



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.
28649

FEB 12 2016

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 July 7, 2015
<input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03. Approximate Start Date	

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

Well Name and Number Chalmers 5300 21-19 11B					
Footages	Qtr-Qtr	Section	Township	Range	
2325 F N L	327 F W L	LOT2	19	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

Effective 7/7/2015 the above referenced well is on pump.

End of Tubing: 2-7/8" L-80 tubing @ 9939.2'

Pump: ESP @ 9935.99'

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 February 8, 2016	
Email Address jswenson@oasispetroleum.com		

<input checked="" type="checkbox"/> Received	<input type="checkbox"/> Approved
Date 3-3-2016	
By 	
Title TAYLOR ROTH	
Engineering Technician	



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
SBN 5698 (03-2000)



Well File No.

28649

NDIC CTB No.

To be assigned

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.

PLEASE SUBMIT THE ORIGINAL AND FOUR COPIES.

Well Name and Number CHALMERS 5300 21-19 11B	Qtr-Qtr LOT2	Section 19	Township 153	Range 100	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 May 1, 2015
Principal Place of Business 1001 Fannin, Suite 1500	City Houston	State TX	Zip Code 77002
Field Address	City	State	Zip Code
Transporter Hiland Crude, LLC	Telephone Number (580) 616-2058	% Transported 75%	Date Effective May 1, 2015
Address P.O. Box 3886	City Enid	State OK	Zip Code 73702
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
Other First Purchasers Purchasing From This Lease	% Purchased	Date Effective
Other Transporters Transporting From This Lease Power Crude Transport	% Transported 25%	Date Effective May 1, 2015
Other Transporters Transporting From This Lease	% Transported	Date Effective
		May 1, 2015
Comments		

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records.	Date September 10, 2015
Signature 	Printed Name Dina Barron
	Title Mktg. Contracts Administrator

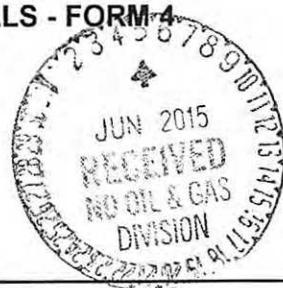
Above Signature Witnessed By:	Printed Name	Title
Signature 	Printed Name Jeremy Harris	Title Marketing Scheduler

FOR STATE USE ONLY		
Date Approved	SEP 18 2015	
By		
Title	Eric Johnson	
Oil & Gas Production Analyst		



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.
28633TA
28634TA
28635
28636TH
28648TA
28637TH
28649TA

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 March 14, 2015
<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 checked="" type="checkbox"/> Reclamation |
| <input type="checkbox"/> Other | <u>Reserve pit reclamation</u> |

Well Name and Number
See below

Footages	F N L	F E L	Qtr-Qtr LOT2	Section 19	Township 153 N	Range 100 W
Field Baker			Pool Bakken		County McKenzie	

24-HOUR PRODUCTION RATE

Before	After
Oil	Bbls
Water	Bbls
Gas	MCF

Name of Contractor(s)
Neu Construction

Address 602 W. 9th Street	City Fairview	State MT	Zip Code 59221
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DETAILS OF WORK

Oasis Petroleum North America LLC plans to reclaim the reserve pit for the below referenced wells as follows:

Chalmers 5300 21-19 5T (28633)
Chalmers 5300 21-19 6B (28634)
Chalmers 5300 21-19 7T2 (28635)
Chalmers 5300 21-19 8T (28636)
Chalmers 5300 21-19 9B (28648)
Chalmers 5300 21-19 10T (28637)
Chalmers 5300 21-19 11T (28649)

The NDIC field inspector, Rick Dunn (NDIC) was notified on 03/06/2015

The surface owners, Wesley and Barbara Lindvig, 14075 41st Street NW, Alexander, ND 58831, were contacted on 03/06/2015

Spread material out in pit, cut top edge of liner and fold over cuttings, cover entire pit with liner, back fill with clay
stone and contour well site to ensure proper drainage

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 June 4, 2015	
Email Address jswenson@oasispetroleum.com		

FOR STATE USE ONLY

<input checked="" type="checkbox"/> Received	<input type="checkbox"/> Approved
Date 9-23-15	
By 	
Title 	



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)

**PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.
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A circular stamp with a black border. In the center is a small black arrow pointing upwards. The outer edge of the circle contains the numbers 1 through 28 in a clockwise sequence. In the middle of the circle, the word "RECEIVED" is printed in large, bold, capital letters. Below it, "ND OIL & GAS" and "DIVISION" are printed in smaller capital letters. At the bottom of the circle, there is a handwritten signature that appears to read "JUN 2015".

Well File No.
28649

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 Chalmers 5300 21-19 11B		Spacing Unit Description Sec. 19/20 T153N R100W		
Operator Oasis Petroleum North America		Telephone Number (281) 404-9591	Field Baker	
Address 1001 Fannin, Suite 1500		Pool Bakken		
City Houston	State TX	Zip Code 77002	Permit Type <input type="checkbox"/> Wildcat	<input checked="" type="checkbox"/> Development <input type="checkbox"/> Extension

LOCATION OF WELL

At Surface 2325 F N L	Qtr-Qtr Lot2	Section 19	Township 153 N	Range 100 W	County McKenzie
Spud Date December 2, 2014	Date TD Reached February 9, 2015	Drilling Contractor and Rig Number Nabors B22	KB Elevation (Ft) 2071	Graded Elevation (Ft) 2046	

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- 11065' to 20675'								Name of Zone (If Different from Pool Name)	
Date Well Completed (SEE INSTRUCTIONS) May 10, 2015					Producing Method Flowing			Pumping-Size & Type of Pump	
Well Status (Producing or Shut-In) Producing									
Date of Test 05/11/2015	Hours Tested 24	Choke Size 42 /64	Production for Test		Oil (Bbls) 2169	Gas (MCF) 1479	Water (Bbls) 4049	Oil Gravity-API (Corr.) °	Disposition of Gas Sold
Flowing Tubing Pressure (PSI)		Flowing Casing Pressure (PSI)		Calculated 24-Hour Rate	Oil (Bbls) 2169	Gas (MCF) 1479	Water (Bbls) 4049	Gas-Oil Ratio 1466	
1200									

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 04/07/2015	Stimulated Formation Bakken		Top (Ft) 11065	Bottom (Ft) 20675	Stimulation Stages 36	Volume 209363	Volume Units Barrels
Type Treatment Sand Frac	Acid %	Lbs Proppant 3768710	Maximum Treatment Pressure (PSI) 9499			Maximum Treatment Rate (BBLS/Min) 75.0	
Details 100 Mesh White: 270990 40/70 Ceramic: 1404730 30/50 Ceramic: 2092990							
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

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 06/23/2015
Signature 	Printed Name Jennifer Swenson	Title Regulatory Specialist

Industrial Commission of North Dakota
Oil and Gas Division

Well or Facility No

28649

Verbal Approval To Purchase and Transport Oil

Tight Hole Yes

OPERATOR

Operator OASIS PETROLEUM NORTH AMERICA LL	Representative Todd Hanson	Rep Phone (701) 577-1632
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WELL INFORMATION

Well Name CHALMERS 5300 21-19 11B	Inspector Richard Dunn
Well Location QQ Sec Twp Rng	County MCKENZIE
LOT2 19 153 N 100 W	Field BAKER
Footages 2325 Feet From the N Line	Pool BAKKEN
327 Feet From the W Line	Date of First Production Through Permanent Wellhead 5/10/2015 This Is The First Sales

PURCHASER / TRANSPORTER

Purchaser OASIS PETROLEUM MARKETING LLC	Transporter HOFMANN TRUCKING, LLC
---------------------------------------------------	---------------------------------------------

TANK BATTERY

Single Well Tank Battery Number :

SALES INFORMATION This Is The First Sales

ESTIMATED BARRELS TO BE SOLD	ACTUAL BARRELS SOLD	DATE
15000	BBLS	233
	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.

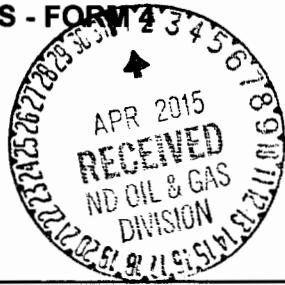
Start Date	5/10/2015
Date Approved	5/12/2015
Approved By	Richard Dunn



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.
28649



PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.

PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

<input checked="" type="checkbox"/> Notice of Intent	Approximate Start Date March 31, 2015	<input type="checkbox"/> Drilling Prognosis	<input type="checkbox"/> Spill Report
<input type="checkbox"/> Report of Work Done	Date Work Completed	<input type="checkbox"/> Redrilling or Repair	<input type="checkbox"/> Shooting
<input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.		<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	Change well status to CONFIDENTIAL

Well Name and Number Chalmers 5300 21-19 11B					
Footages 2325 F N L	327	Qtr-Qtr 328 F W L	LOT2	Section 19	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.

This well has not been completed.

OFF CONFIDENTIAL 10/01/15.

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 March 31, 2015		
Email Address jswenson@oasispetroleum.com			

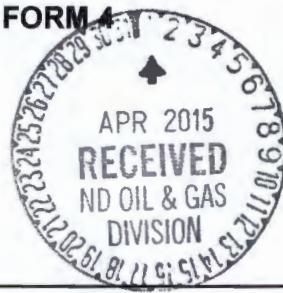
<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date 4/08/15	
By 	
Title Engineering Technician	



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.
28649



PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.

PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

<input checked="" type="checkbox"/> Notice of Intent	Approximate Start Date March 31, 2015	<input type="checkbox"/> Drilling Prognosis	<input type="checkbox"/> Spill Report
<input type="checkbox"/> Report of Work Done	Date Work Completed	<input type="checkbox"/> Redrilling or Repair	<input type="checkbox"/> Shooting
<input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.	Approximate Start Date	<input type="checkbox"/> Casing or Liner	<input type="checkbox"/> Acidizing
		<input type="checkbox"/> Plug Well	<input type="checkbox"/> Fracture Treatment
		<input type="checkbox"/> Supplemental History	<input type="checkbox"/> Change Production Method
		<input type="checkbox"/> Temporarily Abandon	<input type="checkbox"/> Reclamation
		<input type="checkbox"/> Other	Waiver from tubing/packer requirement

Well Name and Number

Chalmers 5300 21-19 11B

Footages	325 F N L	326 F W L	Qtr-Qtr	Section 19	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
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DETAILS OF WORK

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

The following assurances apply:

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

Company Oasis Petroleum North America LLC	Telephone Number 281-404-9436	
Address 1001 Fannin, Suite 1500		
City Houston	State TX	Zip Code 77002
Signature 	Printed Name Jennifer Swenson	
Title Regulatory Specialist	Date March 31, 2015	
Email Address jswenson@oasispetroleum.com		

FOR STATE USE ONLY

<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date April 1, 2015	
By 	
Title PETROLEUM ENGINEER	



Oasis Petroleum North America, LLC

Chalmers 5300 21-19 11B

2,325' FNL & 327' FWL

Lot 2 Sec. 19, 153N, 100W

Baker / Middle Bakken Member

McKenzie County, North Dakota

BOTTOM HOLE LOCATION:

899.37' S & 9,903.83' E of surface location or approx.

2,039.19' FSL & 282.54' FEL, NE SE Sec. 20, T153N, R100W

Prepared for:

Nathan Gabelman
Oasis Petroleum North America, LLC
1001 Fannin Suite 1500
Houston, TX 77002

Prepared by:

Michelle Baker, G. Wayne Peterson, Zachary Moses
PO Box 80507; Billings, MT 59108
(406) 259-4124
geology@sunburstconsulting.com
www.sunburstconsulting.com

WELL EVALUATION



Figure 1. Nabors B22 drilling the Oasis Petroleum North America, LLC - Chalmers 5300 21-19 11B during January and February, 2015 in Baker Field, McKenzie County, North Dakota.
(G. Wayne Peterson, Sunburst Consulting)

INTRODUCTION

The **Oasis Petroleum North America, LLC Chalmers 5300 21-19 11B** [Lot 2 Section 19, T153N, R100W] is located approximately 7 miles south of the town of Williston in McKenzie County, North Dakota. The Chalmers 5300 21-19 11B is a horizontal Middle Bakken well within the Williston Basin consisting of one 9,615' lateral drilled toward the east. The vertical hole was planned to be drilled to approximately 10,230'. The curve would be built at 12 degrees per 100' to land within the Middle Bakken. This well is a two section lateral which originates in the northwest quarter of section 19, then drilled east to the southeast quarter of section 20. Directional drilling technologies and geo-steering techniques were used to land in the Middle Bakken reservoir and maintain exposure to the ideal target rock.

OFFSET WELLS

Offset well data used for depth correlation during curve operations are found in the ‘Control Data’ section appended to this report. Offset well control was essential in curve operations, to successfully land within the Middle Bakken. Formation thicknesses expressed by gamma ray signatures in these wells were compared to gamma data collected during drilling operations in order to successfully land the curve. The target landing true vertical depth (TVD) was periodically updated during drilling to ensure accurate landing of the curve.

GEOLOGY

The Charles Formation [Mississippian Madison Group] was logged 8,536' MD 8,535' TVD (-6,459' SS). Samples in the lower portion of the Charles Formation consisted of a lime mudstone, which was light brown, light gray brown, light gray brown, off white in color. It was microcrystalline, friable, laminated, with an earthy texture. A trace of intercrystalline porosity was observed as was *occasional to rare spotty light brown oil stain*. Occasionally noted was a dolo-mudstone, which was light brown, light gray, light gray brown in color. It was microcrystalline, friable-firm, laminated, with an earthy texture. Also noted was a trace of intercrystalline porosity, and *occasional spotty light brown oil stain*. Rarely noted was anhydrite, which was off white, cream in color. It was soft, microcrystalline, and massive with an earthy to amorphous texture. Following connections or periods of non-circulation, gas peaks of 35 to 54 units were noted, as were drilling gas shows of 62 to 89 units.

The Mission Canyon Formation [Mississippian Madison Group] was logged 9,431' MD 9,430' TVD (-7,354' SS). The Mission Canyon Formation consisted of a lime mudstone that was described as light gray, light brown to brown, gray brown, trace dark gray in color. The lime mudstone was predominately friable to firm, with an earthy to rarely crystalline in texture. Some intervals contained a trace of black-brown algal material, a trace of fossil fragments, and traces of disseminated pyrite. Also present was an argillaceous lime mudstone that was described as light gray, occasional medium gray, rare gray tan, rare off white, trace dark gray in color. The argillaceous lime mudstone was predominately firm to friable, crystalline to chalky texture. Some intervals contained a trace of disseminated pyrite. Following connections or periods of non-circulation, gas peaks of 35 to 191 units were noted, as were drilling gas shows of 40 to 109 units. Rare intercrystalline porosity was noted as well as traces to occasional *spotty light brown oil stain* was occasionally observed while logging the Mission Canyon Formation.



Figure 2. Limestone with spotty light to medium brown staining from the Mission Canyon Formation.

The Upper Bakken Shale [Mississippian-Bakken Formation] was drilled at 10,842' MD 10,728' TVD (-8,652' SS). Entry into this member was characterized by high gamma, elevated background gas and increased rates of penetration. The black to black gray carbonaceous and *petroliferous* shale was hard with a sub blocky to sub platy texture. Fracture porosity was noted, and trace minerals were observed to include disseminated pyrite and calcite fracture fill. Hydrocarbons evaluated in this interval reached a maximum of 532 units drilling gas, with a connection gas of 388 units.

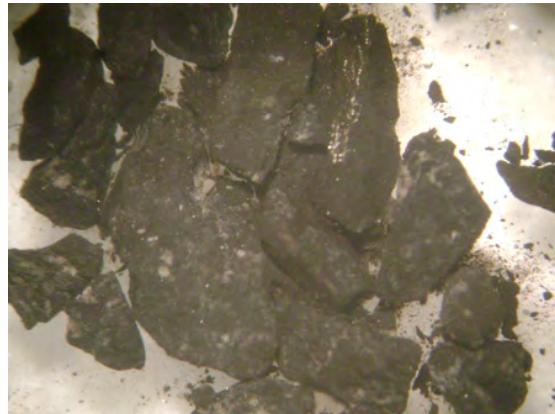


Figure 3. Black carbonaceous and petroliferous shale from the Upper Bakken Shale.

The Middle Bakken [Mississippian-Devonian Bakken Formation] was reached at 10,884' MD 10,744' TVD (-8,668' SS) which was -1' low to the Oasis Petroleum NA LLC Chalmers 5300 21-19 9B. The target zone of the Middle Bakken was to be drilled in a predominately 10 foot zone beginning 12 feet below the Upper Bakken Shale.

Samples in the Middle Bakken were predominantly silty sandstone which was described as light-medium brown, occasional light gray brown, rare light gray in color. It was very fine grained, firm-friable, sub rounded to sub angular, smooth, moderately sorted, calcite cement, and moderately cemented. A trace of disseminated and nodular pyrite was noted as was occasional intergranular porosity. Also noted was *common light to medium brown spotty to even oil stain*.



Figures 4 and 5. Predominately silty sandstone sample from the target zone (left), and sample from below the target zone (right).

Hydrocarbon Shows

Gas monitoring and fluid gains provided evidence of a hydrocarbon saturated reservoir during the drilling of the Chalmers 5300 21-19 11B. Oil and gas shows at the shakers and in samples were continuously monitored. In the closed mud system, hydrostatic conditions were maintained near balance, this allowed for gas and fluid gains from the well to be evaluated. Gas on the Chalmers 5300 21-19 11B varied according to stratigraphic position and penetration rates which may have reflected increased porosity. During the vertical, connection gas peaks of 35 to 191 units were noted, as were drilling gas shows of 31 to 109 units, against a 10-11.5 lb/gal diesel-invert mud weight. Background concentrations in the lateral ranged from 470 to 2,200 units, against a 9.6-9.7 lb/gal saltwater gel drilling fluid. Connection peaks of 2,000 to 3,000 units were observed, as were drilling gas shows of 2,500 units to 5,490 units coinciding with the best shows. Drilling out of casing at 11,085 MD' yielded a trip gas of 984 units. The lateral was completed with one bottom hole assembly, consequently no other trip gasses were noted. Chromatography of gas revealed typical concentrations of methane, characteristic of Middle Bakken Member gas.

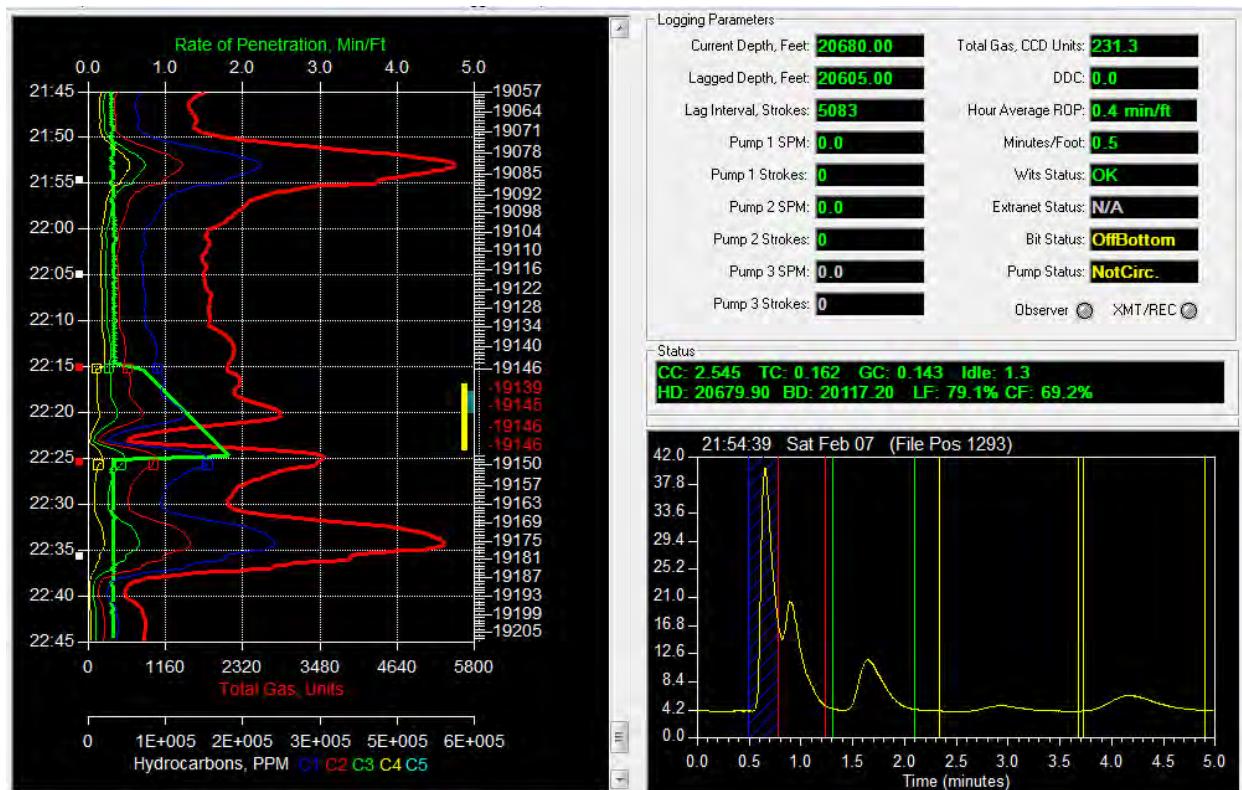


Figure 6. Gas chromatography of a 5,490 unit connection gas peak.

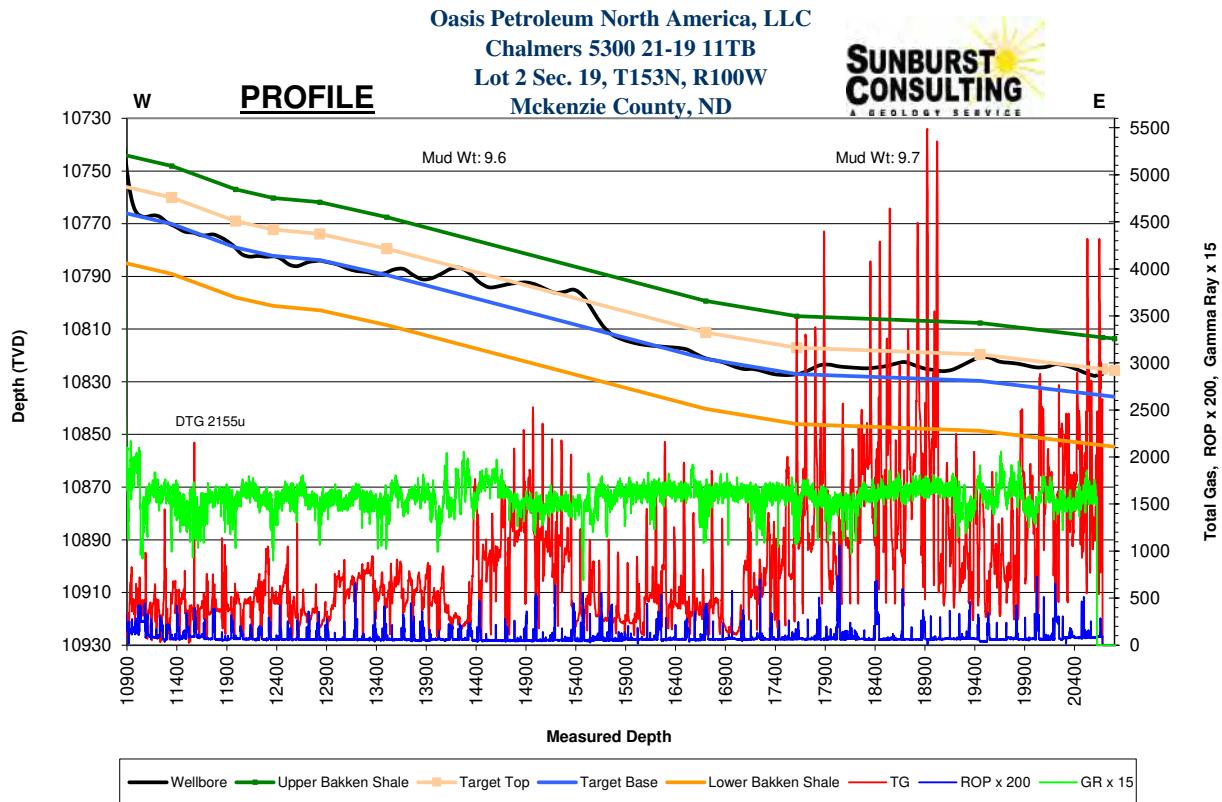


Figure 7. Profile displaying total gas, gamma ray and rate of penetration.

Geosteering

Ryan Energy Technologies provided personnel and equipment for measurement-while-drilling (MWD) services. The RPM directional driller and MWD, and Sunburst Consulting personnel worked closely together throughout the project to evaluate data and make steering decisions to maximize the amount of borehole in the targeted zones and increase rate of penetration (ROP) of the formation.

The 855' curve was drilled in 23 hours. It was first drilled with a bottom hole assembly (BHA) consisting of bit #3, a Ulterra U516M PDC bit, attached to a 2.38 degree fixed NOV 7/8 5.0 motor and MWD tools. Poor build rates caused this BHA to be replaced with bit # 4, a Smith F30T Tri-cone bit attached to a 2.60 degree Cavare 6/7 5.0 motor. Excessive build rates caused this assembly to be replaced. The previously run Cavare motor was adjusted to 2.45 degrees and attached to bit #5, a Security MMD55M PDC bit. The curve was successfully landed at 11,085' MD and 10,767' TVD, approximately 23' into the Middle Bakken. Seven inch diameter 32# HCP-110 casing was set to 11,065' MD.

Geologic structure maps of the Chalmers 5300 21-19 11B and surrounding control wells had estimated formation dip to be a down dip at approximately -0.5° down to the TD of the lateral. The preferred drilling interval of the Chalmers 5300 21-19 11B consisted of a 10 foot zone located approximately 12 feet into the Middle Bakken. Penetration rates, gas shows, gamma ray data, and sample observations were utilized to keep the wellbore in the preferred stratigraphic

position in the target zone. Using offset well data provided by Oasis representatives, projected porosity zones were identified in the preferred drilling areas.

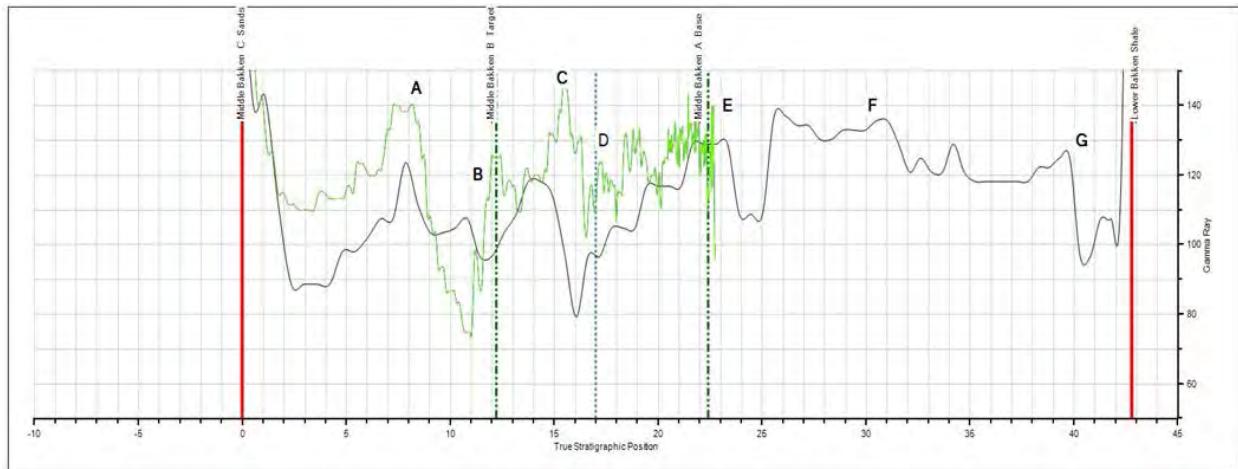


Figure 8. Offset well target definition, Indian Hills Prospect (Oasis).

Steering decisions were made by using gamma markers identified by Oasis representatives. The high gamma (C) in the upper portion of the drilling zone was useful in identifying the well-bore placement in formation. The slightly lower gamma (B) was observed as the well-bore moved to the top of the target zone, followed by lower gamma as the well-bore moved higher, out of the target zone. Low gamma in the middle of the target zone (D) was noted as the well-bore moved to the middle of the target zone. As the well-bore moved lower in formation, the higher gamma (E) was noted. Samples collected when drilling below the target zone tended to have a greater concentration of the light gray to gray silty sandstone than did the samples collected when the well-bore was higher in the target zone. The TD of 20,680' MD was achieved at 14:30 hours CST February 8, 2015. The well site team worked together to maintain the well bore in the desired target interval for 90% of the lateral, opening 9,615' of potentially productive reservoir rock. During the drilling of the lateral to avoid unnecessary doglegs it was decided not to steer the well-bore into the target zone for the sole purpose of reentering the target zone. The hole was then circulated and reamed for completion.

SUMMARY

The Chalmers 5300 21-19 11B is a successful well in Oasis Petroleum's horizontal Middle Bakken development program in Baker Field. The project was drilled from surface casing to TD in 16 days. The TD of 20,860' MD was achieved at 14:30 hours CST February 8, 2015. The well site team worked together to maintain the well-bore in the desired target interval for 90% of the lateral, opening 9,615' of potentially productive reservoir rock. During the drilling of the lateral to avoid unnecessary doglegs it was decided not to steer the well-bore into the target zone for the sole purpose of regaining the target zone.

Samples in the Middle Bakken were predominantly silty sandstone which was described as light-medium brown, occasional light gray brown, rare light gray in color. It was very fine grained, firm-friable, sub rounded to sub angular, smooth, moderately sorted, calcite cement moderately cemented. A trace of disseminated and nodular pyrite was noted as was occasional intergranular porosity. Also noted was *common light to medium brown spotty to even oil stain*.

Gas on the Chalmers 5300 21-19 11B varied according to stratigraphic position and penetration rates which may have reflected increased porosity. The overall gas and hydrocarbon shows were encouraging and indicate a hydrocarbon rich system in the Middle Bakken.

The Oasis Petroleum North America, LLC. Chalmers 5300 21-19 11B awaits completion operations to determine its ultimate production potential.

Respectfully submitted,

G. Wayne Peterson
Sunburst Consulting, Inc.
9 February, 2015

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>	Chalmers 5300 21-19 11B
<u>API #:</u>	33-053-06024
<u>WELL FILE #:</u>	28649
<u>SURFACE LOCATION:</u>	2,325' FNL & 327' FWL Lot 2 Sec. 19, 153N, 100W
<u>FIELD/ PROSPECT:</u>	Baker / Middle Bakken Member
<u>COUNTY, STATE</u>	McKenzie County, North Dakota
<u>BASIN:</u>	Williston
<u>WELL TYPE:</u>	Middle Bakken Member Horizontal Lateral
<u>ELEVATION:</u>	GL: 2,051' KB: 2,076'
<u>SPUD/ RE-ENTRY DATE:</u>	January 24, 2014
<u>BOTTOM HOLE LOCATION</u>	899.37' S & 9,903.83' E of surface location or approx. 2,039.19' FSL & 282.54' FEL, NE SE Sec. 20, T153N, R100W
<u>CLOSURE COORDINATE</u>	Closure Direction: 95.19° Closure Distance: 9,944.58'
<u>TOTAL DEPTH / DATE:</u>	20,680' on February 8, 2015 90% within target interval
<u>TOTAL DRILLING DAYS:</u>	16 days
<u>CONTRACTOR:</u>	Nabors #B22
<u>PUMPS:</u>	H&H Triplex (stroke length - 12")

<u>TOOLPUSHERS:</u>	Jessie Tibbets, Mark Rollins
<u>FIELD SUPERVISORS:</u>	John Gordon, Doug Rakstad
<u>CHEMICAL COMPANY:</u>	NOV
<u>MUD ENGINEER:</u>	Ken Rockeman, Adam Fallis
<u>MUD TYPE:</u>	Fresh water in surface hole Diesel invert in curve; Salt water in lateral
<u>MUD LOSSES:</u>	Invert Mud: 468 bbls, Salt Water: 0 bbls
<u>PROSPECT GEOLOGIST:</u>	Nathan Gabelman
<u>WELLSITE GEOLOGISTS:</u>	Michelle Baker, G. Wayne Peterson, Zachary Moses
<u>GEOSTEERING SYSTEM:</u>	Sunburst Digital Wellsite Geological System
<u>ROCK SAMPLING:</u>	30' from 8,240' - 20,680 (TD)
<u>SAMPLE EXAMINATION:</u>	Binocular microscope & fluoroscope
<u>SAMPLE CUTS:</u>	Trichloroethylene (Carbo-Sol)
<u>GAS DETECTION:</u>	MSI (Mudlogging Systems, Inc.) TGC - total gas with chromatograph Serial Number(s): ML-134
<u>ELECTRIC LOGS:</u>	n/a
<u>DRILL STEM TESTS:</u>	n/a
<u>DIRECTIONAL DRILLERS:</u>	RPM, Inc. John Gordon, Doug Rakstad, Robert Jasper
<u>MWD:</u>	Ryan Mike McCommond, Ronald Maddalena, Jake Creech
<u>CASING:</u>	Surface: 13 3/8" 54# J-55 set to 2,183' Second: 9 5/8" 40# HCL-80 set to 6,066' Intermediate: 7" 32# P-110 set to 11,065'

KEY OFFSET WELLS:

Oasis Petroleum North America, LLC

Chalmers 5300 31-19H

NW SW Sec. 19 T153N R100W

McKenzie County, ND

Oasis Petroleum North America, LLC

Chalmers 5300 21-19 8T

Lot 2, Sec. 19, T153N, R100W

McKenzie County, ND

Oasis Petroleum North America, LLC

Chalmers 5300 21-19 7T2

Lot 2, Sec. 19, T153N, R101W

McKenzie County, ND

Oasis Petroleum North America, LLC

Chalmers 5300 21-19 9B

Lot 2, Sec. 19, T153N, R100W

McKenzie County, ND

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

SECTION 19, T153N, R106W
2325 FEET FROM NORTH LINE AND 327 FEET FROM WEST LINE
EDGE OF
LAKE

R101W
R100W

FOUND REBAR
REBAR

W/ 2" AC
LS 2352

2630.15

AZ 9000'00"

2640 (GLO)

1947 (GLO)

2216' (GLO)

1056' (GLO)

AZ 9000'00"

CALCULATED
IN LAKE

FOUND REBAR
REBAR

W/ 2" AC
LS 2352

2631.88'

AZ 9005'35"

2631.68'

AZ 9004'59"

2325'

LOT 1

FOUND REBAR
REBAR

W/ 2" AC
LS 2352

327'

AZ 9508'00"

10019.44'

CHALMERS 5300 21-19 11T

GROUND ELEV. 2050.9'
LATITUDE 48°03'40.2"N
LONGITUDE 103°38'10.11"W
GPS SURVEY DATUM: NAD 83

LOT 2

FOUND REBAR
REBAR

W/ 2" AC
LS 2352

2631.68'

AZ 9005'03"

LOT 3

FOUND REBAR
REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 4

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 5

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 6

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 7

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 8

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 9

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 10

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 11

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 12

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 13

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 14

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 15

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 16

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 17

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 18

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 19

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 20

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 21

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 22

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 23

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 24

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 25

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 26

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 27

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 28

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 29

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 30

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 31

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 32

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 33

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 34

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 35

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 36

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 37

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 38

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 39

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 40

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 41

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 42

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 43

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 44

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 45

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 46

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 47

FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

LOT 48

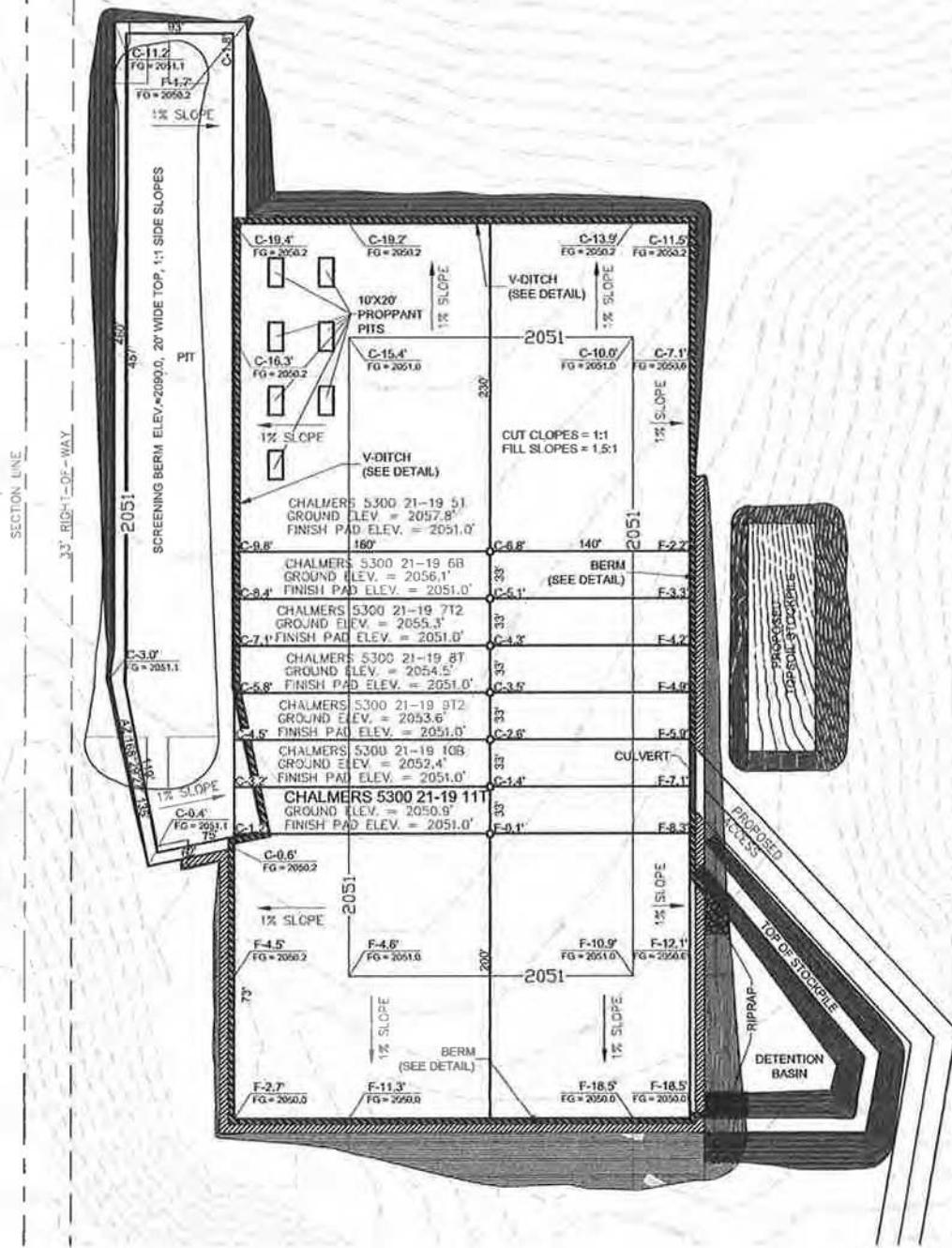
FOUND STONE
& REBAR

W/ 2" AC
LS 2352

2651.37'

AZ 9003'03"

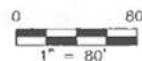
PAD LAYOUT
 OASIS PETROLEUM NORTH AMERICA, LLC
 1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
 "CHALMERS 5300 21-19 11T"
 2325 FEET FROM NORTH LINE AND 327 FEET FROM WEST LINE
 SECTION 19, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



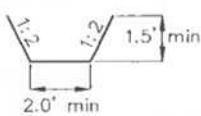
NOTE 1: Pad dimensions shown are to usable area, the v-ditch and berm areas shall be built to the outside of the pad dimensions.

NOTE 2 : Screening berm is to be built after drilling operations are complete.

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V-DITCH DETAIL



Proposed Contours — BERM
 Original Contours — DITCH

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

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OASIS PETROLEUM NORTH AMERICA, LLC
 PAD LAYOUT
 SECTION 19, T153N, R100W
 MCKENZIE COUNTY, NORTH DAKOTA
 Drawn By: BHL Project No.: 513-00-282-06
 Checked By: DJK Date: JUN 2014

Revision No.	Date	By	Description
REV 1	5/07/14	JK	WIRED WELLS ON PAD
REV 2	5/22/14	JK	WIRED WELLS ON PAD/REVISED PAD
REV 3	5/22/14	JK	WIRED WELLS ON PAD/REVISED PAD

OASIS PETROLEUM NORTH AMERICA, LLC
CHALMERS 5300 21-19 11T
2325' FNL/327' FWL
QUAD LOCATION MAP
SECTION 19, T153N, R100W
MCKENZIE COUNTY, NORTH DAKOTA

W

13

CHALMERS 5300
21-19 11T

WADE 5300 21-30H



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QUAD LOCATION MAP
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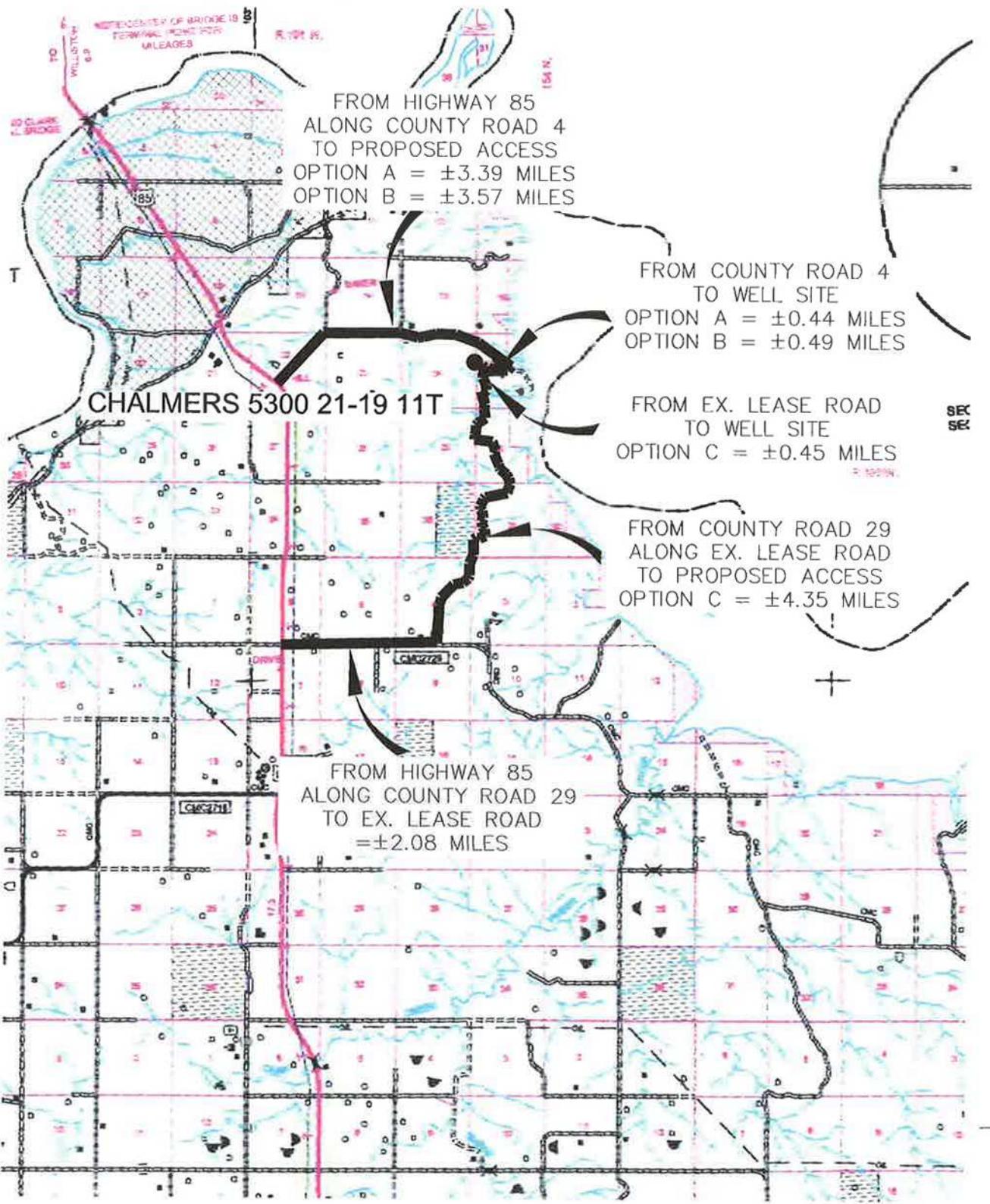
Revision No.	Date	By	Description
REV 1	3/17/14	JWS	Moved wells on pad
REV 2	4/22/14	BBW	Moved wells on pad/revised pad
REV 3	5/2/14	BBW	Moved wells on pad/revised pad

COUNTY ROAD MAP

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

"CHALMERS 5300 21-19 11T"

2325 FEET FROM NORTH LINE AND 327 FEET FROM WEST LINE
SECTION 19, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



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OASIS PETROLEUM NORTH AMERICA, LLC
COUNTY ROAD MAP
SECTION 19, T153N, R100W
MCKENZIE COUNTY, NORTH DAKOTA

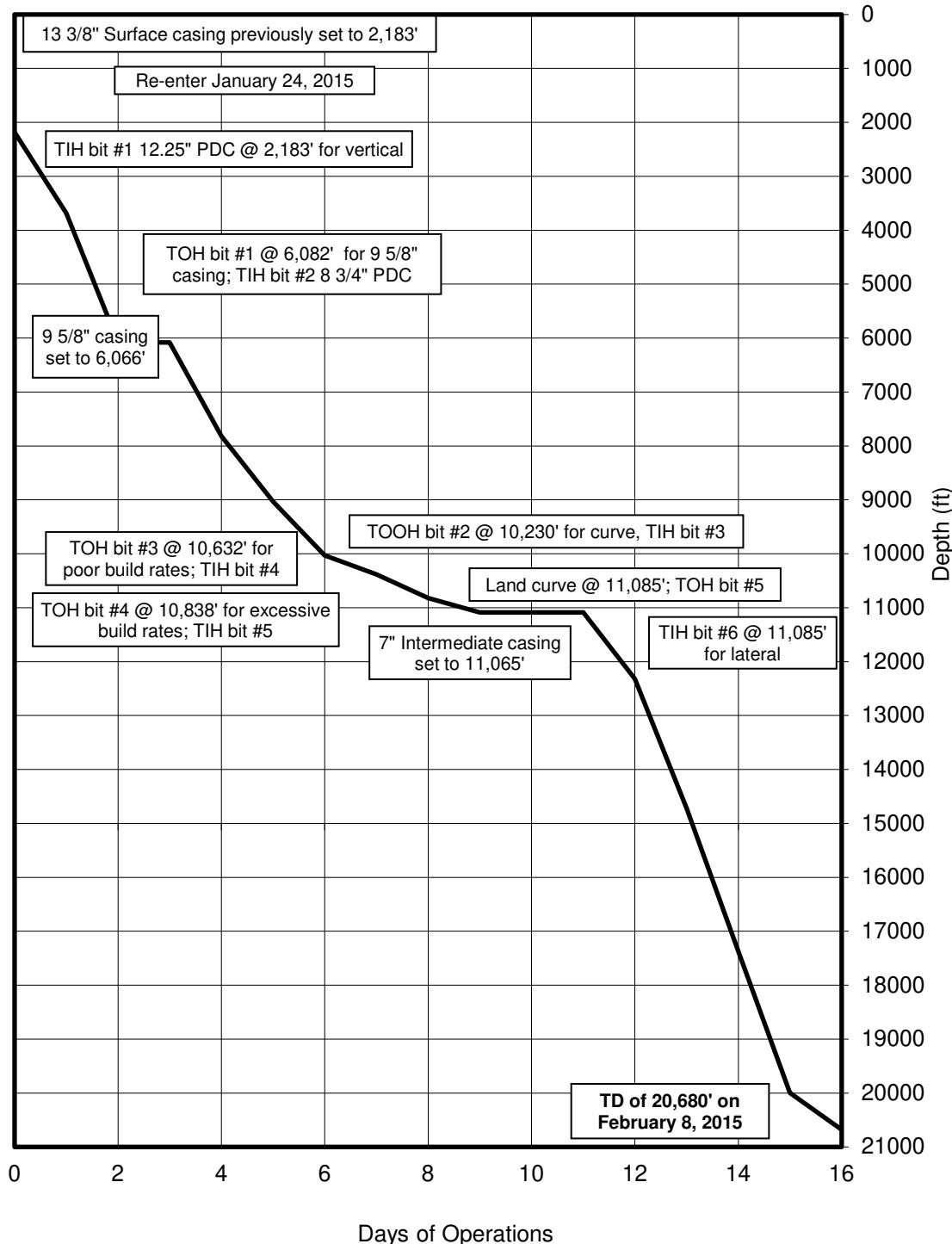
Drawn By: B.H.H. | Project No.: S13-09-202.08
Checked By: D.D.K. | Date: JAN. 2014

Revision No.	Date	By	Description
REV 1	3/3/14	JRS	Moved wells on pad
REV 2	4/22/14	BHJ	Moved wells on pad/revised pad
REV 3	5/2/14	BHJ	Moved wells on pad/revised pad

SCALE: 1" = 2 MILE

TIME VS DEPTH

Oasis Petroleum North America, LLC
Chalmers 5300 21-19 11B



DAILY DRILLING SUMMARY

Day	Date 2015	Depth (0600 Hrs)	24 Hr Footage	Bit #	WOB (Klbs) RT	RPM (RT)	WOB (Klbs) MM	RPM (MM)	24 Hr Activity			Formation
									PP	SPM 1	SPM 2	
0	1/24	2,183'	-	-	-	-	-	-	-	-	-	Surface
1	1/25	3,687'	1,504	1	25	50	-	-	3,900	95	95	669
2	1/26	6,082'	2,395	1	25	50	-	-	3,900	95	95	669
3	1/27	6,082'	0	-	-	-	-	-	-	-	-	Dakota
4	1/28	7,819'	1,737	2	15	50	30	-	3,200	71	71	500
5	1/29	9,032'	1,213	2	15	50	20	130	3,500	77	77	542
6	1/30	10,028'	996	2	40	55	35	130	3,500	77	77	542
7	1/31	10,381'	353	2/3	25	25	40	145	3,650	71	71	500

DAILY DRILLING SUMMARY

Day	Date 2015	Depth (0600 Hrs)	24 Hr Footage	Bit #	WOB (Klbs) RT	RPM (RT)	WOB (Klbs) MM	RPM (MM)	24 Hr Activity			Formation
									PP	SPM 1	SPM 2	
8	2/1	10,822'	441	3/4	50	20	70	159	3650	78	78	549
9	2/2	11,085'	263	4/5	20	25	50	147	3800	72	72	507
10	2/3	11,085'	0	-	-	-	-	-	-	-	-	Middle Bakken Member
11	2/4	11,085'	0	-	-	-	-	-	-	-	-	Middle Bakken Member
12	2/5	12,320'	1,235	6	11	40	30	10	3600	88	-	310
13	2/6	14,721'	2,401	6	20	40	50	305	3600	84	-	296
14	2/7	17,375'	2,654	6	20	40	60	289	3800	80	-	281

DAILY DRILLING SUMMARY

Day	Date 2015	Depth (0600 Hrs)	24 Hr Footage	Bit #	WOB (Klbs) RT	RPM (RT)	WOB (Klbs) MM	RPM (MM)	PP	SPM 1	SPM 2	GPM	24 Hr Activity		Formation
15	2/8	19,997'	2,622	6	20	45	55	261	3900	72	-	253	19,997'	Drilling and sliding when needed from 17,375'-18,007'. Service rig. Drilling and sliding when needed from 18,007'-19807'. Service rig, spr @ 19,807' 40 stk 1270 psi. Drilling and sliding when needed from 19807-.	Middle Bakken Member
16	2/9	20,680'	683	6	20	45	55	261	3900	72	-	253	Drilling and sliding when needed from 19,997'-20,680'. Circulate and condition. TOH	Middle Bakken Member	

DAILY MUD SUMMARY

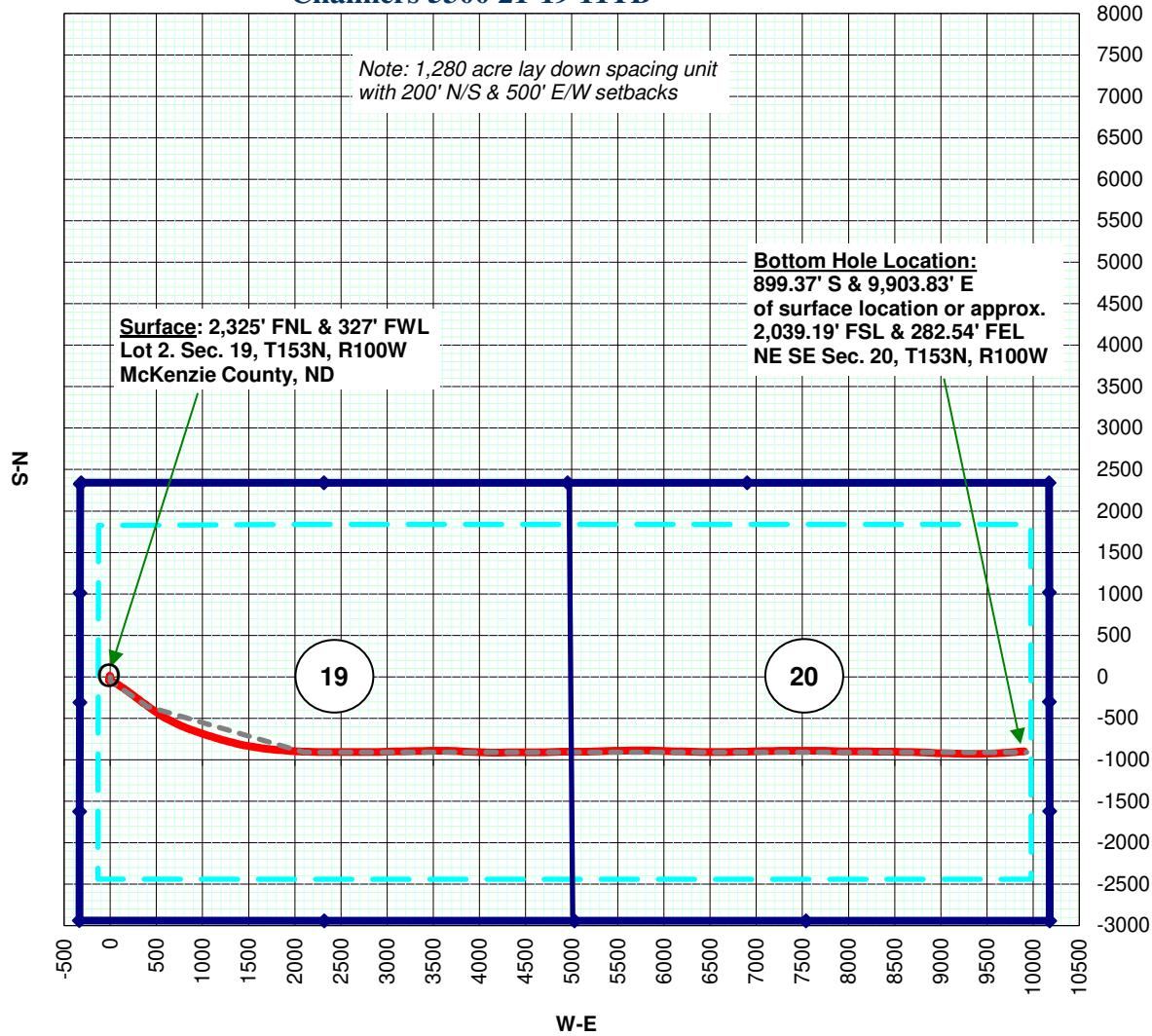
Day	Date 2015	Mud Depth	Drilling Fluid	Mud WT (ppg)	Vis (sec/qt)	PV (cP)	YP (lbs/100 ft ²)	Gels (lbs/100 ft ²)	600/300	NAP/H ₂ O (ratio)	NAP/H ₂ O (% by vol)	Cake (API/HTHP)	Cor. Solids (%)	Alk	pH	Excess Lime (lb/bbl)	Cl ⁻ (mg/L)	HGS/LGS (%)	Salinity (ppm)	Electrical Stability	Gain/Loss (bbls)
0	01/24	2,183'	invert	11.1	78	20	10	11/14/-	50/30	71.4/28.6	60/24	2	13.2	2.1	-	2.7	46k	12.2/1	240,045	420	-
1	01/25	3,687'	invert	11.1	78	20	10	11/14/-	50/30	71.4/28.6	60/24	2	13.2	2.1	-	2.7	46k	12.2/1	240,045	420	-
2	01/26	4,060'	invert	11.5	66	24	10	13/21/-	58/34	70.7/29.3	58/24	2	15.2	2.2	-	2.8	46k	13.5/1.7	240,045	370	-73
3	01/27	6,082'	invert	11.5	66	21	10	12/17/-	52/31	72.4/27.6	59/22.5	2	15.6	2.1	-	2.7	48k	13.2/2.4	260,122	400	-46
4	01/28	6,413'	invert	10.6	64	21	11	11/17/-	53/32	68.6/31.4	59/27	2	11.4	2	-	2.6	43k	10.2/1.2	207,595	667	-63
5	01/29	7,932'	invert	10	50	16	10	10/16/-	42/26	72.7/27.3	64/24	3	9.4	2.1	-	2.7	43k	8.1/1.3	227,958	790	-210
6	01/30	9,310'	invert	10	58	18	10	10/14/16	46/28	75.6/24.4	65/21	2	112.2	3.6	-	4.7	50k	6.8/4.4	255,583	473	-10
7	01/31	10,230'	invert	10.3	56	11	11	12/15/16	45/28	77.6/22.4	66/19	2	12.5	3.8	-	4.9	55k	7.9/4.5	264,320	535	-109
8	02/01	10,630'	invert	10.35	62	19	10	10/13/15	48/29	77.6/22.4	66/19	2	12.5	3.9	-	5.1	54k	8.5/4.0	264,320	570	-38
9	02/02	11,085'	invert	10.35	62	19	10	10/13/15	48/29	77.6/22.4	66/19	2	12.5	3.9	-	5.1	54k	8.5/4.0	264,320	570	-/-
10	02/03	11,085'	invert	10.35	62	19	10	10/13/15	48/29	77.6/22.4	66/19	2	12.5	3.9	-	5.1	54k	8.5/4.0	264,320	570	-/-
11	02/04	11,085'	invert	10.5	87	22	12	11/15/17	56/34	76.2/23.8	64/20	2	13.3	2.8	-	3.6	52k	8.7/4.6	246,320	534	-/-
12	02/05	12,320'	saltwater	9.6	27	2	1	1/1/1	5/3	-	2/89	-	9	-	9	-	140k	0/0.8	-	-	-/-
13	02/06	14,721'	saltwater	9.6	27	2	1	1/1/1	5/3	-	2/89	-	9	-	9	-	140k	0/0.8	-	-	-/-
14	02/07	17,375'	saltwater	9.6	27	2	1	1/1/1	5/3	-	2/89	-	9	-	9	-	140k	0/0.8	-	-	-/-
15	02/08	19,997'	saltwater	9.7	28	2	1	1/1/1	5/3	-	0/89	-	-	-	7	-	154k	-/-	-	-	-/-
16	02/09	20,680'	saltwater	9.7	28	2	1	1/1/1	5/3	-	0/89	-	-	-	7	-	154k	-/-	-	-	-/-

BOTTOM HOLE ASSEMBLY RECORD

BHA Run	Depth In	Depth Out	Footage	Hours	Accum. Hours	Vert. Dev.	Bit Data					Motor Data								
							Bit #	Size (in.)	Type	Make	Model	Serial #	Jets	Hours	Motor #	Make	Model			
1	2,183'	6,082'	3,899'	27	27.00	Vertical	1	12 1/4	PDC	Varel	V619PD	4008019	5x20	27	1	NOV	6/5 5.0	2.12°	27	0.13
2	6,082'	10,230'	4,148'	61	88.00	Vertical	2	8 3/4	PDC	Ultra	U616M	27806	6x16	61	2	NOV	7/8 5.7	1.50°	61	0.24
3	10,230'	10,632'	402'	9	97.00	Curve	3	8 3/4	PDC	Ultra	U516M	27451	5x18	9	3	NOV	7/8 5.0	2.38°	9	0.29
4	10,632'	10,838'	206'	9	106.00	Curve	4	8 3/4	Tri-cone	Smith	F30T	RD6694	22x3	9	4	Cavare	6/7 5.0	2.60°	9	0.29
5	10,838'	11,085'	247'	5	111.00	Curve	5	8 3/4	PDC	Security	MMD55M	12564961	5x18	5	5/RR4	Cavare	6/7 5.0	2.45°	5	0.29
6	11,085'	20,680'	9,595'	92	203.00	Lateral	6	6	PDC	Hughes	T406	TX20503R	6x18	92	6	Baker	XLP	1.50°	92	1.03

PLAN VIEW

**Oasis Petroleum North America, LLC
Chalmers 5300 21-19 11TB**

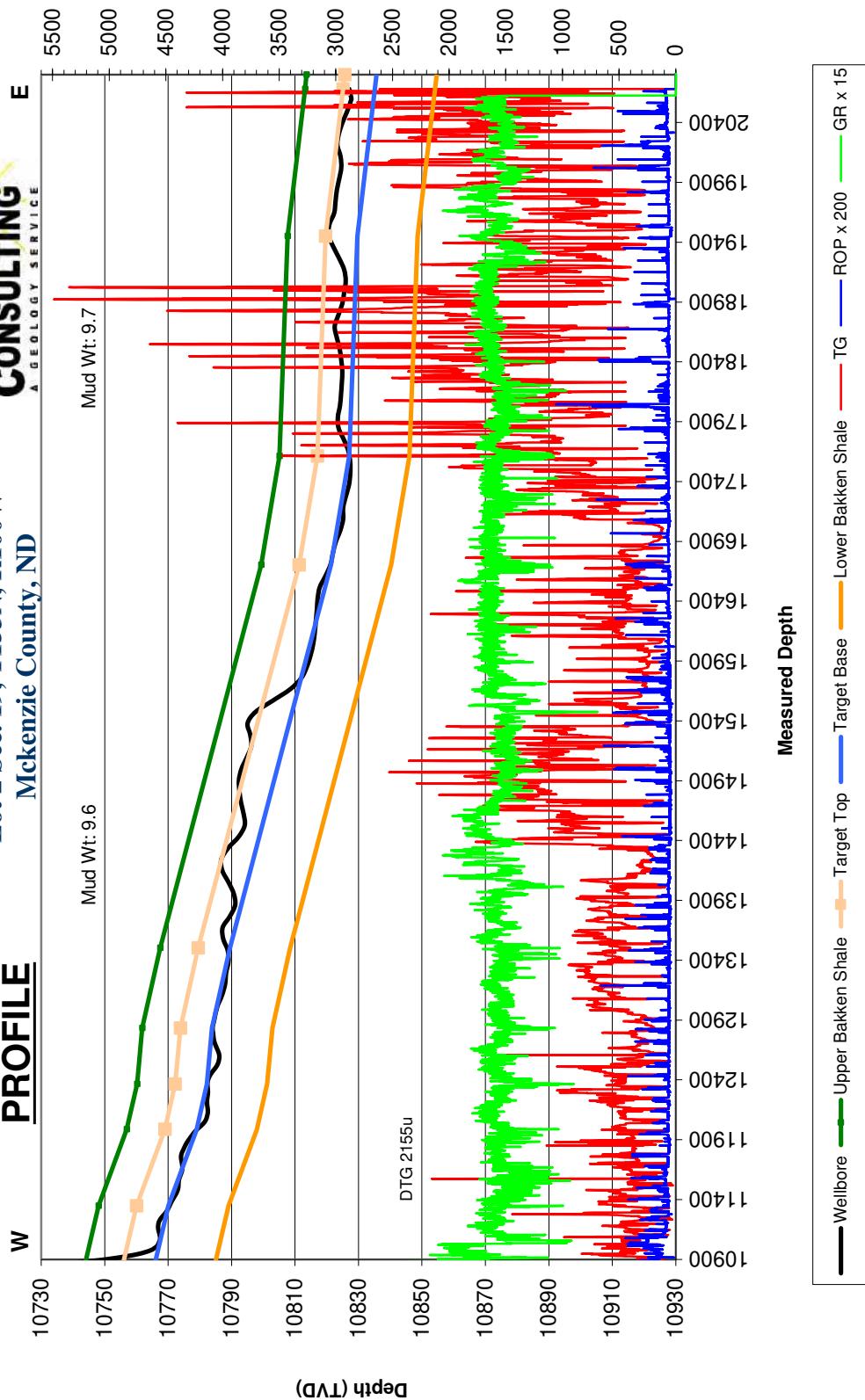


Oasis Petroleum North America, LLC
 Chalmers 5300 21-19 11TB
 Lot 2 Sec. 19, T153N, R100W
 Mckenzie County, ND



PROFILE

Total Gas, ROP x 200, Gamma Ray x 15



FORMATION MARKERS & DIP ESTIMATES

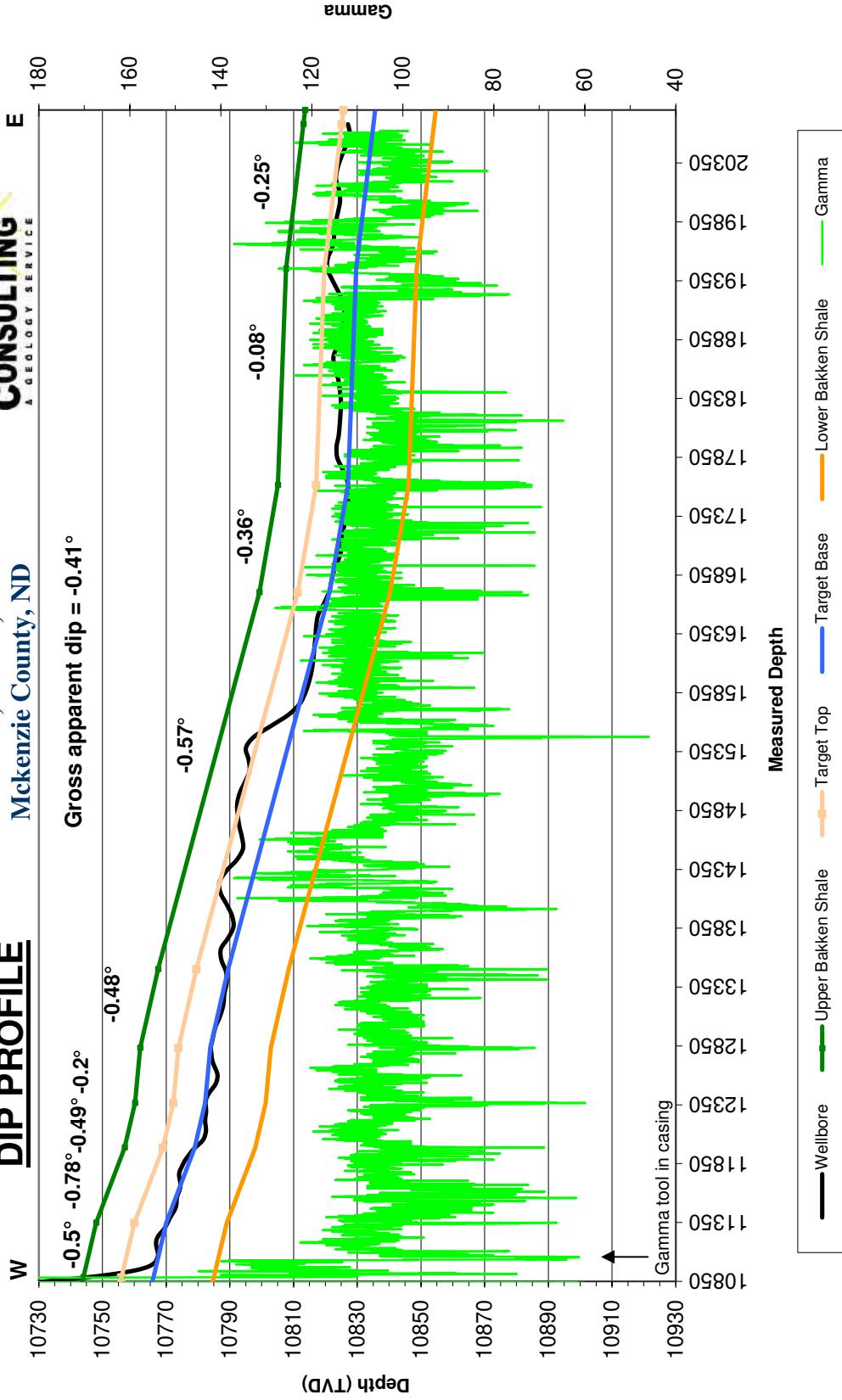
Oasis Petroleum North America, LLC - Chalmers 5300 21-19 11TB

Dip Change Points	MD	TVD	TVD diff.	MD diff.	Dip	Dipping up/down	Type of Marker
Marker							
Zone entry	10,884'	10,755.00					Gamma
Target bottom	11,105'	10,756.91	1.91	221.00	-0.50	Down	Gamma
Target bottom	11,988'	10,768.99	12.08	883.00	-0.78	Down	Gamma
Target bottom	12,365'	10,772.22	3.23	377.00	-0.49	Down	Gamma
Target bottom	12,833'	10,773.85	1.63	468.00	-0.20	Down	Gamma
Target bottom	13,503'	10,779.46	5.61	670.00	-0.48	Down	Gamma
Target bottom	16,703'	10,811.30	31.84	3200.00	-0.57	Down	Gamma
Target bottom	17,614'	10,817.10	5.80	911.00	-0.36	Down	Gamma
Target top	19,451'	10,819.66	2.56	1837.00	-0.08	Down	Gamma
TD	20,680'	10,825.12	5.46	1229.00	-0.25	Down	Gamma
Gross Dip							
Initial Target Contact	10,884'	10,755.00					
Projected Final Target Contact	20,680'	10,825.12	70.12	9796.00	-0.41	Down	Projection

Oasis Petroleum North America, LLC
 Chalmers 5300 21-19 11TB
 Lot 2 Sec. 19, T153N, R100W
 Mckenzie County, ND



DIP PROFILE



SUNBURST CONSULTING, INC.

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Operator:	Oasis Petroleum North America, LLC	
Well :	Chalmers 5300 21-19 11TB	
County:	Mckenzie	State: ND
QQ:	Lot 2	Section: 19
Township:	153	N/S: N
Range:	100	E/W: W
Footages:	2325	FN/SL: N
	327	FE/WL: W

Kick-off:	1/31/2015
Finish:	2/8/2015
Directional Supervision:	Ryan Directional Services

Date: 2/17/2015
 Time: 10:16
F9 to re-calculate

Proposed dir: 95.23

Minimum Curvature Method (SPE-3362)

[North and East are positive and South and West are negative, relative to surface location]

No.	MD	INC	TRUE				SECT	DLS/ 100
			AZM	TVD	N-S	E-W		
Tie	2148.00	0.70	242.30	2147.61	11.61	-0.75	-0.75	0.46
1	2230.00	0.90	250.90	2229.60	11.17	-1.80	-2.81	0.28
2	2323.00	1.00	251.50	2322.59	10.67	-3.26	-4.22	0.11
3	2417.00	0.90	247.70	2416.58	10.13	-4.72	-5.63	0.13
4	2510.00	1.10	235.30	2509.56	9.34	-6.13	-6.96	0.32
5	2603.00	2.10	177.00	2602.53	7.13	-6.78	-7.40	1.92
6	2697.00	2.30	175.60	2696.46	3.53	-6.54	-6.84	0.22
7	2790.00	1.40	166.50	2789.41	0.57	-6.13	-6.16	1.01
8	2884.00	1.40	172.60	2883.38	-1.69	-5.72	-5.54	0.16
9	2977.00	1.50	175.80	2976.35	-4.03	-5.48	-5.09	0.14
10	3071.00	1.60	178.70	3070.32	-6.57	-5.36	-4.74	0.14
11	3164.00	1.60	178.10	3163.28	-9.16	-5.29	-4.43	0.02
12	3257.00	1.50	176.80	3256.25	-11.68	-5.18	-4.09	0.11
13	3350.00	1.50	177.40	3349.22	-14.11	-5.06	-3.75	0.02
14	3444.00	1.60	174.50	3443.18	-16.64	-4.87	-3.34	0.14
15	3537.00	0.70	147.20	3536.16	-18.41	-4.44	-2.75	1.11
16	3631.00	0.80	146.90	3630.16	-19.44	-3.77	-1.98	0.11
17	3724.00	0.80	145.50	3723.15	-20.52	-3.05	-1.17	0.02
18	3817.00	0.80	141.90	3816.14	-21.57	-2.28	-0.31	0.05
19	3911.00	0.90	147.70	3910.13	-22.71	-1.48	0.59	0.14
20	4004.00	0.70	147.90	4003.12	-23.81	-0.79	1.38	0.22
21	4097.00	0.70	141.30	4096.11	-24.73	-0.13	2.12	0.09
22	4191.00	0.70	145.30	4190.10	-25.65	0.55	2.89	0.05
23	4284.00	0.20	159.10	4283.10	-26.27	0.93	3.32	0.55
24	4377.00	0.10	254.60	4376.10	-26.44	0.91	3.32	0.25
25	4471.00	0.10	202.10	4470.10	-26.54	0.80	3.22	0.09
26	4564.00	0.30	223.90	4563.10	-26.79	0.60	3.04	0.23
27	4657.00	0.30	255.10	4656.10	-27.03	0.20	2.66	0.17
28	4751.00	0.20	257.20	4750.10	-27.13	-0.20	2.28	0.11
29	4844.00	0.20	259.70	4843.10	-27.20	-0.52	1.97	0.01
30	4937.00	0.20	234.00	4936.10	-27.32	-0.81	1.69	0.10
31	5031.00	0.40	223.60	5030.10	-27.65	-1.17	1.36	0.22
32	5124.00	0.40	241.50	5123.09	-28.04	-1.68	0.89	0.13
33	5217.00	0.40	254.20	5216.09	-28.29	-2.27	0.32	0.10
34	5311.00	0.50	262.40	5310.09	-28.43	-2.99	-0.39	0.13

SUNBURST CONSULTING, INC.

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Operator:	Oasis Petroleum North America, LLC	
Well :	Chalmers 5300 21-19 11TB	
County:	Mckenzie	State: ND
QQ:	Lot 2	Section: 19
Township:	153	N/S: N
Range:	100	E/W: W
Footages:	2325	FN/SL: N
	327	FE/WL: W

Kick-off:	1/31/2015
Finish:	2/8/2015
Directional Supervision:	Ryan Directional Services

Date: 2/17/2015
 Time: 10:16
F9 to re-calculate

Proposed dir: 95.23

Minimum Curvature Method (SPE-3362)

[North and East are positive and South and West are negative, relative to surface location]

No.	MD	INC	TRUE				SECT	DLS/ 100
			AZM	TVD	N-S	E-W		
35	5404.00	0.40	257.50	5403.09	-28.56	-3.71	-1.10	0.12
36	5498.00	0.40	257.80	5497.08	-28.70	-4.36	-1.72	0.00
37	5591.00	0.40	228.40	5590.08	-28.98	-4.92	-2.25	0.22
38	5684.00	0.40	252.00	5683.08	-29.30	-5.47	-2.77	0.18
39	5777.00	0.20	270.40	5776.08	-29.39	-5.94	-3.23	0.24
40	5871.00	0.10	288.60	5870.08	-29.37	-6.18	-3.48	0.12
41	5964.00	0.20	266.80	5963.08	-29.35	-6.42	-3.72	0.12
42	6026.00	0.30	245.80	6025.08	-29.42	-6.67	-3.96	0.22
43	6114.00	0.40	317.80	6113.07	-29.29	-7.09	-4.39	0.48
44	6208.00	0.40	340.70	6207.07	-28.74	-7.42	-4.77	0.17
45	6301.00	0.50	1.10	6300.07	-28.03	-7.52	-4.93	0.20
46	6394.00	0.50	128.90	6393.07	-27.87	-7.20	-4.63	0.97
47	6488.00	0.70	142.60	6487.06	-28.59	-6.53	-3.89	0.26
48	6581.00	1.00	177.60	6580.05	-29.85	-6.15	-3.40	0.63
49	6675.00	1.10	183.20	6674.04	-31.57	-6.16	-3.26	0.15
50	6768.00	1.20	187.80	6767.02	-33.43	-6.35	-3.27	0.15
51	6861.00	1.20	190.90	6860.00	-35.35	-6.66	-3.41	0.07
52	6955.00	1.10	200.00	6953.98	-37.16	-7.16	-3.74	0.22
53	7048.00	1.20	196.40	7046.96	-38.94	-7.74	-4.16	0.13
54	7141.00	1.20	187.10	7139.94	-40.84	-8.13	-4.38	0.21
55	7235.00	1.30	189.90	7233.92	-42.86	-8.44	-4.50	0.12
56	7328.00	0.50	191.90	7326.91	-44.30	-8.70	-4.63	0.86
57	7421.00	0.60	49.80	7419.90	-44.38	-8.42	-4.33	1.12
58	7515.00	0.50	47.40	7513.90	-43.79	-7.74	-3.71	0.11
59	7608.00	0.40	38.60	7606.90	-43.26	-7.24	-3.26	0.13
60	7701.00	0.30	15.50	7699.89	-42.77	-6.97	-3.04	0.18
61	7795.00	0.30	339.90	7793.89	-42.30	-6.99	-3.10	0.20
62	7888.00	0.40	286.80	7886.89	-41.98	-7.38	-3.52	0.35
63	7981.00	0.40	269.30	7979.89	-41.89	-8.02	-4.17	0.13
64	8075.00	0.60	271.40	8073.89	-41.88	-8.84	-4.98	0.21
65	8168.00	0.70	333.90	8166.88	-41.36	-9.57	-5.76	0.73
66	8261.00	0.90	335.20	8259.87	-40.19	-10.13	-6.43	0.22
67	8355.00	0.90	27.50	8353.86	-38.86	-10.10	-6.51	0.84
68	8448.00	0.90	34.80	8446.85	-37.61	-9.35	-5.88	0.12
69	8542.00	0.90	39.50	8540.84	-36.44	-8.45	-5.10	0.08

SUNBURST CONSULTING, INC.

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Operator:	Oasis Petroleum North America, LLC	
Well :	Chalmers 5300 21-19 11TB	
County:	Mckenzie	State: ND
QQ:	Lot 2	Section: 19
Township:	153	N/S: N
Range:	100	E/W: W
Footages:	2325	FN/SL: N
	327	FE/WL: W

Kick-off:	1/31/2015
Finish:	2/8/2015
Directional Supervision:	Ryan Directional Services

Date: 2/17/2015
 Time: 10:16
F9 to re-calculate

Proposed dir: 95.23

Minimum Curvature Method (SPE-3362)

[North and East are positive and South and West are negative, relative to surface location]

No.	MD	INC	TRUE				SECT	DLS/ 100
			AZM	TVD	N-S	E-W		
70	8635.00	1.00	84.30	8633.83	-35.79	-7.18	-3.89	0.78
71	8728.00	1.00	101.90	8726.81	-35.88	-5.58	-2.29	0.33
72	8822.00	1.30	102.80	8820.79	-36.29	-3.74	-0.41	0.32
73	8915.00	1.30	98.10	8913.77	-36.67	-1.66	1.68	0.11
74	9008.00	1.30	106.70	9006.75	-37.12	0.39	3.77	0.21
75	9102.00	1.10	107.60	9100.73	-37.70	2.27	5.70	0.21
76	9195.00	1.50	142.60	9193.70	-38.94	3.86	7.39	0.94
77	9288.00	1.30	159.70	9286.68	-40.89	4.97	8.67	0.50
78	9382.00	0.60	168.60	9380.66	-42.37	5.43	9.27	0.76
79	9475.00	0.50	172.90	9473.66	-43.25	5.58	9.50	0.12
80	9569.00	0.60	184.70	9567.65	-44.15	5.59	9.59	0.16
81	9662.00	0.70	188.80	9660.65	-45.20	5.46	9.56	0.12
82	9755.00	0.60	184.40	9753.64	-46.25	5.34	9.53	0.12
83	9849.00	0.50	175.10	9847.64	-47.15	5.34	9.61	0.14
84	9942.00	0.60	174.30	9940.63	-48.03	5.42	9.78	0.11
85	10035.00	0.40	179.60	10033.63	-48.84	5.47	9.90	0.22
86	10129.00	0.30	199.50	10127.63	-49.40	5.39	9.87	0.17
87	10175.00	0.30	220.90	10173.63	-49.61	5.27	9.77	0.24
88	10226.00	0.20	214.20	10224.63	-49.78	5.13	9.65	0.20
89	10257.00	1.40	107.90	10255.62	-49.94	5.46	9.99	4.74
90	10288.00	4.40	112.70	10286.58	-50.52	6.92	11.50	9.70
91	10319.00	8.50	114.40	10317.38	-51.93	10.11	14.80	13.24
92	10350.00	13.00	117.20	10347.83	-54.47	15.30	20.20	14.61
93	10382.00	16.30	117.90	10378.78	-58.21	22.47	27.68	10.33
94	10413.00	18.70	119.40	10408.34	-62.69	30.64	36.23	7.88
95	10444.00	20.80	120.60	10437.52	-67.93	39.71	45.74	6.90
96	10475.00	22.70	120.50	10466.31	-73.77	49.61	56.12	6.13
97	10506.00	25.30	122.10	10494.63	-80.33	60.37	67.44	8.65
98	10537.00	28.90	123.20	10522.22	-87.95	72.26	79.97	11.72
99	10568.00	31.30	123.10	10549.04	-96.45	85.27	93.71	7.74
100	10602.00	33.00	122.70	10577.82	-106.28	100.46	109.73	5.04
101	10633.00	35.60	123.80	10603.43	-115.86	115.07	125.15	8.62
102	10664.00	39.60	126.60	10627.99	-126.78	130.50	141.52	14.03
103	10695.00	44.60	128.30	10650.98	-139.42	146.99	159.09	16.54
104	10727.00	50.30	128.80	10672.61	-154.11	165.41	178.77	17.85

SUNBURST CONSULTING, INC.

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Operator:	Oasis Petroleum North America, LLC	
Well :	Chalmers 5300 21-19 11TB	
County:	Mckenzie	State: ND
QQ:	Lot 2	Section: 19
Township:	153	N/S: N
Range:	100	E/W: W
Footages:	2325	FN/SL: N
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Kick-off:	1/31/2015
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F9 to re-calculate	

Minimum Curvature Method (SPE-3362)

[North and East are positive and South and West are negative, relative to surface location]

No.	MD	INC	TRUE				SECT	DLS/ 100
			AZM	TVD	N-S	E-W		
105	10758.00	57.00	130.20	10690.98	-169.99	184.66	199.39	21.92
106	10789.00	63.00	129.90	10706.47	-187.26	205.20	221.42	19.37
107	10820.00	65.50	129.80	10719.94	-205.15	226.64	244.39	8.07
108	10851.00	65.90	130.10	10732.70	-223.29	248.30	267.62	1.56
109	10882.00	69.50	129.90	10744.46	-241.72	270.26	291.17	11.63
110	10913.00	75.30	128.80	10753.83	-260.44	293.11	315.63	19.01
111	10945.00	80.20	128.80	10760.61	-280.03	317.47	341.67	15.31
112	10976.00	85.40	129.50	10764.50	-299.44	341.31	367.19	16.92
113	11007.00	87.80	129.30	10766.34	-319.08	365.22	392.79	7.77
114	11021.00	88.70	129.80	10766.76	-328.00	376.01	404.35	7.35
115	11066.00	89.60	127.30	10767.43	-356.03	411.20	441.94	5.90
116	11096.00	90.50	129.50	10767.41	-374.67	434.71	467.05	7.92
117	11127.00	90.60	129.50	10767.11	-394.38	458.63	492.67	0.32
118	11159.00	90.30	128.50	10766.86	-414.52	483.49	519.27	3.26
119	11191.00	89.60	128.40	10766.88	-434.42	508.56	546.04	2.21
120	11222.00	89.10	126.60	10767.24	-453.29	533.15	572.25	6.03
121	11254.00	88.00	123.20	10768.05	-471.59	559.38	600.04	11.16
122	11284.00	88.20	123.00	10769.04	-487.96	584.50	626.54	0.94
123	11314.00	88.90	121.30	10769.80	-503.92	609.89	653.28	6.13
124	11345.00	88.90	119.30	10770.40	-519.56	636.65	681.36	6.45
125	11377.00	89.10	119.30	10770.95	-535.22	664.55	710.57	0.63
126	11407.00	88.50	117.80	10771.58	-549.55	690.89	738.11	5.38
127	11439.00	88.90	117.20	10772.31	-564.32	719.27	767.72	2.25
128	11470.00	89.00	116.90	10772.88	-578.42	746.87	796.49	1.02
129	11502.00	89.80	115.70	10773.21	-592.59	775.56	826.35	4.51
130	11533.00	90.00	115.00	10773.27	-605.87	803.57	855.46	2.35
131	11565.00	89.50	113.80	10773.41	-619.09	832.72	885.68	4.06
132	11596.00	89.10	112.20	10773.78	-631.20	861.25	915.20	5.32
133	11628.00	89.30	112.60	10774.23	-643.39	890.83	945.77	1.40
134	11658.00	89.80	112.20	10774.47	-654.82	918.57	974.43	2.13
135	11689.00	90.30	111.40	10774.44	-666.33	947.35	1004.14	3.04
136	11721.00	90.40	111.00	10774.24	-677.91	977.18	1034.91	1.29
137	11751.00	90.30	110.60	10774.06	-688.56	1005.23	1063.81	1.37
138	11783.00	89.10	109.20	10774.23	-699.45	1035.31	1094.76	5.76
139	11814.00	89.00	109.10	10774.74	-709.62	1064.59	1124.85	0.46

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SUNBURST CONSULTING, INC.

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Operator:	Oasis Petroleum North America, LLC	
Well :	Chalmers 5300 21-19 11TB	
County:	Mckenzie	State: ND
QQ:	Lot 2	Section: 19
Township:	153	N/S: N
Range:	100	E/W: W
Footages:	2325	FN/SL: N
	327	FE/WL: W

Kick-off:	1/31/2015
Finish:	2/8/2015
Directional Supervision:	Ryan Directional Services

Date: 2/17/2015
 Time: 10:16
F9 to re-calculate

Proposed dir: 95.23

Minimum Curvature Method (SPE-3362)

[North and East are positive and South and West are negative, relative to surface location]

No.	MD	INC	TRUE				SECT	DLS/ 100
			AZM	TVD	N-S	E-W		
140	11845.00	89.00	109.30	10775.28	-719.81	1093.87	1154.93	0.65
141	11876.00	88.70	109.10	10775.91	-730.01	1123.14	1185.00	1.16
142	11907.00	88.30	108.80	10776.72	-740.07	1152.45	1215.11	1.61
143	11937.00	88.60	108.90	10777.53	-749.76	1180.83	1244.25	1.05
144	11968.00	88.00	107.10	10778.45	-759.33	1210.29	1274.47	6.12
145	12000.00	87.60	107.20	10779.68	-768.76	1240.85	1305.76	1.29
146	12031.00	87.70	106.40	10780.95	-777.71	1270.50	1336.10	2.60
147	12063.00	89.10	105.40	10781.84	-786.48	1301.26	1367.54	5.38
148	12094.00	89.40	105.70	10782.25	-794.79	1331.13	1398.03	1.37
149	12126.00	89.70	105.40	10782.50	-803.36	1361.95	1429.51	1.33
150	12158.00	90.40	103.80	10782.47	-811.43	1392.92	1461.08	5.46
151	12189.00	90.20	103.20	10782.31	-818.67	1423.06	1491.76	2.04
152	12221.00	90.00	102.40	10782.25	-825.76	1454.27	1523.48	2.58
153	12252.00	89.60	100.90	10782.36	-832.02	1484.63	1554.29	5.01
154	12284.00	89.80	101.30	10782.53	-838.18	1516.03	1586.12	1.40
155	12315.00	90.20	100.90	10782.53	-844.15	1546.45	1616.96	1.82
156	12347.00	90.20	99.80	10782.42	-849.89	1577.93	1648.83	3.44
157	12379.00	89.80	99.10	10782.42	-855.15	1609.49	1680.74	2.52
158	12410.00	89.10	99.30	10782.71	-860.10	1640.09	1711.66	2.35
159	12442.00	88.80	97.40	10783.30	-864.75	1671.74	1743.61	6.01
160	12473.00	88.30	97.20	10784.08	-868.69	1702.48	1774.58	1.74
161	12505.00	88.30	96.90	10785.03	-872.61	1734.23	1806.55	0.94
162	12537.00	89.30	96.10	10785.70	-876.24	1766.01	1838.53	4.00
163	12568.00	89.50	95.70	10786.03	-879.42	1796.85	1869.53	1.44
164	12600.00	90.10	95.60	10786.14	-882.57	1828.69	1901.53	1.90
165	12631.00	90.90	95.10	10785.87	-885.46	1859.56	1932.53	3.04
166	12663.00	90.90	95.40	10785.37	-888.39	1891.42	1964.52	0.94
167	12695.00	90.90	95.30	10784.86	-891.37	1923.27	1996.52	0.31
168	12726.00	90.50	94.20	10784.49	-893.94	1954.17	2027.52	3.78
169	12758.00	90.20	94.30	10784.29	-896.31	1986.08	2059.51	0.99
170	12789.00	90.20	94.00	10784.18	-898.56	2017.00	2090.50	0.97
171	12821.00	90.40	92.50	10784.01	-900.37	2048.94	2122.48	4.73
172	12853.00	89.30	91.80	10784.10	-901.57	2080.92	2154.44	4.07
173	12884.00	89.60	92.40	10784.40	-902.71	2111.90	2185.39	2.16
174	12916.00	89.50	90.60	10784.65	-903.54	2143.88	2217.32	5.63

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SUNBURST CONSULTING, INC.

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Operator:	Oasis Petroleum North America, LLC	
Well :	Chalmers 5300 21-19 11TB	
County:	Mckenzie	State: ND
QQ:	Lot 2	Section: 19
Township:	153	N/S: N
Range:	100	E/W: W
Footages:	2325	FN/SL: N
	327	FE/WL: W

Kick-off:	1/31/2015
Finish:	2/8/2015
Directional Supervision:	Ryan Directional Services
Date:	2/17/2015
Time:	10:16
F9 to re-calculate	

Minimum Curvature Method (SPE-3362)

[North and East are positive and South and West are negative, relative to surface location]

No.	MD	INC	TRUE				SECT	DLS/ 100
			AZM	TVD	N-S	E-W		
175	13011.00	89.50	90.70	10785.48	-904.62	2238.87	2312.01	0.11
176	13105.00	88.70	89.40	10786.95	-904.70	2332.86	2405.61	1.62
177	13200.00	90.10	90.30	10787.95	-904.45	2427.85	2500.19	1.75
178	13295.00	89.50	90.50	10788.28	-905.12	2522.85	2594.85	0.67
179	13389.00	89.60	90.30	10789.02	-905.77	2616.84	2688.51	0.24
180	13484.00	90.70	90.20	10788.77	-906.19	2711.84	2783.15	1.16
181	13579.00	91.00	89.90	10787.36	-906.27	2806.83	2877.75	0.45
182	13674.00	89.20	88.10	10787.19	-904.61	2901.81	2972.18	2.68
183	13768.00	88.00	88.70	10789.49	-901.99	2995.74	3065.49	1.43
184	13863.00	90.00	89.00	10791.15	-900.08	3090.70	3159.88	2.13
185	13958.00	90.60	88.50	10790.65	-898.01	3185.68	3254.27	0.82
186	14053.00	91.40	88.70	10788.99	-895.69	3280.63	3348.62	0.87
187	14148.00	90.90	88.80	10787.09	-893.62	3375.59	3442.99	0.54
188	14242.00	89.50	88.80	10786.76	-891.65	3469.57	3536.40	1.49
189	14337.00	87.90	90.30	10788.91	-890.90	3564.53	3630.90	2.31
190	14432.00	88.10	91.30	10792.23	-892.23	3659.46	3725.56	1.07
191	14527.00	89.60	92.60	10794.14	-895.46	3754.39	3820.38	2.09
192	14621.00	90.80	93.60	10793.81	-900.54	3848.24	3914.31	1.66
193	14716.00	90.20	92.70	10792.98	-905.76	3943.10	4009.24	1.14
194	14811.00	90.40	92.00	10792.48	-909.66	4038.01	4104.12	0.77
195	14906.00	89.80	91.00	10792.32	-912.15	4132.98	4198.92	1.23
196	15000.00	89.20	89.20	10793.14	-912.31	4226.97	4292.54	2.02
197	15095.00	88.80	88.60	10794.79	-910.49	4321.94	4386.94	0.76
198	15190.00	89.50	89.80	10796.20	-909.16	4416.92	4481.40	1.46
199	15285.00	90.90	91.10	10795.87	-909.91	4511.91	4576.07	2.01
200	15380.00	90.10	89.40	10795.04	-910.32	4606.90	4670.70	1.98
201	15474.00	86.90	88.00	10797.50	-908.19	4700.83	4764.04	3.72
202	15569.00	86.50	88.30	10802.97	-905.13	4795.62	4858.16	0.53
203	15664.00	86.90	89.60	10808.44	-903.39	4890.45	4952.43	1.43
204	15759.00	88.80	89.90	10812.00	-902.98	4985.37	5046.93	2.02
205	15854.00	89.10	89.60	10813.74	-902.56	5080.36	5141.48	0.45
206	15948.00	89.50	89.20	10814.89	-901.58	5174.35	5234.99	0.60
207	16043.00	89.50	88.20	10815.72	-899.42	5269.32	5329.36	1.05
208	16138.00	89.90	87.40	10816.22	-895.78	5364.24	5423.56	0.94
209	16233.00	89.70	88.10	10816.55	-892.05	5459.17	5517.76	0.77

SUNBURST CONSULTING, INC.

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Minimum Curvature Method (SPE-3362)

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No.	MD	INC	TRUE				SECT	DLS/ 100
			AZM	TVD	N-S	E-W		
210	16328.00	89.90	89.50	10816.88	-890.06	5554.15	5612.15	1.49
211	16422.00	89.80	89.10	10817.13	-888.91	5648.14	5705.65	0.44
212	16517.00	89.40	90.30	10817.79	-888.41	5743.13	5800.20	1.33
213	16612.00	88.40	90.30	10819.62	-888.91	5838.11	5894.83	1.05
214	16707.00	89.70	91.80	10821.19	-890.65	5933.08	5989.56	2.09
215	16801.00	89.40	92.50	10821.93	-894.18	6027.01	6083.42	0.81
216	16896.00	89.50	91.50	10822.84	-897.49	6121.95	6178.27	1.06
217	16991.00	88.80	91.80	10824.25	-900.23	6216.89	6273.07	0.80
218	17086.00	90.10	91.40	10825.16	-902.88	6311.85	6367.87	1.43
219	17180.00	89.90	90.80	10825.16	-904.68	6405.83	6461.63	0.67
220	17275.00	89.10	90.10	10825.99	-905.43	6500.83	6556.29	1.12
221	17370.00	89.70	90.00	10826.99	-905.51	6595.82	6650.90	0.64
222	17465.00	89.80	88.90	10827.40	-904.60	6690.81	6745.42	1.16
223	17559.00	90.20	88.90	10827.40	-902.80	6784.80	6838.84	0.43
224	17654.00	90.50	88.70	10826.82	-900.81	6879.77	6933.24	0.38
225	17749.00	91.20	87.90	10825.41	-897.99	6974.72	7027.54	1.12
226	17844.00	90.80	88.90	10823.75	-895.34	7069.67	7121.85	1.13
227	17939.00	89.50	88.50	10823.50	-893.18	7164.64	7216.23	1.43
228	18033.00	89.70	89.60	10824.16	-891.62	7258.62	7309.68	1.19
229	18128.00	89.90	90.10	10824.49	-891.37	7353.62	7404.26	0.57
230	18223.00	89.80	89.30	10824.74	-890.88	7448.62	7498.82	0.85
231	18318.00	90.00	89.30	10824.91	-889.72	7543.61	7593.31	0.21
232	18412.00	90.40	91.00	10824.58	-889.96	7637.61	7686.93	1.86
233	18507.00	90.20	92.10	10824.08	-892.53	7732.57	7781.73	1.18
234	18602.00	90.90	91.70	10823.17	-895.68	7827.51	7876.57	0.85
235	18697.00	89.90	91.20	10822.51	-898.08	7922.48	7971.36	1.18
236	18791.00	88.70	89.90	10823.65	-898.99	8016.46	8065.03	1.88
237	18886.00	89.80	90.30	10824.90	-899.15	8111.45	8159.64	1.23
238	18981.00	89.50	90.90	10825.48	-900.15	8206.45	8254.33	0.71
239	19076.00	89.90	90.80	10825.98	-901.56	8301.43	8349.05	0.43
240	19171.00	90.70	90.60	10825.48	-902.72	8396.42	8443.75	0.87
241	19265.00	91.20	90.20	10823.92	-903.37	8490.41	8537.41	0.68
242	19360.00	91.00	91.10	10822.10	-904.45	8585.38	8632.09	0.97
243	19455.00	90.80	92.10	10820.60	-907.10	8680.33	8726.88	1.07
244	19550.00	88.90	92.50	10820.85	-910.92	8775.25	8821.75	2.04

SUNBURST CONSULTING, INC.

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QQ:	Lot 2	Section: 19
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Minimum Curvature Method (SPE-3362)

[North and East are positive and South and West are negative, relative to surface location]

No.	MD	INC	TRUE				SECT	DLS/ 100
			AZM	TVD	N-S	E-W		
245	19645.00	89.30	92.70	10822.34	-915.22	8870.14	8916.64	0.47
246	19739.00	90.20	92.40	10822.76	-919.41	8964.05	9010.54	1.01
247	19834.00	89.30	91.70	10823.17	-922.81	9058.98	9105.39	1.20
248	19929.00	89.80	91.60	10823.92	-925.54	9153.94	9200.20	0.54
249	20024.00	89.40	91.10	10824.58	-927.78	9248.91	9294.98	0.67
250	20118.00	90.90	91.20	10824.33	-929.67	9342.89	9388.74	1.60
251	20213.00	90.30	88.50	10823.34	-929.42	9437.88	9483.30	2.91
252	20308.00	89.10	86.50	10823.84	-925.27	9532.78	9577.43	2.46
253	20403.00	89.50	86.60	10825.00	-919.56	9627.60	9671.34	0.43
254	20498.00	88.70	85.50	10826.49	-913.01	9722.36	9765.11	1.43
255	20593.00	89.80	85.60	10827.73	-905.64	9817.06	9858.75	1.16
256	20612.00	90.50	85.90	10827.68	-904.24	9836.01	9877.49	4.01
257	20680.00	90.50	85.90	10827.09	-899.37	9903.83	9944.58	0.00

DEVIATION SURVEYS

Depth	Inclination	Azimuth
160	0.90	215.30
251	0.70	262.00
344	0.40	86.60
428	0.40	85.90
515	0.40	109.10
599	0.50	84.50
687	0.70	91.90
773	0.90	127.20
860	0.90	124.60
945	0.50	113.70
1035	0.50	91.20
1125	1.10	43.40
1210	1.20	20.40
1301	1.20	8.70
1391	1.20	354.60
1477	1.80	350.90
1564	2.50	344.60
1656	2.60	334.50
1746	1.10	323.20
1835	0.70	251.10
1922	0.90	211.10
2011	0.50	221.00
2102	0.90	237.10

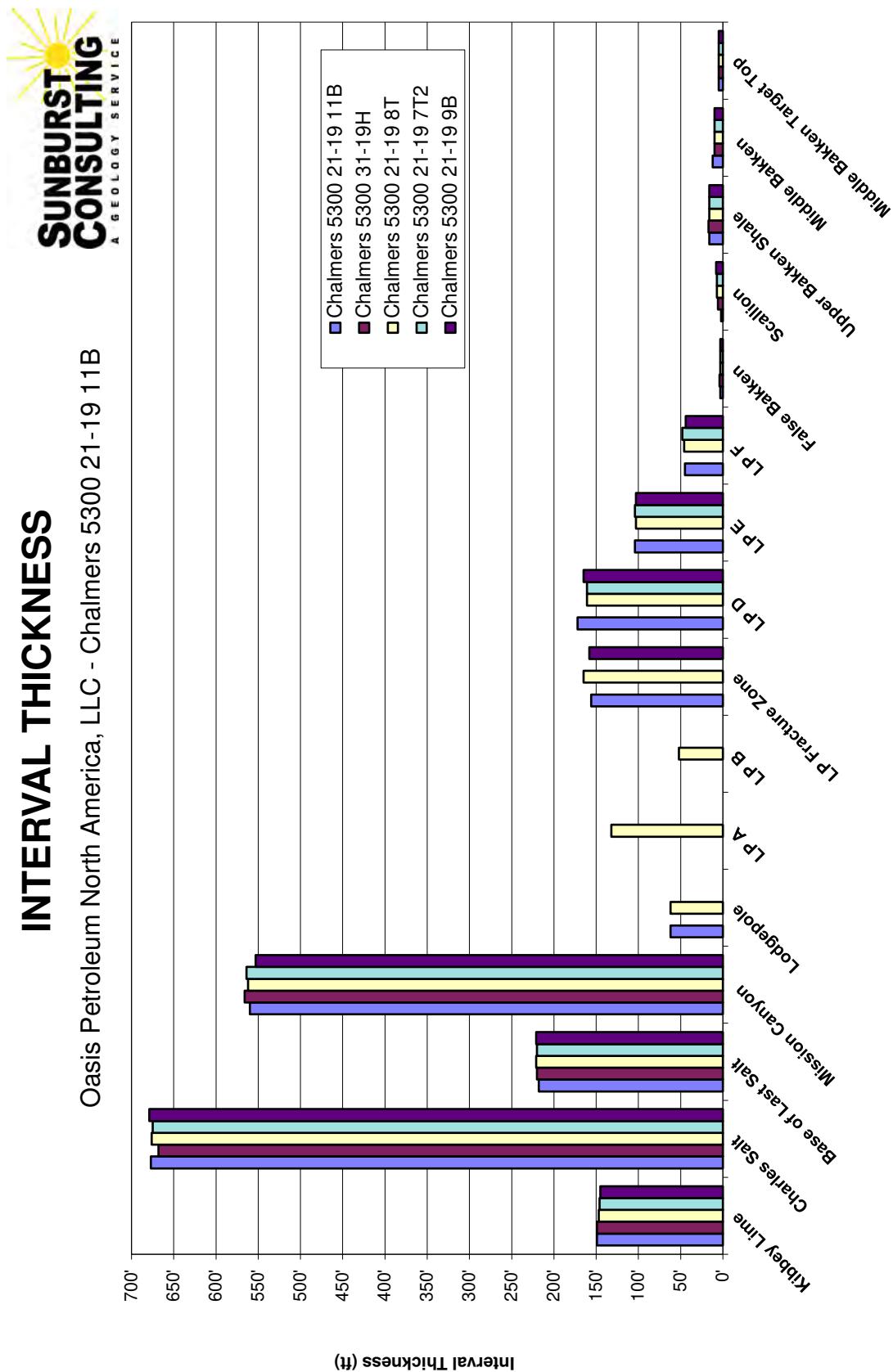
INFORMATION TOPS & STRUCTURAL RELATIONSHIPS

CONTROL DATA

Oasis Petroleum North America, LLC Chalmers 5300 21-19 8T NW SW Sec. 19 T153N R100W McKenzie County, ND ~1/4 mile S of subject well										Oasis Petroleum North America, LLC Chalmers 5300 21-19 7T2 Lot 2, Sec. 19, T153N, R101W McKenzie County, ND Shares pad with subject well										
Operator: Well Name: Location:										Operator: Well Name: Location:										
Oasis Petroleum North America, LLC Chalmers 5300 31-19H NW SW Sec. 19 T153N R100W McKenzie County, ND ~1/4 mile S of subject well										Oasis Petroleum North America, LLC Chalmers 5300 21-19 8T Lot 2, Sec. 19, T153N, R100W McKenzie County, ND Shares pad with subject well										
Elevation: KB: 1,929'										Elevation: KB: 2,076'										
Formation/ Zone	E-Log Top	Datum (MSL)	Interval Thickness	Thickness to Target Landing	TVD Top	Datum (MSL)	Interval Thickness	Thickness to Target Landing	E-Log Top	Datum (MSL)	Interval Thickness	Thickness to Target Landing	TVD Top	Datum (MSL)	Interval Thickness	Thickness to Target Landing	TVD Top	Datum (MSL)	Interval Thickness	Thickness to Target Landing
Kibbey Lime	8,243'	-6,314'	149'	2,355'	8,386'	-6,310'	147'	2,368'	8,388'	-6,312'	146'	2,367'	8,390'	-6,314'	145'	2,368'	8,390'	-6,314'	145'	2,368'
Charles Salt	8,392'	-6,463'	668'	2,206'	8,533'	-6,457'	676'	2,221'	8,534'	-6,458'	675'	2,221'	8,535'	-6,459'	679'	2,223'	8,535'	-6,459'	679'	2,223'
Base of Last Salt	9,060'	-7,131'	220'	1,538'	9,209'	-7,133'	221'	1,545'	9,209'	-7,133'	220'	1,546'	9,214'	-7,138'	221'	1,544'	9,214'	-7,138'	221'	1,544'
Mission Canyon	9,280'	-7,351'	566'	1,318'	9,430'	-7,354'	562'	1,324'	9,429'	-7,353'	564'	1,326'	9,435'	-7,359'	563'	1,323'	9,435'	-7,359'	563'	1,323'
Lodgepole	9,846'	-7,917'	-	752'	9,992'	-7,916'	62'	762'	9,993'	-7,917'	-	762'	9,988'	-7,912'	-	770'	9,988'	-7,912'	-	770'
LP A	-	-	-	-	-	-	10,054'	-7,978'	132'	700'	-	-	-	-	-	-	-	-	-	-
LP B	-	-	-	-	-	-	10,186'	-8,110'	52'	568'	-	-	-	-	-	-	-	-	-	-
LP Fracture Zone	-	-	-	-	-	-	10,238'	-8,162'	165'	516	-	-	-	-	-	-	10,246'	-8,170'	158'	512'
LP D	-	-	-	-	-	-	10,403'	-8,327'	161'	351'	10,401'	-8,325'	161'	354'	10,404'	-8,328'	165'	354'	10,404'	-8,328'
LP E	-	-	-	-	-	-	10,564'	-8,488'	103'	190'	10,562'	-8,486'	104'	193'	10,569'	-8,493'	103'	189'	10,569'	-8,493'
LP F	-	-	-	-	-	-	10,567'	-8,591'	46'	87'	10,666'	-8,590'	48'	89'	10,672'	-8,596'	44'	86'	10,672'	-8,596'
False Bakken	10,556'	-8,627'	4'	42'	10,713'	-8,637'	3'	41'	10,714'	-8,638'	3'	41'	10,716'	-8,640'	3'	41'	10,716'	-8,640'	3'	42'
Scallion	10,560'	-8,631'	6'	38'	10,716'	-8,640'	7'	38'	10,717'	-8,641'	7'	38'	10,719'	-8,643'	8'	39'	10,719'	-8,643'	8'	39'
Upper Bakken Shale	10,566'	-8,637'	17'	32'	10,723'	-8,647'	16'	31'	10,724'	-8,648'	16'	31'	10,727'	-8,651'	16'	31'	10,727'	-8,651'	16'	31'
Middle Bakken	10,583'	-8,654'	10'	15'	10,739'	-8,663'	10'	15'	10,740'	-8,664'	10'	15'	10,743'	-8,667'	10'	15'	10,743'	-8,667'	10'	15'
Middle Bakken Target Top	10,593'	-8,664'	5'	10,749'	-8,673'	5'	10,750'	-8,674'	5'	10,750'	-8,674'	5'	10,753'	-8,677'	5'	10,753'	-8,677'	5'	10,753'	-8,677'
Landing Target	10,598'	-8,669'	5'	0'	10,754'	-8,678'	6'	0'	10,755'	-8,679'	5'	0'	10,758'	-8,682'	5'	0'	10,758'	-8,682'	5'	0'
Middle Bakken Target Base	10,603'	-8,674'	13'	-5'	10,760'	-8,684'	23'	-6'	10,760'	-8,684'	22'	-5'	10,763'	-8,687'	22'	-5'	10,763'	-8,687'	22'	-5'
Lower Bakken Shale	10,616'	-8,687'	33'	-18'	10,783'	-8,707'	30'	-29'	10,782'	-8,706'	28'	-27'	10,785'	-8,709'	28'	-27'	10,785'	-8,709'	28'	-27'
Three Forks	10,649'	-8,720'	-	-51'	10,813'	-8,737'	-	-59'	10,810'	-8,734'	-	-55'	10,813'	-8,737'	-	-55'	10,813'	-8,737'	-	-55'

INTERVAL THICKNESS

Oasis Petroleum North America, LLC - Chalmers 5300 21-19 11B



LANDING PROJECTION

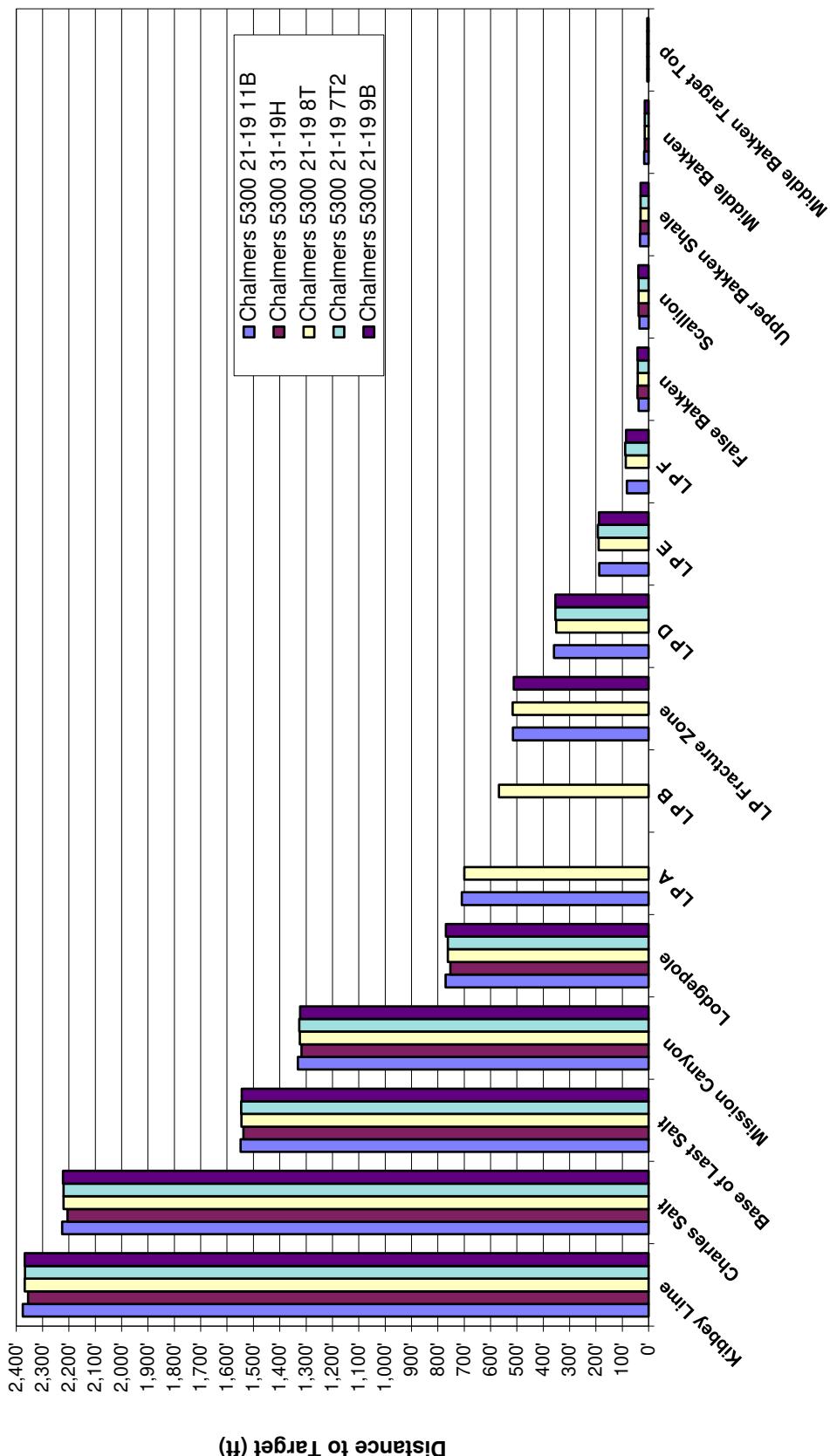
Formation/Zone:	Proposed Target Landing From:			
Chalmers 5300 31-19H	Chalmers 5300 21-19 8T	Chalmers 5300 21-19 712	Chalmers 5300 21-19 9B	Average of Offset Wells
Kibbey Lime	10,741'	10,754'	10,753'	10,754'
Charles Salt	10,741'	10,756'	10,756'	10,758'
Base of Last Salt	10,750'	10,757'	10,758'	10,756'
Mission Canyon	10,748'	10,754'	10,756'	10,753'
Lodgepole	10,742'	10,752'	10,752'	10,760'
LP A	-	10,752'	-	10,752'
LP B	-	-	-	-
LP Fracture Zone	-	10,762'	-	10,758'
LP D	-	10,753'	10,756'	10,760'
LP E	-	10,764'	10,767'	10,755'
LP F	-	10,765'	10,767'	10,765'
False Bakken	10,765'	10,764'	10,764'	10,765'
Scallion	10,764'	10,764'	10,764'	10,764'
Upper Bakken Shale	10,760'	10,759'	10,759'	10,759'
Middle Bakken	10,759'	10,759'	10,759'	10,759'
Middle Bakken Target Top	10,761'	10,761'	10,761'	10,761'
Landing Target	10,761'	10,761'	10,761'	10,761'

Current Landing Target (17` below base of UBS): 10,761'

Landing targets are subject to change as new formation tops are available

ISOPACH TO TARGET

Oasis Petroleum North America, LLC - Chalmers 5300 21-19 11B



LITHOLOGY

Oasis Petroleum North America, LLC
Chalmers 5300 21-19 11B

Rig crews caught 30' sample intervals, under the supervision of Sunburst geologists, from 8,240' to the TD of the lateral at 20,680'. Formation tops and lithologic markers have been inserted into the sample descriptions below for reference. Sample descriptions begin in the Kibbey Formation just prior to the Kibbey Lime. 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.

Drilling in the Kibbey Formation [Mississippian Big Snowy Group]

8,240-8,270 SILTSTONE: red brown, soft, sub blocky, calcareous cement, poorly cemented, no visible porosity, no visible oil stain; rare ANHYDRITE: milky pink, crystalline, soft, massive, earthy

8,270-8,300 SILTSTONE: red brown, soft, platy, calcareous cement, poorly cemented, no visible porosity, no visible oil stain; trace SILTY SANDSTONE: tan, off white, very fine grained, sub rounded, moderately sorted, calcite cement, poorly cemented

8,300-8,330 SILTSTONE: red brown, soft, platy, calcareous cement, poorly cemented, no visible porosity, no visible oil stain; trace SILTY SANDSTONE: tan, off white, very fine grained, sub rounded, moderately sorted, calcite cement, poorly cemented

8,330-8,360 SILTSTONE: red brown, soft, platy, calcareous cement, poorly cemented, no visible porosity, no visible oil stain; trace SILTY SANDSTONE: tan, very fine grained, sub rounded, moderately sorted, calcite cement, poorly cemented

Kibbey "Lime" 8,387' MD / 8,386' TVD (-6,310')

8,360-8,390 SILTSTONE: red brown, soft, platy, calcareous cement, poorly cemented, no visible porosity, no visible oil stain; trace SILTY SANDSTONE: tan, very fine grained, sub rounded, moderately sorted, calcite cement, poorly cemented; ANHYDRITE: off white, light gray, soft, amorphous texture

8,390-8,420 LIMESTONE: mudstone, light brown, light gray-gray brown, micro crystalline, firm-hard, argillaceous in part, dense, crystalline-chalky texture, no visible porosity; rare ANHYDRITE: off white, light gray, soft, amorphous texture; trace SILTSTONE: red brown, tan, light orange, soft, sub blocky, calcite cement, poorly cemented

8,420-8,450 SILTSTONE: dark-light brown, tan, light orange, soft, sub blocky, calcite cement, poorly cement; trace SILTY SANDSTONE: tan, very fine grained, sub rounded, moderately sorted, calcite cement, poorly cemented

8,450-8,480 SILTSTONE: dark-light brown, tan, light orange, soft, sub blocky, calcite cement, poorly cement; trace SILTY SANDSTONE: tan, very fine grained, sub rounded, moderately sorted, calcite cement, poorly cemented

8,480-8,510 SILTSTONE: light brown, tan, soft, sub blocky, calcite cement, poorly cement; trace SILTY SANDSTONE: tan, off white, very fine grained, sub rounded, moderately sorted, calcite cement, poorly cemented

Charles Formation [Mississippian Madison Group] 8,536' MD / 8,535' TVD (-6,459')

8,510-8,540 SALT: clear-translucent, frosted, crystalline, firm, euhedral; trace LIMESTONE: mudstone, off white, gray, rare tan, fine crystalline, firm, laminated, crystalline-chalky texture, no visible porosity, no visible oil stain; trace SILTY SANDSTONE: as above

- 8,540-8,570 SALT: clear-translucent, frosted, crystalline, firm, euhedral; trace ARGILLACEOUS LIMESTONE: mudstone-wackestone, light-medium brown, tan, rare light-medium gray, rare gray tan, micro crystalline, friable, earthy
- 8,570-8,600 SALT: clear-translucent, frosted, crystalline, firm, euhedral
- 8,600-8,630 SALT: clear-translucent, frosted, crystalline, firm, euhedral; rare ARGILLACEOUS LIMESTONE: as above; trace ANHYDRITE: as above
- 8,630-8,660 SALT: clear-translucent, frosted, crystalline, firm, euhedral; trace ARGILLACEOUS LIMESTONE: mudstone-wackestone, light-medium brown, tan, rare light-medium gray, rare gray tan, micro crystalline, friable, earthy
- 8,660-8,690 SALT: clear-translucent, frosted, crystalline, firm, euhedral, crystalline
- 8,690-8,720 ANHYDRITE: off white, soft, amorphous texture; occasional ARGILLACEOUS LIMESTONE: mudstone-wackestone, light-medium brown, tan, rare light-medium gray, rare gray tan, micro crystalline, friable, earthy
- 8,720-8,750 ARGILLACEOUS LIMESTONE: mudstone-wackestone, light-medium brown, tan, rare light-medium gray, rare gray tan, micro crystalline, friable, earthy; rare SALT: clear-translucent, frosted, crystalline, firm, euhedral, crystalline; trace ANHYDRITE: off white, soft, amorphous texture
- 8,750-8,780 ARGILLACEOUS LIMESTONE: mudstone, gray, off white, rare cream-tan, very fine crystalline, firm, laminated, crystalline-chalky texture, possible intercrystalline porosity, no visible oil stain; SALT: clear-translucent, frosted, crystalline, firm, euhedral, crystalline
- 8,780-8,810 SALT: clear-translucent, frosted, crystalline, firm, euhedral, crystalline; occasional ARGILLACEOUS LIMESTONE: mudstone, gray, off white, rare cream, very fine crystalline, firm, laminated, crystalline-chalky texture, possible intercrystalline porosity, no visible oil stain; rare DOLOMITE: medium-light brown, micro crystalline, firm, crystalline, occasional intercrystalline porosity, common medium-light brown spotty oil stain
- 8,810-8,840 LIMESTONE: mudstone, tan, cream, light brown, very fine crystalline, firm, laminated, crystalline, rare intercrystalline porosity, occasional even-spotty light-medium brown oil stain; trace DOLOMITE: medium-light brown, micro crystalline, firm, crystalline, occasional intercrystalline porosity, common medium-light brown spotty oil stain
- 8,840-8,870 SALT: clear-translucent, frosted, crystalline, firm, euhedral, crystalline; rare DOLOMITE: medium-light brown, micro crystalline, firm, rare intercrystalline porosity, rare medium-light brown spotty oil stain
- 8,870-8,900 SALT: clear-translucent, frosted, crystalline, firm, euhedral, crystalline; occasional ANHYDRITE: off white, cream, soft, microcrystalline, anhedral, earthy; rare LIMESTONE: mudstone, tan, cream, light brown, very fine crystalline, firm, laminated, crystalline, rare intercrystalline porosity, occasional spotty light-medium brown oil stain
- 8,900-8,930 LIMESTONE: mudstone, light brown, light gray, off white, microcrystalline, friable, laminated, earthy, trace intercrystalline porosity, rare even-spotty light-medium brown oil stain; common DOLOMITE: mudstone, light brown, light gray brown, microcrystalline, friable-firm, laminated, earthy, trace intercrystalline porosity, occasional even-spotty light-medium brown oil stain; trace ANHYDRITE: off white, cream, soft, microcrystalline, anhedral, earthy
- 8,930-8,960 LIMESTONE: mudstone, light brown, light gray brown, off white, microcrystalline, friable, laminated, earthy, trace intercrystalline porosity, rare even-spotty light-medium brown oil stain; common DOLOMITE: mudstone, light brown, light gray brown, microcrystalline, friable-firm, laminated, earthy, trace intercrystalline porosity, occasional even-spotty light-medium brown oil stain; trace ANHYDRITE: off white, cream, soft, microcrystalline, anhedral, earthy
- 8,960-8,990 LIMESTONE: mudstone, light brown, light gray brown, off white, microcrystalline, friable, laminated, earthy, trace intercrystalline porosity, rare even-spotty light-medium brown oil stain; common DOLOMITE: mudstone, light brown, light gray brown, microcrystalline, friable-firm, laminated, earthy, trace intercrystalline porosity, occasional even-spotty light-medium brown oil stain; trace ANHYDRITE: off white, cream, soft, microcrystalline, anhedral, earthy
- 8,990-9,020 SALT: clear-translucent, rarely frosted, crystalline, firm, euhedral, crystalline

9,020-9,050 ANHYDRITE: off white, cream-light orange, soft, microcrystalline, anhedral, earthy; occasional DOLOMITE: mudstone, light brown, light gray brown, microcrystalline, friable-firm, laminated, earthy, trace intercrystalline porosity, occasional spotty light-medium brown oil stain; trace SALT: as above

9,050-9,080 ANHYDRITE: off white, cream, soft, microcrystalline, massive, earthy-amorphous; occasional DOLOMITE: mudstone, light brown, light gray brown, microcrystalline, friable-firm, laminated, earthy, trace intercrystalline porosity, occasional spotty light-medium brown oil stain; rare LIMESTONE: mudstone, light brown, light gray brown, off white, microcrystalline, friable, laminated, earthy, trace intercrystalline porosity, trace spotty light-medium brown oil stain

9,080-9,110 LIMESTONE: mudstone, light brown, light gray brown, off white, microcrystalline, friable, laminated, earthy, trace intercrystalline porosity, rare spotty light brown oil stain; occasional DOLOMITE: mudstone, light brown, light gray brown, microcrystalline, friable-firm, laminated, earthy, trace intercrystalline porosity, occasional spotty light brown oil stain

9,110-9,140 LIMESTONE: mudstone, light brown, light gray brown, off white, microcrystalline, friable, laminated, earthy, trace intercrystalline porosity, rare spotty light brown oil stain; occasional DOLOMITE: mudstone, light brown, light gray brown, microcrystalline, friable-firm, laminated, earthy, trace intercrystalline porosity, occasional spotty light brown oil stain; rare ANHYDRITE: off white, cream, soft, microcrystalline, massive, earthy-amorphous

9,140-9,170 LIMESTONE: mudstone, light brown, light gray brown, off white, microcrystalline, friable, laminated, earthy, trace intercrystalline porosity, trace spotty light brown oil stain; occasional DOLOMITE: mudstone, light brown, light gray brown, microcrystalline, friable-firm, laminated, earthy, trace intercrystalline porosity, trace spotty light brown oil stain; rare ANHYDRITE: off white, cream, soft, microcrystalline, massive, earthy-amorphous

9,170-9,200 SALT: clear-translucent, rarely frosted, crystalline, firm, euhedral, crystalline

Base Last Salt [Charles Formation]

9,213' MD / 9,212' TVD (-7,136')

9,200-9,230 ANHYDRITE: off white, cream, soft, microcrystalline, massive, earthy-amorphous; DOLOMITE: mudstone, light brown, light gray brown, rare light gray, microcrystalline, friable-firm, laminated, earthy, trace intercrystalline porosity, occasional spotty light brown oil stain

9,230-9,260 ANHYDRITE: off white, cream, soft, microcrystalline, massive, earthy-amorphous; DOLOMITE: mudstone, light brown, light gray brown, rare light gray, microcrystalline, friable-firm, laminated, earthy, trace intercrystalline porosity, occasional spotty light brown oil stain

9,260-9,290 DOLOMITE: mudstone, light brown, light gray, light gray brown, microcrystalline, friable-firm, laminated, earthy, trace intercrystalline porosity, occasional spotty light brown oil stain; ANHYDRITE: off white, cream, soft, microcrystalline, massive, earthy-amorphous

9,290-9,320 LIMESTONE: mudstone, light brown-brown, microcrystalline, firm, earthy-crystalline texture, trace intercrystalline porosity, trace spotty light brown oil stain; rare ANHYDRITE: off white, cream, soft, microcrystalline, massive, earthy-amorphous

9,320-9,350 LIMESTONE: mudstone, light gray, light gray brown, rare light brown, firm, earthy-crystalline texture, trace intercrystalline porosity, trace disseminated pyrite, trace spotty light brown oil stain; trace ANHYDRITE: off white, cream, soft, microcrystalline, massive, earthy-amorphous

9,350-9,380 LIMESTONE: mudstone, gray-light gray, gray brown, rare light brown, firm-friable, earthy-crystalline texture, trace intercrystalline porosity, trace disseminated pyrite, no visible oil stain; trace ANHYDRITE: off white, cream, soft, microcrystalline, massive, earthy-amorphous

9,380-9,410 LIMESTONE: mudstone, gray-light gray, gray brown, rare light brown, firm-friable, earthy-crystalline texture, trace intercrystalline porosity, trace disseminated pyrite, no visible oil stain; trace ANHYDRITE: off white, cream, soft, microcrystalline, massive, earthy-amorphous

Mission Canyon Formation /Mississippian Madison Group

9,431' MD / 9,430' TVD (-7,354')

9,410-9,440 LIMESTONE-ARGILLACEOUS LIMESTONE: mudstone, light brown-off white, light gray brown, trace gray, firm-friable, earthy-crystalline texture, possible intercrystalline porosity, trace disseminated pyrite, argillaceous in part, no visible oil stain; trace ANHYDRITE: off white, cream, soft, microcrystalline, massive, earthy-amorphous

9,440-9,470 LIMESTONE: mudstone, light brown-brown, gray brown, trace gray, firm-friable, earthy-crystalline texture, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; trace ANHYDRITE: off white, cream, soft, microcrystalline, massive, earthy-amorphous

9,470-9,500 LIMESTONE: mudstone, light gray, light brown, gray brown, trace dark gray, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, trace fossil fragments, trace spotty light brown oil stain

9,500-9,530 ARGILLACEOUS LIMESTONE: mudstone, light gray, occasional medium gray, rare gray tan, rare off white, trace dark gray, firm-friable, crystalline-chalky texture, trace disseminated pyrite, possible intercrystalline porosity, trace light brown spotty oil stain

9,530-9,560 LIMESTONE: mudstone, light gray, light brown, gray brown, trace dark gray, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, trace fossil fragments, trace spotty light brown oil stain

9,560-9,590 LIMESTONE: mudstone, light gray, light brown, gray brown, trace dark gray, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, trace fossil fragments, trace spotty light brown oil stain

9,590-9,620 ARGILLACEOUS LIMESTONE: mudstone, light gray, occasional medium gray, rare gray tan, rare off white, trace dark gray, firm-friable, crystalline-chalky texture, trace disseminated pyrite, trace fossil fragments, trace light brown spotty oil stain

9,620-9,650 LIMESTONE: mudstone, light gray, light brown, gray brown, trace dark gray, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, trace fossil fragments, trace spotty light brown oil stain

9,650-9,680 LIMESTONE: mudstone, light gray, light brown, gray brown, trace dark gray, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, trace fossil fragments, trace spotty light brown oil stain

9,680-9,710 LIMESTONE: mudstone, gray-brown, trace dark gray, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, trace fossil fragments, trace spotty light brown oil stain

9,710-9,740 LIMESTONE: mudstone, light gray-brown, trace dark gray, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, trace fossil fragments, trace spotty light brown oil stain

9,740-9,770 LIMESTONE: mudstone, light gray-brown, trace dark gray, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, trace fossil fragments, trace spotty light brown oil stain

9,770-9,800 LIMESTONE: mudstone, light gray-brown, trace dark gray, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, trace fossil fragments, trace spotty light brown oil stain

9,800-9,830 LIMESTONE: tan-light brown gray, off white, microcrystalline, fine crystalline, rare intercrystalline porosity, argillaceous in part, trace light brown spotty oil stain; rare ARGILLACEOUS LIMESTONE: mudstone, cream-tan, gray, trace off white, micro crystalline, friable-firm, dense, massive, trace laminated, occasional Algal laminated, earthy, trace calcite, trace pyrite, no visible porosity, trace dead oil stain

9,830-9,860 LIMESTONE: mudstone, light gray-brown, trace dark gray, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, trace fossil fragments, trace spotty light brown oil stain

9,860-9,890 LIMESTONE: mudstone, light gray-brown, trace dark gray, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, trace fossil fragments, trace spotty light brown oil stain

9,890-9,920 ARGILLACEOUS LIMESTONE: mudstone, light gray, occasional medium gray, rare gray tan, rare off white, trace dark gray, firm-friable, crystalline-chalky texture, trace disseminated pyrite, no visible porosity, no visible oil stain; LIMESTONE: mudstone, light gray, rare off white, trace dark gray, trace brown, friable-firm, dense, earthy, possible intercrystalline porosity, trace light brown spotty oil stain

9,920-9,950 LIMESTONE: mudstone, light gray-gray brown, trace dark gray, firm, earthy, rare crystalline texture, trace disseminated pyrite, trace fossil fragments, possible intercrystalline porosity, trace light brown spotty oil stain

9,950-9,980 LIMESTONE: mudstone, light gray-brown, trace dark gray, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, trace fossil fragments

Lodgepole [Mississippian Madison Group] **9,991' MD / 9,990' TVD (-7,914')**

9,980-10,010 LIMESTONE: mudstone, light gray-brown, trace dark gray, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, trace fossil fragments, no visible porosity, no visible oil stain

10,010-10,040 LIMESTONE: mudstone, light gray-brown, trace dark gray, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, no visible porosity, no visible oil stain

10,040-10,070 LIMESTONE: mudstone, light gray-gray, gray brown, trace light brown, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, no visible porosity, no visible oil stain

10,070-10,100 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, gray brown, trace light brown, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, no visible porosity, no visible oil stain

10,100-10,130 LIMESTONE: mudstone, light gray-gray, gray brown, trace light brown, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, no visible porosity, no visible oil stain

10,130-10,160 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, gray brown, trace light brown, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, no visible porosity, no visible oil stain

10,160-10,190 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, gray brown, trace light brown, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, no visible porosity, no visible oil stain

10,190-10,220 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, gray brown, trace light brown, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, no visible porosity, no visible oil stain

10,230-10,250 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, gray brown, trace light brown, firm-friable, earthy, rarely crystalline texture, trace disseminated pyrite, no visible porosity, no visible oil stain

10,250-10,280 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, rare gray brown, firm, earthy, rarely crystalline texture, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,280-10,310 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, rare gray brown, firm, earthy, rarely crystalline texture, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,310-10,340 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, rare gray brown, firm, earthy, rarely crystalline texture, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,340-10,370 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, rare gray brown, firm, earthy, rarely crystalline texture, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,370-10,400 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, rare gray brown, firm, earthy, rarely crystalline texture, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,400-10,430 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, rare gray brown, firm, earthy, rarely crystalline texture, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,430-10,460 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, rare gray brown, firm, earthy, rarely crystalline texture, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,460-10,490 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, rare gray brown, firm, earthy, rarely crystalline texture, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,490-10,520 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, rare gray brown, firm, earthy, rarely crystalline texture, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,520-10,550 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, rare gray brown, firm, earthy, rarely crystalline texture, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,550-10,580 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, trace gray brown, firm, earthy, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,580-10,610 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, trace gray brown, firm, earthy, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,610-10,640 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, trace gray brown, firm, earthy, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,640-10,670 ARGILLACEOUS LIMESTONE: mudstone, light gray-gray, trace gray brown, firm, earthy, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,670-10,700 ARGILLACEOUS LIMESTONE: mudstone, light gray- medium gray, occasional tan gray-gray brown, firm, earthy, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,700-10,730 ARGILLACEOUS LIMESTONE: mudstone, light gray- medium gray, occasional tan gray-gray brown, firm, earthy, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,730-10,760 ARGILLACEOUS LIMESTONE: mudstone, light gray- medium gray, occasional tan gray-gray brown, firm, earthy, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,760-10,790 ARGILLACEOUS LIMESTONE: mudstone, light gray- medium gray, occasional tan gray-gray brown, firm, earthy, occasional disseminated pyrite, no visible porosity, no visible oil stain

10,790-10,820 ARGILLACEOUS LIMESTONE: mudstone, light gray- medium gray, occasional tan gray-gray brown, firm, earthy, occasional disseminated pyrite, no visible porosity, no visible oil stain

<u>False Bakken Member [Lodgepole]</u>	<u>10,831' MD / 10,723' TVD (-8,647')</u>
<u>Scallion [Lodgepole]</u>	<u>10,835' MD / 10,726' TVD (-8,650')</u>
<u>Upper Bakken Shale [Mississippian-Devonian Bakken Formation]</u>	<u>10,842' MD / 10,728' TVD (-8,652')</u>

10,820-10,850 ARGILLACEOUS LIMESTONE: as above; occasional SHALE: black, black gray, hard, splintery, smooth, pyritic, carbonaceous, fracture porosity; trace LIMESTONE: as above

10,850-10,880 SHALE: black, black gray, hard, sub blocky-sub platy, earthy, pyritic, carbonaceous, fracture porosity, black oil stain

Middle Bakken Member [Mississippian-Devonian Bakken Formation] 10,884' MD / 10,744' TVD (-8,668')

10,880-10,910 SILTY SANDSTONE: light brown-tan, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, intercrystalline porosity, occasional light brown spotty oil stain; trace SHALE: as above

10,910-10,940 SILTY SANDSTONE: light brown-tan, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, intercrystalline porosity, occasional light brown spotty oil stain

10,940-10,970 SILTY SANDSTONE: light brown-tan, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, intercrystalline porosity, occasional light brown spotty oil stain

10,970-11,000 SILTY SANDSTONE: medium brown, trace light brown-gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, occasional intercrystalline porosity, common medium-light brown spotty oil stain

11,000-11,030 SILTY SANDSTONE: medium brown, trace light brown-gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, occasional intercrystalline porosity, common medium-light brown spotty oil stain

11,030-11,060 SILTY SANDSTONE: medium brown, trace light brown-gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, rare disseminated pyrite, occasional intercrystalline porosity, common medium-light brown spotty oil stain

11,060-11,085 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain

11,085-11,120 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain

12,920-12,950 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

12,950-12,980 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

12,980-13,010 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,010-13,040 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,040-13,070 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,070-13,100 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,100-13,130 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,130-13,160 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,160-13,190 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,190-13,220 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,220-13,250 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,250-13,280 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,280-13,310 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,310-13,340 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,340-13,370 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,370-13,400 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,400-13,430 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,430-13,460 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,460-13,490 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,490-13,520 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,820-13,850 SILTY SANDSTONE: light brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,850-13,880 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,880-13,910 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,910-13,940 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,940-13,970 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

13,970-14,000 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

14,000-14,030 SILTY SANDSTONE: medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

14,030-14,060 SILTY SANDSTONE: medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

14,060-14,090 SILTY SANDSTONE: medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

14,090-14,120 SILTY SANDSTONE: medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

14,420-14,450 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,450-14,480 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,480-14,510 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,510-14,540 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,540-14,570 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,570-14,600 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,600-14,630 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,630-14,660 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,660-14,690 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,690-14,720 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,720-14,750 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,750-14,780 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,780-14,810 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,810-14,840 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,840-14,870 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,870-14,900 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,900-14,930 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,930-14,960 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,960-14,990 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

14,990-15,020 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,020-15,050 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,050-15,080 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,080-15,110 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,110-15,140 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,140-15,170 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,170-15,200 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,200-15,230 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,230-15,260 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,260-15,290 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,290-15,320 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,320-15,350 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,350-15,380 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,380-15,410 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,410-15,440 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,440-15,470 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,470-15,500 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,500-15,530 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,530-15,560 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

15,560-15,590 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

15,590-15,620 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

15,920-15,950 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

15,950-15,980 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

15,980-16,010 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,010-16,040 SILTY SANDSTONE: medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,040-16,070 SILTY SANDSTONE: medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,070-16,100 SILTY SANDSTONE: medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,100-16,130 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,130-16,160 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,160-16,190 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,190-16,220 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,520-16,550 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,550-16,580 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,580-16,610 SILTY SANDSTONE: light brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,610-16,640 SILTY SANDSTONE: light brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,640-16,670 SILTY SANDSTONE: light brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,670-16,700 SILTY SANDSTONE: light brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,700-16,730 SILTY SANDSTONE: light brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,730-16,760 SILTY SANDSTONE: light brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,760-16,790 SILTY SANDSTONE: light brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,790-16,820 SILTY SANDSTONE: light brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,820-16,850 SILTY SANDSTONE: light brown, occasional light gray brown, rare light gray, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,850-16,880 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,880-16,910 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,910-16,940 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,940-16,970 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

16,970-17,000 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

17,000-17,030 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

17,030-17,060 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

17,060-17,090 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

17,090-17,120 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

17,120-17,150 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

17,150-17,180 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

17,180-17,210 SILTY SANDSTONE: light-medium brown, occasional light gray brown, rare light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; moderately yellow streaming cut fluorescence

17,210-17,240 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

17,240-17,270 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

17,270-17,300 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

17,300-17,330 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

17,330-17,360 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

17,360-17,390 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

17,390-17,420 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

18,320-18,350 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

18,350-18,380 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

18,380-18,410 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

18,410-18,440 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

18,440-18,470 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

18,470-18,500 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

18,500-18,530 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

18,530-18,560 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

18,560-18,590 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

18,590-18,620 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

18,920-18,950 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

18,950-18,980 SILTY SANDSTONE: light gray, occasional light brown-brown, rare light gray brown, trace gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

18,980-19,010 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,010-19,040 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,040-19,070 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,070-19,100 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,100-19,130 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,130-19,160 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,160-19,190 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,190-19,220 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,220-19,250 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,250-19,280 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,280-19,310 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,310-19,340 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,340-19,370 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,370-19,400 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,400-19,430 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,430-19,460 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,460-19,490 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,490-19,520 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,520-19,550 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,550-19,580 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,580-19,610 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,610-19,640 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,640-19,670 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,670-19,700 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,700-19,730 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,730-19,760 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,760-19,790 SILTY SANDSTONE: light-medium gray, occasional light brown-brown, rare light gray brown, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, rare medium-light brown spotty-even oil stain; slow yellow streaming cut fluorescence

19,790-19,820 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

19,820-19,850 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

19,850-19,880 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

19,880-19,910 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

19,910-19,940 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

19,940-19,970 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

19,970-20,000 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

20,000-20,030 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

20,030-20,060 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

20,060-20,090 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

20,090-20,120 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

20,420-20,450 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

20,450-20,480 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

20,480-20,510 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

20,510-20,540 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

20,540-20,570 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

20,570-20,600 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

20,600-20,630 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

20,630-120,660 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence

20,660-20,680 SILTY SANDSTONE: light brown-brown, occasional light gray brown, trace light gray, very fine grained, firm-friable, sub rounded-sub angular, smooth, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, occasional intercrystalline porosity, occasional medium-light brown spotty-even oil stain; fast yellow streaming cut fluorescence



Directional Survey Certification

Operator: Oasis Petroleum LLC **Well Name:** Chalmers 5300 21-19 11T **API:** 33-053-06024

Enseco Job#: S14004-02 **Job Type:** MWD D&I **County, State:** McKenzie County, N. Dakota

Well Surface Hole Location (SHL): Lot 2 , Sec. 19, T1153N, R100W (2,325' FNL & 326 FWL)

Latitude: 48° 03' 40.32 N **Longitude:** 103° 36' 10.11 W **Datum:** Nad 83

Final MWD Report Date: Dec. 05, 2014 **MWD Survey Run Date:** Dec. 01, 2014 to Dec. 01, 2014

Tied In to Surveys Provided By: Enseco Directional Drilling D&I MWD **MD:** Surface

MWD Surveyed from 00 ft **to** 2,148.0 ft **MD** **Survey Type:** Positive Pulse D&I MWD **Sensor to Bit:** 35 ft

Rig Contractor: Nabors **Rig Number:** B22 **RKB Height:** 2,079.0 ft **GL Elevation:** 2,054.0 ft

MWD Surveyor Name: David Hopper

"The data and calculations for this survey have been checked by me and conform to the calibration standards and operational procedures set forth by Enseco Energy Services USA Corp. I am authorized and qualified to review the data, calculations and this report and that the report represents a true and correct Directional Survey of this well based on the original data corrected to True North and obtained at the well site. Wellbore coordinates are calculated using the minimum curvature method."

Jonathan Hovland, Well Planner

Enseco Representative Name, Title

Jonathan Hovland

Signature

December 9th 2014

Date Signed

On this the day of , 20 , before me personally appeared First & Last Name, to me known as the person described in and who executed the foregoing instrument and acknowledged the (s)he executed the same as his/her free act and deed.

Seal: _____

Notary Public

Commission Expiry



Enseco Survey Report

09 December, 2014

Continental Resources

McKenzie County, N. Dakota
Lot 2 Sec.19 Twp.153N Rge.100W
Chalmers 5300 21-19 11T
Job # S14004-02
API#: 33-053-06024

Survey: Final Surveys Vertical Section





Survey Report



Company:	Continental Resources	Local Co-ordinate Reference:	Well Chalmers 5300 21-19 11T
Project:	McKenzie County, N. Dakota	Ground Level Elevation:	2,054.00usft
Site:	Lot 2 Sec.19 Twp.153N Rge.100W	Wellhead Elevation:	KB 25 @ 2079.00usft (Nabors B22)
Well:	Chalmers 5300 21-19 11T	North Reference:	True
Wellbore:	Job # S14004-02	Survey Calculation Method:	Minimum Curvature
Design:	Final Surveys Vertical Section	Database:	EDM5000

Project	McKenzie County, N. Dakota		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	North Dakota Northern Zone		Using geodetic scale factor

Site	Lot 2 Sec.19 Twp.153N Rge.100W		
Site Position:		Northing:	402,374.71 usft
From:	Lat/Long	Easting:	1,209,981.92 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "

Well	Chalmers 5300 21-19 11T		API#: 33-053-06024	
Well Position	+N/-S +E/-W	0.00 usft	Northing: Easting:	402,374.71 usft 1,209,981.92 usft
			Wellhead Elevation:	2,079.00 usft
Position Uncertainty		0.00 usft	Latitude: Longitude:	48° 3' 40.320 N 103° 36' 10.110 W

Wellbore	Job # S14004-02				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/9/2014	8.181	72.957	56,376

Design:	Final Surveys Vertical Section	Survey Error Model:	Standard ISCWSA MWD Tool
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
Vertical Section:		Depth From (TVD) (usft)	+N/-S (usft)
		0.00	0.00
			+E/-W (usft)
			0.00
			Direction (°)
			356.30



Survey Report



Company:	Continental Resources	Local Co-ordinate Reference:	Well Chalmers 5300 21-19 11T
Project:	McKenzie County, N. Dakota	Ground Level Elevation:	2,054.00usft
Site:	Lot 2 Sec.19 Twp.153N Rge.100W	Wellhead Elevation:	KB 25 @ 2079.00usft (Nabors B22)
Well:	Chalmers 5300 21-19 11T	North Reference:	True
Wellbore:	Job # S14004-02	Survey Calculation Method:	Minimum Curvature
Design:	Final Surveys Vertical Section	Database:	EDM5000

Survey										
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/S (usft)	+E/W (usft)	Vertical Section (usft)	Dogleg Rate (%/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
Tie-in from Surface										
0.00	0.00	0.00	0.00	2,079.00	0.00	0.00	0.00	0.00	0.00	0.00
160.00	0.90	215.30	159.99	1,919.01	-1.03	-0.73	-0.98	0.56	0.56	0.00
251.00	0.70	262.00	250.99	1,828.01	-1.69	-1.69	-1.57	0.73	-0.22	51.32
344.00	0.40	86.60	343.98	1,735.02	-1.75	-1.93	-1.62	1.18	-0.32	-188.60
428.00	0.40	85.90	427.98	1,651.02	-1.71	-1.34	-1.62	0.01	0.00	-0.83
515.00	0.40	109.10	514.98	1,564.02	-1.79	-0.75	-1.73	0.18	0.00	26.67
599.00	0.50	84.50	598.98	1,480.02	-1.85	-0.11	-1.84	0.26	0.12	-29.29
687.00	0.70	91.90	686.97	1,392.03	-1.83	0.81	-1.88	0.24	0.23	8.41
773.00	0.90	127.20	772.96	1,306.04	-2.25	1.87	-2.37	0.61	0.23	41.05
860.00	0.90	124.60	859.95	1,219.05	-3.05	2.98	-3.24	0.05	0.00	-2.99
945.00	0.50	113.70	944.95	1,134.05	-3.58	3.87	-3.82	0.49	-0.47	-12.82
1,035.00	0.50	91.20	1,034.94	1,044.06	-3.75	4.62	-4.04	0.22	0.00	-25.00
1,125.00	1.10	43.40	1,124.94	954.06	-3.13	5.61	-3.48	0.94	0.67	-53.11
1,210.00	1.20	20.40	1,209.92	869.08	-1.70	6.48	-2.12	0.55	0.12	-27.06
1,301.00	1.20	8.70	1,300.90	778.10	0.13	6.95	-0.32	0.27	0.00	-12.86
1,391.00	1.20	354.60	1,390.88	688.12	2.00	7.01	1.55	0.33	0.00	-15.67
1,477.00	1.80	350.90	1,476.85	602.15	4.23	6.71	3.79	0.71	0.70	-4.30
1,564.00	2.50	344.60	1,563.79	515.21	7.41	5.99	7.01	0.85	0.80	-7.24
1,656.00	2.60	334.50	1,655.70	423.30	11.23	4.56	10.91	0.50	0.11	-10.98
1,746.00	1.10	323.20	1,745.65	333.35	13.76	3.16	13.53	1.71	-1.67	-12.56
1,835.00	0.70	251.10	1,834.64	244.36	14.27	2.13	14.10	1.24	-0.45	-81.01
1,922.00	0.90	211.10	1,921.63	157.37	13.51	1.28	13.40	0.67	0.23	-45.98
2,011.00	0.50	221.00	2,010.62	68.38	12.62	0.66	12.55	0.47	-0.45	11.12
2,102.00	0.90	237.10	2,101.62	-22.62	11.94	-0.20	11.92	0.49	0.44	17.69
Last MWD Survey										
2,148.00	0.70	242.30	2,147.61	-68.61	11.61	-0.75	11.63	0.46	-0.43	11.30

Survey Annotations					
Local Coordinates					
MD (usft)	TVD (usft)	+N/S (usft)	+E/W (usft)	Comment	
0.00	0.00	0.00	0.00	Tie-in from Surface	
2,148.00	2,147.61	11.61	-0.75	Last MWD Survey	



19510 Oil Center Blvd
Houston, TX 77073
Bus 281.443.1414
Fax 281.443.1676

Wednesday, February 11, 2015

State of North Dakota

Subject: **Surveys**

Re: **Oasis**
Chalmers 5300 21-19 11B
McKenzie, ND

Enclosed, please find the original and one copy of the survey performed on the above-referenced well by Ryan Directional Services, Inc.. Other information required by your office is as follows:

Surveyor Name	Surveyor Title	Borehole Number	Start Depth	End Depth	Start Date	End Date	Type of	TD Straight Line Projection
Jake Creech	MWD Operator	O.H.	2148'	20612'	01/24/15	02/08/15	MWD	20680'

If any other information is required please contact the undersigned at the letterhead address or phone number.

A handwritten signature in black ink that reads 'Douglas Hudson'. It is written in a cursive, flowing style.

Douglas Hudson
Well Planner



RYAN DIRECTIONAL SERVICES, INC.
A NABORS COMPANY

Ryan Directional Services, Inc.
19510 Oil Center Blvd.
Houston, Texas 77073
Bus: 281.443.1414
Fax: 281.443.1676

Sunday, February 08, 2015

State of North Dakota
County of McKenzie

Subject: **Survey Certification Letter**

Survey Company: Ryan Directional Services, Inc.

Job Number: 8552

Surface: 48 3' 40.320 N / 103 36' 10.110 W

Survey Job Type: Ryan MWD

A.P.I. No: 33-053-06024

Customer: Oasis Petroleum

Location: McKenzie, North Dakota

Well Name: Chalmers 5300 21-19 11B

RKB Height: 25'

Rig Name: Nabors B-22

Distance to Bit: 68'

<i>Surveyor Name</i>	<i>Surveyor Title</i>	<i>Borehole Number</i>	<i>Start Depth</i>	<i>End Depth</i>	<i>Start Date</i>	<i>End Date</i>	<i>Type of</i>	<i>TD Straight Line Projection</i>
Jake Creech	MWD Supervisor	OH	2230'	20612'	01/24/15	02/08/15	MWD	20680'

The data and calculations for this survey have been checked by me and conform to the calibration standards and operational procedures set forth by Ryan Directional Services, Inc. I am authorized and qualified to review the data, calculations and these reports; the reports represents true and correct Directional Surveys of this well based on the original data, the minimum curvature method, corrected to True North and obtained at the well site.



Jake Creech
MWD Supervisor
Ryan Directional Services, Inc.



SURVEY REPORT

Customer: **Oasis Petroleum**
 Well Name: **Chalmers 5300 21-19 11B**
 Rig #: **Nabors B-22**
 API #: **33-053-06024**
 Calculation Method: **Minimum Curvature Calculation**

MWD Operator: **J. Creech, R. Maddalena**
 Directional Drillers: **D. Rakstad, J. Gordon, R. Jasper**
 Survey Corrected To: **True North**
 Vertical Section Direction: **95.23**
 Total Correction: **8.17**
 Temperature Forecasting Model (Chart Only): **Logarithmic**

Survey #	MD	Inc	Azm	Temp	TVD	VS	N/S	E/W	DLS
Tie in to Gyro Surveys									
Tie In	2148	0.70	242.30	32.00	2147.61	-0.75	11.61	-0.75	0.46
1	2230	0.90	250.90	71.00	2229.60	-2.81	11.17	-1.80	0.28
2	2323	1.00	251.50	77.00	2322.59	-4.22	10.67	-3.26	0.11
3	2417	0.90	247.70	78.00	2416.58	-5.63	10.13	-4.72	0.13
4	2510	1.10	235.30	82.00	2509.56	-6.96	9.34	-6.13	0.32
5	2603	2.10	177.00	86.00	2602.53	-7.40	7.13	-6.78	1.92
6	2697	2.30	175.60	89.00	2696.46	-6.84	3.53	-6.54	0.22
7	2790	1.40	166.50	91.00	2789.41	-6.16	0.57	-6.13	1.01
8	2884	1.40	172.60	95.00	2883.38	-5.54	-1.69	-5.72	0.16
9	2977	1.50	175.80	98.00	2976.35	-5.09	-4.03	-5.48	0.14
10	3071	1.60	178.70	102.00	3070.32	-4.74	-6.57	-5.36	0.14
11	3164	1.60	178.10	104.00	3163.28	-4.43	-9.16	-5.29	0.02
12	3257	1.50	176.80	105.00	3256.25	-4.09	-11.68	-5.18	0.11
13	3350	1.50	177.40	109.00	3349.22	-3.75	-14.11	-5.06	0.02
14	3444	1.60	174.50	111.00	3443.18	-3.34	-16.64	-4.87	0.14
15	3537	0.70	147.20	114.00	3536.16	-2.75	-18.41	-4.44	1.11
16	3631	0.80	146.90	116.00	3630.16	-1.98	-19.44	-3.77	0.11
17	3724	0.80	145.50	118.00	3723.15	-1.17	-20.52	-3.05	0.02
18	3817	0.80	141.90	120.00	3816.14	-0.31	-21.57	-2.28	0.05
19	3911	0.90	147.70	122.00	3910.13	0.59	-22.71	-1.48	0.14
20	4004	0.70	147.90	123.00	4003.12	1.38	-23.81	-0.79	0.22
21	4097	0.70	141.30	122.00	4096.11	2.12	-24.73	-0.13	0.09
22	4191	0.70	145.30	123.00	4190.10	2.89	-25.65	0.55	0.05
23	4284	0.20	159.10	127.00	4283.10	3.32	-26.27	0.93	0.55
24	4377	0.10	254.60	127.00	4376.10	3.32	-26.44	0.91	0.25
25	4471	0.10	202.10	131.00	4470.10	3.22	-26.54	0.80	0.09
26	4564	0.30	223.90	134.00	4563.10	3.04	-26.79	0.60	0.23
27	4657	0.30	255.10	136.00	4656.10	2.66	-27.03	0.20	0.17
28	4751	0.20	257.20	140.00	4750.10	2.28	-27.13	-0.20	0.11
29	4844	0.20	259.70	141.00	4843.10	1.97	-27.20	-0.52	0.01
30	4937	0.20	234.00	143.00	4936.10	1.69	-27.32	-0.81	0.10
31	5031	0.40	223.60	145.00	5030.10	1.36	-27.65	-1.17	0.22
32	5124	0.40	241.50	147.00	5123.09	0.89	-28.04	-1.68	0.13
33	5217	0.40	254.20	149.00	5216.09	0.32	-28.29	-2.27	0.10
34	5311	0.50	262.40	150.00	5310.09	-0.39	-28.43	-2.99	0.13
35	5404	0.40	257.50	152.00	5403.09	-1.10	-28.56	-3.71	0.12
36	5498	0.40	257.80	143.00	5497.08	-1.72	-28.70	-4.36	0.00
37	5591	0.40	228.40	145.00	5590.08	-2.25	-28.98	-4.92	0.22
38	5684	0.40	252.00	149.00	5683.08	-2.77	-29.30	-5.47	0.18
39	5777	0.20	270.40	152.00	5776.08	-3.23	-29.39	-5.94	0.24
40	5871	0.10	288.60	154.00	5870.08	-3.48	-29.37	-6.18	0.12
41	5964	0.20	266.80	156.00	5963.08	-3.72	-29.35	-6.42	0.12
42	6026	0.30	245.80	158.00	6025.08	-3.96	-29.42	-6.67	0.22
43	6114	0.40	317.80	127.00	6113.07	-4.39	-29.29	-7.09	0.48
44	6208	0.40	340.70	131.00	6207.07	-4.77	-28.74	-7.42	0.17
45	6301	0.50	1.10	136.00	6300.07	-4.93	-28.03	-7.52	0.20
46	6394	0.50	128.90	141.00	6393.07	-4.63	-27.87	-7.20	0.97
47	6488	0.70	142.60	145.00	6487.06	-3.89	-28.59	-6.53	0.26
48	6581	1.00	177.60	150.00	6580.05	-3.40	-29.85	-6.15	0.63
49	6675	1.10	183.20	152.00	6674.04	-3.26	-31.57	-6.16	0.15
50	6768	1.20	187.80	156.00	6767.02	-3.27	-33.43	-6.35	0.15
51	6861	1.20	190.90	159.00	6860.00	-3.41	-35.35	-6.66	0.07
52	6955	1.10	200.00	163.00	6953.98	-3.74	-37.16	-7.16	0.22
53	7048	1.20	196.40	165.00	7046.96	-4.16	-38.94	-7.74	0.13
54	7141	1.20	187.10	168.00	7139.94	-4.38	-40.84	-8.13	0.21
55	7235	1.30	189.90	170.00	7233.92	-4.50	-42.86	-8.44	0.12
56	7328	0.50	191.90	172.00	7326.91	-4.63	-44.30	-8.70	0.86
57	7421	0.60	49.80	176.00	7419.90	-4.33	-44.38	-8.42	1.12
58	7515	0.50	47.40	177.00	7513.90	-3.71	-43.79	-7.74	0.11
59	7608	0.40	38.60	176.00	7606.90	-3.26	-43.26	-7.24	0.13
60	7701	0.30	15.50	168.00	7699.89	-3.04	-42.77	-6.97	0.18
61	7795	0.30	339.90	168.00	7793.89	-3.10	-42.30	-6.99	0.20
62	7888	0.40	286.80	172.00	7886.89	-3.52	-41.98	-7.38	0.35
63	7981	0.40	269.30	174.00	7979.89	-4.17	-41.89	-8.02	0.13
64	8075	0.60	271.40	176.00	8073.89	-4.98	-41.88	-8.84	0.21
65	8168	0.70	333.90	176.00	8166.88	-5.76	-41.36	-9.57	0.73



SURVEY REPORT

Customer: **Oasis Petroleum**
Well Name: **Chalmers 5300 21-19 11B**
Rig #: **Nabors B-22**
API #: **33-053-06024**
Calculation Method: **Minimum Curvature Calculation**

MWD Operator: **J. Creech, R. Maddalena**
Directional Drillers: **D. Rakstad, J. Gordon, R. Jasper**
Survey Corrected To: **True North**
Vertical Section Direction: **95.23**
Total Correction: **8.17**
Temperature Forecasting Model (Chart Only): **Logarithmic**

Survey #	MD	Inc	Azm	Temp	TVD	VS	N/S	E/W	DLS
66	8261	0.90	335.20	177.00	8259.87	-6.43	-40.19	-10.13	0.22
67	8355	0.90	27.50	183.00	8353.86	-6.51	-38.86	-10.10	0.84
68	8448	0.90	34.80	181.00	8446.85	-5.88	-37.61	-9.35	0.12
69	8542	0.90	39.50	181.00	8540.84	-5.10	-36.44	-8.45	0.08
70	8635	1.00	84.30	181.00	8633.83	-3.89	-35.79	-7.18	0.78
71	8728	1.00	101.90	181.00	8726.81	-2.29	-35.88	-5.58	0.33
72	8822	1.30	102.80	185.00	8820.79	-0.41	-36.29	-3.74	0.32
73	8915	1.30	98.10	186.00	8913.77	1.68	-36.67	-1.66	0.11
74	9008	1.30	106.70	186.00	9006.75	3.77	-37.12	0.39	0.21
75	9102	1.10	107.60	190.00	9100.73	5.70	-37.70	2.27	0.21
76	9195	1.50	142.60	192.00	9193.70	7.39	-38.94	3.86	0.94
77	9288	1.30	159.70	195.00	9286.68	8.67	-40.89	4.97	0.50
78	9382	0.60	168.60	197.00	9380.66	9.27	-42.37	5.43	0.76
79	9475	0.50	172.90	201.00	9473.66	9.50	-43.25	5.58	0.12
80	9569	0.60	184.70	203.00	9567.65	9.59	-44.15	5.59	0.16
81	9662	0.70	188.80	204.00	9660.65	9.56	-45.20	5.46	0.12
82	9755	0.60	184.40	204.00	9753.64	9.53	-46.25	5.34	0.12
83	9849	0.50	175.10	204.00	9847.64	9.61	-47.15	5.34	0.14
84	9942	0.60	174.30	208.00	9940.63	9.78	-48.03	5.42	0.11
85	10035	0.40	179.60	208.00	10033.63	9.90	-48.84	5.47	0.22
86	10129	0.30	199.50	210.00	10127.63	9.87	-49.40	5.39	0.17
87	10175	0.30	220.90	210.00	10173.63	9.77	-49.61	5.27	0.24
88	10226	0.20	214.20	179.00	10224.63	9.65	-49.78	5.13	0.20
89	10257	1.40	107.90	183.00	10255.62	9.99	-49.94	5.46	4.74
90	10288	4.40	112.70	183.00	10286.58	11.50	-50.52	6.92	9.70
91	10319	8.50	114.40	185.00	10317.38	14.80	-51.93	10.11	13.24
92	10350	13.00	117.20	186.00	10347.83	20.20	-54.47	15.30	14.61
93	10382	16.30	117.90	188.00	10378.78	27.68	-58.21	22.47	10.33
94	10413	18.70	119.40	188.00	10408.34	36.23	-62.69	30.64	7.88
95	10444	20.80	120.60	190.00	10437.52	45.74	-67.93	39.71	6.90
96	10475	22.70	120.50	188.00	10466.31	56.12	-73.77	49.61	6.13
97	10506	25.30	122.10	190.00	10494.63	67.44	-80.33	60.37	8.65
98	10537	28.90	123.20	190.00	10522.22	79.97	-87.95	72.26	11.72
99	10568	31.30	123.10	190.00	10549.04	93.71	-96.45	85.27	7.74
100	10602	33.00	122.70	179.00	10577.82	109.73	-106.28	100.46	5.04
101	10633	35.60	123.80	185.00	10603.43	125.15	-115.86	115.07	8.62
102	10664	39.60	126.60	183.00	10627.99	141.52	-126.78	130.50	14.03
103	10695	44.60	128.30	186.00	10650.98	159.09	-139.42	146.99	16.54
104	10727	50.30	128.80	190.00	10672.61	178.77	-154.11	165.41	17.85
105	10758	57.00	130.20	194.00	10690.98	199.39	-169.99	184.66	21.92
106	10789	63.00	129.90	199.00	10706.47	221.42	-187.26	205.20	19.37
107	10820	65.50	129.80	181.00	10719.94	244.39	-205.15	226.64	8.07
108	10851	65.90	130.10	181.00	10732.70	267.62	-223.29	248.30	1.56
109	10882	69.50	129.90	183.00	10744.46	291.17	-241.72	270.26	11.63
110	10913	75.30	128.80	185.00	10753.83	315.63	-260.44	293.11	19.01
111	10945	80.20	128.80	188.00	10760.61	341.67	-280.03	317.47	15.31
112	10976	85.40	129.50	190.00	10764.50	367.19	-299.44	341.31	16.92
113	11007	87.80	129.30	194.00	10766.34	392.79	-319.08	365.22	7.77
114	11021	88.70	129.80	194.00	10766.76	404.35	-328.00	376.01	7.35
115	11066	89.60	127.30	215.00	10767.43	441.94	-356.03	411.20	5.90
116	11096	90.50	129.50	212.00	10767.41	467.05	-374.67	434.71	7.92
117	11127	90.60	129.50	212.00	10767.11	492.67	-394.38	458.63	0.32
118	11159	90.30	128.50	212.00	10766.86	519.27	-414.52	483.49	3.26
119	11191	89.60	128.40	208.00	10766.88	546.04	-434.42	508.56	2.21
120	11222	89.10	126.60	217.00	10767.24	572.25	-453.29	533.15	6.03
121	11254	88.00	123.20	212.00	10768.05	600.04	-471.59	559.38	11.16
122	11284	88.20	123.00	212.00	10769.04	626.54	-487.96	584.50	0.94
123	11314	88.90	121.30	210.00	10769.80	653.28	-503.92	609.89	6.13
124	11345	88.90	119.30	210.00	10770.40	681.36	-519.56	636.65	6.45
125	11377	89.10	119.30	210.00	10770.95	710.57	-535.22	664.55	0.63
126	11407	88.50	117.80	210.00	10771.58	738.11	-549.55	690.89	5.38
127	11439	88.90	117.20	212.00	10772.31	767.72	-564.32	719.27	2.25
128	11470	89.00	116.90	221.00	10772.88	796.49	-578.42	746.87	1.02
129	11502	89.80	115.70	221.00	10773.21	826.35	-592.59	775.56	4.51
130	11533	90.00	115.00	215.00	10773.27	855.46	-605.87	803.57	2.35



SURVEY REPORT

Customer: **Oasis Petroleum**
Well Name: **Chalmers 5300 21-19 11B**
Rig #: **Nabors B-22**
API #: **33-053-06024**
Calculation Method: **Minimum Curvature Calculation**

MWD Operator: **J. Creech, R. Maddalena**
Directional Drillers: **D. Rakstad, J. Gordon, R. Jasper**
Survey Corrected To: **True North**
Vertical Section Direction: **95.23**
Total Correction: **8.17**
Temperature Forecasting Model (Chart Only): **Logarithmic**

Survey #	MD	Inc	Azm	Temp	TVD	VS	N/S	E/W	DLS
131	11565	89.50	113.80	215.00	10773.41	885.68	-619.09	832.72	4.06
132	11596	89.10	112.20	215.00	10773.78	915.20	-631.20	861.25	5.32
133	11628	89.30	112.60	215.00	10774.23	945.77	-643.39	890.83	1.40
134	11658	89.80	112.20	215.00	10774.47	974.43	-654.82	918.57	2.13
135	11689	90.30	111.40	215.00	10774.44	1004.14	-666.33	947.35	3.04
136	11721	90.40	111.00	217.00	10774.24	1034.91	-677.91	977.18	1.29
137	11751	90.30	110.60	217.00	10774.06	1063.81	-688.56	1005.23	1.37
138	11783	89.10	109.20	215.00	10774.23	1094.76	-699.45	1035.31	5.76
139	11814	89.00	109.10	219.00	10774.74	1124.85	-709.62	1064.59	0.46
140	11845	89.00	109.30	219.00	10775.28	1154.93	-719.81	1093.87	0.65
141	11876	88.70	109.10	219.00	10775.91	1185.00	-730.01	1123.14	1.16
142	11907	88.30	108.80	219.00	10776.72	1215.11	-740.07	1152.45	1.61
143	11937	88.60	108.90	219.00	10777.53	1244.25	-749.76	1180.83	1.05
144	11968	88.00	107.10	219.00	10778.45	1274.47	-759.33	1210.29	6.12
145	12000	87.60	107.20	221.00	10779.68	1305.76	-768.76	1240.85	1.29
146	12031	87.70	106.40	221.00	10780.95	1336.10	-777.71	1270.50	2.60
147	12063	89.10	105.40	221.00	10781.84	1367.54	-786.48	1301.26	5.38
148	12094	89.40	105.70	222.00	10782.25	1398.03	-794.79	1331.13	1.37
149	12126	89.70	105.40	222.00	10782.50	1429.51	-803.36	1361.95	1.33
150	12158	90.40	103.80	222.00	10782.47	1461.08	-811.43	1392.92	5.46
151	12189	90.20	103.20	222.00	10782.31	1491.76	-818.67	1423.06	2.04
152	12221	90.00	102.40	222.00	10782.25	1523.48	-825.76	1454.27	2.58
153	12252	89.60	100.90	222.00	10782.36	1554.29	-832.02	1484.63	5.01
154	12284	89.80	101.30	224.00	10782.53	1586.12	-838.18	1516.03	1.40
155	12315	90.20	100.90	224.00	10782.53	1616.96	-844.15	1546.45	1.82
156	12347	90.20	99.80	224.00	10782.42	1648.83	-849.89	1577.93	3.44
157	12379	89.80	99.10	226.00	10782.42	1680.74	-855.15	1609.49	2.52
158	12410	89.10	99.30	226.00	10782.71	1711.66	-860.10	1640.09	2.35
159	12442	88.80	97.40	226.00	10783.30	1743.61	-864.75	1671.74	6.01
160	12473	88.30	97.20	226.00	10784.08	1774.58	-868.69	1702.48	1.74
161	12505	88.30	96.90	226.00	10785.03	1806.55	-872.61	1734.23	0.94
162	12537	89.30	96.10	226.00	10785.70	1838.53	-876.24	1766.01	4.00
163	12568	89.50	95.70	230.00	10786.03	1869.53	-879.42	1796.85	1.44
164	12600	90.10	95.60	230.00	10786.14	1901.53	-882.57	1828.69	1.90
165	12631	90.90	95.10	230.00	10785.87	1932.53	-885.46	1859.56	3.04
166	12663	90.90	95.40	230.00	10785.37	1964.52	-888.39	1891.42	0.94
167	12695	90.90	95.30	230.00	10784.86	1996.52	-891.37	1923.27	0.31
168	12726	90.50	94.20	230.00	10784.49	2027.52	-893.94	1954.17	3.78
169	12758	90.20	94.30	230.00	10784.29	2059.51	-896.31	1986.08	0.99
170	12789	90.20	94.00	230.00	10784.18	2090.50	-898.56	2017.00	0.97
171	12821	90.40	92.50	230.00	10784.01	2122.48	-900.37	2048.94	4.73
172	12853	89.30	91.80	231.00	10784.10	2154.44	-901.57	2080.92	4.07
173	12884	89.60	92.40	231.00	10784.40	2185.39	-902.71	2111.90	2.16
174	12916	89.50	90.60	231.00	10784.65	2217.32	-903.54	2143.88	5.63
175	13011	89.50	90.70	233.00	10785.48	2312.01	-904.62	2238.87	0.11
176	13105	88.70	89.40	235.00	10786.95	2405.61	-904.70	2332.86	1.62
177	13200	90.10	90.30	235.00	10787.95	2500.19	-904.45	2427.85	1.75
178	13295	89.50	90.50	239.00	10788.28	2594.85	-905.12	2522.85	0.67
179	13389	89.60	90.30	239.00	10789.02	2688.51	-905.77	2616.84	0.24
180	13484	90.70	90.20	239.00	10788.77	2783.15	-906.19	2711.84	1.16
181	13579	91.00	89.90	240.00	10787.36	2877.75	-906.27	2806.83	0.45
182	13674	89.20	88.10	240.00	10787.19	2972.18	-904.61	2901.81	2.68
183	13768	88.00	88.70	240.00	10789.49	3065.49	-901.99	2995.74	1.43
184	13863	90.00	89.00	240.00	10791.15	3159.88	-900.08	3090.70	2.13
185	13958	90.60	88.50	244.00	10790.65	3254.27	-898.01	3185.68	0.82
186	14053	91.40	88.70	244.00	10788.99	3348.62	-895.69	3280.63	0.87
187	14148	90.90	88.80	244.00	10787.09	3442.99	-893.62	3375.59	0.54
188	14242	89.50	88.80	244.00	10786.76	3536.40	-891.65	3469.57	1.49
189	14337	87.90	90.30	244.00	10788.91	3630.90	-890.90	3564.53	2.31
190	14432	88.10	91.30	244.00	10792.23	3725.56	-892.23	3659.46	1.07
191	14527	89.60	92.60	246.00	10794.14	3820.38	-895.46	3754.39	2.09
192	14621	90.80	93.60	248.00	10793.81	3914.31	-900.54	3848.24	1.66
193	14716	90.20	92.70	248.00	10792.98	4009.24	-905.76	3943.10	1.14
194	14811	90.40	92.00	249.00	10792.48	4104.12	-909.66	4038.01	0.77
195	14906	89.80	91.00	249.00	10792.32	4198.92	-912.15	4132.98	1.23



SURVEY REPORT

Customer: **Oasis Petroleum**
Well Name: **Chalmers 5300 21-19 11B**
Rig #: **Nabors B-22**
API #: **33-053-06024**
Calculation Method: **Minimum Curvature Calculation**

MWD Operator: **J. Creech, R. Maddalena**
Directional Drillers: **D. Rakstad, J. Gordon, R. Jasper**
Survey Corrected To: **True North**
Vertical Section Direction: **95.23**
Total Correction: **8.17**
Temperature Forecasting Model (Chart Only): **Logarithmic**

Survey #	MD	Inc	Azm	Temp	TVD	VS	N/S	E/W	DLS
196	15000	89.20	89.20	248.00	10793.14	4292.54	-912.31	4226.97	2.02
197	15095	88.80	88.60	251.00	10794.79	4386.94	-910.49	4321.94	0.76
198	15190	89.50	89.80	249.00	10796.20	4481.40	-909.16	4416.92	1.46
199	15285	90.90	91.10	251.00	10795.87	4576.07	-909.91	4511.91	2.01
200	15380	90.10	89.40	251.00	10795.04	4670.70	-910.32	4606.90	1.98
201	15474	86.90	88.00	251.00	10797.50	4764.04	-908.19	4700.83	3.72
202	15569	86.50	88.30	253.00	10802.97	4858.16	-905.13	4795.62	0.53
203	15664	86.90	89.60	253.00	10808.44	4952.43	-903.39	4890.45	1.43
204	15759	88.80	89.90	253.00	10812.00	5046.93	-902.98	4985.37	2.02
205	15854	89.10	89.60	255.00	10813.74	5141.48	-902.56	5080.36	0.45
206	15948	89.50	89.20	257.00	10814.89	5234.99	-901.58	5174.35	0.60
207	16043	89.50	88.20	257.00	10815.72	5329.36	-899.42	5269.32	1.05
208	16138	89.90	87.40	257.00	10816.22	5423.56	-895.78	5364.24	0.94
209	16233	89.70	88.10	257.00	10816.55	5517.76	-892.05	5459.17	0.77
210	16328	89.90	89.50	258.00	10816.88	5612.15	-890.06	5554.15	1.49
211	16422	89.80	89.10	258.00	10817.13	5705.65	-888.91	5648.14	0.44
212	16517	89.40	90.30	258.00	10817.79	5800.20	-888.41	5743.13	1.33
213	16612	88.40	90.30	258.00	10819.62	5894.83	-888.91	5838.11	1.05
214	16707	89.70	91.80	258.00	10821.19	5989.56	-890.65	5933.08	2.09
215	16801	89.40	92.50	260.00	10821.93	6083.42	-894.18	6027.01	0.81
216	16896	89.50	91.50	260.00	10822.84	6178.27	-897.49	6121.95	1.06
217	16991	88.80	91.80	260.00	10824.25	6273.07	-900.23	6216.89	0.80
218	17086	90.10	91.40	258.00	10825.16	6367.87	-902.88	6311.85	1.43
219	17180	89.90	90.80	258.00	10825.16	6461.63	-904.68	6405.83	0.67
220	17275	89.10	90.10	260.00	10825.99	6556.29	-905.43	6500.83	1.12
221	17370	89.70	90.00	258.00	10826.99	6650.90	-905.51	6595.82	0.64
222	17465	89.80	88.90	260.00	10827.40	6745.42	-904.60	6690.81	1.16
223	17559	90.20	88.90	260.00	10827.40	6838.84	-902.80	6784.80	0.43
224	17654	90.50	88.70	260.00	10826.82	6933.24	-900.81	6879.77	0.38
225	17749	91.20	87.90	262.00	10825.41	7027.54	-897.99	6974.72	1.12
226	17844	90.80	88.90	258.00	10823.75	7121.85	-895.34	7069.67	1.13
227	17939	89.50	88.50	260.00	10823.50	7216.23	-893.18	7164.64	1.43
228	18033	89.70	89.60	260.00	10824.16	7309.68	-891.62	7258.62	1.19
229	18128	89.90	90.10	260.00	10824.49	7404.26	-891.37	7353.62	0.57
230	18223	89.80	89.30	262.00	10824.74	7498.82	-890.88	7448.62	0.85
231	18318	90.00	89.30	262.00	10824.91	7593.31	-889.72	7543.61	0.21
232	18412	90.40	91.00	260.00	10824.58	7686.93	-889.96	7637.61	1.86
233	18507	90.20	92.10	262.00	10824.08	7781.73	-892.53	7732.57	1.18
234	18602	90.90	91.70	262.00	10823.17	7876.57	-895.68	7827.51	0.85
235	18697	89.90	91.20	264.00	10822.51	7971.36	-898.08	7922.48	1.18
236	18791	88.70	89.90	264.00	10823.65	8065.03	-898.99	8016.46	1.88
237	18886	89.80	90.30	262.00	10824.90	8159.64	-899.15	8111.45	1.23
238	18981	89.50	90.90	264.00	10825.48	8254.33	-900.15	8206.45	0.71
239	19076	89.90	90.80	264.00	10825.98	8349.05	-901.56	8301.43	0.43
240	19171	90.70	90.60	264.00	10825.48	8443.75	-902.72	8396.42	0.87
241	19265	91.20	90.20	264.00	10823.92	8537.41	-903.37	8490.41	0.68
242	19360	91.00	91.10	262.00	10822.10	8632.09	-904.45	8585.38	0.97
243	19455	90.80	92.10	262.00	10820.60	8726.88	-907.10	8680.33	1.07
244	19550	88.90	92.50	262.00	10820.85	8821.75	-910.92	8775.25	2.04
245	19645	89.30	92.70	264.00	10822.34	8916.64	-915.22	8870.14	0.47
246	19739	90.20	92.40	264.00	10822.76	9010.54	-919.41	8964.05	1.01
247	19834	89.30	91.70	262.00	10823.17	9105.39	-922.81	9058.98	1.20
248	19929	89.80	91.60	264.00	10823.92	9200.20	-925.54	9153.94	0.54
249	20024	89.40	91.10	262.00	10824.58	9294.98	-927.78	9248.91	0.67
250	20118	90.90	91.20	264.00	10824.33	9388.74	-929.67	9342.89	1.60
251	20213	90.30	88.50	260.00	10823.34	9483.30	-929.42	9437.88	2.91
252	20308	89.10	86.50	262.00	10823.84	9577.43	-925.27	9532.78	2.46
253	20403	89.50	86.60	264.00	10825.00	9671.34	-919.56	9627.60	0.43
254	20498	88.70	85.50	262.00	10826.49	9765.11	-913.01	9722.36	1.43
255	20593	89.80	85.60	264.00	10827.73	9858.75	-905.64	9817.06	1.16
256	20612	90.50	85.90	262.00	10827.68	9877.49	-904.24	9836.01	4.01
Projection	20680	90.50	85.90	262.00	10827.09	9944.58	-899.37	9903.83	0.00



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.
28849

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 31, 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 checked="" 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 type="checkbox"/> Other	Name and Formation Change

Well Name and Number

Chalmers 5300 21-19 11T

Footages	Qtr-Qtr	Section	Township	Range
2325' F N L	326' F W L	LOT2	19	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
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DETAILS OF WORK

Oasis Petroleum respectfully requests to change the above referenced well:

Name Change to: Chalmers 5300 21-19 11B

Formation change to: Bakken

Surface Hole Change: 2325' FNL & 327' FWL (old SHL 2325' FNL & 326' FWL)

Surface casings changed to 2121'

Casing Depth Change: 2660' FNL & 708' FWL; MD11018 TVD 10749

Bottom Hole Depth Change: 2036 FSL & 250 FEL; MD 20695 TVD 10825

cc 25.00 1-5-15 KB

Revised drill plan, well summary, directional plan and plot attached.

CC 25.00

Company Oasis Petroleum North America LLC	Telephone Number 281-404-9500	
Address 1001 Fannin, Suite 1500		
City Houston	State TX	Zip Code 77002
Signature <i>Chelsea Covington</i>	Printed Name Chelsea Covington	
Title Regulatory Assistant	Date December 31, 2014	
Email Address ccovington@oasispetroleum.com		

FOR STATE USE ONLY

<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date 01-02-2014	
By <i>David Burns</i>	
Title Engineering Tech.	

David Burns
Engineering Tech.

WELL LOCATION PLAT
SIS PETROLEUM NORTH AMERICA, INC.
FANNIN SUITE 1500 HOUSTON, TX 77002

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

CHALMERS 5300 21-19 11B

CHAMBERS 3300 21-19 11B
OM NORTH LINE AND 327 FEET FROM WEST LINE

2325 FEET FROM NORTH LINE AND 357 FEET FROM WEST LINE
SECTION 19, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

EDGE OF

MISSOURI RIVER PER 1891 SURVEY

SAKAWEE

EDGE OF LAKE

FOUND REBAR W/ 2" AC LS 2352

FOUND STONE & REBAR

VICINITY MAP

CHALMERS 5300 21-19 11B
GROUND ELEV. 2050.9'
LATITUDE 48°03'40.32"N
LONGITUDE 103°36'10.1"W
GPS SURVEY DATUM: NAD 83

LOT 1
AZ 90'03'35"
2631.88'
2325'
AZ 0'04'59"
327'
AZ 95'08'00"
10019.44'
19 1947' (GLO)
1831.5' (GLO)

LOT 2
AZ 90'00'00"
2640' (GLO)

LOT 3
AZ 90'03'03"
2651.37'
1507' (GLO)

LOT 4
AZ 90'00'00"
1207' (GLO)

LOT 5
AZ 359'55.00"
1831.5' (GLO)

LOT 6
AZ 90'00'00"

LOT 7
AZ 90'00'00"

LOT 8
2216' (GLO)
5148' (GLO)

LOT 9
1056' (GLO)
5280' (GLO)

LOT 10
CALCULATED IN LAKE

LOT 11
CALCULATED IN LAKE

LOT 12
CALCULATED IN LAKE

THIS DOCUMENT WAS ORIGINALLY ISSUED
AND SEALED BY DARYL D. KASEMAN,
PLS. REGISTRATION NUMBER 3880 ON
5/07/14 AND THE ORIGINAL
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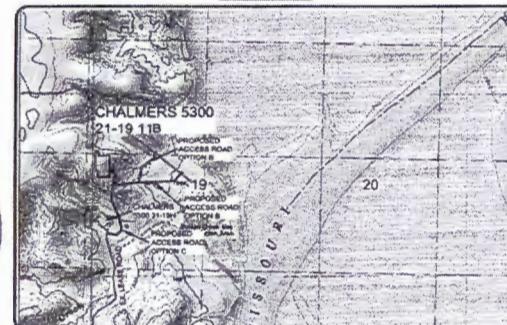
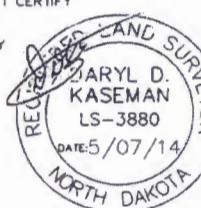
  - MONUMENT - RECOVERED
 - MONUMENT - NOT RECOVERED

STAKED ON 1/29/14
VERTICAL CONTROL DATUM WAS BASED UPON
CONTROL POINT 16 WITH AN ELEVATION OF 2014.2'

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



DARYL D. KASEMAN LS-3880



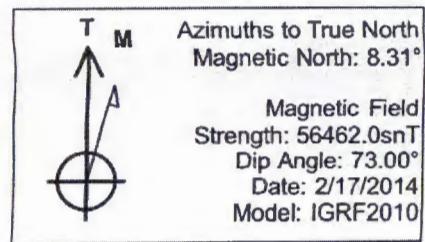
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OASIS PETROLEUM NORTH AMERICA, LLC		Date	By
WELL LOCATION PLAT		1/27/14	Drillers/Operator
SECTION 19, T15S, R10W		1/27/14	REC'D. FOR REC'D. BY:
MCKENZIE COUNTY, NORTH DAKOTA		1/27/14	WALTER WELLS DR. / PAUL GROVES PAQ
		1/27/14	WALTER WELLS DR. / PAUL GROVES PAQ
		REC'D. 1/27/14	WALTER WELLS DR. / PAUL GROVES PAQ
Drawn By:		Project No.:	Date:
C. J. S. N.		000-0000000000000000	03/20/2014



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DRILLING PLAN								
OPERATOR	Oasis Petroleum			COUNTY/STATE	McKenzie Co., ND			
WELL NAME	Chalmers 5300 21-19 11B			RIG	B 22			
WELL TYPE	Middle Bakken			LOCATION				
EST. T.D.	SW NW 19-153N-100W		Surface Location (survey plat): 2325' FNL		327' FWL	GROUND ELEV:		
TOTAL LATERAL:	20,695'		9,677'	KB ELEV:	2,046'	Sub Height: 25'		
MARKER	TVD	Subsea TVD	LOGS:	Type	Interval			
Pierre	NDIC MAP	2,021	50	OH Logs: Request a Sundry for an Open Hole Log Waiver: Oasis Chalmers 5300 31-19H 1,850' to S				
Greenhorn		4,824	-2,553	sec 19 153N 100W				
Mowry		5,029	-2,958	CBL/GPR: Above top of cement/GPR to base of casing				
Dakota		5,417	-3,346	MWD GR: KOP to lateral TD				
Riordan		6,463	-4,392	DEVIATION:	Surf: 3 deg. max., 1 deg / 100'; svny every 500'			
Dunham Salt		6,881	-4,820	Prod: 5 deg. max., 1 deg / 100'; svny every 100'				
Dunham Salt Base		6,960	-4,889					
Pine Salt		7,257	-5,166					
Pine Salt Base		7,290	-5,219					
Opeche Salt		7,351	-5,280					
Opeche Salt Base		7,426	-5,355					
Amesden		7,682	-5,591					
Tyler		7,828	-5,757					
Otter/Base Minnelusa		8,032	-5,961	DSTS:	None planned			
Kibbey Lime		8,383	-6,312					
Charles Salt		8,529	-6,458	CORES:	None planned			
Base Last Salt		9,204	-7,133					
Mission Canyon		9,424	-7,353					
Lodgepole		9,988	-7,917					
False Bakken		10,709	-8,838					
Upper Bakken Shale		10,719	-8,846	MUDLOGGING:	Two-Man: Begin 200' above Kibbey			
Middle Bakken		10,735	-8,664		30' samples in curve and lateral			
Top of Target		10,745	-8,674					
Landing Target		10,751	-8,880					
Base of target		10,755	-8,664					
Lower Bakken Shale		10,777	-8,706	BOP:	11" 5000 psi blind, pipe & annular			
Est. Dip Rate:	0.45							
Max. Anticipated BHP:	0			Surface Formation:	Glacial till			
MUD:	Interval	Type	WT	VIS	WL	Remarks		
Surface:	0' -	2,121'	FW	8.4-9.0	28-32	NC		
Intermediate:	2,121' -	11,018'	Invert	9.5-10.4	40-50	30+HHp		
Lateral:	11,018' -	20,695'	Salt Water	9.8-10.2	28-32	NC		
CASING:	Size	Wt pcf	Hole	Depth	Cement	WOC	Remarks	
Surface:	13-3/8"	54.5#	17-1/2"	2,121'	To Surface	12	100' into Pierre	
Intermediate: (Dakota)	9-5/8"	40#	12-1/4"	6,000'	To Surface	24	Set Casing across Dakota	
Intermediate:	7"	32#	8-3/4"	11,018'	3917	24	1500' above Dakota	
Production Liner:	4.5"	13.5#	6"	20,695'	TOL @ 10,222'		50' above KOP	
PROBABLE PLUGS, IF REQ'D:								
OTHER:	MD	TVD	FNL/FSL	FEL/FWL	S-T-R	AZI		
	Surface: 2,121	2,121	2325 FNL	327 FWL	SEC. 19 T163N R100W		Build Rate: 12 Deg/100'	
	KOP: 10,272'	10,272'	2375 FNL	327 FWL	SEC. 19 T163N R100W			
	EOC: 11,018'	10,749'	2660 FNL	706 FWL	SEC. 19 T163N R100W	126.9		
	Casing Point: 11,018'	10,749'	2660 FNL	706 FWL	SEC. 19 T163N R100W	126.9		
	Three Forks Lateral TD: 20,695'	10,825'	2036 FSL	250 FEL	SEC. 20 T163N R100W	90.0		
Comments:								
Request a Sundry for an Open Hole Log Waiver: Oasis Chalmers 5300 31-19H 1,850' to sec 19 153N 100W No frac string planned 35 packers and 25 sleeves planned 3.6MM lbs 30% ceramic 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) 68008-20-8 (Primary Name: Kerosene)								
OASIS PETROLEUM								
Geology: N. Gabelman	2/4/2014			Engineering: TR 12/29/14				
Revised: N. Gabelman	12/31/2014			TR 12/31/14				

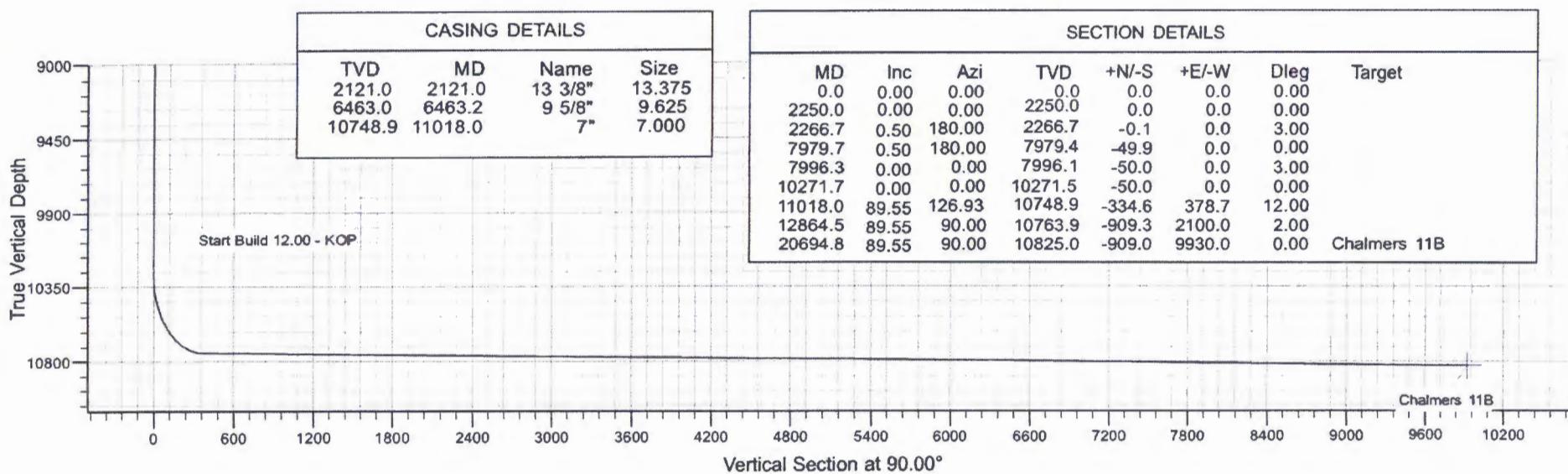
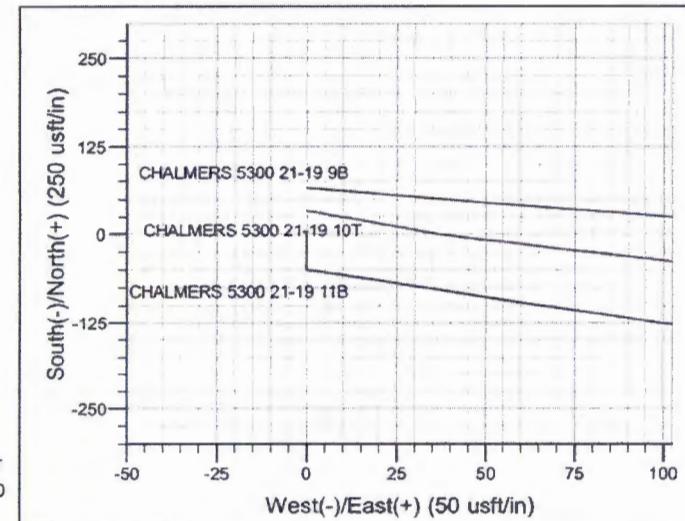
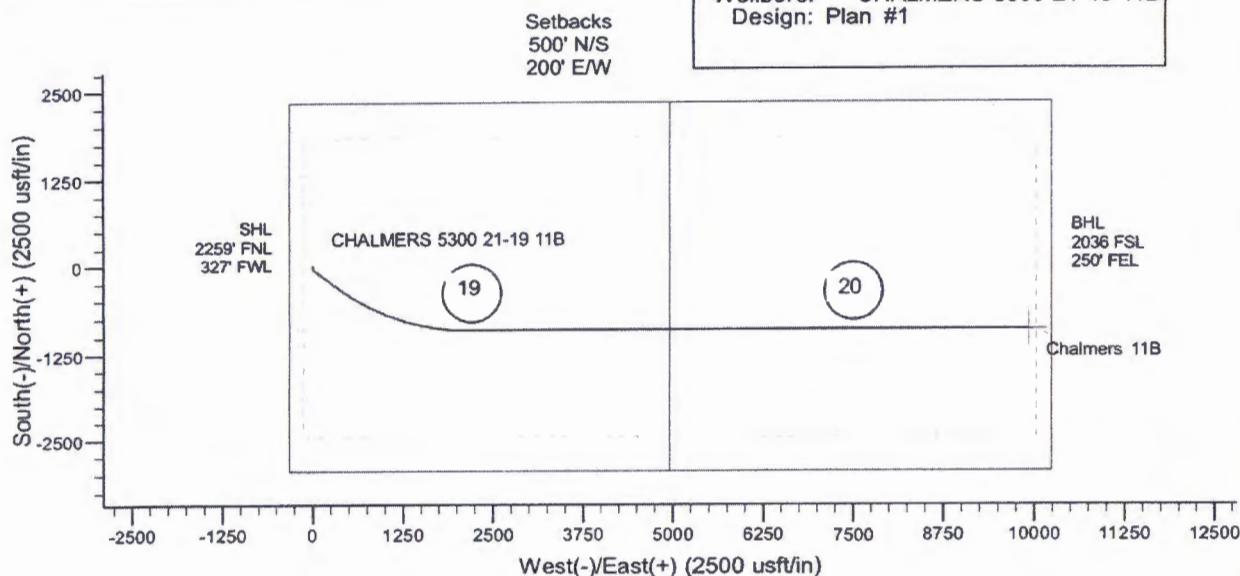


Project: Indian Hills
Site: 153N-100W-19/20
Well: CHALMERS 5300 21-19 11B
Wellbore: CHALMERS 5300 21-19 11B
Design: Plan #1

SITE DETAILS: 153N-100W-19/20

Well Centre Latitude: 48° 3' 40.320 N
Longitude: 103° 36' 10.110 W

Positional Uncertainty: 0.0
Convergence: -2.31
Local North: True



Oasis Petroleum
Well Summary
Chalmers 5300 21-19 11B
Section 19 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' - 2121'	54.5	J-55	LTC	12.615"	12.459"	4100	5470	6840

Interval	Description	Collapse	Burst	Tension
		(psi) / a	(psi) / b	(1000 lbs) / c
0' - 2121'	13-3/8", 54.5#, J-55, LTC, 8rd	1130 / 1.13	2730 / 1.90	514 / 2.57

API Rating & Safety Factor

- a) Collapse based on full casing evacuation with 9 ppg fluid on backside (2121' setting)
- b) Burst pressure based on 13 ppg fluid with no fluid on backside (2121' setting depth).
- c) Based on string weight in 9 ppg fluid at 2121' 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: 695 sks (359 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: 349 sks (72 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
Chalmers 5300 21-19 11B
Section 19 T153N R100W
McKenzie County, ND

Contingency INTERMEDIATE CASING AND CEMENT DESIGN

Size	Interval	Weight	Grade	Coupling	I.D.	Drift	Make-up Torque (ft-lbs)		
							Minimum	Optimum	Max
9-5/8"	0' - 6463'	36	J-55	LTC	8.921"	8.765"	3400	4530	5660

Interval	Description	Collapse (psi) / a	Burst (psi) / b	Tension (1000 lbs) / c
0' - 6463'	9-5/8", 36#, J-55, LTC, 8rd	2020 / 2.14	3520 / 1.28	453 / 1.53

API Rating & Safety Factor

- a) Collapse based on full casing evacuation with 10.4 ppg fluid on backside (6463' 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 6463' TVD plus 100k# overpull. (Buoyed weight equals 196k 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.
Mix and pump the following slurry.

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

Lead Slurry: **565 sks** (292 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: **624 sks** (129 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
Chalmers 5300 21-19 11B
Section 19 T153N R100W
McKenzie County, ND

INTERMEDIATE CASING AND CEMENT DESIGN

Size	Interval	Weight	Grade	Coupling	I.D.	Drift**	Make-up Torque (ft-lbs)		
							Minimum	Optimum	Max
7"	0' - 6741'	29	P-110	LTC	6.184"	6.059"	5980	7970	8770
7"	6741' - 10272'	32	HCP-110	LTC	6.094"	6.000***	6730	8970	9870
7"	10272' - 11018'	29	P-110	LTC	6.184"	6.059"	5980	7970	8770

**Special Drift 7" 32# to 6.0"

Interval	Length	Description	Collapse (psi) a	Burst (psi) b	Tension (1000 lbs) c
0' - 6741'	6741'	7", 29#, P-110, LTC, 8rd	8530 / 2.43*	11220 / 1.19	797 / 2.08
6741' - 10272'	3531'	7", 32#, HCP-110, LTC, 8rd	11820 / 2.21*	12460 / 1.29	
6741' - 10272'	3531'	7", 32#, HCP-110, LTC, 8rd	11820 / 1.06**	12460 / 1.29	
10272' - 11018'	746'	7", 29#, P-110, LTC, 8rd	8530 / 1.52*	11220 / 1.16	

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 10749' TVD.
- c) Based on string weight in 10 ppg fluid, (280k lbs buoyed weight) plus 100k lbs overpull.

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

Mix and pump the following slurry

Pre-flush (Spacer): 100 bbls Saltwater
 20bbls CW8
 20bbls Fresh Water

Lead Slurry: 219 sks (86 bbls), 11.8 lb/gal, 2.59 ft3/sk yield, Conventional system with 61 lb/sk cement, 10% NaCl, 23 lb/sk extender, 0.2% D046 Anti Foam, 0.25lb/sk D130 Lost Circulation, 0.8% D112 Fluid Loss, 6% D035 Extender.

Tall Slurry: 600 sks (165 bbls), 15.8 lb/gal, 1.55 ft3/sk yield, Conventional system with 94 lb/sk cement, 10% NaCl, 35% Silica, 0.2% fluid loss agent D167, 0.27% Retarder D198, 0.25 lb/sk D130 lost circulation control, 0.2% Anti Foam D046.

Oasis Petroleum
Well Summary
Chalmers 5300 21-19 11B
Section 19 T153N R100W
McKenzie County, ND

PRODUCTION LINER

Size	Interval	Weight	Grade	Coupling	I.D.	Drift	Make-up Torque (ft-lbs)		
							Minimum	Optimum	Max
4-1/2"	10222' - 20695'	11.6	P-110	BTC	4.000"	3.875"	2270	3020	3780

Interval	Length	Description	Collapse (psi) a	Burst (psi) b	Tension (1000 lbs) c
10222' - 20695'	10473	4-1/2", 11.6 lb, P-110, BTC	7560 / 1.41	10690 / 1.10	385 / 1.88

API Rating & Safety Factor

- a) Based on full casing evacuation with 9.5 ppg fluid on backside @ 10825' TVD.
- b) Burst pressure based on 9000 psi treating pressure with 10.2 ppg internal fluid gradient and 9 ppg external fluid gradient @ 10825' TVD.
- c) Based on string weight in 9.5 ppg fluid (Buoyed weight: 104k lbs.) plus 100k lbs overpull.

Oasis

Indian Hills

153N-100W-19/20

CHALMERS 5300 21-19 11B

T153N R100W SECTION 19

CHALMERS 5300 21-19 11B

Plan: Plan #1

Standard Planning Report

31 December, 2014

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well CHALMERS 5300 21-19 11B							
Company:	Oasis	TVD Reference:	WELL @ 2071.0usft (Original Well Elev)							
Project:	Indian Hills	MD Reference:	WELL @ 2071.0usft (Original Well Elev)							
Site:	153N-100W-19/20	North Reference:	True							
Well:	CHALMERS 5300 21-19 11B	Survey Calculation Method:	Minimum Curvature							
Wellbore:	CHALMERS 5300 21-19 11B									
Design:	Plan #1									
Project	Indian Hills									
Map System:	US State Plane 1983	System Datum:	Mean Sea Level							
Geo Datum:	North American Datum 1983									
Map Zone:	North Dakota Northern Zone									
Site	153N-100W-19/20									
Site Position:		Northing:	402,776.24 usft							
From:	Lat/Long	Easting:	1,209,958.00 usft							
Position Uncertainty:	0.0 usft	Slot Radius:	13.200 in							
			Latitude: 48° 3' 44.270 N							
			Longitude: 103° 36' 10.700 W							
			Grid Convergence: -2.31 °							
Well	CHALMERS 5300 21-19 11B									
Well Position	+N/S +E/W	-400.2 usft 40.1 usft	Northing: 402,374.70 usft Easting: 1,209,881.92 usft							
Position Uncertainty	2.0 usft		Latitude: 48° 3' 40.320 N Longitude: 103° 36' 10.110 W							
			Wellhead Elevation: Ground Level: 2,048.0 usft							
Wellbore	CHALMERS 5300 21-19 11B									
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)					
	IGRF2010	2/17/2014	8.31	73.00	56,462					
Design	Plan #1									
Audit Notes:										
Version:		Phase:	PROTOTYPE	Tie On Depth:	0.0					
Vertical Section:		Depth From (TVD) (usft)	+N/S (usft)	+E/W (usft)	Direction (°)					
		0.0	0.0	0.0	90.00					
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
2,250.0	0.00	0.00	2,250.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00
2,266.7	0.50	180.00	2,266.7	-0.1	0.0	3.00	3.00	0.00	0.00	180.00
7,979.7	0.50	180.00	7,979.4	-49.9	0.0	0.00	0.00	0.00	0.00	0.00
7,996.3	0.00	0.00	7,996.1	-50.0	0.0	3.00	-3.00	0.00	0.00	180.00
10,271.7	0.00	0.00	10,271.5	-50.0	0.0	0.00	0.00	0.00	0.00	0.00
11,018.0	89.55	126.93	10,748.9	-334.6	378.7	12.00	12.00	0.00	0.00	126.93
12,864.5	89.55	90.00	10,763.9	-909.3	2,100.0	2.00	0.00	-2.00	-90.15	
20,694.8	89.55	90.00	10,825.0	-909.0	9,930.0	0.00	0.00	0.00	0.00	Chalmers 11B

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well CHALMERS 5300 21-19 11B
Company:	Oasis	TVD Reference:	WELL @ 2071.0usft (Original Well Elev)
Project:	Indian Hills	MD Reference:	WELL @ 2071.0usft (Original Well Elev)
Site:	153N-100W-19/20	North Reference:	True
Well:	CHALMERS 5300 21-19 11B	Survey Calculation Method:	Minimum Curvature
Wellbore:	CHALMERS 5300 21-19 11B		
Design:	Plan #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)	
2,250.0	0.00	0.00	2,250.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
Start Build 3.00										
2,266.7	0.50	180.00	2,266.7	-0.1	0.0	0.0	3.00	3.00	0.00	0.00
Start 5713.0 hold at 2266.7 MD										
2,300.0	0.50	180.00	2,300.0	-0.4	0.0	0.0	0.00	0.00	0.00	0.00
2,400.0	0.50	160.00	2,400.0	-1.2	0.0	0.0	0.00	0.00	0.00	0.00
2,500.0	0.50	180.00	2,500.0	-2.1	0.0	0.0	0.00	0.00	0.00	0.00
2,600.0	0.50	180.00	2,600.0	-3.0	0.0	0.0	0.00	0.00	0.00	0.00
2,700.0	0.50	180.00	2,700.0	-3.9	0.0	0.0	0.00	0.00	0.00	0.00
2,800.0	0.50	180.00	2,800.0	-4.7	0.0	0.0	0.00	0.00	0.00	0.00
2,900.0	0.50	180.00	2,900.0	-5.6	0.0	0.0	0.00	0.00	0.00	0.00
3,000.0	0.50	180.00	3,000.0	-8.5	0.0	0.0	0.00	0.00	0.00	0.00
3,100.0	0.50	180.00	3,100.0	-7.3	0.0	0.0	0.00	0.00	0.00	0.00
3,200.0	0.50	180.00	3,200.0	-8.2	0.0	0.0	0.00	0.00	0.00	0.00
3,300.0	0.50	180.00	3,300.0	-9.1	0.0	0.0	0.00	0.00	0.00	0.00
3,400.0	0.50	180.00	3,400.0	-10.0	0.0	0.0	0.00	0.00	0.00	0.00
3,500.0	0.50	180.00	3,500.0	-10.8	0.0	0.0	0.00	0.00	0.00	0.00
3,600.0	0.50	180.00	3,599.9	-11.7	0.0	0.0	0.00	0.00	0.00	0.00
3,700.0	0.50	180.00	3,699.9	-12.6	0.0	0.0	0.00	0.00	0.00	0.00
3,800.0	0.50	180.00	3,799.9	-13.5	0.0	0.0	0.00	0.00	0.00	0.00
3,900.0	0.50	180.00	3,899.9	-14.3	0.0	0.0	0.00	0.00	0.00	0.00
4,000.0	0.50	180.00	3,999.9	-15.2	0.0	0.0	0.00	0.00	0.00	0.00
4,100.0	0.50	180.00	4,099.9	-16.1	0.0	0.0	0.00	0.00	0.00	0.00
4,200.0	0.50	180.00	4,199.9	-16.9	0.0	0.0	0.00	0.00	0.00	0.00
4,300.0	0.50	180.00	4,299.9	-17.8	0.0	0.0	0.00	0.00	0.00	0.00
4,400.0	0.50	180.00	4,399.9	-18.7	0.0	0.0	0.00	0.00	0.00	0.00
4,500.0	0.50	180.00	4,499.9	-19.6	0.0	0.0	0.00	0.00	0.00	0.00
4,600.0	0.50	180.00	4,599.9	-20.4	0.0	0.0	0.00	0.00	0.00	0.00
4,700.0	0.50	180.00	4,699.9	-21.3	0.0	0.0	0.00	0.00	0.00	0.00
4,800.0	0.50	180.00	4,799.9	-22.2	0.0	0.0	0.00	0.00	0.00	0.00
4,900.0	0.50	180.00	4,899.9	-23.1	0.0	0.0	0.00	0.00	0.00	0.00
5,000.0	0.50	180.00	4,999.9	-23.9	0.0	0.0	0.00	0.00	0.00	0.00
5,100.0	0.50	180.00	5,099.9	-24.8	0.0	0.0	0.00	0.00	0.00	0.00
5,200.0	0.50	180.00	5,199.9	-25.7	0.0	0.0	0.00	0.00	0.00	0.00
5,300.0	0.50	180.00	5,299.9	-26.5	0.0	0.0	0.00	0.00	0.00	0.00
5,400.0	0.50	180.00	5,399.9	-27.4	0.0	0.0	0.00	0.00	0.00	0.00
5,500.0	0.50	180.00	5,499.9	-28.3	0.0	0.0	0.00	0.00	0.00	0.00
5,600.0	0.50	180.00	5,599.9	-29.2	0.0	0.0	0.00	0.00	0.00	0.00
5,700.0	0.50	180.00	5,699.9	-30.0	0.0	0.0	0.00	0.00	0.00	0.00
5,800.0	0.50	180.00	5,799.9	-30.9	0.0	0.0	0.00	0.00	0.00	0.00
5,900.0	0.50	180.00	5,899.9	-31.8	0.0	0.0	0.00	0.00	0.00	0.00
6,000.0	0.50	180.00	5,999.9	-32.7	0.0	0.0	0.00	0.00	0.00	0.00
6,100.0	0.50	180.00	6,099.9	-33.5	0.0	0.0	0.00	0.00	0.00	0.00
6,200.0	0.50	180.00	6,199.8	-34.4	0.0	0.0	0.00	0.00	0.00	0.00
6,300.0	0.50	180.00	6,299.8	-35.3	0.0	0.0	0.00	0.00	0.00	0.00
6,400.0	0.50	180.00	6,399.8	-36.1	0.0	0.0	0.00	0.00	0.00	0.00
6,463.2	0.50	180.00	6,463.0	-36.7	0.0	0.0	0.00	0.00	0.00	0.00
9 5/8"										
6,500.0	0.50	180.00	6,499.8	-37.0	0.0	0.0	0.00	0.00	0.00	0.00
6,600.0	0.50	180.00	6,599.8	-37.9	0.0	0.0	0.00	0.00	0.00	0.00
6,700.0	0.50	180.00	6,699.8	-38.8	0.0	0.0	0.00	0.00	0.00	0.00
6,800.0	0.50	180.00	6,799.8	-39.6	0.0	0.0	0.00	0.00	0.00	0.00
6,900.0	0.50	180.00	6,899.8	-40.5	0.0	0.0	0.00	0.00	0.00	0.00
7,000.0	0.50	180.00	6,999.8	-41.4	0.0	0.0	0.00	0.00	0.00	0.00
7,100.0	0.50	180.00	7,099.8	-42.3	0.0	0.0	0.00	0.00	0.00	0.00

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well CHALMERS 5300 21-19 11B						
Company:	Oasis	TVD Reference:	WELL @ 2071.0usft (Original Well Elev)						
Project:	Indian Hills	MD Reference:	WELL @ 2071.0usft (Original Well Elev)						
Site:	153N-100W-19/20	North Reference:	True						
Well:	CHALMERS 5300 21-19 11B	Survey Calculation Method:	Minimum Curvature						
Wellbore:	CHALMERS 5300 21-19 11B								
Design:	Plan #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)
7,200.0	0.50	180.00	7,199.8	-43.1	0.0	0.0	0.00	0.00	0.00
7,300.0	0.50	180.00	7,299.8	-44.0	0.0	0.0	0.00	0.00	0.00
7,400.0	0.50	180.00	7,399.8	-44.9	0.0	0.0	0.00	0.00	0.00
7,500.0	0.50	180.00	7,499.8	-45.7	0.0	0.0	0.00	0.00	0.00
7,600.0	0.50	180.00	7,599.8	-46.5	0.0	0.0	0.00	0.00	0.00
7,700.0	0.50	180.00	7,699.8	-47.5	0.0	0.0	0.00	0.00	0.00
7,800.0	0.50	180.00	7,799.8	-48.4	0.0	0.0	0.00	0.00	0.00
7,900.0	0.50	180.00	7,899.8	-49.2	0.0	0.0	0.00	0.00	0.00
7,979.7	0.50	180.00	7,979.4	-49.9	0.0	0.0	0.00	0.00	0.00
Start Drop -3.00									
7,998.3	0.00	0.00	7,996.1	-50.0	0.0	0.0	3.00	-3.00	0.00
Start 2275.4 hold at 7996.3 MD									
10,271.7	0.00	0.00	10,271.5	-50.0	0.0	0.0	0.00	0.00	0.00
Start Build 12.00 - KOP									
10,300.0	3.39	126.93	10,299.8	-50.5	0.7	0.7	12.00	12.00	0.00
10,400.0	15.39	126.93	10,398.2	-60.3	13.7	13.7	12.00	12.00	0.00
10,500.0	27.39	126.93	10,491.2	-82.2	42.8	42.8	12.00	12.00	0.00
10,600.0	39.39	126.93	10,574.5	-115.2	86.7	86.7	12.00	12.00	0.00
10,700.0	51.39	126.93	10,644.8	-157.9	143.5	143.5	12.00	12.00	0.00
10,800.0	63.39	126.93	10,698.4	-208.4	210.7	210.7	12.00	12.00	0.00
10,900.0	75.39	126.93	10,733.5	-264.5	285.4	285.4	12.00	12.00	0.00
11,000.0	87.39	126.93	10,748.5	-323.8	364.3	364.3	12.00	12.00	0.00
11,018.0	89.55	126.93	10,748.9	-334.6	378.7	378.7	11.98	11.98	0.00
Start DLS 2.00 TFO -90.15 + EOC - 7"									
11,100.0	89.55	125.29	10,749.6	-383.0	444.9	444.9	2.00	0.00	-2.00
11,200.0	89.54	123.29	10,750.4	-439.3	527.6	527.6	2.00	0.00	-2.00
11,300.0	89.54	121.29	10,751.2	-492.7	612.1	612.1	2.00	0.00	-2.00
11,400.0	89.53	119.29	10,752.0	-543.1	698.4	698.4	2.00	0.00	-2.00
11,500.0	89.53	117.29	10,752.8	-590.5	786.5	786.5	2.00	0.00	-2.00
11,600.0	89.53	115.29	10,753.6	-634.8	876.1	876.1	2.00	0.00	-2.00
11,700.0	89.53	113.29	10,754.5	-676.0	987.3	987.3	2.00	0.00	-2.00
11,800.0	89.53	111.29	10,755.3	-713.9	1,059.8	1,059.8	2.00	0.00	-2.00
11,900.0	89.53	109.29	10,756.1	-748.5	1,153.6	1,153.6	2.00	0.00	-2.00
12,000.0	89.53	107.29	10,756.9	-779.9	1,248.5	1,248.5	2.00	0.00	-2.00
12,100.0	89.53	105.29	10,757.8	-808.0	1,344.5	1,344.5	2.00	0.00	-2.00
12,200.0	89.53	103.29	10,758.6	-832.6	1,441.4	1,441.4	2.00	0.00	-2.00
12,300.0	89.53	101.29	10,759.4	-853.9	1,539.1	1,539.1	2.00	0.00	-2.00
12,400.0	89.53	99.29	10,760.2	-871.8	1,637.5	1,637.5	2.00	0.00	-2.00
12,500.0	89.54	97.29	10,761.0	-886.2	1,738.4	1,738.4	2.00	0.00	-2.00
12,600.0	89.54	95.29	10,761.8	-897.2	1,835.8	1,835.8	2.00	0.00	-2.00
12,700.0	89.54	93.29	10,762.6	-904.6	1,935.5	1,935.5	2.00	0.00	-2.00
12,800.0	89.55	91.29	10,763.4	-908.6	2,035.4	2,035.4	2.00	0.00	-2.00
12,864.5	89.55	90.00	10,763.9	-909.3	2,100.0	2,100.0	2.00	0.01	-2.00
Start 7830.3 hold at 12864.5 MD									
12,900.0	89.55	90.00	10,764.2	-909.3	2,135.4	2,135.4	0.00	0.00	0.00
13,000.0	89.55	90.00	10,765.0	-909.3	2,235.4	2,235.4	0.00	0.00	0.00
13,100.0	89.55	90.00	10,765.8	-909.3	2,335.4	2,335.4	0.00	0.00	0.00
13,200.0	89.55	90.00	10,766.5	-909.3	2,435.4	2,435.4	0.00	0.00	0.00
13,300.0	89.55	90.00	10,767.3	-909.3	2,535.4	2,535.4	0.00	0.00	0.00
13,400.0	89.55	90.00	10,768.1	-909.3	2,635.4	2,635.4	0.00	0.00	0.00
13,500.0	89.55	90.00	10,768.9	-909.3	2,735.4	2,735.4	0.00	0.00	0.00
13,600.0	89.55	90.00	10,789.7	-909.3	2,835.4	2,835.4	0.00	0.00	0.00
13,700.0	89.55	90.00	10,770.4	-909.3	2,935.4	2,935.4	0.00	0.00	0.00
13,800.0	89.55	90.00	10,771.2	-909.3	3,035.4	3,035.4	0.00	0.00	0.00

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well CHALMERS 5300 21-19 11B
Company:	Oasis	TVD Reference:	WELL @ 2071.0usft (Original Well Elev)
Project:	Indian Hills	MD Reference:	WELL @ 2071.0usft (Original Well Elev)
Site:	153N-100W-19/20	North Reference:	True
Well:	CHALMERS 5300 21-19 11B	Survey Calculation Method:	Minimum Curvature
Wellbore:	CHALMERS 5300 21-19 11B		
Design:	Plan #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)	
13,900.0	89.55	90.00	10,772.0	-909.3	3,135.4	3,135.4	0.00	0.00	0.00	0.00
14,000.0	89.55	90.00	10,772.8	-909.3	3,235.4	3,235.4	0.00	0.00	0.00	0.00
14,100.0	89.55	90.00	10,773.6	-909.3	3,335.4	3,335.4	0.00	0.00	0.00	0.00
14,200.0	89.55	90.00	10,774.3	-909.3	3,435.4	3,435.4	0.00	0.00	0.00	0.00
14,300.0	89.55	90.00	10,775.1	-909.3	3,535.4	3,535.4	0.00	0.00	0.00	0.00
14,400.0	89.55	90.00	10,775.9	-909.3	3,635.4	3,635.4	0.00	0.00	0.00	0.00
14,500.0	89.55	90.00	10,776.7	-909.3	3,735.4	3,735.4	0.00	0.00	0.00	0.00
14,600.0	89.55	90.00	10,777.5	-909.3	3,835.4	3,835.4	0.00	0.00	0.00	0.00
14,700.0	89.55	90.00	10,778.2	-909.3	3,935.4	3,935.4	0.00	0.00	0.00	0.00
14,800.0	89.55	90.00	10,779.0	-909.3	4,035.4	4,035.4	0.00	0.00	0.00	0.00
14,900.0	89.55	90.00	10,779.8	-909.3	4,135.4	4,135.4	0.00	0.00	0.00	0.00
15,000.0	89.55	90.00	10,780.6	-909.3	4,235.4	4,235.4	0.00	0.00	0.00	0.00
15,100.0	89.55	90.00	10,781.4	-909.2	4,335.4	4,335.4	0.00	0.00	0.00	0.00
15,200.0	89.55	90.00	10,782.1	-909.2	4,435.4	4,435.4	0.00	0.00	0.00	0.00
15,300.0	89.55	90.00	10,782.9	-909.2	4,535.4	4,535.4	0.00	0.00	0.00	0.00
15,400.0	89.55	90.00	10,783.7	-909.2	4,635.4	4,635.4	0.00	0.00	0.00	0.00
15,500.0	89.55	90.00	10,784.5	-909.2	4,735.4	4,735.4	0.00	0.00	0.00	0.00
15,600.0	89.55	90.00	10,785.3	-909.2	4,835.3	4,835.3	0.00	0.00	0.00	0.00
15,700.0	89.55	90.00	10,786.0	-909.2	4,935.3	4,935.3	0.00	0.00	0.00	0.00
15,800.0	89.55	90.00	10,786.8	-909.2	5,035.3	5,035.3	0.00	0.00	0.00	0.00
15,900.0	89.55	90.00	10,787.6	-909.2	5,135.3	5,135.3	0.00	0.00	0.00	0.00
18,000.0	89.55	90.00	10,788.4	-909.2	5,235.3	5,235.3	0.00	0.00	0.00	0.00
16,100.0	89.55	90.00	10,789.2	-909.2	5,335.3	5,335.3	0.00	0.00	0.00	0.00
18,200.0	89.55	90.00	10,789.9	-909.2	5,435.3	5,435.3	0.00	0.00	0.00	0.00
16,300.0	89.55	90.00	10,790.7	-909.2	5,535.3	5,535.3	0.00	0.00	0.00	0.00
18,400.0	89.55	90.00	10,791.5	-909.2	5,635.3	5,635.3	0.00	0.00	0.00	0.00
18,500.0	89.55	90.00	10,792.3	-909.2	5,735.3	5,735.3	0.00	0.00	0.00	0.00
16,600.0	89.55	90.00	10,793.1	-909.2	5,835.3	5,835.3	0.00	0.00	0.00	0.00
16,700.0	89.55	90.00	10,793.8	-909.2	5,935.3	5,935.3	0.00	0.00	0.00	0.00
18,800.0	89.55	90.00	10,794.6	-909.2	8,035.3	8,035.3	0.00	0.00	0.00	0.00
16,900.0	89.55	90.00	10,795.4	-909.2	6,135.3	6,135.3	0.00	0.00	0.00	0.00
17,000.0	89.55	90.00	10,796.2	-909.2	6,235.3	6,235.3	0.00	0.00	0.00	0.00
17,100.0	89.55	90.00	10,797.0	-909.2	6,335.3	6,335.3	0.00	0.00	0.00	0.00
17,200.0	89.55	90.00	10,797.7	-909.2	6,435.3	6,435.3	0.00	0.00	0.00	0.00
17,300.0	89.55	90.00	10,798.5	-909.2	6,535.3	6,535.3	0.00	0.00	0.00	0.00
17,400.0	89.55	90.00	10,799.3	-909.1	6,635.3	6,635.3	0.00	0.00	0.00	0.00
17,500.0	89.55	90.00	10,800.1	-909.1	6,735.3	6,735.3	0.00	0.00	0.00	0.00
17,600.0	89.55	90.00	10,800.9	-909.1	6,835.3	6,835.3	0.00	0.00	0.00	0.00
17,700.0	89.55	90.00	10,801.6	-909.1	6,935.3	6,935.3	0.00	0.00	0.00	0.00
17,800.0	89.55	90.00	10,802.4	-909.1	7,035.3	7,035.3	0.00	0.00	0.00	0.00
17,900.0	89.55	90.00	10,803.2	-909.1	7,135.3	7,135.3	0.00	0.00	0.00	0.00
18,000.0	89.55	90.00	10,804.0	-909.1	7,235.3	7,235.3	0.00	0.00	0.00	0.00
18,100.0	89.55	90.00	10,804.8	-909.1	7,335.3	7,335.3	0.00	0.00	0.00	0.00
18,200.0	89.55	90.00	10,805.5	-909.1	7,435.3	7,435.3	0.00	0.00	0.00	0.00
18,300.0	89.55	90.00	10,808.3	-909.1	7,535.3	7,535.3	0.00	0.00	0.00	0.00
18,400.0	89.55	90.00	10,807.1	-909.1	7,635.3	7,635.3	0.00	0.00	0.00	0.00
18,500.0	89.55	90.00	10,807.9	-909.1	7,735.3	7,735.3	0.00	0.00	0.00	0.00
18,600.0	89.55	90.00	10,808.7	-909.1	7,835.3	7,835.3	0.00	0.00	0.00	0.00
18,700.0	89.55	90.00	10,809.4	-909.1	7,935.3	7,935.3	0.00	0.00	0.00	0.00
16,800.0	89.55	90.00	10,810.2	-909.1	8,035.2	8,035.2	0.00	0.00	0.00	0.00
18,900.0	89.55	90.00	10,811.0	-909.1	8,135.2	8,135.2	0.00	0.00	0.00	0.00
19,000.0	89.55	90.00	10,811.8	-909.1	8,235.2	8,235.2	0.00	0.00	0.00	0.00
19,100.0	89.55	90.00	10,812.6	-909.1	8,335.2	8,335.2	0.00	0.00	0.00	0.00
19,200.0	89.55	90.00	10,813.3	-909.1	8,435.2	8,435.2	0.00	0.00	0.00	0.00
19,300.0	89.55	90.00	10,814.1	-909.1	8,535.2	8,535.2	0.00	0.00	0.00	0.00

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well CHALMERS 5300 21-19 11B
Company:	Oasis	TVD Reference:	WELL @ 2071.0usft (Original Well Elev)
Project:	Indian Hills	MD Reference:	WELL @ 2071.0usft (Original Well Elev)
Site:	153N-100W-19/20	North Reference:	True
Well:	CHALMERS 5300 21-19 11B	Survey Calculation Method:	Minimum Curvature
Wellbore:	CHALMERS 5300 21-19 11B		
Design:	Plan #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)	
19,400.0	89.55	90.00	10,814.9	-909.1	8,635.2	8,635.2	0.00	0.00	0.00	
19,500.0	89.55	90.00	10,815.7	-909.1	8,735.2	8,735.2	0.00	0.00	0.00	
19,600.0	89.55	90.00	10,818.5	-909.0	8,835.2	8,835.2	0.00	0.00	0.00	
19,700.0	89.55	90.00	10,817.2	-909.0	8,935.2	8,935.2	0.00	0.00	0.00	
19,800.0	89.55	90.00	10,818.0	-909.0	9,035.2	9,035.2	0.00	0.00	0.00	
19,900.0	89.55	90.00	10,818.8	-909.0	9,135.2	9,135.2	0.00	0.00	0.00	
20,000.0	89.55	90.00	10,819.6	-909.0	9,235.2	9,235.2	0.00	0.00	0.00	
20,100.0	89.55	90.00	10,820.4	-909.0	9,335.2	9,335.2	0.00	0.00	0.00	
20,200.0	89.55	90.00	10,821.1	-909.0	9,435.2	9,435.2	0.00	0.00	0.00	
20,300.0	89.55	90.00	10,821.9	-909.0	9,535.2	9,535.2	0.00	0.00	0.00	
20,400.0	89.55	90.00	10,822.7	-909.0	9,635.2	9,635.2	0.00	0.00	0.00	
20,500.0	89.55	90.00	10,823.5	-909.0	9,735.2	9,735.2	0.00	0.00	0.00	
20,600.0	89.55	90.00	10,824.3	-909.0	9,835.2	9,835.2	0.00	0.00	0.00	
20,694.8	89.55	90.00	10,825.0	-909.0	9,930.0	9,930.0	0.00	0.00	0.00	

TD at 20694.8 - Chalmers 11B

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/S (usft)	+E/W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
Chalmers 11B	0.00	0.00	10,825.0	-909.0	9,930.0	401,066.39	1,219,867.23	48° 3' 31.323 N	103° 33' 43.925 W	- plan hits target center - Point

Casing Points										
Measured Depth (usft)	Vertical Depth (usft)	Name					Casing Diameter (in)	Hole Diameter (in)		
2,121.0	2,121.0	13 3/8"					13.375	17.500		
6,463.2	8,463.0	9 5/8"					9.625	12.250		
11,018.0	10,748.9	7"					7.000	8.750		

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well CHALMERS 5300 21-19 11B
Company:	Oasis	TVD Reference:	WELL @ 2071.0usft (Original Well Elev)
Project:	Indian Hills	MD Reference:	WELL @ 2071.0usft (Original Well Elev)
Site:	153N-100W-19/20	North Reference:	True
Well:	CHALMERS 5300 21-19 11B	Survey Calculation Method:	Minimum Curvature
Wellbore:	CHALMERS 5300 21-19 11B		
Design:	Plan #1		

Formations	Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
	2,021.0	2,021.0	Pierre			
	4,624.1	4,624.0	Greenhorn			
	5,029.1	5,029.0	Mowry			
	5,417.1	5,417.0	Dakota			
	6,463.2	6,463.0	Rierdon			
	6,891.2	6,891.0	Dunham Salt			
	6,960.2	6,960.0	Dunham Salt Base			
	7,257.2	7,257.0	Pine Salt			
	7,290.2	7,290.0	Pine Salt Base			
	7,351.2	7,351.0	Opeche Salt			
	7,426.2	7,426.0	Opeche Salt Base			
	7,662.2	7,662.0	Amsden			
	7,828.2	7,828.0	Tyler			
	8,032.2	8,032.0	Otter/Base Minnelusa			
	8,384.2	8,384.0	Kibbey Lime			
	8,534.2	8,534.0	Charles Salt			
	9,209.2	9,209.0	Base Last Salt			
	9,429.2	9,429.0	Mission Canyon			
	9,993.2	9,993.0	Lodgepole			
	10,817.6	10,706.0	False Bakken			
	10,843.3	10,718.0	Upper Bakken Shale			
	10,946.2	10,743.0	Middle Bakken (Top of Target)			
	11,644.1	10,754.0	Middle Bakken (Base of target)			
	13,130.7	10,766.0	Lower Bakken Shale			
	17,381.5	10,799.0	Threeforks			

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			Comment
		+N/S (usft)	+E/W (usft)		
2,250.0	2,250.0	0.0	0.0	Start Build 3.00	
2,286.7	2,266.7	-0.1	0.0	Start 5713.0 hold at 2286.7 MD	
7,979.7	7,979.4	-49.9	0.0	Start Drop -3.00	
7,996.3	7,996.1	-50.0	0.0	Start 2275.4 hold at 7996.3 MD	
10,271.7	10,271.5	-50.0	0.0	Start Build 12.00 - KOP	
11,018.0	10,748.9	-334.6	378.7	Start DLS 2.00 TFO -90.15 - EOC	
12,864.5	10,763.9	-909.3	2,100.0	Start 7830.3 hold at 12864.5 MD	
20,694.8	10,825.0	-909.0	9,930.0	TD at 20694.8	

SECTION BREAKDOWN
OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"CHALMERS 5300 21-19-11B"

2325 FEET FROM NORTH LINE AND 327 FEET FROM WEST LINE
SECTIONS 19 & 20, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

EDGES OF LAKE

MISSOURI RIVER PER 1891 SURVEY

SAKAKAWEAH

LOT 1

LOT 2

LOT 3

LOT 4

LOT 5

LOT 6

LOT 7

FOUND REBAR W/ 2" AC LS 2352

FOUND STONE & REBAR

R100W

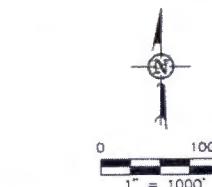
CALCULATED IN LAKE

FOUND REBAR W/ 2" AC LS 2352

FOUND STONE & REBAR

R100W

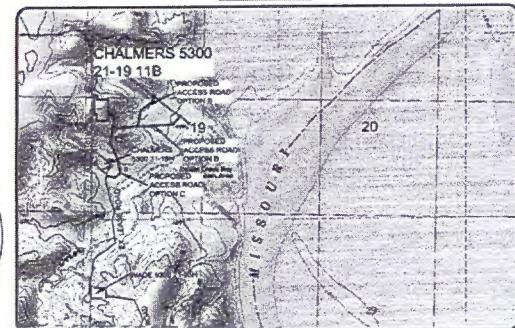
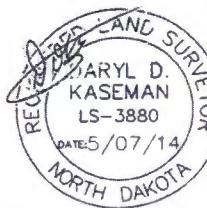
CALCULATED IN LAKE



-  - MONUMENT - RECOVERED
 - MONUMENT - NOT RECOVERED

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ALL AZIMUTHS ARE BASED ON G.P.S.
OBSERVATIONS. THE ORIGINAL SURVEY OF THIS
AREA FOR THE GENERAL LAND OFFICE (G.L.O.)
WAS 1891. 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 -003°.



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Reaction No.	Dilute	By	Description	
			1	2
REV 1	3/17/74	SUB	MIXED WELLS ON PAD	
REV 2	5/22/74	SPIN	MIXED WELLS ON PAD/REMOVED PAD	
REV 3	5/22/74	SPIN	MIXED WELLS ON PAD/REMOVED PAD	

OASIS PETROLEUM NORTH AMERICA, LLC	
SECTION 19 & 20, T153N, R100W	
MCKENZIE COUNTY, NORTH DAKOTA	
Drawn By	B.A.Z.
Cheated By	D.D.K.
Project No.:	03-02-207-06
Date:	08/20/2014

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



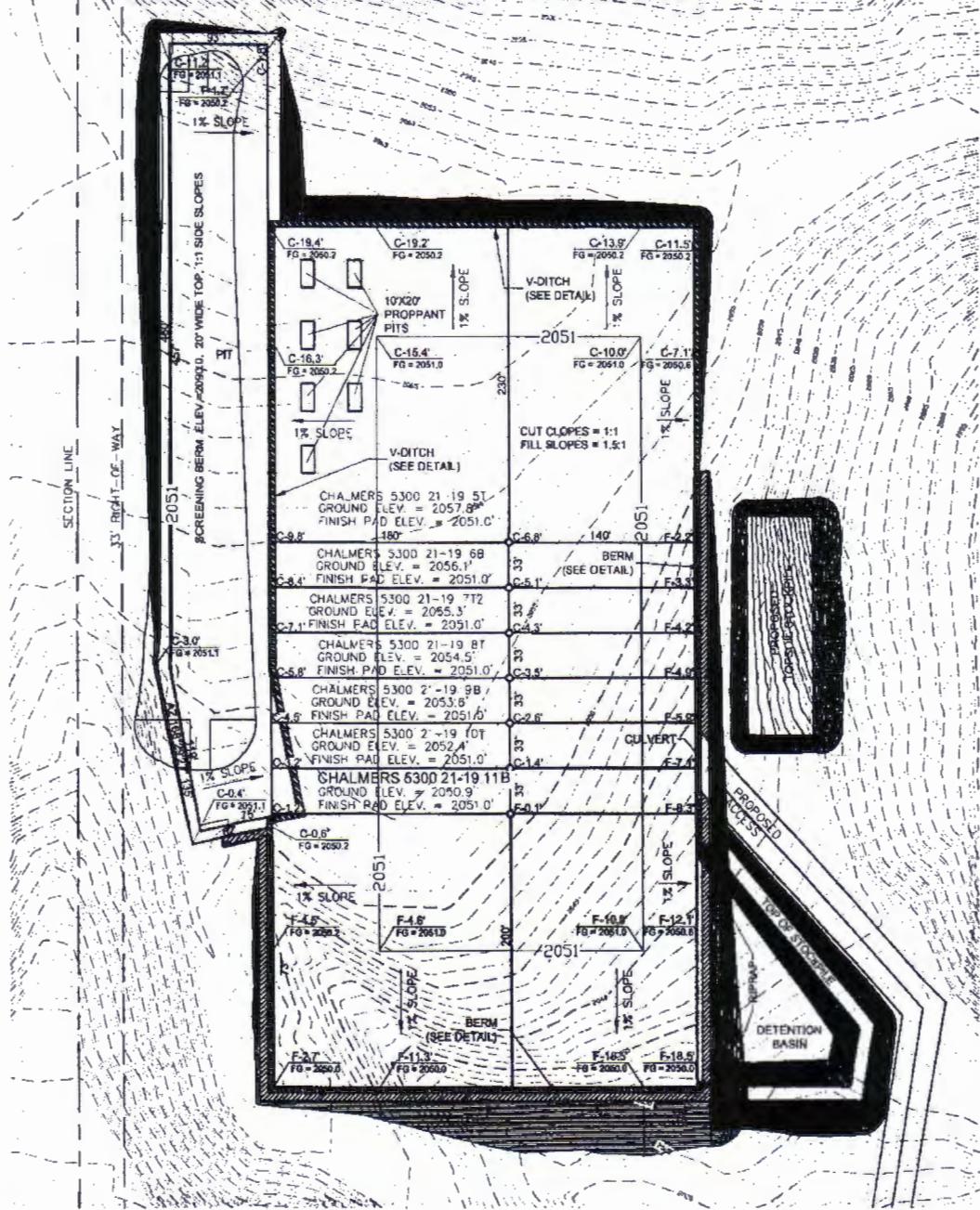
MATERIALS AND METHODS

PAD LAYOUT

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

*CHALMERS 5300 21-19 11B

2325 FEET FROM NORTH LINE AND 327 FEET FROM WEST LINE
SECTION 19, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



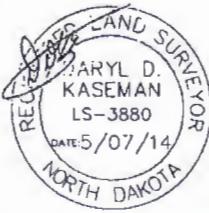
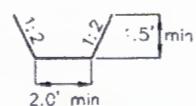
NOTE 1: Pad dimensions shown are to useable area, the v-ditch and berm areas shall be built to the outside of the pad dimensions.

NOTE 2 : Screening berm is to be built after drilling operations are complete.

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D 80
1" = 80'

V-DITCH DETAIL



Proposed Contours - BERM
Original Contours - DITCH

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

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Other offices in Montana, Wyoming and South Dakota

OASIS PETROLEUM NORTH AMERICA, LLC
PAD LAYOUT
SECTION 19, T153N, R100W

MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.H.N. Project No.: 81340-28220
Checked By: D.D.K. Date: JUL 2014

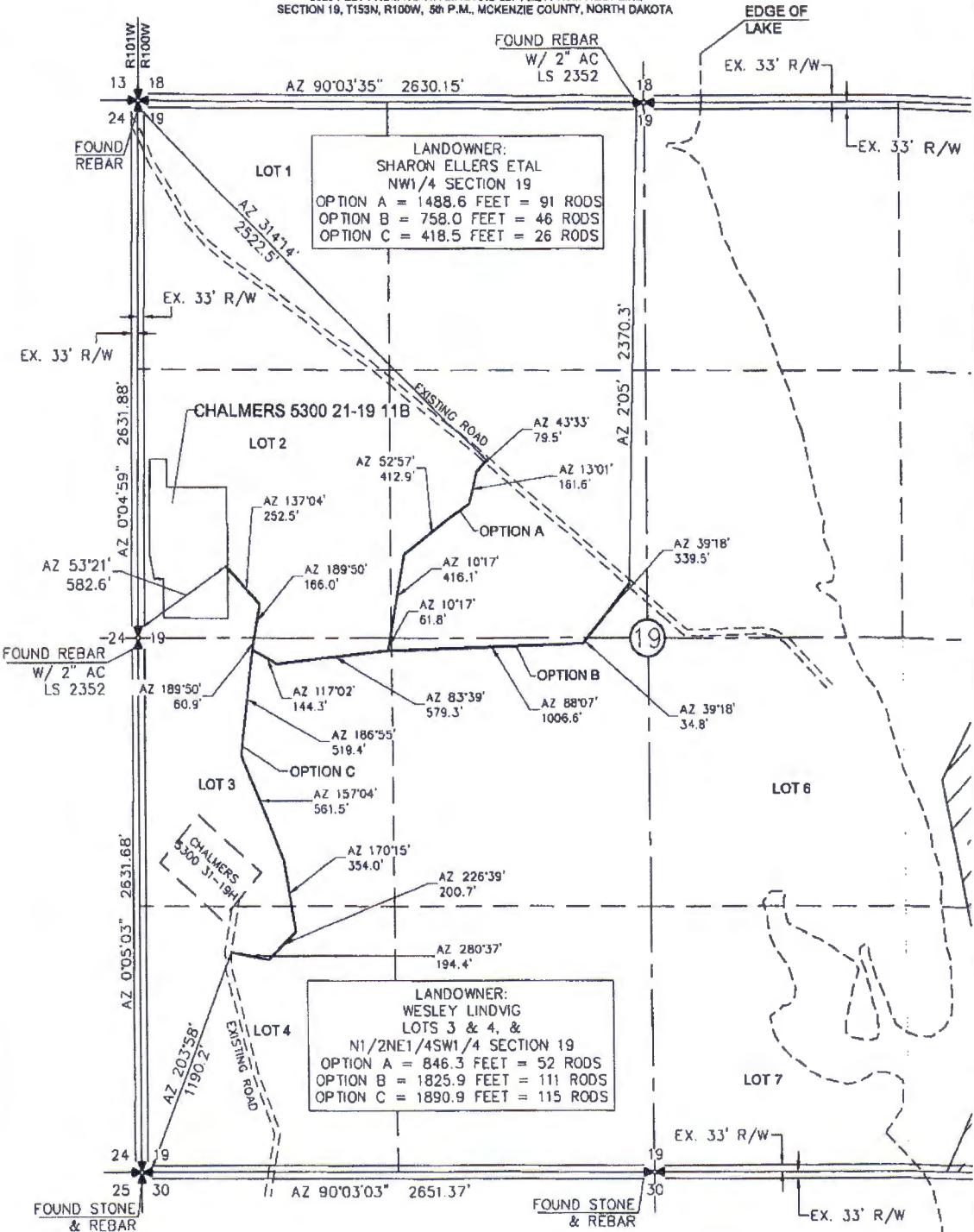
Revision No.	Date	By	Description
REV 1	5/07/14	BHD	MOVED WELLS ON PAD
REV 2	5/07/14	BHD	MOVED WELLS ON PAD, REVISED PAD
REV 3	5/07/14	BHD	MOVED WELLS ON PAD, REVISED PAD

ACCESS APPROACH

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

"CHALMERS 5300 21-19 11B"

2325 FEET FROM NORTH LINE AND 327 FEET FROM WEST LINE
SECTION 19, T153N, R100W, 50 P.M., MCKENZIE COUNTY, NORTH DAKOTA



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OASIS PETROLEUM NORTH AMERICA, LLC
ACCESS APPROACH
SECTION 19, T153N, R100W

MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.J.H.

Checked By: D.R.K.

Date: 5/1/14

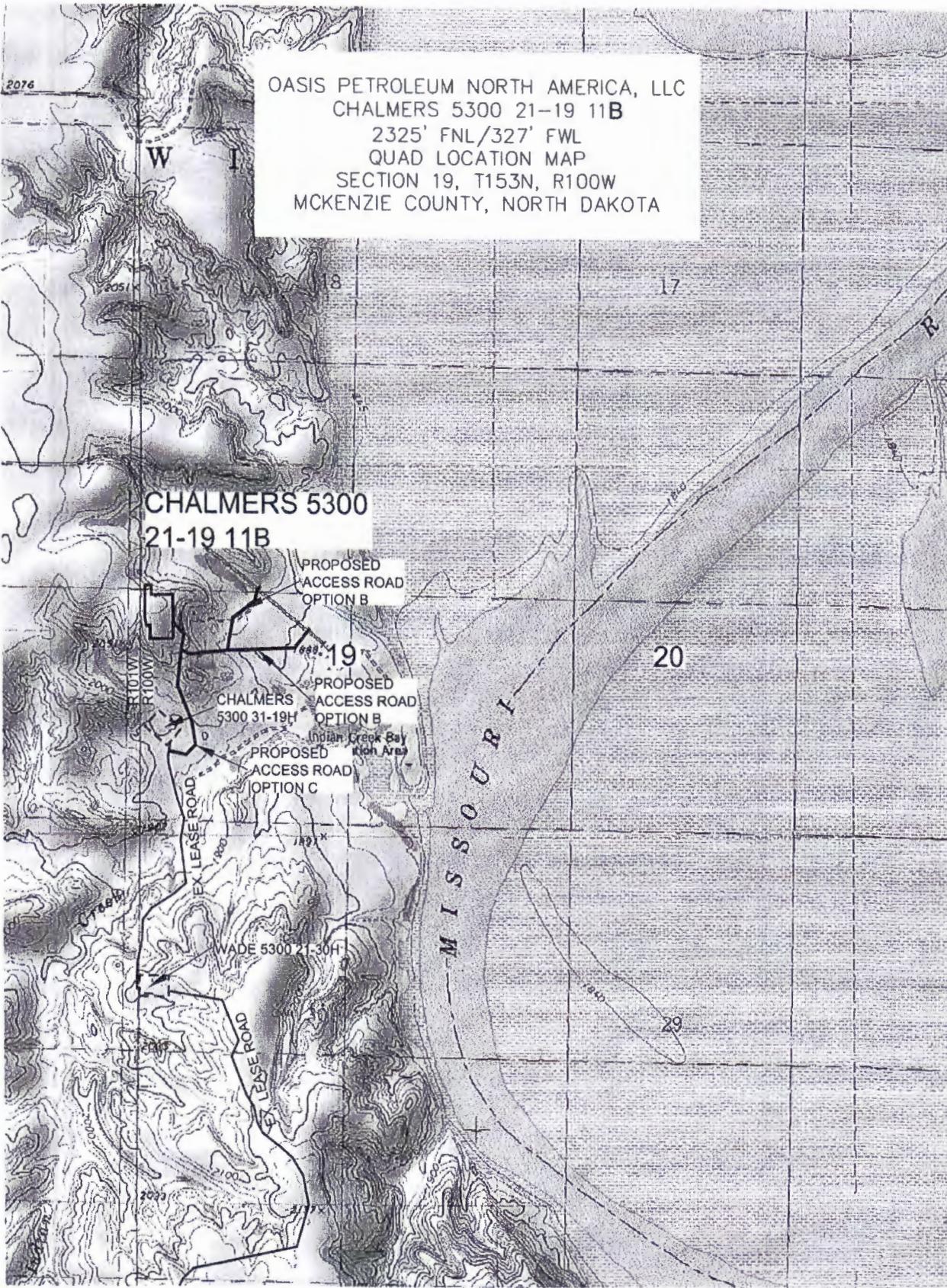
Project No.: 813-09-2008

Drawn By: B.J.H.

Checked By: D.R.K.

Date: JAN 2014

Permit No.	Date	By	Description
REV I	2/2/14	ABH	Moved wells on pad
REV Z	4/3/14	ABH	Moved wells on pad/revised pad
REV J	5/1/14	ABH	Moved wells on pad/revised pad



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OASIS PETROLEUM NORTH AMERICA, LLC
QUAD LOCATION MAP
SECTION 19, T153N, R100W
MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.H.H. Project No.: S13-09-282.00
Checked By: D.D.K. Date: JAN 2014

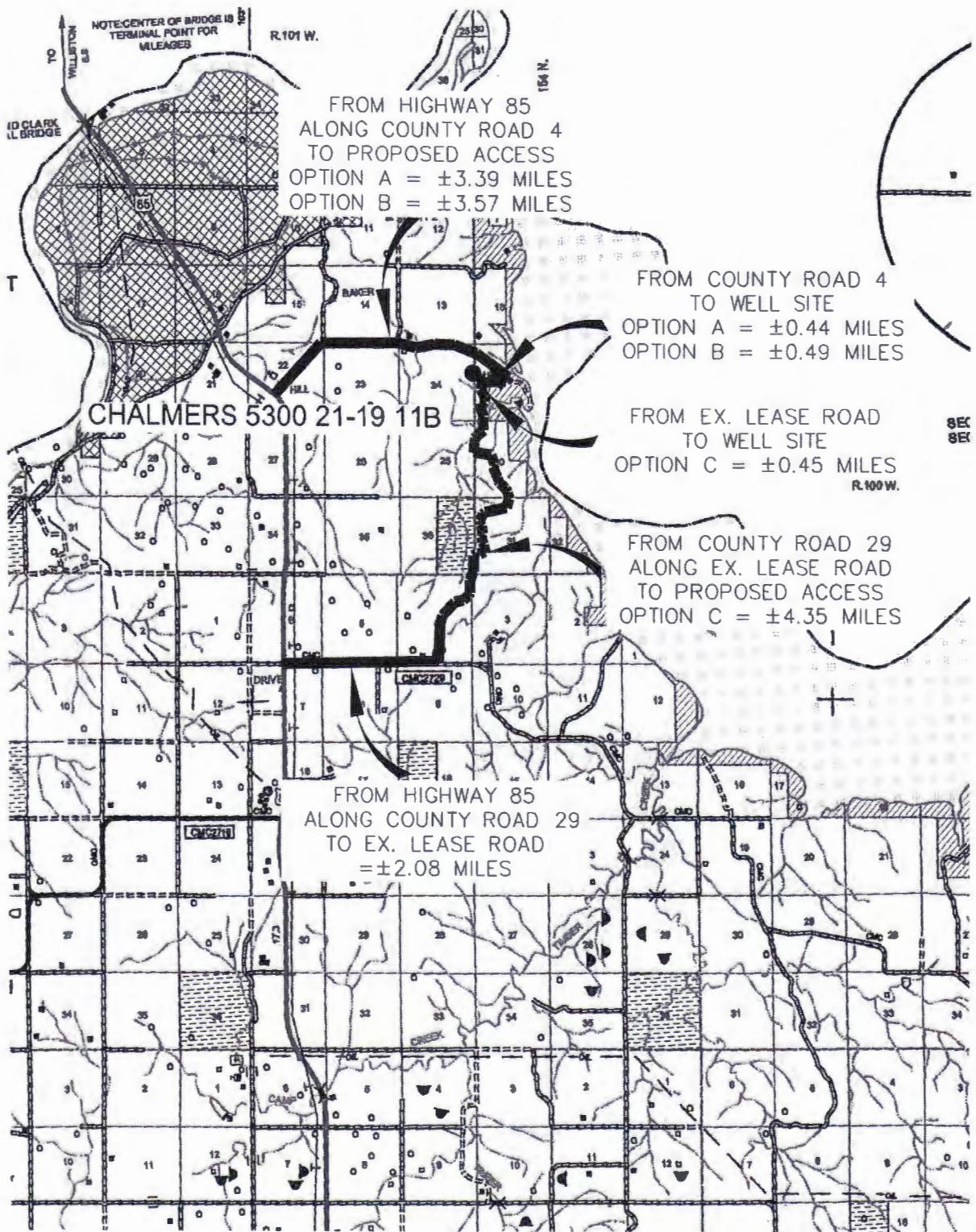
Revision No.	Date	By	Description
REV 1	1/12/14	JUS	Moved wells on pad
REV 2	1/22/14	BHH	Moved wells on pad/revised pad
REV 3	5/7/14	BHH	Moved wells on pad/revised pad

COUNTY ROAD MAP

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

"CHALMERS 5300 21-19 11B"

2325 FEET FROM NORTH LINE AND 327 FEET FROM WEST LINE
SECTION 19, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



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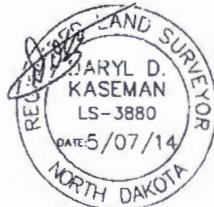
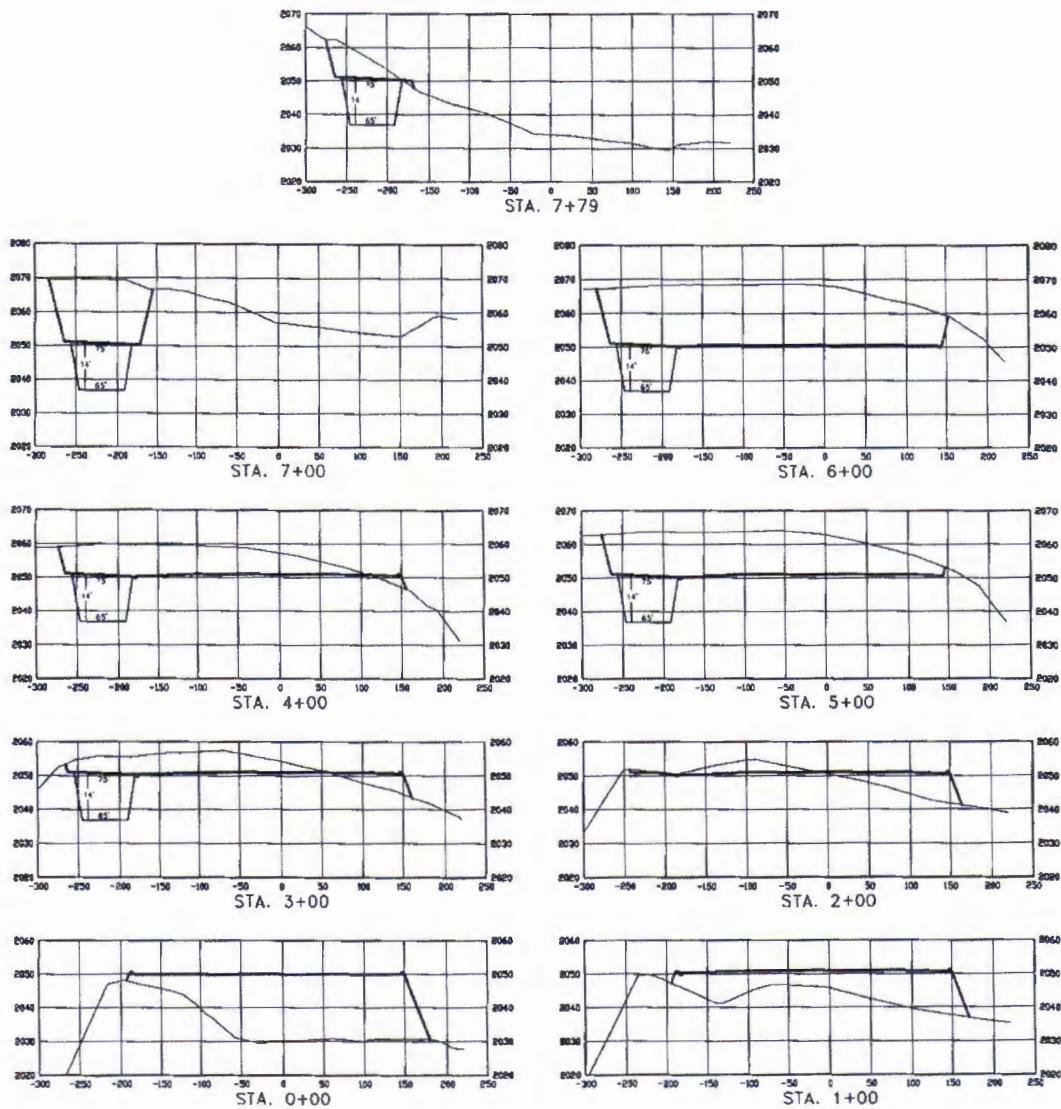
OASIS PETROLEUM NORTH AMERICA, LLC
COUNTY ROAD MAP
SECTION 19, T153N, R100W
MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.H.H. Project No.: S13-09-282-06
Checked By: D.D.K. Date: JAN, 2014

Revision No.	Date	By	Description
REV 1	3/12/14	BBH	Moved wells on pad
REV 2	4/22/14	BBH	Moved wells off pad/revised pad
REV 3	5/2/14	BBH	Moved wells on pad/revised pad

SCALE: 1" = 2 MILE

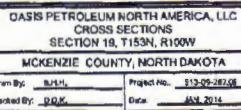
CROSS SECTIONS
 OASIS PETROLEUM NORTH AMERICA, LLC
 1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
 "CHALMERS 5300 21-19 11B
 2325 FEET FROM NORTH LINE AND 327 FEET FROM WEST LINE
 SECTION 19, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



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SCALE
 HORIZ 1"=140'
 VERT 1'=35'

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Operation No.	Date	By	Description
REV 1	3/12/14	ABJ	WELL HULLS ON PAD
REV 2	4/22/14	DMH	WELL HULLS ON PAD/REMOVED PAD
REV 3	5/1/14	DMH	WELL HULLS ON PAD/REMOVED PAD

Engineering Services 520 P-H 111 Revision 3-2-14 Rev - 5/2014-12-26

WELL LOCATION SITE QUANTITIES
 OASIS PETROLEUM NORTH AMERICA, LLC
 1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
 "CHALMERS 5300 21-19 11B
 2325 FEET FROM NORTH LINE AND 327 FEET FROM WEST LINE
 SECTION 19, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

WELL SITE ELEVATION	2050.9
WELL PAD ELEVATION	2051.0
EXCAVATION	67,041
PLUS PIT	<u>22,050</u>
	89,091
EMBANKMENT	26,714
PLUS SHRINKAGE (25%)	<u>6,679</u>
	33,393
STOCKPILE PIT	22,050
STOCKPILE TOP SOIL (6")	5,434
BERMS	1,007 LF = 326 CY
DITCHES	1,768 LF = 270 CY
SCREENING BERM	27,464 CY
STOCKPILE MATERIAL	694
DISTURBED AREA FROM PAD	6.74 ACRES

NOTE: ALL QUANTITIES ARE IN CUBIC YARDS (UNLESS NOTED)

CUT END SLOPES AT 1:1

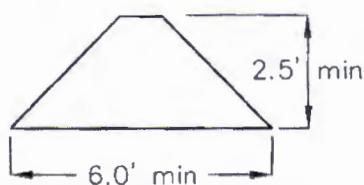
FILL END SLOPES AT 1.5:1

WELL SITE LOCATION

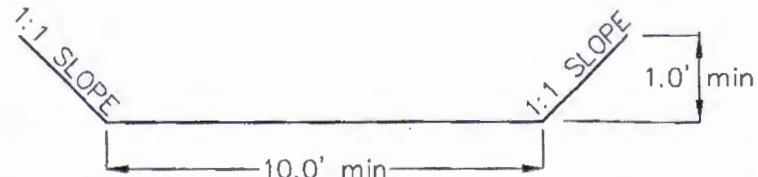
2325' FNL

327' FWL

BERM DETAIL



DITCH DETAIL



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OASIS PETROLEUM NORTH AMERICA, LLC
 QUANTITIES
 SECTION 19, T153N, R100W
 MCKENZIE COUNTY, NORTH DAKOTA

Drawn By:	B.H.H.	Project No.:	S13-09-282.06
Checked By:	D.O.K.	Date:	JAN. 2014

Revision No.	Date	By	Description
REV 1	3/2/14	JWS	Moved wells on pad
REV 2	4/22/14	BHH	Moved wells on pad/revised pad
REV 3	5/2/14	BHH	Moved wells on pad/revised pad

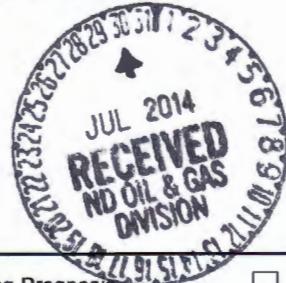


SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4

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.

28649



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

<input checked="" type="checkbox"/> Notice of Intent	Approximate Start Date July 29, 2014
<input type="checkbox"/> Report of Work Done	Date Work Completed
<input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.	
Approximate Start Date	

<input type="checkbox"/> Drilling Prognosis	<input type="checkbox"/> Spill Report
<input type="checkbox"/> Redrilling or Repair	<input type="checkbox"/> Shooting
<input 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	Change casing

Well Name and Number Chalmers 5300 21-19 11T					
Footages 2325 F N L	326 F W L	Qtr-Qtr LOT2	Section 19	Township 153 N	Range 100 W
Field	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 permission to make the following changes to the above referenced well:

- Surface casing changed to 13 3/8" and depth changed to 2,126'
- Contingency 9 5/8" casing added
- 7' casing changed to all 32#

Attached are revised drill plan, well summary, directional plan and plot

Company Oasis Petroleum North America LLC	Telephone Number 281-404-9563	
Address 1001 Fannin, Suite 1500		
City Houston	State TX	Zip Code 77002
Signature <i>Heather McCowan</i>	Printed Name Heather McCowan	
Title Regulatory Assistant	Date July 29, 2014	
Email Address hmccowan@oasispetroleum.com		

FOR STATE USE ONLY

<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date <i>8-15-14</i>	
By <i>Pathanee Corbele</i>	
Title Petroleum Resource Specialist	

**Oasis Petroleum
Well Summary**
Chalmers 5300 21-19 11T
Sec. 19 T153N R100W
McKenzie County, North Dakota

SURFACE CASING AND CEMENT DESIGN

Size	Interval	Weight	Grade	Coupling	I.D.	Drift	Make-up Torque (ft-lbs)		
							Minimum	Optimum	Max
13-3/8"	0' to 2,126'	54.5	J-55	STC	12.615"	12.459"	4,100	5,470	6,840

Interval	Description	Collapse	Burst	Tension	Cost per ft
		(psi) a	(psi) b	(1000 lbs) c	
0' to 2,126'	13-3/8", 54.5#, J-55, STC, 8rd	1130 / 1.14	2730 / 2.74	514 / 2.57	

API Rating & Safety Factor

- a) Collapse pressure based on full casing evacuation with 9 ppg fluid on backside (2126' setting depth).
- b) Burst pressure based on 9 ppg fluid with no fluid on backside (2126' setting depth).
- c) Tension based on string weight in 9 ppg fluid at 2126' 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 50% excess to circulate cement back to surface. Mix and pump the following slurry.

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

Lead Slurry: **629 sks** (325 bbls) 2.9 yield conventional system with 94 lb/sk cement, .25 lb/sk D130 Lost Circulation Control Agent, 2% CaCL2, 4% D079 Extender, and 2% D053 Expanding Agent.

Tail Slurry: **374 sks** (77 bbls) 1.16 yield conventional system with 94 lb/sk cement, .25 lb/sk Lost Circulation Control Agent, and .25% CaCL2.

**Oasis Petroleum
Well Summary
Chalmers 5300 21-19 11T
Sec. 19 T153N R100W
McKenzie County, North Dakota**

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' - 6000'	40	HCL-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' - 6000'	9-5/8", 40#, HCL-80, LTC, 8rd	3090 / 3.96*	5750 / 1.23	837 / 2.75

API Rating & Safety Factor

- d) Collapse pressure based on 11.5ppg fluid on backside and 9ppg fluid inside of casing.
- e) 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.
- f) Tension based on string weight in 10 ppg fluid, (217k lbs buoyed weight) plus 100k lbs overpull.

Cement volumes are estimates based on 9-5/8" casing set in an 12-1/4" hole with **10%** excess in OH and **0%** excess inside surface casing. TOC at surface.

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

Lead Slurry: **540 sks** (280 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: **373 sks** (77 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
Chalmers 5300 21-19 11T
Sec. 19 T153N R100W
McKenzie County, North Dakota**

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' - 11098'	32	HCP-110	LTC	6.094"	6.000***	6730	8970	9870

**Special Drift

Interval	Description	Collapse	Burst	Tension
		(psi) a	(psi) b	(1000 lbs) c
0' - 11098'	7", 32#, P-110, LTC, 8rd	11820 / 2.10*	12460 / 1.28	897 / 2.23
6741' - 9209'	7", 32#, HCP-110, LTC, 8rd	11820 / 1.28**	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 10,818' 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): **50 bbls** Saltwater
40 bbls Weighted MudPush Express

Lead Slurry: **219 sks** (86 bbls) 2.21 yield conventional system with 47 lb/sk cement, 37 lb/sk D035 Extender, 3.0% KCl, 3.0% D154 Extender, 0.3% D208 Viscosifier, 0.07% Retarder, 0.2% Anti Foam, 0.5lb/sk D130 LCM

Tail Slurry: **617 sks** (169 bbls) 1.54 yield conventional system with 94 lb/sk cement, 3.0% KCl, 35.0% Silica, 0.5% Retarder, 0.2% Fluid Loss, 0.2% Anti Foam, 0.5 lb/sk LCM

**Oasis Petroleum
Well Summary**
Chalmers 5300 21-19 11T
Sec. 19 T153N R100W
McKenzie County, North Dakota

PRODUCTION LINER

Size	Interval	Weight	Grade	Coupling	I.D.	Drift	Make-up Torque (ft-lbs)		
							Minimum	Optimum	Max
4-1/2"	10291' - 20810'	13.5	P-110	BTC	3.920"	3.795"	2270	3020	3780

Interval	Description	Collapse (psi) a	Burst (psi) b	Tension (1000 lbs) c
10291' - 20810'	4-1/2", 13.5 lb, P-110, BTC	10670 / 1.98	12410 / 1.28	443 / 2.0

API Rating & Safety Factor

- a) Based on full casing evacuation with 9.5 ppg fluid on backside @ 10894' TVD.
- b) Burst pressure based on 9000 psi treating pressure with 10.2 ppg internal fluid gradient and 9 ppg external fluid gradient @ 10894' TVD.
- c) Based on string weight in 9.5 ppg fluid (Buoyed weight: 121k lbs.) plus 100k lbs overpull.

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)



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

28649

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

Date: 6/23/2014

RE: CORES AND SAMPLES

Well Name: CHALMERS 5300 21-19 11T Well File No.: 28649
Location: LOT2 19-153-100 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.
28649

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

<input checked="" type="checkbox"/> Notice of Intent	Approximate Start Date February 24, 2014	<input type="checkbox"/> Drilling Prognosis	<input type="checkbox"/> Spill Report
<input type="checkbox"/> Report of Work Done	Date Work Completed	<input type="checkbox"/> Redrilling or Repair	<input type="checkbox"/> Shooting
<input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.	Approximate Start Date	<input type="checkbox"/> Casing or Liner	<input type="checkbox"/> Acidizing
		<input type="checkbox"/> Plug Well	<input type="checkbox"/> Fracture Treatment
		<input type="checkbox"/> Supplemental History	<input type="checkbox"/> Change Production Method
		<input type="checkbox"/> Temporarily Abandon	<input type="checkbox"/> Reclamation
		<input checked="" type="checkbox"/> Other	Waiver to rule Rule 43-02-03-31

Well Name and Number
Chalmers 5300 21-19 11T

Footages	2325 F N L	326 F W L	Qtr-Qtr	Section	Township	Range
			LOT2	19	153 N	100 W
Field		Pool		County		
		Bakken		McKenzie		

24-HOUR PRODUCTION RATE

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

Name of Contractor(s)

Address	City	State	Zip Code
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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:

The Oasis Petroleum/Chalmers 5300 31-19H (NDIC 20407) 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 281-404-9491	
Address 1001 Fannin, Suite 1500		
City Houston	State TX	Zip Code 77002
Signature <i>Brandi Terry</i>	Printed Name Brandi Terry	
Title Regulatory Specialist	Date March 27, 2014	
Email Address bterry@oasispetroleum.com		

FOR STATE USE ONLY

<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date <i>6-17-2014</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.
28649

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.

PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

<input checked="" type="checkbox"/> Notice of Intent	Approximate Start Date February 24, 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 Chalmers 5300 21-19 11T					
Footages 2325 F N L	326 F WL	Qtr-Qtr LOT2	Section 19	Township 153 N	Range 100 W
Field	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) Advanced Energy Services			
Address	City	State	Zip Code

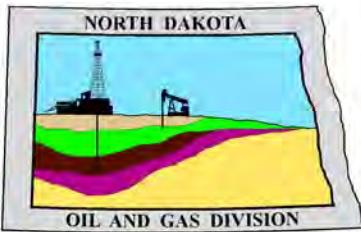
DETAILS OF WORK

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.

Notify NDIC inspector Richard Dunn at 701-770-3554 with spud and TD info.

Company Oasis Petroleum North America LLC	Telephone Number (281) 404-9491	
Address 1001 Fannin, Suite 1500		
City Houston	State TX	Zip Code 77002
Signature 	Printed Name Brandi Terry	
Title Regulatory Specialist	Date February 24, 2014	
Email Address bterry@oasispetroleum.com		

FOR STATE USE ONLY	
<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date 6/17/14	
By Nathaniel Erbele	
Title Petroleum Resource Specialist	



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

June 17, 2014

Brandi Terry
Regulatory Specialist
OASIS PETROLEUM NORTH AMERICA LLC
1001 Fannin Suite 1500
Houston, TX 77002

**RE: HORIZONTAL WELL
CHALMERS 5300 21-19 11T
LOT2 Section 19-153N-100W
McKenzie County
Well File # 28649**

Dear Brandi:

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 19 &20 T153N R100W.

PERMIT STIPULATIONS: Effective June 1, 2014, a covered leak-proof container (with placard) for filter sock disposal must be maintained on the well site beginning when the well is spud, and must remain on-site during clean-out, completion, and flow-back whenever filtration operations are conducted. Due to the proximity of Lake Sakakawea to the well site, a dike is required surrounding the entire location. OASIS PETRO NO AMER must contact NDIC Field Inspector Richard Dunn at 701-770-3554 prior to location construction.

Drilling pit

NDAC 43-02-03-19.4 states that "a pit may be utilized to bury drill cuttings and solids generated during well drilling and completion operations, providing the pit can be constructed, used and reclaimed in a manner that will prevent pollution of the land surface and freshwaters. Reserve and circulation of mud system through earthen pits are prohibited. All pits shall be inspected by an authorized representative of the director prior to lining and use. Drill cuttings and solids must be stabilized in a manner approved by the director prior to placement in a cuttings pit."

Form 1 Changes & Hard Lines

Any changes, shortening of casing point or lengthening at Total Depth must have prior approval by the NDIC. The proposed directional plan is at a legal location. Based on the azimuth of the proposed lateral the maximum legal coordinate from the well head is: 9963' east.

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,

Nathaniel Erbele
Petroleum Resource Specialist



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 03 / 1 / 2014	Confidential Status No
Operator OASIS PETROLEUM NORTH AMERICA LLC		Telephone Number 281-404-9491	
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 CHALMERS			Well Number 5300 21-19 11T				
Surface Footages 2325 F N L 326 F W L		Qtr-Qtr LOT2	Section 19	Township 153 N	Range 100 W	County McKenzie	
Longstring Casing Point Footages 2587 F S L 705 F W L		Qtr-Qtr LOT3	Section 19	Township 153 N	Range 100 W	County McKenzie	
Longstring Casing Point Coordinates From Well Head 351 S From WH 379 E From WH		Azimuth 128.5 °	Longstring Total Depth 11098 Feet MD 10818 Feet TVD				
Bottom Hole Footages From Nearest Section Line 2035 F S L 201 F E L		Qtr-Qtr NESE	Section 20	Township 153 N	Range 100 W	County McKenzie	
Bottom Hole Coordinates From Well Head 920 S From WH 9962 E From WH		KOP Lateral 1 10341 Feet MD	Azimuth Lateral 1 90.0 °	Estimated Total Depth Lateral 1 20810 Feet MD 10894 Feet TVD			
Latitude of Well Head 48 ° 03 ' 40.32 "	Longitude of Well Head -103 ° 36 ' 10.11 "	NAD Reference NAD83		Description of Spacing Unit: Sections 19 &20 T153N R100W (Subject to NDIC Approval)			
Ground Elevation 2051 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 10498 Feet	South Line of Spacing/Drilling Unit 10513 Feet	East Line of Spacing/Drilling Unit 5280 Feet		West Line of Spacing/Drilling Unit 5263 Feet			
Objective Horizons Three Forks B1						Pierre Shale Top 2021	
Proposed Surface Casing	Size 9 - 5/8 "	Weight 36 Lb./Ft.	Depth 2150 Feet	Cement Volume 632 Sacks	NOTE: Surface hole must be drilled with fresh water and surface casing must be cemented back to surface.		
Proposed Longstring Casing	Size 7 - "	Weight(s) 29/32 Lb./Ft.	Longstring Total Depth 11098 Feet MD 10818 Feet TVD		Cement Volume 764 Sacks	Cement Top 3917 Feet	Top Dakota Sand 5417 Feet
Base Last Charles Salt (If Applicable) 9209 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, Plots**

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

06 / 16 / 2014

ePermit

Printed Name
Brandi Terry

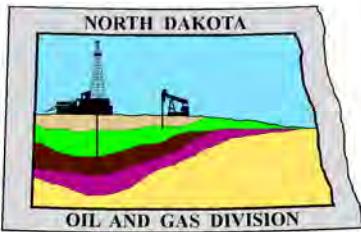
Title

Regulatory Specialist**FOR STATE USE ONLY**

Permit and File Number 28649	API Number 33 - 053 - 06024
Field BAKER	
Pool BAKKEN	Permit Type DEVELOPMENT

FOR STATE USE ONLY

Date Approved 6 / 17 / 2014
By Nathaniel Erbele
Title Petroleum Resource Specialist



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

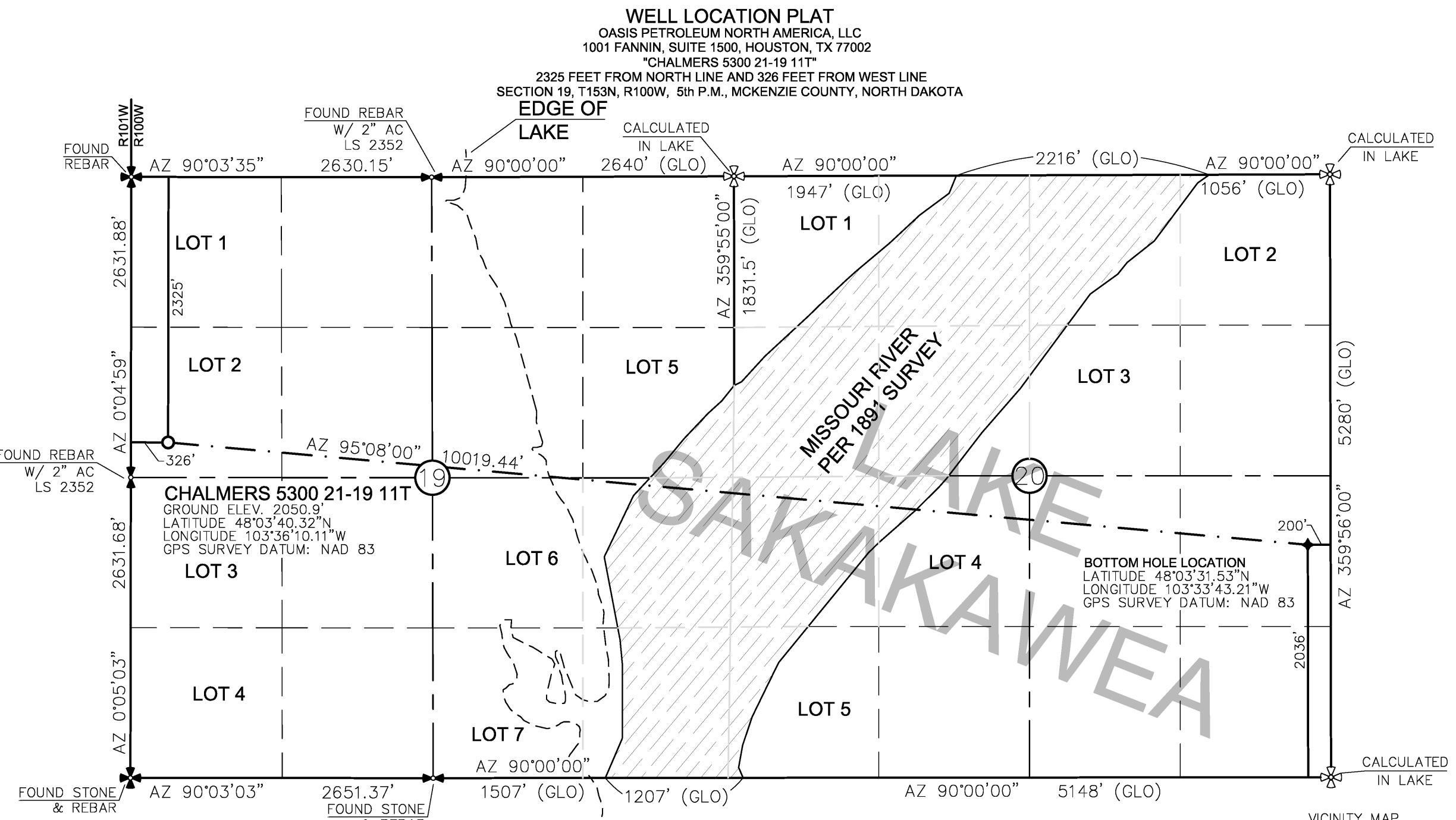
If the operator will not utilize a filtration system, a waiver to the container requirement will be considered, but only upon the operator submitting a Sundry Notice (Form 4) justifying their request.

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.

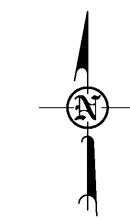
Sincerely,

Bruce E. Hicks
Assistant Director



THIS DOCUMENT WAS ORIGINALLY ISSUED
AND SEALED BY DARYL D. KASEMAN,
PLS, REGISTRATION NUMBER 3880 ON
3/13/14 AND THE ORIGINAL
DOCUMENTS ARE STORED AT THE
OFFICES OF INTERSTATE ENGINEERING,
INC.

- MONUMENT - RECOVERED
- MONUMENT - NOT RECOVERED

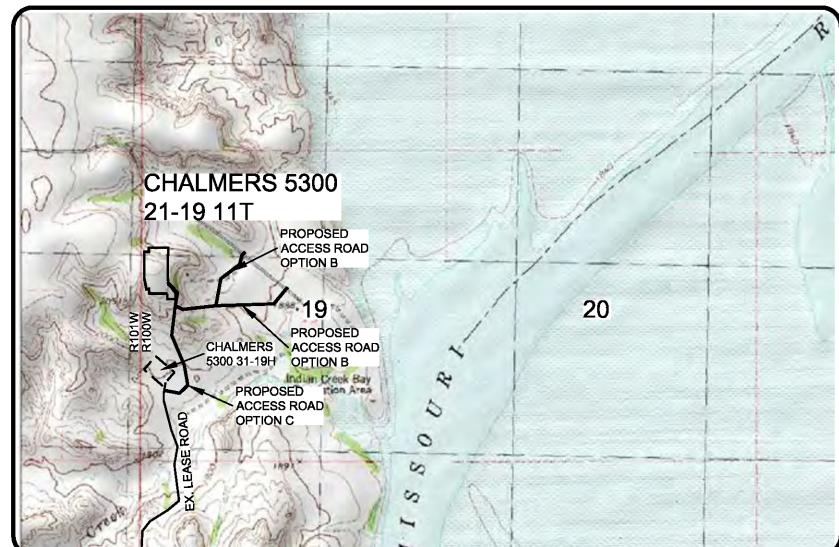
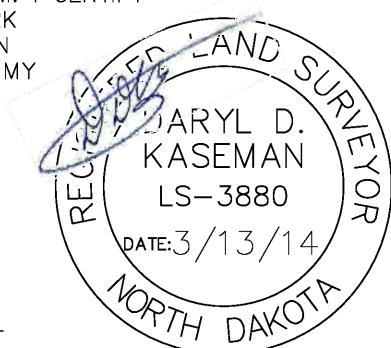


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1" = 1000'

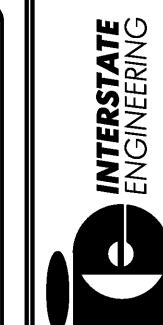
STAKED ON 1/29/14
VERTICAL CONTROL DATUM WAS BASED UPON
CONTROL POINT 16 WITH AN ELEVATION OF 2014.2'

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

DARYL D. KASEMAN LS-3880



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1/8

OASIS PETROLEUM NORTH AMERICA, LLC
WELL LOCATION PLAT
SECTION 19, T153N, R100W
MCKENZIE COUNTY, NORTH DAKOTA
Project No.: ST13-09-282-06
Drawn By: BHH
Checked By: DDK
Date: JAN 2014

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Chalmers 5300 21-19 11T

DRILLING PLAN										
OPERATOR	Oasis Petroleum			COUNTY/STATE	McKenzie Co., ND					
WELL NAME	Chalmers 5300 21-19 11T			RIC	B 25					
WELL TYPE	Horizontal Three Forks									
LOCATION	SW NW 19-153N-100W	Surface Location (survey plat): 2325' FNL		326' FWL						
EST. T.D.	20,810'			GROUND ELEV:	2,046'	Sub Height: 25'				
TOTAL LATERAL:	9,712'			KB ELEV:	2,071'					
MARKER	TVD	Subsea TVD	LOGS:	Type	Interval					
Pierre	NDIC MAP	2,021	50	OH Logs: Request a Sundry for an Open Hole Log Waiver: Oasis Chalmers 5300 31-19H 1,850' to S sec 19 153N 100W						
Greenhorn		4,624	-2,553	CBL/GR: Above top of cement/GR to base of casing						
Mowry		5,029	-2,958	MWD GR: KOP to lateral TD						
Dakota		5,417	-3,346							
Rierdon		6,463	-4,392	DEVIATION:	Surf: 3 deg. max., 1 deg / 100'; svry every 500' Prod: 5 deg. max., 1 deg / 100'; svry every 100'					
Dunham Salt		6,891	-4,820							
Dunham Salt Base		6,960	-4,889							
Pine Salt		7,257	-5,186							
Pine Salt Base		7,290	-5,219							
Opecche Salt		7,351	-5,280							
Opecche Salt Base		7,426	-5,355							
Amsden		7,662	-5,591							
Tyler		7,828	-5,757							
Otter/Base Minnelusa		8,032	-5,961	DST'S:	None planned					
Kibbey Lime		8,384	-6,313							
Charles Salt		8,534	-6,463	CORES:	None planned					
Base Last Salt		9,209	-7,138							
Mission Canyon		9,429	-7,358							
Lodgepole		9,993	-7,922							
False Bakken		10,706	-8,635							
Upper Bakken Shale		10,716	-8,645	MUDLOGGING:	Two-Man: Begin 200' above Kibbey 30' samples in curve and lateral					
Middle Bakken		10,732	-8,661							
Lower Bakken Shale		10,766	-8,695							
Pronghorn		10,780	-8,709							
Threeforks		10,799	-8,728							
Threeforks(Top of Target)		10,811	-8,740							
Threeforks(Base of Target)		10,822	-8,751							
Claystone		10,822	-8,751	BOP:	11" 5000 psi blind, pipe & annular					
Est. Dip Rate:	-0.45									
Max. Anticipated BHP:	4689			Surface Formation: Glacial till						
MUD:	Interval	Type	WT	Vis	WL	Remarks				
Surface:	0' -	2,150' FW	8.4-9.0	28-32	NC	Circ Mud Tanks				
Intermediate:	2,150' -	11,098' Invert	9.5-10.4	40-50	30+ Ht Hp	Circ Mud Tanks				
Laterall:	11,098' -	20,810' Salt Water	9.8-10.2	28-32	NC	Circ Mud Tanks				
CASING:	Size	Wt pfp	Hole	Depth	Cement	WOC	Remarks			
Surface:	9-5/8"	36#	13-1/2"	2,150'	To Surface	12	100' into Pierre			
Intermediate:	7"	32#	8-3/4"	11,098'	3917	24	1500' above Dakota			
Production Liner:	4.5"	13.5#	6"	20,810'	TOL @ 10,291'					
PROBABLE PLUGS, IF REQ'D:										
OTHER:	MD	TVD	FNL/FSL	FEL/FWL	S-T-R	AZI				
Surface:	2,150	2,150	2325 FNL	326 FWL	SEC. 19 T153N R100W	Survey Company:				
KOP:	10,341'	10,341'	2375 FNL	326 FWL	SEC. 19 T153N R100W	Build Rate: 12 deg /100'				
EOC:	11,087'	10,818'	2670 FNL	697 FWL	SEC. 19 T153N R100W	128.5				
Casing Point:	11,098'	10,818'	2676 FNL	705 FWL	SEC. 19 T153N R100W	128.5				
Three Forks Lateral TD:	20,810'	10,894'	2036 FSL	200 FEL	SEC. 20 T153N R100W	90.0				
Comments:										
Request a Sundry for an Open Hole Log Waiver: Oasis Chalmers 5300 31-19H 1,850' to S sec 19 153N 100W										
No frac string planned										
35 packers and 25 sleeves planned 3.6MM lbs 30% ceramic										
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: N. Gabelman	2/4/2014		Engineering: smg3.26							

Oasis Petroleum
Well Summary
Chalmers 5300 21-19 11T
Section 19 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
9-5/8"	0' - 2150'	36	J-55	LTC	8.921"	8.765"	3400	4530	5660

Interval	Description	Collapse	Burst	Tension
		(psi) / a	(psi) / b	(1000 lbs) / c
0' - 2150'	9-5/8", 36#, J-55, LTC, 8rd	2020 / 2.00	3520 / 3.49	453 / 2.71

API Rating & Safety Factor

- a) Based on full casing evacuation with 9 ppg fluid on backside (2150' setting depth).
- b) Burst pressure based on 9 ppg fluid with no fluid on backside (2150' setting depth).
- c) Based on string weight in 9 ppg fluid at 2150' TVD plus 100k# overpull. (Buoyed weight equals 67k lbs.)

Cement volumes are based on 9-5/8" casing set in 13-1/2 " 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: **459 sks** (243 bbls), 11.5 lb/gal, 2.97 cu. Ft./sk Varicem Cement with 0.125 il/sk Lost Circulation Additive

Tail Slurry: **173 sks** (62 bbls), 13.0 lb/gal, 2.01 cu.ft./sk Varicem with .125 lb/sk Lost Circulation Agent

Oasis Petroleum
Well Summary
Chalmers 5300 21-19 11T
Section 19 T153N R100W
McKenzie County, ND

INTERMEDIATE CASING AND CEMENT DESIGN

Size	Interval	Weight	Grade	Coupling	I.D.	Drift**	Make-up Torque (ft-lbs)		
							Minimum	Optimum	Max
7"	0' - 11098'	32	HCP-110	LTC	6.094"	6.000"**	6730	8970	9870

**Special Drift 7" 32# to 6.0"

Interval	Length	Description	Collapse (psi) a	Burst (psi) b	Tension (1000 lbs) c
0' - 11098'	11098'	7", 32#, P-110, LTC, 8rd	11820 / 2.10*	12460 / 1.28	897 / 2.23
6691' - 9429'	2738'	7", 32#, HCP-110, LTC, 8rd	11820 / 1.04**	12460 / 1.29	

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 10818' 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.

Mix and pump the following slurry

Pre-flush (Spacer): **100 bbls** Saltwater

20bbls CW8

20bbls Fresh Water

Lead Slurry: **183 sks** (84 bbls), 11.8 ppg, 2.55 cu. ft./sk Econocem Cement with .3% Fe-2 and .25 lb/sk Lost Circulation Additive

Tail Slurry: **581 sks** (170 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
Chalmers 5300 21-19 11T
Section 19 T153N R100W
McKenzie County, ND

PRODUCTION LINER

Size	Interval	Weight	Grade	Coupling	I.D.	Drift	Make-up Torque (ft-lbs)		
							Minimum	Optimum	Max
4-1/2"	10291' - 20810	13.5	P-110	BTC	3.920"	3.795"	2270	3020	3780

Interval	Length	Description	Collapse (psi) a	Burst (psi) b	Tension (1000 lbs) c
10291' - 20810	10519	4-1/2", 13.5 lb, P-110, BTC	10670 / 1.98	12410 / 1.28	443 / 1.99

API Rating & Safety Factor

- a) Based on full casing evacuation with 9.5 ppg fluid on backside @ 10895' TVD.
- b) Burst pressure based on 9000 psi treating pressure with 10.2 ppg internal fluid gradient and 9 ppg external fluid gradient @ 10895' TVD.
- c) Based on string weight in 9.5 ppg fluid (Buoyed weight: 122k lbs.) plus 100k lbs overpull.



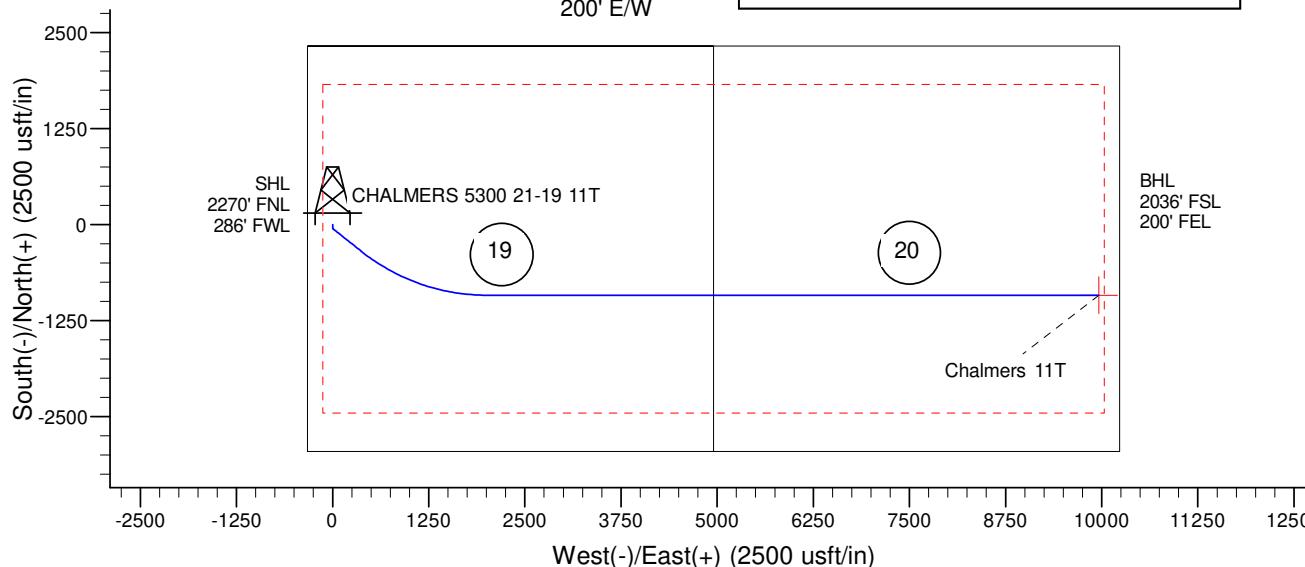
Azimuths to True North
Magnetic North: 8.17°

Magnetic Field
Strength: 56490.4snT
Dip Angle: 72.96°
Date: 2/17/2014
Model: IGRF200510



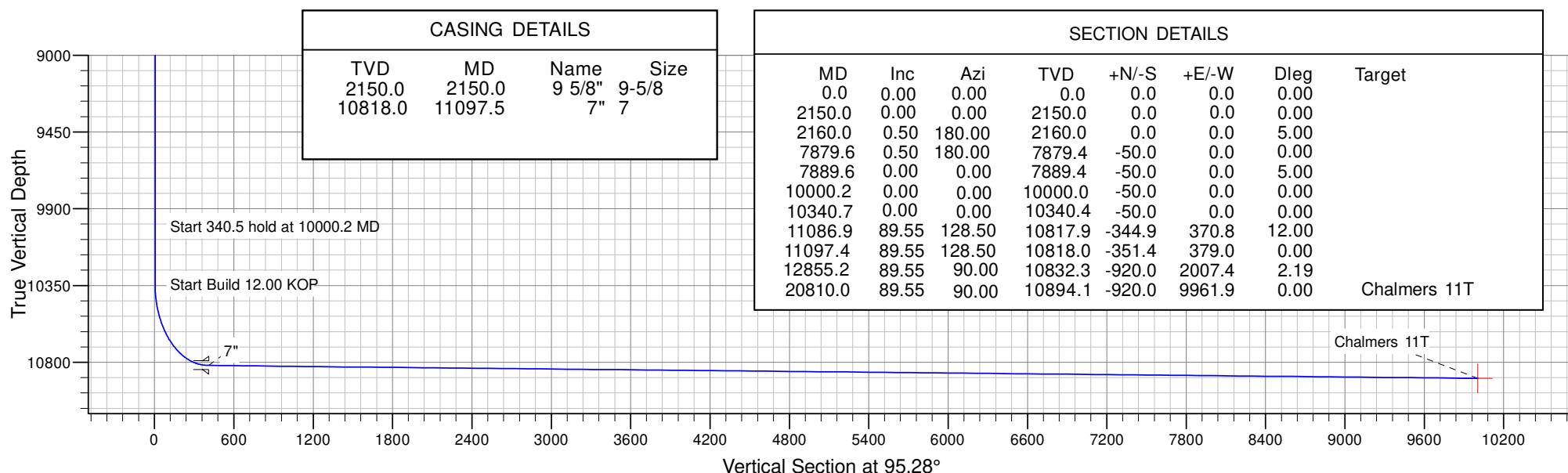
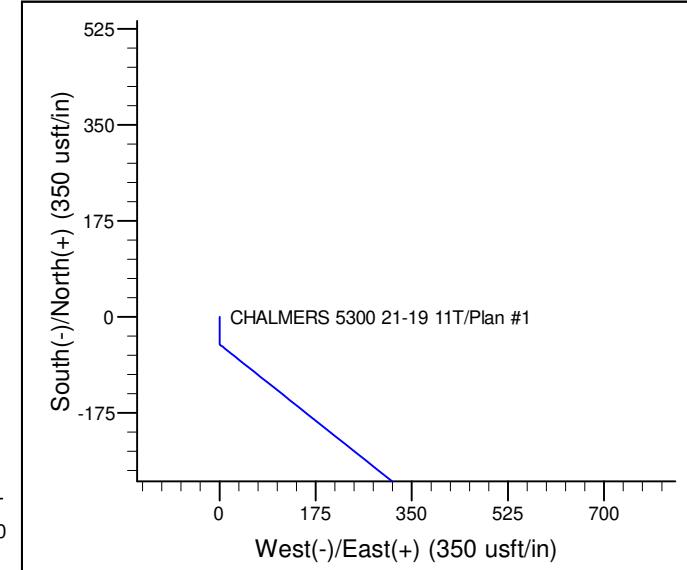
Project: Indian Hills
Site: 153N-100W-19/20
Well: CHALMERS 5300 21-19 11T
Wellbore: CHALMERS 5300 21-19 11T
Design: Plan #1

Setbacks
500' N/S
200' E/W



SITE DETAILS: 153N-100W-19/20

Well Centre Latitude: 48° 3' 40.320 N
Longitude: 103° 36' 10.110 W
Positional Uncertainty: 0.0
Convergence: -2.31
Local North: True



Oasis

**Indian Hills
153N-100W-19/20
CHALMERS 5300 21-19 11T**

CHALMERS 5300 21-19 11T

Plan: Plan #1

Standard Planning Report

16 June, 2014

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well CHALMERS 5300 21-19 11T
Company:	Oasis	TVD Reference:	WELL @ 2071.0usft (Original Well Elev)
Project:	Indian Hills	MD Reference:	WELL @ 2071.0usft (Original Well Elev)
Site:	153N-100W-19/20	North Reference:	True
Well:	CHALMERS 5300 21-19 11T	Survey Calculation Method:	Minimum Curvature
Wellbore:	CHALMERS 5300 21-19 11T		
Design:	Plan #1		

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

Site	153N-100W-19/20
Site Position:	Northing: 402,776.24 usft
From: Lat/Long	Easting: 1,209,958.00 usft
Position Uncertainty: 0.0 usft	Slot Radius: 13-3/16 "

Latitude: 48° 3' 44.270 N

Longitude: 103° 36' 10.700 W

Grid Convergence: -2.31 °

Well	CHALMERS 5300 21-19 11T
Well Position	+N/-S -400.2 usft Northing: 402,374.70 usft Latitude: 48° 3' 40.320 N
	+E/-W 40.1 usft Easting: 1,209,981.92 usft Longitude: 103° 36' 10.110 W
Position Uncertainty	0.0 usft Wellhead Elevation: Ground Level: 2,046.0 usft

40.320 N

10.110 W

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	2/17/2014	8.17	72.96	56,490

Design	Plan #1
Audit Notes:	
Version:	
Vertical Section:	

Phase: PROTOTYPE **Tie On Depth:** 0.0

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,150.0	0.00	0.00	2,150.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,160.0	0.50	180.00	2,160.0	0.0	0.0	5.00	5.00	0.00	180.00	
7,879.6	0.50	180.00	7,879.4	-50.0	0.0	0.00	0.00	0.00	0.00	
7,889.6	0.00	0.00	7,889.4	-50.0	0.0	5.00	-5.00	0.00	180.00	
10,000.2	0.00	0.00	10,000.0	-50.0	0.0	0.00	0.00	0.00	0.00	
10,340.7	0.00	0.00	10,340.4	-50.0	0.0	0.00	0.00	0.00	0.00	
11,086.9	89.55	128.50	10,817.9	-344.9	370.8	12.00	12.00	0.00	128.50	
11,097.4	89.55	128.50	10,818.0	-351.4	379.0	0.00	0.00	0.00	0.00	
12,855.2	89.55	90.00	10,832.3	-920.0	2,007.4	2.19	0.00	-2.19	269.85	
20,810.0	89.55	90.00	10,894.1	-920.0	9,961.9	0.00	0.00	0.00	0.00	Chalmers 11T

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well CHALMERS 5300 21-19 11T
Company:	Oasis	TVD Reference:	WELL @ 2071.0usft (Original Well Elev)
Project:	Indian Hills	MD Reference:	WELL @ 2071.0usft (Original Well Elev)
Site:	153N-100W-19/20	North Reference:	True
Well:	CHALMERS 5300 21-19 11T	Survey Calculation Method:	Minimum Curvature
Wellbore:	CHALMERS 5300 21-19 11T		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/S (usft)	+E/W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
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
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,021.0	0.00	0.00	2,021.0	0.0	0.0	0.0	0.00	0.00	0.00
Pierre									
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,150.0	0.00	0.00	2,150.0	0.0	0.0	0.0	0.00	0.00	0.00
Start Build 5.00 - 9 5/8"									
2,160.0	0.50	180.00	2,160.0	0.0	0.0	0.0	5.00	5.00	0.00
Start 5719.7 hold at 2160.0 MD									
2,200.0	0.50	180.00	2,200.0	-0.4	0.0	0.0	0.00	0.00	0.00
2,300.0	0.50	180.00	2,300.0	-1.3	0.0	0.1	0.00	0.00	0.00
2,400.0	0.50	180.00	2,400.0	-2.1	0.0	0.2	0.00	0.00	0.00
2,500.0	0.50	180.00	2,500.0	-3.0	0.0	0.3	0.00	0.00	0.00
2,600.0	0.50	180.00	2,600.0	-3.9	0.0	0.4	0.00	0.00	0.00
2,700.0	0.50	180.00	2,700.0	-4.8	0.0	0.4	0.00	0.00	0.00
2,800.0	0.50	180.00	2,800.0	-5.6	0.0	0.5	0.00	0.00	0.00
2,900.0	0.50	180.00	2,900.0	-6.5	0.0	0.6	0.00	0.00	0.00
3,000.0	0.50	180.00	3,000.0	-7.4	0.0	0.7	0.00	0.00	0.00
3,100.0	0.50	180.00	3,100.0	-8.2	0.0	0.8	0.00	0.00	0.00
3,200.0	0.50	180.00	3,200.0	-9.1	0.0	0.8	0.00	0.00	0.00
3,300.0	0.50	180.00	3,300.0	-10.0	0.0	0.9	0.00	0.00	0.00
3,400.0	0.50	180.00	3,400.0	-10.9	0.0	1.0	0.00	0.00	0.00
3,500.0	0.50	180.00	3,499.9	-11.7	0.0	1.1	0.00	0.00	0.00
3,600.0	0.50	180.00	3,599.9	-12.6	0.0	1.2	0.00	0.00	0.00
3,700.0	0.50	180.00	3,699.9	-13.5	0.0	1.2	0.00	0.00	0.00
3,800.0	0.50	180.00	3,799.9	-14.4	0.0	1.3	0.00	0.00	0.00
3,900.0	0.50	180.00	3,899.9	-15.2	0.0	1.4	0.00	0.00	0.00
4,000.0	0.50	180.00	3,999.9	-16.1	0.0	1.5	0.00	0.00	0.00
4,100.0	0.50	180.00	4,099.9	-17.0	0.0	1.6	0.00	0.00	0.00
4,200.0	0.50	180.00	4,199.9	-17.8	0.0	1.6	0.00	0.00	0.00
4,300.0	0.50	180.00	4,299.9	-18.7	0.0	1.7	0.00	0.00	0.00
4,400.0	0.50	180.00	4,399.9	-19.6	0.0	1.8	0.00	0.00	0.00
4,500.0	0.50	180.00	4,499.9	-20.5	0.0	1.9	0.00	0.00	0.00
4,600.0	0.50	180.00	4,599.9	-21.3	0.0	2.0	0.00	0.00	0.00
4,624.1	0.50	180.00	4,624.0	-21.5	0.0	2.0	0.00	0.00	0.00
Greenhorn									

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well CHALMERS 5300 21-19 11T
Company:	Oasis	TVD Reference:	WELL @ 2071.0usft (Original Well Elev)
Project:	Indian Hills	MD Reference:	WELL @ 2071.0usft (Original Well Elev)
Site:	153N-100W-19/20	North Reference:	True
Well:	CHALMERS 5300 21-19 11T	Survey Calculation Method:	Minimum Curvature
Wellbore:	CHALMERS 5300 21-19 11T		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,700.0	0.50	180.00	4,699.9	-22.2	0.0	2.0	0.00	0.00	0.00
4,800.0	0.50	180.00	4,799.9	-23.1	0.0	2.1	0.00	0.00	0.00
4,900.0	0.50	180.00	4,899.9	-24.0	0.0	2.2	0.00	0.00	0.00
5,000.0	0.50	180.00	4,999.9	-24.8	0.0	2.3	0.00	0.00	0.00
5,029.1	0.50	180.00	5,029.0	-25.1	0.0	2.3	0.00	0.00	0.00
Mowry									
5,100.0	0.50	180.00	5,099.9	-25.7	0.0	2.4	0.00	0.00	0.00
5,200.0	0.50	180.00	5,199.9	-26.6	0.0	2.4	0.00	0.00	0.00
5,300.0	0.50	180.00	5,299.9	-27.4	0.0	2.5	0.00	0.00	0.00
5,400.0	0.50	180.00	5,399.9	-28.3	0.0	2.6	0.00	0.00	0.00
5,417.1	0.50	180.00	5,417.0	-28.5	0.0	2.6	0.00	0.00	0.00
Dakota									
5,500.0	0.50	180.00	5,499.9	-29.2	0.0	2.7	0.00	0.00	0.00
5,600.0	0.50	180.00	5,599.9	-30.1	0.0	2.8	0.00	0.00	0.00
5,700.0	0.50	180.00	5,699.9	-30.9	0.0	2.8	0.00	0.00	0.00
5,800.0	0.50	180.00	5,799.9	-31.8	0.0	2.9	0.00	0.00	0.00
5,900.0	0.50	180.00	5,899.9	-32.7	0.0	3.0	0.00	0.00	0.00
6,000.0	0.50	180.00	5,999.9	-33.6	0.0	3.1	0.00	0.00	0.00
6,100.0	0.50	180.00	6,099.8	-34.4	0.0	3.2	0.00	0.00	0.00
6,200.0	0.50	180.00	6,199.8	-35.3	0.0	3.2	0.00	0.00	0.00
6,300.0	0.50	180.00	6,299.8	-36.2	0.0	3.3	0.00	0.00	0.00
6,400.0	0.50	180.00	6,399.8	-37.0	0.0	3.4	0.00	0.00	0.00
6,463.2	0.50	180.00	6,463.0	-37.6	0.0	3.5	0.00	0.00	0.00
Rierdon									
6,500.0	0.50	180.00	6,499.8	-37.9	0.0	3.5	0.00	0.00	0.00
6,600.0	0.50	180.00	6,599.8	-38.8	0.0	3.6	0.00	0.00	0.00
6,700.0	0.50	180.00	6,699.8	-39.7	0.0	3.6	0.00	0.00	0.00
6,800.0	0.50	180.00	6,799.8	-40.5	0.0	3.7	0.00	0.00	0.00
6,891.2	0.50	180.00	6,891.0	-41.3	0.0	3.8	0.00	0.00	0.00
Dunham Salt									
6,900.0	0.50	180.00	6,899.8	-41.4	0.0	3.8	0.00	0.00	0.00
6,960.2	0.50	180.00	6,960.0	-41.9	0.0	3.9	0.00	0.00	0.00
Dunham Salt Base									
7,000.0	0.50	180.00	6,999.8	-42.3	0.0	3.9	0.00	0.00	0.00
7,100.0	0.50	180.00	7,099.8	-43.2	0.0	4.0	0.00	0.00	0.00
7,200.0	0.50	180.00	7,199.8	-44.0	0.0	4.0	0.00	0.00	0.00
7,257.2	0.50	180.00	7,257.0	-44.5	0.0	4.1	0.00	0.00	0.00
Pine Salt									
7,290.2	0.50	180.00	7,290.0	-44.8	0.0	4.1	0.00	0.00	0.00
Pine Salt Base									
7,300.0	0.50	180.00	7,299.8	-44.9	0.0	4.1	0.00	0.00	0.00
7,351.2	0.50	180.00	7,351.0	-45.3	0.0	4.2	0.00	0.00	0.00
Opeche Salt									
7,400.0	0.50	180.00	7,399.8	-45.8	0.0	4.2	0.00	0.00	0.00
7,426.2	0.50	180.00	7,426.0	-46.0	0.0	4.2	0.00	0.00	0.00
Opeche Salt Base									
7,500.0	0.50	180.00	7,499.8	-46.6	0.0	4.3	0.00	0.00	0.00
7,600.0	0.50	180.00	7,599.8	-47.5	0.0	4.4	0.00	0.00	0.00
7,662.2	0.50	180.00	7,662.0	-48.1	0.0	4.4	0.00	0.00	0.00
Amsden									
7,700.0	0.50	180.00	7,699.8	-48.4	0.0	4.4	0.00	0.00	0.00
7,800.0	0.50	180.00	7,799.8	-49.3	0.0	4.5	0.00	0.00	0.00
7,828.2	0.50	180.00	7,828.0	-49.5	0.0	4.6	0.00	0.00	0.00
Tyler									

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well CHALMERS 5300 21-19 11T
Company:	Oasis	TVD Reference:	WELL @ 2071.0usft (Original Well Elev)
Project:	Indian Hills	MD Reference:	WELL @ 2071.0usft (Original Well Elev)
Site:	153N-100W-19/20	North Reference:	True
Well:	CHALMERS 5300 21-19 11T	Survey Calculation Method:	Minimum Curvature
Wellbore:	CHALMERS 5300 21-19 11T		
Design:	Plan #1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
7,879.6	0.50	180.00	7,879.4	-50.0	0.0	4.6	0.00	0.00	0.00	
Start Drop -5.00										
7,889.6	0.00	0.00	7,889.4	-50.0	0.0	4.6	5.00	-5.00	-1,800.00	
Start 2110.6 hold at 7889.7 MD										
7,900.0	0.00	0.00	7,899.8	-50.0	0.0	4.6	0.00	0.00	0.00	
8,000.0	0.00	0.00	7,999.8	-50.0	0.0	4.6	0.00	0.00	0.00	
8,032.2	0.00	0.00	8,032.0	-50.0	0.0	4.6	0.00	0.00	0.00	
Otter/Base Minnelusa										
8,100.0	0.00	0.00	8,099.8	-50.0	0.0	4.6	0.00	0.00	0.00	
8,200.0	0.00	0.00	8,199.8	-50.0	0.0	4.6	0.00	0.00	0.00	
8,300.0	0.00	0.00	8,299.8	-50.0	0.0	4.6	0.00	0.00	0.00	
8,384.2	0.00	0.00	8,384.0	-50.0	0.0	4.6	0.00	0.00	0.00	
Kibbey Lime										
8,400.0	0.00	0.00	8,399.8	-50.0	0.0	4.6	0.00	0.00	0.00	
8,500.0	0.00	0.00	8,499.8	-50.0	0.0	4.6	0.00	0.00	0.00	
8,534.2	0.00	0.00	8,534.0	-50.0	0.0	4.6	0.00	0.00	0.00	
Charles Salt										
8,600.0	0.00	0.00	8,599.8	-50.0	0.0	4.6	0.00	0.00	0.00	
8,700.0	0.00	0.00	8,699.8	-50.0	0.0	4.6	0.00	0.00	0.00	
8,800.0	0.00	0.00	8,799.8	-50.0	0.0	4.6	0.00	0.00	0.00	
8,900.0	0.00	0.00	8,899.8	-50.0	0.0	4.6	0.00	0.00	0.00	
9,000.0	0.00	0.00	8,999.8	-50.0	0.0	4.6	0.00	0.00	0.00	
9,100.0	0.00	0.00	9,099.8	-50.0	0.0	4.6	0.00	0.00	0.00	
9,200.0	0.00	0.00	9,199.8	-50.0	0.0	4.6	0.00	0.00	0.00	
9,209.2	0.00	0.00	9,209.0	-50.0	0.0	4.6	0.00	0.00	0.00	
Base Last Salt										
9,300.0	0.00	0.00	9,299.8	-50.0	0.0	4.6	0.00	0.00	0.00	
9,400.0	0.00	0.00	9,399.8	-50.0	0.0	4.6	0.00	0.00	0.00	
9,429.2	0.00	0.00	9,429.0	-50.0	0.0	4.6	0.00	0.00	0.00	
Mission Canyon										
9,500.0	0.00	0.00	9,499.8	-50.0	0.0	4.6	0.00	0.00	0.00	
9,600.0	0.00	0.00	9,599.8	-50.0	0.0	4.6	0.00	0.00	0.00	
9,700.0	0.00	0.00	9,699.8	-50.0	0.0	4.6	0.00	0.00	0.00	
9,800.0	0.00	0.00	9,799.8	-50.0	0.0	4.6	0.00	0.00	0.00	
9,900.0	0.00	0.00	9,899.8	-50.0	0.0	4.6	0.00	0.00	0.00	
9,993.2	0.00	0.00	9,993.0	-50.0	0.0	4.6	0.00	0.00	0.00	
Lodgepole										
10,000.2	0.00	0.00	10,000.0	-50.0	0.0	4.6	0.00	0.00	0.00	
Start 340.5 hold at 10000.2 MD										
10,100.0	0.00	0.00	10,099.8	-50.0	0.0	4.6	0.00	0.00	0.00	
10,200.0	0.00	0.00	10,199.8	-50.0	0.0	4.6	0.00	0.00	0.00	
10,300.0	0.00	0.00	10,299.8	-50.0	0.0	4.6	0.00	0.00	0.00	
10,340.7	0.00	0.00	10,340.4	-50.0	0.0	4.6	0.00	0.00	0.00	
Start Build 12.00 KOP										
10,350.0	1.12	128.50	10,349.8	-50.1	0.1	4.7	12.00	12.00	0.00	
10,375.0	4.12	128.50	10,374.8	-50.8	1.0	5.6	12.00	12.00	0.00	
10,400.0	7.12	128.50	10,399.6	-52.3	2.9	7.7	12.00	12.00	0.00	
10,425.0	10.12	128.50	10,424.3	-54.6	5.8	10.8	12.00	12.00	0.00	
10,450.0	13.12	128.50	10,448.8	-57.8	9.8	15.0	12.00	12.00	0.00	
10,475.0	16.12	128.50	10,473.0	-61.7	14.7	20.3	12.00	12.00	0.00	
10,500.0	19.12	128.50	10,496.8	-66.4	20.6	26.6	12.00	12.00	0.00	
10,525.0	22.12	128.50	10,520.2	-71.9	27.5	34.0	12.00	12.00	0.00	
10,550.0	25.12	128.50	10,543.1	-78.1	35.3	42.4	12.00	12.00	0.00	
10,575.0	28.12	128.50	10,565.5	-85.1	44.1	51.7	12.00	12.00	0.00	

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well CHALMERS 5300 21-19 11T
Company:	Oasis	TVD Reference:	WELL @ 2071.0usft (Original Well Elev)
Project:	Indian Hills	MD Reference:	WELL @ 2071.0usft (Original Well Elev)
Site:	153N-100W-19/20	North Reference:	True
Well:	CHALMERS 5300 21-19 11T	Survey Calculation Method:	Minimum Curvature
Wellbore:	CHALMERS 5300 21-19 11T		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/S (usft)	+E/W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,600.0	31.12	128.50	10,587.2	-92.8	53.8	62.1	12.00	12.00	0.00
10,625.0	34.12	128.50	10,608.3	-101.2	64.3	73.4	12.00	12.00	0.00
10,650.0	37.12	128.50	10,628.6	-110.2	75.7	85.5	12.00	12.00	0.00
10,675.0	40.12	128.50	10,648.1	-119.9	87.9	98.6	12.00	12.00	0.00
10,700.0	43.12	128.50	10,666.8	-130.3	100.9	112.5	12.00	12.00	0.00
10,725.0	46.12	128.50	10,684.6	-141.2	114.7	127.2	12.00	12.00	0.00
10,750.0	49.12	128.50	10,701.5	-152.7	129.1	142.6	12.00	12.00	0.00
10,757.0	49.96	128.50	10,706.0	-156.0	133.3	147.1	12.00	12.00	0.00
False Bakken									
10,772.8	51.86	128.50	10,716.0	-163.7	142.9	157.4	12.00	12.00	0.00
Upper Bakken Shale									
10,775.0	52.12	128.50	10,717.3	-164.7	144.2	158.8	12.00	12.00	0.00
10,799.7	55.09	128.50	10,732.0	-177.1	159.8	175.4	12.00	12.00	0.00
Middle Bakken									
10,800.0	55.12	128.50	10,732.1	-177.2	160.0	175.6	12.00	12.00	0.00
10,825.0	58.12	128.50	10,745.9	-190.2	176.3	193.1	12.00	12.00	0.00
10,850.0	61.12	128.50	10,758.5	-203.7	193.2	211.1	12.00	12.00	0.00
10,865.9	63.03	128.50	10,766.0	-212.4	204.2	222.9	12.00	12.00	0.00
Lower Bakken Shale									
10,875.0	64.12	128.50	10,770.0	-217.5	210.6	229.7	12.00	12.00	0.00
10,899.1	67.01	128.50	10,780.0	-231.1	227.7	248.0	12.00	12.00	0.00
Pronghorn									
10,900.0	67.12	128.50	10,780.3	-231.6	228.4	248.7	12.00	12.00	0.00
10,925.0	70.12	128.50	10,789.5	-246.1	246.6	268.2	12.00	12.00	0.00
10,950.0	73.12	128.50	10,797.3	-260.9	265.2	288.1	12.00	12.00	0.00
10,955.8	73.81	128.50	10,799.0	-264.3	269.5	292.7	12.00	12.00	0.00
Threeforks									
10,975.0	76.12	128.50	10,804.0	-275.9	284.0	308.2	12.00	12.00	0.00
11,000.0	79.12	128.50	10,809.3	-291.1	303.2	328.6	12.00	12.00	0.00
11,009.2	80.22	128.50	10,811.0	-296.7	310.2	336.2	12.00	12.00	0.00
Threeforks(Top of Target)									
11,025.0	82.12	128.50	10,813.4	-306.5	322.5	349.3	12.00	12.00	0.00
11,050.0	85.12	128.50	10,816.2	-321.9	341.9	370.1	12.00	12.00	0.00
11,075.0	88.12	128.50	10,817.7	-337.5	361.4	390.9	12.00	12.00	0.00
11,086.9	89.55	128.50	10,817.9	-344.9	370.8	400.9	12.00	12.00	0.00
Start 10.5 hold at 11086.9 MD EOC									
11,097.5	89.55	128.50	10,818.0	-351.4	379.0	409.7	0.00	0.00	0.00
Start DLS 2.00 TFO 269.85 - 7"									
11,100.0	89.55	128.44	10,818.0	-353.0	381.0	411.8	2.22	-0.01	-2.22
11,200.0	89.54	126.25	10,818.8	-413.7	460.5	496.6	2.19	-0.01	-2.19
11,300.0	89.54	124.06	10,819.6	-471.2	542.2	583.3	2.19	0.00	-2.19
11,400.0	89.54	121.87	10,820.4	-525.6	626.1	671.8	2.19	0.00	-2.19
11,500.0	89.53	119.68	10,821.2	-576.8	712.0	762.1	2.19	0.00	-2.19
11,600.0	89.53	117.49	10,822.0	-624.6	799.9	853.9	2.19	0.00	-2.19
11,700.0	89.53	115.30	10,822.8	-669.1	889.4	947.2	2.19	0.00	-2.19
11,800.0	89.53	113.11	10,823.7	-710.1	980.6	1,041.8	2.19	0.00	-2.19
11,900.0	89.53	110.92	10,824.5	-747.6	1,073.3	1,137.5	2.19	0.00	-2.19
12,000.0	89.53	108.73	10,825.3	-781.5	1,167.4	1,234.3	2.19	0.00	-2.19
12,100.0	89.53	106.54	10,826.2	-811.8	1,262.7	1,332.0	2.19	0.00	-2.19
12,200.0	89.53	104.35	10,827.0	-838.4	1,359.1	1,430.4	2.19	0.00	-2.19
12,300.0	89.53	102.16	10,827.8	-861.3	1,456.4	1,529.4	2.19	0.00	-2.19
12,400.0	89.53	99.97	10,828.6	-880.5	1,554.5	1,628.9	2.19	0.00	-2.19
12,500.0	89.54	97.78	10,829.4	-895.9	1,653.3	1,728.7	2.19	0.00	-2.19
12,600.0	89.54	95.59	10,830.2	-907.6	1,752.6	1,828.7	2.19	0.00	-2.19

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well CHALMERS 5300 21-19 11T
Company:	Oasis	TVD Reference:	WELL @ 2071.0usft (Original Well Elev)
Project:	Indian Hills	MD Reference:	WELL @ 2071.0usft (Original Well Elev)
Site:	153N-100W-19/20	North Reference:	True
Well:	CHALMERS 5300 21-19 11T	Survey Calculation Method:	Minimum Curvature
Wellbore:	CHALMERS 5300 21-19 11T		
Design:	Plan #1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
12,700.0	89.55	93.40	10,831.0	-915.4	1,852.3	1,928.6	2.19	0.00	-2.19	
12,800.0	89.55	91.21	10,831.8	-919.4	1,952.2	2,028.5	2.19	0.01	-2.19	
12,855.2	89.55	90.00	10,832.3	-920.0	2,007.4	2,083.5	2.19	0.01	-2.19	
12,900.0	89.55	90.00	10,832.6	-920.0	2,052.2	2,128.1	0.00	0.00	0.00	
13,000.0	89.55	90.00	10,833.4	-920.0	2,152.2	2,227.7	0.00	0.00	0.00	
13,022.1	89.55	90.00	10,833.6	-920.0	2,174.4	2,249.7	0.00	0.00	0.00	
Start 7906.2 hold at 13022.2 MD										
13,100.0	89.55	90.00	10,834.2	-920.0	2,252.2	2,327.3	0.00	0.00	0.00	
13,200.0	89.55	90.00	10,834.9	-920.0	2,352.2	2,426.8	0.00	0.00	0.00	
13,300.0	89.55	90.00	10,835.7	-920.0	2,452.2	2,526.4	0.00	0.00	0.00	
13,400.0	89.55	90.00	10,836.5	-920.0	2,552.2	2,626.0	0.00	0.00	0.00	
13,500.0	89.55	90.00	10,837.3	-920.0	2,652.2	2,725.6	0.00	0.00	0.00	
13,600.0	89.55	90.00	10,838.0	-920.0	2,752.2	2,825.1	0.00	0.00	0.00	
13,700.0	89.55	90.00	10,838.8	-920.0	2,852.2	2,924.7	0.00	0.00	0.00	
13,800.0	89.55	90.00	10,839.6	-920.0	2,952.2	3,024.3	0.00	0.00	0.00	
13,900.0	89.55	90.00	10,840.4	-920.0	3,052.2	3,123.8	0.00	0.00	0.00	
14,000.0	89.55	90.00	10,841.2	-920.0	3,152.2	3,223.4	0.00	0.00	0.00	
14,100.0	89.55	90.00	10,841.9	-920.0	3,252.2	3,323.0	0.00	0.00	0.00	
14,200.0	89.55	90.00	10,842.7	-920.0	3,352.2	3,422.6	0.00	0.00	0.00	
14,300.0	89.55	90.00	10,843.5	-920.0	3,452.2	3,522.1	0.00	0.00	0.00	
14,400.0	89.55	90.00	10,844.3	-920.0	3,552.2	3,621.7	0.00	0.00	0.00	
14,500.0	89.55	90.00	10,845.0	-920.0	3,652.2	3,721.3	0.00	0.00	0.00	
14,600.0	89.55	90.00	10,845.8	-920.0	3,752.2	3,820.9	0.00	0.00	0.00	
14,700.0	89.55	90.00	10,846.6	-920.0	3,852.2	3,920.4	0.00	0.00	0.00	
14,800.0	89.55	90.00	10,847.4	-920.0	3,952.2	4,020.0	0.00	0.00	0.00	
14,900.0	89.55	90.00	10,848.2	-920.0	4,052.1	4,119.6	0.00	0.00	0.00	
15,000.0	89.55	90.00	10,848.9	-920.0	4,152.1	4,219.2	0.00	0.00	0.00	
15,100.0	89.55	90.00	10,849.7	-920.0	4,252.1	4,318.7	0.00	0.00	0.00	
15,200.0	89.55	90.00	10,850.5	-920.0	4,352.1	4,418.3	0.00	0.00	0.00	
15,300.0	89.55	90.00	10,851.3	-920.0	4,452.1	4,517.9	0.00	0.00	0.00	
15,400.0	89.55	90.00	10,852.0	-920.0	4,552.1	4,617.4	0.00	0.00	0.00	
15,500.0	89.55	90.00	10,852.8	-920.0	4,652.1	4,717.0	0.00	0.00	0.00	
15,600.0	89.55	90.00	10,853.6	-920.0	4,752.1	4,816.6	0.00	0.00	0.00	
15,700.0	89.55	90.00	10,854.4	-920.0	4,852.1	4,916.2	0.00	0.00	0.00	
15,800.0	89.55	90.00	10,855.2	-920.0	4,952.1	5,015.7	0.00	0.00	0.00	
15,900.0	89.55	90.00	10,855.9	-920.0	5,052.1	5,115.3	0.00	0.00	0.00	
16,000.0	89.55	90.00	10,856.7	-920.0	5,152.1	5,214.9	0.00	0.00	0.00	
16,100.0	89.55	90.00	10,857.5	-920.0	5,252.1	5,314.5	0.00	0.00	0.00	
16,200.0	89.55	90.00	10,858.3	-920.0	5,352.1	5,414.0	0.00	0.00	0.00	
16,300.0	89.55	90.00	10,859.0	-920.0	5,452.1	5,513.6	0.00	0.00	0.00	
16,400.0	89.55	90.00	10,859.8	-920.0	5,552.1	5,613.2	0.00	0.00	0.00	
16,500.0	89.55	90.00	10,860.6	-920.0	5,652.1	5,712.8	0.00	0.00	0.00	
16,600.0	89.55	90.00	10,861.4	-920.0	5,752.1	5,812.3	0.00	0.00	0.00	
16,700.0	89.55	90.00	10,862.2	-920.0	5,852.1	5,911.9	0.00	0.00	0.00	
16,800.0	89.55	90.00	10,862.9	-920.0	5,952.1	6,011.5	0.00	0.00	0.00	
16,900.0	89.55	90.00	10,863.7	-920.0	6,052.1	6,111.0	0.00	0.00	0.00	
17,000.0	89.55	90.00	10,864.5	-920.0	6,152.1	6,210.6	0.00	0.00	0.00	
17,100.0	89.55	90.00	10,865.3	-920.0	6,252.1	6,310.2	0.00	0.00	0.00	
17,200.0	89.55	90.00	10,866.0	-920.0	6,352.1	6,409.8	0.00	0.00	0.00	
17,300.0	89.55	90.00	10,866.8	-920.0	6,452.1	6,509.3	0.00	0.00	0.00	
17,400.0	89.55	90.00	10,867.6	-920.0	6,552.1	6,608.9	0.00	0.00	0.00	
17,500.0	89.55	90.00	10,868.4	-920.0	6,652.1	6,708.5	0.00	0.00	0.00	
17,600.0	89.55	90.00	10,869.2	-920.0	6,752.1	6,808.1	0.00	0.00	0.00	
17,700.0	89.55	90.00	10,869.9	-920.0	6,852.1	6,907.6	0.00	0.00	0.00	
17,800.0	89.55	90.00	10,870.7	-920.0	6,952.1	7,007.2	0.00	0.00	0.00	

Oasis Petroleum

Planning Report

Database: OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well CHALMERS 5300 21-19 11T
Company: Oasis	TVD Reference:	WELL @ 2071.0usft (Original Well Elev)
Project: Indian Hills	MD Reference:	WELL @ 2071.0usft (Original Well Elev)
Site: 153N-100W-19/20	North Reference:	True
Well: CHALMERS 5300 21-19 11T	Survey Calculation Method:	Minimum Curvature
Wellbore: CHALMERS 5300 21-19 11T		
Design: Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/S (usft)	+E/W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
17,900.0	89.55	90.00	10,871.5	-920.0	7,052.1	7,106.8	0.00	0.00	0.00
18,000.0	89.55	90.00	10,872.3	-920.0	7,152.1	7,206.4	0.00	0.00	0.00
18,100.0	89.55	90.00	10,873.0	-920.0	7,252.1	7,305.9	0.00	0.00	0.00
18,200.0	89.55	90.00	10,873.8	-920.0	7,352.0	7,405.5	0.00	0.00	0.00
18,300.0	89.55	90.00	10,874.6	-920.0	7,452.0	7,505.1	0.00	0.00	0.00
18,400.0	89.55	90.00	10,875.4	-920.0	7,552.0	7,604.6	0.00	0.00	0.00
18,500.0	89.55	90.00	10,876.2	-920.0	7,652.0	7,704.2	0.00	0.00	0.00
18,600.0	89.55	90.00	10,876.9	-920.0	7,752.0	7,803.8	0.00	0.00	0.00
18,700.0	89.55	90.00	10,877.7	-920.0	7,852.0	7,903.4	0.00	0.00	0.00
18,800.0	89.55	90.00	10,878.5	-920.0	7,952.0	8,002.9	0.00	0.00	0.00
18,900.0	89.55	90.00	10,879.3	-920.0	8,052.0	8,102.5	0.00	0.00	0.00
19,000.0	89.55	90.00	10,880.0	-920.0	8,152.0	8,202.1	0.00	0.00	0.00
19,100.0	89.55	90.00	10,880.8	-920.0	8,252.0	8,301.7	0.00	0.00	0.00
19,200.0	89.55	90.00	10,881.6	-920.0	8,352.0	8,401.2	0.00	0.00	0.00
19,300.0	89.55	90.00	10,882.4	-920.0	8,452.0	8,500.8	0.00	0.00	0.00
19,400.0	89.55	90.00	10,883.2	-920.0	8,552.0	8,600.4	0.00	0.00	0.00
19,500.0	89.55	90.00	10,883.9	-920.0	8,652.0	8,700.0	0.00	0.00	0.00
19,600.0	89.55	90.00	10,884.7	-920.0	8,752.0	8,799.5	0.00	0.00	0.00
19,700.0	89.55	90.00	10,885.5	-920.0	8,852.0	8,899.1	0.00	0.00	0.00
19,800.0	89.55	90.00	10,886.3	-920.0	8,952.0	8,998.7	0.00	0.00	0.00
19,900.0	89.55	90.00	10,887.0	-920.0	9,052.0	9,098.2	0.00	0.00	0.00
20,000.0	89.55	90.00	10,887.8	-920.0	9,152.0	9,197.8	0.00	0.00	0.00
20,100.0	89.55	90.00	10,888.6	-920.0	9,252.0	9,297.4	0.00	0.00	0.00
20,200.0	89.55	90.00	10,889.4	-920.0	9,352.0	9,397.0	0.00	0.00	0.00
20,300.0	89.55	90.00	10,890.2	-920.0	9,452.0	9,496.5	0.00	0.00	0.00
20,400.0	89.55	90.00	10,890.9	-920.0	9,552.0	9,596.1	0.00	0.00	0.00
20,500.0	89.55	90.00	10,891.7	-920.0	9,652.0	9,695.7	0.00	0.00	0.00
20,600.0	89.55	90.00	10,892.5	-920.0	9,752.0	9,795.3	0.00	0.00	0.00
20,700.0	89.55	90.00	10,893.3	-920.0	9,852.0	9,894.8	0.00	0.00	0.00
20,810.0	89.55	90.00	10,894.1	-920.0	9,961.9	10,004.3	0.00	0.00	0.00

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/S (usft)	+E/W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Chalmers 11T	0.00	0.00	10,894.7	-919.3	9,962.0	401,054.81	1,219,898.79	48° 3' 31.221 N	103° 33' 43.454 W
- plan misses target center by 0.9usft at 20810.0usft MD (10894.1 TVD, -920.0 N, 9961.9 E) - Point									

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter ("")	Hole Diameter ("")
2,150.0	2,150.0 9 5/8"		9-5/8	13-1/2
11,097.5	10,818.0 7"		7	8-3/4

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	Local Co-ordinate Reference:	Well CHALMERS 5300 21-19 11T
Company:	Oasis	TVD Reference:	WELL @ 2071.0usft (Original Well Elev)
Project:	Indian Hills	MD Reference:	WELL @ 2071.0usft (Original Well Elev)
Site:	153N-100W-19/20	North Reference:	True
Well:	CHALMERS 5300 21-19 11T	Survey Calculation Method:	Minimum Curvature
Wellbore:	CHALMERS 5300 21-19 11T		
Design:	Plan #1		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,021.0	2,021.0	Pierre			
4,624.1	4,624.0	Greenhorn			
5,029.1	5,029.0	Mowry			
5,417.1	5,417.0	Dakota			
6,463.2	6,463.0	Rierdon			
6,891.2	6,891.0	Dunham Salt			
6,960.2	6,960.0	Dunham Salt Base			
7,257.2	7,257.0	Pine Salt			
7,290.2	7,290.0	Pine Salt Base			
7,351.2	7,351.0	Opeche Salt			
7,426.2	7,426.0	Opeche Salt Base			
7,662.2	7,662.0	Amsden			
7,828.2	7,828.0	Tyler			
8,032.2	8,032.0	Otter/Base Minnelusa			
8,384.2	8,384.0	Kibbey Lime			
8,534.2	8,534.0	Charles Salt			
9,209.2	9,209.0	Base Last Salt			
9,429.2	9,429.0	Mission Canyon			
9,993.2	9,993.0	Lodgepole			
10,757.0	10,706.0	False Bakken			
10,772.8	10,716.0	Upper Bakken Shale			
10,799.7	10,732.0	Middle Bakken			
10,865.9	10,766.0	Lower Bakken Shale			
10,899.1	10,780.0	Pronghorn			
10,955.8	10,799.0	Threeforks			
11,009.2	10,811.0	Threeforks(Top of Target)			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			Comment
		+N-S (usft)	+E-W (usft)		
2,150.0	2,150.0	0.0	0.0		Start Build 5.00
2,160.0	2,160.0	0.0	0.0		Start 5719.7 hold at 2160.0 MD
7,879.6	7,879.4	-50.0	0.0		Start Drop -5.00
7,889.6	7,889.4	-50.0	0.0		Start 2110.6 hold at 7889.7 MD
10,000.2	10,000.0	-50.0	0.0		Start 340.5 hold at 10000.2 MD
10,340.7	10,340.4	-50.0	0.0		Start Build 12.00 KOP
11,086.9	10,817.9	-344.9	370.8		Start 10.5 hold at 11086.9 MD EOC
11,097.4	10,818.0	-351.4	379.0		Start DLS 2.00 TFO 269.85
13,022.1	10,833.6	-920.0	2,174.4		Start 7906.2 hold at 13022.2 MD
20,822.9					TD at 20822.9

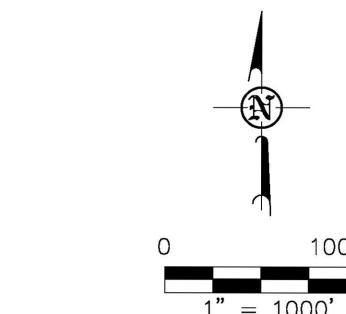
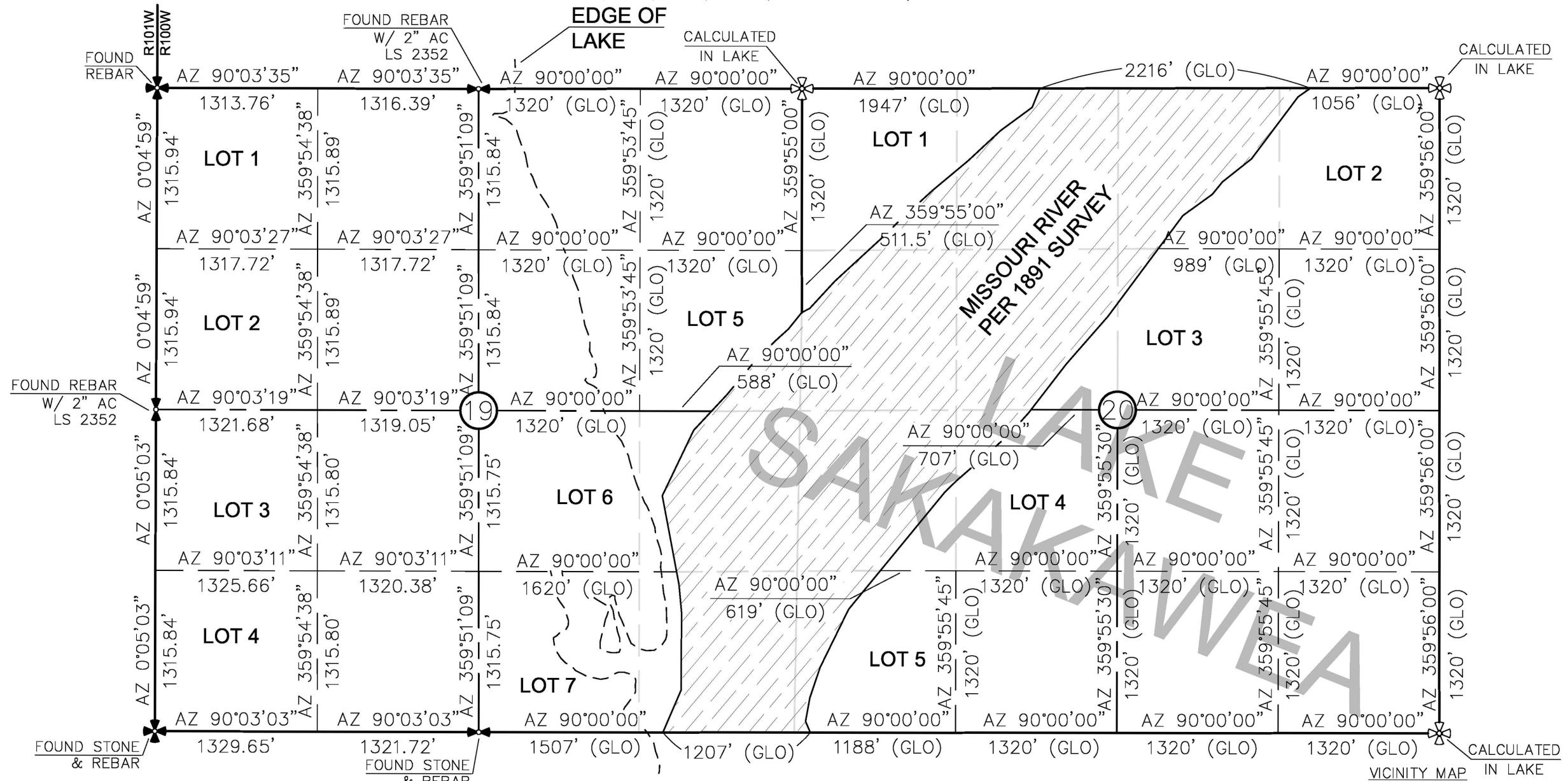
SECTION BREAKDOWN

OASIS PETROLEUM NORTH AMERICA, LLC

I FANNIN, SUITE 1500, HOUSTON, TX 77002
"QUAL MERO 5000-01-10-117"

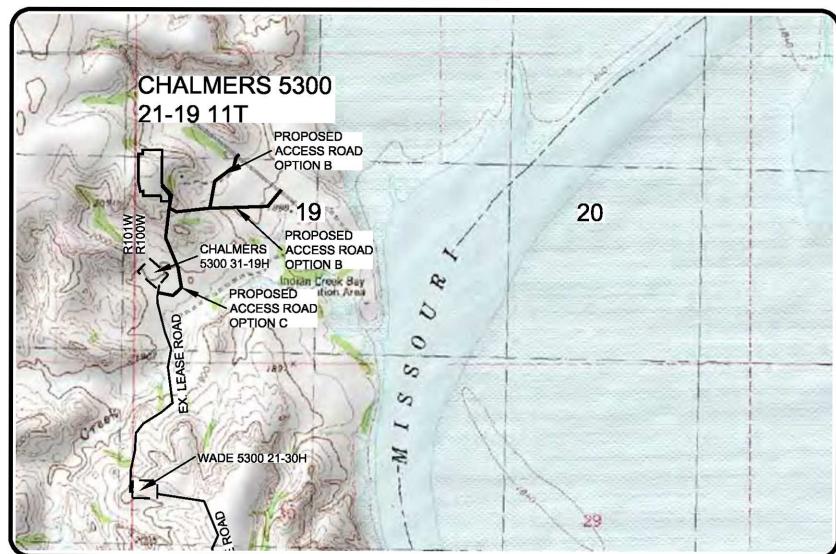
"CHALMERS 5300 21-19

2325 FEET FROM NORTH LINE AND 326 FEET FROM WEST LINE
SECTIONS 19 & 20, 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
3/13/14 AND THE ORIGINAL
DOCUMENTS ARE STORED AT THE
OFFICES OF INTERSTATE ENGINEERING,
INC.

ALL AZIMUTHS ARE BASED ON G.P.S.
OBSERVATIONS. THE ORIGINAL SURVEY OF THIS
AREA FOR THE GENERAL LAND OFFICE (G.L.O.)
WAS 1891. 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 $-0^{\circ}03'$.



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Revision No.	Date	By	Description
REV 1	3/12/14	JUS	MOVED WELLS ON PAD

OASIS PETROLEUM NORTH AMERICA, LLC	
SECTION BREAKDOWN	
SECTIONS 19 & 20, T153N, R100W	
MCKENZIE COUNTY, NORTH DAKOTA	
Town By:	B.H.B.
checked By:	D.D.K.
Project No.:	S13-09-282-06
Date:	JAN. 2014

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



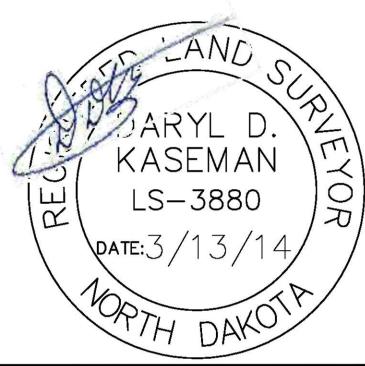
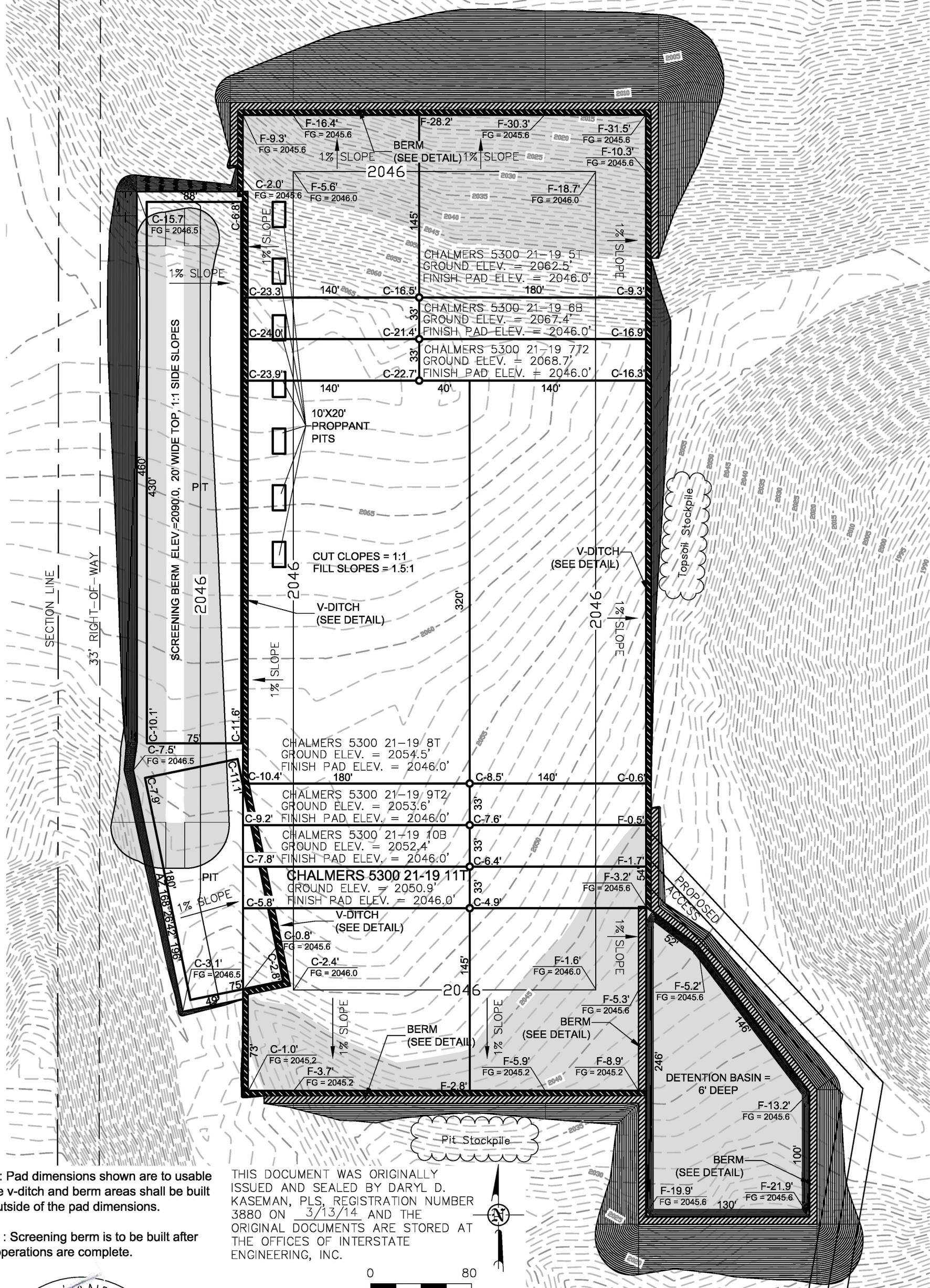
2/8
SHEET NO.

PAD LAYOUT

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

"CHALMERS 5300 21-19 11T"

2325 FEET FROM NORTH LINE AND 326 FEET FROM WEST LINE
SECTION 19, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



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3/8



Professionals you need, people you trust

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Other offices in Minnesota, North Dakota and South Dakota

OASIS PETROLEUM NORTH AMERICA, LLC
PAD LAYOUT
SECTION 19, T153N, R100W
MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.H.H. Project No.: S13-09-282.06
Checked By: D.D.K. Date: JAN, 2014

Revision No.	Date	By	Description
REV 1	3/12/14	JJS	MOVED WELLS ON PAD

Chalmers\cadd\REVISED CHALMERS 11T.dwg - 3/13/2014 2:22 PM John schmeler

WELL LOCATION SITE QUANTITIES

OASIS PETROLEUM NORTH AMERICA, LLC

1001 FANNIN, SUITE 1500, HOUSTON, TX 77002

"CHALMERS 5300 21-19 11T"

2325 FEET FROM NORTH LINE AND 326 FEET FROM WEST LINE
SECTION 19, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

WELL SITE ELEVATION	2050.9
WELL PAD ELEVATION	2046.0
EXCAVATION	119,687
PLUS PIT	<u>22,050</u>
	141,737
EMBANKMENT	53,703
PLUS SHRINKAGE (30%)	<u>16,111</u>
	69,814
STOCKPILE PIT	22,050
STOCKPILE TOP SOIL (6")	7,335
BERMS	1,373 LF = 445 CY
DITCHES	2,044 LF = 313 CY
DETENTION AREA	4,751 CY
SCREENING BERM	27,464 CY
STOCKPILE MATERIAL	19,693
DISTURBED AREA FROM PAD	9.09 ACRES

NOTE: ALL QUANTITIES ARE IN CUBIC YARDS (UNLESS NOTED)

CUT END SLOPES AT 1:1

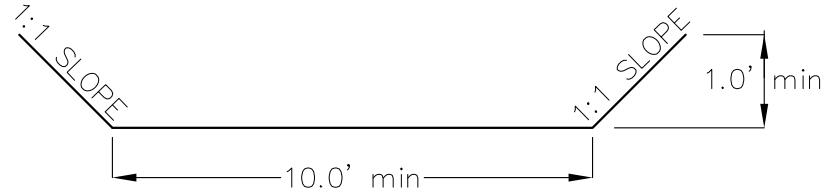
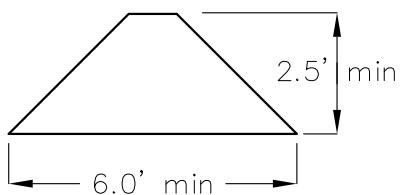
FILL END SLOPES AT 1.5:1

WELL SITE LOCATION

2325' FNL

326' FWL

BERM DETAIL



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Other offices in Minnesota, North Dakota and South Dakota

OASIS PETROLEUM NORTH AMERICA, LLC

QUANTITIES

SECTION 19, T153N, R100W

MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.H.H. Project No.: S13-09-282.06

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

Revision No.	Date	By	Description
REV 1	3/12/14	JJS	MOVED WELLS ON PAD

CROSS SECTIONS

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

"CHALMERS 5300 21-19 11T"

2325 FEET FROM NORTH LINE AND 326 FEET FROM WEST LINE
SECTION 19, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

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SCALE
HORIZ 1"=200'
VERT 1"=50'

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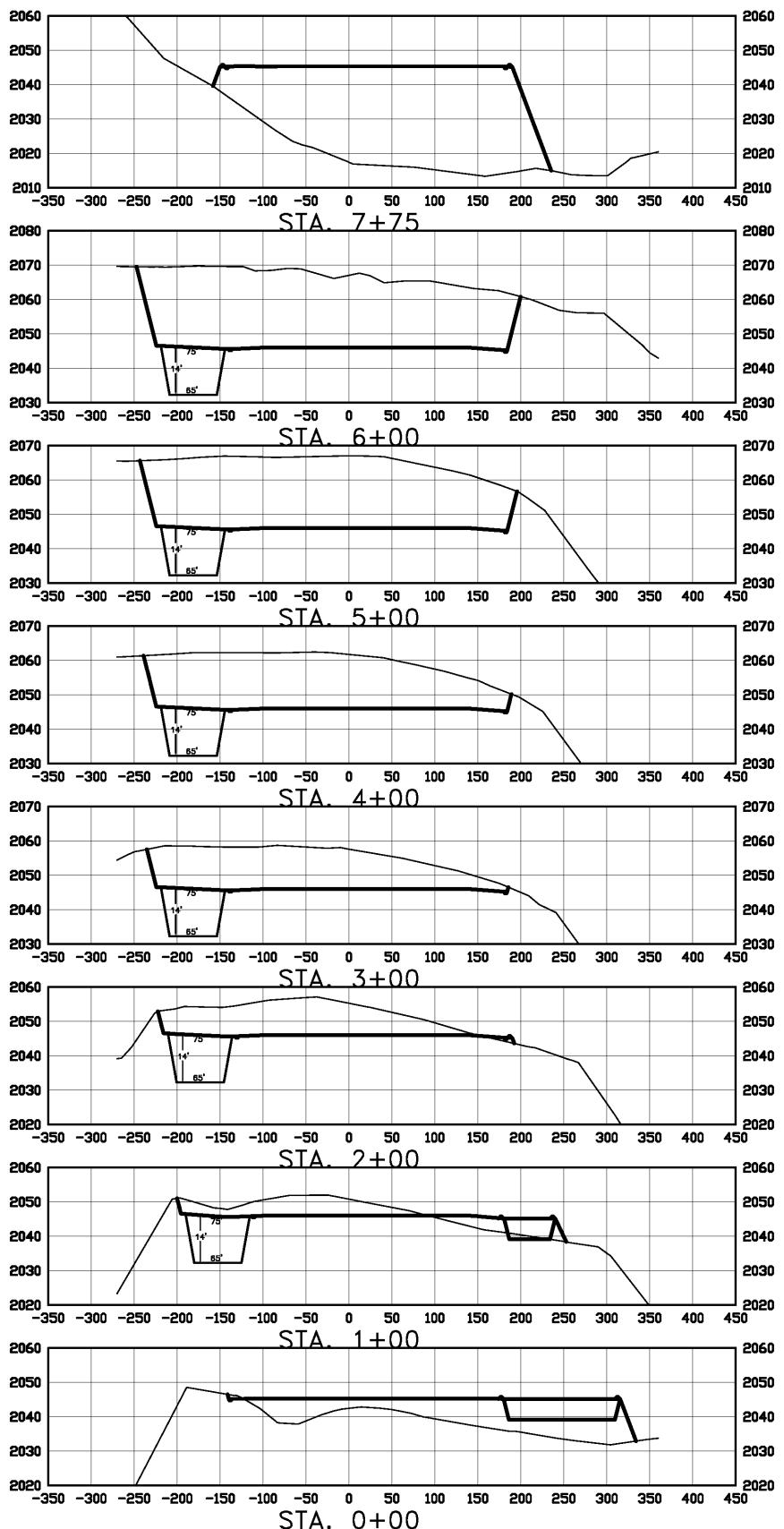
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PAD CROSS SECTIONS
SECTION 19, T153N, R100W

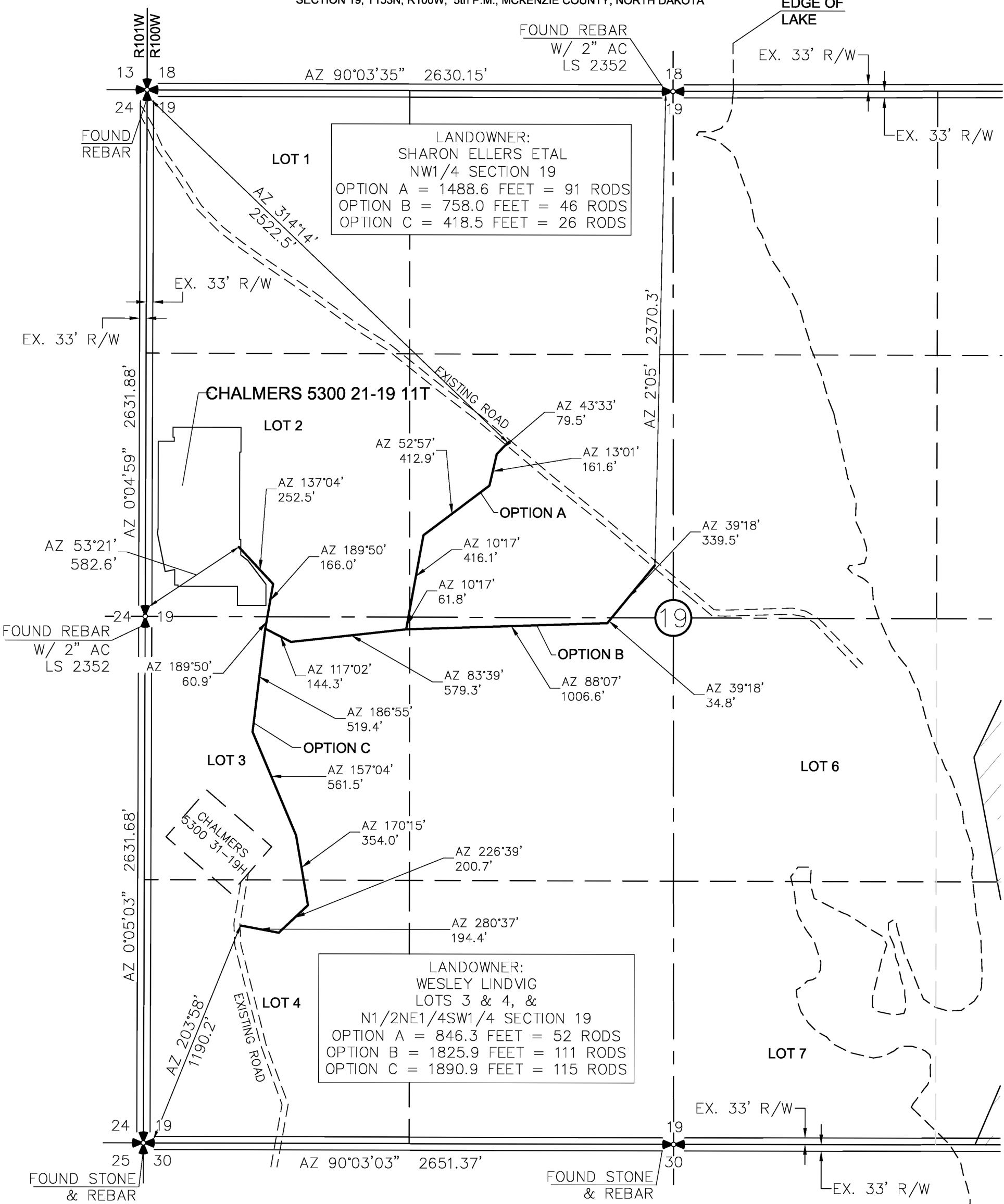
MCKENZIE COUNTY, NORTH DAKOTA

Drawn By:	B.H.H.	Project No.:	S13-09-282-06
Checked By:	D.D.K.	Date:	JAN. 2014

Revision No.	Date	By	Description
REV 1	3/12/14	JJS	MOVED WELLS ON PAD



ACCESS APPROACH
OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"CHALMERS 5300 21-19 11T"
2325 FEET FROM NORTH LINE AND 326 FEET FROM WEST LINE
SECTION 19, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

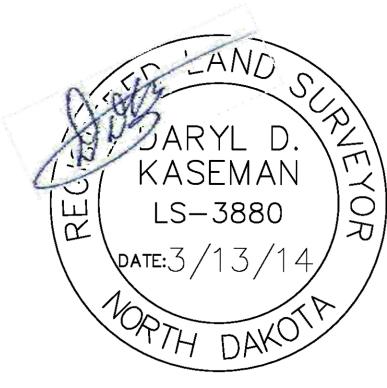


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NOTE: All utilities shown are preliminary only, a complete utilities location is recommended before construction.

A scale bar diagram consisting of a horizontal line with tick marks. The left end is labeled '0' and the right end is labeled '500'. Between these labels are five vertical tick marks. The first four tick marks are black, and the fifth is white. Below the line, the text '1" = 500'' is written.

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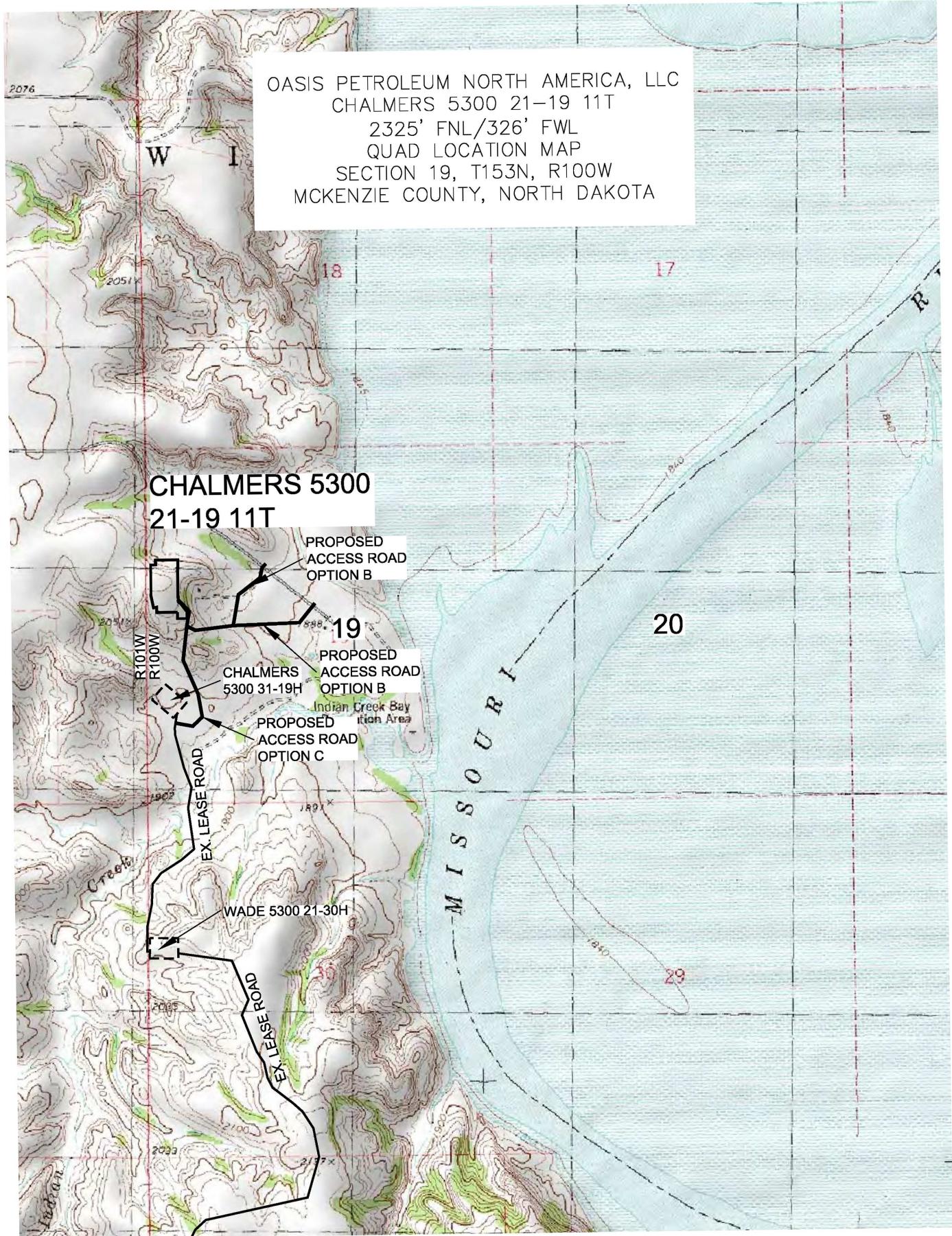
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2023-06-06

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OASIS PETROLEUM NORTH AMERICA, LLC
ACCESS APPROACH

SECTION 19, T153N, R100W		REV 1	3/12/14	JJS	MOVED WELLS ON PAD		
MCKENZIE COUNTY, NORTH DAKOTA							
Drawn By: B.H.H.		Project No.: S13-09-282.06					
Checked By: D.D.K.		Date: JAN 2014		S13-09-282.06	Gasoline	Petroleum	- 7 of 7 Infill Wells for



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OASIS PETROLEUM NORTH AMERICA, LLC
 QUAD LOCATION MAP
 SECTION 19, T153N, R100W
 MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.H.H. Project No.: S13-09-282.06
 Checked By: D.D.K. Date: JAN. 2014

Revision No.	Date	By	Description
REV 1	3/12/14	JJS	MOVED WELLS ON PAD

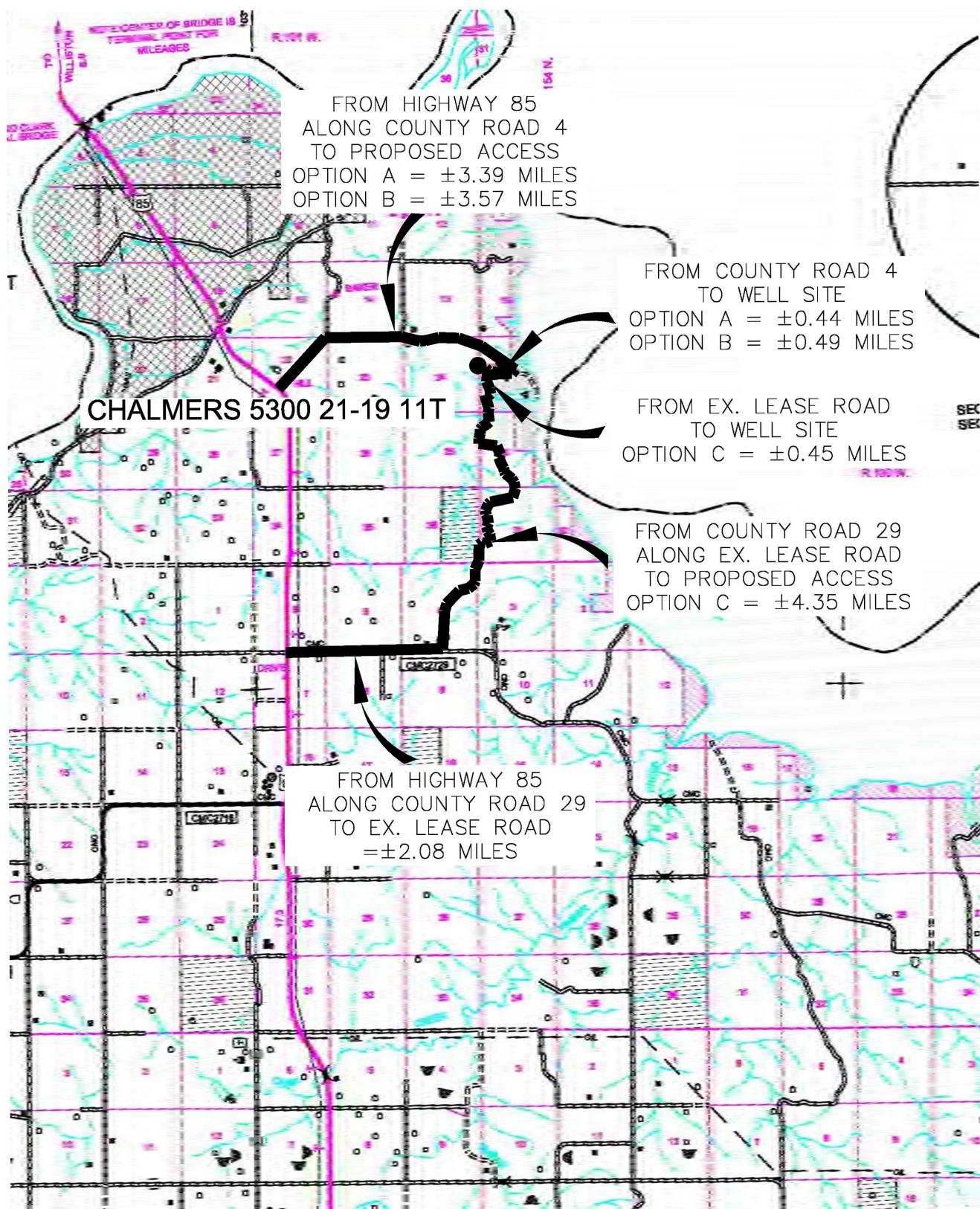


COUNTY ROAD MAP

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

"CHALMERS 5300 21-19 11T"

2325 FEET FROM NORTH LINE AND 326 FEET FROM WEST LINE
SECTION 19, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



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SCALE: 1" = 2 MILE

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OASIS PETROLEUM NORTH AMERICA, LLC
COUNTY ROAD MAP
SECTION 19, T153N, R100W

MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.H.H.	Project No.: S13-09-282-06
Checked By: D.D.K.	Date: JAN. 2014

Revision No.	Date	By	Description
REV 1	3/12/14	JJS	MOVED WELLS ON PAD



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.

April 3, 2014
McKenzie County
Aaron Chisolm – address@co.mckenzie.nd.us

Chalmers 5300 21-19 5T Lot 2 Section 19 T153N R100W
Chalmers 5300 21-19 6B Lot 2 Section 19 T153N R100W
Chalmers 5300 21-19 7T2 Lot 2 Section 19 T153N R100W
Chalmers 5300 21-19 8T Lot 2 Section 19 T153N R100W
Chalmers 5300 21-19 9T2 Lot 2 Section 19 T153N R100W
Chalmers 5300 21-19 10B Lot 2 Section 19 T153N R100W
Chalmers 5300 21-19 11T Lot 2 Sections 19 T153N R100W

Chelsea Covington

Chelsea Covington
Regulatory Assistant
Oasis Petroleum North America, LLC



June 10, 2014

Re: Un-Occupied Trailer House and Seasonal Cabin.

Brandi,

Just to follow up with past conversations about the dwellings east of our proposed Chalmer 5300 21-19 well site. The white trailer is unlivable, it has no water, power or sewer. The cabin is seasonal at best and has not been used for several years. If I can be of further assistance please advise.

Thank you,

A handwritten signature in blue ink, appearing to read "JD DeMorrett".

JD DeMorrett

Sr. Staff Landman for Oasis Petroleum North America, LLC

PO Box 1126 Williston ND- Office 701-577-1600 Fax 701-577-1692