



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.

30189

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 2B	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 5, 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 5, 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 5, 2019
Other First Purchasers Purchasing From This Lease	% Purchased	Date Effective August 5, 2019
Other Transporters Transporting From This Lease Power Energy Logistics, LLC	% Transported 5%	Date Effective August 5, 2019
Other Transporters Transporting From This Lease	% Transported	Date Effective August 5, 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
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FOR STATE USE ONLY

Date Approved NOV 15 2019	NDIC CTB NO 208190
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
SEN 2468 (04-2010)

RECEIVED
RM 6

SEP 17 2019

Well File No.
30189

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 2B		Spacing Unit Description Sec. 31/32 T153N R100W		
Operator Oasis Petroleum North America	Telephone Number (281) 404-9500	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 1050 F N L	265 F WL	Qtr-Qtr LOT1	Section 31	Township 153 N	Range 100 W	County McKenzie
Spud Date January 25, 2019	Date TD Reached February 13, 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)

PERFORATION & OPEN HOLE INTERVALS

PRODUCTION

Current Producing Open Hole or Perforated Interval(s), This Completion, Top and Bottom, (MD Ft) Lateral 1- 11160' to 20807'							Name of Zone (If Different from Pool Name)		
Date Well Completed (SEE INSTRUCTIONS) August 2, 2019							Well Status (Producing or Shut-In) producing		
Date of Test 08/05/2019	Hours Tested 24	Choke Size 18 /64	Producing Method flowing		Pumping-Size & Type of Pump				
			Oil (Bbls) 548	Gas (MCF) 764	Water (Bbls) 461	Oil Gravity-API (Corr.) °	Disposition of Gas Sold		
Flowing Tubing Pressure (PSI)		Flowing Casing Pressure (PSI)		Calculated 24-Hour Rate	Oil (Bbls) 548	Gas (MCF) 764	Water (Bbls) 461	Gas-Oil Ratio 1394	

GEOLOGICAL MARKERS

PLUG BACK INFORMATION

CORES CUT

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

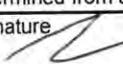
Drill Stem Test

Well Specific Stimulation

Date Stimulated 06/20/2019	Stimulated Formation Bakken		Top (Ft) 11160	Bottom (Ft) 20807	Stimulation Stages 40	Volume 305814	Volume Units Barrels
Type Treatment Sand Frac	Acid %	Lbs Proppant 6010700	Maximum Treatment Pressure (PSI) 9259		Maximum Treatment Rate (BBLS/Min) 73.0		
Details 100 Mesh: 3586110 40/70 White: 1510300 40/70 CRC: 914290							
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

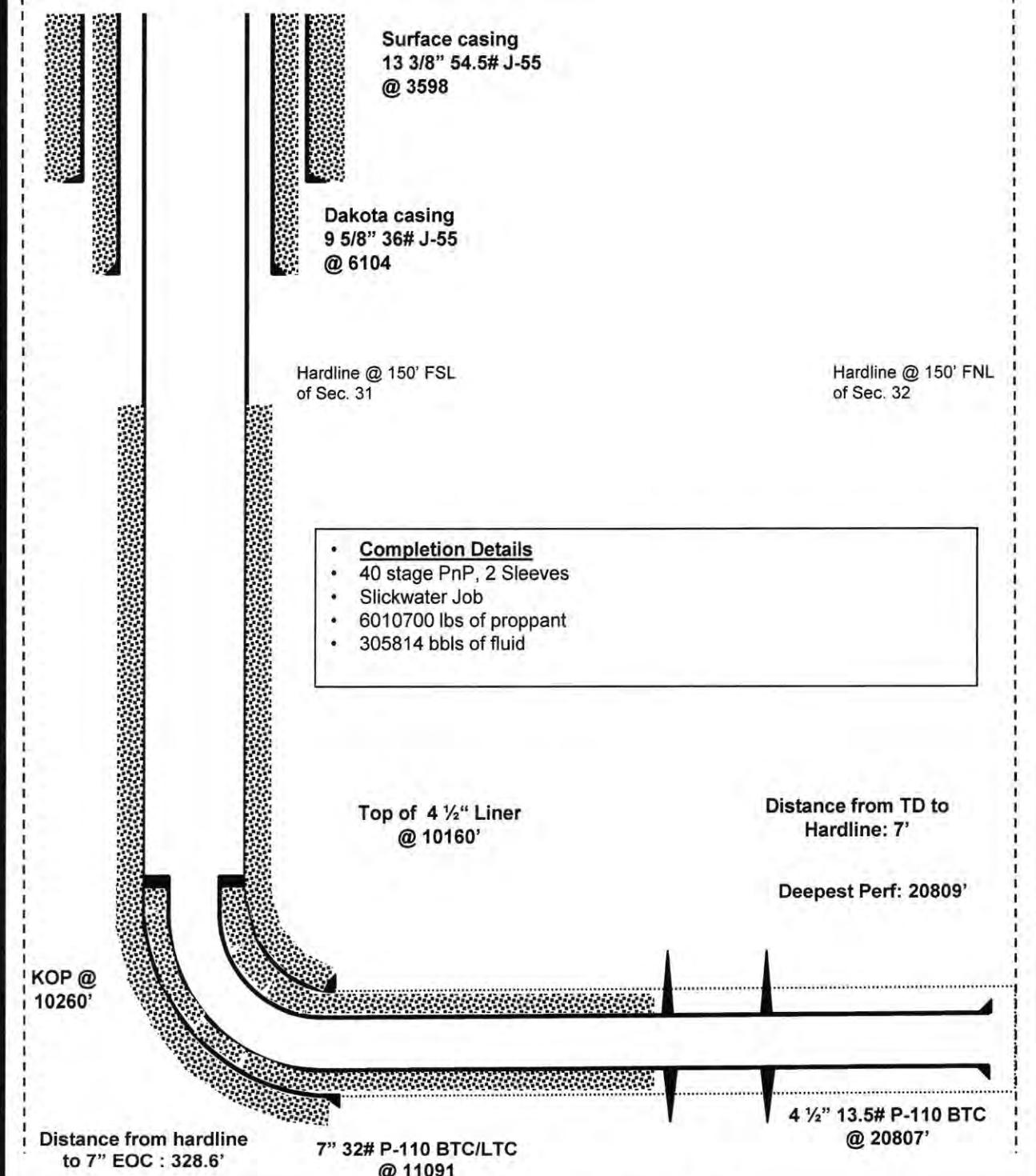
A scab liner was set on this well to raise liner top to approximately 10160'.
This report provides frac data.

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 2B
Wellbore Schematic

FORMATION: Bakken



OASIS PETROLEUM NA LLC

Lewis Federal 5300 11-31 2B

Wellbore: T153N-R100W Sec. 31 & 32

SHL: 1050' FNL & 265' FEL T153N-R100W Sec. 31

McKenzie County, North Dakota



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)

RECEIVED

AUG 22 2019

Well File No.
30189

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 2, 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 | Change well status to CONFIDENTIAL |

Well Name and Number Lewis Federal 5300 11-31 2B					
Footages 1050 F N L	256 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 2, 2019.

off confidential 2/2/20

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 August 13, 2019	
Email Address jcrawford@oasispetroleum.com			

FOR STATE USE ONLY	
<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date <i>8/23/19</i>	
By <i>Abbie Ebel</i>	
Title Petroleum Resource Specialist	

Industrial Commission of North Dakota
Oil and Gas Division

Well or Facility No
30189

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 2B	Inspector Richard Dunn		
Well Location QQ Sec Twp Rng LOT1 31 153 N 100 W	County MCKENZIE		
Footages 1050 Feet From the N Line	Field BAKER		
265 Feet From the W Line	Pool		
Date of First Production Through Permanent Wellhead	8/5/2019	This Is The First Sales	

PURCHASER / TRANSPORTER

Purchaser OASIS PETROLEUM MARKETING LLC	Transporter HILAND CRUDE, LLC
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TANK BATTERY

Single Well Tank Battery Number : 130189-01

SALES INFORMATION This Is The First Sales

ESTIMATED BARRELS TO BE SOLD	ACTUAL BARRELS SOLD	DATE
15000 BBLS	1860 BBLS	8/5/2019
BBLS	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.
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Start Date	8/5/2019
Date Approved	8/9/2019
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
SEN 2468 (04-2010)

Review

JUN 1 2019

Well File No.
30189

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.

PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

ND Oil & Gas Division

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 2B			Spacing Unit Description Sec. 31/32 T153N R100W
Operator Oasis Petroleum North America	Telephone Number (281) 404-9500	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	<u>1050</u> <u>973</u>	<u>F N L</u>	<u>265</u> <u>235</u>	<u>F WL</u>	Qtr-Qtr LOT1	Section 31	Township 153 N	Range 100 W	County McKenzie
Spud Date	Date TD Reached		Drilling Contractor and Rig Number			KB Elevation (Ft)		Graded Elevation (Ft)	
January 25, 2019	February 13, 2019		Nabors B21			2135		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)

PERFORATION & OPEN HOLE INTERVALS

PRODUCTION

Current Producing Open Hole or Perforated Interval(s), This Completion, Top and Bottom, (MD Ft) Lateral 1-								Name of Zone (If Different from Pool Name)	
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 /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
06/18/2019

Signature

Printed Name
Jennifer Swenson

Title
Regulatory Specialist



Scientific
Drilling

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 2B
API #	33-053-06549
County & State	McKenzie County, ND
SDI Job #	OP.015962
Rig	Nabors B21
Survey Date	12-Feb-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 20870 feet is true and correct as determined from all available records.

Seth Burstad

Signature

14-Feb-2019

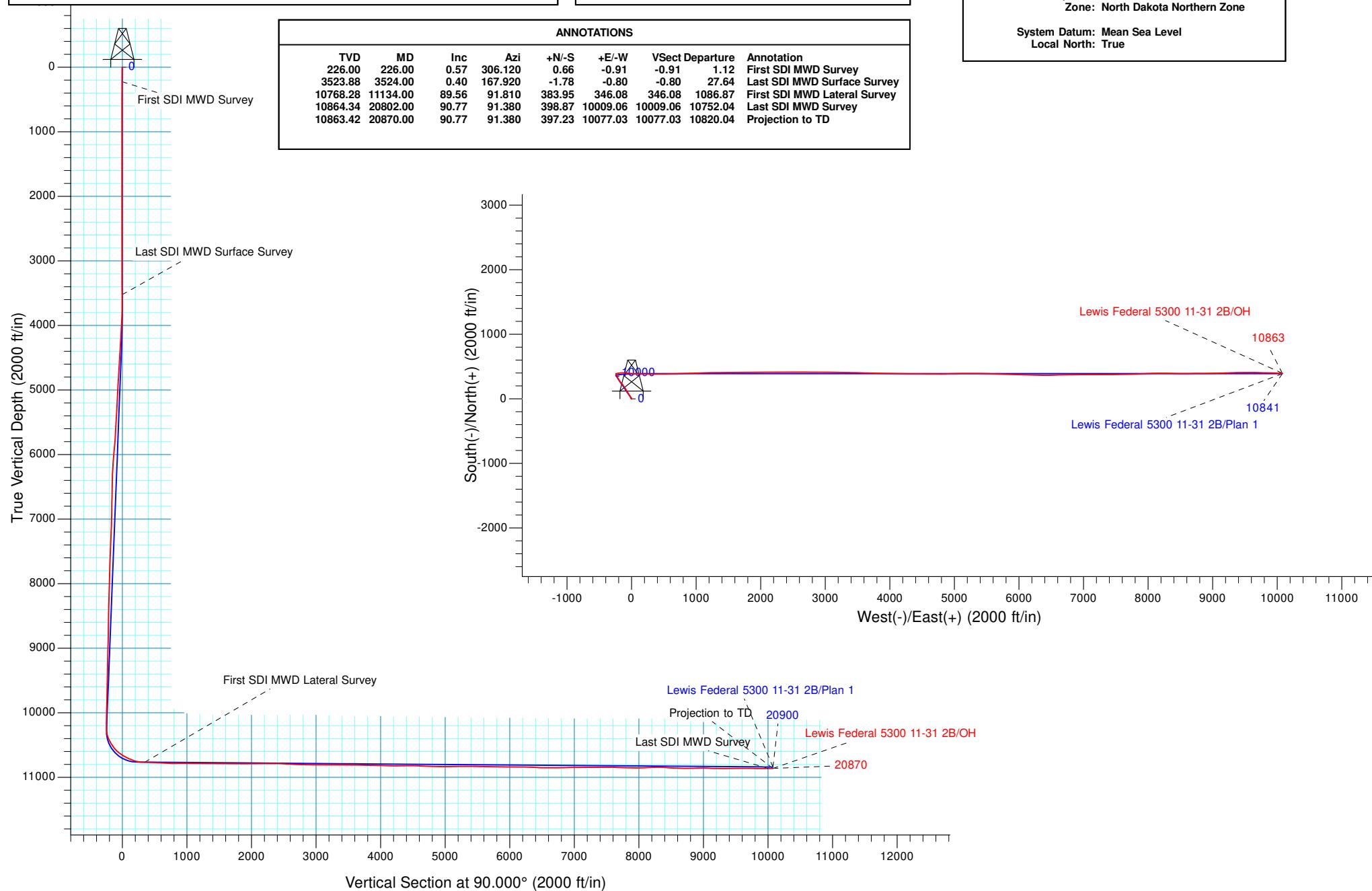
Date

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

WELL DETAILS: Lewis Federal 5300 11-31 2B				
Northing 393162.02	GL 2110' & KB 25 @ 2135.00ft (Nabors B21)	2110.00	Latitude 48° 2' 9.300 N	Longitude 103° 36' 11.060 W

Design: OH (Lewis Federal 5300 11-31 2B/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 2B

OH

Design: OH

Standard Survey Report

14 February, 2019



www.scientificdrilling.com



Company:	Oasis Petroleum	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 2B
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 2B	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 2B, 1050' FNL 265' FWL Sec 31 T153N R100W				
Well Position	+N/-S +E/-W	0.00 ft 0.00 ft	Northing: Easting:	393,162.02 usft 1,209,545.85 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	55,785

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	2/14/2019		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
226.00	3,524.00	Survey #1 - Surface (OH)	MWD+HDGM	OWSG MWD + HDGM
3,524.00	6,023.00	Survey #2 - Vertical (OH)	MWD+HDGM	OWSG MWD + HDGM
6,148.00	11,076.00	Survey #3 - Vertical / Curve (OH)	MWD+HDGM	OWSG MWD + HDGM
11,134.00	20,870.00	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
226.00	0.57	306.120	226.00	0.66	-0.91	-0.91	0.25	0.25	0.00
First SDI MWD Survey									
288.00	0.34	294.940	287.99	0.92	-1.32	-1.32	0.40	-0.37	-18.03
381.00	0.26	310.670	380.99	1.18	-1.73	-1.73	0.12	-0.09	16.91
443.00	0.52	315.060	442.99	1.47	-2.04	-2.04	0.42	0.42	7.08
534.00	0.30	1.750	533.99	2.00	-2.32	-2.32	0.42	-0.24	51.31
628.00	0.21	0.720	627.99	2.42	-2.31	-2.31	0.10	-0.10	-1.10

Company:	Oasis Petroleum	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 2B
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 2B	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)	
718.00	0.21	316.340	717.99	2.70	-2.43	-2.43	0.18	0.00	-49.31	
808.00	0.34	1.590	807.99	3.09	-2.53	-2.53	0.27	0.14	50.28	
899.00	0.78	29.060	898.98	3.90	-2.22	-2.22	0.55	0.48	30.19	
989.00	0.67	31.180	988.98	4.88	-1.65	-1.65	0.13	-0.12	2.36	
1,079.00	0.52	22.270	1,078.97	5.71	-1.23	-1.23	0.20	-0.17	-9.90	
1,170.00	0.69	17.850	1,169.97	6.61	-0.90	-0.90	0.19	0.19	-4.86	
1,261.00	0.63	22.140	1,260.96	7.60	-0.55	-0.55	0.09	-0.07	4.71	
1,350.00	0.65	358.870	1,349.95	8.56	-0.37	-0.37	0.29	0.02	-26.15	
1,442.00	0.41	186.790	1,441.95	8.75	-0.42	-0.42	1.15	-0.26	-187.04	
1,532.00	0.26	209.490	1,531.95	8.25	-0.56	-0.56	0.22	-0.17	25.22	
1,622.00	0.37	235.110	1,621.95	7.91	-0.90	-0.90	0.20	0.12	28.47	
1,713.00	0.64	230.240	1,712.95	7.42	-1.53	-1.53	0.30	0.30	-5.35	
1,806.00	0.60	221.430	1,805.94	6.72	-2.25	-2.25	0.11	-0.04	-9.47	
1,899.00	0.64	241.650	1,898.94	6.11	-3.03	-3.03	0.24	0.04	21.74	
1,993.00	0.43	225.640	1,992.93	5.61	-3.75	-3.75	0.27	-0.22	-17.03	
2,086.00	0.50	228.000	2,085.93	5.10	-4.30	-4.30	0.08	0.08	2.54	
2,180.00	0.66	260.260	2,179.92	4.73	-5.13	-5.13	0.38	0.17	34.32	
2,273.00	0.18	148.060	2,272.92	4.52	-5.59	-5.59	0.80	-0.52	-120.65	
2,366.00	0.28	90.670	2,365.92	4.39	-5.28	-5.28	0.26	0.11	-61.71	
2,460.00	0.63	94.640	2,459.92	4.35	-4.54	-4.54	0.37	0.37	4.22	
2,553.00	0.47	122.250	2,552.91	4.10	-3.70	-3.70	0.33	-0.17	29.69	
2,647.00	0.50	101.160	2,646.91	3.82	-2.98	-2.98	0.19	0.03	-22.44	
2,740.00	0.34	121.260	2,739.91	3.59	-2.34	-2.34	0.23	-0.17	21.61	
2,833.00	0.26	156.970	2,832.91	3.26	-2.02	-2.02	0.21	-0.09	38.40	
2,927.00	0.37	130.970	2,926.91	2.86	-1.71	-1.71	0.19	0.12	-27.66	
3,020.00	0.52	173.350	3,019.90	2.25	-1.43	-1.43	0.38	0.16	45.57	
3,113.00	0.30	165.280	3,112.90	1.59	-1.32	-1.32	0.24	-0.24	-8.68	
3,206.00	0.41	162.370	3,205.90	1.04	-1.16	-1.16	0.12	0.12	-3.13	
3,300.00	0.62	176.170	3,299.89	0.21	-1.03	-1.03	0.26	0.22	14.68	
3,393.00	0.63	182.690	3,392.89	-0.80	-1.02	-1.02	0.08	0.01	7.01	
3,486.00	0.35	148.360	3,485.89	-1.56	-0.89	-0.89	0.42	-0.30	-36.91	
3,524.00	0.40	167.920	3,523.88	-1.78	-0.80	-0.80	0.36	0.13	51.47	
Last SDI MWD Surface Survey										
3,605.00	0.51	177.950	3,604.88	-2.42	-0.73	-0.73	0.17	0.14	12.38	
3,667.00	0.36	336.340	3,666.88	-2.52	-0.80	-0.80	1.38	-0.24	255.47	
3,760.00	1.94	323.760	3,759.86	-0.98	-1.85	-1.85	1.71	1.70	-13.53	
3,854.00	4.04	328.360	3,853.73	3.12	-4.52	-4.52	2.25	2.23	4.89	
3,947.00	5.93	329.690	3,946.37	10.06	-8.67	-8.67	2.04	2.03	1.43	
4,041.00	6.72	333.480	4,039.80	19.17	-13.57	-13.57	0.95	0.84	4.03	
4,134.00	7.50	336.380	4,132.08	29.60	-18.44	-18.44	0.92	0.84	3.12	
4,228.00	7.50	333.430	4,225.28	40.71	-23.64	-23.64	0.41	0.00	-3.14	
4,321.00	6.55	325.750	4,317.58	50.52	-29.34	-29.34	1.43	-1.02	-8.26	
4,414.00	5.76	319.420	4,410.05	58.45	-35.36	-35.36	1.12	-0.85	-6.81	
4,508.00	5.83	321.850	4,503.57	65.79	-41.38	-41.38	0.27	0.07	2.59	

Company:	Oasis Petroleum	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 2B
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 2B	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)	
4,602.00	6.14	326.050	4,597.05	73.71	-47.13	-47.13	0.57	0.33	4.47	
4,697.00	6.24	328.670	4,691.50	82.34	-52.66	-52.66	0.32	0.11	2.76	
4,792.00	6.46	331.910	4,785.92	91.46	-57.86	-57.86	0.44	0.23	3.41	
4,887.00	6.36	333.570	4,880.32	100.89	-62.71	-62.71	0.22	-0.11	1.75	
4,982.00	5.51	329.090	4,974.81	109.52	-67.40	-67.40	1.02	-0.89	-4.72	
5,077.00	5.49	331.300	5,069.38	117.41	-71.92	-71.92	0.22	-0.02	2.33	
5,172.00	5.87	334.160	5,163.91	125.77	-76.22	-76.22	0.50	0.40	3.01	
5,267.00	6.09	327.370	5,258.39	134.39	-81.06	-81.06	0.78	0.23	-7.15	
5,361.00	6.57	321.720	5,351.82	142.81	-87.08	-87.08	0.84	0.51	-6.01	
5,457.00	6.02	324.070	5,447.24	151.20	-93.44	-93.44	0.63	-0.57	2.45	
5,551.00	6.04	329.670	5,540.72	159.46	-98.83	-98.83	0.63	0.02	5.96	
5,646.00	6.56	331.180	5,635.15	168.53	-103.97	-103.97	0.57	0.55	1.59	
5,741.00	6.64	329.150	5,729.52	178.00	-109.40	-109.40	0.26	0.08	-2.14	
5,836.00	6.76	322.950	5,823.87	187.17	-115.58	-115.58	0.77	0.13	-6.53	
5,930.00	7.57	323.390	5,917.14	196.56	-122.61	-122.61	0.86	0.86	0.47	
6,023.00	8.46	324.970	6,009.23	207.08	-130.19	-130.19	0.99	0.96	1.70	
6,148.00	7.87	321.760	6,132.96	221.33	-140.76	-140.76	0.60	-0.47	-2.57	
6,210.00	5.30	317.690	6,194.55	226.78	-145.32	-145.32	4.21	-4.15	-6.56	
6,304.00	3.28	315.700	6,288.28	231.92	-150.12	-150.12	2.15	-2.15	-2.12	
6,397.00	2.69	314.340	6,381.15	235.35	-153.54	-153.54	0.64	-0.63	-1.46	
6,490.00	1.81	312.300	6,474.08	237.86	-156.19	-156.19	0.95	-0.95	-2.19	
6,584.00	0.90	297.560	6,568.05	239.20	-157.94	-157.94	1.03	-0.97	-15.68	
6,677.00	0.44	267.330	6,661.05	239.52	-158.94	-158.94	0.61	-0.49	-32.51	
6,771.00	1.06	293.500	6,755.04	239.85	-160.10	-160.10	0.74	0.66	27.84	
6,864.00	1.35	298.880	6,848.02	240.73	-161.85	-161.85	0.33	0.31	5.78	
6,957.00	1.71	308.130	6,940.99	242.11	-163.90	-163.90	0.47	0.39	9.95	
7,051.00	2.38	316.470	7,034.93	244.39	-166.35	-166.35	0.78	0.71	8.87	
7,144.00	2.58	315.700	7,127.84	247.29	-169.14	-169.14	0.22	0.22	-0.83	
7,237.00	4.41	327.300	7,220.66	251.80	-172.53	-172.53	2.10	1.97	12.47	
7,331.00	4.67	328.680	7,314.37	258.11	-176.48	-176.48	0.30	0.28	1.47	
7,424.00	4.58	330.440	7,407.06	264.57	-180.28	-180.28	0.18	-0.10	1.89	
7,518.00	4.40	331.390	7,500.78	271.00	-183.85	-183.85	0.21	-0.19	1.01	
7,612.00	4.13	331.380	7,594.52	277.14	-187.20	-187.20	0.29	-0.29	-0.01	
7,705.00	4.08	332.430	7,687.28	283.01	-190.34	-190.34	0.10	-0.05	1.13	
7,798.00	4.04	335.000	7,780.04	288.91	-193.25	-193.25	0.20	-0.04	2.76	
7,892.00	3.72	328.810	7,873.83	294.52	-196.23	-196.23	0.56	-0.34	-6.59	
7,985.00	3.43	321.450	7,966.65	299.28	-199.53	-199.53	0.58	-0.31	-7.91	
8,078.00	2.92	325.980	8,059.50	303.42	-202.59	-202.59	0.61	-0.55	4.87	
8,172.00	2.30	325.940	8,153.41	306.97	-204.98	-204.98	0.66	-0.66	-0.04	
8,265.00	2.16	324.850	8,246.34	309.94	-207.04	-207.04	0.16	-0.15	-1.17	
8,358.00	2.12	327.330	8,339.27	312.83	-208.97	-208.97	0.11	-0.04	2.67	
8,451.00	1.99	330.500	8,432.21	315.68	-210.70	-210.70	0.19	-0.14	3.41	
8,545.00	1.87	329.310	8,526.16	318.42	-212.28	-212.28	0.13	-0.13	-1.27	

Company:	Oasis Petroleum	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 2B
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 2B	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)	
8,638.00	1.98	334.160	8,619.11	321.17	-213.76	-213.76	0.21	0.12	5.22	
8,731.00	2.45	336.680	8,712.04	324.44	-215.25	-215.25	0.52	0.51	2.71	
8,825.00	2.97	336.370	8,805.93	328.52	-217.02	-217.02	0.55	0.55	-0.33	
8,918.00	3.14	342.980	8,898.80	333.16	-218.73	-218.73	0.42	0.18	7.11	
9,012.00	3.65	336.240	8,992.63	338.36	-220.69	-220.69	0.69	0.54	-7.17	
9,105.00	3.56	338.030	9,085.45	343.75	-222.96	-222.96	0.15	-0.10	1.92	
9,198.00	3.33	336.470	9,178.28	348.90	-225.12	-225.12	0.27	-0.25	-1.68	
9,292.00	3.10	337.500	9,272.13	353.75	-227.18	-227.18	0.25	-0.24	1.10	
9,387.00	2.95	338.710	9,367.00	358.40	-229.05	-229.05	0.17	-0.16	1.27	
9,481.00	2.64	340.170	9,460.89	362.69	-230.67	-230.67	0.34	-0.33	1.55	
9,576.00	2.49	330.440	9,555.79	366.55	-232.43	-232.43	0.48	-0.16	-10.24	
9,670.00	2.63	327.620	9,649.70	370.14	-234.59	-234.59	0.20	0.15	-3.00	
9,765.00	2.47	330.050	9,744.61	373.76	-236.78	-236.78	0.20	-0.17	2.56	
9,860.00	2.29	330.730	9,839.53	377.19	-238.73	-238.73	0.19	-0.19	0.72	
9,955.00	1.88	324.330	9,934.46	380.11	-240.56	-240.56	0.50	-0.43	-6.74	
10,049.00	1.67	321.790	10,028.42	382.44	-242.31	-242.31	0.24	-0.22	-2.70	
10,144.00	1.58	319.640	10,123.38	384.52	-244.01	-244.01	0.11	-0.09	-2.26	
10,191.00	1.43	316.990	10,170.36	385.45	-244.83	-244.83	0.35	-0.32	-5.64	
10,238.00	1.19	308.700	10,217.35	386.18	-245.62	-245.62	0.65	-0.51	-17.64	
10,269.00	1.54	55.910	10,248.35	386.62	-245.52	-245.52	7.12	1.13	345.84	
10,300.00	5.57	77.400	10,279.28	387.18	-243.71	-243.71	13.47	13.00	69.32	
10,332.00	10.18	80.260	10,310.97	387.99	-239.40	-239.40	14.45	14.41	8.94	
10,363.00	15.12	77.340	10,341.21	389.35	-232.75	-232.75	16.06	15.94	-9.42	
10,395.00	19.73	74.060	10,371.73	391.74	-223.48	-223.48	14.72	14.41	-10.25	
10,426.00	23.55	75.140	10,400.54	394.77	-212.46	-212.46	12.39	12.32	3.48	
10,458.00	26.63	77.590	10,429.52	397.95	-199.27	-199.27	10.16	9.63	7.66	
10,489.00	29.38	80.260	10,456.89	400.73	-184.99	-184.99	9.75	8.87	8.61	
10,521.00	31.38	83.270	10,484.49	403.04	-168.98	-168.98	7.85	6.25	9.41	
10,553.00	34.21	89.120	10,511.40	404.15	-151.70	-151.70	13.27	8.84	18.28	
10,584.00	37.20	93.680	10,536.57	403.68	-133.63	-133.63	12.91	9.65	14.71	
10,616.00	40.59	94.600	10,561.48	402.23	-113.59	-113.59	10.75	10.59	2.88	
10,647.00	44.87	94.890	10,584.24	400.49	-92.63	-92.63	13.82	13.81	0.94	
10,679.00	49.19	94.540	10,606.05	398.56	-69.30	-69.30	13.52	13.50	-1.09	
10,710.00	52.98	94.410	10,625.52	396.68	-45.26	-45.26	12.23	12.23	-0.42	
10,742.00	55.78	94.050	10,644.15	394.77	-19.32	-19.32	8.80	8.75	-1.13	
10,773.00	58.26	94.460	10,661.03	392.84	6.61	6.61	8.08	8.00	1.32	
10,804.00	61.30	93.910	10,676.63	390.88	33.32	33.32	9.93	9.81	-1.77	
10,835.00	62.34	93.900	10,691.27	389.02	60.58	60.58	3.35	3.35	-0.03	
10,866.00	65.13	92.230	10,704.98	387.54	88.34	88.34	10.21	9.00	-5.39	
10,897.00	66.31	91.770	10,717.73	386.56	116.58	116.58	4.04	3.81	-1.48	
10,929.00	69.26	90.740	10,729.83	385.91	146.19	146.19	9.69	9.22	-3.22	
10,960.00	70.15	91.050	10,740.58	385.46	175.26	175.26	3.02	2.87	1.00	
10,991.00	73.39	91.080	10,750.28	384.91	204.70	204.70	10.45	10.45	0.10	

Company:	Oasis Petroleum	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 2B
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 2B	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)	
11,023.00	78.40	90.680	10,758.07	384.43	235.72	235.72	15.70	15.66	-1.25	
11,054.00	82.92	89.680	10,763.10	384.34	266.30	266.30	14.92	14.58	-3.23	
11,076.00	84.84	89.330	10,765.45	384.53	288.17	288.17	8.87	8.73	-1.59	
11,134.00	89.56	91.810	10,768.28	383.95	346.08	346.08	9.19	8.14	4.28	
First SDI MWD Lateral Survey										
11,227.00	88.09	89.850	10,770.19	382.60	439.04	439.04	2.63	-1.58	-2.11	
11,319.00	87.05	87.950	10,774.09	384.37	530.94	530.94	2.35	-1.13	-2.07	
11,411.00	86.48	88.060	10,779.28	387.56	622.74	622.74	0.63	-0.62	0.12	
11,504.00	87.69	88.430	10,784.01	390.41	715.57	715.57	1.36	1.30	0.40	
11,596.00	90.30	89.030	10,785.62	392.45	807.53	807.53	2.91	2.84	0.65	
11,688.00	90.33	88.040	10,785.12	394.80	899.49	899.49	1.08	0.03	-1.08	
11,780.00	89.87	88.170	10,784.96	397.84	991.44	991.44	0.52	-0.50	0.14	
11,872.00	88.79	87.880	10,786.03	401.01	1,083.38	1,083.38	1.22	-1.17	-0.32	
11,964.00	90.30	89.130	10,786.76	403.41	1,175.34	1,175.34	2.13	1.64	1.36	
12,055.00	89.73	88.520	10,786.74	405.28	1,266.32	1,266.32	0.92	-0.63	-0.67	
12,148.00	89.36	89.620	10,787.48	406.79	1,359.30	1,359.30	1.25	-0.40	1.18	
12,240.00	90.30	89.760	10,787.75	407.28	1,451.30	1,451.30	1.03	1.02	0.15	
12,332.00	89.50	89.010	10,787.91	408.27	1,543.29	1,543.29	1.19	-0.87	-0.82	
12,427.00	89.40	90.000	10,788.83	409.09	1,638.29	1,638.29	1.05	-0.11	1.04	
12,522.00	89.36	90.040	10,789.85	409.06	1,733.28	1,733.28	0.06	-0.04	0.04	
12,616.00	90.44	90.040	10,790.02	408.99	1,827.28	1,827.28	1.15	1.15	0.00	
12,712.00	90.10	89.570	10,789.56	409.32	1,923.28	1,923.28	0.60	-0.35	-0.49	
12,808.00	91.30	88.410	10,788.39	411.01	2,019.25	2,019.25	1.74	1.25	-1.21	
12,903.00	90.43	89.600	10,786.96	412.66	2,114.22	2,114.22	1.55	-0.92	1.25	
12,997.00	88.93	90.150	10,787.48	412.87	2,208.22	2,208.22	1.70	-1.60	0.59	
13,092.00	89.50	89.620	10,788.78	413.06	2,303.21	2,303.21	0.82	0.60	-0.56	
13,186.00	90.30	88.980	10,788.95	414.21	2,397.20	2,397.20	1.09	0.85	-0.68	
13,282.00	87.15	90.570	10,791.08	414.58	2,493.16	2,493.16	3.68	-3.28	1.66	
13,377.00	86.78	90.250	10,796.11	413.90	2,588.02	2,588.02	0.51	-0.39	-0.34	
13,472.00	87.82	90.360	10,800.59	413.40	2,682.92	2,682.92	1.10	1.09	0.12	
13,567.00	88.36	90.590	10,803.76	412.61	2,777.86	2,777.86	0.62	0.57	0.24	
13,661.00	88.16	90.360	10,806.61	411.83	2,871.81	2,871.81	0.32	-0.21	-0.24	
13,756.00	88.73	90.460	10,809.19	411.15	2,966.78	2,966.78	0.61	0.60	0.11	
13,850.00	90.60	90.440	10,809.74	410.42	3,060.77	3,060.77	1.99	1.99	-0.02	
13,945.00	90.77	89.940	10,808.60	410.10	3,155.76	3,155.76	0.56	0.18	-0.53	
14,039.00	90.94	89.900	10,807.20	410.23	3,249.75	3,249.75	0.19	0.18	-0.04	
14,134.00	88.96	91.640	10,807.28	408.95	3,344.73	3,344.73	2.77	-2.08	1.83	
14,229.00	89.13	92.210	10,808.87	405.76	3,439.66	3,439.66	0.63	0.18	0.60	
14,324.00	89.30	91.370	10,810.17	402.80	3,534.61	3,534.61	0.90	0.18	-0.88	
14,418.00	88.90	91.700	10,811.64	400.28	3,628.56	3,628.56	0.55	-0.43	0.35	
14,513.00	89.30	91.580	10,813.14	397.56	3,723.51	3,723.51	0.44	0.42	-0.13	
14,607.00	88.56	91.170	10,814.89	395.31	3,817.47	3,817.47	0.90	-0.79	-0.44	
14,702.00	89.03	91.310	10,816.89	393.25	3,912.42	3,912.42	0.52	0.49	0.15	
14,796.00	88.79	90.980	10,818.68	391.37	4,006.39	4,006.39	0.43	-0.26	-0.35	

Company:	Oasis Petroleum	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 2B
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 2B	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)	
14,891.00	89.03	90.770	10,820.48	389.92	4,101.36	4,101.36	0.34	0.25	-0.22	
14,985.00	89.43	90.020	10,821.75	389.27	4,195.35	4,195.35	0.90	0.43	-0.80	
15,080.00	90.40	90.570	10,821.89	388.78	4,290.34	4,290.34	1.17	1.02	0.58	
15,175.00	90.67	90.300	10,821.00	388.06	4,385.34	4,385.34	0.40	0.28	-0.28	
15,270.00	90.30	90.570	10,820.20	387.34	4,480.33	4,480.33	0.48	-0.39	0.28	
15,364.00	86.98	90.950	10,822.43	386.10	4,574.28	4,574.28	3.55	-3.53	0.40	
15,458.00	87.56	90.000	10,826.90	385.32	4,668.17	4,668.17	1.18	0.62	-1.01	
15,552.00	87.65	90.310	10,830.83	385.06	4,762.09	4,762.09	0.34	0.10	0.33	
15,646.00	89.16	88.920	10,833.45	385.70	4,856.05	4,856.05	2.18	1.61	-1.48	
15,741.00	89.53	88.950	10,834.54	387.46	4,951.02	4,951.02	0.39	0.39	0.03	
15,836.00	90.84	88.850	10,834.23	389.28	5,046.00	5,046.00	1.38	1.38	-0.11	
15,931.00	91.48	89.020	10,832.31	391.05	5,140.97	5,140.97	0.70	0.67	0.18	
16,026.00	90.30	89.520	10,830.83	392.26	5,235.95	5,235.95	1.35	-1.24	0.53	
16,121.00	90.64	90.120	10,830.05	392.56	5,330.94	5,330.94	0.73	0.36	0.63	
16,216.00	89.36	91.440	10,830.05	391.27	5,425.93	5,425.93	1.94	-1.35	1.39	
16,310.00	88.22	91.090	10,832.04	389.19	5,519.88	5,519.88	1.27	-1.21	-0.37	
16,405.00	89.06	91.180	10,834.29	387.31	5,614.84	5,614.84	0.89	0.88	0.09	
16,499.00	88.56	92.010	10,836.24	384.69	5,708.78	5,708.78	1.03	-0.53	0.88	
16,594.00	89.10	91.890	10,838.18	381.46	5,803.70	5,803.70	0.58	0.57	-0.13	
16,688.00	89.40	91.390	10,839.41	378.77	5,897.66	5,897.66	0.62	0.32	-0.53	
16,783.00	89.36	91.960	10,840.44	376.00	5,992.61	5,992.61	0.60	-0.04	0.60	
16,877.00	89.83	91.870	10,841.11	372.85	6,086.55	6,086.55	0.51	0.50	-0.10	
16,971.00	90.67	91.690	10,840.70	369.93	6,180.51	6,180.51	0.91	0.89	-0.19	
17,066.00	87.82	91.810	10,841.95	367.03	6,275.45	6,275.45	3.00	-3.00	0.13	
17,161.00	86.68	89.870	10,846.51	365.64	6,370.32	6,370.32	2.37	-1.20	-2.04	
17,256.00	88.19	88.760	10,850.76	366.78	6,465.21	6,465.21	1.97	1.59	-1.17	
17,350.00	89.87	88.690	10,852.35	368.87	6,559.17	6,559.17	1.79	1.79	-0.07	
17,445.00	90.07	88.260	10,852.40	371.40	6,654.14	6,654.14	0.50	0.21	-0.45	
17,538.00	90.90	88.210	10,851.61	374.26	6,747.09	6,747.09	0.89	0.89	-0.05	
17,634.00	91.37	89.610	10,849.71	376.09	6,843.05	6,843.05	1.54	0.49	1.46	
17,728.00	90.97	90.720	10,847.79	375.82	6,937.03	6,937.03	1.25	-0.43	1.18	
17,823.00	91.07	89.870	10,846.10	375.33	7,032.01	7,032.01	0.90	0.11	-0.89	
17,917.00	89.50	90.110	10,845.63	375.34	7,126.01	7,126.01	1.69	-1.67	0.26	
18,011.00	89.90	89.990	10,846.12	375.26	7,220.01	7,220.01	0.44	0.43	-0.13	
18,106.00	90.33	89.080	10,845.93	376.03	7,315.00	7,315.00	1.06	0.45	-0.96	
18,202.00	91.34	89.160	10,844.53	377.51	7,410.98	7,410.98	1.06	1.05	0.08	
18,296.00	89.53	89.200	10,843.82	378.85	7,504.96	7,504.96	1.93	-1.93	0.04	
18,390.00	88.83	89.920	10,845.16	379.57	7,598.95	7,598.95	1.07	-0.74	0.77	
18,485.00	87.08	88.630	10,848.55	380.77	7,693.88	7,693.88	2.29	-1.84	1.36	
18,579.00	88.66	89.030	10,852.05	382.69	7,787.79	7,787.79	1.73	1.68	0.43	
18,673.00	89.53	87.650	10,853.53	385.41	7,881.73	7,881.73	1.74	0.93	-1.47	
18,768.00	90.27	87.410	10,853.70	389.51	7,976.65	7,976.65	0.82	0.78	-0.25	
18,863.00	91.54	86.750	10,852.20	394.35	8,071.51	8,071.51	1.51	1.34	-0.69	



Scientific Drilling, Intl

Survey Report



Company:	Oasis Petroleum	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 2B
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 2B	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)	
18,958.00	92.42	89.850	10,848.92	397.16	8,166.40	8,166.40	3.39	0.93	3.26	
19,052.00	92.14	91.520	10,845.18	396.04	8,260.31	8,260.31	1.80	-0.30	1.78	
19,115.00	89.83	91.200	10,844.09	394.55	8,323.28	8,323.28	3.70	-3.67	-0.51	
19,146.00	87.96	91.710	10,844.69	393.76	8,354.26	8,354.26	6.25	-6.03	1.65	
19,177.00	85.91	91.330	10,846.35	392.94	8,385.21	8,385.21	6.73	-6.61	-1.23	
19,209.00	85.80	91.350	10,848.66	392.19	8,417.11	8,417.11	0.35	-0.34	0.06	
19,240.00	85.70	91.130	10,850.96	391.52	8,448.02	8,448.02	0.78	-0.32	-0.71	
19,272.00	85.81	91.750	10,853.33	390.72	8,479.92	8,479.92	1.96	0.34	1.94	
19,304.00	86.15	90.600	10,855.57	390.07	8,511.84	8,511.84	3.74	1.06	-3.59	
19,335.00	86.78	90.450	10,857.48	389.78	8,542.78	8,542.78	2.09	2.03	-0.48	
19,367.00	88.22	89.300	10,858.88	389.85	8,574.75	8,574.75	5.76	4.50	-3.59	
19,398.00	88.49	89.050	10,859.77	390.30	8,605.73	8,605.73	1.19	0.87	-0.81	
19,430.00	88.59	88.470	10,860.58	390.99	8,637.71	8,637.71	1.84	0.31	-1.81	
19,461.00	89.73	88.340	10,861.04	391.85	8,668.70	8,668.70	3.70	3.68	-0.42	
19,525.00	90.84	88.400	10,860.72	393.67	8,732.67	8,732.67	1.74	1.73	0.09	
19,619.00	89.90	89.160	10,860.11	395.68	8,826.64	8,826.64	1.29	-1.00	0.81	
19,715.00	91.07	90.800	10,859.30	395.71	8,922.63	8,922.63	2.10	1.22	1.71	
19,809.00	90.20	89.700	10,858.26	395.30	9,016.63	9,016.63	1.49	-0.93	-1.17	
19,905.00	86.85	87.990	10,860.73	397.23	9,112.56	9,112.56	3.92	-3.49	-1.78	
19,968.00	87.55	87.700	10,863.81	399.60	9,175.44	9,175.44	1.20	1.11	-0.46	
20,000.00	89.33	87.480	10,864.68	400.94	9,207.40	9,207.40	5.60	5.56	-0.69	
20,094.00	90.84	87.550	10,864.54	405.02	9,301.30	9,301.30	1.61	1.61	0.07	
20,189.00	90.91	88.670	10,863.09	408.15	9,396.24	9,396.24	1.18	0.07	1.18	
20,283.00	90.03	89.970	10,862.32	409.27	9,490.23	9,490.23	1.67	-0.94	1.38	
20,378.00	91.04	90.940	10,861.43	408.51	9,585.22	9,585.22	1.47	1.06	1.02	
20,473.00	88.16	91.310	10,862.09	406.65	9,680.19	9,680.19	3.06	-3.03	0.39	
20,567.00	90.27	91.770	10,863.38	404.12	9,774.14	9,774.14	2.30	2.24	0.49	
20,662.00	88.59	90.970	10,864.32	401.85	9,869.10	9,869.10	1.96	-1.77	-0.84	
20,757.00	90.70	91.340	10,864.91	399.94	9,964.08	9,964.08	2.25	2.22	0.39	
20,802.00	90.77	91.380	10,864.34	398.87	10,009.06	10,009.06	0.18	0.16	0.09	
Last SDI MWD Survey										
20,870.00	90.77	91.380	10,863.42	397.23	10,077.03	10,077.03	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)							
226.00	226.00	0.66		-0.91	First SDI MWD Survey					
3,524.00	3,523.88	-1.78		-0.80	Last SDI MWD Surface Survey					
11,134.00	10,768.28	383.95		346.08	First SDI MWD Lateral Survey					
20,802.00	10,864.34	398.87		10,009.06	Last SDI MWD Survey					
20,870.00	10,863.42	397.23		10,077.03	Projection to TD					



Scientific Drilling, Intl

Survey Report



Company:	Oasis Petroleum	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 2B
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 2B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Casper District

Checked By: _____ Approved By: _____ Date: _____



Oasis Petroleum North America, LLC

Lewis Federal 5300 11-31 2B

1,050' FNL & 265' FWL

Lot 1 Section 31, T153N, R100W

Baker Field / Middle Bakken

McKenzie County, North Dakota

BOTTOM HOLE LOCATION:

397.23' N & 10,077.03' E of surface or approx.

652.77' FNL & 180.71' FEL Lot 4 Sec. 32, T153N, R100W

Prepared for:

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Prepared by:

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**Oasis Petroleum North America, LLC.
Lewis Federal 5300 11-31 2B
Well Evaluation**



Figure 1. Nabors drilling rig #B21 at the Oasis Petroleum NA, LLC. Lewis Federal 5300 11-31 2B; January 2019, McKenzie County, North Dakota.

Introduction

The Oasis Petroleum NA, LLC. Lewis Federal 5300 11-31 2B is located in Baker Field of the Williston Basin [Lot 1 Section 31, T153N, R101W]. 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 2B is the third of four 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 2B was spud on January 25, 2019. The surface hole was drilled with one 17.5" assembly to a depth of 3,600'. 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 3,598'. 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 6,120'. The 9 5/8" casing was then set to set to a depth of 6,107'. The remainder of the vertical hole was completed with three 8.75" assemblies. The first vertical assembly drilled to a depth of 8,336' before being replaced due to low ROP, the second drilled to a depth of 8,374 when a mud motor failure was experienced, the third vertical assembly drilled to a depth of 10,260' (KOP). The curve assembly consisted of an 8.75" Baker DD505TS PDC bit, a 2.38° NOV mud motor, and Scientific drilling MWD tools. The curve was successfully landed at 11,150' MD and 10,769' TVD, approximately 10' below the Upper Bakken Shale on 6 February 2019. Seven inch diameter 32# P-110 intermediate casing was set to 11,091' MD at landing. The lateral was completed using two 6" assemblies. The first lateral assembly drilled to a depth of 17,478' before a trip was required due to an MWD failure. The second and final lateral assembly reached a total depth of 20,870' on February 13, 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 Petroleum North America, LLC, Wade Federal 5300 41-30 8T3*, the *Oasis Petroleum North America, LLC, Lewis Federal 5300 31-31H*, and the *Oasis Petroleum North America, LLC, Lewis Federal 5300 33-31 3B*. 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 9,464' MD, 9,444' TVD (-7,309' 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 mudstone (**Figure 2**). The limestone has an earthy, rarely crystalline texture. Also noted in several samples were trace fossil fragments. The limestone is argillaceous in part throughout this interval. In certain areas possible intercrystalline 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 ~125u with gas shows peaking at 333u.

Figure 2. Wet sample cuttings of lime mudstone from the Mission Canyon.



The Bakken Formation

The Upper Bakken Shale Member [Mississippian] was recorded at 10,967' MD, 10,743' TVD (-8,608' 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 gas a background gas of 1300u was observed, as well as a survey gas of 2319u. 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 11,026' MD, 10,759' TVD (-8,624' 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 ~500 to 4500 units while several shows exceeded 5000u.



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

Geosteering

Structure maps provided by Oasis Petroleum projected that the structure would be a consistent down dip averaging 89.38° over the course of the lateral. The steering team anticipated the structure to be down at 89.50° the first 4,000' of vertical section, steepening to an 89.12° to 6,000' of vertical section, and remaining near 89.53° for the remainder of the lateral. Due to higher than anticipated build rates through the curve the wellbore landed only 10' into the Middle Bakken and as a result the gamma signatures throughout the middle member were based on offset wells. Upon exiting casing, and drilling down, 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, this technique was also used in drilling the Lewis Federal 5300 11-31 3B. 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**). The cool C marker was contacted several times in the lateral. However, 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. Near 19,050' 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 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 favorable in relation to ROP.

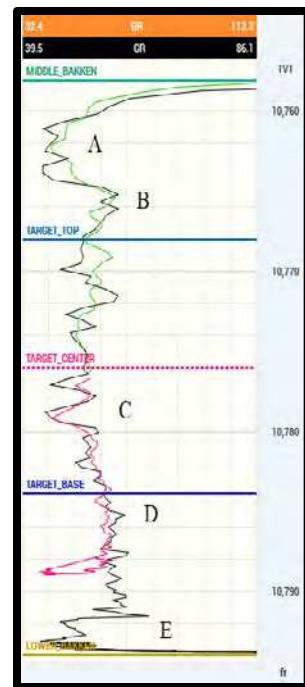


Figure 4. Target definition for the Oasis Petroleum, Lewis Federal 5300 11-31 2B.

The Lewis Federal 5300 11-31 2B had an estimated overall formation dip of approximately -0.59°. 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 20,870' MD was achieved at 21:30 hours on February 13, 2019. The wellbore was completed 96.6% within target, opening 9,799' (measurement taken from uncased lateral portion) of potentially productive reservoir rock.

Hydrocarbon Shows

Gas was continuously recorded from 3,600' 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 350 units were noted, against a 9.1 to 12.85 pound per gallon (PPG) diesel-invert, mud weight. Gas shows were significantly higher prior to 17,400'. Chromatography of gas revealed typical concentrations of methane, ethane and propane characteristic of the Middle Bakken (**Figure 5**). Background concentrations in the lateral ranged from 300 to 5000 units, against a 9.45-9.6 PPG saltwater gel drilling fluid (**Figure 6**). 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.*

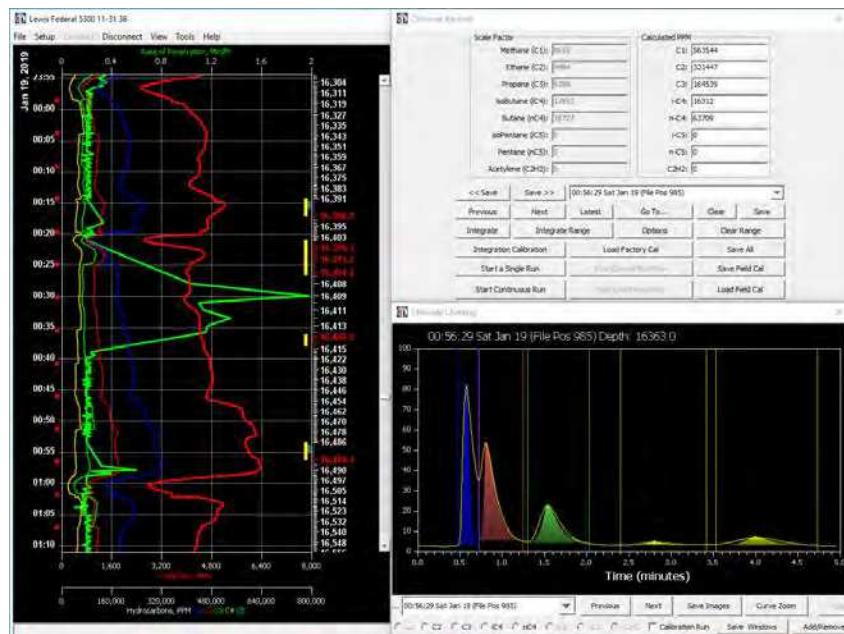


Figure 5. Screen shot of gas chromatography portraying total gas values and C₁-C₄ values, shown in parts per million.

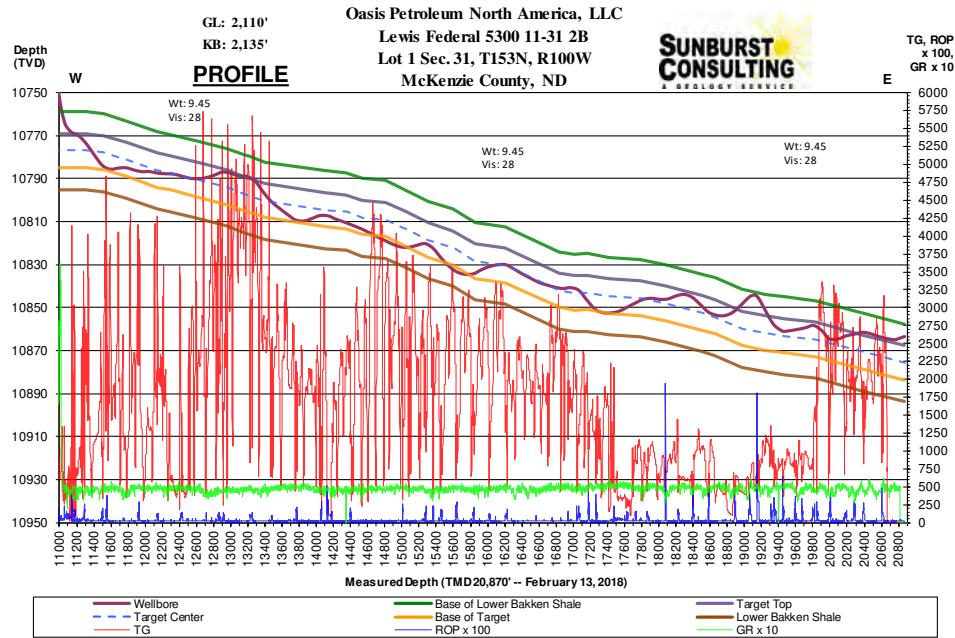


Figure 6. Cross-sectional profile of the Lewis Federal 5300 11-31 3B displaying stratigraphic position, total gas, rate of penetration and gamma values.

Summary

The *Lewis Federal 5300 11-31 2B* is a well in Oasis Petroleum's horizontal Middle Bakken Member development program in McKenzie County, North Dakota. The project was drilled from surface casing to total depth in 20 days. A total depth of 20,870' MD was achieved at 21:30 hours on 13 January 2019. The well-site team worked together to maintain the wellbore in the desired target interval for 96.6% within target, opening 9,779' of potentially productive reservoir rock.

Samples in the Middle Bakken Member are predominantly silty sandstone. These samples are light to medium gray, light brown, and occasionally cream silty sandstone. The silty sandstone is fine to very fine grained. The middle member typically contained sub round and occasionally sub-angular grains. Samples are smooth, moderately sorted and poorly cemented by calcite. Rare quantities of disseminated and nodular pyrite are present as was trace to fair intergranular porosity. Trace to rare light-medium brown, spotty oil stain was visible in many of these samples. 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 2B* awaits completion operations to determine its ultimate production potential and commercial value.

Respectfully,
Michelle Baker
 Well Site Geosteering Consultant
 Sunburst Consulting, Inc.
 15 February 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 2B
<u>API #:</u>	33-053-06549
<u>WELL FILE #:</u>	30189
<u>SURFACE LOCATION:</u>	1,050' FNL & 265' 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 25, 2019
<u>BOTTOM HOLE LOCATION:</u>	397.23' N & 10,077.03' E of surface or approx. 652.77' FNL & 180.71' FEL Lot 4 Sec. 32, T153N, R100W
<u>CLOSURE COORDINATES:</u>	Closure Azimuth: 87.74° Closure Distance: 10,084.86'
<u>TOTAL DEPTH / DATE:</u>	20,870' on February 13, 2019 96.6% within target interval
<u>TOTAL DRILLING DAYS:</u>	20 days
<u>PUMP INFO:</u>	Stroke length - 12" Liner Inner Diameter - 6" for surface; 5.0" for vertical, curve and lateral
<u>COMPANY MEN:</u>	Doug Rakstad, Ian Anderson, Mike Ziegler, Mike Crow

COMPANY GEOLOGIST: Shea Cook, John O'Donnell

WELLSITE GEOLOGISTS: Michelle Baker, Chris Kyler

ROCK SAMPLING: 30' from 8,200' - 11,150
50' from 11,150' - 20,870'

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, Jason Strandlien, Willem Zylstra

MWD: Scientific Drilling
James Swartz, Steve Gray

CASING: Surface: 13 3/8" 54.5# J-55 set to 3,598'
Isolation: 9 5/8" 36# J-55 set to 6,107'
Intermediate: 7" 32# set to 11,091'

KEY OFFSET WELLS:

Oasis Petroleum North America, LLC
Lewis Federal 5300 11-31 3B
Lot 1 Section 31, T153N, R100W
McKenzie County, ND
NDIC: 30197
KB: 2,135'

Oasis Petroleum North America, LLC
Wade Federal 5300 41-30 8T3
Lot 6 Sec. 30, T153N, R100W
McKenzie County, ND
NDIC: 28558
KB: 2,077'

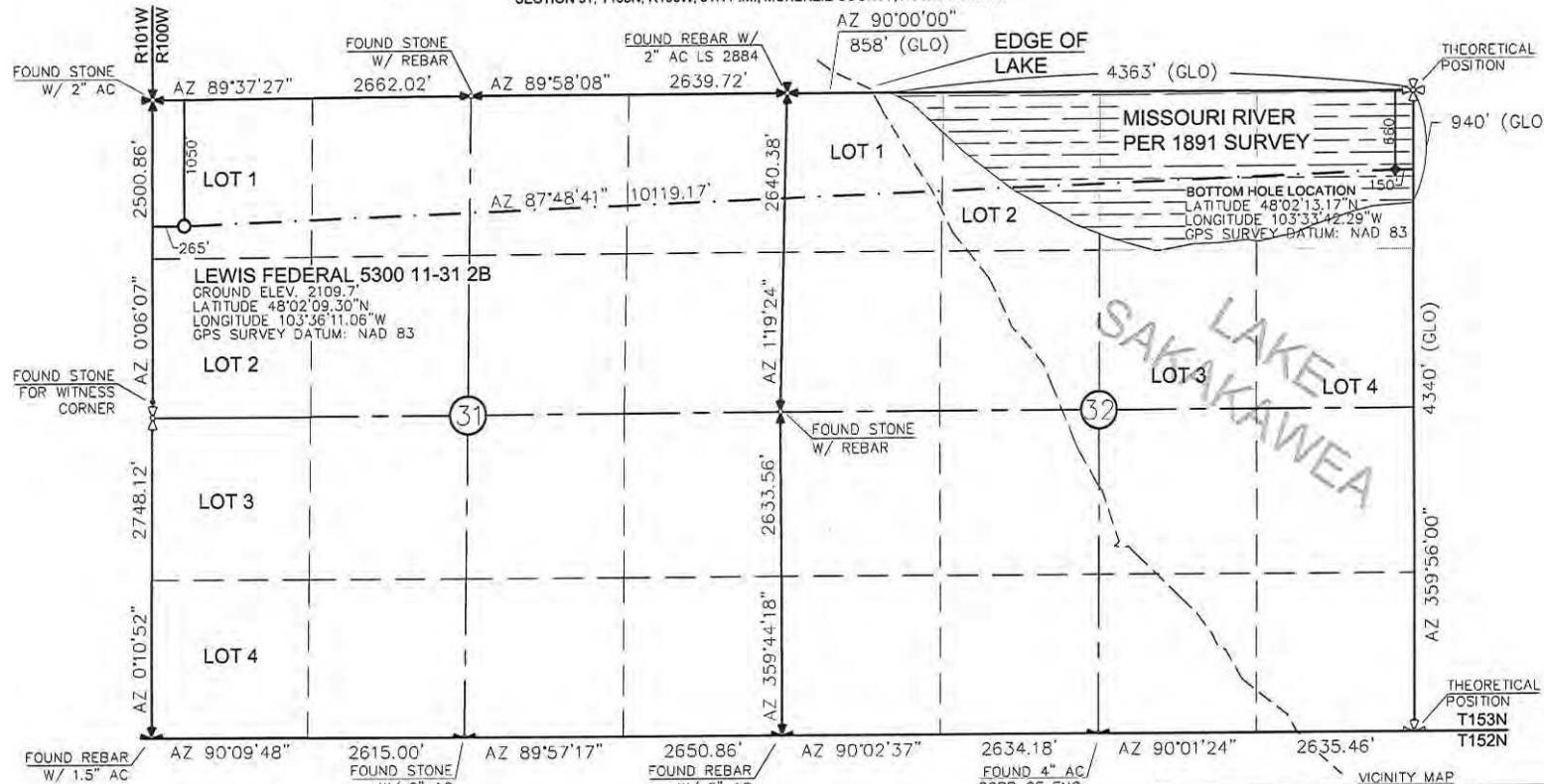
Oasis Petroleum North America, LLC
Lewis Federal 5300 31-31H
Lot 6 Sec. 30, T153N, R100W
McKenzie County, ND
NDIC: 20314
KB: 2,185'

WELL LOCATION

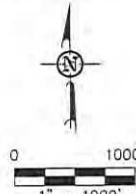
OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002

LEWIS FEDERAL 5300 11-31 2B

LEWIS FEDERAL 3300 11-31-26
1050 FEET FROM NORTH LINE AND 265 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
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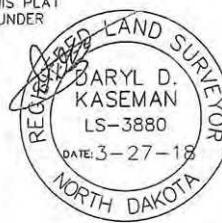


 - MONUMENT - RECOVERED
 - MONUMENT - NOT RECOVERED

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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19

Project No.	Date	Description	
100			
OASIS PETROLEUM NORTH AMERICA, LLC			
WELL LOCATION			
SECTION 31, T15N, R10W, 5TH F.M.			
MCKENZIE COUNTY, NORTH DAKOTA			
Drawn By:	J.D.M	Project No.:	S17-25-153
Checked By:	D.D.K	Date:	MARCH 2018

Interstate Engineering, Inc.
 P.O. Box 648
 425 East Main Street
 Sidney, Montana 59270
 Ph. (406) 333-5617
 Fax (406) 333-5618
www.interstate69.com
 Office in Missoula, North Idaho and South Dakota

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2/8

SECTION BREAKDOWN
OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"LEWIS FEDERAL 5300 11-31-2T"

SECTION 31, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

Project #: S129-23242
Date: JAN 2014

Sheet No. 1

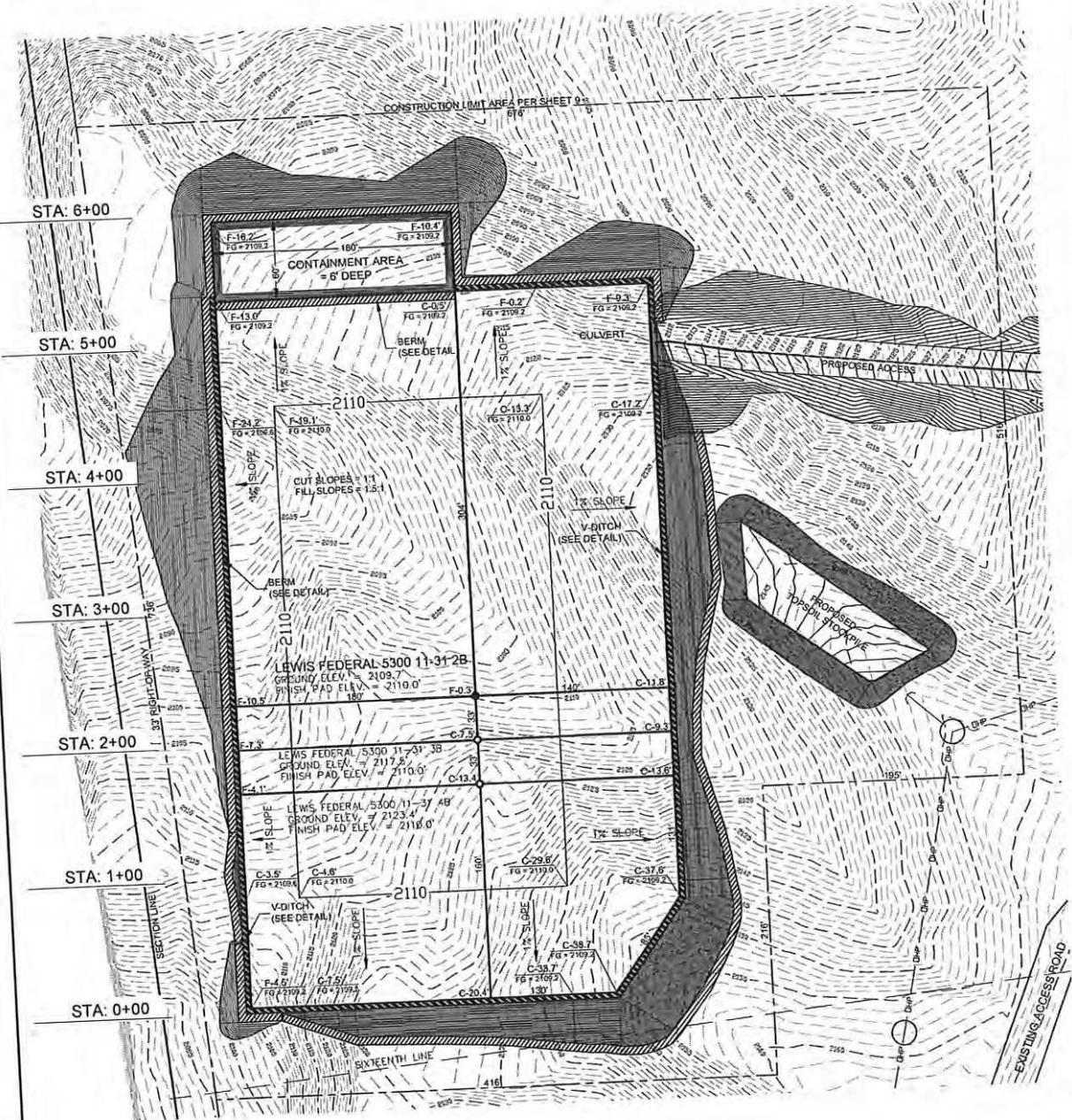
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Drawing No. 1

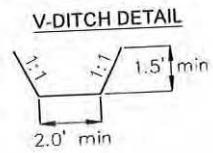
Page No. 1

PAD LAYOUT
 OASIS PETROLEUM NORTH AMERICA, LLC
 1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
 LEWIS FEDERAL 5300 11-31 2B
 1050 FEET FROM NORTH LINE AND 265 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
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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
 utilities location is recommended before construction.

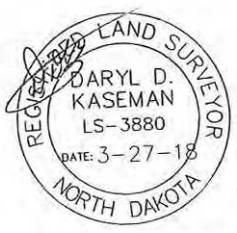
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 Other offices in Minnesota, North Dakota and South Dakota

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

Drawn By: JDM Project No: B17-09-163
 Checked By: DDK Date: MARCH 2018

Revision No	Date	By	Description

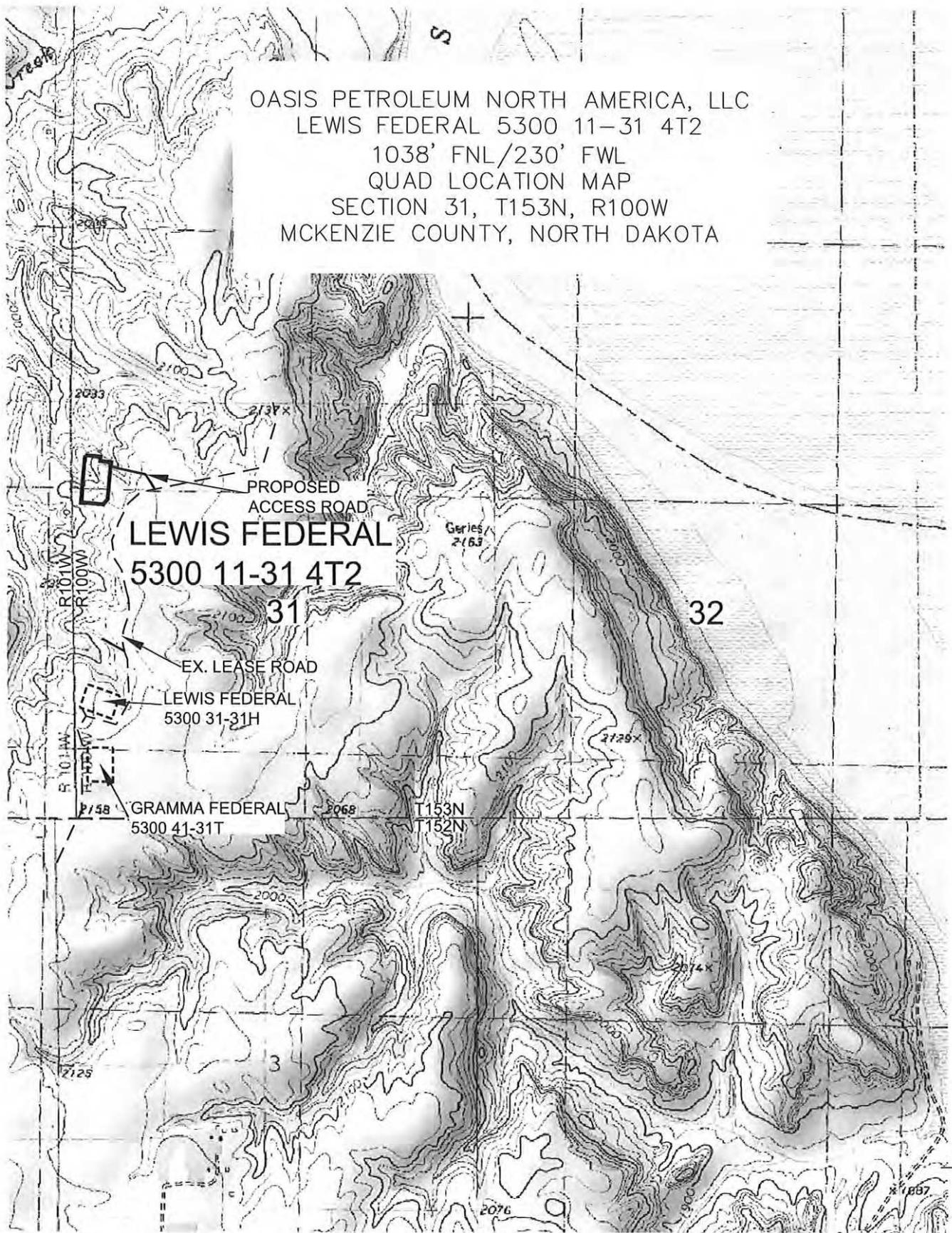


0
1" = 80'

3/9
SHEET NO.



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

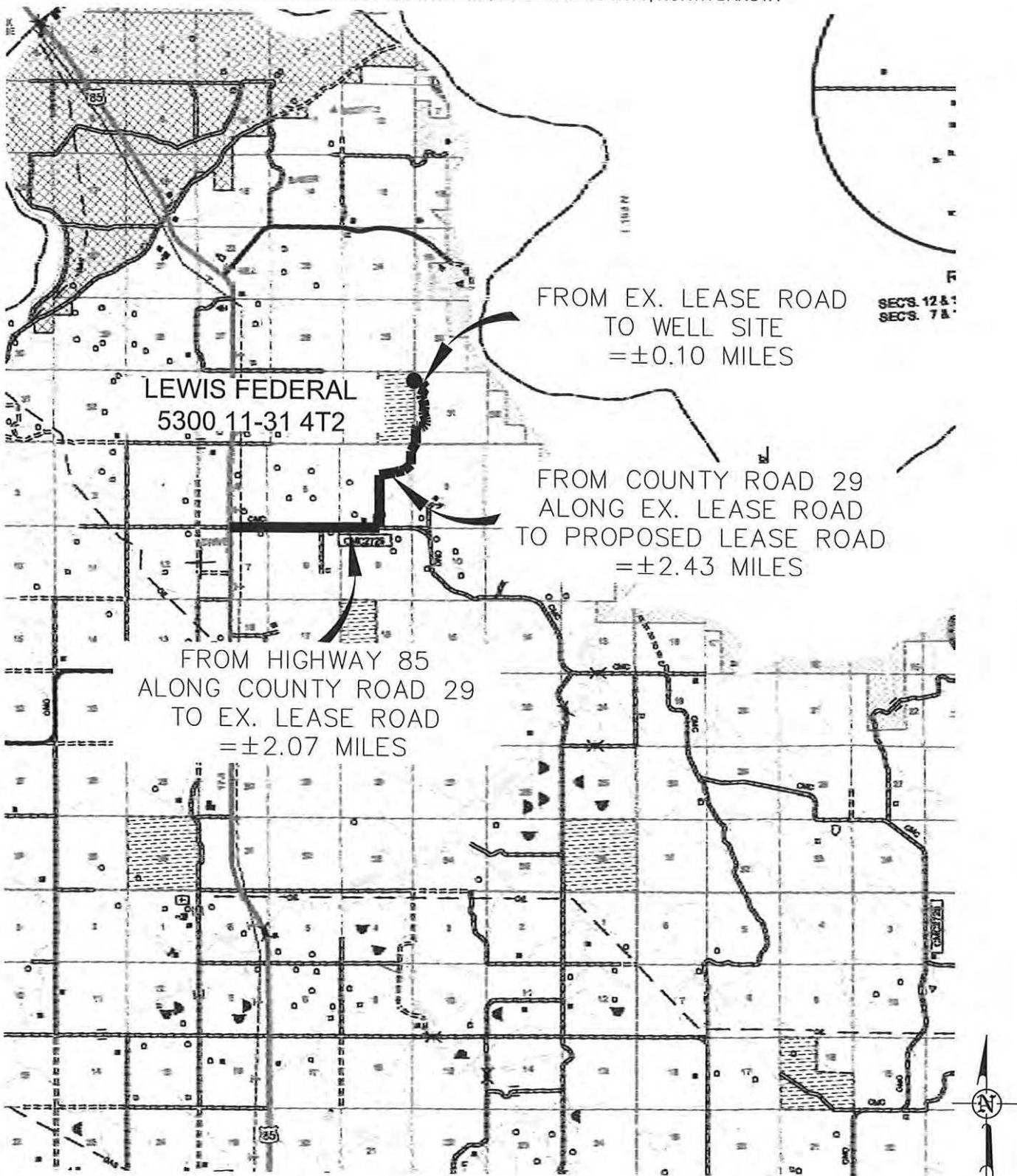
Drawn By: B.H.H. Project No.: S13-09-378.03
Checked By: D.D.K. Date: JAN. 2014

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

COUNTY ROAD MAP

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"LEWIS FEDERAL 5200-11-01 (72)"

"LEWIS M5300 11-31 4T2"
1038 FEET FROM NORTH LINE AND 230 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



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

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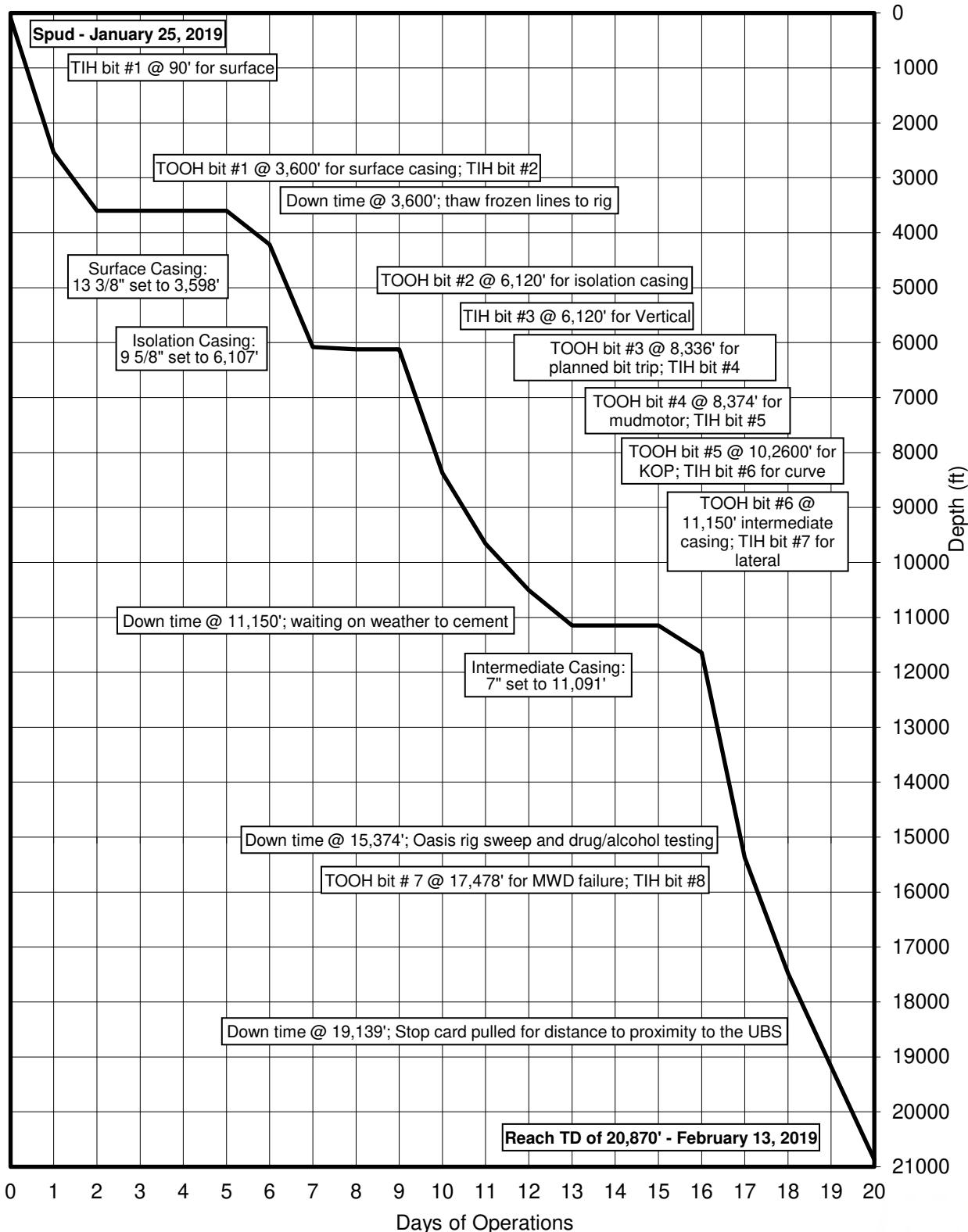
Drawn By: B.H.H. Project No.: S13-09-378.0
Checked By: D.D.K. Date: JAN. 2014

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

TIME VS. DEPTH

Oasis Petroleum North America, LLC

Lewis Federal 5300 11-31 2B



MORNING REPORT SUMMARY

Rig Contractor: Nabors B21									Tool Pushers: Todd Miller, Matt Piehl						24 Hr Activity Summary			
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				Formation
0	1/25	90'	0'	-	-	-	-	-	-	-	-	-	-	Skid rig from Lewis Federal 11-31 3B to Lewis Federal 11-31 2B; prepare rig for drilling; rig up catwalk, mud line, floor equipment, and cellar equipment; rig accepted at 21:00 hours on 01/24/2019; wait on pit cleaners.	-	-	-	-
1	1/26	2,539'	2,449'	1	10	70	7	147	2750	-	110	110	921	Pre-spud meeting; pick up BHA; circulate and condition; warm up mud motor; spud well at 12:30 hours on 1/25/2019; rotary drilling from 90'-882'; service rig; rotary drilling from 882'-2,539'; service rig.	Pierre	-	-	-
2	1/27	3,600'	1,061'	1	10	70	8	147	3000	-	110	110	921	Circulate and condition; rotary drilling from 2,539'-3,472'; circulate and condition; rig service; TOOH; TIH reaming tight spots; rotary drilling from 3,472'-3,600'; circulate and condition; circulate bottoms up 1.5x; rig service; TOOH.	Pierre	-	-	-
3	1/28	3,600'	0'	-	-	-	-	-	-	-	-	-	-	TOOH; lay down BHA; rig service; clean floor in preparation for casing; pre-job safety meeting with Noble Casing; rig up casing crew; run casing; rig down casing crew; hold pre-job safety meeting with cement crew; blow down mud lines; rig up bell extensions, casing elevators, cement crew.	Pierre	-	-	-
4	1/29	3,600'	0'	-	-	-	-	-	-	-	-	-	-	Primary cementing, pre-job safety meeting; rig down cementers; rig down Hoss cellar equipment; install wellheads with welder; clean up spill; nipple up BOPs; rig up B sec, BOP, koomey hoses, mouse hole, kill line, fill line, flow line, turn buckles, choke line; pressure test koomey line; trouble shoot Noble top job equipment; pre-job safety meeting with BOP testers; rig up testers; trouble shoot test plug, test plug not seating.	Pierre	-	-	-
5	1/30	3,600'	0'	-	-	-	-	-	-	-	-	-	-	Test BOPs; attempt to thaw out hole fill abilities; fill hole with salt water truck; trouble shoot test plug seating, each test component required several cycles before a successful test; trouble shoot and test annular; flow line orbital valve failed to test; attempt to thaw mud lines between testing; service rig; test BOPs; rig down BOP testers; working as directed by operator, change orbital valve; thaw out frozen mudline; thaw out frozen kill line; hammer up mud line; hammer up kill line, fill tanks with invert; rig service.	Pierre	-	-	-
6	1/31	4,212'	612'	2	15	45	5	191	5400	95	95	95	829	Test BOPs; thaw and reconnect mud lines; install/remove wear bushing; test BOPs; test orbital valve to 1000 psi; pressure test casing/shoe to 1500 psi; service rig; pick up BHA; TIH; tool orientation; pre job safety with Keene for top job; top cement job; top cement job; TIH; drilling cement out of casing; tag float @ 3,555', tag shoe @ 3,598', rotate ahead to 3,614'; circulate and condition; circulate complete bottoms up; FIT @ 3,614' using 13.8 ppg EMW held to 451 psi; rotary drilling, sliding as needed, from 3,614'-3,828'; service rig; rotary drilling, sliding as needed, from 3,828'-4,212'.	Pierre	-	-	-
7	2/1	6,080'	1,868'	2	10	55	8	159	4750	77	77	77	693	Service rig; rotary drilling, sliding as needed, from 4,212'-5,335'; build volume, weight up mud as per well plan; circulate and condition; record complete slow pump rates; rotary drilling, sliding as needed, from 5,335'-6,080'; back ream hole for casing.	Swift	-	-	-

MORNING REPORT SUMMARY

Rig Contractor: Nabors B21									Tool Pushers: Todd Miller, Matt Piehl						24 Hr Activity Summary			
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				Formation
8	2/2	6,120'	40'	2	18	50	14	137	4750	67	67	67	596	Back reaming; TIH; circulate and condition; rotary drill from 6,080'-6,120'; circulate and condition; back reaming; spot pill of LCM; circulate and condition; flow check, no flow; service rig; TOOH; lay down BHA; install/remove wear bushing; working as directed by operator clean up rig floor from wet trip; pre-job safety with casing crew; rig up casing crew; run casing 9 5/8" casing.				Swift
9	2/3	6,120'	0'	3	-	-	-	-	-	-	-	-	-	Run casing; circulate and condition bottoms up; pre-job safety meeting with cementers; pre-job safety on rigging down CRT; rig up cementers; primary cementing; primary cementing; pressure test 6500 PSI, tuned spacer, drop plug, displace, bump plug; pump cement; pressure test casing shoe to 1500 psi; circulate cement and displace ; rig down cementers; working as directed by operator lay down landing joint, rig down bell extensions, casing elevators; install 5" elevators; working as directed by operator install pack off/wear bushing; test pack off; pick up BHA; TIH; rotary drill cement out of casing, tag float at 6,064' and shoe at 6,107'.				Swift
10	2/4	8,374'	2,254'	4	20	45	26	156	4500	68	69	69	599	Circulate and condition bottoms up; FIT using EMW of 13 ppg held to 383 psi against upper pipe and super choke, good test; rotary drilling, sliding as needed, from 6,120'-7,776'; service rig; rotary drilling, sliding as needed, from 7,776'-8,336'; TOOH for planned bit trip; lay down BHA; change out bit; function blinds/HCR; TIH; rotary drilling from 8,336'-8,374'; service rig; circulate.				Otter
11	2/5	9,657'	1,283'	5	35	50	20	145	4200	71	71	71	631	Circulate and condition; build and pump dry job; TOOH for mud motor; install/remove wear bushing; pull rotating head rubber/install trip nipple; TOOH; pre-job safety meeting for BHA; lay down BHA; pre-job safety meeting before trip; TIH; rotary drilling, sliding as needed, from 8,374'-8,614'; rig service; rotary drilling, sliding as needed from 8,614'-9,657'; service rig.				Mission Canyon
12	2/6	10,505'	848'	6	40	50	60	257	3100	58	58	58	513	Rotary drilling, sliding as needed, from 9,667'-10,260'; flow check; pre-job safety meeting for tripping; TOOH, pull 20 wet stands through salts; pump dry job; pull rotating head; TOOH; pre-job safety meeting to lay down BHA; lay down BHA; pre-job safety meeting to rig up wireline; rig up wireline truck and crew; run cement bond logs; lay down 3rd party tools; rig down KLX wireline; pre-job safety meeting for BHA; pick up BHA; TIH; remove trip nipple; install rotating head rubber; slip and cut drill line 12 wraps; TIH; Orientate curve build sliding, rotating as needed, from 10,260'-10,505'.				Lodgepole
13	2/7	11,150'	645'	6	40	50	65	257	3280	58	58	58	513	Build curve sliding, rotating as needed, from 10,505'-11,150'; service top drive; short trip; circulate; TOOH; pre-job safety meeting with casing crew, rig up casing crew, run casing.				Middle Bakken
14	2/8	11,150'	0'	-	-	-	-	-	-	-	-	-	-	Pre-job safety meeting to run casing; run casing; service rig/catwalk; run 7" casing; service rig; rig up cement trucks; wait on outside temperature to rise above -27° F (-40° F wind chill) to pump cement as per Halliburton's policy.				Middle Bakken

MORNING REPORT SUMMARY

Rig Contractor: Nabors B21									Tool Pushers: Todd Miller, Matt Piehl						24 Hr Activity Summary			
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				Formation
15	2/9	11,150'	0'	-	-	-	-	-	-	-	-	-	-	Waiting on weather as per Halliburton's policy; pre-job safety meeting to rig down CRT; rig up/down to run casing; rig down CRT; pre-job safety meeting to rig up cementers; rig up cement crew; primary cementing; rig up different elevators; primary cementing; change elevators; working as directed by operator work casing; cementing; rig down Halliburton cementers; nipple down BOPs; clean cellar; rig down mouse hole; rig down flow line; install casing slips inside mouse hole; set 400k string weight into slips; drain and cut casing; layout landing joint; dress casing; install Cactus packoff.				Middle Bakken
16	2/10	11,644'	494'	7	25	45	30	20	3350	-	55	55	325	Working as directed by operator install lower packoff; set stack down and tighten up; install upper packoff and test; nipple up BOPs; hook up flow line; remove wrangler; install turn buckles; install mouse hole and centerstack; pick up tools and garbage; pre-job safety meeting to rig up testers; test BOPs; rig up; make up plug; set plug and fill stack with brine water; test BOPs shell test; pressure test casing shoe to 2500 psi; test BOPS; rig down; install/remove wear bushing; pre-job safety meeting to make up BHA; pick up BHA; service top drive; TIH; test tool; TIH; ream and wash from 10,000' due to high cement plug; drill cement, tag float at 11,000' and shoe at 11,091'; service rig; rotary drill to 11,170'; FIT using 13 ppg EMW held to 1867 psi, good test; rotary drilling, sliding as needed, from 11,170'-11,644'.				Middle Bakken
17	2/11	15,374'	3,730'	7	28	45	30	277	3150	55	-	55	325	Rotary drilling from 11,572'-13,540'; service rig; change 4" on mud pump; rotary drilling, sliding as needed, from 13,540'-15,374'; circulate; ordered to shut down location and stop drilling by Oasis; circulate.				Middle Bakken
18	2/12	17,478'	2,104'	7	28	55	40	275	4000	55	-	55	325	Circulate and condition as per Oasis, shut down drilling for urinary analysis drug testing by Oasis; rig sweep and search with dogs for drugs, alcohol, and firearms; wait on permission from Oasis to go back drilling; rotary drilling, sliding as needed, from 15,374'-17,039'; rig service; rotary drilling, sliding as needed, from 17,039'-17,478'; directional work, trouble shoot MWD tool; spot pill mix and send slug; TOOH for MWD tool failure; remove rotating head rubber; install trip nipple; pre-job safety meeting for BHA; lay down BHA; pick up BHA.				Middle Bakken
19	2/13	19,174'	1,696'	8	28	55	30	276	4100	55	-	55	325	TIH; fill pipe and test tool; slip and cut drilling line 13 wraps; service top drive; TIH; circulate and condition, fill pipe and gas buster, verify returns; rotary drilling, sliding as needed, from 17,478'-18,079'; weighting up premixes to a 13.5 MW; rotary drilling, sliding as needed, from 18,079'-19,139'; geology pulled stop card; circulate and wait on orders; time drill 1 minute per inch for 5', slide drill 30' lowside to 19,174'.				Middle Bakken
20	2/14	20,870'	1,696'	8	28	55	50	276	4500	55	-	55	325	Rotary drilling, sliding as needed, from 19,174'-19,750'; rig service; rotary drilling, sliding as needed, from 19,750'-20,870'; reach a TD of 20,870' at 21:30 hours CST on February 13, 2019; wiper trip; circulate bottoms up x2; TOOH.				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)		
01/25	450'	8.4	26	2	1	1/1/1	5/3	-	-/99	-	0.1	-	0.1	8.5	0	800	0.06/0	-	-	-	-		
01/26	2,900'	9.1	29	3	3	3/3/3	9/6	-	-/95	-	5	-	0.1	8.5	0	700	4.97/0	-	-	-	-		
01/27	3,600'	9.1	29	3	3	3/3/3	9/6	-	-/95	-	5	-	0.1	8.5	0	700	4.97/0	-	-	-	-		
01/28	3,600'	9.1	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
01/29	3,600'	9.1	29	Change from fresh water to OBM																			
01/30	3,600'	9.1	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
01/31	5,335'	12.8	55	21	19	11/17/19	61/40	75/25	58/19	2	12	21.79	2.1	-	2.72	20k	4.27/17.52	147829	797	-	-	-	
02/01	3,120'	12.8	55	40	30	18/25/5	110/70	71/29	55/23	2	22	20.73	2	-	2.59	21k	3.34/17.39	130790	600	-	-	-	
02/02	6,120'	12.8	55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
02/03	6,120'	12.8	55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
02/04	8,374'	10.85	50	15	8	9/13/18	38/23	78/22	64/18	3	18	15.88	2.2	-	2.85	35k	6.48/9.4	242679	965	-	-	-	
02/05	10,260'	10.35	45	11	8	8/12/16	29/18	83/17	68/14.5	3	16.5	14.62	2.2	-	2.85	31k	5.46/9.16	260536	1045	-	-	-	
02/06	10,900'	10.35	45	11	8	8/12/16	29/18	83/17	68/14.5	3	16.5	14.62	2.2	-	2.85	31k	5.46/9.16	260536	1045	-	-	-	
02/07	11,150'	10.75	62	14	12	11/16/20	40/26	80/20	66/17	3	17	15.13	2.5	-	3.24	31k	3.96/11.17	231075	1090	-	-	-	
02/08	11,150'	10.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
02/09	11,150'	Change from OBM to salt water																					
02/10	13,540'	9.5	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
02/11	16,227'	9.45	28	1	1	1/1/1	3/2	-	1/98	-	1	-	-	9.5	-	105k	-	-	-	-	-	-	
02/12	17,478'	9.55	28	1	1	1/1/1	3/2	-	1/97	-	2	-	-	9	-	109k	-	-	-	-	-	-	
02/13	20,000'	9.6	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
02/14	20,870'	9.6	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

BOTTOM HOLE ASSEMBLY RECORD

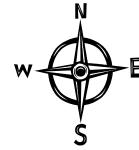
Bit Data											Motor Data						Reason For Removal
Bit #	Size (in.)	Type	Make	Model	Depth In	Depth Out	Footage	Hours	Σ hrs	Vert. Dev.	Make	Model	Lobe	Stage	Bend	Rev/Gal	
1	17 1/2	PDC	Varel	VTD619SHX	90'	3,600'	3,510'	33.0	33	Surface	Stickman	Predator	5/6	6.0	2.0°	0.16	TD surface
2	12 1/4	PDC	Ultera	SPL616	3,600'	6,120'	2,520'	21.0	54	Vertical	Stickman	Predator	5/6	6.0	2.0°	0.16	TD isolation portion
3	8 3/4	PDC	Smith	XS616	6,120'	8,336'	2,216'	14.0	68	Vertical	Cavare	-	7/8	8.5	1.50°	0.26	Planned bit trip
4	8 3/4	PDC	Smith	XS616	8,336'	8,374'	38'	1.0	69	Vertical	Cavare	-	7/8	8.5	1.50°	0.26	Motor failure
5	8 3/4	PDC	Reed	TKC66	8,374'	10,260'	1,886'	18.0	87	Vertical	NOV	-	7/8	5.7	1.50°	0.23	TD vertical
6	8 3/4	PDC	Baker	DD505TS	10,260'	11,150'	890'	14.0	101	Curve	NOV	-	4/5	7.0	2.38°	0.5	TD curve
7	6	PDC	Security	GTD54HE	11,150'	17,478'	6,328'	30.0	131	Lateral	Discovery	-	7/8	10.6	1.50°	0.85	MWD failure
8	6	PDC	Smith	LP1890	17,478'	20,870'	3,392'	29.0	160	Lateral	Discovery	-	7/8	10.6	1.50°	0.85	TD lateral



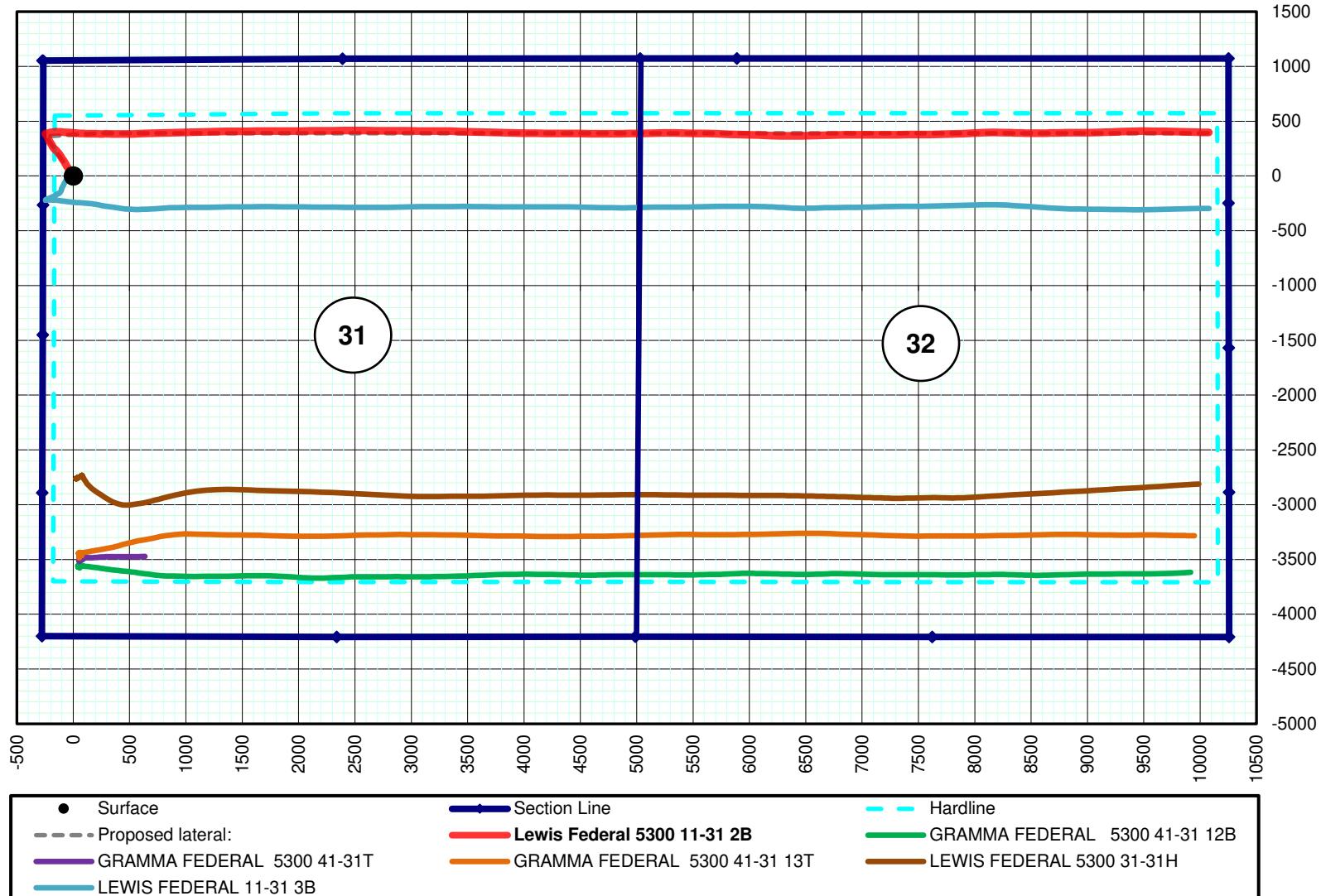
Note: 1,280 acre
laydown spacing unit
with 500' N/S & 100' E/W

PLAN VIEW

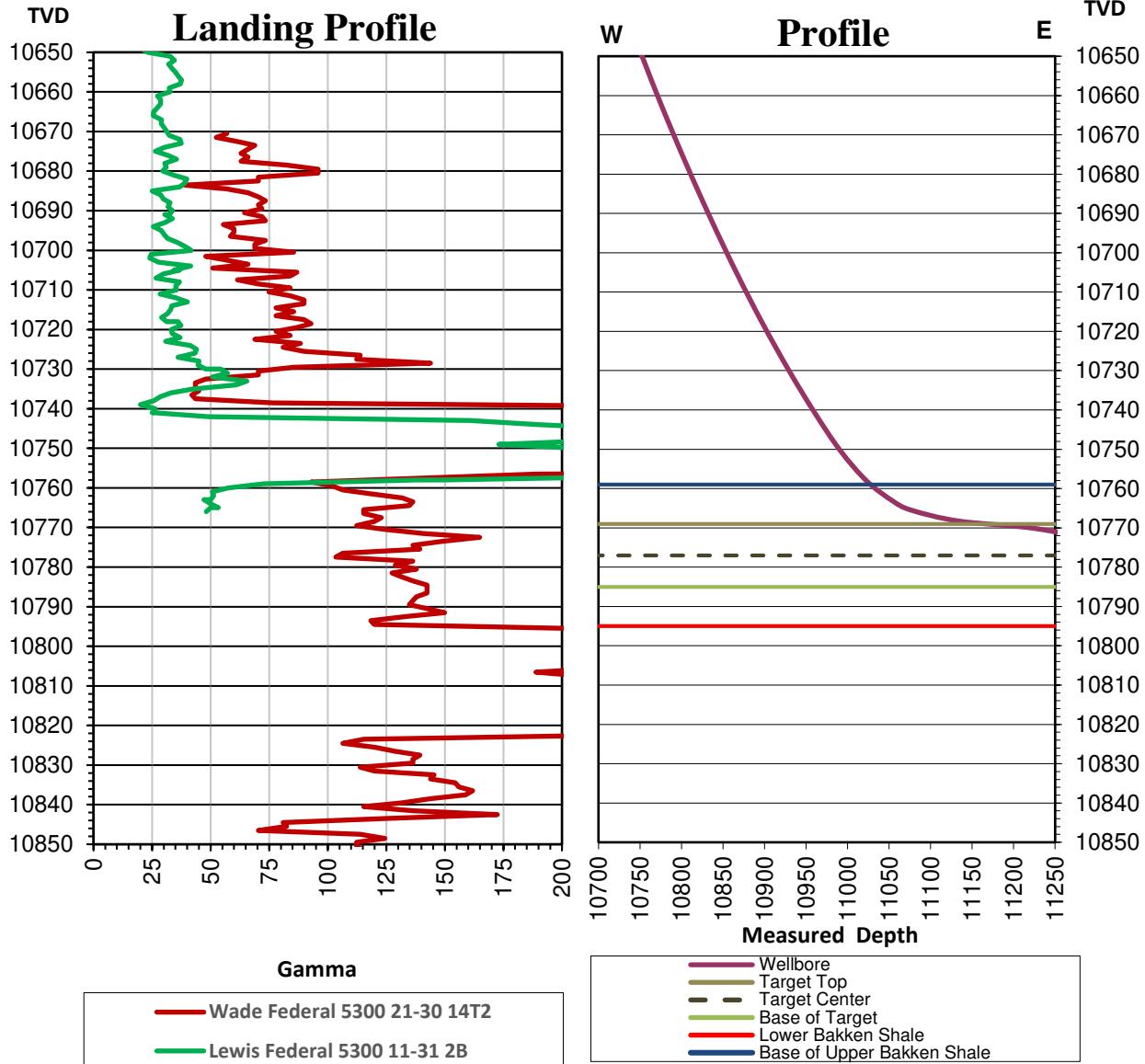
Oasis Petroleum North America, LLC
Lewis Federal 5300 11-31 2B
1,050' FNL & 265' FWL
Lot 1 Sec. 31, T153N, R100W



Bottom Hole Location
397.23' N & 10,077.03' E
of surface location or
652.77' FNL & 180.71' FEL
Lot 4 Sec. 32, T153N, R100W



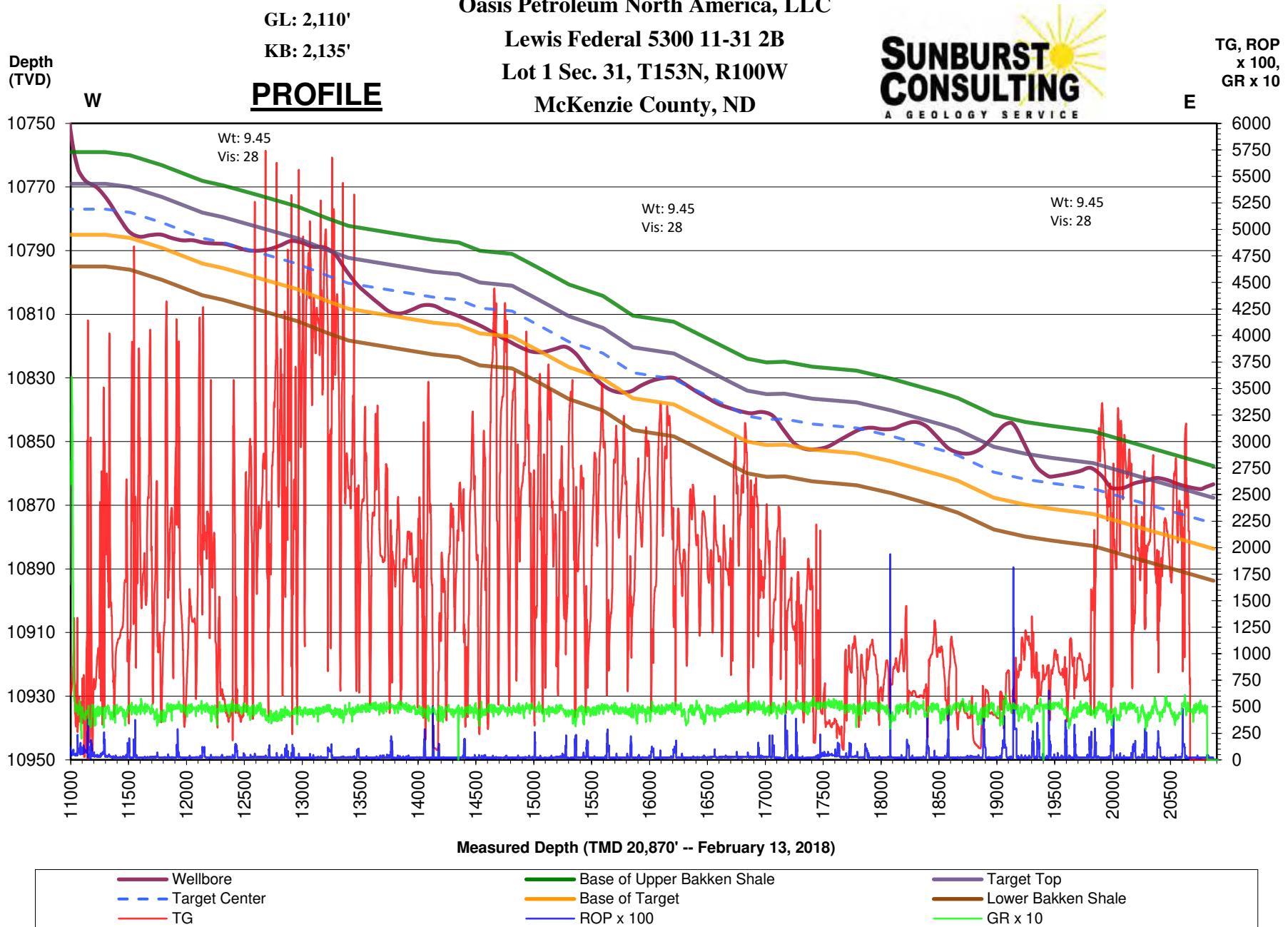
Lewis Federal 5300 11-31 2B
257' FNL & 1,817' FEL
Lot 1 Sec. 31, T153N, R100W
McKenzie County, ND

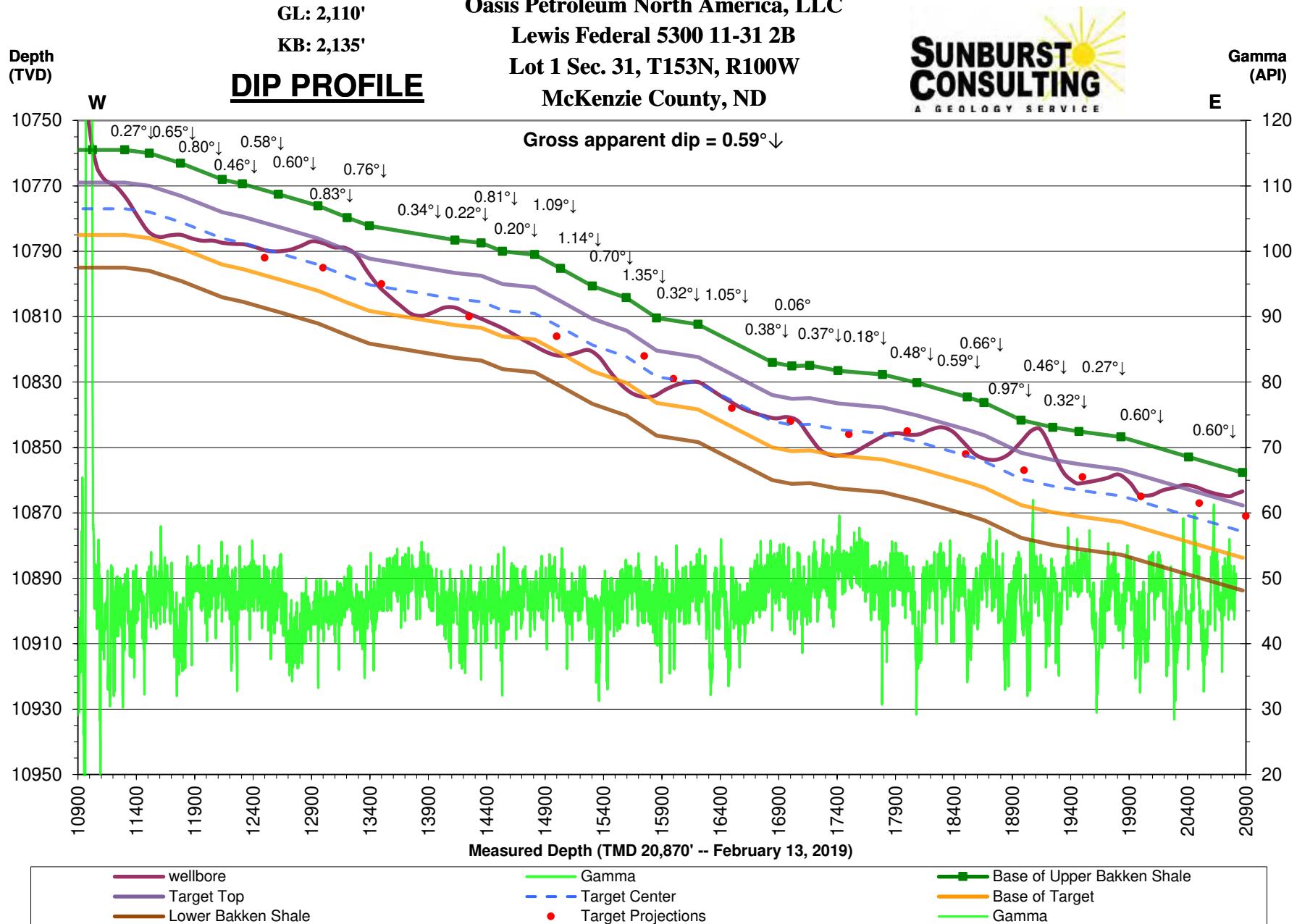


LANDING PROJECTION

Formation/ Zone:	Proposed Landing Target From:			
	Lewis Federal 5300 11-31 3B	Wade Federal 5300 41-30 8T3	Lewis Federal 5300 31-31H	Average of Offset Wells
Pierre	10,778'	-	10,746'	10,762'
Greenhorn	10,771'	10,762'	10,796'	10,776'
Mowry (Dakota Group)	10,779'	10,767'	10,790'	10,779'
Inyan Kara (Dakota Group)	10,780'	10,737'	10,751'	10,756'
Swift (Base Dakota Group)	10,775'	10,753'	10,801'	10,776'
Rierdon	10,784'	10,748'	10,867'	10,800'
Dunham Salt	10,765'	10,730'	10,846'	10,780'
Dunham Salt Base	10,782'	10,740'	10,799'	10,774'
Pine Salt	10,777'	10,766'	10,769'	10,771'
Pine Salt Base	10,764'	10,771'	10,737'	10,757'
Opeche Salt	10,775'	10,785'	10,763'	10,774'
Opeche Salt Base	10,775'	10,772'	10,748'	10,765'
Amsden	10,767'	10,779'	10,749'	10,765'
Tyler	10,768'	10,766'	10,740'	10,758'
Otter/Base Minnelusa	10,773'	10,774'	10,748'	10,765'
Kibbey "Lime"	10,768'	10,766'	10,745'	10,760'
Charles Salt	10,764'	10,769'	10,741'	10,758'
Base Last Salt	10,771'	10,773'	10,759'	10,767'
Mission Canyon	10,774'	10,767'	10,759'	10,767'
Lodgepole	10,773'	10,767'	10,765'	10,768'
Lodgepole A	10,768'	10,764'	10,766'	10,766'
Lodgepole B	10,767'	10,755'	10,747'	10,756'
Lodgepole C	10,765'	10,763'	10,765'	10,765'
Lodgepole D	10,779'	10,776'	10,786'	10,780'
Lodgepole E	10,774'	10,776'	10,780'	10,777'
Lodgepole F	10,774'	10,776'	10,781'	10,777'
False Bakken	10,773'	10,778'	10,781'	10,777'
Upper Bakken Shale	10,774'	10,780'	10,779'	10,778'
Middle Bakken	10,777'	10,780'	10,780'	10,779'
Target Top	10,777'	10,778'	10,778'	10,778'
Target Landing	10,777'	10,777'	10,777'	10,777'

Current Landing Target (18' below the base of the UBS): **10,777'**





WELL

Lewis Federal 5300 11-31 2B



API
33-053-06549-00-00

TYPEWELL
07248-CND

FIELD
Baker

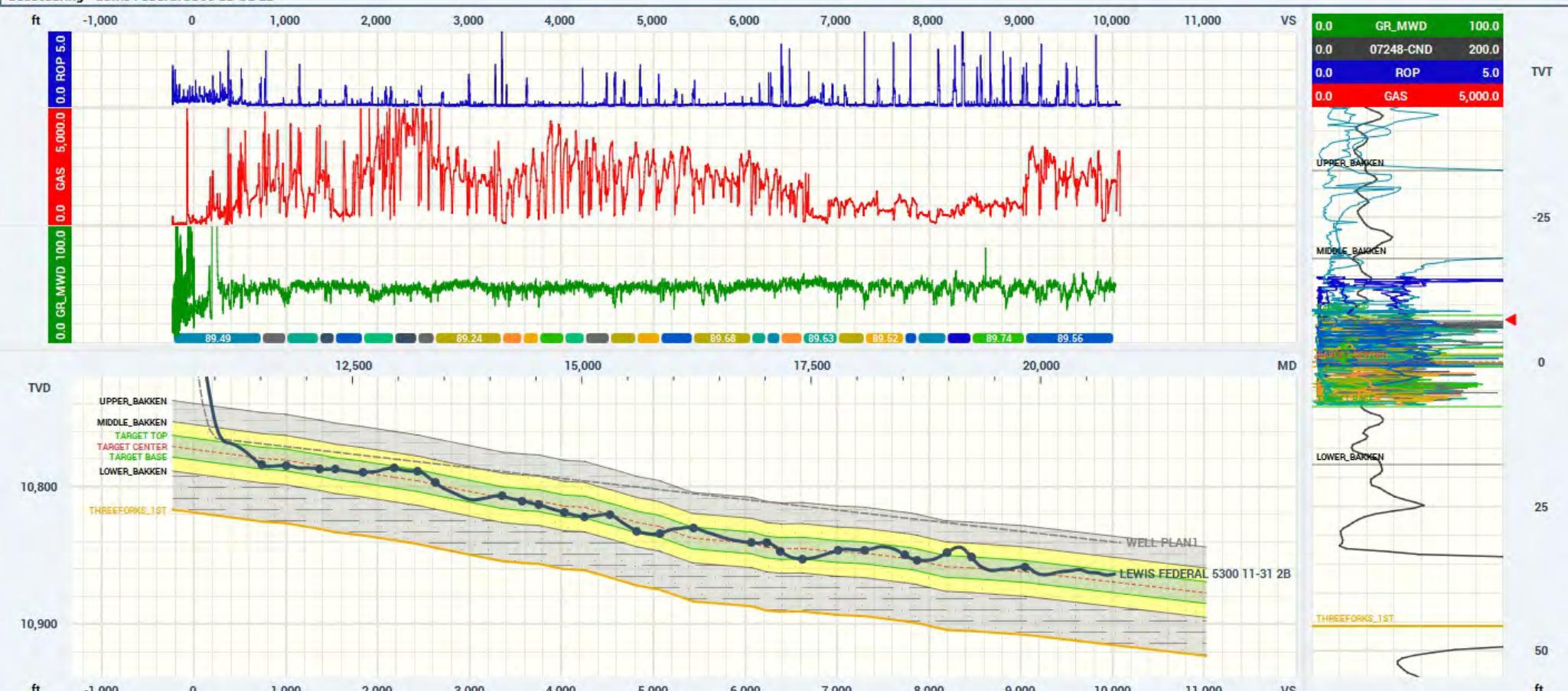
INTERPRETER

DATE

2/18/2019 2:22 PM

VS AZIMUTH
87.78°

Geosteering - Lewis Federal 5300 11-31 2B



Wellbore Last Survey Position
2.2 below
13.6 above

Target Top
Target Base

Last Surveys

MD	INCL	AZIM	TVD	VS	DLS
20,757.0	90.70	91.3	10,864.1	9,972.1	2.3
20,802.0	90.77	91.4	10,863.6	10,017.0	0.2

Last Segment Dip
89.56°

Interval

Total MD
Total VS
In-Zone %
Average Dip
Exit/Enter in

Target Top -
Target Base
9,354.8
9,344.0
96.6%
89.4
104.4

COMMENTS

Operator:	Oasis Petroleum North America, LLC
Well:	Lewis Federal 5300 11-31 2B
Surface Coordinates:	1,050' FNL & 265' FWL
Surface Location:	Lot 1 Sec. 31, T153N, R100W
County, State:	McKenzie County, ND
Bottom Hole Location:	397.23' N & 10,077.03' E of surface location or 652.77' FNL & 180.71' FEL Lot 4 Sec. 32, T153N, R100W



Kick-off: 2/6/2019
Finish: 2/16/2019

Directional Supervision:
Scientific MWD, RPM DI

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: 87.78

No.	MD	INC	TRUE		N-S	E-W	SECT	DLS/ 100
			AZM	TVD				
Tie	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	226.00	0.57	306.12	226.00	0.66	-0.91	-0.88	0.25
2	288.00	0.34	294.94	287.99	0.92	-1.32	-1.29	0.40
3	381.00	0.26	310.67	380.99	1.18	-1.73	-1.69	0.12
4	443.00	0.52	315.06	442.99	1.47	-2.04	-1.98	0.42
5	534.00	0.30	1.75	533.99	2.00	-2.32	-2.24	0.42
6	628.00	0.21	0.72	627.99	2.42	-2.31	-2.22	0.10
7	718.00	0.21	316.34	717.99	2.70	-2.43	-2.32	0.18
8	808.00	0.34	1.59	807.99	3.09	-2.53	-2.41	0.27
9	899.00	0.78	29.06	898.98	3.90	-2.22	-2.07	0.55
10	989.00	0.67	31.18	988.98	4.88	-1.65	-1.46	0.13
11	1079.00	0.52	22.27	1078.97	5.71	-1.23	-1.00	0.20
12	1170.00	0.69	17.85	1169.97	6.61	-0.90	-0.65	0.19
13	1261.00	0.63	22.14	1260.96	7.60	-0.55	-0.25	0.09
14	1350.00	0.65	358.87	1349.95	8.56	-0.37	-0.04	0.29
15	1442.00	0.41	186.79	1441.95	8.75	-0.42	-0.08	1.15
16	1532.00	0.26	209.49	1531.95	8.25	-0.56	-0.24	0.22
17	1622.00	0.37	235.11	1621.95	7.91	-0.90	-0.59	0.20
18	1713.00	0.64	230.24	1712.95	7.42	-1.53	-1.24	0.30
19	1806.00	0.60	221.43	1805.94	6.72	-2.25	-1.99	0.11
20	1899.00	0.64	241.65	1898.94	6.11	-3.03	-2.79	0.24
21	1993.00	0.43	225.64	1992.93	5.61	-3.75	-3.52	0.27
22	2086.00	0.50	228.00	2085.93	5.10	-4.30	-4.10	0.08
23	2180.00	0.66	260.26	2179.92	4.73	-5.13	-4.95	0.38
24	2273.00	0.18	148.06	2272.92	4.52	-5.59	-5.41	0.80
25	2366.00	0.28	90.67	2365.92	4.39	-5.28	-5.11	0.26
26	2460.00	0.63	94.64	2459.92	4.35	-4.54	-4.36	0.37
27	2553.00	0.47	122.25	2552.91	4.10	-3.70	-3.54	0.33
28	2647.00	0.50	101.16	2646.91	3.82	-2.98	-2.83	0.19
29	2740.00	0.34	121.26	2739.91	3.59	-2.34	-2.20	0.23
30	2833.00	0.26	156.97	2832.91	3.26	-2.02	-1.90	0.21
31	2927.00	0.37	130.97	2926.91	2.86	-1.71	-1.60	0.19
32	3020.00	0.52	173.35	3019.90	2.25	-1.43	-1.35	0.38
33	3113.00	0.30	165.28	3112.90	1.59	-1.32	-1.26	0.24
34	3206.00	0.41	162.37	3205.90	1.04	-1.16	-1.12	0.12
35	3300.00	0.62	176.17	3299.89	0.21	-1.03	-1.02	0.26
36	3393.00	0.63	182.69	3392.89	-0.80	-1.02	-1.05	0.08



Operator:	Oasis Petroleum North America, LLC
Well:	Lewis Federal 5300 11-31 2B
Surface Coordinates:	1,050' FNL & 265' FWL
Surface Location:	Lot 1 Sec. 31, T153N, R100W
County, State:	McKenzie County, ND
Bottom Hole Location:	397.23' N & 10,077.03' E of surface location or 652.77' FNL & 180.71' FEL Lot 4 Sec. 32, T153N, R100W



Kick-off: 2/6/2019
Finish: 2/16/2019

Directional Supervision:
Scientific MWD, RPM DI

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: 87.78

No.	MD	INC	TRUE		N-S	E-W	SECT	DLS/ 100
			AZM	TVD				
37	3486.00	0.35	148.36	3485.89	-1.56	-0.89	-0.95	0.42
38	3524.00	0.40	167.92	3523.88	-1.78	-0.80	-0.87	0.36
39	3605.00	0.51	177.95	3604.88	-2.42	-0.73	-0.82	0.17
40	3667.00	0.36	336.34	3666.88	-2.52	-0.80	-0.90	1.38
41	3760.00	1.94	323.76	3759.86	-0.98	-1.85	-1.88	1.71
42	3854.00	4.04	328.36	3853.73	3.12	-4.52	-4.40	2.25
43	3947.00	5.93	329.69	3946.37	10.06	-8.67	-8.27	2.04
44	4041.00	6.72	333.48	4039.80	19.17	-13.57	-12.82	0.95
45	4134.00	7.50	336.38	4132.08	29.60	-18.44	-17.28	0.92
46	4228.00	7.50	333.43	4225.28	40.71	-23.64	-22.04	0.41
47	4321.00	6.55	325.75	4317.58	50.52	-29.34	-27.36	1.43
48	4414.00	5.76	319.42	4410.05	58.45	-35.36	-33.07	1.12
49	4508.00	5.83	321.85	4503.57	65.79	-41.38	-38.80	0.27
50	4602.00	6.14	326.05	4597.05	73.71	-47.13	-44.24	0.57
51	4697.00	6.24	328.67	4691.50	82.34	-52.66	-49.43	0.32
52	4792.00	6.46	331.91	4785.92	91.46	-57.86	-54.27	0.44
53	4887.00	6.36	333.57	4880.32	100.89	-62.71	-58.76	0.22
54	4982.00	5.51	329.09	4974.81	109.52	-67.40	-63.11	1.02
55	5077.00	5.49	331.30	5069.38	117.41	-71.92	-67.32	0.22
56	5172.00	5.87	334.16	5163.91	125.77	-76.22	-71.30	0.50
57	5267.00	6.09	327.37	5258.39	134.39	-81.06	-75.79	0.78
58	5361.00	6.57	321.72	5351.82	142.81	-87.08	-81.48	0.84
59	5457.00	6.02	324.07	5447.24	151.20	-93.44	-87.51	0.63
60	5551.00	6.04	329.67	5540.72	159.46	-98.83	-92.57	0.63
61	5646.00	6.56	331.18	5635.15	168.53	-103.97	-97.36	0.57
62	5741.00	6.64	329.15	5729.52	178.00	-109.40	-102.42	0.26
63	5836.00	6.76	322.95	5823.87	187.17	-115.58	-108.25	0.77
64	5930.00	7.57	323.39	5917.14	196.56	-122.61	-114.90	0.86
65	6023.00	8.46	324.97	6009.23	207.08	-130.19	-122.07	0.99
66	6148.00	7.87	321.76	6132.96	221.33	-140.76	-132.09	0.60
67	6210.00	5.30	317.69	6194.55	226.78	-145.32	-136.43	4.21
68	6304.00	3.28	315.70	6288.28	231.92	-150.12	-141.02	2.15
69	6397.00	2.69	314.34	6381.15	235.35	-153.54	-144.31	0.64
70	6490.00	1.81	312.30	6474.08	237.86	-156.19	-146.86	0.95
71	6584.00	0.90	297.56	6568.05	239.20	-157.94	-148.56	1.03
72	6677.00	0.44	267.33	6661.05	239.52	-158.94	-149.55	0.61
73	6771.00	1.06	293.50	6755.04	239.85	-160.10	-150.69	0.74

Operator:	Oasis Petroleum North America, LLC
Well:	Lewis Federal 5300 11-31 2B
Surface Coordinates:	1,050' FNL & 265' FWL
Surface Location:	Lot 1 Sec. 31, T153N, R100W
County, State:	McKenzie County, ND
Bottom Hole Location:	397.23' N & 10,077.03' E of surface location or 652.77' FNL & 180.71' FEL Lot 4 Sec. 32, T153N, R100W



Kick-off: 2/6/2019
Finish: 2/16/2019

Directional Supervision:
Scientific MWD, RPM DI

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: 87.78

No.	MD	INC	TRUE		N-S	E-W	SECT	DLS/ 100
			AZM	TVD				
74	6864.00	1.35	298.88	6848.02	240.73	-161.85	-152.40	0.33
75	6957.00	1.71	308.13	6940.99	242.11	-163.90	-154.40	0.47
76	7051.00	2.38	316.47	7034.92	244.39	-166.35	-156.76	0.78
77	7144.00	2.58	315.70	7127.84	247.29	-169.14	-159.43	0.22
78	7237.00	4.41	327.30	7220.66	251.80	-172.53	-162.65	2.10
79	7331.00	4.67	328.68	7314.37	258.11	-176.48	-166.35	0.30
80	7424.00	4.58	330.44	7407.06	264.57	-180.28	-169.89	0.18
81	7518.00	4.40	331.39	7500.78	271.00	-183.85	-173.22	0.21
82	7612.00	4.13	331.38	7594.52	277.14	-187.20	-176.33	0.29
83	7705.00	4.08	332.43	7687.28	283.01	-190.34	-179.23	0.10
84	7798.00	4.04	335.00	7780.04	288.91	-193.25	-181.92	0.20
85	7892.00	3.72	328.81	7873.83	294.52	-196.23	-184.68	0.56
86	7985.00	3.43	321.45	7966.65	299.28	-199.53	-187.78	0.58
87	8078.00	2.92	325.98	8059.50	303.42	-202.59	-190.68	0.61
88	8172.00	2.30	325.94	8153.41	306.97	-204.98	-192.94	0.66
89	8265.00	2.16	324.85	8246.34	309.94	-207.04	-194.88	0.16
90	8358.00	2.12	327.33	8339.27	312.83	-208.97	-196.70	0.11
91	8451.00	1.99	330.50	8432.21	315.68	-210.70	-198.31	0.19
92	8545.00	1.87	329.31	8526.16	318.42	-212.28	-199.79	0.13
93	8638.00	1.98	334.16	8619.11	321.17	-213.76	-201.16	0.21
94	8731.00	2.45	336.68	8712.04	324.44	-215.25	-202.52	0.52
95	8825.00	2.97	336.37	8805.93	328.52	-217.02	-204.13	0.55
96	8918.00	3.14	342.98	8898.80	333.16	-218.73	-205.66	0.42
97	9012.00	3.65	336.24	8992.63	338.36	-220.69	-207.42	0.69
98	9105.00	3.56	338.03	9085.45	343.75	-222.96	-209.48	0.15
99	9198.00	3.33	336.47	9178.28	348.90	-225.12	-211.44	0.27
100	9292.00	3.10	337.50	9272.13	353.75	-227.18	-213.31	0.25
101	9387.00	2.95	338.71	9367.00	358.40	-229.05	-215.00	0.17
102	9481.00	2.64	340.17	9460.89	362.69	-230.67	-216.44	0.34
103	9576.00	2.49	330.44	9555.79	366.55	-232.43	-218.05	0.48
104	9670.00	2.63	327.62	9649.70	370.14	-234.59	-220.07	0.20
105	9765.00	2.47	330.05	9744.61	373.76	-236.78	-222.12	0.20
106	9860.00	2.29	330.73	9839.52	377.19	-238.73	-223.94	0.19
107	9955.00	1.88	324.33	9934.46	380.11	-240.56	-225.66	0.50
108	10049.00	1.67	321.79	10028.42	382.44	-242.31	-227.31	0.24
109	10144.00	1.58	319.64	10123.38	384.52	-244.01	-228.94	0.11
110	10191.00	1.43	316.99	10170.36	385.45	-244.83	-229.72	0.35



Operator:	Oasis Petroleum North America, LLC
Well:	Lewis Federal 5300 11-31 2B
Surface Coordinates:	1,050' FNL & 265' FWL
Surface Location:	Lot 1 Sec. 31, T153N, R100W
County, State:	McKenzie County, ND
Bottom Hole Location:	397.23' N & 10,077.03' E of surface location or 652.77' FNL & 180.71' FEL Lot 4 Sec. 32, T153N, R100W



Kick-off: 2/6/2019
Finish: 2/16/2019

Directional Supervision:
Scientific MWD, RPM DI

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: 87.78

No.	MD	INC	TRUE		N-S	E-W	SECT	DLS/ 100
			AZM	TVD				
111	10238.00	1.19	308.70	10217.35	386.18	-245.62	-230.47	0.65
112	10269.00	1.54	55.91	10248.34	386.62	-245.52	-230.36	7.12
113	10300.00	5.57	77.40	10279.28	387.18	-243.71	-228.53	13.47
114	10332.00	10.18	80.26	10310.97	387.99	-239.40	-224.19	14.45
115	10363.00	15.12	77.34	10341.21	389.35	-232.75	-217.50	16.06
116	10395.00	19.73	74.06	10371.73	391.74	-223.48	-208.14	14.72
117	10426.00	23.55	75.14	10400.54	394.77	-212.46	-197.01	12.39
118	10458.00	26.63	77.59	10429.52	397.95	-199.27	-183.71	10.16
119	10489.00	29.38	80.26	10456.89	400.73	-184.99	-169.33	9.75
120	10521.00	31.38	83.27	10484.49	403.04	-168.98	-153.24	7.85
121	10553.00	34.21	89.12	10511.40	404.15	-151.70	-135.93	13.27
122	10584.00	37.20	93.68	10536.57	403.68	-133.63	-117.89	12.91
123	10616.00	40.59	94.60	10561.48	402.23	-113.59	-97.93	10.75
124	10647.00	44.87	94.89	10584.24	400.49	-92.63	-77.05	13.82
125	10679.00	49.19	94.54	10606.05	398.56	-69.30	-53.81	13.52
126	10710.00	52.98	94.41	10625.52	396.68	-45.26	-29.86	12.23
127	10742.00	55.78	94.05	10644.15	394.77	-19.32	-4.02	8.80
128	10773.00	58.26	94.46	10661.03	392.84	6.61	21.82	8.08
129	10804.00	61.30	93.91	10676.63	390.88	33.32	48.44	9.93
130	10835.00	62.34	93.90	10691.27	389.02	60.58	75.61	3.35
131	10866.00	65.13	92.23	10704.98	387.54	88.34	103.28	10.21
132	10897.00	66.31	91.77	10717.73	386.56	116.58	131.46	4.04
133	10929.00	69.26	90.74	10729.83	385.91	146.19	161.03	9.69
134	10960.00	70.15	91.05	10740.58	385.46	175.26	190.06	3.02
135	10991.00	73.39	91.08	10750.28	384.91	204.70	219.46	10.45
136	11023.00	78.40	90.68	10758.07	384.43	235.72	250.43	15.70
137	11054.00	82.92	89.68	10763.10	384.34	266.30	280.99	14.92
138	11076.00	84.84	89.33	10765.45	384.53	288.17	302.85	8.87
139	11134.00	89.56	91.81	10768.28	383.95	346.08	360.69	9.19
140	11227.00	88.09	89.85	10770.19	382.60	439.04	453.54	2.63
141	11319.00	87.05	87.95	10774.09	384.37	530.94	545.43	2.35
142	11411.00	86.48	88.06	10779.28	387.56	622.74	637.28	0.63
143	11504.00	87.69	88.43	10784.01	390.41	715.57	730.16	1.36
144	11596.00	90.30	89.03	10785.62	392.45	807.53	822.12	2.91
145	11688.00	90.33	88.04	10785.12	394.80	899.49	914.11	1.08
146	11780.00	89.87	88.17	10784.96	397.84	991.44	1006.11	0.52
147	11872.00	88.79	87.88	10786.03	401.01	1083.38	1098.10	1.22



Operator:	Oasis Petroleum North America, LLC
Well:	Lewis Federal 5300 11-31 2B
Surface Coordinates:	1,050' FNL & 265' FWL
Surface Location:	Lot 1 Sec. 31, T153N, R100W
County, State:	McKenzie County, ND
Bottom Hole Location:	397.23' N & 10,077.03' E of surface location or 652.77' FNL & 180.71' FEL Lot 4 Sec. 32, T153N, R100W



Kick-off: 2/6/2019
Finish: 2/16/2019

Directional Supervision:
Scientific MWD, RPM DI

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: 87.78

No.	MD	INC	TRUE		N-S	E-W	SECT	DLS/ 100
			AZM	TVD				
148	11964.00	90.30	89.13	10786.76	403.41	1175.34	1190.09	2.13
149	12055.00	89.73	88.52	10786.74	405.28	1266.32	1281.07	0.92
150	12148.00	89.36	89.62	10787.48	406.79	1359.30	1374.04	1.25
151	12240.00	90.30	89.76	10787.75	407.28	1451.30	1465.99	1.03
152	12332.00	89.50	89.01	10787.91	408.27	1543.29	1557.95	1.19
153	12427.00	89.40	90.00	10788.82	409.09	1638.29	1652.90	1.05
154	12522.00	89.36	90.04	10789.85	409.06	1733.28	1747.82	0.06
155	12616.00	90.44	90.04	10790.02	408.99	1827.28	1841.75	1.15
156	12712.00	90.10	89.57	10789.56	409.32	1923.28	1937.69	0.60
157	12808.00	91.30	88.41	10788.39	411.01	2019.25	2033.66	1.74
158	12903.00	90.43	89.60	10786.96	412.66	2114.22	2128.62	1.55
159	12997.00	88.93	90.15	10787.48	412.87	2208.22	2222.55	1.70
160	13092.00	89.50	89.62	10788.78	413.06	2303.21	2317.48	0.82
161	13186.00	90.30	88.98	10788.95	414.21	2397.20	2411.45	1.09
162	13282.00	87.15	90.57	10791.08	414.58	2493.16	2507.35	3.68
163	13377.00	86.78	90.25	10796.11	413.90	2588.02	2602.12	0.51
164	13472.00	87.82	90.36	10800.59	413.40	2682.92	2696.92	1.10
165	13567.00	88.36	90.59	10803.76	412.61	2777.86	2791.76	0.62
166	13661.00	88.16	90.36	10806.61	411.83	2871.81	2885.61	0.32
167	13756.00	88.73	90.46	10809.19	411.15	2966.78	2980.48	0.61
168	13850.00	90.60	90.44	10809.74	410.42	3060.77	3074.37	1.99
169	13945.00	90.77	89.94	10808.60	410.10	3155.76	3169.28	0.56
170	14039.00	90.94	89.90	10807.20	410.23	3249.75	3263.20	0.19
171	14134.00	88.96	91.64	10807.28	408.95	3344.73	3358.06	2.77
172	14229.00	89.13	92.21	10808.86	405.76	3439.66	3452.80	0.63
173	14324.00	89.30	91.37	10810.17	402.80	3534.61	3547.56	0.90
174	14418.00	88.90	91.70	10811.64	400.28	3628.56	3641.34	0.55
175	14513.00	89.30	91.58	10813.14	397.56	3723.51	3736.12	0.44
176	14607.00	88.56	91.17	10814.89	395.31	3817.47	3829.91	0.90
177	14702.00	89.03	91.31	10816.89	393.25	3912.42	3924.72	0.52
178	14796.00	88.79	90.98	10818.68	391.37	4006.39	4018.54	0.43
179	14891.00	89.03	90.77	10820.48	389.92	4101.36	4113.39	0.34
180	14985.00	89.43	90.02	10821.75	389.27	4195.35	4207.28	0.90
181	15080.00	90.40	90.57	10821.89	388.78	4290.34	4302.18	1.17
182	15175.00	90.67	90.30	10821.00	388.06	4385.34	4397.08	0.40
183	15270.00	90.30	90.57	10820.20	387.34	4480.33	4491.97	0.48
184	15364.00	86.98	90.95	10822.43	386.10	4574.28	4585.81	3.55



Operator:	Oasis Petroleum North America, LLC
Well:	Lewis Federal 5300 11-31 2B
Surface Coordinates:	1,050' FNL & 265' FWL
Surface Location:	Lot 1 Sec. 31, T153N, R100W
County, State:	McKenzie County, ND
Bottom Hole Location:	397.23' N & 10,077.03' E of surface location or 652.77' FNL & 180.71' FEL Lot 4 Sec. 32, T153N, R100W



Kick-off: 2/6/2019
Finish: 2/16/2019

Directional Supervision:
Scientific MWD, RPM DI

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: 87.78

No.	MD	TRUE			N-S	E-W	SECT	DLS/ 100
		INC	AZM	TVD				
185	15458.00	87.56	90.00	10826.90	385.32	4668.17	4679.59	1.18
186	15552.00	87.65	90.31	10830.83	385.06	4762.09	4773.43	0.34
187	15646.00	89.16	88.92	10833.45	385.70	4856.05	4867.34	2.18
188	15741.00	89.53	88.95	10834.54	387.46	4951.02	4962.32	0.39
189	15836.00	90.84	88.85	10834.23	389.28	5046.00	5057.30	1.38
190	15931.00	91.48	89.02	10832.31	391.05	5140.97	5152.26	0.70
191	16026.00	90.30	89.52	10830.83	392.26	5235.95	5247.21	1.35
192	16121.00	90.64	90.12	10830.05	392.56	5330.94	5342.15	0.73
193	16216.00	89.36	91.44	10830.05	391.27	5425.93	5437.01	1.94
194	16310.00	88.22	91.09	10832.04	389.19	5519.88	5530.82	1.27
195	16405.00	89.06	91.18	10834.29	387.31	5614.84	5625.63	0.89
196	16499.00	88.56	92.01	10836.24	384.69	5708.78	5719.40	1.03
197	16594.00	89.10	91.89	10838.18	381.46	5803.70	5814.12	0.58
198	16688.00	89.40	91.39	10839.41	378.77	5897.66	5907.90	0.62
199	16783.00	89.36	91.96	10840.44	376.00	5992.61	6002.68	0.60
200	16877.00	89.83	91.87	10841.10	372.85	6086.55	6096.43	0.51
201	16971.00	90.67	91.69	10840.69	369.93	6180.51	6190.20	0.91
202	17066.00	87.82	91.81	10841.95	367.03	6275.45	6284.95	3.00
203	17161.00	86.68	89.87	10846.50	365.64	6370.32	6379.70	2.37
204	17256.00	88.19	88.76	10850.76	366.78	6465.21	6474.57	1.97
205	17350.00	89.87	88.69	10852.35	368.87	6559.17	6568.54	1.79
206	17445.00	90.07	88.26	10852.40	371.40	6654.14	6663.53	0.50
207	17538.00	90.90	88.21	10851.61	374.26	6747.09	6756.52	0.89
208	17634.00	91.37	89.61	10849.71	376.09	6843.05	6852.48	1.54
209	17728.00	90.97	90.72	10847.79	375.82	6937.03	6946.38	1.25
210	17823.00	91.07	89.87	10846.10	375.33	7032.01	7041.27	0.90
211	17917.00	89.50	90.11	10845.63	375.34	7126.01	7135.20	1.69
212	18011.00	89.90	89.99	10846.12	375.26	7220.01	7229.13	0.44
213	18106.00	90.33	89.08	10845.93	376.03	7315.00	7324.08	1.06
214	18202.00	91.34	89.16	10844.53	377.51	7410.98	7420.04	1.06
215	18296.00	89.53	89.20	10843.82	378.85	7504.96	7514.01	1.93
216	18390.00	88.83	89.92	10845.16	379.57	7598.95	7607.95	1.07
217	18485.00	87.08	88.63	10848.55	380.77	7693.88	7702.85	2.29
218	18579.00	88.66	89.03	10852.05	382.69	7787.79	7796.77	1.73
219	18673.00	89.53	87.65	10853.53	385.41	7881.73	7890.75	1.74
220	18768.00	90.27	87.41	10853.70	389.51	7976.65	7985.75	0.82
221	18863.00	91.54	86.75	10852.20	394.35	8071.51	8080.73	1.51



Operator:	Oasis Petroleum North America, LLC
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Kick-off: 2/6/2019
Finish: 2/16/2019

Directional Supervision:
Scientific MWD, RPM DI

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: 87.78

No.	MD	INC	TRUE		N-S	E-W	SECT	DLS/
			AZM	TVD				100
222	18958.00	92.42	89.85	10848.92	397.16	8166.40	8175.65	3.39
223	19052.00	92.14	91.52	10845.18	396.04	8260.31	8269.45	1.80
224	19115.00	89.83	91.20	10844.09	394.55	8323.28	8332.32	3.70
225	19146.00	87.96	91.71	10844.69	393.76	8354.26	8363.25	6.25
226	19177.00	85.91	91.33	10846.35	392.94	8385.21	8394.13	6.73
227	19209.00	85.80	91.35	10848.66	392.19	8417.11	8425.99	0.35
228	19240.00	85.70	91.13	10850.96	391.52	8448.02	8456.85	0.78
229	19272.00	85.81	91.75	10853.33	390.72	8479.92	8488.69	1.96
230	19304.00	86.15	90.60	10855.57	390.07	8511.84	8520.56	3.74
231	19335.00	86.78	90.45	10857.48	389.78	8542.78	8551.46	2.09
232	19367.00	88.22	89.30	10858.88	389.85	8574.75	8583.41	5.76
233	19398.00	88.49	89.05	10859.77	390.30	8605.73	8614.39	1.19
234	19430.00	88.59	88.47	10860.58	390.99	8637.71	8646.37	1.84
235	19461.00	89.73	88.34	10861.04	391.85	8668.70	8677.37	3.70
236	19525.00	90.84	88.40	10860.72	393.67	8732.67	8741.36	1.74
237	19619.00	89.90	89.16	10860.11	395.68	8826.64	8835.35	1.29
238	19715.00	91.07	90.80	10859.30	395.71	8922.63	8931.27	2.10
239	19809.00	90.20	89.70	10858.26	395.30	9016.63	9025.17	1.49
240	19905.00	86.85	87.99	10860.73	397.23	9112.56	9121.10	3.92
241	19968.00	87.55	87.70	10863.81	399.60	9175.44	9184.03	1.20
242	20000.00	89.33	87.48	10864.68	400.94	9207.40	9216.02	5.60
243	20094.00	90.84	87.55	10864.54	405.02	9301.30	9310.01	1.61
244	20189.00	90.91	88.67	10863.09	408.15	9396.24	9405.00	1.18
245	20283.00	90.03	89.97	10862.32	409.27	9490.23	9498.96	1.67
246	20378.00	91.04	90.94	10861.43	408.51	9585.22	9593.85	1.47
247	20473.00	88.16	91.31	10862.09	406.65	9680.19	9688.67	3.06
248	20567.00	90.27	91.77	10863.38	404.12	9774.14	9782.46	2.30
249	20662.00	88.59	90.97	10864.32	401.85	9869.10	9877.26	1.96
250	20757.00	90.70	91.34	10864.91	399.94	9964.08	9972.09	2.25
251	20802.00	90.77	91.38	10864.34	398.87	10009.06	10017.00	0.18
252	20870.00	90.77	91.38	10863.42	397.23	10077.03	10084.86	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 2B 1,050' FNL & 265' FWL Lot 1 Section 31, T153N, R100W GL: 2,110' Sub: 25' KB: 2,135'								Dip To Lewis Federal 5300 11-31 3B	Dip To Wade Federal 5300 41-30 8T3	Dip To Lewis Federal 5300 31-31H
Formation/ Marker	Prog. Top	Prog. Datum (MSL)	Driller's Depth Top (MD)	Driller's Depth Top (TVD)	Datum (MSL)	Interval Thickness	Thickness to Target	Dip To Prog.			
Pierre	1,985'	150'	1,931'	1,931'	204'	2,690'	8,846'	54'	-2'	-	22'
Greenhorn	4,615'	-2,480'	4,626'	4,621'	-2,486'	409'	6,156'	-6'	5'	9'	-28'
Mowry (Dakota Group)	5,023'	-2,888'	5,037'	5,030'	-2,895'	400'	5,747'	-7'	-3'	4'	-22'
Inyan Kara (Dakota Group)	5,446'	-3,311'	5,440'	5,430'	-3,295'	477'	5,347'	16'	-4'	34'	17'
Swift (Base Dakota Group)	5,890'	-3,755'	5,920'	5,907'	-3,772'	544'	4,870'	-17'	1'	18'	-33'
Rierdon	6,443'	-4,308'	6,467'	6,451'	-4,316'	467'	4,326'	-8'	-8'	23'	-99'
Dunham Salt	6,920'	-4,785'	6,934'	6,918'	-4,783'	66'	3,859'	2'	11'	41'	-78'
Dunham Salt Base	6,980'	-4,845'	7,000'	6,984'	-4,849'	279'	3,793'	-4'	-6'	31'	-31'
Pine Salt	7,255'	-5,120'	7,279'	7,263'	-5,128'	38'	3,514'	-8'	-1'	5'	-1'
Pine Salt Base	7,311'	-5,176'	7,318'	7,301'	-5,166'	134'	3,476'	10'	12'	0'	31'
Opeche Salt	7,427'	-5,292'	7,452'	7,435'	-5,300'	15'	3,342'	-8'	1'	-14'	5'
Opeche Salt Base	7,470'	-5,335'	7,467'	7,450'	-5,315'	234'	3,327'	20'	1'	-1'	20'
Amsden	7,671'	-5,536'	7,701'	7,684'	-5,549'	144'	3,093'	-13'	9'	-8'	19'
Tyler	7,834'	-5,699'	7,845'	7,828'	-5,693'	235'	2,949'	6'	8'	5'	28'
Otter/Base Minnelusa	8,060'	-5,925'	8,081'	8,063'	-5,928'	339'	2,714'	-3'	3'	-3'	20'
Kibbey "Lime"	8,406'	-6,271'	8,421'	8,402'	-6,267'	146'	2,375'	4'	8'	5'	23'
Charles Salt	8,553'	-6,418'	8,567'	8,548'	-6,413'	688'	2,229'	5'	12'	2'	27'
Base Last Salt	9,237'	-7,102'	9,255'	9,236'	-7,101'	208'	1,541'	1'	5'	-2'	9'
Mission Canyon	9,440'	-7,305'	9,464'	9,444'	-7,309'	568'	1,333'	-4'	2'	4'	9'
Lodgepole	10,014'	-7,879'	10,033'	10,012'	-7,877'	73'	765'	2'	3'	4'	3'
Lodgepole A	10,086'	-7,951'	10,106'	10,085'	-7,950'	52'	692'	1'	8'	7'	2'
Lodgepole B	10,142'	-8,007'	10,158'	10,137'	-8,002'	68'	640'	5'	9'	16'	21'
Lodgepole C	10,237'	-8,102'	10,226'	10,205'	-8,070'	208'	572'	32'	11'	8'	3'
Lodgepole D	10,413'	-8,278'	10,440'	10,413'	-8,278'	166'	364'	0'	-3'	-5'	-18'
Lodgepole E	10,558'	-8,423'	10,640'	10,579'	-8,444'	71'	198'	-21'	2'	-5'	-12'
Lodgepole F	10,649'	-8,514'	10,753'	10,650'	-8,515'	82'	127'	-1'	2'	-5'	-13'
False Bakken	10,731'	-8,596'	10,936'	10,732'	-8,597'	11'	45'	-1'	3'	-7'	-13'
Upper Bakken Shale	10,742'	-8,607'	10,967'	10,743'	-8,608'	16'	34'	-1'	2'	-9'	-11'
Middle Bakken	10,756'	-8,621'	11,026'	10,759'	-8,624'	10'	18'	-3'	-1'	-9'	-12'
Target Top	10,766'	-8,631'	11,150'	10,769'	-8,634'	8'	8'	-3'	-1'	-7'	-10'
Target Landing	10,774'	-8,639'	-	10,777'	-8,642'	8'	0'	-3'	-1'	-6'	-9'
Target Base	10,782'	-8,647'	-	10,785'	-8,650'	10'	-8'	-3'	-1'	-5'	-8'
Lower Bakken Shale	10,792'	-8,657'	-	10,795'	-8,660'	-	-18'	-3'	-1'	-1'	-7'

CONTROL DATA

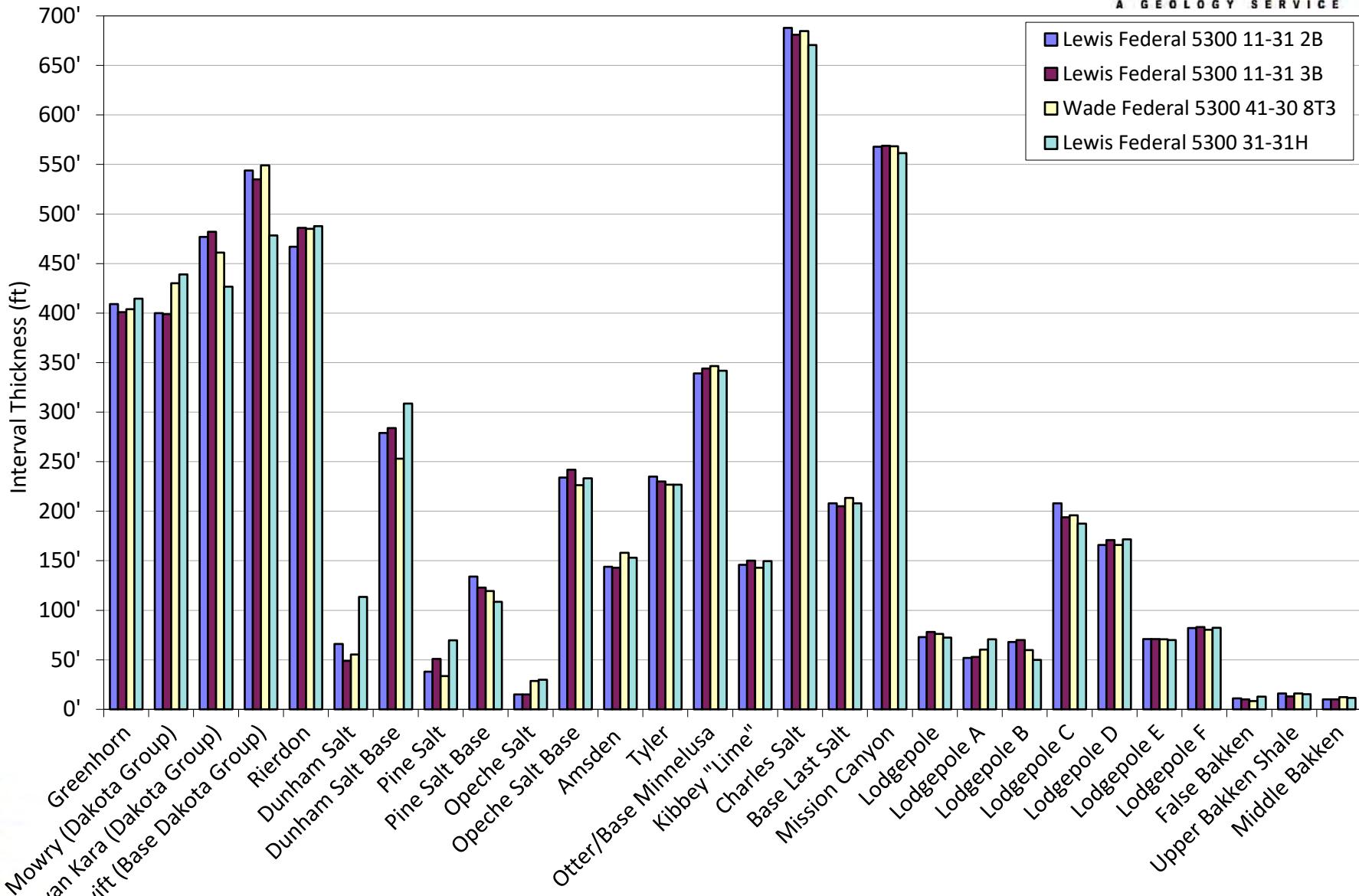
Operator:	Oasis Petroleum North America, LLC				Oasis Petroleum North America, LLC				Oasis Petroleum North America, LLC			
	Lewis Federal 5300 11-31 3B				Wade Federal 5300 41-30 8T3				Lewis Federal 5300 31-31H			
Well Name:	Lot 1 Section 31, T153N, R100W McKenzie County, ND shares pad with subject well				Lot 6 Sec. 30, T153N, R100W McKenzie County, ND 0.4 miles N of subject well				Lot 6 Sec. 30, T153N, R100W McKenzie County, ND 0.5 miles S of subject well			
	Elevation:	KB: 2,135'	NDIC: 30197		KB: 2,077'	NDIC: 28558			KB: 2,185'	NDIC: 20314		
Formation/ Zone	Driller's (TVD)	Datum (MSL)	Interval Thickness	Thickness to Target	Driller's (TVD)	Datum (MSL)	Interval Thickness	Thickness to Target	E-Log (TVD)	Datum (MSL)	Interval Thickness	Thickness to Target
Pierre	1,929'	206'	2,697'	8,847'	-	-	-	-	2,003'	182'	2,640'	8,815'
Greenhorn	4,626'	-2,491'	401'	6,150'	4,572'	-2,495'	404'	6,141'	4,643'	-2,458'	414'	6,175'
Mowry (Dakota Group)	5,027'	-2,892'	399'	5,749'	4,976'	-2,899'	430'	5,737'	5,058'	-2,873'	439'	5,760'
Inyan Kara (Dakota Group)	5,426'	-3,291'	482'	5,350'	5,406'	-3,329'	461'	5,307'	5,497'	-3,312'	427'	5,321'
Swift (Base Dakota Group)	5,908'	-3,773'	535'	4,868'	5,867'	-3,790'	549'	4,846'	5,924'	-3,739'	478'	4,894'
Rierdon	6,443'	-4,308'	486'	4,333'	6,416'	-4,339'	485'	4,297'	6,402'	-4,217'	488'	4,416'
Dunham Salt	6,929'	-4,794'	49'	3,847'	6,901'	-4,824'	55'	3,812'	6,890'	-4,705'	113'	3,928'
Dunham Salt Base	6,978'	-4,843'	284'	3,798'	6,957'	-4,880'	253'	3,756'	7,003'	-4,818'	309'	3,815'
Pine Salt	7,262'	-5,127'	51'	3,514'	7,210'	-5,133'	33'	3,503'	7,312'	-5,127'	70'	3,506'
Pine Salt Base	7,313'	-5,178'	123'	3,463'	7,243'	-5,166'	119'	3,470'	7,382'	-5,197'	109'	3,436'
Opeche Salt	7,436'	-5,301'	15'	3,340'	7,363'	-5,286'	29'	3,350'	7,490'	-5,305'	30'	3,328'
Opeche Salt Base	7,451'	-5,316'	242'	3,325'	7,391'	-5,314'	226'	3,322'	7,520'	-5,335'	233'	3,298'
Amsden	7,693'	-5,558'	143'	3,083'	7,618'	-5,541'	158'	3,095'	7,753'	-5,568'	153'	3,065'
Tyler	7,836'	-5,701'	230'	2,940'	7,775'	-5,698'	227'	2,938'	7,906'	-5,721'	227'	2,912'
Otter/Base Minnelusa	8,066'	-5,931'	344'	2,710'	8,002'	-5,925'	346'	2,711'	8,133'	-5,948'	342'	2,685'
Kibbey "Lime"	8,410'	-6,275'	150'	2,366'	8,349'	-6,272'	143'	2,364'	8,475'	-6,290'	150'	2,343'
Charles Salt	8,560'	-6,425'	681'	2,216'	8,492'	-6,415'	685'	2,221'	8,625'	-6,440'	671'	2,193'
Base Last Salt	9,241'	-7,106'	205'	1,535'	9,176'	-7,099'	213'	1,537'	9,295'	-7,110'	208'	1,523'
Mission Canyon	9,446'	-7,311'	569'	1,330'	9,390'	-7,313'	568'	1,323'	9,503'	-7,318'	561'	1,315'
Lodgepole	10,015'	-7,880'	78'	761'	9,958'	-7,881'	76'	755'	10,065'	-7,880'	72'	753'
Lodgepole A	10,093'	-7,958'	53'	683'	10,034'	-7,957'	60'	679'	10,137'	-7,952'	71'	681'
Lodgepole B	10,146'	-8,011'	70'	630'	10,095'	-8,018'	60'	618'	10,208'	-8,023'	50'	610'
Lodgepole C	10,216'	-8,081'	194'	560'	10,155'	-8,078'	196'	558'	10,258'	-8,073'	187'	560'
Lodgepole D	10,410'	-8,275'	171'	366'	10,350'	-8,273'	166'	363'	10,445'	-8,260'	172'	373'
Lodgepole E	10,581'	-8,446'	71'	195'	10,516'	-8,439'	71'	197'	10,617'	-8,432'	70'	201'
Lodgepole F	10,652'	-8,517'	83'	124'	10,587'	-8,510'	80'	126'	10,687'	-8,502'	82'	131'
False Bakken	10,735'	-8,600'	10'	41'	10,667'	-8,590'	8'	46'	10,769'	-8,584'	13'	49'
Upper Bakken Shale	10,745'	-8,610'	13'	31'	10,676'	-8,599'	16'	37'	10,782'	-8,597'	15'	36'
Middle Bakken	10,758'	-8,623'	10'	18'	10,692'	-8,615'	12'	21'	10,797'	-8,612'	12'	21'
Target Top	10,768'	-8,633'	8'	8'	10,704'	-8,627'	9'	9'	10,809'	-8,624'	9'	9'
Target Landing	10,776'	-8,641'	8'	0'	10,713'	-8,636'	9'	0'	10,818'	-8,633'	9'	0'
Target Base	10,784'	-8,649'	10'	-8'	10,722'	-8,645'	14'	-9'	10,827'	-8,642'	11'	-9'
Lower Bakken Shale	10,794'	-8,659'		-18'	10,736'	-8,659'		-23'	10,838'	-8,653'		-20'

Projected Depths



INTERVAL THICKNESS

Oasis Petroleum North America, LLC - Lewis Federal 5300 11-31 2B



LITHOLOGY

Oasis Petroleum North America, LLC
Lewis Federal 5300 11-31 2B

Sunburst geologists caught 20' sample intervals from 4,570'-4,790'; 30' sample intervals from 8,200' to 11,150'; and 50' sample intervals to the TD of the lateral at 20,870'. 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]

4,570-4,590 SHALE: light-medium gray, firm, occasional soft, sub platy, rare sub blocky, earthy texture, trace disseminated pyrite, no visible porosity, no visible oil stain

4,590-4,610 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] 4,626' MD / 4,621' TVD (-2,486')

4,610-4,630 SHALE: light-medium gray, firm, occasional soft, sub platy, rare sub blocky, earthy texture, trace disseminated pyrite, no visible porosity, no visible oil stain

4,630-4,650 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

4,650-4,670 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

4,670-4,690 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

4,690-4,710 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

4,710-4,730 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

4,730-4,750 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

4,750-4,770 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

4,770-4,790 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, calcareous 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, calcareous 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, calcareous 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, calcareous 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

8,320-8,336 No sample

8,336-8,350 SILTSTONE: light red orange, gray, firm, sub blocky, calcareous 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, calcareous 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 SILTSTONE: light red orange, gray, firm, sub blocky, calcareous 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

Kibbey "Lime" [Mississippian Big Snowy Group]

8,421' MD / 8,402' TVD (-6,267')

8,410-8,440 SILTSTONE and SILTY SANDSTONE: as above; ANHYDRITE off white, microcrystalline, soft, chalky, massive, anhedral, amorphous; no visible porosity, no visible oil stain;

8,440-8,470 SILTSTONE: dark orange, firm, sub blocky, calcareous 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, calcareous 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, calcareous 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, calcareous cement, well sorted, no visible porosity

Charles Formation [Mississippian Madison Group]

8,567' MD / 8,548' TVD (-6,413')

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; r 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

Base of Last Salt [Charles Formation] **9,255' MD / 9,236' TVD (-7,101')**

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 Group] **9,464' MD / 9,444' TVD (-7,309')**

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, 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

9,580-9,610 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]

10.033' MD / 10.012' TVD (-7,877')

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

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

10,090-10,120 ARGILLACEOUS LIMESTONE: mudstone, light-dark gray, rare cream, microcrystalline, firm, dense, earthy texture, rare disseminated pyrite, no visible porosity, no visible oil stain

10,120-10,150 ARGILLACEOUS LIMESTONE: mudstone, light-dark gray, rare cream, microcrystalline, firm, dense, earthy texture, rare disseminated pyrite, no visible porosity, no visible oil stain

10,150-10,180 ARGILLACEOUS LIMESTONE: mudstone, light-medium gray, trace cream-tan, trace dark gray, microcrystalline, firm, dense, earthy texture, rare disseminated pyrite, no visible porosity, no visible oil stain

10,180-10,260 No sample

Horizontal Log Descriptions:

MD / TVD (MSL Datum)

10,260-10,270 ARGILLACEOUS LIMESTONE: mudstone, dark brown, medium-light gray, rare cream, rare calcite fill, firm, trace hard, microcrystalline texture, earthy texture, no visible porosity, no visible oil stain

10,270-10,300 ARGILLACEOUS LIMESTONE: mudstone, dark brown, medium-light gray, rare cream, rare calcite fill, firm, trace hard, microcrystalline texture, earthy texture, no visible porosity, no visible oil stain

10,300-10,330 ARGILLACEOUS LIMESTONE: mudstone, dark brown, medium-light gray, rare cream, rare calcite fill, firm, trace hard, microcrystalline texture, earthy texture, no visible porosity, no visible oil stain

10,330-10,360 ARGILLACEOUS LIMESTONE: mudstone, dark brown, medium-light gray, rare cream, rare calcite fill, firm, trace hard, microcrystalline texture, earthy texture, no visible porosity, no visible oil stain

10,360-10,390 ARGILLACEOUS LIMESTONE: mudstone, dark brown, medium-light gray, rare cream, rare calcite fill, firm, trace hard, microcrystalline texture, earthy texture, no visible porosity, no visible oil stain

10,390-10,420 ARGILLACEOUS LIMESTONE: mudstone, medium-light gray, firm, earthy texture, no visible porosity, no visible oil stain

10,420-10,450 ARGILLACEOUS LIMESTONE: mudstone, medium-light gray, firm, earthy texture, no visible porosity, no visible oil stain

10,450-10,480 ARGILLACEOUS LIMESTONE: mudstone, medium-light gray, firm, earthy texture, no visible porosity, no visible oil stain

10,480-10,510 ARGILLACEOUS LIMESTONE: mudstone, light-medium gray, firm, earthy texture, no visible porosity, no visible oil stain

10,510-10,540 ARGILLACEOUS LIMESTONE: mudstone, light-medium gray, firm, earthy texture, no visible porosity, no visible oil stain

10,540-10,570 ARGILLACEOUS LIMESTONE: mudstone, light-medium gray, firm, earthy texture, no visible porosity, no visible oil stain

10,570-10,600 ARGILLACEOUS LIMESTONE: mudstone, light-medium gray, firm, earthy texture, no visible porosity, no visible oil stain

10,600-10,630 ARGILLACEOUS LIMESTONE: mudstone, light-medium gray, firm, earthy texture, no visible porosity, no visible oil stain

10,630-10,660 ARGILLACEOUS LIMESTONE: mudstone, light-medium gray, firm, earthy texture, no visible porosity, no visible oil stain

10,660-10,690 ARGILLACEOUS LIMESTONE: mudstone, light-medium gray, firm, earthy texture, no visible porosity, no visible oil stain

10,690-10,720 ARGILLACEOUS LIMESTONE: mudstone, light-medium gray, firm, earthy texture, no visible porosity, no visible oil stain

10,720-10,750 ARGILLACEOUS LIMESTONE: mudstone, light-medium gray, firm, earthy texture, no visible porosity, no visible oil stain

10,750-10,780 ARGILLACEOUS LIMESTONE: mudstone, light-medium gray, firm, earthy texture, no visible porosity, no visible oil stain

10,780-10,810 ARGILLACEOUS LIMESTONE: mudstone, medium-light gray, firm, earthy texture, no visible porosity, no visible oil stain

10,810-10,840 ARGILLACEOUS LIMESTONE: mudstone, medium-light gray, firm, earthy texture, no visible porosity, no visible oil stain

10,840-10,870 ARGILLACEOUS LIMESTONE: mudstone, medium-light gray, firm, earthy texture, no visible porosity, no visible oil stain

10,870-10,900 ARGILLACEOUS LIMESTONE: mudstone, medium-light gray, firm, earthy texture, no visible porosity, no visible oil stain

10,900-10,930 ARGILLACEOUS LIMESTONE: mudstone, medium-light gray, firm, earthy texture, no visible porosity, no visible oil stain

False Bakken /Lodgepole Formation**10.936' MD / 10.732' TVD (-8.597')**

10,930-10,960 ARGILLACEOUS LIMESTONE-LIMESTONE: mudstone, medium-light gray, tan gray, off white, firm, earthy texture, no visible porosity, no visible oil stain; SHALE: gray 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**10.967' MD / 10.743' TVD (-8.608')**

10,960-10,990 SHALE: black, hard, brittle, blocky, carbonaceous, petroliferous, pyritic, no visible porosity, possible fracture porosity, dark brown even oil stain

10,990-11,020 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**11.026' MD / 10.759' TVD (-8.624')**

11,020-11,050 SILTY SANDSTONE: light-medium gray, light brown gray-light brown, firm, friable, fine grained, sub rounded, moderately poorly sorted, calcareous cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; SHALE: as above

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

11,080-11,150 No sample

11,150-11,200 SILTY SANDSTONE: light-medium gray, light brown gray-light brown, firm, friable, fine grained, sub rounded, moderately poorly sorted, calcareous cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain

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

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

11,300-11,350 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, calcareous cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

11,350-11,400 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, calcareous cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

11,400-11,450 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, calcareous cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

11,450-11,500 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, calcareous cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

11,500-11,550 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, calcareous cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

12,650-12,700 SILTY SANDSTONE: light-medium brown, brown gray, rare medium-light gray, firm, fine grained, sub rounded, moderately-poorly sorted, calcareous cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, rare light-medium 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, calcareous 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, calcareous 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: medium-dark gray, rare light brown gray, firm, trace hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcareous 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, calcareous 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, calcareous 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, calcareous 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, calcareous 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, calcareous 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 gray, off white, rare light brown gray, firm, rare hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcareous 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

13,850-13,900 SILTY SANDSTONE: light gray, off white, rare light brown gray, firm, rare hard, fine grained, sub rounded, rare sub angular, moderately-poorly sorted, calcareous 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

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

13,950-14,000 SILTY SANDSTONE: off white, light gray, occasional light brown, trace medium-dark gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcareous cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light brown spotty oil stain; slow pale yellow diffuse cut fluorescence

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

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

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

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

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

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

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

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

14,705-14,800 SILTY SANDSTONE: light-medium gray, light brown gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcareous cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderately 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, calcareous 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, calcareous 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, calcareous 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, calcareous cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderately 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, calcareous cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderately 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, calcareous cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderately 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, calcareous cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderately 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, calcareous cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderately 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, calcareous cement, moderately cemented, trace disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderately 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, calcareous cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderately 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, calcareous cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderately pale yellow diffuse cut fluorescence

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

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

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

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

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

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

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

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

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

15,800-15,850 SILTY SANDSTONE: light-medium brown, brown gray, rare gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcareous cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow pale yellow diffuse cut fluorescence

15,850-15,900 SILTY SANDSTONE: light-medium brown, brown gray, rare gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcareous cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow pale yellow diffuse cut fluorescence

15,900-15,950 SILTY SANDSTONE: medium-light brown, brown gray, rare gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcareous cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow pale yellow diffuse cut fluorescence

15,950-16,000 SILTY SANDSTONE: medium-light brown, brown gray, rare gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcareous cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderately pale yellow diffuse cut fluorescence

16,000-16,050 SILTY SANDSTONE: light-medium gray brown, rare gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcareous cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow pale yellow diffuse cut fluorescence

16,050-16,100 SILTY SANDSTONE: light-medium gray brown, rare gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcareous cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow pale yellow diffuse cut fluorescence

16,100-16,150 SILTY SANDSTONE: medium-light brown, brown gray, rare gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcareous cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderately pale yellow diffuse cut fluorescence

16,150-16,200 SILTY SANDSTONE: light-medium brown, brown gray, rare gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcareous cement, moderately cemented, trace clear free calcite, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow pale yellow diffuse cut fluorescence

16,200-16,250 SILTY SANDSTONE: light brown gray, light-medium brown, rare medium-light gray, firm, very fine grained, sub rounded, moderately sorted, calcareous cement, moderately-poorly cemented, trace disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow pale yellow-light green diffuse cut fluorescence

16,250-16,300 SILTY SANDSTONE: light-medium brown, brown gray, rare gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcareous cement, moderately cemented, trace clear free calcite, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow pale yellow diffuse cut fluorescence

16,300-16,350 SILTY SANDSTONE: light brown gray, light-medium brown, rare medium-light gray, firm, very fine grained, sub rounded, moderately sorted, calcareous cement, moderately-poorly cemented, trace disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow pale yellow-light green diffuse cut fluorescence

16,350-16,400 SILTY SANDSTONE: light brown gray, light-medium brown, rare medium-light gray, firm, very fine grained, sub rounded, moderately sorted, calcareous cement, moderately-poorly cemented, trace disseminated pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow pale yellow diffuse cut fluorescence

16,400-16,450 SILTY SANDSTONE: light-medium brown, brown gray, rare gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcareous cement, moderately cemented, trace clear free calcite, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow pale yellow diffuse cut fluorescence

16,450-16,500 SILTY SANDSTONE: light brown gray, light-medium brown, rare medium-light gray, firm, very fine grained, sub rounded, moderately sorted, calcareous cement, moderately-poorly cemented, trace disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow pale yellow-light green diffuse cut fluorescence

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

16,550-16,600 SILTY SANDSTONE: light brown gray, light-medium brown, rare medium-light gray, firm, very fine grained, sub rounded, moderately sorted, calcareous cement, moderately-poorly cemented, trace disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow pale yellow-light green diffuse cut fluorescence

16,600-16,650 SILTY SANDSTONE: light-medium brown, brown gray, rare gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcareous cement, moderately cemented, trace clear free calcite, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow pale yellow diffuse cut fluorescence

16,650-16,700 SILTY SANDSTONE: light-medium brown, brown gray, rare gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcareous cement, moderately cemented, trace clear free calcite, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow pale yellow diffuse cut fluorescence

16,700-16,750 SILTY SANDSTONE: light brown gray, light-medium brown, rare medium-light gray, firm, very fine grained, sub rounded, moderately sorted, calcareous cement, moderately-poorly cemented, trace disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow pale yellow-light green diffuse cut fluorescence

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

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

16,850-16,900 SILTY SANDSTONE: medium gray, brown-gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcareous cement, moderately cemented, rare disseminated pyrite, trace nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; moderately 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, calcareous cement, moderately cemented, rare disseminated pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; moderately 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, calcareous cement, moderately cemented, rare disseminated pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; moderately 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, calcareous cement, moderately cemented, rare disseminated pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; moderately 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, calcareous cement, moderately cemented, rare disseminated pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; moderately pale yellow-grain diffuse cut fluorescence

17,100-17,150 SILTY SANDSTONE: dark brown-gray, tan-gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcareous cement, moderately cemented, rare disseminated pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderately 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, calcareous cement, moderately cemented, rare disseminated pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderately 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, calcareous cement, moderately cemented, rare disseminated pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderately 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, calcareous cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderately 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, calcareous cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderately 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, calcareous cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderately 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, calcareous cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderately pale yellow diffuse cut fluorescence

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

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

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

17,600-17,650 SILTY SANDSTONE: light-medium brown gray, brown, rare gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcareous cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow pale yellow diffuse cut fluorescence.

17,650-17,700 SILTY SANDSTONE: light-medium brown, brown gray, rare gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcareous cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow pale yellow diffuse cut fluorescence

17,700-17,750 SILTY SANDSTONE: light-medium brown gray, brown, rare gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcareous cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow pale yellow diffuse cut fluorescence

17,750-17,800 SILTY SANDSTONE: light-medium brown gray, brown, rare gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcareous cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow pale yellow diffuse cut fluorescence

17,800-17,850 SILTY SANDSTONE: light-medium brown, brown gray, rare gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcareous cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow pale yellow diffuse cut fluorescence

17,850-17,900 SILTY SANDSTONE: light-medium brown gray, brown, rare gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcareous cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow pale yellow diffuse cut fluorescence

17,900-17,950 SILTY SANDSTONE: light-medium brown gray, brown, rare gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcareous cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow pale yellow diffuse cut fluorescence

17,950-18,000 SILTY SANDSTONE: light-medium brown gray, brown, rare gray, firm, fine grained, sub rounded, occasional sub angular, moderately-poorly sorted, calcareous cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow pale yellow diffuse cut fluorescence

18,000-18,050 SILTY SANDSTONE: light-dark gray, gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcareous cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderately pale yellow diffuse cut fluorescence

18,050-18,100 SILTY SANDSTONE: light-dark gray, gray, firm, fine grained, sub rounded, occasional sub angular, moderately sorted, calcareous cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; slow-moderately pale yellow diffuse 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, calcareous 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, calcareous 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, calcareous 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, calcareous 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, calcareous 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, calcareous 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, calcareous 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, calcareous 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, calcareous 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, calcareous 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, calcareous 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, calcareous 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, calcareous 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, calcareous 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, calcareous 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, calcareous 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, calcareous cement, moderately cemented, rare disseminated pyrite, rare nodular pyrite, trace intergranular porosity, trace light-medium brown spotty oil stain; contaminated cut fluorescence

20,800-20,870 Sample contaminated with lube; SILTY SANDSTONE: light-medium gray, off white, firm, fine-very fine grained, sub rounded, moderately sorted, calcareous 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

Well File No.
30189

JAN 10 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 January 14, 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 Program	<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 2B					
Footages 1050 F N L	265 F W L	Qtr-Qtr Lot 2	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 to amend the surface casing depth to 3600' MD (previously 2136') 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.

DV tool will not 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 10, 2019	
Email Address jswenson@oasispetroleum.com		

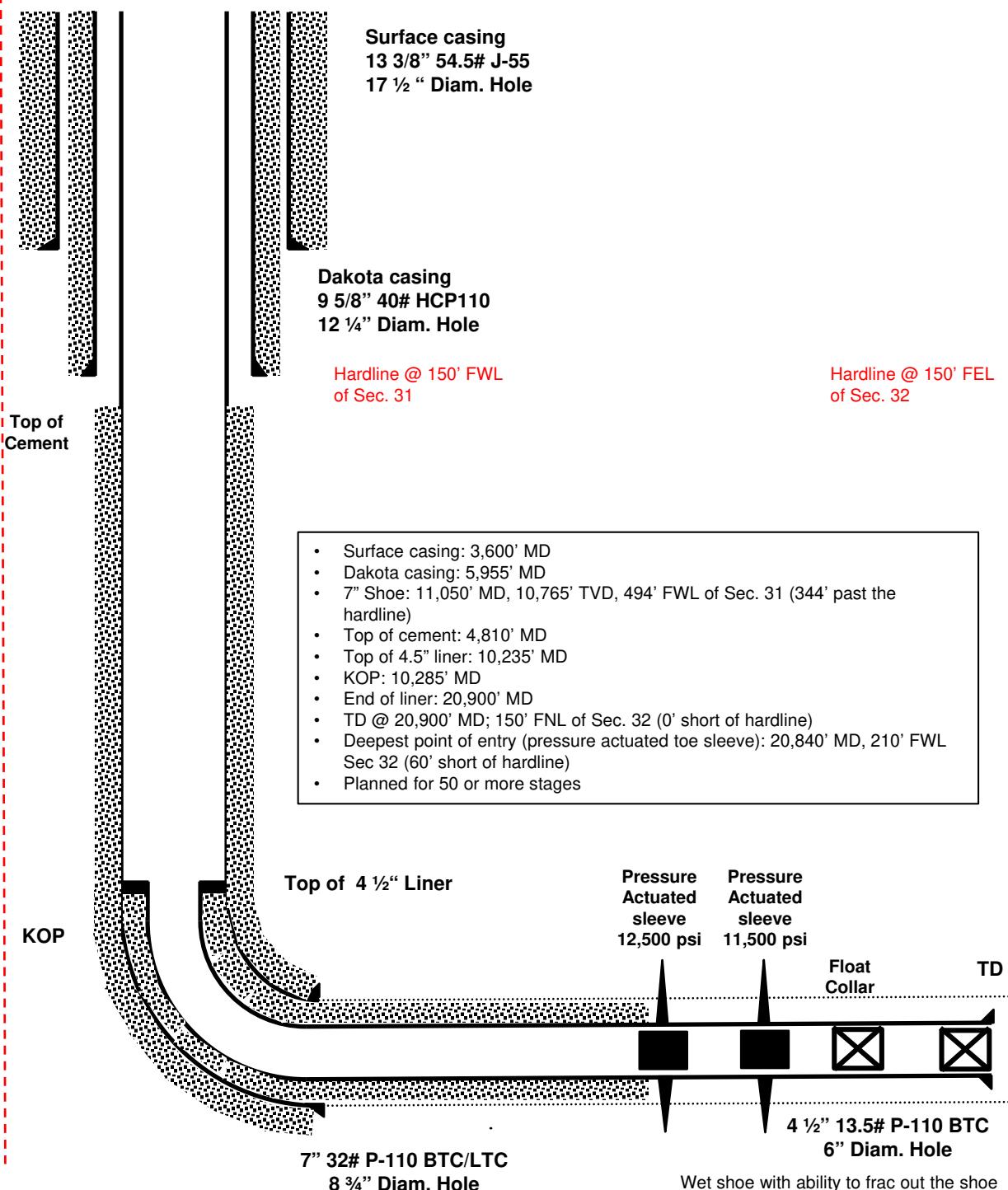
FOR STATE USE ONLY	
<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date 1/15/2019	
By 	
Title DAVID BURNS	

Engineering Technician

ELEVATION: 2,110' SL

Lewis Federal 5300 11-31 2B Proposed Wellbore Schematic

FORMATION: Bakken



OASIS PETROLEUM NA LLC

Lewis Federal 5300 11-31 2B

Wellbore: T153N-R100W Sec. 31 & 32

SHL: 1050' FNL & 265' FWL T153N-R100W Sec. 31

Williams County, North Dakota

Updated: 4-12-2018 TR

Oasis Petroleum
Well Summary
Lewis Federal 5300 11-31 2B
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: **1262 sks** (652 bbls), 11.5 lb/gal, 2.97 cu. Ft./sk Varicem Cement with 0.125 il/sk Lost Circulation Additive

Tail Slurry: **349 sks** (72 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 2B
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'	40	J-55	LTC	8.921"	8.765"

Interval	Description	Collapse (psi) / a	Burst (psi) / b	Tension (1000 lbs) / c
0' - 5955'	9-5/8", 40#, HCP110, BTC	3530 / 4.01	7870 / 3.08	1260 / 4.19

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 200k 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: **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 2B
Section 31 T153N R100W
McKenzie County, ND

INTERMEDIATE CASING AND CEMENT DESIGN

Size	Interval	Weight	Grade	Coupling	I.D.	Drift**
7"	0' - 11050'	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' - 11050'	6050'	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, (300k 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: **569 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 2B
Section 31 T153N R100W
McKenzie County, ND

PRODUCTION LINER

Size	Interval	Weight	Grade	Coupling	I.D.	Drift
4-1/2"	10235' - 20900'	13.5	P-110	GB CD BTC	3.920"	3.795"

Interval	Length	Description	Collapse	Burst	Tension
10235' - 20900'	10665	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 10235ft @ 0.011bbl/ft
4.5" casing: 10235ft to 20847ft; 0.0149bbl/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

JAN 4 2019

Well File No.

30189

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

<input checked="" type="checkbox"/> Notice of Intent	Approximate Start Date January 3, 2019
<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 from tubing/packer requirement |

Well Name and Number Lewis Federal 5300 11-31 2B					
Footages 973 F N L	1050 205 235 F W L	Qtr-Qtr 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 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	
Address 1001 Fannin, 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 Jan 10, 2019	
By JGM	
Title PETROLEUM ENGINEER	



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.
30189

DE 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
Edition

- 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 **APD Renewal**

Well Name and Number Lewis Federal 5300 11-21 2T 31 Lot 1
 Footages 1050 265 Qtr-Qtr NNNW Section 31 Township 153 N Range 100 W
973 F N L 255 F W L
 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

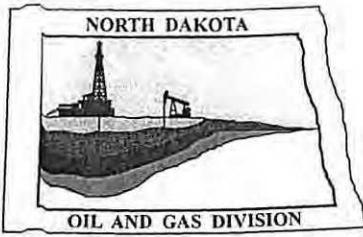
Oasis Petroleum requests a permit renewal for above referenced well. There are no changes to the current drill plan.

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
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	<i>Alicia D. Nehls</i>
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/

30189

November 13, 2018

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

RE: LEWIS FEDERAL 5300 11-31 2B
LOT1 Sec. 31-153N-100W
MCKENZIE COUNTY
WELL FILE NO. 30189

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



SUNDY NOTICES AND REPORTS ON WELLS - FORM 4
Received

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.
30189

APR 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 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	

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 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 2B

Footages	Qtr-Qtr	Section	Township	Range
973 F N L	235 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
Oil	Bbls	Water	Bbls	Water	Bbls
Gas	MCF	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: 1050' FNL & 265' FWL Lot 2 Sec. 31 T153N R100W (Previously 973' FNL & 235' FWL Lot 1 Sec. 31 T153N R100W)

BHL change: 660' FSL & 150' FEL NENE Sec. 32 T153N R100W (Previously 551' FNL & 212' FEL NENE Sec. 32 T153N R100W)

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

TD Change: 20900' MD / 10841' TVD (Previously 20772' MD / 10924' TVD)

Please see attached supporting documents.

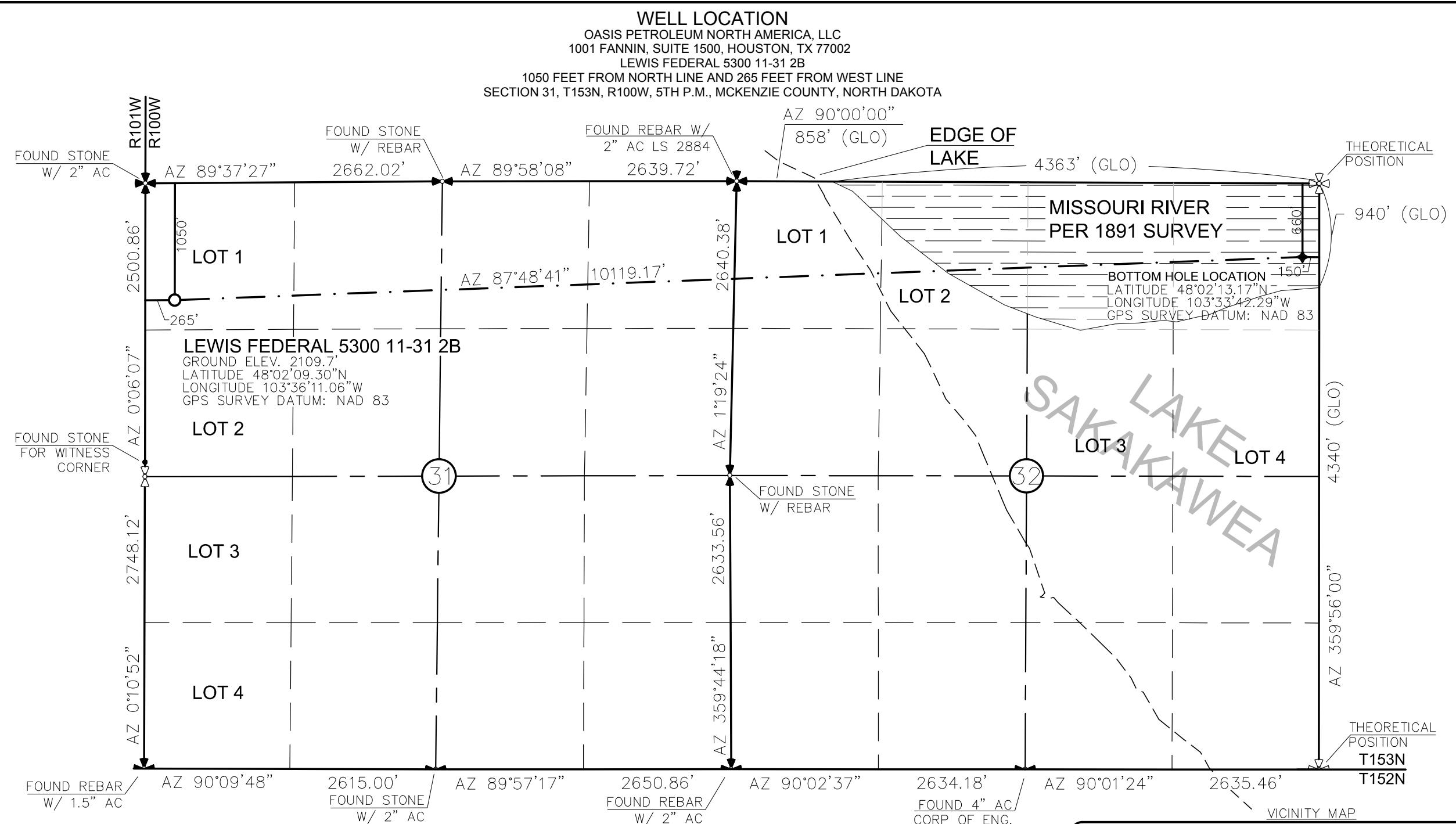
The East 150' setback is based on a production liner cemented in the lateral with a wet shoe and the ability to frac out the shoe.

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

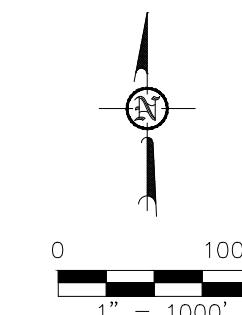
Company Oasis Petroleum North America LLC	Telephone Number 281-404-9494	
Address 1001 Fannin, Suite 1500		
City Houston	State TX	Zip Code 77002
Signature <i>Sadie Goodrum</i>	Printed Name Sadie Goodrum	
Title Regulatory Specialist II	Date April 16, 2018	
Email Address sgoodrum@oasispetroleum.com		

FOR STATE USE ONLY

<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date 4/24/2018	
By <i>Dal Brune</i>	
Title Engineering Tech.	



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.

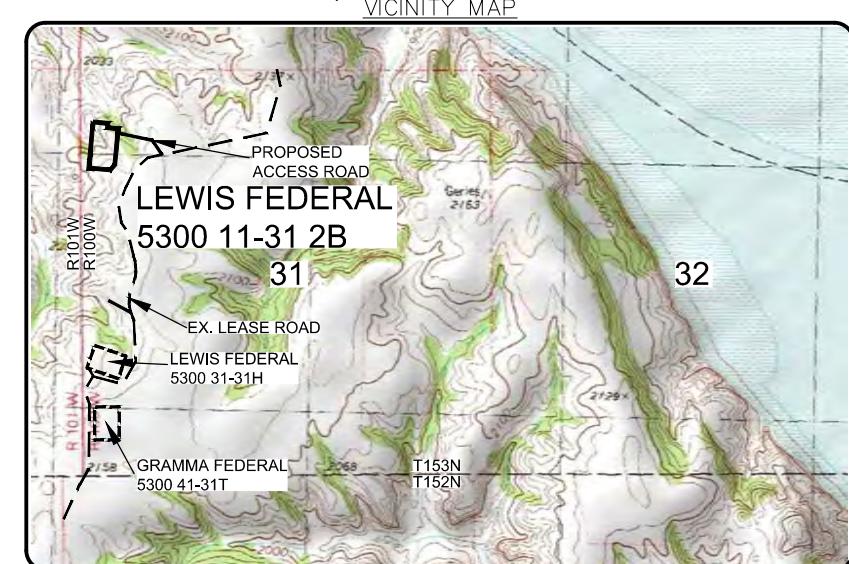
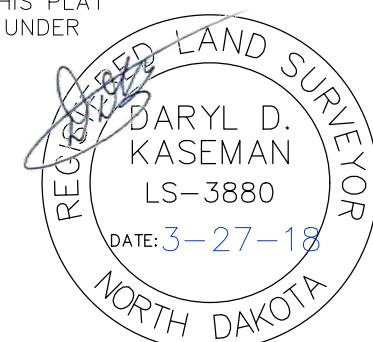


- MONUMENT - RECOVERED
- MONUMENT - NOT RECOVERED

DARYL D. KASEMAN LS-3880

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.



1/9
SHEET NO.

© 2018, INTERSTATE ENGINEERING, INC.

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

INTERSTATE
ENGINEERING
Professionals you need, people you trust

Revision No.	Date	By	Description
5300 11-31 2B	Quadrant Pad to Section 31	Standard Quadrant Pad to Section 31	LEWIS FEDERAL 5300 11-31 2B

OASIS PETROLEUM NORTH AMERICA, LLC
WELL LOCATION
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

DRILLING PLAN							
OPERATOR	Oasis Petroleum			COUNTY/STATE	McKenzie Co., ND		
WELL NAME	Lewis Federal 5300 11-31 2B			RIG	-		
WELL TYPE	Middle Bakken						
LOCATION	T153N R100W S31 NWNW	Surface Location (survey plat):		1050' FNL	265' FWL		
EST. T.D.	20,900'			FINISH PAD ELEV:		2,110'	Sub Height: 25'
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 GR/Resistivity GR CND	CBL/GR: MWD GR:	KOP to Kibbey (or min run of 1800' whichever is greater)	
Greenhorn		4,596	-2,461'			Bottom of surface casing	
Mowry (Dakota Group)		5,010	-2,875'			To surface	
Inyan Kara (Dakota Group)		5,432	-3,297'			Through Dakota Group (Inyan Kara Sands)	
Swift (Base Dakota Group)		5,855	-3,720'	CBL/GR: MWD GR:	Above top of cement/GR to base of casing KOP to lateral TD		
Rierdon		6,371	-4,236'				
Dunham Salt		6,898	-4,763'				
Dunham Salt Base		6,955	-4,820'				
Pine Salt		7,262	-5,127'				
Pine Salt Base		7,323	-5,188'			3 deg. max., 1 deg / 100'; svry every 500'	
Opeche Salt		7,441	-5,306'			5 deg. max., 1 deg / 100'; svry every 100'	
Opeche Salt Base		7,467	-5,332'				
Amsden		7,663	-5,528'				
Tyler		7,851	-5,716'				
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'				
Lodgepole		10,006	-7,871'				
False Bakken		10,720	-8,585'				
Upper Bakken Shale		10,730	-8,595'				
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:	89.56						
Max. Anticipated BHP:	4,698'					Surface Formation: Glacial till	
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' -	11,050'	Invert	9.5-10.4	40-50	30+HHhp	Circ Mud Tanks
Lateral:	11,050' -	20,900'	Salt Water	9.8-10.2	28-32	NC	Circ Mud Tanks
CASING:	Size	Wt pcf	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"	11,050'	4810	24 hours	200' above Mowry
Production Liner:	4.5"	13.5#	6"	20,900'	10235		50' above KOP
PROBABLE PLUGS, IF REQ'D:							
OTHER:	MD	TVD	FNL/FSL	FEL/FWL	S-T-R	AZI	
Surface:	2,135'	2,135'	1050 FNL	265 FWL	Sec 31 T153N R100W	-	Survey Company:
KOP:	10,285'	10,270'	689 FNL	21 FWL	Sec 31 T153N R100W	-	Build Rate: 12 deg /100'
EOC:	11,050'	10,765'	660 FNL	494 FWL	Sec 31 T153N R100W	90.0	
Casing Point:	11,050'	10,765'	660 FNL	494 FWL	Sec 31 T153N R100W	90.0	
TD:	20,900'	10,841'	660 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				Engineering: TR 4/12/18			
Revision:				Revision:			
Revision 2:				Revision 2:			

Oasis Petroleum
Well Summary
Lewis Federal 5300 11-31 2B
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 2B
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 2B
Section 31 T153N R100W
McKenzie County, ND

INTERMEDIATE CASING AND CEMENT DESIGN

Size	Interval	Weight	Grade	Coupling	I.D.	Drift**
7"	0' - 11050'	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' - 11050'	6050'	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, (300k 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: **569 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 2B
Section 31 T153N R100W
McKenzie County, ND

PRODUCTION LINER

Size	Interval	Weight	Grade	Coupling	I.D.	Drift
4-1/2"	10235' - 20900'	13.5	P-110	GB CD BTC	3.920"	3.795"

Interval	Length	Description	Collapse	Burst	Tension
10235' - 20900'	10665	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

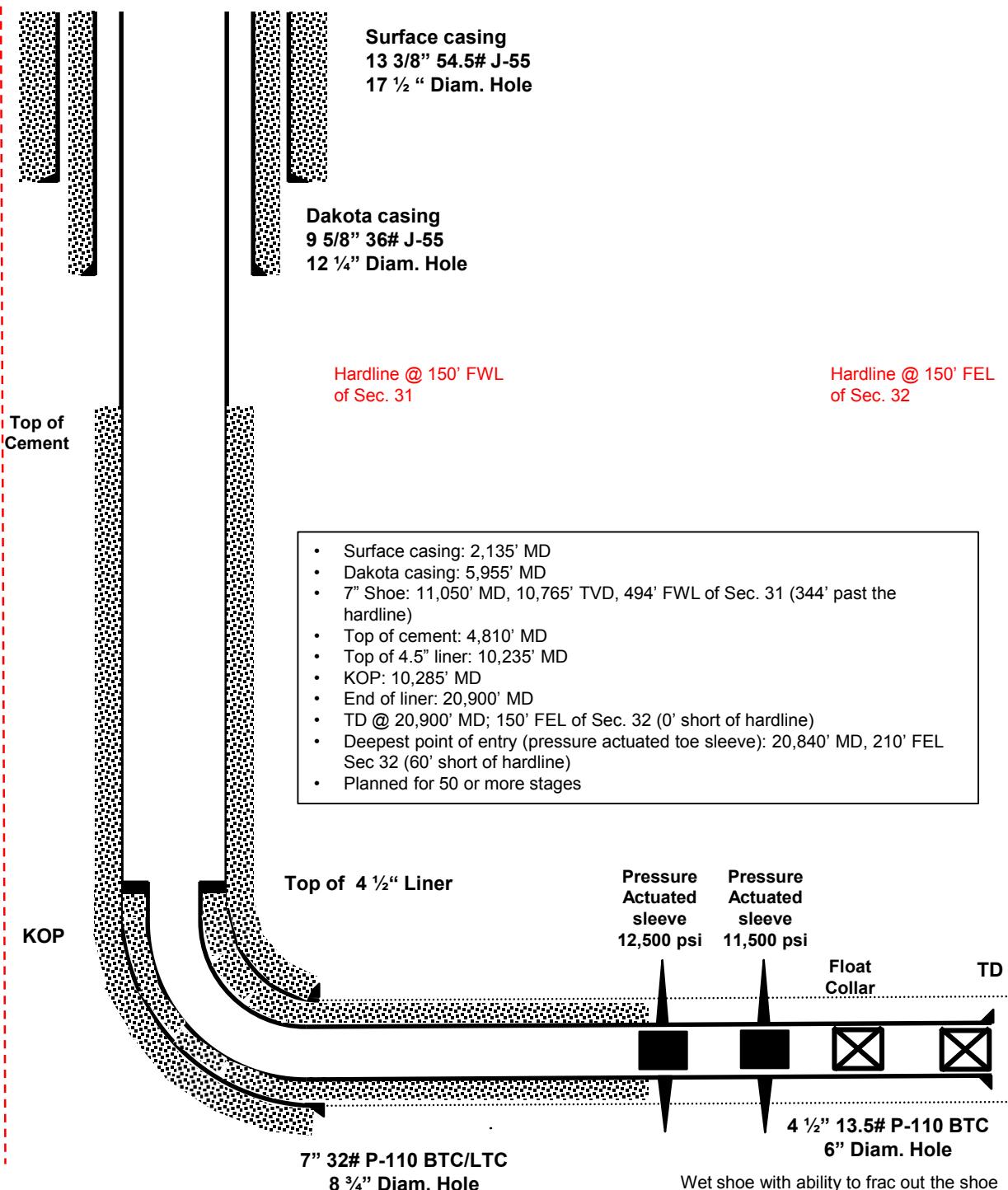
Cement Slurry: **726 sks** (197 bbls), 14.3ppg, 1.52 cu/ft/sk conventional system with
20% silica flour

Displacement **272 bbls** Based on 53 ft shoe track and 4" drill pipe from surface to top of liner
4" DP: 0ft to 10235ft @ 0.011bbl/ft
4.5" casing: 10235ft to 20847ft; 0.0149bbl/ft

ELEVATION: 2,110' SL

Lewis Federal 5300 11-31 2B
Proposed Wellbore Schematic

FORMATION: Bakken



OASIS PETROLEUM NA LLC

Lewis Federal 5300 11-31 2B

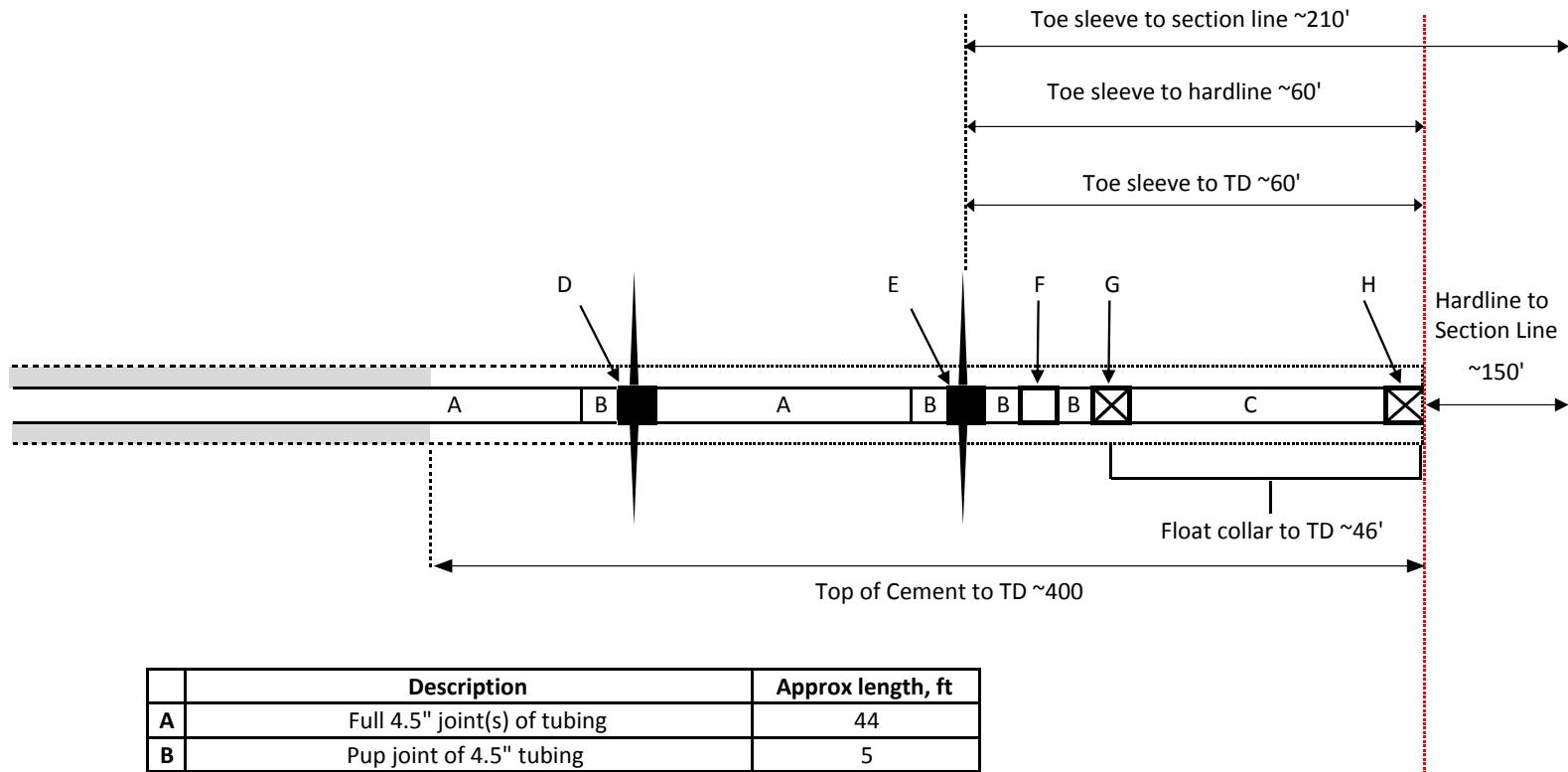
Wellbore: T153N-R100W Sec. 31 & 32

SHL: 1050' FNL & 265' FWL T153N-R100W Sec. 31

Williams County, North Dakota

Updated: 4-12-2018 TR

Lewis Federal 5300 11-31 2B planned toe completion

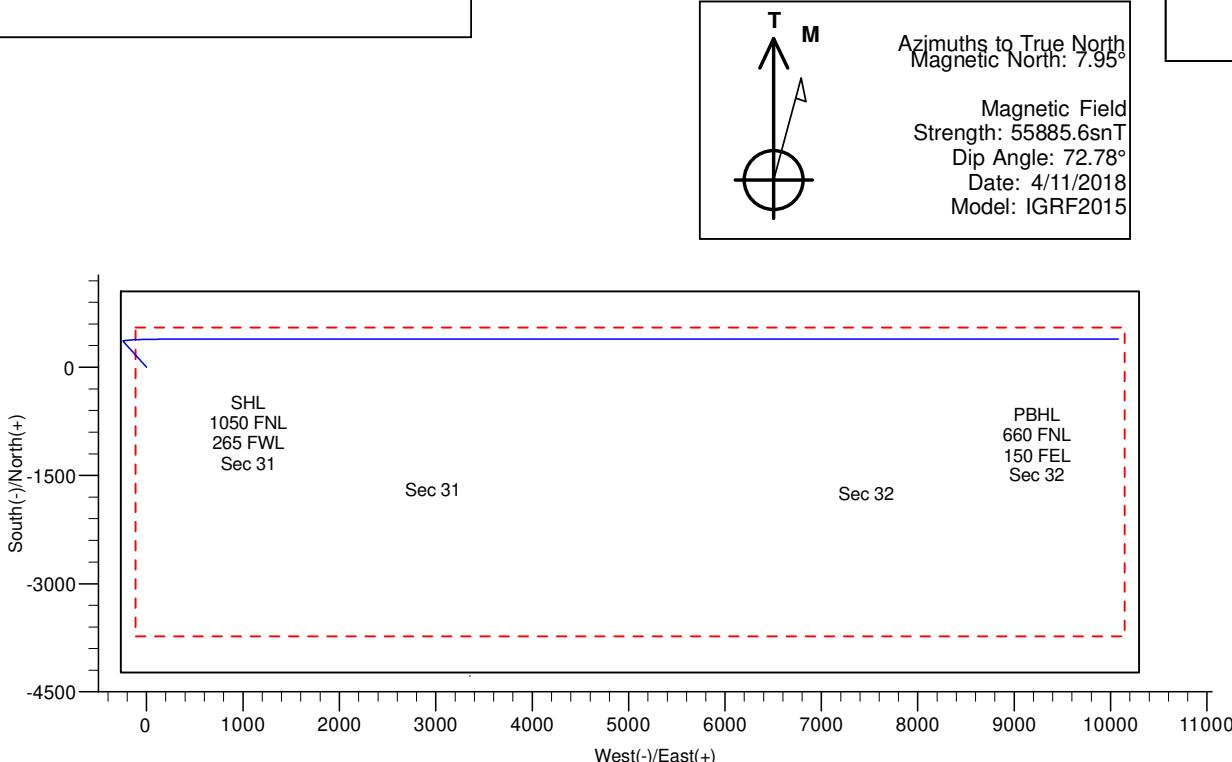


	Description	Approx length, ft
A	Full 4.5" joint(s) of tubing	44
B	Pup joint of 4.5" tubing	5
C	Full 4.5" joint of tubing, with NO cement	44
D	Pressure actuated sleeve, 12,500psi absolute	7
E	Pressure actuated sleeve, 11,500psi absolute	5
F	Landing collar	2
G	Float collar	2
H	Float shoe	2

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

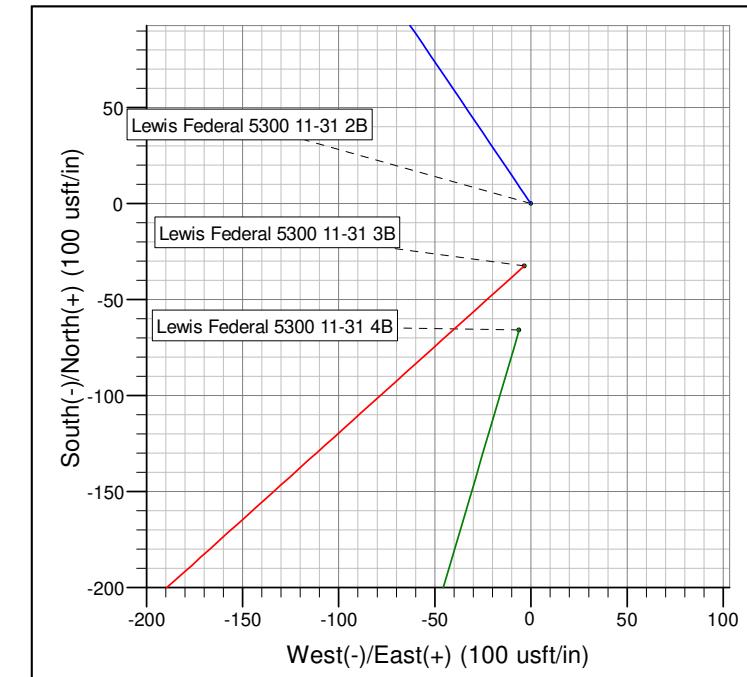
*Diagram not to scale

Project: Indian Hills
 Site: 153N-100W-31/32
 Well: Lewis Federal 5300 11-31 2B
 Wellbore: Lewis Federal 5300 11-31 2B
 Design: Design #1



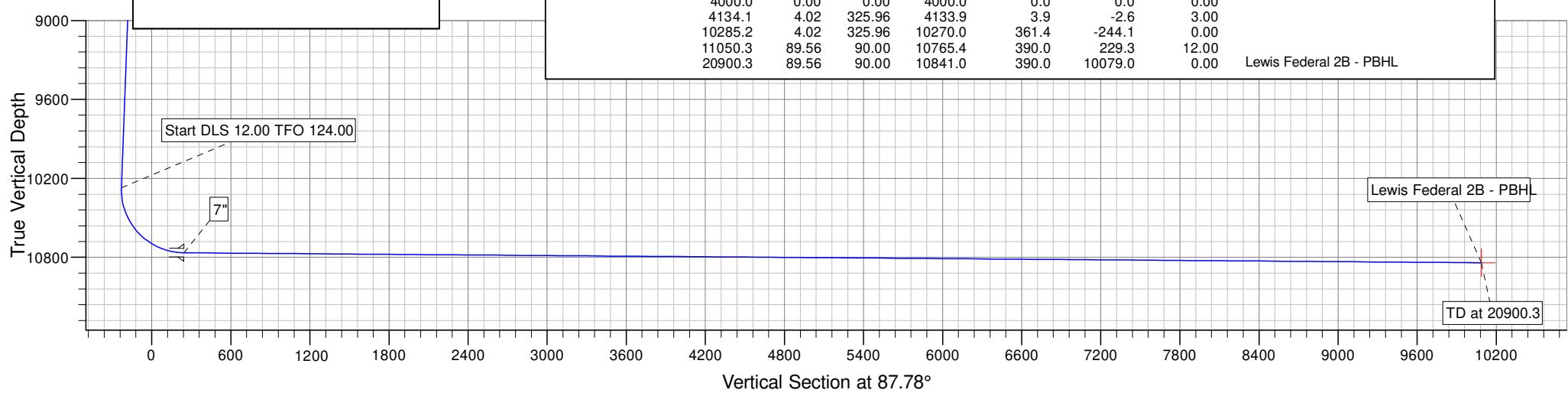
WELL DETAILS: Lewis Federal 5300 11-31 2B

Northing	393162.02	Ground Level:	2110.0
		Easting	1209545.85
		Latitude	48° 2' 9.300 N
		Longitude	103° 36' 11.060 W



CASING DETAILS			
TVD	MD	Name	Size
2135.0	2135.0	13 3/8"	13.375
5950.4	5955.0	9 5/8"	9.625
10765.4	11050.3	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		Lewis Federal 2B - PBHL
4000.0	0.00	0.00	4000.0	0.0	0.0	0.00		
4134.1	4.02	325.96	4133.9	3.9	-2.6	3.00		
10285.2	4.02	325.96	10270.0	361.4	-244.1	0.00		
11050.3	89.56	90.00	10765.4	390.0	229.3	12.00		
20900.3	89.56	90.00	10841.0	390.0	10079.0	0.00		



Oasis

Indian Hills

153N-100W-31/32

Lewis Federal 5300 11-31 2B

Lewis Federal 5300 11-31 2T

Lewis Federal 5300 11-31 2B

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 2B
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 2B	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lewis Federal 5300 11-31 2B		
Design:	Design #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: 390,397.86 usft
From: Lat/Long	Easting: 1,209,464.32 usft
Position Uncertainty:	Slot Radius: 13.200 in

Well	Lewis Federal 5300 11-31 2B, DEV
Well Position	+N/S 2,765.2 usft Northing: 393,162.02 usft Latitude: 48° 1' 42.010 N
	+E/W -29.9 usft Easting: 1,209,545.85 usft Longitude: 103° 36' 10.620 W

Wellbore	Lewis Federal 5300 11-31 2B
Magnetics	Model Name Sample Date Declination Dip Angle Field Strength

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) +N/S +E/W Direction	
(usft) (usft) (usft) (°)	
0.0 0.0 0.0 87.78	

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	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00
4,134.1	4.02	325.96	4,133.9	3.9	-2.6	3.00	3.00	0.00	325.96	
10,285.2	4.02	325.96	10,270.0	361.4	-244.1	0.00	0.00	0.00	0.00	
11,050.3	89.56	90.00	10,765.4	390.0	229.3	12.00	11.18	16.21	124.00	
20,900.3	89.56	90.00	10,841.0	390.0	10,079.0	0.00	0.00	0.00	0.00	Lewis Federal 2B - PE

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 2B
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 2B	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lewis Federal 5300 11-31 2B		
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)	
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00	
Start Build 3.00										
4,100.0	3.00	325.96	4,100.0	2.2	-1.5	-1.4	3.00	3.00	0.00	
4,134.1	4.02	325.96	4,133.9	3.9	-2.6	-2.5	3.00	3.00	0.00	
Start 6151.2 hold at 4134.1 MD										
4,200.0	4.02	325.96	4,199.7	7.7	-5.2	-4.9	0.00	0.00	0.00	
4,300.0	4.02	325.96	4,299.5	13.5	-9.1	-8.6	0.00	0.00	0.00	
4,400.0	4.02	325.96	4,399.2	19.4	-13.1	-12.3	0.00	0.00	0.00	
4,500.0	4.02	325.96	4,499.0	25.2	-17.0	-16.0	0.00	0.00	0.00	
4,600.0	4.02	325.96	4,598.7	31.0	-20.9	-19.7	0.00	0.00	0.00	
4,700.0	4.02	325.96	4,698.5	36.8	-24.9	-23.4	0.00	0.00	0.00	
4,800.0	4.02	325.96	4,798.3	42.6	-28.8	-27.1	0.00	0.00	0.00	
4,900.0	4.02	325.96	4,898.0	48.4	-32.7	-30.8	0.00	0.00	0.00	
5,000.0	4.02	325.96	4,997.8	54.2	-36.6	-34.5	0.00	0.00	0.00	
5,100.0	4.02	325.96	5,097.5	60.0	-40.6	-38.2	0.00	0.00	0.00	
5,200.0	4.02	325.96	5,197.3	65.8	-44.5	-41.9	0.00	0.00	0.00	
5,300.0	4.02	325.96	5,297.0	71.7	-48.4	-45.6	0.00	0.00	0.00	
5,400.0	4.02	325.96	5,396.8	77.5	-52.3	-49.3	0.00	0.00	0.00	
5,500.0	4.02	325.96	5,496.5	83.3	-56.3	-53.0	0.00	0.00	0.00	
5,600.0	4.02	325.96	5,596.3	89.1	-60.2	-56.7	0.00	0.00	0.00	
5,700.0	4.02	325.96	5,696.0	94.9	-64.1	-60.4	0.00	0.00	0.00	
5,800.0	4.02	325.96	5,795.8	100.7	-68.0	-64.1	0.00	0.00	0.00	
5,900.0	4.02	325.96	5,895.5	106.5	-72.0	-67.8	0.00	0.00	0.00	
5,955.0	4.02	325.96	5,950.4	109.7	-74.1	-69.8	0.00	0.00	0.00	
9 5/8"										
6,000.0	4.02	325.96	5,995.3	112.3	-75.9	-71.5	0.00	0.00	0.00	
6,100.0	4.02	325.96	6,095.0	118.1	-79.8	-75.2	0.00	0.00	0.00	
6,200.0	4.02	325.96	6,194.8	124.0	-83.7	-78.9	0.00	0.00	0.00	
6,300.0	4.02	325.96	6,294.6	129.8	-87.7	-82.6	0.00	0.00	0.00	
6,400.0	4.02	325.96	6,394.3	135.6	-91.6	-86.3	0.00	0.00	0.00	
6,500.0	4.02	325.96	6,494.1	141.4	-95.5	-90.0	0.00	0.00	0.00	
6,600.0	4.02	325.96	6,593.8	147.2	-99.5	-93.7	0.00	0.00	0.00	
6,700.0	4.02	325.96	6,693.6	153.0	-103.4	-97.4	0.00	0.00	0.00	
6,800.0	4.02	325.96	6,793.3	158.8	-107.3	-101.1	0.00	0.00	0.00	
6,900.0	4.02	325.96	6,893.1	164.6	-111.2	-104.8	0.00	0.00	0.00	
7,000.0	4.02	325.96	6,992.8	170.4	-115.2	-108.5	0.00	0.00	0.00	
7,100.0	4.02	325.96	7,092.6	176.3	-119.1	-112.2	0.00	0.00	0.00	
7,200.0	4.02	325.96	7,192.3	182.1	-123.0	-115.9	0.00	0.00	0.00	
7,300.0	4.02	325.96	7,292.1	187.9	-126.9	-119.6	0.00	0.00	0.00	
7,400.0	4.02	325.96	7,391.8	193.7	-130.9	-123.3	0.00	0.00	0.00	
7,500.0	4.02	325.96	7,491.6	199.5	-134.8	-127.0	0.00	0.00	0.00	
7,600.0	4.02	325.96	7,591.4	205.3	-138.7	-130.7	0.00	0.00	0.00	
7,700.0	4.02	325.96	7,691.1	211.1	-142.6	-134.4	0.00	0.00	0.00	
7,800.0	4.02	325.96	7,790.9	216.9	-146.6	-138.1	0.00	0.00	0.00	
7,900.0	4.02	325.96	7,890.6	222.7	-150.5	-141.8	0.00	0.00	0.00	
8,000.0	4.02	325.96	7,990.4	228.6	-154.4	-145.5	0.00	0.00	0.00	
8,100.0	4.02	325.96	8,090.1	234.4	-158.3	-149.2	0.00	0.00	0.00	
8,200.0	4.02	325.96	8,189.9	240.2	-162.3	-152.9	0.00	0.00	0.00	
8,300.0	4.02	325.96	8,289.6	246.0	-166.2	-156.6	0.00	0.00	0.00	
8,400.0	4.02	325.96	8,389.4	251.8	-170.1	-160.3	0.00	0.00	0.00	
8,500.0	4.02	325.96	8,489.1	257.6	-174.1	-164.0	0.00	0.00	0.00	
8,600.0	4.02	325.96	8,588.9	263.4	-178.0	-167.7	0.00	0.00	0.00	
8,700.0	4.02	325.96	8,688.6	269.2	-181.9	-171.4	0.00	0.00	0.00	

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 2B
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 2B	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lewis Federal 5300 11-31 2B		
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)
8,800.0	4.02	325.96	8,788.4	275.0	-185.8	-175.1	0.00	0.00	0.00
8,900.0	4.02	325.96	8,888.2	280.9	-189.8	-178.8	0.00	0.00	0.00
9,000.0	4.02	325.96	8,987.9	286.7	-193.7	-182.5	0.00	0.00	0.00
9,100.0	4.02	325.96	9,087.7	292.5	-197.6	-186.2	0.00	0.00	0.00
9,200.0	4.02	325.96	9,187.4	298.3	-201.5	-189.9	0.00	0.00	0.00
9,300.0	4.02	325.96	9,287.2	304.1	-205.5	-193.5	0.00	0.00	0.00
9,400.0	4.02	325.96	9,386.9	309.9	-209.4	-197.2	0.00	0.00	0.00
9,500.0	4.02	325.96	9,486.7	315.7	-213.3	-200.9	0.00	0.00	0.00
9,600.0	4.02	325.96	9,586.4	321.5	-217.2	-204.6	0.00	0.00	0.00
9,700.0	4.02	325.96	9,686.2	327.4	-221.2	-208.3	0.00	0.00	0.00
9,800.0	4.02	325.96	9,785.9	333.2	-225.1	-212.0	0.00	0.00	0.00
9,900.0	4.02	325.96	9,885.7	339.0	-229.0	-215.7	0.00	0.00	0.00
10,000.0	4.02	325.96	9,985.4	344.8	-232.9	-219.4	0.00	0.00	0.00
10,100.0	4.02	325.96	10,085.2	350.6	-236.9	-223.1	0.00	0.00	0.00
10,200.0	4.02	325.96	10,185.0	356.4	-240.8	-226.8	0.00	0.00	0.00
10,285.2	4.02	325.96	10,270.0	361.4	-244.1	-230.0	0.00	0.00	0.00
Start DLS 12.00 TFO 124.00									
10,300.0	3.37	351.81	10,284.7	362.2	-244.5	-230.3	12.00	-4.43	175.21
10,400.0	11.99	74.10	10,383.9	368.0	-234.9	-220.5	12.00	8.62	82.30
10,500.0	23.74	82.42	10,478.9	373.5	-204.8	-190.2	12.00	11.76	8.31
10,600.0	35.65	85.37	10,565.6	378.5	-155.7	-140.9	12.00	11.91	2.95
10,700.0	47.61	86.98	10,640.3	382.9	-89.5	-74.6	12.00	11.95	1.61
10,800.0	59.58	88.07	10,699.5	386.3	-9.2	5.7	12.00	11.97	1.09
10,900.0	71.55	88.91	10,740.8	388.6	81.6	96.6	12.00	11.98	0.85
11,000.0	83.53	89.65	10,762.3	389.8	179.1	194.0	12.00	11.98	0.73
11,050.3	89.56	90.00	10,765.4	390.0	229.3	244.2	12.00	11.98	0.70
Start 9850.0 hold at 11050.3 MD - 7"									
11,100.0	89.56	90.00	10,765.7	390.0	279.0	293.8	0.01	0.01	0.00
11,200.0	89.56	90.00	10,766.5	390.0	379.0	393.7	0.00	0.00	0.00
11,300.0	89.56	90.00	10,767.3	390.0	478.9	493.7	0.00	0.00	0.00
11,400.0	89.56	90.00	10,768.0	390.0	578.9	593.6	0.00	0.00	0.00
11,500.0	89.56	90.00	10,768.8	390.0	678.9	693.5	0.00	0.00	0.00
11,600.0	89.56	90.00	10,769.6	390.0	778.9	793.4	0.00	0.00	0.00
11,700.0	89.56	90.00	10,770.3	390.0	878.9	893.4	0.00	0.00	0.00
11,800.0	89.56	90.00	10,771.1	390.0	978.9	993.3	0.00	0.00	0.00
11,900.0	89.56	90.00	10,771.9	390.0	1,078.9	1,093.2	0.00	0.00	0.00
12,000.0	89.56	90.00	10,772.7	390.0	1,178.9	1,193.1	0.00	0.00	0.00
12,100.0	89.56	90.00	10,773.4	390.0	1,278.9	1,293.0	0.00	0.00	0.00
12,200.0	89.56	90.00	10,774.2	390.0	1,378.9	1,393.0	0.00	0.00	0.00
12,300.0	89.56	90.00	10,775.0	390.0	1,478.9	1,492.9	0.00	0.00	0.00
12,400.0	89.56	90.00	10,775.7	390.0	1,578.9	1,592.8	0.00	0.00	0.00
12,500.0	89.56	90.00	10,776.5	390.0	1,678.9	1,692.7	0.00	0.00	0.00
12,600.0	89.56	90.00	10,777.3	390.0	1,778.9	1,792.7	0.00	0.00	0.00
12,700.0	89.56	90.00	10,778.0	390.0	1,878.9	1,892.6	0.00	0.00	0.00
12,800.0	89.56	90.00	10,778.8	390.0	1,978.9	1,992.5	0.00	0.00	0.00
12,900.0	89.56	90.00	10,779.6	390.0	2,078.9	2,092.4	0.00	0.00	0.00
13,000.0	89.56	90.00	10,780.3	390.0	2,178.9	2,192.3	0.00	0.00	0.00
13,100.0	89.56	90.00	10,781.1	390.0	2,278.9	2,292.3	0.00	0.00	0.00
13,200.0	89.56	90.00	10,781.9	390.0	2,378.9	2,392.2	0.00	0.00	0.00
13,300.0	89.56	90.00	10,782.6	390.0	2,478.9	2,492.1	0.00	0.00	0.00
13,400.0	89.56	90.00	10,783.4	390.0	2,578.9	2,592.0	0.00	0.00	0.00
13,500.0	89.56	90.00	10,784.2	390.0	2,678.9	2,692.0	0.00	0.00	0.00
13,600.0	89.56	90.00	10,784.9	390.0	2,778.9	2,791.9	0.00	0.00	0.00
13,700.0	89.56	90.00	10,785.7	390.0	2,878.9	2,891.8	0.00	0.00	0.00

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 2B
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 2B	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lewis Federal 5300 11-31 2B		
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)
13,800.0	89.56	90.00	10,786.5	390.0	2,978.9	2,991.7	0.00	0.00	0.00
13,900.0	89.56	90.00	10,787.2	390.0	3,078.9	3,091.6	0.00	0.00	0.00
14,000.0	89.56	90.00	10,788.0	390.0	3,178.9	3,191.6	0.00	0.00	0.00
14,100.0	89.56	90.00	10,788.8	390.0	3,278.9	3,291.5	0.00	0.00	0.00
14,200.0	89.56	90.00	10,789.5	390.0	3,378.9	3,391.4	0.00	0.00	0.00
14,300.0	89.56	90.00	10,790.3	390.0	3,478.9	3,491.3	0.00	0.00	0.00
14,400.0	89.56	90.00	10,791.1	390.0	3,578.9	3,591.3	0.00	0.00	0.00
14,500.0	89.56	90.00	10,791.8	390.0	3,678.9	3,691.2	0.00	0.00	0.00
14,600.0	89.56	90.00	10,792.6	390.0	3,778.9	3,791.1	0.00	0.00	0.00
14,700.0	89.56	90.00	10,793.4	390.0	3,878.8	3,891.0	0.00	0.00	0.00
14,800.0	89.56	90.00	10,794.2	390.0	3,978.8	3,990.9	0.00	0.00	0.00
14,900.0	89.56	90.00	10,794.9	390.0	4,078.8	4,090.9	0.00	0.00	0.00
15,000.0	89.56	90.00	10,795.7	390.0	4,178.8	4,190.8	0.00	0.00	0.00
15,100.0	89.56	90.00	10,796.5	390.0	4,278.8	4,290.7	0.00	0.00	0.00
15,200.0	89.56	90.00	10,797.2	390.0	4,378.8	4,390.6	0.00	0.00	0.00
15,300.0	89.56	90.00	10,798.0	390.0	4,478.8	4,490.6	0.00	0.00	0.00
15,400.0	89.56	90.00	10,798.8	390.0	4,578.8	4,590.5	0.00	0.00	0.00
15,500.0	89.56	90.00	10,799.5	390.0	4,678.8	4,690.4	0.00	0.00	0.00
15,600.0	89.56	90.00	10,800.3	390.0	4,778.8	4,790.3	0.00	0.00	0.00
15,700.0	89.56	90.00	10,801.1	390.0	4,878.8	4,890.2	0.00	0.00	0.00
15,800.0	89.56	90.00	10,801.8	390.0	4,978.8	4,990.2	0.00	0.00	0.00
15,900.0	89.56	90.00	10,802.6	390.0	5,078.8	5,090.1	0.00	0.00	0.00
16,000.0	89.56	90.00	10,803.4	390.0	5,178.8	5,190.0	0.00	0.00	0.00
16,100.0	89.56	90.00	10,804.1	390.0	5,278.8	5,289.9	0.00	0.00	0.00
16,200.0	89.56	90.00	10,804.9	390.0	5,378.8	5,389.9	0.00	0.00	0.00
16,300.0	89.56	90.00	10,805.7	390.0	5,478.8	5,489.8	0.00	0.00	0.00
16,400.0	89.56	90.00	10,806.4	390.0	5,578.8	5,589.7	0.00	0.00	0.00
16,500.0	89.56	90.00	10,807.2	390.0	5,678.8	5,689.6	0.00	0.00	0.00
16,600.0	89.56	90.00	10,808.0	390.0	5,778.8	5,789.5	0.00	0.00	0.00
16,700.0	89.56	90.00	10,808.7	390.0	5,878.8	5,889.5	0.00	0.00	0.00
16,800.0	89.56	90.00	10,809.5	390.0	5,978.8	5,989.4	0.00	0.00	0.00
16,900.0	89.56	90.00	10,810.3	390.0	6,078.8	6,089.3	0.00	0.00	0.00
17,000.0	89.56	90.00	10,811.0	390.0	6,178.8	6,189.2	0.00	0.00	0.00
17,100.0	89.56	90.00	10,811.8	390.0	6,278.8	6,289.2	0.00	0.00	0.00
17,200.0	89.56	90.00	10,812.6	390.0	6,378.8	6,389.1	0.00	0.00	0.00
17,300.0	89.56	90.00	10,813.4	390.0	6,478.8	6,489.0	0.00	0.00	0.00
17,400.0	89.56	90.00	10,814.1	390.0	6,578.8	6,588.9	0.00	0.00	0.00
17,500.0	89.56	90.00	10,814.9	390.0	6,678.8	6,688.9	0.00	0.00	0.00
17,600.0	89.56	90.00	10,815.7	390.0	6,778.8	6,788.8	0.00	0.00	0.00
17,700.0	89.56	90.00	10,816.4	390.0	6,878.8	6,888.7	0.00	0.00	0.00
17,800.0	89.56	90.00	10,817.2	390.0	6,978.8	6,988.6	0.00	0.00	0.00
17,900.0	89.56	90.00	10,818.0	390.0	7,078.8	7,088.5	0.00	0.00	0.00
18,000.0	89.56	90.00	10,818.7	390.0	7,178.8	7,188.5	0.00	0.00	0.00
18,100.0	89.56	90.00	10,819.5	390.0	7,278.7	7,288.4	0.00	0.00	0.00
18,200.0	89.56	90.00	10,820.3	390.0	7,378.7	7,388.3	0.00	0.00	0.00
18,300.0	89.56	90.00	10,821.0	390.0	7,478.7	7,488.2	0.00	0.00	0.00
18,400.0	89.56	90.00	10,821.8	390.0	7,578.7	7,588.2	0.00	0.00	0.00
18,500.0	89.56	90.00	10,822.6	390.0	7,678.7	7,688.1	0.00	0.00	0.00
18,600.0	89.56	90.00	10,823.3	390.0	7,778.7	7,788.0	0.00	0.00	0.00
18,700.0	89.56	90.00	10,824.1	390.0	7,878.7	7,887.9	0.00	0.00	0.00
18,800.0	89.56	90.00	10,824.9	390.0	7,978.7	7,987.8	0.00	0.00	0.00
18,900.0	89.56	90.00	10,825.6	390.0	8,078.7	8,087.8	0.00	0.00	0.00
19,000.0	89.56	90.00	10,826.4	390.0	8,178.7	8,187.7	0.00	0.00	0.00
19,100.0	89.56	90.00	10,827.2	390.0	8,278.7	8,287.6	0.00	0.00	0.00

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 2B
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 2B	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lewis Federal 5300 11-31 2B		
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)
19,200.0	89.56	90.00	10,827.9	390.0	8,378.7	8,387.5	0.00	0.00	0.00
19,300.0	89.56	90.00	10,828.7	390.0	8,478.7	8,487.5	0.00	0.00	0.00
19,400.0	89.56	90.00	10,829.5	390.0	8,578.7	8,587.4	0.00	0.00	0.00
19,500.0	89.56	90.00	10,830.2	390.0	8,678.7	8,687.3	0.00	0.00	0.00
19,600.0	89.56	90.00	10,831.0	390.0	8,778.7	8,787.2	0.00	0.00	0.00
19,700.0	89.56	90.00	10,831.8	390.0	8,878.7	8,887.1	0.00	0.00	0.00
19,800.0	89.56	90.00	10,832.5	390.0	8,978.7	8,987.1	0.00	0.00	0.00
19,900.0	89.56	90.00	10,833.3	390.0	9,078.7	9,087.0	0.00	0.00	0.00
20,000.0	89.56	90.00	10,834.1	390.0	9,178.7	9,186.9	0.00	0.00	0.00
20,100.0	89.56	90.00	10,834.9	390.0	9,278.7	9,286.8	0.00	0.00	0.00
20,200.0	89.56	90.00	10,835.6	390.0	9,378.7	9,386.8	0.00	0.00	0.00
20,300.0	89.56	90.00	10,836.4	390.0	9,478.7	9,486.7	0.00	0.00	0.00
20,400.0	89.56	90.00	10,837.2	390.0	9,578.7	9,586.6	0.00	0.00	0.00
20,500.0	89.56	90.00	10,837.9	390.0	9,678.7	9,686.5	0.00	0.00	0.00
20,600.0	89.56	90.00	10,838.7	390.0	9,778.7	9,786.4	0.00	0.00	0.00
20,700.0	89.56	90.00	10,839.5	390.0	9,878.7	9,886.4	0.00	0.00	0.00
20,800.0	89.56	90.00	10,840.2	390.0	9,978.7	9,986.3	0.00	0.00	0.00
20,900.0	89.56	90.00	10,841.0	390.0	10,078.7	10,086.2	0.00	0.00	0.00
20,900.3	89.56	90.00	10,841.0	390.0	10,079.0	10,086.5	0.00	0.00	0.00
TD at 20900.3									

Design Targets									
Target Name									
- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/S (usft)	+E/W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- Shape									
Lewis Federal 2B - PBH	0.00	0.00	10,841.0	390.0	10,079.0	393,145.62	1,219,632.38	48° 2' 13.122 N	103° 33' 42.744 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	5,950.4	9 5/8"				9.625	12.250		
11,050.3	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 2B
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 2B	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lewis Federal 5300 11-31 2B		
Design:	Design #1		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,985.0	1,985.0	Pierre			
4,597.3	4,596.0	Greenhorn			
5,012.3	5,010.0	Mowry (Dakota Group)			
5,435.3	5,432.0	Inyan Kara (Dakota Group)			
5,859.4	5,855.0	Swift (Base Dakota Group)			
6,376.6	6,371.0	Rierdon			
6,904.9	6,898.0	Dunham Salt			
6,962.1	6,955.0	Dunham Salt Base			
7,269.8	7,262.0	Pine Salt			
7,331.0	7,323.0	Pine Salt Base			
7,449.3	7,441.0	Opeche Salt			
7,475.3	7,467.0	Opeche Salt Base			
7,671.8	7,663.0	Amsden			
7,860.3	7,851.0	Tyler			
8,078.8	8,069.0	Otter/Base Minnelusa			
8,426.7	8,416.0	Kibbey Lime			
8,573.0	8,562.0	Charles Salt			
9,245.7	9,233.0	Base Last Salt			
9,460.2	9,447.0	Mission Canyon			
10,020.6	10,006.0	Lodgepole			
10,844.0	10,720.0	False Bakken			
10,868.9	10,730.0	Upper Bakken Shale			
10,917.4	10,746.0	Middle Bakken			
10,959.2	10,756.0	Target Top			
11,035.1	10,765.0	Target Landing			
12,175.7	10,774.0	Target Base			
13,477.9	10,784.0	Lower Bakken			

Plan Annotations

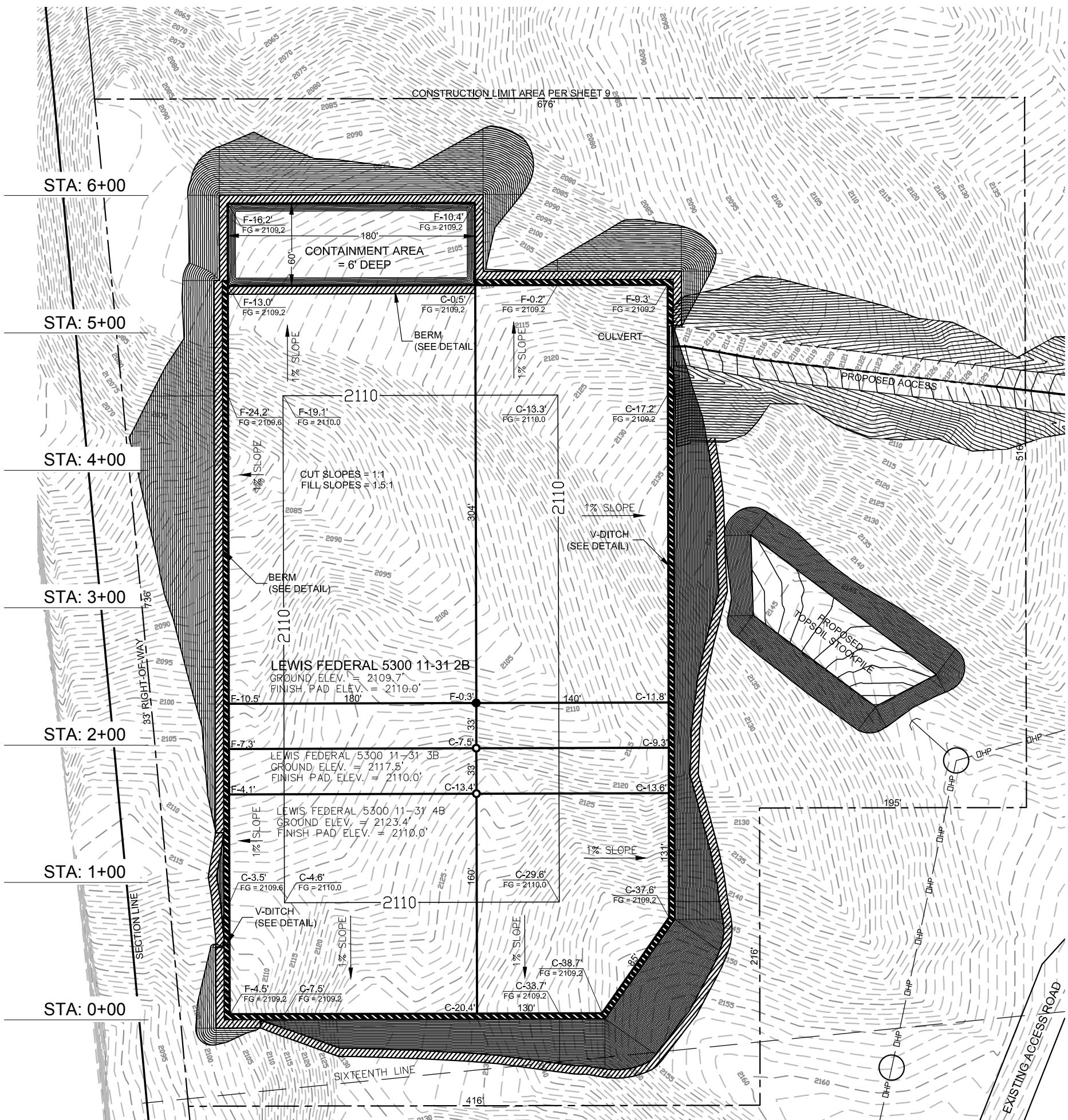
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			Comment
		+N/-S (usft)	+E/-W (usft)		
4,000.0	4,000.0	0.0	0.0		Start Build 3.00
4,134.1	4,133.9	3.9	-2.6		Start 6151.2 hold at 4134.1 MD
10,285.2	10,270.0	361.4	-244.1		Start DLS 12.00 TFO 124.00
11,050.3	10,765.4	390.0	229.3		Start 9850.0 hold at 11050.3 MD
20,900.3	10,841.0	390.0	10,079.0		TD at 20900.3

PAD LAYOUT

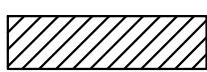
OASIS PETROLEUM NORTH AMERICA, LLC
001 FANNIN, SUITE 1500, HOUSTON, TX 77002
LEWIS FEDERAL 5300.11.31.2B

LEWIS FEDERAL 5300 11-31 2B
1050 FEET FROM NORTH LINE AND 265 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.



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

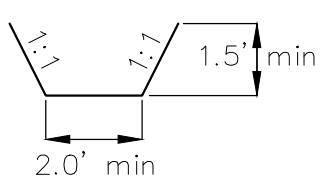


= BERM



- DITCH

— — — — — Original Contours

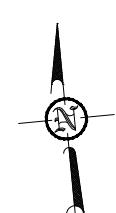


NOTE: All utilities shown are preliminary only, a complete utilities location is recommended before construction.

© 2018, INTERSTATE ENGINEERING, INC.

INTERSTATE ENGINEERING, INC. CASSIS PETROLEUM

A circular registration stamp. The outer ring contains the words "REGISTERED LAND SURVEYOR" at the top and "NORTH DAKOTA" at the bottom. The center of the circle contains the name "DARYL D. KASEMAN" above the identifier "LS-3880". Below the name is the date "DATE: 3-27-18". A large, handwritten signature "DARYL D. KASEMAN" is written across the top of the circle, partially overlapping the outer ring.



$$1'' = 80'$$

3/9



Professionals 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

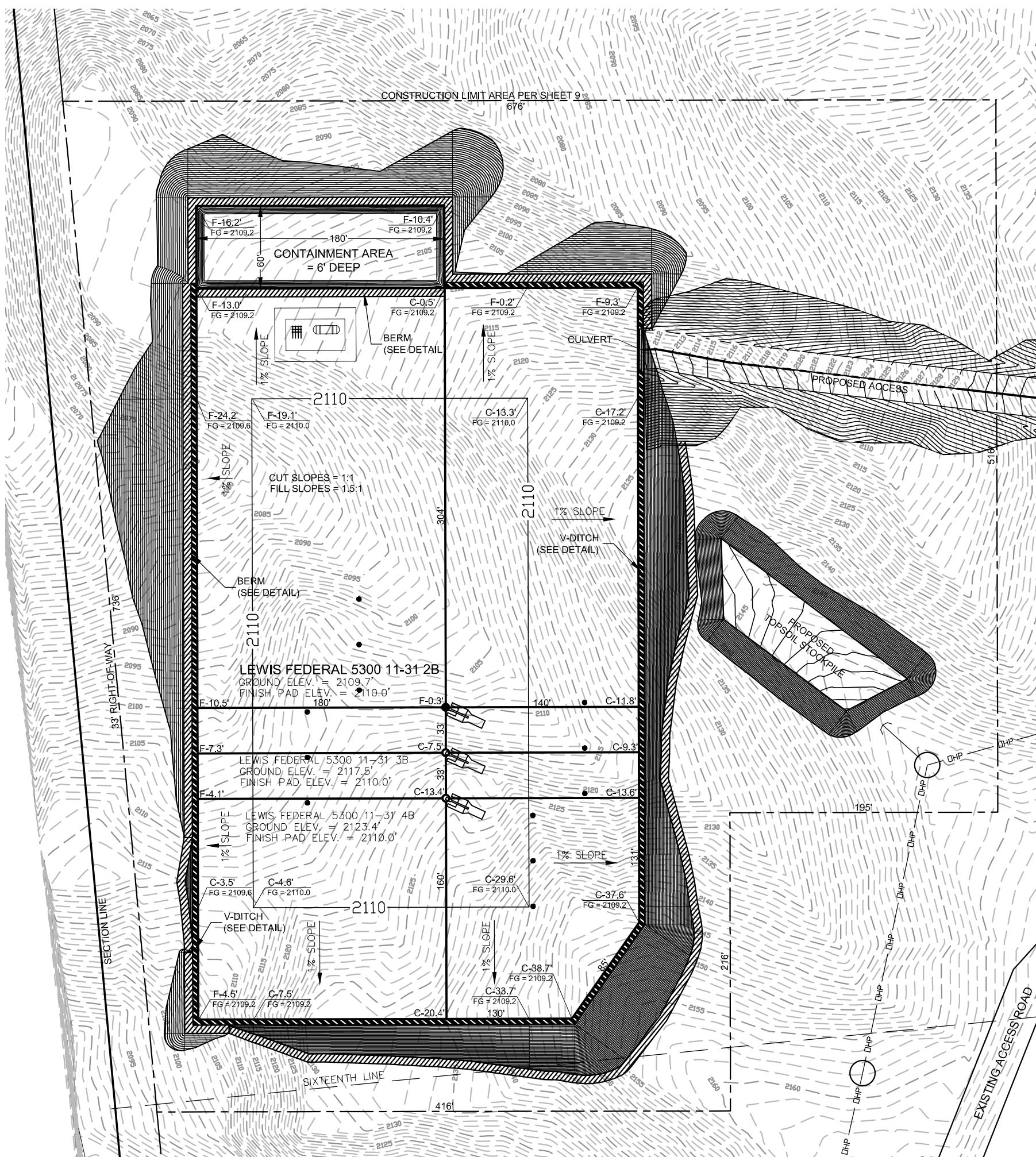
Interstate Engineering, Inc.
P.O. Box 648
425 East Main Street
Sidney, Montana 59270
Ph. (406) 432-6517

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

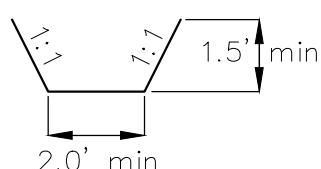
OASIS PETROLEUM NORTH AMERICA, LLC
PAD LAYOUT
SECTION 31 T153N R100W 5TH P M

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.

PRODUCTION LAYOUT
OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
LEWIS FEDERAL 5300 11-31 2B
1050 FEET FROM NORTH LINE AND 265 FEET FROM WEST LINE
SECTION 31, T153N, R100W, 5TH P.M., MCKENZIE COUNTY, NORTH DAKOTA



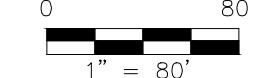
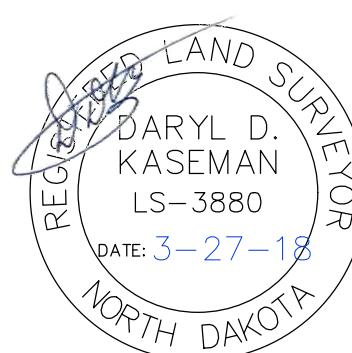
V-DITCH DETAIL



- BERM
- DITCH
- Proposed Contours
- - - - 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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4/9

SHEET NO.



Interstate Engineering, Inc.
P.O. Box 648
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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
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

Revision No.	Date	By	Description

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

5300 11-31 Quad Pad to New Standards\CAD\LEWIS FEDERAL 5300 11-31 2B\LEWIS FEDERAL 5300 11-31 2B.dwg - 3/27/2018 4:45 PM picked.mif

Received



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)

APR 18 2018

Well File No.
30189

ND Oil & Gas
Division

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.

PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

Notice of Intent

Approximate Start Date
April 30, 2018

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 Name Change

Well Name and Number

Lewis Federal 5300 11-31 2T

Footages 973 F N L 253 F W L Qtr-Qtr Section Township Range
 973 F N L 253 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 respectfully request approval to make the following change to the above referenced well:

Name Change: Lewis Federal 5300 11-31 2B (Previously Lewis Federal 5300 11-31 2T).

Please utilize credit card on file for the associated fees.

cc 825.00

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 <i>4-24-2018</i>	
By <i>David Burns</i>	
Title DAVID BURNS	

Engineering Technician



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.
30189

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	<input type="checkbox"/> APD Renewal

Well Name and Number
Lewis Federal 5300 11-21 2T

Lot 1

Footages 973 F N L	235 F W L	Qtr-Qtr NNNW	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 a permit renewal for above referenced well. There are no changes to the current drill plan.

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

See attached supporting document gas capture plan.

cc \$100.00 12/21/17

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 §

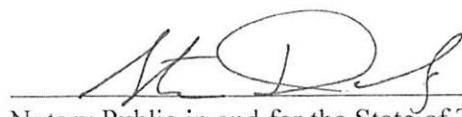
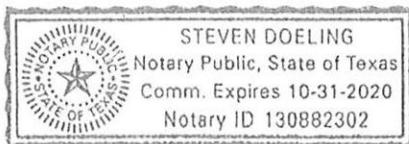
Robert Eason, being duly sworn, states as follows:

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 2T 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 1,024 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 2T

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:	Lewis Federal 5300 11-31 2T		Lewis 5300 11-31 CTB (10 wells)	
	MCFD	BOPD	MCFD	BOPD
30 Days:	634	634	4,703	4,851
60 Days:	481	481	6,422	6,609
180 Days:	276	276	3,175	3,277

Oasis Flaring Percentage

Oasis % of Gas Flared:	Statewide	Baker Field
	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 2T

Section 31 T153N R100W

McKenzie County, North Dakota

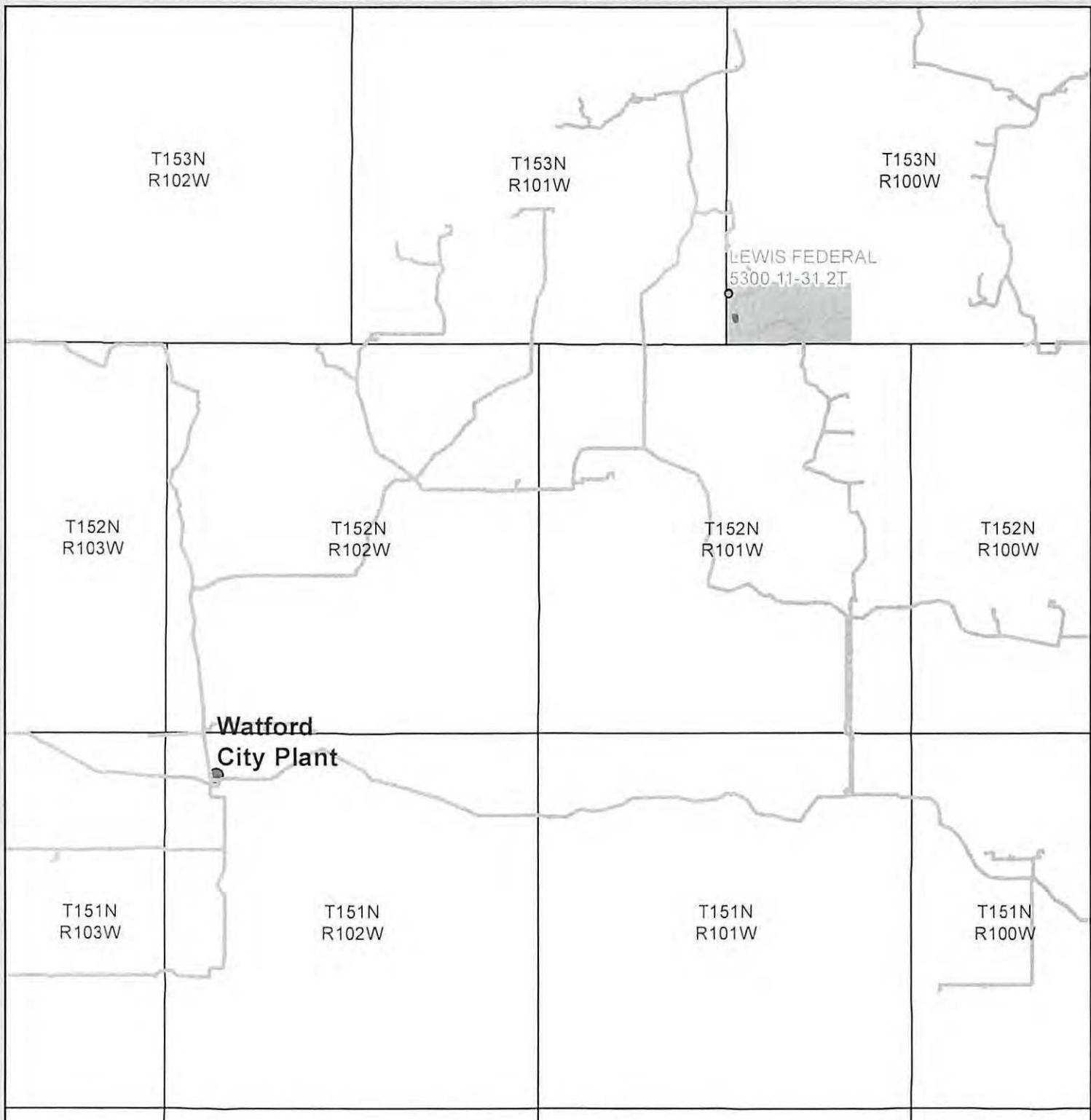


- CTB Outline
- Proposed Well
- Hiland Gas Line
- Oneok Gas Line

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

OASIS
PETROLEUM

Gas Capture Plan - Overview
LEWIS FEDERAL 5300 11-31 2T
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/

30189

November 13, 2017

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

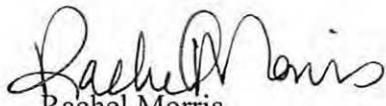
RE: LEWIS FEDERAL 5300 11-31 2T
LOT1 Sec. 31-153N-100W
MCKENZIE COUNTY
WELL FILE NO. 30189

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.
30189

JAN - 3 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, 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	

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 2T *Lot 1*

Footages 973 F N L	235 F W L	Qtr-Qtr NNNW	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 a permit renewal for above referenced well. There are no changes to the current drill plan.

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

See attached supporting document gas capture plan.

*Dmv#50142
Permit Expires 12/11/17. cc \$100.00 1/5/17 ta*

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, 2017	
Email Address jswenson@oasispetroleum.com		

FOR STATE USE ONLY

<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date 1/03/17	
By 	
Title Engineering Technician	

GAS CAPTURE PLAN AFFIDAVIT

STATE OF TEXAS §
 §
COUNTY OF HARRIS §

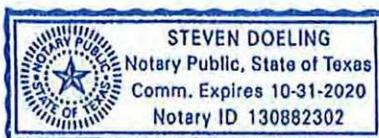
Robert Eason, being duly sworn, states as follows:

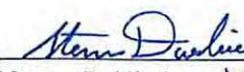
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2. This affidavit is submitted in conjunction with the Application for Permit to Drill for the Lewis Federal 5300 11-31 2T well, with a surface location in Lot 1 of Section 31, Township 153 North, Range 100 West, McKenzie County, North Dakota (the "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 1024 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 2T

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:	Lewis Federal 5300 11-31 2T		Lewis 5300 11-31 CTB (10 wells)	
	MCFD	BOPD	MCFD	BOPD
30 Days:	634	634	4,703	4,851
60 Days:	481	481	6,422	6,609
180 Days:	276	276	3,175	3,277

Oasis Flaring Percentage

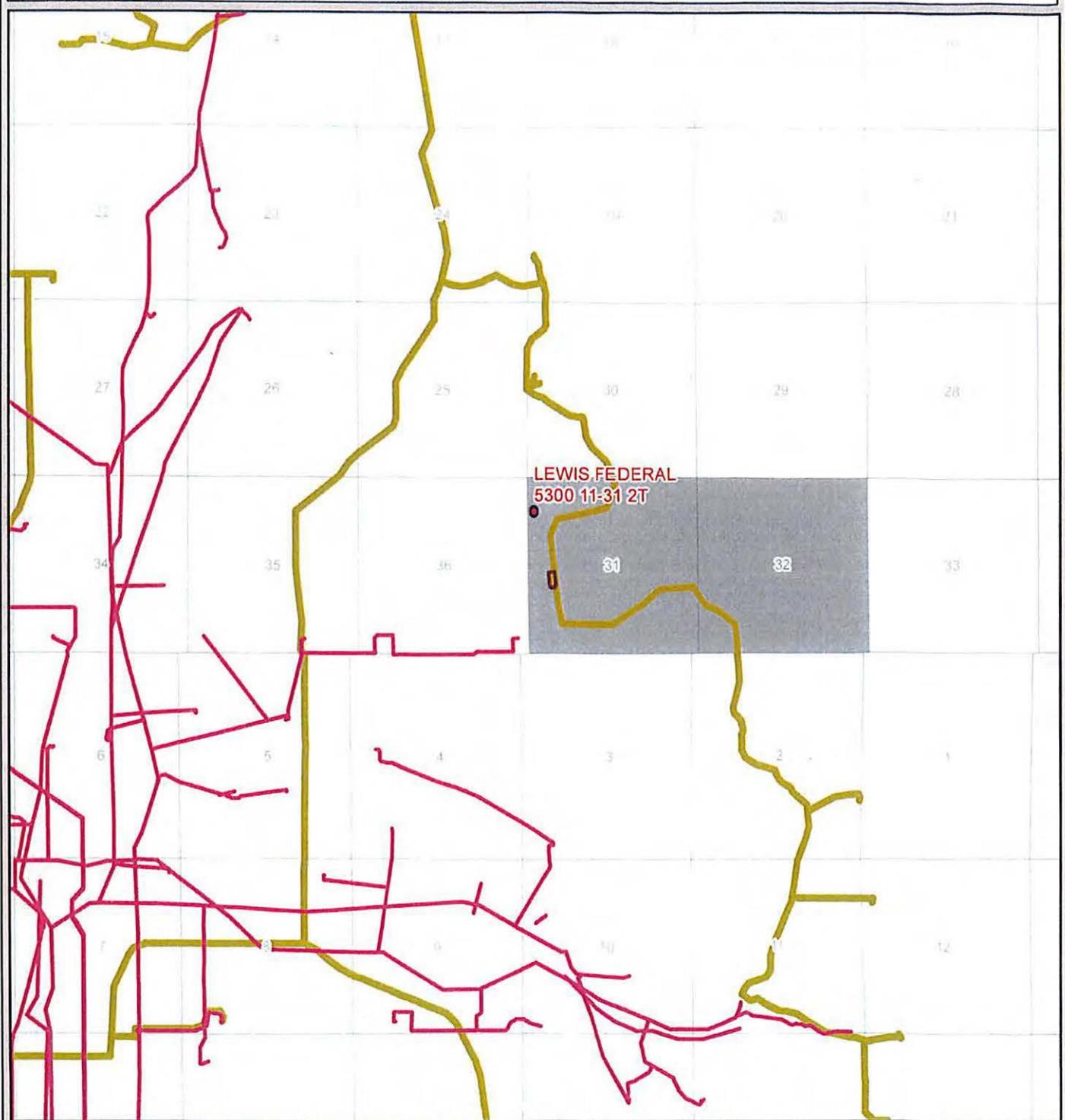
	Statewide	Baker Field
Oasis % of Gas Flared:	12%	10%

*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 2T
Section 31 T153N R100W
McKenzie County, North Dakota

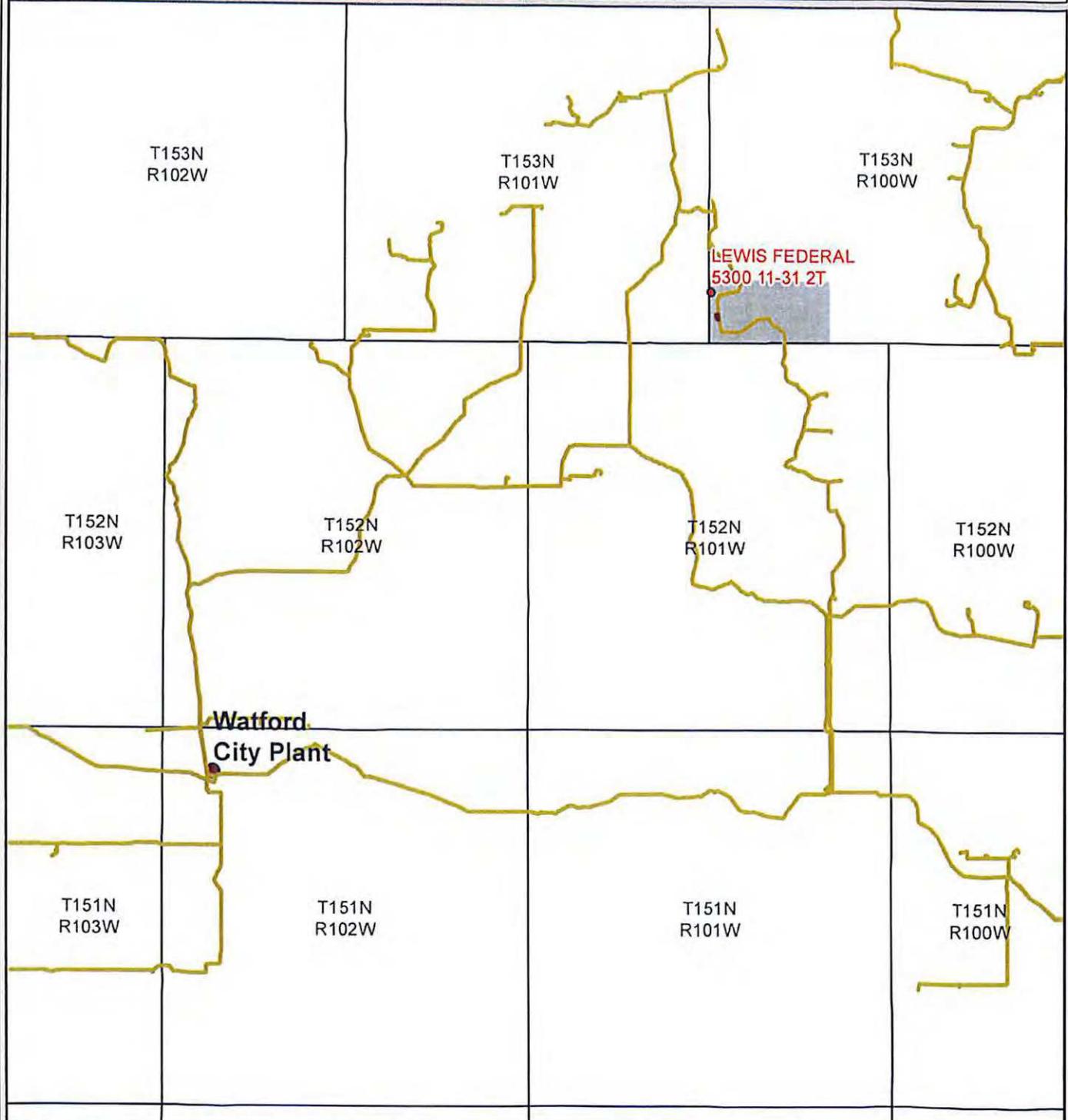


- CTB Outline
- Proposed Well
- Hiland Gas Line
- Oneok Gas Line

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



Gas Capture Plan - Overview
LEWIS FEDERAL 5300 11-31 2T
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





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.
30189

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, 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	

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 11-21 2T					
Footages 973 F N L		Qtr-Qtr NNNW	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 a permit renewal for above referenced well. There are no changes to the current drill plan.

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

See attached supporting document gas capture plan.

Dmv#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 §

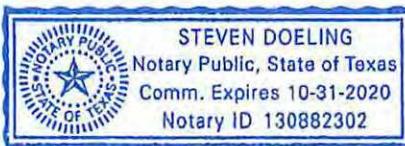
Robert Eason, being duly sworn, states as follows:

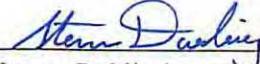
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3. Oasis currently anticipates that gas to be produced from the Well will be gathered by Hiland Partners (the "Gathering Company"). Oasis has advised the Gathering Company of its intent to drill the Well and has advised the Gathering Company that it currently anticipates that the Well will be completed in ~ December 2017, with an initial gas production rate of approximately 1024 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 2T

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:	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 40%;">Lewis Federal 5300 11-31 2T</th> <th colspan="2" style="text-align: right; width: 20%;">Lewis 5300 11-31 CTB (10 wells)</th> </tr> <tr> <th></th> <th style="text-align: center;">MCFD</th> <th style="text-align: center;">BOPD</th> <th style="text-align: center;">MCFD</th> <th style="text-align: center;">BOPD</th> </tr> </thead> <tbody> <tr> <td>30 Days:</td> <td style="text-align: center;">634</td> <td style="text-align: center;">634</td> <td style="text-align: center;">4,703</td> <td style="text-align: center;">4,851</td> </tr> <tr> <td>60 Days:</td> <td style="text-align: center;">481</td> <td style="text-align: center;">481</td> <td style="text-align: center;">6,422</td> <td style="text-align: center;">6,609</td> </tr> <tr> <td>180 Days:</td> <td style="text-align: center;">276</td> <td style="text-align: center;">276</td> <td style="text-align: center;">3,175</td> <td style="text-align: center;">3,277</td> </tr> </tbody> </table>	Lewis Federal 5300 11-31 2T	Lewis 5300 11-31 CTB (10 wells)			MCFD	BOPD	MCFD	BOPD	30 Days:	634	634	4,703	4,851	60 Days:	481	481	6,422	6,609	180 Days:	276	276	3,175	3,277
Lewis Federal 5300 11-31 2T	Lewis 5300 11-31 CTB (10 wells)																							
	MCFD	BOPD	MCFD	BOPD																				
30 Days:	634	634	4,703	4,851																				
60 Days:	481	481	6,422	6,609																				
180 Days:	276	276	3,175	3,277																				

Oasis Flaring Percentage

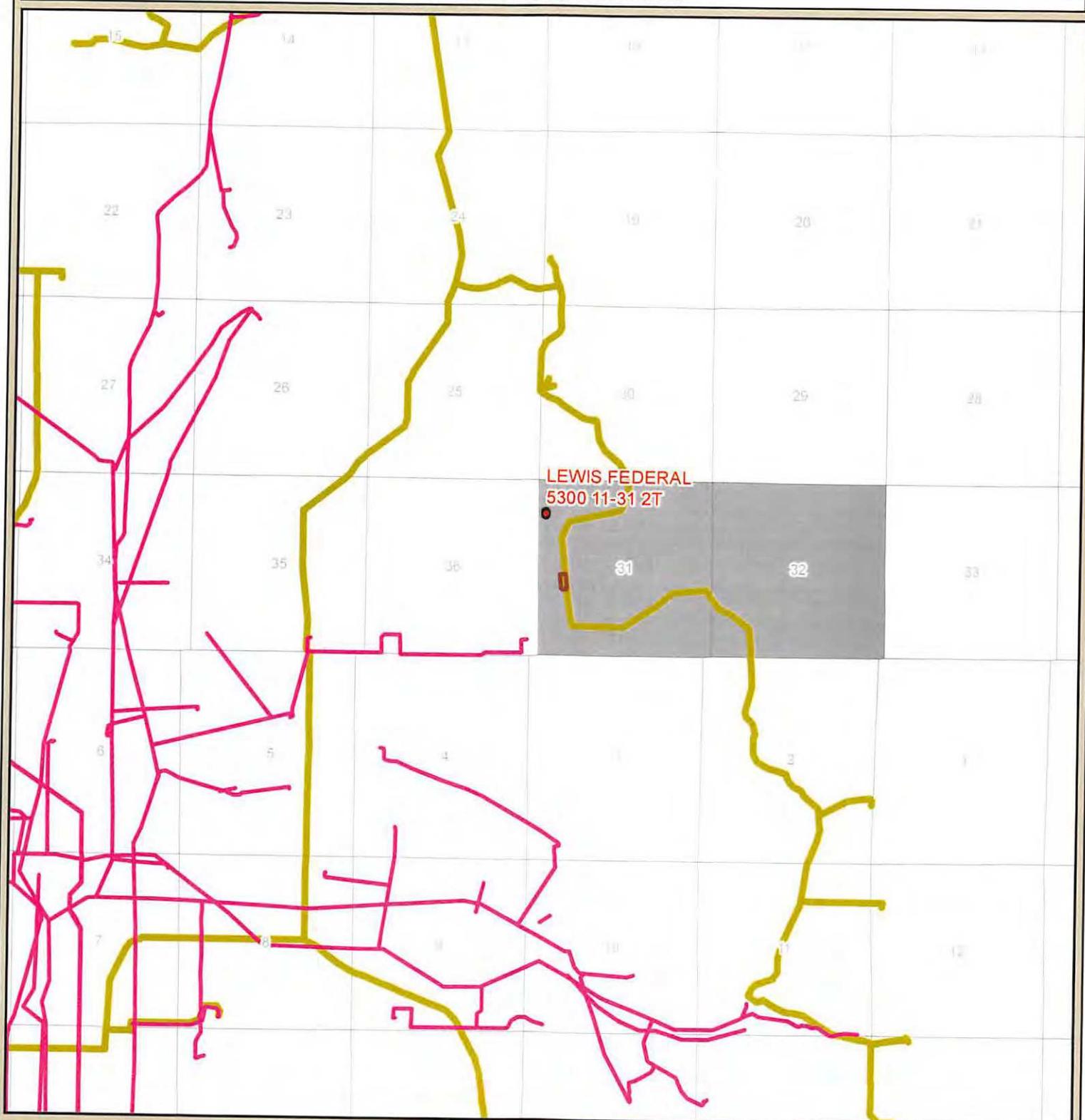
	Statewide	Baker Field
Oasis % of Gas Flared:	12%	10%

*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 2T
Section 31 T153N R100W
McKenzie County, North Dakota

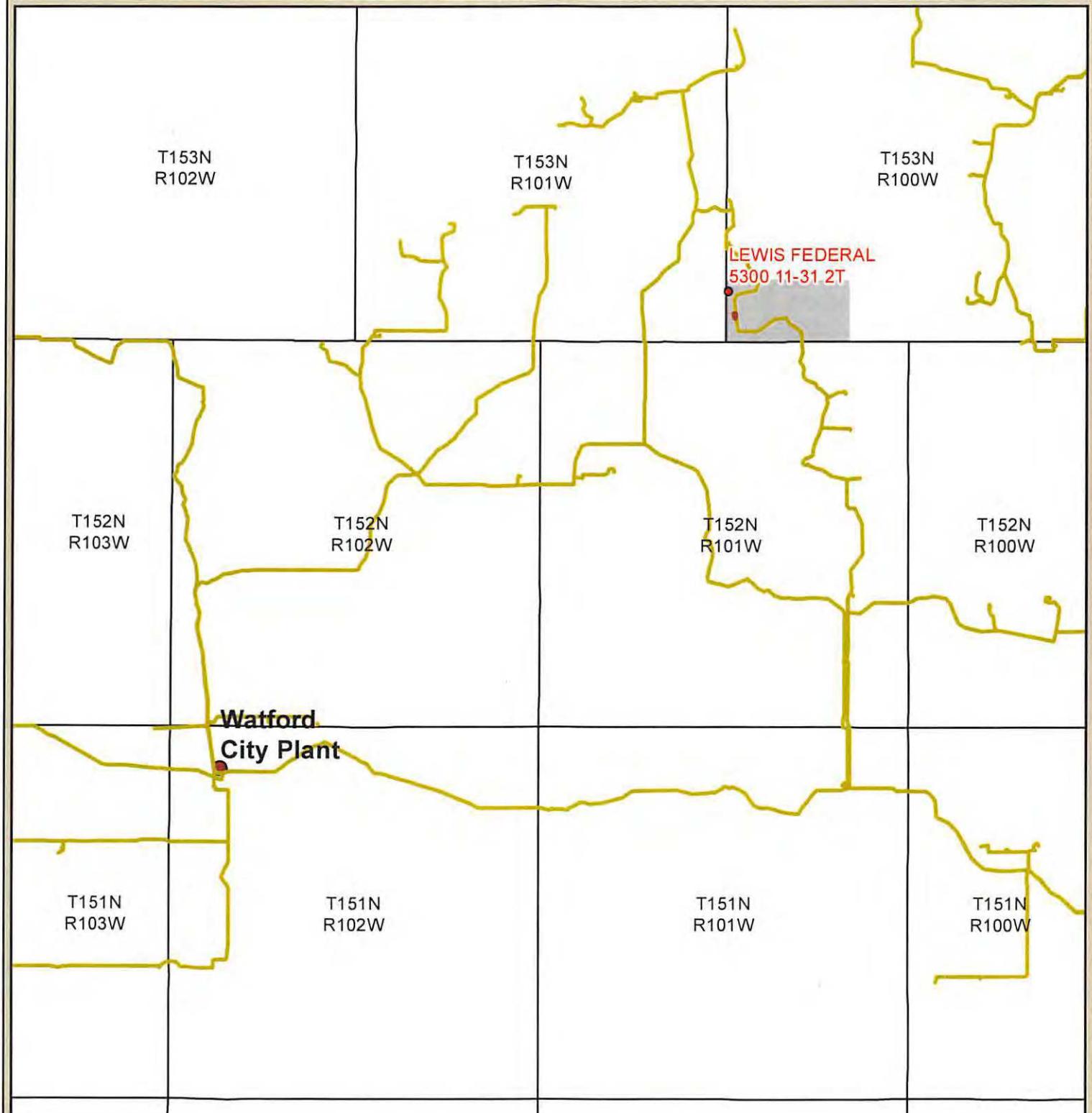


- CTB Outline
- Proposed Well
- Hiland Gas Line
- Oneok Gas Line

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



Gas Capture Plan - Overview
LEWIS FEDERAL 5300 11-31 2T
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/

30189

November 7, 2016

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

RE: LEWIS FEDERAL 5300 11-31 2T
LOT1 Sec. 31-153N-100W
MCKENZIE COUNTY
WELL FILE NO. 30189

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 8749 (09-2006)



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

Notice of Intent

Approximate Start Date
December 11, 2015

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

APD Renewal

Well Name and Number

Lewis Federal 5300 11-31 2T

Footages	Qtr-Qtr	Section	Township	Range
973 F N L	235 F W L	Lot 1	31	163 N 100 W
Field Baker	Pool Bakken		County McKenzie	

24-HOUR PRODUCTION RATE

Before	After	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

Received Approved

Date

By

Title

12/11/15

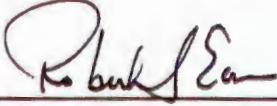
Aliee D. Webster
Engineering Technician

GAS CAPTURE PLAN AFFIDAVIT

STATE OF TEXAS §
 §
COUNTY OF HARRIS §

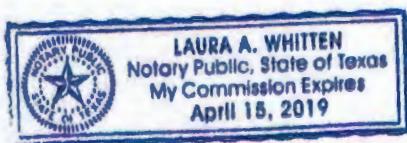
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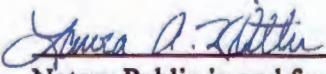
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Robert H. Eason
Marketing Manager

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





Laura A. Whitten
Notary Public in and for the State of Texas

GAS CAPTURE PLAN – OASIS PETROLEUM

Lewis Federal 5300 11-31 2T

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	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
Multi-Well Start-up Plan:		
Estimated Flow Rate:	<u>Lewis Federal 5300 11-31 2T</u>	<u>Lewis Federal 5300 31-32 CTB (7 wells)</u>
	<u>MCFD</u>	<u>BOPD</u>
30 Days:	603	670
60 Days:	483	536
180 Days:	295	328

Oasis Flaring Percentage

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

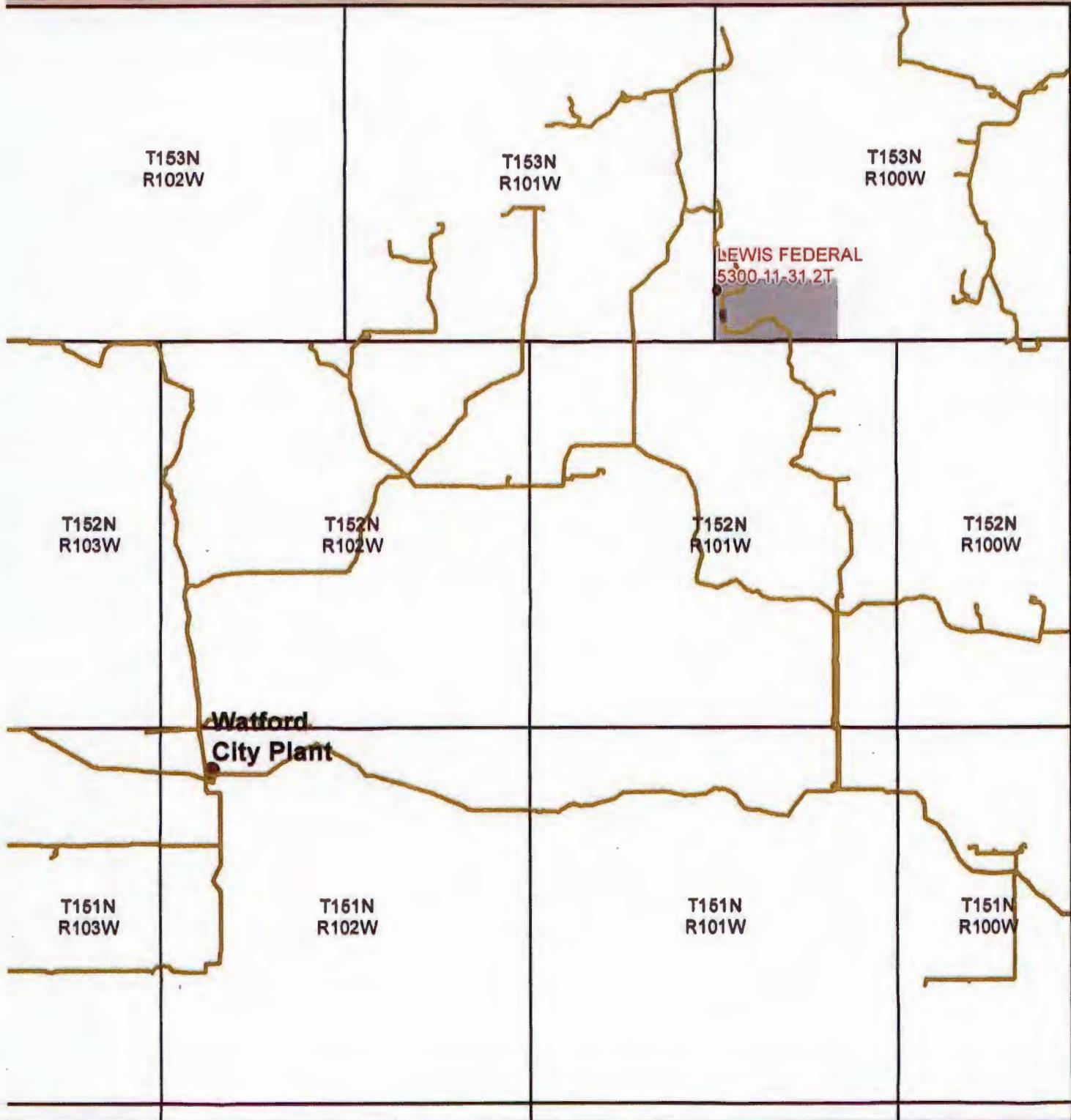
**Flared percentage reflects October 2015*

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 2T
Section 31 T153N R100W
McKenzie County, North Dakota



CTB Outline

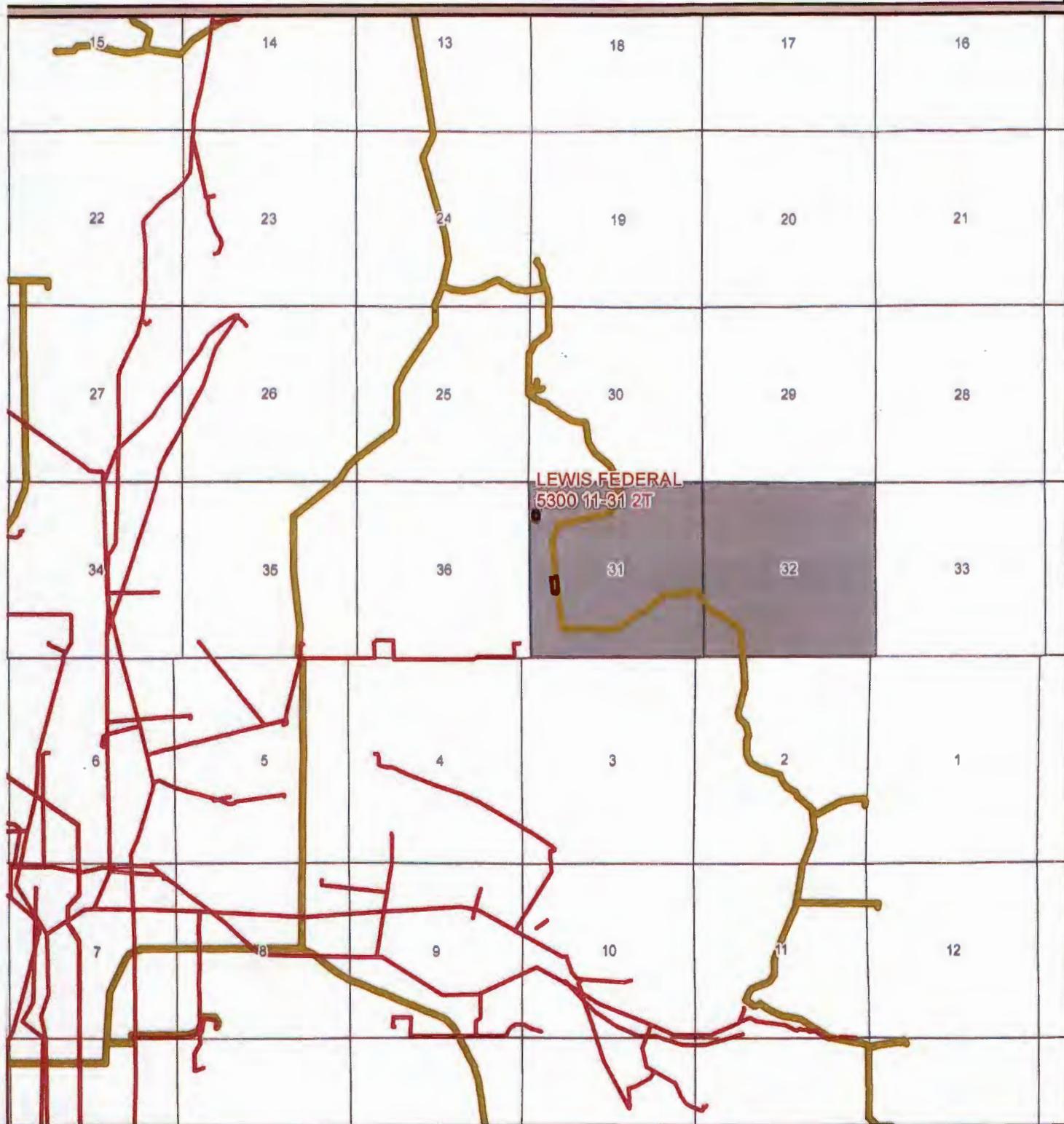
Hiland Gas Line

● 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 2T
Section 31 T153N R100W
McKenzie County, North Dakota



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

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

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

30189

November 9, 2015

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

RE: LEWIS FEDERAL 5300 11-31 2T
LOT1 Sec. 31-153N-100W
MCKENZIE COUNTY
WELL FILE NO. 30189

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

30189

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 2T** Well File No.: **30189**
Location: **LOT1 31-153-100** County: **MCKENZIE**
Permit Type: **Development - HORIZONTAL**
Field: **BAKER** Target Horizon: **THREE FORKS B1**

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 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.
30189

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.		<input type="checkbox"/> Casing or Liner	<input type="checkbox"/> Acidizing
Approximate Start Date		<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 2T

lot 1

Footages	Qtr-Qtr	Section	Township	Range	
973 F N L	235 F W L	NNNW	31	153 N	100 W
Field	Pool	County			
<i>Bakken</i>	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 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	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
SFN 5749 (09-2006)



Well File No.
30189

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 16, 2014	<input type="checkbox"/> Spill Report
<input type="checkbox"/> Report of Work Done	Date Work Completed	<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.		<input type="checkbox"/> Acidizing
Approximate Start Date		<input type="checkbox"/> Fracture Treatment
		<input type="checkbox"/> Change Production Method
		<input type="checkbox"/> Reclamation
<input checked="" type="checkbox"/> Other		Offsite Cutting Pit Request

Well Name and Number

Lewis Federal 5300 11-31 2T

Footages 973 F N L	235 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:

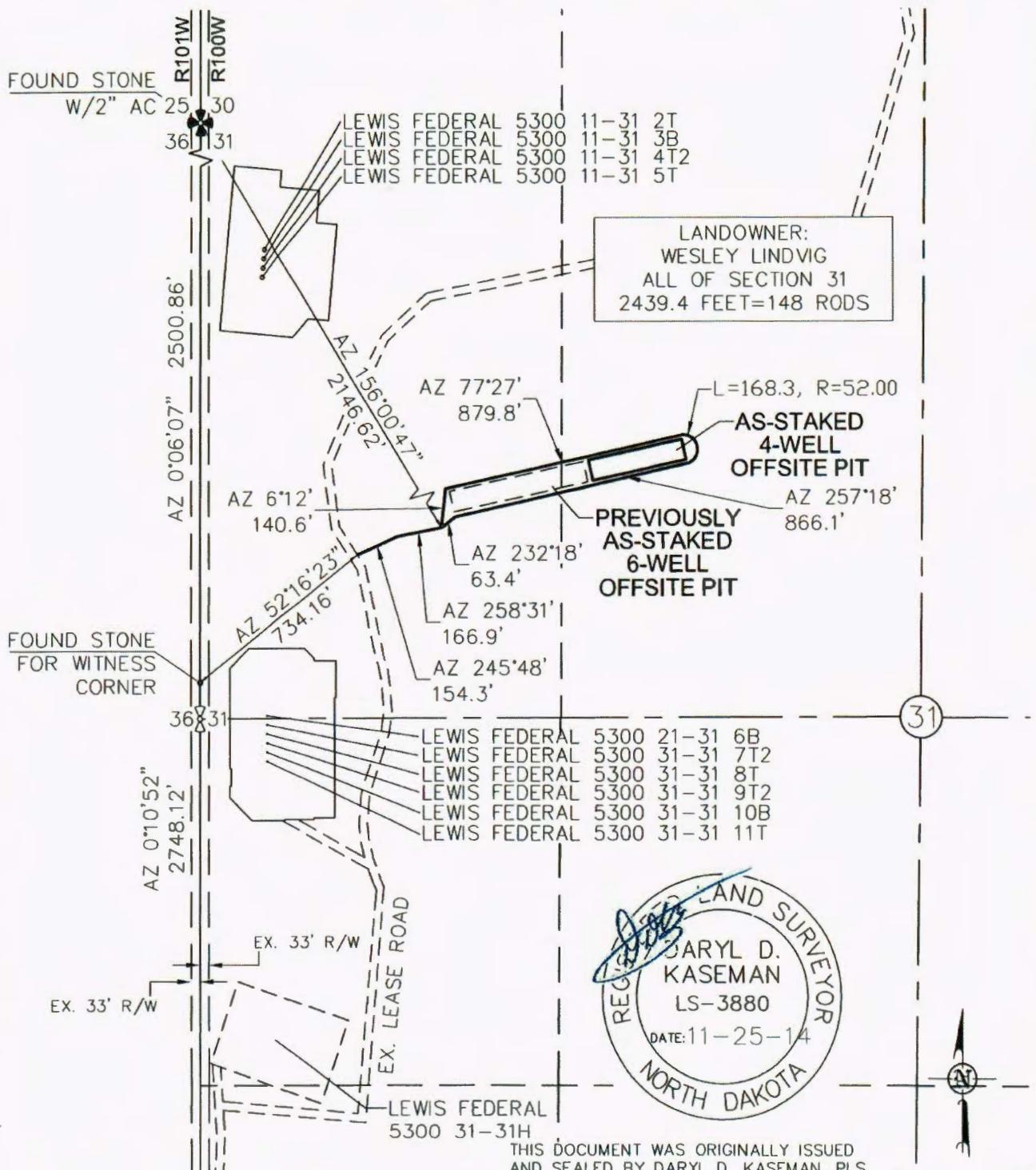
Lewis Federal 5300 11-31 3B (File No. 30188)
Lewis Federal 5300 11-31 4T2 (File No. 30187)
Lewis Federal 5300 11-31 5T (File No. 30186)

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 12-18-14	
By 	
Title 	

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.

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THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY DARYL D. KASEMAN, PLS, REGISTRATION NUMBER 3880 ON 11-25-14 AND THE ORIGINAL DOCUMENTS ARE STORED AT THE OFFICES OF INTERSTATE ENGINEERING, INC.

3/3



INTERSTATE
ENGINEERING

Professionals 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.: S13-09-378.08

Checked By: D.D.K. Date: NOV. 2014

Revision 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 November, 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.

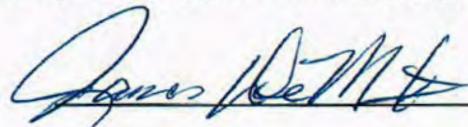
My Commission expires:

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.
30189

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.		<input type="checkbox"/> Casing or Liner	<input type="checkbox"/> Acidizing
Approximate Start Date		<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 2T					
Footages	Qtr-Qtr	Section	Township	Range	
973 F N L	235 F WL	NWNW	31	153 N	100 W
Field	Pool	County			
	Bakken	McKenzie			

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

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

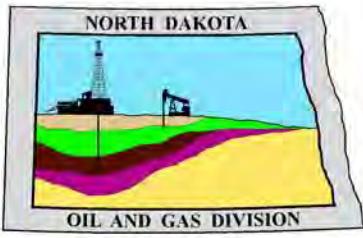
DETAILS OF WORK

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		

FOR STATE USE ONLY	
<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 2T
LOT1 Section 31-153N-100W
McKenzie County
Well File # 30189**

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. **Tool error is not required pursuant to order.**

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 coordinates from the well head are: 473 N & 10097 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 2T				
Surface Footages 973 F N L 235 F W L		Qtr-Qtr LOT1	Section 31	Township 153 N	Range 100 W	County McKenzie	
Longstring Casing Point Footages 722 F N L 679 F W L		Qtr-Qtr LOT1	Section 31	Township 153 N	Range 100 W	County McKenzie	
Longstring Casing Point Coordinates From Well Head 251 N From WH 444 E From WH		Azimuth 65.61 °	Longstring Total Depth 11116 Feet MD 10833 Feet TVD				
Bottom Hole Footages From Nearest Section Line 551 F N L 212 F E L		Qtr-Qtr NENE	Section 32	Township 153 N	Range 100 W	County Williams	
Bottom Hole Coordinates From Well Head 422 N From WH 10075 E From WH		KOP Lateral 1 10356 Feet MD	Azimuth Lateral 1 90 °	Estimated Total Depth Lateral 1 20772 Feet MD 10924 Feet TVD			
Latitude of Well Head 48 ° 02 ' 10.06 "	Longitude of Well Head -103 ° 36 ' 11.55 "	NAD Reference NAD83		Description of Spacing Unit: Sections 31 & 32 T153N R100W (Subject to NDIC Approval)			
Ground Elevation 2098 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 Three Forks B1						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) 32 Lb./Ft.	Longstring Total Depth 11116 Feet MD 10833 Feet TVD		Cement Volume 769 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 / 24 / 2014**ePermit**Printed Name
Heather McCowanTitle
Regulatory Assistant**FOR STATE USE ONLY**

Permit and File Number 30189	API Number 33 - 053 - 06549
Field BAKER	
Pool BAKKEN	Permit Type DEVELOPMENT

FOR STATE USE ONLY

Date Approved 12 / 11 / 2014
By David Burns
Title Engineering Technician



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.
30189

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.		<input type="checkbox"/> Casing or Liner	<input type="checkbox"/> Acidizing
Approximate Start Date		<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 2T					
Footages	Qtr-Qtr	Section	Township	Range	
973 F N L	235 F WL	NWNW	31	153 N	100 W
Field	Pool	County			
	Bakken	McKenzie			

24-HOUR PRODUCTION RATE			
Before	After	Oil	Bbls
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		

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

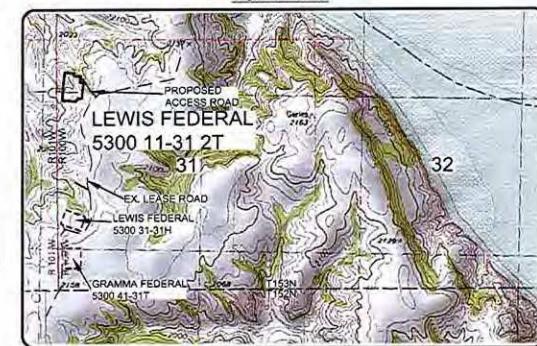
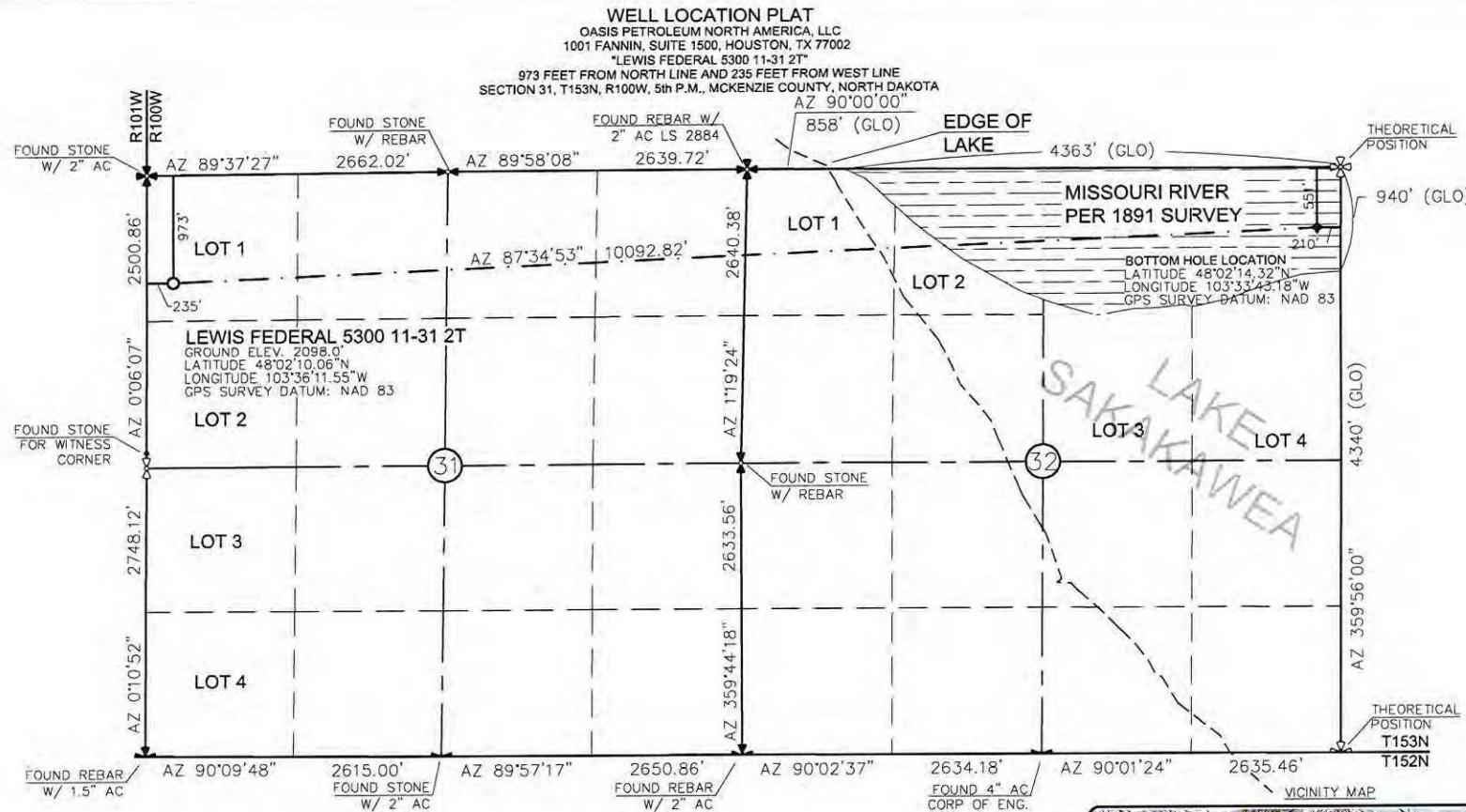
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1/8

Sheet No.

Project No.: 5120-201	Date: JUN 2014
Project Name: OASIS PETROLEUM NORTH AMERICA, LLC WELL LOCATION PLAT SECTION 31, T153N, R100W	Drawn By: B.H.K.
Reviewed By: Daryl D. Kaseman, PLS, LS-3880 Date: 1/21/14	
Owner: OASIS PETROLEUM NORTH AMERICA, LLC 475 East Main Street Stevens, Montana 59270 Ph: (406) 433-5617 Fax: (406) 433-5618 www.interstateeng.com	





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 2T			RIG	N/A				
WELL TYPE	Horizontal Three Forks			LOCATION	NW NW 31-153N-100W				
EST. T.D.	20,772'			Surface Location (survey plat):	973' FNL	235' FWL			
TOTAL LATERAL:	9,656'			GROUND ELEV:	2,112'	Sub Height: 22'			
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		10,744		-8,610					
Lower Bakken Shale		10,780		-8,646					
Pronghorn		10,789		-8,655					
Threeforks		10,810		-8,676					
Threeforks(Top of Target)		10,821		-8,687					
Threeforks(Base of Target)		10,833		-8,699					
Claystone		10,833		-8,699	BOP:	11" 5000 psi blind, pipe & annular			
Est. Dip Rate:	-0.54								
Max. Anticipated BHP:	4694				Surface Formation: Glacial till				
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' -	11,116' Invert	9.5-10.4	40-50	30+HtP	Circ Mud Tanks			
Laterl:	11,116' -	20,772' 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"	11,116'	4885	24	500' above Dakota		
Production Liner:	4.5"	11.6#	6"	20,772'	TOL @ 10,306'		50' above KOP		
PROBABLE PLUGS, IF REQ'D:									
OTHER:	MD	TVD	FNL/FSL	FEL/FWL	S-T-R	AZI	Survey Company: Build Rate: 12 deg /100'		
Surface:	2,100	2,100	973' FNL	235' FWL	31-T153N-R100W				
KOP:	10,356'	10,356'	923' FNL	235' FWL	31-T153N-R100W				
EOC:	11,101'	10,833'	728' FNL	666' FWL	31-T153N-R100W				
Casing Point:	11,116'	10,833'	721' FNL	680' FWL	31-T153N-R100W				
Middle Bakken Lateral TD:	20,772'	10,924'	551' 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 planned									
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: N. Gabelman	1/22/2014		Engineering: A. Soto 3/13/14						



**Oasis Petroleum
Well Summary**
Lewis Federal 5300 11-31 2T
Section 31 T153N R100W
McKenzie County, ND

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 2T
Section 31 T153N R100W
McKenzie County, ND

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 2T
Section 31 T153N R100W
McKenzie County, ND

INTERMEDIATE CASING AND CEMENT DESIGN

Intermediate Casing Design

Size	Interval	Weight	Grade	Coupling	I.D.	Drift	Make-up Torque (ft-lbs)		
							Minimum	Optimum	Max
7"	0' - 11116'	32	HCP-110	LTC	6.094"	6.000***	6,730	8,970	11210

**Special Drift

Interval	Description	Collapse	Burst	Tension
		(psi) a	(psi) b	(1000 lbs) c
0' - 11116'	7", 32#, HCP-110, LTC, 8rd	11820 / 2.09*	12460 / 1.28	897 / 2.23
6677' - 9230'	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 10833' TVD.
- c) Based on string weight in 10 ppg fluid, (301k 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: **184 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: **585 sks** (171 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 2T
Section 31 T153N R100W
McKenzie County, ND

PRODUCTION LINER

Size	Interval	Weight	Grade	Coupling	I.D.	Drift	Estimated Torque
4-1/2"	10306' - 20805'	13.5	P-110	BTC	3.920"	3.795"	4500

Interval	Description	Collapse	Burst	Tension
		(psi) a	(psi) b	(1000 lbs) c
10306' - 20772'	4-1/2", 13.5 lb, P-110, BTC, 8rd	10670 / 1.97	12410 / 1.28	443 / 2.01

API Rating & Safety Factor

- a) Based on full casing evacuation with 9.5 ppg fluid on backside @ 10925' TVD.
Burst pressure based on 9000 psi treating pressure with 10.2 ppg internal fluid gradient
- b) and 9 ppg external fluid gradient @ 10924' TVD.
- c) Based on string weight in 9.5 ppg fluid (Buoyed weight: 120k lbs.) plus 100k lbs overpull.

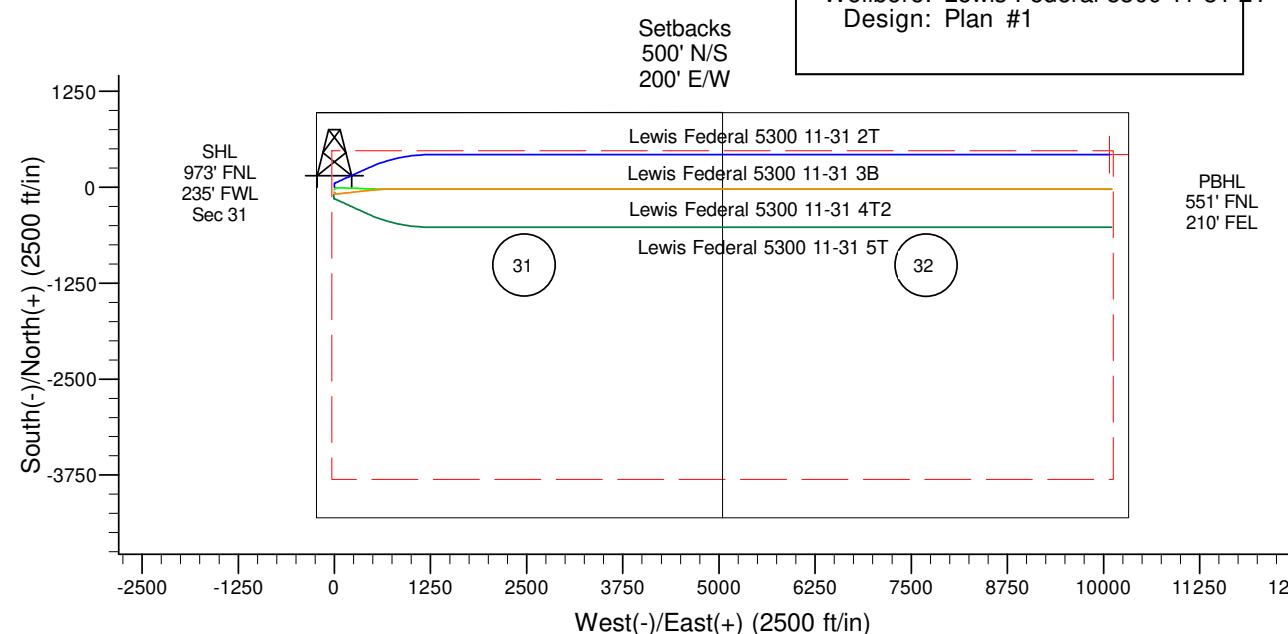


Azimuths to True North
Magnetic North: 8.16°

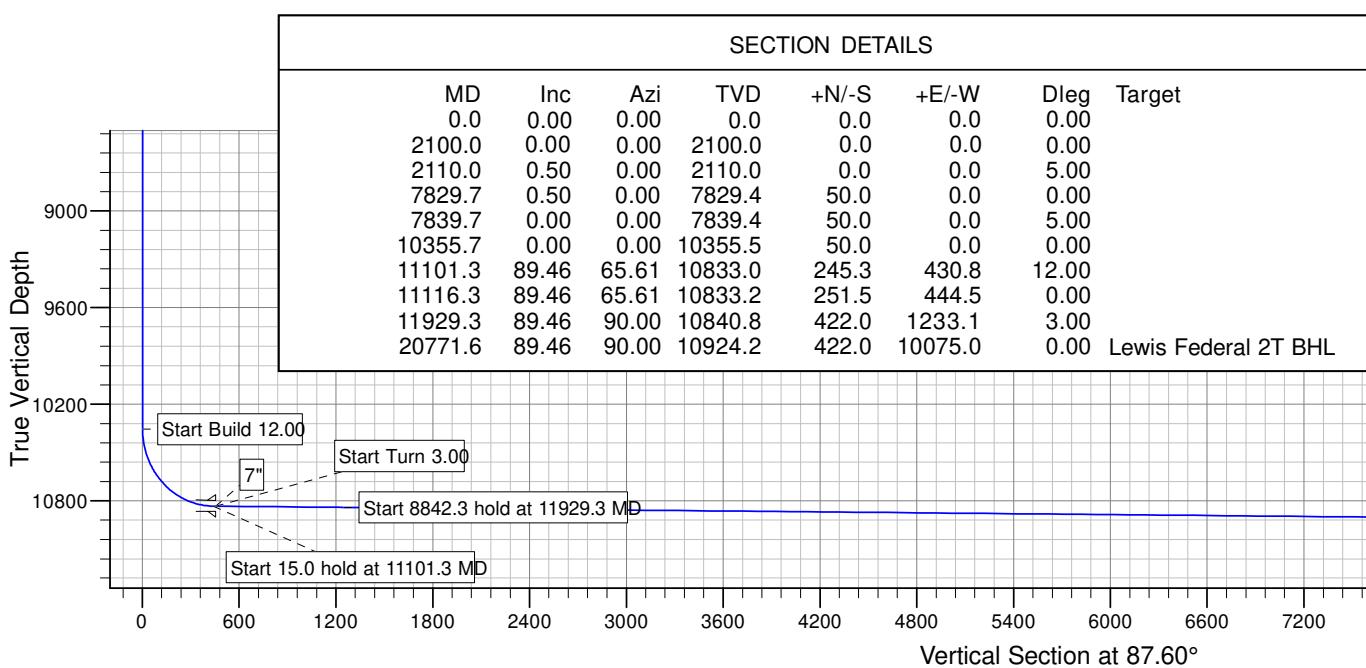
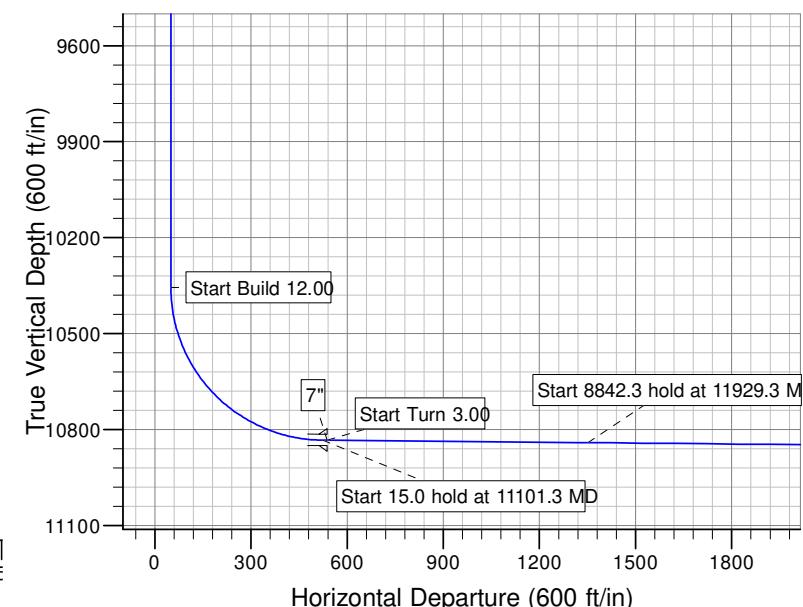
Magnetic Field
Strength: 56474.1snT
Dip Angle: 72.94°
Date: 3/11/2014
Model: IGRF200510



Project: Indian Hills
Site: 153N-100W-31/32
Well: Lewis Federal 5300 11-31 2T
Wellbore: Lewis Federal 5300 11-31 2T
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
10833.211116.0		7"	7.000
10924.220771.6		4 1/2"	4.500

Oasis

**Indian Hills
153N-100W-31/32
Lewis Federal 5300 11-31 2T**

Lewis Federal 5300 11-31 2T

Plan: Plan #1

Standard Planning Report

24 March, 2014

Planning Report

Database: Company: Project: Site: Well: Wellbore: Design:	OpenWellsCompass - EDM Prod Oasis Indian Hills 153N-100W-31/32 Lewis Federal 5300 11-31 2T Lewis Federal 5300 11-31 2T Plan #1	Local Co-ordinate Reference: TVD Reference: MD Reference: North Reference: Survey Calculation Method:	Well Lewis Federal 5300 11-31 2T WELL @ 2134.0ft (Original Well Elev) WELL @ 2134.0ft (Original Well Elev) True Minimum Curvature							
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:	From: Lat/Long	Northing: Easting:	Latitude: Longitude:							
Position Uncertainty:		0.0 ft Slot Radius:	13.200 in Grid Convergence:							
			48° 1' 42.010 N 103° 36' 10.620 W -2.31 °							
Well	Lewis Federal 5300 11-31 2T									
Well Position	+N/-S +E/-W	2,842.2 ft -63.2 ft	Northing: Easting:							
		0.0 ft	393,241.77 ft 1,209,520.20 ft							
Position Uncertainty			Latitude: Longitude: Ground Level:							
			48° 2' 10.060 N 103° 36' 11.550 W 2,112.0 ft							
Wellbore	Lewis Federal 5300 11-31 2T									
Magnetics	Model Name	Sample Date	Declination (°)							
	IGRF200510	3/11/2014	8.16							
			Dip Angle (°)							
			72.94							
			Field Strength (nT)							
			56,474							
Design	Plan #1									
Audit Notes:										
Version:	Phase:	PROTOTYPE	Tie On Depth:							
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)							
	0.0	0.0	Direction (°)							
			87.60							
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	0.00	2,110.0	0.0	0.0	5.00	5.00	0.00	0.00	0.00
7,829.7	0.50	0.00	7,829.4	50.0	0.0	0.00	0.00	0.00	0.00	0.00
7,839.7	0.00	0.00	7,839.4	50.0	0.0	5.00	-5.00	0.00	180.00	
10,355.7	0.00	0.00	10,355.5	50.0	0.0	0.00	0.00	0.00	0.00	
11,101.3	89.46	65.61	10,833.0	245.3	430.8	12.00	12.00	0.00	65.61	
11,116.3	89.46	65.61	10,833.2	251.5	444.5	0.00	0.00	0.00	0.00	
11,929.3	89.46	90.00	10,840.8	422.0	1,233.1	3.00	0.00	3.00	90.00	
20,771.6	89.46	90.00	10,924.2	422.0	10,075.0	0.00	0.00	0.00	0.00	Lewis Federal 2T BHL

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 2T
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 2T	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lewis Federal 5300 11-31 2T		
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	0.00	2,110.0	0.0	0.0	0.0	5.00	5.00	0.00	
2,200.0	0.50	0.00	2,200.0	0.8	0.0	0.0	0.00	0.00	0.00	
2,300.0	0.50	0.00	2,300.0	1.7	0.0	0.1	0.00	0.00	0.00	
2,400.0	0.50	0.00	2,400.0	2.6	0.0	0.1	0.00	0.00	0.00	
2,500.0	0.50	0.00	2,500.0	3.4	0.0	0.1	0.00	0.00	0.00	
2,600.0	0.50	0.00	2,600.0	4.3	0.0	0.2	0.00	0.00	0.00	
2,700.0	0.50	0.00	2,700.0	5.2	0.0	0.2	0.00	0.00	0.00	
2,800.0	0.50	0.00	2,800.0	6.1	0.0	0.3	0.00	0.00	0.00	
2,900.0	0.50	0.00	2,900.0	6.9	0.0	0.3	0.00	0.00	0.00	
3,000.0	0.50	0.00	3,000.0	7.8	0.0	0.3	0.00	0.00	0.00	
3,100.0	0.50	0.00	3,100.0	8.7	0.0	0.4	0.00	0.00	0.00	
3,200.0	0.50	0.00	3,200.0	9.6	0.0	0.4	0.00	0.00	0.00	
3,300.0	0.50	0.00	3,300.0	10.4	0.0	0.4	0.00	0.00	0.00	
3,400.0	0.50	0.00	3,400.0	11.3	0.0	0.5	0.00	0.00	0.00	
3,500.0	0.50	0.00	3,499.9	12.2	0.0	0.5	0.00	0.00	0.00	
3,600.0	0.50	0.00	3,599.9	13.0	0.0	0.5	0.00	0.00	0.00	
3,700.0	0.50	0.00	3,699.9	13.9	0.0	0.6	0.00	0.00	0.00	
3,800.0	0.50	0.00	3,799.9	14.8	0.0	0.6	0.00	0.00	0.00	
3,900.0	0.50	0.00	3,899.9	15.7	0.0	0.7	0.00	0.00	0.00	
4,000.0	0.50	0.00	3,999.9	16.5	0.0	0.7	0.00	0.00	0.00	
4,100.0	0.50	0.00	4,099.9	17.4	0.0	0.7	0.00	0.00	0.00	
4,200.0	0.50	0.00	4,199.9	18.3	0.0	0.8	0.00	0.00	0.00	
4,300.0	0.50	0.00	4,299.9	19.2	0.0	0.8	0.00	0.00	0.00	
4,400.0	0.50	0.00	4,399.9	20.0	0.0	0.8	0.00	0.00	0.00	
4,500.0	0.50	0.00	4,499.9	20.9	0.0	0.9	0.00	0.00	0.00	
4,584.1	0.50	0.00	4,584.0	21.6	0.0	0.9	0.00	0.00	0.00	
Greenhorn										
4,600.0	0.50	0.00	4,599.9	21.8	0.0	0.9	0.00	0.00	0.00	
4,700.0	0.50	0.00	4,699.9	22.6	0.0	0.9	0.00	0.00	0.00	
4,800.0	0.50	0.00	4,799.9	23.5	0.0	1.0	0.00	0.00	0.00	

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 2T
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 2T	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lewis Federal 5300 11-31 2T		
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	0.00	4,899.9	24.4	0.0	1.0	0.00	0.00	0.00	0.00
4,997.1	0.50	0.00	4,997.0	25.2	0.0	1.1	0.00	0.00	0.00	0.00
Mowry										
5,000.0	0.50	0.00	4,999.9	25.3	0.0	1.1	0.00	0.00	0.00	0.00
5,100.0	0.50	0.00	5,099.9	26.1	0.0	1.1	0.00	0.00	0.00	0.00
5,200.0	0.50	0.00	5,199.9	27.0	0.0	1.1	0.00	0.00	0.00	0.00
5,300.0	0.50	0.00	5,299.9	27.9	0.0	1.2	0.00	0.00	0.00	0.00
5,385.1	0.50	0.00	5,385.0	28.6	0.0	1.2	0.00	0.00	0.00	0.00
Dakota										
5,400.0	0.50	0.00	5,399.9	28.8	0.0	1.2	0.00	0.00	0.00	0.00
5,500.0	0.50	0.00	5,499.9	29.6	0.0	1.2	0.00	0.00	0.00	0.00
5,600.0	0.50	0.00	5,599.9	30.5	0.0	1.3	0.00	0.00	0.00	0.00
5,700.0	0.50	0.00	5,699.9	31.4	0.0	1.3	0.00	0.00	0.00	0.00
5,800.0	0.50	0.00	5,799.9	32.2	0.0	1.3	0.00	0.00	0.00	0.00
5,900.0	0.50	0.00	5,899.9	33.1	0.0	1.4	0.00	0.00	0.00	0.00
6,000.0	0.50	0.00	5,999.9	34.0	0.0	1.4	0.00	0.00	0.00	0.00
6,100.0	0.50	0.00	6,099.8	34.9	0.0	1.5	0.00	0.00	0.00	0.00
6,200.0	0.50	0.00	6,199.8	35.7	0.0	1.5	0.00	0.00	0.00	0.00
6,300.0	0.50	0.00	6,299.8	36.6	0.0	1.5	0.00	0.00	0.00	0.00
6,347.2	0.50	0.00	6,347.0	37.0	0.0	1.5	0.00	0.00	0.00	0.00
Rierdon										
6,400.0	0.50	0.00	6,399.8	37.5	0.0	1.6	0.00	0.00	0.00	0.00
6,500.0	0.50	0.00	6,499.8	38.4	0.0	1.6	0.00	0.00	0.00	0.00
6,600.0	0.50	0.00	6,599.8	39.2	0.0	1.6	0.00	0.00	0.00	0.00
6,700.0	0.50	0.00	6,699.8	40.1	0.0	1.7	0.00	0.00	0.00	0.00
6,800.0	0.50	0.00	6,799.8	41.0	0.0	1.7	0.00	0.00	0.00	0.00
6,877.2	0.50	0.00	6,877.0	41.6	0.0	1.7	0.00	0.00	0.00	0.00
Dunham Salt										
6,900.0	0.50	0.00	6,899.8	41.8	0.0	1.8	0.00	0.00	0.00	0.00
6,947.2	0.50	0.00	6,947.0	42.3	0.0	1.8	0.00	0.00	0.00	0.00
Dunham Salt Base										
7,000.0	0.50	0.00	6,999.8	42.7	0.0	1.8	0.00	0.00	0.00	0.00
7,100.0	0.50	0.00	7,099.8	43.6	0.0	1.8	0.00	0.00	0.00	0.00
7,200.0	0.50	0.00	7,199.8	44.5	0.0	1.9	0.00	0.00	0.00	0.00
7,249.2	0.50	0.00	7,249.0	44.9	0.0	1.9	0.00	0.00	0.00	0.00
Pine Salt										
7,300.0	0.50	0.00	7,299.8	45.3	0.0	1.9	0.00	0.00	0.00	0.00
7,314.2	0.50	0.00	7,314.0	45.5	0.0	1.9	0.00	0.00	0.00	0.00
Pine Salt Base										
7,380.2	0.50	0.00	7,380.0	46.0	0.0	1.9	0.00	0.00	0.00	0.00
Opeche Salt										
7,400.0	0.50	0.00	7,399.8	46.2	0.0	1.9	0.00	0.00	0.00	0.00
7,471.2	0.50	0.00	7,471.0	46.8	0.0	2.0	0.00	0.00	0.00	0.00
Opeche Salt Base										
7,500.0	0.50	0.00	7,499.8	47.1	0.0	2.0	0.00	0.00	0.00	0.00
7,600.0	0.50	0.00	7,599.8	48.0	0.0	2.0	0.00	0.00	0.00	0.00
7,693.2	0.50	0.00	7,693.0	48.8	0.0	2.0	0.00	0.00	0.00	0.00
Amsden										
7,700.0	0.50	0.00	7,699.8	48.8	0.0	2.0	0.00	0.00	0.00	0.00
7,800.0	0.50	0.00	7,799.8	49.7	0.0	2.1	0.00	0.00	0.00	0.00
7,829.7	0.50	0.00	7,829.4	50.0	0.0	2.1	0.00	0.00	0.00	0.00
7,839.7	0.00	0.00	7,839.4	50.0	0.0	2.1	5.00	-5.00	0.00	0.00
7,841.2	0.00	0.00	7,841.0	50.0	0.0	2.1	0.00	0.00	0.00	0.00
Tyler										

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 2T
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 2T	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lewis Federal 5300 11-31 2T		
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	50.0	0.0	2.1	0.00	0.00	0.00
8,000.0	0.00	0.00	7,999.8	50.0	0.0	2.1	0.00	0.00	0.00
8,065.2	0.00	0.00	8,065.0	50.0	0.0	2.1	0.00	0.00	0.00
Otter/Base Minnelusa									
8,100.0	0.00	0.00	8,099.8	50.0	0.0	2.1	0.00	0.00	0.00
8,200.0	0.00	0.00	8,199.8	50.0	0.0	2.1	0.00	0.00	0.00
8,300.0	0.00	0.00	8,299.8	50.0	0.0	2.1	0.00	0.00	0.00
8,400.0	0.00	0.00	8,399.8	50.0	0.0	2.1	0.00	0.00	0.00
8,408.2	0.00	0.00	8,408.0	50.0	0.0	2.1	0.00	0.00	0.00
Kibbey Lime									
8,500.0	0.00	0.00	8,499.8	50.0	0.0	2.1	0.00	0.00	0.00
8,561.2	0.00	0.00	8,561.0	50.0	0.0	2.1	0.00	0.00	0.00
Charles Salt									
8,600.0	0.00	0.00	8,599.8	50.0	0.0	2.1	0.00	0.00	0.00
8,700.0	0.00	0.00	8,699.8	50.0	0.0	2.1	0.00	0.00	0.00
8,800.0	0.00	0.00	8,799.8	50.0	0.0	2.1	0.00	0.00	0.00
8,900.0	0.00	0.00	8,899.8	50.0	0.0	2.1	0.00	0.00	0.00
9,000.0	0.00	0.00	8,999.8	50.0	0.0	2.1	0.00	0.00	0.00
9,100.0	0.00	0.00	9,099.8	50.0	0.0	2.1	0.00	0.00	0.00
9,200.0	0.00	0.00	9,199.8	50.0	0.0	2.1	0.00	0.00	0.00
9,230.2	0.00	0.00	9,230.0	50.0	0.0	2.1	0.00	0.00	0.00
Base Last Salt									
9,300.0	0.00	0.00	9,299.8	50.0	0.0	2.1	0.00	0.00	0.00
9,400.0	0.00	0.00	9,399.8	50.0	0.0	2.1	0.00	0.00	0.00
9,446.2	0.00	0.00	9,446.0	50.0	0.0	2.1	0.00	0.00	0.00
Mission Canyon									
9,500.0	0.00	0.00	9,499.8	50.0	0.0	2.1	0.00	0.00	0.00
9,600.0	0.00	0.00	9,599.8	50.0	0.0	2.1	0.00	0.00	0.00
9,700.0	0.00	0.00	9,699.8	50.0	0.0	2.1	0.00	0.00	0.00
9,800.0	0.00	0.00	9,799.8	50.0	0.0	2.1	0.00	0.00	0.00
9,900.0	0.00	0.00	9,899.8	50.0	0.0	2.1	0.00	0.00	0.00
9,987.2	0.00	0.00	9,987.0	50.0	0.0	2.1	0.00	0.00	0.00
Lodgepole									
10,000.0	0.00	0.00	9,999.8	50.0	0.0	2.1	0.00	0.00	0.00
10,100.0	0.00	0.00	10,099.8	50.0	0.0	2.1	0.00	0.00	0.00
10,200.0	0.00	0.00	10,199.8	50.0	0.0	2.1	0.00	0.00	0.00
10,300.0	0.00	0.00	10,299.8	50.0	0.0	2.1	0.00	0.00	0.00
10,355.7	0.00	0.00	10,355.5	50.0	0.0	2.1	0.00	0.00	0.00
10,375.0	2.31	65.61	10,374.8	50.2	0.4	2.5	12.00	12.00	0.00
10,400.0	5.31	65.61	10,399.7	50.8	1.9	4.0	12.00	12.00	0.00
10,425.0	8.31	65.61	10,424.5	52.1	4.6	6.7	12.00	12.00	0.00
10,450.0	11.31	65.61	10,449.2	53.8	8.4	10.7	12.00	12.00	0.00
10,475.0	14.31	65.61	10,473.5	56.1	13.5	15.8	12.00	12.00	0.00
10,500.0	17.31	65.61	10,497.6	58.9	19.7	22.1	12.00	12.00	0.00
10,525.0	20.31	65.61	10,521.3	62.3	27.0	29.6	12.00	12.00	0.00
10,550.0	23.31	65.61	10,544.5	66.1	35.5	38.2	12.00	12.00	0.00
10,575.0	26.31	65.61	10,567.2	70.4	45.0	48.0	12.00	12.00	0.00
10,600.0	29.31	65.61	10,589.3	75.2	55.7	58.8	12.00	12.00	0.00
10,625.0	32.31	65.61	10,610.7	80.5	67.3	70.6	12.00	12.00	0.00
10,650.0	35.31	65.61	10,631.5	86.3	80.0	83.5	12.00	12.00	0.00
10,675.0	38.31	65.61	10,651.5	92.5	93.6	97.4	12.00	12.00	0.00
10,700.0	41.31	65.61	10,670.7	99.1	108.2	112.3	12.00	12.00	0.00
10,725.0	44.31	65.61	10,689.1	106.1	123.7	128.0	12.00	12.00	0.00
10,750.0	47.31	65.61	10,706.5	113.5	140.0	144.6	12.00	12.00	0.00
10,764.3	49.02	65.61	10,716.0	117.9	149.7	154.5	12.00	12.00	0.00

Planning Report

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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 2T	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lewis Federal 5300 11-31 2T		
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)
False Bakken									
10,775.0	50.31	65.61	10,723.0	121.2	157.1	162.1	12.00	12.00	0.00
10,783.0	51.27	65.61	10,728.0	123.8	162.8	167.8	12.00	12.00	0.00
Upper Bakken Shale									
10,800.0	53.30	65.61	10,738.4	129.4	175.0	180.3	12.00	12.00	0.00
10,809.5	54.45	65.61	10,744.0	132.5	182.0	187.4	12.00	12.00	0.00
Middle Bakken									
10,825.0	56.30	65.61	10,752.8	137.8	193.6	199.2	12.00	12.00	0.00
10,850.0	59.30	65.61	10,766.1	146.5	212.9	218.8	12.00	12.00	0.00
10,875.0	62.30	65.61	10,778.3	155.5	232.8	239.1	12.00	12.00	0.00
10,878.7	62.74	65.61	10,780.0	156.9	235.7	242.1	12.00	12.00	0.00
Lower Bakken Shale									
10,899.2	65.20	65.61	10,789.0	164.5	252.5	259.2	12.00	12.00	0.00
Pronghorn									
10,900.0	65.30	65.61	10,789.4	164.8	253.2	259.9	12.00	12.00	0.00
10,925.0	68.30	65.61	10,799.2	174.3	274.1	281.2	12.00	12.00	0.00
10,950.0	71.30	65.61	10,807.8	184.0	295.5	302.9	12.00	12.00	0.00
10,956.9	72.14	65.61	10,810.0	186.7	301.5	309.0	12.00	12.00	0.00
Threeforks									
10,975.0	74.30	65.61	10,815.2	193.8	317.2	325.1	12.00	12.00	0.00
10,998.5	77.12	65.61	10,821.0	203.2	337.9	346.1	12.00	12.00	0.00
Threeforks(Top of Target)									
11,000.0	77.30	65.61	10,821.4	203.8	339.3	347.5	12.00	12.00	0.00
11,025.0	80.30	65.61	10,826.2	214.0	361.6	370.3	12.00	12.00	0.00
11,050.0	83.30	65.61	10,829.8	224.2	384.2	393.2	12.00	12.00	0.00
11,075.0	86.30	65.61	10,832.0	234.5	406.8	416.3	12.00	12.00	0.00
11,101.3	89.46	65.61	10,833.0	245.3	430.8	440.7	12.00	12.00	0.00
11,116.0	89.46	65.61	10,833.2	251.4	444.2	454.3	0.00	0.00	0.00
7"									
11,116.3	89.46	65.61	10,833.2	251.5	444.5	454.6	0.00	0.00	0.00
11,200.0	89.46	68.12	10,834.0	284.4	521.4	532.8	3.00	0.00	3.00
11,300.0	89.46	71.12	10,834.9	319.2	615.1	627.9	3.00	0.00	3.00
11,400.0	89.46	74.12	10,835.8	349.1	710.5	724.5	3.00	0.00	3.00
11,500.0	89.46	77.12	10,836.8	373.9	807.4	822.3	3.00	0.00	3.00
11,600.0	89.46	80.12	10,837.7	393.6	905.4	921.1	3.00	0.00	3.00
11,700.0	89.46	83.12	10,838.7	408.2	1,004.3	1,020.5	3.00	0.00	3.00
11,800.0	89.46	86.12	10,839.6	417.6	1,103.9	1,120.4	3.00	0.00	3.00
11,900.0	89.46	89.12	10,840.5	421.7	1,203.8	1,220.4	3.00	0.00	3.00
11,929.3	89.46	90.00	10,840.8	422.0	1,233.1	1,249.7	3.00	0.00	3.00
12,000.0	89.46	90.00	10,841.5	422.0	1,303.8	1,320.3	0.00	0.00	0.00
12,100.0	89.46	90.00	10,842.4	422.0	1,403.8	1,420.2	0.00	0.00	0.00
12,200.0	89.46	90.00	10,843.4	422.0	1,503.8	1,520.1	0.00	0.00	0.00
12,300.0	89.46	90.00	10,844.3	422.0	1,603.8	1,620.0	0.00	0.00	0.00
12,400.0	89.46	90.00	10,845.3	422.0	1,703.8	1,719.9	0.00	0.00	0.00
12,500.0	89.46	90.00	10,846.2	422.0	1,803.7	1,819.8	0.00	0.00	0.00
12,600.0	89.46	90.00	10,847.1	422.0	1,903.7	1,919.7	0.00	0.00	0.00
12,700.0	89.46	90.00	10,848.1	422.0	2,003.7	2,019.6	0.00	0.00	0.00
12,800.0	89.46	90.00	10,849.0	422.0	2,103.7	2,119.5	0.00	0.00	0.00
12,900.0	89.46	90.00	10,850.0	422.0	2,203.7	2,219.5	0.00	0.00	0.00
13,000.0	89.46	90.00	10,850.9	422.0	2,303.7	2,319.4	0.00	0.00	0.00
13,100.0	89.46	90.00	10,851.9	422.0	2,403.7	2,419.3	0.00	0.00	0.00
13,200.0	89.46	90.00	10,852.8	422.0	2,503.7	2,519.2	0.00	0.00	0.00
13,300.0	89.46	90.00	10,853.7	422.0	2,603.7	2,619.1	0.00	0.00	0.00
13,400.0	89.46	90.00	10,854.7	422.0	2,703.7	2,719.0	0.00	0.00	0.00

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 2T
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 2T	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lewis Federal 5300 11-31 2T		
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)
13,500.0	89.46	90.00	10,855.6	422.0	2,803.7	2,818.9	0.00	0.00	0.00
13,600.0	89.46	90.00	10,856.6	422.0	2,903.7	2,918.8	0.00	0.00	0.00
13,700.0	89.46	90.00	10,857.5	422.0	3,003.7	3,018.7	0.00	0.00	0.00
13,800.0	89.46	90.00	10,858.5	422.0	3,103.7	3,118.6	0.00	0.00	0.00
13,900.0	89.46	90.00	10,859.4	422.0	3,203.7	3,218.5	0.00	0.00	0.00
14,000.0	89.46	90.00	10,860.3	422.0	3,303.7	3,318.4	0.00	0.00	0.00
14,100.0	89.46	90.00	10,861.3	422.0	3,403.7	3,418.4	0.00	0.00	0.00
14,200.0	89.46	90.00	10,862.2	422.0	3,503.7	3,518.3	0.00	0.00	0.00
14,300.0	89.46	90.00	10,863.2	422.0	3,603.7	3,618.2	0.00	0.00	0.00
14,400.0	89.46	90.00	10,864.1	422.0	3,703.7	3,718.1	0.00	0.00	0.00
14,500.0	89.46	90.00	10,865.1	422.0	3,803.7	3,818.0	0.00	0.00	0.00
14,600.0	89.46	90.00	10,866.0	422.0	3,903.7	3,917.9	0.00	0.00	0.00
14,700.0	89.46	90.00	10,866.9	422.0	4,003.6	4,017.8	0.00	0.00	0.00
14,800.0	89.46	90.00	10,867.9	422.0	4,103.6	4,117.7	0.00	0.00	0.00
14,900.0	89.46	90.00	10,868.8	422.0	4,203.6	4,217.6	0.00	0.00	0.00
15,000.0	89.46	90.00	10,869.8	422.0	4,303.6	4,317.5	0.00	0.00	0.00
15,100.0	89.46	90.00	10,870.7	422.0	4,403.6	4,417.4	0.00	0.00	0.00
15,200.0	89.46	90.00	10,871.7	422.0	4,503.6	4,517.3	0.00	0.00	0.00
15,300.0	89.46	90.00	10,872.6	422.0	4,603.6	4,617.2	0.00	0.00	0.00
15,400.0	89.46	90.00	10,873.5	422.0	4,703.6	4,717.2	0.00	0.00	0.00
15,500.0	89.46	90.00	10,874.5	422.0	4,803.6	4,817.1	0.00	0.00	0.00
15,600.0	89.46	90.00	10,875.4	422.0	4,903.6	4,917.0	0.00	0.00	0.00
15,700.0	89.46	90.00	10,876.4	422.0	5,003.6	5,016.9	0.00	0.00	0.00
15,800.0	89.46	90.00	10,877.3	422.0	5,103.6	5,116.8	0.00	0.00	0.00
15,900.0	89.46	90.00	10,878.2	422.0	5,203.6	5,216.7	0.00	0.00	0.00
16,000.0	89.46	90.00	10,879.2	422.0	5,303.6	5,316.6	0.00	0.00	0.00
16,100.0	89.46	90.00	10,880.1	422.0	5,403.6	5,416.5	0.00	0.00	0.00
16,200.0	89.46	90.00	10,881.1	422.0	5,503.6	5,516.4	0.00	0.00	0.00
16,300.0	89.46	90.00	10,882.0	422.0	5,603.6	5,616.3	0.00	0.00	0.00
16,400.0	89.46	90.00	10,883.0	422.0	5,703.6	5,716.2	0.00	0.00	0.00
16,500.0	89.46	90.00	10,883.9	422.0	5,803.6	5,816.1	0.00	0.00	0.00
16,600.0	89.46	90.00	10,884.8	422.0	5,903.6	5,916.1	0.00	0.00	0.00
16,700.0	89.46	90.00	10,885.8	422.0	6,003.6	6,016.0	0.00	0.00	0.00
16,800.0	89.46	90.00	10,886.7	422.0	6,103.6	6,115.9	0.00	0.00	0.00
16,900.0	89.46	90.00	10,887.7	422.0	6,203.6	6,215.8	0.00	0.00	0.00
17,000.0	89.46	90.00	10,888.6	422.0	6,303.5	6,315.7	0.00	0.00	0.00
17,100.0	89.46	90.00	10,889.6	422.0	6,403.5	6,415.6	0.00	0.00	0.00
17,200.0	89.46	90.00	10,890.5	422.0	6,503.5	6,515.5	0.00	0.00	0.00
17,300.0	89.46	90.00	10,891.4	422.0	6,603.5	6,615.4	0.00	0.00	0.00
17,400.0	89.46	90.00	10,892.4	422.0	6,703.5	6,715.3	0.00	0.00	0.00
17,500.0	89.46	90.00	10,893.3	422.0	6,803.5	6,815.2	0.00	0.00	0.00
17,600.0	89.46	90.00	10,894.3	422.0	6,903.5	6,915.1	0.00	0.00	0.00
17,700.0	89.46	90.00	10,895.2	422.0	7,003.5	7,015.0	0.00	0.00	0.00
17,800.0	89.46	90.00	10,896.2	422.0	7,103.5	7,114.9	0.00	0.00	0.00
17,900.0	89.46	90.00	10,897.1	422.0	7,203.5	7,214.9	0.00	0.00	0.00
18,000.0	89.46	90.00	10,898.0	422.0	7,303.5	7,314.8	0.00	0.00	0.00
18,100.0	89.46	90.00	10,899.0	422.0	7,403.5	7,414.7	0.00	0.00	0.00
18,200.0	89.46	90.00	10,899.9	422.0	7,503.5	7,514.6	0.00	0.00	0.00
18,300.0	89.46	90.00	10,900.9	422.0	7,603.5	7,614.5	0.00	0.00	0.00
18,400.0	89.46	90.00	10,901.8	422.0	7,703.5	7,714.4	0.00	0.00	0.00
18,500.0	89.46	90.00	10,902.8	422.0	7,803.5	7,814.3	0.00	0.00	0.00
18,600.0	89.46	90.00	10,903.7	422.0	7,903.5	7,914.2	0.00	0.00	0.00
18,700.0	89.46	90.00	10,904.6	422.0	8,003.5	8,014.1	0.00	0.00	0.00
18,800.0	89.46	90.00	10,905.6	422.0	8,103.5	8,114.0	0.00	0.00	0.00
18,900.0	89.46	90.00	10,906.5	422.0	8,203.5	8,213.9	0.00	0.00	0.00

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 2T
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 2T	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lewis Federal 5300 11-31 2T		
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)
19,000.0	89.46	90.00	10,907.5	422.0	8,303.5	8,313.8	0.00	0.00	0.00
19,100.0	89.46	90.00	10,908.4	422.0	8,403.5	8,413.8	0.00	0.00	0.00
19,200.0	89.46	90.00	10,909.3	422.0	8,503.4	8,513.7	0.00	0.00	0.00
19,300.0	89.46	90.00	10,910.3	422.0	8,603.4	8,613.6	0.00	0.00	0.00
19,400.0	89.46	90.00	10,911.2	422.0	8,703.4	8,713.5	0.00	0.00	0.00
19,500.0	89.46	90.00	10,912.2	422.0	8,803.4	8,813.4	0.00	0.00	0.00
19,600.0	89.46	90.00	10,913.1	422.0	8,903.4	8,913.3	0.00	0.00	0.00
19,700.0	89.46	90.00	10,914.1	422.0	9,003.4	9,013.2	0.00	0.00	0.00
19,800.0	89.46	90.00	10,915.0	422.0	9,103.4	9,113.1	0.00	0.00	0.00
19,900.0	89.46	90.00	10,915.9	422.0	9,203.4	9,213.0	0.00	0.00	0.00
20,000.0	89.46	90.00	10,916.9	422.0	9,303.4	9,312.9	0.00	0.00	0.00
20,100.0	89.46	90.00	10,917.8	422.0	9,403.4	9,412.8	0.00	0.00	0.00
20,200.0	89.46	90.00	10,918.8	422.0	9,503.4	9,512.7	0.00	0.00	0.00
20,300.0	89.46	90.00	10,919.7	422.0	9,603.4	9,612.6	0.00	0.00	0.00
20,400.0	89.46	90.00	10,920.7	422.0	9,703.4	9,712.6	0.00	0.00	0.00
20,500.0	89.46	90.00	10,921.6	422.0	9,803.4	9,812.5	0.00	0.00	0.00
20,600.0	89.46	90.00	10,922.5	422.0	9,903.4	9,912.4	0.00	0.00	0.00
20,700.0	89.46	90.00	10,923.5	422.0	10,003.4	10,012.3	0.00	0.00	0.00
20,771.6	89.46	90.00	10,924.2	422.0	10,075.0	10,083.8	0.00	0.00	0.00

Lewis Federal 2T 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 2T BHL	0.00	0.00	10,924.5	422.0	10,075.0	393,257.49	1,219,604.03	48° 2' 14.198 N	103° 33' 43.292 W
- plan misses target center by 0.4ft at 20771.6ft MD (10924.2 TVD, 422.0 N, 10075.0 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			
11,116.0	10,833.2	7"			7.000	8.750			
20,804.6		4 1/2"			4.500	6.000			

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 2T
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 2T	Survey Calculation Method:	Minimum Curvature
Wellbore:	Lewis Federal 5300 11-31 2T		
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				
10,764.3	10,716.0	False Bakken				
10,783.0	10,728.0	Upper Bakken Shale				
10,809.5	10,744.0	Middle Bakken				
10,878.7	10,780.0	Lower Bakken Shale				
10,899.2	10,789.0	Pronghorn				
10,956.9	10,810.0	Threeforks				
10,998.5	10,821.0	Threeforks(Top of Target)				

Oasis

**Indian Hills
153N-100W-31/32
Lewis Federal 5300 11-31 2T**

**Lewis Federal 5300 11-31 2T
Plan #1**

Anticollision Report

11 March, 2014

Oasis Petroleum

Anticollision Report

Company:	Oasis	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 2T
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 2T	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 2T	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	20,804.2	Plan #1 (Lewis Federal 5300 11-31 2T)		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 3B - Lewis Federal 5300 11-31	2,100.0	2,100.0	32.5	23.4	3.550	CC
	Lewis Federal 5300 11-31 3B - Lewis Federal 5300 11-31	20,804.6	20,640.9	454.6	-124.0	0.786	Level 1, ES, SF
	Lewis Federal 5300 11-31 4T2 - Lewis Federal 5300 11-3	2,100.0	2,100.0	66.1	57.0	7.216	CC
	Lewis Federal 5300 11-31 4T2 - Lewis Federal 5300 11-3	20,804.6	20,757.0	449.5	-136.5	0.767	Level 1, ES, SF
	Lewis Federal 5300 11-31 5T - Lewis Federal 5300 11-31	2,100.0	2,100.0	98.7	89.5	10.766	CC, ES
	Lewis Federal 5300 11-31 5T - Lewis Federal 5300 11-31	20,804.6	20,812.9	943.3	355.0	1.604	SF

Offset Design 153N-100W-31/32 - Lewis Federal 5300 11-31 3B - Lewis Federal 5300 11-31 3B - 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
0.0	0.0	0.0	0.0	0.0	0.0	-175.21	-32.4	-2.7	32.5				
100.0	100.0	100.0	100.0	0.1	0.1	-175.21	-32.4	-2.7	32.5	32.4	0.18	185.596	
200.0	200.0	200.0	200.0	0.3	0.3	-175.21	-32.4	-2.7	32.5	31.9	0.62	52.074	
300.0	300.0	300.0	300.0	0.5	0.5	-175.21	-32.4	-2.7	32.5	31.5	1.07	30.286	
400.0	400.0	400.0	400.0	0.8	0.8	-175.21	-32.4	-2.7	32.5	31.0	1.52	21.352	
500.0	500.0	500.0	500.0	1.0	1.0	-175.21	-32.4	-2.7	32.5	30.6	1.97	16.488	
600.0	600.0	600.0	600.0	1.2	1.2	-175.21	-32.4	-2.7	32.5	30.1	2.42	13.429	
700.0	700.0	700.0	700.0	1.4	1.4	-175.21	-32.4	-2.7	32.5	29.7	2.87	11.327	
800.0	800.0	800.0	800.0	1.7	1.7	-175.21	-32.4	-2.7	32.5	29.2	3.32	9.795	
900.0	900.0	900.0	900.0	1.9	1.9	-175.21	-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	-175.21	-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	-175.21	-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	-175.21	-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	-175.21	-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	-175.21	-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	-175.21	-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	-175.21	-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	-175.21	-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	-175.21	-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	-175.21	-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	-175.21	-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	-175.21	-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 2T
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 2T	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 2T	Database:	OpenWellsCompass - EDM Prod
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design 153N-100W-31/32 - Lewis Federal 5300 11-31 3B - Lewis Federal 5300 11-31 3B - 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	2,110.2	2,110.2	4.6	4.6	-175.27	-32.4	-2.7	32.5	23.3	9.21	3.534				
2,200.0	2,200.0	2,200.2	2,200.2	4.8	4.8	-176.27	-31.8	-2.1	32.7	23.1	9.61	3.407				
2,300.0	2,300.0	2,300.2	2,300.2	5.0	5.0	-177.37	-31.2	-1.5	33.0	22.9	10.05	3.279				
2,400.0	2,400.0	2,400.2	2,400.2	5.3	5.2	-178.45	-30.6	-0.9	33.2	22.7	10.49	3.163				
2,500.0	2,500.0	2,500.2	2,500.2	5.5	5.5	-179.52	-30.0	-0.3	33.4	22.5	10.94	3.057				
2,600.0	2,600.0	2,600.2	2,600.2	5.7	5.7	179.43	-29.4	0.3	33.7	22.3	11.38	2.960				
2,700.0	2,700.0	2,700.2	2,700.2	5.9	5.9	178.39	-28.8	1.0	34.0	22.1	11.83	2.872				
2,800.0	2,800.0	2,800.2	2,800.2	6.2	6.1	177.37	-28.1	1.6	34.2	22.0	12.27	2.790				
2,900.0	2,900.0	2,900.2	2,900.2	6.4	6.3	176.37	-27.5	2.2	34.5	21.8	12.72	2.715				
3,000.0	3,000.0	3,000.2	3,000.2	6.6	6.6	175.38	-26.9	2.8	34.8	21.7	13.16	2.646				
3,100.0	3,100.0	3,100.2	3,100.2	6.8	6.8	174.41	-26.3	3.4	35.1	21.5	13.61	2.582				
3,200.0	3,200.0	3,200.2	3,200.2	7.1	7.0	173.46	-25.7	4.0	35.5	21.4	14.05	2.523				
3,300.0	3,300.0	3,300.2	3,300.1	7.3	7.2	172.52	-25.0	4.7	35.8	21.3	14.50	2.468				
3,400.0	3,400.0	3,400.2	3,400.1	7.5	7.4	171.60	-24.4	5.3	36.1	21.2	14.94	2.417				
3,500.0	3,499.9	3,500.2	3,500.1	7.7	7.7	170.70	-23.8	5.9	36.5	21.1	15.39	2.369				
3,600.0	3,599.9	3,600.2	3,600.1	8.0	7.9	169.82	-23.2	6.5	36.8	21.0	15.84	2.325				
3,700.0	3,699.9	3,700.2	3,700.1	8.2	8.1	168.95	-22.6	7.1	37.2	20.9	16.29	2.284				
3,800.0	3,799.9	3,800.2	3,800.1	8.4	8.3	168.11	-22.0	7.7	37.6	20.8	16.73	2.245				
3,900.0	3,899.9	3,900.2	3,900.1	8.6	8.6	167.27	-21.3	8.4	37.9	20.8	17.18	2.209				
4,000.0	3,999.9	4,000.2	4,000.1	8.9	8.8	166.46	-20.7	9.0	38.3	20.7	17.63	2.175				
4,100.0	4,099.9	4,100.2	4,100.1	9.1	9.0	165.66	-20.1	9.6	38.7	20.7	18.07	2.143				
4,200.0	4,199.9	4,200.2	4,200.1	9.3	9.2	164.88	-19.5	10.2	39.1	20.6	18.52	2.113				
4,300.0	4,299.9	4,300.2	4,300.1	9.5	9.4	164.11	-18.9	10.8	39.5	20.6	18.97	2.085				
4,400.0	4,399.9	4,400.2	4,400.1	9.8	9.7	163.36	-18.3	11.4	40.0	20.5	19.42	2.058				
4,500.0	4,499.9	4,500.2	4,500.1	10.0	9.9	162.62	-17.6	12.1	40.4	20.5	19.86	2.033				
4,600.0	4,599.9	4,600.2	4,600.1	10.2	10.1	161.90	-17.0	12.7	40.8	20.5	20.31	2.010				
4,700.0	4,699.9	4,700.2	4,700.1	10.4	10.3	161.20	-16.4	13.3	41.3	20.5	20.76	1.987				
4,800.0	4,799.9	4,800.2	4,800.1	10.7	10.6	160.51	-15.8	13.9	41.7	20.5	21.21	1.966				
4,900.0	4,899.9	4,900.2	4,900.0	10.9	10.8	159.84	-15.2	14.5	42.2	20.5	21.66	1.946				
5,000.0	4,999.9	5,000.2	5,000.0	11.1	11.0	159.18	-14.6	15.1	42.6	20.5	22.10	1.928				
5,100.0	5,099.9	5,100.1	5,100.0	11.3	11.2	158.53	-13.9	15.8	43.1	20.5	22.55	1.910				
5,200.0	5,199.9	5,200.1	5,200.0	11.6	11.5	157.90	-13.3	16.4	43.5	20.5	23.00	1.893				
5,300.0	5,299.9	5,300.1	5,300.0	11.8	11.7	157.28	-12.7	17.0	44.0	20.6	23.45	1.877				
5,400.0	5,399.9	5,400.1	5,400.0	12.0	11.9	156.67	-12.1	17.6	44.5	20.6	23.90	1.862				
5,500.0	5,499.9	5,500.1	5,500.0	12.2	12.1	156.08	-11.5	18.2	45.0	20.6	24.34	1.847				
5,600.0	5,599.9	5,600.1	5,600.0	12.5	12.3	155.50	-10.9	18.8	45.4	20.7	24.79	1.833				
5,700.0	5,699.9	5,700.1	5,700.0	12.7	12.6	154.93	-10.2	19.5	45.9	20.7	25.24	1.820				
5,800.0	5,799.9	5,800.1	5,800.0	12.9	12.8	154.37	-9.6	20.1	46.4	20.7	25.69	1.808				
5,900.0	5,899.9	5,900.1	5,900.0	13.1	13.0	153.83	-9.0	20.7	46.9	20.8	26.14	1.796				
6,000.0	5,999.9	6,000.1	6,000.0	13.4	13.2	153.30	-8.4	21.3	47.4	20.9	26.58	1.784				
6,100.0	6,099.8	6,100.1	6,100.0	13.6	13.5	152.78	-7.8	21.9	47.9	20.9	27.03	1.774				
6,200.0	6,199.8	6,200.0	6,199.8	13.8	13.7	152.69	-7.4	22.3	48.6	21.1	27.47	1.768				
6,300.0	6,299.8	6,300.0	6,299.8	14.0	13.9	153.16	-7.4	22.3	49.3	21.4	27.91	1.768				
6,400.0	6,399.8	6,400.0	6,399.8	14.3	14.1	153.61	-7.4	22.3	50.1	21.8	28.36	1.768				
6,500.0	6,499.8	6,500.0	6,499.8	14.5	14.3	154.05	-7.4	22.3	50.9	22.1	28.81	1.767				
6,600.0	6,599.8	6,600.0	6,599.8	14.7	14.6	154.47	-7.4	22.3	51.7	22.4	29.25	1.767				
6,700.0	6,699.8	6,700.0	6,699.8	14.9	14.8	154.88	-7.4	22.3	52.5	22.8	29.70	1.767				
6,800.0	6,799.8	6,800.0	6,799.8	15.1	15.0	155.28	-7.4	22.3	53.3	23.1	30.15	1.767				
6,900.0	6,899.8	6,900.0	6,899.8	15.4	15.2	155.66	-7.4	22.3	54.1	23.5	30.59	1.767				
7,000.0	6,999.8	7,000.0	6,999.8	15.6	15.5	156.04	-7.4	22.3	54.9	23.8	31.04	1.768				
7,100.0	7,099.8	7,100.0	7,099.8	15.8	15.7	156.40	-7.4	22.3	55.7	24.2	31.49	1.768				
7,200.0	7,199.8	7,200.0	7,199.8	16.0	15.9	156.76	-7.4	22.3	56.5	24.5	31.93	1.768				
7,300.0	7,299.8	7,300.0	7,299.8	16.3	16.1	157.10	-7.4	22.3	57.3	24.9	32.38	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 2T
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 2T	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 2T	Database:	OpenWellsCompass - EDM Prod
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design 153N-100W-31/32 - Lewis Federal 5300 11-31 3B - Lewis Federal 5300 11-31 3B - 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)	Hightside Toolface (°)	Offset Wellbore Centre +N/S (usft)	Centre +E/W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning			
7,400.0	7,399.8	7,400.0	7,399.8	16.5	16.3	157.44	-7.4	22.3	58.1	25.2	32.83	1.769				
7,500.0	7,499.8	7,499.9	7,499.8	16.7	16.6	157.76	-7.4	22.3	58.9	25.6	33.27	1.770				
7,600.0	7,599.8	7,599.9	7,599.8	16.9	16.8	158.08	-7.4	22.3	59.7	26.0	33.72	1.770				
7,700.0	7,699.8	7,699.9	7,699.8	17.2	17.0	158.39	-7.4	22.3	60.5	26.3	34.17	1.771				
7,800.0	7,799.8	7,799.9	7,799.8	17.4	17.2	158.69	-7.4	22.3	61.3	26.7	34.62	1.771				
7,829.7	7,829.4	7,829.6	7,829.4	17.5	17.3	158.78	-7.4	22.3	61.6	26.8	34.75	1.771				
7,839.7	7,839.4	7,839.6	7,839.4	17.5	17.3	158.79	-7.4	22.3	61.6	26.8	34.75	1.772				
7,900.0	7,899.8	7,899.9	7,899.8	17.6	17.4	158.79	-7.4	22.3	61.6	26.6	35.00	1.760				
8,000.0	7,999.8	7,999.9	7,999.8	17.8	17.7	158.79	-7.4	22.3	61.6	26.1	35.45	1.738				
8,100.0	8,099.8	8,099.9	8,099.8	18.1	17.9	158.79	-7.4	22.3	61.6	25.7	35.90	1.716				
8,200.0	8,199.8	8,199.9	8,199.8	18.3	18.1	158.79	-7.4	22.3	61.6	25.3	36.34	1.695				
8,300.0	8,299.8	8,299.9	8,299.8	18.5	18.3	158.79	-7.4	22.3	61.6	24.8	36.79	1.674				
8,400.0	8,399.8	8,399.9	8,399.8	18.7	18.6	158.79	-7.4	22.3	61.6	24.4	37.24	1.654				
8,500.0	8,499.8	8,499.9	8,499.8	19.0	18.8	158.79	-7.4	22.3	61.6	23.9	37.69	1.634				
8,600.0	8,599.8	8,599.9	8,599.8	19.2	19.0	158.79	-7.4	22.3	61.6	23.5	38.13	1.615				
8,700.0	8,699.8	8,699.9	8,699.8	19.4	19.2	158.79	-7.4	22.3	61.6	23.0	38.58	1.597				
8,800.0	8,799.8	8,799.9	8,799.8	19.6	19.5	158.79	-7.4	22.3	61.6	22.6	39.03	1.578				
8,900.0	8,899.8	8,899.9	8,899.8	19.8	19.7	158.79	-7.4	22.3	61.6	22.1	39.47	1.560				
9,000.0	8,999.8	8,999.9	8,999.8	20.1	19.9	158.79	-7.4	22.3	61.6	21.7	39.92	1.543				
9,100.0	9,099.8	9,099.9	9,099.8	20.3	20.1	158.79	-7.4	22.3	61.6	21.2	40.37	1.526				
9,200.0	9,199.8	9,199.9	9,199.8	20.5	20.3	158.79	-7.4	22.3	61.6	20.8	40.82	1.509				
9,300.0	9,299.8	9,299.9	9,299.8	20.7	20.6	158.79	-7.4	22.3	61.6	20.3	41.26	1.493 Level 3	Level 3			
9,400.0	9,399.8	9,399.9	9,399.8	21.0	20.8	158.79	-7.4	22.3	61.6	19.9	41.71	1.477 Level 3	Level 3			
9,500.0	9,499.8	9,499.9	9,499.8	21.2	21.0	158.79	-7.4	22.3	61.6	19.4	42.16	1.461 Level 3	Level 3			
9,600.0	9,599.8	9,599.9	9,599.8	21.4	21.2	158.79	-7.4	22.3	61.6	19.0	42.61	1.446 Level 3	Level 3			
9,700.0	9,699.8	9,699.9	9,699.8	21.6	21.5	158.79	-7.4	22.3	61.6	18.5	43.05	1.431 Level 3	Level 3			
9,800.0	9,799.8	9,799.9	9,799.8	21.9	21.7	158.79	-7.4	22.3	61.6	18.1	43.50	1.416 Level 3	Level 3			
9,900.0	9,899.8	9,899.9	9,899.8	22.1	21.9	158.79	-7.4	22.3	61.6	17.6	43.95	1.402 Level 3	Level 3			
10,000.0	9,999.8	9,999.9	9,999.8	22.3	22.1	158.79	-7.4	22.3	61.6	17.2	44.40	1.387 Level 3	Level 3			
10,100.0	10,099.8	10,099.9	10,099.8	22.5	22.4	158.79	-7.4	22.3	61.6	16.8	44.84	1.374 Level 3	Level 3			
10,200.0	10,199.8	10,199.9	10,199.8	22.8	22.6	158.79	-7.4	22.3	61.6	16.3	45.29	1.360 Level 3	Level 3			
10,259.7	10,259.5	10,259.7	10,259.5	22.9	22.7	158.79	-7.4	22.3	61.6	16.0	45.56	1.352 Level 3	Level 3			
10,300.0	10,299.8	10,299.1	10,298.9	23.0	22.8	158.55	-7.4	22.6	61.7	16.0	45.74	1.349 Level 3	Level 3			
10,355.7	10,355.6	10,351.6	10,351.2	23.1	22.9	154.68	-7.6	27.3	63.9	17.9	45.97	1.389 Level 3	Level 3			
10,375.0	10,374.8	10,369.6	10,368.9	23.2	23.0	86.93	-7.7	30.2	65.3	19.3	46.10	1.418 Level 3	Level 3			
10,400.0	10,399.7	10,392.6	10,391.5	23.2	23.0	84.42	-7.9	34.9	67.9	21.7	46.20	1.469 Level 3	Level 3			
10,425.0	10,424.5	10,415.5	10,413.7	23.3	23.1	82.23	-8.1	40.6	71.0	24.7	46.30	1.533				
10,450.0	10,449.2	10,438.2	10,435.3	23.3	23.1	80.37	-8.3	47.4	74.6	28.2	46.39	1.608				
10,475.0	10,473.5	10,460.7	10,456.4	23.4	23.2	78.82	-8.6	55.1	78.8	32.3	46.48	1.695				
10,500.0	10,497.6	10,482.9	10,477.0	23.4	23.2	77.56	-8.9	63.6	83.4	36.8	46.56	1.791				
10,525.0	10,521.3	10,505.0	10,496.9	23.5	23.3	76.54	-9.2	73.1	88.4	41.8	46.64	1.896				
10,550.0	10,544.5	10,526.8	10,516.2	23.6	23.4	75.75	-9.5	83.3	93.8	47.1	46.71	2.009				
10,575.0	10,567.2	10,548.5	10,534.8	23.6	23.4	75.13	-9.9	94.3	99.7	52.9	46.78	2.130				
10,600.0	10,589.3	10,569.9	10,552.7	23.7	23.5	74.66	-10.3	106.0	105.8	58.9	46.86	2.258				
10,625.0	10,610.7	10,591.1	10,569.9	23.8	23.6	74.31	-10.7	118.4	112.3	65.3	46.93	2.392				
10,650.0	10,631.5	10,612.0	10,586.4	23.8	23.6	74.06	-11.2	131.4	119.1	72.1	47.01	2.533				
10,675.0	10,651.5	10,632.8	10,602.1	23.9	23.7	73.87	-11.7	144.9	126.2	79.1	47.09	2.679				
10,700.0	10,670.7	10,653.4	10,617.1	24.0	23.8	73.74	-12.2	159.0	133.5	86.3	47.19	2.829				
10,725.0	10,689.1	10,675.0	10,632.2	24.1	23.9	73.70	-12.7	174.5	141.2	93.9	47.30	2.984				
10,750.0	10,706.5	10,694.0	10,644.8	24.2	24.0	73.59	-13.2	188.6	149.0	101.6	47.42	3.143				
10,775.0	10,722.9	10,714.0	10,657.5	24.3	24.1	73.54	-13.7	204.1	157.2	109.6	47.56	3.305				
10,800.0	10,738.4	10,733.8	10,669.5	24.5	24.3	73.50	-14.3	219.9	165.5	117.8	47.71	3.469				
10,825.0	10,752.8	10,753.6	10,680.7	24.6	24.4	73.46	-14.8	236.1	174.1	126.2	47.89	3.635				

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 2T
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 2T	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 2T	Database:	OpenWellsCompass - EDM Prod
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design 153N-100W-31/32 - Lewis Federal 5300 11-31 3B - Lewis Federal 5300 11-31 3B - 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)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor				
10,850.0	10,766.1	10,775.0	10,692.1	24.8	24.5	73.52	-15.4	254.3	182.8	134.7	48.10	3.800			
10,875.0	10,778.3	10,792.6	10,700.9	24.9	24.7	73.37	-16.0	269.5	191.7	143.4	48.30	3.969			
10,900.0	10,789.4	10,811.9	10,709.9	25.1	24.8	73.32	-16.6	286.6	200.8	152.3	48.55	4.137			
10,925.0	10,799.2	10,831.1	10,718.1	25.3	25.0	73.25	-17.2	304.0	210.1	161.2	48.82	4.303			
10,950.0	10,807.8	10,850.0	10,725.5	25.5	25.2	73.16	-17.8	321.3	219.4	170.3	49.10	4.469			
10,975.0	10,815.2	10,869.4	10,732.4	25.8	25.3	73.10	-18.4	339.4	228.9	179.5	49.43	4.631			
11,000.0	10,821.3	10,888.5	10,738.4	26.0	25.5	73.00	-19.0	357.5	238.5	188.7	49.78	4.791			
11,025.0	10,826.2	10,907.5	10,743.7	26.2	25.7	72.90	-19.6	375.8	248.2	198.0	50.15	4.948			
11,050.0	10,829.8	10,925.0	10,747.9	26.5	25.9	72.70	-20.2	392.8	257.9	207.4	50.52	5.105			
11,075.0	10,832.0	10,945.5	10,752.1	26.8	26.2	72.67	-20.9	412.8	267.7	216.7	50.98	5.251			
11,101.3	10,833.0	10,965.6	10,755.3	27.1	26.4	72.55	-21.6	432.6	278.0	226.6	51.46	5.403			
11,116.3	10,833.1	10,977.0	10,756.8	27.3	26.5	73.17	-22.0	444.0	284.0	232.1	51.84	5.478			
11,200.0	10,833.9	11,044.8	10,760.1	28.4	27.4	75.60	-24.3	511.6	317.6	263.5	54.10	5.871			
11,300.0	10,834.9	11,149.0	10,761.1	29.9	29.0	77.43	-25.4	615.8	352.5	295.2	57.32	6.149			
11,400.0	10,835.8	11,244.5	10,761.9	31.6	30.6	78.55	-25.4	711.2	381.8	321.0	60.72	6.287			
11,500.0	10,836.8	11,341.3	10,762.7	33.5	32.4	79.36	-25.4	808.1	406.2	341.7	64.42	6.305			
11,600.0	10,837.7	11,439.3	10,763.6	35.5	34.4	79.92	-25.4	906.1	425.6	357.2	68.37	6.225			
11,700.0	10,838.6	11,538.3	10,764.4	37.6	36.5	80.29	-25.4	1,005.0	440.0	367.5	72.49	6.069			
11,800.0	10,839.6	11,637.8	10,765.3	39.7	38.8	80.50	-25.4	1,104.5	449.2	372.5	76.71	5.856			
11,900.0	10,840.5	11,737.7	10,766.2	42.0	41.1	80.57	-25.4	1,204.4	453.3	372.3	80.97	5.598			
11,929.3	10,840.8	11,767.0	10,766.4	42.6	41.8	80.56	-25.4	1,233.7	453.5	371.3	82.22	5.516			
12,000.0	10,841.5	11,837.7	10,767.1	44.3	43.5	80.56	-25.4	1,304.4	453.5	368.0	85.54	5.302			
12,100.0	10,842.4	11,937.7	10,767.9	46.6	46.0	80.55	-25.4	1,404.4	453.6	363.2	90.34	5.021			
12,200.0	10,843.4	12,037.7	10,768.8	49.0	48.5	80.54	-25.4	1,504.4	453.6	358.3	95.25	4.762			
12,300.0	10,844.3	12,137.7	10,769.7	51.5	51.0	80.53	-25.4	1,604.4	453.6	353.3	100.25	4.524			
12,400.0	10,845.2	12,237.7	10,770.6	54.0	53.6	80.52	-25.4	1,704.4	453.6	348.3	105.33	4.306			
12,500.0	10,846.2	12,337.7	10,771.4	56.5	56.3	80.51	-25.4	1,804.4	453.6	343.1	110.48	4.106			
12,600.0	10,847.1	12,437.7	10,772.3	59.1	58.9	80.50	-25.4	1,904.4	453.6	337.9	115.69	3.921			
12,700.0	10,848.1	12,537.7	10,773.2	61.7	61.6	80.50	-25.4	2,004.4	453.6	332.7	120.95	3.751			
12,800.0	10,849.0	12,637.7	10,774.0	64.4	64.3	80.49	-25.4	2,104.4	453.6	327.4	126.25	3.593			
12,900.0	10,850.0	12,737.7	10,774.9	67.1	67.0	80.48	-25.4	2,204.4	453.6	322.0	131.60	3.447			
13,000.0	10,850.9	12,837.7	10,775.8	69.7	69.8	80.47	-25.4	2,304.4	453.7	316.7	136.98	3.312			
13,100.0	10,851.8	12,937.7	10,776.7	72.5	72.5	80.46	-25.4	2,404.4	453.7	311.3	142.39	3.186			
13,200.0	10,852.8	13,037.7	10,777.5	75.2	75.3	80.45	-25.4	2,504.4	453.7	305.9	147.83	3.069			
13,300.0	10,853.7	13,137.7	10,778.4	77.9	78.1	80.44	-25.4	2,604.4	453.7	300.4	153.29	2.960			
13,400.0	10,854.7	13,237.7	10,779.3	80.7	80.9	80.44	-25.4	2,704.4	453.7	294.9	158.78	2.858			
13,500.0	10,855.6	13,337.7	10,780.2	83.4	83.7	80.43	-25.4	2,804.4	453.7	289.4	164.28	2.762			
13,600.0	10,856.5	13,437.7	10,781.0	86.2	86.5	80.42	-25.4	2,904.4	453.7	283.9	169.80	2.672			
13,700.0	10,857.5	13,537.7	10,781.9	89.0	89.3	80.41	-25.4	3,004.4	453.7	278.4	175.34	2.588			
13,800.0	10,858.4	13,637.7	10,782.8	91.8	92.1	80.40	-25.4	3,104.4	453.8	272.9	180.90	2.508			
13,900.0	10,859.4	13,737.7	10,783.6	94.6	94.9	80.39	-25.4	3,204.4	453.8	267.3	186.46	2.434			
14,000.0	10,860.3	13,837.7	10,784.5	97.4	97.8	80.38	-25.4	3,304.4	453.8	261.7	192.04	2.363			
14,100.0	10,861.3	13,937.7	10,785.4	100.2	100.6	80.37	-25.4	3,404.4	453.8	256.2	197.63	2.296			
14,200.0	10,862.2	14,037.7	10,786.3	103.0	103.5	80.37	-25.4	3,504.4	453.8	250.6	203.23	2.233			
14,300.0	10,863.1	14,137.7	10,787.1	105.9	106.3	80.36	-25.4	3,604.4	453.8	245.0	208.84	2.173			
14,400.0	10,864.1	14,237.7	10,788.0	108.7	109.2	80.35	-25.4	3,704.3	453.8	239.4	214.45	2.116			
14,500.0	10,865.0	14,337.7	10,788.9	111.5	112.0	80.34	-25.4	3,804.3	453.8	233.8	220.08	2.062			
14,600.0	10,866.0	14,437.7	10,789.7	114.4	114.9	80.33	-25.4	3,904.3	453.8	228.1	225.71	2.011			
14,700.0	10,866.9	14,537.7	10,790.6	117.2	117.7	80.32	-25.4	4,004.3	453.9	222.5	231.35	1.962			
14,800.0	10,867.9	14,637.7	10,791.5	120.1	120.6	80.31	-25.4	4,104.3	453.9	216.9	237.00	1.915			
14,900.0	10,868.8	14,737.7	10,792.4	122.9	123.5	80.30	-25.4	4,204.3	453.9	211.2	242.65	1.871			
15,000.0	10,869.7	14,837.7	10,793.2	125.8	126.4	80.30	-25.4	4,304.3	453.9	205.6	248.30	1.828			
15,100.0	10,870.7	14,937.7	10,794.1	128.7	129.2	80.29	-25.4	4,404.3	453.9	199.9	253.96	1.787			

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 2T
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 2T	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 2T	Database:	OpenWellsCompass - EDM Prod
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design 153N-100W-31/32 - Lewis Federal 5300 11-31 3B - Lewis Federal 5300 11-31 3B - 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)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
15,200.0	10,871.6	15,037.7	10,795.0	131.5	132.1	80.28	-25.4	4,504.3	453.9	194.3	259.63	1.748	
15,300.0	10,872.6	15,137.7	10,795.9	134.4	135.0	80.27	-25.4	4,604.3	453.9	188.6	265.30	1.711	
15,400.0	10,873.5	15,237.7	10,796.7	137.3	137.9	80.26	-25.4	4,704.3	453.9	183.0	270.97	1.675	
15,500.0	10,874.5	15,337.7	10,797.6	140.1	140.8	80.25	-25.4	4,804.3	454.0	177.3	276.65	1.641	
15,600.0	10,875.4	15,437.7	10,798.5	143.0	143.7	80.24	-25.4	4,904.3	454.0	171.6	282.33	1.608	
15,700.0	10,876.3	15,537.7	10,799.3	145.9	146.5	80.24	-25.4	5,004.3	454.0	166.0	288.01	1.576	
15,800.0	10,877.3	15,637.7	10,800.2	148.8	149.4	80.23	-25.4	5,104.3	454.0	160.3	293.70	1.546	
15,900.0	10,878.2	15,737.7	10,801.1	151.7	152.3	80.22	-25.4	5,204.3	454.0	154.6	299.39	1.516	
16,000.0	10,879.2	15,837.7	10,802.0	154.5	155.2	80.21	-25.4	5,304.3	454.0	148.9	305.09	1.488 Level 3	
16,100.0	10,880.1	15,937.7	10,802.8	157.4	158.1	80.20	-25.4	5,404.3	454.0	143.2	310.78	1.461 Level 3	
16,200.0	10,881.1	16,037.7	10,803.7	160.3	161.0	80.19	-25.4	5,504.3	454.0	137.6	316.48	1.435 Level 3	
16,300.0	10,882.0	16,137.7	10,804.6	163.2	163.9	80.18	-25.4	5,604.3	454.0	131.9	322.18	1.409 Level 3	
16,400.0	10,882.9	16,237.7	10,805.5	166.1	166.8	80.17	-25.4	5,704.3	454.1	126.2	327.88	1.385 Level 3	
16,500.0	10,883.9	16,337.7	10,806.3	169.0	169.7	80.17	-25.4	5,804.3	454.1	120.5	333.58	1.361 Level 3	
16,600.0	10,884.8	16,437.7	10,807.2	171.9	172.6	80.16	-25.4	5,904.3	454.1	114.8	339.29	1.338 Level 3	
16,700.0	10,885.8	16,537.7	10,808.1	174.8	175.5	80.15	-25.4	6,004.3	454.1	109.1	345.00	1.316 Level 3	
16,800.0	10,886.7	16,637.7	10,808.9	177.7	178.4	80.14	-25.4	6,104.3	454.1	103.4	350.71	1.295 Level 3	
16,900.0	10,887.7	16,737.7	10,809.8	180.6	181.3	80.13	-25.4	6,204.3	454.1	97.7	356.42	1.274 Level 3	
17,000.0	10,888.6	16,837.7	10,810.7	183.5	184.2	80.12	-25.4	6,304.2	454.1	92.0	362.13	1.254 Level 3	
17,100.0	10,889.5	16,937.7	10,811.6	186.4	187.1	80.11	-25.4	6,404.2	454.1	86.3	367.84	1.235 Level 2	
17,200.0	10,890.5	17,037.7	10,812.4	189.3	190.0	80.11	-25.4	6,504.2	454.2	80.6	373.56	1.216 Level 2	
17,300.0	10,891.4	17,137.7	10,813.3	192.2	192.9	80.10	-25.4	6,604.2	454.2	74.9	379.28	1.197 Level 2	
17,400.0	10,892.4	17,237.7	10,814.2	195.1	195.8	80.09	-25.4	6,704.2	454.2	69.2	384.99	1.180 Level 2	
17,500.0	10,893.3	17,337.7	10,815.1	198.0	198.7	80.08	-25.4	6,804.2	454.2	63.5	390.71	1.162 Level 2	
17,600.0	10,894.2	17,437.7	10,815.9	200.9	201.6	80.07	-25.4	6,904.2	454.2	57.8	396.43	1.146 Level 2	
17,700.0	10,895.2	17,537.7	10,816.8	203.8	204.6	80.06	-25.4	7,004.2	454.2	52.1	402.15	1.129 Level 2	
17,800.0	10,896.1	17,637.7	10,817.7	206.7	207.5	80.05	-25.4	7,104.2	454.2	46.4	407.87	1.114 Level 2	
17,900.0	10,897.1	17,737.7	10,818.5	209.6	210.4	80.04	-25.4	7,204.2	454.2	40.6	413.60	1.098 Level 2	
18,000.0	10,898.0	17,837.7	10,819.4	212.5	213.3	80.04	-25.4	7,304.2	454.3	34.9	419.32	1.083 Level 2	
18,100.0	10,899.0	17,937.7	10,820.3	215.4	216.2	80.03	-25.4	7,404.2	454.3	29.2	425.04	1.069 Level 2	
18,200.0	10,899.9	18,037.7	10,821.2	218.3	219.1	80.02	-25.4	7,504.2	454.3	23.5	430.77	1.055 Level 2	
18,300.0	10,900.8	18,137.7	10,822.0	221.2	222.0	80.01	-25.4	7,604.2	454.3	17.8	436.49	1.041 Level 2	
18,400.0	10,901.8	18,237.7	10,822.9	224.1	224.9	80.00	-25.4	7,704.2	454.3	12.1	442.22	1.027 Level 2	
18,500.0	10,902.7	18,337.7	10,823.8	227.0	227.8	79.99	-25.4	7,804.2	454.3	6.4	447.95	1.014 Level 2	
18,600.0	10,903.7	18,437.7	10,824.7	229.9	230.8	79.98	-25.4	7,904.2	454.3	0.7	453.67	1.001 Level 2	
18,700.0	10,904.6	18,537.7	10,825.5	232.8	233.7	79.98	-25.4	8,004.2	454.3	-5.1	459.40	0.989 Level 1	
18,800.0	10,905.6	18,637.7	10,826.4	235.7	236.6	79.97	-25.4	8,104.2	454.3	-10.8	465.13	0.977 Level 1	
18,900.0	10,906.5	18,737.7	10,827.3	238.6	239.5	79.96	-25.4	8,204.2	454.4	-16.5	470.86	0.965 Level 1	
19,000.0	10,907.4	18,837.7	10,828.1	241.6	242.4	79.95	-25.4	8,304.2	454.4	-22.2	476.59	0.953 Level 1	
19,100.0	10,908.4	18,937.7	10,829.0	244.5	245.3	79.94	-25.4	8,404.2	454.4	-27.9	482.32	0.942 Level 1	
19,200.0	10,909.3	19,037.7	10,829.9	247.4	248.2	79.93	-25.4	8,504.2	454.4	-33.6	488.05	0.931 Level 1	
19,300.0	10,910.3	19,137.7	10,830.8	250.3	251.2	79.92	-25.4	8,604.2	454.4	-39.4	493.78	0.920 Level 1	
19,400.0	10,911.2	19,237.7	10,831.6	253.2	254.1	79.91	-25.4	8,704.2	454.4	-45.1	499.51	0.910 Level 1	
19,500.0	10,912.2	19,337.7	10,832.5	256.1	257.0	79.91	-25.4	8,804.2	454.4	-50.8	505.24	0.899 Level 1	
19,600.0	10,913.1	19,437.7	10,833.4	259.0	259.9	79.90	-25.4	8,904.1	454.4	-56.5	510.97	0.889 Level 1	
19,700.0	10,914.0	19,537.7	10,834.3	261.9	262.8	79.89	-25.4	9,004.1	454.5	-62.2	516.70	0.880 Level 1	
19,800.0	10,915.0	19,637.7	10,835.1	264.9	265.7	79.88	-25.4	9,104.1	454.5	-68.0	522.43	0.870 Level 1	
19,900.0	10,915.9	19,737.7	10,836.0	267.8	268.7	79.87	-25.4	9,204.1	454.5	-73.7	528.17	0.860 Level 1	
20,000.0	10,916.9	19,837.7	10,836.9	270.7	271.6	79.86	-25.4	9,304.1	454.5	-79.4	533.90	0.851 Level 1	
20,100.0	10,917.8	19,937.7	10,837.7	273.6	274.5	79.85	-25.4	9,404.1	454.5	-85.1	539.63	0.842 Level 1	
20,200.0	10,918.8	20,037.7	10,838.6	276.5	277.4	79.85	-25.4	9,504.1	454.5	-90.8	545.36	0.833 Level 1	
20,300.0	10,919.7	20,137.7	10,839.5	279.4	280.3	79.84	-25.4	9,604.1	454.5	-96.6	551.10	0.825 Level 1	
20,400.0	10,920.6	20,237.7	10,840.4	282.3	283.2	79.83	-25.4	9,704.1	454.5	-102.3	556.83	0.816 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 2T
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 2T	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 2T	Database:	OpenWellsCompass - EDM Prod
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design 153N-100W-31/32 - Lewis Federal 5300 11-31 3B - Lewis Federal 5300 11-31 3B - 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	
20,500.0	10,921.6	20,337.7	10,841.2	285.3	286.2	79.82	-25.4	9,804.1	454.6	-108.0	562.56	0.808	Level 1	
20,600.0	10,922.5	20,437.7	10,842.1	288.2	289.1	79.81	-25.4	9,904.1	454.6	-113.7	568.30	0.800	Level 1	
20,700.0	10,923.5	20,537.7	10,843.0	291.1	292.0	79.80	-25.4	10,004.1	454.6	-119.4	574.03	0.792	Level 1	
20,761.5	10,924.0	20,599.2	10,843.5	292.3	293.8	79.80	-25.4	10,065.6	454.6	-122.4	576.96	0.788	Level 1	
20,804.6	10,924.4	20,640.9	10,843.9	293.1	294.6	79.79	-25.4	10,107.3	454.6	-124.0	578.56	0.786	Level 1, ES, SF	

Oasis Petroleum

Anticollision Report

Company:	Oasis	Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 2T
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 2T	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 2T	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	-174.69	-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	2,109.6	2,109.6	4.6	4.6	-174.72	-65.9	-6.1	66.2	57.0	9.21	7.192			
2,200.0	2,200.0	2,199.6	2,199.6	4.8	4.8	-175.30	-66.4	-5.5	67.5	57.9	9.57	7.054			
2,300.0	2,300.0	2,299.6	2,299.6	5.0	4.9	-175.91	-67.1	-4.9	68.9	59.0	9.97	6.912			
2,400.0	2,400.0	2,399.6	2,399.6	5.3	5.1	-176.50	-67.7	-4.3	70.4	60.0	10.38	6.779			
2,500.0	2,500.0	2,499.6	2,499.6	5.5	5.3	-177.06	-68.3	-3.7	71.8	61.0	10.80	6.655			
2,600.0	2,600.0	2,599.6	2,599.5	5.7	5.5	-177.60	-68.9	-3.1	73.3	62.1	11.21	6.539			
2,700.0	2,700.0	2,699.6	2,699.5	5.9	5.7	-178.12	-69.5	-2.4	74.8	63.1	11.63	6.430			
2,800.0	2,800.0	2,799.5	2,799.5	6.2	5.9	-178.62	-70.1	-1.8	76.2	64.2	12.05	6.328			
2,900.0	2,900.0	2,899.5	2,899.5	6.4	6.1	-179.11	-70.8	-1.2	77.7	65.2	12.47	6.233			
3,000.0	3,000.0	2,999.5	2,999.5	6.6	6.3	-179.57	-71.4	-0.6	79.2	66.3	12.89	6.143			
3,100.0	3,100.0	3,099.5	3,099.5	6.8	6.5	-179.99	-72.0	0.0	80.7	67.4	13.32	6.058			
3,200.0	3,200.0	3,199.5	3,199.4	7.1	6.7	-179.56	-72.6	0.6	82.2	68.4	13.74	5.979			
3,300.0	3,300.0	3,299.5	3,299.4	7.3	6.9	-179.14	-73.2	1.3	83.7	69.5	14.17	5.904			
3,400.0	3,400.0	3,399.5	3,399.4	7.5	7.1	-178.74	-73.8	1.9	85.2	70.6	14.60	5.833			
3,500.0	3,499.9	3,499.4	3,499.4	7.7	7.3	-178.35	-74.5	2.5	86.7	71.6	15.03	5.766			
3,600.0	3,599.9	3,599.4	3,599.4	8.0	7.5	-177.98	-75.1	3.1	88.2	72.7	15.46	5.702			
3,700.0	3,699.9	3,699.4	3,699.4	8.2	7.7	-177.62	-75.7	3.7	89.7	73.8	15.90	5.642			
3,800.0	3,799.9	3,799.4	3,799.3	8.4	7.9	-177.27	-76.3	4.3	91.2	74.9	16.33	5.585			
3,900.0	3,899.9	3,899.4	3,899.3	8.6	8.1	-176.94	-76.9	5.0	92.7	76.0	16.77	5.531			
4,000.0	3,999.9	3,999.4	3,999.3	8.9	8.4	-176.61	-77.6	5.6	94.3	77.1	17.20	5.480			
4,100.0	4,099.9	4,099.4	4,099.3	9.1	8.6	-176.29	-78.2	6.2	95.8	78.1	17.64	5.431			
4,200.0	4,199.9	4,199.4	4,199.3	9.3	8.8	-175.99	-78.8	6.8	97.3	79.2	18.07	5.384			
4,300.0	4,299.9	4,299.3	4,299.3	9.5	9.0	-175.69	-79.4	7.4	98.8	80.3	18.51	5.339			
4,400.0	4,399.9	4,399.3	4,399.2	9.8	9.2	-175.40	-80.0	8.0	100.4	81.4	18.95	5.297			
4,500.0	4,499.9	4,499.3	4,499.2	10.0	9.4	-175.13	-80.6	8.7	101.9	82.5	19.39	5.256			
4,600.0	4,599.9	4,599.3	4,599.2	10.2	9.6	-174.86	-81.3	9.3	103.4	83.6	19.83	5.217			
4,700.0	4,699.9	4,699.3	4,699.2	10.4	9.9	-174.59	-81.9	9.9	105.0	84.7	20.27	5.180			
4,800.0	4,799.9	4,799.3	4,799.2	10.7	10.1	-174.34	-82.5	10.5	106.5	85.8	20.71	5.145			
4,900.0	4,899.9	4,899.3	4,899.2	10.9	10.3	-174.09	-83.1	11.1	108.1	86.9	21.15	5.111			
5,000.0	4,999.9	4,999.3	4,999.1	11.1	10.5	-173.85	-83.7	11.7	109.6	88.0	21.59	5.078			
5,100.0	5,099.9	5,099.2	5,099.1	11.3	10.7	-173.62	-84.3	12.4	111.2	89.1	22.03	5.047			

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 2T
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 2T	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 2T	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
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	5,199.2	5,199.1	11.6	10.9	173.39	-85.0	13.0	112.7	90.2	22.47	5.016			
5,300.0	5,299.9	5,299.2	5,299.1	11.8	11.2	173.17	-85.6	13.6	114.3	91.4	22.91	4.987			
5,400.0	5,399.9	5,399.2	5,399.1	12.0	11.4	172.95	-86.2	14.2	115.8	92.5	23.35	4.960			
5,500.0	5,499.9	5,499.2	5,499.1	12.2	11.6	172.74	-86.8	14.8	117.4	93.6	23.80	4.933			
5,600.0	5,599.9	5,599.2	5,599.0	12.5	11.8	172.54	-87.4	15.4	118.9	94.7	24.24	4.907			
5,700.0	5,699.9	5,699.2	5,699.0	12.7	12.0	172.34	-88.0	16.1	120.5	95.8	24.68	4.882			
5,800.0	5,799.9	5,799.2	5,799.0	12.9	12.2	172.14	-88.7	16.7	122.0	96.9	25.12	4.858			
5,900.0	5,899.9	5,899.1	5,899.0	13.1	12.5	171.96	-89.3	17.3	123.6	98.0	25.57	4.835			
6,000.0	5,999.9	5,999.1	5,999.0	13.4	12.7	171.77	-89.9	17.9	125.2	99.2	26.01	4.812			
6,100.0	6,099.8	6,099.1	6,099.0	13.6	12.9	171.59	-90.5	18.5	126.7	100.3	26.45	4.791			
6,200.0	6,199.8	6,200.0	6,199.8	13.8	13.1	171.52	-90.9	18.9	128.0	101.1	26.89	4.759			
6,300.0	6,299.8	6,300.0	6,299.8	14.0	13.3	171.57	-90.9	18.9	128.9	101.5	27.32	4.716			
6,400.0	6,399.8	6,400.0	6,399.8	14.3	13.5	171.63	-90.9	18.9	129.7	102.0	27.75	4.675			
6,500.0	6,499.8	6,500.0	6,499.8	14.5	13.7	171.69	-90.9	18.9	130.6	102.4	28.18	4.634			
6,600.0	6,599.8	6,600.0	6,599.8	14.7	13.9	171.74	-90.9	18.9	131.5	102.8	28.61	4.595			
6,700.0	6,699.8	6,700.0	6,699.8	14.9	14.1	171.79	-90.9	18.9	132.3	103.3	29.04	4.557			
6,800.0	6,799.8	6,800.0	6,799.8	15.1	14.3	171.85	-90.9	18.9	133.2	103.7	29.47	4.520			
6,900.0	6,899.8	6,900.0	6,899.8	15.4	14.5	171.90	-90.9	18.9	134.0	104.1	29.90	4.483			
7,000.0	6,999.8	7,000.0	6,999.8	15.6	14.8	171.95	-90.9	18.9	134.9	104.6	30.33	4.448			
7,100.0	7,099.8	7,100.0	7,099.8	15.8	15.0	172.00	-90.9	18.9	135.8	105.0	30.76	4.414			
7,200.0	7,199.8	7,200.0	7,199.8	16.0	15.2	172.06	-90.9	18.9	136.6	105.4	31.19	4.380			
7,300.0	7,299.8	7,300.0	7,299.8	16.3	15.4	172.11	-90.9	18.9	137.5	105.9	31.63	4.348			
7,400.0	7,399.8	7,400.0	7,399.8	16.5	15.6	172.16	-90.9	18.9	138.4	106.3	32.06	4.316			
7,500.0	7,499.8	7,499.9	7,499.8	16.7	15.8	172.20	-90.9	18.9	139.2	106.7	32.49	4.285			
7,600.0	7,599.8	7,599.9	7,599.8	16.9	16.0	172.25	-90.9	18.9	140.1	107.2	32.93	4.255			
7,700.0	7,699.8	7,699.9	7,699.8	17.2	16.2	172.30	-90.9	18.9	141.0	107.6	33.36	4.225			
7,800.0	7,799.8	7,799.9	7,799.8	17.4	16.4	172.35	-90.9	18.9	141.8	108.0	33.80	4.196			
7,829.7	7,829.4	7,829.6	7,829.4	17.5	16.5	172.36	-90.9	18.9	142.1	108.2	33.93	4.188			
7,839.7	7,839.4	7,839.6	7,839.4	17.5	16.5	172.36	-90.9	18.9	142.1	108.2	33.94	4.187			
7,900.0	7,899.8	7,899.9	7,899.8	17.6	16.6	172.36	-90.9	18.9	142.1	107.9	34.19	4.157			
8,000.0	7,999.8	7,999.9	7,999.8	17.8	16.8	172.36	-90.9	18.9	142.1	107.5	34.62	4.105			
8,100.0	8,099.8	8,099.9	8,099.8	18.1	17.0	172.36	-90.9	18.9	142.1	107.1	35.06	4.054			
8,200.0	8,199.8	8,199.9	8,199.8	18.3	17.3	172.36	-90.9	18.9	142.1	106.6	35.49	4.004			
8,300.0	8,299.8	8,299.9	8,299.8	18.5	17.5	172.36	-90.9	18.9	142.1	106.2	35.93	3.956			
8,400.0	8,399.8	8,399.9	8,399.8	18.7	17.7	172.36	-90.9	18.9	142.1	105.8	36.37	3.908			
8,500.0	8,499.8	8,499.9	8,499.8	19.0	17.9	172.36	-90.9	18.9	142.1	105.3	36.80	3.862			
8,600.0	8,599.8	8,599.9	8,599.8	19.2	18.1	172.36	-90.9	18.9	142.1	104.9	37.24	3.817			
8,700.0	8,699.8	8,699.9	8,699.8	19.4	18.3	172.36	-90.9	18.9	142.1	104.4	37.68	3.772			
8,800.0	8,799.8	8,799.9	8,799.8	19.6	18.5	172.36	-90.9	18.9	142.1	104.0	38.11	3.729			
8,900.0	8,899.8	8,899.9	8,899.8	19.8	18.7	172.36	-90.9	18.9	142.1	103.6	38.55	3.687			
9,000.0	8,999.8	8,999.9	8,999.8	20.1	19.0	172.36	-90.9	18.9	142.1	103.1	38.99	3.645			
9,100.0	9,099.8	9,099.9	9,099.8	20.3	19.2	172.36	-90.9	18.9	142.1	102.7	39.43	3.605			
9,200.0	9,199.8	9,199.9	9,199.8	20.5	19.4	172.36	-90.9	18.9	142.1	102.3	39.87	3.565			
9,300.0	9,299.8	9,299.9	9,299.8	20.7	19.6	172.36	-90.9	18.9	142.1	101.8	40.31	3.526			
9,400.0	9,399.8	9,399.9	9,399.8	21.0	19.8	172.36	-90.9	18.9	142.1	101.4	40.74	3.488			
9,500.0	9,499.8	9,499.9	9,499.8	21.2	20.0	172.36	-90.9	18.9	142.1	100.9	41.18	3.451			
9,600.0	9,599.8	9,599.9	9,599.8	21.4	20.2	172.36	-90.9	18.9	142.1	100.5	41.62	3.414			
9,700.0	9,699.8	9,699.9	9,699.8	21.6	20.5	172.36	-90.9	18.9	142.1	100.1	42.06	3.379			
9,800.0	9,799.8	9,799.9	9,799.8	21.9	20.7	172.36	-90.9	18.9	142.1	99.6	42.50	3.344			
9,900.0	9,899.8	9,899.9	9,899.8	22.1	20.9	172.36	-90.9	18.9	142.1	99.2	42.94	3.309			
10,000.0	9,999.8	9,999.9	9,999.8	22.3	21.1	172.36	-90.9	18.9	142.1	98.7	43.38	3.276			
10,100.0	10,099.8	10,099.9	10,099.8	22.5	21.3	172.36	-90.9	18.9	142.1	98.3	43.82	3.243			
10,200.0	10,199.8	10,199.9	10,199.8	22.8	21.5	172.36	-90.9	18.9	142.1	97.9	44.27	3.211			

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 2T
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 2T	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 2T	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			
10,300.0	10,299.8	10,299.9	10,299.8	23.0	21.8	172.36	-90.9	18.9	142.1	97.4	44.71	3.179				
10,355.7	10,355.5	10,355.7	10,355.5	23.1	21.9	172.36	-90.9	18.9	142.1	97.2	44.95	3.162				
10,375.0	10,374.8	10,374.9	10,374.8	23.2	21.9	106.89	-90.9	18.9	142.2	97.2	45.07	3.156				
10,400.0	10,399.7	10,399.9	10,399.7	23.2	22.0	107.45	-90.9	18.9	142.7	97.6	45.17	3.160				
10,425.0	10,424.5	10,424.7	10,424.6	23.3	22.0	108.06	-90.7	20.0	143.6	98.4	45.27	3.173				
10,450.0	10,449.2	10,449.7	10,449.4	23.3	22.1	108.60	-90.5	22.3	145.0	99.6	45.36	3.196				
10,475.0	10,473.5	10,474.7	10,474.2	23.4	22.1	109.05	-90.1	25.9	146.7	101.3	45.44	3.229				
10,500.0	10,497.6	10,499.8	10,498.8	23.4	22.2	109.41	-89.5	30.8	148.9	103.4	45.51	3.272				
10,525.0	10,521.3	10,525.0	10,523.2	23.5	22.3	109.67	-88.9	37.0	151.5	105.9	45.59	3.323				
10,550.0	10,544.5	10,550.2	10,547.2	23.6	22.3	109.85	-88.0	44.5	154.4	108.8	45.65	3.382				
10,575.0	10,567.2	10,575.4	10,570.8	23.6	22.4	109.94	-87.1	53.2	157.8	112.0	45.72	3.450				
10,600.0	10,589.3	10,600.7	10,594.0	23.7	22.5	109.94	-86.0	63.2	161.5	115.7	45.79	3.526				
10,625.0	10,610.7	10,625.9	10,616.6	23.8	22.5	109.85	-84.7	74.4	165.5	119.7	45.87	3.609				
10,650.0	10,631.5	10,651.2	10,638.6	23.8	22.6	109.67	-83.4	86.8	169.9	124.0	45.96	3.698				
10,675.0	10,651.5	10,676.5	10,660.0	23.9	22.7	109.42	-81.9	100.3	174.7	128.6	46.06	3.793				
10,700.0	10,670.7	10,701.8	10,680.5	24.0	22.8	109.09	-80.3	114.9	179.7	133.6	46.18	3.892				
10,725.0	10,689.1	10,727.1	10,700.3	24.1	22.8	108.70	-78.5	130.6	185.1	138.8	46.32	3.996				
10,750.0	10,706.5	10,752.4	10,719.2	24.2	22.9	108.24	-76.7	147.3	190.8	144.3	46.48	4.104				
10,775.0	10,722.9	10,777.7	10,737.2	24.3	23.1	107.71	-74.8	165.0	196.7	150.0	46.68	4.213				
10,800.0	10,738.4	10,803.0	10,754.2	24.5	23.2	107.14	-72.7	183.6	202.9	156.0	46.91	4.325				
10,825.0	10,752.8	10,828.3	10,770.2	24.6	23.3	106.51	-70.6	203.1	209.3	162.1	47.17	4.437				
10,850.0	10,766.1	10,853.6	10,785.1	24.8	23.5	105.84	-68.3	223.4	216.0	168.5	47.47	4.549				
10,875.0	10,778.3	10,878.9	10,799.0	24.9	23.6	105.14	-66.0	244.4	222.8	175.0	47.81	4.661				
10,900.0	10,789.4	10,904.2	10,811.7	25.1	23.8	104.39	-63.6	266.1	229.9	181.7	48.18	4.771				
10,925.0	10,799.2	10,929.5	10,823.2	25.3	24.0	103.62	-61.1	288.5	237.1	188.5	48.59	4.879				
10,950.0	10,807.8	10,954.8	10,833.5	25.5	24.2	102.82	-58.6	311.5	244.5	195.4	49.04	4.985				
10,975.0	10,815.2	10,980.2	10,842.6	25.8	24.5	101.99	-56.0	335.0	252.0	202.5	49.52	5.088				
11,000.0	10,821.3	11,005.5	10,850.4	26.0	24.7	101.15	-53.4	359.0	259.6	209.6	50.04	5.188				
11,025.0	10,826.2	11,031.0	10,857.0	26.2	25.0	100.30	-50.7	383.4	267.3	216.7	50.59	5.284				
11,050.0	10,829.8	11,056.4	10,862.2	26.5	25.3	99.43	-47.9	408.2	275.1	224.0	51.17	5.377				
11,075.0	10,832.0	11,082.0	10,866.2	26.8	25.6	98.55	-45.2	433.3	283.0	231.2	51.77	5.466				
11,101.3	10,833.0	11,108.9	10,868.8	27.1	26.0	97.63	-42.2	459.9	291.3	238.8	52.43	5.555				
11,116.3	10,833.1	11,124.3	10,869.7	27.3	26.2	97.64	-40.6	475.2	296.0	243.2	52.79	5.606				
11,200.0	10,833.9	11,200.0	10,870.6	28.4	27.2	97.01	-32.8	550.5	320.7	265.7	55.00	5.831				
11,300.0	10,834.9	11,279.6	10,871.4	29.9	28.5	96.41	-27.7	629.9	349.2	291.3	57.85	6.035				
11,400.0	10,835.8	11,362.8	10,872.2	31.6	30.0	95.89	-25.9	713.1	376.8	315.7	61.03	6.173				
11,500.0	10,836.8	11,456.8	10,873.1	33.5	31.8	95.44	-25.9	807.1	401.5	336.8	64.67	6.208				
11,600.0	10,837.7	11,554.8	10,874.0	35.5	33.8	95.11	-25.9	905.1	421.1	352.5	68.60	6.139				
11,700.0	10,838.6	11,653.7	10,874.9	37.6	35.9	94.88	-25.9	1,004.0	435.6	362.9	72.70	5.992				
11,800.0	10,839.6	11,753.3	10,875.9	39.7	38.2	94.73	-25.9	1,103.5	445.0	368.1	76.91	5.786				
11,900.0	10,840.5	11,853.2	10,876.9	42.0	40.5	94.65	-25.9	1,203.4	449.1	368.0	81.17	5.533				
11,929.3	10,840.8	11,882.5	10,877.1	42.6	41.2	94.64	-25.9	1,232.8	449.3	366.9	82.41	5.453				
12,000.0	10,841.5	11,953.2	10,877.8	44.3	43.0	94.64	-25.9	1,303.4	449.3	363.6	85.79	5.238				
12,100.0	10,842.4	12,053.2	10,878.8	46.6	45.5	94.64	-25.9	1,403.4	449.3	358.7	90.67	4.956				
12,200.0	10,843.4	12,153.2	10,879.7	49.0	48.0	94.65	-25.9	1,503.4	449.3	353.7	95.66	4.697				
12,300.0	10,844.3	12,253.2	10,880.7	51.5	50.6	94.65	-25.9	1,603.4	449.3	348.6	100.74	4.460				
12,400.0	10,845.2	12,353.2	10,881.7	54.0	53.2	94.65	-25.9	1,703.4	449.3	343.4	105.90	4.243				
12,500.0	10,846.2	12,453.2	10,882.6	56.5	55.8	94.65	-25.9	1,803.4	449.3	338.2	111.13	4.044				
12,600.0	10,847.1	12,553.2	10,883.6	59.1	58.5	94.65	-25.9	1,903.4	449.4	332.9	116.41	3.860				
12,700.0	10,848.1	12,653.2	10,884.5	61.7	61.2	94.66	-25.9	2,003.4	449.4	327.6	121.75	3.691				
12,800.0	10,849.0	12,753.2	10,885.5	64.4	63.9	94.66	-25.9	2,103.4	449.4	322.2	127.13	3.535				
12,900.0	10,850.0	12,853.2	10,886.5	67.1	66.6	94.66	-25.9	2,203.4	449.4	316.8	132.55	3.390				
13,000.0	10,850.9	12,953.2	10,887.4	69.7	69.4	94.66	-25.9	2,303.4	449.4	311.4	138.00	3.256				

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 2T
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 2T	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 2T	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
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			
13,100.0	10,851.8	13,053.2	10,888.4	72.5	72.2	94.67	-25.9	2,403.4	449.4	305.9	143.49	3.132			
13,200.0	10,852.8	13,153.2	10,889.3	75.2	74.9	94.67	-25.9	2,503.4	449.4	300.4	149.00	3.016			
13,300.0	10,853.7	13,253.2	10,890.3	77.9	77.7	94.67	-25.9	2,603.4	449.4	294.8	154.53	2.908			
13,400.0	10,854.7	13,353.2	10,891.3	80.7	80.5	94.67	-25.9	2,703.4	449.4	289.3	160.09	2.807			
13,500.0	10,855.6	13,453.2	10,892.2	83.4	83.3	94.67	-25.9	2,803.4	449.4	283.7	165.67	2.712			
13,600.0	10,856.5	13,553.2	10,893.2	86.2	86.1	94.68	-25.9	2,903.4	449.4	278.1	171.26	2.624			
13,700.0	10,857.5	13,653.2	10,894.1	89.0	89.0	94.68	-25.9	3,003.4	449.4	272.5	176.87	2.541			
13,800.0	10,858.4	13,753.2	10,895.1	91.8	91.8	94.68	-25.9	3,103.4	449.4	266.9	182.50	2.462			
13,900.0	10,859.4	13,853.2	10,896.1	94.6	94.6	94.68	-25.9	3,203.4	449.4	261.2	188.14	2.389			
14,000.0	10,860.3	13,953.2	10,897.0	97.4	97.5	94.69	-25.9	3,303.3	449.4	255.6	193.79	2.319			
14,100.0	10,861.3	14,053.2	10,898.0	100.2	100.3	94.69	-25.9	3,403.3	449.4	249.9	199.45	2.253			
14,200.0	10,862.2	14,153.2	10,899.9	103.0	103.2	94.69	-25.9	3,503.3	449.4	244.3	205.12	2.191			
14,300.0	10,863.1	14,253.2	10,909.9	105.9	106.0	94.69	-25.9	3,603.3	449.4	238.6	210.80	2.132			
14,400.0	10,864.1	14,353.2	10,900.9	108.7	108.9	94.69	-25.9	3,703.3	449.4	232.9	216.49	2.076			
14,500.0	10,865.0	14,453.2	10,901.8	111.5	111.7	94.70	-25.9	3,803.3	449.4	227.2	222.18	2.023			
14,600.0	10,866.0	14,553.2	10,902.8	114.4	114.6	94.70	-25.9	3,903.3	449.4	221.5	227.89	1.972			
14,700.0	10,866.9	14,653.2	10,903.7	117.2	117.5	94.70	-25.9	4,003.3	449.4	215.8	233.60	1.924			
14,800.0	10,867.9	14,753.2	10,904.7	120.1	120.3	94.70	-25.9	4,103.3	449.4	210.1	239.32	1.878			
14,900.0	10,868.8	14,853.2	10,905.7	122.9	123.2	94.71	-25.9	4,203.3	449.4	204.3	245.04	1.834			
15,000.0	10,869.7	14,953.2	10,906.6	125.8	126.1	94.71	-25.9	4,303.3	449.4	198.6	250.77	1.792			
15,100.0	10,870.7	15,053.2	10,907.6	128.7	129.0	94.71	-25.9	4,403.3	449.4	192.9	256.50	1.752			
15,200.0	10,871.6	15,153.2	10,908.5	131.5	131.9	94.71	-25.9	4,503.3	449.4	187.1	262.24	1.714			
15,300.0	10,872.6	15,253.2	10,909.5	134.4	134.7	94.71	-25.9	4,603.3	449.4	181.4	267.98	1.677			
15,400.0	10,873.5	15,353.2	10,910.5	137.3	137.6	94.72	-25.9	4,703.3	449.4	175.7	273.73	1.642			
15,500.0	10,874.5	15,453.2	10,911.4	140.1	140.5	94.72	-25.9	4,803.3	449.4	169.9	279.48	1.608			
15,600.0	10,875.4	15,553.2	10,912.4	143.0	143.4	94.72	-25.9	4,903.3	449.4	164.2	285.23	1.576			
15,700.0	10,876.3	15,653.2	10,913.3	145.9	146.3	94.72	-25.9	5,003.3	449.4	158.4	290.99	1.544			
15,800.0	10,877.3	15,753.2	10,914.3	148.8	149.2	94.73	-25.9	5,103.3	449.4	152.6	296.75	1.514			
15,900.0	10,878.2	15,853.2	10,915.3	151.7	152.1	94.73	-25.9	5,203.3	449.4	146.9	302.51	1.486 Level 3			
16,000.0	10,879.2	15,953.2	10,916.2	154.5	155.0	94.73	-25.9	5,303.3	449.4	141.1	308.28	1.458 Level 3			
16,100.0	10,880.1	16,053.2	10,917.2	157.4	157.9	94.73	-25.9	5,403.3	449.4	135.4	314.05	1.431 Level 3			
16,200.0	10,881.1	16,153.2	10,918.1	160.3	160.8	94.73	-25.9	5,503.2	449.4	129.6	319.82	1.405 Level 3			
16,300.0	10,882.0	16,253.2	10,919.1	163.2	163.7	94.74	-25.9	5,603.2	449.4	123.8	325.60	1.380 Level 3			
16,400.0	10,882.9	16,353.2	10,920.1	166.1	166.6	94.74	-25.9	5,703.2	449.4	118.0	331.37	1.356 Level 3			
16,500.0	10,883.9	16,453.2	10,921.0	169.0	169.5	94.74	-25.9	5,803.2	449.4	112.3	337.15	1.333 Level 3			
16,600.0	10,884.8	16,553.2	10,922.0	171.9	172.4	94.74	-25.9	5,903.2	449.4	106.5	342.93	1.310 Level 3			
16,700.0	10,885.8	16,653.2	10,922.9	174.8	175.3	94.74	-25.9	6,003.2	449.4	100.7	348.71	1.289 Level 3			
16,800.0	10,886.7	16,753.2	10,923.9	177.7	178.2	94.75	-25.9	6,103.2	449.4	94.9	354.50	1.268 Level 3			
16,900.0	10,887.7	16,853.2	10,924.9	180.6	181.1	94.75	-25.9	6,203.2	449.4	89.1	360.29	1.247 Level 2			
17,000.0	10,888.6	16,953.2	10,925.8	183.5	184.0	94.75	-25.9	6,303.2	449.4	83.3	366.07	1.228 Level 2			
17,100.0	10,889.5	17,053.2	10,926.8	186.4	186.9	94.75	-25.9	6,403.2	449.4	77.6	371.86	1.209 Level 2			
17,200.0	10,890.5	17,153.2	10,927.7	189.3	189.8	94.76	-25.9	6,503.2	449.4	71.8	377.65	1.190 Level 2			
17,300.0	10,891.4	17,253.2	10,928.7	192.2	192.7	94.76	-25.9	6,603.2	449.4	66.0	383.45	1.172 Level 2			
17,400.0	10,892.4	17,353.2	10,929.7	195.1	195.6	94.76	-25.9	6,703.2	449.4	60.2	389.24	1.155 Level 2			
17,500.0	10,893.3	17,453.2	10,930.6	198.0	198.5	94.76	-25.9	6,803.2	449.4	54.4	395.04	1.138 Level 2			
17,600.0	10,894.2	17,553.2	10,931.6	200.9	201.4	94.76	-25.9	6,903.2	449.4	48.6	400.83	1.121 Level 2			
17,700.0	10,895.2	17,653.2	10,932.5	203.8	204.3	94.77	-25.9	7,003.2	449.4	42.8	406.63	1.105 Level 2			
17,800.0	10,896.1	17,753.2	10,933.5	206.7	207.3	94.77	-25.9	7,103.2	449.4	37.0	412.43	1.090 Level 2			
17,900.0	10,897.1	17,853.2	10,934.5	209.6	210.2	94.77	-25.9	7,203.2	449.4	31.2	418.23	1.075 Level 2			
18,000.0	10,898.0	17,953.2	10,935.4	212.5	213.1	94.77	-25.9	7,303.2	449.4	25.4	424.03	1.060 Level 2			
18,100.0	10,899.0	18,053.2	10,936.4	215.4	216.0	94.78	-25.9	7,403.2	449.4	19.6	429.83	1.046 Level 2			
18,200.0	10,899.9	18,153.2	10,937.3	218.3	218.9	94.78	-25.9	7,503.2	449.4	13.8	435.63	1.032 Level 2			
18,300.0	10,900.8	18,253.2	10,938.3	221.2	221.8	94.78	-25.9	7,603.2	449.4	8.0	441.44	1.018 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 2T
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 2T	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 2T	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
18,400.0	10,901.8	18,353.2	10,939.3	224.1	224.7	94.78	-25.9	7,703.1	449.4	2.2	447.24	1.005	Level 2
18,500.0	10,902.7	18,453.2	10,940.2	227.0	227.6	94.78	-25.9	7,803.1	449.4	-3.6	453.05	0.992	Level 1
18,600.0	10,903.7	18,553.2	10,941.2	229.9	230.6	94.79	-25.9	7,903.1	449.4	-9.4	458.86	0.979	Level 1
18,700.0	10,904.6	18,653.2	10,942.1	232.8	233.5	94.79	-25.9	8,003.1	449.4	-15.2	464.66	0.967	Level 1
18,800.0	10,905.6	18,753.2	10,943.1	235.7	236.4	94.79	-25.9	8,103.1	449.4	-21.0	470.47	0.955	Level 1
18,900.0	10,906.5	18,853.2	10,944.1	238.6	239.3	94.79	-25.9	8,203.1	449.4	-26.8	476.28	0.944	Level 1
19,000.0	10,907.4	18,953.2	10,945.0	241.6	242.2	94.80	-25.9	8,303.1	449.4	-32.6	482.09	0.932	Level 1
19,100.0	10,908.4	19,053.2	10,946.0	244.5	245.1	94.80	-25.9	8,403.1	449.4	-38.5	487.90	0.921	Level 1
19,200.0	10,909.3	19,153.2	10,946.9	247.4	248.0	94.80	-25.9	8,503.1	449.4	-44.3	493.71	0.910	Level 1
19,300.0	10,910.3	19,253.2	10,947.9	250.3	251.0	94.80	-25.9	8,603.1	449.4	-50.1	499.52	0.900	Level 1
19,400.0	10,911.2	19,353.2	10,948.9	253.2	253.9	94.80	-25.9	8,703.1	449.5	-55.9	505.33	0.889	Level 1
19,500.0	10,912.2	19,453.2	10,949.8	256.1	256.8	94.81	-25.9	8,803.1	449.5	-61.7	511.15	0.879	Level 1
19,600.0	10,913.1	19,553.2	10,950.8	259.0	259.7	94.81	-25.9	8,903.1	449.5	-67.5	516.96	0.869	Level 1
19,700.0	10,914.0	19,653.2	10,951.7	261.9	262.6	94.81	-25.9	9,003.1	449.5	-73.3	522.77	0.860	Level 1
19,800.0	10,915.0	19,753.2	10,952.7	264.9	265.5	94.81	-25.9	9,103.1	449.5	-79.1	528.59	0.850	Level 1
19,900.0	10,915.9	19,853.2	10,953.7	267.8	268.5	94.82	-25.9	9,203.1	449.5	-84.9	534.40	0.841	Level 1
20,000.0	10,916.9	19,953.2	10,954.6	270.7	271.4	94.82	-25.9	9,303.1	449.5	-90.8	540.22	0.832	Level 1
20,100.0	10,917.8	20,053.2	10,955.6	273.6	274.3	94.82	-25.9	9,403.1	449.5	-96.6	546.03	0.823	Level 1
20,200.0	10,918.8	20,153.2	10,956.5	276.5	277.2	94.82	-25.9	9,503.1	449.5	-102.4	551.85	0.814	Level 1
20,300.0	10,919.7	20,253.2	10,957.5	279.4	280.1	94.82	-25.9	9,603.1	449.5	-108.2	557.67	0.806	Level 1
20,400.0	10,920.6	20,353.2	10,958.5	282.3	283.1	94.83	-25.9	9,703.1	449.5	-114.0	563.48	0.798	Level 1
20,500.0	10,921.6	20,453.2	10,959.4	285.3	286.0	94.83	-25.9	9,803.0	449.5	-119.8	569.30	0.790	Level 1
20,600.0	10,922.5	20,553.2	10,960.4	288.2	288.9	94.83	-25.9	9,903.0	449.5	-125.6	575.12	0.782	Level 1
20,700.0	10,923.5	20,653.2	10,961.3	291.1	291.8	94.83	-25.9	10,003.0	449.5	-131.5	580.94	0.774	Level 1
20,763.5	10,924.1	20,716.6	10,961.9	292.3	293.7	94.84	-25.9	10,066.5	449.5	-134.5	584.00	0.770	Level 1
20,804.6	10,924.4	20,757.0	10,962.3	293.1	294.9	94.84	-25.9	10,106.9	449.5	-136.5	585.97	0.767	Level 1, ES, SF

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 2T
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 2T	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 2T	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	-174.86	-98.3	-8.8	98.7				
100.0	100.0	100.0	100.0	0.1	0.1	-174.86	-98.3	-8.8	98.7	98.5	0.18	562.881	
200.0	200.0	200.0	200.0	0.3	0.3	-174.86	-98.3	-8.8	98.7	98.1	0.62	157.931	
300.0	300.0	300.0	300.0	0.5	0.5	-174.86	-98.3	-8.8	98.7	97.6	1.07	91.851	
400.0	400.0	400.0	400.0	0.8	0.8	-174.86	-98.3	-8.8	98.7	97.2	1.52	64.756	
500.0	500.0	500.0	500.0	1.0	1.0	-174.86	-98.3	-8.8	98.7	96.7	1.97	50.005	
600.0	600.0	600.0	600.0	1.2	1.2	-174.86	-98.3	-8.8	98.7	96.3	2.42	40.728	
700.0	700.0	700.0	700.0	1.4	1.4	-174.86	-98.3	-8.8	98.7	95.8	2.87	34.354	
800.0	800.0	800.0	800.0	1.7	1.7	-174.86	-98.3	-8.8	98.7	95.4	3.32	29.706	
900.0	900.0	900.0	900.0	1.9	1.9	-174.86	-98.3	-8.8	98.7	94.9	3.77	26.165	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-174.86	-98.3	-8.8	98.7	94.5	4.22	23.378	
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	-174.86	-98.3	-8.8	98.7	94.0	4.67	21.128	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-174.86	-98.3	-8.8	98.7	93.6	5.12	19.273	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-174.86	-98.3	-8.8	98.7	93.1	5.57	17.718	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-174.86	-98.3	-8.8	98.7	92.7	6.02	16.395	
1,500.0	1,500.0	1,500.0	1,500.0	3.2	3.2	-174.86	-98.3	-8.8	98.7	92.2	6.47	15.255	
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	-174.86	-98.3	-8.8	98.7	91.8	6.92	14.264	
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	-174.86	-98.3	-8.8	98.7	91.3	7.37	13.394	
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	-174.86	-98.3	-8.8	98.7	90.9	7.82	12.624	
1,900.0	1,900.0	1,900.0	1,900.0	4.1	4.1	-174.86	-98.3	-8.8	98.7	90.4	8.27	11.937	
2,000.0	2,000.0	2,000.0	2,000.0	4.4	4.4	-174.86	-98.3	-8.8	98.7	90.0	8.72	11.322	
2,100.0	2,100.0	2,100.0	2,100.0	4.6	4.6	-174.86	-98.3	-8.8	98.7	89.5	9.17	10.766 CC, ES	
2,110.0	2,110.0	2,109.2	2,109.2	4.6	4.6	-174.87	-98.3	-8.8	98.8	89.6	9.21	10.728	
2,200.0	2,200.0	2,199.1	2,199.1	4.8	4.8	-174.95	-99.1	-8.8	100.3	90.8	9.56	10.495	
2,300.0	2,300.0	2,299.1	2,299.1	5.0	4.9	-175.03	-100.0	-8.8	102.1	92.1	9.96	10.251	
2,400.0	2,400.0	2,399.1	2,399.1	5.3	5.1	-175.12	-100.9	-8.8	103.8	93.5	10.36	10.022	
2,500.0	2,500.0	2,499.1	2,499.1	5.5	5.3	-175.20	-101.7	-8.8	105.5	94.8	10.76	9.807	
2,600.0	2,600.0	2,599.1	2,599.0	5.7	5.5	-175.28	-102.6	-8.8	107.3	96.1	11.17	9.604	
2,700.0	2,700.0	2,699.1	2,699.0	5.9	5.7	-175.35	-103.5	-8.8	109.0	97.4	11.58	9.414	
2,800.0	2,800.0	2,799.0	2,799.0	6.2	5.8	-175.42	-104.3	-8.8	110.8	98.8	12.00	9.234	
2,900.0	2,900.0	2,899.0	2,899.0	6.4	6.0	-175.50	-105.2	-8.8	112.5	100.1	12.41	9.064	
3,000.0	3,000.0	2,999.0	2,999.0	6.6	6.2	-175.56	-106.1	-8.8	114.2	101.4	12.83	8.904	
3,100.0	3,100.0	3,099.0	3,099.0	6.8	6.4	-175.63	-107.0	-8.8	116.0	102.7	13.25	8.753	
3,200.0	3,200.0	3,199.0	3,198.9	7.1	6.6	-175.70	-107.8	-8.8	117.7	104.1	13.67	8.610	
3,300.0	3,300.0	3,299.0	3,298.9	7.3	6.8	-175.76	-108.7	-8.8	119.5	105.4	14.10	8.474	
3,400.0	3,400.0	3,398.9	3,398.9	7.5	7.0	-175.82	-109.6	-8.8	121.2	106.7	14.52	8.346	
3,500.0	3,499.9	3,498.9	3,498.9	7.7	7.2	-175.88	-110.5	-8.8	122.9	108.0	14.95	8.224	
3,600.0	3,599.9	3,598.9	3,598.9	8.0	7.4	-175.94	-111.3	-8.8	124.7	109.3	15.38	8.108	
3,700.0	3,699.9	3,698.9	3,698.8	8.2	7.6	-175.99	-112.2	-8.8	126.4	110.6	15.81	7.998	
3,800.0	3,799.9	3,798.9	3,798.8	8.4	7.8	-176.05	-113.1	-8.8	128.2	111.9	16.24	7.893	
3,900.0	3,899.9	3,898.9	3,898.8	8.6	8.0	-176.10	-113.9	-8.8	129.9	113.2	16.67	7.793	
4,000.0	3,999.9	3,998.9	3,998.8	8.9	8.3	-176.15	-114.8	-8.8	131.7	114.5	17.10	7.698	
4,100.0	4,099.9	4,098.8	4,098.8	9.1	8.5	-176.20	-115.7	-8.8	133.4	115.9	17.54	7.607	
4,200.0	4,199.9	4,198.8	4,198.7	9.3	8.7	-176.25	-116.6	-8.8	135.1	117.2	17.97	7.520	
4,300.0	4,299.9	4,298.8	4,298.7	9.5	8.9	-176.30	-117.4	-8.8	136.9	118.5	18.41	7.437	
4,400.0	4,399.9	4,398.8	4,398.7	9.8	9.1	-176.35	-118.3	-8.8	138.6	119.8	18.84	7.357	
4,500.0	4,499.9	4,498.8	4,498.7	10.0	9.3	-176.39	-119.2	-8.8	140.4	121.1	19.28	7.281	
4,600.0	4,599.9	4,598.8	4,598.7	10.2	9.5	-176.44	-120.0	-8.8	142.1	122.4	19.71	7.208	
4,700.0	4,699.9	4,698.7	4,698.6	10.4	9.7	-176.48	-120.9	-8.8	143.8	123.7	20.15	7.138	
4,800.0	4,799.9	4,798.7	4,798.6	10.7	10.0	-176.52	-121.8	-8.8	145.6	125.0	20.59	7.071	
4,900.0	4,899.9	4,898.7	4,898.6	10.9	10.2	-176.56	-122.7	-8.8	147.3	126.3	21.03	7.006	
5,000.0	4,999.9	4,998.7	4,998.6	11.1	10.4	-176.60	-123.5	-8.8	149.1	127.6	21.47	6.944	
5,100.0	5,099.9	5,098.7	5,098.6	11.3	10.6	-176.64	-124.4	-8.8	150.8	128.9	21.91	6.884	

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 2T
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 2T	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 2T	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)	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	5,198.7	5,198.6	11.6	10.8	-176.68	-125.3	-8.8	152.6	130.2	22.35	6.827	
5,300.0	5,299.9	5,298.7	5,298.5	11.8	11.0	-176.72	-126.2	-8.8	154.3	131.5	22.79	6.771	
5,400.0	5,399.9	5,398.6	5,398.5	12.0	11.2	-176.75	-127.0	-8.8	156.0	132.8	23.23	6.718	
5,500.0	5,499.9	5,498.6	5,498.5	12.2	11.5	-176.79	-127.9	-8.8	157.8	134.1	23.67	6.666	
5,600.0	5,599.9	5,598.6	5,598.5	12.5	11.7	-176.82	-128.8	-8.8	159.5	135.4	24.11	6.616	
5,700.0	5,699.9	5,698.6	5,698.5	12.7	11.9	-176.86	-129.6	-8.8	161.3	136.7	24.55	6.568	
5,800.0	5,799.9	5,798.6	5,798.4	12.9	12.1	-176.89	-130.5	-8.8	163.0	138.0	24.99	6.522	
5,900.0	5,899.9	5,898.6	5,898.4	13.1	12.3	-176.93	-131.4	-8.8	164.8	139.3	25.44	6.477	
6,000.0	5,999.9	5,998.5	5,998.4	13.4	12.6	-176.96	-132.3	-8.8	166.5	140.6	25.88	6.434	
6,100.0	6,099.8	6,098.5	6,098.4	13.6	12.8	-176.99	-133.1	-8.8	168.2	141.9	26.32	6.392	
6,200.0	6,199.8	6,198.5	6,198.4	13.8	13.0	-177.02	-134.0	-8.8	170.0	143.2	26.76	6.351	
6,300.0	6,299.8	6,298.5	6,298.3	14.0	13.2	-177.05	-134.9	-8.8	171.7	144.5	27.21	6.312	
6,400.0	6,399.8	6,398.5	6,398.3	14.3	13.4	-177.08	-135.8	-8.8	173.5	145.8	27.65	6.273	
6,500.0	6,499.8	6,498.5	6,498.3	14.5	13.7	-177.11	-136.6	-8.8	175.2	147.1	28.09	6.236	
6,600.0	6,599.8	6,598.5	6,598.3	14.7	13.9	-177.14	-137.5	-8.8	177.0	148.4	28.54	6.200	
6,700.0	6,699.8	6,698.4	6,698.3	14.9	14.1	-177.17	-138.4	-8.8	178.7	149.7	28.98	6.166	
6,800.0	6,799.8	6,798.4	6,798.2	15.1	14.3	-177.19	-139.2	-8.8	180.4	151.0	29.43	6.132	
6,900.0	6,899.8	6,898.4	6,898.2	15.4	14.5	-177.22	-140.1	-8.8	182.2	152.3	29.87	6.099	
7,000.0	6,999.8	6,998.4	6,998.2	15.6	14.8	-177.25	-141.0	-8.8	183.9	153.6	30.32	6.067	
7,100.0	7,099.8	7,098.4	7,098.2	15.8	15.0	-177.27	-141.9	-8.8	185.7	154.9	30.76	6.036	
7,200.0	7,199.8	7,198.4	7,198.2	16.0	15.2	-177.30	-142.7	-8.8	187.4	156.2	31.21	6.006	
7,300.0	7,299.8	7,298.4	7,298.2	16.3	15.4	-177.32	-143.6	-8.8	189.2	157.5	31.65	5.976	
7,400.0	7,399.8	7,398.3	7,398.1	16.5	15.6	-177.35	-144.5	-8.8	190.9	158.8	32.10	5.948	
7,500.0	7,499.8	7,498.3	7,498.1	16.7	15.9	-177.37	-145.4	-8.8	192.6	160.1	32.54	5.920	
7,600.0	7,599.8	7,598.3	7,598.1	16.9	16.1	-177.39	-146.2	-8.8	194.4	161.4	32.99	5.893	
7,700.0	7,699.8	7,698.3	7,698.1	17.2	16.3	-177.42	-147.1	-8.8	196.1	162.7	33.43	5.867	
7,800.0	7,799.8	7,798.3	7,798.1	17.4	16.5	-177.44	-148.0	-8.8	197.9	164.0	33.88	5.841	
7,829.7	7,829.4	7,827.9	7,827.7	17.5	16.6	-177.45	-148.2	-8.8	198.4	164.4	34.01	5.833	
7,839.7	7,839.4	7,839.7	7,839.4	17.5	16.6	-177.45	-148.3	-8.8	198.5	164.4	34.08	5.824	
7,900.0	7,899.8	7,900.0	7,899.8	17.6	16.7	-177.45	-148.3	-8.8	198.5	164.2	34.32	5.783	
8,000.0	7,999.8	8,000.0	7,999.8	17.8	16.9	-177.45	-148.3	-8.8	198.5	163.7	34.74	5.714	
8,100.0	8,099.8	8,100.0	8,099.8	18.1	17.1	-177.45	-148.3	-8.8	198.5	163.3	35.15	5.647	
8,200.0	8,199.8	8,200.0	8,199.8	18.3	17.3	-177.45	-148.3	-8.8	198.5	162.9	35.57	5.580	
8,300.0	8,299.8	8,300.0	8,299.8	18.5	17.5	-177.45	-148.3	-8.8	198.5	162.5	35.99	5.516	
8,400.0	8,399.8	8,400.0	8,399.8	18.7	17.7	-177.45	-148.3	-8.8	198.5	162.1	36.40	5.452	
8,500.0	8,499.8	8,500.0	8,499.8	19.0	17.9	-177.45	-148.3	-8.8	198.5	161.7	36.82	5.390	
8,600.0	8,599.8	8,600.0	8,599.8	19.2	18.1	-177.45	-148.3	-8.8	198.5	161.2	37.24	5.329	
8,700.0	8,699.8	8,700.0	8,699.8	19.4	18.3	-177.45	-148.3	-8.8	198.5	160.8	37.66	5.270	
8,800.0	8,799.8	8,800.0	8,799.8	19.6	18.5	-177.45	-148.3	-8.8	198.5	160.4	38.08	5.212	
8,900.0	8,899.8	8,900.0	8,899.8	19.8	18.7	-177.45	-148.3	-8.8	198.5	160.0	38.51	5.155	
9,000.0	8,999.8	9,000.0	8,999.8	20.1	18.9	-177.45	-148.3	-8.8	198.5	159.6	38.93	5.099	
9,100.0	9,099.8	9,100.0	9,099.8	20.3	19.1	-177.45	-148.3	-8.8	198.5	159.1	39.35	5.044	
9,200.0	9,199.8	9,200.0	9,199.8	20.5	19.3	-177.45	-148.3	-8.8	198.5	158.7	39.77	4.990	
9,300.0	9,299.8	9,300.0	9,299.8	20.7	19.5	-177.45	-148.3	-8.8	198.5	158.3	40.20	4.938	
9,400.0	9,399.8	9,400.0	9,399.8	21.0	19.7	-177.45	-148.3	-8.8	198.5	157.9	40.62	4.886	
9,500.0	9,499.8	9,500.0	9,499.8	21.2	19.9	-177.45	-148.3	-8.8	198.5	157.4	41.05	4.835	
9,600.0	9,599.8	9,600.0	9,599.8	21.4	20.1	-177.45	-148.3	-8.8	198.5	157.0	41.47	4.786	
9,700.0	9,699.8	9,700.0	9,699.8	21.6	20.3	-177.45	-148.3	-8.8	198.5	156.6	41.90	4.737	
9,800.0	9,799.8	9,800.0	9,799.8	21.9	20.5	-177.45	-148.3	-8.8	198.5	156.2	42.33	4.689	
9,900.0	9,899.8	9,900.0	9,899.8	22.1	20.7	-177.45	-148.3	-8.8	198.5	155.7	42.75	4.642	
10,000.0	9,999.8	10,000.0	9,999.8	22.3	20.9	-177.45	-148.3	-8.8	198.5	155.3	43.18	4.596	
10,100.0	10,099.8	10,100.0	10,099.8	22.5	21.1	-177.45	-148.3	-8.8	198.5	154.9	43.61	4.551	
10,200.0	10,199.8	10,200.0	10,199.8	22.8	21.3	-177.45	-148.3	-8.8	198.5	154.4	44.04	4.507	

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 2T
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 2T	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 2T	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		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		
10,300.0	10,299.8	10,300.0	10,299.8	23.0	21.5	-177.45	-148.3	-8.8	198.5	154.0	44.47	4.464			
10,337.1	10,336.9	10,337.1	10,336.9	23.1	21.6	-177.45	-148.3	-8.8	198.5	153.9	44.63	4.448			
10,355.7	10,355.5	10,355.7	10,355.5	23.1	21.6	-177.45	-148.3	-8.8	198.5	153.8	44.71	4.440			
10,375.0	10,374.8	10,372.4	10,372.2	23.2	21.7	116.92	-148.4	-8.6	198.8	154.0	44.78	4.439			
10,400.0	10,399.7	10,394.0	10,393.8	23.2	21.7	116.82	-148.9	-7.4	200.1	155.2	44.86	4.460			
10,425.0	10,424.5	10,415.5	10,415.2	23.3	21.7	116.64	-149.8	-5.4	202.4	157.4	44.93	4.504			
10,450.0	10,449.2	10,436.9	10,436.3	23.3	21.8	116.37	-151.1	-2.6	205.7	160.7	44.99	4.571			
10,475.0	10,473.5	10,458.2	10,457.2	23.4	21.8	116.04	-152.8	1.1	209.9	164.9	45.05	4.661			
10,500.0	10,497.6	10,479.2	10,477.6	23.4	21.9	115.62	-154.9	5.6	215.2	170.1	45.09	4.772			
10,525.0	10,521.3	10,500.0	10,497.6	23.5	21.9	115.12	-157.2	10.9	221.4	176.2	45.13	4.904			
10,550.0	10,544.5	10,520.5	10,517.0	23.6	22.0	114.55	-159.9	16.8	228.5	183.3	45.18	5.057			
10,575.0	10,567.2	10,540.6	10,535.8	23.6	22.0	113.90	-162.9	23.4	236.4	191.2	45.22	5.228			
10,600.0	10,589.3	10,560.5	10,554.1	23.7	22.1	113.17	-166.2	30.5	245.3	200.0	45.28	5.417			
10,625.0	10,610.7	10,580.0	10,571.6	23.8	22.1	112.36	-169.7	38.2	254.9	209.6	45.34	5.622			
10,650.0	10,631.5	10,600.0	10,589.3	23.8	22.2	111.50	-173.6	46.8	265.3	219.9	45.42	5.842			
10,675.0	10,651.5	10,617.9	10,604.7	23.9	22.2	110.51	-177.3	55.1	276.5	231.0	45.51	6.075			
10,700.0	10,670.7	10,636.3	10,620.2	24.0	22.3	109.47	-181.4	64.1	288.4	242.8	45.63	6.320			
10,725.0	10,689.1	10,654.3	10,635.0	24.1	22.3	108.34	-185.7	73.4	300.9	255.2	45.77	6.575			
10,750.0	10,706.5	10,671.9	10,649.1	24.2	22.4	107.14	-190.0	83.0	314.1	268.2	45.94	6.838			
10,775.0	10,722.9	10,689.1	10,662.4	24.3	22.4	105.85	-194.5	92.9	327.9	281.7	46.13	7.108			
10,800.0	10,738.4	10,705.9	10,675.1	24.5	22.5	104.48	-199.1	102.9	342.2	295.8	46.34	7.383			
10,825.0	10,752.8	10,722.4	10,687.2	24.6	22.6	103.03	-203.7	113.1	357.0	310.4	46.58	7.663			
10,850.0	10,766.1	10,738.4	10,698.5	24.8	22.6	101.50	-208.4	123.5	372.2	325.4	46.85	7.946			
10,875.0	10,778.3	10,754.2	10,709.3	24.9	22.7	99.90	-213.2	133.9	387.9	340.8	47.13	8.231			
10,900.0	10,789.4	10,769.6	10,719.5	25.1	22.8	98.23	-218.0	144.5	404.0	356.6	47.43	8.519			
10,925.0	10,799.2	10,784.6	10,729.0	25.3	22.9	96.48	-222.8	155.1	420.4	372.7	47.73	8.808			
10,950.0	10,807.8	10,800.0	10,738.4	25.5	23.0	94.71	-227.8	166.1	437.2	389.1	48.04	9.100			
10,975.0	10,815.2	10,813.9	10,746.5	25.8	23.0	92.81	-232.5	176.4	454.2	405.9	48.35	9.394			
11,000.0	10,821.3	10,828.1	10,754.5	26.0	23.1	90.90	-237.3	187.1	471.5	422.8	48.65	9.691			
11,025.0	10,826.2	10,842.1	10,762.0	26.2	23.2	88.94	-242.2	197.8	488.9	440.0	48.94	9.990			
11,050.0	10,829.8	10,855.8	10,769.0	26.5	23.3	86.96	-247.1	208.5	506.6	457.4	49.21	10.294			
11,075.0	10,832.0	10,869.3	10,775.6	26.8	23.4	84.95	-252.0	219.3	524.4	474.9	49.47	10.601			
11,101.3	10,833.0	10,883.3	10,782.1	27.1	23.5	82.82	-257.1	230.6	543.2	493.5	49.71	10.929			
11,116.3	10,833.1	10,891.3	10,785.6	27.3	23.6	83.44	-260.1	237.1	554.1	504.1	49.95	11.091			
11,200.0	10,833.9	10,939.4	10,804.3	28.4	24.0	86.62	-278.4	277.5	614.1	562.7	51.46	11.935			
11,300.0	10,834.9	11,004.9	10,822.4	29.9	24.7	89.07	-304.4	334.7	683.9	630.4	53.46	12.793			
11,400.0	10,835.8	11,077.6	10,832.2	31.6	25.6	90.10	-334.2	400.3	750.5	694.7	55.75	13.462			
11,500.0	10,836.8	11,184.3	10,833.8	33.5	27.2	90.13	-377.2	497.9	812.4	753.8	58.67	13.848			
11,600.0	10,837.7	11,336.3	10,835.2	35.5	29.8	90.10	-429.5	640.6	864.7	802.0	62.70	13.792			
11,700.0	10,838.6	11,507.0	10,836.8	37.6	33.1	90.07	-474.5	805.2	904.9	837.1	67.79	13.348			
11,800.0	10,839.6	11,692.8	10,838.6	39.7	37.1	90.04	-506.5	988.1	931.3	857.4	73.95	12.594			
11,900.0	10,840.5	11,887.9	10,840.4	42.0	41.6	90.01	-520.8	1,182.5	942.8	862.0	80.86	11.660			
11,929.3	10,840.8	11,938.5	10,840.9	42.6	42.8	90.01	-521.3	1,233.1	943.3	860.5	82.78	11.395			
12,000.0	10,841.5	12,009.2	10,841.6	44.3	44.5	90.01	-521.3	1,303.8	943.3	857.1	86.19	10.944			
12,100.0	10,842.4	12,109.2	10,842.5	46.6	46.9	90.01	-521.3	1,403.8	943.3	852.2	91.11	10.353			
12,200.0	10,843.4	12,209.2	10,843.4	49.0	49.4	90.01	-521.3	1,503.8	943.3	847.2	96.14	9.812			
12,300.0	10,844.3	12,309.2	10,844.4	51.5	51.9	90.01	-521.3	1,603.8	943.3	842.0	101.25	9.316			
12,400.0	10,845.2	12,409.2	10,845.3	54.0	54.5	90.01	-521.3	1,703.8	943.3	836.8	106.44	8.862			
12,500.0	10,846.2	12,509.2	10,846.3	56.5	57.1	90.01	-521.3	1,803.8	943.3	831.6	111.70	8.445			
12,600.0	10,847.1	12,609.2	10,847.2	59.1	59.8	90.01	-521.3	1,903.8	943.3	826.3	117.02	8.061			
12,700.0	10,848.1	12,709.2	10,848.2	61.7	62.4	90.01	-521.3	2,003.8	943.3	820.9	122.38	7.708			
12,800.0	10,849.0	12,809.2	10,849.1	64.4	65.1	90.01	-521.3	2,103.8	943.3	815.5	127.79	7.382			
12,900.0	10,850.0	12,909.2	10,850.0	67.1	67.8	90.01	-521.3	2,203.7	943.3	810.1	133.23	7.080			

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 2T
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 2T	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 2T	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		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		
13,000.0	10,850.9	13,009.2	10,851.0	69.7	70.5	90.01	-521.3	2,303.7	943.3	804.6	138.71	6.800			
13,100.0	10,851.8	13,109.2	10,851.9	72.5	73.3	90.01	-521.3	2,403.7	943.3	799.1	144.22	6.540			
13,200.0	10,852.8	13,209.2	10,852.9	75.2	76.0	90.01	-521.3	2,503.7	943.3	793.5	149.76	6.299			
13,300.0	10,853.7	13,309.2	10,853.8	77.9	78.8	90.01	-521.3	2,603.7	943.3	788.0	155.32	6.073			
13,400.0	10,854.7	13,409.2	10,854.8	80.7	81.6	90.01	-521.3	2,703.7	943.3	782.4	160.90	5.863			
13,500.0	10,855.6	13,509.2	10,855.7	83.4	84.4	90.01	-521.3	2,803.7	943.3	776.8	166.50	5.665			
13,600.0	10,856.5	13,609.2	10,856.6	86.2	87.2	90.01	-521.3	2,903.7	943.3	771.2	172.12	5.481			
13,700.0	10,857.5	13,709.2	10,857.6	89.0	90.0	90.01	-521.3	3,003.7	943.3	765.5	177.75	5.307			
13,800.0	10,858.4	13,809.2	10,858.5	91.8	92.8	90.01	-521.3	3,103.7	943.3	759.9	183.40	5.143			
13,900.0	10,859.4	13,909.2	10,859.5	94.6	95.6	90.01	-521.3	3,203.7	943.3	754.2	189.06	4.989			
14,000.0	10,860.3	14,009.2	10,860.4	97.4	98.4	90.01	-521.3	3,303.7	943.3	748.6	194.73	4.844			
14,100.0	10,861.3	14,109.2	10,861.3	100.2	101.3	90.01	-521.3	3,403.7	943.3	742.9	200.41	4.707			
14,200.0	10,862.2	14,209.2	10,862.3	103.0	104.1	90.01	-521.3	3,503.7	943.3	737.2	206.10	4.577			
14,300.0	10,863.1	14,309.2	10,863.2	105.9	107.0	90.01	-521.3	3,603.7	943.3	731.5	211.80	4.454			
14,400.0	10,864.1	14,409.2	10,864.2	108.7	109.8	90.01	-521.3	3,703.7	943.3	725.8	217.51	4.337			
14,500.0	10,865.0	14,509.2	10,865.1	111.5	112.7	90.01	-521.3	3,803.7	943.3	720.1	223.23	4.226			
14,600.0	10,866.0	14,609.2	10,866.1	114.4	115.5	90.01	-521.3	3,903.7	943.3	714.3	228.96	4.120			
14,700.0	10,866.9	14,709.2	10,867.0	117.2	118.4	90.01	-521.3	4,003.7	943.3	708.6	234.69	4.019			
14,800.0	10,867.9	14,809.2	10,867.9	120.1	121.2	90.01	-521.3	4,103.7	943.3	702.9	240.43	3.923			
14,900.0	10,868.8	14,909.2	10,868.9	122.9	124.1	90.01	-521.3	4,203.7	943.3	697.1	246.17	3.832			
15,000.0	10,869.7	15,009.2	10,869.8	125.8	127.0	90.01	-521.3	4,303.7	943.3	691.4	251.92	3.744			
15,100.0	10,870.7	15,109.2	10,870.8	128.7	129.8	90.01	-521.3	4,403.7	943.3	685.6	257.67	3.661			
15,200.0	10,871.6	15,209.2	10,871.7	131.5	132.7	90.01	-521.3	4,503.6	943.3	679.9	263.43	3.581			
15,300.0	10,872.6	15,309.2	10,872.7	134.4	135.6	90.01	-521.3	4,603.6	943.3	674.1	269.19	3.504			
15,400.0	10,873.5	15,409.2	10,873.6	137.3	138.5	90.01	-521.3	4,703.6	943.3	668.3	274.96	3.431			
15,500.0	10,874.5	15,509.2	10,874.5	140.1	141.4	90.01	-521.3	4,803.6	943.3	662.6	280.73	3.360			
15,600.0	10,875.4	15,609.2	10,875.5	143.0	144.2	90.01	-521.3	4,903.6	943.3	656.8	286.50	3.292			
15,700.0	10,876.3	15,709.2	10,876.4	145.9	147.1	90.01	-521.3	5,003.6	943.3	651.0	292.28	3.227			
15,800.0	10,877.3	15,809.2	10,877.4	148.8	150.0	90.01	-521.3	5,103.6	943.3	645.2	298.06	3.165			
15,900.0	10,878.2	15,909.2	10,878.3	151.7	152.9	90.01	-521.3	5,203.6	943.3	639.4	303.84	3.105			
16,000.0	10,879.2	16,009.2	10,879.3	154.5	155.8	90.01	-521.3	5,303.6	943.3	633.7	309.63	3.047			
16,100.0	10,880.1	16,109.2	10,880.2	157.4	158.7	90.01	-521.3	5,403.6	943.3	627.9	315.42	2.991			
16,200.0	10,881.1	16,209.2	10,881.1	160.3	161.6	90.01	-521.3	5,503.6	943.3	622.1	321.21	2.937			
16,300.0	10,882.0	16,309.2	10,882.1	163.2	164.5	90.01	-521.3	5,603.6	943.3	616.3	327.00	2.885			
16,400.0	10,882.9	16,409.2	10,883.0	166.1	167.4	90.01	-521.3	5,703.6	943.3	610.5	332.80	2.834			
16,500.0	10,883.9	16,509.2	10,884.0	169.0	170.3	90.01	-521.3	5,803.6	943.3	604.7	338.60	2.786			
16,600.0	10,884.8	16,609.2	10,884.9	171.9	173.2	90.01	-521.3	5,903.6	943.3	598.9	344.40	2.739			
16,700.0	10,885.8	16,709.2	10,885.9	174.8	176.0	90.01	-521.3	6,003.6	943.3	593.1	350.20	2.694			
16,800.0	10,886.7	16,809.2	10,886.8	177.7	178.9	90.01	-521.3	6,103.6	943.3	587.3	356.00	2.650			
16,900.0	10,887.7	16,909.2	10,887.7	180.6	181.8	90.01	-521.3	6,203.6	943.3	581.5	361.81	2.607			
17,000.0	10,888.6	17,009.2	10,888.7	183.5	184.7	90.01	-521.3	6,303.6	943.3	575.7	367.62	2.566			
17,100.0	10,889.5	17,109.2	10,889.6	186.4	187.7	90.01	-521.3	6,403.6	943.3	569.9	373.43	2.526			
17,200.0	10,890.5	17,209.2	10,890.6	189.3	190.6	90.01	-521.3	6,503.6	943.3	564.1	379.24	2.487			
17,300.0	10,891.4	17,309.2	10,891.5	192.2	193.5	90.01	-521.3	6,603.6	943.3	558.2	385.05	2.450			
17,400.0	10,892.4	17,409.2	10,892.4	195.1	196.4	90.01	-521.3	6,703.5	943.3	552.4	390.86	2.413			
17,500.0	10,893.3	17,509.2	10,893.4	198.0	199.3	90.01	-521.3	6,803.5	943.3	546.6	396.68	2.378			
17,600.0	10,894.2	17,609.2	10,894.3	200.9	202.2	90.01	-521.3	6,903.5	943.3	540.8	402.50	2.344			
17,700.0	10,895.2	17,709.2	10,895.3	203.8	205.1	90.01	-521.3	7,003.5	943.3	535.0	408.31	2.310			
17,800.0	10,896.1	17,809.2	10,896.2	206.7	208.0	90.01	-521.3	7,103.5	943.3	529.2	414.13	2.278			
17,900.0	10,897.1	17,909.2	10,897.2	209.6	210.9	90.01	-521.3	7,203.5	943.3	523.3	419.95	2.246			
18,000.0	10,898.0	18,009.2	10,898.1	212.5	213.8	90.01	-521.3	7,303.5	943.3	517.5	425.77	2.215			
18,100.0	10,899.0	18,109.2	10,899.0	215.4	216.7	90.01	-521.3	7,403.5	943.3	511.7	431.59	2.186			
18,200.0	10,899.9	18,209.2	10,900.0	218.3	219.6	90.01	-521.3	7,503.5	943.3	505.9	437.42	2.157			

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 2T
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 2T	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Lewis Federal 5300 11-31 2T	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
18,300.0	10,900.8	18,309.2	10,900.9	221.2	222.5	90.01	-521.3	7,603.5	943.3	500.1	443.24	2.128	
18,400.0	10,901.8	18,409.2	10,901.9	224.1	225.4	90.01	-521.3	7,703.5	943.3	494.2	449.06	2.101	
18,500.0	10,902.7	18,509.2	10,902.8	227.0	228.4	90.01	-521.3	7,803.5	943.3	488.4	454.89	2.074	
18,600.0	10,903.7	18,609.2	10,903.8	229.9	231.3	90.01	-521.3	7,903.5	943.3	482.6	460.72	2.047	
18,700.0	10,904.6	18,709.2	10,904.7	232.8	234.2	90.01	-521.3	8,003.5	943.3	476.7	466.54	2.022	
18,800.0	10,905.6	18,809.2	10,905.6	235.7	237.1	90.01	-521.3	8,103.5	943.3	470.9	472.37	1.997	
18,900.0	10,906.5	18,909.2	10,906.6	238.6	240.0	90.01	-521.3	8,203.5	943.3	465.1	478.20	1.973	
19,000.0	10,907.4	19,009.2	10,907.5	241.6	242.9	90.01	-521.3	8,303.5	943.3	459.3	484.03	1.949	
19,100.0	10,908.4	19,109.2	10,908.5	244.5	245.8	90.01	-521.3	8,403.5	943.3	453.4	489.86	1.926	
19,200.0	10,909.3	19,209.2	10,909.4	247.4	248.7	90.01	-521.3	8,503.5	943.3	447.6	495.89	1.903	
19,300.0	10,910.3	19,309.2	10,910.4	250.3	251.7	90.01	-521.3	8,603.5	943.3	441.8	501.52	1.881	
19,400.0	10,911.2	19,409.2	10,911.3	253.2	254.6	90.01	-521.3	8,703.5	943.3	435.9	507.35	1.859	
19,500.0	10,912.2	19,509.2	10,912.2	256.1	257.5	90.01	-521.3	8,803.5	943.3	430.1	513.19	1.838	
19,600.0	10,913.1	19,609.2	10,913.2	259.0	260.4	90.01	-521.3	8,903.5	943.3	424.3	519.02	1.817	
19,700.0	10,914.0	19,709.2	10,914.1	261.9	263.3	90.01	-521.3	9,003.4	943.3	418.4	524.85	1.797	
19,800.0	10,915.0	19,809.2	10,915.1	264.9	266.2	90.01	-521.3	9,103.4	943.3	412.6	530.69	1.777	
19,900.0	10,915.9	19,909.2	10,916.0	267.8	269.2	90.01	-521.3	9,203.4	943.3	406.8	536.52	1.758	
20,000.0	10,916.9	20,009.2	10,917.0	270.7	272.1	90.01	-521.3	9,303.4	943.3	400.9	542.36	1.739	
20,100.0	10,917.8	20,109.2	10,917.9	273.6	275.0	90.01	-521.3	9,403.4	943.3	395.1	548.19	1.721	
20,200.0	10,918.8	20,209.2	10,918.8	276.5	277.9	90.01	-521.3	9,503.4	943.3	389.3	554.03	1.703	
20,300.0	10,919.7	20,309.2	10,919.8	279.4	280.8	90.01	-521.3	9,603.4	943.3	383.4	559.87	1.685	
20,400.0	10,920.6	20,409.2	10,920.7	282.3	283.7	90.01	-521.3	9,703.4	943.3	377.6	565.71	1.667	
20,500.0	10,921.6	20,509.2	10,921.7	285.3	286.7	90.01	-521.3	9,803.4	943.3	371.7	571.54	1.650	
20,600.0	10,922.5	20,609.2	10,922.6	288.2	289.6	90.01	-521.3	9,903.4	943.3	365.9	577.38	1.634	
20,700.0	10,923.5	20,709.2	10,923.6	291.1	292.5	90.01	-521.3	10,003.4	943.3	360.1	583.22	1.617	
20,763.9	10,924.1	20,773.0	10,924.2	292.3	294.4	90.01	-521.3	10,067.3	943.3	357.0	586.32	1.609	
20,804.6	10,924.4	20,812.9	10,924.5	293.1	295.5	90.01	-521.3	10,107.2	943.3	355.0	588.26	1.604 SF	

Oasis Petroleum

Anticollision Report

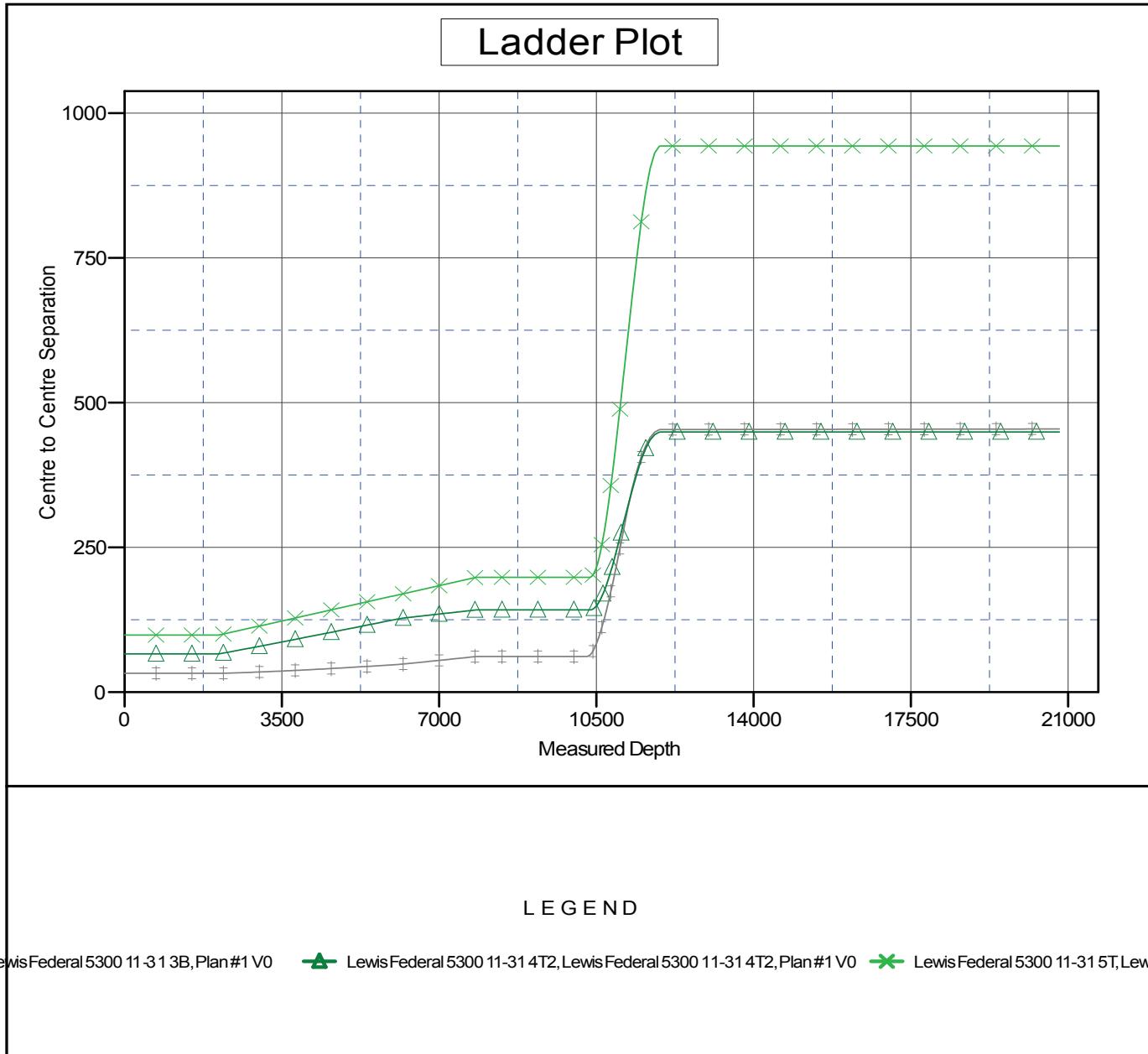
Company:	Oasis
Project:	Indian Hills
Reference Site:	153N-100W-31/32
Site Error:	0.0 usft
Reference Well:	Lewis Federal 5300 11-31 2T
Well Error:	0.0 usft
Reference Wellbore	Lewis Federal 5300 11-31 2T
Reference Design:	Plan #1

Local Co-ordinate Reference:	
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

Well Lewis Federal 5300 11-31 2T
WELL @ 2134.0usft (Original Well Elev)
WELL @ 2134.0usft (Original Well Elev)
True
Minimum Curvature
2.00 sigma
OpenWellsCompass - EDM Prod
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 2T
Coordinate System is US State Plane 1983, North Dakota Northern Zone
Grid Convergence at Surface is: -2.31°



Oasis Petroleum

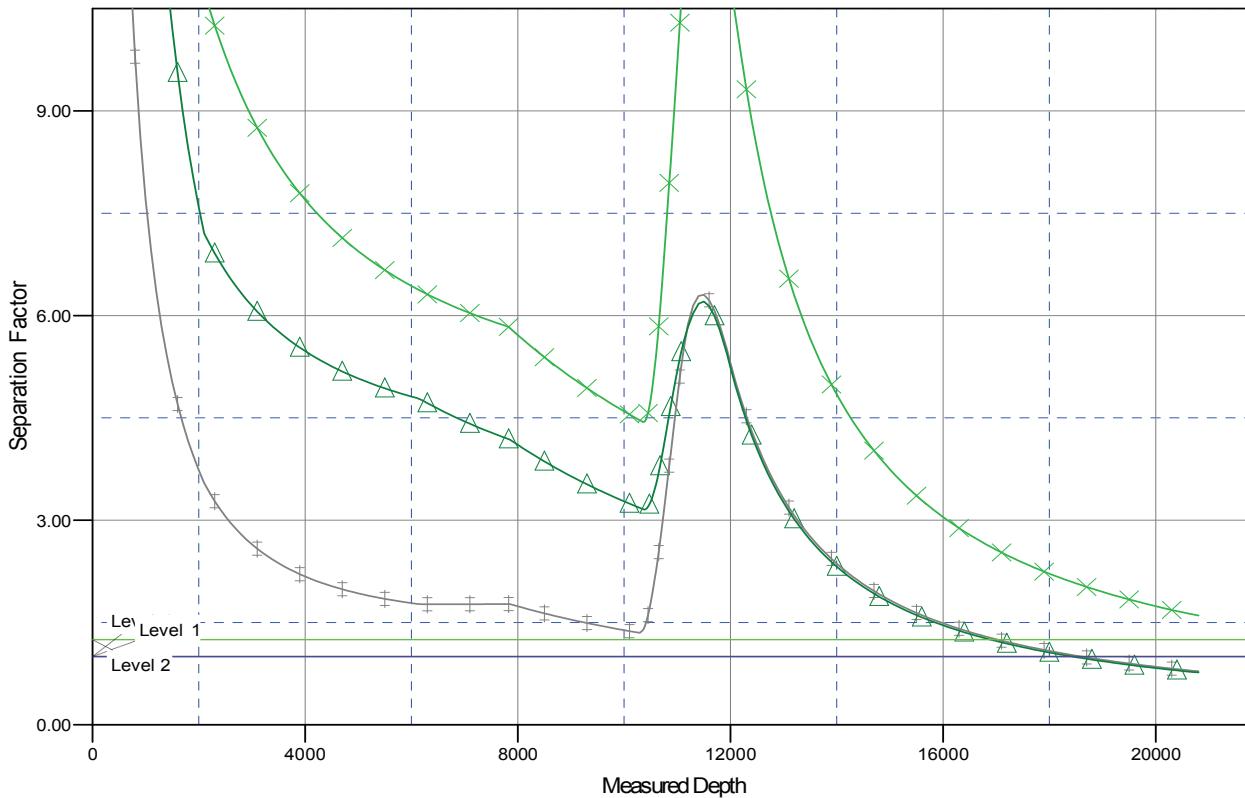
Anticollision Report

Company:	Oasis
Project:	Indian Hills
Reference Site:	153N-100W-31/32
Site Error:	0.0 usft
Reference Well:	Lewis Federal 5300 11-31 2T
Well Error:	0.0 usft
Reference Wellbore	Lewis Federal 5300 11-31 2T
Reference Design:	Plan #1

Local Co-ordinate Reference:	Well Lewis Federal 5300 11-31 2T
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	Coordinates are relative to: Lewis Federal 5300 11-31 2T
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1983, North Dakota Northern Zone
Central Meridian is 100° 30' 0.000 W	Grid Convergence at Surface is: -2.31°

Separation Factor Plot



LEGEND

LewisFederal 5300 11-31 3B, Plan #1 V0 LewisFederal 5300 11-31 4T2, LewisFederal 5300 11-31 4T2, Plan #1 V0 LewisFederal 5300 11-31 5T, LewisF



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

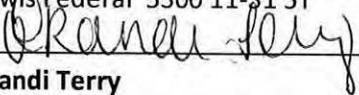
Aaron Chisolm – McKenzie County Dept.

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)....?

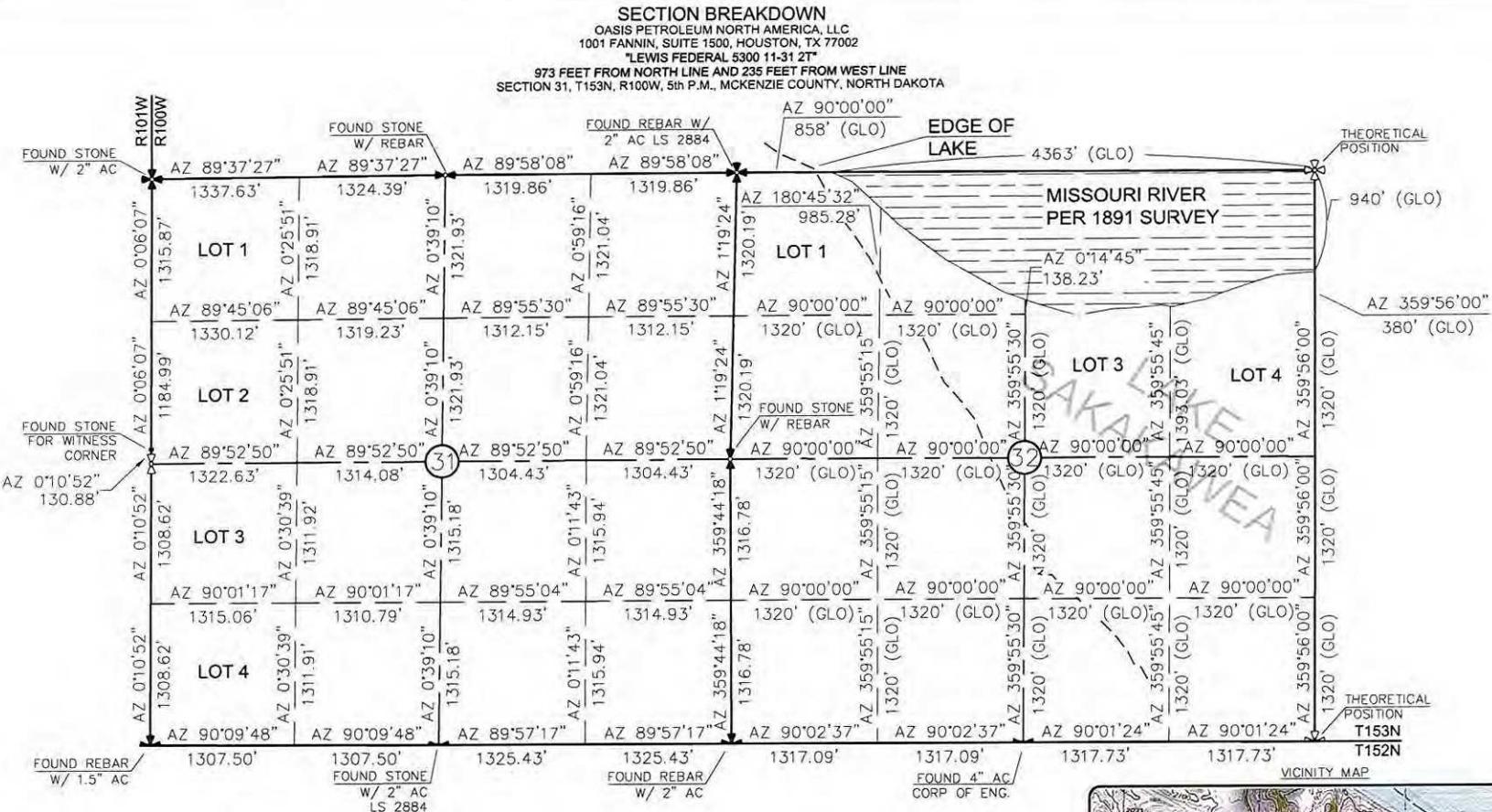
If there is anything else, please let me know.

Thanks



Damon Jorgensen
Construction Superintendent
701.577.1687 Office
701.400.1353 Mobile

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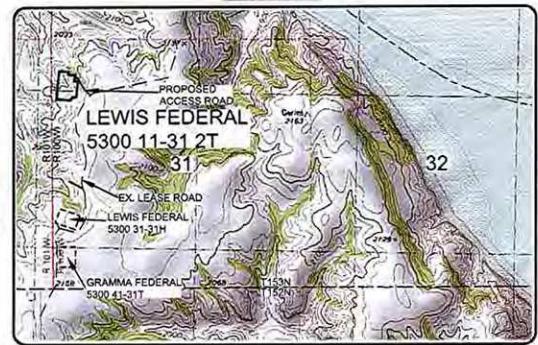
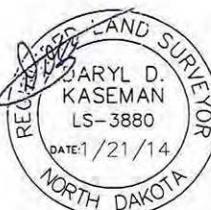


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- MONUMENT - RECOVERED
- MONUMENT - NOT RECOVERED

0 1000
1" = 1000'

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'.



Receiv. By	Date	Description
OASIS PETROLEUM NORTH AMERICA, LLC SECTION BREAKDOWN SECTIONS 31 & 32, T153N, R100W MCKENZIE COUNTY, NORTH DAKOTA		
Drawn By: B.L.H.	Project No.: S153-2878.01	Date: Jan 2014
Checked By: D.D.K.	Drawing No. 1	

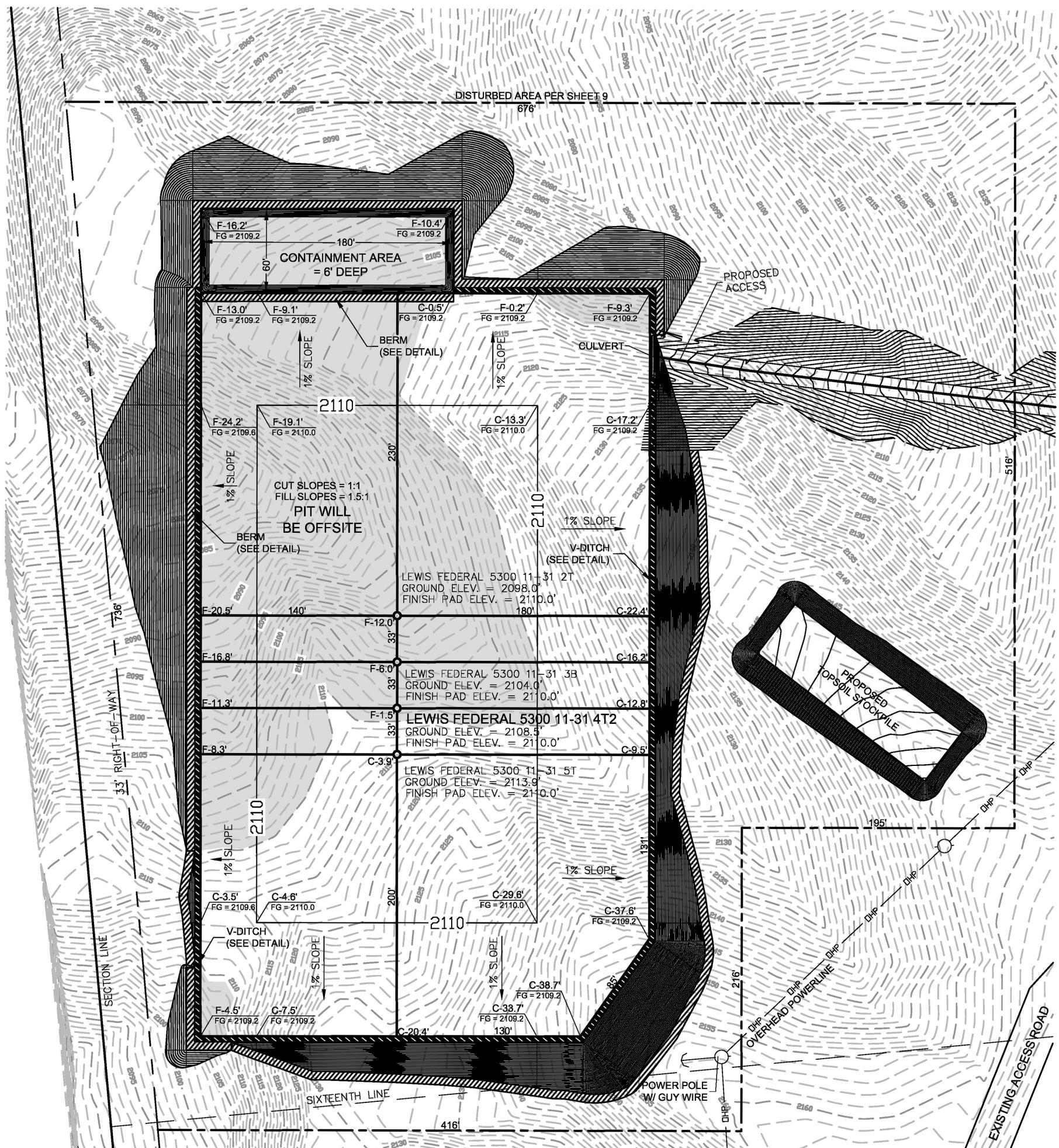
Interstate Engineering, Inc. P.O. Box 548 405 East Main Street Stanley, Montana 59270 Ph. (406) 433-5617 Fax (406) 433-5618 www.interstateengineering.com
Owner's or lessee's name and address Lewis Federal 5300 11-31 2T

INTERSTATE ENGINEERING A Division of Interstate Construction
2/8

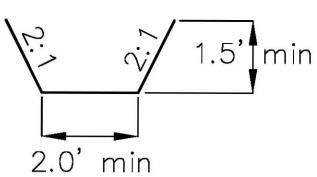
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PAD LAYOUT

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"LEWIS FEDERAL 5300 11-31 4T2"
1038 FEET FROM NORTH LINE AND 230 FEET FROM WEST LINE
SECTION 31, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



V-DITCH DETAIL

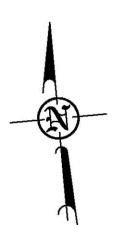
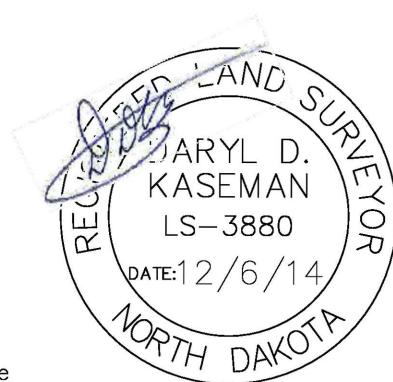


The legend consists of two horizontal bars. The top bar, labeled 'BERM', has thin black diagonal hatching on a white background. The bottom bar, labeled 'DITCH', has thick black diagonal hatching on a white background. Below these bars is a solid black horizontal line labeled 'Proposed Contours'. At the bottom of the diagram is a dashed black 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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$$0 \quad \quad \quad 80$$

1" ≡ 80'

3/9



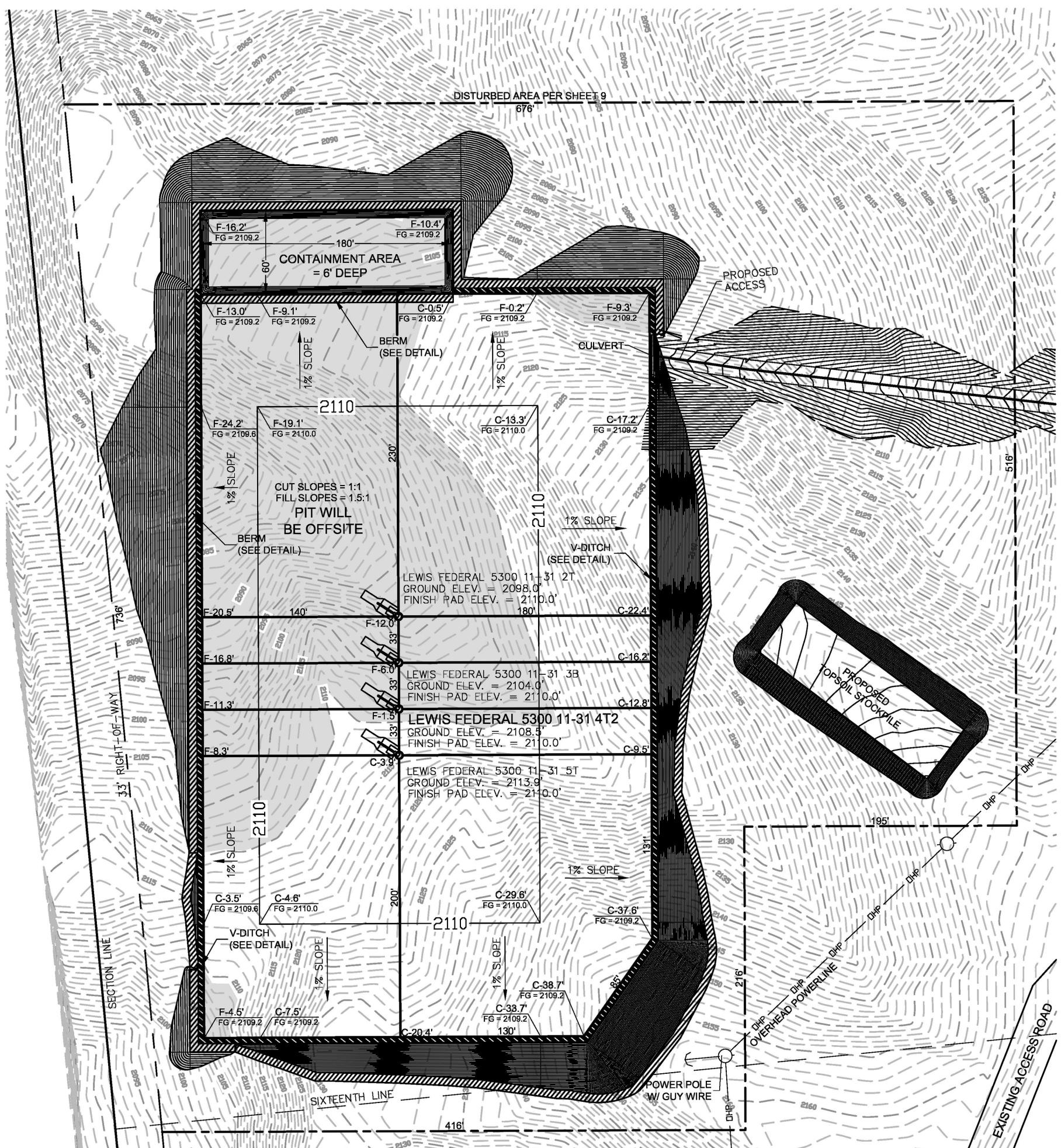
Professionals you need, people you trust.

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

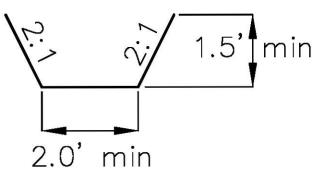
OASIS PETROLEUM NORTH AMERICA, LLC
PAD LAYOUT
SECTION 31, T153N, R100W

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

PRODUCTION LAYOUT
OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"LEWIS FEDERAL 5300 11-31 4T2"
1038 FEET FROM NORTH LINE AND 230 FEET FROM WEST LINE
SECTION 31, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



V-DITCH DETAIL

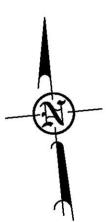
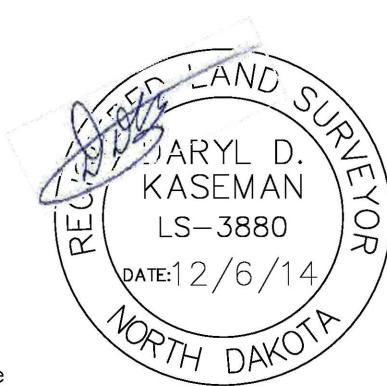


The diagram illustrates two types of terrain features: BERM and DITCH. Each feature is represented by a rectangular area with diagonal hatching. The top row shows the 'Proposed Contours' as solid black lines, while the bottom row shows the 'Original Contours' as dashed black lines. The BERM feature has a lighter hatched area, and the DITCH feature has a darker hatched area.

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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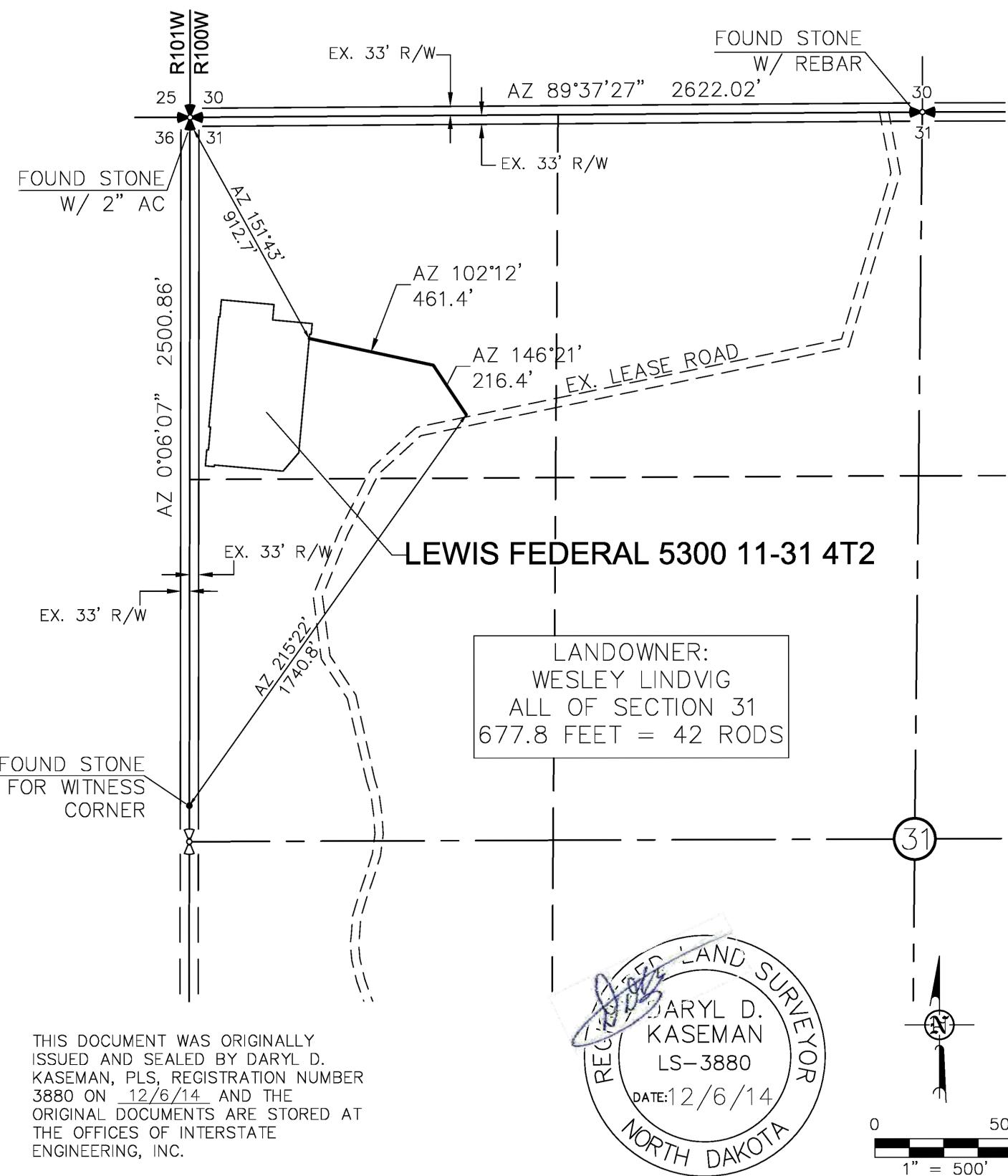
A scale bar with markings at 0 and 80. Below the bar, the text "1'' = 80'" is written.

ACCESS APPROACH

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

"LEWIS FEDERAL 5300 11-31 4T2"

1038 FEET FROM NORTH LINE AND 230 FEET FROM WEST LINE
SECTION 31, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



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OASIS PETROLEUM NORTH AMERICA, LLC

ACCESS APPROACH

SECTION 31, T153N, R100W

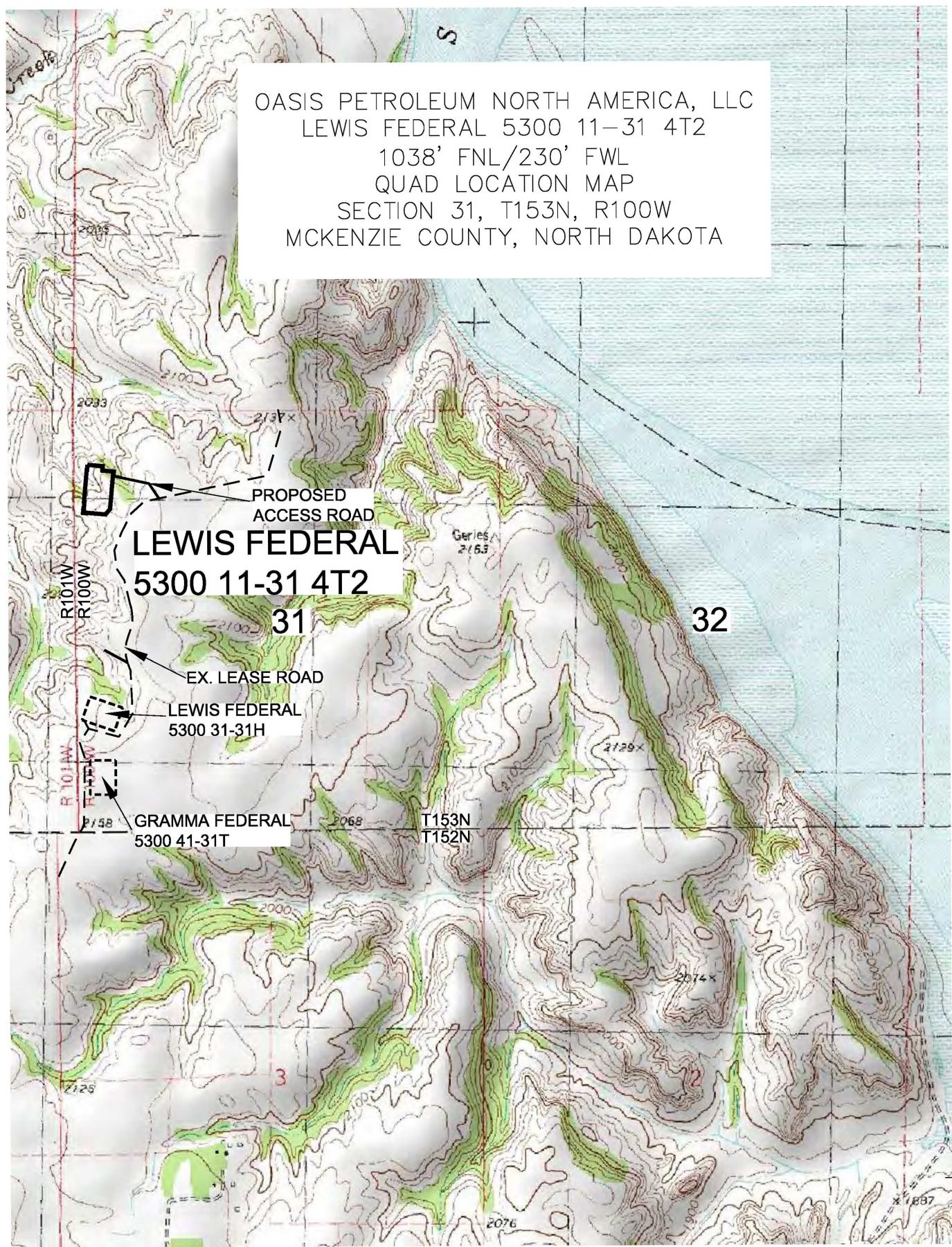
MCKENZIE COUNTY, NORTH DAKOTA

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

Drawn By: B.H.H. Project No.: S13-09-378.03

Checked By: D.D.K. Date: JAN. 2014

OASIS PETROLEUM NORTH AMERICA, LLC
LEWIS FEDERAL 5300 11-31 4T2
1038' FNL/230' FWL
QUAD LOCATION MAP
SECTION 31, T153N, R100W
MCKENZIE COUNTY, NORTH DAKOTA



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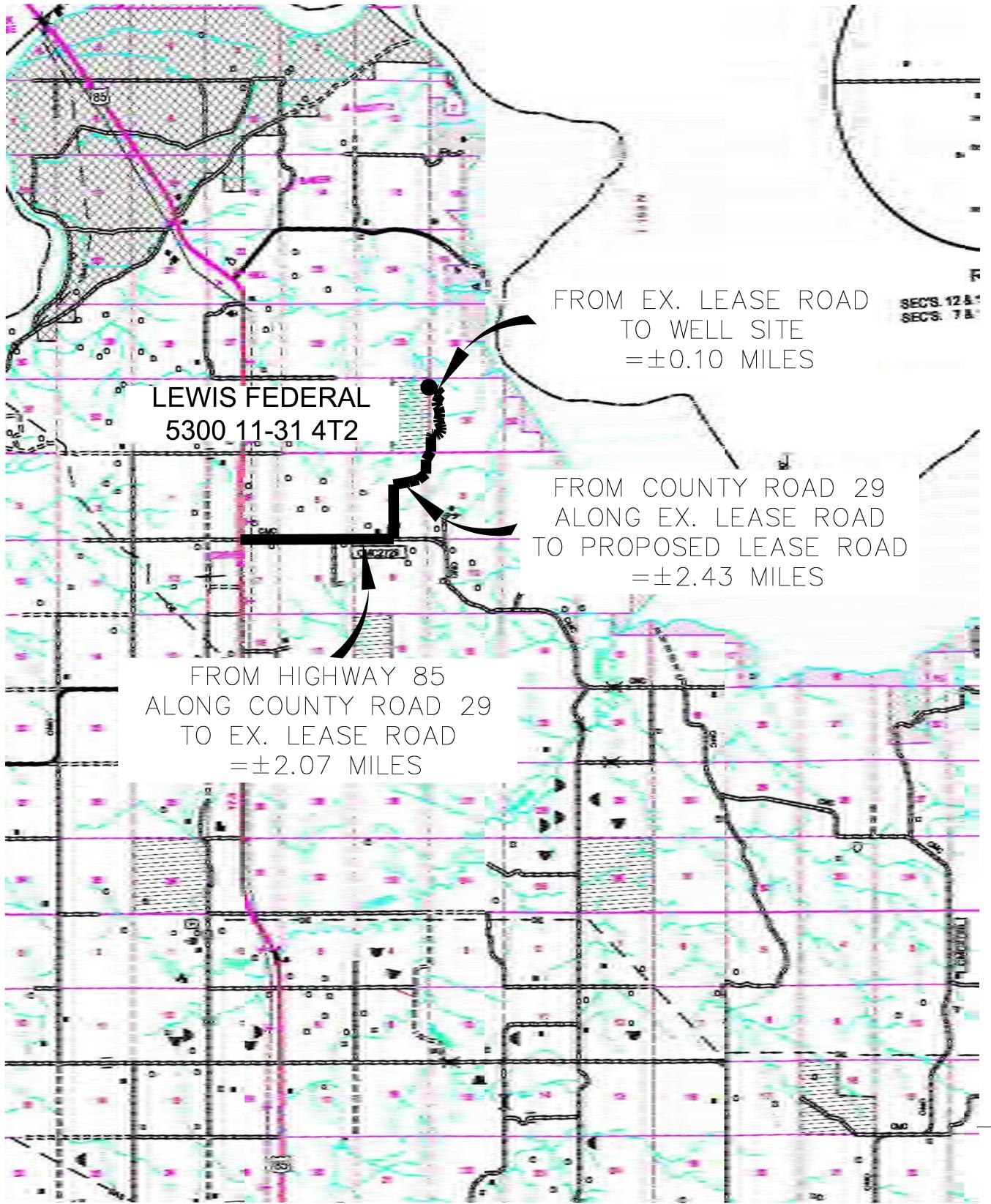
Professionals you need, people you trust.

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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>S13-09-378.03</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	BHH	REMOVED PIT FROM PAD

COUNTY ROAD MAP
 OASIS PETROLEUM NORTH AMERICA, LLC
 1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
 "LEWIS FEDERAL 5300 11-31 4T2"
 1038 FEET FROM NORTH LINE AND 230 FEET FROM WEST LINE
 SECTION 31, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



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OASIS PETROLEUM NORTH AMERICA, LLC
COUNTY ROAD MAP
SECTION 31, T153N, R100W
MCKENZIE COUNTY, NORTH DAKOTA
Drawn By: B.H.H. Project No.: S13-09-378.03
Checked By: D.D.K. Date: JAN. 2014

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

SCALE: 1" = 2 MILE