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
APR 08 2016
ND Oil & Gas Division

Well File No.
28599

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

- ☐ Notice of Intent — Approximate Start Date
- ☑ Report of Work Done — Date Work Completed: **March 22, 2016**
- ☐ Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03. — Approximate Start Date

- ☐ Drilling Prognosis
- ☐ Redrilling or Repair
- ☐ Casing or Liner
- ☐ Plug Well
- ☐ Supplemental History
- ☐ Temporarily Abandon
- ☐ Other **Well is now on pump**
- ☐ Spill Report
- ☐ Shooting
- ☐ Acidizing
- ☐ Fracture Treatment
- ☐ Change Production Method
- ☐ Reclamation

Well Name and Number: **Chalmers 5301 44-24 3BR**

Footages	Qtr-Qtr	Section	Township	Range
926 F **S** L **245** F **E** L	**SESE**	**24**	**153 N**	**101 W**

Field	Pool	County
Baker	**Bakken**	**McKenzie**

24-HOUR PRODUCTION RATE

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

Name of Contractor(s)			
Address	City	State	Zip Code

DETAILS OF WORK

Effective 03/22/2016 the above referenced well is on pump.

End of Tubing: 2-7/8" L-80 tubing @ 8218.46'

Pump: 2-1/2" x 2.0" x 24' insert pump @ 8054.41'

Company	Telephone Number
Oasis Petroleum North America LLC	**281 404-9436**
Address: **1001 Fannin, Suite 1500**	
City: **Houston**	State: **TX** Zip Code: **77002**
Signature	Printed Name: **Jennifer Swenson**
Title: **Regulatory Specialist**	Date: **April 7, 2016**
Email Address: **jswenson@oasispetroleum.com**	

FOR STATE USE ONLY

☑ Received ☐ Approved

Date: 4/26/2016

By: Taylor Roth

Title: TAYLOR ROTH
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)

TH

MAR 2015
RECEIVED
ND OIL & GAS
DIVISION

Well File No.
28599

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

- ☐ Notice of Intent — Approximate Start Date
- ☑ Report of Work Done — Date Work Completed: **January 30, 2015**
- ☐ Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03. — Approximate Start Date

- ☐ Drilling Prognosis
- ☐ Redrilling or Repair
- ☐ Casing or Liner
- ☐ Plug Well
- ☐ Supplemental History
- ☐ Temporarily Abandon
- ☑ Other **Well on pump**
- ☐ Spill Report
- ☐ Shooting
- ☐ Acidizing
- ☐ Fracture Treatment
- ☐ Change Production Method
- ☐ Reclamation

Well Name and Number: **Chalmers 5301 44-24 3BR**

Footages	Qtr-Qtr	Section	Township	Range
926 F **S** L **245** F **E** L	**SESE**	**24**	**153 N**	**101 W**

Field	Pool	County
Baker	**Bakken**	**McKenzie**

24-HOUR PRODUCTION RATE

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

Name of Contractor(s)			
Address	City	State	Zip Code

DETAILS OF WORK

Effective 1/30/2015 the above referenced well is on pump.

End of Tubing: 2-7/8" L-80 tubing @ 9999'

Pump: 2-1/2" x 2.0" x 24' insert pump @ 9758'

Company	Telephone Number
Oasis Petroleum North America LLC	**281 404-9652**

Address		
1001 Fannin, Suite 1500		
City: **Houston**	State: **TX**	Zip Code: **77002**

Signature	Printed Name
VS	**Victoria Siemieniewski**
Title: **Regulatory Specialist**	Date: **March 19, 2015**
Email Address: **vsiemieniewski@oasispetroleum.com**	

FOR STATE USE ONLY

☑ Received	☐ Approved
Date: 4-1-2015	
By:	
Title: JARED THUNE Engineering Technician	

Industrial Commission of North Dakota
Oil and Gas Division
Verbal Approval To Purchase and Transport Oil

Well or Facility No **28599**

Tight Hole **Yes**

OPERATOR

Operator	Representative	Rep Phone
OASIS PETROLEUM NORTH AMERICA LL	**Kelly Johnson**	**(701) 580-0524**

WELL INFORMATION

Well Name: **CHALMERS 5301 44-24 3BR**

Inspector: **Richard Dunn**

Well Location	QQ	Sec	Twp		Rng	
	SESE	**24**	**153**	**N**	**101**	**W**

County: **MCKENZIE**

Field: **BAKER**

Footages: **926** Feet From the **S** Line; **245** Feet From the **E** Line

Pool: **BAKKEN**

Date of First Production Through Permanent Wellhead **12/12/2014** **This Is Not The First Sales**

PURCHASER / TRANSPORTER

Purchaser	Transporter
OASIS PETROLEUM MARKETING LLC	**PRAIRIE FIELD SERVICES, LLC**

TANK BATTERY

Central Tank Battery Number :

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

ESTIMATED BARRELS TO BE SOLD	ACTUAL BARRELS SOLD	DATE
5000 BBLS	**240** BBLS	**12/12/2014**
BBLS	BBLS	
BBLS	BBLS	
BBLS	BBLS	
BBLS	BBLS	
BBLS	BBLS	
BBLS	BBLS	
BBLS	BBLS	
BBLS	BBLS	

DETAILS

Start Date	**12/12/2014**
Date Approved	**12/12/2014**
Approved By	**Jessica Gilkey**

WELL COMPLETION OR RECOMPLETION REPORT - FORM 6

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

JAN 2015 RECEIVED ND OIL & GAS DIVISION

Well File No. **28599**

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

Designate Type of Completion
☑ Oil Well ☐ EOR Well ☐ Recompletion ☐ Deepened Well ☐ Added Horizontal Leg ☐ Extended Horizontal Leg
☐ Gas Well ☐ SWD Well ☐ Water Supply Well ☐ Other:

Well Name and Number	Spacing Unit Description
Chalmers 5301 44-24 3BR	**Sec. 19 & 20 T 153N R100W**

Operator	Telephone Number	Field
Oasis Petroleum North America	**(281) 404-9591**	**Baker**

Address	Pool
1001 Fannin, Suite 1500	**Bakken**

City	State	Zip Code	Permit Type
Houston	**TX**	**77002**	☐ Wildcat ☑ Development ☐ Extension

LOCATION OF WELL

At Surface	Qtr-Qtr	Section	Township	Range	County
926 F S L 245 F E L	**SESE**	**24**	**153 N**	**101 W**	**MCKENZIE**

Spud Date	Date TD Reached	Drilling Contractor and Rig Number	KB Elevation (Ft)	Graded Elevation (Ft)
June 25, 2014	**September 17, 2014**	**NABORS B25**	**1995**	**1970**

Type of Electric and Other Logs Run (See Instructions)
MWD/GR from KOP to TD; CBL from intermediate TD to surface

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

Well Bore	String Type	String Size (Inch)	Top Set (MD Ft)	Depth Set (MD Ft)	Hole Size (Inch)	Weight (Lbs/Ft)	Anchor Set (MD Ft)	Packer Set (MD Ft)	Sacks Cement	Top of Cement
Surface Hole	**Surface**	**9 5/8**	**0**	**6016**	**13 1/2**	**36**			**967**	**0**
Vertical Hole	**Intermediate**	**7**	**0**	**10916**	**8 3/4**	**32**			**1341**	**6009**
Lateral1	**Liner**	**4 1/2**	**10063**	**20808**	**6**	**13.5**				

PERFORATION & OPEN HOLE INTERVALS

Well Bore	Well Bore TD Drillers Depth (MD Ft)	Completion Type	Open Hole/Perforated Interval (MD,Ft) Top	Bottom	Kick-off Point (MD Ft)	Top of Casing Window (MD Ft)	Date Perf'd or Drilled	Date Isolated	Isolation Method	Sacks Cement
Lateral1	**20833**	**Perforations**	**10916**	**20833**	**10121**		**10/30/2014**			

PRODUCTION

Current Producing Open Hole or Perforated Interval(s), This Completion, Top and Bottom, (MD Ft)	Name of Zone (If Different from Pool Name)
Lateral 1- 10916-20833	

Date Well Completed (SEE INSTRUCTIONS)	Producing Method	Pumping-Size & Type of Pump	Well Status (Producing or Shut-In)
December 12, 2014	**Flowing**		**Producing**

Date of Test	Hours Tested	Choke Size	Production for Test	Oil (Bbls)	Gas (MCF)	Water (Bbls)	Oil Gravity-API (Corr.)	Disposition of Gas
12/12/2014	**15**	**36 /64**		**864**	**414**	**3690**	°	**Sold**

Flowing Tubing Pressure (PSI)	Flowing Casing Pressure (PSI)	Calculated 24-Hour Rate	Oil (Bbls)	Gas (MCF)	Water (Bbls)	Gas-Oil Ratio
	2100		**1382**	**662**	**5904**	**479**

GEOLOGICAL MARKERS

Formation	MD (Ft)	TVD (Ft)
Dakota	5341	5341
Kibbey Lime	8269	8268
First Charles Salt	8440	8439
UB		
Base Last Salt	9072	9071
Ratcliffe	9118	9117
Mission Canyon	9292	9291
Lodgepole	9850	9849
False Bakken	10754	10584
Scallion		
Upper Bakken	10785	10592
Middle Bakken	10853	10612
Target		

PLUG BACK INFORMATION

Well Bore	Type of Plug	Top (Ft)	Bottom (Ft)	Sacks Cement

CORES CUT

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

Drill Stem Test

Test Date	Formation	Top (Ft)	Bottom (Ft)	BH Temp (°F)	CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)

Drill Pipe Recovery

Sample Chamber Recovery

Test Date	Formation	Top (Ft)	Bottom (Ft)	BH Temp (°F)	CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)

Drill Pipe Recovery

Sample Chamber Recovery

Test Date	Formation	Top (Ft)	Bottom (Ft)	BH Temp (°F)	CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)

Drill Pipe Recovery

Sample Chamber Recovery

Test Date	Formation	Top (Ft)	Bottom (Ft)	BH Temp (°F)	CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)

Drill Pipe Recovery

Sample Chamber Recovery

Test Date	Formation	Top (Ft)	Bottom (Ft)	BH Temp (°F)	CL ppm	H2S ppm	Shut-in 1 (PSIG)	Shut-in 2 (PSIG)

Drill Pipe Recovery

Sample Chamber Recovery

Well Specific Stimulations

Date Stimulated 10/30/2014	Stimulated Formation Bakken	Top (Ft) 10910	Bottom (Ft) 20833	Stimulation Stages 36	Volume 206015	Volume Units Barrels

Type Treatment Sand Frac	Acid %	Lbs Proppant 4076819	Maximum Treatment Pressure (PSI) 9177	Maximum Treatment Rate (BBLS/Min) 75.0

Details
40/70 Ceramic: 1513408
30/50 Ceramic: 2259661
100 mesh: 303750

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 **01/08/2015**
Signature	Printed Name **Jennifer Swenson**	Title **Regulatory Assistant**

TH

AUTHORIZATION TO PURCHASE AND TRANSPORT OIL FROM LEASE – Form 8

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

DEC 2014 RECEIVED ND OIL & GAS DIVISION

Well File No.
28599
NDIC CTB No.
220407

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.
PLEASE SUBMIT THE ORIGINAL AND FOUR COPIES.

Well Name and Number	Qtr-Qtr	Section	Township	Range	County
CHALMERS 5301 44-24 3BR	SESE	24	153	101	Mckenzie

Operator	Telephone Number	Field
Oasis Petroleum North America LLC	(281) 404-9573	BAKER

Address	City	State	Zip Code
1001 Fannin, Suite 1500	Houston	TX	77002

Name of First Purchaser	Telephone Number	% Purchased	Date Effective
Oasis Petroleum Marketing LLC	(281) 404-9627	100%	December 12, 2014

Principal Place of Business	City	State	Zip Code
1001 Fannin, Suite 1500	Houston	TX	77002

Field Address	City	State	Zip Code

Transporter	Telephone Number	% Transported	Date Effective
Hiland Crude, LLC	(580) 616-2058	75%	December 12, 2014

Address	City	State	Zip Code
P.O. Box 3886	Enid	OK	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	% Transported	Date Effective
Prairie Field Services, LLC	25%	December 12, 2014
Other Transporters Transporting From This Lease	% Transported	Date Effective
		December 12, 2014

Comments

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records.

Date: December 18, 2014

Signature	Printed Name	Title
	Brianna Salinas	Marketing Assistant

Above Signature Witnessed By:

Signature	Printed Name	Title
	Dina Barron	Mktg. Contracts Administrator

FOR STATE USE ONLY

Date Approved	JAN 16 2015
By	
Title	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)

RECEIVED
OCT 2014
ND OIL & GAS DIVISION

Well File No.
28599

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

☑ Notice of Intent	Approximate Start Date **October 22, 2014**	☐ Drilling Prognosis	☐ Spill Report
☐ Report of Work Done	Date Work Completed	☐ Redrilling or Repair	☐ Shooting
☐ 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	☐ Casing or Liner	☐ Acidizing
		☐ Plug Well	☐ Fracture Treatment
		☐ Supplemental History	☐ Change Production Method
		☐ Temporarily Abandon	☐ Reclamation
		☑ Other	**Change well status to CONFIDENTIAL**

Well Name and Number					
Chalmers 5301 44-24 3BR					
Footages	Qtr-Qtr	Section	Township	Range	
926 F S L 245 F E L	**SESE**	**24**	**153 N**	**101 W**	
Field	Pool	County			
Baker	**Bakken**	**McKenzie**			

24-HOUR PRODUCTION RATE

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

Name of Contractor(s)			
Address	City	State	Zip Code

DETAILS OF WORK

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

Company	Telephone Number
Oasis Petroleum North America LLC	**281-404-9436**
Address	
1001 Fannin, Suite 1500	
City	State / Zip Code
Houston	**TX 77002**
Signature	Printed Name
	Jennifer Swenson
Title	Date
Regulatory Assistant	**October 22, 2014**
Email Address	
jswenson@oasispetroleum.com	

FOR STATE USE ONLY

☐ Received	☑ Approved
Date	10/24/14
By	Alice D. Webster
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)

OCT 2014 RECEIVED ND OIL & GAS DIVISION

CTB
Well File No. 220407-01

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

- [x] Notice of Intent — Approximate Start Date: **October 15, 2014**
- [ ] Report of Work Done — Date Work Completed:
- [ ] Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03. — Approximate Start Date:

- [ ] Drilling Prognosis
- [ ] Redrilling or Repair
- [ ] Casing or Liner
- [ ] Plug Well
- [ ] Supplemental History
- [ ] Temporarily Abandon
- [ ] Spill Report
- [ ] Shooting
- [ ] Acidizing
- [ ] Fracture Treatment
- [ ] Change Production Method
- [ ] Reclamation
- [x] Other: **Central production facility-commingle prod**

Well Name and Number: **(see details)**

Footages	Qtr-Qtr	Section	Township	Range
F L F L		**20**	**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

DETAILS OF WORK

Oasis Petroleum North America LLC requests approval to commingle oil and gas in a central production facility known as: 5300 19-20 CTB 2 with common ownership for the following wells:

Well File #28342 Chalmes 5301 44-24 2TR SESE Sec 24-153N-R101W API 3305305924
Well File #20407 Chalmers 5301 31-19H LOT3 Sec 19-153N-101W API 33005303472
Well File #28599 Chalmers 5301 44-24 3BR SESE Sec 24 153N-101W API 3305306010
Well File #28600 Chalmers 5301 44-24 4T2R SESE Sec 21 153N-101W API 3305306011

Please find the following attachments:
1. A schematic drawing of the facility which diagrms the testing, treating, routing, and transferring of production. 2. A plat showing the location of the central facility 3. Affidavit of title indicating common ownership.Oasis will allocate production measured at the central production facility to the various wells on the basis of isolated production tests utilizing oil, gas and water meters on a test seperator at the central production facility. Oasis will measure the production from each well separately each month for a minimum of three days. Oasis believes that such allocation will result in an accurate determination of production from each well. Tank vapor gas is being recovered and burned by a 98% DRE enclosed combuster

Company	Telephone Number
Oasis Petroleum North America LLC	**281-404-9591**

Address		
1001 Fannin, Suite 1500		
City: **Houston**	State: **TX**	Zip Code: **77002**

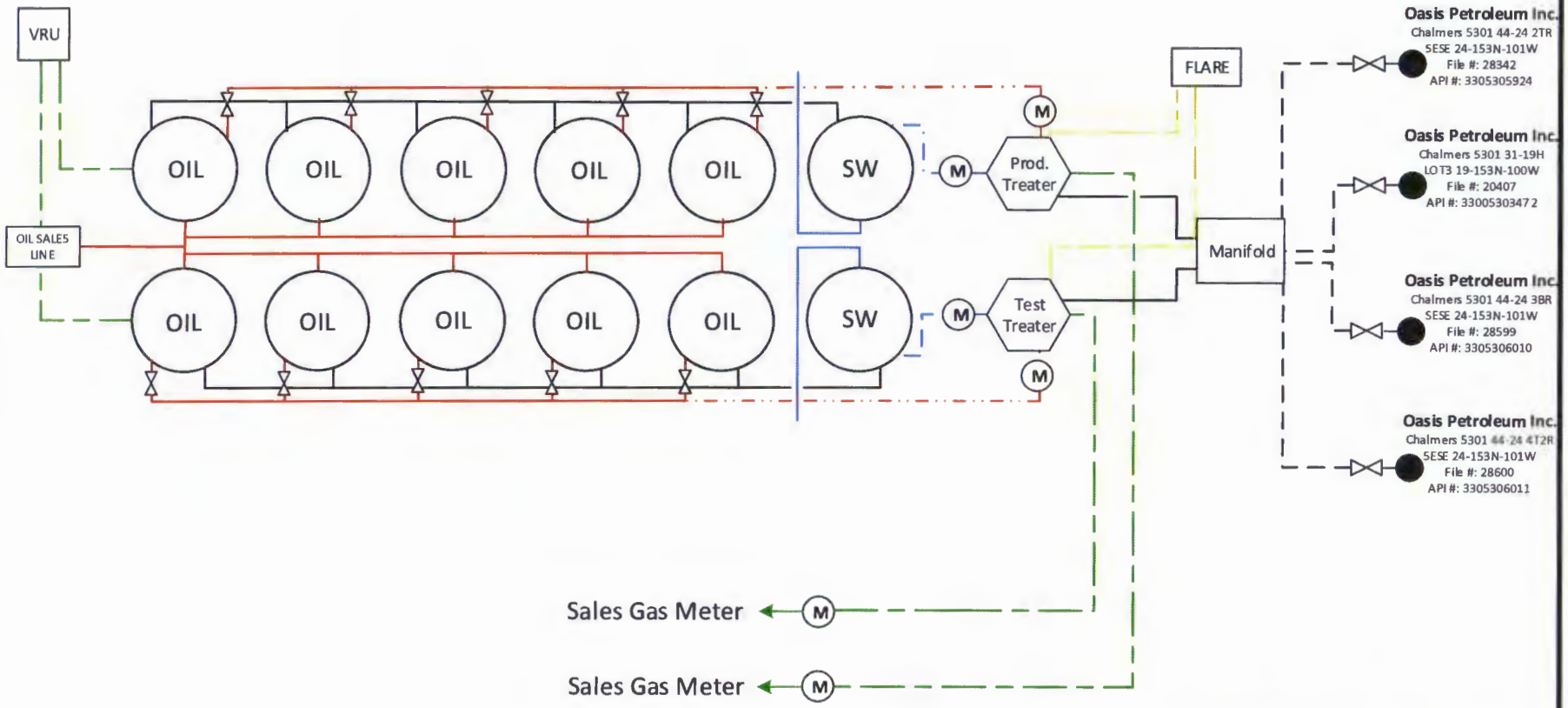
Signature	Printed Name
Chelsea Covington	**Chelsea Covington**
Title: **Regulatory Assistant**	Date: **October 13, 2014**

Email Address: **ccovington@oasispetroleum.com**

FOR STATE USE ONLY

- [ ] Received
- [x] Approved

Date: 10-17-2014
By: David Tabor
Title: **PETROLEUM ENGINEER**

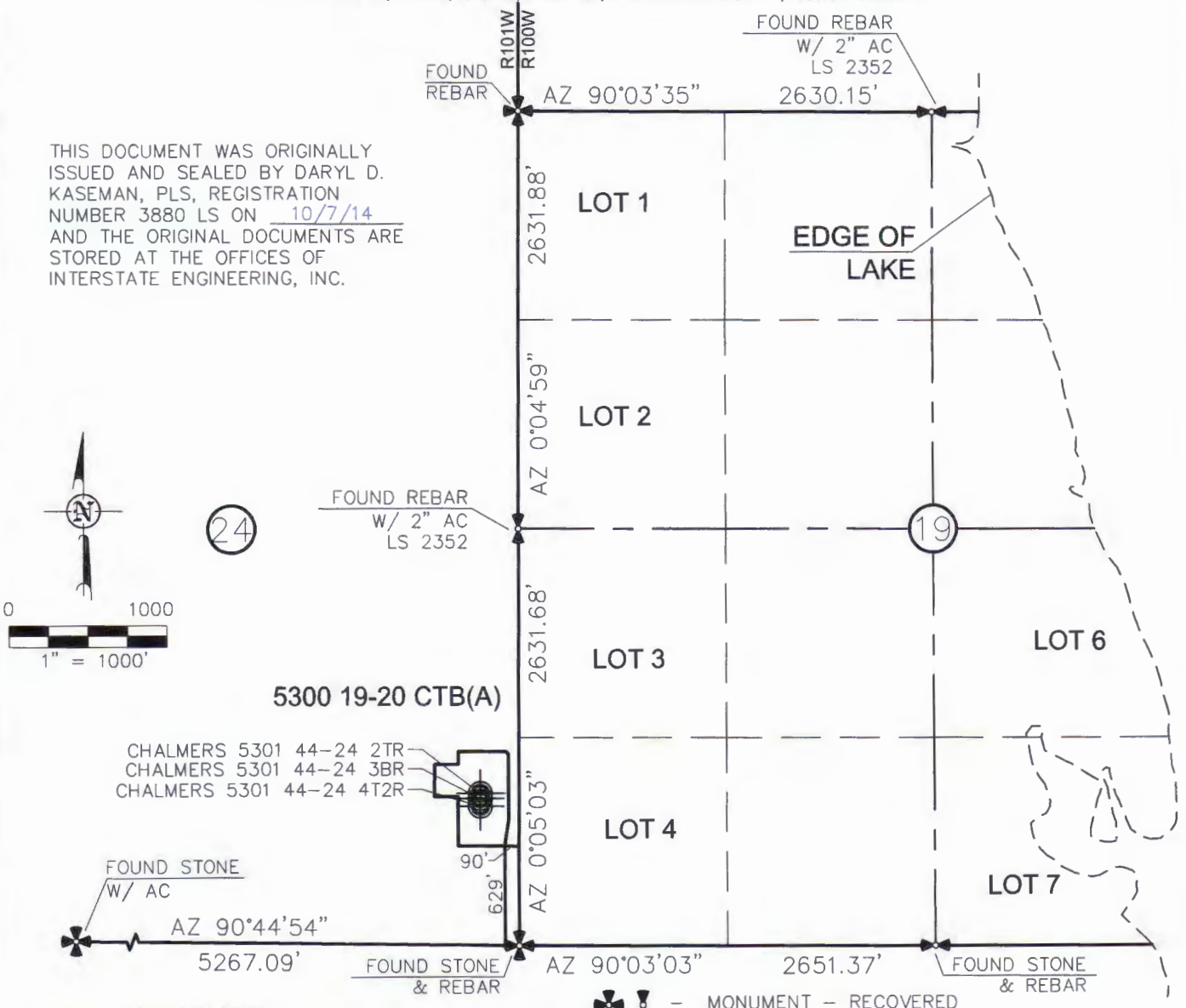


CHALMERS 5300 19-20 CENTRAL TANK BATTERY 2

DATE	REV.	BY	APPR.	SCALE
SEPTEMBER 23, 2014	0	LEE		NA
LOCATION		FIELD		
NORTH DAKOTA		BAKER		

BATTERY LOCATION PLAT

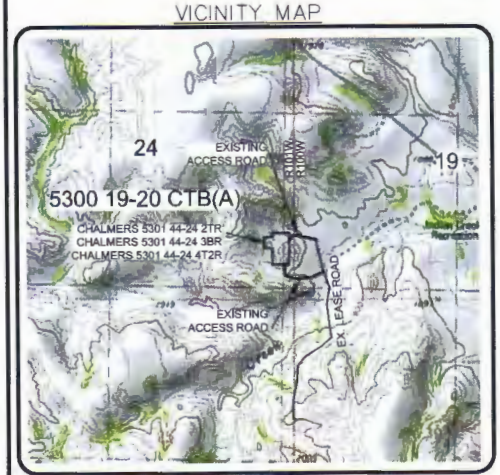
OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"5300 19-20 CTB(A)"
SECTION 24, T153N, R101W, 5TH P.M., MCKENZIE COUNTY, NORTH DAKOTA



THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY DARYL D. KASEMAN, PLS, REGISTRATION NUMBER 3880 LS ON 10/7/14 AND THE ORIGINAL DOCUMENTS ARE STORED AT THE OFFICES OF INTERSTATE ENGINEERING, INC.

● – MONUMENT – RECOVERED
○ – MONUMENT – NOT RECOVERED

VICINITY MAP



STAKED ON 9/3/2013
VERTICAL CONTROL DATUM WAS BASED UPON GPS 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.

REGISTERED LAND SURVEYOR
DARYL D. KASEMAN
LS-3880
DATE: 10/7/14
NORTH DAKOTA

DARYL D. KASEMAN LS-3880

1/5
SHEET NO.

INTERSTATE ENGINEERING
Professionals you need, people you trust

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

OASIS PETROLEUM NORTH AMERICA, LLC
BATTERY LOCATION PLAT
SECTION 24, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA

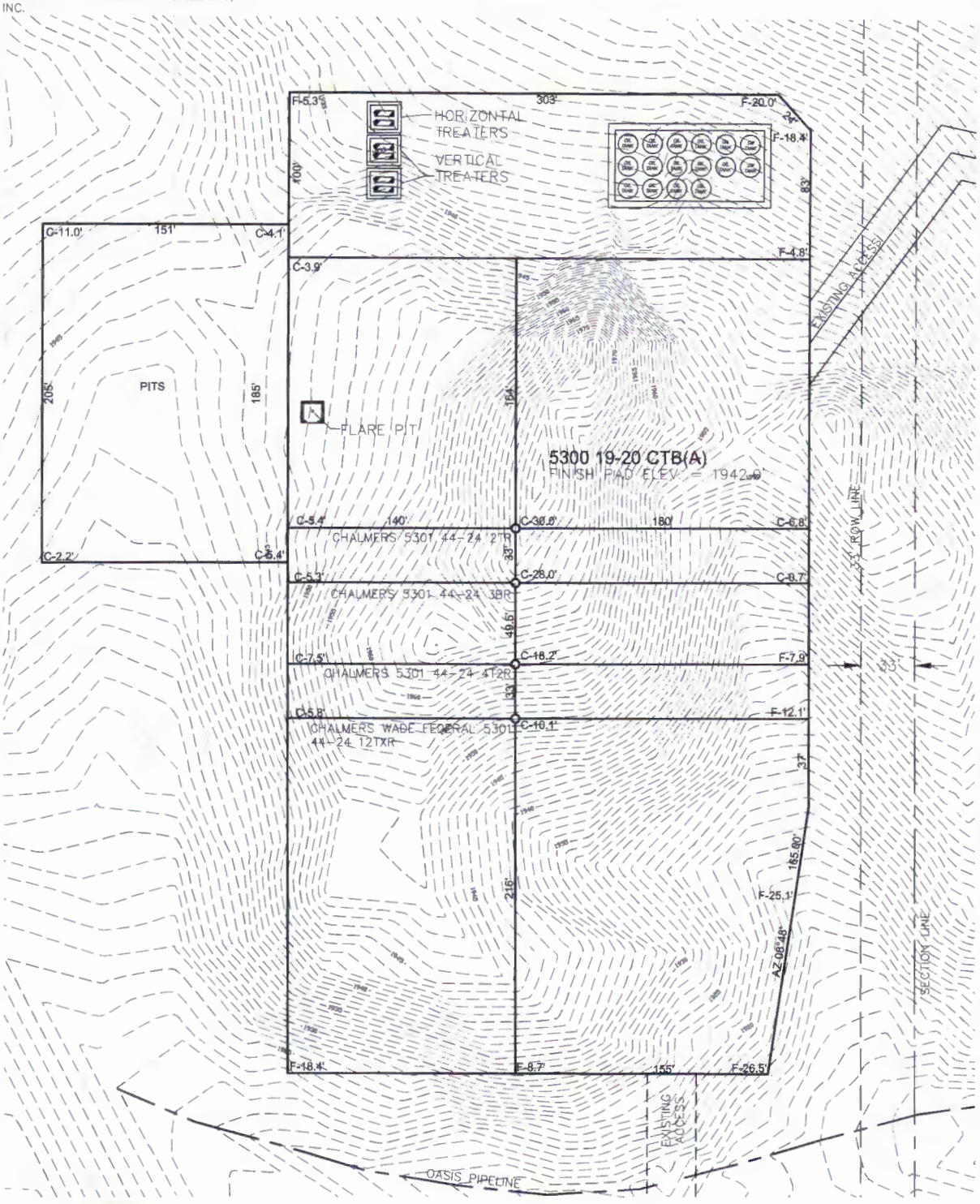
Drawn By: J.D.M. | Project No.: S14-09-241
Checked By: D.D.K. | Date: OCT. 2014

Revision No.	Date	By	Description

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY DARYL D. KASEMAN, PLS, REGISTRATION NUMBER 3880 ON 10/7/14 AND THE ORIGINAL DOCUMENTS ARE STORED AT THE OFFICES OF INTERSTATE ENGINEERING, INC.

PAD LAYOUT

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"5300 19-20 CTB(A)"
SECTION 24, T153N, R101W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



REGISTERED LAND SURVEYOR
DARYL D. KASEMAN
LS-3880
DATE: 10/7/14
NORTH DAKOTA

0 60
1" = 60'

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

INTERSTATE ENGINEERING
Professionals you need, people you trust
Interstate Engineering, Inc.
P.O. Box 648
425 East Main Street
Sidney, Montana 59270
Ph (406) 433-5617
Fax (406) 433-5618
www.interstateeng.com
Other offices in Minnesota, North Dakota and South Dakota

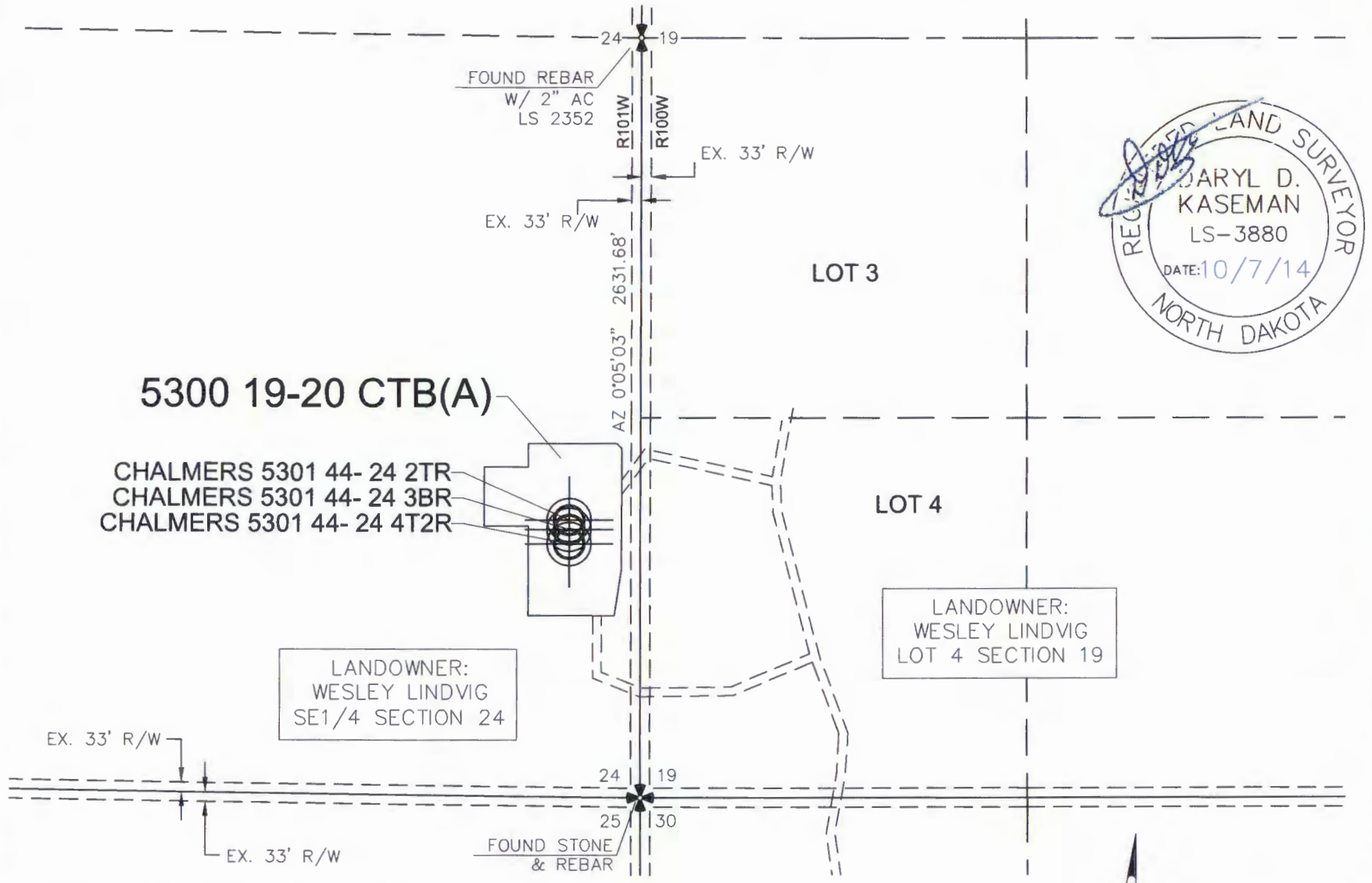
OASIS PETROLEUM NORTH AMERICA, LLC
PAD LAYOUT
SECTION 24, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: J.D.M. | Project No.: 514-09-241
Checked By: D.D.K. | Date: OCT 2014

Revision No.	Date	By	Description

ACCESS APPROACH

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"5300 19-20 CTB(A)"
SECTION 24, T153N, R101W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



REGISTERED LAND SURVEYOR
DARYL D.
KASEMAN
LS-3880
DATE: 10/7/14
NORTH DAKOTA

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

Revision No.	Date	By	Description

OASIS PETROLEUM NORTH AMERICA, LLC
ACCESS APPROACH
SECTION 24, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: J.D.M. | Project No.: S14-09-241
Checked By: D.D.K. | Date: OCT. 2014

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425 East Main Street
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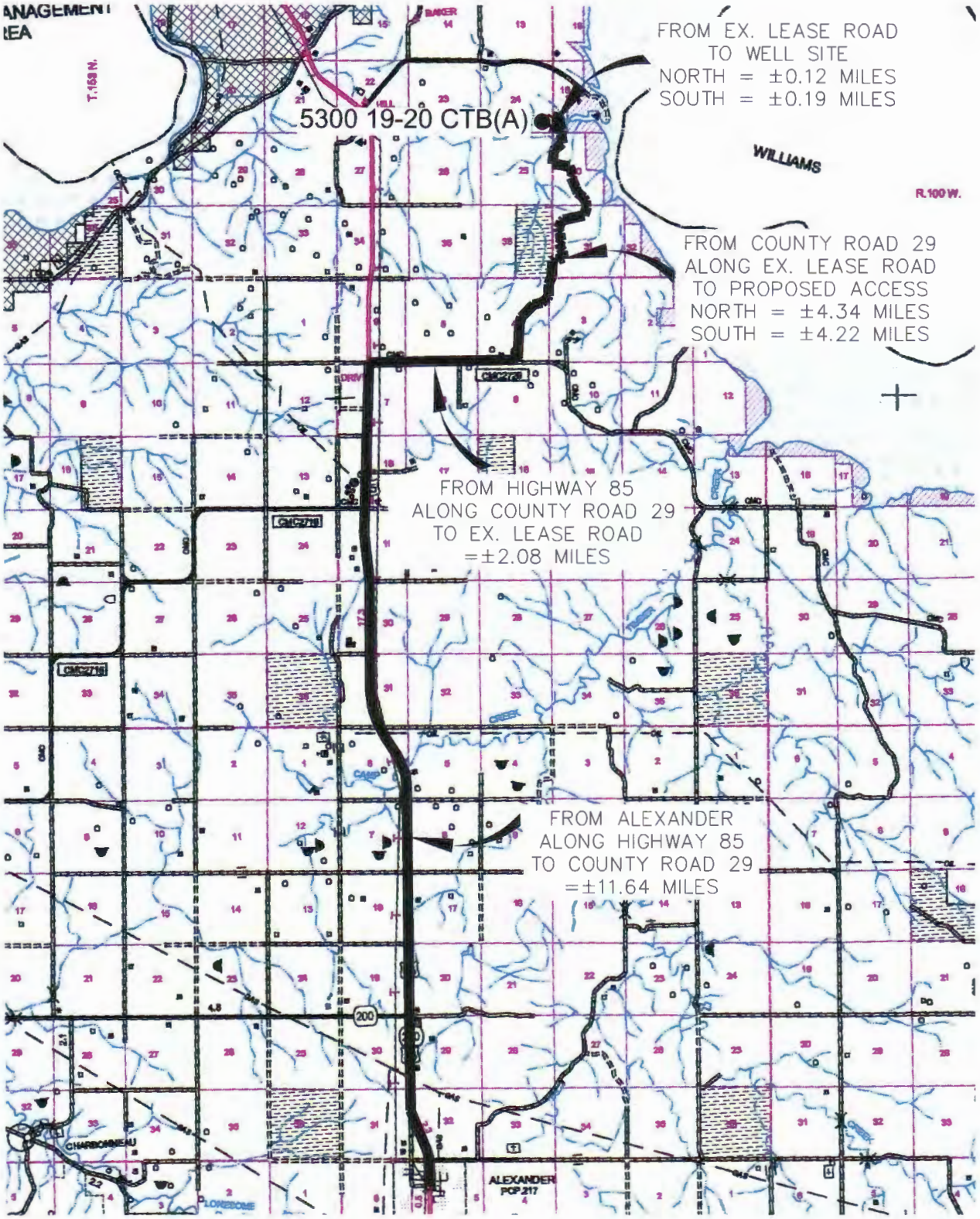
OASIS PETROLEUM NORTH AMERICA, LLC
QUAD LOCATION MAP
SECTION 24, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: J.D.M. | Project No.: S14-09-251
Checked By: D.D.K. | Date: OCT 2014

Revision No.	Date	By	Description

COUNTY ROAD MAP

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"5300 19-20 CTB(A)"
SECTION 24, T153N, R101W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



SCALE: 1" = 2 MILE

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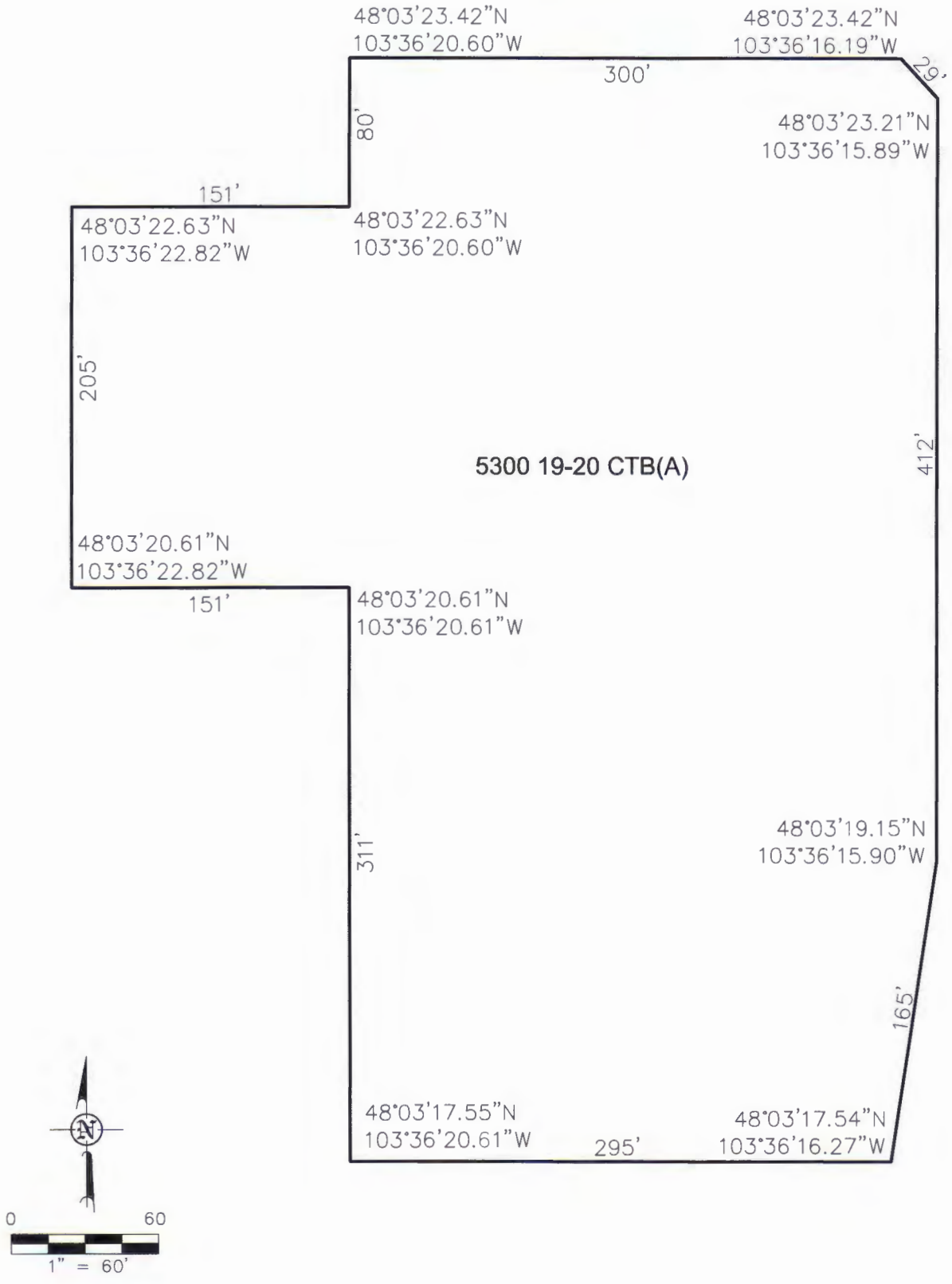
OASIS PETROLEUM NORTH AMERICA, LLC
COUNTY ROAD MAP
SECTION 24, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: J.D.M. | Project No.: S14-09-241
Checked By: D.D.K. | Date: OCT 2014

Revision No.	Date	By	Description

LAT/LONG PAD CORNERS



COMMINGLING AFFIDAVIT

STATE OF NORTH DAKOTA)
) ss.
COUNTY OF WILLIAMS)

The under signed, Alexandra Haley, of lawful age, being first duly sworn on her oath states that she is a duly authorized agent of Oasis Petroleum North America LLC, and that she has personal knowledge of the facts hereinafter set forth to make this Affidavit.

1. Sections 19 & 20, Township 153 North, Range 100 West, Williams County North Dakota constitute a spacing unit in accordance with the applicable orders for the Bakken pool.

2. Three wells have been drilled in the spacing unit, which are known as the Chalmers 5300 44-24 2TR, Chalmers 5300 44-24 3BR, and Chalmers 5300 44-24 4T2R.

3. By NDIC Order 19005 dated May 11, 2012 and recorded in Williams County as Document No. 737164, all oil and gas interest within the aforementioned spacing unit were pooled.

4. All Working Interests, Royalty Interests and Overriding Royalty Interests in the Chalmers 5300 44-24 2TR, Chalmers 5300 44-24 3BR, and Chalmers 5300 44-24 4T2R will be in common.

Dated this 15th day of September, 2014

Alexandra Haley
Landman

STATE OF TEXAS)
) ss.
COUNTY OF HARRIS)

Subscribed to and sworn before me this 15th day of September, 2014

JEFFREY E. THOMPSON
Notary Public, State of Texas
My Commission Expires
February 14, 2018

Notary Public
State of Texas
My Commission Expires: 2-14-18

Oasis Petroleum North America, LLC

Chalmers 5301 44-24 3BR

926' FSL & 245' FSL
SE SE Section 24, T153N, R101W
Baker Field / Middle Bakken
McKenzie County, North Dakota

BOTTOM HOLE LOCATION:
307' south & 10,439' east of surface location or approx.
619' FSL & 320' FEL, SE SE Section 20, T153N, R100W

Prepared for:
Clay Hargett
Oasis Petroleum North America, LLC
1001 Fannin Street, Suite 1500
Houston, Texas 77002

Prepared by:
Hannah Thatcher, Daniel Haynes, Kate Schwehr
PO Box 80507; Billings, MT 59108
(406) 259-4124
geology@sunburstconsulting.com
www.sunburstconsulting.com

WELL EVALUATION

Chalmers 5301 44-24 3BR

Figure 1: Nabors B25 drills the Oasis Petroleum North America Chalmers 5301 44-24 3BR on July 3, 2014, south of Williston in McKenzie County, North Dakota. (Kate Schwehr, wellsite geologist)

INTRODUCTION

The Oasis Petroleum North America, LLC Chalmers 5301 44-24 3BR well [SE SE Section 24, T153N, R101W] is located approximately 30 miles south of Williston, North Dakota. The horizontal well was spud on June 11, 2014 and represents a continuation of Oasis Petroleum's development of the Bakken Formation within Baker Field. The Chalmers 3BR was planned to drill an approximately 9,953' lateral along a proposed azimuth of 91.52°. The well bore will be enhanced for production by multistage fracture stimulation.

OFFSET CONTROL INFORMATION

The Oasis Chalmers 5301 44-24 2TR [SE SE Sec. 24, T153N, R101W] is located 33' north of the Chalmers 5301 44-24 3BR on the same pad. The offset was spud on May 9, 2014. The Oasis Chalmers 5300 31-19H [NW SW Sec. 19, T153N, R100W] is located approximately 0.16 miles northeast of the subject well. The Chalmers 5300 31-19H was spud on the first of September 2011. The Missouri Basin Well Lynn 1 was spud on the 27th of April 2004 and is located 1.83 miles northwest [SW NW Sec. 23, T153N, R101W].

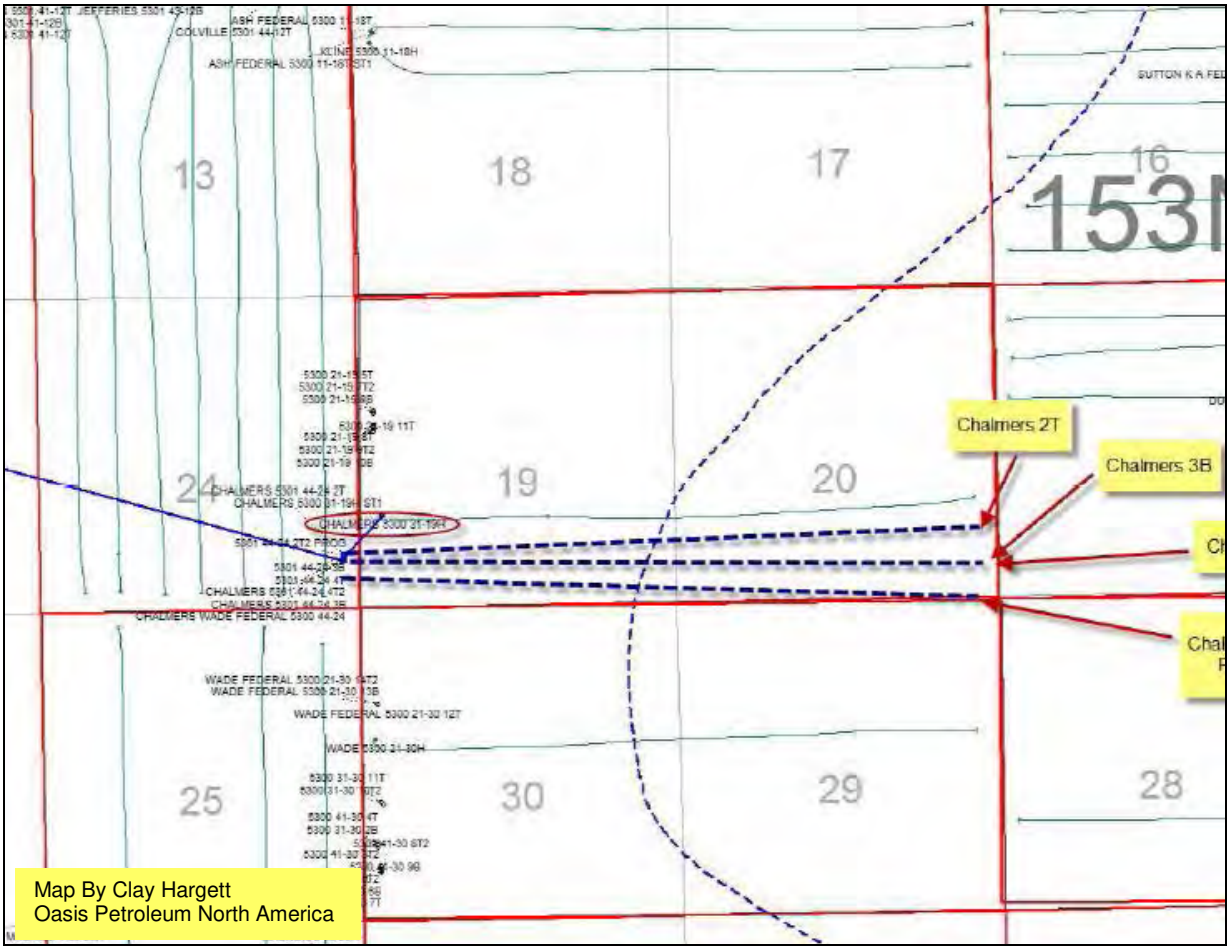


Figure 2: Offsetting control wells in relation to the Chalmers 5301 44-24 3BR well.

GEOLOGIC EVALUATION

Methods:

Geologic supervision of the Chalmers 5301 44-24 3BR was provided by Sunburst Consulting, Inc. with two well site geologists. A digital gas detector and chromatograph were interfaced with a Pason electronic data recorder system. The unit of measure for gas on this well was units (u), which was defined as 100 units equaling 1% methane equivalent in air. The EDR provided drill rate, on-off bottom and pump strokes to the gas detection computer and received total gas information from Sunburst for viewing around location. Lagged samples were caught by the rig

crew in 30' intervals from 8,200' MD to 10,780' MD, 10' intervals from 10,780' MD to 10,939' MD, and 30' intervals from 10,939' MD to 20,833' TD. Wet and dry cuttings were examined under a tri-ocular microscope and complete lithologic descriptions and sampling intervals are provided in the lithology document within this evaluation. The set of dry cuttings collected during the duration of the well were sent to the State of North Dakota. Evidence of light hydrocarbons present in the drilling fluid was reported by the gas chromatography equipment and documented on the mud log presented with this report.

Zones of Interest:

The Mission Canyon Formation (Mississippian; Madison Group) was drilled at 9,291' TVD (-7,323') and is comprised largely of light gray lime mudstone followed by gray to tan earthy textured argillaceous lime mudstone. Shows within the Mission Canyon ranged from 20 to 94 units against 9.8 ppg mud.

Figure 3 & 4: Wet cutting of the Lodgepole Formation (left) and False Bakken sub-interval (right) at 10X.

The top of the Lodgepole Formation was logged at 9,849' TVD (-7,881'). In general the Lodgepole can be described as a medium to dark gray brown argillaceous lime mudstone with a crystalline texture and trace amounts of disseminated pyrite (Figure 3). The False Bakken (Carrington Shale), drilled at 10,584' TVD (-8,616'), is comprised of very dark brown to black, slightly pyritic shale with an earthy texture, and was found to be soft to firm (Figure 4). Strong hydrocarbon shows in the lower 100' of the Lodgepole were as high as 920 total gas units; suggest that some of the oil and gas from the Upper Bakken Shale may be exploiting fractures thought to exist in the Lower Lodgepole.

The Bakken Formation (Devonian – Mississippian) has four formal members, an upper and lower black, fissile, organic-rich pyritic shale, separated by an arenaceous limestone, siltstone and silty sandstone middle member. These three members overlay a silty shale or siltstone of the Pronghorn Member toward the basin depositional center. The Upper Bakken Shale was drilled at 10,592' TVD (-8,624') with sample returns typically described as black, carbonaceous, *petroliferous* shale with trace amounts of disseminated pyrite (Figure 5). The Middle Bakken, penetrated at 10,612' TVD (-8,644'), consists of a varying thickness and sequence of interbedded

siltstone, limestone and silty sandstone (Figures 6 & 7). *Trace spotty light brown oil staining* was common.

Figure 5, 6 & 7: Wet cuttings of the Upper Bakken Shale (left), Middle Bakken siltstone (center) and Middle Bakken silty sandstone (right) at 10X (photos by Kate Schwehr, wellsite geologist).

Geo-steering:

Kick-off point for the curve was established from the isopach of the "base last salt" marker to the Middle Bakken "target" in the offset wells. The Chalmers 5301 44-24 2TR was used as the primary offset through the vertical and curve sections. While drilling the curve, measured gamma ray signatures were compared to those of the three offsets and aided in the landing of the curve. The landing target was confirmed by the depth of the False Bakken, which was consistent with the offset wells. The curve was successfully landed within the Middle Bakken Member at a depth of 10,939' MD (10,621' TVD) placing the well bore approximately 9' below the top of the Middle Bakken Formation. Directional tools were then pulled out of the hole and a string of 7" casing was set (10,898' MD) and then cemented by Schlumberger.

Samples from the target zone varied in porosity, oil staining, color, cementation, and pyrite content. Stratigraphic location in the target zone was based on these sample observations along with gas shows, drill rates and gamma ray values. Severe doglegs were to be avoided so as to obtain the desired vertical section and aid in a successful completion liner run at TD.

The Oasis Petroleum North America, LLC prospect geologist defined the an initial target zone as an 13' zone that began 11' below the base of the Upper Bakken Shale and ended 16' above the top of the Lower Bakken Shale. The target zone consisted of an upper silty sandstone interval reading 90-140 count gamma (A marker). The center of the target interval was comprised of slightly less silty sandstone reading 80-140 count gamma (B marker). Underlying the B Marker was another sandstone layer with gamma readings of 80-120 (C marker). The A-C gamma markers were used for determining depth within the target interval and plotted on the Chalmers 5301 44-24 3BR dip profile (Figure 9).

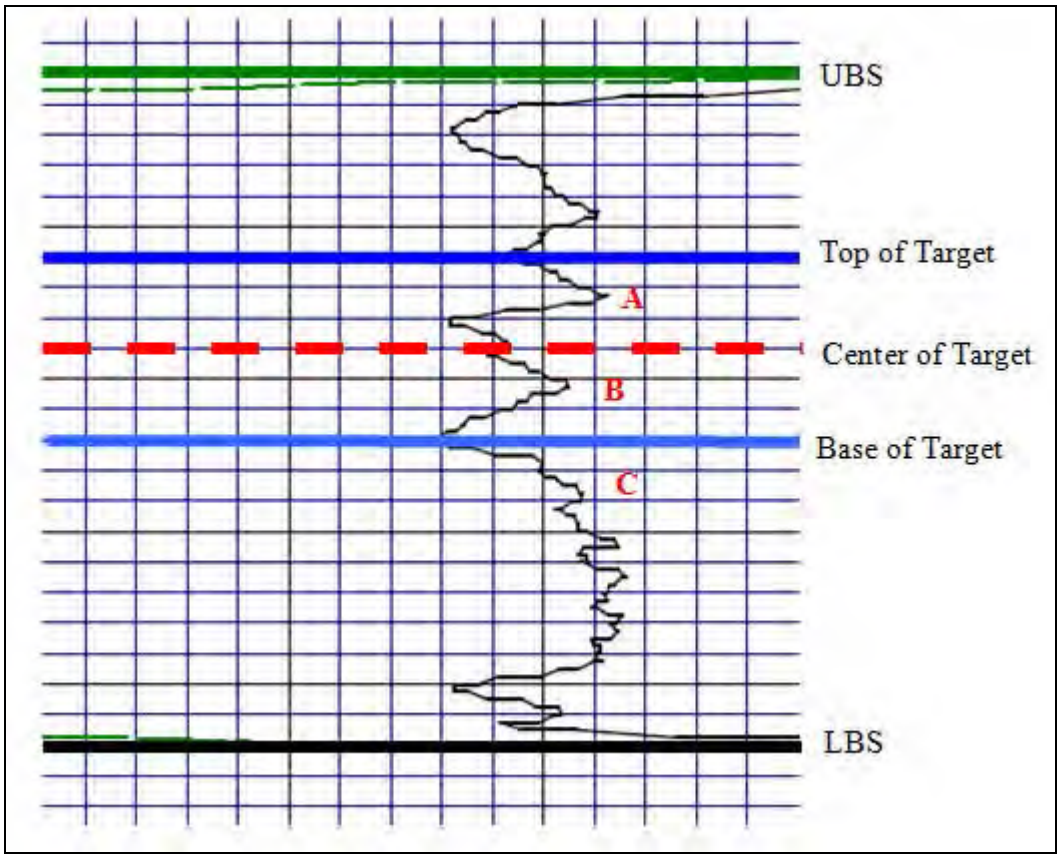


Figure 8: Offset gamma ray profile of the Middle Bakken (0-100 api. scale) *See dip profile (Figure 9) for marker presentation*

Using the aforementioned information gathered during drilling, offset log information and the structural data provided from Oasis Petroleum North America, LLC., well site geologists were able to anticipate, and interpret the local apparent dip during the drilling of the Chalmers 5301 44-24 3BR well. A total depth of 20,833' MD was reached on September 16, 2014 at 12:30 CDT. The target resultant was 100% within the Middle Bakken Member. The resulting structure of the Middle Bakken was a drop in TVD of 87.90' over 9,983' MD; resulting in an overall 0.50 down dip as portrayed on the Chalmers 5301 44-24 3BR dip profile (Figure 9).

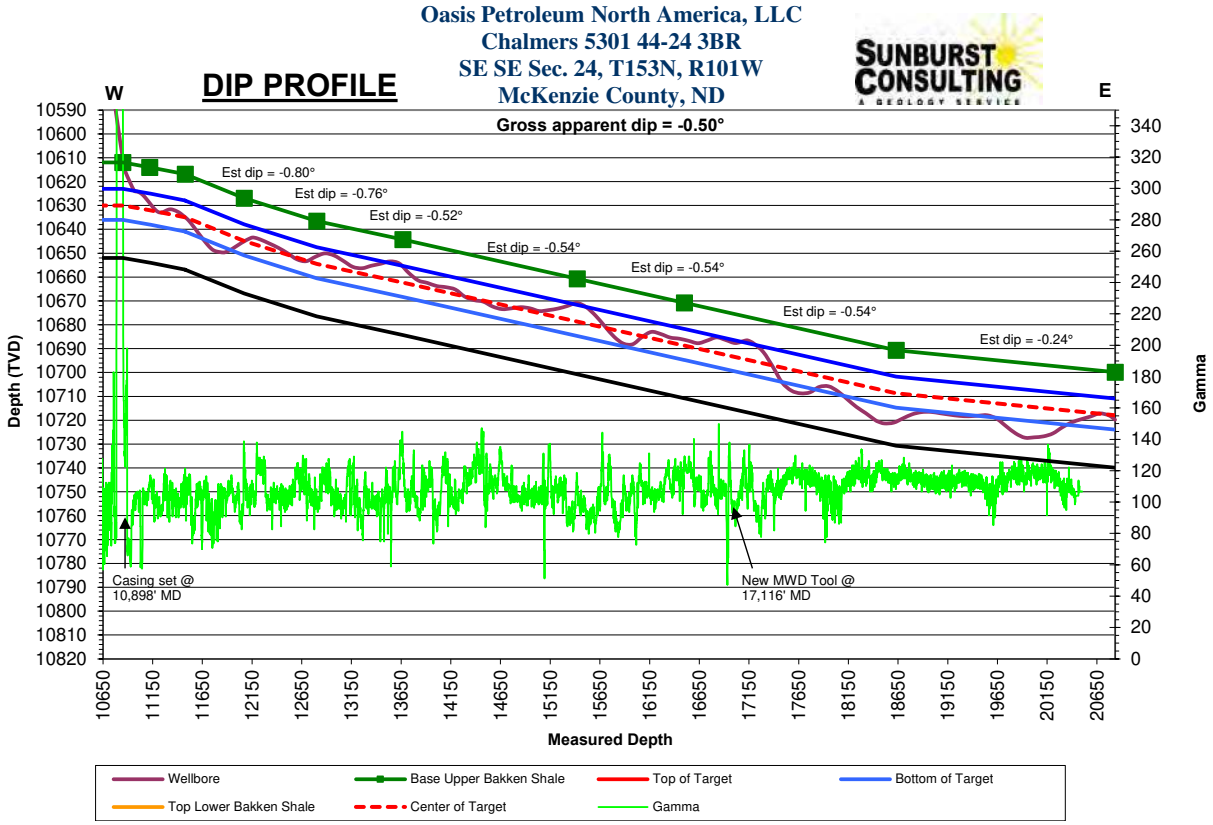


Figure 9: Well profile representing estimated dip value & gamma ray for the Chalmers 5301 44-24 3BR lateral.

Hydrocarbons:

Figures 10 & 11: 30' flare observed during Chalmers 5301 44-24 3BR lateral.

Gas monitoring and fluid gains were monitored to evaluate the viability of this reservoir during the drilling of the Chalmers 5301 44-24 3BR well. In the invert mud system, hydrostatic conditions were maintained near balance. This allowed for gas and fluid gains from the well to be monitored. Gas shows were encountered in vertical, curve and lateral drilling of the well.

Background gas observed during the drilling of the lateral ranged from 1,000 to 3,000 units. Invert drilling fluid was used throughout the drilling of the vertical and curve weighing 9.8-11.7 ppg. The lateral was drilled with saline drilling fluid with a mud weight of 9.7-10.15 ppg. Gas shows ranged up to 3,728 units and connection gases were observed up to 3,620 units. C1-C4 gas components were observed throughout the course of the lateral. Trip gases were observed as high as 5,976 units. Oil shows were very light throughout the lateral ranging from 0-3% in sample. When present it was a *light brown spotty oil stain* that yielded a *slow to moderate streaming to diffuse pale yellow cut fluorescence*.

SUMMARY

The Nabors B25 drilling rig successfully drilled a two-section horizontal well bore within the Three Forks Formation at the Chalmers 5301 44-24 3BR. A net of 9,894' was drilled within the Middle Bakken. A mud program consisting of diesel invert (9.8–11.7 ppg), during the vertical and curve build sections, and saline based mud (9.7-10.15 ppg), during the lateral maintained stable hole conditions and permitted adequate analysis of gas concentrations.

Projections of dip were successfully used to maintain the well bore in the Middle Bakken Member target for 85% of the lateral. Samples from the target consisted of a light to medium gray, light to medium gray-brown silty sandstone with trace to occasional amounts of disseminated pyrite and calcite cement. Intergranular porosity was generally seen throughout the entire lateral. Hydrocarbon shows in the target zone were high throughout the lateral. Samples from the ideal zone contained a spotty light brown oil stain.

The Chalmers 5301 44-24 3BR will be fitted with a 4 ½" production liner and swell packers in preparation for a fracture stimulation that will determine the true commercial value of the well. The well currently awaits fracture stimulation.

Respectfully submitted,

Hannah Thatcher

Kate Schwehr

Sunburst Consulting, Inc.

September 16, 2014

WELL DATA SUMMARY

OPERATOR:	**Oasis Petroleum North America, LLC**
ADDRESS:	1001 Fannin Street, Suite 1500 Houston, Texas 77002
WELL NAME:	**Chalmers 5301 44-24 3BR**
API #:	33-053-06010-00-00
WELL FILE #:	28599
SURFACE LOCATION:	926' FSL & 245' FSL SE SE Section 24, T153N, R101W
FIELD/ OBJECTIVE:	Baker Field / Middle Bakken
COUNTY, STATE	McKenzie County, North Dakota
BASIN:	Williston
WELL TYPE:	Middle Bakken Horizontal
ELEVATION:	GL: 1,943' KB:1,968'
SPUD/ RE-ENTRY DATE:	June 11, 2014
BOTTOM HOLE LOCATION:	307' south & 10,439' east of surface location or approx. 619' FSL & 320' FEL, SE SE Section 20, T153N, R100W
CLOSURE COORDINATES:	Closure Azimuth: 91.69° Closure Distance: 10,443.29'
TOTAL DEPTH / DATE:	20,833' on September 16, 2014 85% within target interval
TOTAL DRILLING DAYS:	19 days
CONTRACTOR:	Nabors B25

PUMPS:	H &H Triplex (stroke length - 12")
TOOLPUSHERS:	Casey Pippenger, Bruce Walter
FIELD SUPERVISORS:	Mike Crow, Travis Handran
CHEMICAL COMPANY:	Fluid Control
MUD ENGINEER:	Keith McCarty, Warren Carlson
MUD TYPE:	Fresh water in surface hole Diesel invert in curve; Salt water in lateral
MUD LOSSES:	Invert Mud: 1,186 bbls., Salt Water: Not tracked
PROSPECT GEOLOGIST:	Clay Hargett
WELLSITE GEOLOGISTS:	Hannah Thatcher, Daniel Haynes, Kate Schwehr
GEOSTEERING SYSTEM:	Sunburst Digital Wellsite Geological System
ROCK SAMPLING:	30' from 8,200' - 10,780' 10' from 10,780' -10,939' 30' from 10,939' - 20,833' (TD)
SAMPLE EXAMINATION:	Trinocular microscope & fluoroscope
SAMPLE CUTS:	Trichloroethylene
GAS DETECTION:	MSI (Mudlogging Systems, Inc.) TGC - total gas with chromatograph Serial Number(s): ML-382
DIRECTIONAL DRILLERS:	RPM, Inc. Mike Crow, Travis Handran, Will Wright
MWD:	Ryan Directional Service Inc. Dave Unger, Daniel Ogden
CASING:	Surface: 13 3/4" 55# J-55 set to 2,095' Intermediate Surface: 9 5/8" 40# HCL-110 set to 5,982' Intermediate: 7" 32# HCP-110 set 10,898'
SAFETY/ H_2S MONITORING:	Oilind Safety

KEY OFFSET WELLS:

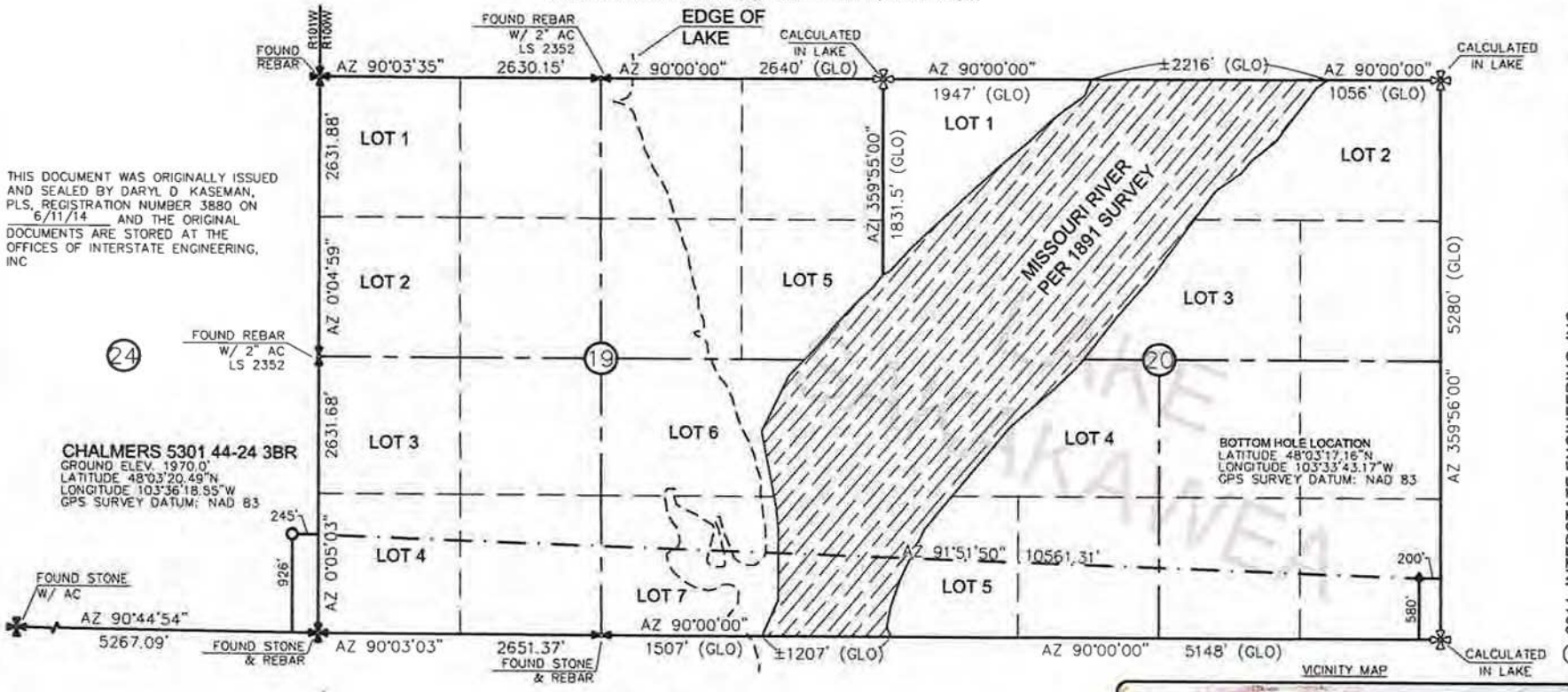
Oasis Petroleum North America
Chalmers 5301 44-24 2TR
SE SE Sec. 24, T153N, R101W
McKenzie Co., ND
KB: 1,968'

Oasis Petroleum North America
Chalmers 5300 31-19H
NW SW Sec. 19, T153N, R100W
McKenzie Co., ND
KB: 1,929'

Missouri Basin Well
Lynn 1
SW NW Sec. 23, T153N, R101W
McKenzie Co., ND
KB: 2,142'

WELL LOCATION PLAT

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"CHALMERS 5301 44-24 3BR"
926 FEET FROM SOUTH LINE AND 245 FEET FROM EAST LINE
SECTION 24, T153N, R101W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



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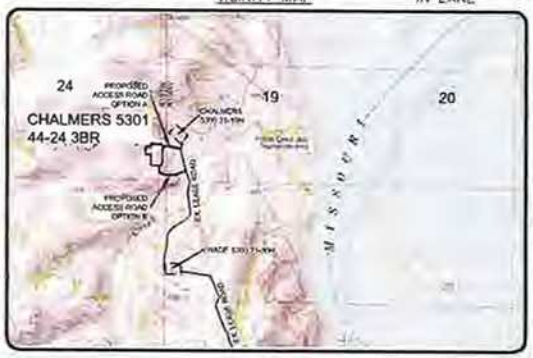
DARYL D. KASEMAN LS-3880

REGISTERED LAND SURVEYOR
DARYL D. KASEMAN
LS-3880
DATE: 6/11/14
NORTH DAKOTA

VICINITY MAP



Rev. No.	Date	By	Description
REV 1	7/28/14	BH	CHANGE PAD LAYOUT
REV 2	8/28/14	LA	ADDED WELL TO PAD
REV 3	9/29/14	LA	ADDED NAME, STATE WELL
REV 4	12/1/14	JM	ADDED DIMENSIONS

OASIS PETROLEUM NORTH AMERICA, LLC
WELL LOCATION PLAT
SECTION 24, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: J.H.S. | Project No.: 513-09-318.01
Checked By: JMK | Date: MAY 2014

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P.O. Box 648
425 East Main Street
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Ph: (406) 433-5617
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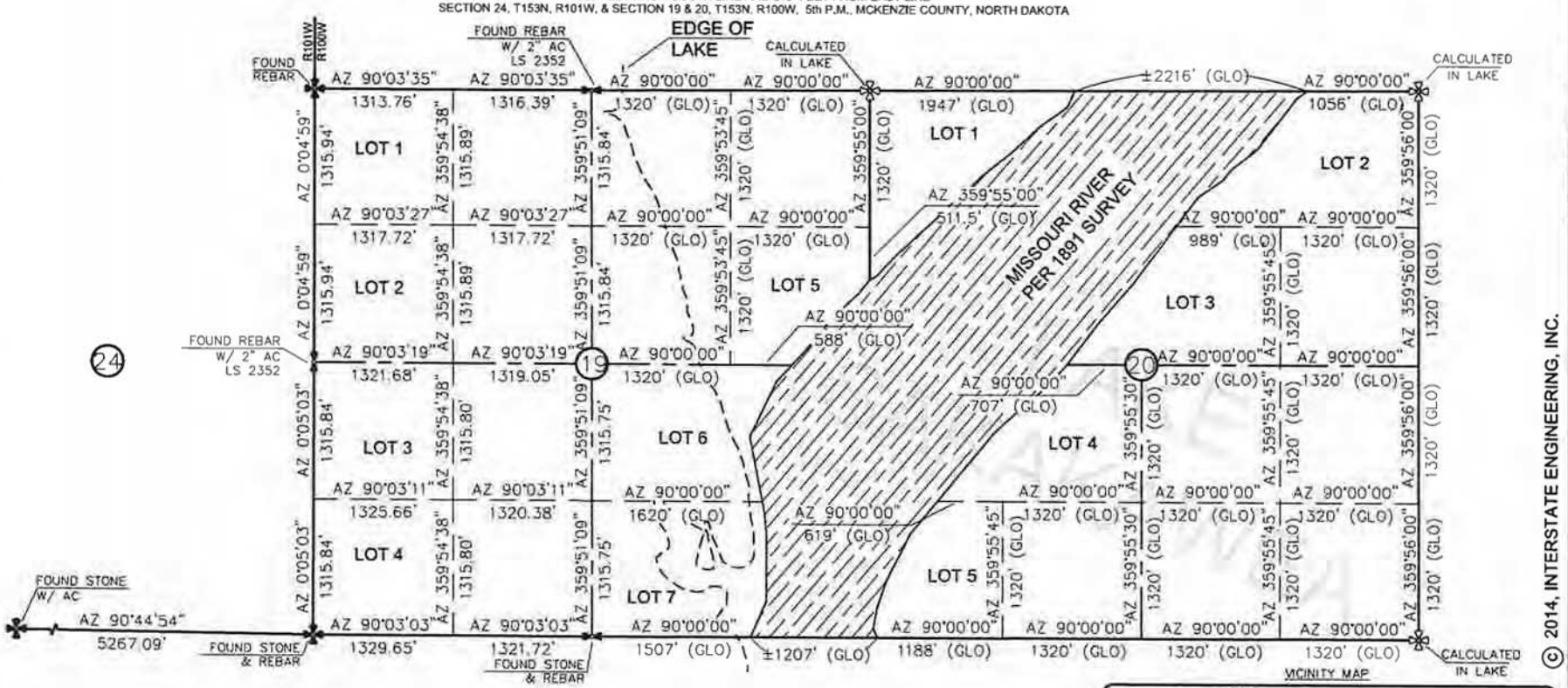
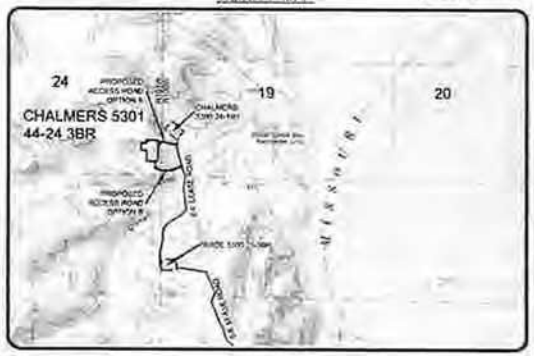
SECTION BREAKDOWN

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"CHALMERS 5301 44-24 3BR"
926 FEET FROM SOUTH LINE AND 245 FEET FROM EAST LINE
SECTION 24, T153N, R101W, & SECTION 19 & 20, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



VICINITY MAP



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REGISTERED LAND SURVEYOR
DARYL D. KASEMAN
LS-3880
DATE 6/11/14
NORTH DAKOTA

OASIS PETROLEUM NORTH AMERICA, LLC
SECTION BREAKDOWN
SECTION 24, T153N, R101W, & SECTIONS 19 & 20, T153N, R100W
MCKENZIE COUNTY, NORTH DAKOTA

Rev. No.	Date	By	Description
REV 3	1/28/14	BH	CHANGED PAD LAYOUT
REV 2	1/28/14	JLS	ADDED REV. TO PAD
REV 1	5/20/14	JLS	CHANGED WELL HEAD REV.
REV 0	6/11/14	JLS	ADDED DAKOTAS

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Sidney, Montana 59270
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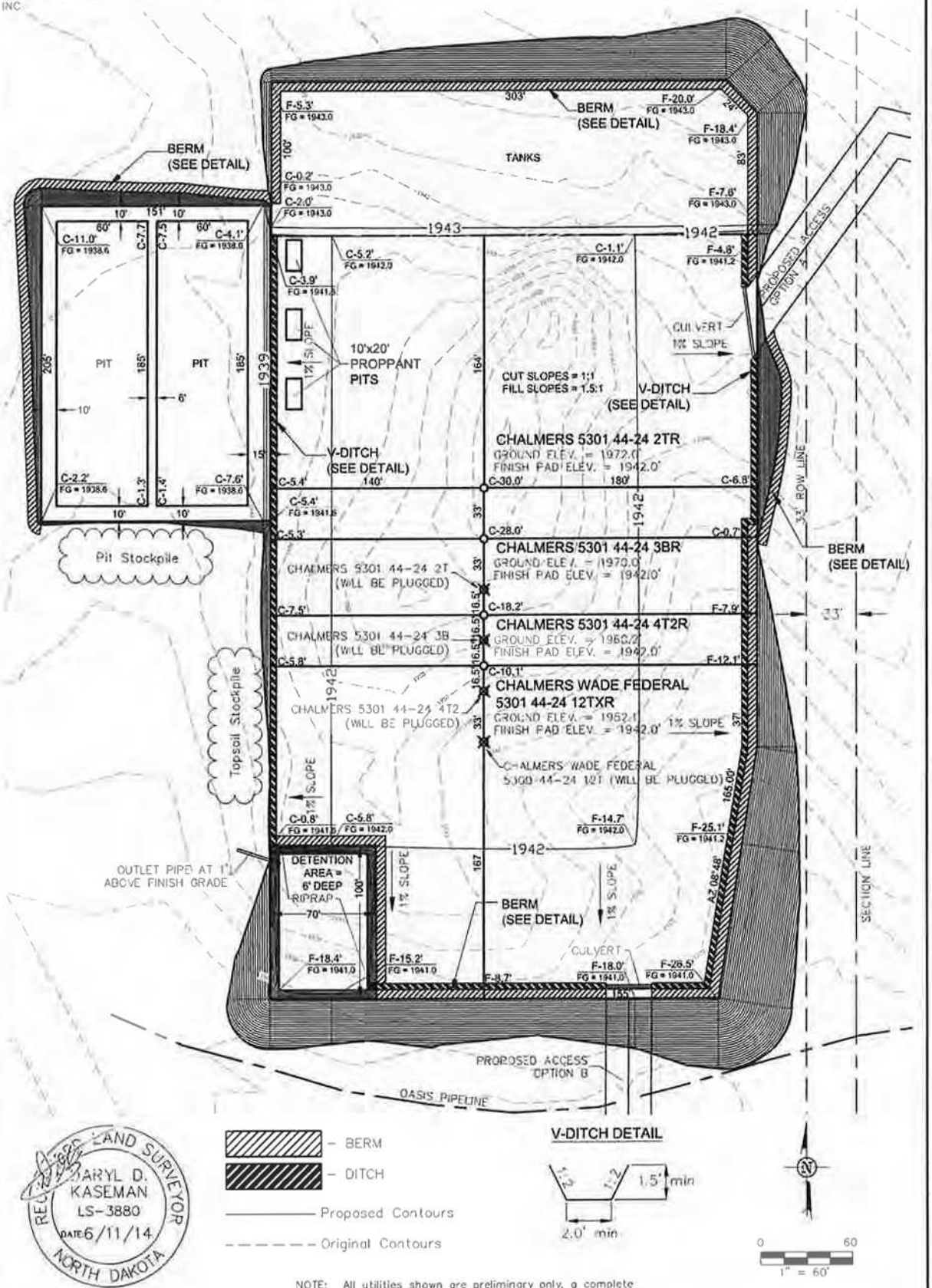
PAD LAYOUT

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"CHALMERS 5301 44-24 3BR"
926 FEET FROM SOUTH LINE AND 245 FEET FROM EAST LINE
SECTION 24, T153N, R101W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



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OASIS PETROLEUM NORTH AMERICA, LLC
PAD LAYOUT
SECTION 24, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA
Drawn By: J.H.S. Project No.: 513409-230.01
Checked By: D.D.K. Date: MAY 2014

Project No.	Date	By	Description
REV 3	1/20/14	NAB	CHANGE PAD LAYOUT
REV 4	5/09/14	AJS	MOVE WELL TO PAD
REV 5	5/20/14	AJS	CHANGE BARE, MOVED WELL
REV 6	6/11/14	JDM	ADDED DIMENSIONS

COUNTY ROAD MAP

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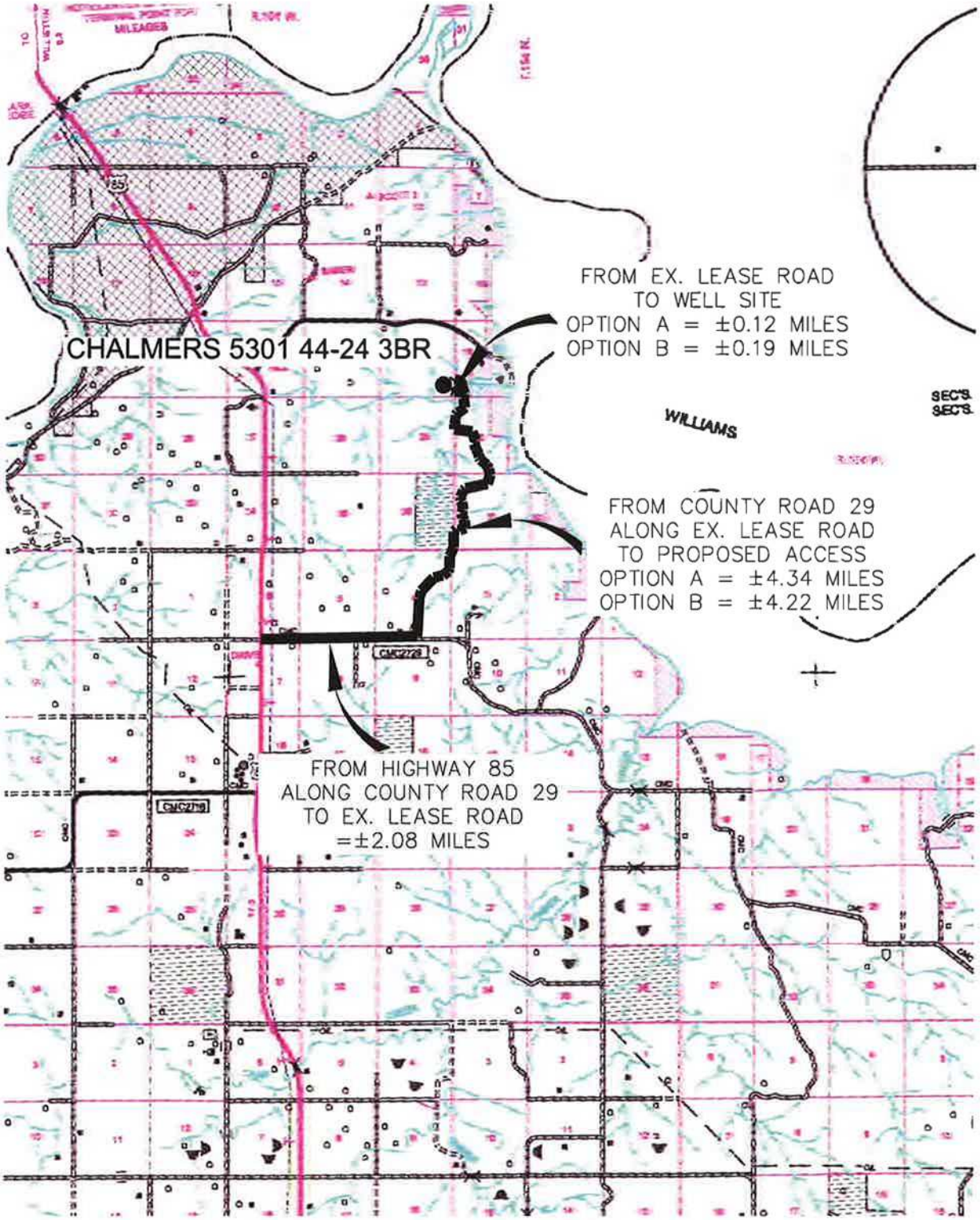
"CHALMERS 5301 44-24 3BR"
926 FEET FROM SOUTH LINE AND 245 FEET FROM EAST LINE
SECTION 24, T153N, R101W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



SCALE: 1" = 2 MILE

6/8
SHEET NO.

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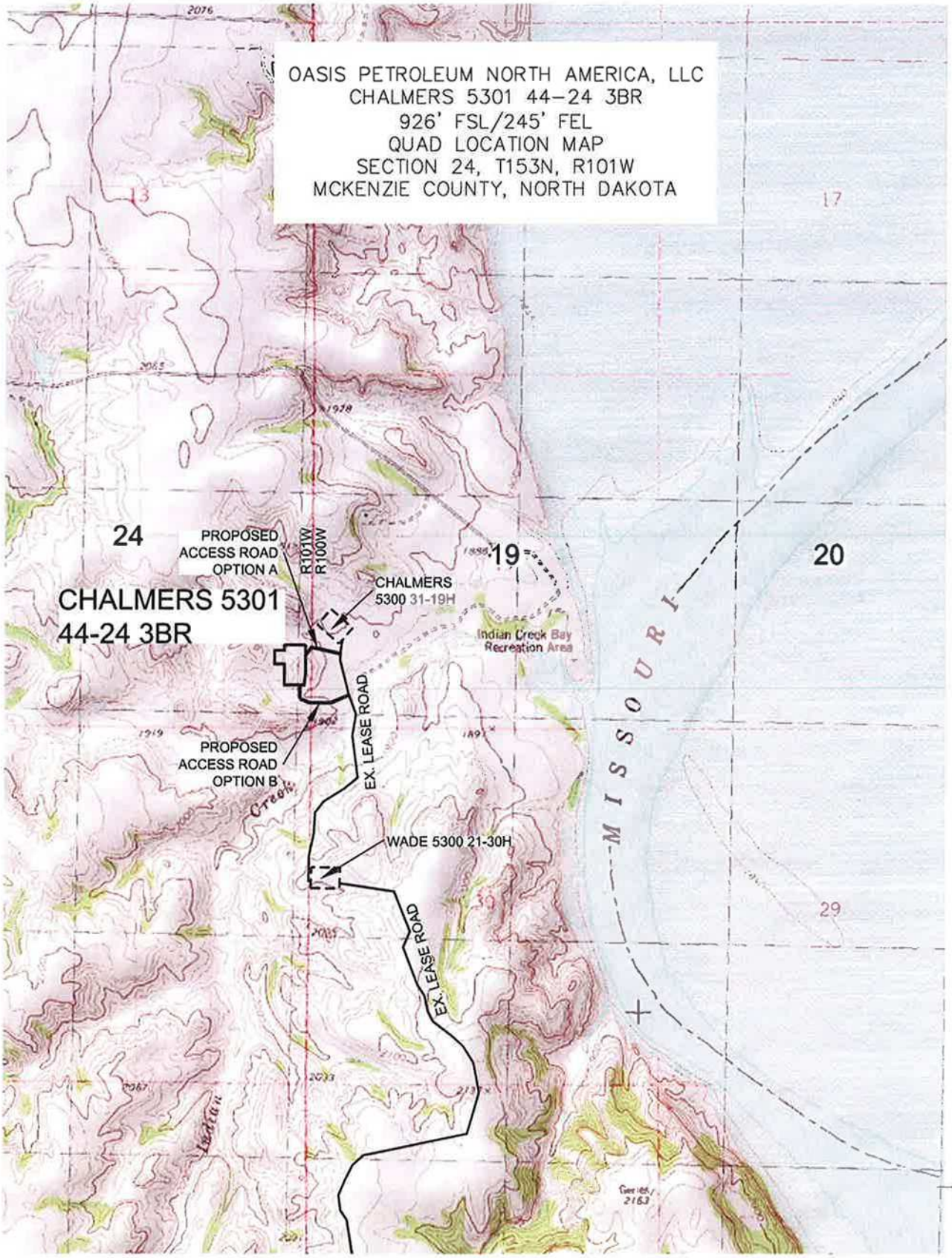
Other offices in Minnesota, North Dakota and South Dakota

OASIS PETROLEUM NORTH AMERICA, LLC
COUNTY ROAD MAP
SECTION 24, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: J.J.S. | Project No.: S13-09-235.01
Checked By: D.D.K. | Date: MAY 2014

Revision No.	Date	By	Description
REV 2	12/3/13	JJS	CHANGED PAD LAYOUT
REV 3	1/30/14	BH	CHANGED PAD LAYOUT
REV 4	5/09/14	JJS	ADDED WELL TO PAD
REV 5	5/22/14	JJS	CHANGED NAME, MOVED WELL
REV 6	5/11/14	JDH	ADDED DIMENSIONS



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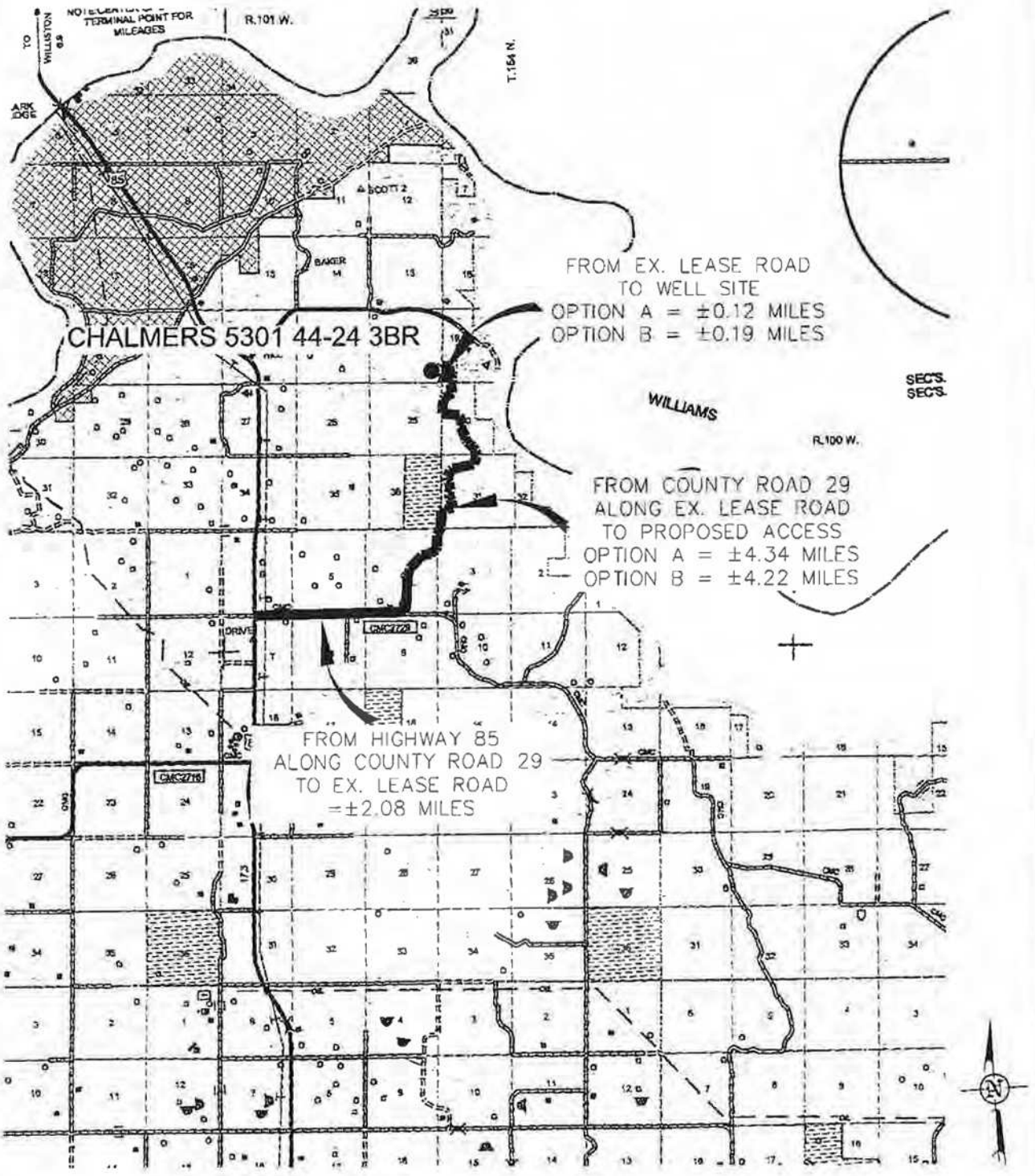
OASIS PETROLEUM NORTH AMERICA, LLC
QUAD LOCATION MAP
SECTION 24, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: J.J.S. | Project No.: S13-09-330.01
Checked By: D.D.K. | Date: MAY 2014

Revision No.	Date	By	Description
REV 2	12/3/13	JJS	CHANGED PAD LAYOUT
REV 3	1/20/14	BHH	CHANGED PAD LAYOUT
REV 4	5/09/14	JJS	ADDED WELL TO PAD
REV 5	5/20/14	JJS	CHANGED NAME, MIRRED WELL
REV 6	6/11/14	JJM	ADDED DIMENSIONS

COUNTY ROAD MAP

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"CHALMERS 5301 44-24 3BR"
926 FEET FROM SOUTH LINE AND 245 FEET FROM EAST LINE
SECTION 24, T153N, R101W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



SCALE: 1" = 2 MILE

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OASIS PETROLEUM NORTH AMERICA, LLC
COUNTY ROAD MAP
SECTION 24, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA

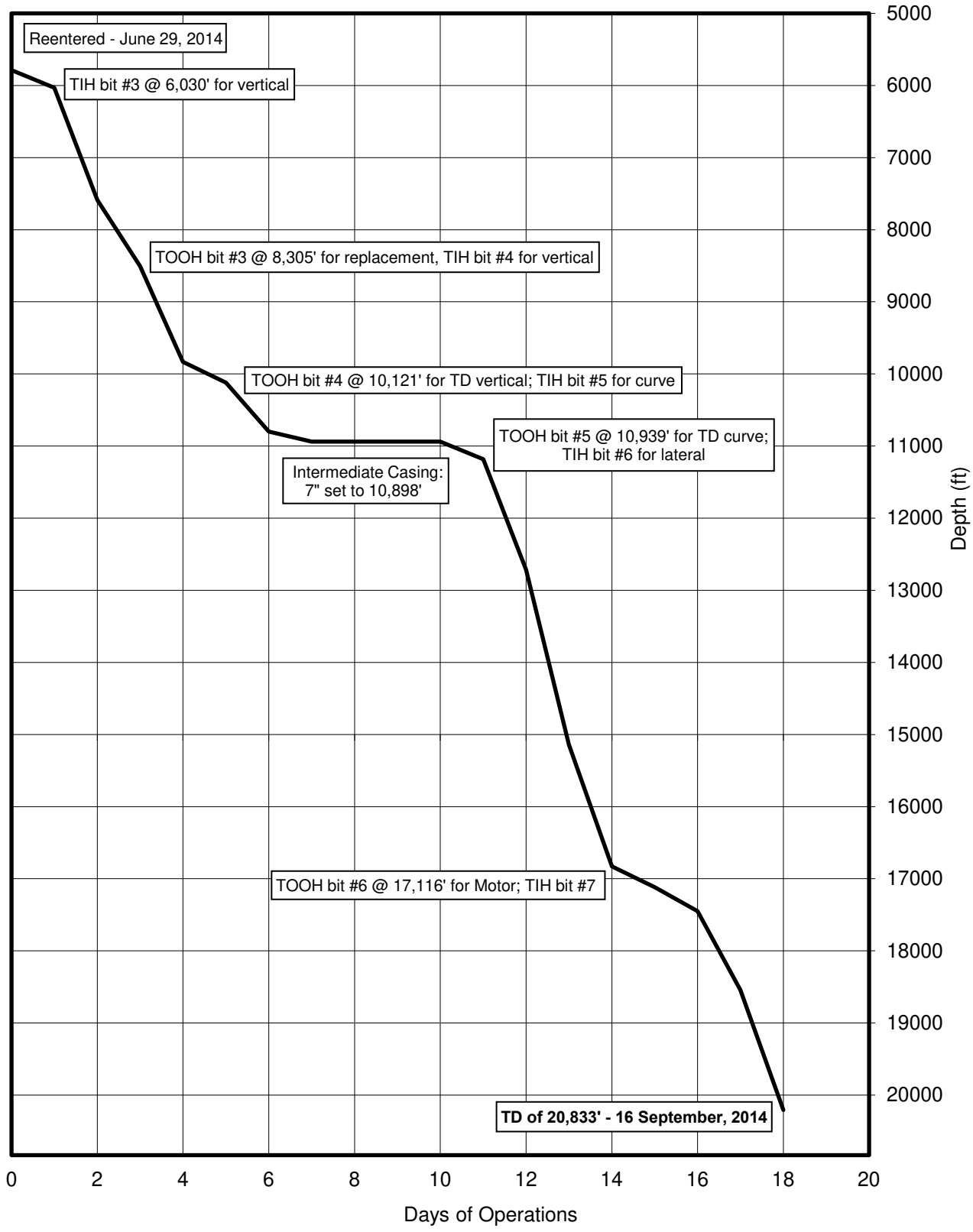
Drawn By: J.J.S. | Project No.: 513-09-235.01
Checked By: D.D.K. | Date: MAY 2014

Revision No.	Date	By	Description
REV 1	10/09/13	JJS	CHANGED WELL NAME
REV 2	12/5/13	JJS	CHANGED PAD LAYOUT
REV 3	1/30/14	BRH	CHANGED PAD LAYOUT
REV 4	5/08/14	JJS	ADDED WELL TO PAD
REV 5	5/30/14	JJS	CHANGED NAME, MOVED WELL

TIME VS. DEPTH

Oasis Petroleum North America, LLC

Chalmers 5301 44-24 3BR



MORNING REPORT SUMMARY

Day	Date 2014	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 Summary	Formation
0	6/29	5,787'	-	-	-	-	-	-	-	-	-	-	Drill F/ 2056 to 4388, rig service, drill F/4388 to 5787	-
1	6/30	6,030'	243	2	25	80	-	-	3400	57	57	401	Drill F/5787 to 6030, circulate and condition, pump pill, BOP drill, service rig, grease C&B, blackjack, TOOH, L/D BHA, install/remove wear bushing, R/U casers, run casing, circulate and condition, R/D casers, R/U cementers, primary cementing, R/D cement	Dakota
2	7/1	7,589'	1559	3	18	50	-	-	2200	70	70	492	P/U BHA, TIH, change rotating head/rubber, TIH, pressure test, drill cement F/5924 to 6040, float at 5977, shoe at 6024, FIT test, drill F/6040 to 6423, service top drive, drill F/6423 to 7589	Amsden
3	7/2	8,506'	917	4	25	50	-	-	3300	70	70	492	BOP drills, drill F/7589 to 8305, TOOH, service rig, TOOH, change rotating head/rubber, remove rotating head/install trip nipple, service rig, level sub, TOOH, change rotating head/rubber, remove trip nipple/install rotating head, TIH, drill F/8305 to 8506	Kibbey
4	7/3	9,832'	1326	4	20	50	-	-	3300	70	70	492	Drill F/8506 to 9284, service top drive, crown, and blocks, function HCR, drill F/9284 to 9832	Mission Canyon
5	7/4	10,121'	289	4	30	50	-	-	3200	70	70	492	Drill F/9832 to 10121, circulate and condition, TOOH, change rotating head/rubber, removed rot head/installed trip nipple, TOOH, case hole logs, R/U loggers, logged, R/D loggers, P/U BHA, TIH	Lodgepole
6	7/5	10,800'	679	5	25	20	28	241	3000	70	70	492	Change rotating head/rubber, install rotating head, TIH, ream F/8405 to 9100,drill F/10121 to 10364, service top drive, function pipe rams, drill F/10364 to 10800	Upper Bakken
7	7/6	10,939'	139	5	20	20	30	241	3300	70	70	492	Drill F/10800 to 10939, circulate and condition, short trip, function HCR, circulate and condition, TOOH, cut and slip, TOOH, checked for flow and worked on flow sensor, TOOH, change rotating head/rubber, installed trip nipple, TOOH, L/D BHA	Middle Bakken
8	7/7	10,939'	0	5	20	20	30	241	3300	70	70	492	Run casing, wash down, run casing, washing casing to bottom, circulate/cement/displace, R/D casing, R/U cementers, waiting on cement	Middle Bakken
9	7/8	10,939'	0	5	20	20	30	241	3300	70	70	492	Waiting on cement, nipple down BOP, working as directed by operator, L/D rotating head, stand back BOP, preparing to set casing slips, install well heads, pull apart B section, clean, put back together, put in slips, install well heads, wait on weldrs, cut casing	Middle Bakken
10	9/8	10,939'	0	5	20	20	30	241	3300	70	70	492	Working as directed by operator on previous well, transport, RB catwalk, flowline, misc. to walk, skid rig, walk 49', soft ground, rig up catwalk, flowline, misc., nipple up BOP	Middle Bakken
11	9/9	11,183'	244	6	18	50	25	147	2800	-	85	299	Nipple up BOP, working as directed by operator, rig up catwalk, flow line, water and air, test BOP, pressure test BOP and casing, P/U BHA, TIH, test tool, service top drive, change out quill, TIH, install/remove wear bushing, pull trip nipple, install rotating head, drill F/10939 to 11183	Middle Bakken
12	9/10	12,714'	1531	6	18	50	35	147	3600	85	-	299	Drill F/11183-11758, service top drive,greasee blocks, crown, swivel, and lower well, drill F/11758 to 12714	Middle Bakken

MORNING REPORT SUMMARY

Day	Date 2014	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 Summary	Formation
13	9/11	15,139'	2425	6	18	50	35	147	3900	84	-	299	Drill F/12714 to 13808, service rig, drill F/13808 to 14732, circulate and condition, circulate gas from wellbore, drill F/14737 to 15139	Middle Bakken
14	9/12	16,829'	1690	6	25	50	30	138	3800	80	-	281	Drill F/15139 to 16047, service rig, drill F/16047 to 16829	Middle Bakken
15	9/13	17,116'	287	6	25	50	35	134	3800	78	-	274	Drill F/16829 to 17116, circulate and condition, TOOH, circulate and condition, change rotating head/rubber, remove rotating head, install trip nipple, TOOH, L/D BHA, P/U BHA, install/remove wear bushing, install rotating head, TIH, cut drilling line 98', circulate and condition/circulate gas out	Middle Bakken
16	9/14	17,450'	334	7	18	50	25	121	3500	-	70	246	TOOH, L/D BHA, L/D tool and pick up new one, function pipe rams and annular, TIH, change rotating head/rubber, remove trip nipple, install rotating head, TIH, circulate and condition, TIH, circulate and condition/circulate gas out, drill F/17116 to 17450	Middle Bakken
17	9/15	18,542'	1092	7	18	50	25	121	3400	70	-	246	Drill F/17450 to 18012, service rig, drill F/18012 to 18542	Middle Bakken
18	9/16	20,206'	1664	7	18	50	30	121	2755	70	-	246	Drill F/18542 to 19548, service rig, well control BOP drill, drill F/19548 to 20206	Middle Bakken
19	9/17	20,833'	627	7	18	50	30	121	2755	70	-	246	Drill F/20206 to 20833	Middle Bakken

DAILY MUD SUMMARY

Date 2014	Mud Depth	Mud WT (ppg)	VIS (sec/qt)	PV (cP)	YP (lbs/ 100 ft^2)	Gels (lbs/ 100 ft^2)	600/ 300	NAP/ H_20 (ratio)	NAP/ H_20 (% by vol)	Cake (API/ HTHP)	Cor. Solids (%)	Oil/ H_20 (%)	Alk	pH	Excess Lime (lb/bbl)	Cl^- (mg/L)	LGS/ HGS (%)	Salinity (ppm)	ES	Gain/ Loss (bbls)
06/29	6,030'	11.7	61	26	11	11/16/-	63/37	75.5/24.5	61/19.8	3	17.7	61/19.8	1.7	-	2.2	25k	13.4/4.3	170,813	387	-/107
06/30	6,030'	9.95	81	24	10	9/14/-	58/34	69.7/27	62/27	3	9.5	62/27	2.1	-	2.7	24k	8/1.5	166,498	0	-/188
07/01	8,305'	10	72	18	7	7/11/-	43/25	77.3/22.7	68/20	3	10.7	68/20	2.3	-	3	22k	8.2/2.4	127,856	377	-/70
07/02	8,577'	10.05	48	18	7	7/11/-	43/25	79.3/20.7	69/18	3	11.7	69/18	2.1	-	2.7	22k	7.8/3.9	153,461	370	-/106
07/03	9,975'	9.85	47	17	10	9/14/-	44/27	82.3/17.7	72/15.5	2	11.2	72/15.5	2.3	-	3	22k	7.3/3.9	215,349	676	-/153
07/04	10,122'	10.2	52	15	10	9/14/-	40/25	82.6/17.4	71/15	2	12.5	71/15	2.2	-	2.8	24k	8.5/4.2	240,376	632	-/123
07/05	10,939'	10.4	46	17	11	9/14/-	45/28	83.5/16.5	71/14	2	13.6	71/14	2.2	-	2.8	23k	9.1/4.3	213,059	620	-/146
07/06	10,939'	10.4	46	17	11	9/14/-	45/28	83.5/16.5	71/14	2	13.6	71/14	2.2	-	2.8	23k	9.1/4.3	213,059	620	-/146
07/07	10,939'	10.4	46	17	11	9/14/-	45/29	83.5/16.6	71/15	2	13.6	71/15	3.2	-	3.8	23k	9.1/4.4	213,059	620	-/147
07/08	10,939'	Change mud from diesel invert to salt water																		
09/08	10,939'	9.7	26	1	1	-	3/2	-	0/92	-	-	0/92	-	9	-	16k	0/0.1	-	-	-/-
09/09	11,368'	9.7	26	1	1	-	3/2	-	0/92	-	-	0/92	-	9	-	16k	0/0.1	-	-	-/-
09/10	12,714'	9.7	26	1	1	-	3/2	-	0/92	-	-	0/92	-	9	-	16k	0/0.1	-	-	-/-
09/11	15,775'	9.85	27	1	1	-	4/2	-	0.5/88.8	-	-	0.5/88.5	-	8	-	187lk	-/0.8	-	-	-/-
09/12	16,933'	9.85	27	1	1	-	4/2	-	0.5/88.8	-	-	0.5/88.5	-	8	-	187lk	-/0.8	-	-	-/-
09/13	17,116'	9.85	27	1	1	-	4/2	-	0.5/88.8	-	-	0.5/88.5	-	8	-	187lk	-/0.8	-	-	-/-
09/14	17,450'	10.15	28	4	-	-	8/4	-	6.5/79	-	-	6.5/79	-	8	-	8k	-/1.7	-	-	-
09/15	19,061'	10.15	28	4	-	-	8/4	-	6.5/79	-	-	6.5/79	-	8	-	8k	-/1.7	-	-	-
09/16	20,206'	10.15	28	4	-	-	8/4	-	6.5/79	-	-	6.5/79	-	8	-	8k	-/1.7	-	-	-

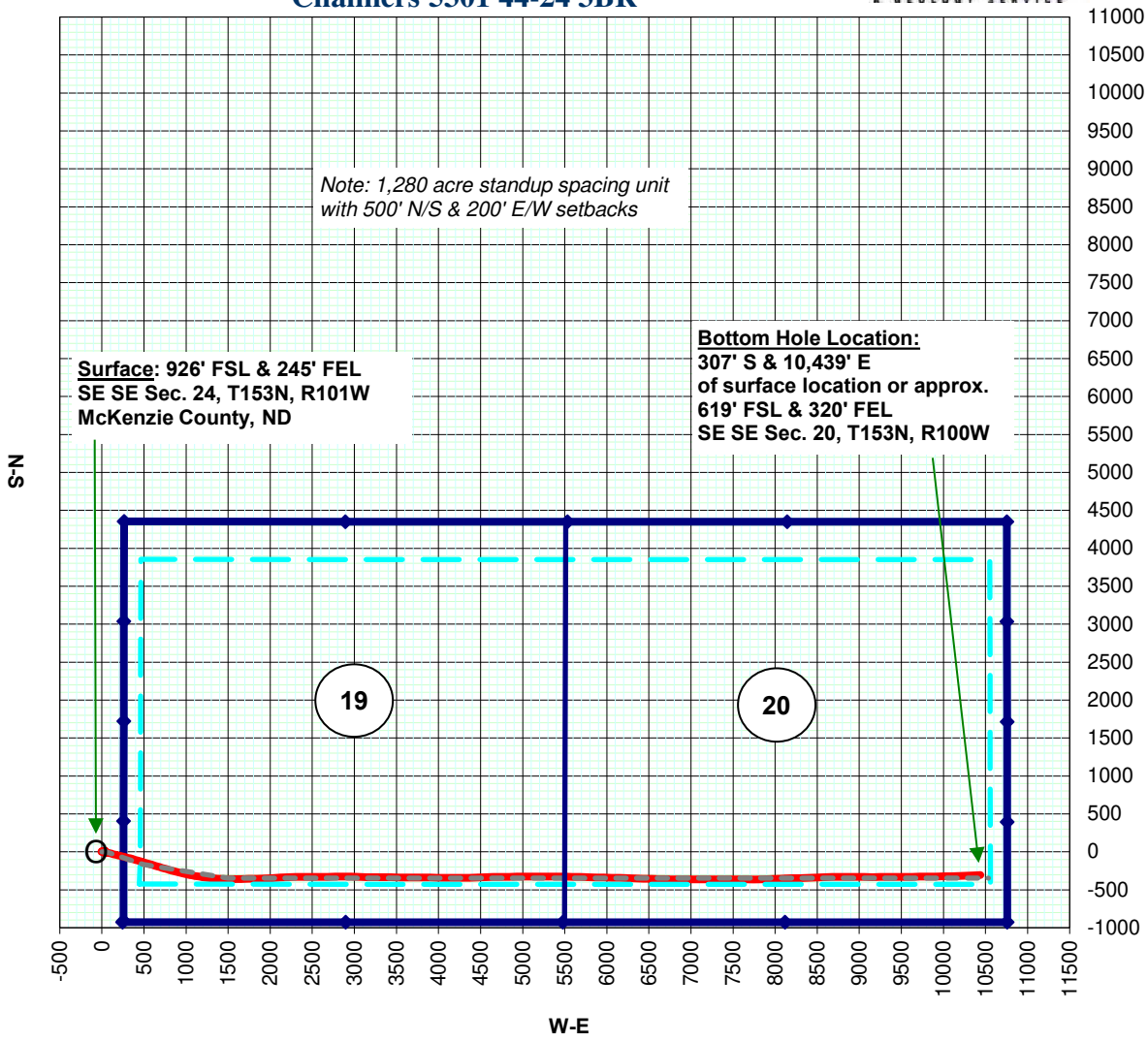
BOTTOM HOLE ASSEMBLY RECORD

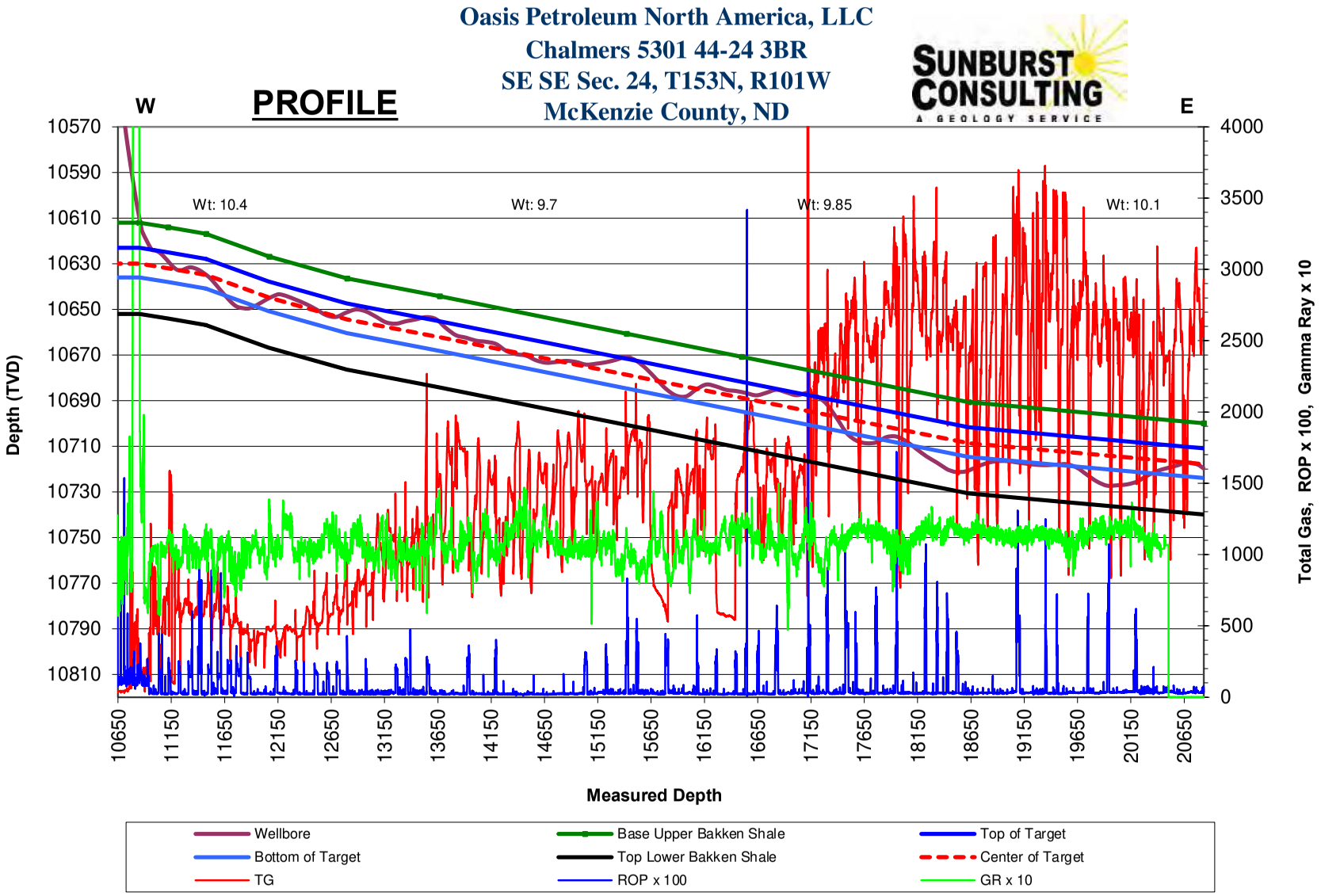
Bit Data											Reason For Removal
Bit #	Size (in.)	Type	Make	Model	Depth In	Depth Out	Footage	Hours	Σ hrs	Vert. Dev.	
1	17 1/2	Tri-cone	NOV	-	80'	2,095'	2,015'	14	14	Surface	TD surface
2	12 1/4	PDC	NOV	AA1L	2,040'	6,030'	3,990'	26	40	Vertical	Vertical
3	8 3/4	PDC	Security	MM64D	6,030'	8,305'	2,275'	25	65	Vertical	Casing
4	8 3/4	PDC	Security	MM64D	8,305'	10,121'	1,816'	34.5	99.5	Vertical	TD Vertical
5	8 3/4	PDC	Security	MM55MM	10,121'	10,939'	818'	25.5	125	Curve	TD curve
6	6	PDC	Security	MMD64	10,939'	17,116'	6,177'	76	201	Lateral	Motor Failure
7	6	PDC	Security	MM64	17,116'	20,833'	3,717'	59.5	260.5	Lateral	TD Lateral

PLAN VIEW

Oasis Petroleum North America, LLC
Chalmers 5301 44-24 3BR

SUNBURST CONSULTING
A GEOLOGY SERVICE




Oasis Petroleum North America, LLC
Chalmers 5301 44-24 3BR
SE SE Sec. 24, T153N, R101W
McKenzie County, ND
PROFILE
SUNBURST CONSULTING
A GEOLOGY SERVICE
W
E
Wt: 10.4
Wt: 9.7
Wt: 9.85
Wt: 10.1
Depth (TVD)
Total Gas, ROP x 100, Gamma Ray x 10
Measured Depth
Wellbore
Base Upper Bakken Shale
Top of Target
Bottom of Target
Top Lower Bakken Shale
Center of Target
TG
ROP x 100
GR x 10

FORMATION MARKERS & DIP ESTIMATES

Oasis Petroleum North America, LLC - Chalmers 5301 44-24 3BR

Dip Change Points	MD	TVD	TVD diff.	MD diff.	Dip	Dipping up/down	Type of Marker
Marker							
	10,850'	10,612.00					Gamma
Top of Target	11,120'	10,614.00	2.00	270.00	***-0.42***	Down	Gamma
Center of Target	11,478'	10,619.00	5.00	358.00	***-0.80***	Down	Gamma
Center of Target	12,070'	10,626.90	7.90	592.00	***-0.76***	Down	Gamma
Center of Target	12,800'	10,636.50	9.60	730.00	***-0.75***	Down	Gamma
Top of Target	13,667'	10,644.30	7.80	867.00	***-0.52***	Down	Gamma
Top of Target	15,421'	10,660.70	16.40	1754.00	***-0.54***	Down	Gamma
Center of Target	16,500'	10,670.80	10.10	1079.00	***-0.54***	Down	Gamma
Nondescript Gamma	18,630'	10,690.70	19.90	2130.00	***-0.54***	Down	Gamma
TD	20,833'	10,699.90	9.20	2203.00	***-0.24***	Down	Gamma
Gross Dip							
Initial Target Contact	10,850'	10,612.00					
Projected Final Target Contact	20,833'	10,699.90	87.90	9983.00	***-0.50***	Down	Projection

Oasis Petroleum North America, LLC
Chalmers 5301 44-24 3BR
SE SE Sec. 24, T153N, R101W
McKenzie County, ND

DIP PROFILE

SUNBURST CONSULTING
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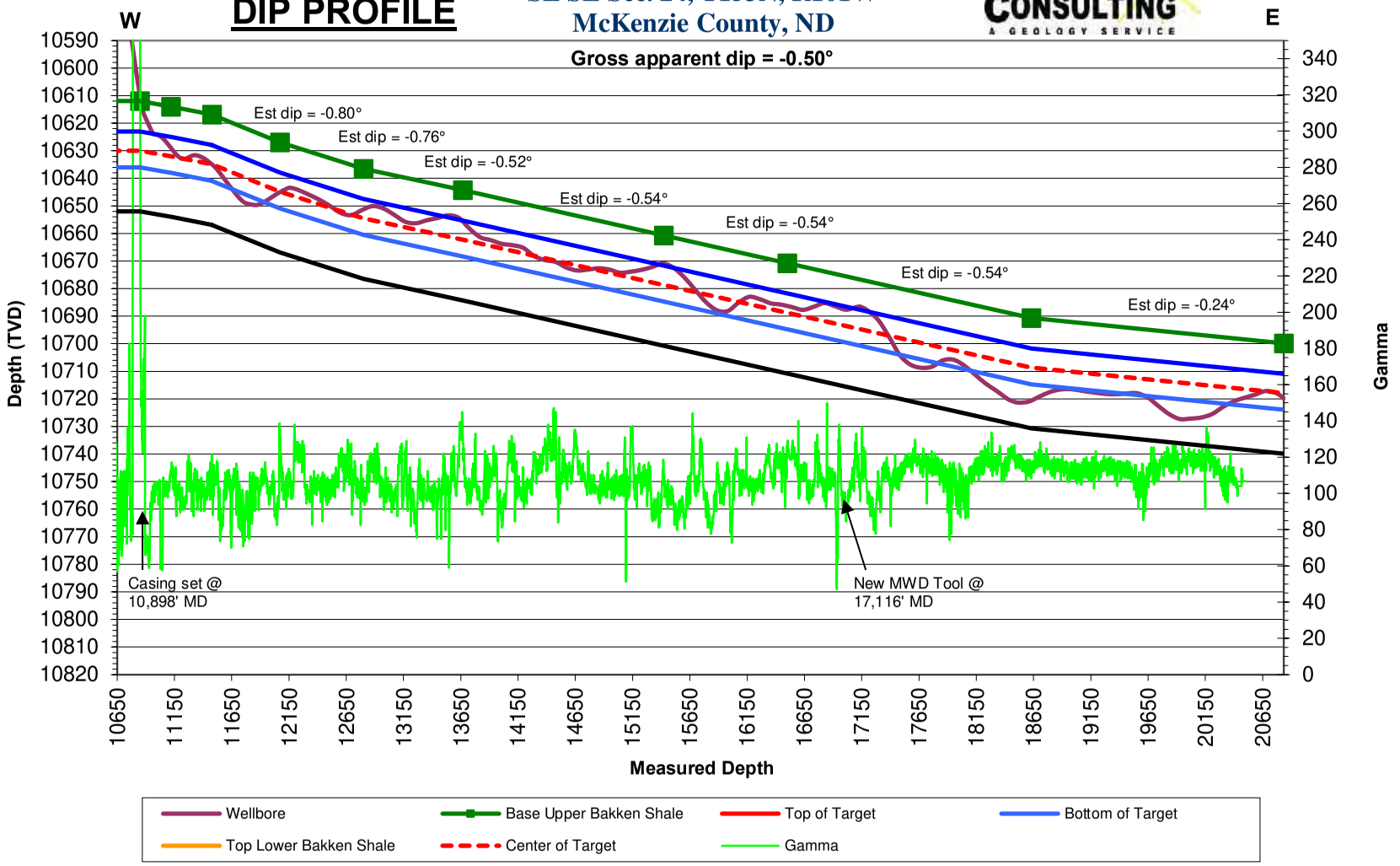


SUNBURST CONSULTING, INC.

Operator:	Oasis Petroleum North America, LLC			Kick-off:	6/30/2014
Well :	Chalmers 5301 44-24 3BR			Finish:	9/16/2014
County:	McKenzie	State:	ND	Directional Supervision:	
QQ:	SE SE	Section:	24	RPM	
Township:	153	N/S:	N		
Range:	101	E/W:	W	Date:	9/23/2014
Footages:	926	FN/SL:	S	Time:	16:53
	245	FE/WL:	E	**F9 to re-calculate**	

Minimum Curvature Method (SPE-3362) Proposed dir: 90

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

No.	MD	INC	TRUE AZM	TVD	N-S	E-W	SECT	DLS/ 100
Tie	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	184.00	0.80	273.10	183.99	0.07	-1.28	-1.28	0.43
2	215.00	0.70	271.20	214.99	0.09	-1.69	-1.69	0.33
3	308.00	0.90	267.70	307.98	0.07	-2.99	-2.99	0.22
4	402.00	0.30	299.60	401.98	0.16	-3.94	-3.94	0.71
5	495.00	0.30	302.10	494.98	0.41	-4.36	-4.36	0.01
6	588.00	0.70	304.50	587.97	0.86	-5.03	-5.03	0.43
7	680.00	0.70	339.40	679.97	1.70	-5.69	-5.69	0.46
8	772.00	1.30	28.50	771.95	3.15	-5.39	-5.39	1.08
9	865.00	1.20	56.40	864.93	4.61	-4.08	-4.08	0.66
10	957.00	1.10	52.90	956.91	5.68	-2.57	-2.57	0.13
11	1049.00	1.00	55.60	1048.90	6.67	-1.20	-1.20	0.12
12	1142.00	1.70	55.50	1141.87	7.91	0.60	0.60	0.75
13	1234.00	1.20	103.10	1233.84	8.46	2.67	2.67	1.37
14	1326.00	0.80	133.60	1325.83	7.80	4.07	4.07	0.71
15	1418.00	0.70	167.60	1417.82	6.81	4.66	4.66	0.49
16	1510.00	0.40	124.20	1509.82	6.08	5.04	5.04	0.54
17	1604.00	0.30	109.00	1603.82	5.81	5.55	5.55	0.14
18	1697.00	0.20	134.70	1696.82	5.62	5.89	5.89	0.16
19	1790.00	0.40	172.40	1789.82	5.18	6.05	6.05	0.29
20	1883.00	0.40	108.80	1882.81	4.76	6.40	6.40	0.45
21	1977.00	0.50	116.60	1976.81	4.47	7.08	7.08	0.12
22	2031.00	0.40	151.40	2030.81	4.20	7.38	7.38	0.53
23	2096.00	0.50	271.90	2095.81	4.01	7.20	7.20	1.20
24	2190.00	0.40	197.90	2189.81	3.71	6.69	6.69	0.58
25	2283.00	0.70	165.90	2282.80	2.85	6.73	6.73	0.45
26	2376.00	1.10	170.60	2375.79	1.42	7.02	7.02	0.44
27	2469.00	1.30	167.40	2468.77	-0.49	7.39	7.39	0.23
28	2563.00	0.90	130.90	2562.75	-2.02	8.18	8.18	0.84
29	2656.00	0.40	132.00	2655.75	-2.71	8.98	8.98	0.54
30	2749.00	0.80	137.60	2748.74	-3.41	9.66	9.66	0.43
31	2843.00	0.70	86.60	2842.73	-3.86	10.67	10.67	0.69
32	2936.00	1.00	99.10	2935.72	-3.95	12.04	12.04	0.38
33	3029.00	0.80	74.90	3028.71	-3.91	13.47	13.47	0.46
34	3122.00	1.10	76.00	3121.70	-3.53	14.96	14.96	0.32

SUNBURST CONSULTING, INC.

Operator:	Oasis Petroleum North America, LLC			Kick-off:	6/30/2014
Well :	Chalmers 5301 44-24 3BR			Finish:	9/16/2014
County:	McKenzie	State:	ND	Directional Supervision:	
QQ:	SE SE	Section:	24	RPM	
Township:	153	N/S:	N		
Range:	101	E/W:	W	Date:	9/23/2014
Footages:	926	FN/SL:	S	Time:	16:53
	245	FE/WL:	E	**F9 to re-calculate**	

Minimum Curvature Method (SPE-3362) Proposed dir: 90

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

No.	MD	INC	TRUE AZM	TVD	N-S	E-W	SECT	DLS/ 100
35	3216.00	0.90	83.40	3215.69	-3.23	16.57	16.57	0.25
36	3309.00	0.70	115.00	3308.68	-3.38	17.81	17.81	0.51
37	3402.00	0.60	124.30	3401.67	-3.90	18.73	18.73	0.16
38	3495.00	1.30	50.90	3494.66	-3.50	19.95	19.95	1.36
39	3589.00	1.30	62.60	3588.64	-2.34	21.72	21.72	0.28
40	3682.00	0.70	75.70	3681.62	-1.72	23.21	23.21	0.69
41	3775.00	1.00	93.70	3774.61	-1.63	24.57	24.57	0.43
42	3868.00	1.00	87.90	3867.60	-1.65	26.19	26.19	0.11
43	3962.00	0.80	91.20	3961.59	-1.63	27.67	27.67	0.22
44	4055.00	0.60	112.20	4054.58	-1.83	28.77	28.77	0.35
45	4148.00	0.90	148.50	4147.57	-2.64	29.60	29.60	0.59
46	4242.00	0.70	10.80	4241.57	-2.70	30.09	30.09	1.59
47	4335.00	0.50	1.00	4334.56	-1.74	30.21	30.21	0.24
48	4428.00	0.40	10.40	4427.56	-1.02	30.27	30.27	0.13
49	4521.00	0.30	2.20	4520.56	-0.45	30.34	30.34	0.12
50	4615.00	0.10	305.30	4614.56	-0.16	30.28	30.28	0.28
51	4708.00	0.30	320.50	4707.56	0.08	30.06	30.06	0.22
52	4801.00	0.80	303.50	4800.55	0.62	29.36	29.36	0.56
53	4894.00	0.70	277.90	4893.54	1.06	28.26	28.26	0.37
54	4988.00	0.30	167.50	4987.54	0.90	27.74	27.74	0.91
55	5081.00	0.70	123.70	5080.54	0.34	28.27	28.27	0.57
56	5174.00	1.00	162.10	5173.53	-0.74	28.99	28.99	0.67
57	5268.00	1.10	169.10	5267.51	-2.41	29.41	29.41	0.17
58	5361.00	0.30	157.70	5360.51	-3.51	29.68	29.68	0.87
59	5454.00	0.60	147.50	5453.50	-4.15	30.03	30.03	0.33
60	5547.00	0.70	142.00	5546.50	-5.01	30.64	30.64	0.13
61	5641.00	1.00	165.90	5640.49	-6.25	31.19	31.19	0.49
62	5734.00	1.20	149.70	5733.47	-7.88	31.88	31.88	0.40
63	5827.00	1.00	172.70	5826.45	-9.53	32.48	32.48	0.52
64	5920.00	1.10	185.40	5919.44	-11.22	32.50	32.50	0.27
65	5977.00	1.10	167.90	5976.43	-12.30	32.56	32.56	0.59
66	6062.00	1.20	178.60	6061.41	-13.99	32.75	32.75	0.28
67	6093.00	1.10	184.00	6092.40	-14.61	32.74	32.74	0.48
68	6187.00	0.60	19.80	6186.40	-15.05	32.84	32.84	1.79
69	6280.00	0.70	344.00	6279.39	-14.04	32.85	32.85	0.44

SUNBURST CONSULTING, INC.

Operator:	Oasis Petroleum North America, LLC			Kick-off:	6/30/2014
Well :	Chalmers 5301 44-24 3BR			Finish:	9/16/2014
County:	McKenzie	State:	ND	Directional Supervision:	
QQ:	SE SE	Section:	24	RPM	
Township:	153	N/S:	N		
Range:	101	E/W:	W	Date:	9/23/2014
Footages:	926	FN/SL:	S	Time:	16:53
	245	FE/WL:	E	**F9 to re-calculate**	

Minimum Curvature Method (SPE-3362) Proposed dir: 90

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

No.	MD	INC	TRUE AZM	TVD	N-S	E-W	SECT	DLS/ 100
70	6373.00	0.60	322.50	6372.39	-13.11	32.40	32.40	0.28
71	6466.00	0.40	285.40	6465.38	-12.64	31.79	31.79	0.40
72	6560.00	0.90	70.10	6559.38	-12.30	32.17	32.17	1.33
73	6653.00	0.60	65.80	6652.37	-11.85	33.30	33.30	0.33
74	6746.00	0.60	100.50	6745.37	-11.74	34.22	34.22	0.38
75	6839.00	1.10	34.10	6838.36	-11.09	35.20	35.20	1.10
76	6933.00	1.30	16.20	6932.34	-9.32	36.00	36.00	0.45
77	7026.00	1.20	17.60	7025.32	-7.38	36.59	36.59	0.11
78	7119.00	1.20	17.00	7118.30	-5.52	37.17	37.17	0.01
79	7212.00	1.10	6.20	7211.28	-3.70	37.55	37.55	0.26
80	7306.00	0.50	35.80	7305.27	-2.47	37.89	37.89	0.75
81	7399.00	0.40	50.40	7398.27	-1.93	38.38	38.38	0.16
82	7492.00	0.50	41.90	7491.26	-1.42	38.90	38.90	0.13
83	7586.00	0.70	59.10	7585.26	-0.82	39.67	39.67	0.28
84	7679.00	0.90	70.80	7678.25	-0.29	40.84	40.84	0.28
85	7772.00	0.70	65.80	7771.24	0.18	42.05	42.05	0.23
86	7865.00	0.40	9.00	7864.24	0.73	42.62	42.62	0.63
87	7959.00	0.40	307.50	7958.23	1.26	42.41	42.41	0.44
88	8052.00	0.50	318.60	8051.23	1.76	41.89	41.89	0.14
89	8145.00	0.70	315.10	8144.23	2.47	41.22	41.22	0.22
90	8239.00	0.70	312.30	8238.22	3.26	40.39	40.39	0.04
91	8332.00	0.50	328.70	8331.21	3.99	39.75	39.75	0.28
92	8425.00	0.70	329.90	8424.21	4.83	39.26	39.26	0.22
93	8518.00	0.50	336.30	8517.20	5.69	38.81	38.81	0.23
94	8612.00	0.60	358.50	8611.20	6.56	38.63	38.63	0.25
95	8705.00	0.70	330.80	8704.19	7.54	38.34	38.34	0.35
96	8798.00	0.70	322.90	8797.19	8.49	37.72	37.72	0.10
97	8892.00	0.90	317.60	8891.18	9.49	36.88	36.88	0.23
98	8985.00	0.10	318.50	8984.17	10.09	36.33	36.33	0.86
99	9078.00	0.80	149.30	9077.17	9.60	36.61	36.61	0.97
100	9171.00	0.80	154.60	9170.16	8.45	37.22	37.22	0.08
101	9265.00	0.60	154.90	9264.15	7.41	37.71	37.71	0.21
102	9358.00	0.70	158.50	9357.15	6.44	38.13	38.13	0.12
103	9451.00	0.70	168.90	9450.14	5.36	38.44	38.44	0.14
104	9545.00	0.80	168.00	9544.13	4.15	38.69	38.69	0.11

SUNBURST CONSULTING, INC.

Operator:	Oasis Petroleum North America, LLC			Kick-off:	6/30/2014
Well :	Chalmers 5301 44-24 3BR			Finish:	9/16/2014
County:	McKenzie	State:	ND	Directional Supervision:	
QQ:	SE SE	Section:	24	RPM	
Township:	153	N/S:	N		
Range:	101	E/W:	W	Date:	9/23/2014
Footages:	926	FN/SL:	S	Time:	16:53
	245	FE/WL:	E	**F9 to re-calculate**	

Minimum Curvature Method (SPE-3362) Proposed dir: 90

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

No.	MD	INC	TRUE AZM	TVD	N-S	E-W	SECT	DLS/ 100
105	9638.00	0.90	178.30	9637.12	2.79	38.85	38.85	0.20
106	9731.00	1.00	194.10	9730.11	1.27	38.67	38.67	0.30
107	9824.00	1.00	210.20	9823.10	-0.22	38.07	38.07	0.30
108	9918.00	0.90	157.50	9917.09	-1.61	37.93	37.93	0.90
109	10011.00	0.80	181.50	10010.08	-2.93	38.20	38.20	0.39
110	10071.00	1.10	207.10	10070.07	-3.87	37.92	37.92	0.85
111	10088.00	1.10	212.70	10087.06	-4.15	37.76	37.76	0.63
112	10119.00	1.50	139.20	10118.06	-4.71	37.87	37.87	5.12
113	10150.00	6.30	110.30	10148.98	-5.60	39.73	39.73	16.25
114	10181.00	11.10	106.30	10179.61	-7.03	44.19	44.19	15.60
115	10212.00	15.40	104.20	10209.78	-8.88	51.05	51.05	13.96
116	10243.00	20.40	103.10	10239.27	-11.12	60.31	60.31	16.17
117	10274.00	24.40	101.80	10267.93	-13.65	71.84	71.84	13.00
118	10305.00	27.20	102.40	10295.83	-16.48	85.03	85.03	9.07
119	10337.00	30.20	105.00	10323.90	-20.14	99.95	99.95	10.15
120	10368.00	33.00	107.10	10350.30	-24.64	115.56	115.56	9.70
121	10399.00	36.70	107.10	10375.74	-29.85	132.48	132.48	11.94
122	10430.00	41.10	106.10	10399.86	-35.40	151.14	151.14	14.34
123	10461.00	45.80	105.00	10422.36	-41.10	171.67	171.67	15.36
124	10492.00	48.80	104.30	10443.38	-46.86	193.71	193.71	9.82
125	10523.00	51.20	104.50	10463.30	-52.77	216.71	216.71	7.76
126	10554.00	51.40	104.70	10482.69	-58.87	240.12	240.12	0.82
127	10585.00	52.10	105.10	10501.88	-65.13	263.65	263.65	2.47
128	10616.00	54.30	106.50	10520.45	-71.89	287.53	287.53	7.96
129	10647.00	57.20	106.50	10537.89	-79.17	312.10	312.10	9.35
130	10678.00	61.50	106.60	10553.69	-86.76	337.65	337.65	13.87
131	10710.00	67.20	106.90	10567.54	-95.07	365.27	365.27	17.83
132	10741.00	71.30	107.60	10578.52	-103.67	392.94	392.94	13.39
133	10772.00	72.30	107.90	10588.20	-112.65	420.99	420.99	3.35
134	10803.00	73.00	108.40	10597.45	-121.86	449.11	449.11	2.73
135	10834.00	74.70	108.60	10606.07	-131.31	477.34	477.34	5.52
136	10865.00	77.80	108.50	10613.43	-140.89	505.89	505.89	10.00
137	10880.00	80.30	108.50	10616.28	-145.56	519.85	519.85	16.67
138	10963.00	89.40	108.60	10623.73	-171.83	598.14	598.14	10.96
139	10994.00	89.00	108.10	10624.16	-181.59	627.56	627.56	2.07

SUNBURST CONSULTING, INC.

Operator:	Oasis Petroleum North America, LLC			Kick-off:	6/30/2014
Well :	Chalmers 5301 44-24 3BR			Finish:	9/16/2014
County:	McKenzie	State:	ND	Directional Supervision:	
QQ:	SE SE	Section:	24	RPM	
Township:	153	N/S:	N		
Range:	101	E/W:	W	Date:	9/23/2014
Footages:	926	FN/SL:	S	Time:	16:53
	245	FE/WL:	E	**F9 to re-calculate**	

Minimum Curvature Method (SPE-3362) Proposed dir: 90

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

No.	MD	INC	TRUE AZM	TVD	N-S	E-W	SECT	DLS/ 100
140	11024.00	88.90	107.90	10624.71	-190.86	656.09	656.09	0.75
141	11055.00	87.30	109.20	10625.74	-200.72	685.46	685.46	6.65
142	11086.00	87.20	108.70	10627.22	-210.77	714.75	714.75	1.64
143	11117.00	86.90	108.10	10628.82	-220.55	744.12	744.12	2.16
144	11147.00	87.00	107.10	10630.42	-229.60	772.68	772.68	3.35
145	11178.00	87.70	106.80	10631.85	-238.63	802.30	802.30	2.46
146	11209.00	88.80	107.00	10632.80	-247.64	831.94	831.94	3.61
147	11240.00	90.60	106.80	10632.96	-256.65	861.60	861.60	5.84
148	11271.00	91.20	106.20	10632.47	-265.45	891.32	891.32	2.74
149	11302.00	91.10	106.30	10631.85	-274.13	921.08	921.08	0.46
150	11333.00	89.80	104.50	10631.61	-282.36	950.96	950.96	7.16
151	11364.00	89.00	104.40	10631.93	-290.09	980.98	980.98	2.60
152	11395.00	89.00	104.20	10632.47	-297.75	1011.02	1011.02	0.65
153	11426.00	88.20	102.20	10633.23	-304.83	1041.19	1041.19	6.95
154	11457.00	88.00	102.20	10634.26	-311.37	1071.47	1071.47	0.65
155	11487.00	88.20	101.20	10635.25	-317.45	1100.83	1100.83	3.40
156	11518.00	87.00	99.50	10636.55	-323.02	1131.30	1131.30	6.71
157	11549.00	87.00	99.40	10638.17	-328.10	1161.83	1161.83	0.32
158	11580.00	86.70	99.60	10639.88	-333.21	1192.36	1192.36	1.16
159	11611.00	86.80	97.80	10641.63	-337.89	1222.96	1222.96	5.81
160	11642.00	87.00	97.00	10643.31	-341.88	1253.65	1253.65	2.66
161	11672.00	86.90	97.00	10644.91	-345.53	1283.39	1283.39	0.33
162	11703.00	87.30	94.70	10646.47	-348.68	1314.18	1314.18	7.52
163	11735.00	87.60	94.70	10647.90	-351.30	1346.04	1346.04	0.94
164	11766.00	88.80	94.40	10648.87	-353.76	1376.93	1376.93	3.99
165	11797.00	89.60	92.40	10649.30	-355.60	1407.87	1407.87	6.95
166	11828.00	89.50	92.70	10649.55	-356.98	1438.84	1438.84	1.02
167	11859.00	89.90	92.40	10649.71	-358.36	1469.81	1469.81	1.61
168	11890.00	91.00	90.30	10649.47	-359.09	1500.80	1500.80	7.65
169	11952.00	91.40	89.80	10648.17	-359.14	1562.78	1562.78	1.03
170	12045.00	91.70	89.40	10645.65	-358.49	1655.75	1655.75	0.54
171	12137.00	90.80	88.50	10643.65	-356.81	1747.71	1747.71	1.38
172	12168.00	89.90	87.90	10643.46	-355.83	1778.69	1778.69	3.49
173	12231.00	88.70	87.40	10644.23	-353.25	1841.63	1841.63	2.06
174	12323.00	89.20	88.00	10645.91	-349.56	1933.54	1933.54	0.85

SUNBURST CONSULTING, INC.

Operator:	Oasis Petroleum North America, LLC			Kick-off:	6/30/2014
Well :	Chalmers 5301 44-24 3BR			Finish:	9/16/2014
County:	McKenzie	State:	ND	Directional Supervision:	
QQ:	SE SE	Section:	24	RPM	
Township:	153	N/S:	N		
Range:	101	E/W:	W	Date:	9/23/2014
Footages:	926	FN/SL:	S	Time:	16:53
	245	FE/WL:	E	**F9 to re-calculate**	

Minimum Curvature Method (SPE-3362) Proposed dir: 90

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

No.	MD	INC	TRUE AZM	TVD	N-S	E-W	SECT	DLS/ 100
175	12416.00	88.50	85.90	10647.78	-344.61	2026.38	2026.38	2.38
176	12508.00	88.70	87.00	10650.03	-338.92	2118.18	2118.18	1.21
177	12601.00	88.20	86.90	10652.54	-333.97	2211.01	2211.01	0.55
178	12695.00	90.80	88.70	10653.36	-330.36	2304.93	2304.93	3.36
179	12789.00	91.50	90.50	10651.48	-329.71	2398.90	2398.90	2.05
180	12883.00	90.20	89.70	10650.08	-329.87	2492.89	2492.89	1.62
181	12976.00	88.70	89.60	10650.97	-329.30	2585.88	2585.88	1.62
182	13070.00	88.50	89.30	10653.27	-328.40	2679.85	2679.85	0.38
183	13164.00	88.50	89.00	10655.73	-327.01	2773.81	2773.81	0.32
184	13258.00	90.80	90.40	10656.31	-326.52	2867.79	2867.79	2.86
185	13352.00	90.50	91.40	10655.24	-327.99	2961.77	2961.77	1.11
186	13445.00	90.50	91.50	10654.43	-330.34	3054.74	3054.74	0.11
187	13539.00	90.70	91.30	10653.44	-332.64	3148.71	3148.71	0.30
188	13633.00	88.20	91.20	10654.35	-334.69	3242.67	3242.67	2.66
189	13727.00	87.00	89.80	10658.28	-335.51	3336.58	3336.58	1.96
190	13821.00	89.20	90.90	10661.40	-336.09	3430.52	3430.52	2.62
191	13914.00	89.50	89.70	10662.45	-336.57	3523.51	3523.51	1.33
192	14008.00	88.90	90.40	10663.77	-336.66	3617.50	3617.50	0.98
193	14102.00	90.50	90.40	10664.26	-337.31	3711.50	3711.50	1.70
194	14196.00	88.30	90.80	10665.24	-338.30	3805.48	3805.48	2.38
195	14290.00	88.10	90.60	10668.19	-339.44	3899.43	3899.43	0.30
196	14384.00	90.10	91.60	10669.67	-341.25	3993.39	3993.39	2.38
197	14478.00	89.10	90.50	10670.33	-342.97	4087.37	4087.37	1.58
198	14572.00	88.40	89.70	10672.38	-343.13	4181.35	4181.35	1.13
199	14666.00	90.30	89.70	10673.44	-342.64	4275.34	4275.34	2.02
200	14760.00	90.10	89.10	10673.12	-341.66	4369.33	4369.33	0.67
201	14854.00	90.50	88.70	10672.62	-339.85	4463.31	4463.31	0.60
202	14947.00	88.90	86.80	10673.11	-336.20	4556.23	4556.23	2.67
203	15041.00	89.70	88.20	10674.26	-332.10	4650.13	4650.13	1.72
204	15136.00	90.80	88.90	10673.85	-329.70	4745.10	4745.10	1.37
205	15229.00	90.00	89.30	10673.20	-328.24	4838.08	4838.08	0.96
206	15323.00	91.30	89.90	10672.13	-327.58	4932.07	4932.07	1.52
207	15418.00	90.20	89.10	10670.89	-326.75	5027.06	5027.06	1.43
208	15512.00	87.70	90.30	10672.61	-326.26	5121.03	5121.03	2.95
209	15606.00	88.00	90.50	10676.13	-326.92	5214.96	5214.96	0.38

SUNBURST CONSULTING, INC.

Operator:	Oasis Petroleum North America, LLC			Kick-off:	6/30/2014
Well :	Chalmers 5301 44-24 3BR			Finish:	9/16/2014
County:	McKenzie	State:	ND	Directional Supervision:	
QQ:	SE SE	Section:	24	RPM	
Township:	153	N/S:	N		
Range:	101	E/W:	W	Date:	9/23/2014
Footages:	926	FN/SL:	S	Time:	16:53
	245	FE/WL:	E	**F9 to re-calculate**	

Minimum Curvature Method (SPE-3362) Proposed dir: 90

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

No.	MD	INC	TRUE AZM	TVD	N-S	E-W	SECT	DLS/ 100
210	15700.00	86.50	89.20	10680.64	-326.67	5308.85	5308.85	2.11
211	15793.00	88.10	90.60	10685.03	-326.51	5401.74	5401.74	2.28
212	15887.00	88.40	91.20	10687.90	-327.99	5495.69	5495.69	0.71
213	15981.00	91.30	91.10	10688.14	-329.87	5589.66	5589.66	3.09
214	16075.00	92.40	91.40	10685.11	-331.92	5683.58	5683.58	1.21
215	16169.00	90.20	91.60	10682.98	-334.38	5777.52	5777.52	2.35
216	16263.00	88.70	91.30	10683.88	-336.76	5871.48	5871.48	1.63
217	16357.00	89.50	91.10	10685.35	-338.73	5965.45	5965.45	0.88
218	16450.00	89.90	91.50	10685.84	-340.84	6058.43	6058.43	0.61
219	16544.00	89.00	91.80	10686.74	-343.54	6152.38	6152.38	1.01
220	16638.00	89.80	92.30	10687.73	-346.91	6246.31	6246.31	1.00
221	16732.00	91.60	92.50	10686.58	-350.84	6340.22	6340.22	1.93
222	16825.00	90.00	91.60	10685.28	-354.17	6433.15	6433.15	1.97
223	16919.00	88.60	91.30	10686.43	-356.55	6527.11	6527.11	1.52
224	17013.00	89.90	91.20	10687.66	-358.60	6621.08	6621.08	1.39
225	17108.00	91.30	91.20	10686.67	-360.59	6716.05	6716.05	1.47
226	17139.00	89.00	90.30	10686.58	-360.99	6747.04	6747.04	7.97
227	17201.00	88.50	90.60	10687.94	-361.48	6809.03	6809.03	0.94
228	17295.00	87.20	90.10	10691.46	-362.05	6902.96	6902.96	1.48
229	17389.00	85.40	89.60	10697.53	-361.81	6996.76	6996.76	1.99
230	17483.00	86.50	89.80	10704.17	-361.32	7090.52	7090.52	1.19
231	17576.00	89.30	90.80	10707.58	-361.80	7183.44	7183.44	3.20
232	17670.00	89.30	90.00	10708.72	-362.46	7277.43	7277.43	0.85
233	17764.00	91.20	90.60	10708.31	-362.95	7371.43	7371.43	2.12
234	17857.00	91.60	90.10	10706.04	-363.52	7464.40	7464.40	0.69
235	17951.00	88.70	90.40	10705.80	-363.93	7558.39	7558.39	3.10
236	18045.00	88.70	90.40	10707.93	-364.59	7652.36	7652.36	0.00
237	18138.00	87.30	89.70	10711.17	-364.67	7745.30	7745.30	1.68
238	18231.00	88.70	88.60	10714.42	-363.29	7838.23	7838.23	1.91
239	18325.00	88.10	87.20	10717.04	-359.85	7932.13	7932.13	1.62
240	18418.00	88.40	86.90	10719.88	-355.06	8024.96	8024.96	0.46
241	18450.00	89.10	87.40	10720.58	-353.47	8056.91	8056.91	2.69
242	18512.00	89.50	88.10	10721.34	-351.04	8118.86	8118.86	1.30
243	18606.00	90.90	88.20	10721.01	-348.00	8212.81	8212.81	1.49
244	18699.00	91.30	88.20	10719.23	-345.08	8305.74	8305.74	0.43

SUNBURST CONSULTING, INC.

Operator:	Oasis Petroleum North America, LLC			Kick-off:	6/30/2014
Well :	Chalmers 5301 44-24 3BR			Finish:	9/16/2014
County:	McKenzie	State:	ND	Directional Supervision:	
QQ:	SE SE	Section:	24	RPM	
Township:	153	N/S:	N		
Range:	101	E/W:	W	Date:	9/23/2014
Footages:	926	FN/SL:	S	Time:	16:53
	245	FE/WL:	E	**F9 to re-calculate**	

Minimum Curvature Method (SPE-3362) Proposed dir: 90

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

No.	MD	INC	TRUE AZM	TVD	N-S	E-W	SECT	DLS/ 100
245	18793.00	90.80	88.10	10717.50	-342.05	8399.68	8399.68	0.54
246	18887.00	90.30	87.50	10716.60	-338.44	8493.60	8493.60	0.83
247	18982.00	89.80	87.40	10716.52	-334.21	8588.51	8588.51	0.54
248	19076.00	89.50	88.20	10717.09	-330.61	8682.44	8682.44	0.91
249	19171.00	89.80	90.80	10717.67	-329.78	8777.42	8777.42	2.75
250	19266.00	89.60	90.30	10718.17	-330.69	8872.42	8872.42	0.57
251	19361.00	90.20	90.50	10718.34	-331.35	8967.42	8967.42	0.67
252	19455.00	90.10	90.60	10718.09	-332.25	9061.41	9061.41	0.15
253	19549.00	90.10	89.90	10717.93	-332.66	9155.41	9155.41	0.74
254	19644.00	88.10	89.00	10719.42	-331.75	9250.39	9250.39	2.31
255	19739.00	88.10	89.60	10722.57	-330.59	9345.33	9345.33	0.63
256	19833.00	88.30	89.90	10725.52	-330.18	9439.28	9439.28	0.38
257	19927.00	89.50	89.70	10727.33	-329.85	9533.26	9533.26	1.29
258	20020.00	90.70	89.40	10727.16	-329.12	9626.26	9626.26	1.33
259	20114.00	89.80	89.10	10726.75	-327.89	9720.25	9720.25	1.01
260	20208.00	91.70	89.20	10725.52	-326.50	9814.22	9814.22	2.02
261	20302.00	91.40	88.70	10722.98	-324.78	9908.17	9908.17	0.62
262	20396.00	91.10	89.00	10720.93	-322.89	10002.13	10002.13	0.45
263	20489.00	90.50	88.50	10719.63	-320.86	10095.10	10095.10	0.84
264	20584.00	90.90	88.60	10718.47	-318.46	10190.06	10190.06	0.43
265	20678.00	90.70	87.80	10717.16	-315.51	10284.01	10284.01	0.88
266	20772.00	88.30	86.70	10717.98	-311.00	10377.88	10377.88	2.81
267	20833.00	88.30	86.70	10719.79	-307.49	10438.76	10438.76	0.00

FORMATION TOPS & STRUCTURAL RELATIONSHIPS

Operator: / Well Name: / Location: / Elevation:	Subject Well: Oasis Petroleum North America, LLC; Chalmers 5301 44-24 3BR; 926' FSL & 245' FSL; SE SE Section 24, T153N, R101W; GL: 1,943' Sub: 25' KB: 1,968'								Offset Wells:		
Formation/ Marker	**Prog. Top**	**Prog. Datum (MSL)**	**Driller's Depth Top (MD)**	**Driller's Depth Top (TVD)**	**Datum (MSL)**	**Interval Thickness**	**Thickness to Target**	**Dip To Prog.**	**Dip To Chalmers 5301 44-24 2TR**	**Dip To Chalmers 5300 31-19H**	**Dip To Lynn 1**
Kibbey Lime	8,269'	-6,301'	8,269'	8,268'	-6,300'	171'	2,353'	1'	-4'	11'	-47'
Charles	8,433'	-6,465'	8,440'	8,439'	-6,471'	548'	2,182'	-6'	-10'	4'	-54'
UB	9,010'	-7,042'	8,988'	8,987'	-7,019'	84'	1,634'	23'	-5'	30'	-28'
Base Last Salt	9,091'	-7,123'	9,072'	9,071'	-7,103'	46'	1,550'	20'	-9'	27'	-31'
Ratcliffe	9,141'	-7,173'	9,118'	9,117'	-7,149'	174'	1,504'	24'	-8'	30'	-27'
Mission Canyon	9,311'	-7,343'	9,292'	9,291'	-7,323'	558'	1,330'	20'	-5'	26'	-27'
Lodgepole	9,876'	-7,908'	9,850'	9,849'	-7,881'	99'	772'	27'	-4'	34'	-35'
Lodgepole A	9,953'	-7,985'	9,949'	9,948'	-7,980'	105'	673'	5'	5'	14'	-56'
Lodgepole B	10,109'	-8,141'	10,054'	10,053'	-8,085'	38'	568'	56'	-2'	63'	-70'
Lodgepole C	10,180'	-8,212'	10,092'	10,091'	-8,123'	187'	530'	89'	0'	96'	-27'
Lodgepole D	10,283'	-8,315'	10,286'	10,278'	-8,310'	151'	343'	5'	-3'	12'	-86'
Lodgepole E	10,429'	-8,461'	10,470'	10,429'	-8,461'	68'	192'	0'	-8'	7'	-57'
Lodgepole F	10,502'	-8,534'	10,583'	10,497'	-8,529'	87'	124'	5'	-5'	11'	-44'
False Bakken	10,588'	-8,620'	10,754'	10,584'	-8,616'	8'	37'	4'	-7'	11'	-54'
Upper Bakken Shale	10,599'	-8,631'	10,785'	10,592'	-8,624'	20'	29'	7'	-7'	12'	-52'
Middle Bakken	10,616'	-8,648'	10,853'	10,612'	-8,644'	9'	9'	4'	-10'	10'	-57'
Landing Target	10,630'	-8,662'	10,939'	10,621'	-8,653'	-	-	9'	-12'	11'	-59'

CONTROL DATA

Operator:	Oasis Petroleum North America				Oasis Petroleum North America				Missouri Basin Well			
Well Name:	Chalmers 5301 44-24 2TR				Chalmers 5300 31-19H				Lynn 1			
Location:	SE SE Sec. 24, T153N, R101W				NW SW Sec. 19, T153N, R100W				SW NW Sec. 23, T153N, R101W			
	McKenzie Co., ND				McKenzie Co., ND				McKenzie Co., ND			
	shares pad with subject well				0.16 miles northeast of Chalmers 5301 44-24 3BR				1.83 miles northwest of Chalmers 5301 44-24 3B			
Elevation:	KB: 1,968'				KB: 1,929'				KB: 2,142'			
Formation/ Zone	**E-Log Top**	**Datum (MSL)**	**Interval Thickness**	**Thickness to Target**	**E-Log Top**	**Datum (MSL)**	**Interval Thickness**	**Thickness to Target**	**E-Log Top**	**Datum (MSL)**	**Interval Thickness**	**Thickness to Target**
Kibbey Lime	8,264'	-6,296'	165'	2,352'	8,240'	-6,311'	164'	2,358'	8,395'	-6,253'	164'	2,346'
Charles	8,429'	-6,461'	553'	2,187'	8,404'	-6,475'	574'	2,194'	8,559'	-6,417'	574'	2,182'
UB	8,982'	-7,014'	80'	1,634'	8,978'	-7,049'		1,620'	9,133'	-6,991'		1,608'
Base Last Salt	9,062'	-7,094'	47'	1,554'	9,059'	-7,130'	81'	1,539'	9,214'	-7,072'	81'	1,527'
Ratcliffe	9,109'	-7,141'	177'	1,507'	9,108'	-7,179'	49'	1,490'	9,264'	-7,122'	50'	1,477'
Mission Canyon	9,286'	-7,318'	559'	1,330'	9,278'	-7,349'	566'	1,320'	9,438'	-7,296'	550'	1,303'
Lodgepole	9,845'	-7,877'	108'	771'	9,844'	-7,915'	79'	754'	9,988'	-7,846'	78'	753'
Lodgepole A	9,953'	-7,985'	98'	663'	9,923'	-7,994'	154'	675'	10,066'	-7,924'	91'	675'
Lodgepole B	10,051'	-8,083'	40'	565'	10,077'	-8,148'	71'	521'	10,157'	-8,015'	81'	584'
Lodgepole C	10,091'	-8,123'	184'	525'	10,148'	-8,219'	103'	450'	10,238'	-8,096'	128'	503'
Lodgepole D	10,275'	-8,307'	146'	341'	10,251'	-8,322'	146'	347'	10,366'	-8,224'	180'	375'
Lodgepole E	10,421'	-8,453'	71'	195'	10,397'	-8,468'	72'	201'	10,546'	-8,404'	81'	195'
Lodgepole F	10,492'	-8,524'	85'	124'	10,469'	-8,540'	87'	129'	10,627'	-8,485'	77'	114'
False Bakken	10,577'	-8,609'	8'	39'	10,556'	-8,627'	9'	42'	10,704'	-8,562'	10'	37'
Upper Bakken Shale	10,585'	-8,617'	17'	31'	10,565'	-8,636'	18'	33'	10,714'	-8,572'	15'	27'
Middle Bakken	10,602'	-8,634'	7'	14'	10,583'	-8,654'	10'	15'	10,729'	-8,587'	7'	12'
Top of Target	10,609'	-8,641'	7'	7'	10,593'	-8,664'	5'	5'	10,736'	-8,594'	5'	5'
Landing Target	10,616'	-8,648'	5'	0'	10,598'	-8,669'	3'	0'	10,741'	-8,599'	4'	0'
Base of Target	10,621'	-8,653'	23'	-	10,601'	-8,672'	13'	-	10,745'	-8,603'	19'	-
Lower Bakken Shale	10,644'	-8,676'	-	-	10,614'	-8,685'	-	-	10,764'	-8,622'	-	-

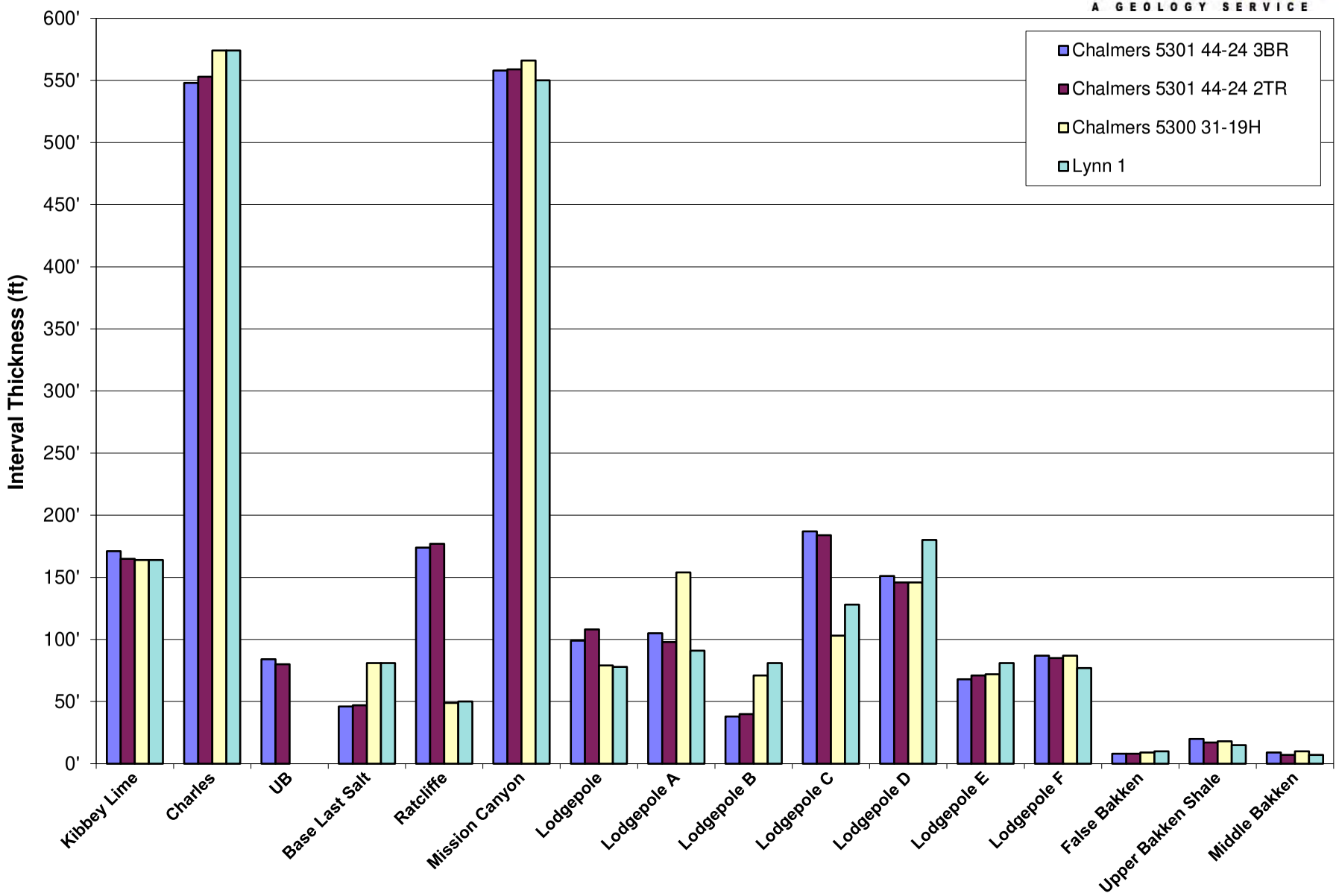
LANDING PROJECTION

Formation/ Zone:	Proposed Top of Target From:			
	Chalmers 5301 44-24 2TR	Chalmers 5300 31-19H	Lynn 1	Average of Offset Wells
Kibbey Lime	10,620'	10,626'	10,614'	10,620'
Charles	10,626'	10,633'	10,621'	10,627'
UB	10,621'	10,691'	10,679'	10,692'
Base Last Salt	10,625'	10,656'	10,644'	10,657'
Ratcliffe	10,624'	10,611'	10,594'	10,609'
Mission Canyon	10,621'	10,603'	10,602'	10,608'
Lodgepole	10,620'	10,623'	10,623'	10,619'
Lodgepole A	10,611'	10,574'	10,637'	10,596'
Lodgepole B	10,618'	10,541'	10,594'	10,561'
Lodgepole C	10,616'	10,625'	10,653'	10,632'
Lodgepole D	10,619'	10,630'	10,624'	10,626'
Lodgepole E	10,624'	10,626'	10,611'	10,619'
Lodgepole F	10,621'	10,626'	10,621'	10,623'
False Bakken	10,623'	10,625'	10,619'	10,622'
Upper Bakken Shale	10,623'	10,627'	10,624'	10,626'
Middle Bakken	10,626'			
Landing Target	10,628'	10,621'	10,621'	10,621'

Current Landing Target (9' below the base of the UBS): **10,621'**

INTERVAL THICKNESS

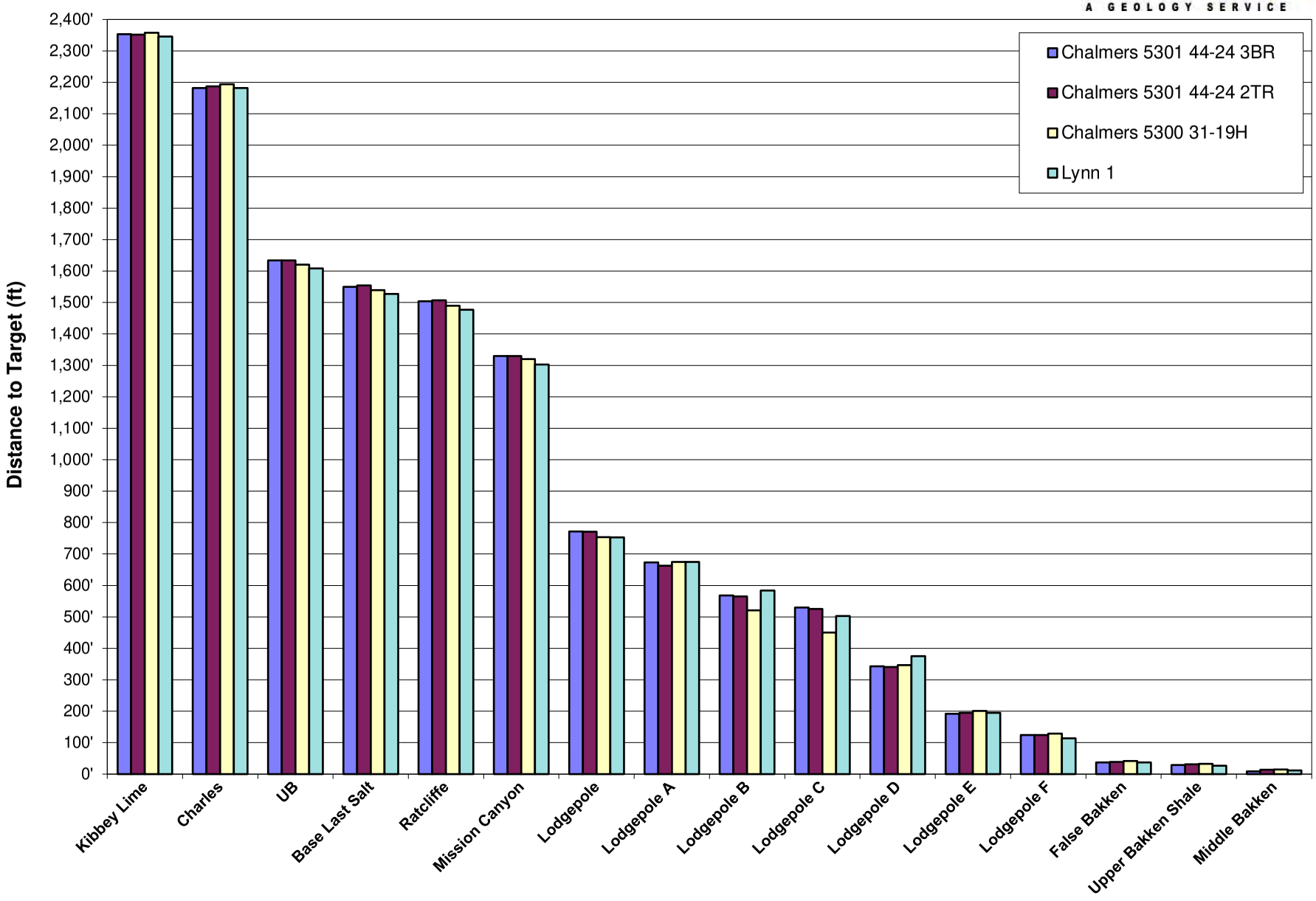
Oasis Petroleum North America, LLC - Chalmers 5301 44-24 3BR



ISOPACH TO TARGET

Oasis Petroleum North America, LLC - Chalmers 5301 44-24 3BR

SUNBURST CONSULTING
A GEOLOGY SERVICE



LITHOLOGY

Rig crews caught lagged samples in 30' intervals under the supervision of Sunburst geologists. A detailed list of sampling intervals is included in the well data summary page. Sample or gamma ray marker tops have been inserted in the sample descriptions below for reference. Samples were examined wet and dry under a trinocular microscope. The drilling fluid was diesel-based invert from surface casing to intermediate casing, while salt water drilling fluid was used throughout the lateral. Sample collection began at 8,200' MD.

Kibbey

8200-8230 SILTSTONE: red orange, tan, pink, soft to firm, sub-blocky, calcite cement, poorly cemented; rare SILTY SANDSTONE: tan to off white, very fine grained, sub round, moderately sorted, calcite cement, poorly cemented; trace ANHYDRITE: off white, soft, massive, amorphous texture

8230-8260 SILTSTONE: dark orange to light brown, tan, pink, rare gray, soft to firm, sub-blocky, calcite cement, poorly cemented; rare ANHYDRITE: off white, soft, amorphous texture; trace SILTY SANDSTONE: tan to off white, very fine grained, sub round, moderately sorted, calcite cement, poorly cemented

Kibbey "Lime" [8,269' MD, 8,268' TVD (-6,300')]

8260-8290 SILTSTONE: orange to light brown, tan, gray, soft, sub-blocky, calcite cement, poorly cemented; rare ANHYDRITE: off white, light pink, soft, amorphous texture; trace SILTY SANDSTONE: tan to off white, very fine grained, sub round, moderately sorted, calcite cement, poorly cemented

8290-8320 SILTSTONE: dark orange to light brown, tan, pink, soft, sub-blocky, calcite cement, poorly cemented; occasional ANHYDRITE: off white, soft, amorphous texture; trace SILTY SANDSTONE: as above

8320-8350 SILTSTONE: dark orange to light brown, tan, pink, soft, sub-blocky, calcite cement, poorly cemented; occasional ANHYDRITE: off white, soft, amorphous texture; trace SILTY SANDSTONE: as above

8350-8380 SILTSTONE: dark orange to light brown, tan, pink, soft, sub-blocky, calcite cement, poorly cemented; occasional ANHYDRITE: off white, soft, amorphous texture; trace SILTY SANDSTONE: as above

8380-8410 SILTSTONE: orange to light brown, tan, pink, soft, sub-blocky, calcite cement, poorly cemented; occasional ANHYDRITE: off white, soft, amorphous texture; trace SILTY SANDSTONE: as above

8410-8440 SILTSTONE: dark orange to light brown, tan to gray, trace pink, soft, sub-blocky, calcite cement, poorly cemented; occasional ANHYDRITE: off white, soft, amorphous texture; trace SILTY SANDSTONE: as above

The First Charles Salt [8,440' MD, 8,439' TVD (-6,471')]

8440-8470 SALT: translucent, microcrystalline, anhedral, crystalline texture, hard, frosted; trace LIMESTONE: mudstone, light to medium gray to gray brown, microcrystalline, firm to hard, argillaceous in part, dense, chalky texture, no visible porosity

8470-8500 SALT: translucent, trace frosted, microcrystalline, anhedral, crystalline texture, hard; rare LIMESTONE: mudstone, light to medium gray to gray brown, microcrystalline, firm to hard, argillaceous in part, dense, chalky texture, no visible porosity

8500-8530 SALT: translucent, rare frosted, microcrystalline, anhedral, crystalline texture, hard; occasional LIMESTONE: mudstone, light to medium gray, rare gray brown, microcrystalline, firm to hard, argillaceous in part, dense, earthy texture, no visible porosity

8530-8560 SALT: translucent, trace frosted, microcrystalline, anhedral, crystalline texture, hard; trace LIMESTONE: mudstone, light to medium gray, rare gray brown, microcrystalline, firm to hard, argillaceous in part, dense, earthy texture, no visible porosity

8560-8590 SALT: translucent, rare frosted, microcrystalline, anhedral, crystalline texture, hard; trace LIMESTONE: mudstone, light to medium gray, rare gray brown, microcrystalline, firm to hard, argillaceous in part, dense, earthy texture, no visible porosity

8590-8620 SALT: translucent, rare frosted, microcrystalline, anhedral, crystalline texture, hard; occasional LIMESTONE: mudstone, light to medium gray, occasional gray brown, microcrystalline, firm to hard, argillaceous in part, dense, earthy texture, no visible porosity

8620-8650 ANHYDRITE: off white, soft, amorphous; abundant SALT: clear to milky, off white, crystalline, hard, euhedral; trace LIMESTONE: as above

8650-8680 SALT: translucent, rare frosted, microcrystalline, anhedral, crystalline texture, hard; occasional LIMESTONE: mudstone, light to medium gray, occasional gray brown, microcrystalline, firm to hard, dense, earthy texture, no visible porosity; trace ANHYDRITE: off white, soft, massive, amorphous

8680-8710 SALT: translucent, microcrystalline, anhedral, crystalline texture, hard, frosted; common LIMESTONE: mudstone, light to medium gray to gray brown, microcrystalline, firm to hard, argillaceous in part, dense, chalky texture; rare ANHYDRITE: off white, soft, amorphous, no visible porosity

8710-8740 SALT: translucent, rare milky, microcrystalline, anhedral, crystalline texture, hard; occasional LIMESTONE: mudstone, medium gray, occasional gray brown, trace light gray, microcrystalline, firm to hard, argillaceous in part, dense, earthy texture, no visible porosity

8740-8770 SALT: translucent, occasional milky, microcrystalline, anhedral, crystalline texture, hard; rare LIMESTONE: mudstone, light gray, rare gray brown, microcrystalline, firm to hard, argillaceous in part, dense, earthy texture, no visible porosity

8770-8800 SALT: translucent, rare frosted, microcrystalline, anhedral, crystalline texture, hard; occasional LIMESTONE: mudstone, light gray, trace gray brown, microcrystalline, firm to hard, argillaceous in part, dense, earthy texture, no visible porosity

8800-8830 LIMESTONE: mudstone, light gray, trace gray brown, rare off white, microcrystalline, firm to hard, argillaceous in part, dense, earthy texture, no visible porosity

8830-8860 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, light gray, microcrystalline, firm, dense to banded, earthy texture, no visible porosity, occasional ANHYDRITE: off white, soft, massive, amorphous, no visible porosity

8860-8890 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, light gray, microcrystalline, firm, dense to banded, earthy texture, no visible porosity, occasional SALT: clear to milky, off white, crystalline, hard, euhedral; trace ANHYDRITE: as above

8890-8920 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, occasional light gray, microcrystalline, firm, dense to banded, earthy texture, no visible porosity, rare ANHYDRITE: off white to white, soft, massive, amorphous, no visible porosity, trace SALT: as above

8920-8950 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, occasional light gray, slightly mottled, microcrystalline, firm, dense to banded, earthy texture, no visible porosity, rare ANHYDRITE: off white to white, soft, massive, amorphous, no visible porosity, trace SALT: as above

8950-8980 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, occasional light gray, slightly mottled, microcrystalline, firm, dense to banded, earthy texture, no visible porosity, trace ANHYDRITE: off white to white, soft, massive, amorphous, no visible porosity

8980-9010 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, occasional light gray, slightly mottled, microcrystalline, firm, dense to banded, earthy texture, no visible porosity, rare ANHYDRITE: off white, trace light tan, soft, massive, amorphous, no visible porosity

9010-9040 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, occasional light gray, slightly mottled, microcrystalline, firm, dense to banded, earthy texture, no visible porosity, rare ANHYDRITE: as above; rare SALT: translucent, rare milky, crystalline, hard, euhedral

9040-9070 SALT: translucent, rare milky, crystalline, hard, euhedral; occasional ARGILLACEOUS LIMESTONE: mudstone, cream to tan, rare light to medium gray, slightly mottled, microcrystalline, firm, dense to banded, earthy texture, no visible porosity

Base Last Salt [9,072' MD, 9,071' TVD (-7,103')]

9070-9100 ARGILLACEOUS LIMESTONE: mudstone, cream to tan, rare light to medium gray, slightly mottled, microcrystalline, firm, dense to banded, earthy texture, no visible porosity; trace ANHYDRITE: off white, soft, massive, amorphous, no visible porosity

Ratcliffe [9,118' MD, 9,117' TVD (-7,149')]

9100-9130 ARGILLACEOUS LIMESTONE: mudstone, cream to tan, rare brown, trace gray, slightly mottled, microcrystalline, firm, dense to banded, earthy texture, no visible porosity; trace ANHYDRITE: off white, soft, massive, amorphous, no visible porosity

9130-9160 ARGILLACEOUS LIMESTONE: mudstone, cream to tan, rare brown, trace gray, slightly mottled, microcrystalline, firm, dense to banded, earthy texture, no visible porosity; trace ANHYDRITE: off white, soft, massive, amorphous, no visible porosity

9160-9190 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, light gray, microcrystalline, firm, dense to banded, earthy texture, no visible porosity, occasional ANHYDRITE: as above

9190-9220 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, light gray, microcrystalline, firm, dense to banded, earthy texture, no visible porosity, occasional ANHYDRITE: as above

9220-9250 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, light gray, microcrystalline, firm, dense to banded, earthy texture, no visible porosity, occasional ANHYDRITE: as above

9250-9280 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, light gray, microcrystalline, firm, dense to banded, earthy texture, no visible porosity, occasional ANHYDRITE: as above

Mission Canyon [9,292' MD, 9,291' TVD (-7,323')]

9280-9310 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, light gray, microcrystalline, firm, dense to banded, earthy texture, no visible porosity, occasional ANHYDRITE: as above

9310-9340 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, light gray, microcrystalline, firm, dense to banded, earthy texture, no visible porosity, occasional ANHYDRITE: as above

9340-9370 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, light gray, microcrystalline, firm, dense to banded, earthy texture, no visible porosity, occasional ANHYDRITE: as above

9370-9400 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, light gray, microcrystalline, firm, dense to banded, earthy texture, no visible porosity, occasional ANHYDRITE: as above

9400-9430 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, light gray, microcrystalline, firm, dense to banded, earthy texture, no visible porosity, occasional ANHYDRITE: as above

9430-9460 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, light gray, microcrystalline, firm, dense to banded, earthy texture, no visible porosity, occasional ANHYDRITE: as above

9460-9490 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, light gray, microcrystalline, firm, dense to banded, earthy texture, no visible porosity, occasional ANHYDRITE: as above

9490-9520 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, light gray, microcrystalline, firm, dense to banded, earthy texture, no visible porosity, occasional ANHYDRITE: as above

9520-9550 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, light gray, microcrystalline, firm, dense to banded, earthy texture, no visible porosity, occasional ANHYDRITE: as above

9550-9580 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, light gray, microcrystalline, firm, dense to banded, earthy texture, no visible porosity, occasional ANHYDRITE: as above

9580-9610 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, light gray, microcrystalline, firm, dense to banded, earthy texture, no visible porosity, occasional ANHYDRITE: as above

9610-9640 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, light gray, microcrystalline, firm, dense to banded, earthy texture, no visible porosity, occasional ANHYDRITE: as above

9640-9670 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, light gray, microcrystalline, firm, dense to banded, earthy texture, no visible porosity, occasional ANHYDRITE: as above

9670-9700 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, light gray, microcrystalline, firm, dense to banded, earthy texture, no visible porosity, occasional ANHYDRITE: as above

9700-9730 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, light gray, microcrystalline, firm, dense to banded, earthy texture, no visible porosity, occasional ANHYDRITE: as above

9730-9760 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, light gray, microcrystalline, firm, dense to banded, earthy texture, no visible porosity, occasional ANHYDRITE: as above

9760-9790 ARGILLACEOUS LIMESTONE: mudstone, cream, tan, light gray, microcrystalline, firm, dense to banded, earthy texture, no visible porosity, occasional ANHYDRITE: as above

9790-9820 ARGILLACEOUS LIMESTONE: mudstone, light to medium gray brown, tan, microcrystalline, firm to friable, rare algal material; trace ANHYDRITE: off white, massive, soft, amorphous

9820-9850 ARGILLACEOUS LIMESTONE: mudstone, light to medium gray brown, tan, microcrystalline, firm to friable, earthy texture, rare algal material

<u>Lodgepole</u> [9,850’ MD, 9,849’ TVD (-7,881’)]

9850-9880 ARGILLACEOUS LIMESTONE: mudstone, light to medium gray brown, tan, microcrystalline, firm to friable, earthy texture, rare algal material

9880-9910 ARGILLACEOUS LIMESTONE: mudstone, light to medium gray brown, tan, trace dark gray, microcrystalline, firm to friable, earthy texture, trace algal material

9910-9940 ARGILLACEOUS LIMESTONE: mudstone, light to medium gray brown, tan, trace dark gray, microcrystalline, firm to friable, earthy texture

9940-9970 ARGILLACEOUS LIMESTONE: mudstone, light to medium gray brown, tan, trace dark gray, microcrystalline, firm to friable, earthy texture

9970-10000 ARGILLACEOUS LIMESTONE: mudstone, light to medium gray brown, tan, trace dark gray, microcrystalline, firm to friable, earthy texture; trace ANHYDRITE: off white, massive, soft, amorphous

10000-10030 ARGILLACEOUS LIMESTONE: mudstone, light to medium gray brown, tan, trace dark gray, microcrystalline, firm to friable, earthy texture, trace algal material; trace ANHYDRITE: off white, massive, soft, amorphous

10030-10060 ARGILLACEOUS LIMESTONE: mudstone, light to medium gray brown, tan, trace dark gray, microcrystalline, firm to friable, earthy texture, trace algal material; trace ANHYDRITE: off white, massive, soft, amorphous

10060-10090 ARGILLACEOUS LIMESTONE: mudstone, light to medium gray brown, light tan, trace cream, slightly mottled, microcrystalline, firm to friable, earthy texture, trace algal material; trace ANHYDRITE: off white, massive, soft, amorphous

10090-10120 ARGILLACEOUS LIMESTONE: mudstone, light to medium gray brown, light tan, trace cream, slightly mottled, microcrystalline, firm to friable, earthy texture, trace algal material; trace ANHYDRITE: off white, massive, soft, amorphous

10120-10150 ARGILLACEOUS LIMESTONE: mudstone, light to medium gray brown, tan, microcrystalline, firm to friable, rare algal material; rare ANHYDRITE: off white, massive, soft, amorphous

10150-10180 ARGILLACEOUS LIMESTONE: mudstone, occasional gray brown, rare tan, microcrystalline, firm to friable, trace algal material; trace ANHYDRITE: off white, massive, soft, amorphous

10180-10210 ARGILLACEOUS LIMESTONE: mudstone, occasional gray brown, rare tan, microcrystalline, firm to friable, earthy, trace algal material; trace ANHYDRITE: off white, massive, soft, amorphous

10210-10240 ARGILLACEOUS LIMESTONE: mudstone, occasional gray brown, rare tan, rare cream, microcrystalline, firm to friable, earthy, trace algal material

10240-10270 ARGILLACEOUS LIMESTONE: mudstone, gray brown, rare tan, rare cream, microcrystalline, firm to friable, earthy, trace algal material

10270-10300 ARGILLACEOUS LIMESTONE: mudstone, gray brown, rare tan, trace cream, microcrystalline, firm to friable, earthy, trace algal material; trace ANHYDRITE: off white, soft, massive, amorphous

10300-10330 ARGILLACEOUS LIMESTONE: mudstone, gray brown, rare tan, trace cream, microcrystalline, firm to friable, earthy, trace algal material; trace ANHYDRITE: off white, soft, massive, amorphous

10330-10360 ARGILLACEOUS LIMESTONE: mudstone, gray brown, rare tan, trace cream, microcrystalline, firm to friable, earthy, trace algal material; trace ANHYDRITE: off white, soft, massive, amorphous

10360-10390 ARGILLACEOUS LIMESTONE: mudstone, gray brown, rare tan, trace cream, microcrystalline, firm to friable, earthy, trace algal material; trace ANHYDRITE: off white, soft, massive, amorphous

10390-10420 ARGILLACEOUS LIMESTONE: mudstone, gray brown, rare tan, trace cream, microcrystalline, firm to friable, earthy, trace algal material; trace ANHYDRITE: off white, soft, massive, amorphous

10420-10450 ARGILLACEOUS LIMESTONE: mudstone, gray brown, rare tan, trace cream, microcrystalline, firm to friable, earthy, trace algal material; trace ANHYDRITE: off white, soft, massive, amorphous

10450-10480 ARGILLACEOUS LIMESTONE: mudstone, gray brown, rare tan, trace cream, microcrystalline, firm to friable, earthy, trace algal material; trace ANHYDRITE: off white, soft, massive, amorphous

10480-10510 ARGILLACEOUS LIMESTONE: mudstone, gray brown, rare tan, trace cream, microcrystalline, firm to friable, earthy, trace algal material; trace ANHYDRITE: off white, soft, massive, amorphous

10510-10540 ARGILLACEOUS LIMESTONE: mudstone, gray brown, rare tan, trace cream, microcrystalline, firm to friable, earthy, trace algal material; trace ANHYDRITE: off white, soft, massive, amorphous

10540-10570 ARGILLACEOUS LIMESTONE: mudstone, gray brown, rare tan, trace cream, microcrystalline, firm to friable, earthy, trace algal material; trace ANHYDRITE: off white, soft, massive, amorphous

10570-10600 ARGILLACEOUS LIMESTONE: mudstone, gray brown, rare tan, trace cream, microcrystalline, firm to friable, earthy, trace algal material; trace ANHYDRITE: off white, soft, massive, amorphous

10600-10630 ARGILLACEOUS LIMESTONE: mudstone, gray brown, rare tan, trace cream, microcrystalline, firm to friable, earthy, trace algal material; trace ANHYDRITE: off white, soft, massive, amorphous

10630-10660 ARGILLACEOUS LIMESTONE: mudstone, gray brown, rare tan, trace cream, microcrystalline, firm to friable, earthy, trace algal material; trace ANHYDRITE: off white, soft, massive, amorphous

10660-10690 ARGILLACEOUS LIMESTONE: mudstone, gray brown, rare tan, trace cream, microcrystalline, firm to friable, earthy, trace algal material; trace ANHYDRITE: off white, soft, massive, amorphous

10690-10720 ARGILLACEOUS LIMESTONE: mudstone, gray brown, rare tan, trace cream, microcrystalline, firm to friable, earthy, trace algal material; trace ANHYDRITE: off white, soft, massive, amorphous

10720-10750 ARGILLACEOUS LIMESTONE: mudstone, gray brown, rare tan, trace cream, microcrystalline, firm to friable, earthy

False Bakken [10,754' MD, 10,584' TVD (-8,616')]

10750-10780 LIMESTONE: mudstone, light brown, rare tan, trace cream, microcrystalline, firm to friable, earthy

Upper Bakken [10,785' MD, 10,592' TVD (-8,624')]

10780-10810 SHALE: black to dark brown, firm, blocky, earthy, disseminated pyrite, petroliferous, carbonaceous, rare fracture porosity

10810-10820 SHALE: black to dark brown, firm, blocky, earthy, disseminated pyrite, petroliferous, carbonaceous, rare fracture porosity

10820-10830 SHALE: black to dark brown, firm, blocky, earthy, disseminated pyrite, petroliferous, carbonaceous, rare fracture porosity

10830-10840 SHALE: black, firm, blocky, earthy, disseminated pyrite, petroliferous, carbonaceous, rare fracture porosity

10840-10850 SHALE: black, firm, blocky, earthy, disseminated pyrite, petroliferous, carbonaceous, rare fracture porosity

Middle Bakken [10,853' MD, 10,612' TVD (-8,644')]

10850-10860 SHALE: black to dark brown, friable to firm, blocky, earthy, disseminated pyrite, petroliferous, carbonaceous, rare fracture porosity

10860-10870 SILTSTONE: light gray to light gray brown, sub-blocky, calcite cemented, trace disseminated pyrite, trace intergranular porosity

10870-10880 SILTSTONE: light gray to light gray brown, sub-blocky, calcite cemented, trace disseminated pyrite, trace intergranular porosity, trace spotty light brown oil stain

10880-10890 SILTSTONE: light gray to light gray brown, sub-blocky, calcite cemented, trace disseminated pyrite, trace intergranular porosity; trace SILTY SANDSTONE: medium to light gray, fine grained, sub round, firm, moderate sorted, calcite cement, moderate cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain

10890-10910 SILTSTONE: as above; occasional SILTY SANDSTONE: medium to light gray, trace tan, fine grained, sub round, firm, moderate sorted, calcite cement, moderate cemented, trace disseminated pyrite, trace intergranular porosity, trace spotty light brown oil stain

10910-10920 SILTY SANDSTONE: medium to light gray, trace tan, fine grained, sub round, firm, moderate sorted, calcite cement, moderate cemented, trace disseminated pyrite, trace intergranular porosity trace spotty light brown oil stain; trace SILTSTONE: as above

10920-10930 SILTY SANDSTONE: medium to light gray, trace tan, fine grained, sub round, firm, moderate sorted, calcite cement, moderate cemented, trace disseminated pyrite, trace intergranular porosity, trace spotty light brown oil stain

10930-10939 SILTY SANDSTONE: medium to light gray, trace tan, fine grained, sub round, firm, moderate sorted, calcite cement, moderate cemented, trace disseminated pyrite, trace intergranular porosity, trace spotty light brown oil stain

10939-10970 SILTY SANDSTONE: medium to light gray, trace tan, fine grained, sub round, firm, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace intergranular porosity, trace spotty light brown oil stain

10970-11000 SILTY SANDSTONE: medium to light gray, trace tan, fine grained, sub round, firm, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace intergranular porosity, trace spotty light brown oil stain

11000-11030 SILTY SANDSTONE: medium to light gray, trace tan, fine grained, sub round, firm, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

11030-11060 SILTY SANDSTONE: medium to light gray, trace tan, fine grained, sub round, firm, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

11060-11090 SILTY SANDSTONE: medium to light gray, trace tan, fine grained, sub round, firm, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

11090-11120 SILTY SANDSTONE: medium to light gray, trace tan, fine grained, sub round, firm, moderately sorted, calcite cement, moderately cemented, trace disseminated pyrite, trace intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

11120-11150 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

11150-11180 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

11180-11210 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

11210-11240 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

11240-11270 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

11270-11300 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

11300-11330 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

11330-11360 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

11360-11390 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

11390-11420 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

11420-11450 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

11450-11480 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

11480-11510 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

11510-11540 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

11540-11570 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

11570-11600 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

11600-11630 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

11630-11660 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

11660-11690 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

11690-11720 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

11720-11750 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

11750-11780 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

11780-11810 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

11810-11840 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

11840-11870 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

11870-11900 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

11900-11930 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

11930-11960 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

11960-11990 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

11990-12020 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12020-12050 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12050-12080 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12080-12110 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12110-12140 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12140-12170 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12170-12200 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12200-12230 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12230-12260 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12260-12290 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12290-12320 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12320-12350 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12350-12380 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12380-12410 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12410-12440 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12440-12470 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12470-12500 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12500-12530 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12530-12560 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12560-12590 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12590-12620 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12620-12650 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12650-12680 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12680-12710 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12710-12740 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12740-12770 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12770-12800 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12800-12830 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12830-12860 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12860-12890 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12890-12920 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12920-12950 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12950-12980 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

12980-13010 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13010-13040 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13040-13070 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13070-13100 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13100-13130 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13130-13160 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13160-13190 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13190-13220 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13220-13250 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13250-13280 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13280-13310 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13310-13340 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13340-13370 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13370-13400 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13400-13430 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13430-13460 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13460-13490 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13490-13520 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13520-13550 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13550-13580 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13580-13610 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13610-13640 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13640-13670 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13670-13700 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13700-13730 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13730-13760 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13760-13790 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13790-13820 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13820-13850 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13850-13880 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13880-13910 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13910-13940 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13940-13970 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

13970-14000 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14000-14030 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14030-14060 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14060-14090 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14090-14120 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14120-14150 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14150-14180 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14180-14210 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14210-14240 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14240-14270 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14270-14300 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14300-14330 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14330-14360 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14360-14390 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14390-14420 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14420-14450 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14450-14480 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14480-14510 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14510-14540 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14540-14570 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14570-14600 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14600-14630 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14630-14660 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14660-14690 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14690-14720 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14720-14750 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14750-14780 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14780-14810 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14810-14840 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14840-14870 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14870-14900 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14900-14930 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast diffuse pale yellow cut florescence

14930-14960 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

14960-14990 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

14990-15020 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

15020-15050 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

15050-15080 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

15080-15110 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

15110-15140 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

15140-15170 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

15170-15200 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

15200-15230 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

15230-15260 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, weak contaminated with lube

15260-15290 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, weak contaminated with lube

15290-15320 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, moderately contaminated with lube

15320-15350 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, moderately contaminated with lube

15350-15380 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, moderately contaminated with lube

15380-15410 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, moderately contaminated with lube

15410-15440 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

15440-15470 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

15470-15500 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

15500-15530 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

15530-15560 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, weak contaminated with lube

15560-15590 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, weak contaminated with lube

15590-15620 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, weak contaminated with lube

15620-15650 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

15650-15680 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

15680-15710 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

15710-15740 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

15740-15770 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

15770-15800 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

15800-15830 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

15830-15860 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

15860-15890 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

15890-15920 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

15920-15950 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

15950-15980 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

15980-16010 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16010-16040 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16040-16070 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16070-16100 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16100-16130 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16130-16160 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16160-16190 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16190-16220 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16220-16250 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16250-16280 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16280-16310 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16310-16340 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16340-16370 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16370-16400 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16400-16430 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16430-16460 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16460-16490 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16490-16520 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16520-16550 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16550-16580 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16580-16610 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16610-16640 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16640-16670 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16670-16700 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16700-16730 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16730-16760 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16760-16790 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16790-16820 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16820-16850 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16850-16880 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16880-16910 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16910-16940 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16940-16970 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

16970-17000 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavy contaminated with lube

17000-17030 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17030-17060 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17060-17090 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17090-17120 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17120-17150 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17150-17180 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17180-17210 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17210-17240 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17240-17270 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17270-17300 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17300-17330 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17330-17360 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17360-17390 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17390-17420 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17420-17450 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17450-17480 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17480-17510 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17510-17540 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17540-17570 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17570-17600 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17600-17630 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17630-17660 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17660-17690 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17690-17720 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17720-17750 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17750-17780 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17780-17810 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17810-17840 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17840-17870 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17870-17900 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17900-17930 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17930-17960 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17960-17990 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

17990-18020 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

18020-18050 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

18050-18080 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

18080-18110 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

18110-18140 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

18140-18170 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

18170-18200 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

18200-18230 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

18230-18260 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

18260-18290 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

18290-18320 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, fast cloudy pale yellow cut florescence

18320-18350 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

18350-18380 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

18380-18410 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

18410-18440 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

18440-18470 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

18470-18500 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

18500-18530 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

18530-18560 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

18560-18590 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

18590-18620 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

18620-18650 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

18650-18680 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

18680-18710 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

18710-18740 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

18740-18770 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

18770-18800 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

18800-18830 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

18830-18860 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

18860-18890 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

18890-18920 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

18920-18950 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

18950-18980 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

18980-19010 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19010-19040 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19040-19070 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19070-19100 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19100-19130 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19130-19160 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19160-19190 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19190-19220 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19220-19250 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19250-19280 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19280-19310 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19310-19340 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19340-19370 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19370-19400 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19400-19430 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19430-19460 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19460-19490 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19490-19520 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19520-19550 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19550-19580 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19580-19610 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19610-19640 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19640-19670 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19670-19700 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19700-19730 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19730-19760 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19760-19790 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19790-19820 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19820-19850 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19850-19880 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19880-19910 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19910-19940 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19940-19970 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

19970-20000 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

20000-20030 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

20030-20060 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

20060-20090 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

20090-20120 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

20120-20150 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

20150-20180 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

20180-20210 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

20210-20240 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

20240-20270 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

20270-20300 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

20300-20330 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

20330-20360 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

20360-20390 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

20390-20420 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

20420-20450 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

20450-20480 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

20480-20510 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

20510-20540 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

20540-20570 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

20570-20600 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

20600-20630 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

20630-20660 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

20660-20690 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

20690-20720 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

20720-20750 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

20750-20780 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

20780-20810 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

20810-20833 SILTY SANDSTONE: light to medium gray to brown, fine grained, sub round, firm, moderately sorted, calcareous cement, moderately cemented, trace disseminated pyrite, possible intergranular porosity, trace spotty light brown oil stain, heavily contaminated with lube

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)

SEP 2014
RECEIVED
ND OIL & GAS
DIVISION

Well File No.
28599

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

☐ Notice of Intent	Approximate Start Date	☐ Drilling Prognosis	☐ Spill Report
☑ Report of Work Done	Date Work Completed: **September 23, 2014**	☐ Redrilling or Repair	☐ Shooting
☐ 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	☐ Casing or Liner	☐ Acidizing
		☐ Plug Well	☐ Fracture Treatment
		☐ Supplemental History	☐ Change Production Method
		☐ Temporarily Abandon	☑ Reclamation
		☐ Other **Reserve pit reclamation**	

Well Name and Number: **Chalmers 5301 44-24 3BR**

Footages	Qtr-Qtr	Section	Township	Range
926 F S L 245 F E L	**SESE**	**24**	**153 N**	**101 W**

Field	Pool	County
Baker	**Bakken**	**McKenzie**

24-HOUR PRODUCTION RATE

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

Name of Contractor(s): **Neu Construction**

Address	City	State	Zip Code
602 W 9th Street	**Fairview**	**MT**	**59221**

DETAILS OF WORK

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

The NDIC field inspector, Rick Dunn (NDIC) was notified on 09/23/2014

The surface owners, Wes Lindvig was contacted on 09/23/2014
Wes Lindvig 140758 41st Street NW Alexander, ND 58831

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

Company	Telephone Number
Oasis Petroleum North America LLC	**281-404-9591**

Address: **1001 Fannin, Suite 1500**

City	State	Zip Code
Houston	**TX**	**77002**

Signature	Printed Name
Chelsea Covington	**Chelsea Covington**
Title: **Regulatory Assistant**	Date: **September 24, 2014**

Email Address: **ccovington@oasispetroleum.com**

FOR STATE USE ONLY

☒ Received	☐ Approved
Date: 10-6-14	
By:	
Title:	

RYAN DIRECTIONAL SERVICES, INC.
A NABORS COMPANY

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

Thursday, September 18, 2014

State of North Dakota

Subject: **Surveys**

Re: **Oasis**
Chalmers 5301 44-24 3BR
McKenzie, ND
A.P.I. No: 33-053-06010

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*
Ogden, Daniel	MWD Operator	O.H.	0'	10880'	06/24/14	07/05/14	MWD	10880'
Ogden, Daniel	MWD Operator	O.H.	18880'	20772'	09/08/14	09/15/14	MWD	20883'

A certified plat on which the bottom hole location is oriented both to the surface location and to the lease lines (or unit lines in case of pooling) is attached to the survey report. If any other information is required please contact the undersigned at the letterhead address or phone number.

Douglas Hudson

Hudson, Douglas
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

Saturday, July 05, 2014

State of North Dakota
County of McKenzie Co.

Subject: **Survey Certification Letter**

Survey Company:	**Ryan Directional Services, Inc.**		
Job Number:	**7798**	Surface:	**48°03'20.49", -103°36'18.55"**
Survey Job Type:	**Ryan MWD**	A.P.I. No:	**33-053-06010**
Customer:	**Oasis Petroleum N.A. LLC**	Location:	**McKenzie Co., North Dakota**
Well Name:	**Chalmers 5301 44-24 3BR**	RKB Height:	**25'**
Rig Name:	**Nabors B-25**	Distance to Bit:	**59'**

Surveyor Name	*Surveyor Title*	*Borehole Number*	*Start Depth*	*End Depth*	*Start Date*	*End Date*	*Type of*	*TD Straight Line Projection*
Daniel Ogden	MWD Supervisor	OH	100'	10880'	06/24/14	07/05/14	MWD	10939'

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.

Daniel Ogden
MWD Supervisor
Ryan Directional Services, Inc.

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

Tuesday, September 16, 2014

State of North Dakota
County of McKenzie

Subject: **Survey Certification Letter**

Survey Company:	**Ryan Directional Services, Inc.**		
Job Number:	**7893**	Surface:	**48°03'20.49", -103°36'18.55"**
Survey Job Type:	**Ryan MWD**	A.P.I. No:	**33-053-06010**
Customer:	**Oasis Petroleum N.A. LLC**	Location:	**McKenzie, ND**
Well Name:	**Chalmers 5301 44-24 3BR**	RKB Height:	**25'**
Rig Name:	**Nabors B-25**	Distance to Bit:	**61'**

Surveyor Name	*Surveyor Title*	*Borehole Number*	*Start Depth*	*End Depth*	*Start Date*	*End Date*	*Type of*	*TD Straight Line Projection*
Daniel Ogden	MWD Supervisor	OH	10939'	20772'	09/08/14	09/16/14	MWD	20833'

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.

Daniel Ogden
MWD Supervisor
Ryan Directional Services, Inc.

Report #: 1
Date: 24-Jun-14

RYAN DIRECTIONAL SERVICES, INC.
A NABORS COMPANY

Ryan Job # 7798

SURVEY REPORT

Customer:	Oasis Petroleum N.A. LLC
Well Name:	Chalmers 5301 44-24 3BR
Rig #:	Nabors B-25
API #:	33-053-06010
Calculation Method:	Minimum Curvature Calculation

MWD Operator:	Daniel Ogden
Directional Drillers:	RPM
Survey Corrected To:	True North
Vertical Section Direction:	90
Total Correction:	8.27
Temperature Forecasting Model (Chart Only):	Logarithmic

Survey #	MD	Inc	Azm	Temp	TVD	VS	N/S	E/W	DLS
Tie in to Conductor Well Depth									
Tie In	**0**	**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
1	184	0.80	273.10	1.00	183.99	-1.28	0.07	-1.28	0.43
2	215	0.70	271.20	71.00	214.99	-1.69	0.09	-1.69	0.33
3	308	0.90	267.70	71.00	307.98	-2.99	0.07	-2.99	0.22
4	402	0.30	299.60	71.00	401.98	-3.94	0.16	-3.94	0.71
5	**495**	**0.30**	**302.10**	**73.00**	**494.98**	**-4.36**	**0.41**	**-4.36**	**0.01**
6	588	0.70	304.50	75.00	587.97	-5.03	0.86	-5.03	0.43
7	680	0.70	339.40	75.00	679.97	-5.69	1.70	-5.69	0.46
8	772	1.30	28.50	78.00	771.95	-5.39	3.15	-5.39	1.08
9	865	1.20	56.40	80.00	864.93	-4.08	4.61	-4.08	0.66
10	**957**	**1.10**	**52.90**	**82.00**	**956.91**	**-2.57**	**5.68**	**-2.57**	**0.13**
11	1049	1.00	55.60	86.00	1048.90	-1.20	6.67	-1.20	0.12
12	1142	1.70	55.50	87.00	1141.87	0.60	7.91	0.60	0.75
13	1234	1.20	103.10	91.00	1233.84	2.67	8.46	2.67	1.37
14	1326	0.80	133.60	93.00	1325.83	4.07	7.80	4.07	0.71
15	**1418**	**0.70**	**167.60**	**98.00**	**1417.82**	**4.66**	**6.81**	**4.66**	**0.49**
16	1510	0.40	124.20	98.00	1509.82	5.04	6.08	5.04	0.54
17	1604	0.30	109.00	100.00	1603.82	5.55	5.81	5.55	0.14
18	1697	0.20	134.70	104.00	1696.82	5.89	5.62	5.89	0.16
19	1790	0.40	172.40	104.00	1789.82	6.05	5.18	6.05	0.29
20	**1883**	**0.40**	**108.80**	**105.00**	**1882.81**	**6.40**	**4.76**	**6.40**	**0.45**
21	1977	0.50	116.60	107.00	1976.81	7.08	4.47	7.08	0.12
22	2031	0.40	151.40	102.00	2030.81	7.38	4.20	7.38	0.53
23	2096	0.50	271.90	96.00	2095.81	7.20	4.01	7.20	1.20
24	2190	0.40	197.90	100.00	2189.81	6.69	3.71	6.69	0.58
25	**2283**	**0.70**	**165.90**	**104.00**	**2282.80**	**6.73**	**2.85**	**6.73**	**0.45**
26	2376	1.10	170.60	107.00	2375.79	7.02	1.42	7.02	0.44
27	2469	1.30	167.40	109.00	2468.77	7.39	-0.49	7.39	0.23
28	2563	0.90	130.90	111.00	2562.75	8.18	-2.02	8.18	0.84
29	2656	0.40	132.00	114.00	2655.75	8.98	-2.71	8.98	0.54
30	**2749**	**0.80**	**137.60**	**116.00**	**2748.74**	**9.66**	**-3.41**	**9.66**	**0.43**
31	2843	0.70	86.60	120.00	2842.73	10.67	-3.86	10.67	0.69
32	2936	1.00	99.10	122.00	2935.72	12.04	-3.95	12.04	0.38
33	3029	0.80	74.90	125.00	3028.71	13.47	-3.91	13.47	0.46
34	3122	1.10	76.00	127.00	3121.70	14.96	-3.53	14.96	0.32
35	**3216**	**0.90**	**83.40**	**127.00**	**3215.69**	**16.57**	**-3.23**	**16.57**	**0.25**
36	3309	0.70	115.00	127.00	3308.68	17.81	-3.38	17.81	0.51
37	3402	0.60	124.30	127.00	3401.67	18.73	-3.90	18.73	0.16
38	3495	1.30	50.90	127.00	3494.66	19.95	-3.50	19.95	1.36
39	3589	1.30	62.60	129.00	3588.64	21.72	-2.34	21.72	0.28
40	**3682**	**0.70**	**75.70**	**131.00**	**3681.62**	**23.21**	**-1.72**	**23.21**	**0.69**
41	3775	1.00	93.70	132.00	3774.61	24.57	-1.63	24.57	0.43
42	3868	1.00	87.90	132.00	3867.60	26.19	-1.65	26.19	0.11
43	3962	0.80	91.20	134.00	3961.59	27.67	-1.63	27.67	0.22
44	4055	0.60	112.20	136.00	4054.58	28.77	-1.83	28.77	0.35
45	**4148**	**0.90**	**148.50**	**134.00**	**4147.57**	**29.60**	**-2.64**	**29.60**	**0.59**
46	4242	0.70	10.80	136.00	4241.57	30.09	-2.70	30.09	1.59
47	4335	0.50	1.00	140.00	4334.56	30.21	-1.74	30.21	0.24
48	4428	0.40	10.40	141.00	4427.56	30.27	-1.02	30.27	0.13
49	4521	0.30	2.20	143.00	4520.56	30.34	-0.45	30.34	0.12
50	**4615**	**0.10**	**305.30**	**143.00**	**4614.56**	**30.28**	**-0.16**	**30.28**	**0.28**
51	4708	0.30	320.50	145.00	4707.56	30.06	0.08	30.06	0.22
52	4801	0.80	303.50	147.00	4800.55	29.36	0.62	29.36	0.56
53	4894	0.70	277.90	147.00	4893.54	28.26	1.06	28.26	0.37
54	4988	0.30	167.50	149.00	4987.54	27.74	0.90	27.74	0.91
55	**5081**	**0.70**	**123.70**	**150.00**	**5080.54**	**28.27**	**0.34**	**28.27**	**0.57**
56	5174	1.00	162.10	150.00	5173.53	28.99	-0.74	28.99	0.67
57	5268	1.10	169.10	152.00	5267.51	29.41	-2.41	29.41	0.17
58	5361	0.30	157.70	152.00	5360.51	29.68	-3.51	29.68	0.87
59	5454	0.60	147.50	154.00	5453.50	30.03	-4.15	30.03	0.33
60	**5547**	**0.70**	**142.00**	**156.00**	**5546.50**	**30.64**	**-5.01**	**30.64**	**0.13**

Report #: 1
Date: 24-Jun-14

RYAN DIRECTIONAL SERVICES, INC.
A NABORS COMPANY

Ryan Job # 7798

SURVEY REPORT

Customer:	Oasis Petroleum N.A. LLC
Well Name:	Chalmers 5301 44-24 3BR
Rig #:	Nabors B-25
API #:	33-053-06010
Calculation Method:	Minimum Curvature Calculation

MWD Operator:	Daniel Ogden
Directional Drillers:	RPM
Survey Corrected To:	True North
Vertical Section Direction:	90
Total Correction:	8.27
Temperature Forecasting Model (Chart Only):	Logarithmic

Survey #	MD	Inc	Azm	Temp	TVD	VS	N/S	E/W	DLS
61	5641	1.00	165.90	158.00	5640.49	31.19	-6.25	31.19	0.49
62	5734	1.20	149.70	158.00	5733.47	31.88	-7.88	31.88	0.40
63	5827	1.00	172.70	158.00	5826.45	32.48	-9.53	32.48	0.52
64	5920	1.10	185.40	158.00	5919.44	32.50	-11.22	32.50	0.27
65	**5977**	**1.10**	**167.90**	**158.00**	**5976.43**	**32.56**	**-12.30**	**32.56**	**0.59**
66	6062	1.20	178.60	122.00	6061.41	32.75	-13.99	32.75	0.28
67	6093	1.10	184.00	122.00	6092.40	32.74	-14.61	32.74	0.48
68	6187	0.60	19.80	125.00	6186.40	32.84	-15.05	32.84	1.79
69	6280	0.70	344.00	129.00	6279.39	32.85	-14.04	32.85	0.44
70	**6373**	**0.60**	**322.50**	**132.00**	**6372.39**	**32.40**	**-13.11**	**32.40**	**0.28**
71	6466	0.40	285.40	136.00	6465.38	31.79	-12.64	31.79	0.40
72	6560	0.90	70.10	140.00	6559.38	32.17	-12.30	32.17	1.33
73	6653	0.60	65.80	145.00	6652.37	33.30	-11.85	33.30	0.33
74	6746	0.60	100.50	147.00	6745.37	34.22	-11.74	34.22	0.38
75	**6839**	**1.10**	**34.10**	**150.00**	**6838.36**	**35.20**	**-11.09**	**35.20**	**1.10**
76	6933	1.30	16.20	152.00	6932.34	36.00	-9.32	36.00	0.45
77	7026	1.20	17.60	156.00	7025.32	36.59	-7.38	36.59	0.11
78	7119	1.20	17.00	158.00	7118.30	37.17	-5.52	37.17	0.01
79	7212	1.10	6.20	159.00	7211.28	37.55	-3.70	37.55	0.26
80	**7306**	**0.50**	**35.80**	**161.00**	**7305.27**	**37.89**	**-2.47**	**37.89**	**0.75**
81	7399	0.40	50.40	165.00	7398.27	38.38	-1.93	38.38	0.16
82	7492	0.50	41.90	167.00	7491.26	38.90	-1.42	38.90	0.13
83	7586	0.70	59.10	168.00	7585.26	39.67	-0.82	39.67	0.28
84	7679	0.90	70.80	170.00	7678.25	40.84	-0.29	40.84	0.28
85	**7772**	**0.70**	**65.80**	**172.00**	**7771.24**	**42.05**	**0.18**	**42.05**	**0.23**
86	7865	0.40	9.00	172.00	7864.24	42.62	0.73	42.62	0.63
87	7959	0.40	307.50	174.00	7958.23	42.41	1.26	42.41	0.44
88	8052	0.50	318.60	176.00	8051.23	41.89	1.76	41.89	0.14
89	8145	0.70	315.10	177.00	8144.23	41.22	2.47	41.22	0.22
90	**8239**	**0.70**	**312.30**	**179.00**	**8238.22**	**40.39**	**3.26**	**40.39**	**0.04**
91	8332	0.50	328.70	167.00	8331.21	39.75	3.99	39.75	0.28
92	8425	0.70	329.90	170.00	8424.21	39.26	4.83	39.26	0.22
93	8518	0.50	336.30	174.00	8517.20	38.81	5.69	38.81	0.23
94	8612	0.60	358.50	177.00	8611.20	38.63	6.56	38.63	0.25
95	**8705**	**0.70**	**330.80**	**179.00**	**8704.19**	**38.34**	**7.54**	**38.34**	**0.35**
96	8798	0.70	322.90	183.00	8797.19	37.72	8.49	37.72	0.10
97	8892	0.90	317.60	185.00	8891.18	36.88	9.49	36.88	0.23
98	8985	0.10	318.50	186.00	8984.17	36.33	10.09	36.33	0.86
99	9078	0.80	149.30	188.00	9077.17	36.61	9.60	36.61	0.97
100	**9171**	**0.80**	**154.60**	**192.00**	**9170.16**	**37.22**	**8.45**	**37.22**	**0.08**
101	9265	0.60	154.90	194.00	9264.15	37.71	7.41	37.71	0.21
102	9358	0.70	158.50	194.00	9357.15	38.13	6.44	38.13	0.12
103	9451	0.70	168.90	197.00	9450.14	38.44	5.36	38.44	0.14
104	9545	0.80	168.00	199.00	9544.13	38.69	4.15	38.69	0.11
105	**9638**	**0.90**	**178.30**	**199.00**	**9637.12**	**38.85**	**2.79**	**38.85**	**0.20**
106	9731	1.00	194.10	201.00	9730.11	38.67	1.27	38.67	0.30
107	9824	1.00	210.20	203.00	9823.10	38.07	-0.22	38.07	0.30
108	9918	0.90	157.50	201.00	9917.09	37.93	-1.61	37.93	0.90
109	10011	0.80	181.50	203.00	10010.08	38.20	-2.93	38.20	0.39
110	**10071**	**1.10**	**207.10**	**203.00**	**10070.07**	**37.92**	**-3.87**	**37.92**	**0.85**
111	10088	1.10	212.70	185.00	10087.06	37.76	-4.15	37.76	0.63
112	10119	1.50	139.20	185.00	10118.06	37.87	-4.71	37.87	5.12
113	10150	6.30	110.30	188.00	10148.98	39.73	-5.60	39.73	16.25
114	10181	11.10	106.30	188.00	10179.61	44.19	-7.03	44.19	15.60
115	**10212**	**15.40**	**104.20**	**188.00**	**10209.78**	**51.05**	**-8.88**	**51.05**	**13.96**
116	10243	20.40	103.10	192.00	10239.27	60.31	-11.12	60.31	16.17
117	10274	24.40	101.80	192.00	10267.93	71.84	-13.65	71.84	13.00
118	10305	27.20	102.40	195.00	10295.83	85.03	-16.48	85.03	9.07
119	10337	30.20	105.00	195.00	10323.90	99.95	-20.14	99.95	10.15
120	**10368**	**33.00**	**107.10**	**195.00**	**10350.30**	**115.56**	**-24.64**	**115.56**	**9.70**

Report #: 1
Date: 24-Jun-14

RYAN DIRECTIONAL SERVICES, INC.
A NABORS COMPANY

Ryan Job # 7798

SURVEY REPORT

Customer:	Oasis Petroleum N.A. LLC
Well Name:	Chalmers 5301 44-24 3BR
Rig #:	Nabors B-25
API #:	33-053-06010
Calculation Method:	Minimum Curvature Calculation

MWD Operator:	Daniel Ogden
Directional Drillers:	RPM
Survey Corrected To:	True North
Vertical Section Direction:	90
Total Correction:	8.27
Temperature Forecasting Model (Chart Only):	Logarithmic

Survey #	MD	Inc	Azm	Temp	TVD	VS	N/S	E/W	DLS
121	10399	36.70	107.10	195.00	10375.74	132.48	-29.85	132.48	11.94
122	10430	41.10	106.10	199.00	10399.86	151.14	-35.40	151.14	14.34
123	10461	45.80	105.00	199.00	10422.36	171.67	-41.10	171.67	15.36
124	10492	48.80	104.30	199.00	10443.38	193.71	-46.86	193.71	9.82
125	**10523**	**51.20**	**104.50**	**203.00**	**10463.30**	**216.71**	**-52.77**	**216.71**	**7.76**
126	10554	51.40	104.70	203.00	10482.69	240.12	-58.87	240.12	0.82
127	10585	52.10	105.10	203.00	10501.88	263.65	-65.13	263.65	2.47
128	10616	54.30	106.50	203.00	10520.45	287.53	-71.89	287.53	7.96
129	10647	57.20	106.50	203.00	10537.89	312.10	-79.17	312.10	9.35
130	**10678**	**61.50**	**106.60**	**203.00**	**10553.69**	**337.65**	**-86.76**	**337.65**	**13.87**
131	10710	67.20	106.90	203.00	10567.54	365.27	-95.07	365.27	17.83
132	10741	71.30	107.60	203.00	10578.52	392.94	-103.67	392.94	13.39
133	10772	72.30	107.90	203.00	10588.20	420.99	-112.65	420.99	3.35
134	10803	73.00	108.40	203.00	10597.45	449.11	-121.86	449.11	2.73
135	**10834**	**74.70**	**108.60**	**203.00**	**10606.07**	**477.34**	**-131.31**	**477.34**	**5.52**
136	10865	77.80	108.50	203.00	10613.43	505.89	-140.89	505.89	10.00
137	10880	80.30	108.50	203.00	10616.28	519.85	-145.56	519.85	16.67
138	10963	89.40	108.60	221.00	10623.73	598.14	-171.83	598.14	10.96
139	10994	89.00	108.10	213.00	10624.16	627.56	-181.59	627.56	2.07
140	**11024**	**88.90**	**107.90**	**213.00**	**10624.71**	**656.09**	**-190.86**	**656.09**	**0.75**
141	11055	87.30	109.20	215.00	10625.74	685.46	-200.72	685.46	6.65
142	11086	87.20	108.70	212.00	10627.22	714.75	-210.77	714.75	1.64
143	11117	86.90	108.10	212.00	10628.82	744.12	-220.55	744.12	2.16
144	11147	87.00	107.10	213.00	10630.42	772.68	-229.60	772.68	3.35
145	**11178**	**87.70**	**106.80**	**210.00**	**10631.85**	**802.30**	**-238.63**	**802.30**	**2.46**
146	11209	88.80	107.00	212.00	10632.80	831.94	-247.64	831.94	3.61
147	11240	90.60	106.80	213.00	10632.96	861.60	-256.65	861.60	5.84
148	11271	91.20	106.20	210.00	10632.47	891.32	-265.45	891.32	2.74
149	11302	91.10	106.30	210.00	10631.85	921.08	-274.13	921.08	0.46
150	**11333**	**89.80**	**104.50**	**212.00**	**10631.61**	**950.96**	**-282.36**	**950.96**	**7.16**
151	11364	89.00	104.40	210.00	10631.93	980.98	-290.09	980.98	2.60
152	11395	89.00	104.20	210.00	10632.47	1011.02	-297.75	1011.02	0.65
153	11426	88.20	102.20	213.00	10633.23	1041.19	-304.83	1041.19	6.95
154	11457	88.00	102.20	210.00	10634.26	1071.47	-311.37	1071.47	0.65
155	**11487**	**88.20**	**101.20**	**212.00**	**10635.25**	**1100.83**	**-317.45**	**1100.83**	**3.40**
156	11518	87.00	99.50	215.00	10636.55	1131.30	-323.02	1131.30	6.71
157	11549	87.00	99.40	213.00	10638.17	1161.83	-328.10	1161.83	0.32
158	11580	86.70	99.60	213.00	10639.88	1192.36	-333.21	1192.36	1.16
159	11611	86.80	97.80	215.00	10641.63	1222.96	-337.89	1222.96	5.81
160	**11642**	**87.00**	**97.00**	**213.00**	**10643.31**	**1253.65**	**-341.88**	**1253.65**	**2.66**
161	11672	86.90	97.00	215.00	10644.91	1283.39	-345.53	1283.39	0.33
162	11703	87.30	94.70	213.00	10646.47	1314.18	-348.68	1314.18	7.52
163	11735	87.60	94.70	213.00	10647.90	1346.04	-351.30	1346.04	0.94
164	11766	88.80	94.40	215.00	10648.87	1376.93	-353.76	1376.93	3.99
165	**11797**	**89.60**	**92.40**	**217.00**	**10649.30**	**1407.87**	**-355.60**	**1407.87**	**6.95**
166	11828	89.50	92.70	215.00	10649.55	1438.84	-356.98	1438.84	1.02
167	11859	89.90	92.40	217.00	10649.71	1469.81	-358.36	1469.81	1.61
168	11890	91.00	90.30	219.00	10649.47	1500.80	-359.09	1500.80	7.65
169	11952	91.40	89.80	221.00	10648.17	1562.78	-359.14	1562.78	1.03
170	**12045**	**91.70**	**89.40**	**222.00**	**10645.65**	**1655.75**	**-358.49**	**1655.75**	**0.54**
171	12137	90.80	88.50	222.00	10643.65	1747.71	-356.81	1747.71	1.38
172	12168	89.90	87.90	222.00	10643.46	1778.69	-355.83	1778.69	3.49
173	12231	88.70	87.40	226.00	10644.23	1841.63	-353.25	1841.63	2.06
174	12323	89.20	88.00	224.00	10645.91	1933.54	-349.56	1933.54	0.85
175	**12416**	**88.50**	**85.90**	**228.00**	**10647.78**	**2026.38**	**-344.61**	**2026.38**	**2.38**
176	12508	88.70	87.00	226.00	10650.03	2118.18	-338.92	2118.18	1.21
177	12601	88.20	86.90	226.00	10652.54	2211.01	-333.97	2211.01	0.55
178	12695	90.80	88.70	226.00	10653.36	2304.93	-330.36	2304.93	3.36
179	12789	91.50	90.50	228.00	10651.48	2398.90	-329.71	2398.90	2.05
180	**12883**	**90.20**	**89.70**	**231.00**	**10650.08**	**2492.89**	**-329.87**	**2492.89**	**1.62**

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Total Correction: 8.27
Temperature Forecasting Model (Chart Only): Logarithmic

Survey #	MD	Inc	Azm	Temp	TVD	VS	N/S	E/W	DLS
181	12976	88.70	89.60	231.00	10650.97	2585.88	-329.30	2585.88	1.62
182	13070	88.50	89.30	235.00	10653.27	2679.85	-328.40	2679.85	0.38
183	13164	88.50	89.00	237.00	10655.73	2773.81	-327.01	2773.81	0.32
184	13258	90.80	90.40	235.00	10656.31	2867.79	-326.52	2867.79	2.86
185	**13352**	**90.50**	**91.40**	**235.00**	**10655.24**	**2961.77**	**-327.99**	**2961.77**	**1.11**
186	13445	90.50	91.50	239.00	10654.43	3054.74	-330.34	3054.74	0.11
187	13539	90.70	91.30	235.00	10653.44	3148.71	-332.64	3148.71	0.30
188	13633	88.20	91.20	239.00	10654.35	3242.67	-334.69	3242.67	2.66
189	13727	87.00	89.80	240.00	10658.28	3336.58	-335.51	3336.58	1.96
190	**13821**	**89.20**	**90.90**	**242.00**	**10661.40**	**3430.52**	**-336.09**	**3430.52**	**2.62**
191	13914	89.50	89.70	239.00	10662.45	3523.51	-336.57	3523.51	1.33
192	14008	88.90	90.40	242.00	10663.77	3617.50	-336.66	3617.50	0.98
193	14102	90.50	90.40	244.00	10664.26	3711.50	-337.31	3711.50	1.70
194	14196	88.30	90.80	242.00	10665.24	3805.48	-338.30	3805.48	2.38
195	**14290**	**88.10**	**90.60**	**246.00**	**10668.19**	**3899.43**	**-339.44**	**3899.43**	**0.30**
196	14384	90.10	91.60	246.00	10669.67	3993.39	-341.25	3993.39	2.38
197	14478	89.10	90.50	248.00	10670.33	4087.37	-342.97	4087.37	1.58
198	14572	88.40	89.70	249.00	10672.38	4181.35	-343.13	4181.35	1.13
199	14666	90.30	89.70	248.00	10673.44	4275.34	-342.64	4275.34	2.02
200	**14760**	**90.10**	**89.10**	**249.00**	**10673.12**	**4369.33**	**-341.66**	**4369.33**	**0.67**
201	14854	90.50	88.70	251.00	10672.62	4463.31	-339.85	4463.31	0.60
202	14947	88.90	86.80	253.00	10673.11	4556.23	-336.20	4556.23	2.67
203	15041	89.70	88.20	249.00	10674.26	4650.13	-332.10	4650.13	1.72
204	15136	90.80	88.90	253.00	10673.85	4745.10	-329.70	4745.10	1.37
205	**15229**	**90.00**	**89.30**	**251.00**	**10673.20**	**4838.08**	**-328.24**	**4838.08**	**0.96**
206	15323	91.30	89.90	253.00	10672.13	4932.07	-327.58	4932.07	1.52
207	15418	90.20	89.10	249.00	10670.89	5027.06	-326.75	5027.06	1.43
208	15512	87.70	90.30	251.00	10672.61	5121.03	-326.26	5121.03	2.95
209	15606	88.00	90.50	255.00	10676.13	5214.96	-326.92	5214.96	0.38
210	**15700**	**86.50**	**89.20**	**255.00**	**10680.64**	**5308.85**	**-326.67**	**5308.85**	**2.11**
211	15793	88.10	90.60	255.00	10685.03	5401.74	-326.51	5401.74	2.28
212	15887	88.40	91.20	255.00	10687.90	5495.69	-327.99	5495.69	0.71
213	15981	91.30	91.10	255.00	10688.14	5589.66	-329.87	5589.66	3.09
214	16075	92.40	91.40	255.00	10685.11	5683.58	-331.92	5683.58	1.21
215	**16169**	**90.20**	**91.60**	**255.00**	**10682.98**	**5777.52**	**-334.38**	**5777.52**	**2.35**
216	16263	88.70	91.30	255.00	10683.88	5871.48	-336.76	5871.48	1.63
217	16357	89.50	91.10	258.00	10685.35	5965.45	-338.73	5965.45	0.88
218	16450	89.90	91.50	257.00	10685.84	6058.43	-340.84	6058.43	0.61
219	16544	89.00	91.80	257.00	10686.74	6152.38	-343.54	6152.38	1.01
220	**16638**	**89.80**	**92.30**	**255.00**	**10687.73**	**6246.31**	**-346.91**	**6246.31**	**1.00**
221	16732	91.60	92.50	258.00	10686.58	6340.22	-350.84	6340.22	1.93
222	16825	90.00	91.60	257.00	10685.28	6433.15	-354.17	6433.15	1.97
223	16919	88.60	91.30	260.00	10686.43	6527.11	-356.55	6527.11	1.52
224	17013	89.90	91.20	260.00	10687.66	6621.08	-358.60	6621.08	1.39
225	**17108**	**91.30**	**91.20**	**257.00**	**10686.67**	**6716.05**	**-360.59**	**6716.05**	**1.47**
226	17139	89.00	90.30	258.00	10686.58	6747.04	-360.99	6747.04	7.97
227	17201	88.50	90.60	260.00	10687.94	6809.03	-361.48	6809.03	0.94
228	17295	87.20	90.10	258.00	10691.46	6902.96	-362.05	6902.96	1.48
229	17389	85.40	89.60	262.00	10697.53	6996.76	-361.81	6996.76	1.99
230	**17483**	**86.50**	**89.80**	**260.00**	**10704.17**	**7090.52**	**-361.32**	**7090.52**	**1.19**
231	17576	89.30	90.80	260.00	10707.58	7183.44	-361.80	7183.44	3.20
232	17670	89.30	90.00	262.00	10708.72	7277.43	-362.46	7277.43	0.85
233	17764	91.20	90.60	260.00	10708.31	7371.43	-362.95	7371.43	2.12
234	17857	91.60	90.10	264.00	10706.04	7464.40	-363.52	7464.40	0.69
235	**17951**	**88.70**	**90.40**	**262.00**	**10705.80**	**7558.39**	**-363.93**	**7558.39**	**3.10**
236	18045	88.70	90.40	264.00	10707.93	7652.36	-364.59	7652.36	0.00
237	18138	87.30	89.70	266.00	10711.17	7745.30	-364.67	7745.30	1.68
238	18231	88.70	88.60	262.00	10714.42	7838.23	-363.29	7838.23	1.91
239	18325	88.10	87.20	262.00	10717.04	7932.13	-359.85	7932.13	1.62
240	**18418**	**88.40**	**86.90**	**262.00**	**10719.88**	**8024.96**	**-355.06**	**8024.96**	**0.46**

Report #: 1
Date: 24-Jun-14

RYAN DIRECTIONAL SERVICES, INC.
A NABORS COMPANY

Ryan Job # 7798

SURVEY REPORT

Customer: Oasis Petroleum N.A. LLC
Well Name: Chalmers 5301 44-24 3BR
Rig #: Nabors B-25
API #: 33-053-06010
Calculation Method: Minimum Curvature Calculation

MWD Operator: Daniel Ogden
Directional Drillers: RPM
Survey Corrected To: True North
Vertical Section Direction: 90
Total Correction: 8.27
Temperature Forecasting Model (Chart Only): Logarithmic

Survey #	MD	Inc	Azm	Temp	TVD	VS	N/S	E/W	DLS
241	18450	89.10	87.40	264.00	10720.58	8056.91	-353.47	8056.91	2.69
242	18512	89.50	88.10	262.00	10721.34	8118.86	-351.04	8118.86	1.30
243	18606	90.90	88.20	266.00	10721.01	8212.81	-348.00	8212.81	1.49
244	18699	91.30	88.20	267.00	10719.23	8305.74	-345.08	8305.74	0.43
245	**18793**	**90.80**	**88.10**	**267.00**	**10717.50**	**8399.68**	**-342.05**	**8399.68**	**0.54**
246	18887	90.30	87.50	267.00	10716.60	8493.60	-338.44	8493.60	0.83
247	18982	89.80	87.40	269.00	10716.52	8588.51	-334.21	8588.51	0.54
248	19076	89.50	88.20	269.00	10717.09	8682.44	-330.61	8682.44	0.91
249	19171	89.80	90.80	267.00	10717.67	8777.42	-329.78	8777.42	2.75
250	**19266**	**89.60**	**90.30**	**267.00**	**10718.17**	**8872.42**	**-330.69**	**8872.42**	**0.57**
251	19361	90.20	90.50	266.00	10718.34	8967.42	-331.35	8967.42	0.67
252	19455	90.10	90.60	266.00	10718.09	9061.41	-332.25	9061.41	0.15
253	19549	90.10	89.90	267.00	10717.93	9155.41	-332.66	9155.41	0.74
254	19644	88.10	89.00	269.00	10719.42	9250.39	-331.75	9250.39	2.31
255	**19739**	**88.10**	**89.60**	**269.00**	**10722.57**	**9345.33**	**-330.59**	**9345.33**	**0.63**
256	19833	88.30	89.90	267.00	10725.52	9439.28	-330.18	9439.28	0.38
257	19927	89.50	89.70	266.00	10727.33	9533.26	-329.85	9533.26	1.29
258	20020	90.70	89.40	267.00	10727.16	9626.26	-329.12	9626.26	1.33
259	20114	89.80	89.10	269.00	10726.75	9720.25	-327.89	9720.25	1.01
260	**20208**	**91.70**	**89.20**	**266.00**	**10725.52**	**9814.22**	**-326.50**	**9814.22**	**2.02**
261	20302	91.40	88.70	269.00	10722.98	9908.17	-324.78	9908.17	0.62
262	20396	91.10	89.00	267.00	10720.93	10002.13	-322.89	10002.13	0.45
263	20489	90.50	88.50	269.00	10719.63	10095.10	-320.86	10095.10	0.84
264	20584	90.90	88.60	269.00	10718.47	10190.06	-318.46	10190.06	0.43
265	**20678**	**90.70**	**87.80**	**262.00**	**10717.16**	**10284.01**	**-315.51**	**10284.01**	**0.88**
266	20772	88.30	86.70	262.00	10717.98	10377.88	-311.00	10377.88	2.81
Projection	20833	88.30	86.70	262.00	10719.79	10438.76	-307.49	10438.76	0.00

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

28599

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

Date: **6/17/2014**

RE: CORES AND SAMPLES

Well Name: **CHALMERS 5301 44-24 3BR** Well File No.: **28599**
Location: **SESE 24-153-101** County: MCKENZIE
Permit Type: **Development - HORIZONTAL**
Field: **BAKER** Target Horizon: BAKKEN

Dear BRANDI TERRY:

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

1) All cores, core chips and samples must be submitted to the State Geologist as provided for under North Dakota Century Code: Section 38-08-04 and North Dakota Administrative Code: Section 43-02-03-38.1.

2) Samples: The Operator is to begin collecting sample drill cuttings no lower than the:
Base of the Last Charles Salt
   - Sample cuttings shall be collected at:
     - o 30' maximum intervals through all vertical and build sections.
     - o 100' maximum intervals through any horizontal sections.
   - Samples must be washed, dried, placed in standard sample envelopes (3" x 4.5"), packed in the correct order into standard sample boxes (3.5" x 5.25" x 15.25").
   - Samples boxes are to be carefully identified with a label that indicates the operator, well name, well file number, American Petroleum Institute (API) number, location and depth of samples; and forwarded in to the state core and sample library within 30 days of the completion of drilling operations.

3) Cores: Any cores cut shall be preserved in correct order, boxed in standard core boxes (4.5", 4.5", 35.75"), and the entire core forwarded to the state core and samples library within 180 days of completion of drilling operations. Any extension of time must have approval on a Form 4 Sundry Notice.

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

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

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

Sincerely

Stephen Fried
Geologist

SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4

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

JUN 2014
RECEIVED
ND OIL & GAS DIVISION

Well File No. 28599

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

- [x] Notice of Intent — Approximate Start Date: **June 1, 2014**
- [ ] Report of Work Done — Date Work Completed:
- [ ] Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03. — Approximate Start Date:

- [x] Drilling Prognosis
- [ ] Redrilling or Repair
- [ ] Casing or Liner
- [ ] Plug Well
- [ ] Supplemental History
- [ ] Temporarily Abandon
- [x] Other **Waiver to rule Rule 43-02-03-31**
- [ ] Spill Report
- [ ] Shooting
- [ ] Acidizing
- [ ] Fracture Treatment
- [ ] Change Production Method
- [ ] Reclamation

Well Name and Number: **Chalmers 5301 44-24 3BR**

Footages	Qtr-Qtr	Section	Township	Range
926 F S L 245 F E L	SESE	24	153 N	101 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

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:

Oasis Petroleum/ Chalmers 5300 31-19H (NDIC 20407) located within one 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 GR.

Company	Telephone Number
Oasis Petroleum North America LLC	281-404-9491

Address		
1001 Fannin, Suite 1500		
City: Houston	State: TX	Zip Code: 77002

Signature	Printed Name
Heather McCowan	Heather McCowan
Title: Regulatory Assistant	Date: May 28, 2014
Email Address: hmccowan@oasispetroleum.com	

FOR STATE USE ONLY

- [ ] Received
- [x] Approved

Date: 6-11-2014

By:

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.
28599

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

☑ Notice of Intent	Approximate Start Date: June 1, 2014	☐ Drilling Prognosis	☐ Spill Report
☐ Report of Work Done	Date Work Completed:	☐ Redrilling or Repair	☐ Shooting
☐ 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:	☐ Casing or Liner	☐ Acidizing
		☐ Plug Well	☐ Fracture Treatment
		☐ Supplemental History	☐ Change Production Method
		☐ Temporarily Abandon	☐ Reclamation
		☑ Other: Suspension of Drilling	

Well Name and Number: Chalmers 5301 44-24 3BR

Footages	Qtr-Qtr	Section	Township	Range
926 F S L 245 F E L	SESE	24	153 N	101 W

Field	Pool	County
	Bakken	McKENZIE

24-HOUR PRODUCTION RATE

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

Name of Contractor(s): Advanced Energy Services

Address	City	State	Zip Code

DETAILS OF WORK

Oasis Petroleum North America LLC requests permission for suspension of drilling for up to 90 days for the referenced well under NDAC 43-02-03-55. Oasis Petroleum North America LLC intends to drill the surface hole with freshwater based drilling mud and set surface casing with a small drilling rig and move off within 3 to 5 days. The casing will be set at a depth pre-approved by the NDIC per the Application for Permit to Drill NDAC 43-02-03-21. No saltwater will be used in the drilling and cementing operations of the surface casing. Once the surface casing is cemented, a plug or mechanical seal will be placed at the top of the casing to prevent any foreign matter from getting into the well. A rig capable of drilling to TD will move onto the location within the 90 days previously outlined to complete the drilling and casing plan as per the APD. The undersigned states that this request for suspension of drilling operations in accordance with the Subsection 4 of Section 43-02-03-55 of the NDAC, is being requested to take advantage of the cost savings and time savings of using an initial rig that is smaller than the rig necessary to drill a well to total depth but is not intended to alter or extend the terms and conditions of, or suspend any obligation under, any oil and gas lease with acreage in or under the spacing or drilling unit for the above-referenced well. Oasis Petroleum North America LLC understands NDAC 43-02-03-31 requirements regarding confidentiality pertaining to this permit. The drilling pit will be fenced immediately after construction if the well pad is located in a pasture (NDAC 43-02-03-19 & 19.1). Oasis Petroleum North America LL 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	Telephone Number
Oasis Petroleum North America LLC	(281) 404-9563

Address		
1001 Fannin, Suite 1500		
City: Houston	State: TX	Zip Code: 77002

Signature	Printed Name
Heather McCowan	Heather McCowan
Title: Regulatory Assistant	Date: May 28, 2014

Email Address: hmccowan@oasispetroleum.com

FOR STATE USE ONLY

☐ Received	☒ Approved
Date: 6/11/14	
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 11, 2014

Heather McCowan
Regulatory Assistant
OASIS PETROLEUM NORTH AMERICA LLC
1001 Fannin Suite 1500
Houston, TX 77002

RE: HORIZONTAL WELL
CHALMERS 5301 44-24 3BR
SESE Section 24-153N-101W
McKenzie County
Well File # 28599

Dear Heather:

Pursuant to Commission Order No. 23752, approval to drill the above captioned well is hereby given. The approval is granted on the condition that all portions of the well bore not isolated by cement, be no closer than the 500' setback from the north & south boundaries and 200' setback from the east & west boundaries within the 1280 acre spacing unit consisting of Sections 19 & 20 T153N R100W.

PERMIT STIPULATIONS: DUE TO STREAM ADJACENT TO THE WELL SITE, A DIKE IS REQUIRED SURROUNDING THE ENTIRE LOCATION. 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. In cases where a spacing unit is accessed from an off-site drill pad, an affidavit must be provided affirming that the surface owner of the multi-well pad agrees to accept burial on their property of the cuttings generated from drilling the well(s) into an offsite spacing/drilling unit. OASIS PETRO NO AMER must contact NDIC Field Inspector Richard Dunn at 701-770-3554 prior to setting conductor.

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. The minimum legal coordinate from the well head at casing point is: 445' east. Also, based on the azimuth of the proposed lateral the maximum legal coordinates from the well head are: 426' south and 10558' 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	Type of Well	Approximate Date Work Will Start	Confidential Status
New Location	**Oil & Gas**	**6 / 1 / 2013**	**No**

Operator	Telephone Number
OASIS PETROLEUM NORTH AMERICA LLC	**281-404-9563**

Address	City	State	Zip Code
1001 Fannin Suite 1500	**Houston**	**TX**	**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	Well Number
CHALMERS	**5301 44-24 3BR**

Surface Footages	Qtr-Qtr	Section	Township	Range	County
926 F **S** L **245** F **E** L	**SESE**	**24**	**153 N**	**101 W**	**McKenzie**
Longstring Casing Point Footages	Qtr-Qtr	Section	Township	Range	County
760 F **S** L **250** F **W** L	**SWSW**	**19**	**153 N**	**101 W**	**McKenzie**
Longstring Casing Point Coordinates From Well Head	Azimuth	Longstring Total Depth			
166 S From WH **495 E** From WH	**110.4 º**	**10899** Feet MD	**10629** Feet TVD		
Bottom Hole Footages From Nearest Section Line	Qtr-Qtr	Section	Township	Range	County
580 F **S** L **224** F **E** L	**SESE**	**20**	**153 N**	**101 W**	**Williams**

Bottom Hole Coordinates From Well Head	KOP Lateral 1	Azimuth Lateral 1	Estimated Total Depth Lateral 1
346 S From WH **10534 E** From WH	**10151** Feet MD	**90 º**	**20960** Feet MD **10699** Feet TVD

Latitude of Well Head	Longitude of Well Head	NAD Reference	Description of (Subject to NDIC Approval)
48 ° 03 ' 20.5 "	**-103 ° 36 ' 18.55 "**	**NAD83**	**Spacing Unit: Sections 19 & 20 T153N R100W**

Ground Elevation	Acres in Spacing/Drilling Unit	Spacing/Drilling Unit Setback Requirement	Industrial Commission Order
1970 Feet Above S.L.	**1280**	**500** Feet N/S **200** Feet E/W	**23752**

North Line of Spacing/Drilling Unit	South Line of Spacing/Drilling Unit	East Line of Spacing/Drilling Unit	West Line of Spacing/Drilling Unit
10489 Feet	**10513** Feet	**5280** Feet	**5263** Feet

Objective Horizons	Pierre Shale Top
Bakken	**1918**

Proposed	Size	Weight	Depth	Cement Volume	
Surface Casing	**13 - 3/8 "**	**54** Lb./Ft.	**2018** Feet	**967** Sacks	**NOTE: Surface hole must be drilled with fresh water and surface casing must be cemented back to surface.**

Proposed	Size	Weight(s)	Longstring Total Depth	Cement Volume	Cement Top	Top Dakota Sand
Longstring Casing	**7 - "**	**32** Lb./Ft.	**10899** Feet MD **10629** Feet TVD	**821** Sacks	**3841** Feet	**5341** Feet

Base Last Charles Salt (If Applicable)	
9091 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)	Drilling Mud Type (Lateral)
Invert	**Salt Water Gel**

Survey Type in Vertical Portion of Well	Survey Frequency: Build Section	Survey Frequency: Lateral	Survey Contractor
MWD Every 100 Feet	**30** Feet	**90** Feet	**Ryan**

NOTE: A Gamma Ray log must be run to ground surface and a CBL must be run on intermediate or longstring casing string if set.

Surveys are required at least every 30 feet in the build section and every 90 feet in the lateral section of a horizontal well. Measurement inaccuracies are not considered when determining compliance with the spacing/drilling unit boundary setback requirement except in the following scenarios: 1) When the angle between the well bore and the respective boundary is 10 degrees or less; or 2) If Industry standard methods and equipment are not utilized. Consult the applicable field order for exceptions.

If measurement inaccuracies are required to be considered, a 2° MWD measurement inaccuracy will be applied to the horizontal portion of the well bore. This measurement inaccuracy is applied to the well bore from KOP to TD.

REQUIRED ATTACHMENTS: Certified surveyor's plat, horizontal section plat, estimated geological tops, proposed mud/cementing plan, directional plot/plan, $100 fee.

See Page 2 for Comments section and signature block.

COMMENTS, ADDITIONAL INFORMATION, AND/OR LIST OF ATTACHMENTS

Documents forwarded by email: Drill plan with drilling fluids, Well Summary with casing/cement plans, Directional Plan & Plot, Plats

Lateral 2

KOP Lateral 2 Feet MD	Azimuth Lateral 2 °	Estimated Total Depth Lateral 2 Feet MD	Feet TVD	KOP Coordinates From Well Head From WH	From WH
Formation Entry Point Coordinates From Well Head From WH	From WH	Bottom Hole Coordinates From Well Head From WH	From WH		
KOP Footages From Nearest Section Line F L	F L	Qtr-Qtr	Section	Township N	Range W	County
Bottom Hole Footages From Nearest Section Line F L	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	From WH	Bottom Hole Coordinates From Well Head From WH	From WH		
KOP Footages From Nearest Section Line F L	F L	Qtr-Qtr	Section	Township N	Range W	County
Bottom Hole Footages From Nearest Section Line F L	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	From WH	Bottom Hole Coordinates From Well Head From WH	From WH		
KOP Footages From Nearest Section Line F L	F L	Qtr-Qtr	Section	Township N	Range W	County
Bottom Hole Footages From Nearest Section Line F L	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	From WH	Bottom Hole Coordinates From Well Head From WH	From WH		
KOP Footages From Nearest Section Line F L	F L	Qtr-Qtr	Section	Township N	Range W	County
Bottom Hole Footages From Nearest Section Line F L	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 5 / 28 / 2014
ePermit	Printed Name **Heather McCowan** / Title **Regulatory Assistant**

FOR STATE USE ONLY

Permit and File Number	API Number
28599	**33 - 053 - 06010**
Field **BAKER**	
Pool **BAKKEN**	Permit Type **DEVELOPMENT**

FOR STATE USE ONLY

Date Approved
6 / 11 / 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.

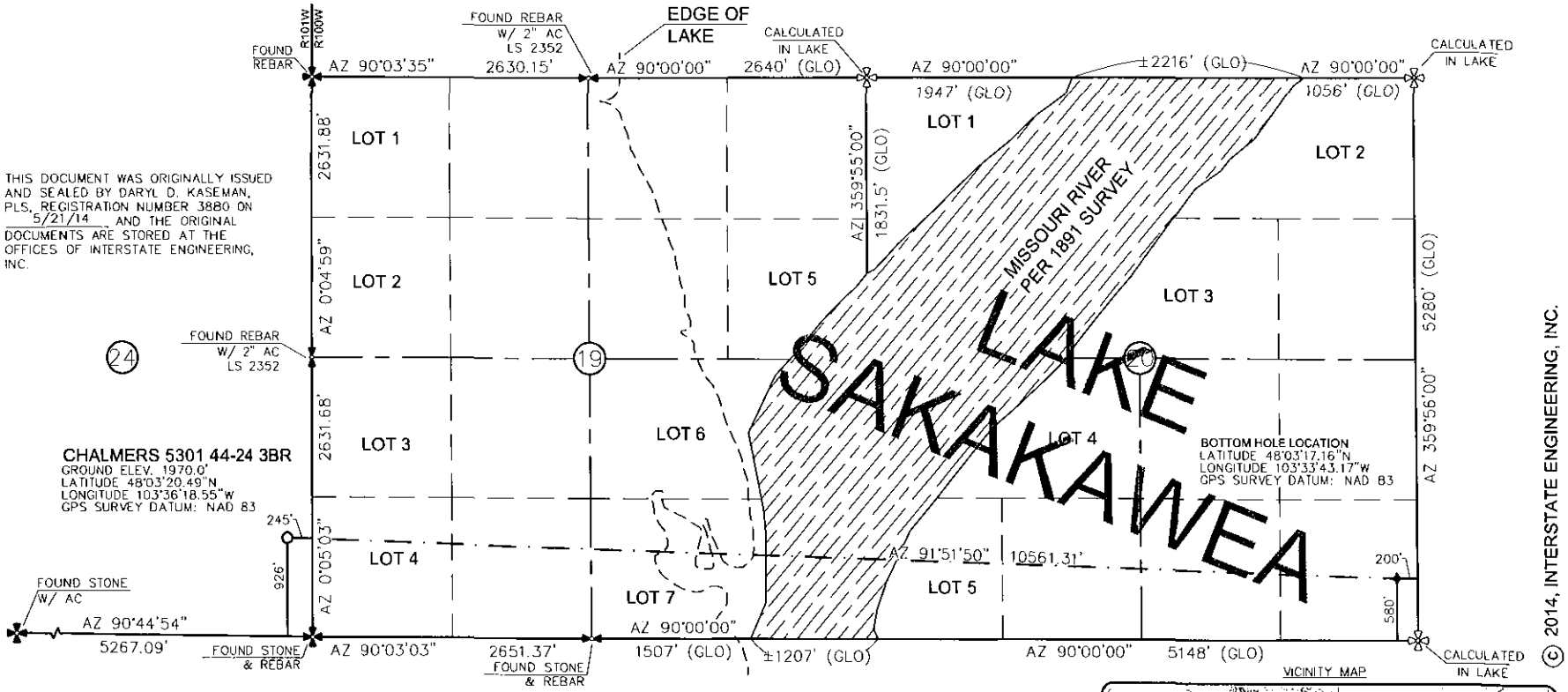
Thank you for your cooperation.

Sincerely,

Bruce E. Hicks
Assistant Director

WELL LOCATION PLAT

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"CHALMERS 5301 44-24 3BR"
926 FEET FROM SOUTH LINE AND 245 FEET FROM EAST LINE
SECTION 24, T153N, R101W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY DARYL D. KASEMAN, PLS, REGISTRATION NUMBER 3880 ON 5/21/14 AND THE ORIGINAL DOCUMENTS ARE STORED AT THE OFFICES OF INTERSTATE ENGINEERING, INC.

CHALMERS 5301 44-24 3BR
GROUND ELEV. 1970.0'
LATITUDE 48°03'20.49"N
LONGITUDE 103°36'18.55"W
GPS SURVEY DATUM: NAD 83

BOTTOM HOLE LOCATION
LATITUDE 48°03'17.16"N
LONGITUDE 103°33'43.17"W
GPS SURVEY DATUM: NAD 83

0 1000
1" = 1000'

- ✠ ! – MONUMENT – RECOVERED
- ✠ ! – MONUMENT – NOT RECOVERED

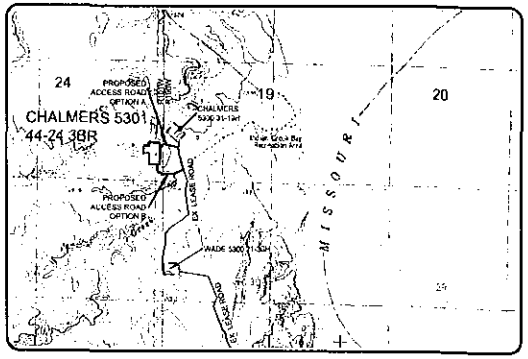
STAKED ON 9/3/13
VERTICAL CONTROL DATUM WAS BASED UPON CONTROL POINT 16 WITH AN ELEVATION OF 2014.2'

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

REGISTERED LAND SURVEYOR
DARYL D. KASEMAN
LS-3880
DATE: 5/21/14
NORTH DAKOTA

VICINITY MAP



Revision No.	Date	By	Description
REV. 2	12/5/13	JAS	CHANGED PAD LAYOUT
REV. 3	1/20/14	BHH	CHANGED PAD LAYOUT
REV. 4	2/26/14	JAS	ADDED WELL TO PAD
REV. 5	5/20/14	JAS	CHANGED NAME, MOVED WELL

OASIS PETROLEUM NORTH AMERICA, LLC
WELL LOCATION PLAT
SECTION 24, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: J.A.S. | Project No.: 513-09-236.01
Checked By: DARK | Date: MAY 2014

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

INTERSTATE ENGINEERING
Professionals you need, people you trust

SHEET NO. 1/8

DRILLING PLAN

OPERATOR	Oasis Petroleum	**COUNTY/STATE**	McKenzie Co., ND
WELL NAME	Chalmers 5301 44-24 3BR	**RIG**	Nabors B25
WELL TYPE	Horizontal Middle Bakken		
LOCATION	SESE 24-153N-101W Surface Location (survey plat): 926' FSL	245' FEL	
EST. T.D.	20,960'	**GROUND ELEV:**	1943 Finished Pad Elev. **Sub Height:** 25
	TOTAL LATERA 10,061'	**KB ELEV:**	1968

PROGNOSIS: Based on 1,968' KB(est)

MARKER		DEPTH (Surf Loc)	DATUM (Surf Loc)
Pierre	NDIC MAP	1,918	50
Greenhorn		4,510	(2,542)
Mowry		4,914	(2,946)
Dakota		5,341	(3,373)
Rierdon		6,356	(4,388)
Dunham Salt		6,683	(4,715)
Dunham Salt Base		6,800	(4,832)
Spearfish		6,887	(4,919)
Pine Salt		7,135	(5,167)
Pine Salt Base		7,168	(5,200)
Opeche Salt		7,235	(5,267)
Opeche Salt Base		7,269	(5,301)
Broom Creek (Top of Minnelusa Gp.)		7,469	(5,501)
Amsden		7,553	(5,585)
Tyler		7,720	(5,752)
Otter (Base of Minnelusa Gp.)		7,920	(5,952)
Kibbey Lime		8,269	(6,301)
Charles Salt		8,433	(6,465)
UB		9,010	(7,042)
Base Last Salt		9,091	(7,123)
Ratcliffe		9,141	(7,173)
Mission Canyon		9,311	(7,343)
Lodgepole		9,876	(7,908)
Lodgepole Fracture Zone		10,109	(8,141)
False Bakken		10,588	(8,620)
Upper Bakken		10,599	(8,631)
Middle Bakken		10,616	(8,648)
Middle Bakken Sand Target		10,625	(8,657)
Base Middle Bakken Sand Target		10,634	(8,666)
Lower Bakken		10,648	(8,680)
Three Forks		10,676	(8,708)

Dip Rate: **-0.40° or .7' /100' down**

LOGS:

Type	Interval
OH Logs:	Triple Combo KOP to Kibby (or min run of 1800' whichever is greater); GR/Res to BSC; GR to surf; CND through the Dakota
CBL/GR:	Above top of cement/GR to base of casing
MWD GR:	KOP to lateral TD
Logging Waiver	**Oasis Chalmers 5300 31-19H 894' to NE sec 19 153N 100W**

DEVIATION:

Surf: 3 deg. max., 1 deg / 100'; srvy every 500'
Prod: 5 deg. max., 1 deg / 100'; srvy every 100'

DST'S: None planned

CORES: None planned

MUDLOGGING:

Two-Man: 8,233'
~200' above the Charles (Kibbey) to Casing point; Casing point to TD
30' samples at direction of wellsite geologist; 10' through target @ curve land

BOP: 11" 5000 psi blind, pipe & annular

Max. Anticipated BHP: 4614 **Surface Formation:** *Glacial till*

MUD:	Interval		Type	WT	Vis	WL	Remarks
Surface:	0' -	2,018'	FW/Gel - Lime Sweeps	8.4-9.0	28-32	NC	Circ Mud Tanks
Intermediate:	2,018' -	10,899'	Invert	9.5-10.4	40-50	30+HtHp	Circ Mud Tanks
Lateral:	10,899' -	20,960'	Salt Water	9.8-10.2	28-32	NC	Circ Mud Tanks

CASING:	Size	Wt ppf	Hole	Depth		Cement	WOC	Remarks
Surface:	13-3/8"	54.5#	17-1/2"	2,018'		Surface	12	100' into Pierre
Intermediate (Dakota):	9-5/8"	40#	12-1/4"	6,000'		Surface	24	Set Casing across Dakota
Intermediate:	7"	32#	8-3/4"	10,899'		3,841'	24	1500' above Dakota
Production Liner:	4.5"	13.5#	6"	20,960'	**TOL @ 10,101'**			50' above KOP

PROBABLE PLUGS, IF REQ'D:

OTHER:

	MD	TVD	FNL/FSL	FEL/FWL	S-T-R	AZI	
Surface:	2,018	2,018	926' FSL	245' FEL	**Sec. 24 153N 101W**	Survey Company:	
KOP:	10,151'	10,151'	926' FSL	195' FEL	**Sec. 24 153N 101W**	Build Rate:	12 deg /100'
EOC:	10,899'	10,629'	761' FSL	249' FWL	**Sec. 19 153N 100W**	110.0 Turn Rate:	2 deg /100'
Casing Point:	10,899'	10,630'	761' FSL	249' FWL	**Sec. 19 153N 100W**	110.0	
Middle Bakken Lateral TD:	20,960'	10,700'	580' FSL	200' FEL	**Sec. 20 153N 100W**	90.0	

Comments:

Request a Sundry for an Open Hole Log Waiver

Exception well: Oasis Petroleum's J O Anderson 5200 31-28T (33053039510000); 152N/100W/S28; located 0.30 miles S of the proposed location
No frac string planned
35 packers and 2 sleeves
**Note Hardlines
Pit location as depicted on plats. Constructed on native ground, not fill

Geology: C. Hargett 9/30/2013 **Engineering:** M. Brown_5-28-14

Oasis Petroleum
Well Summary
Chalmers 5301 44-24 3BR
Sec. 24 T153N R101W
McKenzie County, North Dakota

SURFACE CASING AND CEMENT DESIGN

							Make-up Torque (ft-lbs)		
Size	**Interval**	**Weight**	**Grade**	**Coupling**	**I.D.**	**Drift**	**Minimum**	**Optimum**	**Max**
13-3/8”	0’ to 2,018’	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 2,018’	13-3/8", 54.5#, J-55, STC, 8rd	1130 / 2.13	2730 / 2.89	514 / 2.63	

API Rating & Safety Factor

a) Based on full casing evacuation with 9 ppg fluid on backside (2018' setting depth).

b) Burst pressure based on 9 ppg fluid with no fluid on backside (2018' setting depth).

c) Based on string weight in 9 ppg fluid at 2018' TVD plus 100k# overpull. (Buoyed weight equals 95k 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: **593 sks** (307 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 5301 44-24 3BR
Sec. 24 T153N R101W
McKenzie County, North Dakota

INTERMEDIATE CASING AND CEMENT DESIGN

Intermediate Casing Design

							Make-up Torque (ft-lbs)		
Size	**Interval**	**Weight**	**Grade**	**Coupling**	**I.D.**	**Drift**	**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

a) Burst pressure calculated from a gas kick coming from the production zone (Bakken Pool) at 9,000psi and a subsequent breakdown at the 9-5/8" shoe, based on a 13.5#/ft fracture gradient. Backup of 9 ppg fluid.
b) Collapse pressure based on 11.5ppg fluid on backside and 9ppg fluid inside of casing.
c) Yield based on string weight in 10 ppg fluid, (217k lbs buoyed weight) plus 100k lbs overpull.

Cement volumes are estimates based on 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 5301 44-24 3BR
Sec. 24 T153N R101W
McKenzie County, North Dakota

INTERMEDIATE CASING AND CEMENT DESIGN

Intermediate Casing Design

							Make-up Torque (ft-lbs)		
Size	**Interval**	**Weight**	**Grade**	**Coupling**	**I.D.**	**Drift**	**Minimum**	**Optimum**	**Max**
7”	0' - 10899'	32	HCP-110	LTC	6.094”	6.000”**	6,730	8,970	11210

**Special Drift

Interval	Description	Collapse	Burst	Tension
		(psi) a	(psi) b	(1000 lbs) c
0' - 10899'	7”, 32#, HCP-110, LTC, 8rd	11890 / 2.15*	12450 / 1.28	897 / 2.26
6600' - 9091'	7”, 32#, HCP-110, LTC, 8rd	11890 / 1.85**	12450 / 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 10,630' TVD.
c. Based on string weight in 10 ppg fluid, (295k 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: **207 sks** (82 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: **614 sks** (168 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 5301 44-24 3BR
Sec. 24 T153N R101W
McKenzie County, North Dakota

PRODUCTION LINER

Size	Interval	Weight	Grade	Coupling	I.D.	Drift	Torque
4-1/2”	10101' - 20960'	13.5	P-110	BTC	3.92"	3.795"	4,500

Interval	Length	Description	Collapse	Burst	Tension
			(psi) **a**	(psi) **b**	(1000 lbs) **c**
10101' - 20960'	10,859’	4-1/2”, 13.5 lb, P-110, BTC, 8rd	10680 / 2.02	12410 / 1.28	422 / 1.87

API Rating & Safety Factor

a) Based on full casing evacuation with 9.5 ppg fluid on backside @ 10700' TVD.
b) Burst pressure based on 9000 psi treating pressure with 10.2 ppg internal fluid gradient and 9 ppg external fluid gradient @ 10700' TVD.
c) Based on string weight in 9.5 ppg fluid (Buoyed weight: 125k 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)

Oasis

Indian Hills
153N-100W-19/20_Altered
Chalmers 5301 44-24 3BR

Chalmers 5301 44-24 3BR

Plan: Design #2

Standard Planning Report

27 May, 2014

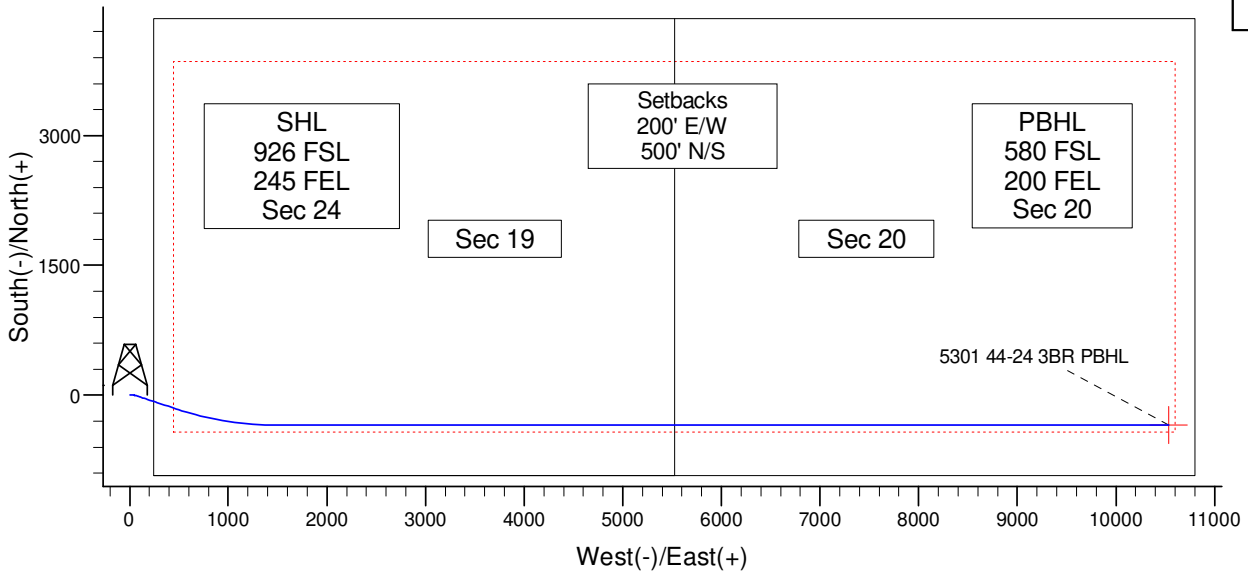
Project: Indian Hills
Site: 153N-100W-19/20_Altered
Well: Chalmers 5301 44-24 3BR
Wellbore: Chalmers 5301 44-24 3BR
Design: Design #2

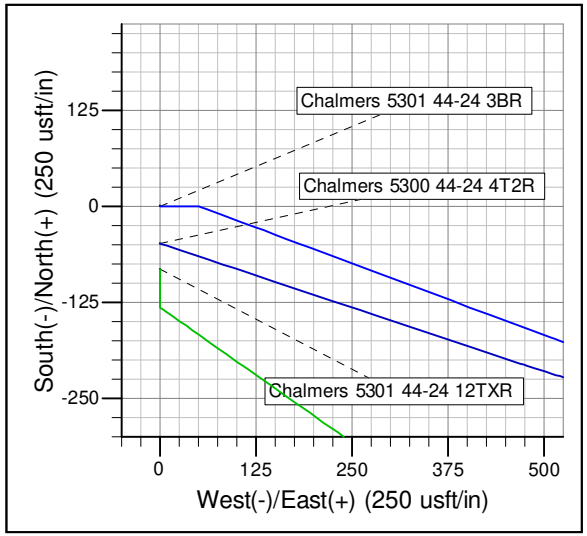
OASIS PETROLEUM

WELL DETAILS: Chalmers 5301 44-24 3BR

Ground Level: 1942.0

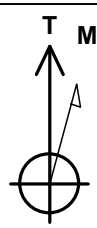
Northing	Easting	Latitude	Longitude
400390.13	1209328.09	48° 3' 20.490 N	103° 36' 18.550 W





CASING DETAILS

TVD	MD	Name	Size
10629.0	10899.0	7"	7

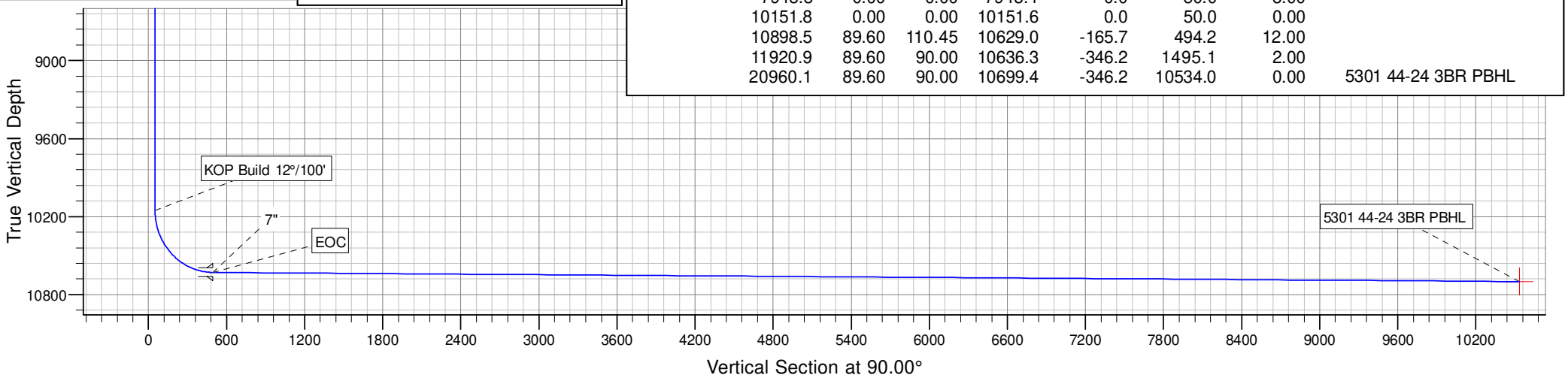


Azimuths to True North
Magnetic North: 8.27°

Magnetic Field
Strength: 56433.4snT
Dip Angle: 72.98°
Date: 5/22/2014
Model: IGRF2010

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	
2200.0	0.00	0.00	2200.0	0.0	0.0	0.00	
2216.7	0.50	90.00	2216.7	0.0	0.1	3.00	
7926.7	0.50	90.00	7926.4	0.0	49.9	0.00	
7943.3	0.00	0.00	7943.1	0.0	50.0	3.00	
10151.8	0.00	0.00	10151.6	0.0	50.0	0.00	
10898.5	89.60	110.45	10629.0	-165.7	494.2	12.00	
11920.9	89.60	90.00	10636.3	-346.2	1495.1	2.00	
20960.1	89.60	90.00	10699.4	-346.2	10534.0	0.00	5301 44-24 3BR PBHL



Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Chalmers 5301 44-24 3BR
Company:	Oasis	**TVD Reference:**	Well @ 1967.0usft
Project:	Indian Hills	**MD Reference:**	Well @ 1967.0usft
Site:	153N-100W-19/20_Altered	**North Reference:**	True
Well:	Chalmers 5301 44-24 3BR	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Chalmers 5301 44-24 3BR		
Design:	Design #2		

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_Altered				
Site Position:		**Northing:**	400,357.73 usft	**Latitude:**	48° 3' 20.170 N
From:	Lat/Long	**Easting:**	1,209,326.78 usft	**Longitude:**	103° 36' 18.550 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-2.31 °

Well	Chalmers 5301 44-24 3BR					
Well Position	**+N/-S**	32.4 usft	**Northing:**	400,390.13 usft	**Latitude:**	48° 3' 20.490 N
	+E/-W	0.0 usft	**Easting:**	1,209,328.09 usft	**Longitude:**	103° 36' 18.550 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	0.0 usft	**Ground Level:**	1,942.0 usft

Wellbore	Chalmers 5301 44-24 3BR				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	5/22/2014	8.27	72.98	56,433

Design	Design #2				
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 (°/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	
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,216.7	0.50	90.00	2,216.7	0.0	0.1	3.00	3.00	0.00	90.00	
7,926.7	0.50	90.00	7,926.4	0.0	49.9	0.00	0.00	0.00	0.00	
7,943.3	0.00	0.00	7,943.1	0.0	50.0	3.00	-3.00	0.00	180.00	
10,151.8	0.00	0.00	10,151.6	0.0	50.0	0.00	0.00	0.00	0.00	
10,898.5	89.60	110.45	10,629.0	-165.7	494.2	12.00	12.00	0.00	110.45	
11,920.9	89.60	90.00	10,636.3	-346.2	1,495.1	2.00	0.00	-2.00	-90.07	
20,960.1	89.60	90.00	10,699.4	-346.2	10,534.0	0.00	0.00	0.00	0.00	5301 44-24 3BR PBH

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Chalmers 5301 44-24 3BR
Company:	Oasis	**TVD Reference:**	Well @ 1967.0usft
Project:	Indian Hills	**MD Reference:**	Well @ 1967.0usft
Site:	153N-100W-19/20_Altered	**North Reference:**	True
Well:	Chalmers 5301 44-24 3BR	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Chalmers 5301 44-24 3BR		
Design:	Design #2		

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)
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,216.7	0.50	90.00	2,216.7	0.0	0.1	0.1	3.00	3.00	0.00
2,300.0	0.50	90.00	2,300.0	0.0	0.8	0.8	0.00	0.00	0.00
2,400.0	0.50	90.00	2,400.0	0.0	1.7	1.7	0.00	0.00	0.00
2,500.0	0.50	90.00	2,500.0	0.0	2.5	2.5	0.00	0.00	0.00
2,600.0	0.50	90.00	2,600.0	0.0	3.4	3.4	0.00	0.00	0.00
2,700.0	0.50	90.00	2,700.0	0.0	4.3	4.3	0.00	0.00	0.00
2,800.0	0.50	90.00	2,800.0	0.0	5.2	5.2	0.00	0.00	0.00
2,900.0	0.50	90.00	2,900.0	0.0	6.0	6.0	0.00	0.00	0.00
3,000.0	0.50	90.00	3,000.0	0.0	6.9	6.9	0.00	0.00	0.00
3,100.0	0.50	90.00	3,100.0	0.0	7.8	7.8	0.00	0.00	0.00
3,200.0	0.50	90.00	3,200.0	0.0	8.7	8.7	0.00	0.00	0.00
3,300.0	0.50	90.00	3,300.0	0.0	9.5	9.5	0.00	0.00	0.00
3,400.0	0.50	90.00	3,400.0	0.0	10.4	10.4	0.00	0.00	0.00
3,500.0	0.50	90.00	3,500.0	0.0	11.3	11.3	0.00	0.00	0.00
3,600.0	0.50	90.00	3,599.9	0.0	12.1	12.1	0.00	0.00	0.00
3,700.0	0.50	90.00	3,699.9	0.0	13.0	13.0	0.00	0.00	0.00
3,800.0	0.50	90.00	3,799.9	0.0	13.9	13.9	0.00	0.00	0.00
3,900.0	0.50	90.00	3,899.9	0.0	14.8	14.8	0.00	0.00	0.00
4,000.0	0.50	90.00	3,999.9	0.0	15.6	15.6	0.00	0.00	0.00
4,100.0	0.50	90.00	4,099.9	0.0	16.5	16.5	0.00	0.00	0.00
4,200.0	0.50	90.00	4,199.9	0.0	17.4	17.4	0.00	0.00	0.00
4,300.0	0.50	90.00	4,299.9	0.0	18.3	18.3	0.00	0.00	0.00
4,400.0	0.50	90.00	4,399.9	0.0	19.1	19.1	0.00	0.00	0.00
4,500.0	0.50	90.00	4,499.9	0.0	20.0	20.0	0.00	0.00	0.00
4,510.1	0.50	90.00	4,510.0	0.0	20.1	20.1	0.00	0.00	0.00
Greenhorn									
4,600.0	0.50	90.00	4,599.9	0.0	20.9	20.9	0.00	0.00	0.00
4,700.0	0.50	90.00	4,699.9	0.0	21.7	21.7	0.00	0.00	0.00
4,800.0	0.50	90.00	4,799.9	0.0	22.6	22.6	0.00	0.00	0.00
4,900.0	0.50	90.00	4,899.9	0.0	23.5	23.5	0.00	0.00	0.00
4,914.1	0.50	90.00	4,914.0	0.0	23.6	23.6	0.00	0.00	0.00
Mowry									
5,000.0	0.50	90.00	4,999.9	0.0	24.4	24.4	0.00	0.00	0.00
5,100.0	0.50	90.00	5,099.9	0.0	25.2	25.2	0.00	0.00	0.00
5,200.0	0.50	90.00	5,199.9	0.0	26.1	26.1	0.00	0.00	0.00
5,300.0	0.50	90.00	5,299.9	0.0	27.0	27.0	0.00	0.00	0.00
5,341.1	0.50	90.00	5,341.0	0.0	27.3	27.3	0.00	0.00	0.00
Dakota									
5,400.0	0.50	90.00	5,399.9	0.0	27.9	27.9	0.00	0.00	0.00
5,500.0	0.50	90.00	5,499.9	0.0	28.7	28.7	0.00	0.00	0.00
5,600.0	0.50	90.00	5,599.9	0.0	29.6	29.6	0.00	0.00	0.00
5,700.0	0.50	90.00	5,699.9	0.0	30.5	30.5	0.00	0.00	0.00
5,800.0	0.50	90.00	5,799.9	0.0	31.3	31.3	0.00	0.00	0.00
5,900.0	0.50	90.00	5,899.9	0.0	32.2	32.2	0.00	0.00	0.00
6,000.0	0.50	90.00	5,999.9	0.0	33.1	33.1	0.00	0.00	0.00
6,100.0	0.50	90.00	6,099.9	0.0	34.0	34.0	0.00	0.00	0.00
6,200.0	0.50	90.00	6,199.8	0.0	34.8	34.8	0.00	0.00	0.00
6,300.0	0.50	90.00	6,299.8	0.0	35.7	35.7	0.00	0.00	0.00
6,356.2	0.50	90.00	6,356.0	0.0	36.2	36.2	0.00	0.00	0.00
Rierdon									
6,400.0	0.50	90.00	6,399.8	0.0	36.6	36.6	0.00	0.00	0.00
6,500.0	0.50	90.00	6,499.8	0.0	37.5	37.5	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Chalmers 5301 44-24 3BR
Company:	Oasis	**TVD Reference:**	Well @ 1967.0usft
Project:	Indian Hills	**MD Reference:**	Well @ 1967.0usft
Site:	153N-100W-19/20_Altered	**North Reference:**	True
Well:	Chalmers 5301 44-24 3BR	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Chalmers 5301 44-24 3BR		
Design:	Design #2		

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)
6,600.0	0.50	90.00	6,599.8	0.0	38.3	38.3	0.00	0.00	0.00
6,683.2	0.50	90.00	6,683.0	0.0	39.0	39.0	0.00	0.00	0.00
Dunham Salt									
6,700.0	0.50	90.00	6,699.8	0.0	39.2	39.2	0.00	0.00	0.00
6,800.0	0.50	90.00	6,799.8	0.0	40.1	40.1	0.00	0.00	0.00
6,800.2	0.50	90.00	6,800.0	0.0	40.1	40.1	0.00	0.00	0.00
Dunham Salt Base									
6,887.2	0.50	90.00	6,887.0	0.0	40.8	40.8	0.00	0.00	0.00
Spearfish									
6,900.0	0.50	90.00	6,899.8	0.0	40.9	40.9	0.00	0.00	0.00
7,000.0	0.50	90.00	6,999.8	0.0	41.8	41.8	0.00	0.00	0.00
7,100.0	0.50	90.00	7,099.8	0.0	42.7	42.7	0.00	0.00	0.00
7,135.2	0.50	90.00	7,135.0	0.0	43.0	43.0	0.00	0.00	0.00
Pine Salt									
7,168.2	0.50	90.00	7,168.0	0.0	43.3	43.3	0.00	0.00	0.00
Pine Salt Base									
7,200.0	0.50	90.00	7,199.8	0.0	43.6	43.6	0.00	0.00	0.00
7,235.2	0.50	90.00	7,235.0	0.0	43.9	43.9	0.00	0.00	0.00
Opeche Salt									
7,269.2	0.50	90.00	7,269.0	0.0	44.2	44.2	0.00	0.00	0.00
Opeche Salt Base									
7,300.0	0.50	90.00	7,299.8	0.0	44.4	44.4	0.00	0.00	0.00
7,400.0	0.50	90.00	7,399.8	0.0	45.3	45.3	0.00	0.00	0.00
7,469.2	0.50	90.00	7,469.0	0.0	45.9	45.9	0.00	0.00	0.00
Broom Creek (Top of Minnelusa Gp.)									
7,500.0	0.50	90.00	7,499.8	0.0	46.2	46.2	0.00	0.00	0.00
7,553.2	0.50	90.00	7,553.0	0.0	46.6	46.6	0.00	0.00	0.00
Amsden									
7,600.0	0.50	90.00	7,599.8	0.0	47.1	47.1	0.00	0.00	0.00
7,700.0	0.50	90.00	7,699.8	0.0	47.9	47.9	0.00	0.00	0.00
7,720.2	0.50	90.00	7,720.0	0.0	48.1	48.1	0.00	0.00	0.00
Tyler									
7,800.0	0.50	90.00	7,799.8	0.0	48.8	48.8	0.00	0.00	0.00
7,900.0	0.50	90.00	7,899.8	0.0	49.7	49.7	0.00	0.00	0.00
7,920.2	0.50	90.00	7,920.0	0.0	49.8	49.8	0.00	0.00	0.00
Otter (Base of Minnelusa Gp.)									
7,926.7	0.50	90.00	7,926.4	0.0	49.9	49.9	0.00	0.00	0.00
7,943.3	0.00	0.00	7,943.1	0.0	50.0	50.0	3.00	-3.00	0.00
8,000.0	0.00	0.00	7,999.8	0.0	50.0	50.0	0.00	0.00	0.00
8,100.0	0.00	0.00	8,099.8	0.0	50.0	50.0	0.00	0.00	0.00
8,200.0	0.00	0.00	8,199.8	0.0	50.0	50.0	0.00	0.00	0.00
8,269.2	0.00	0.00	8,269.0	0.0	50.0	50.0	0.00	0.00	0.00
Kibbey Lime									
8,300.0	0.00	0.00	8,299.8	0.0	50.0	50.0	0.00	0.00	0.00
8,400.0	0.00	0.00	8,399.8	0.0	50.0	50.0	0.00	0.00	0.00
8,433.2	0.00	0.00	8,433.0	0.0	50.0	50.0	0.00	0.00	0.00
Charles Salt									
8,500.0	0.00	0.00	8,499.8	0.0	50.0	50.0	0.00	0.00	0.00
8,600.0	0.00	0.00	8,599.8	0.0	50.0	50.0	0.00	0.00	0.00
8,700.0	0.00	0.00	8,699.8	0.0	50.0	50.0	0.00	0.00	0.00
8,800.0	0.00	0.00	8,799.8	0.0	50.0	50.0	0.00	0.00	0.00
8,900.0	0.00	0.00	8,899.8	0.0	50.0	50.0	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Chalmers 5301 44-24 3BR
Company:	Oasis	**TVD Reference:**	Well @ 1967.0usft
Project:	Indian Hills	**MD Reference:**	Well @ 1967.0usft
Site:	153N-100W-19/20_Altered	**North Reference:**	True
Well:	Chalmers 5301 44-24 3BR	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Chalmers 5301 44-24 3BR		
Design:	Design #2		

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)
9,000.0	0.00	0.00	8,999.8	0.0	50.0	50.0	0.00	0.00	0.00
9,010.2	0.00	0.00	9,010.0	0.0	50.0	50.0	0.00	0.00	0.00
UB									
9,091.2	0.00	0.00	9,091.0	0.0	50.0	50.0	0.00	0.00	0.00
Base Last Salt									
9,100.0	0.00	0.00	9,099.8	0.0	50.0	50.0	0.00	0.00	0.00
9,141.2	0.00	0.00	9,141.0	0.0	50.0	50.0	0.00	0.00	0.00
Ratcliffe									
9,200.0	0.00	0.00	9,199.8	0.0	50.0	50.0	0.00	0.00	0.00
9,300.0	0.00	0.00	9,299.8	0.0	50.0	50.0	0.00	0.00	0.00
9,311.2	0.00	0.00	9,311.0	0.0	50.0	50.0	0.00	0.00	0.00
Mission Canyon									
9,400.0	0.00	0.00	9,399.8	0.0	50.0	50.0	0.00	0.00	0.00
9,500.0	0.00	0.00	9,499.8	0.0	50.0	50.0	0.00	0.00	0.00
9,600.0	0.00	0.00	9,599.8	0.0	50.0	50.0	0.00	0.00	0.00
9,700.0	0.00	0.00	9,699.8	0.0	50.0	50.0	0.00	0.00	0.00
9,800.0	0.00	0.00	9,799.8	0.0	50.0	50.0	0.00	0.00	0.00
9,876.2	0.00	0.00	9,876.0	0.0	50.0	50.0	0.00	0.00	0.00
Lodgepole									
9,900.0	0.00	0.00	9,899.8	0.0	50.0	50.0	0.00	0.00	0.00
10,000.0	0.00	0.00	9,999.8	0.0	50.0	50.0	0.00	0.00	0.00
10,100.0	0.00	0.00	10,099.8	0.0	50.0	50.0	0.00	0.00	0.00
10,109.2	0.00	0.00	10,109.0	0.0	50.0	50.0	0.00	0.00	0.00
Lodgepole Fracture Zone									
10,151.8	0.00	0.00	10,151.6	0.0	50.0	50.0	0.00	0.00	0.00
KOP Build 12°/100'									
10,175.0	2.78	110.45	10,174.8	-0.2	50.5	50.5	12.00	12.00	0.00
10,200.0	5.78	110.45	10,199.7	-0.8	52.3	52.3	12.00	12.00	0.00
10,225.0	8.78	110.45	10,224.5	-2.0	55.2	55.2	12.00	12.00	0.00
10,250.0	11.78	110.45	10,249.1	-3.5	59.4	59.4	12.00	12.00	0.00
10,275.0	14.78	110.45	10,273.4	-5.5	64.8	64.8	12.00	12.00	0.00
10,300.0	17.78	110.45	10,297.4	-8.0	71.4	71.4	12.00	12.00	0.00
10,325.0	20.78	110.45	10,321.0	-10.9	79.1	79.1	12.00	12.00	0.00
10,350.0	23.78	110.45	10,344.1	-14.2	88.0	88.0	12.00	12.00	0.00
10,375.0	26.78	110.45	10,366.7	-17.9	98.0	98.0	12.00	12.00	0.00
10,400.0	29.78	110.45	10,388.8	-22.0	109.1	109.1	12.00	12.00	0.00
10,425.0	32.78	110.45	10,410.1	-26.6	121.2	121.2	12.00	12.00	0.00
10,450.0	35.78	110.45	10,430.8	-31.5	134.4	134.4	12.00	12.00	0.00
10,475.0	38.78	110.45	10,450.7	-36.8	148.6	148.6	12.00	12.00	0.00
10,500.0	41.78	110.45	10,469.7	-42.4	163.8	163.8	12.00	12.00	0.00
10,525.0	44.78	110.45	10,487.9	-48.4	179.8	179.8	12.00	12.00	0.00
10,550.0	47.78	110.45	10,505.2	-54.7	196.7	196.7	12.00	12.00	0.00
10,575.0	50.78	110.45	10,521.5	-61.3	214.5	214.5	12.00	12.00	0.00
10,600.0	53.78	110.45	10,536.8	-68.3	233.0	233.0	12.00	12.00	0.00
10,625.0	56.78	110.45	10,551.0	-75.4	252.3	252.3	12.00	12.00	0.00
10,650.0	59.78	110.45	10,564.2	-82.9	272.2	272.2	12.00	12.00	0.00
10,675.0	62.78	110.45	10,576.2	-90.5	292.7	292.7	12.00	12.00	0.00
10,700.0	65.78	110.45	10,587.0	-98.4	313.8	313.8	12.00	12.00	0.00
10,702.4	66.07	110.45	10,588.0	-99.2	315.9	315.9	12.00	12.00	0.00
False Bakken									
10,725.0	68.78	110.45	10,596.7	-106.5	335.4	335.4	12.00	12.00	0.00
10,731.5	69.57	110.45	10,599.0	-108.6	341.2	341.2	12.00	12.00	0.00
Upper Bakken									

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Chalmers 5301 44-24 3BR
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Site:	153N-100W-19/20_Altered	**North Reference:**	True
Well:	Chalmers 5301 44-24 3BR	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Chalmers 5301 44-24 3BR		
Design:	Design #2		

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)
10,750.0	71.78	110.45	10,605.1	-114.7	357.5	357.5	12.00	12.00	0.00
10,775.0	74.78	110.45	10,612.3	-123.0	379.9	379.9	12.00	12.00	0.00
10,789.9	76.57	110.45	10,616.0	-128.1	393.5	393.5	12.00	12.00	0.00
Middle Bakken									
10,800.0	77.78	110.45	10,618.2	-131.5	402.7	402.7	12.00	12.00	0.00
10,825.0	80.78	110.45	10,622.9	-140.1	425.7	425.7	12.00	12.00	0.00
10,839.6	82.53	110.45	10,625.0	-145.1	439.2	439.2	12.00	12.00	0.00
Middle Bakken Sand Target									
10,850.0	83.78	110.45	10,626.2	-148.8	448.9	448.9	12.00	12.00	0.00
10,875.0	86.78	110.45	10,628.3	-157.5	472.2	472.2	12.00	12.00	0.00
10,898.5	89.60	110.45	10,629.0	-165.7	494.3	494.3	11.98	11.98	0.00
EOC									
10,899.0	89.60	110.44	10,629.0	-165.8	494.7	494.7	2.13	0.00	-2.13
7"									
10,900.0	89.60	110.42	10,629.0	-166.2	495.7	495.7	2.00	0.00	-2.00
11,000.0	89.60	108.42	10,629.7	-199.4	590.0	590.0	2.00	0.00	-2.00
11,100.0	89.60	106.42	10,630.4	-229.4	685.4	685.4	2.00	0.00	-2.00
11,200.0	89.59	104.42	10,631.2	-256.0	781.8	781.8	2.00	0.00	-2.00
11,300.0	89.59	102.42	10,631.9	-279.2	879.0	879.0	2.00	0.00	-2.00
11,400.0	89.59	100.42	10,632.6	-299.0	977.0	977.0	2.00	0.00	-2.00
11,500.0	89.59	98.42	10,633.3	-315.3	1,075.7	1,075.7	2.00	0.00	-2.00
11,600.0	89.59	96.42	10,634.0	-328.2	1,174.8	1,174.8	2.00	0.00	-2.00
11,601.2	89.59	96.42	10,634.0	-328.4	1,176.0	1,176.0	0.00	0.00	0.00
Base Middle Bakken Sand Target									
11,700.0	89.60	94.42	10,634.7	-337.7	1,274.4	1,274.4	2.02	0.00	-2.02
11,800.0	89.60	92.42	10,635.4	-343.6	1,374.2	1,374.2	2.00	0.00	-2.00
11,900.0	89.60	90.42	10,636.1	-346.1	1,474.2	1,474.2	2.00	0.00	-2.00
11,920.9	89.60	90.00	10,636.3	-346.2	1,495.1	1,495.1	2.00	0.00	-2.00
12,000.0	89.60	90.00	10,636.8	-346.2	1,574.2	1,574.2	0.00	0.00	0.00
12,100.0	89.60	90.00	10,637.5	-346.2	1,674.2	1,674.2	0.00	0.00	0.00
12,200.0	89.60	90.00	10,638.2	-346.2	1,774.2	1,774.2	0.00	0.00	0.00
12,300.0	89.60	90.00	10,638.9	-346.2	1,874.2	1,874.2	0.00	0.00	0.00
12,400.0	89.60	90.00	10,639.6	-346.2	1,974.1	1,974.1	0.00	0.00	0.00
12,500.0	89.60	90.00	10,640.3	-346.2	2,074.1	2,074.1	0.00	0.00	0.00
12,600.0	89.60	90.00	10,641.0	-346.2	2,174.1	2,174.1	0.00	0.00	0.00
12,700.0	89.60	90.00	10,641.7	-346.2	2,274.1	2,274.1	0.00	0.00	0.00
12,800.0	89.60	90.00	10,642.4	-346.2	2,374.1	2,374.1	0.00	0.00	0.00
12,900.0	89.60	90.00	10,643.1	-346.2	2,474.1	2,474.1	0.00	0.00	0.00
13,000.0	89.60	90.00	10,643.8	-346.2	2,574.1	2,574.1	0.00	0.00	0.00
13,100.0	89.60	90.00	10,644.5	-346.2	2,674.1	2,674.1	0.00	0.00	0.00
13,200.0	89.60	90.00	10,645.2	-346.2	2,774.1	2,774.1	0.00	0.00	0.00
13,300.0	89.60	90.00	10,645.9	-346.2	2,874.1	2,874.1	0.00	0.00	0.00
13,400.0	89.60	90.00	10,646.6	-346.2	2,974.1	2,974.1	0.00	0.00	0.00
13,500.0	89.60	90.00	10,647.3	-346.2	3,074.1	3,074.1	0.00	0.00	0.00
13,600.0	89.60	90.00	10,648.0	-346.2	3,174.1	3,174.1	0.00	0.00	0.00
13,604.0	89.60	90.00	10,648.0	-346.2	3,178.1	3,178.1	0.00	0.00	0.00
Lower Bakken									
13,700.0	89.60	90.00	10,648.7	-346.2	3,274.1	3,274.1	0.00	0.00	0.00
13,800.0	89.60	90.00	10,649.4	-346.2	3,374.1	3,374.1	0.00	0.00	0.00
13,900.0	89.60	90.00	10,650.1	-346.2	3,474.1	3,474.1	0.00	0.00	0.00
14,000.0	89.60	90.00	10,650.8	-346.2	3,574.1	3,574.1	0.00	0.00	0.00
14,100.0	89.60	90.00	10,651.5	-346.2	3,674.1	3,674.1	0.00	0.00	0.00
14,200.0	89.60	90.00	10,652.2	-346.2	3,774.1	3,774.1	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Chalmers 5301 44-24 3BR
Company:	Oasis	**TVD Reference:**	Well @ 1967.0usft
Project:	Indian Hills	**MD Reference:**	Well @ 1967.0usft
Site:	153N-100W-19/20_Altered	**North Reference:**	True
Well:	Chalmers 5301 44-24 3BR	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Chalmers 5301 44-24 3BR		
Design:	Design #2		

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)
14,300.0	89.60	90.00	10,652.9	-346.2	3,874.1	3,874.1	0.00	0.00	0.00
14,400.0	89.60	90.00	10,653.6	-346.2	3,974.1	3,974.1	0.00	0.00	0.00
14,500.0	89.60	90.00	10,654.3	-346.2	4,074.1	4,074.1	0.00	0.00	0.00
14,600.0	89.60	90.00	10,655.0	-346.2	4,174.1	4,174.1	0.00	0.00	0.00
14,700.0	89.60	90.00	10,655.7	-346.2	4,274.1	4,274.1	0.00	0.00	0.00
14,800.0	89.60	90.00	10,656.3	-346.2	4,374.1	4,374.1	0.00	0.00	0.00
14,900.0	89.60	90.00	10,657.0	-346.2	4,474.1	4,474.1	0.00	0.00	0.00
15,000.0	89.60	90.00	10,657.7	-346.2	4,574.1	4,574.1	0.00	0.00	0.00
15,100.0	89.60	90.00	10,658.4	-346.2	4,674.1	4,674.1	0.00	0.00	0.00
15,200.0	89.60	90.00	10,659.1	-346.2	4,774.1	4,774.1	0.00	0.00	0.00
15,300.0	89.60	90.00	10,659.8	-346.2	4,874.1	4,874.1	0.00	0.00	0.00
15,400.0	89.60	90.00	10,660.5	-346.2	4,974.1	4,974.1	0.00	0.00	0.00
15,500.0	89.60	90.00	10,661.2	-346.2	5,074.1	5,074.1	0.00	0.00	0.00
15,600.0	89.60	90.00	10,661.9	-346.2	5,174.1	5,174.1	0.00	0.00	0.00
15,700.0	89.60	90.00	10,662.6	-346.2	5,274.1	5,274.1	0.00	0.00	0.00
15,800.0	89.60	90.00	10,663.3	-346.2	5,374.1	5,374.1	0.00	0.00	0.00
15,900.0	89.60	90.00	10,664.0	-346.2	5,474.1	5,474.1	0.00	0.00	0.00
16,000.0	89.60	90.00	10,664.7	-346.2	5,574.1	5,574.1	0.00	0.00	0.00
16,100.0	89.60	90.00	10,665.4	-346.2	5,674.1	5,674.1	0.00	0.00	0.00
16,200.0	89.60	90.00	10,666.1	-346.2	5,774.1	5,774.1	0.00	0.00	0.00
16,300.0	89.60	90.00	10,666.8	-346.2	5,874.1	5,874.1	0.00	0.00	0.00
16,400.0	89.60	90.00	10,667.5	-346.2	5,974.1	5,974.1	0.00	0.00	0.00
16,500.0	89.60	90.00	10,668.2	-346.2	6,074.0	6,074.0	0.00	0.00	0.00
16,600.0	89.60	90.00	10,668.9	-346.2	6,174.0	6,174.0	0.00	0.00	0.00
16,700.0	89.60	90.00	10,669.6	-346.2	6,274.0	6,274.0	0.00	0.00	0.00
16,800.0	89.60	90.00	10,670.3	-346.2	6,374.0	6,374.0	0.00	0.00	0.00
16,900.0	89.60	90.00	10,671.0	-346.2	6,474.0	6,474.0	0.00	0.00	0.00
17,000.0	89.60	90.00	10,671.7	-346.2	6,574.0	6,574.0	0.00	0.00	0.00
17,100.0	89.60	90.00	10,672.4	-346.2	6,674.0	6,674.0	0.00	0.00	0.00
17,200.0	89.60	90.00	10,673.1	-346.2	6,774.0	6,774.0	0.00	0.00	0.00
17,300.0	89.60	90.00	10,673.8	-346.2	6,874.0	6,874.0	0.00	0.00	0.00
17,400.0	89.60	90.00	10,674.5	-346.2	6,974.0	6,974.0	0.00	0.00	0.00
17,500.0	89.60	90.00	10,675.2	-346.2	7,074.0	7,074.0	0.00	0.00	0.00
17,600.0	89.60	90.00	10,675.9	-346.2	7,174.0	7,174.0	0.00	0.00	0.00
17,614.7	89.60	90.00	10,676.0	-346.2	7,188.7	7,188.7	0.00	0.00	0.00
Three Forks									
17,700.0	89.60	90.00	10,676.6	-346.2	7,274.0	7,274.0	0.00	0.00	0.00
17,800.0	89.60	90.00	10,677.3	-346.2	7,374.0	7,374.0	0.00	0.00	0.00
17,900.0	89.60	90.00	10,678.0	-346.2	7,474.0	7,474.0	0.00	0.00	0.00
18,000.0	89.60	90.00	10,678.7	-346.2	7,574.0	7,574.0	0.00	0.00	0.00
18,100.0	89.60	90.00	10,679.4	-346.2	7,674.0	7,674.0	0.00	0.00	0.00
18,200.0	89.60	90.00	10,680.1	-346.2	7,774.0	7,774.0	0.00	0.00	0.00
18,300.0	89.60	90.00	10,680.8	-346.2	7,874.0	7,874.0	0.00	0.00	0.00
18,400.0	89.60	90.00	10,681.5	-346.2	7,974.0	7,974.0	0.00	0.00	0.00
18,500.0	89.60	90.00	10,682.2	-346.2	8,074.0	8,074.0	0.00	0.00	0.00
18,600.0	89.60	90.00	10,682.9	-346.2	8,174.0	8,174.0	0.00	0.00	0.00
18,700.0	89.60	90.00	10,683.6	-346.2	8,274.0	8,274.0	0.00	0.00	0.00
18,800.0	89.60	90.00	10,684.3	-346.2	8,374.0	8,374.0	0.00	0.00	0.00
18,900.0	89.60	90.00	10,685.0	-346.2	8,474.0	8,474.0	0.00	0.00	0.00
19,000.0	89.60	90.00	10,685.7	-346.2	8,574.0	8,574.0	0.00	0.00	0.00
19,100.0	89.60	90.00	10,686.4	-346.2	8,674.0	8,674.0	0.00	0.00	0.00
19,200.0	89.60	90.00	10,687.1	-346.2	8,774.0	8,774.0	0.00	0.00	0.00
19,300.0	89.60	90.00	10,687.8	-346.2	8,874.0	8,874.0	0.00	0.00	0.00
19,400.0	89.60	90.00	10,688.5	-346.2	8,974.0	8,974.0	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Chalmers 5301 44-24 3BR
Company:	Oasis	**TVD Reference:**	Well @ 1967.0usft
Project:	Indian Hills	**MD Reference:**	Well @ 1967.0usft
Site:	153N-100W-19/20_Altered	**North Reference:**	True
Well:	Chalmers 5301 44-24 3BR	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Chalmers 5301 44-24 3BR		
Design:	Design #2		

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)
19,500.0	89.60	90.00	10,689.2	-346.2	9,074.0	9,074.0	0.00	0.00	0.00
19,600.0	89.60	90.00	10,689.9	-346.2	9,174.0	9,174.0	0.00	0.00	0.00
19,700.0	89.60	90.00	10,690.6	-346.2	9,274.0	9,274.0	0.00	0.00	0.00
19,800.0	89.60	90.00	10,691.3	-346.2	9,374.0	9,374.0	0.00	0.00	0.00
19,900.0	89.60	90.00	10,692.0	-346.2	9,474.0	9,474.0	0.00	0.00	0.00
20,000.0	89.60	90.00	10,692.7	-346.2	9,574.0	9,574.0	0.00	0.00	0.00
20,100.0	89.60	90.00	10,693.4	-346.2	9,674.0	9,674.0	0.00	0.00	0.00
20,200.0	89.60	90.00	10,694.0	-346.2	9,774.0	9,774.0	0.00	0.00	0.00
20,300.0	89.60	90.00	10,694.7	-346.2	9,874.0	9,874.0	0.00	0.00	0.00
20,400.0	89.60	90.00	10,695.4	-346.2	9,974.0	9,974.0	0.00	0.00	0.00
20,500.0	89.60	90.00	10,696.1	-346.2	10,074.0	10,074.0	0.00	0.00	0.00
20,600.0	89.60	90.00	10,696.8	-346.2	10,173.9	10,173.9	0.00	0.00	0.00
20,700.0	89.60	90.00	10,697.5	-346.2	10,273.9	10,273.9	0.00	0.00	0.00
20,800.0	89.60	90.00	10,698.2	-346.2	10,373.9	10,373.9	0.00	0.00	0.00
20,900.0	89.60	90.00	10,698.9	-346.2	10,473.9	10,473.9	0.00	0.00	0.00
20,960.1	89.60	90.00	10,699.4	-346.2	10,534.0	10,534.0	0.00	0.00	0.00
5301 44-24 3BR PBHL									

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
5301 44-24 3BR PBHL	0.00	0.00	10,699.2	-346.0	10,534.0	399,619.70	1,219,839.57	48° 3' 17.046 N	103° 33' 43.485 W
- plan misses target center by 0.2usft at 20960.1usft MD (10699.4 TVD, -346.2 N, 10534.0 E)									
- Point									

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
10,899.0	10,629.0	7"	7	8-3/4

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Chalmers 5301 44-24 3BR
Company:	Oasis	**TVD Reference:**	Well @ 1967.0usft
Project:	Indian Hills	**MD Reference:**	Well @ 1967.0usft
Site:	153N-100W-19/20_Altered	**North Reference:**	True
Well:	Chalmers 5301 44-24 3BR	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Chalmers 5301 44-24 3BR		
Design:	Design #2		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,918.0	1,918.0	Pierre			
4,510.1	4,510.0	Greenhorn			
4,914.1	4,914.0	Mowry			
5,341.1	5,341.0	Dakota			
6,356.2	6,356.0	Rierdon			
6,683.2	6,683.0	Dunham Salt			
6,800.2	6,800.0	Dunham Salt Base			
6,887.2	6,887.0	Spearfish			
7,135.2	7,135.0	Pine Salt			
7,168.2	7,168.0	Pine Salt Base			
7,235.2	7,235.0	Opeche Salt			
7,269.2	7,269.0	Opeche Salt Base			
7,469.2	7,469.0	Broom Creek (Top of Minnelusa Gp.)			
7,553.2	7,553.0	Amsden			
7,720.2	7,720.0	Tyler			
7,920.2	7,920.0	Otter (Base of Minnelusa Gp.)			
8,269.2	8,269.0	Kibbey Lime			
8,433.2	8,433.0	Charles Salt			
9,010.2	9,010.0	UB			
9,091.2	9,091.0	Base Last Salt			
9,141.2	9,141.0	Ratcliffe			
9,311.2	9,311.0	Mission Canyon			
9,876.2	9,876.0	Lodgepole			
10,109.2	10,109.0	Lodgepole Fracture Zone			
10,702.4	10,588.0	False Bakken			
10,731.5	10,599.0	Upper Bakken			
10,789.9	10,616.0	Middle Bakken			
10,839.6	10,625.0	Middle Bakken Sand Target			
11,601.2	10,634.0	Base Middle Bakken Sand Target			
13,604.0	10,648.0	Lower Bakken			
17,614.7	10,676.0	Three Forks			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
10,151.8	10,151.6	0.0	50.0	KOP Build 12°/100'
10,898.5	10,629.0	-165.7	494.3	EOC

Oasis

Indian Hills
153N-100W-19/20_Altered
Chalmers 5301 44-24 3BR

Chalmers 5301 44-24 3BR
Design #2

Anticollision Report

27 May, 2014

Ryan Directional Services

Anticollision Report

Company:	Oasis	**Local Co-ordinate Reference:**	Well Chalmers 5301 44-24 3BR
Project:	Indian Hills	**TVD Reference:**	Well @ 1967.0usft
Reference Site:	153N-100W-19/20_Altered	**MD Reference:**	Well @ 1967.0usft
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	Chalmers 5301 44-24 3BR	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 3BR	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Reference Design #2

Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.0 usft	**Error Surface:**	Elliptical Conic
Warning Levels Evaluated at:	2.00 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 5/27/2014

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	20,960.1	Design #2 (Chalmers 5301 44-24 3BR)	MWD	MWD - Standard

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
153N-100W-19/20_Altered						
Chalmers 5300 44-24 4T2R - Chalmers 5300 44-24 4T2R	2,200.1	2,200.1	48.6	38.6	4.859	CC
Chalmers 5300 44-24 4T2R - Chalmers 5300 44-24 4T2R	20,960.1	21,105.8	108.2	-47.9	0.693	Level 1, ES, SF
Chalmers 5301 44-24 12TXR - Chalmers 5301 44-24 12T	2,200.0	2,200.0	82.1	72.1	8.201	CC
Chalmers 5301 44-24 12TXR - Chalmers 5301 44-24 12T	20,960.1	21,225.9	585.3	-22.5	0.963	Level 1, ES, SF

Offset Design 153N-100W-19/20_Altered - Chalmers 5300 44-24 4T2R - Chalmers 5300 44-24 4T2R - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD **Offset Well Error:** 2.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	2.0	-180.00	-48.6	0.0	48.6				
100.0	100.0	100.0	100.0	0.1	2.0	-180.00	-48.6	0.0	48.6	46.6	2.09	23.315	
200.0	200.0	200.0	200.0	0.3	2.0	-180.00	-48.6	0.0	48.6	46.3	2.33	20.849	
300.0	300.0	300.0	300.0	0.5	2.1	-180.00	-48.6	0.0	48.6	46.0	2.60	18.679	
400.0	400.0	400.0	400.0	0.8	2.1	-180.00	-48.6	0.0	48.6	45.7	2.90	16.785	
500.0	500.0	500.0	500.0	1.0	2.2	-180.00	-48.6	0.0	48.6	45.4	3.21	15.142	
600.0	600.0	600.0	600.0	1.2	2.3	-180.00	-48.6	0.0	48.6	45.1	3.54	13.721	
700.0	700.0	700.0	700.0	1.4	2.5	-180.00	-48.6	0.0	48.6	44.7	3.89	12.493	
800.0	800.0	800.0	800.0	1.7	2.6	-180.00	-48.6	0.0	48.6	44.4	4.26	11.430	
900.0	900.0	900.0	900.0	1.9	2.7	-180.00	-48.6	0.0	48.6	44.0	4.63	10.507	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.9	-180.00	-48.6	0.0	48.6	43.6	5.01	9.703	
1,100.0	1,100.0	1,100.0	1,100.0	2.3	3.1	-180.00	-48.6	0.0	48.6	43.2	5.40	9.000	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	3.2	-180.00	-48.6	0.0	48.6	42.8	5.80	8.382	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	3.4	-180.00	-48.6	0.0	48.6	42.4	6.21	7.835	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.6	-180.00	-48.6	0.0	48.6	42.0	6.62	7.350	
1,500.0	1,500.0	1,500.0	1,500.0	3.2	3.8	-180.00	-48.6	0.0	48.6	41.6	7.03	6.918	
1,600.0	1,600.0	1,600.0	1,600.0	3.5	4.0	-180.00	-48.6	0.0	48.6	41.2	7.45	6.530	
1,700.0	1,700.0	1,700.0	1,700.0	3.7	4.2	-180.00	-48.6	0.0	48.6	40.8	7.87	6.181	
1,800.0	1,800.0	1,800.0	1,800.0	3.9	4.4	-180.00	-48.6	0.0	48.6	40.3	8.29	5.865	
1,900.0	1,900.0	1,900.0	1,900.0	4.1	4.6	-180.00	-48.6	0.0	48.6	39.9	8.72	5.578	
2,000.0	2,000.0	2,000.0	2,000.0	4.4	4.8	-180.00	-48.6	0.0	48.6	39.5	9.15	5.317	
2,100.0	2,100.0	2,100.0	2,100.0	4.6	5.0	-180.00	-48.6	0.0	48.6	39.1	9.58	5.079	
2,200.0	2,200.0	2,200.0	2,200.0	4.8	5.2	-180.00	-48.6	0.0	48.6	38.6	10.01	4.860	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	Oasis	**Local Co-ordinate Reference:**	Well Chalmers 5301 44-24 3BR
Project:	Indian Hills	**TVD Reference:**	Well @ 1967.0usft
Reference Site:	153N-100W-19/20_Altered	**MD Reference:**	Well @ 1967.0usft
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	Chalmers 5301 44-24 3BR	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 3BR	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design 153N-100W-19/20_Altered - Chalmers 5300 44-24 4T2R - Chalmers 5300 44-24 4T2R - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 2.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
2,200.1	2,200.1	2,200.1	2,200.1	4.8	5.2	-180.00	-48.6	0.0	48.6	38.6	10.01	4.859	CC
2,216.7	2,216.7	2,216.7	2,216.7	4.8	5.2	90.09	-48.6	0.0	48.6	38.6	10.08	4.826	
2,300.0	2,300.0	2,300.0	2,300.0	5.0	5.4	90.94	-48.6	0.0	48.6	38.2	10.42	4.670	
2,400.0	2,400.0	2,400.0	2,400.0	5.2	5.6	91.97	-48.6	0.0	48.7	37.8	10.82	4.496	
2,500.0	2,500.0	2,500.0	2,500.0	5.4	5.8	93.00	-48.6	0.0	48.7	37.5	11.24	4.334	
2,600.0	2,600.0	2,600.0	2,600.0	5.6	6.0	94.02	-48.6	0.0	48.8	37.1	11.65	4.185	
2,700.0	2,700.0	2,700.0	2,700.0	5.8	6.3	95.04	-48.6	0.0	48.8	36.8	12.07	4.046	
2,800.0	2,800.0	2,800.0	2,800.0	6.0	6.5	96.06	-48.6	0.0	48.9	36.4	12.49	3.916	
2,900.0	2,900.0	2,900.0	2,900.0	6.2	6.7	97.07	-48.6	0.0	49.0	36.1	12.91	3.796	
3,000.0	3,000.0	3,000.0	3,000.0	6.4	6.9	98.08	-48.6	0.0	49.1	35.8	13.33	3.684	
3,100.0	3,100.0	3,100.0	3,100.0	6.6	7.1	99.09	-48.6	0.0	49.3	35.5	13.76	3.580	
3,200.0	3,200.0	3,200.0	3,200.0	6.9	7.3	100.09	-48.6	0.0	49.4	35.2	14.19	3.482	
3,300.0	3,300.0	3,300.0	3,300.0	7.1	7.5	101.08	-48.6	0.0	49.6	34.9	14.61	3.391	
3,400.0	3,400.0	3,400.0	3,400.0	7.3	7.8	102.07	-48.6	0.0	49.7	34.7	15.04	3.306	
3,500.0	3,500.0	3,500.0	3,500.0	7.5	8.0	103.05	-48.6	0.0	49.9	34.5	15.48	3.226	
3,600.0	3,599.9	3,599.9	3,599.9	7.7	8.2	104.02	-48.6	0.0	50.1	34.2	15.91	3.151	
3,700.0	3,699.9	3,699.9	3,699.9	7.9	8.4	104.98	-48.6	0.0	50.3	34.0	16.34	3.081	
3,800.0	3,799.9	3,799.9	3,799.9	8.1	8.6	105.94	-48.6	0.0	50.6	33.8	16.77	3.016	
3,900.0	3,899.9	3,899.9	3,899.9	8.4	8.9	106.88	-48.6	0.0	50.8	33.6	17.21	2.954	
4,000.0	3,999.9	3,999.9	3,999.9	8.6	9.1	107.82	-48.6	0.0	51.1	33.4	17.64	2.896	
4,100.0	4,099.9	4,099.9	4,099.9	8.8	9.3	108.75	-48.6	0.0	51.4	33.3	18.08	2.841	
4,200.0	4,199.9	4,199.9	4,199.9	9.0	9.5	109.66	-48.6	0.0	51.6	33.1	18.52	2.789	
4,300.0	4,299.9	4,299.9	4,299.9	9.2	9.7	110.57	-48.6	0.0	51.9	33.0	18.95	2.741	
4,400.0	4,399.9	4,399.9	4,399.9	9.4	10.0	111.47	-48.6	0.0	52.3	32.9	19.39	2.695	
4,500.0	4,499.9	4,499.9	4,499.9	9.7	10.2	112.35	-48.6	0.0	52.6	32.8	19.83	2.652	
4,600.0	4,599.9	4,599.9	4,599.9	9.9	10.4	113.22	-48.6	0.0	52.9	32.7	20.27	2.611	
4,700.0	4,699.9	4,699.9	4,699.9	10.1	10.6	114.09	-48.6	0.0	53.3	32.6	20.71	2.572	
4,800.0	4,799.9	4,799.9	4,799.9	10.3	10.8	114.94	-48.6	0.0	53.6	32.5	21.15	2.536	
4,900.0	4,899.9	4,899.9	4,899.9	10.5	11.1	115.78	-48.6	0.0	54.0	32.4	21.59	2.502	
5,000.0	4,999.9	4,999.9	4,999.9	10.8	11.3	116.60	-48.6	0.0	54.4	32.4	22.03	2.469	
5,100.0	5,099.9	5,099.9	5,099.9	11.0	11.5	117.42	-48.6	0.0	54.8	32.3	22.47	2.438	
5,200.0	5,199.9	5,199.9	5,199.9	11.2	11.7	118.22	-48.6	0.0	55.2	32.3	22.91	2.409	
5,300.0	5,299.9	5,299.9	5,299.9	11.4	11.9	119.02	-48.6	0.0	55.6	32.3	23.36	2.381	
5,400.0	5,399.9	5,399.9	5,399.9	11.6	12.2	119.80	-48.6	0.0	56.0	32.2	23.80	2.355	
5,500.0	5,499.9	5,499.9	5,499.9	11.9	12.4	120.57	-48.6	0.0	56.5	32.2	24.24	2.330	
5,600.0	5,599.9	5,599.9	5,599.9	12.1	12.6	121.32	-48.6	0.0	56.9	32.3	24.68	2.307	
5,700.0	5,699.9	5,699.9	5,699.9	12.3	12.8	122.07	-48.6	0.0	57.4	32.3	25.13	2.284	
5,800.0	5,799.9	5,799.9	5,799.9	12.5	13.0	122.80	-48.6	0.0	57.9	32.3	25.57	2.263	
5,900.0	5,899.9	5,899.9	5,899.9	12.7	13.3	123.52	-48.6	0.0	58.3	32.3	26.01	2.243	
6,000.0	5,999.9	5,999.9	5,999.9	13.0	13.5	124.23	-48.6	0.0	58.8	32.4	26.46	2.223	
6,100.0	6,099.9	6,099.9	6,099.9	13.2	13.7	124.92	-48.6	0.0	59.3	32.4	26.90	2.205	
6,200.0	6,199.8	6,199.8	6,199.8	13.4	13.9	125.61	-48.6	0.0	59.8	32.5	27.34	2.188	
6,300.0	6,299.8	6,299.8	6,299.8	13.6	14.2	126.28	-48.6	0.0	60.3	32.5	27.79	2.171	
6,400.0	6,399.8	6,399.8	6,399.8	13.9	14.4	126.94	-48.6	0.0	60.9	32.6	28.23	2.155	
6,500.0	6,499.8	6,499.8	6,499.8	14.1	14.6	127.60	-48.6	0.0	61.4	32.7	28.68	2.141	
6,600.0	6,599.8	6,599.8	6,599.8	14.3	14.8	128.24	-48.6	0.0	61.9	32.8	29.12	2.126	
6,700.0	6,699.8	6,699.8	6,699.8	14.5	15.1	128.86	-48.6	0.0	62.5	32.9	29.57	2.113	
6,800.0	6,799.8	6,799.8	6,799.8	14.7	15.3	129.48	-48.6	0.0	63.0	33.0	30.01	2.100	
6,900.0	6,899.8	6,899.8	6,899.8	15.0	15.5	130.09	-48.6	0.0	63.6	33.1	30.46	2.087	
7,000.0	6,999.8	6,999.8	6,999.8	15.2	15.7	130.69	-48.6	0.0	64.1	33.2	30.90	2.076	
7,100.0	7,099.8	7,099.8	7,099.8	15.4	15.9	131.27	-48.6	0.0	64.7	33.4	31.35	2.064	
7,200.0	7,199.8	7,199.8	7,199.8	15.6	16.2	131.85	-48.6	0.0	65.3	33.5	31.79	2.054	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	Oasis	**Local Co-ordinate Reference:**	Well Chalmers 5301 44-24 3BR
Project:	Indian Hills	**TVD Reference:**	Well @ 1967.0usft
Reference Site:	153N-100W-19/20_Altered	**MD Reference:**	Well @ 1967.0usft
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	Chalmers 5301 44-24 3BR	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 3BR	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design 153N-100W-19/20_Altered - Chalmers 5300 44-24 4T2R - Chalmers 5300 44-24 4T2R - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 2.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
7,300.0	7,299.8	7,299.8	7,299.8	15.9	16.4	132.41	-48.6	0.0	65.9	33.6	32.24	2.043	
7,400.0	7,399.8	7,399.8	7,399.8	16.1	16.6	132.97	-48.6	0.0	66.5	33.8	32.69	2.034	
7,500.0	7,499.8	7,499.8	7,499.8	16.3	16.8	133.51	-48.6	0.0	67.1	33.9	33.13	2.024	
7,600.0	7,599.8	7,599.8	7,599.8	16.5	17.1	134.05	-48.6	0.0	67.7	34.1	33.58	2.015	
7,700.0	7,699.8	7,699.8	7,699.8	16.7	17.3	134.58	-48.6	0.0	68.3	34.3	34.02	2.007	
7,800.0	7,799.8	7,799.8	7,799.8	17.0	17.5	135.09	-48.6	0.0	68.9	34.4	34.47	1.999	
7,900.0	7,899.8	7,899.8	7,899.8	17.2	17.7	135.60	-48.6	0.0	69.5	34.6	34.92	1.991	
7,926.7	7,926.4	7,926.4	7,926.4	17.3	17.8	135.73	-48.6	0.0	69.7	34.6	35.04	1.989	
7,943.3	7,943.1	7,943.1	7,943.1	17.3	17.8	-134.22	-48.6	0.0	69.7	34.7	35.06	1.989	
8,000.0	7,999.8	7,999.8	7,999.8	17.4	18.0	-134.22	-48.6	0.0	69.7	34.4	35.30	1.975	
8,100.0	8,099.8	8,099.8	8,099.8	17.6	18.2	-134.22	-48.6	0.0	69.7	34.0	35.74	1.951	
8,200.0	8,199.8	8,199.8	8,199.8	17.8	18.4	-134.22	-48.6	0.0	69.7	33.6	36.17	1.928	
8,300.0	8,299.8	8,299.8	8,299.8	18.0	18.6	-134.22	-48.6	0.0	69.7	33.1	36.60	1.905	
8,400.0	8,399.8	8,399.8	8,399.8	18.2	18.8	-134.22	-48.6	0.0	69.7	32.7	37.04	1.883	
8,500.0	8,499.8	8,499.8	8,499.8	18.5	19.1	-134.22	-48.6	0.0	69.7	32.3	37.47	1.861	
8,600.0	8,599.8	8,599.8	8,599.8	18.7	19.3	-134.22	-48.6	0.0	69.7	31.8	37.90	1.840	
8,700.0	8,699.8	8,699.8	8,699.8	18.9	19.5	-134.22	-48.6	0.0	69.7	31.4	38.34	1.819	
8,800.0	8,799.8	8,799.8	8,799.8	19.1	19.7	-134.22	-48.6	0.0	69.7	31.0	38.77	1.798	
8,900.0	8,899.8	8,899.8	8,899.8	19.3	20.0	-134.22	-48.6	0.0	69.7	30.5	39.21	1.779	
9,000.0	8,999.8	8,999.8	8,999.8	19.5	20.2	-134.22	-48.6	0.0	69.7	30.1	39.65	1.759	
9,100.0	9,099.8	9,099.8	9,099.8	19.7	20.4	-134.22	-48.6	0.0	69.7	29.7	40.08	1.740	
9,200.0	9,199.8	9,199.8	9,199.8	19.9	20.6	-134.22	-48.6	0.0	69.7	29.2	40.52	1.721	
9,300.0	9,299.8	9,299.8	9,299.8	20.1	20.9	-134.22	-48.6	0.0	69.7	28.8	40.95	1.703	
9,400.0	9,399.8	9,399.8	9,399.8	20.4	21.1	-134.22	-48.6	0.0	69.7	28.3	41.39	1.685	
9,500.0	9,499.8	9,499.8	9,499.8	20.6	21.3	-134.22	-48.6	0.0	69.7	27.9	41.83	1.667	
9,600.0	9,599.8	9,599.8	9,599.8	20.8	21.5	-134.22	-48.6	0.0	69.7	27.5	42.27	1.650	
9,700.0	9,699.8	9,699.8	9,699.8	21.0	21.8	-134.22	-48.6	0.0	69.7	27.0	42.70	1.633	
9,800.0	9,799.8	9,799.8	9,799.8	21.2	22.0	-134.22	-48.6	0.0	69.7	26.6	43.14	1.616	
9,900.0	9,899.8	9,899.8	9,899.8	21.4	22.2	-134.22	-48.6	0.0	69.7	26.2	43.58	1.600	
10,000.0	9,999.8	9,999.8	9,999.8	21.6	22.4	-134.22	-48.6	0.0	69.7	25.7	44.02	1.584	
10,100.0	10,099.8	10,099.8	10,099.8	21.9	22.6	-134.22	-48.6	0.0	69.7	25.3	44.46	1.569	
10,151.8	10,151.6	10,151.6	10,151.6	22.0	22.8	-134.22	-48.6	0.0	69.7	25.1	44.68	1.561	
10,175.0	10,174.8	10,174.8	10,174.8	22.0	22.8	115.72	-48.6	0.0	70.0	25.2	44.82	1.561	
10,200.0	10,199.7	10,199.7	10,199.7	22.1	22.9	116.99	-48.6	0.0	70.8	25.9	44.91	1.577	
10,225.0	10,224.5	10,224.5	10,224.5	22.1	22.9	119.05	-48.6	0.0	72.3	27.3	44.97	1.608	
10,250.0	10,249.1	10,249.1	10,249.1	22.2	23.0	121.78	-48.6	0.0	74.6	29.6	45.00	1.658	
10,275.0	10,273.4	10,275.0	10,275.0	22.3	23.0	125.09	-48.7	0.2	77.7	32.7	44.97	1.727	
10,300.0	10,297.4	10,302.2	10,302.2	22.3	23.1	128.32	-49.2	1.8	81.0	36.1	44.87	1.805	
10,325.0	10,321.0	10,329.9	10,329.6	22.4	23.1	131.27	-50.3	4.9	84.4	39.7	44.71	1.889	
10,350.0	10,344.1	10,357.9	10,357.2	22.5	23.2	133.95	-51.8	9.6	87.9	43.5	44.47	1.977	
10,375.0	10,366.7	10,386.3	10,384.8	22.5	23.3	136.40	-53.9	15.9	91.5	47.3	44.17	2.070	
10,400.0	10,388.8	10,415.1	10,412.4	22.6	23.3	138.63	-56.6	23.8	95.0	51.1	43.80	2.168	
10,425.0	10,410.1	10,444.3	10,439.7	22.7	23.4	140.65	-59.8	33.5	98.4	55.0	43.37	2.268	
10,450.0	10,430.8	10,473.9	10,466.8	22.8	23.5	142.50	-63.6	44.9	101.7	58.8	42.88	2.372	
10,475.0	10,450.7	10,503.9	10,493.4	22.9	23.5	144.19	-68.0	58.1	104.9	62.5	42.34	2.477	
10,500.0	10,469.7	10,534.3	10,519.3	23.0	23.6	145.72	-73.0	72.9	107.9	66.1	41.75	2.584	
10,525.0	10,487.9	10,565.0	10,544.5	23.1	23.7	147.13	-78.5	89.6	110.7	69.6	41.12	2.692	
10,550.0	10,505.2	10,596.0	10,568.8	23.3	23.8	148.41	-84.6	107.9	113.3	72.8	40.47	2.800	
10,575.0	10,521.5	10,627.4	10,592.0	23.4	23.9	149.58	-91.3	127.9	115.6	75.8	39.80	2.906	
10,600.0	10,536.8	10,659.0	10,614.0	23.6	24.1	150.64	-98.5	149.5	117.7	78.6	39.12	3.009	
10,625.0	10,551.0	10,690.9	10,634.6	23.7	24.2	151.61	-106.2	172.6	119.4	81.0	38.44	3.107	
10,650.0	10,564.2	10,723.0	10,653.6	23.9	24.4	152.48	-114.4	197.2	120.9	83.1	37.78	3.200	

Company:	Oasis	**Local Co-ordinate Reference:**	Well Chalmers 5301 44-24 3BR
Project:	Indian Hills	**TVD Reference:**	Well @ 1967.0usft
Reference Site:	153N-100W-19/20_Altered	**MD Reference:**	Well @ 1967.0usft
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	Chalmers 5301 44-24 3BR	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 3BR	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design 153N-100W-19/20_Altered - Chalmers 5300 44-24 4T2R - Chalmers 5300 44-24 4T2R - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 2.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,675.0	10,576.2	10,755.4	10,670.9	24.1	24.6	153.28	-123.1	223.1	122.0	84.9	37.14	3.285	
10,700.0	10,587.0	10,787.8	10,686.4	24.3	24.9	153.99	-132.1	250.1	122.8	86.2	36.55	3.359	
10,725.0	10,596.7	10,820.4	10,700.0	24.6	25.1	154.62	-141.5	278.2	123.2	87.2	36.01	3.421	
10,750.0	10,605.1	10,853.1	10,711.6	24.8	25.4	155.18	-151.1	307.2	123.3	87.7	35.54	3.468	
10,775.0	10,612.3	10,885.8	10,721.0	25.1	25.8	155.67	-161.0	336.9	122.9	87.8	35.15	3.498	
10,800.0	10,618.2	10,918.5	10,728.3	25.4	26.1	156.09	-171.1	367.1	122.3	87.4	34.84	3.509	
10,825.0	10,622.9	10,951.1	10,733.4	25.7	26.5	156.44	-181.3	397.6	121.2	86.6	34.64	3.500	
10,850.0	10,626.2	10,983.6	10,736.3	26.0	26.9	156.71	-191.5	428.3	119.8	85.3	34.55	3.468	
10,875.0	10,628.3	11,013.8	10,737.0	26.4	27.3	156.93	-201.1	457.0	118.1	83.6	34.56	3.418	
10,898.5	10,629.0	11,037.6	10,737.2	26.7	27.6	157.31	-208.5	479.7	117.2	82.6	34.58	3.390	
10,900.0	10,629.0	11,039.2	10,737.2	26.7	27.6	157.34	-209.0	481.1	117.2	82.6	34.58	3.389	
11,000.0	10,629.7	11,140.6	10,737.9	28.2	29.2	159.46	-238.2	578.2	115.5	80.8	34.67	3.331	
11,100.0	10,630.4	11,241.8	10,738.6	29.9	30.9	161.67	-264.0	676.1	113.9	79.2	34.72	3.282	
11,200.0	10,631.2	11,342.9	10,739.3	31.8	32.8	163.96	-286.3	774.7	112.6	77.8	34.70	3.243	
11,300.0	10,631.9	11,443.8	10,740.0	33.9	34.9	166.31	-305.0	873.8	111.3	76.7	34.62	3.216	
11,400.0	10,632.6	11,544.5	10,740.7	36.0	37.0	168.72	-320.2	973.4	110.3	75.8	34.49	3.198	
11,500.0	10,633.3	11,645.1	10,741.5	38.3	39.3	171.19	-331.9	1,073.3	109.5	75.1	34.36	3.186	
11,600.0	10,634.0	11,745.5	10,742.2	40.6	41.6	173.70	-340.1	1,173.3	108.8	74.5	34.30	3.173	
11,700.0	10,634.7	11,845.7	10,742.9	43.0	44.0	176.24	-344.7	1,273.4	108.4	74.0	34.41	3.150	
11,800.0	10,635.4	11,945.7	10,743.6	45.5	46.4	178.77	-345.9	1,373.4	108.2	73.4	34.82	3.107	
11,878.0	10,635.9	12,023.7	10,744.1	47.4	48.3	179.96	-345.9	1,451.4	108.2	72.8	35.40	3.055	
11,900.0	10,636.1	12,045.7	10,744.3	47.9	48.8	-179.90	-345.9	1,473.4	108.2	72.6	35.59	3.040	
11,920.9	10,636.3	12,066.6	10,744.4	48.4	49.3	-179.86	-345.9	1,494.3	108.2	72.4	35.76	3.024	
12,000.0	10,636.8	12,145.7	10,745.0	50.4	51.3	-179.86	-345.9	1,573.4	108.2	71.7	36.45	2.967	
12,039.4	10,637.1	12,185.1	10,745.2	51.4	52.3	-179.86	-345.9	1,612.8	108.2	71.4	36.80	2.939	
12,100.0	10,637.5	12,245.7	10,745.7	53.0	53.9	-179.86	-345.9	1,673.4	108.2	70.8	37.35	2.896	
12,172.4	10,638.0	12,318.1	10,746.2	54.8	55.8	-179.86	-345.9	1,745.9	108.2	70.1	38.03	2.844	
12,200.0	10,638.2	12,345.7	10,746.4	55.5	56.5	-179.86	-345.9	1,773.4	108.2	69.9	38.29	2.825	
12,300.0	10,638.9	12,445.7	10,747.1	58.2	59.1	-179.86	-345.9	1,873.4	108.2	68.9	39.26	2.755	
12,339.4	10,639.2	12,485.1	10,747.3	59.2	60.1	-179.86	-345.9	1,912.8	108.2	68.5	39.65	2.728	
12,400.0	10,639.6	12,545.7	10,747.8	60.8	61.8	-179.86	-345.9	1,973.4	108.2	67.9	40.26	2.686	
12,477.4	10,640.1	12,623.1	10,748.3	62.9	63.8	-179.86	-345.9	2,050.8	108.2	67.1	41.06	2.634	
12,500.0	10,640.3	12,645.7	10,748.5	63.5	64.4	-179.86	-345.9	2,073.4	108.2	66.9	41.29	2.620	
12,600.0	10,641.0	12,745.7	10,749.2	66.2	67.1	-179.86	-345.9	2,173.4	108.2	65.8	42.35	2.554	
12,635.5	10,641.2	12,781.2	10,749.4	67.1	68.1	-179.86	-345.9	2,208.9	108.2	65.4	42.73	2.532	
12,700.0	10,641.7	12,845.7	10,749.9	68.9	69.8	-179.86	-345.9	2,273.4	108.2	64.7	43.42	2.491	
12,777.4	10,642.2	12,923.1	10,750.4	71.0	72.0	-179.86	-345.9	2,350.8	108.2	63.9	44.27	2.443	
12,800.0	10,642.4	12,945.7	10,750.5	71.6	72.6	-179.86	-345.9	2,373.4	108.2	63.6	44.52	2.429	
12,900.0	10,643.1	13,045.7	10,751.2	74.4	75.3	-179.86	-345.9	2,473.4	108.2	62.5	45.64	2.370	
12,935.5	10,643.3	13,081.2	10,751.5	75.3	76.3	-179.86	-345.9	2,508.9	108.2	62.1	46.05	2.349	
13,000.0	10,643.8	13,145.7	10,751.9	77.1	78.1	-179.86	-345.9	2,573.4	108.2	61.4	46.78	2.312	
13,072.7	10,644.3	13,218.4	10,752.5	79.1	80.1	-179.86	-345.9	2,646.0	108.2	60.5	47.62	2.271	
13,100.0	10,644.5	13,245.7	10,752.6	79.9	80.9	-179.86	-345.9	2,673.4	108.2	60.2	47.94	2.256	
13,200.0	10,645.2	13,345.7	10,753.3	82.7	83.6	-179.86	-345.9	2,773.4	108.2	59.1	49.11	2.202	
13,235.5	10,645.4	13,381.2	10,753.6	83.7	84.6	-179.86	-345.9	2,808.9	108.2	58.6	49.53	2.184	
13,300.0	10,645.9	13,445.7	10,754.0	85.5	86.4	-179.86	-345.9	2,873.4	108.2	57.9	50.30	2.150	
13,372.4	10,646.4	13,518.1	10,754.5	87.5	88.5	-179.86	-345.9	2,945.8	108.2	57.0	51.17	2.114	
13,400.0	10,646.6	13,545.7	10,754.7	88.3	89.2	-179.86	-345.9	2,973.4	108.2	56.7	51.51	2.100	
13,500.0	10,647.3	13,645.7	10,755.4	91.1	92.0	-179.86	-345.9	3,073.4	108.2	55.4	52.72	2.052	
13,535.5	10,647.5	13,681.2	10,755.7	92.1	93.0	-179.86	-345.9	3,108.9	108.2	55.0	53.16	2.035	
13,600.0	10,648.0	13,745.7	10,756.1	93.9	94.9	-179.86	-345.9	3,173.4	108.2	54.2	53.95	2.005	
13,678.2	10,648.5	13,823.9	10,756.7	96.1	97.1	-179.86	-345.9	3,251.5	108.2	53.2	54.92	1.970	

Ryan Directional Services

Anticollision Report

Company:	Oasis	**Local Co-ordinate Reference:**	Well Chalmers 5301 44-24 3BR
Project:	Indian Hills	**TVD Reference:**	Well @ 1967.0usft
Reference Site:	153N-100W-19/20_Altered	**MD Reference:**	Well @ 1967.0usft
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	Chalmers 5301 44-24 3BR	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 3BR	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design 153N-100W-19/20_Altered - Chalmers 5300 44-24 4T2R - Chalmers 5300 44-24 4T2R - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 2.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,700.0	10,648.7	13,845.7	10,756.8	96.7	97.7	-179.86	-345.9	3,273.4	108.2	53.0	55.19	1.960	
13,800.0	10,649.4	13,945.7	10,757.5	99.5	100.5	-179.86	-345.9	3,373.4	108.2	51.7	56.44	1.916	
13,835.5	10,649.6	13,981.2	10,757.8	100.5	101.5	-179.86	-345.9	3,408.8	108.2	51.3	56.89	1.901	
13,900.0	10,650.1	14,045.7	10,758.2	102.4	103.4	-179.86	-345.9	3,473.4	108.2	50.5	57.70	1.875	
14,000.0	10,650.8	14,145.7	10,758.9	105.2	106.2	-179.86	-345.9	3,573.4	108.2	49.2	58.97	1.834	
14,035.5	10,651.0	14,181.2	10,759.2	106.2	107.2	-179.86	-345.9	3,608.8	108.2	48.7	59.43	1.820	
14,100.0	10,651.5	14,245.7	10,759.6	108.1	109.0	-179.86	-345.9	3,673.4	108.2	47.9	60.25	1.795	
14,177.4	10,652.0	14,323.1	10,760.2	110.3	111.2	-179.86	-345.9	3,750.8	108.2	46.9	61.25	1.766	
14,200.0	10,652.2	14,345.7	10,760.3	110.9	111.9	-179.86	-345.9	3,773.4	108.2	46.6	61.54	1.758	
14,300.0	10,652.9	14,445.7	10,761.0	113.8	114.7	-179.86	-345.9	3,873.3	108.2	45.3	62.84	1.721	
14,335.5	10,653.1	14,481.2	10,761.3	114.8	115.8	-179.86	-345.9	3,908.8	108.2	44.9	63.30	1.709	
14,400.0	10,653.6	14,545.7	10,761.7	116.6	117.6	-179.86	-345.9	3,973.3	108.2	44.0	64.14	1.686	
14,472.4	10,654.1	14,618.1	10,762.2	118.7	119.7	-179.86	-345.9	4,045.8	108.2	43.1	65.09	1.662	
14,500.0	10,654.3	14,645.7	10,762.4	119.5	120.5	-179.86	-345.9	4,073.3	108.2	42.7	65.45	1.653	
14,600.0	10,655.0	14,745.7	10,763.1	122.4	123.3	-179.86	-345.9	4,173.3	108.2	41.4	66.77	1.620	
14,635.5	10,655.2	14,781.2	10,763.4	123.4	124.3	-179.86	-345.9	4,208.8	108.2	40.9	67.24	1.609	
14,700.0	10,655.7	14,845.7	10,763.8	125.2	126.2	-179.86	-345.9	4,273.3	108.2	40.1	68.09	1.589	
14,772.4	10,656.2	14,918.1	10,764.3	127.3	128.3	-179.86	-345.9	4,345.8	108.2	39.1	69.05	1.566	
14,800.0	10,656.3	14,945.7	10,764.5	128.1	129.1	-179.86	-345.9	4,373.3	108.2	38.7	69.42	1.558	
14,900.0	10,657.0	15,045.7	10,765.2	131.0	131.9	-179.86	-345.9	4,473.3	108.2	37.4	70.75	1.529	
14,935.5	10,657.3	15,081.2	10,765.5	132.0	133.0	-179.86	-345.9	4,508.8	108.2	36.9	71.23	1.519	
15,000.0	10,657.7	15,145.7	10,765.9	133.8	134.8	-179.86	-345.9	4,573.3	108.2	36.1	72.09	1.500	
15,077.4	10,658.3	15,223.1	10,766.4	136.1	137.0	-179.86	-345.9	4,650.8	108.2	35.0	73.13	1.479	Level 3Level 3
15,100.0	10,658.4	15,245.7	10,766.6	136.7	137.7	-179.86	-345.9	4,673.3	108.2	34.7	73.44	1.473	Level 3Level 3
15,200.0	10,659.1	15,345.7	10,767.3	139.6	140.6	-179.86	-345.9	4,773.3	108.2	33.4	74.78	1.446	Level 3Level 3
15,235.5	10,659.4	15,381.2	10,767.6	140.6	141.6	-179.86	-345.9	4,808.8	108.2	32.9	75.26	1.437	Level 3Level 3
15,300.0	10,659.8	15,445.7	10,768.0	142.5	143.5	-179.86	-345.9	4,873.3	108.2	32.0	76.14	1.421	Level 3Level 3
15,378.2	10,660.4	15,523.9	10,768.5	144.7	145.7	-179.86	-345.9	4,951.5	108.2	31.0	77.20	1.401	Level 3Level 3
15,400.0	10,660.5	15,545.7	10,768.7	145.4	146.3	-179.86	-345.9	4,973.3	108.2	30.7	77.49	1.396	Level 3Level 3
15,500.0	10,661.2	15,645.7	10,769.4	148.2	149.2	-179.86	-345.9	5,073.3	108.2	29.3	78.85	1.372	Level 3Level 3
15,535.5	10,661.5	15,681.2	10,769.6	149.3	150.2	-179.86	-345.9	5,108.8	108.2	28.8	79.34	1.363	Level 3Level 3
15,600.0	10,661.9	15,745.7	10,770.1	151.1	152.1	-179.86	-345.9	5,173.3	108.2	27.9	80.22	1.348	Level 3Level 3
15,672.4	10,662.4	15,818.1	10,770.6	153.2	154.2	-179.86	-345.9	5,245.8	108.2	27.0	81.21	1.332	Level 3Level 3
15,700.0	10,662.6	15,845.7	10,770.8	154.0	155.0	-179.86	-345.9	5,273.3	108.2	26.6	81.59	1.326	Level 3Level 3
15,800.0	10,663.3	15,945.7	10,771.5	156.9	157.9	-179.86	-345.9	5,373.3	108.2	25.2	82.96	1.304	Level 3Level 3
15,836.5	10,663.6	15,982.2	10,771.7	158.0	158.9	-179.86	-345.9	5,409.8	108.2	24.7	83.46	1.296	Level 3Level 3
15,900.0	10,664.0	16,045.7	10,772.2	159.8	160.8	-179.86	-345.9	5,473.3	108.2	23.8	84.33	1.283	Level 3Level 3
15,972.7	10,664.5	16,118.4	10,772.7	161.9	162.9	-179.86	-345.9	5,546.0	108.2	22.8	85.33	1.268	Level 3Level 3
16,000.0	10,664.7	16,145.7	10,772.9	162.7	163.7	-179.86	-345.9	5,573.3	108.2	22.5	85.71	1.262	Level 3Level 3
16,100.0	10,665.4	16,245.7	10,773.6	165.6	166.6	-179.86	-345.9	5,673.3	108.2	21.1	87.09	1.242	Level 2
16,135.5	10,665.7	16,281.2	10,773.8	166.6	167.6	-179.86	-345.9	5,708.8	108.2	20.6	87.58	1.235	Level 2
16,200.0	10,666.1	16,345.7	10,774.3	168.5	169.5	-179.86	-345.9	5,773.3	108.2	19.7	88.48	1.223	Level 2
16,300.0	10,666.8	16,445.7	10,775.0	171.4	172.4	-179.86	-345.9	5,873.3	108.2	18.3	89.86	1.204	Level 2
16,335.5	10,667.1	16,481.2	10,775.2	172.4	173.4	-179.86	-345.9	5,908.8	108.2	17.8	90.35	1.197	Level 2
16,400.0	10,667.5	16,545.7	10,775.7	174.3	175.3	-179.86	-345.9	5,973.3	108.2	16.9	91.25	1.185	Level 2
16,472.4	10,668.0	16,618.1	10,776.2	176.4	177.4	-179.86	-345.9	6,045.7	108.2	15.9	92.26	1.172	Level 2
16,500.0	10,668.2	16,645.7	10,776.4	177.2	178.2	-179.86	-345.9	6,073.3	108.2	15.5	92.64	1.168	Level 2
16,600.0	10,668.9	16,745.7	10,777.1	180.1	181.1	-179.86	-345.9	6,173.3	108.2	14.1	94.03	1.150	Level 2
16,635.5	10,669.2	16,781.2	10,777.3	181.1	182.1	-179.86	-345.9	6,208.8	108.2	13.6	94.53	1.144	Level 2
16,700.0	10,669.6	16,845.7	10,777.8	183.0	184.0	-179.86	-345.9	6,273.3	108.2	12.7	95.43	1.133	Level 2
16,777.4	10,670.2	16,923.1	10,778.3	185.2	186.2	-179.86	-345.9	6,350.7	108.2	11.7	96.51	1.121	Level 2
16,800.0	10,670.3	16,945.7	10,778.5	185.9	186.9	-179.86	-345.9	6,373.3	108.2	11.3	96.83	1.117	Level 2

Ryan Directional Services

Anticollision Report

Company:	Oasis	**Local Co-ordinate Reference:**	Well Chalmers 5301 44-24 3BR
Project:	Indian Hills	**TVD Reference:**	Well @ 1967.0usft
Reference Site:	153N-100W-19/20_Altered	**MD Reference:**	Well @ 1967.0usft
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	Chalmers 5301 44-24 3BR	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 3BR	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design 153N-100W-19/20_Altered - Chalmers 5300 44-24 4T2R - Chalmers 5300 44-24 4T2R - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 2.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
16,900.0	10,671.0	17,045.7	10,779.2	188.8	189.8	-179.86	-345.9	6,473.3	108.2	9.9	98.23	1.101	Level 2
16,935.5	10,671.3	17,081.2	10,779.4	189.8	190.8	-179.86	-345.9	6,508.8	108.2	9.4	98.72	1.096	Level 2
17,000.0	10,671.7	17,145.7	10,779.9	191.7	192.7	-179.86	-345.9	6,573.3	108.2	8.5	99.63	1.086	Level 2
17,078.2	10,672.3	17,223.9	10,780.4	194.0	194.9	-179.86	-345.9	6,651.5	108.2	7.4	100.73	1.074	Level 2
17,100.0	10,672.4	17,245.7	10,780.6	194.6	195.6	-179.86	-345.9	6,673.3	108.2	7.1	101.03	1.071	Level 2
17,200.0	10,673.1	17,345.7	10,781.3	197.5	198.5	-179.86	-345.9	6,773.3	108.2	5.7	102.44	1.056	Level 2
17,235.5	10,673.4	17,381.2	10,781.5	198.5	199.5	-179.86	-345.9	6,808.8	108.2	5.2	102.94	1.051	Level 2
17,300.0	10,673.8	17,445.7	10,782.0	200.4	201.4	-179.86	-345.9	6,873.3	108.2	4.3	103.84	1.042	Level 2
17,377.4	10,674.3	17,523.1	10,782.5	202.7	203.6	-179.86	-345.9	6,950.7	108.2	3.2	104.93	1.031	Level 2
17,400.0	10,674.5	17,545.7	10,782.7	203.3	204.3	-179.86	-345.9	6,973.3	108.2	2.9	105.25	1.028	Level 2
17,500.0	10,675.2	17,645.7	10,783.4	206.2	207.2	-179.86	-345.9	7,073.3	108.2	1.5	106.66	1.014	Level 2
17,535.5	10,675.4	17,681.2	10,783.6	207.3	208.2	-179.86	-345.9	7,108.8	108.2	1.0	107.16	1.009	Level 2
17,600.0	10,675.9	17,745.7	10,784.1	209.1	210.1	-179.86	-345.9	7,173.3	108.2	0.1	108.07	1.001	Level 2
17,672.7	10,676.4	17,818.4	10,784.6	211.3	212.2	-179.86	-345.9	7,245.9	108.2	-0.9	109.10	0.991	Level 1
17,700.0	10,676.6	17,845.7	10,784.8	212.1	213.0	-179.86	-345.9	7,273.3	108.2	-1.3	109.49	0.988	Level 1
17,800.0	10,677.3	17,945.7	10,785.5	215.0	215.9	-179.86	-345.9	7,373.3	108.2	-2.7	110.90	0.975	Level 1
17,835.5	10,677.5	17,981.2	10,785.7	216.0	217.0	-179.86	-345.9	7,408.7	108.2	-3.2	111.40	0.971	Level 1
17,900.0	10,678.0	18,045.7	10,786.2	217.9	218.8	-179.86	-345.9	7,473.3	108.2	-4.2	112.32	0.963	Level 1
18,000.0	10,678.7	18,145.7	10,786.9	220.8	221.8	-179.86	-345.9	7,573.3	108.2	-5.6	113.73	0.951	Level 1
18,035.5	10,678.9	18,181.2	10,787.1	221.8	222.8	-179.86	-345.9	7,608.7	108.2	-6.1	114.24	0.947	Level 1
18,100.0	10,679.4	18,245.7	10,787.6	223.7	224.7	-179.86	-345.9	7,673.3	108.2	-7.0	115.15	0.939	Level 1
18,172.4	10,679.9	18,318.1	10,788.1	225.8	226.8	-179.86	-345.9	7,745.7	108.2	-8.0	116.18	0.931	Level 1
18,200.0	10,680.1	18,345.7	10,788.2	226.6	227.6	-179.86	-345.9	7,773.3	108.2	-8.4	116.57	0.928	Level 1
18,300.0	10,680.8	18,445.7	10,788.9	229.5	230.5	-179.86	-345.9	7,873.3	108.2	-9.8	117.99	0.917	Level 1
18,335.5	10,681.0	18,481.2	10,789.2	230.6	231.5	-179.86	-345.9	7,908.7	108.2	-10.3	118.50	0.913	Level 1
18,400.0	10,681.5	18,545.7	10,789.6	232.4	233.4	-179.86	-345.9	7,973.2	108.2	-11.2	119.41	0.906	Level 1
18,472.4	10,682.0	18,618.1	10,790.2	234.5	235.5	-179.86	-345.9	8,045.7	108.2	-12.3	120.44	0.898	Level 1
18,500.0	10,682.2	18,645.7	10,790.3	235.3	236.3	-179.86	-345.9	8,073.2	108.2	-12.7	120.84	0.895	Level 1
18,600.0	10,682.9	18,745.7	10,791.0	238.3	239.2	-179.86	-345.9	8,173.2	108.2	-14.1	122.26	0.885	Level 1
18,646.4	10,683.2	18,792.1	10,791.4	239.6	240.6	-179.86	-345.9	8,219.7	108.2	-14.8	122.92	0.880	Level 1
18,700.0	10,683.6	18,845.7	10,791.7	241.2	242.1	-179.86	-345.9	8,273.2	108.2	-15.5	123.69	0.875	Level 1
18,773.0	10,684.1	18,918.7	10,792.2	243.3	244.3	-179.86	-345.9	8,346.2	108.2	-16.6	124.73	0.867	Level 1
18,800.0	10,684.3	18,945.7	10,792.4	244.1	245.1	-179.86	-345.9	8,373.2	108.2	-16.9	125.11	0.865	Level 1
18,900.0	10,685.0	19,045.7	10,793.1	247.0	248.0	-179.86	-345.9	8,473.2	108.2	-18.4	126.54	0.855	Level 1
18,941.1	10,685.3	19,086.8	10,793.4	248.2	249.2	-179.86	-345.9	8,514.3	108.2	-19.0	127.12	0.851	Level 1
19,000.0	10,685.7	19,145.7	10,793.8	249.9	250.9	-179.86	-345.9	8,573.2	108.2	-19.8	127.97	0.845	Level 1
19,073.0	10,686.2	19,218.7	10,794.3	252.1	253.0	-179.86	-345.9	8,646.2	108.2	-20.8	129.01	0.838	Level 1
19,100.0	10,686.4	19,245.7	10,794.5	252.8	253.8	-179.86	-345.9	8,673.2	108.2	-21.2	129.39	0.836	Level 1
19,200.0	10,687.1	19,345.7	10,795.2	255.8	256.7	-179.86	-345.9	8,773.2	108.2	-22.7	130.82	0.827	Level 1
19,244.5	10,687.4	19,390.2	10,795.5	257.1	258.0	-179.86	-345.9	8,817.7	108.2	-23.3	131.46	0.823	Level 1
19,300.0	10,687.8	19,445.7	10,795.9	258.7	259.6	-179.86	-345.9	8,873.2	108.2	-24.1	132.25	0.818	Level 1
19,400.0	10,688.5	19,545.7	10,796.6	261.6	262.6	-179.86	-345.9	8,973.2	108.2	-25.5	133.68	0.809	Level 1
19,444.5	10,688.8	19,590.2	10,796.9	262.9	263.8	-179.86	-345.9	9,017.7	108.2	-26.2	134.32	0.805	Level 1
19,500.0	10,689.2	19,645.7	10,797.3	264.5	265.5	-179.86	-345.9	9,073.2	108.2	-27.0	135.12	0.801	Level 1
19,573.3	10,689.7	19,719.0	10,797.8	266.6	267.6	-179.86	-345.9	9,146.5	108.2	-28.0	136.17	0.794	Level 1
19,600.0	10,689.9	19,745.7	10,798.0	267.4	268.4	-179.86	-345.9	9,173.2	108.2	-28.4	136.55	0.792	Level 1
19,700.0	10,690.6	19,845.7	10,798.7	270.3	271.3	-179.86	-345.9	9,273.2	108.2	-29.8	137.98	0.784	Level 1
19,744.5	10,690.9	19,890.2	10,799.0	271.6	272.6	-179.86	-345.9	9,317.7	108.2	-30.5	138.62	0.780	Level 1
19,800.0	10,691.3	19,945.7	10,799.4	273.3	274.2	-179.86	-345.9	9,373.2	108.2	-31.3	139.42	0.776	Level 1
19,878.3	10,691.8	20,024.0	10,800.0	275.5	276.5	-179.86	-345.9	9,451.5	108.2	-32.4	140.54	0.770	Level 1
19,900.0	10,692.0	20,045.7	10,800.1	276.2	277.1	-179.86	-345.9	9,473.2	108.2	-32.7	140.85	0.768	Level 1
20,000.0	10,692.7	20,145.7	10,800.8	279.1	280.1	-179.86	-345.9	9,573.2	108.2	-34.1	142.29	0.760	Level 1

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Ryan Directional Services

Anticollision Report

Company:	Oasis	**Local Co-ordinate Reference:**	Well Chalmers 5301 44-24 3BR
Project:	Indian Hills	**TVD Reference:**	Well @ 1967.0usft
Reference Site:	153N-100W-19/20_Altered	**MD Reference:**	Well @ 1967.0usft
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	Chalmers 5301 44-24 3BR	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 3BR	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design 153N-100W-19/20_Altered - Chalmers 5300 44-24 4T2R - Chalmers 5300 44-24 4T2R - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 2.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
20,039.5	10,692.9	20,185.2	10,801.1	280.2	281.2	-179.86	-345.9	9,612.7	108.2	-34.7	142.85	0.757	Level 1
20,100.0	10,693.4	20,245.7	10,801.5	282.0	283.0	-179.86	-345.9	9,673.2	108.2	-35.6	143.72	0.753	Level 1
20,178.3	10,693.9	20,324.0	10,802.1	284.3	285.3	-179.86	-345.9	9,751.5	108.2	-36.7	144.85	0.747	Level 1
20,200.0	10,694.0	20,345.7	10,802.2	284.9	285.9	-179.86	-345.9	9,773.2	108.2	-37.0	145.16	0.745	Level 1
20,300.0	10,694.7	20,445.7	10,802.9	287.9	288.8	-179.86	-345.9	9,873.2	108.2	-38.4	146.60	0.738	Level 1
20,339.5	10,695.0	20,485.2	10,803.2	289.0	290.0	-179.86	-345.9	9,912.7	108.2	-39.0	147.16	0.735	Level 1
20,400.0	10,695.4	20,545.7	10,803.6	290.8	291.7	-179.86	-345.9	9,973.2	108.2	-39.9	148.03	0.731	Level 1
20,478.3	10,696.0	20,624.0	10,804.2	293.1	294.0	-179.86	-345.9	10,051.5	108.2	-41.0	149.16	0.725	Level 1
20,500.0	10,696.1	20,645.7	10,804.3	293.7	294.7	-179.86	-345.9	10,073.2	108.2	-41.3	149.47	0.724	Level 1
20,600.0	10,696.8	20,745.7	10,805.0	296.6	297.6	-179.86	-345.9	10,173.2	108.2	-42.7	150.91	0.717	Level 1
20,641.1	10,697.1	20,786.8	10,805.3	297.8	298.8	-179.86	-345.9	10,214.3	108.2	-43.3	151.50	0.714	Level 1
20,700.0	10,697.5	20,845.7	10,805.7	299.5	300.5	-179.86	-345.9	10,273.2	108.2	-44.2	152.35	0.710	Level 1
20,800.0	10,698.2	20,945.7	10,806.4	302.5	303.4	-179.86	-345.9	10,373.2	108.2	-45.6	153.79	0.703	Level 1
20,887.1	10,698.8	21,032.8	10,807.0	305.0	306.0	-179.86	-345.9	10,460.3	108.2	-46.9	155.04	0.698	Level 1
20,900.0	10,698.9	21,045.7	10,807.1	305.4	306.3	-179.86	-345.9	10,473.2	108.2	-47.1	155.23	0.697	Level 1
20,960.1	10,699.4	21,105.8	10,807.5	307.1	308.1	-179.86	-345.9	10,533.2	108.2	-47.9	156.09	0.693	Level 1, ES, SF

Company:	Oasis	**Local Co-ordinate Reference:**	Well Chalmers 5301 44-24 3BR
Project:	Indian Hills	**TVD Reference:**	Well @ 1967.0usft
Reference Site:	153N-100W-19/20_Altered	**MD Reference:**	Well @ 1967.0usft
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	Chalmers 5301 44-24 3BR	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 3BR	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design 153N-100W-19/20_Altered - Chalmers 5301 44-24 12TXR - Chalmers 5301 44-24 12TXR - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 2.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	2.0	-180.00	-82.1	0.0	82.1				
100.0	100.0	100.0	100.0	0.1	2.0	-180.00	-82.1	0.0	82.1	80.0	2.09	39.346	
200.0	200.0	200.0	200.0	0.3	2.0	-180.00	-82.1	0.0	82.1	79.7	2.33	35.185	
300.0	300.0	300.0	300.0	0.5	2.1	-180.00	-82.1	0.0	82.1	79.5	2.60	31.522	
400.0	400.0	400.0	400.0	0.8	2.1	-180.00	-82.1	0.0	82.1	79.2	2.90	28.326	
500.0	500.0	500.0	500.0	1.0	2.2	-180.00	-82.1	0.0	82.1	78.9	3.21	25.554	
600.0	600.0	600.0	600.0	1.2	2.3	-180.00	-82.1	0.0	82.1	78.5	3.54	23.155	
700.0	700.0	700.0	700.0	1.4	2.5	-180.00	-82.1	0.0	82.1	78.2	3.89	21.083	
800.0	800.0	800.0	800.0	1.7	2.6	-180.00	-82.1	0.0	82.1	77.8	4.26	19.289	
900.0	900.0	900.0	900.0	1.9	2.7	-180.00	-82.1	0.0	82.1	77.4	4.63	17.732	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.9	-180.00	-82.1	0.0	82.1	77.1	5.01	16.375	
1,100.0	1,100.0	1,100.0	1,100.0	2.3	3.1	-180.00	-82.1	0.0	82.1	76.7	5.40	15.188	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	3.2	-180.00	-82.1	0.0	82.1	76.3	5.80	14.145	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	3.4	-180.00	-82.1	0.0	82.1	75.9	6.21	13.223	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.6	-180.00	-82.1	0.0	82.1	75.5	6.62	12.404	
1,500.0	1,500.0	1,500.0	1,500.0	3.2	3.8	-180.00	-82.1	0.0	82.1	75.0	7.03	11.674	
1,600.0	1,600.0	1,600.0	1,600.0	3.5	4.0	-180.00	-82.1	0.0	82.1	74.6	7.45	11.019	
1,700.0	1,700.0	1,700.0	1,700.0	3.7	4.2	-180.00	-82.1	0.0	82.1	74.2	7.87	10.430	
1,800.0	1,800.0	1,800.0	1,800.0	3.9	4.4	-180.00	-82.1	0.0	82.1	73.8	8.29	9.897	
1,900.0	1,900.0	1,900.0	1,900.0	4.1	4.6	-180.00	-82.1	0.0	82.1	73.4	8.72	9.414	
2,000.0	2,000.0	2,000.0	2,000.0	4.4	4.8	-180.00	-82.1	0.0	82.1	72.9	9.15	8.973	
2,100.0	2,100.0	2,100.0	2,100.0	4.6	5.0	-180.00	-82.1	0.0	82.1	72.5	9.58	8.570	
2,200.0	2,200.0	2,200.0	2,200.0	4.8	5.2	-180.00	-82.1	0.0	82.1	72.1	10.01	8.201 CC	
2,216.7	2,216.7	2,216.0	2,216.0	4.8	5.2	90.05	-82.1	0.0	82.1	72.1	10.07	8.156	
2,300.0	2,300.0	2,299.3	2,299.3	5.0	5.4	90.55	-82.9	0.0	82.9	72.5	10.37	7.995	
2,400.0	2,400.0	2,399.3	2,399.3	5.2	5.5	91.14	-83.7	0.0	83.8	73.0	10.73	7.810	
2,500.0	2,500.0	2,499.3	2,499.3	5.4	5.7	91.72	-84.6	0.0	84.7	73.6	11.09	7.633	
2,600.0	2,600.0	2,599.3	2,599.2	5.6	5.9	92.29	-85.5	0.0	85.6	74.1	11.46	7.465	
2,700.0	2,700.0	2,699.2	2,699.2	5.8	6.0	92.84	-86.4	0.0	86.5	74.6	11.84	7.304	
2,800.0	2,800.0	2,799.2	2,799.2	6.0	6.2	93.38	-87.2	0.0	87.4	75.2	12.22	7.151	
2,900.0	2,900.0	2,899.2	2,899.2	6.2	6.4	93.91	-88.1	0.0	88.3	75.7	12.61	7.006	
3,000.0	3,000.0	2,999.2	2,999.2	6.4	6.6	94.44	-89.0	0.0	89.3	76.3	13.00	6.867	
3,100.0	3,100.0	3,099.2	3,099.2	6.6	6.7	94.94	-89.9	0.0	90.2	76.8	13.39	6.735	
3,200.0	3,200.0	3,199.2	3,199.2	6.9	6.9	95.44	-90.7	0.0	91.1	77.4	13.79	6.610	
3,300.0	3,300.0	3,299.2	3,299.2	7.1	7.1	95.93	-91.6	0.0	92.1	77.9	14.19	6.491	
3,400.0	3,400.0	3,399.2	3,399.1	7.3	7.3	96.41	-92.5	0.0	93.1	78.5	14.59	6.377	
3,500.0	3,500.0	3,499.2	3,499.1	7.5	7.5	96.88	-93.3	0.0	94.0	79.0	15.00	6.269	
3,600.0	3,599.9	3,599.2	3,599.1	7.7	7.7	97.34	-94.2	0.0	95.0	79.6	15.41	6.166	
3,700.0	3,699.9	3,699.2	3,699.1	7.9	7.9	97.79	-95.1	0.0	96.0	80.2	15.82	6.068	
3,800.0	3,799.9	3,799.2	3,799.1	8.1	8.1	98.23	-96.0	0.0	97.0	80.7	16.23	5.975	
3,900.0	3,899.9	3,899.2	3,899.1	8.4	8.3	98.66	-96.8	0.0	98.0	81.3	16.64	5.885	
4,000.0	3,999.9	3,999.1	3,999.1	8.6	8.5	99.09	-97.7	0.0	99.0	81.9	17.06	5.800	
4,100.0	4,099.9	4,099.1	4,099.1	8.8	8.7	99.50	-98.6	0.0	100.0	82.5	17.48	5.719	
4,200.0	4,199.9	4,199.1	4,199.1	9.0	8.9	99.91	-99.5	0.0	101.0	83.1	17.90	5.641	
4,300.0	4,299.9	4,299.1	4,299.0	9.2	9.1	100.31	-100.3	0.0	102.0	83.7	18.32	5.567	
4,400.0	4,399.9	4,399.1	4,399.0	9.4	9.3	100.70	-101.2	0.0	103.0	84.3	18.74	5.495	
4,500.0	4,499.9	4,499.1	4,499.0	9.7	9.5	101.08	-102.1	0.0	104.0	84.8	19.17	5.427	
4,600.0	4,599.9	4,599.1	4,599.0	9.9	9.7	101.46	-102.9	0.0	105.0	85.4	19.59	5.362	
4,700.0	4,699.9	4,699.1	4,699.0	10.1	9.9	101.82	-103.8	0.0	106.1	86.1	20.02	5.299	
4,800.0	4,799.9	4,799.1	4,799.0	10.3	10.1	102.19	-104.7	0.0	107.1	86.7	20.44	5.239	
4,900.0	4,899.9	4,899.1	4,899.0	10.5	10.3	102.54	-105.6	0.0	108.1	87.3	20.87	5.181	
5,000.0	4,999.9	4,999.1	4,999.0	10.8	10.6	102.89	-106.4	0.0	109.2	87.9	21.30	5.126	

Company:	Oasis	**Local Co-ordinate Reference:**	Well Chalmers 5301 44-24 3BR
Project:	Indian Hills	**TVD Reference:**	Well @ 1967.0usft
Reference Site:	153N-100W-19/20_Altered	**MD Reference:**	Well @ 1967.0usft
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	Chalmers 5301 44-24 3BR	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 3BR	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design 153N-100W-19/20_Altered - Chalmers 5301 44-24 12TXR - Chalmers 5301 44-24 12TXR - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 2.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.0	5,099.9	5,099.1	5,099.0	11.0	10.8	103.23	-107.3	0.0	110.2	88.5	21.73	5.073	
5,200.0	5,199.9	5,199.1	5,198.9	11.2	11.0	103.56	-108.2	0.0	111.3	89.1	22.16	5.022	
5,300.0	5,299.9	5,299.0	5,298.9	11.4	11.2	103.89	-109.0	0.0	112.3	89.7	22.59	4.972	
5,400.0	5,399.9	5,399.0	5,398.9	11.6	11.4	104.21	-109.9	0.0	113.4	90.4	23.03	4.925	
5,500.0	5,499.9	5,499.0	5,498.9	11.9	11.6	104.53	-110.8	0.0	114.5	91.0	23.46	4.879	
5,600.0	5,599.9	5,599.0	5,598.9	12.1	11.8	104.84	-111.7	0.0	115.5	91.6	23.89	4.835	
5,700.0	5,699.9	5,699.0	5,698.9	12.3	12.0	105.14	-112.5	0.0	116.6	92.3	24.33	4.793	
5,800.0	5,799.9	5,799.0	5,798.9	12.5	12.3	105.44	-113.4	0.0	117.7	92.9	24.76	4.752	
5,900.0	5,899.9	5,899.0	5,898.9	12.7	12.5	105.74	-114.3	0.0	118.7	93.5	25.20	4.713	
6,000.0	5,999.9	5,999.0	5,998.9	13.0	12.7	106.03	-115.2	0.0	119.8	94.2	25.63	4.675	
6,100.0	6,099.9	6,099.0	6,098.8	13.2	12.9	106.31	-116.0	0.0	120.9	94.8	26.07	4.638	
6,200.0	6,199.8	6,199.0	6,198.8	13.4	13.1	106.59	-116.9	0.0	122.0	95.5	26.51	4.602	
6,300.0	6,299.8	6,299.0	6,298.8	13.6	13.3	106.86	-117.8	0.0	123.1	96.1	26.94	4.568	
6,400.0	6,399.8	6,399.0	6,398.8	13.9	13.6	107.13	-118.6	0.0	124.2	96.8	27.38	4.535	
6,500.0	6,499.8	6,499.0	6,498.8	14.1	13.8	107.39	-119.5	0.0	125.3	97.4	27.82	4.503	
6,600.0	6,599.8	6,598.9	6,598.8	14.3	14.0	107.65	-120.4	0.0	126.4	98.1	28.26	4.471	
6,700.0	6,699.8	6,698.9	6,698.8	14.5	14.2	107.91	-121.3	0.0	127.4	98.8	28.70	4.441	
6,800.0	6,799.8	6,798.9	6,798.8	14.7	14.4	108.16	-122.1	0.0	128.5	99.4	29.14	4.412	
6,900.0	6,899.8	6,898.9	6,898.7	15.0	14.6	108.40	-123.0	0.0	129.7	100.1	29.58	4.384	
7,000.0	6,999.8	6,998.9	6,998.7	15.2	14.9	108.65	-123.9	0.0	130.8	100.7	30.02	4.356	
7,100.0	7,099.8	7,098.9	7,098.7	15.4	15.1	108.88	-124.8	0.0	131.9	101.4	30.46	4.330	
7,200.0	7,199.8	7,198.9	7,198.7	15.6	15.3	109.12	-125.6	0.0	133.0	102.1	30.90	4.304	
7,300.0	7,299.8	7,298.9	7,298.7	15.9	15.5	109.35	-126.5	0.0	134.1	102.7	31.34	4.279	
7,400.0	7,399.8	7,398.9	7,398.7	16.1	15.7	109.58	-127.4	0.0	135.2	103.4	31.78	4.254	
7,500.0	7,499.8	7,498.9	7,498.7	16.3	16.0	109.80	-128.2	0.0	136.3	104.1	32.22	4.231	
7,600.0	7,599.8	7,598.9	7,598.7	16.5	16.2	110.02	-129.1	0.0	137.4	104.8	32.66	4.208	
7,700.0	7,699.8	7,698.9	7,698.7	16.7	16.4	110.23	-130.0	0.0	138.5	105.4	33.10	4.185	
7,800.0	7,799.8	7,798.9	7,798.6	17.0	16.6	110.44	-130.9	0.0	139.7	106.1	33.55	4.164	
7,900.0	7,899.8	7,898.9	7,898.6	17.2	16.8	110.65	-131.7	0.0	140.8	106.8	33.99	4.142	
7,926.7	7,926.4	7,925.5	7,925.3	17.3	16.9	110.71	-132.0	0.0	141.1	107.0	34.11	4.137	
7,943.3	7,943.1	7,943.3	7,943.1	17.3	16.9	-159.27	-132.1	0.0	141.2	107.0	34.18	4.131	
8,000.0	7,999.8	8,000.0	7,999.8	17.4	17.1	-159.27	-132.1	0.0	141.2	106.8	34.41	4.103	
8,100.0	8,099.8	8,100.0	8,099.8	17.6	17.2	-159.27	-132.1	0.0	141.2	106.4	34.81	4.056	
8,200.0	8,199.8	8,200.0	8,199.8	17.8	17.4	-159.27	-132.1	0.0	141.2	106.0	35.21	4.010	
8,300.0	8,299.8	8,300.0	8,299.8	18.0	17.6	-159.27	-132.1	0.0	141.2	105.6	35.61	3.965	
8,400.0	8,399.8	8,400.0	8,399.8	18.2	17.8	-159.27	-132.1	0.0	141.2	105.2	36.01	3.921	
8,500.0	8,499.8	8,500.0	8,499.8	18.5	18.0	-159.27	-132.1	0.0	141.2	104.8	36.42	3.877	
8,600.0	8,599.8	8,600.0	8,599.8	18.7	18.2	-159.27	-132.1	0.0	141.2	104.4	36.82	3.834	
8,700.0	8,699.8	8,700.0	8,699.8	18.9	18.4	-159.27	-132.1	0.0	141.2	104.0	37.23	3.793	
8,800.0	8,799.8	8,800.0	8,799.8	19.1	18.6	-159.27	-132.1	0.0	141.2	103.6	37.63	3.752	
8,900.0	8,899.8	8,900.0	8,899.8	19.3	18.8	-159.27	-132.1	0.0	141.2	103.2	38.04	3.712	
9,000.0	8,999.8	9,000.0	8,999.8	19.5	19.0	-159.27	-132.1	0.0	141.2	102.7	38.45	3.672	
9,100.0	9,099.8	9,100.0	9,099.8	19.7	19.2	-159.27	-132.1	0.0	141.2	102.3	38.86	3.633	
9,200.0	9,199.8	9,200.0	9,199.8	19.9	19.4	-159.27	-132.1	0.0	141.2	101.9	39.27	3.595	
9,300.0	9,299.8	9,300.0	9,299.8	20.1	19.6	-159.27	-132.1	0.0	141.2	101.5	39.68	3.558	
9,400.0	9,399.8	9,400.0	9,399.8	20.4	19.8	-159.27	-132.1	0.0	141.2	101.1	40.09	3.522	
9,500.0	9,499.8	9,500.0	9,499.8	20.6	20.0	-159.27	-132.1	0.0	141.2	100.7	40.51	3.486	
9,600.0	9,599.8	9,600.0	9,599.8	20.8	20.2	-159.27	-132.1	0.0	141.2	100.3	40.92	3.450	
9,700.0	9,699.8	9,700.0	9,699.8	21.0	20.4	-159.27	-132.1	0.0	141.2	99.9	41.33	3.416	
9,800.0	9,799.8	9,800.0	9,799.8	21.2	20.6	-159.27	-132.1	0.0	141.2	99.4	41.75	3.382	
9,900.0	9,899.8	9,900.0	9,899.8	21.4	20.8	-159.27	-132.1	0.0	141.2	99.0	42.16	3.349	
10,000.0	9,999.8	10,000.0	9,999.8	21.6	21.0	-159.27	-132.1	0.0	141.2	98.6	42.58	3.316	

Company:	Oasis	**Local Co-ordinate Reference:**	Well Chalmers 5301 44-24 3BR
Project:	Indian Hills	**TVD Reference:**	Well @ 1967.0usft
Reference Site:	153N-100W-19/20_Altered	**MD Reference:**	Well @ 1967.0usft
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	Chalmers 5301 44-24 3BR	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 3BR	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design 153N-100W-19/20_Altered - Chalmers 5301 44-24 12TXR - Chalmers 5301 44-24 12TXR - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 2.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,100.0	10,099.8	10,100.0	10,099.8	21.9	21.2	-159.27	-132.1	0.0	141.2	98.2	43.00	3.284	
10,151.8	10,151.6	10,151.8	10,151.6	22.0	21.3	-159.27	-132.1	0.0	141.2	98.0	43.21	3.267	
10,175.0	10,174.8	10,175.0	10,174.8	22.0	21.3	90.51	-132.1	0.0	141.2	97.9	43.33	3.259	
10,200.0	10,199.7	10,199.9	10,199.7	22.1	21.4	91.26	-132.1	0.0	141.2	97.8	43.44	3.251	
10,225.0	10,224.5	10,224.7	10,224.5	22.1	21.4	92.52	-132.1	0.0	141.3	97.8	43.55	3.246	
10,250.0	10,249.1	10,248.1	10,247.9	22.2	21.5	93.96	-132.4	0.4	141.7	98.0	43.65	3.246	
10,275.0	10,273.4	10,271.6	10,271.3	22.3	21.5	95.38	-133.3	1.8	142.5	98.7	43.76	3.256	
10,300.0	10,297.4	10,295.2	10,294.8	22.3	21.6	96.78	-135.0	4.1	143.7	99.8	43.86	3.276	
10,325.0	10,321.0	10,319.0	10,318.2	22.4	21.6	98.13	-137.3	7.4	145.3	101.4	43.97	3.306	
10,350.0	10,344.1	10,343.0	10,341.6	22.5	21.7	99.43	-140.3	11.7	147.4	103.3	44.06	3.345	
10,375.0	10,366.7	10,367.1	10,364.8	22.5	21.8	100.66	-144.0	17.0	149.9	105.7	44.16	3.394	
10,400.0	10,388.8	10,391.4	10,387.9	22.6	21.8	101.81	-148.4	23.3	152.7	108.5	44.25	3.452	
10,425.0	10,410.1	10,415.8	10,410.6	22.7	21.9	102.88	-153.5	30.5	156.0	111.7	44.33	3.519	
10,450.0	10,430.8	10,440.4	10,433.1	22.8	21.9	103.85	-159.3	38.8	159.7	115.2	44.41	3.595	
10,475.0	10,450.7	10,465.2	10,455.1	22.9	22.0	104.73	-165.8	48.1	163.7	119.2	44.50	3.678	
10,500.0	10,469.7	10,490.1	10,476.6	23.0	22.1	105.51	-173.1	58.3	168.0	123.4	44.58	3.768	
10,525.0	10,487.9	10,515.2	10,497.6	23.1	22.1	106.19	-181.0	69.6	172.7	128.0	44.68	3.864	
10,550.0	10,505.2	10,540.5	10,518.0	23.3	22.2	106.77	-189.6	81.8	177.6	132.8	44.79	3.966	
10,575.0	10,521.5	10,565.9	10,537.7	23.4	22.3	107.25	-198.8	95.0	182.9	137.9	44.92	4.071	
10,600.0	10,536.8	10,591.6	10,556.6	23.6	22.4	107.62	-208.7	109.1	188.4	143.3	45.07	4.179	
10,625.0	10,551.0	10,617.4	10,574.7	23.7	22.5	107.91	-219.3	124.2	194.1	148.8	45.25	4.289	
10,650.0	10,564.2	10,643.4	10,591.9	23.9	22.7	108.10	-230.5	140.1	200.1	154.6	45.47	4.400	
10,675.0	10,576.2	10,669.5	10,608.1	24.1	22.8	108.20	-242.3	156.9	206.2	160.5	45.72	4.510	
10,700.0	10,587.0	10,695.9	10,623.3	24.3	23.0	108.22	-254.7	174.5	212.5	166.5	46.02	4.618	
10,725.0	10,596.7	10,722.5	10,637.4	24.6	23.1	108.16	-267.7	193.0	219.0	172.6	46.36	4.723	
10,750.0	10,605.1	10,749.2	10,650.3	24.8	23.3	108.03	-281.1	212.1	225.6	178.8	46.75	4.825	
10,775.0	10,612.3	10,776.2	10,661.9	25.1	23.6	107.83	-295.1	232.0	232.3	185.1	47.19	4.922	
10,800.0	10,618.2	10,803.4	10,672.2	25.4	23.8	107.56	-309.6	252.6	239.1	191.4	47.69	5.013	
10,825.0	10,622.9	10,830.8	10,681.2	25.7	24.1	107.23	-324.5	273.8	245.9	197.7	48.23	5.099	
10,850.0	10,626.2	10,858.4	10,688.7	26.0	24.4	106.84	-339.7	295.5	252.8	204.0	48.81	5.179	
10,875.0	10,628.3	10,886.2	10,694.7	26.4	24.7	106.41	-355.4	317.8	259.7	210.3	49.45	5.252	
10,898.5	10,629.0	10,912.5	10,698.9	26.7	25.0	105.96	-370.3	339.0	266.2	216.1	50.08	5.315	
10,900.0	10,629.0	10,914.2	10,699.1	26.7	25.0	105.98	-371.3	340.4	266.6	216.5	50.11	5.320	
11,000.0	10,629.7	11,024.4	10,703.4	28.2	26.4	105.21	-434.1	430.6	293.1	240.2	52.92	5.538	
11,100.0	10,630.4	11,131.8	10,704.3	29.9	28.1	103.98	-492.6	520.8	319.1	263.0	56.16	5.683	
11,200.0	10,631.2	11,240.5	10,705.2	31.8	30.0	102.94	-548.3	614.1	345.0	285.3	59.72	5.777	
11,300.0	10,631.9	11,350.5	10,706.1	33.9	32.1	102.06	-601.0	710.6	370.7	307.2	63.57	5.832	
11,400.0	10,632.6	11,461.6	10,707.0	36.0	34.4	101.30	-650.4	810.2	396.1	328.5	67.63	5.858	
11,500.0	10,633.3	11,574.1	10,707.9	38.3	36.8	100.64	-696.5	912.8	421.2	349.3	71.86	5.861	
11,600.0	10,634.0	11,687.9	10,708.8	40.6	39.4	100.07	-739.0	1,018.3	445.9	369.7	76.22	5.850	
11,700.0	10,634.7	11,803.0	10,709.8	43.0	42.2	99.57	-777.6	1,126.7	470.1	389.4	80.68	5.827	
11,800.0	10,635.4	11,919.4	10,710.7	45.5	45.0	99.13	-812.3	1,237.8	493.9	408.7	85.22	5.796	
11,900.0	10,636.1	12,037.2	10,711.7	47.9	47.9	98.73	-842.7	1,351.6	517.1	427.3	89.78	5.759	
11,920.9	10,636.3	12,062.0	10,711.9	48.4	48.5	98.66	-848.5	1,375.7	521.8	431.1	90.74	5.751	
12,000.0	10,636.8	12,156.6	10,712.7	50.4	50.9	98.34	-868.8	1,468.1	538.6	443.5	95.12	5.662	
12,100.0	10,637.5	12,278.0	10,713.7	53.0	54.0	98.03	-890.3	1,587.5	556.1	455.3	100.81	5.517	
12,200.0	10,638.2	12,401.0	10,714.7	55.5	57.1	97.81	-906.8	1,709.5	569.5	462.9	106.63	5.341	
12,300.0	10,638.9	12,525.3	10,715.7	58.2	60.3	97.67	-918.3	1,833.2	578.7	466.1	112.57	5.140	
12,400.0	10,639.6	12,650.3	10,716.7	60.8	63.5	97.60	-924.3	1,958.1	583.5	464.9	118.58	4.921	
12,500.0	10,640.3	12,765.8	10,717.6	63.5	66.4	97.60	-925.4	2,073.5	584.3	459.9	124.36	4.698	
12,600.0	10,641.0	12,865.8	10,718.4	66.2	69.0	97.61	-925.4	2,173.5	584.3	454.6	129.77	4.503	
12,700.0	10,641.7	12,965.8	10,719.1	68.9	71.6	97.62	-925.4	2,273.5	584.3	449.1	135.21	4.322	

Company:	Oasis	**Local Co-ordinate Reference:**	Well Chalmers 5301 44-24 3BR
Project:	Indian Hills	**TVD Reference:**	Well @ 1967.0usft
Reference Site:	153N-100W-19/20_Altered	**MD Reference:**	Well @ 1967.0usft
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	Chalmers 5301 44-24 3BR	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 3BR	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design 153N-100W-19/20_Altered - Chalmers 5301 44-24 12TXR - Chalmers 5301 44-24 12TXR - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 2.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
12,800.0	10,642.4	13,065.8	10,719.9	71.6	74.2	97.63	-925.4	2,373.5	584.3	443.7	140.68	4.154	
12,900.0	10,643.1	13,165.8	10,720.7	74.4	76.9	97.63	-925.4	2,473.5	584.4	438.2	146.18	3.998	
13,000.0	10,643.8	13,265.8	10,721.5	77.1	79.6	97.64	-925.4	2,573.5	584.4	432.7	151.69	3.852	
13,100.0	10,644.5	13,365.8	10,722.3	79.9	82.3	97.65	-925.4	2,673.5	584.4	427.1	157.24	3.717	
13,200.0	10,645.2	13,465.8	10,723.1	82.7	85.0	97.66	-925.4	2,773.5	584.4	421.6	162.79	3.590	
13,300.0	10,645.9	13,565.8	10,723.9	85.5	87.7	97.67	-925.4	2,873.5	584.4	416.0	168.37	3.471	
13,400.0	10,646.6	13,665.8	10,724.6	88.3	90.4	97.68	-925.4	2,973.5	584.4	410.5	173.96	3.359	
13,500.0	10,647.3	13,765.8	10,725.4	91.1	93.1	97.68	-925.4	3,073.5	584.4	404.9	179.57	3.255	
13,600.0	10,648.0	13,865.8	10,726.2	93.9	95.9	97.69	-925.4	3,173.5	584.4	399.3	185.18	3.156	
13,700.0	10,648.7	13,965.8	10,727.0	96.7	98.7	97.70	-925.4	3,273.5	584.4	393.6	190.81	3.063	
13,800.0	10,649.4	14,065.8	10,727.8	99.5	101.4	97.71	-925.4	3,373.5	584.5	388.0	196.45	2.975	
13,900.0	10,650.1	14,165.8	10,728.6	102.4	104.2	97.72	-925.4	3,473.5	584.5	382.4	202.10	2.892	
14,000.0	10,650.8	14,265.8	10,729.3	105.2	107.0	97.73	-925.4	3,573.5	584.5	376.7	207.76	2.813	
14,100.0	10,651.5	14,365.8	10,730.1	108.1	109.8	97.74	-925.4	3,673.5	584.5	371.1	213.43	2.739	
14,200.0	10,652.2	14,465.8	10,730.9	110.9	112.6	97.74	-925.4	3,773.5	584.5	365.4	219.10	2.668	
14,300.0	10,652.9	14,565.8	10,731.7	113.8	115.4	97.75	-925.4	3,873.5	584.5	359.7	224.78	2.600	
14,400.0	10,653.6	14,665.8	10,732.5	116.6	118.2	97.76	-925.4	3,973.5	584.5	354.1	230.46	2.536	
14,500.0	10,654.3	14,765.8	10,733.3	119.5	121.1	97.77	-925.4	4,073.5	584.5	348.4	236.16	2.475	
14,600.0	10,655.0	14,865.8	10,734.1	122.4	123.9	97.78	-925.4	4,173.5	584.6	342.7	241.85	2.417	
14,700.0	10,655.7	14,965.8	10,734.8	125.2	126.7	97.79	-925.4	4,273.5	584.6	337.0	247.55	2.361	
14,800.0	10,656.3	15,065.8	10,735.6	128.1	129.6	97.79	-925.4	4,373.5	584.6	331.3	253.26	2.308	
14,900.0	10,657.0	15,165.8	10,736.4	131.0	132.4	97.80	-925.4	4,473.5	584.6	325.6	258.97	2.257	
15,000.0	10,657.7	15,265.8	10,737.2	133.8	135.3	97.81	-925.4	4,573.5	584.6	319.9	264.69	2.209	
15,100.0	10,658.4	15,365.8	10,738.0	136.7	138.1	97.82	-925.4	4,673.5	584.6	314.2	270.41	2.162	
15,200.0	10,659.1	15,465.8	10,738.8	139.6	141.0	97.83	-925.4	4,773.5	584.6	308.5	276.13	2.117	
15,300.0	10,659.8	15,565.8	10,739.6	142.5	143.8	97.84	-925.4	4,873.5	584.6	302.8	281.85	2.074	
15,400.0	10,660.5	15,665.8	10,740.3	145.4	146.7	97.85	-925.4	4,973.4	584.6	297.1	287.58	2.033	
15,500.0	10,661.2	15,765.8	10,741.1	148.2	149.5	97.85	-925.4	5,073.4	584.7	291.3	293.31	1.993	
15,600.0	10,661.9	15,865.8	10,741.9	151.1	152.4	97.86	-925.4	5,173.4	584.7	285.6	299.05	1.955	
15,700.0	10,662.6	15,965.8	10,742.7	154.0	155.3	97.87	-925.4	5,273.4	584.7	279.9	304.79	1.918	
15,800.0	10,663.3	16,065.8	10,743.5	156.9	158.1	97.88	-925.4	5,373.4	584.7	274.2	310.52	1.883	
15,900.0	10,664.0	16,165.8	10,744.3	159.8	161.0	97.89	-925.4	5,473.4	584.7	268.4	316.27	1.849	
16,000.0	10,664.7	16,265.8	10,745.1	162.7	163.9	97.90	-925.4	5,573.4	584.7	262.7	322.01	1.816	
16,100.0	10,665.4	16,365.8	10,745.8	165.6	166.7	97.91	-925.4	5,673.4	584.7	257.0	327.75	1.784	
16,200.0	10,666.1	16,465.8	10,746.6	168.5	169.6	97.91	-925.4	5,773.4	584.7	251.2	333.50	1.753	
16,300.0	10,666.8	16,565.8	10,747.4	171.4	172.5	97.92	-925.4	5,873.4	584.8	245.5	339.25	1.724	
16,400.0	10,667.5	16,665.8	10,748.2	174.3	175.4	97.93	-925.4	5,973.4	584.8	239.8	345.00	1.695	
16,500.0	10,668.2	16,765.8	10,749.0	177.2	178.3	97.94	-925.4	6,073.4	584.8	234.0	350.75	1.667	
16,600.0	10,668.9	16,865.8	10,749.8	180.1	181.1	97.95	-925.4	6,173.4	584.8	228.3	356.51	1.640	
16,700.0	10,669.6	16,965.8	10,750.6	183.0	184.0	97.96	-925.4	6,273.4	584.8	222.5	362.26	1.614	
16,800.0	10,670.3	17,065.8	10,751.3	185.9	186.9	97.96	-925.4	6,373.4	584.8	216.8	368.02	1.589	
16,900.0	10,671.0	17,165.8	10,752.1	188.8	189.8	97.97	-925.4	6,473.4	584.8	211.1	373.78	1.565	
17,000.0	10,671.7	17,265.8	10,752.9	191.7	192.7	97.98	-925.4	6,573.4	584.8	205.3	379.54	1.541	
17,100.0	10,672.4	17,365.8	10,753.7	194.6	195.6	97.99	-925.4	6,673.4	584.9	199.6	385.30	1.518	
17,200.0	10,673.1	17,465.8	10,754.5	197.5	198.5	98.00	-925.4	6,773.4	584.9	193.8	391.06	1.496	Level 3Level 3
17,300.0	10,673.8	17,565.8	10,755.3	200.4	201.4	98.01	-925.4	6,873.4	584.9	188.1	396.82	1.474	Level 3Level 3
17,400.0	10,674.5	17,665.8	10,756.1	203.3	204.3	98.02	-925.4	6,973.4	584.9	182.3	402.58	1.453	Level 3Level 3
17,500.0	10,675.2	17,765.8	10,756.8	206.2	207.2	98.02	-925.4	7,073.4	584.9	176.6	408.34	1.432	Level 3Level 3
17,600.0	10,675.9	17,865.8	10,757.6	209.1	210.1	98.03	-925.4	7,173.4	584.9	170.8	414.11	1.412	Level 3Level 3
17,700.0	10,676.6	17,965.8	10,758.4	212.1	212.9	98.04	-925.4	7,273.4	584.9	165.1	419.88	1.393	Level 3Level 3
17,800.0	10,677.3	18,065.8	10,759.2	215.0	215.8	98.05	-925.4	7,373.4	584.9	159.3	425.64	1.374	Level 3Level 3
17,900.0	10,678.0	18,165.8	10,760.0	217.9	218.7	98.06	-925.4	7,473.4	585.0	153.5	431.41	1.356	Level 3Level 3

Ryan Directional Services

Anticollision Report

Company:	Oasis	**Local Co-ordinate Reference:**	Well Chalmers 5301 44-24 3BR
Project:	Indian Hills	**TVD Reference:**	Well @ 1967.0usft
Reference Site:	153N-100W-19/20_Altered	**MD Reference:**	Well @ 1967.0usft
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	Chalmers 5301 44-24 3BR	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 3BR	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Offset Design 153N-100W-19/20_Altered - Chalmers 5301 44-24 12TXR - Chalmers 5301 44-24 12TXR - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

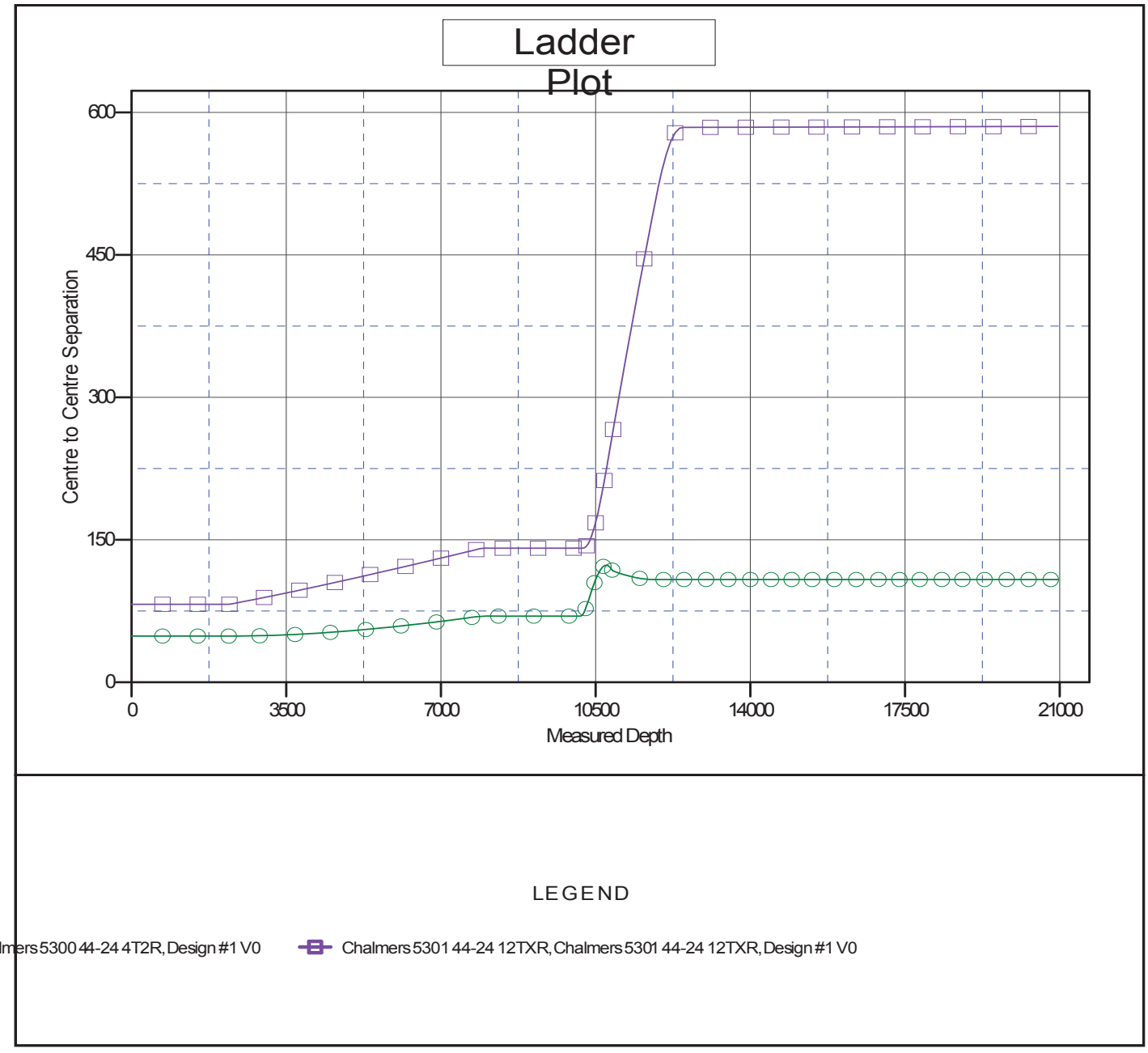
Offset Well Error: 2.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
18,000.0	10,678.7	18,265.8	10,760.8	220.8	221.6	98.07	-925.4	7,573.4	585.0	147.8	437.18	1.338	Level 3Level 3
18,100.0	10,679.4	18,365.8	10,761.5	223.7	224.5	98.07	-925.4	7,673.4	585.0	142.0	442.94	1.321	Level 3Level 3
18,200.0	10,680.1	18,465.8	10,762.3	226.6	227.4	98.08	-925.4	7,773.4	585.0	136.3	448.71	1.304	Level 3Level 3
18,300.0	10,680.8	18,565.8	10,763.1	229.5	230.3	98.09	-925.4	7,873.4	585.0	130.5	454.48	1.287	Level 3Level 3
18,400.0	10,681.5	18,665.8	10,763.9	232.4	233.3	98.10	-925.4	7,973.4	585.0	124.8	460.25	1.271	Level 3Level 3
18,500.0	10,682.2	18,765.8	10,764.7	235.3	236.2	98.11	-925.4	8,073.4	585.0	119.0	466.02	1.255	Level 3Level 3
18,600.0	10,682.9	18,865.8	10,765.5	238.3	239.1	98.12	-925.4	8,173.4	585.0	113.2	471.79	1.240	Level 2
18,700.0	10,683.6	18,965.8	10,766.3	241.2	242.0	98.13	-925.4	8,273.3	585.0	107.5	477.57	1.225	Level 2
18,800.0	10,684.3	19,065.8	10,767.0	244.1	244.9	98.13	-925.4	8,373.3	585.1	101.7	483.34	1.210	Level 2
18,900.0	10,685.0	19,165.8	10,767.8	247.0	247.8	98.14	-925.4	8,473.3	585.1	96.0	489.11	1.196	Level 2
19,000.0	10,685.7	19,265.8	10,768.6	249.9	250.7	98.15	-925.4	8,573.3	585.1	90.2	494.88	1.182	Level 2
19,100.0	10,686.4	19,365.8	10,769.4	252.8	253.6	98.16	-925.4	8,673.3	585.1	84.4	500.66	1.169	Level 2
19,200.0	10,687.1	19,465.8	10,770.2	255.8	256.5	98.17	-925.4	8,773.3	585.1	78.7	506.43	1.155	Level 2
19,300.0	10,687.8	19,565.8	10,771.0	258.7	259.4	98.18	-925.4	8,873.3	585.1	72.9	512.20	1.142	Level 2
19,400.0	10,688.5	19,665.8	10,771.8	261.6	262.3	98.18	-925.4	8,973.3	585.1	67.2	517.98	1.130	Level 2
19,500.0	10,689.2	19,765.8	10,772.5	264.5	265.2	98.19	-925.4	9,073.3	585.1	61.4	523.75	1.117	Level 2
19,600.0	10,689.9	19,865.8	10,773.3	267.4	268.1	98.20	-925.4	9,173.3	585.2	55.6	529.53	1.105	Level 2
19,700.0	10,690.6	19,965.8	10,774.1	270.3	271.0	98.21	-925.4	9,273.3	585.2	49.9	535.30	1.093	Level 2
19,800.0	10,691.3	20,065.8	10,774.9	273.3	274.0	98.22	-925.4	9,373.3	585.2	44.1	541.08	1.082	Level 2
19,900.0	10,692.0	20,165.8	10,775.7	276.2	276.9	98.23	-925.4	9,473.3	585.2	38.3	546.85	1.070	Level 2
20,000.0	10,692.7	20,265.8	10,776.5	279.1	279.8	98.24	-925.4	9,573.3	585.2	32.6	552.63	1.059	Level 2
20,100.0	10,693.4	20,365.8	10,777.3	282.0	282.7	98.24	-925.4	9,673.3	585.2	26.8	558.40	1.048	Level 2
20,200.0	10,694.0	20,465.8	10,778.0	284.9	285.6	98.25	-925.4	9,773.3	585.2	21.1	564.18	1.037	Level 2
20,300.0	10,694.7	20,565.8	10,778.8	287.9	288.5	98.26	-925.4	9,873.3	585.2	15.3	569.96	1.027	Level 2
20,400.0	10,695.4	20,665.8	10,779.6	290.8	291.4	98.27	-925.4	9,973.3	585.3	9.5	575.73	1.017	Level 2
20,500.0	10,696.1	20,765.8	10,780.4	293.7	294.3	98.28	-925.4	10,073.3	585.3	3.8	581.51	1.006	Level 2
20,600.0	10,696.8	20,865.8	10,781.2	296.6	297.3	98.29	-925.4	10,173.3	585.3	-2.0	587.29	0.997	Level 1
20,700.0	10,697.5	20,965.8	10,782.0	299.5	300.2	98.29	-925.4	10,273.3	585.3	-7.8	593.06	0.987	Level 1
20,800.0	10,698.2	21,065.8	10,782.8	302.5	303.1	98.30	-925.4	10,373.3	585.3	-13.5	598.84	0.977	Level 1
20,900.0	10,698.9	21,165.8	10,783.5	305.4	306.0	98.31	-925.4	10,473.3	585.3	-19.3	604.62	0.968	Level 1
20,960.1	10,699.4	21,225.9	10,784.0	307.1	307.5	98.32	-925.4	10,533.3	585.3	-22.5	607.83	0.963	Level 1, ES, SF

Company:	Oasis	**Local Co-ordinate Reference:**	Well Chalmers 5301 44-24 3BR
Project:	Indian Hills	**TVD Reference:**	Well @ 1967.0usft
Reference Site:	153N-100W-19/20_Altered	**MD Reference:**	Well @ 1967.0usft
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	Chalmers 5301 44-24 3BR	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 3BR	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to Well @ 1967.0usft
Offset Depths are relative to Offset Datum
Central Meridian is 100° 30' 0.000 W

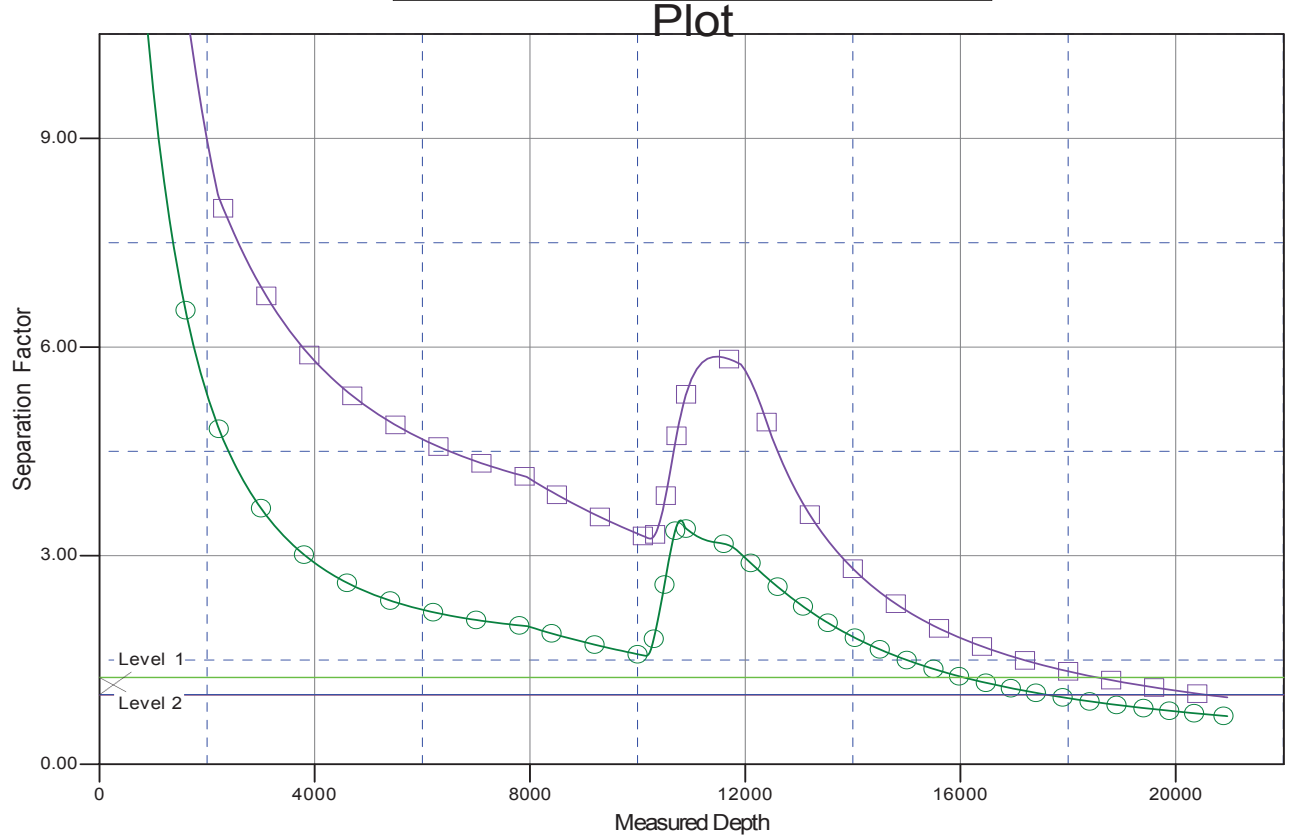
Coordinates are relative to: Chalmers 5301 44-24 3BR
Coordinate System is US State Plane 1983, North Dakota Northern Zone
Grid Convergence at Surface is: -2.31°



Company:	Oasis	**Local Co-ordinate Reference:**	Well Chalmers 5301 44-24 3BR
Project:	Indian Hills	**TVD Reference:**	Well @ 1967.0usft
Reference Site:	153N-100W-19/20_Altered	**MD Reference:**	Well @ 1967.0usft
Site Error:	0.0 usft	**North Reference:**	True
Reference Well:	Chalmers 5301 44-24 3BR	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 3BR	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #2	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to Well @ 1967.0usft
Offset Depths are relative to Offset Datum
Central Meridian is 100° 30' 0.000 W

Coordinates are relative to: Chalmers 5301 44-24 3BR
Coordinate System is US State Plane 1983, North Dakota Northern Zone
Grid Convergence at Surface is: -2.31°



LEGEND

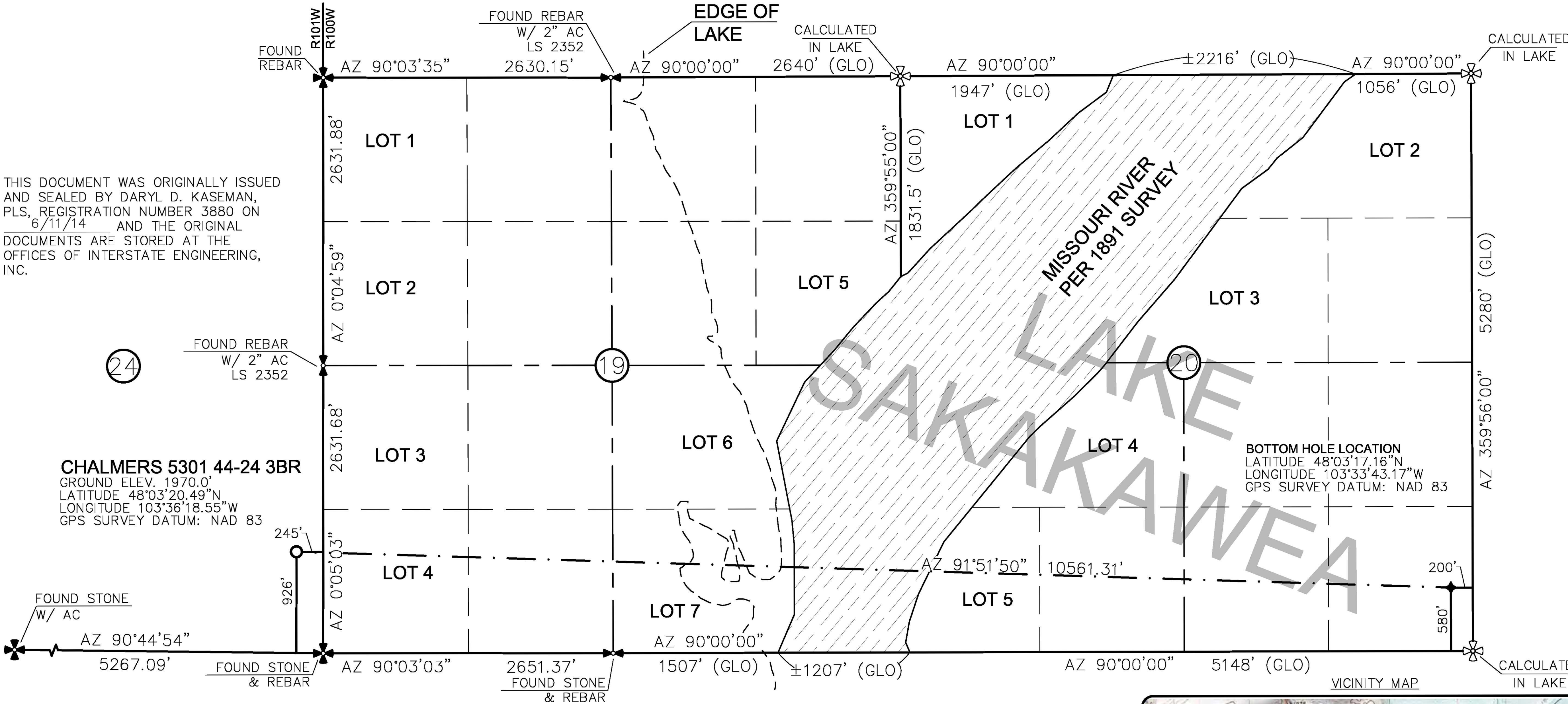
Imers 5300 44-24 4T2R, Design #1 V0

Chalmers 5301 44-24 12TXR, Chalmers 5301 44-24 12TXR, Design #1 V0

WELL LOCATION PLAT

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"CHALMERS 5301 44-24 3BR"
926 FEET FROM SOUTH LINE AND 245 FEET FROM EAST LINE
SECTION 24, T153N, R101W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY DARYL D. KASEMAN, PLS, REGISTRATION NUMBER 3880 ON 6/11/14 AND THE ORIGINAL DOCUMENTS ARE STORED AT THE OFFICES OF INTERSTATE ENGINEERING, INC.



0 1000
1" = 1000'

— MONUMENT — RECOVERED
— MONUMENT — NOT RECOVERED

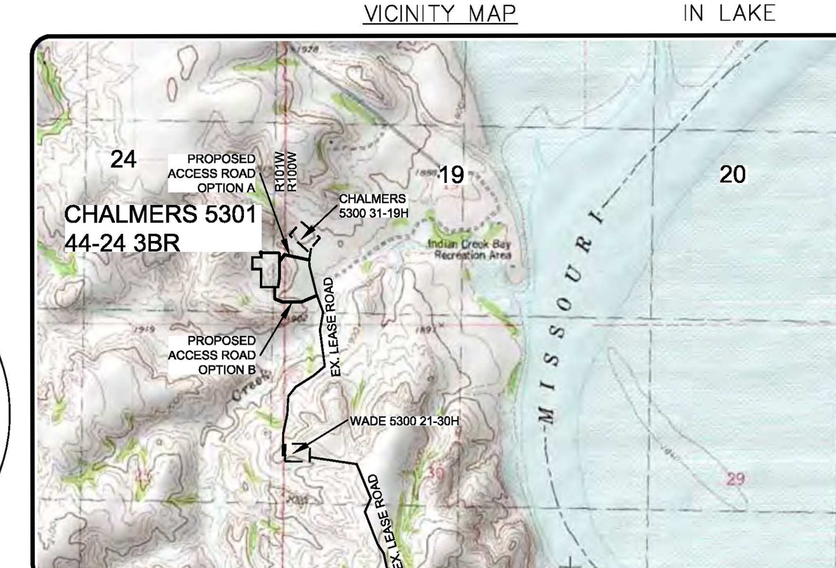
STAKED ON 9/3/13
VERTICAL CONTROL DATUM WAS BASED UPON CONTROL POINT 16 WITH AN ELEVATION OF 2014.2'

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

REGISTERED LAND SURVEYOR
DARYL D. KASEMAN
LS-3880
DATE: 6/11/14
NORTH DAKOTA

VICINITY MAP



Revision No.	Date	By	Description
REV 3	1/20/14	BHH	CHANGED PAD LAYOUT
REV 4	5/09/14	JJS	ADDED WELL TO PAD
REV 5	5/20/14	JJS	CHANGED NAME, MOVED WELL
REV 6	6/11/14	JDM	ADDED DIMENSIONS

Q:\2013\S13-09-\235.01 Oasis Petroleum - 2 of 3 Infill Wells for Chalmers 5300 31-19H\CAD\CHALMERS 3BR UPDATED 6-11-14.dwg - 6/11/2014 9:22 AM jackie miller

OASIS PETROLEUM NORTH AMERICA, LLC
WELL LOCATION PLAT
SECTION 24, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: J.J.S. Project No.: S13-09-235.01
Checked By: D.D.K. Date: MAY 2014

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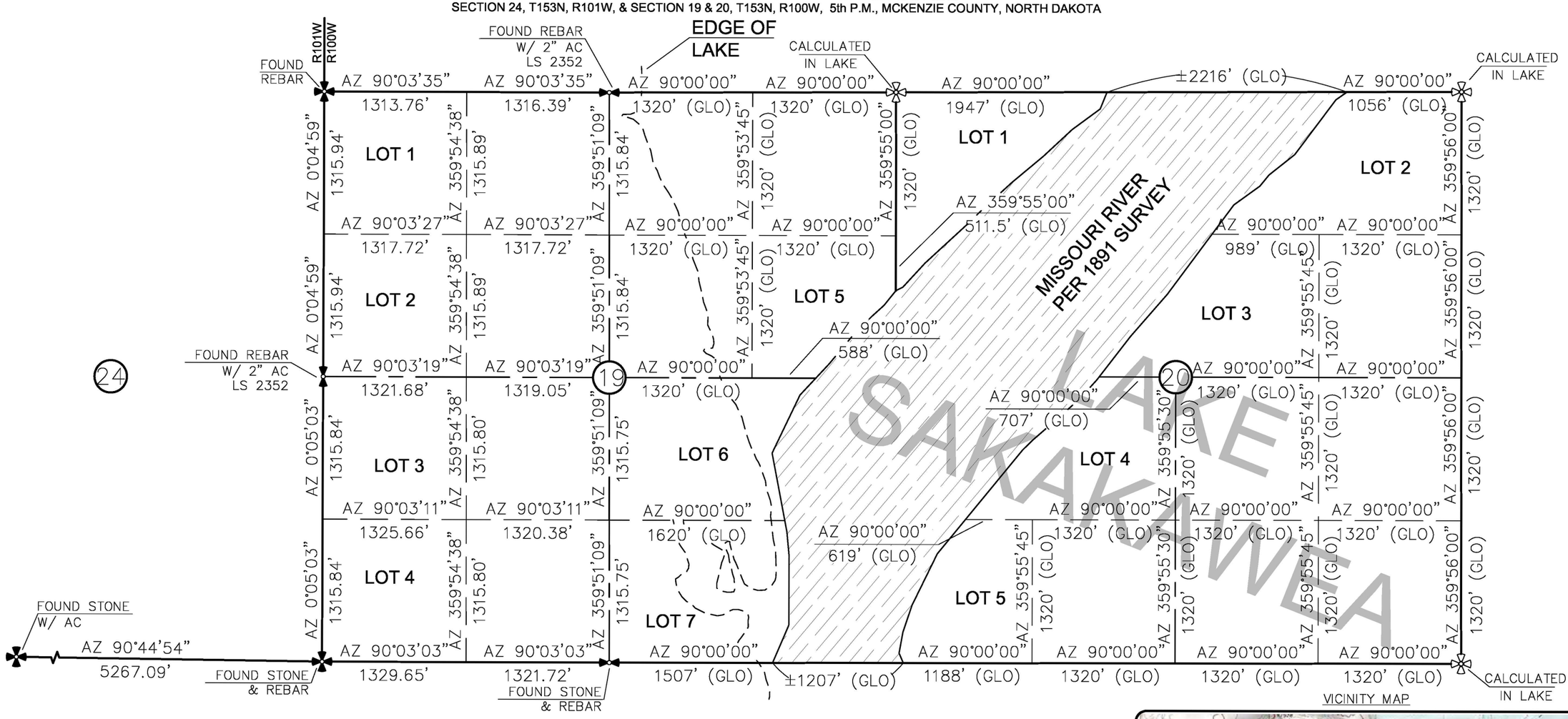
SHEET NO. 1/8

SECTION BREAKDOWN

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"CHALMERS 5301 44-24 3BR"
926 FEET FROM SOUTH LINE AND 245 FEET FROM EAST LINE
SECTION 24, T153N, R101W, & SECTION 19 & 20, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



24

FOUND REBAR W/ 2" AC LS 2352

N

0 1000

1" = 1000'

– MONUMENT – RECOVERED

– MONUMENT – NOT RECOVERED

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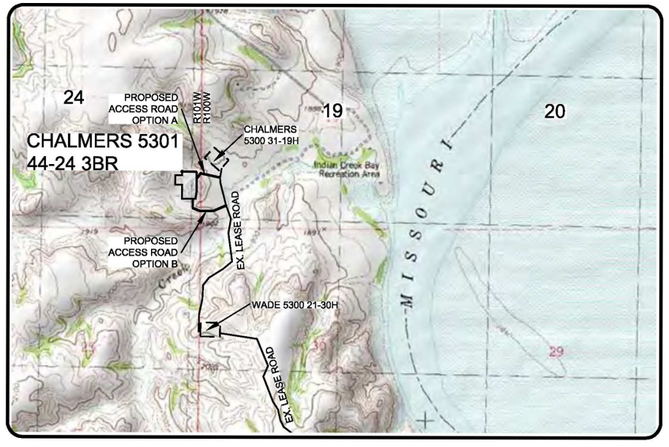
ALL AZIMUTHS ARE BASED ON G.P.S. OBSERVATIONS. THE ORIGINAL SURVEY OF THIS AREA FOR THE GENERAL LAND OFFICE (G.L.O.) WAS 1891. THE CORNERS FOUND ARE AS INDICATED AND ALL OTHERS ARE COMPUTED FROM THOSE CORNERS FOUND AND BASED ON G.L.O. DATA. THE MAPPING ANGLE FOR THIS AREA IS APPROXIMATELY –0°03'.

REGISTERED LAND SURVEYOR
DARYL D. KASEMAN
LS–3880
DATE: 6/11/14
NORTH DAKOTA

VICINITY MAP



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S:\Surveying\Drawings\Oasis Petroleum – 2 of 3 Pad Wells for Dolores 5300 31-19H\Cad\CHALMERS 5301 44-24 3BR UPDATED 6-11-14.dwg – 6/11/2014 8:23 AM jessica miller

OASIS PETROLEUM NORTH AMERICA, LLC
SECTION BREAKDOWN
SECTION 24, T153N, R101W, & SECTIONS 19 & 20, T153N, R100W
MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: J.J.S. | Project No.: S13-09-235.01
Checked By: D.D.K. | Date: MAY 2014

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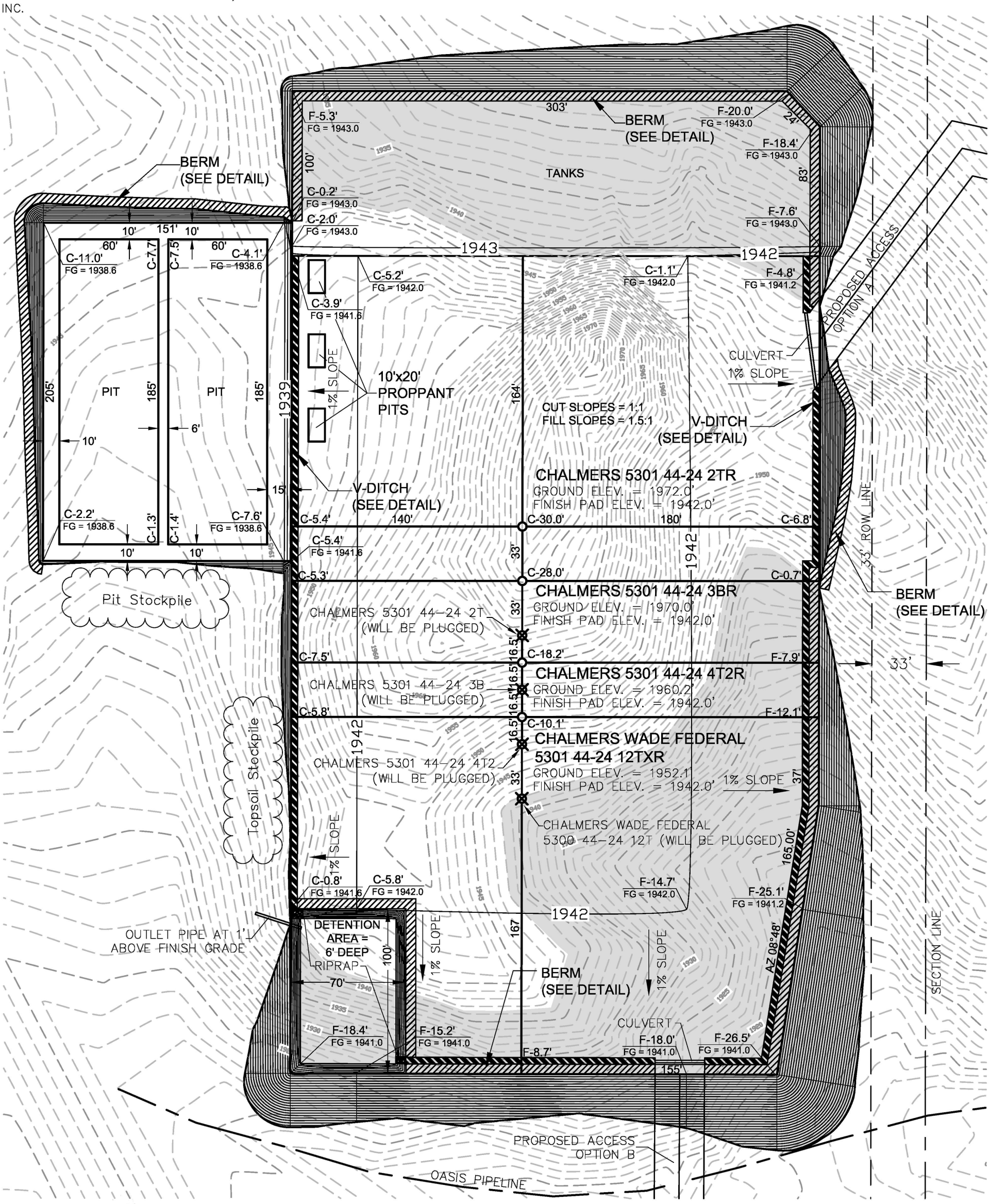
PAD LAYOUT

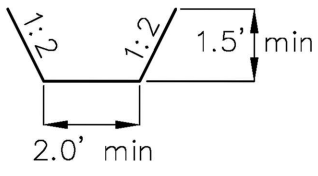
OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"CHALMERS 5301 44-24 3BR"
926 FEET FROM SOUTH LINE AND 245 FEET FROM EAST LINE
SECTION 24, T153N, R101W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



REGISTERED LAND SURVEYOR
DARYL D. KASEMAN
LS-3880
DATE: 6/11/14
NORTH DAKOTA

— BERM
— DITCH
——— Proposed Contours
– – – – – – Original Contours

V-DITCH DETAIL



N

0 60
1" = 60'

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 24, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: J.J.S. | Project No.: S13-09-235.01
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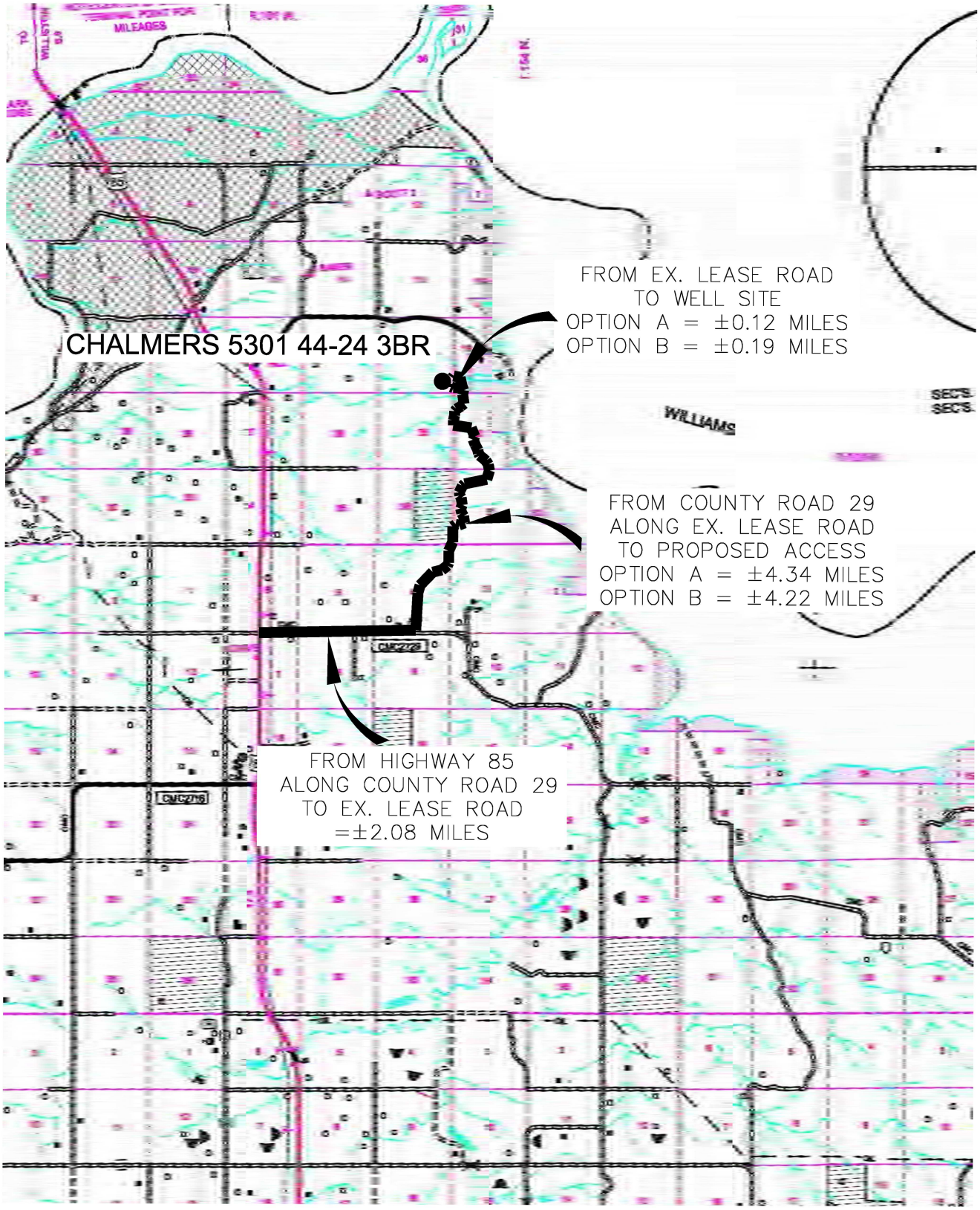
COUNTY ROAD MAP

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"CHALMERS 5301 44-24 3BR"
926 FEET FROM SOUTH LINE AND 245 FEET FROM EAST LINE
SECTION 24, T153N, R101W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



SCALE: 1" = 2 MILE

6/8
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OASIS PETROLEUM NORTH AMERICA, LLC
COUNTY ROAD MAP
SECTION 24, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA

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WELL LOCATION SITE QUANTITIES

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"CHALMERS 5301 44-24 3BR"
926 FEET FROM SOUTH LINE AND 245 FEET FROM EAST LINE
SECTION 24, T153N, R101W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

WELL SITE ELEVATION	1970.0
WELL PAD ELEVATION	1942.0

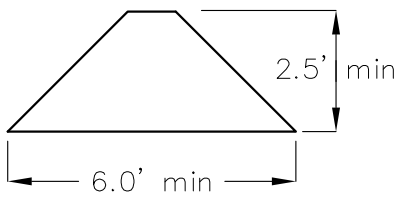
EXCAVATION	55,136
PLUS PIT	9,450
	64,586
EMBANKMENT	37,558
PLUS SHRINKAGE (30%)	11,267
	48,825
STOCKPILE PIT	9,450
STOCKPILE TOP SOIL (6")	4,770
BERMS	1,711 LF = 554 CY
DITCHES	1,029 LF = 157 CY
DETENTION AREA	1,428 CY
STOCKPILE MATERIAL	2,572
DISTURBED AREA FROM PAD	5.91 ACRES

NOTE: ALL QUANTITIES ARE IN CUBIC YARDS (UNLESS NOTED)
CUT END SLOPES AT 1:1
FILL END SLOPES AT 1.5:1

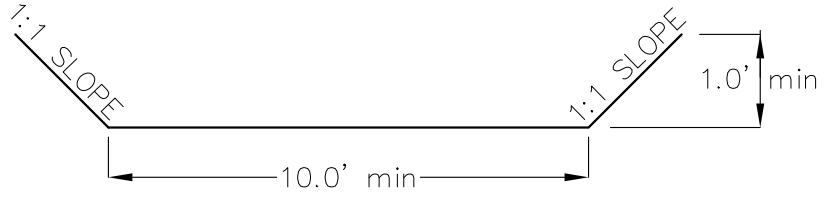
WELL SITE LOCATION

926' FSL
245' FEL

BERM DETAIL



DITCH DETAIL



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OASIS PETROLEUM NORTH AMERICA, LLC
QUANTITIES
SECTION 24, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: J.J.S. | Project No.: S13-09-235.01
Checked By: D.D.K. | Date: MAY 2014

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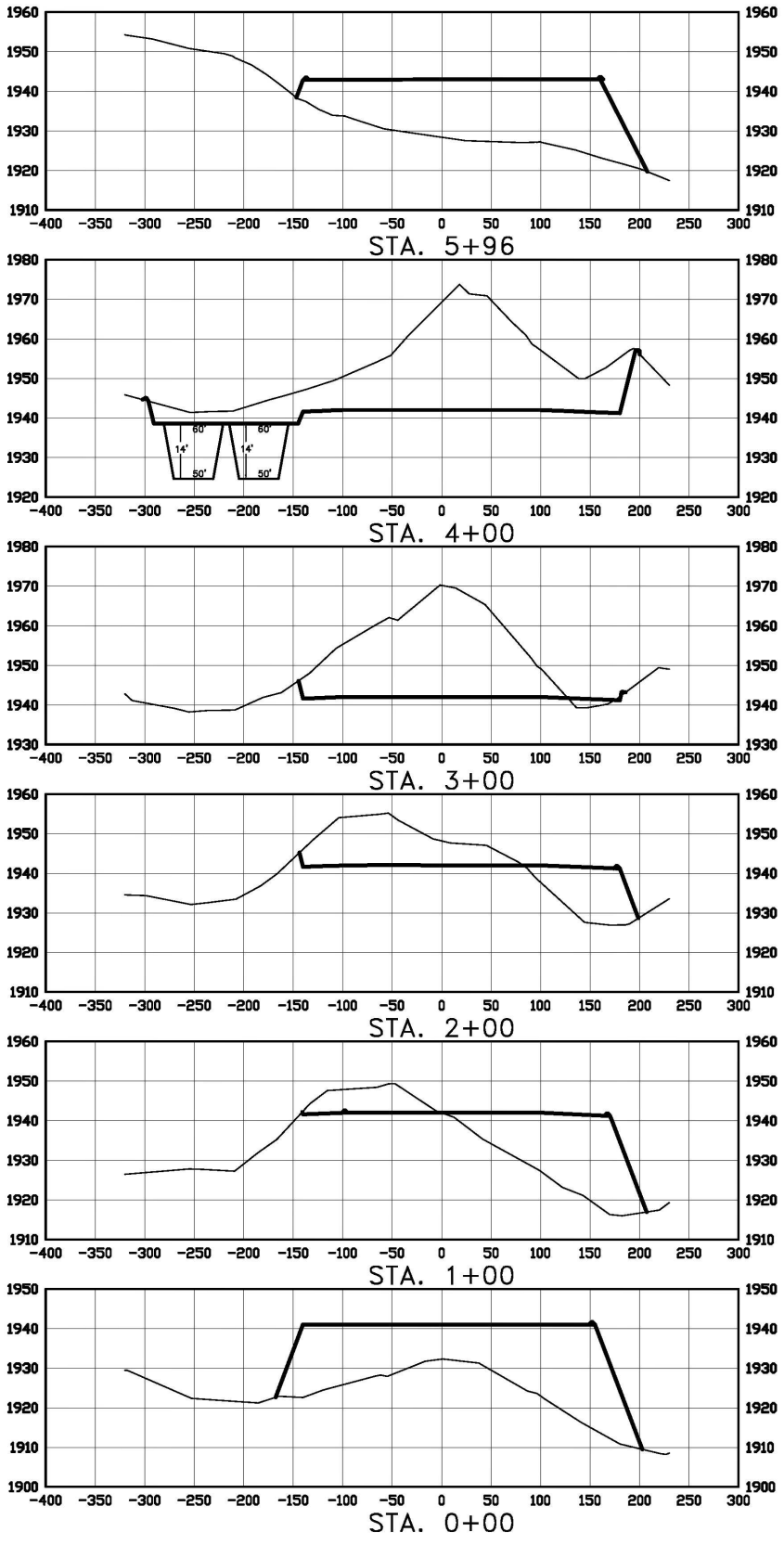
CROSS SECTIONS

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"CHALMERS 5301 44-24 3BR"
926 FEET FROM SOUTH LINE AND 245 FEET FROM EAST LINE
SECTION 24, T153N, R101W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



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REGISTERED LAND SURVEYOR
DARYL D. KASEMAN
LS-3880
DATE: 6/11/14
NORTH DAKOTA

SCALE
HORIZ 1"=180'
VERT 1"=45'

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OASIS PETROLEUM NORTH AMERICA, LLC
PAD CROSS SECTIONS
SECTION 24, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA

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ACCESS APPROACH

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"CHALMERS 5301 44-24 3BR"
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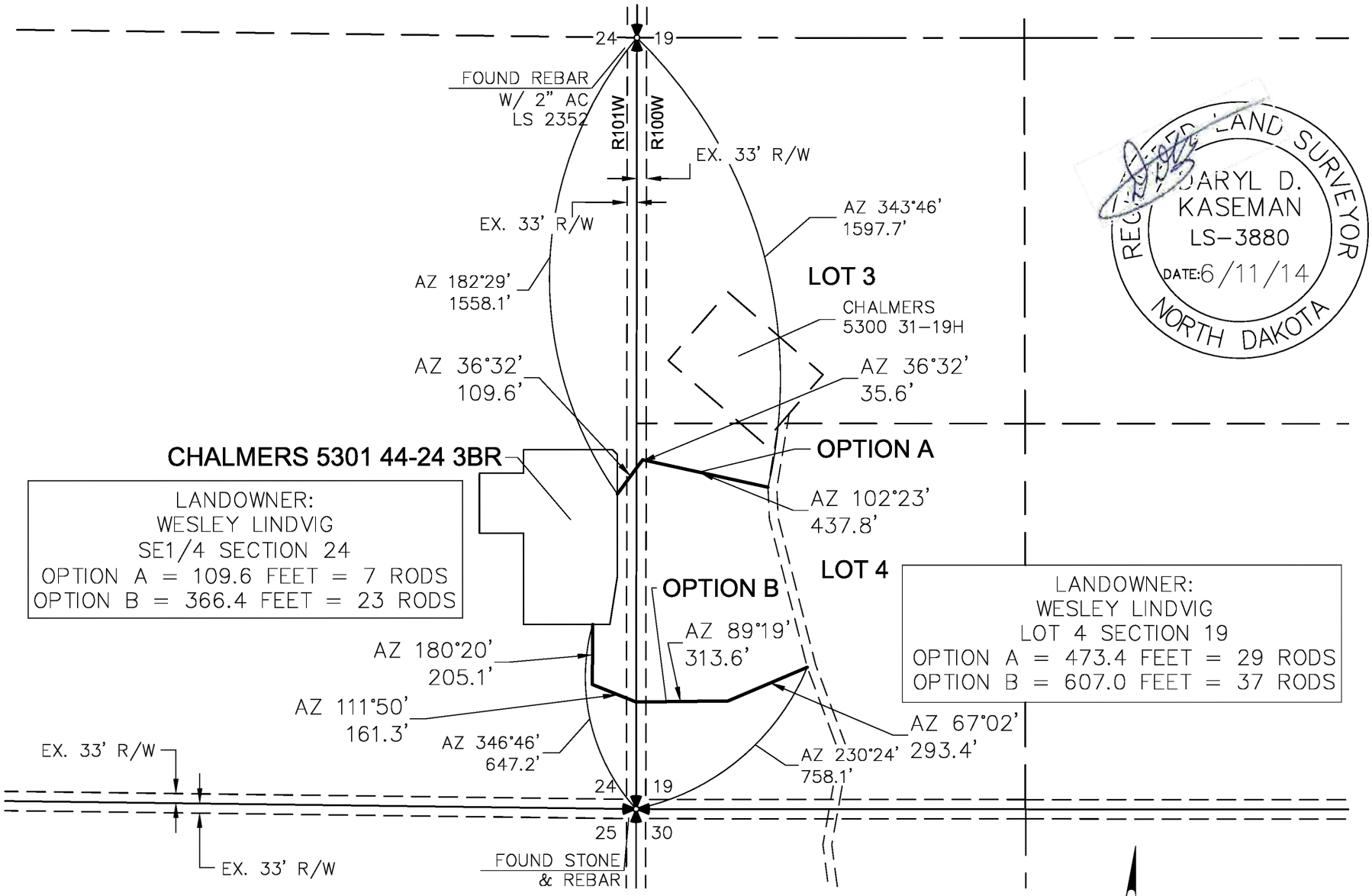

LANDOWNER:
WESLEY LINDVIG
SE1/4 SECTION 24
OPTION A = 109.6 FEET = 7 RODS
OPTION B = 366.4 FEET = 23 RODS

LANDOWNER:
WESLEY LINDVIG
LOT 4 SECTION 19
OPTION A = 473.4 FEET = 29 RODS
OPTION B = 607.0 FEET = 37 RODS

REGISTERED LAND SURVEYOR
DARYL D.
KASEMAN
LS-3880
DATE: 6/11/14
NORTH DAKOTA

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0 500
1" = 500'

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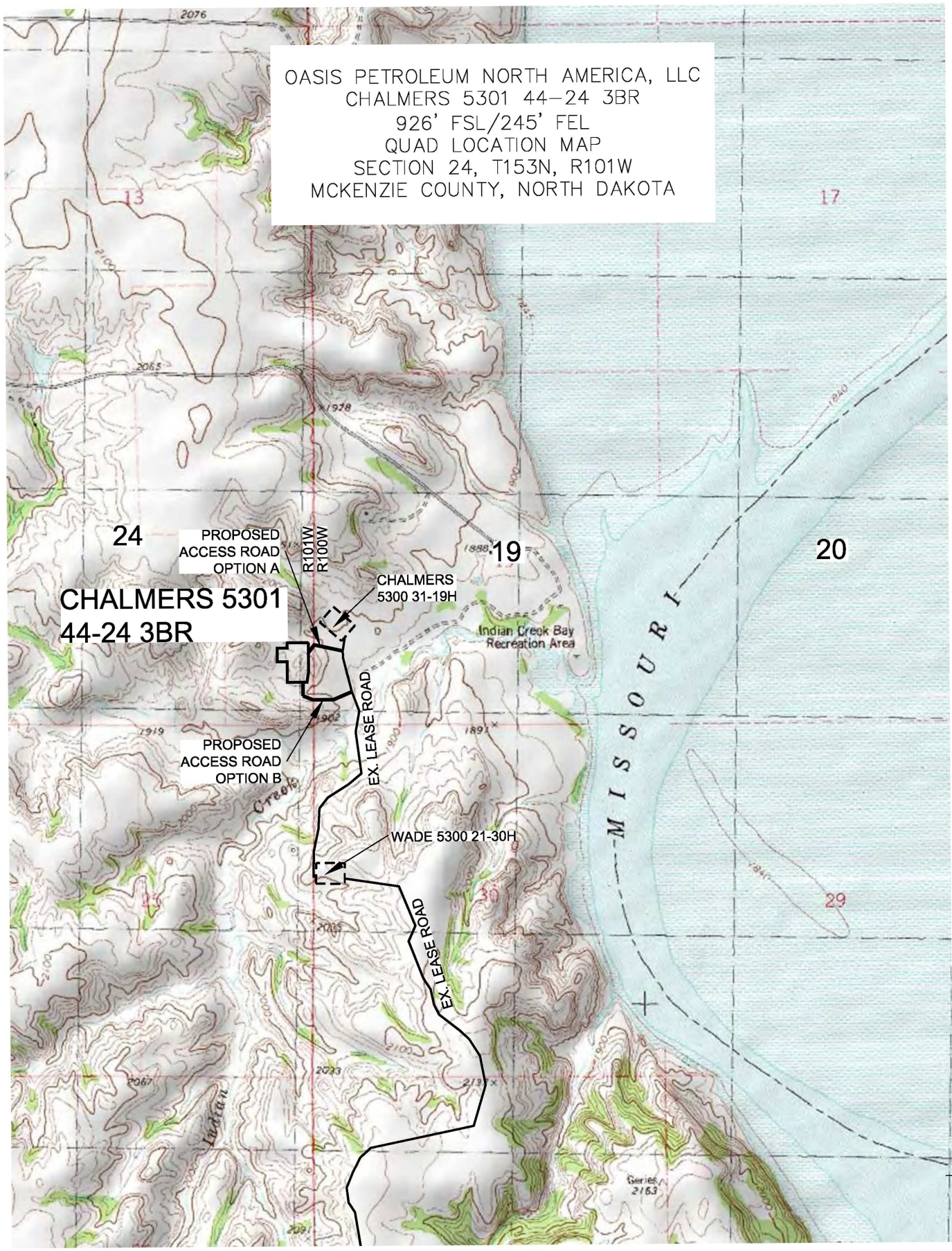
OASIS PETROLEUM NORTH AMERICA, LLC
CHALMERS 5301 44–24 3BR
926' FSL/245' FEL
QUAD LOCATION MAP
SECTION 24, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA



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QUAD LOCATION MAP
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COUNTY ROAD MAP

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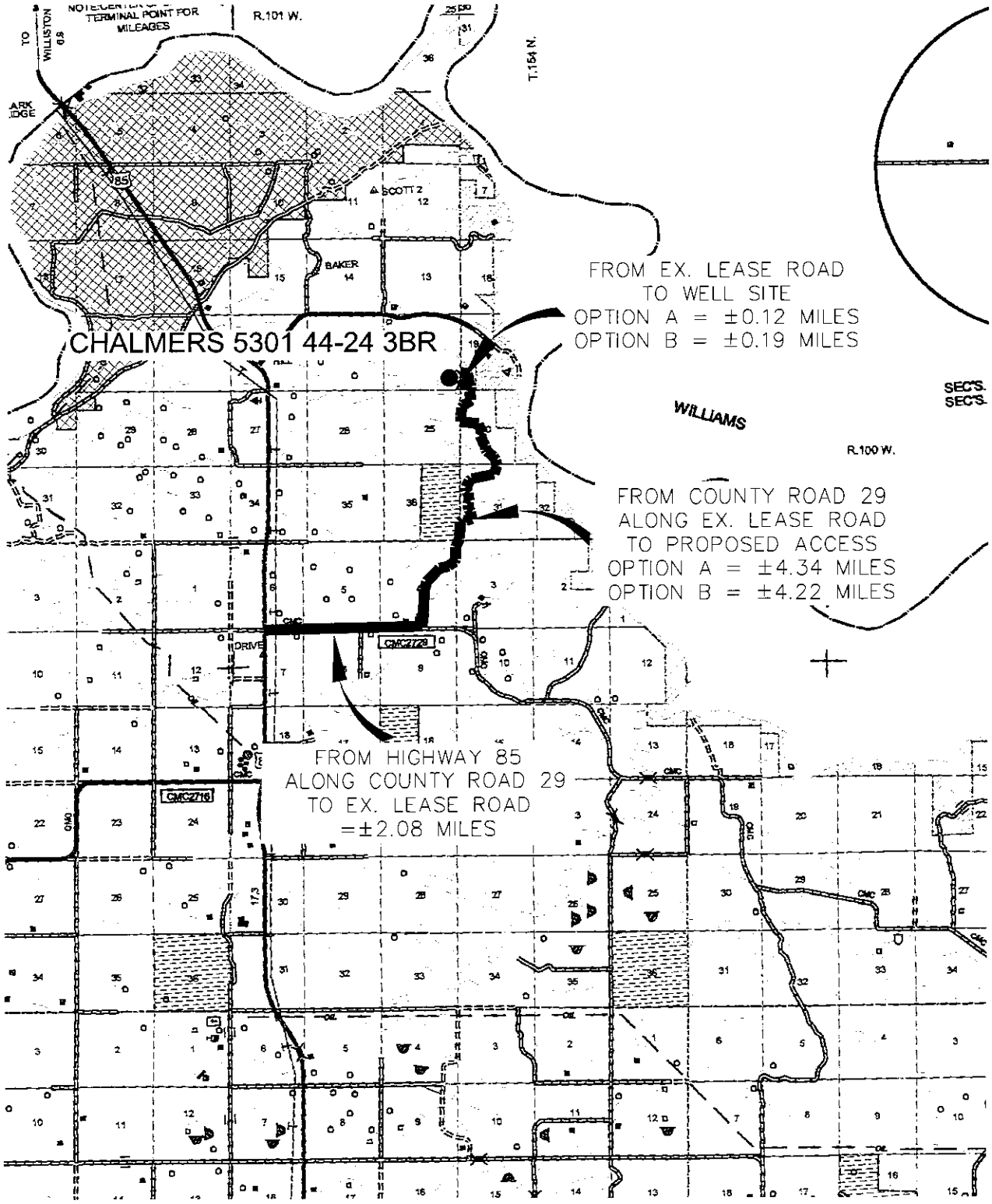

SCALE: 1" = 2 MILE

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MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: J.J.S. | Project No.: S13-09-235.01
Checked By: D.D.K. | Date: MAY 2014

Revision No.	Date	By	Description
REV 1	10/01/13	JJS	CHANGED WELL NAME
REV 2	12/5/13	JJS	CHANGED PAD LAYOUT
REV 3	1/20/14	BHH	CHANGED PAD LAYOUT
REV 4	5/09/14	JJS	ADDED WELL TO PAD
REV 5	5/20/14	JJS	CHANGED NAME, MOVED WELL

OASIS PETROLEUM

6/1/2014

Mineral Resources Permit Manager
North Dakota Industrial Commission
600 East Boulevard Avenue Dept. 405
Bismarck, ND 58505-0840

RE: Chalmers 5301 44-24 3BR
Chalmers 5301 44-24 4T2R
Request for a legal street address

Dear NDIC:

Oasis Petroleum has requested a physical street address for the Chalmers 5301 44-24 3BR and Chalmers 5301 44-24 4T2R. The request was made to Aaron Chisolm, in McKenzie County. Upon receiving a legal street address, Oasis will submit the address to the NDIC on a Sundry Notice (form 4) pursuant to 43-02-03-28.

Thank you for your consideration.

Respectfully,

Heather McCowan
Regulatory Assistant
Oasis Petroleum North America, LLC

SURFACE DAMAGE SETTLEMENT AND RELEASE

This Surface Damage Settlement and Release amends that certain Surface Use and Access Agreement, dated on that 15th day of October, 2013, by and between Wesley and Barbara Lindvig, wife and husband, "Owner" and together with Oasis Petroleum North America LLC ("Oasis") for the 4.60 acre drill site of the Chalmers 5301 44-24 2T, Chalmers 5301 44-24 3B & Chalmers 5301 44-24 4T wells.

Now Therefor and In consideration for the sum of [redacted], paid by Oasis Petroleum North America LLC ("Oasis") to the undersigned surface owner(s), Wesley and Barbara Lindvig, ("Owner,") and together with Oasis, the "Parties") administrators and assigns, who hereby acknowledge the receipt and sufficiency of said payment as a full and complete settlement for and as a release of all claims for loss, damage or injury to the Subject Lands (as defined herein) arising out of the Operations (as defined herein) of the initial well and any number of future infill wells (the "Wells") located on the approximately (5.91) Five and nine one tenths acre tract of land identified on the plat attached hereto as Exhibit "A" (the "Subject Lands") and which is situated on the following described real property located in McKenzie County, State of North Dakota, to wit:

Township 153 North, Range 101 West, 5th P.M.
Section 24: SE¼SE¼

This pad shall accommodate the drilling of the **Chalmers 5301 44-24 2T, Chalmers 5301 44-24 3B, Chalmers 5301 44-24 4T & Chalmers Wade 5301 44-24 12T** well(s).

The undersigned is fully aware that the cuttings generated from the drill of the above described wells will be buried on site on the above described locations.

Grantee hereby agrees to controlling dust during fracing and drilling operations and will police up and control trash along the access road and on the well(s) site.

The Parties agree that the settlement and release described herein does not include any claims by any third party against the Owner for personal injury or property damage arising directly out of Oasis's Operations, and Oasis agrees to indemnify, defend and hold harmless Owner against all liabilities arising from such claim (except as such claim arises from the gross negligence or willful misconduct of Owner).

In further consideration of the payments specified herein, Oasis is hereby specifically granted the right to construct, install and operate, replace or remove pads, pits, pumps, compressors, tanks, roads, pipelines, equipment or other facilities on the above described tract of land necessary for its drilling, completion, operation and/or plugging and abandonment of the Wells (the "Operations"), and to the extent such facilities are maintained by Oasis for use on the Subject Lands, this Agreement shall permit Oasis's use of such facilities for the Operations on the Subject Lands.

Should commercial production be established from the Wells, Oasis agrees to pay Owner an annual amount of $ [redacted] per year beginning one year after the completion of the first Well bore and [redacted] for each additional well bore thereafter until the Wells are plugged and abandoned.

The Parties expressly agree and acknowledge that the payments described herein to be made by Oasis to the Owners constitute full satisfaction of the requirements of Chapter 38.11.1 of the North Dakota Century Code and, once in effect, the amended Chapter 38.11.1 of the North Dakota Century Code enacted by House Bill 1241. The Parties further expressly agree and acknowledge that the [redacted] payment set forth above constitutes full and adequate consideration for damage and disruption required under Section 38.11.1-04 of the North Dakota Century Code, and that the [redacted] payment set forth above constitutes full and adequate consideration for loss of production payments under Section 38.11.1-08.1 of the North Dakota Century Code.

Oasis shall keep the Site free of noxious weeds, and shall take reasonable steps to control erosion and washouts on the Site. Oasis shall restore the Site to a condition as near to the original condition of the Site as is reasonably possible, including the re-contouring, replacing of topsoil and re-seeding of the Site (such actions, the "Restoration").

Owner grants Oasis access to the Wells in the location(s) shown on the plat attached hereto as Exhibit "A".

It is agreed that within (1) year following abandonment of the Road, Operator will restore the surface of the Road, as nearly as practicable, to its condition prior to the Operator's operations. This shall include filling same, grading and leveling the Road including re-seeding as directed by Landowner. However, at the written request of Landowner, the Road may remain in place for use of the Landowner. Any gates, cattle guards, and culvert will become the property of the Landowner.

The Owner grants Oasis a perpetual twenty five (25) foot easement for the installation of all flow lines and fresh water lines needed for Operator's operations. Upon written request all flow lines will be removed after the wells are considered abandoned.

This Agreement shall apply to the Parties and their respective its successors, assigns, parent and subsidiary companies, affiliates and related companies, trusts and partnerships, as well as their contractors, subcontractors, officers, directors, agents and employees.

This Agreement may be executed in multiple counterparts, each of which shall be an original, but all of which shall constitute one instrument.

Replacement well names:
① Chalmers 5301 44-24 3B is now Chalmers 5301 44-24 3BR
② Chalmers 5301 44-24 4T is now Chalmers 5301 44-24 4TR
③ Chalmers Wade 5301 44-24 12T is now Chalmers Wade 44-24 12TR

HOW 4/11/14

DATED this 30 day of April, 2014

SURFACE OWNER

Wesley Lindvig
Wesley Lindvig

Barbara Linvigt
Barbara Linvigt

Address: 14075 41st Street NW

Alexander, ND 58831

Phone: 701-770-1152

ACKNOWLEDGMENT INDIVDUAL

STATE OF North Dakota }
} SS.
COUNTY OF McKenzie }

BE IT REMEMBERED, That on this 30 day of April, 2014 before me, a Notary Public, in and for said County and State, personally appeared Wesley and Barbara Lindvig, to me known to be the identical persons described in and who executed the within and foregoing instrument and acknowledged to me that they executed the same as their free and voluntary act and deed for the uses and purposes therein set forth.

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

My commission expires:

JAMES DEMORRETT
Notary Public
State of North Dakota
My Commission Expires Aug. 16, 2018

NOTARY STAMP

Notary Public