4,099.9	4,099.7	4,099.6	9.0	8.6	138.35	-45.7	8.9	58.2	40.6	17.56	3.312			
4,200.0	4,199.9	4,199.7	4,199.6	9.2	8.8	138.28	-46.4	9.5	59.4	41.4	17.99	3.301			
4,300.0	4,299.9	4,299.6	4,299.6	9.4	9.0	138.21	-47.0	10.1	60.6	42.2	18.43	3.289			
4,400.0	4,399.9	4,399.6	4,399.6	9.7	9.2	138.15	-47.6	10.8	61.9	43.0	18.87	3.279			
4,500.0	4,499.9	4,499.6	4,499.5	9.9	9.4	138.09	-48.2	11.4	63.1	43.8	19.30	3.268			
4,600.0	4,599.9	4,599.6	4,599.5	10.1	9.6	138.03	-48.8	12.0	64.3	44.6	19.74	3.258			
4,700.0	4,699.9	4,699.6	4,699.5	10.3	9.9	137.97	-49.4	12.6	65.6	45.4	20.18	3.249			
4,800.0	4,799.9	4,799.6	4,799.5	10.6	10.1	137.92	-50.1	13.2	66.8	46.2	20.62	3.239			
4,900.0	4,899.9	4,899.6	4,899.5	10.8	10.3	137.86	-50.7	13.8	68.0	47.0	21.06	3.230			
5,000.0	4,999.9	4,999.6	4,999.5	11.0	10.5	137.81	-51.3	14.5	69.2	47.8	21.50	3.221			
5,100.0	5,099.9	5,099.6	5,099.5	11.2	10.7	137.76	-51.9	15.1	70.5	48.5	21.94	3.213			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Oasis Petroleum

Anticollision Report

Company:	Oasis	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Project:	Indian Hills	TVD Reference:	WELL @ 2134.0usft (Original Well Elev)
Reference Site:	153N-100W-31/32	MD Reference:	WELL @ 2134.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	Lewis Federal 5300 11-31 3B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 3B	Database:	OpenWellsCompass - EDM Prod
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design 153N-100W-31/32 - Lewis Federal 5300 11-31 4T2 - Lewis Federal 5300 11-31 4T2 - Plan #1													Offset Site Error:	0.0 usft		
Survey Program: 0-MWD															Offset Well Error:	0.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Offset		Semi Major Axis			Distance							Warning		
		Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/S (usft)	Centre +E/W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor				
5,200.0	5,199.9	5,199.6	5,199.5	11.5	10.9	137.71	-52.5	15.7	71.7	49.3	22.38	3.205				
5,300.0	5,299.9	5,299.6	5,299.4	11.7	11.2	137.67	-53.2	16.3	72.9	50.1	22.82	3.197				
5,400.0	5,399.9	5,399.6	5,399.4	11.9	11.4	137.62	-53.8	16.9	74.2	50.9	23.26	3.189				
5,500.0	5,499.9	5,499.6	5,499.4	12.1	11.6	137.58	-54.4	17.5	75.4	51.7	23.70	3.182				
5,600.0	5,599.9	5,599.5	5,599.4	12.3	11.8	137.54	-55.0	18.2	76.6	52.5	24.14	3.175				
5,700.0	5,699.9	5,699.5	5,699.4	12.6	12.0	137.50	-55.6	18.8	77.9	53.3	24.58	3.168				
5,800.0	5,799.9	5,799.5	5,799.4	12.8	12.2	137.46	-56.2	19.4	79.1	54.1	25.03	3.161				
5,900.0	5,899.9	5,899.5	5,899.4	13.0	12.5	137.42	-56.9	20.0	80.3	54.9	25.47	3.154				
6,000.0	5,999.9	5,999.5	5,999.4	13.2	12.7	137.39	-57.5	20.6	81.6	55.7	25.91	3.148				
6,100.0	6,099.8	6,099.5	6,099.4	13.5	12.9	137.35	-58.1	21.3	82.8	56.5	26.36	3.142				
6,151.5	6,151.3	6,151.0	6,150.8	13.6	13.0	137.33	-58.4	21.6	83.4	56.9	26.58	3.139				
6,161.5	6,161.3	6,161.5	6,161.3	13.6	13.0	-177.67	-58.4	21.6	83.5	56.9	26.61	3.138				
6,200.0	6,199.8	6,200.0	6,199.8	13.7	13.1	-177.67	-58.4	21.6	83.5	56.7	26.76	3.120				
6,300.0	6,299.8	6,300.0	6,299.8	13.9	13.3	-177.67	-58.4	21.6	83.5	56.3	27.19	3.072				
6,400.0	6,399.8	6,400.0	6,399.8	14.1	13.5	-177.67	-58.4	21.6	83.5	55.9	27.61	3.025				
6,500.0	6,499.8	6,500.0	6,499.8	14.3	13.7	-177.67	-58.4	21.6	83.5	55.5	28.03	2.979				
6,600.0	6,599.8	6,600.0	6,599.8	14.6	13.9	-177.67	-58.4	21.6	83.5	55.1	28.46	2.935				
6,700.0	6,699.8	6,700.0	6,699.8	14.8	14.1	-177.67	-58.4	21.6	83.5	54.6	28.88	2.891				
6,800.0	6,799.8	6,800.0	6,799.8	15.0	14.3	-177.67	-58.4	21.6	83.5	54.2	29.31	2.849				
6,900.0	6,899.8	6,900.0	6,899.8	15.2	14.5	-177.67	-58.4	21.6	83.5	53.8	29.74	2.808				
7,000.0	6,999.8	7,000.0	6,999.8	15.5	14.8	-177.67	-58.4	21.6	83.5	53.3	30.16	2.769				
7,100.0	7,099.8	7,100.0	7,099.8	15.7	15.0	-177.67	-58.4	21.6	83.5	52.9	30.59	2.730				
7,200.0	7,199.8	7,200.0	7,199.8	15.9	15.2	-177.67	-58.4	21.6	83.5	52.5	31.02	2.692				
7,300.0	7,299.8	7,300.0	7,299.8	16.1	15.4	-177.67	-58.4	21.6	83.5	52.1	31.45	2.655				
7,400.0	7,399.8	7,400.0	7,399.8	16.3	15.6	-177.67	-58.4	21.6	83.5	51.6	31.88	2.619				
7,500.0	7,499.8	7,500.0	7,499.8	16.6	15.8	-177.67	-58.4	21.6	83.5	51.2	32.31	2.585				
7,600.0	7,599.8	7,600.0	7,599.8	16.8	16.0	-177.67	-58.4	21.6	83.5	50.8	32.74	2.551				
7,700.0	7,699.8	7,700.0	7,699.8	17.0	16.2	-177.67	-58.4	21.6	83.5	50.3	33.17	2.517				
7,800.0	7,799.8	7,800.0	7,799.8	17.2	16.4	-177.67	-58.4	21.6	83.5	49.9	33.60	2.485				
7,900.0	7,899.8	7,900.0	7,899.8	17.5	16.6	-177.67	-58.4	21.6	83.5	49.5	34.04	2.453				
8,000.0	7,999.8	8,000.0	7,999.8	17.7	16.8	-177.67	-58.4	21.6	83.5	49.0	34.47	2.423				
8,100.0	8,099.8	8,100.0	8,099.8	17.9	17.0	-177.67	-58.4	21.6	83.5	48.6	34.90	2.393				
8,200.0	8,199.8	8,200.0	8,199.8	18.1	17.3	-177.67	-58.4	21.6	83.5	48.2	35.34	2.363				
8,300.0	8,299.8	8,300.0	8,299.8	18.3	17.5	-177.67	-58.4	21.6	83.5	47.7	35.77	2.335				
8,400.0	8,399.8	8,400.0	8,399.8	18.6	17.7	-177.67	-58.4	21.6	83.5	47.3	36.20	2.307				
8,500.0	8,499.8	8,500.0	8,499.8	18.8	17.9	-177.67	-58.4	21.6	83.5	46.9	36.64	2.279				
8,600.0	8,599.8	8,600.0	8,599.8	19.0	18.1	-177.67	-58.4	21.6	83.5	46.4	37.07	2.252				
8,700.0	8,699.8	8,700.0	8,699.8	19.2	18.3	-177.67	-58.4	21.6	83.5	46.0	37.51	2.226				
8,800.0	8,799.8	8,800.0	8,799.8	19.5	18.5	-177.67	-58.4	21.6	83.5	45.6	37.95	2.201				
8,900.0	8,899.8	8,900.0	8,899.8	19.7	18.7	-177.67	-58.4	21.6	83.5	45.1	38.38	2.176				
9,000.0	8,999.8	9,000.0	8,999.8	19.9	19.0	-177.67	-58.4	21.6	83.5	44.7	38.82	2.151				
9,100.0	9,099.8	9,100.0	9,099.8	20.1	19.2	-177.67	-58.4	21.6	83.5	44.3	39.26	2.127				
9,200.0	9,199.8	9,200.0	9,199.8	20.3	19.4	-177.67	-58.4	21.6	83.5	43.8	39.69	2.104				
9,300.0	9,299.8	9,300.0	9,299.8	20.6	19.6	-177.67	-58.4	21.6	83.5	43.4	40.13	2.081				
9,400.0	9,399.8	9,400.0	9,399.8	20.8	19.8	-177.67	-58.4	21.6	83.5	42.9	40.57	2.058				
9,500.0	9,499.8	9,500.0	9,499.8	21.0	20.0	-177.67	-58.4	21.6	83.5	42.5	41.00	2.037				
9,600.0	9,599.8	9,600.0	9,599.8	21.2	20.2	-177.67	-58.4	21.6	83.5	42.1	41.44	2.015				
9,700.0	9,699.8	9,700.0	9,699.8	21.5	20.5	-177.67	-58.4	21.6	83.5	41.6	41.88	1.994				
9,800.0	9,799.8	9,800.0	9,799.8	21.7	20.7	-177.67	-58.4	21.6	83.5	41.2	42.32	1.973				
9,900.0	9,899.8	9,900.0	9,899.8	21.9	20.9	-177.67	-58.4	21.6	83.5	40.7	42.76	1.953				
10,000.0	9,999.8	10,000.0	9,999.8	22.1	21.1	-177.67	-58.4	21.6	83.5	40.3	43.20	1.933				
10,100.0	10,099.8	10,100.0	10,099.8	22.4	21.3	-177.67	-58.4	21.6	83.5	39.9	43.64	1.914				
10,200.0	10,199.8	10,200.0	10,199.8	22.6	21.5	-177.67	-58.4	21.6	83.5	39.4	44.08	1.895				

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Oasis Petroleum

Anticollision Report

Company:	Oasis	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Project:	Indian Hills	TVD Reference:	WELL @ 2134.0usft (Original Well Elev)
Reference Site:	153N-100W-31/32	MD Reference:	WELL @ 2134.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	Lewis Federal 5300 11-31 3B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 3B	Database:	OpenWellsCompass - EDM Prod
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design 153N-100W-31/32 - Lewis Federal 5300 11-31 4T2 - Lewis Federal 5300 11-31 4T2 - Plan #1													Offset Site Error:	0.0 usft		
Survey Program: 0-MWD															Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance									
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/S (usft)	Centre +E/W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning			
10,282.7	10,282.5	10,282.7	10,282.5	22.8	21.7	-177.67	-58.4	21.6	83.5	39.1	44.44	1.879				
10,300.0	10,299.8	10,300.0	10,299.8	22.8	21.8	90.57	-58.4	21.6	83.5	39.0	44.55	1.874				
10,325.0	10,324.8	10,324.9	10,324.8	22.9	21.8	91.63	-58.4	21.6	83.5	38.9	44.66	1.870				
10,350.0	10,349.6	10,349.8	10,349.6	22.9	21.9	93.56	-58.4	21.6	83.7	38.9	44.77	1.869				
10,375.0	10,374.3	10,374.4	10,374.3	23.0	21.9	96.31	-58.4	21.6	84.0	39.2	44.88	1.873				
10,400.0	10,398.7	10,399.2	10,399.0	23.0	22.0	99.82	-58.4	21.6	84.8	39.8	44.97	1.886				
10,425.0	10,422.7	10,425.1	10,424.9	23.1	22.0	103.64	-58.3	22.7	85.9	40.8	45.05	1.906				
10,450.0	10,446.4	10,451.4	10,451.1	23.1	22.1	107.39	-58.0	25.2	87.1	42.0	45.11	1.931				
10,475.0	10,469.7	10,478.0	10,477.4	23.2	22.2	111.06	-57.6	29.2	88.5	43.3	45.12	1.961				
10,500.0	10,492.4	10,505.0	10,503.8	23.3	22.2	114.64	-57.0	34.7	90.0	44.9	45.08	1.996				
10,525.0	10,514.6	10,532.3	10,530.2	23.3	22.3	118.14	-56.2	41.8	91.6	46.6	44.98	2.036				
10,550.0	10,536.1	10,560.0	10,556.4	23.4	22.3	121.53	-55.3	50.4	93.3	48.5	44.81	2.082				
10,575.0	10,566.9	10,588.0	10,582.5	23.5	22.4	124.83	-54.1	60.8	95.1	50.5	44.57	2.133				
10,600.0	10,577.0	10,616.4	10,608.2	23.6	22.5	128.03	-52.8	72.8	96.9	52.6	44.26	2.189				
10,625.0	10,596.3	10,645.2	10,633.4	23.7	22.6	131.14	-51.3	86.4	98.7	54.8	43.87	2.250				
10,650.0	10,614.7	10,674.3	10,658.1	23.8	22.7	134.16	-49.6	101.8	100.5	57.1	43.40	2.315				
10,675.0	10,632.2	10,703.8	10,682.1	23.9	22.8	137.09	-47.7	118.8	102.2	59.4	42.87	2.385				
10,700.0	10,648.7	10,733.6	10,705.2	24.1	22.9	139.94	-45.7	137.5	103.9	61.7	42.26	2.459				
10,725.0	10,664.2	10,763.7	10,727.3	24.2	23.0	142.72	-43.4	157.8	105.5	63.9	41.60	2.536				
10,750.0	10,678.7	10,794.1	10,748.3	24.4	23.1	145.42	-41.0	179.7	107.0	66.1	40.90	2.616				
10,775.0	10,692.1	10,824.9	10,768.1	24.5	23.3	148.06	-38.4	203.1	108.3	68.2	40.15	2.698				
10,800.0	10,704.4	10,855.9	10,786.4	24.7	23.5	150.64	-35.7	227.9	109.5	70.2	39.38	2.782				
10,825.0	10,715.5	10,887.1	10,803.2	24.9	23.7	153.17	-32.8	254.1	110.6	72.0	38.59	2.865				
10,850.0	10,725.5	10,918.6	10,818.4	25.2	23.9	155.66	-29.8	281.5	111.4	73.6	37.80	2.947				
10,875.0	10,734.2	10,950.2	10,831.7	25.4	24.2	158.11	-26.6	310.1	112.0	75.0	37.03	3.026				
10,900.0	10,741.7	10,982.1	10,843.3	25.7	24.5	160.52	-23.4	339.6	112.5	76.2	36.29	3.099				
10,925.0	10,747.9	11,014.1	10,852.8	25.9	24.8	162.91	-20.0	369.9	112.7	77.1	35.61	3.164				
10,950.0	10,752.9	11,046.1	10,860.3	26.2	25.2	165.28	-16.6	400.9	112.6	77.6	34.99	3.219				
10,975.0	10,766.5	11,078.3	10,865.7	26.5	25.6	167.63	-13.2	432.4	112.4	77.9	34.47	3.260				
11,000.0	10,758.9	11,110.4	10,868.9	26.8	26.0	169.98	-9.7	464.2	111.8	77.8	34.05	3.285				
11,025.0	10,760.0	11,141.6	10,870.0	27.2	26.4	172.24	-6.2	495.1	111.1	77.3	33.76	3.291				
11,028.6	10,760.0	11,145.1	10,870.1	27.2	26.4	172.51	-5.9	498.6	111.0	77.3	33.74	3.290				
11,043.6	10,760.1	11,159.9	10,870.2	27.4	26.6	173.59	-4.3	513.3	110.8	77.1	33.66	3.291				
11,109.6	10,760.7	11,225.2	10,870.8	28.4	27.6	177.18	1.6	578.4	110.3	76.7	33.57	3.285				
11,164.9	10,761.2	11,280.4	10,871.4	29.3	28.5	178.83	4.7	633.4	110.2	76.5	33.68	3.272				
11,200.0	10,761.5	11,315.4	10,871.7	29.8	29.1	179.45	5.9	668.4	110.2	76.4	33.78	3.263				
11,300.0	10,762.4	11,415.4	10,872.7	31.6	31.0	179.76	6.5	768.4	110.3	76.1	34.16	3.229				
11,400.0	10,763.2	11,515.4	10,873.6	33.6	33.0	179.76	6.5	868.4	110.4	75.8	34.59	3.191				
11,500.0	10,764.1	11,615.4	10,874.6	35.7	35.1	179.76	6.5	968.4	110.5	75.4	35.09	3.149				
11,600.0	10,765.0	11,715.4	10,875.5	37.9	37.3	179.76	6.5	1,068.4	110.6	74.9	35.63	3.103				
11,700.0	10,765.9	11,815.4	10,876.5	40.2	39.6	179.76	6.5	1,168.4	110.6	74.4	36.23	3.054				
11,800.0	10,766.7	11,915.4	10,877.5	42.6	42.0	179.76	6.5	1,268.4	110.7	73.9	36.88	3.003				
11,900.0	10,767.6	12,015.4	10,878.4	45.0	44.5	179.76	6.5	1,368.4	110.8	73.3	37.57	2.950				
12,000.0	10,768.5	12,115.4	10,879.4	47.5	47.0	179.76	6.5	1,468.4	110.9	72.6	38.31	2.895				
12,100.0	10,769.3	12,215.4	10,880.3	50.1	49.6	179.76	6.5	1,568.4	111.0	71.9	39.08	2.840				
12,200.0	10,770.2	12,315.4	10,881.3	52.6	52.2	179.76	6.5	1,668.4	111.1	71.2	39.90	2.784				
12,300.0	10,771.1	12,415.4	10,882.3	55.3	54.8	179.76	6.5	1,768.4	111.2	70.4	40.75	2.728				
12,400.0	10,772.0	12,515.4	10,883.2	57.9	57.5	179.76	6.5	1,868.4	111.3	69.6	41.64	2.672				
12,500.0	10,772.8	12,615.4	10,884.2	60.6	60.2	179.76	6.5	1,968.4	111.3	68.8	42.56	2.616				
12,600.0	10,773.7	12,715.4	10,885.1	63.3	62.9	179.76	6.5	2,068.3	111.4	67.9	43.51	2.561				
12,700.0	10,774.6	12,815.4	10,886.1	66.0	65.6	179.76	6.5	2,168.3	111.5	67.0	44.49	2.507				
12,800.0	10,775.5	12,915.4	10,887.1	68.7	68.3	179.76	6.5	2,268.3	111.6	66.1	45.49	2.453				
12,900.0	10,776.3	13,015.4	10,888.0	71.5	71.1	179.76	6.5	2,368.3	111.7	65.2	46.52	2.401				

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Oasis Petroleum

Anticollision Report

Company:	Oasis	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Project:	Indian Hills	TVD Reference:	WELL @ 2134.0usft (Original Well Elev)
Reference Site:	153N-100W-31/32	MD Reference:	WELL @ 2134.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	Lewis Federal 5300 11-31 3B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 3B	Database:	OpenWellsCompass - EDM Prod
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design 153N-100W-31/32 - Lewis Federal 5300 11-31 4T2 - Lewis Federal 5300 11-31 4T2 - Plan #1													Offset Site Error:	0.0 usft		
Survey Program: 0-MWD															Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance									
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore +N/S (usft)	Centre +E/W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning			
13,000.0	10,777.2	13,115.4	10,889.0	74.2	73.9	179.76	6.5	2,468.3	111.8	64.2	47.57	2.350				
13,100.0	10,778.1	13,215.4	10,889.9	77.0	76.7	179.76	6.5	2,568.3	111.9	63.2	48.65	2.300				
13,200.0	10,778.9	13,315.4	10,890.9	79.8	79.5	179.76	6.5	2,668.3	112.0	62.2	49.74	2.251				
13,300.0	10,779.8	13,415.4	10,891.9	82.6	82.3	179.76	6.5	2,768.3	112.0	61.2	50.85	2.203				
13,400.0	10,780.7	13,515.4	10,892.8	85.4	85.1	179.76	6.5	2,868.3	112.1	60.2	51.98	2.157				
13,500.0	10,781.6	13,615.4	10,893.8	88.2	87.9	179.76	6.5	2,968.3	112.2	59.1	53.13	2.112				
13,600.0	10,782.4	13,715.4	10,894.7	91.0	90.7	179.76	6.5	3,068.3	112.3	58.0	54.29	2.069				
13,700.0	10,783.3	13,815.4	10,895.7	93.9	93.6	179.76	6.5	3,168.3	112.4	56.9	55.46	2.026				
13,800.0	10,784.2	13,915.4	10,896.7	96.7	96.4	179.76	6.5	3,268.3	112.5	55.8	56.65	1.985				
13,900.0	10,785.1	14,015.4	10,897.6	99.5	99.2	179.76	6.5	3,368.3	112.6	54.7	57.86	1.946				
14,000.0	10,785.9	14,115.4	10,898.6	102.4	102.1	179.76	6.5	3,468.3	112.7	53.6	59.07	1.907				
14,100.0	10,786.8	14,215.4	10,899.5	105.2	104.9	179.76	6.5	3,568.3	112.7	52.4	60.30	1.870				
14,200.0	10,787.7	14,315.4	10,900.5	108.1	107.8	179.76	6.5	3,668.3	112.8	51.3	61.53	1.834				
14,300.0	10,788.5	14,415.4	10,901.5	110.9	110.7	179.76	6.5	3,768.3	112.9	50.1	62.78	1.799				
14,400.0	10,789.4	14,515.4	10,902.4	113.8	113.5	179.76	6.5	3,868.3	113.0	49.0	64.03	1.765				
14,500.0	10,790.3	14,615.4	10,903.4	116.7	116.4	179.76	6.5	3,968.3	113.1	47.8	65.30	1.732				
14,600.0	10,791.2	14,715.4	10,904.3	119.5	119.3	179.76	6.5	4,068.3	113.2	46.6	66.57	1.700				
14,700.0	10,792.0	14,815.4	10,905.3	122.4	122.1	179.76	6.5	4,168.2	113.3	45.4	67.85	1.669				
14,800.0	10,792.9	14,915.4	10,906.3	125.3	125.0	179.76	6.5	4,268.2	113.4	44.2	69.14	1.639				
14,900.0	10,793.8	15,015.4	10,907.2	128.2	127.9	179.76	6.5	4,368.2	113.4	43.0	70.44	1.611				
15,000.0	10,794.7	15,115.4	10,908.2	131.0	130.8	179.76	6.5	4,468.2	113.5	41.8	71.74	1.583				
15,100.0	10,795.5	15,215.4	10,909.1	133.9	133.7	179.76	6.5	4,568.2	113.6	40.6	73.05	1.555				
15,200.0	10,796.4	15,315.4	10,910.1	136.8	136.5	179.76	6.5	4,668.2	113.7	39.3	74.36	1.529				
15,300.0	10,797.3	15,415.4	10,911.1	139.7	139.4	179.76	6.5	4,768.2	113.8	38.1	75.68	1.504				
15,400.0	10,798.1	15,515.4	10,912.0	142.6	142.3	179.76	6.5	4,868.2	113.9	36.9	77.00	1.479 Level 3	Level 3	Level 3	Level 3	
15,500.0	10,799.0	15,615.4	10,913.0	145.5	145.2	179.76	6.5	4,968.2	114.0	35.6	78.33	1.455 Level 3	Level 3	Level 3	Level 3	
15,600.0	10,799.9	15,715.4	10,913.9	148.3	148.1	179.76	6.5	5,068.2	114.1	34.4	79.67	1.432 Level 3	Level 3	Level 3	Level 3	
15,700.0	10,800.8	15,815.4	10,914.9	151.2	151.0	179.76	6.5	5,168.2	114.1	33.1	81.01	1.409 Level 3	Level 3	Level 3	Level 3	
15,800.0	10,801.6	15,915.4	10,915.9	154.1	153.9	179.76	6.5	5,268.2	114.2	31.9	82.35	1.387 Level 3	Level 3	Level 3	Level 3	
15,900.0	10,802.5	16,015.4	10,916.8	157.0	156.8	179.76	6.5	5,368.2	114.3	30.6	83.70	1.366 Level 3	Level 3	Level 3	Level 3	
16,000.0	10,803.4	16,115.4	10,917.8	159.9	159.7	179.76	6.5	5,468.2	114.4	29.3	85.05	1.345 Level 3	Level 3	Level 3	Level 3	
16,100.0	10,804.3	16,215.4	10,918.7	162.8	162.6	179.76	6.5	5,568.2	114.5	28.1	86.41	1.325 Level 3	Level 3	Level 3	Level 3	
16,200.0	10,805.1	16,315.4	10,919.7	165.7	165.5	179.76	6.5	5,668.2	114.6	26.8	87.76	1.305 Level 3	Level 3	Level 3	Level 3	
16,300.0	10,806.0	16,415.4	10,920.7	168.6	168.4	179.77	6.5	5,768.2	114.7	25.5	89.13	1.286 Level 3	Level 3	Level 3	Level 3	
16,400.0	10,806.9	16,515.4	10,921.6	171.5	171.3	179.77	6.5	5,868.2	114.7	24.3	90.49	1.268 Level 3	Level 3	Level 3	Level 3	
16,500.0	10,807.7	16,615.4	10,922.6	174.4	174.2	179.77	6.5	5,968.2	114.8	23.0	91.86	1.250 Level 3	Level 3	Level 3	Level 3	
16,600.0	10,808.6	16,715.4	10,923.5	177.3	177.1	179.77	6.5	6,068.2	114.9	21.7	93.23	1.233 Level 2	Level 2	Level 2	Level 2	
16,700.0	10,809.5	16,815.4	10,924.5	180.2	180.0	179.77	6.5	6,168.2	115.0	20.4	94.61	1.216 Level 2	Level 2	Level 2	Level 2	
16,800.0	10,810.4	16,915.4	10,925.5	183.1	182.9	179.77	6.5	6,268.2	115.1	19.1	95.99	1.199 Level 2	Level 2	Level 2	Level 2	
16,900.0	10,811.2	17,015.4	10,926.4	186.0	185.8	179.77	6.5	6,368.1	115.2	17.8	97.37	1.183 Level 2	Level 2	Level 2	Level 2	
17,000.0	10,812.1	17,115.4	10,927.4	188.9	188.7	179.77	6.5	6,468.1	115.3	16.5	98.75	1.167 Level 2	Level 2	Level 2	Level 2	
17,100.0	10,813.0	17,215.4	10,928.3	191.8	191.6	179.77	6.5	6,568.1	115.4	15.2	100.13	1.152 Level 2	Level 2	Level 2	Level 2	
17,200.0	10,813.9	17,315.4	10,929.3	194.7	194.5	179.77	6.5	6,668.1	115.4	13.9	101.52	1.137 Level 2	Level 2	Level 2	Level 2	
17,300.0	10,814.7	17,415.4	10,930.3	197.6	197.4	179.77	6.5	6,768.1	115.5	12.6	102.91	1.123 Level 2	Level 2	Level 2	Level 2	
17,400.0	10,815.6	17,515.4	10,931.2	200.5	200.3	179.77	6.5	6,868.1	115.6	11.3	104.30	1.109 Level 2	Level 2	Level 2	Level 2	
17,500.0	10,816.5	17,615.4	10,932.2	203.5	203.2	179.77	6.5	6,968.1	115.7	10.0	105.70	1.095 Level 2	Level 2	Level 2	Level 2	
17,600.0	10,817.3	17,715.4	10,933.1	206.4	206.2	179.77	6.5	7,068.1	115.8	8.7	107.09	1.081 Level 2	Level 2	Level 2	Level 2	
17,700.0	10,818.2	17,815.4	10,934.1	209.3	209.1	179.77	6.5	7,168.1	115.9	7.4	108.49	1.068 Level 2	Level 2	Level 2	Level 2	
17,800.0	10,819.1	17,915.4	10,935.1	212.2	212.0	179.77	6.5	7,268.1	116.0	6.1	109.89	1.055 Level 2	Level 2	Level 2	Level 2	
17,900.0	10,820.0	18,015.4	10,936.0	215.1	214.9	179.77	6.5	7,368.1	116.1	4.8	111.29	1.043 Level 2	Level 2	Level 2	Level 2	
18,000.0	10,820.8	18,115.4	10,937.0	218.0	217.8	179.77	6.5	7,468.1	116.1	3.5	112.69	1.031 Level 2	Level 2	Level 2	Level 2	
18,100.0	10,821.7	18,215.4	10,937.9	220.9	220.7	179.77	6.5	7,568.1	116.2	2.1	114.10	1.019 Level 2	Level 2	Level 2	Level 2	
18,200.0	10,822.6	18,315.4	10,938.9	223.8	223.6	179.77	6.5	7,668.1	116.3	0.8	115.50	1.007 Level 2	Level 2	Level 2	Level 2	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Oasis Petroleum

Anticollision Report

Company:	Oasis	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Project:	Indian Hills	TVD Reference:	WELL @ 2134.0usft (Original Well Elev)
Reference Site:	153N-100W-31/32	MD Reference:	WELL @ 2134.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	Lewis Federal 5300 11-31 3B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 3B	Database:	OpenWellsCompass - EDM Prod
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design 153N-100W-31/32 - Lewis Federal 5300 11-31 4T2 - Lewis Federal 5300 11-31 4T2 - Plan #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis				Distance					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/S (usft)	Centre +E/W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
18,300.0	10,823.5	18,415.4	10,939.9	226.7	226.5	179.77	6.5	7,768.1	116.4	-0.5	116.91	0.996	Level 1
18,400.0	10,824.3	18,515.4	10,940.8	229.7	229.5	179.77	6.5	7,868.1	116.5	-1.8	118.32	0.985	Level 1
18,500.0	10,825.2	18,615.4	10,941.8	232.6	232.4	179.77	6.5	7,968.1	116.6	-3.1	119.73	0.974	Level 1
18,600.0	10,826.1	18,715.4	10,942.7	235.5	235.3	179.77	6.5	8,068.1	116.7	-4.5	121.14	0.963	Level 1
18,700.0	10,826.9	18,815.4	10,943.7	238.4	238.2	179.77	6.5	8,168.1	116.8	-5.8	122.56	0.953	Level 1
18,800.0	10,827.8	18,915.4	10,944.7	241.3	241.1	179.77	6.5	8,268.1	116.8	-7.1	123.97	0.943	Level 1
18,900.0	10,828.7	19,015.4	10,945.6	244.2	244.0	179.77	6.5	8,368.1	116.9	-8.5	125.38	0.933	Level 1
19,000.0	10,829.6	19,115.4	10,946.6	247.1	246.9	179.77	6.5	8,468.0	117.0	-9.8	126.80	0.923	Level 1
19,100.0	10,830.4	19,215.4	10,947.5	250.1	249.9	179.77	6.5	8,568.0	117.1	-11.1	128.22	0.913	Level 1
19,200.0	10,831.3	19,315.4	10,948.5	253.0	252.8	179.77	6.5	8,668.0	117.2	-12.4	129.64	0.904	Level 1
19,300.0	10,832.2	19,415.4	10,949.5	255.9	255.7	179.77	6.5	8,768.0	117.3	-13.8	131.06	0.895	Level 1
19,400.0	10,833.1	19,515.4	10,950.4	258.8	258.6	179.77	6.5	8,868.0	117.4	-15.1	132.48	0.886	Level 1
19,500.0	10,833.9	19,615.4	10,951.4	261.7	261.5	179.77	6.5	8,968.0	117.5	-16.4	133.90	0.877	Level 1
19,600.0	10,834.8	19,715.4	10,952.3	264.6	264.4	179.77	6.5	9,068.0	117.5	-17.8	135.32	0.869	Level 1
19,700.0	10,835.7	19,815.4	10,953.3	267.6	267.4	179.77	6.5	9,168.0	117.6	-19.1	136.75	0.860	Level 1
19,800.0	10,836.5	19,915.4	10,954.3	270.5	270.3	179.77	6.5	9,268.0	117.7	-20.5	138.17	0.852	Level 1
19,900.0	10,837.4	20,015.4	10,955.2	273.4	273.2	179.77	6.5	9,368.0	117.8	-21.8	139.60	0.844	Level 1
20,000.0	10,838.3	20,115.4	10,956.2	276.3	276.1	179.77	6.5	9,468.0	117.9	-23.1	141.02	0.836	Level 1
20,100.0	10,839.2	20,215.4	10,957.1	279.2	279.0	179.77	6.5	9,568.0	118.0	-24.5	142.45	0.828	Level 1
20,200.0	10,840.0	20,315.4	10,958.1	282.1	282.0	179.77	6.5	9,668.0	118.1	-25.8	143.88	0.821	Level 1
20,300.0	10,840.9	20,415.4	10,959.1	285.1	284.9	179.77	6.5	9,768.0	118.2	-27.2	145.31	0.813	Level 1
20,400.0	10,841.8	20,515.4	10,960.0	288.0	287.8	179.77	6.5	9,868.0	118.2	-28.5	146.74	0.806	Level 1
20,500.0	10,842.7	20,615.4	10,961.0	290.9	290.7	179.77	6.5	9,968.0	118.3	-29.8	148.17	0.799	Level 1
20,600.0	10,843.5	20,715.4	10,961.9	293.8	293.6	179.77	6.5	10,068.0	118.4	-31.2	149.60	0.792	Level 1
20,640.9	10,843.9	20,756.3	10,962.3	294.6	294.8	179.77	6.5	10,108.9	118.5	-31.6	150.04	0.789	Level 1, ES, SF

Oasis Petroleum

Anticollision Report

Company:	Oasis	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Project:	Indian Hills	TVD Reference:	WELL @ 2134.0usft (Original Well Elev)
Reference Site:	153N-100W-31/32	MD Reference:	WELL @ 2134.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	Lewis Federal 5300 11-31 3B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 3B	Database:	OpenWellsCompass - EDM Prod
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design 153N-100W-31/32 - Lewis Federal 5300 11-31 5T - Lewis Federal 5300 11-31 5T - Plan #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD												Offset Well Error:	0.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Reference Offset		Semi Major Axis			Distance					Warning	
		Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/S (usft)	Centre +E/W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
0.0	0.0	0.0	0.0	0.0	0.0	-174.69	-65.9	-6.1	66.1				
100.0	100.0	100.0	100.0	0.1	0.1	-174.69	-65.9	-6.1	66.1	66.0	0.18	377.290	
200.0	200.0	200.0	200.0	0.3	0.3	-174.69	-65.9	-6.1	66.1	65.5	0.62	105.859	
300.0	300.0	300.0	300.0	0.5	0.5	-174.69	-65.9	-6.1	66.1	65.1	1.07	61.566	
400.0	400.0	400.0	400.0	0.8	0.8	-174.69	-65.9	-6.1	66.1	64.6	1.52	43.405	
500.0	500.0	500.0	500.0	1.0	1.0	-174.69	-65.9	-6.1	66.1	64.2	1.97	33.518	
600.0	600.0	600.0	600.0	1.2	1.2	-174.69	-65.9	-6.1	66.1	63.7	2.42	27.299	
700.0	700.0	700.0	700.0	1.4	1.4	-174.69	-65.9	-6.1	66.1	63.3	2.87	23.027	
800.0	800.0	800.0	800.0	1.7	1.7	-174.69	-65.9	-6.1	66.1	62.8	3.32	19.911	
900.0	900.0	900.0	900.0	1.9	1.9	-174.69	-65.9	-6.1	66.1	62.4	3.77	17.538	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-174.69	-65.9	-6.1	66.1	61.9	4.22	15.670	
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	-174.69	-65.9	-6.1	66.1	61.5	4.67	14.162	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-174.69	-65.9	-6.1	66.1	61.0	5.12	12.919	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-174.69	-65.9	-6.1	66.1	60.6	5.57	11.876	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-174.69	-65.9	-6.1	66.1	60.1	6.02	10.989	
1,500.0	1,500.0	1,500.0	1,500.0	3.2	3.2	-174.69	-65.9	-6.1	66.1	59.7	6.47	10.225	
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	-174.69	-65.9	-6.1	66.1	59.2	6.92	9.561	
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	-174.69	-65.9	-6.1	66.1	58.8	7.37	8.978	
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	-174.69	-65.9	-6.1	66.1	58.3	7.82	8.461	
1,900.0	1,900.0	1,900.0	1,900.0	4.1	4.1	-174.69	-65.9	-6.1	66.1	57.9	8.27	8.001	
2,000.0	2,000.0	2,000.0	2,000.0	4.4	4.4	-174.69	-65.9	-6.1	66.1	57.4	8.72	7.589	
2,100.0	2,100.0	2,100.0	2,100.0	4.6	4.6	-174.69	-65.9	-6.1	66.1	57.0	9.17	7.216 CC	
2,110.0	2,110.0	2,109.5	2,109.5	4.6	4.6	140.32	-65.9	-6.1	66.2	57.0	9.21	7.193	
2,200.0	2,200.0	2,199.4	2,199.4	4.8	4.8	140.69	-66.7	-6.1	67.6	58.1	9.55	7.077	
2,300.0	2,300.0	2,299.4	2,299.4	5.0	4.9	141.07	-67.6	-6.1	69.2	59.2	9.94	6.955	
2,400.0	2,400.0	2,399.4	2,399.4	5.2	5.1	141.44	-68.4	-6.1	70.7	60.4	10.34	6.840	
2,500.0	2,500.0	2,499.4	2,499.4	5.5	5.3	141.80	-69.3	-6.1	72.3	61.5	10.74	6.730	
2,600.0	2,600.0	2,599.4	2,599.3	5.7	5.5	142.13	-70.2	-6.1	73.8	62.7	11.14	6.626	
2,700.0	2,700.0	2,699.3	2,699.3	5.9	5.7	142.46	-71.0	-6.1	75.4	63.8	11.54	6.528	
2,800.0	2,800.0	2,799.3	2,799.3	6.1	5.8	142.77	-71.9	-6.1	76.9	65.0	11.95	6.435	
2,900.0	2,900.0	2,899.3	2,899.3	6.3	6.0	143.07	-72.8	-6.1	78.5	66.1	12.37	6.347	
3,000.0	3,000.0	2,999.3	2,999.3	6.6	6.2	143.36	-73.7	-6.1	80.0	67.3	12.78	6.263	
3,100.0	3,100.0	3,099.3	3,099.3	6.8	6.4	143.63	-74.5	-6.1	81.6	68.4	13.20	6.184	
3,200.0	3,200.0	3,199.3	3,199.2	7.0	6.6	143.90	-75.4	-6.1	83.2	69.6	13.62	6.109	
3,300.0	3,300.0	3,299.3	3,299.2	7.2	6.8	144.16	-76.3	-6.1	84.7	70.7	14.04	6.037	
3,400.0	3,400.0	3,399.3	3,399.2	7.4	7.0	144.40	-77.2	-6.1	86.3	71.9	14.46	5.970	
3,500.0	3,499.9	3,499.2	3,499.2	7.7	7.2	144.64	-78.0	-6.1	87.9	73.0	14.88	5.905	
3,600.0	3,599.9	3,599.2	3,599.2	7.9	7.4	144.87	-78.9	-6.1	89.5	74.1	15.31	5.844	
3,700.0	3,699.9	3,699.2	3,699.2	8.1	7.6	145.09	-79.8	-6.1	91.0	75.3	15.74	5.785	
3,800.0	3,799.9	3,799.2	3,799.1	8.3	7.8	145.31	-80.6	-6.1	92.6	76.4	16.16	5.729	
3,900.0	3,899.9	3,899.2	3,899.1	8.6	8.0	145.52	-81.5	-6.1	94.2	77.6	16.59	5.676	
4,000.0	3,999.9	3,999.2	3,999.1	8.8	8.3	145.72	-82.4	-6.1	95.8	78.7	17.02	5.625	
4,100.0	4,099.9	4,099.2	4,099.1	9.0	8.5	145.91	-83.3	-6.1	97.3	79.9	17.46	5.577	
4,200.0	4,199.9	4,199.2	4,199.1	9.2	8.7	146.10	-84.1	-6.1	98.9	81.0	17.89	5.530	
4,300.0	4,299.9	4,299.1	4,299.1	9.4	8.9	146.28	-85.0	-6.1	100.5	82.2	18.32	5.486	
4,400.0	4,399.9	4,399.1	4,399.0	9.7	9.1	146.45	-85.9	-6.1	102.1	83.3	18.75	5.443	
4,500.0	4,499.9	4,499.1	4,499.0	9.9	9.3	146.63	-86.8	-6.1	103.7	84.5	19.19	5.402	
4,600.0	4,599.9	4,599.1	4,599.0	10.1	9.5	146.79	-87.6	-6.1	105.2	85.6	19.62	5.363	
4,700.0	4,699.9	4,699.1	4,699.0	10.3	9.7	146.95	-88.5	-6.1	106.8	86.8	20.06	5.325	
4,800.0	4,799.9	4,799.1	4,799.0	10.6	10.0	147.11	-89.4	-6.1	108.4	87.9	20.50	5.289	
4,900.0	4,899.9	4,899.1	4,899.0	10.8	10.2	147.26	-90.2	-6.1	110.0	89.1	20.94	5.255	
5,000.0	4,999.9	4,999.0	4,998.9	11.0	10.4	147.41	-91.1	-6.1	111.6	90.2	21.37	5.221	
5,100.0	5,099.9	5,099.0	5,098.9	11.2	10.6	147.55	-92.0	-6.1	113.2	91.4	21.81	5.189	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Oasis Petroleum

Anticollision Report

Company:	Oasis	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Project:	Indian Hills	TVD Reference:	WELL @ 2134.0usft (Original Well Elev)
Reference Site:	153N-100W-31/32	MD Reference:	WELL @ 2134.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	Lewis Federal 5300 11-31 3B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 3B	Database:	OpenWellsCompass - EDM Prod
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design 153N-100W-31/32 - Lewis Federal 5300 11-31 5T - Lewis Federal 5300 11-31 5T - Plan #1													Offset Site Error:	0.0 usft		
Survey Program: 0-MWD															Offset Well Error:	0.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Reference Offset		Semi Major Axis			Distance							Warning		
		Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/S (usft)	Centre +E/W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor				
5,200.0	5,199.9	5,199.0	5,198.9	11.5	10.8	147.69	-92.9	-6.1	114.8	92.5	22.25	5.158				
5,300.0	5,299.9	5,299.0	5,298.9	11.7	11.0	147.82	-93.7	-6.1	116.4	93.7	22.69	5.128				
5,400.0	5,399.9	5,399.0	5,398.9	11.9	11.2	147.96	-94.6	-6.1	117.9	94.8	23.13	5.100				
5,500.0	5,499.9	5,499.0	5,498.9	12.1	11.5	148.08	-95.5	-6.1	119.5	96.0	23.57	5.072				
5,600.0	5,599.9	5,599.0	5,598.8	12.3	11.7	148.21	-96.4	-6.1	121.1	97.1	24.01	5.045				
5,700.0	5,699.9	5,699.0	5,698.8	12.6	11.9	148.33	-97.2	-6.1	122.7	98.3	24.45	5.019				
5,800.0	5,799.9	5,798.9	5,798.8	12.8	12.1	148.45	-98.1	-6.1	124.3	99.4	24.89	4.994				
5,900.0	5,899.9	5,898.9	5,898.8	13.0	12.3	148.56	-99.0	-6.1	125.9	100.6	25.33	4.970				
6,000.0	5,999.9	5,998.9	5,998.8	13.2	12.6	148.68	-99.8	-6.1	127.5	101.7	25.77	4.947				
6,100.0	6,099.8	6,098.9	6,098.8	13.5	12.8	148.79	-100.7	-6.1	129.1	102.9	26.22	4.924				
6,151.5	6,151.3	6,150.4	6,150.2	13.6	12.9	148.84	-101.2	-6.1	129.9	103.5	26.44	4.913				
6,161.5	6,161.3	6,160.4	6,160.2	13.6	12.9	-166.15	-101.3	-6.1	130.0	103.5	26.49	4.909				
6,200.0	6,199.8	6,198.9	6,198.7	13.7	13.0	-166.19	-101.6	-6.1	130.4	103.7	26.65	4.891				
6,300.0	6,299.8	6,298.9	6,298.7	13.9	13.2	-166.28	-102.5	-6.1	131.2	104.1	27.09	4.843				
6,400.0	6,399.8	6,398.9	6,398.7	14.1	13.4	-166.37	-103.3	-6.1	132.1	104.5	27.53	4.796				
6,500.0	6,499.8	6,498.9	6,498.7	14.3	13.7	-166.46	-104.2	-6.1	132.9	104.9	27.97	4.751				
6,600.0	6,599.8	6,598.9	6,598.7	14.6	13.9	-166.55	-105.1	-6.1	133.8	105.3	28.41	4.707				
6,700.0	6,699.8	6,698.9	6,698.7	14.8	14.1	-166.63	-106.0	-6.1	134.6	105.7	28.86	4.664				
6,800.0	6,799.8	6,798.9	6,798.7	15.0	14.3	-166.72	-106.8	-6.1	135.5	106.2	29.30	4.623				
6,900.0	6,899.8	6,898.9	6,898.7	15.2	14.5	-166.80	-107.7	-6.1	136.3	106.6	29.74	4.583				
7,000.0	6,999.8	6,998.9	6,998.7	15.5	14.8	-166.89	-108.6	-6.1	137.2	107.0	30.18	4.544				
7,100.0	7,099.8	7,098.9	7,098.7	15.7	15.0	-166.97	-109.4	-6.1	138.0	107.4	30.63	4.506				
7,200.0	7,199.8	7,198.9	7,198.7	15.9	15.2	-167.05	-110.3	-6.1	138.9	107.8	31.07	4.469				
7,300.0	7,299.8	7,298.9	7,298.7	16.1	15.4	-167.13	-111.2	-6.1	139.7	108.2	31.51	4.433				
7,400.0	7,399.8	7,398.9	7,398.6	16.3	15.6	-167.21	-112.1	-6.1	140.6	108.6	31.96	4.398				
7,500.0	7,499.8	7,498.9	7,498.6	16.6	15.9	-167.29	-112.9	-6.1	141.4	109.0	32.40	4.364				
7,600.0	7,599.8	7,598.9	7,598.6	16.8	16.1	-167.36	-113.8	-6.1	142.3	109.4	32.84	4.331				
7,700.0	7,699.8	7,698.9	7,698.6	17.0	16.3	-167.44	-114.7	-6.1	143.1	109.8	33.29	4.299				
7,800.0	7,799.8	7,798.9	7,798.6	17.2	16.5	-167.52	-115.5	-6.1	144.0	110.2	33.73	4.268				
7,900.0	7,899.8	7,900.1	7,899.8	17.5	16.7	-167.54	-115.9	-6.1	144.3	110.1	34.17	4.222				
8,000.0	7,999.8	8,000.1	7,999.8	17.7	16.9	-167.54	-115.9	-6.1	144.3	109.7	34.58	4.171				
8,100.0	8,099.8	8,100.1	8,099.8	17.9	17.1	-167.54	-115.9	-6.1	144.3	109.3	35.00	4.122				
8,200.0	8,199.8	8,200.1	8,199.8	18.1	17.3	-167.54	-115.9	-6.1	144.3	108.8	35.41	4.074				
8,300.0	8,299.8	8,300.1	8,299.8	18.3	17.5	-167.54	-115.9	-6.1	144.3	108.4	35.83	4.027				
8,400.0	8,399.8	8,400.1	8,399.8	18.6	17.7	-167.54	-115.9	-6.1	144.3	108.0	36.24	3.980				
8,500.0	8,499.8	8,500.1	8,499.8	18.8	17.9	-167.54	-115.9	-6.1	144.3	107.6	36.66	3.935				
8,600.0	8,599.8	8,600.1	8,599.8	19.0	18.1	-167.54	-115.9	-6.1	144.3	107.2	37.08	3.891				
8,700.0	8,699.8	8,700.1	8,699.8	19.2	18.3	-167.54	-115.9	-6.1	144.3	106.8	37.50	3.847				
8,800.0	8,799.8	8,800.1	8,799.8	19.5	18.5	-167.54	-115.9	-6.1	144.3	106.3	37.91	3.805				
8,900.0	8,899.8	8,900.1	8,899.8	19.7	18.7	-167.54	-115.9	-6.1	144.3	105.9	38.33	3.763				
9,000.0	8,999.8	9,000.1	8,999.8	19.9	18.9	-167.54	-115.9	-6.1	144.3	105.5	38.75	3.722				
9,100.0	9,099.8	9,100.1	9,099.8	20.1	19.1	-167.54	-115.9	-6.1	144.3	105.1	39.18	3.682				
9,200.0	9,199.8	9,200.1	9,199.8	20.3	19.3	-167.54	-115.9	-6.1	144.3	104.7	39.60	3.643				
9,300.0	9,299.8	9,300.1	9,299.8	20.6	19.5	-167.54	-115.9	-6.1	144.3	104.2	40.02	3.605				
9,400.0	9,399.8	9,400.1	9,399.8	20.8	19.7	-167.54	-115.9	-6.1	144.3	103.8	40.44	3.567				
9,500.0	9,499.8	9,500.1	9,499.8	21.0	19.9	-167.54	-115.9	-6.1	144.3	103.4	40.87	3.530				
9,600.0	9,599.8	9,600.1	9,599.8	21.2	20.1	-167.54	-115.9	-6.1	144.3	103.0	41.29	3.494				
9,700.0	9,699.8	9,700.1	9,699.8	21.5	20.3	-167.54	-115.9	-6.1	144.3	102.5	41.72	3.458				
9,800.0	9,799.8	9,800.1	9,799.8	21.7	20.5	-167.54	-115.9	-6.1	144.3	102.1	42.14	3.423				
9,900.0	9,899.8	9,900.1	9,899.8	21.9	20.7	-167.54	-115.9	-6.1	144.3	101.7	42.57	3.389				
10,000.0	9,999.8	10,000.1	9,999.8	22.1	20.9	-167.54	-115.9	-6.1	144.3	101.3	42.99	3.355				
10,100.0	10,099.8	10,100.1	10,099.8	22.4	21.1	-167.54	-115.9	-6.1	144.3	100.8	43.42	3.322				
10,200.0	10,199.8	10,200.1	10,199.8	22.6	21.3	-167.54	-115.9	-6.1	144.3	100.4	43.85	3.290				

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Oasis Petroleum

Anticollision Report

Company:	Oasis	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Project:	Indian Hills	TVD Reference:	WELL @ 2134.0usft (Original Well Elev)
Reference Site:	153N-100W-31/32	MD Reference:	WELL @ 2134.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	Lewis Federal 5300 11-31 3B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 3B	Database:	OpenWellsCompass - EDM Prod
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design 153N-100W-31/32 - Lewis Federal 5300 11-31 5T - Lewis Federal 5300 11-31 5T - Plan #1													Offset Site Error:	0.0 usft		
Survey Program: 0-MWD															Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance									
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/S (usft)	Centre +E/W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning			
10,282.7	10,282.5	10,282.7	10,282.5	22.8	21.5	-167.54	-115.9	-6.1	144.3	100.1	44.20	3.264				
10,300.0	10,299.8	10,300.1	10,299.8	22.8	21.5	100.59	-115.9	-6.1	144.3	100.0	44.27	3.260				
10,325.0	10,324.8	10,325.0	10,324.8	22.9	21.6	101.16	-115.9	-6.1	144.6	100.2	44.37	3.259				
10,350.0	10,349.6	10,349.8	10,349.6	22.9	21.6	102.20	-115.9	-6.1	145.2	100.7	44.47	3.265				
10,375.0	10,374.3	10,373.7	10,373.4	23.0	21.7	103.47	-116.0	-5.8	146.2	101.6	44.56	3.280				
10,400.0	10,398.7	10,397.3	10,397.1	23.0	21.7	104.68	-116.6	-4.5	147.8	103.1	44.65	3.309				
10,425.0	10,422.7	10,421.1	10,420.7	23.1	21.8	105.81	-117.7	-2.0	149.9	105.2	44.73	3.352				
10,450.0	10,446.4	10,445.0	10,444.3	23.1	21.8	106.85	-119.3	1.5	152.6	107.8	44.80	3.407				
10,475.0	10,469.7	10,469.0	10,467.7	23.2	21.9	107.79	-121.4	6.1	155.9	111.1	44.86	3.476				
10,500.0	10,492.4	10,493.1	10,491.0	23.3	21.9	108.62	-124.0	11.8	159.8	114.8	44.92	3.557				
10,525.0	10,514.6	10,517.4	10,514.1	23.3	22.0	109.33	-127.1	18.6	164.1	119.1	44.97	3.649				
10,550.0	10,536.1	10,541.7	10,536.8	23.4	22.0	109.93	-130.7	26.4	169.0	124.0	45.02	3.753				
10,575.0	10,566.9	10,566.1	10,559.1	23.5	22.1	110.40	-134.7	35.4	174.3	129.3	45.07	3.868				
10,600.0	10,577.0	10,590.5	10,581.0	23.6	22.1	110.75	-139.3	45.4	180.1	135.0	45.13	3.992				
10,625.0	10,596.3	10,615.1	10,602.3	23.7	22.2	110.98	-144.3	56.4	186.4	141.2	45.19	4.124				
10,650.0	10,614.7	10,639.7	10,623.0	23.8	22.3	111.10	-149.8	68.5	193.1	147.8	45.28	4.264				
10,675.0	10,632.2	10,664.4	10,643.1	23.9	22.4	111.11	-155.7	81.6	200.1	154.7	45.38	4.410				
10,700.0	10,648.7	10,689.1	10,662.5	24.1	22.4	111.02	-162.1	95.6	207.6	162.1	45.51	4.561				
10,725.0	10,664.2	10,713.9	10,681.1	24.2	22.5	110.82	-168.9	110.6	215.4	169.7	45.68	4.715				
10,750.0	10,678.7	10,738.8	10,698.8	24.4	22.6	110.53	-176.1	126.5	223.5	177.6	45.87	4.872				
10,775.0	10,692.1	10,763.8	10,715.7	24.5	22.8	110.16	-183.7	143.2	231.9	185.8	46.11	5.029				
10,800.0	10,704.4	10,788.9	10,731.7	24.7	22.9	109.71	-191.7	160.8	240.6	194.2	46.39	5.186				
10,825.0	10,715.5	10,814.1	10,746.6	24.9	23.0	109.18	-200.1	179.2	249.6	202.8	46.72	5.342				
10,850.0	10,725.5	10,839.3	10,760.6	25.2	23.2	108.58	-208.8	198.4	258.8	211.7	47.08	5.495				
10,875.0	10,734.2	10,864.7	10,773.4	25.4	23.4	107.93	-217.9	218.3	268.1	220.6	47.50	5.645				
10,900.0	10,741.7	10,890.2	10,785.2	25.7	23.6	107.22	-227.2	238.9	277.7	229.8	47.96	5.791				
10,925.0	10,747.9	10,915.8	10,795.7	25.9	23.8	106.46	-236.9	260.2	287.5	239.0	48.46	5.931				
10,950.0	10,752.9	10,941.6	10,805.1	26.2	24.0	105.66	-246.8	282.1	297.3	248.3	49.01	6.067				
10,975.0	10,766.5	10,967.6	10,813.2	26.5	24.3	104.81	-257.1	304.6	307.3	257.7	49.59	6.196				
11,000.0	10,758.9	10,993.8	10,819.9	26.8	24.6	103.94	-267.5	327.6	317.3	267.1	50.21	6.320				
11,025.0	10,760.0	11,020.2	10,825.4	27.2	24.9	103.04	-278.2	351.1	327.4	276.5	50.86	6.437				
11,028.6	10,760.0	11,023.9	10,826.0	27.2	24.9	102.91	-279.7	354.5	328.9	277.9	50.96	6.453				
11,043.6	10,760.1	11,039.9	10,828.5	27.4	25.1	103.08	-286.3	368.8	334.9	283.6	51.30	6.528				
11,109.6	10,760.7	11,109.5	10,833.1	28.4	26.0	102.89	-315.0	432.0	361.3	308.4	52.91	6.828				
11,200.0	10,761.5	11,211.2	10,834.0	29.8	27.6	101.53	-354.9	525.5	396.1	340.4	55.77	7.103				
11,300.0	10,762.4	11,330.8	10,835.2	31.6	29.6	100.41	-395.4	638.0	429.5	370.0	59.48	7.221				
11,400.0	10,763.2	11,455.3	10,836.3	33.6	32.1	99.62	-430.0	757.6	456.9	393.3	63.69	7.174				
11,500.0	10,764.1	11,584.2	10,837.6	35.7	34.7	99.07	-457.5	883.5	478.1	409.7	68.36	6.993				
11,600.0	10,765.0	11,716.3	10,838.8	37.9	37.7	98.73	-476.9	1,014.1	492.6	419.1	73.44	6.707				
11,700.0	10,765.9	11,850.5	10,840.1	40.2	40.8	98.56	-487.2	1,147.9	500.2	421.4	78.82	6.346				
11,800.0	10,766.7	11,971.4	10,841.2	42.6	43.6	98.54	-488.9	1,268.7	501.4	417.4	84.06	5.965				
11,900.0	10,767.6	12,071.4	10,842.1	45.0	46.0	98.55	-488.9	1,368.7	501.5	412.5	88.93	5.639				
12,000.0	10,768.5	12,171.4	10,843.1	47.5	48.5	98.56	-488.9	1,468.7	501.5	407.6	93.90	5.340				
12,100.0	10,769.3	12,271.4	10,844.0	50.1	51.0	98.56	-488.9	1,568.7	501.5	402.5	98.97	5.067				
12,200.0	10,770.2	12,371.4	10,845.0	52.6	53.5	98.57	-488.9	1,668.7	501.5	397.4	104.11	4.817				
12,300.0	10,771.1	12,471.4	10,845.9	55.3	56.1	98.58	-488.9	1,768.7	501.5	392.2	109.32	4.588				
12,400.0	10,772.0	12,571.4	10,846.9	57.9	58.8	98.59	-488.9	1,868.7	501.5	386.9	114.58	4.377				
12,500.0	10,772.8	12,671.4	10,847.8	60.6	61.4	98.60	-488.9	1,968.7	501.5	381.6	119.89	4.183				
12,600.0	10,773.7	12,771.4	10,848.7	63.3	64.1	98.60	-488.9	2,068.7	501.5	376.3	125.25	4.004				
12,700.0	10,774.6	12,871.4	10,849.7	66.0	66.8	98.61	-488.9	2,168.7	501.5	370.9	130.64	3.839				
12,800.0	10,775.5	12,971.4	10,850.6	68.7	69.5	98.62	-488.9	2,268.7	501.6	365.5	136.06	3.686				
12,900.0	10,776.3	13,071.4	10,851.6	71.5	72.2	98.63	-488.9	2,368.7	501.6	360.0	141.52	3.544				
13,000.0	10,777.2	13,171.4	10,852.5	74.2	75.0	98.64	-488.9	2,468.7	501.6	354.6	147.00	3.412				

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Oasis Petroleum

Anticollision Report

Company:	Oasis	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Project:	Indian Hills	TVD Reference:	WELL @ 2134.0usft (Original Well Elev)
Reference Site:	153N-100W-31/32	MD Reference:	WELL @ 2134.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	Lewis Federal 5300 11-31 3B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 3B	Database:	OpenWellsCompass - EDM Prod
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design 153N-100W-31/32 - Lewis Federal 5300 11-31 5T - Lewis Federal 5300 11-31 5T - Plan #1												Offset Site Error:	0.0 usft		
Survey Program: 0-MWD												Offset Well Error:	0.0 usft		
Reference				Offset				Semi Major Axis				Distance			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/S (usft)	Centre +E/W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
13,100.0	10,778.1	13,271.4	10,853.5	77.0	77.8	98.64	-488.9	2,568.7	501.6	349.1	152.50	3.289			
13,200.0	10,778.9	13,371.4	10,854.4	79.8	80.5	98.65	-488.9	2,668.7	501.6	343.6	158.03	3.174			
13,300.0	10,779.8	13,471.4	10,855.3	82.6	83.3	98.66	-488.9	2,768.7	501.6	338.0	163.57	3.067			
13,400.0	10,780.7	13,571.4	10,856.3	85.4	86.1	98.67	-488.9	2,868.7	501.6	332.5	169.13	2.966			
13,500.0	10,781.6	13,671.4	10,857.2	88.2	88.9	98.67	-488.9	2,968.7	501.6	326.9	174.70	2.871			
13,600.0	10,782.4	13,771.4	10,858.2	91.0	91.7	98.68	-488.9	3,068.7	501.6	321.3	180.29	2.782			
13,700.0	10,783.3	13,871.4	10,859.1	93.9	94.5	98.69	-488.9	3,168.7	501.6	315.8	185.89	2.699			
13,800.0	10,784.2	13,971.4	10,860.0	96.7	97.4	98.70	-488.9	3,268.7	501.7	310.2	191.51	2.620			
13,900.0	10,785.1	14,071.4	10,861.0	99.5	100.2	98.71	-488.9	3,368.7	501.7	304.5	197.13	2.545			
14,000.0	10,785.8	14,171.4	10,861.9	102.4	103.0	98.71	-488.9	3,468.6	501.7	298.9	202.76	2.474			
14,100.0	10,786.8	14,271.4	10,862.9	105.2	105.9	98.72	-488.9	3,568.6	501.7	293.3	208.40	2.407			
14,200.0	10,787.7	14,371.4	10,863.8	108.1	108.7	98.73	-488.9	3,668.6	501.7	287.7	214.05	2.344			
14,300.0	10,788.5	14,471.4	10,864.8	110.9	111.6	98.74	-488.9	3,768.6	501.7	282.0	219.71	2.284			
14,400.0	10,789.4	14,571.4	10,865.7	113.8	114.4	98.75	-488.9	3,868.6	501.7	276.4	225.37	2.226			
14,500.0	10,790.3	14,671.4	10,866.6	116.7	117.3	98.75	-488.9	3,968.6	501.7	270.7	231.04	2.172			
14,600.0	10,791.2	14,771.4	10,867.6	119.5	120.2	98.76	-488.9	4,068.6	501.7	265.0	236.71	2.120			
14,700.0	10,792.0	14,871.4	10,868.5	122.4	123.0	98.77	-488.9	4,168.6	501.8	259.4	242.39	2.070			
14,800.0	10,792.9	14,971.4	10,869.5	125.3	125.9	98.78	-488.9	4,268.6	501.8	253.7	248.08	2.023			
14,900.0	10,793.8	15,071.4	10,870.4	128.2	128.8	98.79	-488.9	4,368.6	501.8	248.0	253.77	1.977			
15,000.0	10,794.7	15,171.4	10,871.4	131.0	131.6	98.79	-488.9	4,468.6	501.8	242.3	259.46	1.934			
15,100.0	10,795.5	15,271.4	10,872.3	133.9	134.5	98.80	-488.9	4,568.6	501.8	236.6	265.16	1.892			
15,200.0	10,796.4	15,371.4	10,873.2	136.8	137.4	98.81	-488.9	4,668.6	501.8	230.9	270.86	1.853			
15,300.0	10,797.3	15,471.4	10,874.2	139.7	140.3	98.82	-488.9	4,768.6	501.8	225.3	276.57	1.814			
15,400.0	10,798.1	15,571.4	10,875.1	142.6	143.1	98.82	-488.9	4,868.6	501.8	219.6	282.27	1.778			
15,500.0	10,799.0	15,671.4	10,876.1	145.5	146.0	98.83	-488.9	4,968.6	501.8	213.9	287.99	1.743			
15,600.0	10,799.9	15,771.4	10,877.0	148.3	148.9	98.84	-488.9	5,068.6	501.9	208.2	293.70	1.709			
15,700.0	10,800.8	15,871.4	10,878.0	151.2	151.8	98.85	-488.9	5,168.6	501.9	202.4	299.42	1.676			
15,800.0	10,801.6	15,971.4	10,878.9	154.1	154.7	98.86	-488.9	5,268.6	501.9	196.7	305.14	1.645			
15,900.0	10,802.5	16,071.4	10,879.8	157.0	157.6	98.86	-488.9	5,368.6	501.9	191.0	310.86	1.615			
16,000.0	10,803.4	16,171.4	10,880.8	159.9	160.5	98.87	-488.9	5,468.6	501.9	185.3	316.58	1.585			
16,100.0	10,804.3	16,271.4	10,881.7	162.8	163.4	98.88	-488.9	5,568.6	501.9	179.6	322.31	1.557			
16,200.0	10,805.1	16,371.4	10,882.7	165.7	166.3	98.89	-488.9	5,668.5	501.9	173.9	328.04	1.530			
16,300.0	10,806.0	16,471.4	10,883.6	168.6	169.2	98.90	-488.9	5,768.5	501.9	168.2	333.77	1.504			
16,400.0	10,806.9	16,571.4	10,884.6	171.5	172.1	98.90	-488.9	5,868.5	501.9	162.4	339.50	1.478 Level 3			
16,500.0	10,807.7	16,671.4	10,885.5	174.4	175.0	98.91	-488.9	5,968.5	501.9	156.7	345.23	1.454 Level 3			
16,600.0	10,808.6	16,771.4	10,886.4	177.3	177.9	98.92	-488.9	6,068.5	502.0	151.0	350.97	1.430 Level 3			
16,700.0	10,809.5	16,871.4	10,887.4	180.2	180.8	98.93	-488.9	6,168.5	502.0	145.3	356.70	1.407 Level 3			
16,800.0	10,810.4	16,971.4	10,888.3	183.1	183.7	98.93	-488.9	6,268.5	502.0	139.5	362.44	1.385 Level 3			
16,900.0	10,811.2	17,071.4	10,889.3	186.0	186.6	98.94	-488.9	6,368.5	502.0	133.8	368.18	1.363 Level 3			
17,000.0	10,812.1	17,171.4	10,890.2	188.9	189.5	98.95	-488.9	6,468.5	502.0	128.1	373.92	1.343 Level 3			
17,100.0	10,813.0	17,271.4	10,891.2	191.8	192.4	98.96	-488.9	6,568.5	502.0	122.4	379.66	1.322 Level 3			
17,200.0	10,813.9	17,371.4	10,892.1	194.7	195.3	98.97	-488.9	6,668.5	502.0	116.6	385.41	1.303 Level 3			
17,300.0	10,814.7	17,471.4	10,893.0	197.6	198.2	98.97	-488.9	6,768.5	502.0	110.9	391.15	1.283 Level 3			
17,400.0	10,815.6	17,571.4	10,894.0	200.5	201.1	98.98	-488.9	6,868.5	502.0	105.2	396.89	1.265 Level 3			
17,500.0	10,816.5	17,671.4	10,894.9	203.5	204.0	98.99	-488.9	6,968.5	502.1	99.4	402.64	1.247 Level 2			
17,600.0	10,817.3	17,771.4	10,895.9	206.4	206.9	99.00	-488.9	7,068.5	502.1	93.7	408.39	1.229 Level 2			
17,700.0	10,818.2	17,871.4	10,896.8	209.3	209.8	99.01	-488.9	7,168.5	502.1	87.9	414.13	1.212 Level 2			
17,800.0	10,819.1	17,971.4	10,897.7	212.2	212.7	99.01	-488.9	7,268.5	502.1	82.2	419.88	1.196 Level 2			
17,900.0	10,820.0	18,071.4	10,898.7	215.1	215.6	99.02	-488.9	7,368.5	502.1	76.5	425.63	1.180 Level 2			
18,000.0	10,820.8	18,171.4	10,899.6	218.0	218.5	99.03	-488.9	7,468.5	502.1	70.7	431.38	1.164 Level 2			
18,100.0	10,821.7	18,271.4	10,900.6	220.9	221.4	99.04	-488.9	7,568.5	502.1	65.0	437.13	1.149 Level 2			
18,200.0	10,822.6	18,371.4	10,901.5	223.8	224.3	99.04	-488.9	7,668.5	502.1	59.3	442.88	1.134 Level 2			
18,300.0	10,823.5	18,471.4	10,902.5	226.7	227.3	99.05	-488.9	7,768.5	502.1	53.5	448.63	1.119 Level 2			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Oasis Petroleum

Anticollision Report

Company:	Oasis	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
Project:	Indian Hills	TVD Reference:	WELL @ 2134.0usft (Original Well Elev)
Reference Site:	153N-100W-31/32	MD Reference:	WELL @ 2134.0usft (Original Well Elev)
Site Error:	0.0 usft	North Reference:	True
Reference Well:	Lewis Federal 5300 11-31 3B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 3B	Database:	OpenWellsCompass - EDM Prod
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design 153N-100W-31/32 - Lewis Federal 5300 11-31 5T - Lewis Federal 5300 11-31 5T - Plan #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis				Distance					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/S (usft)	Centre +E/W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
18,400.0	10,824.3	18,571.4	10,903.4	229.7	230.2	99.06	-488.9	7,868.4	502.2	47.8	454.39	1.105	Level 2
18,500.0	10,825.2	18,671.4	10,904.3	232.6	233.1	99.07	-488.9	7,968.4	502.2	42.0	460.14	1.091	Level 2
18,600.0	10,826.1	18,771.4	10,905.3	235.5	236.0	99.08	-488.9	8,068.4	502.2	36.3	465.89	1.078	Level 2
18,700.0	10,826.9	18,871.4	10,906.2	238.4	238.9	99.08	-488.9	8,168.4	502.2	30.5	471.65	1.065	Level 2
18,800.0	10,827.8	18,971.4	10,907.2	241.3	241.8	99.09	-488.9	8,268.4	502.2	24.8	477.40	1.052	Level 2
18,900.0	10,828.7	19,071.4	10,908.1	244.2	244.7	99.10	-488.9	8,368.4	502.2	19.1	483.16	1.039	Level 2
19,000.0	10,829.6	19,171.4	10,909.1	247.1	247.6	99.11	-488.9	8,468.4	502.2	13.3	488.91	1.027	Level 2
19,100.0	10,830.4	19,271.4	10,910.0	250.1	250.6	99.12	-488.9	8,568.4	502.2	7.6	494.67	1.015	Level 2
19,200.0	10,831.3	19,371.4	10,910.9	253.0	253.5	99.12	-488.9	8,668.4	502.2	1.8	500.42	1.004	Level 2
19,300.0	10,832.2	19,471.4	10,911.9	255.9	256.4	99.13	-488.9	8,768.4	502.3	-3.9	506.18	0.992	Level 1
19,400.0	10,833.1	19,571.4	10,912.8	258.8	259.3	99.14	-488.9	8,868.4	502.3	-9.7	511.94	0.981	Level 1
19,500.0	10,833.9	19,671.4	10,913.8	261.7	262.2	99.15	-488.9	8,968.4	502.3	-15.4	517.69	0.970	Level 1
19,600.0	10,834.8	19,771.4	10,914.7	264.6	265.1	99.15	-488.9	9,068.4	502.3	-21.2	523.45	0.960	Level 1
19,700.0	10,835.7	19,871.4	10,915.7	267.6	268.1	99.16	-488.9	9,168.4	502.3	-26.9	529.21	0.949	Level 1
19,800.0	10,836.5	19,971.4	10,916.6	270.5	271.0	99.17	-488.9	9,268.4	502.3	-32.7	534.96	0.939	Level 1
19,900.0	10,837.4	20,071.4	10,917.5	273.4	273.9	99.18	-488.9	9,368.4	502.3	-38.4	540.72	0.929	Level 1
20,000.0	10,838.3	20,171.4	10,918.5	276.3	276.8	99.19	-488.9	9,468.4	502.3	-44.1	546.48	0.919	Level 1
20,100.0	10,839.2	20,271.4	10,919.4	279.2	279.7	99.19	-488.9	9,568.4	502.3	-49.9	552.24	0.910	Level 1
20,200.0	10,840.0	20,371.4	10,920.4	282.1	282.6	99.20	-488.9	9,668.4	502.4	-55.6	558.00	0.900	Level 1
20,300.0	10,840.9	20,471.4	10,921.3	285.1	285.6	99.21	-488.9	9,768.4	502.4	-61.4	563.76	0.891	Level 1
20,400.0	10,841.8	20,571.4	10,922.3	288.0	288.5	99.22	-488.9	9,868.4	502.4	-67.1	569.51	0.882	Level 1
20,500.0	10,842.7	20,671.4	10,923.2	290.9	291.4	99.23	-488.9	9,968.4	502.4	-72.9	575.27	0.873	Level 1
20,600.0	10,843.5	20,771.4	10,924.1	293.8	294.3	99.23	-488.9	10,068.4	502.4	-78.6	581.03	0.865	Level 1
20,640.9	10,843.9	20,812.3	10,924.5	294.6	295.5	99.24	-488.9	10,109.2	502.4	-80.6	582.98	0.862	Level 1, ES, SF

Oasis Petroleum

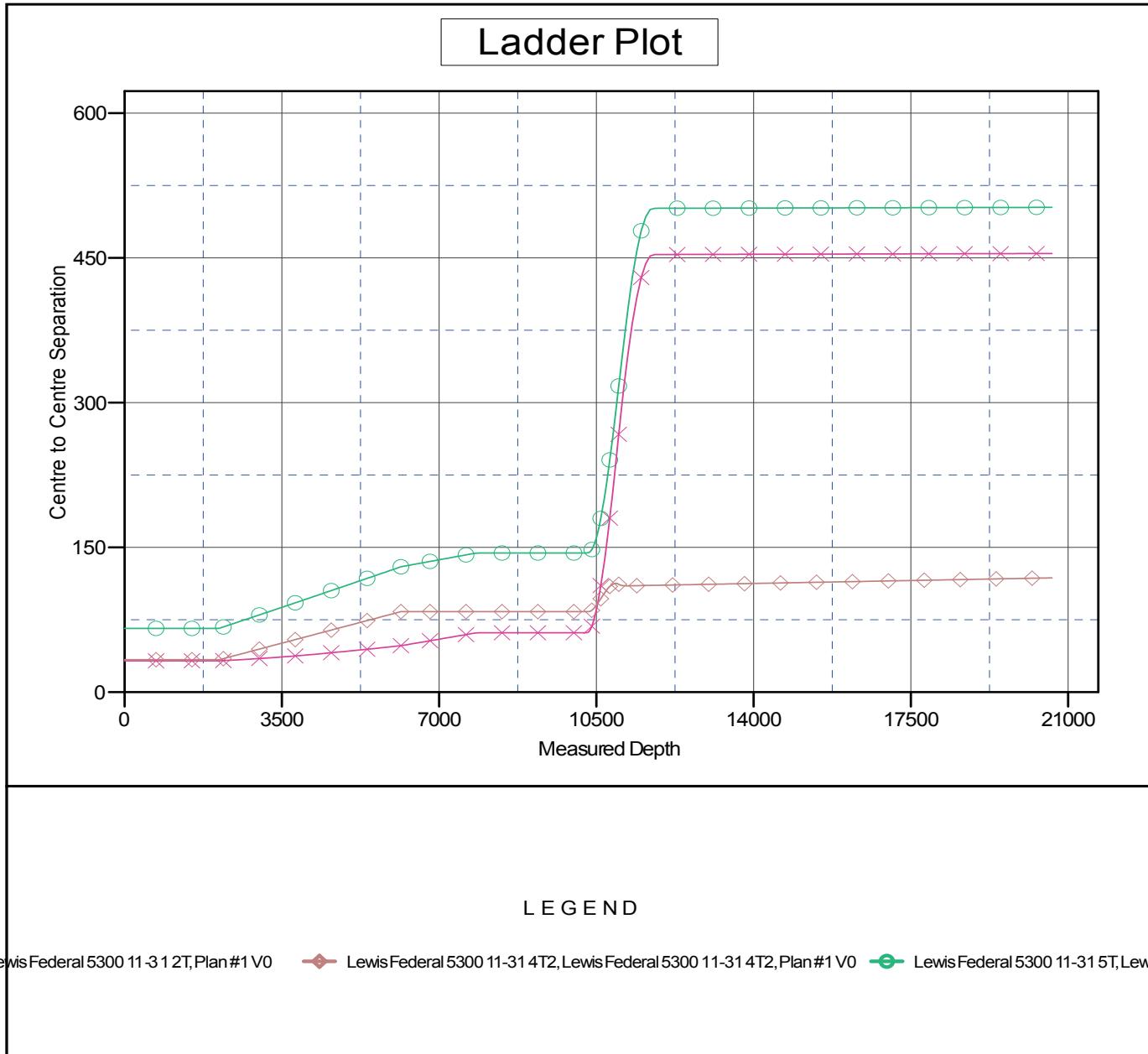
Anticollision Report

Company:	Oasis
Project:	Indian Hills
Reference Site:	153N-100W-31/32
Site Error:	0.0 usft
Reference Well:	Lewis Federal 5300 11-31 3B
Well Error:	0.0 usft
Reference Wellbore	Lewis Federal 5300 11-31 3B
Reference Design:	Plan #1

Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 3B
TVD Reference:	WELL @ 2134.0usft (Original Well Elev)
MD Reference:	WELL @ 2134.0usft (Original Well Elev)
North Reference:	True
Survey Calculation Method:	Minimum Curvature
Output errors are at	2.00 sigma
Database:	OpenWellsCompass - EDM Prod
Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 2134.0usft (Original Well Ele
Offset Depths are relative to Offset Datum
Central Meridian is 100° 30' 0.000 W

Coordinates are relative to: Lewis Federal 5300 11-31 3B
Coordinate System is US State Plane 1983, North Dakota Northern Zone
Grid Convergence at Surface is: -2.31°



Oasis Petroleum

Anticollision Report

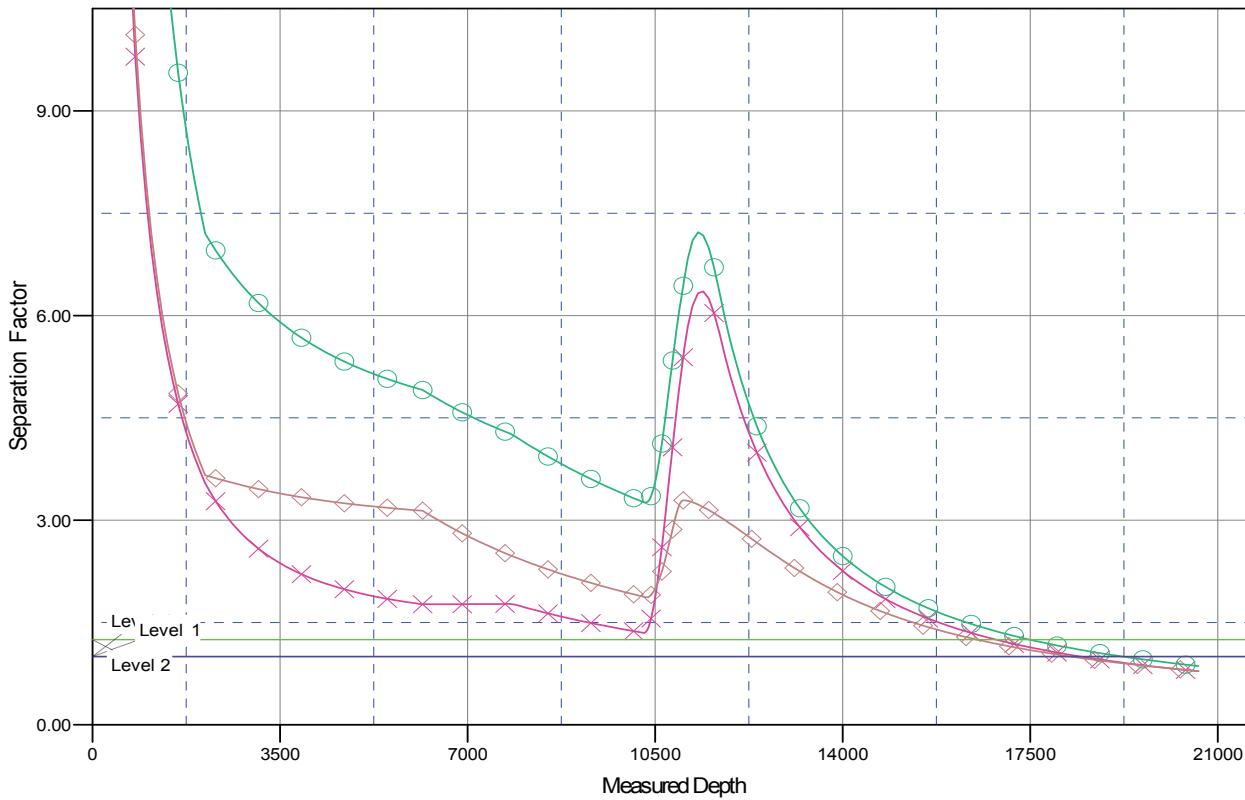
Company:	Oasis
Project:	Indian Hills
Reference Site:	153N-100W-31/32
Site Error:	0.0 usft
Reference Well:	Lewis Federal 5300 11-31 3B
Well Error:	0.0 usft
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Survey Calculation Method:	Minimum Curvature
Output errors are at	2.00 sigma
Database:	OpenWellsCompass - EDM Prod
Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 2134.0usft (Original Well Ele
Offset Depths are relative to Offset Datum
Central Meridian is 100° 30' 0.000 W

Coordinates are relative to: Lewis Federal 5300 11-31 3B
Coordinate System is US State Plane 1983, North Dakota Northern Zone
Grid Convergence at Surface is: -2.31°

Separation Factor Plot



LEGEND

Lewis Federal 5300 11-31 2T, Plan #1 V0 Lewis Federal 5300 11-31 4T2, Lewis Federal 5300 11-31 4T2, Plan #1 V0 Lewis Federal 5300 11-31 5T, Lewis F