



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 23 2017

Well File No.

28601

ND OIL & GAS DIVISION

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 27, 2017

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

Approximate Start Date

Drilling Prognosis

Spill Report

Redrilling or Repair

Shooting

Casing or Liner

Acidizing

Plug Well

Fracture Treatment

Supplemental History

Change Production Method

Temporarily Abandon

Reclamation

Other

Well is now on rod pump

Well Name and Number

Chalmers Wade Federal 5301 44-24 12TXR

Footages	844 F S L	245 F E L	Qtr-Qtr SESE	Section 24	Township 153 N	Range 101 W
Field	Baker	Pool	Bakken	County	McKenzie	

24-HOUR PRODUCTION RATE

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

Name of Contractor(s)

Address

City

State

Zip Code

DETAILS OF WORK

Effective 01/27/2017, the above referenced well was equipped with a rod pump.

End of Tubing: 2-7/8" L-80 tubing @ 9787'

Pump: 2-1/2" x 2.0" x 24' insert pump @ 9720'

Company Oasis Petroleum North America LLC	Telephone Number 281 404-9494
-----------------------------------------------------	-----------------------------------------

Address 1001 Fannin, Suite 1500

City Houston	State TX	Zip Code 77002
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Signature 	Printed Name Sadie Goodrum
---------------	--------------------------------------

Title Regulatory Specialist	Date October 18, 2017
---------------------------------------	---------------------------------

Email Address sgoodrum@oasispetroleum.com

FOR STATE USE ONLY

<input checked="" type="checkbox"/> Received	<input type="checkbox"/> Approved
Date 11-2-2017	
By 	
Title JARED THUNE	<small>Engineering Technician</small>



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/

October 5, 2017

OASIS PETRO NORTH AMERICA
ATTENTION: MICHAEL KUKUK
1001 FANNIN, STE 1500
HOUSTON, TX 77002

RE: Attached List of 17 Wells

Dear Michael Kukuk:

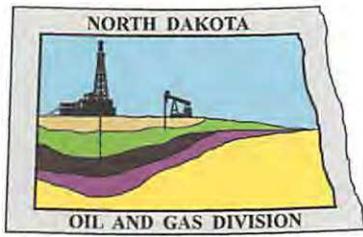
A Sundry notice (Form 4) is needed for the attached list of wells, detailing the changeover from flowing to well now on rod pump. If you have any questions, feel free to contact our office.

Sincerely,



Tom Delling
Petroleum Engineer - Field Inspector

TKD/RSD/RLR



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/

LEWIS FEDERAL 5300 31-31H
LOT 3 31-153N-100W
MCKENZIE COUNTY
WELL FILE NO.: 20314

NEWBERRY 5200 41-20T
SWSW 20-152N-100W
MCKENZIE COUNTY
WELL FILE NO.: 24644

EMMA 13-7H
SWSW 7-151N-99W
MCKENZIE COUNTY
WELL FILE NO.: 26659

CAROL 12-35H
NWSW 35-152N-100W
MCKENZIE COUNTY
WELL FILE NO.: 27623

LUELLA 13-35H
SWSW 35-152N-100W
MCKENZIE COUNTY
WELL FILE NO.: 27768

CHALMERS WADE FEDERAL 5301 44-24 12TXR
SESE 24-153N-101W
MCKENZIE COUNTY
WELL FILE NO.: 28601

GRAMMA FEDERAL 5300 41-31 13T
LOT4 31-153N-100W
MCKENZIE COUNTY
WELL FILE NO.: 29317

LAWLAR 26-35H
NWNE 26-151N-99W
MCKENZIE COUNTY
WELL FILE NO.: 20460

HANK 13X-7H
SWSW 7-151N-99W
MCKENZIE COUNTY
WELL FILE NO.: 26658

HAGEN BANKS 5298 #42-31 7T3
SESW 31-152N-98W
MCKENZIE COUNTY
WELL FILE NO.: 27109

TODD 13X-35H
SWSW 35-152N-100W
MCKENZIE COUNTY
WELL FILE NO.: 27767

DALLAS 2X-13H
NWNE 13-151N-100W
MCKENZIE COUNTY
WELL FILE NO.: 28201

FOSSUM 15-35HR
SWSE 35-153N-101W
MCKENZIE COUNTY
WELL FILE NO.: 30754



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)



Well File No.
28601
NDIC CTB No.
To be assigned

128601

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

Well Name and Number CHALMERS WADE FEDERAL 5301 44-24 12TXR	Qtr-Qtr SESE	Section 24	Township 153	Range 101	County McKenzie
-----------------------------------------------------------------------	-----------------	---------------	-----------------	--------------	--------------------

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

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

Name of First Purchaser Oasis Petroleum Marketing LLC	Telephone Number (281) 404-9627	% Purchased 100%	Date Effective January 1, 2015
Principal Place of Business 1001 Fannin, Suite 1500	City Houston	State TX	Zip Code 77002
Field Address	City	State	Zip Code
Transporter Hiland Crude, LLC	Telephone Number (580) 616-2058	% Transported 75%	Date Effective January 1, 2015
Address P.O. Box 3886	City Enid	State OK	Zip Code 73702

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

Other First Purchasers Purchasing From This Lease	% Purchased	Date Effective
Other First Purchasers Purchasing From This Lease	% Purchased	Date Effective
Other Transporters Transporting From This Lease	% Transported	Date Effective
Prairie Field Services, LLC	25%	January 1, 2015
Other Transporters Transporting From This Lease	% Transported	Date Effective
		January 1, 2015
Comments		

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records.	Date January 29, 2015
Signature 	Printed Name Brianna Salinas Title Marketing Assistant

Above Signature Witnessed By: Signature 	Printed Name Dina Barron	Title Mktg. Contracts Administrator
------------------------------------------------	------------------------------------	-----------------------------------------------

FOR STATE USE ONLY		
Date Approved MAR 03 2015		
By 		
Title Oil & Gas Production Analyst		



WELL COMPLETION OR RECOMPLETION REPORT - FORM 6

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

FEB 2015

RECEIVED
ND OIL & GAS
DIVISION

Well File No.
28601

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.

PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

Designate Type of Completion							
<input checked="" type="checkbox"/> Oil Well	<input type="checkbox"/> EOR Well	<input type="checkbox"/> Recompletion	<input type="checkbox"/> Deepened Well	<input type="checkbox"/> Added Horizontal Leg	<input type="checkbox"/> Extended Horizontal Leg		
<input type="checkbox"/> Gas Well	<input type="checkbox"/> SWD Well	<input type="checkbox"/> Water Supply Well	<input type="checkbox"/> Other:				
Well Name and Number Chalmers Wade Federal 5301 44-24 12TXR				Spacing Unit Description Sec. 19/20/29/30 T153N R101W			
Operator Oasis Petroleum North America		Telephone Number (281) 404-9591		Field Baker			
Address 1001 Fannin, Suite 1500				Pool Bakken			
City Houston	State TX	Zip Code 77002	Permit Type				
<input type="checkbox"/> Wildcat					<input checked="" type="checkbox"/> Development	<input type="checkbox"/> Extension	

LOCATION OF WELL

At Surface 844 F S L		Qtr-Qtr SESE	Section 24	Township 153 N	Range 101 W	County McKenzie
Spud Date June 19, 2014		Date TD Reached August 23, 2014		Drilling Contractor and Rig Number Nabors B25	KB Elevation (Ft) 1967	Graded Elevation (Ft) 1942

Type of Electric and Other Logs Run (See Instructions)

MWD/GR from KOP to TD; CBL from Int. TD to Surface

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

PERFORATION & OPEN HOLE INTERVALS

PRODUCTION

Current Producing Open Hole or Perforated Interval(s), This Completion, Top and Bottom, (MD Ft) Lateral 1- 11418' to 21050'							Name of Zone (If Different from Pool Name) <i>Three Forks</i>	
Date Well Completed (SEE INSTRUCTIONS) January 1, 2015		Producing Method Flowing	Pumping-Size & Type of Pump			Well Status (Producing or Shut-In) Producing		
Date of Test 01/01/2015	Hours Tested 24	Choke Size 28 /64	Production for Test	Oil (Bbls) 328	Gas (MCF) 143	Water (Bbls) 100	Oil Gravity-API (Corr.) °	Disposition of Gas Sold
Flowing Tubing Pressure (PSI)		Flowing Casing Pressure (PSI) 1600		Calculated 24-Hour Rate	Oil (Bbls) 328	Gas (MCF) 143	Water (Bbls) 100	Gas-Oil Ratio 435

GEOLOGICAL MARKERS

PLUG BACK INFORMATION

CORES CUT

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

Drill Stem Test

Well Specific Stimulation

Date Stimulated 11/25/2014	Stimulated Formation Three Forks		Top (Ft) 11418	Bottom (Ft) 21025	Stimulation Stages 36	Volume 95600	Volume Units Barrels
Type Treatment Sand Frac	Acid %	Lbs Proppant 9370930	Maximum Treatment Pressure (PSI) 9044		Maximum Treatment Rate (BBLS/Min) 37.2		
Details 40/70 ceramic - 935,244 30/50 ceramic - 208641 40/70 white - 844,164 20/40 white - 4,382,881							
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 ccovington@oasispetroleum.com	Date 2/12/15
Signature <i>Chelsea Covington</i>	Printed Name Chelsea Covington	Title Production Tech II



SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4

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



Well File No.
28601

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.

PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

<input checked="" type="checkbox"/> Notice of Intent	Approximate Start Date October 30, 2014	<input type="checkbox"/> Drilling Prognosis	<input type="checkbox"/> Spill Report
<input type="checkbox"/> Report of Work Done	Date Work Completed	<input type="checkbox"/> Redrilling or Repair	<input type="checkbox"/> Shooting
<input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.		<input type="checkbox"/> Casing or Liner	<input type="checkbox"/> Acidizing
Approximate Start Date		<input type="checkbox"/> Plug Well	<input type="checkbox"/> Fracture Treatment
		<input type="checkbox"/> Supplemental History	<input type="checkbox"/> Change Production Method
		<input type="checkbox"/> Temporarily Abandon	<input type="checkbox"/> Reclamation
		<input type="checkbox"/> Other	Amended Waiver from tubing/packer requirement

Well Name and Number

Chalmers Wade Federal 5300 44-24 12TXR

Footages 844 F S L	Qtr-Qtr 245 F E L	Section SESE	Township 24	Range 153 N	101 W
Field Baker	Pool Bakken		County McKenzie		

24-HOUR PRODUCTION RATE

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

Name of Contractor(s)

Address

City

State

Zip Code

DETAILS OF WORK

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

The following assurances apply:

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

Company Oasis Petroleum North America LLC	Telephone Number 281-404-9436	
Address 1001 Fannin, Suite 1500		
City Houston	State TX	Zip Code 77002
Signature 	Printed Name Jennifer Swenson	
Title Regulatory Assistant	Date December 9, 2014	
Email Address jswenson@oasispetroleum.com		

FOR STATE USE ONLY

<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date <i>December 11, 2014</i>	
By <i>J. M. Swenson</i>	
Title PETROLEUM ENGINEER	



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

Friday, December 12, 2014

State of North Dakota

Subject: **Surveys**

Re: **Oasis**

**Chalmers Wade Fed 5301 44-24 12TXR
McKenzie, ND**

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

Surveyor Name	Surveyor Title	Borehole Number	Start Depth	End Depth	Start Date	End Date	Type of	TD Straight Line Projection
Daniel Ogden	MWD Operator	O.H.	0'	2031'	06/19/14	06/20/14	MWD	2031'
Daniel Ogden	MWD Operator	O.H.	2031'	10237'	07/19/14	07/29/14	MWD	10313'
Daniel Ogden	MWD Operator	ST 1	10016'	10113'	07/29/14	07/30/14	MWD	10208'
Daniel Ogden	MWD Operator	ST 2	9922'	20985'	07/30/14	08/23/14	MWD	21050'

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

A handwritten signature in black ink that reads "Douglas Hudson".

Douglas Hudson
Well Planner



RYAN DIRECTIONAL SERVICES, INC.

A NABORS COMPANY

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

Friday, June 20, 2014

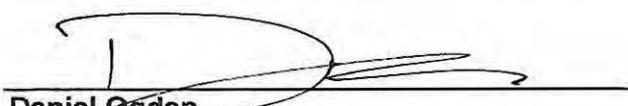
State of North Dakota
County of McKenzie Co.

Subject: **Survey Certification Letter**

Survey Company: Ryan Directional Services, Inc.
Job Number: 7664 Surface: 48°03'19.68", -103°36'18.55"
Survey Job Type: Ryan MWD A.P.I. No: 33-053-06012
Customer: Oasis Petroleum N.A. LLC Location: McKenzie Co., North Dakota
Well Name: Chalmers Wade Fed. 5301 44-24 12TXR RKB Height: 25'
Rig Name: Nabors B-25 Distance to Bit: 64'

<i>Surveyor Name</i>	<i>Surveyor Title</i>	<i>Borehole Number</i>	<i>Start Depth</i>	<i>End Depth</i>	<i>Start Date</i>	<i>End Date</i>	<i>Type of</i>	<i>TD Straight Line Projection</i>
Daniel Ogden	MWD Supervisor	OH	0'	2031'	06/19/14	06/20/14	MWD	2095'

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

Sunday, August 24, 2014

State of North Dakota
County of McKenzie

Subject: **Survey Certification Letter**

Survey Company: **Ryan Directional Services, Inc.**

Job Number: **7875**

Surface: **48°03'20.49", -103°36'18.55"**

Survey Job Type: **Ryan MWD**

A.P.I. No: **33-053-06012**

Customer: **Oasis Petroleum N.A. LLC**

Location: **McKenzie, Noth Dakota**

Well Name: **Chalmers Wade Fed. 5301 44-24 12TXR**

RKB Height: **25'**

Rig Name: **Nabors B-25**

Distance to Bit: **65'**

Surveyor Name	Surveyor Title	Borehole Number	TD Straight		Type of	Line Projection
			Start Depth	End Depth		
Daniel Ogden	MWD Supervisor	OH	2031'	10237'	07/19/14	07/29/14
Daniel Ogden	MWD Supervisor	ST1	10016'	10113'	07/29/14	07/30/14
Daniel Ogden	MWD Supervisor	ST2	9922'	20985'	07/30/14	08/23/14

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.

**SURVEY REPORT**

Customer: **Oasis Petroleum N.A. LLC**
 Well Name: **Chalmers Wade Fed. 5301 44-24 12TXR**
 Rig #: **Nabors B-25**
 API #: **33-053-06012**
 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 0'									
Tie In	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	185	0.70	159.30	57.00	185.00	0.40	-1.06	0.40	0.38
2	247	1.00	159.90	59.00	246.99	0.72	-1.92	0.72	0.48
3	340	0.60	126.50	71.00	339.98	1.39	-2.97	1.39	0.64
4	402	0.90	116.00	71.00	401.97	2.09	-3.38	2.09	0.53
5	464	0.90	88.50	73.00	463.97	3.01	-3.58	3.01	0.69
6	526	0.90	65.80	73.00	525.96	3.94	-3.37	3.94	0.57
7	588	0.80	88.30	71.00	587.95	4.82	-3.15	4.82	0.56
8	680	0.50	67.20	75.00	679.95	5.83	-2.98	5.83	0.41
9	772	0.50	108.60	75.00	771.94	6.58	-2.95	6.58	0.38
10	865	0.40	89.80	75.00	864.94	7.29	-3.08	7.29	0.19
11	957	0.50	141.40	76.00	956.94	7.86	-3.39	7.86	0.44
12	1049	0.10	276.50	80.00	1048.94	8.03	-3.70	8.03	0.63
13	1142	0.20	163.80	82.00	1141.94	8.00	-3.84	8.00	0.28
14	1234	0.90	212.80	82.00	1233.93	7.65	-4.61	7.65	0.85
15	1326	0.50	326.60	86.00	1325.93	7.04	-4.88	7.04	1.30
16	1418	0.60	29.50	87.00	1417.93	7.06	-4.12	7.06	0.63
17	1510	0.50	24.00	89.00	1509.92	7.46	-3.34	7.46	0.12
18	1604	0.20	86.40	91.00	1603.92	7.79	-2.95	7.79	0.47
19	1697	0.40	80.60	91.00	1696.92	8.27	-2.89	8.27	0.22
20	1790	0.30	16.50	91.00	1789.92	8.66	-2.60	8.66	0.41
21	1883	0.20	21.40	93.00	1882.92	8.79	-2.22	8.79	0.11
22	1977	0.10	64.00	93.00	1976.92	8.92	-2.03	8.92	0.15
23	2031	0.20	201.50	93.00	2030.92	8.93	-2.10	8.93	0.52
24	2098	0.30	145.20	82.00	2097.91	8.99	-2.35	8.99	0.38
25	2191	0.50	163.10	87.00	2190.91	9.24	-2.94	9.24	0.25
26	2284	0.80	169.50	91.00	2283.91	9.48	-3.96	9.48	0.33
27	2377	1.20	163.90	96.00	2376.89	9.87	-5.54	9.87	0.44
28	2471	1.70	171.50	100.00	2470.86	10.35	-7.86	10.35	0.57
29	2564	1.20	154.40	105.00	2563.83	10.97	-10.11	10.97	0.71
30	2657	1.40	145.20	105.00	2656.81	12.04	-11.92	12.04	0.31
31	2751	0.20	292.50	113.00	2750.80	12.54	-12.80	12.54	1.67
32	2844	0.60	314.90	116.00	2843.80	12.05	-12.39	12.05	0.45
33	2937	0.60	327.50	118.00	2936.79	11.44	-11.64	11.44	0.14
34	3030	0.50	101.50	123.00	3029.79	11.58	-11.31	11.58	1.09
35	3124	0.70	107.60	123.00	3123.79	12.53	-11.56	12.53	0.22
36	3217	0.90	118.00	125.00	3216.78	13.71	-12.08	13.71	0.26
37	3310	0.30	177.30	132.00	3309.77	14.37	-12.66	14.37	0.85
38	3404	0.40	217.40	134.00	3403.77	14.18	-13.17	14.18	0.27
39	3497	0.60	223.30	138.00	3496.77	13.65	-13.78	13.65	0.22
40	3590	0.60	237.80	140.00	3589.76	12.91	-14.40	12.91	0.16
41	3683	0.80	228.30	141.00	3682.75	12.01	-15.09	12.01	0.25
42	3777	1.10	235.00	141.00	3776.74	10.78	-16.04	10.78	0.34
43	3870	1.10	229.30	141.00	3869.72	9.37	-17.13	9.37	0.12
44	3963	1.10	237.80	141.00	3962.71	7.94	-18.19	7.94	0.18
45	4056	1.40	237.80	143.00	4055.68	6.22	-19.27	6.22	0.32
46	4150	0.70	226.70	145.00	4149.67	4.83	-20.28	4.83	0.77
47	4243	0.60	210.40	147.00	4242.66	4.17	-21.09	4.17	0.22
48	4336	0.80	219.50	149.00	4335.66	3.51	-22.01	3.51	0.25
49	4429	1.00	227.80	149.00	4428.64	2.50	-23.06	2.50	0.26
50	4523	1.00	232.60	152.00	4522.63	1.24	-24.11	1.24	0.09
51	4616	0.00	215.50	154.00	4615.62	0.60	-24.60	0.60	1.08
52	4709	0.20	136.30	156.00	4708.62	0.71	-24.72	0.71	0.22
53	4803	0.20	172.20	156.00	4802.62	0.84	-25.00	0.84	0.13
54	4896	0.40	193.20	156.00	4895.62	0.79	-25.47	0.79	0.24
55	4989	0.50	210.60	158.00	4988.62	0.51	-26.14	0.51	0.18
56	5082	0.70	198.20	159.00	5081.61	0.13	-27.03	0.13	0.26
57	5176	1.00	189.90	159.00	5175.60	-0.19	-28.38	-0.19	0.34
58	5269	1.10	182.90	159.00	5268.59	-0.38	-30.07	-0.38	0.17
59	5362	1.50	186.40	161.00	5361.56	-0.56	-32.17	-0.56	0.44
60	5456	1.00	183.20	161.00	5455.54	-0.74	-34.22	-0.74	0.54



SURVEY REPORT

Customer: **Oasis Petroleum N.A. LLC**
 Well Name: **Chalmers Wade Fed. 5301 44-24 12TXR**
 Rig #: **Nabors B-25**
 API #: **33-053-06012**
 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	5549	1.00	176.40	165.00	5548.53	-0.74	-35.84	-0.74	0.13
62	5642	1.30	191.50	165.00	5641.51	-0.90	-37.68	-0.90	0.46
63	5735	1.40	183.70	168.00	5734.48	-1.18	-39.85	-1.18	0.22
64	5829	1.60	183.00	170.00	5828.45	-1.32	-42.30	-1.32	0.21
65	5922	1.50	184.70	170.00	5921.42	-1.49	-44.81	-1.49	0.12
66	5982	1.70	187.50	172.00	5981.39	-1.67	-46.48	-1.67	0.36
67	6098	1.60	182.70	143.00	6097.35	-1.97	-49.80	-1.97	0.15
68	6191	0.50	2.60	149.00	6190.34	-2.01	-50.69	-2.01	2.26
69	6284	1.10	353.90	152.00	6283.33	-2.09	-49.40	-2.09	0.66
70	6378	0.80	140.00	154.00	6377.32	-1.76	-49.01	-1.76	1.94
71	6471	1.20	167.80	158.00	6470.31	-1.14	-50.45	-1.14	0.66
72	6564	1.00	173.80	159.00	6563.29	-0.85	-52.21	-0.85	0.25
73	6658	1.20	191.50	163.00	6657.27	-0.96	-53.99	-0.96	0.42
74	6751	0.80	215.90	167.00	6750.26	-1.53	-55.47	-1.53	0.62
75	6844	0.40	217.30	168.00	6843.25	-2.11	-56.26	-2.11	0.43
76	6937	0.40	221.00	170.00	6936.25	-2.52	-56.76	-2.52	0.03
77	7031	0.50	206.60	176.00	7030.25	-2.92	-57.38	-2.92	0.16
78	7124	0.50	241.80	177.00	7123.25	-3.46	-57.93	-3.46	0.33
79	7217	0.60	278.00	177.00	7216.24	-4.30	-58.05	-4.30	0.38
80	7310	0.30	268.40	177.00	7309.24	-5.02	-57.99	-5.02	0.33
81	7404	0.40	281.80	179.00	7403.24	-5.59	-57.93	-5.59	0.14
82	7497	0.60	275.20	181.00	7496.23	-6.39	-57.82	-6.39	0.22
83	7590	0.90	41.10	172.00	7589.23	-6.40	-57.23	-6.40	1.44
84	7684	1.10	63.50	170.00	7683.22	-5.10	-56.27	-5.10	0.46
85	7777	1.00	68.50	172.00	7776.20	-3.55	-55.57	-3.55	0.15
86	7870	1.00	53.70	176.00	7869.19	-2.14	-54.80	-2.14	0.28
87	7963	0.60	46.40	177.00	7962.18	-1.13	-53.98	-1.13	0.44
88	8057	0.60	24.10	179.00	8056.17	-0.58	-53.19	-0.58	0.25
89	8150	0.40	52.80	179.00	8149.17	-0.12	-52.55	-0.12	0.34
90	8243	0.40	54.80	181.00	8242.17	0.41	-52.17	0.41	0.02
91	8336	0.20	358.40	185.00	8335.16	0.67	-51.82	0.67	0.36
92	8430	0.60	24.90	185.00	8429.16	0.87	-51.21	0.87	0.46
93	8523	0.40	35.80	186.00	8522.16	1.26	-50.50	1.26	0.24
94	8616	0.50	55.30	188.00	8615.16	1.79	-50.01	1.79	0.20
95	8710	0.50	59.80	190.00	8709.15	2.48	-49.57	2.48	0.04
96	8803	0.30	41.00	192.00	8802.15	2.99	-49.18	2.99	0.25
97	8896	0.20	66.10	192.00	8895.15	3.30	-48.93	3.30	0.16
98	8989	0.30	83.80	194.00	8988.15	3.69	-48.84	3.69	0.13
99	9083	0.20	91.80	194.00	9082.15	4.10	-48.82	4.10	0.11
100	9176	0.30	73.40	192.00	9175.15	4.49	-48.75	4.49	0.14
101	9269	0.30	115.50	194.00	9268.15	4.95	-48.79	4.95	0.23
102	9362	0.20	106.40	194.00	9361.14	5.32	-48.94	5.32	0.12
103	9456	0.40	164.10	195.00	9455.14	5.57	-49.30	5.57	0.36
104	9549	0.30	187.30	199.00	9548.14	5.63	-49.85	5.63	0.18
105	9642	0.40	168.50	199.00	9641.14	5.66	-50.41	5.66	0.16
106	9736	0.50	204.30	201.00	9735.14	5.56	-51.11	5.56	0.31
107	9829	0.60	211.30	201.00	9828.13	5.14	-51.89	5.14	0.13
108	9922	0.90	214.40	203.00	9921.12	4.47	-52.91	4.47	0.33
109	10016	1.10	233.00	204.00	10015.11	3.33	-54.07	3.33	0.40
110	10109	1.50	233.70	206.00	10108.09	1.64	-55.32	1.64	0.43
111	10206	1.40	234.90	195.00	10205.06	-0.35	-56.76	-0.35	0.11
112	10237	1.10	227.30	195.00	10236.05	-0.88	-57.18	-0.88	1.10
Projection	10313	1.10	227.30		10312.03	-1.95	-58.16	-1.95	0.00

Report #: 2
Date: _____



RYAN DIRECTIONAL SERVICES, INC.
A NABORS COMPANY

Ryan Job # 7875

SURVEY REPORT

Customer: **Oasis Petroleum N.A. LLC**
Well Name: **Chalmers Wade Fed. 5301 44-24 12TXR**
Rig #: **Nabors B-25**
API #: **33-053-06012**
Calculation Method: **Minimum Curvature Calculation**

MWD Operator: **Josh Kainz/David Unger**
Directional Drillers: **Will Wright**
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 Gyro Surveys									
Tie In	10016	1.10	233.00	204.00	10015.12	3.33	54.07	3.33	0.40
1	10041	1.40	228.50	199.00	10040.11	2.91	53.72	2.91	1.26
2	10061	1.20	225.20	199.00	10060.11	2.58	53.41	2.58	1.07
3	10082	1.30	224.50	188.00	10081.10	2.26	53.09	2.26	0.48
4	10113	1.50	228.00	188.00	10112.09	1.71	52.57	1.71	0.70
Projection	10208	1.50	228.00		10207.06	-0.14	50.90	-0.14	0.00



SURVEY REPORT

Customer: **Oasis Petroleum N.A. LLC**
 Well Name: **Chalmers Wade Fed. 5301 44-24 12TXR**
 Rig #: **Nabors B-25**
 API #: **33-053-06012**
 Calculation Method: **Minimum Curvature Calculation**

MWD Operator: **Daniel Ogden/David Unger**
 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 Gyro Surveys									
Tie In	9922	0.90	214.40	203.00	9921.13	4.47	-52.92	4.47	0.33
1	9941	1.00	229.00	174.00	9940.13	4.26	-53.15	4.26	1.37
2	9957	1.10	225.70	181.00	9956.12	4.05	-53.35	4.05	0.73
3	9988	0.80	203.00	181.00	9987.12	3.75	-53.76	3.75	1.53
4	10019	3.00	136.50	181.00	10018.10	4.22	-54.55	4.22	8.97
5	10050	7.70	128.60	185.00	10048.96	6.40	-56.43	6.40	15.31
6	10081	12.10	128.90	188.00	10079.49	10.56	-59.77	10.56	14.19
7	10112	16.30	127.50	192.00	10109.54	16.54	-64.46	16.54	13.59
8	10144	19.30	127.70	192.00	10140.00	24.29	-70.43	24.29	9.38
9	10175	19.30	126.90	195.00	10169.26	32.44	-76.64	32.44	0.85
10	10206	18.70	126.80	195.00	10198.57	40.52	-82.69	40.52	1.94
11	10237	17.80	126.70	195.00	10228.01	48.29	-88.50	48.29	2.90
12	10268	17.20	126.80	199.00	10257.58	55.76	-94.08	55.76	1.94
13	10299	17.10	126.60	199.00	10287.20	63.09	-99.54	63.09	0.37
14	10330	20.40	125.50	199.00	10316.55	71.15	-105.40	71.15	10.71
15	10361	24.10	123.60	199.00	10345.24	80.83	-112.04	80.83	12.16
16	10392	28.00	123.90	199.00	10373.08	92.14	-119.60	92.14	12.59
17	10423	32.30	124.50	203.00	10399.88	105.01	-128.36	105.01	13.90
18	10454	36.10	124.70	203.00	10425.52	119.35	-138.25	119.35	12.26
19	10485	39.10	125.50	203.00	10450.07	134.82	-149.13	134.82	9.80
20	10517	41.70	124.00	206.00	10474.44	151.87	-160.94	151.87	8.67
21	10548	43.50	124.00	206.00	10497.26	169.26	-172.67	169.26	5.81
22	10579	44.20	123.00	206.00	10519.62	187.17	-184.53	187.17	3.18
23	10610	45.60	123.20	206.00	10541.57	205.50	-196.48	205.50	4.54
24	10641	48.50	125.70	210.00	10562.70	224.20	-209.32	224.20	11.06
25	10672	51.60	127.40	210.00	10582.60	243.28	-223.47	243.28	10.85
26	10703	55.60	129.00	210.00	10600.99	262.88	-238.91	262.88	13.55
27	10734	59.70	129.30	210.00	10617.58	283.18	-255.44	283.18	13.25
28	10766	63.30	129.40	210.00	10632.84	304.93	-273.27	304.93	11.25
29	10797	67.40	128.40	210.00	10645.77	326.85	-290.95	326.85	13.55
30	10828	71.30	128.10	210.00	10656.70	349.63	-308.91	349.63	12.61
31	10859	74.70	127.30	212.00	10665.76	373.08	-327.03	373.08	11.24
32	10890	77.80	126.30	212.00	10673.13	397.19	-345.07	397.19	10.48
33	10904	78.80	125.70	212.00	10675.97	408.28	-353.12	408.28	8.28
34	10921	80.00	124.20	199.00	10679.10	421.98	-362.70	421.98	11.18
35	10952	84.10	122.70	199.00	10683.38	447.59	-379.61	447.59	14.07
36	10983	86.40	123.30	206.00	10685.95	473.50	-396.44	473.50	7.67
37	11014	88.10	123.40	206.00	10687.44	499.36	-413.46	499.36	5.49
38	11046	88.60	123.80	210.00	10688.36	526.00	-431.16	526.00	2.00
39	11077	90.10	123.70	210.00	10688.71	551.78	-448.38	551.78	4.85
40	11108	90.50	123.60	212.00	10688.55	577.58	-465.56	577.58	1.33
41	11139	90.50	123.70	212.00	10688.28	603.39	-482.74	603.39	0.32
42	11170	90.30	123.50	215.00	10688.06	629.21	-499.89	629.21	0.91
43	11201	90.20	122.90	215.00	10687.93	655.14	-516.87	655.14	1.96
44	11232	90.20	123.00	215.00	10687.82	681.16	-533.73	681.16	0.32
45	11263	90.40	122.10	219.00	10687.66	707.29	-550.41	707.29	2.97
46	11294	90.90	121.60	219.00	10687.30	733.62	-566.76	733.62	2.28
47	11325	90.80	121.60	215.00	10686.84	760.02	-583.01	760.02	0.32
48	11356	91.00	121.30	215.00	10686.36	786.46	-599.18	786.46	1.16
49	11386	91.40	120.30	215.00	10685.73	812.22	-614.54	812.22	3.59
50	11434	92.00	115.80	215.00	10684.30	854.56	-637.09	854.56	9.45
51	11465	91.60	114.80	215.00	10683.33	882.57	-650.33	882.57	3.47
52	11496	90.20	114.10	213.00	10682.84	910.78	-663.16	910.78	5.05
53	11527	88.20	113.90	213.00	10683.28	939.10	-675.77	939.10	6.48
54	11558	87.90	113.10	213.00	10684.33	967.51	-688.12	967.51	2.75
55	11589	87.20	112.00	213.00	10685.66	996.12	-700.00	996.12	4.20
56	11620	87.60	111.30	213.00	10687.06	1024.90	-711.42	1024.90	2.60
57	11650	87.60	109.00	213.00	10688.32	1053.04	-721.75	1053.04	7.66
58	11681	88.70	108.20	213.00	10689.32	1082.40	-731.63	1082.40	4.39
59	11712	88.80	106.80	213.00	10690.00	1111.96	-740.95	1111.96	4.53
60	11742	89.10	104.40	213.00	10690.55	1140.85	-749.02	1140.85	8.06



SURVEY REPORT

Customer: **Oasis Petroleum N.A. LLC**
 Well Name: **Chalmers Wade Fed. 5301 44-24 12TXR**
 Rig #: **Nabors B-25**
 API #: **33-053-06012**
 Calculation Method: **Minimum Curvature Calculation**

MWD Operator: **Daniel Ogden/David Unger**
 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	11773	88.60	102.00	213.00	10691.17	1171.02	-756.09	1171.02	7.91
62	11804	88.70	101.30	213.00	10691.90	1201.37	-762.35	1201.37	2.28
63	11835	88.30	99.80	215.00	10692.71	1231.84	-768.03	1231.84	5.01
64	11866	88.10	98.40	215.00	10693.68	1262.43	-772.93	1262.43	4.56
65	11897	87.90	97.00	215.00	10694.77	1293.13	-777.08	1293.13	4.56
66	11928	88.50	95.70	217.00	10695.74	1323.92	-780.50	1323.92	4.62
67	11959	88.70	95.50	219.00	10696.50	1354.77	-783.53	1354.77	0.91
68	11989	88.90	95.60	219.00	10697.13	1384.62	-786.43	1384.62	0.75
69	12020	89.10	95.50	219.00	10697.67	1415.47	-789.43	1415.47	0.72
70	12051	89.30	95.50	219.00	10698.10	1446.32	-792.40	1446.32	0.65
71	12082	90.90	95.80	221.00	10698.05	1477.17	-795.45	1477.17	5.25
72	12113	91.70	95.40	219.00	10697.34	1508.02	-798.47	1508.02	2.89
73	12143	91.90	95.30	221.00	10696.40	1537.87	-801.27	1537.87	0.75
74	12174	90.20	95.90	221.00	10695.83	1568.72	-804.29	1568.72	5.82
75	12205	90.70	95.40	221.00	10695.59	1599.56	-807.35	1599.56	2.28
76	12236	89.10	96.10	222.00	10695.64	1630.41	-810.45	1630.41	5.63
77	12267	90.40	96.10	224.00	10695.78	1661.23	-813.75	1661.23	4.19
78	12298	90.80	96.20	221.00	10695.45	1692.05	-817.07	1692.05	1.33
79	12328	91.40	95.90	222.00	10694.88	1721.88	-820.23	1721.88	2.24
80	12359	90.30	95.20	222.00	10694.42	1752.73	-823.23	1752.73	4.21
81	12391	90.50	94.70	222.00	10694.19	1784.61	-825.99	1784.61	1.68
82	12422	89.10	93.90	224.00	10694.30	1815.52	-828.31	1815.52	5.20
83	12453	89.30	93.60	226.00	10694.74	1846.45	-830.34	1846.45	1.16
84	12484	90.00	93.10	226.00	10694.92	1877.40	-832.15	1877.40	2.77
85	12515	89.40	92.80	224.00	10695.09	1908.36	-833.74	1908.36	2.16
86	12546	87.50	91.90	226.00	10695.93	1939.32	-835.02	1939.32	6.78
87	12577	86.80	92.60	224.00	10697.47	1970.25	-836.23	1970.25	3.19
88	12608	86.90	91.60	226.00	10699.17	2001.19	-837.37	2001.19	3.24
89	12639	87.80	91.90	226.00	10700.60	2032.14	-838.31	2032.14	3.06
90	12701	88.00	91.00	226.00	10702.88	2094.08	-839.88	2094.08	1.49
91	12793	87.50	87.90	230.00	10706.49	2185.99	-839.00	2185.99	3.41
92	12887	89.60	89.40	230.00	10708.87	2279.92	-836.78	2279.92	2.75
93	12979	87.30	87.60	233.00	10711.36	2371.85	-834.38	2371.85	3.17
94	13072	89.00	88.70	230.00	10714.36	2464.75	-831.38	2464.75	2.18
95	13164	88.70	88.70	231.00	10716.20	2556.71	-829.29	2556.71	0.33
96	13257	89.60	90.40	231.00	10717.58	2649.69	-828.56	2649.69	2.07
97	13351	89.50	89.90	235.00	10718.32	2743.68	-828.81	2743.68	0.54
98	13445	88.00	88.30	237.00	10720.37	2837.64	-827.33	2837.64	2.33
99	13539	88.90	90.40	237.00	10722.92	2931.60	-826.27	2931.60	2.43
100	13633	91.50	92.00	237.00	10722.59	3025.57	-828.23	3025.57	3.25
101	13726	92.30	92.00	239.00	10719.50	3118.46	-831.48	3118.46	0.86
102	13820	90.90	91.20	237.00	10716.88	3212.38	-834.10	3212.38	1.72
103	13914	89.20	90.10	240.00	10716.80	3306.37	-835.17	3306.37	2.15
104	14007	86.70	87.90	242.00	10720.12	3399.28	-833.55	3399.28	3.58
105	14101	88.80	89.60	239.00	10723.81	3493.18	-831.50	3493.18	2.87
106	14195	88.00	88.90	242.00	10726.44	3587.13	-830.27	3587.13	1.13
107	14289	91.00	88.80	244.00	10727.26	3681.10	-828.38	3681.10	3.19
108	14383	92.00	88.50	240.00	10724.80	3775.04	-826.17	3775.04	1.11
109	14477	91.30	88.90	244.00	10722.09	3868.98	-824.04	3868.98	0.86
110	14571	90.80	89.70	242.00	10720.37	3962.95	-822.89	3962.95	1.00
111	14664	90.20	91.90	242.00	10719.56	4055.93	-824.19	4055.93	2.45
112	14696	89.40	91.50	239.00	10719.67	4087.92	-825.14	4087.92	2.80
113	14716	89.30	91.50	239.00	10719.90	4107.91	-825.66	4107.91	0.50
114	14728	89.30	91.30	239.00	10720.04	4119.91	-825.95	4119.91	1.67
115	14759	88.30	91.90	240.00	10720.69	4150.89	-826.82	4150.89	3.76
116	14790	87.40	93.00	242.00	10721.86	4181.84	-828.14	4181.84	4.58
117	14822	88.50	93.00	244.00	10723.00	4213.77	-829.82	4213.77	3.44
118	14853	88.90	93.20	240.00	10723.70	4244.72	-831.49	4244.72	1.44
119	14884	89.10	92.90	242.00	10724.24	4275.67	-833.14	4275.67	1.16
120	14915	87.90	92.90	244.00	10725.06	4306.62	-834.71	4306.62	3.87



SURVEY REPORT

Customer: **Oasis Petroleum N.A. LLC**
 Well Name: **Chalmers Wade Fed. 5301 44-24 12TXR**
 Rig #: **Nabors B-25**
 API #: **33-053-06012**
 Calculation Method: **Minimum Curvature Calculation**

MWD Operator: **Daniel Ogden/David Unger**
 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	14946	87.90	93.50	244.00	10726.19	4337.55	-836.44	4337.55	1.93
122	15009	89.50	92.70	244.00	10727.62	4400.44	-839.84	4400.44	2.84
123	15041	89.20	91.90	242.00	10727.98	4432.41	-841.13	4432.41	2.67
124	15072	89.80	91.70	242.00	10728.26	4463.39	-842.10	4463.39	2.04
125	15103	88.10	92.30	242.00	10728.82	4494.37	-843.18	4494.37	5.82
126	15134	88.10	92.50	244.00	10729.85	4525.32	-844.48	4525.32	0.64
127	15166	86.80	93.30	244.00	10731.27	4557.25	-846.10	4557.25	4.77
128	15197	87.30	93.30	246.00	10732.87	4588.16	-847.88	4588.16	1.61
129	15228	87.10	92.60	246.00	10734.38	4619.08	-849.47	4619.08	2.35
130	15260	87.50	93.30	246.00	10735.89	4651.00	-851.12	4651.00	2.52
131	15291	87.00	92.90	248.00	10737.38	4681.92	-852.79	4681.92	2.06
132	15322	86.80	92.10	248.00	10739.06	4712.85	-854.14	4712.85	2.66
133	15354	86.70	92.80	248.00	10740.87	4744.76	-855.51	4744.76	2.21
134	15416	87.50	93.40	248.00	10744.01	4806.59	-858.86	4806.59	1.61
135	15510	87.70	93.50	249.00	10747.94	4900.34	-864.51	4900.34	0.24
136	15604	88.30	91.90	246.00	10751.22	4994.18	-868.93	4994.18	1.82
137	15699	87.20	90.90	249.00	10754.95	5089.07	-871.25	5089.07	1.56
138	15793	87.60	89.70	248.00	10759.22	5182.97	-871.75	5182.97	1.34
139	15887	87.90	88.30	249.00	10762.91	5276.88	-870.11	5276.88	1.52
140	15980	89.10	87.90	248.00	10765.34	5369.80	-867.02	5369.80	1.36
141	16011	89.70	87.70	249.00	10765.67	5400.77	-865.83	5400.77	2.04
142	16043	90.30	87.40	249.00	10765.67	5432.74	-864.47	5432.74	2.10
143	16074	90.30	87.40	249.00	10765.50	5463.71	-863.06	5463.71	0.00
144	16105	90.50	87.20	251.00	10765.29	5494.68	-861.60	5494.68	0.91
145	16137	90.50	87.20	251.00	10765.01	5526.64	-860.04	5526.64	0.00
146	16168	90.00	86.90	251.00	10764.87	5557.60	-858.44	5557.60	1.88
147	16262	90.20	87.00	251.00	10764.71	5651.46	-853.44	5651.46	0.24
148	16356	90.70	87.20	253.00	10763.97	5745.34	-848.68	5745.34	0.57
149	16450	92.00	86.10	253.00	10761.76	5839.15	-843.19	5839.15	1.81
150	16543	91.60	87.40	249.00	10758.84	5931.95	-837.92	5931.95	1.46
151	16637	91.40	89.90	253.00	10756.37	6025.88	-835.71	6025.88	2.67
152	16731	90.70	90.80	251.00	10754.65	6119.87	-836.28	6119.87	1.21
153	16825	90.20	91.10	251.00	10753.91	6213.85	-837.84	6213.85	0.62
154	16919	90.10	91.40	253.00	10753.67	6307.83	-839.89	6307.83	0.34
155	17012	90.50	91.00	255.00	10753.18	6400.80	-841.84	6400.80	0.61
156	17106	91.10	90.80	255.00	10751.87	6494.78	-843.32	6494.78	0.67
157	17200	92.00	91.10	255.00	10749.33	6588.73	-844.88	6588.73	1.01
158	17293	93.20	91.50	251.00	10745.11	6681.61	-846.98	6681.61	1.36
159	17387	91.80	91.90	251.00	10741.01	6775.48	-849.77	6775.48	1.55
160	17480	89.50	91.40	253.00	10739.95	6868.43	-852.45	6868.43	2.53
161	17574	91.20	91.40	253.00	10739.38	6962.40	-854.74	6962.40	1.81
162	17668	90.20	91.90	255.00	10738.23	7056.35	-857.45	7056.35	1.19
163	17762	88.10	90.90	253.00	10739.62	7150.30	-859.75	7150.30	2.47
164	17855	87.30	90.90	251.00	10743.36	7243.22	-861.21	7243.22	0.86
165	17949	87.60	89.20	255.00	10747.54	7337.12	-861.29	7337.12	1.83
166	18043	87.90	89.90	255.00	10751.23	7431.04	-860.55	7431.04	0.81
167	18137	88.40	89.50	255.00	10754.26	7524.99	-860.06	7524.99	0.68
168	18230	91.20	88.60	257.00	10754.59	7617.97	-858.52	7617.97	3.16
169	18323	91.30	88.50	257.00	10752.56	7710.92	-856.16	7710.92	0.15
170	18417	91.00	88.30	257.00	10750.67	7804.86	-853.54	7804.86	0.38
171	18510	90.20	89.00	257.00	10749.70	7897.83	-851.35	7897.83	1.14
172	18604	90.00	88.60	258.00	10749.53	7991.81	-849.38	7991.81	0.48
173	18697	91.40	88.30	258.00	10748.40	8084.76	-846.86	8084.76	1.54
174	18791	88.70	87.80	257.00	10748.32	8178.70	-843.67	8178.70	2.92
175	18885	92.70	88.30	255.00	10747.17	8272.62	-840.47	8272.62	4.29
176	18978	92.60	89.20	255.00	10742.87	8365.50	-838.44	8365.50	0.97
177	19073	92.40	90.30	253.00	10738.72	8460.41	-838.03	8460.41	1.18
178	19167	89.10	90.10	253.00	10737.49	8554.38	-838.36	8554.38	3.52
179	19262	88.70	89.90	255.00	10739.32	8649.37	-838.36	8649.37	0.47
180	19356	91.30	90.90	253.00	10739.32	8743.35	-839.01	8743.35	2.96



SURVEY REPORT

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 Well Name: **Chalmers Wade Fed. 5301 44-24 12TXR**
 Rig #: **Nabors B-25**
 API #: **33-053-06012**
 Calculation Method: **Minimum Curvature Calculation**

MWD Operator: **Daniel Ogden/David Unger**
 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
181	19451	88.60	91.80	255.00	10739.40	8838.32	-841.25	8838.32	3.00
182	19546	90.50	92.10	253.00	10740.15	8933.26	-844.48	8933.26	2.02
183	19641	86.80	91.20	253.00	10742.38	9028.17	-847.22	9028.17	4.01
184	19672	85.60	91.90	253.00	10744.44	9059.09	-848.05	9059.09	4.48
185	19735	85.40	91.30	253.00	10749.38	9121.87	-849.81	9121.87	1.00
186	19766	85.80	91.30	253.00	10751.76	9152.77	-850.51	9152.77	1.29
187	19830	85.50	91.00	253.00	10756.62	9216.58	-851.79	9216.58	0.66
188	19861	85.50	89.80	253.00	10759.05	9247.48	-852.00	9247.48	3.86
189	19922	85.80	89.70	253.00	10763.67	9308.30	-851.74	9308.30	0.52
190	19954	88.10	89.20	255.00	10765.38	9340.25	-851.43	9340.25	7.35
191	19985	88.60	88.20	253.00	10766.27	9371.23	-850.73	9371.23	3.61
192	20016	89.00	88.60	251.00	10766.92	9402.21	-849.86	9402.21	1.82
193	20048	89.60	88.90	253.00	10767.31	9434.20	-849.17	9434.20	2.10
194	20110	90.90	88.90	257.00	10767.04	9496.19	-847.98	9496.19	2.10
195	20204	92.10	87.80	258.00	10764.58	9590.12	-845.27	9590.12	1.73
196	20298	94.40	87.50	255.00	10759.25	9683.88	-841.42	9683.88	2.47
197	20392	91.30	87.70	253.00	10754.58	9777.67	-837.49	9777.67	3.30
198	20485	89.60	89.60	255.00	10753.85	9870.63	-835.30	9870.63	2.74
199	20579	90.00	89.50	257.00	10754.17	9964.63	-834.56	9964.63	0.44
200	20673	88.70	88.70	255.00	10755.24	10058.61	-833.09	10058.61	1.62
201	20767	89.00	89.20	255.00	10757.13	10152.57	-831.36	10152.57	0.62
202	20861	90.90	90.00	257.00	10757.21	10246.57	-830.71	10246.57	2.19
203	20955	91.10	89.00	258.00	10755.57	10340.55	-829.89	10340.55	1.08
204	20985	91.40	89.00	258.00	10754.91	10370.54	-829.36	10370.54	1.00
Projection	21050	91.40	89.00	258.00	10753.33	10435.51	-828.23	10435.51	0.00



Oasis Petroleum North America, LLC

Chalmers Wade Federal 5301 44-24 12TXR

844' FSL & 245' FEL

SE SE Section 24, T153N, R101W

Baker/Three Forks 1st Bench

McKenzie County, North Dakota

BOTTOM HOLE LOCATION:

831.30' south & 10435.26' east of surface location or approx.

12.7' FSL & 323.11' FEL, SE SE Section 20, T153N, R101W

Prepared for:

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

Prepared by:

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WELL EVALUATION

Chalmers Wade Federal 5301 44-24 12TXR



Figure 1: Nabors B25 drilling the Oasis Petroleum Chalmers Wade Federal 5301 44-24 12TXR during July and August 2014, south of Williston in McKenzie County, North Dakota.
(Photos by Hannah Thatcher, wellsite geologist)

INTRODUCTION

The Oasis Petroleum North America, LLC Chalmers Wade Federal 5301 44-24 12TXR [SE SE Section 24, T153N, R101W] is located approximately 30 miles south of Williston, North Dakota. The horizontal well was spud on June 11th, 2014 and represents a continuation of Oasis Petroleum's development of the Three Forks Formation within Baker Field. The Chalmers Wade Federal 5301 44-24 12TXR was planned to drill an approximately 9,985' lateral along a proposed azimuth of 94.3°. The well bore will be enhanced for production by multistage fracture stimulation.

OFFSET CONTROL INFORMATION

The offset information can be found in the structure section of this report. The three offset wells used are located on the same pad, and were the Oasis Chalmers 5301 44-24 3BR [SE SE Sec. 24, T153N, R101W], the Oasis Chalmers 5301 44-24 2TR [SE SE Sec. 24, T153N, R101W], the Oasis Chalmers 5301 44-24 4T2R [SE SE Sec. 24, T153N, R101W].

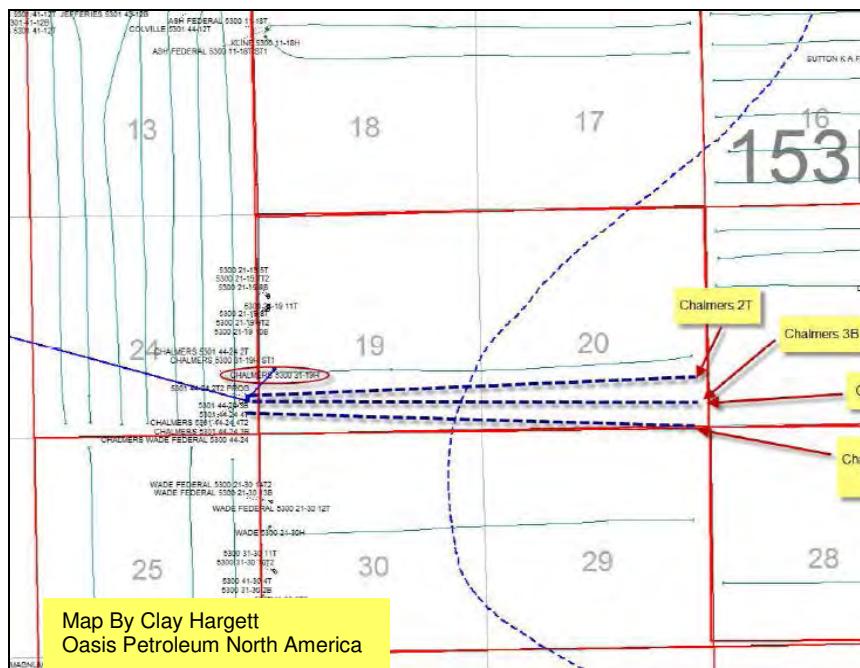


Figure 2: Offsetting control wells in relation to the Chalmers Wade Fed 5301 44-24 12TXR well.

GEOLOGIC EVALUATION

Methods:

Geologic supervision of the Chalmers Wade Federal 5301 44-24 12TXR 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 10,720'MD, 10' intervals from 10,720' MD to 11,500' MD, and 30' intervals from 11,500' MD to 21,050' 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 9,288' TVD (-7,320') 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 40 to 187 units against 10.0 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 9,843' TVD (-7,875'). 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 10,572' TVD (-8,604'), 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 140 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 10,584' TVD (-8,616') with sample returns typically described as black, carbonaceous, *petroliferous* shale with trace amounts of disseminated pyrite (Figure 5). The Middle Bakken, penetrated at 10,599' TVD (-8,631'), consists of a varying thickness and sequence of interbedded siltstone, limestone and silty sandstone. *Trace spotty light brown oil staining* was present along with gas shows as high as 899 TGU. This light brown spotty oil staining was common. Penetrated at 10,649' TVD (-8,681'), the Lower Bakken Shale was described as a black to dark brown carbonaceous shale with trace amounts of disseminated pyrite (Figure 6). Gas shows encountered in the Lower Bakken read as high as 1465u (C1-C4). The Pronghorn was penetrated at 10,649 TVD (-8,681') and is commonly described as a dark to medium gray siltstone with calcite cement.



Figure 5 & 6: Wet cuttings of the Upper Bakken Shale (left), Lower Bakken Shale (right) at 10X.

The Three Forks Formation (Devonian; Kaskaskia Sequence) represents a regressive sequence deposited in a supratidal sabkha environment. The top of the Three Forks was drilled at 10,669' TVD (-8,701') and is comprised of a light to medium gray, cream to off white sucrosic dolomite with trace to occasional amounts of disseminated pyrite and light green shale also with trace amounts of disseminated pyrite (Figure 8). Shows within the Three Forks Formation ranged from 50 to 2805 units in a drilling mud of 9.6-9.9 ppg.



Figure 7 & 8: Wet cuttings of the Three Forks dolomite and shale (left) and Three Forks dolomite and shale (right) at 10X.

Geo-steering:

Kick-off point for the curve was established from the isopach of the “base last salt” marker to the Three Forks “target” in the offset wells. The Chalmers 5301 44-24 4T2R 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. While drilling the curve, the mud motor broke in half leaving the bit and lower part of the motor in the hole. As a result, the curve was plugged and a sidetrack was drilled. This initial sidetrack failed and resulted in the drilling of a successful second sidetrack. The second sidetrack curve was successfully landed within the Three Forks Formation at a depth of 11,451' MD (10,684' TVD) placing the well bore approximately 15'

below the top of the Three Forks Formation. Directional tools were then pulled out of the hole and a string of 7" casing was set (11,418' 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 prospect geologist defined the an initial target zone as an 12' zone that began 9' below the top of the Three Forks Formation and at the claystone member, 21' below the Three Forks Formation. The target zone consisted of an upper dolomite and shale interval reading 100-140 count gamma (A marker). The center of the target interval was comprised of a warmer dolomite with greater amounts of shale reading 120-140 count gamma (B marker). The base of the target zone was characterized by a clean dolomite with trace amounts of shale with gamma readings of 40-100 (C marker). The A-C gamma markers were used for determining depth within the target interval and plotted on the Chalmers Wade Federal 5301 44-24 12TXR dip profile (Figure 10).

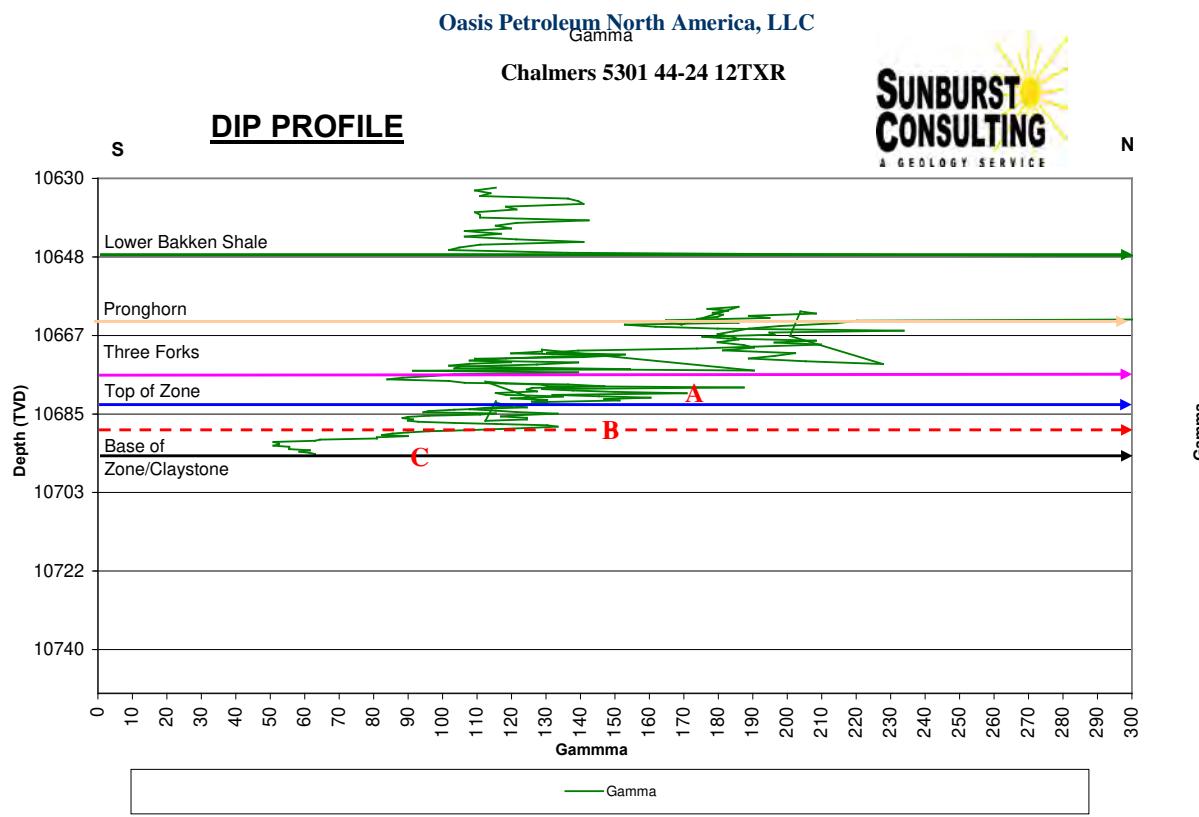


Figure 9: Offset gamma ray profile of the upper Three Forks (0-100 api. scale) *See dip profile (Figure 10) for marker presentation*

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 Wade Federal 5301 44-24 12TXR well. A total depth of 21,050' MD was reached on August 22, 2014 at 13:48 CDT. The target resultant was 100% within the Three Forks Formation. The resulting structure of the Three Forks was a fall in TVD of 69' over 10,150' MD; resulting in an overall down dip of 0.39° as portrayed on the Chalmers Wade Federal 5301 44-24 12TXR dip profile (Figure 10).

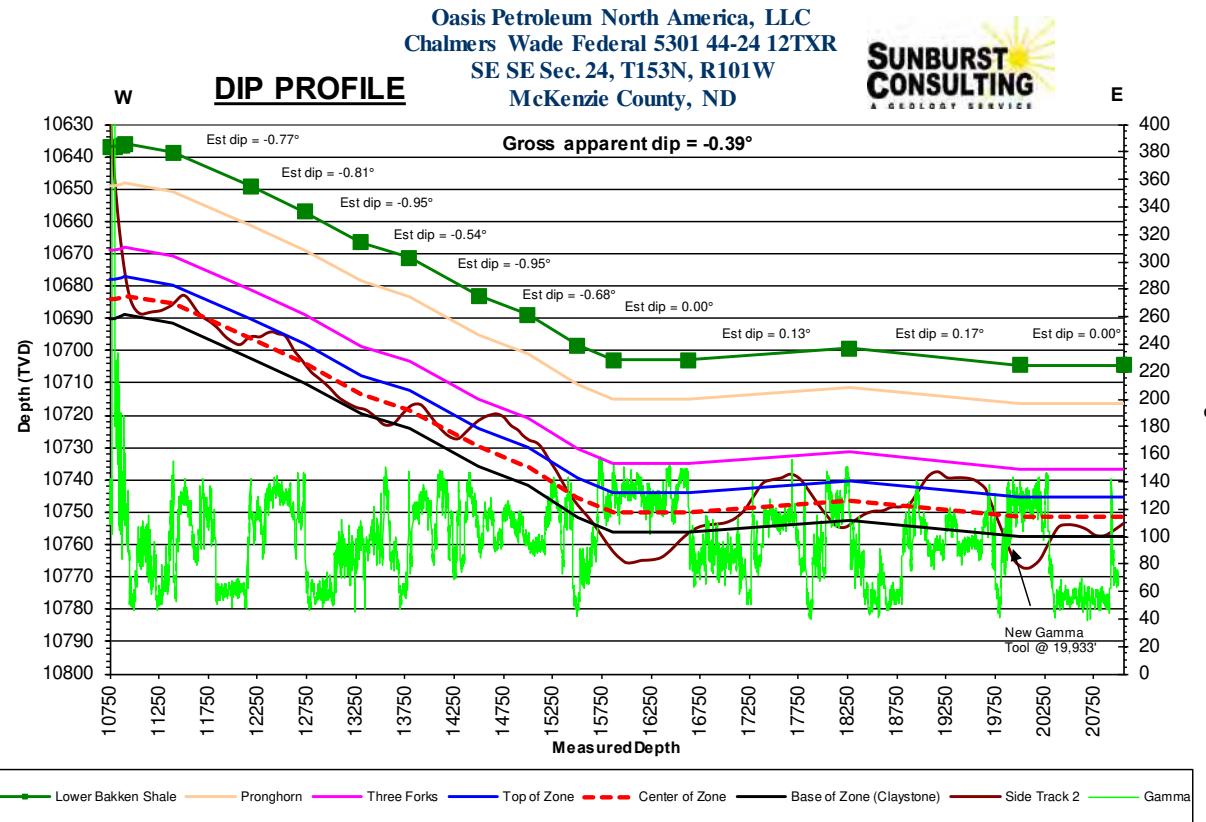


Figure 10: Well profile representing estimated dip value & gamma ray for the Chalmers Wade Federal 5301 44-24 12TXR lateral.

Hydrocarbons:

Gas monitoring and fluid gains were monitored to evaluate the viability of this reservoir during the drilling of the Chalmers Wade Federal 5301 44-24 12TXR 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 60 to 1200 units. Invert drilling fluid was used throughout the drilling of the vertical and curve weighing 10.0-10.8 ppg. The lateral was drilled with saline drilling fluid with a mud weight of 9.6-9.7 ppg. Gas shows ranged up to 2250 units and connection gases were observed up to 3700 units. C1-C4 gas components were observed throughout the course of the lateral. Trip gases were observed as high as 3,671 units. Oil shows were very light throughout the lateral ranging

from 0-3% in sample. When present it displayed a *light brown spotty oil stain that yielded a slow to moderate streaming to diffuse light green cut fluorescence.*

SUMMARY

The Nabors B25 drilling rig successfully drilled a 9,599' two-section horizontal well bore within the Three Forks Formation at the Chalmers Wade Federal 5301 44-24 12TXR. A mud program consisting of diesel invert (10.0–10.8 ppg), during the vertical, first sidetrack curve, and second sidetrack curve build sections, and saline based mud (9.6-9.70 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 Three Forks Formation target for 81% of the lateral. Samples from the target consisted of a light to medium gray, cream to off white dolomite with trace to occasional amounts of disseminated pyrite and light green shale also with trace amounts of disseminated pyrite. Intercrystalline 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 Wade Federal 5301 44-24 12TXR 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,

Daniel Haynes
Sunburst Consulting, Inc.
August 22, 2014

WELL DATA SUMMARY

OPERATOR: **Oasis Petroleum North America, LLC**

ADDRESS: 1001 Fannin Street, Suite 1500
Houston, Texas 77002

WELL NAME: **Chalmers Wade Federal 5301 44-24 12TXR**

API #: 33-053-06012-00-00

WELL FILE #: 28601

SURFACE LOCATION: 844' FSL & 245' FEL
SE SE Section 24, T153N, R101W

FIELD/ OBJECTIVE: Baker/Three Forks 1st Bench

COUNTY, STATE McKenzie County, North Dakota

BASIN: Williston

WELL TYPE: Three Forks Horizontal

ELEVATION: GL: 1,943'
KB: 1,968'

SPUD/ RE-ENTRY DATE: June 11, 2014

BOTTOM HOLE LOCATION: 831.30' south & 10435.26' east of surface location or approx.
12.7' FSL & 323.11' FEL, SE SE Section 20, T153N, R101W

CLOSURE COORDINATES: Closure Azimuth: 94.55°
Closure Distance: 10,468.32'

TOTAL DEPTH / DATE: 21,050' on August 22, 2014
81% within target interval

TOTAL DRILLING DAYS: 30 days

CONTRACTOR: Nabors B25

<u>PUMPS:</u>	H &H Triplex (stroke length - 12")
<u>TOOLPUSHERS:</u>	Casey Pippenger, Bruce Walter
<u>FIELD SUPERVISORS:</u>	Mike Crow, Travis Handran
<u>CHEMICAL COMPANY:</u>	Fluid Control
<u>MUD ENGINEER:</u>	Keith McCarty, Warren Carlson
<u>MUD TYPE:</u>	Fresh water in surface hole Diesel invert in curve; Salt water in lateral
<u>MUD LOSSES:</u>	Invert Mud: 1,251 bbls., Salt Water: Not tracked
<u>PROSPECT GEOLOGIST:</u>	Clay Hargett
<u>WELLSITE GEOLOGISTS:</u>	Hannah Thatcher, Daniel Haynes
<u>GEOSTEERING SYSTEM:</u>	Sunburst Digital Wellsite Geological System
<u>ROCK SAMPLING:</u>	30' from 8,200' - 10,720' 10' from 10,720' -11,500' 30' from 11,500' - 21,050' (TD)
<u>SAMPLE EXAMINATION:</u>	trinocular microscope & fluoroscope
<u>SAMPLE CUTS:</u>	Trichloroethylene
<u>GAS DETECTION:</u>	MSI (Mudlogging Systems, Inc.) TGC - total gas with chromatograph Serial Number(s): ML-382
<u>ELECTRIC LOGS:</u>	na
<u>DRILL STEM TESTS:</u>	na
<u>DIRECTIONAL DRILLERS:</u>	RPM Mike Crow, Travis Handran, Will Wright
<u>MWD:</u>	Ryan Directional Service Inc. Daniel Ogden, Dave Unger

CASING: Surface: 13 3/4" 55# J-55 set to 2,095'

Intermediate: 9 5/8" 40# HCL-80 set to 6,035'

Intermediate: 7" 32# HCP-110 set to 11,418'

SAFETY/ H₂S MONITORING: Oilind Safety

KEY OFFSET WELLS: **Oasis Petroleum North America**

Chalmers 5301 44-24 3BR

SE SE Section 24, T153N, R101W

McKenzie Co., ND

KB: 1,968'

Oasis Petroleum North America

Chalmers 5301 44-24 2TR

SE SE Section 24, T153N, R101W

McKenzie Co., ND

KB: 1,968'

Oasis Petroleum North America

Chalmers 5301 44-24 4T2R

SE SE Section 24, T153N, R101W

McKenzie Co., ND

KB: 1,968'

WELL LOCATION PLATE

OASIS PETROLEUM NORTH AMERICA,
1001 FANNIN, SUITE 1600, HOUSTON, TX
"CHALMERS WADE" FEDERAL #301-44-26
844 FEET FROM SOUTH LINE AND 245 FEET FROM

SECTION 24, T153N, R101W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

STAKED ON 9/3/13
CONTROL POINTING WITH AN ELEVATION OF 2014.2'
THIS SURVEY AND PLAT IS BEING PROVIDED AT THE
REQUEST OF ERIC BATES OR 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. KASEYMAN LS-3880



THIS DOCUMENT WAS ORIGINALLY ISSUED
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Fax (406) 433-5616
www.interstateeng.com

OASIS PETROLEUM NORTH AMERICA, L.L.C.
WELL LOCATION PLAT
SECTION 24, T153N, R107W
MCKENZIE COUNTY, NORTH DAKOTA

Number Ref	Date	By	Description
REV 1	1/28/04	JRC	HARDWELL TO PWD
REV 2	3/25/04	JRC	CHANGED NAME, ADDED WELL

SECTION BREAKDOWN

OASIS PETROLEUM NORTH AMERICA, LLC

1001 FANNIN, SUITE 1500, HOUSTON, TX 77002

CHALMERS WADE FEDERAL 501 44-24 12TR

B4 FEET FROM SOUTH LINE AND 245 FEET FROM EAST LINE
SECTION 24, T15SN, R101W, & SECTION 19A 20, T15SN, R100W, 5p.m., MCKENZIE COUNTY, NORTH DAKOTA

ALL AZIMUTHS ARE BASED ON G.P.S.
OBSERVATIONS. THE ORIGINAL SURVEY OF THIS
AREA FOR THE GENERAL LAND OFFICE (G.L.O.)
WAS 1891. THE CORNERS FOUND ARE AS
INDICATED AND ALL OTHERS ARE COMPUTED FROM
THOSE CORNERS FOUND AND BASED ON G.L.O.
DATA. THE MAPPING ANGLE FOR THIS AREA IS
APPROXIMATELY -003.

RECORDED BY DARYL D.
KASEMAN
LS-3880



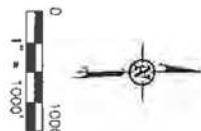
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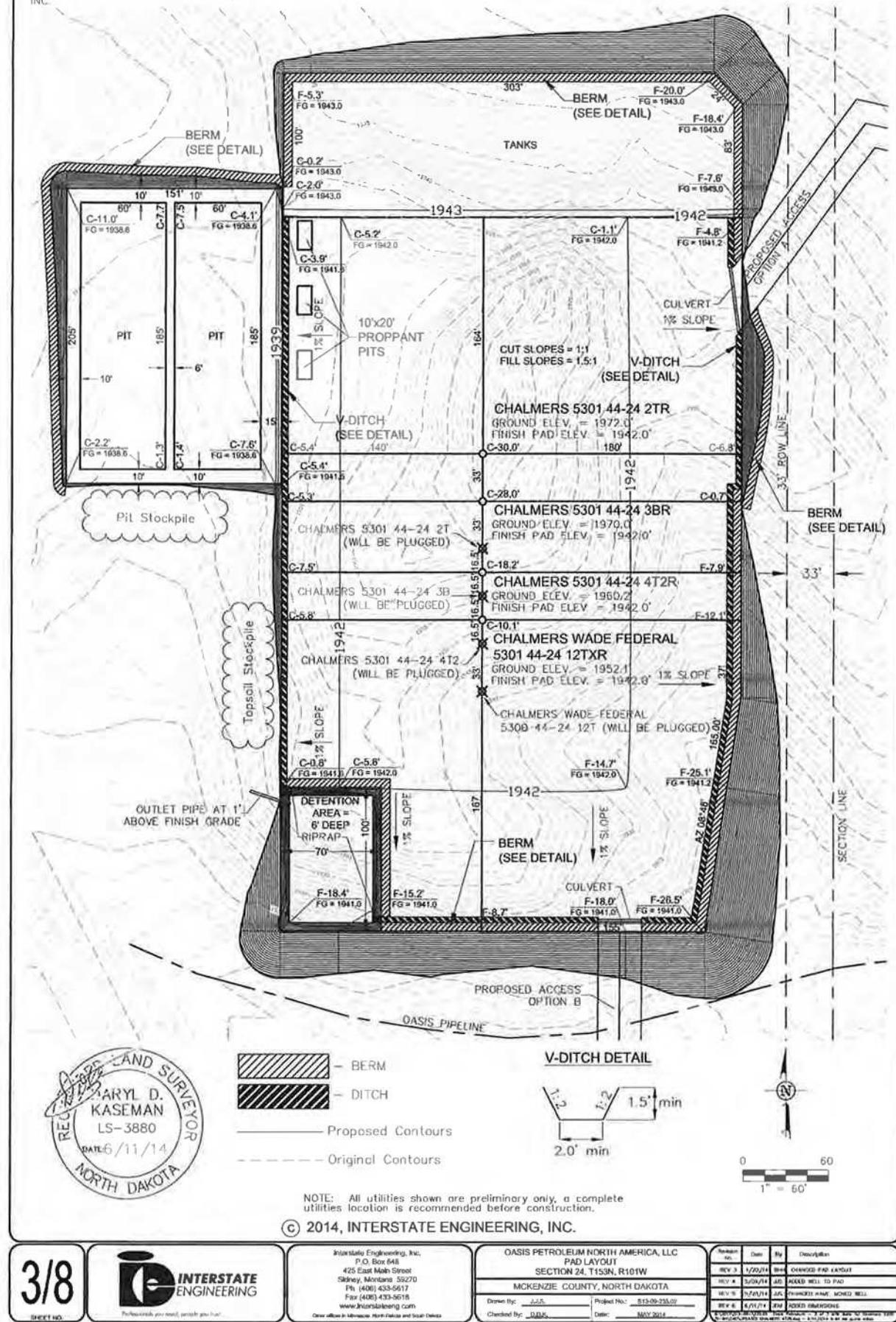
OASIS PETROLEUM NORTH AMERICA, LLC
SECTION BREAKDOWN
SECTION 24, T15SN, R101W, & SECTIONS 19A 20, T15SN, R100W
MCKENZIE COUNTY, NORTH DAKOTA

Owner By:	J.D.S.	Product No.:	111-01-02104
Checked By:	D.R.E.	Date:	MAY 2014

Reorder No.	Date	By	Description
REV 1	5/20/14	ADS	CHANGED WELL NAME WELL
REV 2	5/26/14	ADS	CHANGED NAME, VENUS WELL

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PAD LAYOUT
OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"CHALMERS 5301 44-24 4T2R"
877 FEET FROM SOUTH LINE AND 245 FEET FROM EAST LINE
SECTION 24, T153N, R101W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



OASIS PETROLEUM NORTH AMERICA, LLC
CHALMERS 5301 44-24 4T2R
877' FSL/245' FEL
QUAD LOCATION MAP
SECTION 24, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA

CHALMERS 5301
44-24 4T2R

PROPOSED
ACCESS ROAD
OPTION A

PROPOSED
ACCESS ROAD
OPTION B

1902

58.19

M I S S | O U R F

20



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

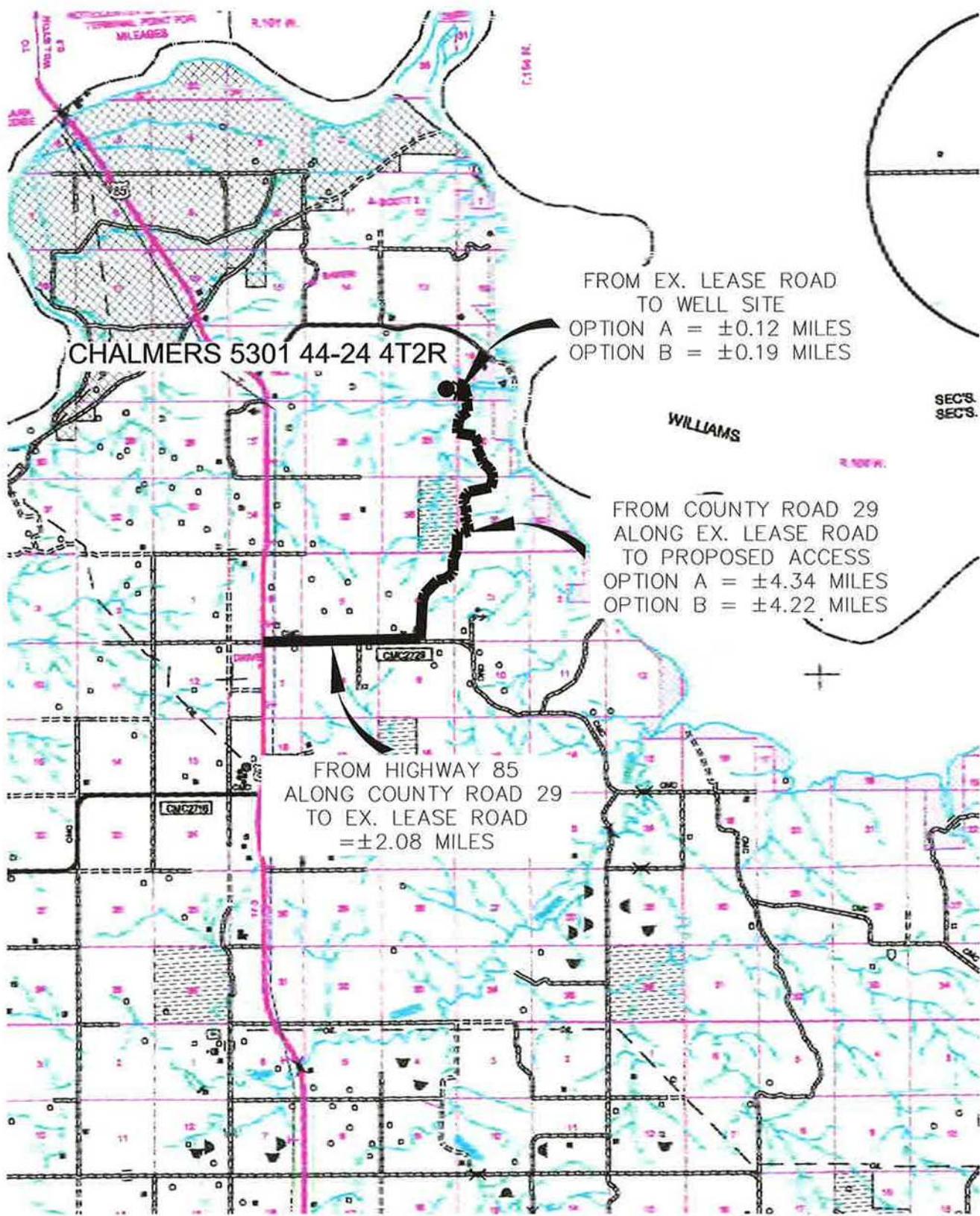
Revision No.	Date	By	Description
REV 2	12/5/13	JJS	CHANGED PAD LAYOUT
REV 3	1/20/14	BHM	CHANGED PAD LAYOUT
REV 4	5/19/14	JJS	ADDED WELL TO PAD

COUNTY ROAD MAP

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

"CHALMERS 5301 44-24 4T2R"

877 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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SCALE: 1" = 2 MILE

6/8

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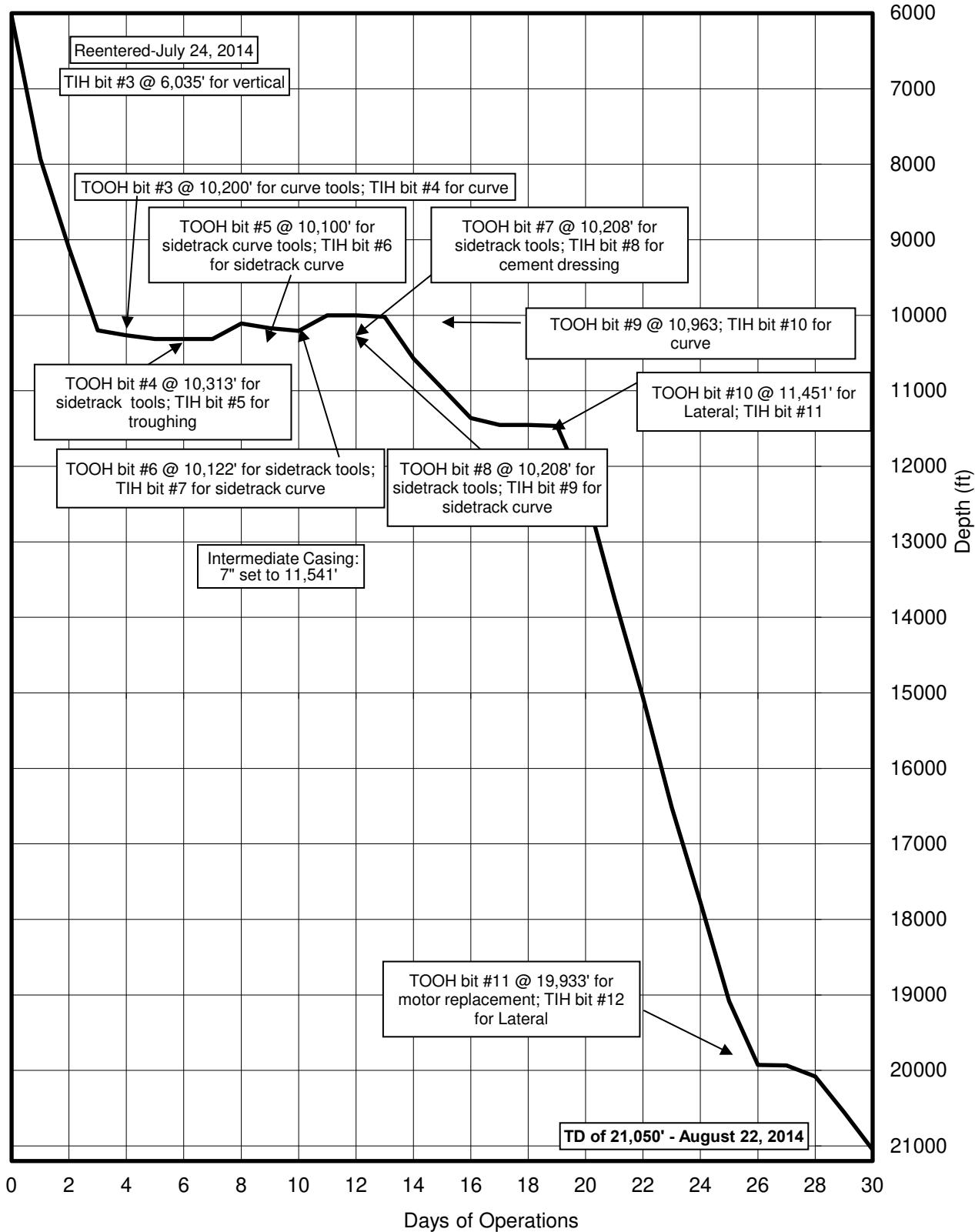
Interstate Engineering, Inc.
P.O. Box 648
425 East Main Street
Sidney, Montana 59270
Ph (406) 433-5617

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

Revision No.	Date	By	Description
REV. 2	12/9/13	JJS	CHANGED PAD LAYOUT
REV. 3	1/20/14	BHR	CHANGED PAD LAYOUT
REV. 4	3/09/14	JJS	ADDED WELL TO PAD

TIME VS. DEPTH

Oasis Petroleum North America, LLC
 Chalmers Wade Federal 5301 44-24 12TXR



MORNING REPORT SUMMARY

Day	Date 2014	Depth (0600 Hrs)	24 Hr Footage	Bit #	WOB (Klbs) RT	RPM (RT)	WOB (Klbs) MM	RPM (MM)	SPM			Formation
									PP	1	2	
0	7/24	6,035'	0	3	25	50	10	253	3300	75	75	517 Skid from Lundin 41X-14D to 41X-14G, prepare to drill out
1	7/25	7,926'	1891	3	25	50	10	253	3300	75	75	517 Drill F/6035 to 7397, service rig, troubleshoot oiler pump, drill F/7397 to 7,926
2	7/26	9,107'	1181	3	25	50	-	253	3300	75	75	517 Drill F/8340 to 8547, rig service, drill F/8547 to 9107
3	7/27	10,200'	1093	3	15	0	25	253	3111	75	75	517 Drill F/9107 to 9666, service rig, drill F/9666 to 10200, TOOH Lodgepole
4	7/28	10,267'	67	3	60	40	25	253	3300	75	75	517 TOOH, change rotating head/rubber, L/D BHA, P/U BHA, cased hole logs CBL, TIH, change rotating head/rubber, install rotating head, TOOH, change rotating head, remove rotating head, install another rotating head, service rig, drill F/10200 to 10267
5	7/29	10,313'	46	3	-	15	30	140	3111	75	75	517 Drill F/10267 to 10313, TOOH, pull 6 stands/trouble shoot, circulate and condition, pump dry job, TOOH, change rotating head/rubber, pull rotating head, install trip nipple, TOOH, L/D BHA, waiting on orders, bit and bottom of motor twisted off in hole, side track curve
6	7/30	10,313'	0	4	20	18	30	140	3300	75	75	517 DrillsBOP etc, functioned HCR, TIH, change rotating head/rubber, remove trip nipple, TOOH, change rotating head, pull rotating head, TIH, D/P, inspect DP, P/U DP, TIH, change rotating head/rubber, remove trip nipple, TOOH, L/D BHA, waiting on orders, bit and bottom of pump plug, cement plugs, rig up to run casing, rig down cementers, TOOH pull 6 stands, circulate and condition, TOOH
7	7/31	10,313'	0	4	20	18	30	140	3300	75	75	517 Rig up cementers, pump plug, cement plugs, rig up to run casing, rig down cementers, TOOH pull 6 stands, circulate and condition, TOOH, Lay down BHA/cement tubing. Working as directed by operator/clean up rig floor, Service top drive/function blinds, Pick up BHA, reaming/washing (tagged cement @#9710), circulate and condition, TOOH
8	8/1	10,110'	-203	5	20	18	30	140	3300	75	75	517 TOOH, L/D BHA, P/U BHA, TIH, service top drive, change out back up dye blocks, TIH, change rotating head/rubber, remove trip nipple, install rotating head, TIH, reaming/washing/through for side track, side track time drill F/10099 to 10110
9	8/2	10,172'	62	6/7	15	0	25	253	3111	75	75	517 Drill F/10110 to 10122, circulate and condition, pump dry job, TOOH, change rotating head/rubber, pull rotating head/install trip nipple, TOOH, L/D BHA, cut drilling line, TIH, tool orientation/pump up survey, match to closest survey, orientate to 125, drill F/10122 to 10172
10	8/3	10,208'	36	7	15	0	25	253	3111	75	75	517 Drill F/10172 to 10208, circulate and condition, pump dry job, TOOH, change rotating head/rubber, remove rotating head, install trip nipple, TOOH, L/D BHA, service rig, replace top drive joy stick, P/U DP 20 joint of 2 7/8 tubing, TIH, change rotating head/rubber, remove trip nipple, install rotating head, circulate and condition, waiting on new batch of cement

MORNING REPORT SUMMARY

Day	Date 2014	Depth (0600 Hrs)	24 Hr Footage	Bit #	WOB (Klbs RT)	RPM (RT)	WOB (Klbs MM)	RPM (MM)	SPM		GPM	24 Hr Activity Summary		
									PP	SPM 1	SPM 2			
11	8/4	10,000'	-208	7	0	10	60	118	3000	75	75	517	Circulate and condition, wait on third party, R/U pumping KOP plug, plug back, TOOH, pull 9 stands to get above plug, circulate and condition, pump dry job, TOOH, change rotating head/rubber, remove rotating head, install trip nipple, L/D DP and tools. P/U BHA, TIH, change rotating head/rubber, remove trip nipple, TIH, reaming/washing start washing down @ 9323 stand #86	Lodgepole
12	8/5	10,002'	2	8	15	0	25	253	3111	75	75	517	Drill cement F/9700 to 10000, circulate and condition, pump pill, TOOH, install/remove wear bushing, remove rotating head, install trip nipple, TOOH, L/D BHA, P/U BHA, TIH, change rotating head/rubber, drill troughing F/9950 to 10000, time drilling F/10000 to 10002	Lodgepole
13	8/6	10,022'	20	8	15	0	25	253	3111	75	75	517	Slide drilling inch drilling F/10003 to 10016, service rig, drill F/10016 to 10022, circulate and condition, change rotating head/rubber, TOOH, L/D BHA, P/U BHA, TIH	Lodgepole
14	8/7	10,571'	549	8	15	0	25	253	3111	75	75	517	TIH, remove trip nipple, install rotating head, TIH, slide drill tag bottom, drill F/10022 to 10203, service rig, drill F/10203 to 10571	Lodgepole
15	8/8	10,963'	392	9	20	25	45	145	2550	75	75	517	Drill F/10576 to 10875, service top drive, drill F/10875 to 10963, circulate and condition, Service rig troub shoot B DWS called electrician, Change rotating head/rubber, TOOH, Lay down BHA, Pick up BHA, TIH	Lodgepole
16	8/9	11,360'	397	9	20	25	3400	147	2650	65	-	250	TIH, cut drilling line, TIH, remove trip nipple, install rotating head, TIH, reaming/washing, drill F/10963 to 11047, service rig, drill F/11047 to 11360	Three Forks
17	8/10	11,451'	91	10	40	25	65	147	2700	-	65	250	Drill 11,360' to 11451, Circulate and condition, Short trip, Circulate and condition pump pill, Lay down drill pipe, Service rig blown hose TM80, Lay down drill pipe, Lay down BHA, Install/remove wear bushing, Working as directed by operator clean rig floor, Rig up/down to run casing HPJSM	Three Forks
18	8/11	11,451'	0	10	25	25	40	147	3210	65	-	250	Run casing, service rig, run casing, circulate and condition, R/D casers, R/U cementers, primary cementing, working as directed by operator LD LJ rig down floor, install/remove wear bushing, install pack off, working as directed by operator change stabbing guide, quill, etc	Three Forks
19	8/12	11,467'	16	10	25	25	40	147	3210	65	-	250	P/U DP, change rotating head/rubber, pull trip nipple, install rotating head, P/U DP, reaming/washing 11060 to 11330, drilling cement/float @ 114460 shoe at 11417, FIT test, drill F/11460 to 11467	Three Forks
20	8/13	12,337'	870	11	40	15	50	148	3000	-	65	251	Drill F/11467 to 11520, service rig, HMI screens not responding, trouble shoot, downtime instrumentation (HMI screens), drill F/11520 to 12337	Three Forks
21	8/14	13,740'	1403	11	35	40	80	148	3000	75	75	517	Drill F/12301 to 13054, service rig, grease crown and blocks/rig watch, drill F/13054 to 13510, service rig, drill F/13510 to 13740	Three Forks
22	8/15	15,060'	1320	11	15	40	25	253	3111	75	75	517	Drill F/13791 to 14604, service rig, drill F/14604 to 14753, Slide drill F/14753 to 14780, Drill F/14780 to 15060	Three Forks

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	24 Hr Activity Summary		Formation
												GPM		
23	8/16	16,515'	1455	11	15	40	25	253	3111	75	75	517	Drill F/15043 to 15701, service rig, drill F/15701 to 16515	Three Forks
24	8/17	17,770'	1255	11	15	30	25	253	3111	75	75	517	Drill F/16452 to 17202, service rig, drill F/17202 to 17770	Three Forks
25	8/18	19,083'	1313	11	15	30	25	253	3111	75	75	517	Drill F/17764 to 18202, rig service, drill F/18202 to 19083	Three Forks
26	8/19	19,926'	843	11	40	30	86	148	3600	75	75	517	Drill F/19075 to 19628, rig service, drill F/19628 to 19926	Three Forks
27	8/20	19,933'	7	11	40	30	50	253	3370	75	75	517	Drill F/19926 to 19933, TOOH, circulate and condition, pump high vis pill, change rotating head/rubber, TOOH, service rig, change TM-80 dies, TOOH, L/D BHA, P/U BHA, install/remove wear bushing, cut drilling line, test BOPS, install/remove wear bushing, TH	Three Forks
28	8/21	20,080'	147	12	38	30	60	148	3600	-	66	251	TOOH 10 stands, change rotating head/rubber, directional surveys trouble shoot MWD tool failure, TOOH, circulate and condition mix, pump high vis pill, TOOH, directional work change out tool check scribe, TH, Drill F/ 19933 to 20080	Three Forks
29	8/22	20,551'	471	12	35	80	45	253	2950	75	75	517	Circulate and condition, relog gamma, drill F/19933 to 20309, service rig, drill F/20309 to 20551	Three Forks
30	8/23	21,050'	499	12	35	80	45	253	2950	75	75	517	Drill from 20,551'-21,050'	Three Forks

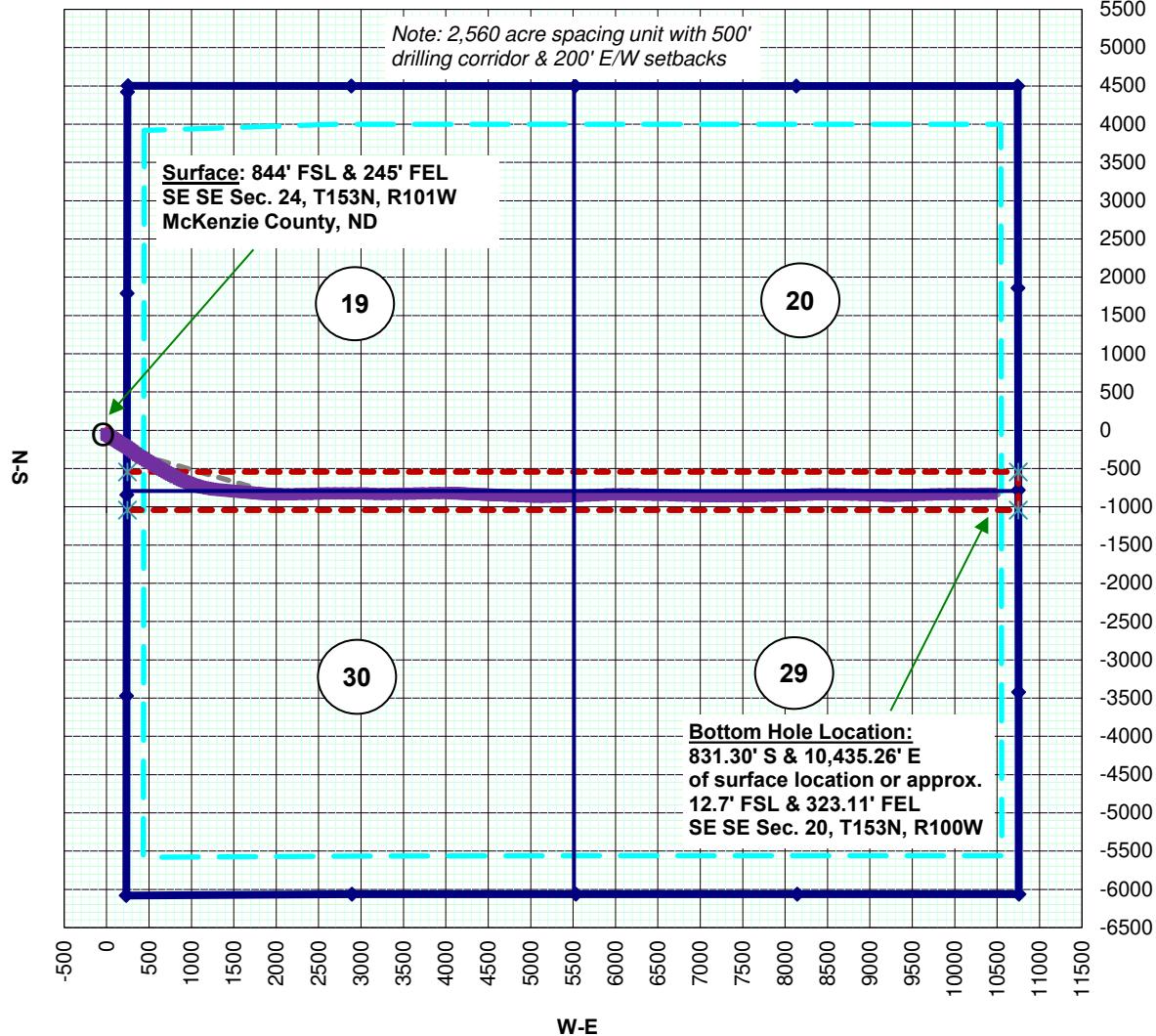
DAILY MUD SUMMARY

BOTTOM HOLE ASSEMBLY RECORD

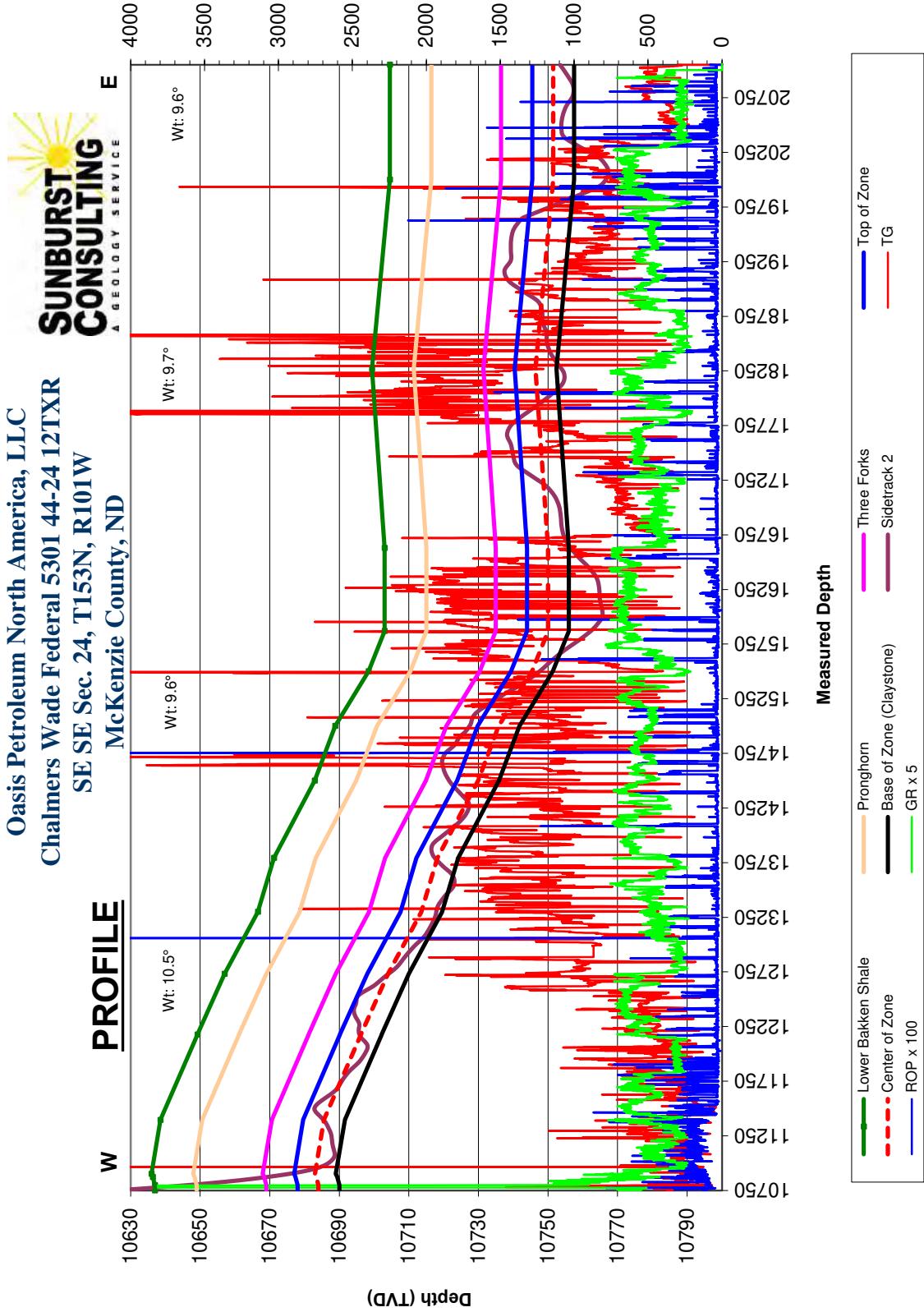
Bit #	Bit Data							Reason For Removal			
	Size (in.)	Type	Make	Model	Depth In	Depth Out	Footage	Hours	Σ hrs	Vert. Dev.	
1	17 1/2	PDC	NOV	SDS	0'	2,095'	2,095'	14	14	Surface	TD surface
2	12 1/4	PDC	NOV	E1038	2,095'	6,035'	3,940'	11.5	25.5	Vertical	TD Intermediate surface
3	8 3/4	PDC	NOV	A197097	6,035'	10,200'	4,165'	73	98.5	Vertical	TD Vertical
4	8 3/4	PDC	Security	MMD55M	10,200'	10,313'	113'	8.5	107	Curve	Broken mud motor
5	8 3/4	PDC	NOV	RH30AP	10,313'	10,313'	0'	0	107	Sidetrack	ST Failure
6	8 3/4	PDC	NOV	HYOALOG	10,100'	10,122'	22'	15	122	Sidetrack	Cement Failure
7	8 3/4	PDC	Security	MMD55M	10,122'	10,208'	86'	6.5	128.5	Sidetrack	Sidetrack
8	8 3/4	PDC	NOV	RH30AP	10,208'	10,208'	0'	0	128.5	Sidetrack	Dress cement
9	8 3/4	PDC	Security	MMD55M	10,000'	10,963'	963'	33	161.5	Curve	Finish sidetrack
10	8 3/4	PDC	Reed	E1202-A11B	10,963'	11,451'	488'	21.5	183	Curve	TD Curve
11	6	PDC	Security	MMD64D	11,451'	19,933'	8,482'	164	347	Lateral	Replacement
12	6	PDC	Security	MMD64D	19,933'	21,050'	1,117'	23.5	370.5	Lateral	TD Well

PLAN VIEW

**Oasis Petroleum North America, LLC
Chalmers Wade Federal 5301 44-24 12TXR**



Oasis Petroleum North America, LLC
Chalmers Wade Federal 5301 44-24 12TXR
 SE SE Sec. 24, T153N, R101W
 McKenzie County, ND



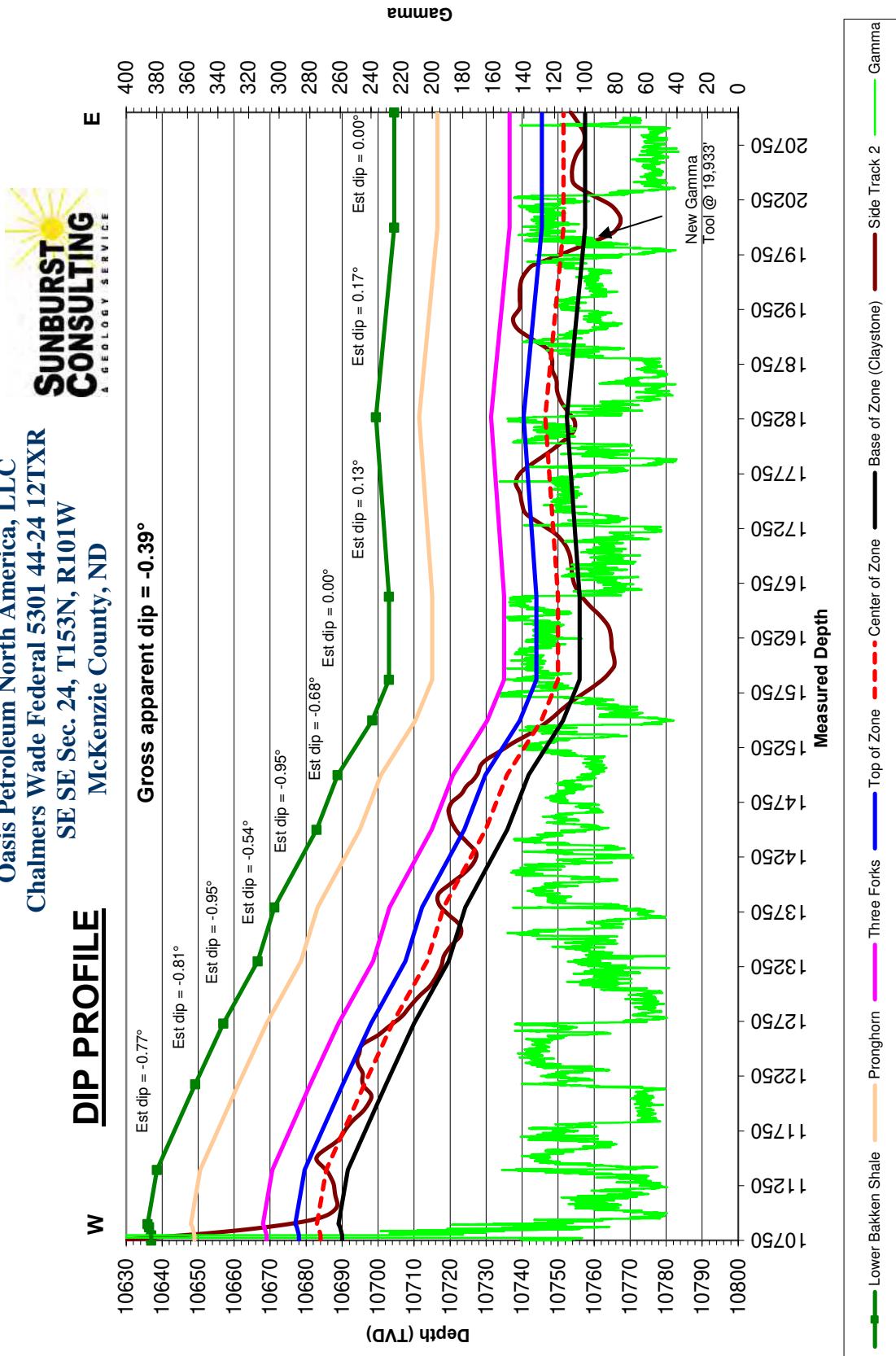
FORMATION MARKERS & DIP ESTIMATES

Oasis Petroleum North America, LLC - Chalmers Wade Federal 5301 44-24 12TXR

Dip Change Points	MD	TVD	TVD diff.	MD diff.	Dip	Dipping up/down	Type of Marker
Marker							
Top of Target	10,900'	10,636.00					Gamma
Center of Target	11,395'	10,638.60	2.60	495.00	-0.30	Down	Gamma
Center of Target	12,177'	10,649.20	10.60	782.00	-0.78	Down	Gamma
Top of Target	12,731'	10,657.00	7.80	554.00	-0.81	Down	Gamma
Center of Target	13,300'	10,666.60	9.60	569.00	-0.97	Down	Gamma
Base of Target	13,792'	10,671.20	4.60	492.00	-0.54	Down	Gamma
Center of Target	14,500'	10,682.90	11.70	708.00	-0.95	Down	Gamma
Nondescript Gamma Marker	15,000'	10,688.80	5.90	500.00	-0.68	Down	Gamma
Top of Target	15,500'	10,698.40	9.60	500.00	-1.10	Down	Gamma
Base of Target	15,870'	10,703.00	4.60	370.00	-0.71	Down	Gamma
Base of Target	16,629'	10,703.00	0.00	759.00	0.00	Flat	Gamma
Base of Target	18,268'	10,699.40	-3.60	1639.00	0.13	Up	Gamma
Base of Target	20,000'	10,704.50	5.10	1732.00	-0.17	Down	Gamma
	21,050'	10,704.50	0.00	1050.00	0.00	Flat	Gamma
Gross Dip							
Initial Target Contact	10,900'	10,636.00					
Projected Final Target Contact	21,050'	10,704.50	68.50	10150.00	-0.39	Down	Projection

Oasis Petroleum North America, LLC
 Chalmers Wade Federal 5301 44-24 12TXR
 SE SE Sec. 24, T153N, R101W
 McKenzie County, ND

DIP PROFILE



SUNBURST CONSULTING, INC.

<

>

Operator:	Oasis Petroleum North America, LLC	
Well :	Chalmers Wade Federal 5301 44-24 12TXR	
County:	McKenzie	State: ND
QQ:	SE SE	Section: 24
Township:	153	N/S: N
Range:	101	E/W: W
Footages:	844	FN/SL: S
	245	FE/WL: E

Kick-off:	7/29/2014
Finish:	7/29/2014
Directional Supervision:	RPM
Date:	8/27/2014
Time:	14:58
F9 to re-calculate	
Proposed dir:	
	94.3

Minimum Curvature Method (SPE-3362)

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

No.	MD	INC	TRUE				SECT	DLS/ 100
			AZM	TVD	N-S	E-W		
Tie	2031.00	0.20	201.50	2030.92	-1.95	8.64	8.64	0.52
1	2098.00	0.30	145.20	2097.92	-2.20	8.70	8.84	0.38
2	2191.00	0.50	163.10	2190.92	-2.79	8.95	9.14	0.25
3	2284.00	0.80	169.50	2283.91	-3.82	9.19	9.45	0.33
4	2377.00	1.20	163.90	2376.90	-5.39	9.58	9.96	0.44
5	2471.00	1.70	171.50	2470.87	-7.72	10.06	10.61	0.57
6	2564.00	1.20	154.40	2563.84	-9.96	10.68	11.40	0.71
7	2657.00	1.40	145.20	2656.81	-11.77	11.75	12.60	0.31
8	2751.00	0.20	292.50	2750.80	-12.65	12.26	13.17	1.67
9	2844.00	0.60	314.90	2843.80	-12.24	11.76	12.65	0.45
10	2937.00	0.60	327.50	2936.80	-11.49	11.15	11.98	0.14
11	3030.00	0.50	101.50	3029.80	-11.16	11.29	12.10	1.09
12	3124.00	0.70	107.60	3123.79	-11.42	12.24	13.06	0.22
13	3217.00	0.90	118.00	3216.78	-11.93	13.43	14.28	0.26
14	3310.00	0.30	177.30	3309.78	-12.52	14.08	14.98	0.85
15	3404.00	0.40	217.40	3403.77	-13.02	13.89	14.83	0.27
16	3497.00	0.60	223.30	3496.77	-13.64	13.36	14.35	0.22
17	3590.00	0.60	237.80	3589.77	-14.25	12.62	13.65	0.16
18	3683.00	0.80	228.30	3682.76	-14.94	11.72	12.81	0.25
19	3777.00	1.10	235.00	3776.75	-15.89	10.49	11.65	0.34
20	3870.00	1.10	229.30	3869.73	-16.99	9.08	10.33	0.12
21	3963.00	1.10	237.80	3962.71	-18.05	7.65	8.98	0.18
22	4056.00	1.40	237.80	4055.69	-19.13	5.93	7.35	0.32
23	4150.00	0.70	226.70	4149.67	-20.13	4.54	6.04	0.77
24	4243.00	0.60	210.40	4242.67	-20.94	3.89	5.44	0.22
25	4336.00	0.80	219.50	4335.66	-21.86	3.23	4.86	0.25
26	4429.00	1.00	227.80	4428.65	-22.91	2.21	3.92	0.26
27	4523.00	1.00	232.60	4522.63	-23.96	0.95	2.75	0.09
28	4616.00	0.00	215.50	4615.63	-24.45	0.31	2.14	1.08
29	4709.00	0.20	136.30	4708.63	-24.57	0.42	2.26	0.22
30	4803.00	0.20	172.20	4802.63	-24.85	0.56	2.42	0.13
31	4896.00	0.40	193.20	4895.63	-25.33	0.50	2.40	0.24
32	4989.00	0.50	210.60	4988.62	-25.99	0.22	2.17	0.18
33	5082.00	0.70	198.20	5081.62	-26.88	-0.16	1.85	0.26
34	5176.00	1.00	189.90	5175.61	-28.24	-0.48	1.64	0.34

SUNBURST CONSULTING, INC.

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Operator:	Oasis Petroleum North America, LLC	
Well :	Chalmers Wade Federal 5301 44-24 12TXR	
County:	McKenzie	State: ND
QQ:	SE SE	Section: 24
Township:	153	N/S: N
Range:	101	E/W: W
Footages:	844	FN/SL: S
	245	FE/WL: E

Kick-off:	7/29/2014
Finish:	7/29/2014
Directional Supervision:	RPM
Date:	8/27/2014
Time:	14:58
F9 to re-calculate	

Minimum Curvature Method (SPE-3362)

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

No.	MD	INC	TRUE				SECT	DLS/ 100
			AZM	TVD	N-S	E-W		
35	5269.00	1.10	182.90	5268.59	-29.93	-0.67	1.58	0.17
36	5362.00	1.50	186.40	5361.57	-32.03	-0.85	1.56	0.44
37	5456.00	1.00	183.20	5455.55	-34.07	-1.03	1.53	0.54
38	5549.00	1.00	176.40	5548.53	-35.69	-1.02	1.65	0.13
39	5642.00	1.30	191.50	5641.51	-37.53	-1.18	1.63	0.46
40	5735.00	1.40	183.70	5734.49	-39.70	-1.47	1.51	0.22
41	5829.00	1.60	183.00	5828.46	-42.16	-1.61	1.55	0.21
42	5922.00	1.50	184.70	5921.42	-44.67	-1.78	1.58	0.12
43	5982.00	1.70	187.50	5981.40	-46.33	-1.96	1.52	0.36
44	6098.00	1.60	182.70	6097.35	-49.66	-2.26	1.47	0.15
45	6191.00	0.50	2.60	6190.34	-50.55	-2.30	1.49	2.26
46	6284.00	1.10	353.90	6283.33	-49.25	-2.38	1.32	0.66
47	6378.00	0.80	140.00	6377.33	-48.86	-2.05	1.62	1.94
48	6471.00	1.20	167.80	6470.31	-50.31	-1.43	2.35	0.66
49	6564.00	1.00	173.80	6563.30	-52.07	-1.14	2.77	0.25
50	6658.00	1.20	191.50	6657.28	-53.85	-1.24	2.80	0.42
51	6751.00	0.80	215.90	6750.26	-55.33	-1.82	2.33	0.62
52	6844.00	0.40	217.30	6843.26	-56.11	-2.40	1.82	0.43
53	6937.00	0.40	221.00	6936.26	-56.61	-2.81	1.45	0.03
54	7031.00	0.50	206.60	7030.25	-57.23	-3.20	1.10	0.16
55	7124.00	0.50	241.80	7123.25	-57.78	-3.74	0.60	0.33
56	7217.00	0.60	278.00	7216.25	-57.91	-4.58	-0.23	0.38
57	7310.00	0.30	268.40	7309.24	-57.85	-5.31	-0.96	0.33
58	7404.00	0.40	281.80	7403.24	-57.79	-5.88	-1.53	0.14
59	7497.00	0.60	275.20	7496.24	-57.68	-6.68	-2.34	0.22
60	7590.00	0.90	41.10	7589.23	-57.08	-6.68	-2.39	1.44
61	7684.00	1.10	63.50	7683.22	-56.12	-5.39	-1.17	0.46
62	7777.00	1.00	68.50	7776.20	-55.43	-3.84	0.33	0.15
63	7870.00	1.00	53.70	7869.19	-54.65	-2.43	1.68	0.28
64	7963.00	0.60	46.40	7962.18	-53.83	-1.42	2.62	0.44
65	8057.00	0.60	24.10	8056.18	-53.04	-0.86	3.12	0.25
66	8150.00	0.40	52.80	8149.17	-52.40	-0.41	3.52	0.34
67	8243.00	0.40	54.80	8242.17	-52.02	0.12	4.02	0.02
68	8336.00	0.20	358.40	8335.17	-51.67	0.38	4.25	0.36
69	8430.00	0.60	24.90	8429.17	-51.06	0.58	4.41	0.46

SUNBURST CONSULTING, INC.

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Operator:	Oasis Petroleum North America, LLC	
Well :	Chalmers Wade Federal 5301 44-24 12TXR	
County:	McKenzie	State: ND
QQ:	SE SE	Section: 24
Township:	153	N/S: N
Range:	101	E/W: W
Footages:	844	FN/SL: S
	245	FE/WL: E

Kick-off:	7/29/2014
Finish:	7/29/2014
Directional Supervision:	RPM
Date:	8/27/2014
Time:	14:58
F9 to re-calculate	

Minimum Curvature Method (SPE-3362)

Proposed dir: 94.3

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

No.	MD	INC	TRUE				SECT	DLS/ 100
			AZM	TVD	N-S	E-W		
70	8523.00	0.40	35.80	8522.16	-50.36	0.98	4.75	0.24
71	8616.00	0.50	55.30	8615.16	-49.86	1.50	5.23	0.20
72	8710.00	0.50	59.80	8709.16	-49.42	2.19	5.89	0.04
73	8803.00	0.30	41.00	8802.15	-49.03	2.70	6.37	0.25
74	8896.00	0.20	66.10	8895.15	-48.78	3.01	6.66	0.16
75	8989.00	0.30	83.80	8988.15	-48.69	3.40	7.04	0.13
76	9083.00	0.20	91.80	9082.15	-48.67	3.81	7.45	0.11
77	9176.00	0.30	73.40	9175.15	-48.61	4.20	7.84	0.14
78	9269.00	0.30	115.50	9268.15	-48.64	4.66	8.29	0.23
79	9362.00	0.20	106.40	9361.15	-48.79	5.03	8.68	0.12
80	9456.00	0.40	164.10	9455.15	-49.15	5.28	8.95	0.36
81	9549.00	0.30	187.30	9548.15	-49.71	5.34	9.05	0.18
82	9642.00	0.40	168.50	9641.14	-50.27	5.37	9.13	0.16
83	9736.00	0.50	204.30	9735.14	-50.96	5.27	9.07	0.31
84	9829.00	0.60	211.30	9828.14	-51.75	4.85	8.71	0.13
85	9922.00	0.90	214.40	9921.13	-52.77	4.18	8.13	0.33
86	10016.00	1.10	233.00	10015.12	-53.92	3.04	7.08	0.40
87	10109.00	1.50	233.70	10108.09	-55.18	1.35	5.48	0.43
88	10145.00	1.40	237.80	10144.08	-55.69	0.60	4.77	0.40
89	10206.00	1.40	234.90	10205.06	-56.52	-0.64	3.60	0.12
90	10237.00	1.10	227.30	10236.05	-56.94	-1.17	3.10	1.10

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SUNBURST CONSULTING, INC.

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Operator:

Oasis Petroleum North America, LLC

Well :

Chalmers Wade Federal 5301 44-24 12TXR Sidetrack #1

County:

McKenzie

State:

ND

QQ:

SE SE

Section:

24

Township:

153

N/S:

N

Range:

101

E/W:

W

Footages:

844

FN/SL:

S

245

FE/WL:

E

Kick-off:

8/2/2014

Finish:

8/3/2014

Directional Supervision:

RPM

Date: 8/27/2014

Time: 14:58

F9 to re-calculate

Proposed dir:

94.3

Minimum Curvature Method (SPE-3362)

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

No.	MD	INC	TRUE				DLS/	
			AZM	TVD	N-S	E-W	SECT	100
Tie	10016.00	1.10	233.00	10015.12	-53.92	3.04	3.04	0.00
1	10041.00	1.40	228.50	10040.11	-54.27	2.62	6.68	1.26
2	10061.00	1.20	225.20	10060.11	-54.58	2.29	6.37	1.07
3	10082.00	1.30	224.50	10081.10	-54.90	1.97	6.08	0.48
4	10113.00	1.50	228.00	10112.09	-55.42	1.42	5.57	0.70

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SUNBURST CONSULTING, INC.

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Operator:	Oasis Petroleum North America, LLC			Kick-off:	8/5/2014
Well :	Chalmers Wade Federal 5301 ST #2			Finish:	8/22/2014
County:	McKenzie			Directional Supervision:	
QQ:	SE SE			RPM	
Township:	153			Date:	8/27/2014
Range:	101			Time:	14:58
Footages:	844			F9 to re-calculate	
	245			Proposed dir:	94.3

Minimum Curvature Method (SPE-3362)

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

No.	MD	INC	TRUE				SECT	DLS/ 100
			AZM	TVD	N-S	E-W		
Tie	9922.00	0.90	214.40	9921.13	-52.77	4.18	4.18	0.00
1	9941.00	1.00	229.00	9940.13	-53.00	3.97	7.93	1.37
2	9957.00	1.10	225.70	9956.12	-53.20	3.76	7.73	0.73
3	9988.00	0.80	203.00	9987.12	-53.61	3.46	7.47	1.53
4	10019.00	3.00	136.50	10018.10	-54.40	3.93	8.00	8.97
5	10050.00	7.70	128.60	10048.96	-56.28	6.11	10.32	15.31
6	10081.00	12.10	128.90	10079.49	-59.62	10.27	14.71	14.19
7	10112.00	16.30	127.50	10109.54	-64.31	16.25	21.03	13.59
8	10144.00	19.30	127.70	10140.00	-70.28	24.00	29.20	9.38
9	10175.00	19.30	126.90	10169.26	-76.49	32.15	37.79	0.85
10	10206.00	18.70	126.80	10198.57	-82.54	40.23	46.30	1.94
11	10237.00	17.80	126.70	10228.01	-88.35	48.00	54.49	2.90
12	10268.00	17.20	126.80	10257.58	-93.93	55.47	62.36	1.94
13	10299.00	17.10	126.60	10287.20	-99.39	62.80	70.08	0.37
14	10330.00	20.40	125.50	10316.55	-105.25	70.86	78.55	10.71
15	10361.00	24.10	123.60	10345.24	-111.89	80.54	88.70	12.16
16	10392.00	28.00	123.90	10373.08	-119.45	91.85	100.55	12.59
17	10423.00	32.30	124.50	10399.88	-128.21	104.72	114.04	13.90
18	10454.00	36.10	124.70	10425.52	-138.10	119.06	129.08	12.26
19	10485.00	39.10	125.50	10450.07	-148.98	134.53	145.32	9.80
20	10517.00	41.70	124.00	10474.44	-160.79	151.58	163.20	8.67
21	10548.00	43.50	124.00	10497.26	-172.52	168.97	181.43	5.81
22	10579.00	44.20	123.00	10519.62	-184.38	186.88	200.18	3.18
23	10610.00	45.60	123.20	10541.57	-196.33	205.21	219.35	4.54
24	10641.00	48.50	125.70	10562.70	-209.17	223.91	238.96	11.06
25	10672.00	51.60	127.40	10582.60	-223.32	242.99	259.05	10.85
26	10703.00	55.60	129.00	10600.99	-238.76	262.59	279.75	13.55
27	10734.00	59.70	129.30	10617.58	-255.29	282.89	301.24	13.25
28	10766.00	63.30	129.40	10632.84	-273.12	304.64	324.26	11.25
29	10797.00	67.40	128.40	10645.77	-290.80	326.56	347.45	13.55
30	10828.00	71.30	128.10	10656.70	-308.76	349.34	371.50	12.61
31	10859.00	74.70	127.30	10665.76	-326.88	372.79	396.25	11.24
32	10890.00	77.80	126.30	10673.13	-344.92	396.90	421.64	10.48
33	10904.00	78.80	125.70	10675.97	-352.97	407.99	433.31	8.28
34	10921.00	80.00	124.20	10679.10	-362.55	421.69	447.68	11.18

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SUNBURST CONSULTING, INC.

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Operator:	Oasis Petroleum North America, LLC		
Well :	Chalmers Wade Federal 5301 ST #2		
County:	McKenzie	State:	ND
QQ:	SE SE	Section:	24
Township:	153	N/S:	N
Range:	101	E/W:	W
Footages:	844	FN/SL:	S
	245	FE/WL:	E

Kick-off:	8/5/2014
Finish:	8/22/2014
Directional Supervision:	RPM
Date:	8/27/2014
Time:	14:58
F9 to re-calculate	
Proposed dir:	94.3

Minimum Curvature Method (SPE-3362)

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

No.	MD	INC	TRUE				SECT	DLS/ 100
			AZM	TVD	N-S	E-W		
35	10952.00	84.10	122.70	10683.38	-379.46	447.30	474.49	14.07
36	10983.00	86.40	123.30	10685.95	-396.29	473.21	501.59	7.67
37	11014.00	88.10	123.40	10687.44	-413.31	499.07	528.65	5.49
38	11046.00	88.60	123.80	10688.36	-431.01	525.71	556.55	2.00
39	11077.00	90.10	123.70	10688.71	-448.23	551.49	583.54	4.85
38	11108.00	90.50	123.60	10688.55	-465.41	577.29	610.56	1.33
40	11139.00	90.50	123.70	10688.28	-482.59	603.10	637.58	0.32
41	11170.00	90.30	123.50	10688.06	-499.74	628.92	664.62	0.91
42	11201.00	90.20	122.90	10687.93	-516.72	654.85	691.75	1.96
43	11232.00	90.20	123.00	10687.82	-533.58	680.87	718.96	0.32
44	11263.00	90.40	122.10	10687.66	-550.26	707.00	746.27	2.97
45	11294.00	90.90	121.60	10687.30	-566.61	733.33	773.75	2.28
46	11325.00	90.80	121.60	10686.84	-582.86	759.73	801.29	0.32
47	11356.00	91.00	121.30	10686.36	-599.03	786.17	828.87	1.16
48	11386.00	91.40	120.30	10685.73	-614.39	811.93	855.71	3.59
49	11434.00	92.00	115.80	10684.30	-636.94	854.27	899.62	9.45
50	11465.00	91.60	114.80	10683.33	-650.18	882.28	928.55	3.47
51	11496.00	90.20	114.10	10682.84	-663.01	910.49	957.64	5.05
52	11527.00	88.20	113.90	10683.28	-675.62	938.81	986.82	6.48
53	11558.00	87.90	113.10	10684.33	-687.97	967.22	1016.08	2.75
54	11589.00	87.20	112.00	10685.66	-699.85	995.83	1045.50	4.20
55	11620.00	87.60	111.30	10687.06	-711.27	1024.61	1075.05	2.60
56	11650.00	87.60	109.00	10688.32	-721.60	1052.75	1103.89	7.66
57	11681.00	88.70	108.20	10689.32	-731.48	1082.11	1133.91	4.39
58	11712.00	88.80	106.80	10690.00	-740.80	1111.67	1164.08	4.53
59	11742.00	89.10	104.40	10690.55	-748.87	1140.56	1193.49	8.06
60	11773.00	88.60	102.00	10691.17	-755.94	1170.73	1224.11	7.91
61	11804.00	88.70	101.30	10691.90	-762.20	1201.08	1254.85	2.28
62	11835.00	88.30	99.80	10692.71	-767.88	1231.55	1285.65	5.01
63	11866.00	88.10	98.40	10693.68	-772.78	1262.14	1316.53	4.56
64	11897.00	87.90	97.00	10694.77	-776.93	1292.84	1347.45	4.56
65	11928.00	88.50	95.70	10695.74	-780.35	1323.63	1378.42	4.62
66	11959.00	88.70	95.50	10696.50	-783.38	1354.48	1409.40	0.91
67	11989.00	88.90	95.60	10697.13	-786.28	1384.33	1439.39	0.75
68	12020.00	89.10	95.50	10697.67	-789.28	1415.18	1470.38	0.72

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SUNBURST CONSULTING, INC.

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Operator:	Oasis Petroleum North America, LLC		
Well :	Chalmers Wade Federal 5301 ST #2		
County:	McKenzie	State:	ND
QQ:	SE SE	Section:	24
Township:	153	N/S:	N
Range:	101	E/W:	W
Footages:	844	FN/SL:	S
	245	FE/WL:	E

Kick-off:	8/5/2014
Finish:	8/22/2014
Directional Supervision:	RPM
Date:	8/27/2014
Time:	14:58
F9 to re-calculate	
Proposed dir:	94.3

Minimum Curvature Method (SPE-3362)

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

No.	MD	INC	TRUE				SECT	DLS/ 100
			AZM	TVD	N-S	E-W		
69	12051.00	89.30	95.50	10698.10	-792.25	1446.03	1501.37	0.65
70	12082.00	90.90	95.80	10698.05	-795.30	1476.88	1532.36	5.25
71	12113.00	91.70	95.40	10697.34	-798.32	1507.73	1563.34	2.89
72	12143.00	91.90	95.35	10696.40	-801.13	1537.58	1593.32	0.69
73	12174.00	90.20	95.90	10695.83	-804.17	1568.42	1624.30	5.76
74	12205.00	90.70	95.40	10695.59	-807.22	1599.27	1655.30	2.28
75	12236.00	89.10	96.10	10695.64	-810.33	1630.12	1686.28	5.63
76	12267.00	90.40	96.10	10695.78	-813.62	1660.94	1717.27	4.19
77	12298.00	90.80	96.20	10695.45	-816.94	1691.76	1748.25	1.33
78	12328.00	91.40	95.90	10694.88	-820.10	1721.59	1778.23	2.24
79	12359.00	90.30	95.20	10694.42	-823.10	1752.44	1809.22	4.21
80	12391.00	90.50	94.70	10694.19	-825.86	1784.32	1841.22	1.68
81	12422.00	89.10	93.90	10694.30	-828.19	1815.23	1872.21	5.20
82	12453.00	89.30	93.60	10694.74	-830.21	1846.16	1903.21	1.16
83	12484.00	90.00	93.10	10694.92	-832.03	1877.10	1934.20	2.77
84	12515.00	89.40	92.80	10695.09	-833.62	1908.06	1965.20	2.16
85	12546.00	87.50	91.90	10695.93	-834.89	1939.02	1996.16	6.78
86	12577.00	86.80	92.60	10697.47	-836.11	1969.96	2027.11	3.19
87	12608.00	86.90	91.60	10699.17	-837.24	2000.89	2058.04	3.24
88	12639.00	87.80	91.90	10700.60	-838.19	2031.85	2088.97	3.06
89	12701.00	88.00	91.00	10702.88	-839.76	2093.78	2150.85	1.49
90	12793.00	87.50	87.90	10706.49	-838.87	2185.70	2242.44	3.41
91	12887.00	89.60	89.40	10708.87	-836.66	2279.63	2335.95	2.75
92	12979.00	87.30	87.60	10711.36	-834.25	2371.56	2427.43	3.17
93	13072.00	89.00	88.70	10714.36	-831.25	2464.46	2519.84	2.18
94	13164.00	88.70	88.70	10716.20	-829.17	2556.41	2611.39	0.33
95	13257.00	89.60	90.40	10717.58	-828.44	2649.40	2704.05	2.07
96	13351.00	89.50	89.90	10718.32	-828.68	2743.39	2797.80	0.54
97	13445.00	88.00	88.30	10720.37	-827.21	2837.35	2891.39	2.33
98	13539.00	88.90	90.40	10722.92	-826.14	2931.31	2985.00	2.43
99	13633.00	91.50	92.00	10722.59	-828.11	3025.27	3078.85	3.25
100	13726.00	92.30	92.00	10719.50	-831.35	3118.16	3171.72	0.86
101	13820.00	90.90	91.20	10716.88	-833.98	3212.09	3265.58	1.72
102	13914.00	89.20	90.10	10716.80	-835.04	3306.08	3359.38	2.15
103	14007.00	86.70	87.90	10720.12	-833.42	3398.99	3451.91	3.58

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SUNBURST CONSULTING, INC.

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Operator:	Oasis Petroleum North America, LLC			Kick-off:	8/5/2014
Well :	Chalmers Wade Federal 5301 ST #2			Finish:	8/22/2014
County:	McKenzie			Directional Supervision:	
QQ:	SE SE			RPM	
Township:	153			Date:	8/27/2014
Range:	101			Time:	14:58
Footages:	844			F9 to re-calculate	
	245			Proposed dir:	94.3

Minimum Curvature Method (SPE-3362)

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

No.	MD	INC	TRUE				SECT	DLS/ 100
			AZM	TVD	N-S	E-W		
104	14101.00	88.80	89.60	10723.81	-831.38	3492.89	3545.39	2.87
105	14195.00	88.00	88.90	10726.44	-830.15	3586.84	3638.99	1.13
106	14289.00	91.00	88.80	10727.26	-828.26	3680.81	3732.55	3.19
107	14383.00	92.00	88.50	10724.80	-826.05	3774.75	3826.06	1.11
108	14477.00	91.30	88.90	10722.09	-823.91	3868.68	3919.57	0.86
109	14571.00	90.80	89.70	10720.37	-822.77	3962.66	4013.20	1.00
110	14664.00	90.20	91.90	10719.56	-824.06	4055.64	4106.01	2.45
111	14696.00	89.40	91.50	10719.67	-825.01	4087.63	4137.98	2.80
112	14716.00	89.30	91.50	10719.90	-825.54	4107.62	4157.95	0.50
113	14728.00	89.30	91.30	10720.04	-825.83	4119.61	4169.94	1.67
114	14759.00	88.30	91.90	10720.69	-826.70	4150.60	4200.90	3.76
115	14790.00	87.40	93.00	10721.86	-828.02	4181.54	4231.86	4.58
116	14822.00	88.50	93.00	10723.00	-829.69	4213.48	4263.83	3.44
117	14853.00	88.90	93.20	10723.70	-831.37	4244.43	4294.81	1.44
118	14884.00	89.10	92.90	10724.24	-833.02	4275.38	4325.80	1.16
119	14915.00	87.90	92.90	10725.06	-834.59	4306.33	4356.78	3.87
120	14946.00	87.90	93.50	10726.19	-836.32	4337.26	4387.75	1.93
121	15009.00	89.50	92.70	10727.62	-839.72	4400.15	4450.72	2.84
122	15041.00	89.20	91.90	10727.98	-841.01	4432.12	4482.70	2.67
123	15072.00	89.80	91.70	10728.26	-841.98	4463.10	4513.67	2.04
124	15103.00	88.10	92.30	10728.82	-843.06	4494.08	4544.64	5.82
125	15134.00	88.10	92.50	10729.85	-844.36	4525.03	4575.60	0.64
126	15166.00	86.80	93.30	10731.27	-845.98	4556.96	4607.56	4.77
127	15197.00	87.30	93.30	10732.87	-847.76	4587.87	4638.52	1.61
128	15228.00	87.10	92.60	10734.38	-849.35	4618.79	4669.47	2.35
129	15260.00	87.50	93.30	10735.89	-851.00	4650.71	4701.42	2.52
130	15291.00	87.00	92.90	10737.38	-852.67	4681.63	4732.38	2.06
131	15322.00	86.80	92.10	10739.06	-854.02	4712.55	4763.32	2.66
132	15354.00	86.70	92.80	10740.87	-855.39	4744.47	4795.25	2.21
133	15416.00	87.50	93.40	10744.01	-858.73	4806.30	4857.16	1.61
134	15510.00	87.70	93.50	10747.94	-864.39	4900.05	4951.07	0.24
135	15604.00	88.30	91.90	10751.22	-868.81	4993.88	5044.97	1.82
136	15699.00	87.20	90.90	10754.95	-871.13	5088.78	5139.77	1.56
137	15793.00	87.60	89.70	10759.22	-871.62	5182.68	5233.44	1.34
138	15887.00	87.90	88.30	10762.91	-869.98	5276.59	5326.97	1.52

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SUNBURST CONSULTING, INC.

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Operator:	Oasis Petroleum North America, LLC			Kick-off:	8/5/2014
Well :	Chalmers Wade Federal 5301 ST #2			Finish:	8/22/2014
County:	McKenzie			Directional Supervision:	
QQ:	SE SE			RPM	
Township:	153			Date:	8/27/2014
Range:	101			Time:	14:58
Footages:	844			F9 to re-calculate	
	245			Proposed dir:	94.3

Minimum Curvature Method (SPE-3362)

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

No.	MD	INC	TRUE				SECT	DLS/ 100
			AZM	TVD	N-S	E-W		
139	15980.00	89.10	87.90	10765.34	-866.90	5369.51	5419.39	1.36
140	16011.00	89.70	87.70	10765.67	-865.71	5400.48	5450.19	2.04
141	16043.00	90.30	87.40	10765.67	-864.34	5432.45	5481.97	2.10
142	16074.00	90.30	87.40	10765.50	-862.94	5463.42	5512.74	0.00
143	16105.00	90.50	87.20	10765.29	-861.48	5494.38	5543.51	0.91
144	16137.00	90.50	87.20	10765.01	-859.91	5526.34	5575.26	0.00
145	16168.00	90.00	89.90	10764.87	-859.13	5557.33	5606.10	8.86
146	16262.00	90.20	87.00	10764.71	-856.59	5651.29	5699.60	3.09
147	16356.00	90.70	87.20	10763.97	-851.83	5745.16	5792.86	0.57
148	16450.00	92.00	86.10	10761.76	-846.34	5838.97	5885.99	1.81
149	16543.00	91.60	87.40	10758.84	-841.07	5931.78	5978.14	1.46
150	16637.00	91.40	89.90	10756.37	-838.86	6025.71	6071.64	2.67
151	16731.00	90.70	90.80	10754.65	-839.43	6119.69	6165.40	1.21
152	16825.00	90.20	91.10	10753.91	-840.99	6213.67	6259.24	0.62
153	16919.00	90.10	91.40	10753.67	-843.04	6307.65	6353.11	0.34
154	17012.00	90.50	91.00	10753.18	-844.99	6400.63	6445.97	0.61
155	17106.00	91.10	90.80	10751.87	-846.46	6494.61	6539.79	0.67
156	17200.00	92.00	92.10	10749.33	-848.84	6588.54	6633.64	1.68
157	17293.00	93.20	91.50	10745.11	-851.76	6681.40	6726.45	1.44
158	17387.00	91.80	91.90	10741.01	-854.55	6775.26	6820.26	1.55
159	17480.00	89.50	91.40	10739.95	-857.22	6868.21	6913.15	2.53
160	17574.00	91.20	91.40	10739.38	-859.52	6962.18	7007.03	1.81
161	17668.00	90.20	91.90	10738.23	-862.23	7056.13	7100.92	1.19
162	17762.00	88.10	90.90	10739.62	-864.52	7150.09	7194.78	2.47
163	17855.00	87.30	90.90	10743.36	-865.98	7243.00	7287.54	0.86
164	17949.00	87.60	89.20	10747.54	-866.06	7336.90	7381.19	1.83
165	18043.00	87.90	89.90	10751.23	-865.33	7430.83	7474.79	0.81
166	18137.00	88.40	89.20	10754.26	-864.59	7524.77	7568.42	0.91
167	18230.00	91.20	88.60	10754.59	-862.80	7617.75	7661.00	3.08
168	18323.00	91.30	88.50	10752.56	-860.45	7710.69	7753.51	0.15
169	18417.00	91.00	88.30	10750.67	-857.83	7804.64	7846.99	0.38
170	18510.00	90.20	89.00	10749.70	-855.64	7897.61	7939.53	1.14
171	18604.00	90.00	88.60	10749.53	-853.67	7991.59	8033.10	0.48
172	18697.00	91.40	88.30	10748.40	-851.15	8084.54	8125.60	1.54
173	18791.00	88.70	87.90	10748.32	-848.04	8178.48	8219.05	2.90

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SUNBURST CONSULTING, INC.

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Operator:	Oasis Petroleum North America, LLC		
Well :	Chalmers Wade Federal 5301 ST #2		
County:	McKenzie	State:	ND
QQ:	SE SE	Section:	24
Township:	153	N/S:	N
Range:	101	E/W:	W
Footages:	844	FN/SL:	S
	245	FE/WL:	E

Kick-off:	8/5/2014
Finish:	8/22/2014
Directional Supervision:	RPM
Date:	8/27/2014
Time:	14:58
F9 to re-calculate	
Proposed dir:	94.3

Minimum Curvature Method (SPE-3362)

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

No.	MD	INC	TRUE				SECT	DLS/ 100
			AZM	TVD	N-S	E-W		
174	18885.00	92.70	87.60	10747.17	-844.35	8272.38	8312.41	4.27
175	18978.00	92.60	89.20	10742.87	-841.75	8365.24	8404.81	1.72
176	19073.00	92.40	90.30	10738.72	-841.34	8460.15	8499.42	1.18
177	19167.00	89.10	90.10	10737.49	-841.67	8554.13	8593.16	3.52
178	19262.00	88.70	89.90	10739.32	-841.67	8649.11	8687.87	0.47
179	19356.00	91.30	90.90	10739.32	-842.32	8743.10	8781.65	2.96
180	19451.00	88.60	91.80	10739.40	-844.56	8838.06	8876.51	3.00
181	19546.00	90.50	92.10	10740.15	-847.79	8933.00	8971.42	2.02
182	19641.00	86.80	91.20	10742.38	-850.53	9027.92	9066.28	4.01
183	19672.00	85.60	91.60	10744.44	-851.28	9058.84	9097.17	4.08
184	19735.00	85.40	91.30	10749.38	-852.87	9121.63	9159.90	0.57
185	19766.00	85.80	91.30	10751.76	-853.57	9152.53	9190.76	1.29
186	19830.00	85.50	91.00	10756.61	-854.85	9216.33	9254.48	0.66
187	19861.00	85.50	89.80	10759.05	-855.07	9247.23	9285.32	3.86
188	19922.00	85.80	89.70	10763.67	-854.80	9308.06	9345.95	0.52
189	19954.00	88.10	89.20	10765.38	-854.50	9340.01	9377.79	7.35
190	19985.00	88.60	88.20	10766.27	-853.79	9370.99	9408.62	3.61
191	20016.00	89.00	88.60	10766.92	-852.93	9401.97	9439.45	1.82
192	20048.00	89.60	88.90	10767.31	-852.23	9433.96	9471.30	2.10
193	20110.00	90.90	88.90	10767.04	-851.04	9495.94	9533.02	2.10
194	20204.00	92.10	87.80	10764.58	-848.34	9589.87	9626.48	1.73
195	20298.00	94.40	87.50	10759.25	-844.49	9683.63	9719.69	2.47
196	20392.00	91.30	87.70	10754.58	-840.56	9777.42	9812.92	3.30
197	20485.00	89.60	89.60	10753.85	-838.37	9870.39	9905.46	2.74
198	20579.00	90.00	89.50	10754.17	-837.63	9964.38	9999.14	0.44
199	20673.00	88.70	88.70	10755.24	-836.15	10058.36	10092.74	1.62
200	20767.00	89.00	89.20	10757.13	-834.43	10152.33	10186.31	0.62
201	20861.00	90.90	90.00	10757.21	-833.77	10246.32	10279.99	2.19
202	20955.00	91.10	89.00	10755.57	-832.95	10340.30	10373.65	1.08
203	21050.00	91.40	89.00	10753.50	-831.30	10435.26	10468.22	0.32

DEVIATION SURVEYS

Depth	Inclination	Azimuth
100	0.23	242.94
200	0.25	351.10
300	0.39	162.78
400	0.60	123.86
500	0.55	70.87
600	0.18	113.03
700	0.49	91.28
800	0.77	74.70
900	0.19	30.05
1000	0.18	194.84
1100	0.35	82.06
1200	0.59	110.56
1300	0.19	59.27
1400	0.34	160.01
1500	0.54	168.40
1600	0.69	178.20
1700	0.74	225.27
1800	0.84	223.59
1900	0.72	151.56
2000	0.83	181.04
2100	0.70	179.05
XXXX	XXX	XXX.XX

FORMATION TOPS & STRUCTURAL RELATIONSHIPS

Formation/ Marker	Subject Well:							Offset Wells:			
	Prog. Top	Prog. Datum (MSL)	Driller's Depth Top (MD)	E-Log Depth Top (TVD)	Datum (MSL)	Interval Thickness	Thickness to Target	Dip To Prog.	Dip To Chalmers 5301 44-24 3BR	Dip To Chalmers 5301 44-24 2TR	Dip To Chalmers 5301 44-24 4T2R
Kibbey Lime	8,266'	-6,298'	8,269'	8,268'	-6,300'	161'	2,416'	-2'	0'	-4'	-2'
Charles	8,438'	-6,470'	8,430'	8,429'	-6,461'	555'	2,255'	9'	10'	0'	g'
UB	8,983'	-7,015'	8,985'	8,984'	-7,016'	83'	1,700'	-1'	3'	-2'	-1'
Base Last Salt	9,067'	-7,099'	9,068'	9,067'	-7,099'	45'	1,617'	0'	4'	-5'	0'
Ratcliffe	9,113'	-7,145'	9,113'	9,112'	-7,144'	176'	1,572'	1'	5'	-3'	1'
Mission Canyon	9,288'	-7,320'	9,289'	9,288'	-7,320'	555'	1,396'	0'	3'	-2'	0'
Lodgepole	9,846'	-7,878'	9,844'	9,843'	-7,875'	112'	841'	3'	6'	2'	3'
Lodgepole A	9,955'	-7,987'	9,956'	9,955'	-7,987'	136'	729'	0'	7'	-2'	0'
Lodgepole B	10,091'	-8,123'	10,092'	10,091'	-8,123'	70'	593	0'	-38'	2'	0'
Lodgepole C	10,159'	-8,191'	10,162'	10,161'	-8,193'	112'	523'	-2'	-70'	-2'	-2'
Lodgepole D	10,274'	-8,306'	10,284'	10,273'	-8,305'	164'	411'	1'	5'	2'	1'
Lodgepole E	10,421'	-8,453'	10,468'	10,437'	-8,469'	65'	247'	-16'	-8'	-16'	-16'
Lodgepole F	10,493'	-8,525'	10,554'	10,502'	-8,534'	70'	182'	-9'	-5'	-10'	-9'
False Bakken	10,574'	-8,606'	10,654'	10,572'	-8,604'	12'	112'	2'	12'	5'	2'
Upper Bakken	10,585'	-8,617'	10,671'	10,584'	-8,616'	15'	100'	1'	8'	1'	1'
Middle Bakken	10,600'	-8,632'	10,696'	10,599'	-8,631'	38'	85'	1'	13'	3'	1'
Lower Bakken	10,639'	-8,671'	10,774'	10,637'	-8,669'	12'	47'	2'	10'	7'	2'
Pronghorn	10,654'	-8,686'	10,798'	10,649'	-8,681'	20'	35'	5'	9'	6'	5'
Threeforks 1st Bench	10,676'	-8,708'	10,873'	10,669'	-8,701'	7'	15'	7'	6'	5'	7'
Target Top	10,688'	-8,720'	10,900'	10,676'	-8,708'	8'	8'	12'	11'	10'	12'
Landing Target	10,690'	-8,722'	11,451'	10,684'	-8,716'	-	0'	6'	18'	18'	8'

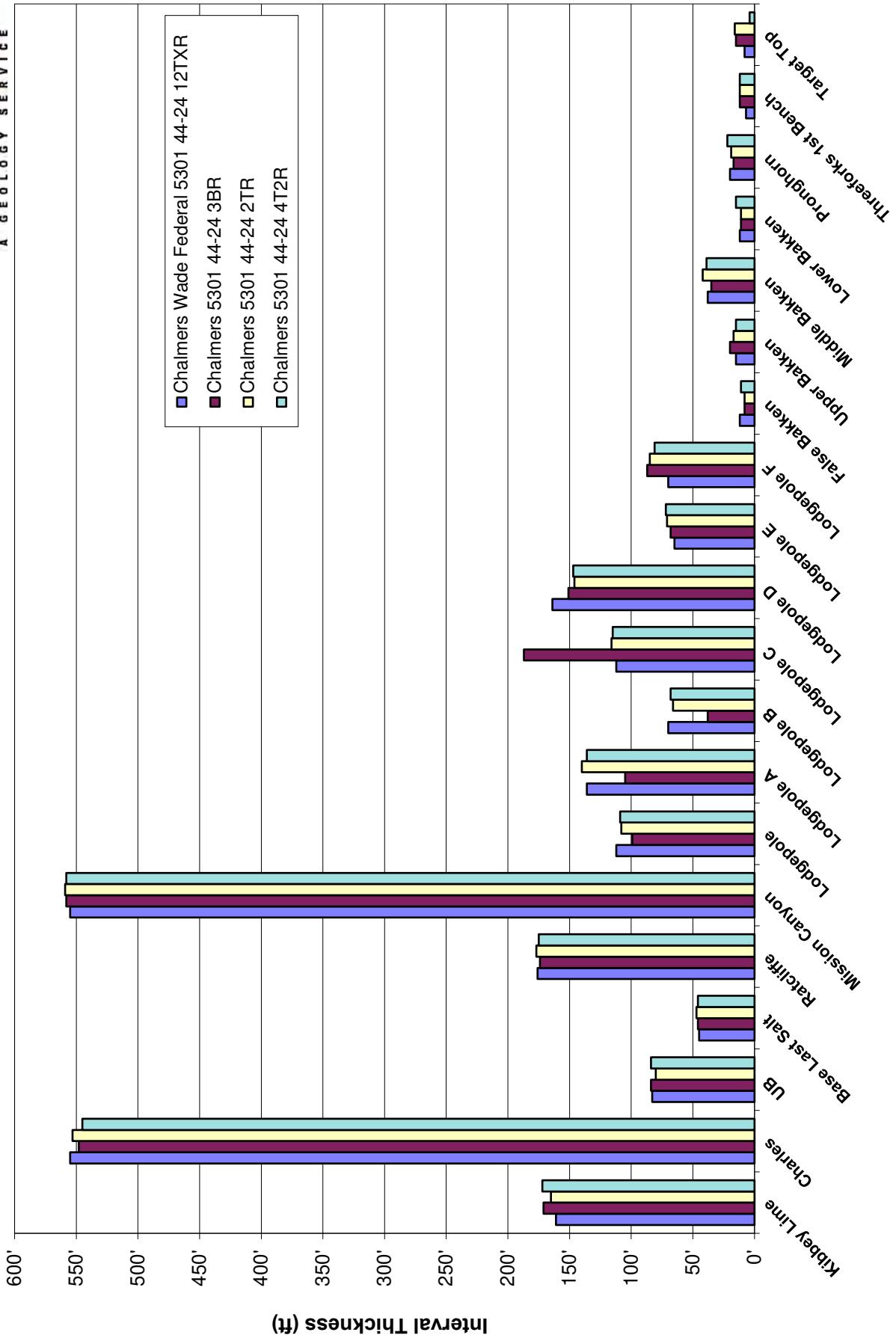
CONTROL DATA

Operator: Well Name: Location: Elevation:	Oasis Petroleum North America Chalmers 5301 44-24 3BR				Oasis Petroleum North America Chalmers 5301 44-24 2TR				Oasis Petroleum North America Chalmers 5301 44-24 4T2R			
	SE SE Section 24, T153N, R101W McKenzie Co., ND shares pad with subject well KB: 1,968'				SE SE Section 24, T153N, R101W McKenzie Co., ND shares pad with subject well KB: 1,968'				SE SE Section 24, T153N, R101W McKenzie Co., ND shares pad with subject well KB: 1,968'			
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	8,268'	-6,300'	171'	2,434'	8,264'	-6,296'	165'	2,438'	8,266'	-6,298'	172'	2,426'
Charles	8,439'	-6,471'	548'	2,263'	8,429'	-6,461'	553'	2,273'	8,438'	-6,470'	545'	2,254'
UB	8,987'	-7,019'	84'	1,715'	8,982'	-7,014'	80'	1,720'	8,983'	-7,015'	84'	1,709'
Base Last Salt	9,071'	-7,103'	46'	1,631'	9,062'	-7,094'	47'	1,640'	9,067'	-7,099'	46'	1,625'
Ratcliffe	9,117'	-7,149'	174'	1,585'	9,109'	-7,141'	177'	1,593'	9,113'	-7,145'	175'	1,579'
Mission Canyon	9,291'	-7,323'	558'	1,411'	9,286'	-7,318'	559'	1,416'	9,288'	-7,320'	558'	1,404'
Lodgepole	9,849'	-7,881'	99'	853'	9,845'	-7,877'	108'	857'	9,846'	-7,878'	109'	846'
Lodgepole A	9,948'	-7,980'	105'	754'	9,953'	-7,985'	140'	749'	9,955'	-7,987'	136'	737'
Lodgepole B	10,053'	-8,095'	38'	649'	10,093'	-8,125'	66'	609'	10,091'	-8,123'	68'	601'
Lodgepole C	10,091'	-8,123'	187'	611'	10,159'	-8,191'	116'	543'	10,159'	-8,191'	115'	533'
Lodgepole D	10,278'	-8,310'	151'	424'	10,275'	-8,307'	146'	427'	10,274'	-8,306'	147'	418'
Lodgepole E	10,429'	-8,461'	68'	273'	10,421'	-8,453'	71'	281'	10,421'	-8,453'	72'	271'
Lodgepole F	10,497'	-8,529'	87'	205'	10,492'	-8,524'	85'	210'	10,493'	-8,525'	81'	199'
False Bakken	10,584'	-8,616'	8'	118'	10,577'	-8,609'	8'	125'	10,574'	-8,606'	11'	118'
Upper Bakken	10,592'	-8,624'	20'	110'	10,585'	-8,617'	17'	117'	10,585'	-8,617'	15'	107'
Middle Bakken	10,612'	-8,644'	35'	90'	10,602'	-8,634'	42'	100'	10,600'	-8,632'	39'	92'
Lower Bakken	10,647'	-8,679'	11'	55'	10,644'	-8,676'	11'	58'	10,639'	-8,671'	15'	53'
Pronghorn	10,658'	-8,690'	17'	44'	10,655'	-8,687'	19'	47'	10,654'	-8,686'	22'	38'
Threeforks 1st Bench	10,675'	-8,707'	12'	27'	10,674'	-8,706'	12'	28'	10,676'	-8,708'	12'	16'
Target Top	10,687'	-8,719'	15'	15'	10,686'	-8,718'	16'	16'	10,688'	-8,720'	4'	4'
Landing Target	10,702'	-8,734'	0'	0'	10,702'	-8,734'	0'	0'	10,692'	-8,724'	0'	0'
Claystone 1	10,702'	-8,734'	-	-	10,702'	-8,734'	-	-	10,692'	-8,724'	-	-



INTERVAL THICKNESS

Oasis Petroleum North America, LLC - Chalmers Wade Federal 5301 44-24 12TXR



LANDING PROJECTION

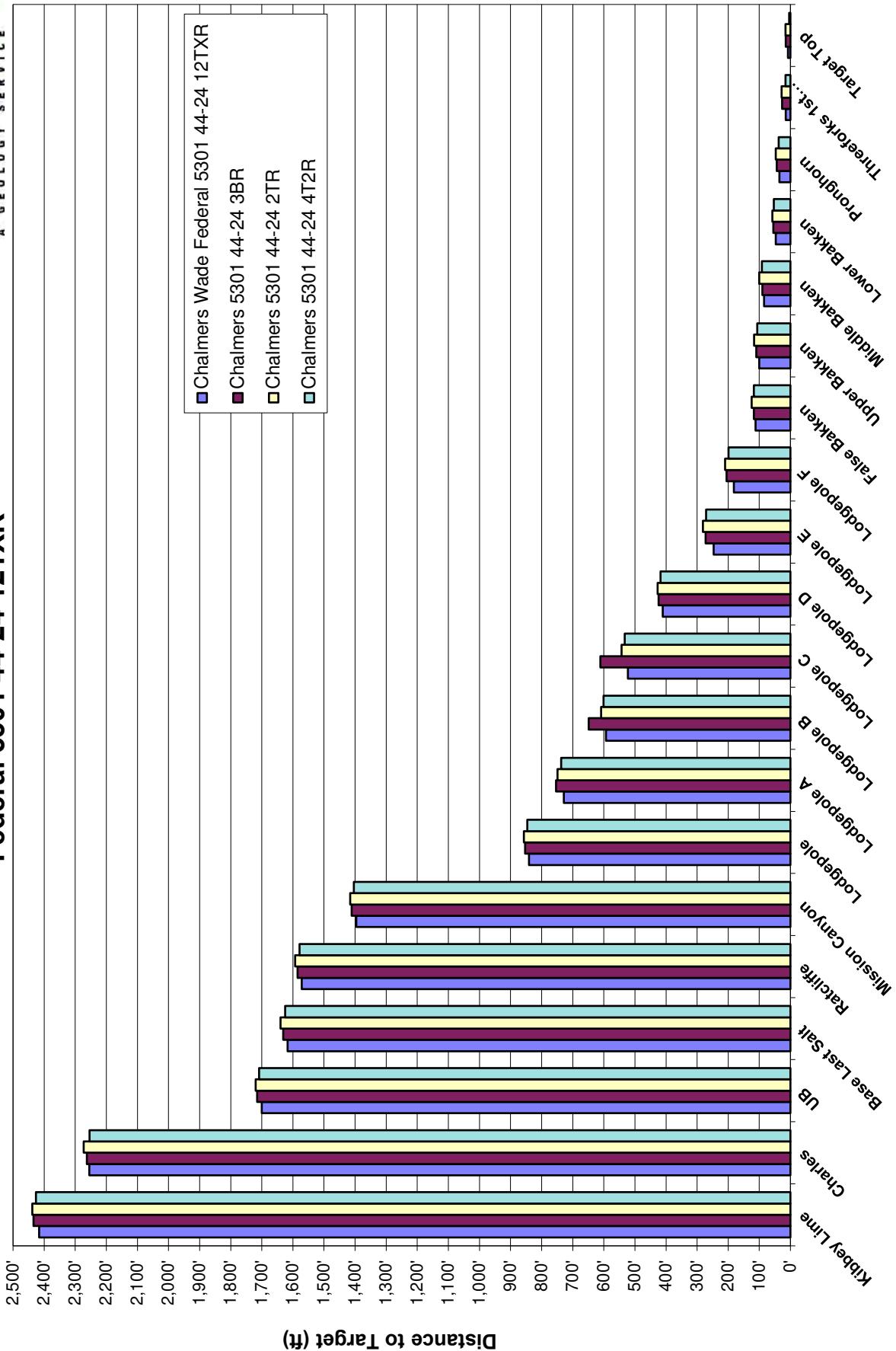
Formation/Zone:	Proposed Top of Target From:			
	Chalmers 5301 44-24 3BR	Chalmers 5301 44-24 2TR	Chalmers 5301 44-24 4T2R	Average of Offset Wells
Kibbey Lime	10,702'	10,706'	10,694'	10,701'
Charles	10,692'	10,702'	10,683'	10,692'
UB	10,699'	10,704'	10,693'	10,699'
Base Last Salt	10,698'	10,707'	10,692'	10,699'
Ratcliffe	10,697'	10,705'	10,691'	10,698'
Mission Canyon	10,699'	10,704'	10,692'	10,698'
Lodgepole	10,696'	10,700'	10,689'	10,695'
Lodgepole A	10,709'	10,704'	10,692'	10,702'
Lodgepole B	10,740'	10,700'	10,692'	10,711'
Lodgepole C	10,772'	10,704'	10,694'	10,723'
Lodgepole D	10,697'	10,700'	10,691'	10,696'
Lodgepole E	10,710'	10,718'	10,708'	10,712'
Lodgepole F	10,707'	10,712'	10,701'	10,707'
False Bakken	10,690'	10,697'	10,690'	10,692'
Upper Bakken	10,694'	10,701'	10,691'	10,695'
Middle Bakken	10,689'	10,699'	10,691'	10,693'
Lower Bakken	10,692'	10,695'	10,690'	10,692'
Pronghorn	10,693'	10,696'	10,687'	10,692'
Threeforks 1st Bench	10,696'	10,697'	10,685'	10,693'
Target Top	10,691'	10,692'	10,680'	10,688'
Landing Target	10,684'	10,684'	10,684'	10,684'



ISOPACH TO TARGET

Oasis Petroleum North America, LLC - Chalmers Wade

Federal 5301 44-24 12TXR



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.

Drilling in the Kibbey Formation

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

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

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

8260-8290 SILTSTONE: dark orange to light brown, tan, pink, soft, sub blocky, calcite cement, poorly cemented; rare ANHYDRITE: off white, soft, amorphous texture; trace SILTY SANDSTONE: as above

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

8380-8410 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

The First Charles Salt [8,430' MD, 8,429' TVD (-6,461')]

8410-8440 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

8440-8470 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

8470-8500 SILTSTONE: dark orange to light brown, tan, pink, soft, sub blocky, calcite cement, poorly cemented; occasional ANHYDRITE: off white, soft, amorphous texture; trace SALT: translucent, microcrystalline, anhedral, crystalline texture, hard, frosted

8500-8530 SILTSTONE: dark orange to light brown, tan, pink, soft, sub blocky, calcite cement, poorly cemented; occasional ANHYDRITE: off white, soft, amorphous texture; trace SALT: translucent, microcrystalline, anhedral, crystalline texture, hard, frosted

8530-8560 SILTSTONE: dark orange to light brown, tan, pink, soft, sub blocky, calcite cement, poorly cemented; occasional ANHYDRITE: off white, soft, amorphous texture; trace SALT: translucent, microcrystalline, anhedral, crystalline texture, hard, frosted

8560-8590 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; trace SILTSTONE: as above

8590-8620 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; trace SILTSTONE: as above

8620-8650 SALT: translucent, rare milky, microcrystalline, anhedral, crystalline texture, hard; common LIMESTONE: mudstone, medium gray, occasional gray brown, trace light gray, microcrystalline, firm to hard, argillaceous in part, dense, earthy texture, no visible porosity; trace SILTSTONE: as above

8650-8680 SALT: translucent, rare milky, microcrystalline, anhedral, crystalline texture, hard; common LIMESTONE: mudstone, medium gray, occasional gray brown, trace light gray, microcrystalline, firm to hard, argillaceous in part, dense, earthy texture, no visible porosity; trace SILTSTONE: as above

8680-8710 SALT: translucent, rare milky, microcrystalline, anhedral, crystalline texture, hard; common LIMESTONE: mudstone, medium gray, occasional gray brown, trace light gray, microcrystalline, firm to hard, argillaceous in part, dense, earthy texture, no visible porosity

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

8740-8770 LIMESTONE: mudstone, medium gray, occasional gray brown, trace light gray, microcrystalline, firm to hard, argillaceous in part, dense, earthy texture, no visible porosity

8770-8800 LIMESTONE: mudstone, medium gray, occasional gray brown, trace light gray, microcrystalline, firm to hard, argillaceous in part, dense, earthy texture, no visible porosity; trace ANHYDRITE: as above; trace SALT: as above

8800-8830 LIMESTONE: mudstone, medium gray, occasional gray brown, trace light gray, microcrystalline, firm to hard, argillaceous in part, dense, earthy texture, no visible porosity; trace ANHYDRITE: as above; trace SALT: as above

8830-8860 LIMESTONE: mudstone, medium gray, occasional gray brown, trace light gray, microcrystalline, firm to hard, argillaceous in part, dense, earthy texture, no visible porosity; common ANHYDRITE: as above

8860-8890 LIMESTONE: mudstone, medium gray, occasional gray brown, trace light gray, microcrystalline, firm to hard, argillaceous in part, dense, earthy texture, no visible porosity; common 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, 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, 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

UB [8,985' MD, 8,984' TVD (-7,016')]

8980-9010 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

9010-9040 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

Base Last Salt [9,068' MD, 9,067' TVD (-7,099')]

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

9070-9100 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

Ratcliffe [9,113' MD, 9,112' TVD (-7,144')]

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 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

9190-9220 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

9220-9250 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

9250-9280 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

Mission Canyon [9,289' MD, 9,288' TVD (-7,320')]

9280-9310 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

9310-9340 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

9760-9790 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

9790-9820 ARGILLACEOUS LIMESTONE: mudstone, cream to tan, rare brown, trace gray, slightly mottled, microcrystalline, firm, dense to banded, earthy texture, no visible porosity

Lodgepole [9,844' MD, 9,843' TVD (-7,875')]

9820-9850 ARGILLACEOUS LIMESTONE: mudstone, cream to tan, rare brown, trace gray, microcrystalline, firm, dense to banded, earthy texture, no visible porosity

9850-9880 ARGILLACEOUS LIMESTONE: mudstone, cream to tan, rare brown, trace gray, slightly mottled, microcrystalline, firm, dense to banded, earthy texture, no visible porosity

9880-9910 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

9910-9940 ARGILLACEOUS LIMESTONE: mudstone, cream to tan, rare brown, trace gray, slightly mottled, microcrystalline, firm, dense to banded, earthy texture, no visible porosity

9940-9970 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

9970-10000 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

10000-10030 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

10030-10060 ARGILLACEOUS LIMESTONE: mudstone, 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

10060-10090 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

10090-10120 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

10120-10150 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

10150-10180 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

10180-10200 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

10180-10210 ARGILLACEOUS LIMESTONE: mudstone, medium gray to dark gray, microcrystalline, firm, banded, dense, trace anhydrite, trace disseminated pyrite, no visible porosity

10210-10240 ARGILLACEOUS LIMESTONE: mudstone, medium gray to dark gray, microcrystalline, firm, banded, dense, trace anhydrite, trace disseminated pyrite, no visible porosity

10240-10270 ARGILLACEOUS LIMESTONE: mudstone, medium gray to dark gray, microcrystalline, firm, banded, dense, trace anhydrite, trace disseminated pyrite, no visible porosity

10270-10300 ARGILLACEOUS LIMESTONE: mudstone, medium gray to dark gray, microcrystalline, firm, banded, dense, trace anhydrite, trace disseminated pyrite, no visible porosity

10300-10330 ARGILLACEOUS LIMESTONE: mudstone, medium gray to dark gray, microcrystalline, firm, banded, dense, trace anhydrite, trace disseminated pyrite, no visible porosity

10330-10360 ARGILLACEOUS LIMESTONE: mudstone, medium gray to dark gray, microcrystalline, firm, banded, dense, trace anhydrite, trace disseminated pyrite, no visible porosity

10360-10390 ARGILLACEOUS LIMESTONE: mudstone, medium gray to dark gray, microcrystalline, firm, banded, dense, trace anhydrite, trace disseminated pyrite, no visible porosity

10390-10420 ARGILLACEOUS LIMESTONE: mudstone, medium gray to dark gray, microcrystalline, firm, banded, dense, trace anhydrite, trace disseminated pyrite, no visible porosity

10420-10450 ARGILLACEOUS LIMESTONE: mudstone, medium gray to dark gray, microcrystalline, firm, banded, dense, trace anhydrite, trace disseminated pyrite, no visible porosity

10450-10480 ARGILLACEOUS LIMESTONE: mudstone, medium gray to dark gray, microcrystalline, firm, banded, dense, trace anhydrite, trace disseminated pyrite, no visible porosity

10480-10510 ARGILLACEOUS LIMESTONE: mudstone, medium gray to dark gray, microcrystalline, firm, banded, dense, trace anhydrite, trace disseminated pyrite, no visible porosity

10510-10540 ARGILLACEOUS LIMESTONE: mudstone, medium gray to dark gray, microcrystalline, firm, banded, dense, trace anhydrite, trace disseminated pyrite, no visible porosity

10540-10570 ARGILLACEOUS LIMESTONE: mudstone, medium gray to dark gray, microcrystalline, firm, banded, dense, trace anhydrite, trace disseminated pyrite, no visible porosity

10570-10600 ARGILLACEOUS LIMESTONE: mudstone, medium gray to dark gray, microcrystalline, firm, banded, dense, trace anhydrite, trace disseminated pyrite, no visible porosity

10600-10630 ARGILLACEOUS LIMESTONE: mudstone, medium gray to dark gray, microcrystalline, firm, banded, dense, trace anhydrite, trace disseminated pyrite, no visible porosity

False Bakken [10,654' MD, 10,572' TVD (-8,604')]

10630-10660 ARGILLACEOUS LIMESTONE: mudstone, medium gray to dark gray, microcrystalline, firm, banded, dense, trace anhydrite, trace disseminated pyrite, no visible porosity

Upper Bakken [10,671' MD, 10,584' TVD (-8,616')]

10660-10690 ARGILLACEOUS LIMESTONE: mudstone, medium gray, microcrystalline, firm, banded, dense, trace anhydrite, trace disseminated pyrite, no visible porosity

Middle Bakken [10,696' MD, 10,599' TVD (-8,631')]

10690-10720 SHALE: black to very dark brown, firm, blocky, earthy texture, disseminated pyrite, petroliferous, carbonaceous, no visible porosity, abundant brown even oil stain

10720-10730 SILTSTONE: light gray to light gray brown, sub blocky, calcite cemented, trace disseminated pyrite, possible intergranular porosity; occasional SILTY SANDSTONE: as above; trace SHALE: as above, trace spotty light brown oil stain

10730-10740 SILTSTONE: light gray to light gray brown, sub blocky, calcite cemented, trace disseminated pyrite, possible intergranular porosity; occasional SILTY SANDSTONE: as above; trace SHALE: as above, trace spotty light brown oil stain

10740-10750 SILTSTONE: light gray to light gray brown, sub blocky, calcite cemented, trace disseminated pyrite, possible intergranular porosity; occasional SILTY SANDSTONE: as above; trace SHALE: as above, trace spotty light brown oil stain

10750-10760 SILTSTONE: light gray to light gray brown, sub blocky, calcite cemented, trace disseminated pyrite, possible intergranular porosity; occasional SILTY SANDSTONE: as above; trace SHALE: as above, trace spotty light brown oil stain

10760-10770 SILTSTONE: light gray to light gray brown, sub blocky, calcite cemented, trace disseminated pyrite, possible intergranular porosity; occasional SILTY SANDSTONE: as above; trace SHALE: as above, trace spotty light brown oil stain

Lower Bakken [10,774' MD, 10,637' TVD (-8,669')]

10770-10780 SILTSTONE: light gray to light gray brown, sub blocky, calcite cemented, trace disseminated pyrite, possible intergranular porosity; occasional SILTY SANDSTONE: as above; trace SHALE: as above, trace spotty light brown oil stain

10780-10790 SILTSTONE: light gray to light gray brown, sub blocky, calcite cemented, trace disseminated pyrite, possible intergranular porosity; occasional SILTY SANDSTONE: as above; trace SHALE: as above, trace spotty light brown oil stain

Pronghorn [10,798' MD, 10,649' TVD (-8,681')]

10790-10800 SHALE: black to very dark brown, firm, blocky, earthy texture, disseminated pyrite, petroliferous, carbonaceous, no visible porosity, abundant brown even oil stain

10800-10810 SHALE: black to very dark brown, firm, blocky, earthy texture, disseminated pyrite, petroliferous, carbonaceous, no visible porosity, abundant brown even oil stain

10810-10820 SILTSTONE: as above; trace SHALE: black to brown, firm, blocky, earthy texture, carbonaceous, rare disseminated pyrite

10820-10830 SILTSTONE: as above; trace SHALE: black to brown, firm, blocky, earthy texture, carbonaceous, rare disseminated pyrite

10830-10840 SILTSTONE: as above; trace SHALE: black to brown, firm, blocky, earthy texture, carbonaceous, rare disseminated pyrite

10840-10850 SILTSTONE: as above; trace SHALE: black to brown, firm, blocky, earthy texture, carbonaceous, rare disseminated pyrite

10850-10860 SILTSTONE: as above; trace SHALE: as above; rare ARGILLACEOUS DOLOMITE: mudstone, medium gray to gray brown, pale grain, cream to tan, fine crystalline, sucrosic texture, firm to friable, rare disseminated pyrite, silty in part, sandy in part, possible intercrystalline porosity, trace spotty light brown oil stain

10860-10870 ARGILLACEOUS DOLOMITE: mudstone, medium gray to gray brown, pale grain, cream to tan, fine crystalline, sucrosic texture, firm to friable, rare disseminated pyrite, silty in part, sandy in part, possible intercrystalline porosity, trace spotty light brown oil stain; rare SILTSTONE: as above; rare SHALE: as above

Three Forks [10,873' MD, 10,669' TVD (-8,701')]

10870-10880 ARGILLACEOUS DOLOMITE: mudstone, medium gray to gray brown, pale grain, cream to tan, fine crystalline, sucrosic texture, firm to friable, rare disseminated pyrite, silty in part, sandy in part, possible intercrystalline porosity, trace spotty light brown oil stain; rare SILTSTONE: as above; rare SHALE: as above

10880-10890 ARGILLACEOUS DOLOMITE: mudstone, medium gray to gray brown, pale grain, cream to tan, fine crystalline, sucrosic texture, firm to friable, rare disseminated pyrite, silty in part, sandy in part, possible intercrystalline porosity, trace spotty light brown oil stain; rare SILTSTONE: as above; rare SHALE: as above

10890-10900 ARGILLACEOUS DOLOMITE: mudstone, medium gray to gray brown, pale grain, cream to tan, fine crystalline, sucrosic texture, firm to friable, rare disseminated pyrite, silty in part, sandy in part, possible intercrystalline porosity, trace spotty light brown oil stain; rare SILTSTONE: as above; rare SHALE: as above

10900-10910 ARGILLACEOUS DOLOMITE: mudstone, medium gray to gray brown, pale grain, cream to tan, fine crystalline, sucrosic texture, firm to friable, rare disseminated pyrite, silty in part, sandy in part, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: as above; trace DOLOMITE: mudstone, tan, pink, friable, earthy texture, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain

10910-10920 ARGILLACEOUS DOLOMITE: mudstone, medium gray to gray brown, pale grain, cream to tan, fine crystalline, sucrosic texture, firm to friable, rare disseminated pyrite, silty in part, sandy in part, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: as above; trace DOLOMITE: as above

10920-10930 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; common SHALE: as above; rare ARGILLACEOUS DOLOMITE: as above

10930-10940 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; common SHALE: as above; rare ARGILLACEOUS DOLOMITE: as above

10940-10950 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; common SHALE: as above

10950-10960 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; common SHALE: as above

10960-10970 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; common SHALE: as above

11380-11390 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; common SHALE: as above

11390-11400 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; common SHALE: as above

11400-11410 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; common SHALE: as above

11410-11420 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; common SHALE: as above

11420-11430 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; common SHALE: as above

11430-11440 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; common SHALE: as above

11440-11470 DOLOMITE: mudstone, tan, pink, friable, earthy texture, sucrosic texture, firm, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; common SHALE: as above

11470-11500 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; common SHALE: as above

11500-11530 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; common SHALE: as above, fast moderately diffuse pale green cut fluorescence

11530-11560 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; common SHALE: as above, fast moderately diffuse pale green cut fluorescence

11560-11590 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; common SHALE: as above, fast moderately diffuse pale green cut fluorescence

11590-11620 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; common SHALE: as above, fast moderately diffuse pale green cut fluorescence

11620-11650 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: as above, fast moderately diffuse pale green cut fluorescence

11650-11680 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: as above, fast moderately diffuse pale green cut fluorescence

11680-11710 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: as above, fast weak diffuse pale green cut fluorescence

11710-11740 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; common SHALE: as above, fast weak diffuse pale green cut fluorescence

11740-11770 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; common SHALE: as above, fast weak diffuse pale green cut fluorescence

11770-11800 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; common SHALE: light green, light gray, friable, earthy texture, trace disseminated pyrite, no visible porosity, trace spotty light brown oil stain, fast weak diffuse pale green cut fluorescence

11800-11830 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: light green, light gray, friable, earthy texture, trace disseminated pyrite, no visible porosity, trace spotty light brown oil stain, fast moderately diffuse pale green cut fluorescence

11830-11860 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: light green, light gray, friable, earthy texture, trace disseminated pyrite, no visible porosity, trace spotty light brown oil stain, fast moderately diffuse pale green cut fluorescence

11860-11890 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; common SHALE: as above, fast moderately diffuse pale green cut fluorescence

11890-11920 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: as above, fast moderately diffuse pale green cut fluorescence

11920-11950 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: as above, fast moderately diffuse pale green cut fluorescence

11950-11980 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: as above, fast moderately diffuse pale green cut fluorescence

11980-12010 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: as above, fast moderately diffuse pale green cut fluorescence

12010-12040 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: as above, fast moderately diffuse pale green cut fluorescence

12040-12070 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: as above, fast moderately diffuse pale green cut fluorescence

12910-12940 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: as above, fast moderately diffuse pale green cut fluorescence

12940-12970 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above, fast moderately diffuse pale green cut fluorescence

12970-13000 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above, fast moderately diffuse pale green cut fluorescence

13000-13030 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above, fast moderately diffuse pale green cut fluorescence

13030-13060 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above, fast moderately diffuse pale green cut fluorescence

13060-13090 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: as above, fast moderately diffuse pale green cut fluorescence

13090-13120 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: as above, fast moderately diffuse pale green cut fluorescence

13120-13150 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: as above, fast moderately diffuse pale green cut fluorescence

13150-13180 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: as above, fast moderately diffuse pale green cut fluorescence

13180-13210 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: as above, fast moderately diffuse pale green cut fluorescence

13210-13240 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: as above, fast moderately diffuse pale green cut fluorescence

13240-13270 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above, fast weak diffuse pale green cut fluorescence

13270-13300 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above, fast weak diffuse pale green cut fluorescence

13570-13600 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; occasional DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible

intercrystalline porosity, trace spotty light brown oil stain; trace SHALE: as above, fast weak diffuse pale green cut fluorescence

13600-13630 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; occasional DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; trace SHALE: as above, fast weak diffuse pale green cut fluorescence

13630-13660 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; common DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; trace SHALE: as above, fast weak diffuse pale green cut fluorescence

13660-13690 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; rare SHALE: as above, fast weak diffuse pale green cut fluorescence

13690-13720 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; rare SHALE: as above, fast weak diffuse pale green cut fluorescence

13720-13750 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above; trace CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain, fast very weak diffuse pale green cut fluorescence

13750-13780 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above; trace CLAYSTONE: as above, fast very weak diffuse pale green cut fluorescence

13780-13810 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: light green, light gray, friable, earthy texture, trace disseminated pyrite, no visible porosity, trace spotty light brown oil stain, fast moderately diffuse pale green cut fluorescence

13810-13840 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: light green, light gray, friable, earthy texture, trace disseminated pyrite, no visible porosity, trace spotty light brown oil stain, fast moderately diffuse pale green cut fluorescence

13840-13870 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: light green, light gray, friable, earthy texture, trace disseminated pyrite, no visible porosity, trace spotty light brown oil stain, fast moderately diffuse pale green cut fluorescence

13870-13900 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above, fast moderately diffuse pale green cut fluorescence

15580-15610 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above, moderately contaminated with lube

15610-15640 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: as above, moderately contaminated with lube

15640-15670 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: as above, moderately contaminated with lube

15670-15700 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: as above, moderately contaminated with lube

15700-15730 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above; trace CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain, fast very weak diffuse pale green cut fluorescence

15730-15760 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above; trace CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain, fast very weak diffuse pale green cut fluorescence

15760-15790 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; rare SHALE: as above, fast weak diffuse pale green cut fluorescence

15790-15820 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; rare SHALE: as above, fast weak diffuse pale green cut fluorescence

15820-15850 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; occasional DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; trace SHALE: as above, fast weak diffuse pale green cut fluorescence

15850-15880 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; occasional DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; trace SHALE: as above, fast weak diffuse pale green cut fluorescence

15880-15910 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; occasional DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; trace SHALE: as above, moderately contaminated with lube

16600-16630 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; rare DOLOMITE: as above; trace SHALE: as above, heavily contaminated with lube

16630-16660 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above; trace CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain, fast very weak diffuse pale green cut fluorescence

16660-16690 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above; trace CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain, fast very weak diffuse pale green cut fluorescence

16690-16720 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above; trace CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain, fast very weak diffuse pale green cut fluorescence

16720-16750 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above; trace CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain, fast very weak diffuse pale green cut fluorescence

16750-16780 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above, moderately contaminated with lube

16780-16810 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above, moderately contaminated with lube

16810-16840 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above, moderately contaminated with lube

16840-16870 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above, moderately contaminated with lube

16870-16900 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above, moderately contaminated with lube

16900-16930 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above, moderately contaminated with lube

16930-16960 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above, moderately contaminated with lube

17800-17830 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above, weak lube contaminated

17830-17860 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above, weak lube contaminated

17860-17890 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above, weak lube contaminated

17890-17920 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above, weak lube contaminated

17920-17950 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above, weak lube contaminated

17950-17980 DOLOMITE: mudstone, tan, pink, friable, earthy texture, rare sucrosic texture, hard to firm, silty in part, sandy in part, rare disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above, weak lube contaminated

17980-18010 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; rare SHALE: as above, fast weak diffuse pale green cut fluorescence

18010-18040 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; rare SHALE: as above, fast weak diffuse pale green cut fluorescence

18040-18070 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; rare SHALE: as above, fast weak diffuse pale green cut fluorescence

18070-18100 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; rare SHALE: as above, fast weak diffuse pale green cut fluorescence

18100-18130 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; occasional DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; trace SHALE: as above, heavily contaminated with lube

18130-18160 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; occasional DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; trace SHALE: as above, heavily contaminated with lube

18160-18190 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; occasional DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; trace SHALE: as above, heavily contaminated with lube

18190-18220 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; occasional DOLOMITE: as above; trace SHALE: as above, heavily contaminated with lube

18220-18250 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; occasional DOLOMITE: as above; trace SHALE: as above, heavily contaminated with lube

18250-18280 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; occasional DOLOMITE: as above; trace SHALE: as above, heavily contaminated with lube

18280-18310 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; occasional DOLOMITE: as above; trace SHALE: as above, heavily contaminated with lube

18310-18340 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; occasional DOLOMITE: as above; trace SHALE: as above, heavily contaminated with lube

18340-18370 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; occasional DOLOMITE: as above; trace SHALE: as above, heavily contaminated with lube

18370-18400 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; rare SHALE: as above, fast weak diffuse pale green cut fluorescence

18400-18430 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; rare SHALE: as above, fast weak diffuse pale green cut fluorescence

18430-18460 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: as above; trace CLAYSTONE: as above, fast weak diffuse pale green cut fluorescence

18460-18490 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: as above; trace CLAYSTONE: as above, fast weak diffuse pale green cut fluorescence

18490-18520 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: as above; trace CLAYSTONE: as above, fast weak diffuse pale green cut fluorescence

18520-18550 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: as above; trace CLAYSTONE: as above, fast weak diffuse pale green cut fluorescence

19810-19840 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above, heavily contaminated with lube

19840-19870 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above, heavily contaminated with lube

19870-19900 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional SHALE: as above, heavily contaminated with lube

19900-19930 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; occasional DOLOMITE: as above; trace SHALE: as above, heavily contaminated with lube

19930-19960 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; occasional DOLOMITE: as above; trace SHALE: as above, heavily contaminated with lube

19960-19990 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; occasional DOLOMITE: as above; trace SHALE: as above, heavily contaminated with lube

19990-20020 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; occasional DOLOMITE: as above; trace SHALE: as above, heavily contaminated with lube

20020-20050 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; occasional DOLOMITE: as above; trace SHALE: as above, heavily contaminated with lube

20050-20080 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; occasional DOLOMITE: as above; trace SHALE: as above, heavily contaminated with lube

20080-20110 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; occasional DOLOMITE: as above; trace SHALE: as above, heavily contaminated with lube

20110-20140 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; occasional DOLOMITE: as above; trace SHALE: as above, heavily contaminated with lube

20140-20170 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; occasional DOLOMITE: as above; trace SHALE: as above, heavily contaminated with lube

20170-20200 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; occasional DOLOMITE: as above; trace SHALE: as above, heavily contaminated with lube

20200-20230 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; occasional DOLOMITE: as above; trace SHALE: as above, heavily contaminated with lube

20230-20260 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; occasional DOLOMITE: as above; trace SHALE: as above, heavily contaminated with lube

20260-20290 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; occasional DOLOMITE: as above; trace SHALE: as above, heavily contaminated with lube

20290-20320 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; common DOLOMITE: as above; trace SHALE: as above, heavily contaminated with lube

20320-20350 CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; common DOLOMITE: as above; trace SHALE: as above, heavily contaminated with lube

20350-20380 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; rare SHALE: as above, moderately contaminated with lube

20380-20410 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; rare SHALE: as above, moderately contaminated with lube

20410-20440 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; occasional CLAYSTONE: light gray, medium gray to tan, occasional off white, massive, fine crystalline, dolomitic cement, trace disseminated pyrite, trace spotty light brown oil stain; rare SHALE: as above, moderately contaminated with lube

20440-20470 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; rare CLAYSTONE: as above; rare SHALE: as above, moderately contaminated with lube

20470-20500 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: as above, moderately contaminated with lube

20500-20530 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: as above, moderately contaminated with lube

20530-20560 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: as above, moderately contaminated with lube

20560-20590 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: as above, moderately contaminated with lube

20590-20620 DOLOMITE: mudstone, orange, tan, pink, friable, earthy texture, silty in part, sandy in part, trace disseminated pyrite, possible intercrystalline porosity, trace spotty light brown oil stain; rare SHALE: as above, moderately 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)

TH

Well File No.
28601

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



<input type="checkbox"/> Notice of Intent	Approximate Start Date 	<input type="checkbox"/> Drilling Prognosis	<input type="checkbox"/> Spill Report
<input checked="" type="checkbox"/> Report of Work Done	Date Work Completed September 23, 2014	<input type="checkbox"/> Redrilling or Repair	<input type="checkbox"/> Shooting
<input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.	Approximate Start Date 	<input type="checkbox"/> Casing or Liner	<input type="checkbox"/> Acidizing
		<input type="checkbox"/> Plug Well	<input type="checkbox"/> Fracture Treatment
		<input type="checkbox"/> Supplemental History	<input type="checkbox"/> Change Production Method
		<input type="checkbox"/> Temporarily Abandon	<input checked="" type="checkbox"/> Reclamation
		<input type="checkbox"/> Other	Reserve pit reclamation

Well Name and Number Chalmers Wade Federal 5301 44-24 12TXR					
Footages	Qtr-Qtr	Section	Township	Range	
844 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 602 W 9th Street	City Fairview	State MT	Zip Code 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 liner, back fill with clay slope and contour well site to ensure proper drainage

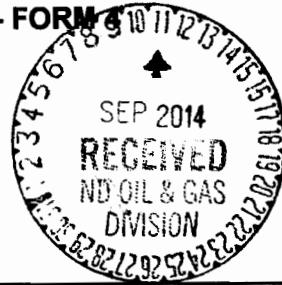
Company Oasis Petroleum North America LLC	Telephone Number 281-404-9591	
Address 1001 Fannin, Suite 1500		
City Houston	State TX	Zip Code 77002
Signature <i>Chelsea Covington</i>	Printed Name Chelsea Covington	
Title Regulatory Assistant	Date September 24, 2014	
Email Address ccovington@oasispetroleum.com		

FOR STATE USE ONLY	
<input checked="" type="checkbox"/> Received	<input type="checkbox"/> Approved
Date 10-6-14	
By <i>WV</i>	
Title <i>WV</i>	



SUNDRY NOTICES AND REPORTS ON WELLS - FORM

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.
28601

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

Notice of Intent

Approximate Start Date
September 9, 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

Spill Report

Redrilling or Repair

Shooting

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 Wade Federal 5301 44-24 12TXR

Footages	Qtr-Qtr	Section	Township	Range
844 F S L	245 F E L	SESE	24	153 N 101 W
Field Baker	Pool Bakken		County McKenzie	

24-HOUR PRODUCTION RATE

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

Name of Contractor(s)

Address	City	State	Zip Code
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DETAILS OF WORK

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

OFF CONFIDENTIAL 3/11/15

Company Oasis Petroleum North America LLC	Telephone Number 281-404-9591	
Address 1001 Fannin, Suite 1500		
City Houston	State TX	Zip Code 77002
Signature <i>Chelsea Covington</i>	Printed Name Chelsea Covington	
Title Regulatory Assistant	Date September 9, 2014	
Email Address ccovington@oasispetroleum.com		

FOR STATE USE ONLY

<input type="checkbox"/> Received	<input checked="" type="checkbox"/> Approved
Date 9/16/14	
By <i>Alice M. Webber</i>	
Title Engineering Technician	



Oil and Gas Division

Lynn D. Helms - Director

Bruce E. Hicks - Assistant Director

Department of Mineral Resources

Lynn D. Helms - Director

North Dakota Industrial Commission

www.dmr.nd.gov/oilgas

2860 |

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 WADE FEDERAL 5301 44-24 12TXR** Well File No.: **28601**
Location: **SESE 24-153-101** County: **MCKENZIE**
Permit Type: **Development - HORIZONTAL**
Field: **BAKER** Target Horizon: **THREE FORKS B1**

Dear BRANDI TERRY:

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

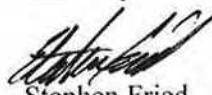
- 1) All cores, core chips and samples must be submitted to the State Geologist as provided for under North Dakota Century Code: Section 38-08-04 and North Dakota Administrative Code: Section 43-02-03-38.1.
- 2) Samples: The Operator is to begin collecting sample drill cuttings no lower than the:
Base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

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

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

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

Sincerely


Stephen Fried
Geologist



SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4

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



Well File No.
28601

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.

PLEASE SUBMIT THE ORIGINAL AND ONE COPY.

<input checked="" type="checkbox"/> Notice of Intent	Approximate Start Date June 1, 2014	<input type="checkbox"/> Drilling Prognosis	<input type="checkbox"/> Spill Report
<input type="checkbox"/> Report of Work Done	Date Work Completed	<input type="checkbox"/> Redrilling or Repair	<input type="checkbox"/> Shooting
<input type="checkbox"/> Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.		<input type="checkbox"/> Casing or Liner	<input type="checkbox"/> Acidizing
Approximate Start Date		<input type="checkbox"/> Plug Well	<input type="checkbox"/> Fracture Treatment
		<input type="checkbox"/> Supplemental History	<input type="checkbox"/> Change Production Method
		<input type="checkbox"/> Temporarily Abandon	<input type="checkbox"/> Reclamation
		<input checked="" type="checkbox"/> Other	Waiver to rule Rule 43-02-03-31

Well Name and Number

Chalmers Wade Federal 5301 44-24 12TXR

Footage	Qtr-Qtr	Section	Township	Range
844 F S L	245 F E L	SESE	24	153 N 101 W
Field	Pool Bakken		County	McKenzie

24-HOUR PRODUCTION RATE

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

Name of Contractor(s)

Address	City	State	Zip Code
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DETAILS OF WORK

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

#20197

The Oasis Petroleum/ Wade Federal 5300 21-30H located within a mile of subject location

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

Company Oasis Petroleum North America LLC	Telephone Number 281-404-9563	
Address 1001 Fannin, Suite 1500		
City Houston	State TX	Zip Code 77002
Signature 	Printed Name Heather McCowan	
Title Regulatory Assistant	Date May 28, 2014	
Email Address hmccowan@oasispetroleum.com		

FOR STATE USE ONLY

<input type="checkbox"/> Received	<input checked="" type="checkbox"/> 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.
28601

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

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

Well Name and Number Chalmers Wade Federal 5301 44-24 12TXR					
Footages 844 F S L	245 F E L	Qtr-Qtr SESE	Section 24	Township 153 N	Range 100 W
Field	Pool Bakken	County McKenzie			

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

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

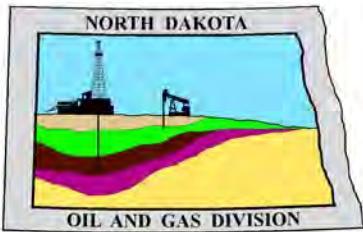
DETAILS OF WORK

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

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

Company Oasis Petroleum North America LLC	Telephone Number (281) 404-9563	
Address 1001 Fannin, Suite 1500		
City Houston	State TX	Zip Code 77002
Signature 	Printed Name Heather McCowan	
Title Regulatory Assistant	Date May 28, 2014	
Email Address hmccowan@oasispetroleum.com		

FOR STATE USE ONLY	
<input type="checkbox"/> Received	<input checked="" type="checkbox"/> 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 WADE FEDERAL 5301 44-24 12TXR
SESE Section 24-153N-101W
McKenzie County
Well File # 28601**

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 located approximately down the east-west axis of the spacing unit (**within 250'** of the section line per Commission policy) and no closer than the **200'** setback from the east & west boundaries within the 2560 acre spacing unit consisting of Sections 19, 20, 29, & 30 T153N R100W.

PERMIT STIPULATIONS: Effective June 1, 2014, a covered leak-proof container (with placard) for filter sock disposal must be maintained on the well site beginning when the well is spud, and must remain on-site during clean-out, completion, and flow-back whenever filtration operations are conducted. 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. **DUE TO STREAM ADJACENT TO THE WELL SITE, A DIKE IS REQUIRED SURROUNDING THE ENTIRE LOCATION. OASIS PETRO NO AMER must contact NDIC Field Inspector Richard Dunn at 701-770-3554 prior to 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 coordinates from the well head at casing point are: 594' south and 445' east. Also, based on the azimuth of the proposed lateral the maximum legal coordinate from the well head is: 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 New Location	Type of Well Oil & Gas	Approximate Date Work Will Start 6 / 1 / 2013	Confidential Status No
Operator OASIS PETROLEUM NORTH AMERICA LLC		Telephone Number 281-404-9563	
Address 1001 Fannin Suite 1500		City Houston	
		State TX Zip Code 77002	

Notice has been provided to the owner of any permanently occupied dwelling within 1,320 feet. This well is not located within five hundred feet of an occupied dwelling.

WELL INFORMATION (If more than one lateral proposed, enter data for additional laterals on page 2)

Well Name CHALMERS WADE FEDERAL				Well Number 5301 44-24 12TXR			
Surface Footages 844 F S L 245 F E L		Qtr-Qtr SESE	Section 24	Township 153 N	Range 101 W	County McKenzie	
Longstring Casing Point Footages 244 F S L 636 F W L		Qtr-Qtr SWSW	Section 19	Township 153 N	Range 101 W	County McKenzie	
Longstring Casing Point Coordinates From Well Head 600 S From WH 881 E From WH		Azimuth 113.7 °	Longstring Total Depth 11540 Feet MD 10707 Feet TVD				
Bottom Hole Footages From Nearest Section Line 1 F S L 224 F E L		Qtr-Qtr SESE	Section 20	Township 153 N	Range 101 W	County McKenzie	
Bottom Hole Coordinates From Well Head 843 S From WH 10534 E From WH		KOP Lateral 1 10225 Feet MD	Azimuth Lateral 1 90 °	Estimated Total Depth Lateral 1 21226 Feet MD 10784 Feet TVD			
Latitude of Well Head 48 ° 03 ' 19.68 "	Longitude of Well Head -103 ° 36 ' 18.55 "	NAD Reference NAD83		Description of (Subject to NDIC Approval) SPACING UNIT: Sections 19,20,29&30 T153N R100W			
Ground Elevation 1952 Feet Above S.L.	Acres in Spacing/Drilling Unit 2560	Spacing/Drilling Unit Setback Requirement Feet N/S 200 Feet E/W		Industrial Commission Order 23752			
North Line of Spacing/Drilling Unit 10489 Feet	South Line of Spacing/Drilling Unit 10522 Feet	East Line of Spacing/Drilling Unit 10362 Feet		West Line of Spacing/Drilling Unit 10500 Feet			
Objective Horizons Three Forks - B1						Pierre Shale Top 1917	
Proposed Surface Casing	Size 13 - 3/8 "	Weight 54 Lb./Ft.	Depth 2018 Feet	Cement Volume 967 Sacks	NOTE: Surface hole must be drilled with fresh water and surface casing must be cemented back to surface.		
Proposed Longstring Casing	Size 7 - "	Weight(s) 32 Lb./Ft.	Longstring Total Depth 11540 Feet MD 10707 Feet TVD		Cement Volume 898 Sacks	Cement Top 3803 Feet	Top Dakota Sand 5303 Feet
Base Last Charles Salt (If Applicable) 9095 Feet		NOTE: Intermediate or longstring casing string must be cemented above the top Dakota Group Sand.					
Proposed Logs Triple Combo: KOP to Kibby GR/Res to BSC GR to surf CND through the Dakota							
Drilling Mud Type (Vertical Hole - Below Surface Casing) Invert				Drilling Mud Type (Lateral) Salt Water Gel			
Survey Type in Vertical Portion of Well MWD Every 100 Feet		Survey Frequency: Build Section 30 Feet		Survey Frequency: Lateral 90 Feet		Survey Contractor Ryan	

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

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

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

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

See Page 2 for Comments section and signature block.

COMMENTS, ADDITIONAL INFORMATION, AND/OR LIST OF ATTACHMENTS**Documents forwarded by email: Drill plan with drilling fluids, Well Summary with casing/cement plans, Directional Plan & Plot, Plots**

Lateral 2

KOP Lateral 2 Feet MD	Azimuth Lateral 2 °	Estimated Total Depth Lateral 2 Feet MD Feet TVD			KOP Coordinates From Well Head From WH From WH		
Formation Entry Point Coordinates From Well Head From WH		Bottom Hole Coordinates From Well Head From WH			From WH		
KOP Footages From Nearest Section Line F L		Qtr-Qtr	Section	Township N	Range W	County	
Bottom Hole Footages From Nearest Section Line F L		Qtr-Qtr	Section	Township N	Range W	County	

Lateral 3

KOP Lateral 3 Feet MD	Azimuth Lateral 3 °	Estimated Total Depth Lateral 3 Feet MD Feet TVD			KOP Coordinates From Well Head From WH From WH		
Formation Entry Point Coordinates From Well Head From WH		Bottom Hole Coordinates From Well Head From WH			From WH		
KOP Footages From Nearest Section Line F L		Qtr-Qtr	Section	Township N	Range W	County	
Bottom Hole Footages From Nearest Section Line F L		Qtr-Qtr	Section	Township N	Range W	County	

Lateral 4

KOP Lateral 4 Feet MD	Azimuth Lateral 4 °	Estimated Total Depth Lateral 4 Feet MD Feet TVD			KOP Coordinates From Well Head From WH From WH		
Formation Entry Point Coordinates From Well Head From WH		Bottom Hole Coordinates From Well Head From WH			From WH		
KOP Footages From Nearest Section Line F L		Qtr-Qtr	Section	Township N	Range W	County	
Bottom Hole Footages From Nearest Section Line F L		Qtr-Qtr	Section	Township N	Range W	County	

Lateral 5

KOP Lateral 5 Feet MD	Azimuth Lateral 5 °	Estimated Total Depth Lateral 5 Feet MD Feet TVD			KOP Coordinates From Well Head From WH From WH		
Formation Entry Point Coordinates From Well Head From WH		Bottom Hole Coordinates From Well Head From WH			From WH		
KOP Footages From Nearest Section Line F L		Qtr-Qtr	Section	Township N	Range W	County	
Bottom Hole Footages From Nearest Section Line F L		Qtr-Qtr	Section	Township N	Range W	County	

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

Date

5 / 28 / 2014**ePermit**Printed Name
Heather McCowanTitle
Regulatory Assistant**FOR STATE USE ONLY**

Permit and File Number 28601	API Number 33 - 053 - 06012
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

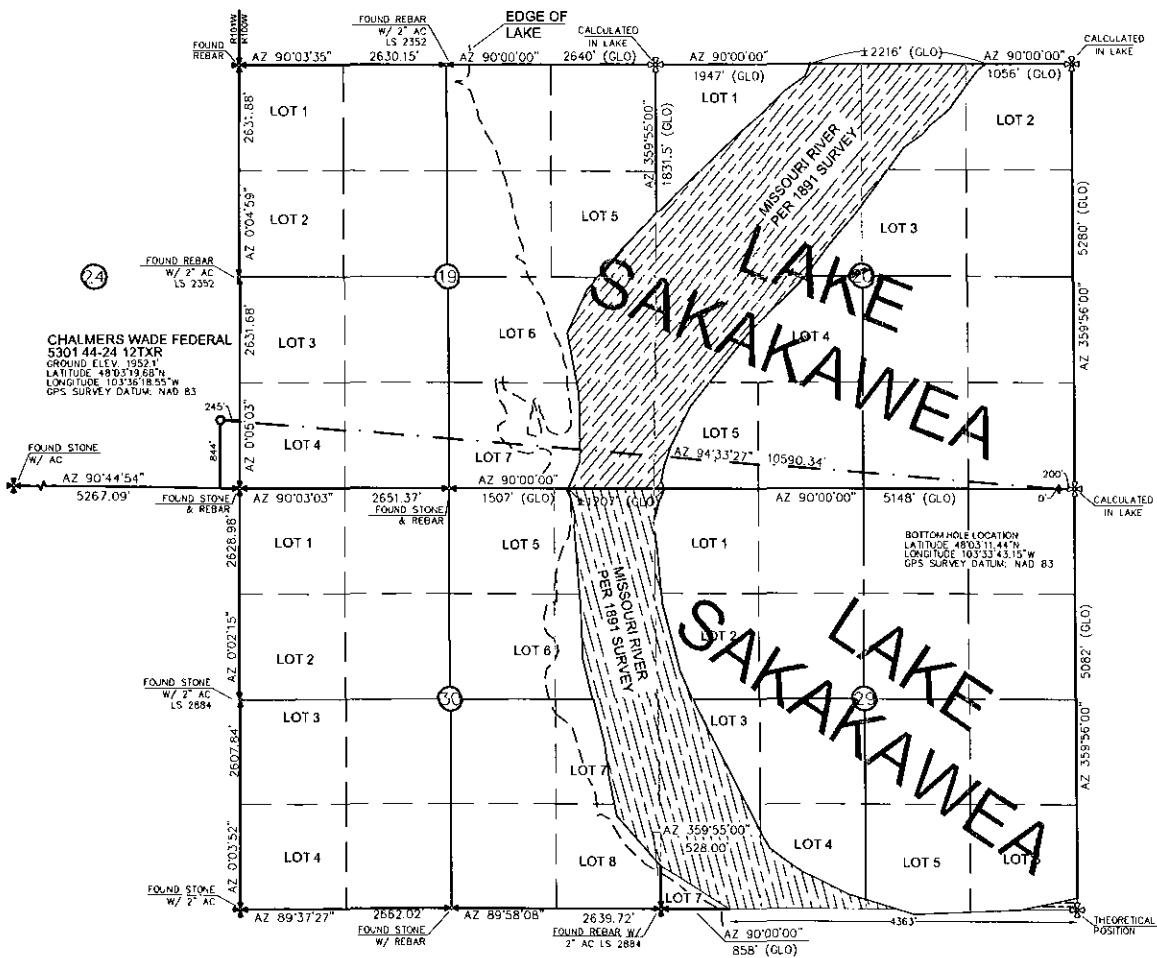
WELL LOCATION PLAT

SASIS PETROLEUM NORTH AMERICA, LLC
10000 GANNON, SUITE 1500, HOUSTON, TEXAS 77042

001 FANNIN, SUITE 1500, HOUSTON, TX 77002
SUCH MEMS MADE FEDERAL 5104-44-34-12TMR#

CHALMERS WADE FEDERAL 5361 44-24 12TXR^H
FROM SOUTH LINE AND 245 FEET FROM EAST

844 FEET FROM SOUTH LINE AND 245 FEET FROM EAST LINE
SECTION 24, T153N, R101W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



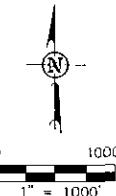
STAKED ON 9/3/13
VERTICAL CONTROL DATUM WAS BASED UPON
CONTROL POINT 16 WITH AN ELEVATION OF 2014.2'

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

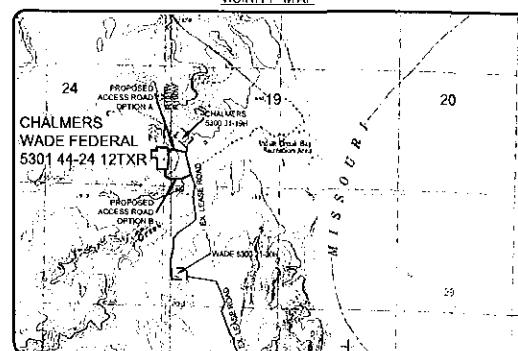


THIS DOCUMENT WAS ORIGINALLY ISSUED
AND SEALED BY DARYL D. KASEMAN,
PLS, REGISTRATION NUMBER 3880 ON
5/21/14 AND THE ORIGINAL
DOCUMENTS ARE STORED AT THE
OFFICES OF INTERSTATE ENGINEERING,
INC.



 - MONUMENT - RECOVERED
 - MONUMENT - NOT RECOVERED

VICINITY MAP



INTERSTATE
ENGINEERING

18

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OASIS PETROLEUM NORTH AMERICA, LLC		Permian Basin	
WELL LOCATION PLAT		Section 24, T15S, R10W	
MCKENZIE COUNTY, NORTH DAKOTA			
Drawn By:	J.S.	Date:	May 2013
Checked By:	D.O.S.		

Oasis Petroleum
Well Summary
Chalmers Wade Federal 5301 44-24 12TXR
Sec. 24 T153N R101W
McKenzie County, North Dakota

SURFACE CASING AND CEMENT DESIGN

Size	Interval	Weight	Grade	Coupling	I.D.	Drift	Make-up Torque (ft-lbs)		
							Minimum	Optimum	Max
13-3/8"	0' to 2,018'	54.5	J-55	STC	12.615"	12.459"	4,100	5,470	6,840

Interval	Description	Collapse (psi) a	Burst (psi) b	Tension (1000 lbs) c	Cost per ft
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 Wade Federal 5301 44-24 12TXR
Sec. 24 T153N R101W
McKenzie County, North Dakota

INTERMEDIATE CASING AND CEMENT DESIGN

Intermediate Casing Design

Size	Interval	Weight	Grade	Coupling	I.D.	Drift	Make-up Torque (ft-lbs)		
							Minimum	Optimum	Max
9-5/8"	0' - 6000'	40	HCL-80	LTC	8.835"	8.75"**	5,450	7,270	9,090

**Special Drift

Interval	Description	Collapse	Burst	Tension
		(psi) a	(psi) b	(1000 lbs) c
0' - 6000'	9-5/8", 40#, HCL-80, LTC, 8rd	3090 / 3.96*	5750 / 1.23	837 / 2.75

API Rating & Safety Factor

- 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 Wade Federal 5301 44-24 12TXR
Sec. 24 T153N R101W
McKenzie County, North Dakota

INTERMEDIATE CASING AND CEMENT DESIGN

Intermediate Casing Design

Size	Interval	Weight	Grade	Coupling	I.D.	Drift	Make-up Torque (ft-lbs)		
							Minimum	Optimum	Max
7"	0' - 11540'	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' - 11540'	7", 32#, HCP-110, LTC, 8rd	11890 / 2.13*	12450 / 1.28	897 / 2.17
6777' - 9095'	7", 32#, HCP-110, LTC, 8rd	11890 / 1.88**	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: **219 sks** (86 bbls) 2.21 yield conventional system with 47 lb/sk cement, 37 lb/sk D035 Extender, 3.0% KCl, 3.0% D154 Extender, 0.3% D208 Viscosifier, 0.07% Retarder, 0.2% Anti Foam, 0.5lb/sk D130 LCM

Tail Slurry: **679 sks** (186 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 Wade Federal 5301 44-24 12TXR
Sec. 24 T153N R101W
McKenzie County, North Dakota

PRODUCTION LINER

Size	Interval	Weight	Grade	Coupling	I.D.	Drift	Torque
4-1/2"	10175' - 21226'	13.5	P-110	BTC	3.92"	3.795"	4,500

Interval	Length	Description	Collapse (psi) a	Burst (psi) b	Tension (1000 lbs) c
10175' - 21226'	11,051	4-1/2", 13.5 lb, P-110, BTC, 8rd	10680 / 2.00	12410 / 1.28	422 / 1.85

API Rating & Safety Factor

- a) Based on full casing evacuation with 9.5 ppg fluid on backside @ 10784' TVD.
- b) Burst pressure based on 9000 psi treating pressure with 10.2 ppg internal fluid gradient and 9 ppg external fluid gradient @ 10784' TVD.
- c) Based on string weight in 9.5 ppg fluid (Buoyed weight: 128k 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 12TXR**

Chalmers 5301 44-24 12TXR

Plan: Design #1

Standard Planning Report

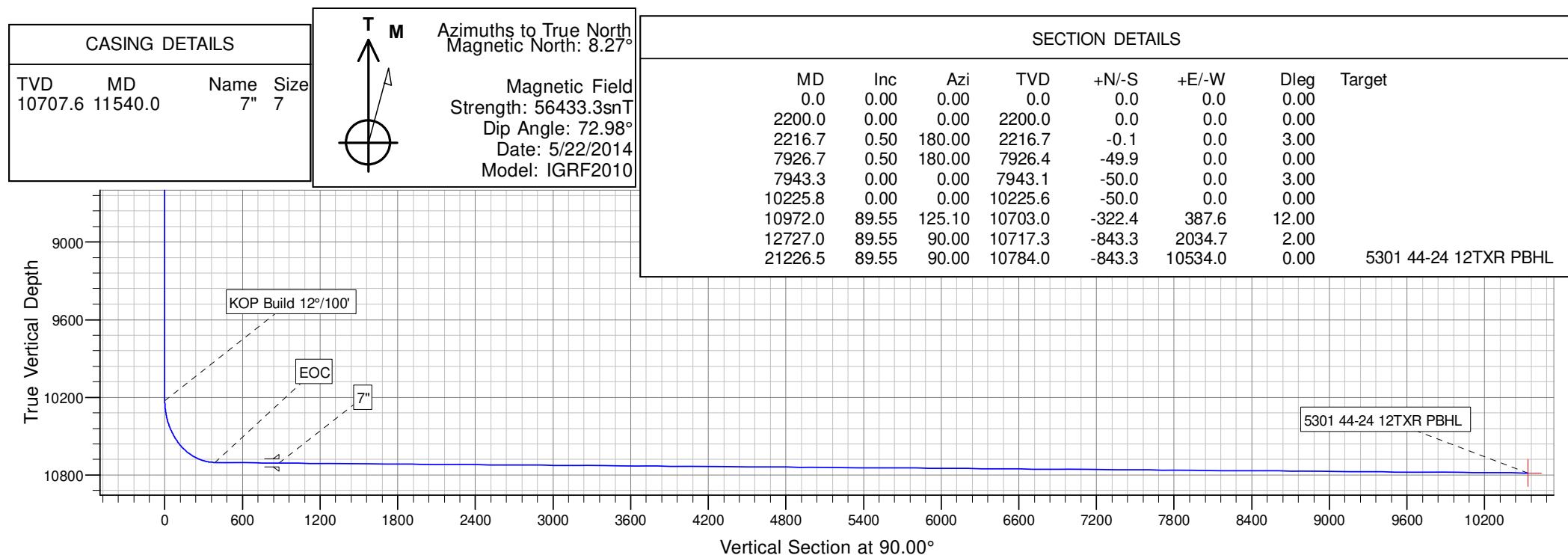
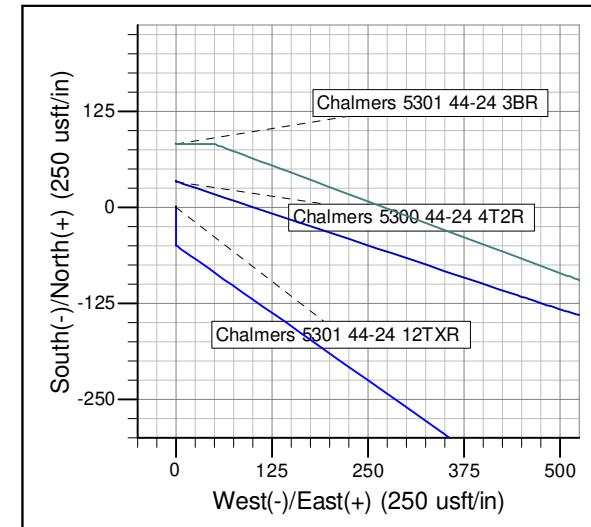
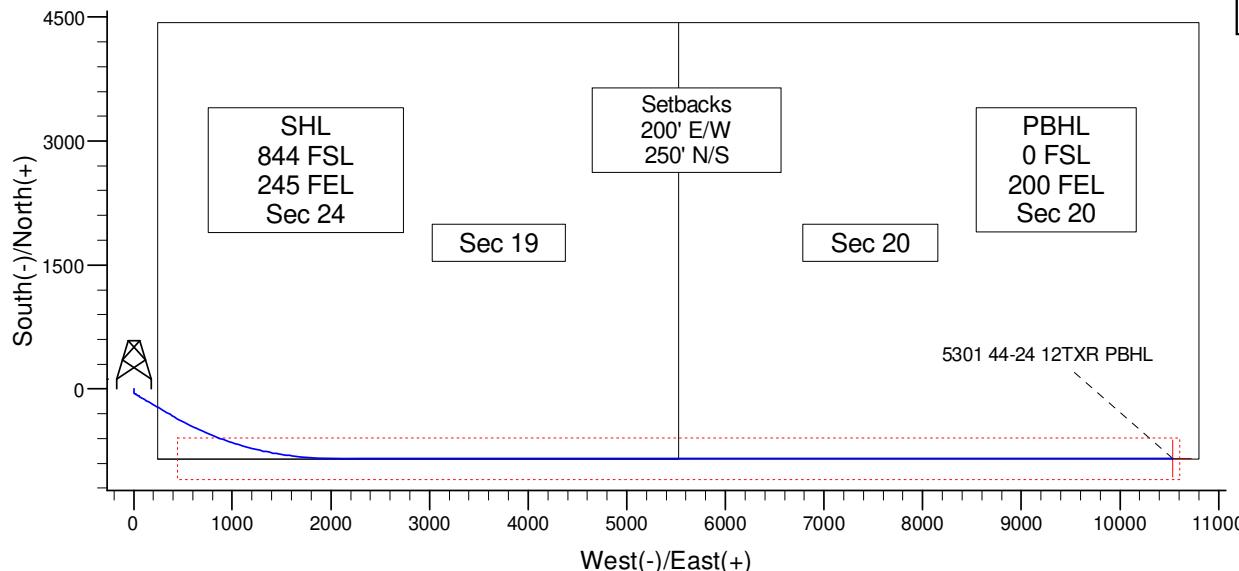
22 May, 2014

Project: Indian Hills
 Site: 153N-100W-19/20_Altered
 Well: Chalmers 5301 44-24 12TXR
 Wellbore: Chalmers 5301 44-24 12TXR
 Design: Design #1



WELL DETAILS: Chalmers 5301 44-24 12TXR

Northing 400308.12	Easting 1209324.78	Latitude 48° 3' 19.680 N	Longitude 103° 36' 18.550 W
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Ryan Directional Services

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Chalmers 5301 44-24 12TXR
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 12TXR	Survey Calculation Method:	Minimum Curvature
Wellbore:	Chalmers 5301 44-24 12TXR		
Design:	Design #1		

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

Site	153N-100W-19/20_Altered		
Site Position:		Northing:	400,357.73 usft
From:	Lat/Long	Easting:	1,209,326.78 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
			Latitude: 48° 3' 20.170 N Longitude: 103° 36' 18.550 W Grid Convergence: -2.31 °

Well	Chalmers 5301 44-24 12TXR				
Well Position	+N/-S +E/-W	-49.7 usft 0.0 usft	Northing: Easting:	400,308.12 usft 1,209,324.78 usft	Latitude: Longitude:
Position Uncertainty		2.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:
					48° 3' 19.680 N 103° 36' 18.550 W 1,942.0 usft

Wellbore	Chalmers 5301 44-24 12TXR				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/22/2014	8.27	72.98	56,433

Design	Design #1				
Audit Notes:					
Version:		Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:		Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
		0.0	0.0	0.0	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	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.00	0.00	0.00	0.00	0.00
2,216.7	0.50	180.00	2,216.7	-0.1	0.0	3.00	3.00	0.00	180.00	
7,926.7	0.50	180.00	7,926.4	-49.9	0.0	0.00	0.00	0.00	0.00	
7,943.3	0.00	0.00	7,943.1	-50.0	0.0	3.00	-3.00	0.00	180.00	
10,225.8	0.00	0.00	10,225.6	-50.0	0.0	0.00	0.00	0.00	0.00	
10,972.0	89.55	125.10	10,703.0	-322.4	387.6	12.00	12.00	0.00	125.10	
12,727.0	89.55	90.00	10,717.3	-843.3	2,034.7	2.00	0.00	-2.00	-90.14	
21,226.5	89.55	90.00	10,784.0	-843.3	10,534.0	0.00	0.00	0.00	0.00	5301 44-24 12TXR PI

Ryan Directional Services

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Chalmers 5301 44-24 12TXR
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 12TXR	Survey Calculation Method:	Minimum Curvature
Wellbore:	Chalmers 5301 44-24 12TXR		
Design:	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/S (usft)	+E/W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
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	180.00	2,216.7	-0.1	0.0	0.0	3.00	3.00	0.00
2,300.0	0.50	180.00	2,300.0	-0.8	0.0	0.0	0.00	0.00	0.00
2,400.0	0.50	180.00	2,400.0	-1.7	0.0	0.0	0.00	0.00	0.00
2,500.0	0.50	180.00	2,500.0	-2.5	0.0	0.0	0.00	0.00	0.00
2,600.0	0.50	180.00	2,600.0	-3.4	0.0	0.0	0.00	0.00	0.00
2,700.0	0.50	180.00	2,700.0	-4.3	0.0	0.0	0.00	0.00	0.00
2,800.0	0.50	180.00	2,800.0	-5.2	0.0	0.0	0.00	0.00	0.00
2,900.0	0.50	180.00	2,900.0	-6.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.50	180.00	3,000.0	-6.9	0.0	0.0	0.00	0.00	0.00
3,100.0	0.50	180.00	3,100.0	-7.8	0.0	0.0	0.00	0.00	0.00
3,200.0	0.50	180.00	3,200.0	-8.7	0.0	0.0	0.00	0.00	0.00
3,300.0	0.50	180.00	3,300.0	-9.5	0.0	0.0	0.00	0.00	0.00
3,400.0	0.50	180.00	3,400.0	-10.4	0.0	0.0	0.00	0.00	0.00
3,500.0	0.50	180.00	3,500.0	-11.3	0.0	0.0	0.00	0.00	0.00
3,600.0	0.50	180.00	3,599.9	-12.1	0.0	0.0	0.00	0.00	0.00
3,700.0	0.50	180.00	3,699.9	-13.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.50	180.00	3,799.9	-13.9	0.0	0.0	0.00	0.00	0.00
3,900.0	0.50	180.00	3,899.9	-14.8	0.0	0.0	0.00	0.00	0.00
4,000.0	0.50	180.00	3,999.9	-15.6	0.0	0.0	0.00	0.00	0.00
4,100.0	0.50	180.00	4,099.9	-16.5	0.0	0.0	0.00	0.00	0.00
4,200.0	0.50	180.00	4,199.9	-17.4	0.0	0.0	0.00	0.00	0.00
4,300.0	0.50	180.00	4,299.9	-18.3	0.0	0.0	0.00	0.00	0.00
4,400.0	0.50	180.00	4,399.9	-19.1	0.0	0.0	0.00	0.00	0.00
4,500.0	0.50	180.00	4,499.9	-20.0	0.0	0.0	0.00	0.00	0.00
4,510.1	0.50	180.00	4,510.0	-20.1	0.0	0.0	0.00	0.00	0.00
Greenhorn									
4,600.0	0.50	180.00	4,599.9	-20.9	0.0	0.0	0.00	0.00	0.00
4,700.0	0.50	180.00	4,699.9	-21.7	0.0	0.0	0.00	0.00	0.00
4,800.0	0.50	180.00	4,799.9	-22.6	0.0	0.0	0.00	0.00	0.00
4,900.0	0.50	180.00	4,899.9	-23.5	0.0	0.0	0.00	0.00	0.00
4,915.1	0.50	180.00	4,915.0	-23.6	0.0	0.0	0.00	0.00	0.00
Mowry									
5,000.0	0.50	180.00	4,999.9	-24.4	0.0	0.0	0.00	0.00	0.00
5,100.0	0.50	180.00	5,099.9	-25.2	0.0	0.0	0.00	0.00	0.00
5,200.0	0.50	180.00	5,199.9	-26.1	0.0	0.0	0.00	0.00	0.00
5,300.0	0.50	180.00	5,299.9	-27.0	0.0	0.0	0.00	0.00	0.00
5,303.1	0.50	180.00	5,303.0	-27.0	0.0	0.0	0.00	0.00	0.00
Dakota									
5,400.0	0.50	180.00	5,399.9	-27.9	0.0	0.0	0.00	0.00	0.00
5,500.0	0.50	180.00	5,499.9	-28.7	0.0	0.0	0.00	0.00	0.00
5,600.0	0.50	180.00	5,599.9	-29.6	0.0	0.0	0.00	0.00	0.00
5,700.0	0.50	180.00	5,699.9	-30.5	0.0	0.0	0.00	0.00	0.00
5,800.0	0.50	180.00	5,799.9	-31.3	0.0	0.0	0.00	0.00	0.00
5,900.0	0.50	180.00	5,899.9	-32.2	0.0	0.0	0.00	0.00	0.00
6,000.0	0.50	180.00	5,999.9	-33.1	0.0	0.0	0.00	0.00	0.00
6,100.0	0.50	180.00	6,099.9	-34.0	0.0	0.0	0.00	0.00	0.00
6,200.0	0.50	180.00	6,199.8	-34.8	0.0	0.0	0.00	0.00	0.00
6,300.0	0.50	180.00	6,299.8	-35.7	0.0	0.0	0.00	0.00	0.00
6,349.2	0.50	180.00	6,349.0	-36.1	0.0	0.0	0.00	0.00	0.00
Rierdon									
6,400.0	0.50	180.00	6,399.8	-36.6	0.0	0.0	0.00	0.00	0.00
6,500.0	0.50	180.00	6,499.8	-37.5	0.0	0.0	0.00	0.00	0.00

Ryan Directional Services

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Chalmers 5301 44-24 12TXR
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 12TXR	Survey Calculation Method:	Minimum Curvature
Wellbore:	Chalmers 5301 44-24 12TXR		
Design:	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,600.0	0.50	180.00	6,599.8	-38.3	0.0	0.0	0.00	0.00	0.00
6,700.0	0.50	180.00	6,699.8	-39.2	0.0	0.0	0.00	0.00	0.00
6,777.2	0.50	180.00	6,777.0	-39.9	0.0	0.0	0.00	0.00	0.00
Dunham Salt									
6,800.0	0.50	180.00	6,799.8	-40.1	0.0	0.0	0.00	0.00	0.00
6,846.2	0.50	180.00	6,846.0	-40.5	0.0	0.0	0.00	0.00	0.00
Dunham Salt Base									
6,900.0	0.50	180.00	6,899.8	-40.9	0.0	0.0	0.00	0.00	0.00
7,000.0	0.50	180.00	6,999.8	-41.8	0.0	0.0	0.00	0.00	0.00
7,100.0	0.50	180.00	7,099.8	-42.7	0.0	0.0	0.00	0.00	0.00
7,143.2	0.50	180.00	7,143.0	-43.1	0.0	0.0	0.00	0.00	0.00
Pine Salt									
7,176.2	0.50	180.00	7,176.0	-43.4	0.0	0.0	0.00	0.00	0.00
Pine Salt Base									
7,200.0	0.50	180.00	7,199.8	-43.6	0.0	0.0	0.00	0.00	0.00
7,237.2	0.50	180.00	7,237.0	-43.9	0.0	0.0	0.00	0.00	0.00
Opeche Salt									
7,300.0	0.50	180.00	7,299.8	-44.4	0.0	0.0	0.00	0.00	0.00
7,312.2	0.50	180.00	7,312.0	-44.5	0.0	0.0	0.00	0.00	0.00
Opeche Salt Base									
7,400.0	0.50	180.00	7,399.8	-45.3	0.0	0.0	0.00	0.00	0.00
7,500.0	0.50	180.00	7,499.8	-46.2	0.0	0.0	0.00	0.00	0.00
7,548.2	0.50	180.00	7,548.0	-46.6	0.0	0.0	0.00	0.00	0.00
Amsden									
7,600.0	0.50	180.00	7,599.8	-47.1	0.0	0.0	0.00	0.00	0.00
7,700.0	0.50	180.00	7,699.8	-47.9	0.0	0.0	0.00	0.00	0.00
7,714.2	0.50	180.00	7,714.0	-48.0	0.0	0.0	0.00	0.00	0.00
Tyler									
7,800.0	0.50	180.00	7,799.8	-48.8	0.0	0.0	0.00	0.00	0.00
7,900.0	0.50	180.00	7,899.8	-49.7	0.0	0.0	0.00	0.00	0.00
7,918.2	0.50	180.00	7,918.0	-49.8	0.0	0.0	0.00	0.00	0.00
Otter/Base Minnelusa									
7,926.7	0.50	180.00	7,926.4	-49.9	0.0	0.0	0.00	0.00	0.00
7,943.3	0.00	0.00	7,943.1	-50.0	0.0	0.0	3.00	-3.00	0.00
8,000.0	0.00	0.00	7,999.8	-50.0	0.0	0.0	0.00	0.00	0.00
8,100.0	0.00	0.00	8,099.8	-50.0	0.0	0.0	0.00	0.00	0.00
8,200.0	0.00	0.00	8,199.8	-50.0	0.0	0.0	0.00	0.00	0.00
8,270.2	0.00	0.00	8,270.0	-50.0	0.0	0.0	0.00	0.00	0.00
Kibbey Lime									
8,300.0	0.00	0.00	8,299.8	-50.0	0.0	0.0	0.00	0.00	0.00
8,400.0	0.00	0.00	8,399.8	-50.0	0.0	0.0	0.00	0.00	0.00
8,420.2	0.00	0.00	8,420.0	-50.0	0.0	0.0	0.00	0.00	0.00
Charles Salt									
8,500.0	0.00	0.00	8,499.8	-50.0	0.0	0.0	0.00	0.00	0.00
8,600.0	0.00	0.00	8,599.8	-50.0	0.0	0.0	0.00	0.00	0.00
8,700.0	0.00	0.00	8,699.8	-50.0	0.0	0.0	0.00	0.00	0.00
8,800.0	0.00	0.00	8,799.8	-50.0	0.0	0.0	0.00	0.00	0.00
8,900.0	0.00	0.00	8,899.8	-50.0	0.0	0.0	0.00	0.00	0.00
9,000.0	0.00	0.00	8,999.8	-50.0	0.0	0.0	0.00	0.00	0.00
9,095.2	0.00	0.00	9,095.0	-50.0	0.0	0.0	0.00	0.00	0.00
Base Last Salt									
9,100.0	0.00	0.00	9,099.8	-50.0	0.0	0.0	0.00	0.00	0.00

Ryan Directional Services

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Chalmers 5301 44-24 12TXR
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 12TXR	Survey Calculation Method:	Minimum Curvature
Wellbore:	Chalmers 5301 44-24 12TXR		
Design:	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,200.0	0.00	0.00	9,199.8	-50.0	0.0	0.0	0.00	0.00	0.00
9,300.0	0.00	0.00	9,299.8	-50.0	0.0	0.0	0.00	0.00	0.00
9,315.2	0.00	0.00	9,315.0	-50.0	0.0	0.0	0.00	0.00	0.00
Mission Canyon									
9,400.0	0.00	0.00	9,399.8	-50.0	0.0	0.0	0.00	0.00	0.00
9,500.0	0.00	0.00	9,499.8	-50.0	0.0	0.0	0.00	0.00	0.00
9,600.0	0.00	0.00	9,599.8	-50.0	0.0	0.0	0.00	0.00	0.00
9,700.0	0.00	0.00	9,699.8	-50.0	0.0	0.0	0.00	0.00	0.00
9,800.0	0.00	0.00	9,799.8	-50.0	0.0	0.0	0.00	0.00	0.00
9,879.2	0.00	0.00	9,879.0	-50.0	0.0	0.0	0.00	0.00	0.00
Lodgepole									
9,900.0	0.00	0.00	9,899.8	-50.0	0.0	0.0	0.00	0.00	0.00
10,000.0	0.00	0.00	9,999.8	-50.0	0.0	0.0	0.00	0.00	0.00
10,100.0	0.00	0.00	10,099.8	-50.0	0.0	0.0	0.00	0.00	0.00
10,200.0	0.00	0.00	10,199.8	-50.0	0.0	0.0	0.00	0.00	0.00
10,225.8	0.00	0.00	10,225.6	-50.0	0.0	0.0	0.00	0.00	0.00
KOP Build 12°/100'									
10,250.0	2.90	125.10	10,249.8	-50.3	0.5	0.5	12.00	12.00	0.00
10,275.0	5.90	125.10	10,274.7	-51.4	2.1	2.1	12.00	12.00	0.00
10,300.0	8.90	125.10	10,299.5	-53.3	4.7	4.7	12.00	12.00	0.00
10,325.0	11.90	125.10	10,324.1	-55.9	8.4	8.4	12.00	12.00	0.00
10,350.0	14.90	125.10	10,348.4	-59.2	13.1	13.1	12.00	12.00	0.00
10,375.0	17.90	125.10	10,372.4	-63.3	18.9	18.9	12.00	12.00	0.00
10,400.0	20.90	125.10	10,395.9	-68.0	25.7	25.7	12.00	12.00	0.00
10,425.0	23.90	125.10	10,419.1	-73.5	33.5	33.5	12.00	12.00	0.00
10,450.0	26.90	125.10	10,441.6	-79.7	42.3	42.3	12.00	12.00	0.00
10,475.0	29.90	125.10	10,463.6	-86.5	52.0	52.0	12.00	12.00	0.00
10,500.0	32.90	125.10	10,485.0	-94.0	62.7	62.7	12.00	12.00	0.00
10,525.0	35.90	125.10	10,505.6	-102.1	74.2	74.2	12.00	12.00	0.00
10,550.0	38.90	125.10	10,525.4	-110.9	86.6	86.6	12.00	12.00	0.00
10,575.0	41.90	125.10	10,544.5	-120.2	99.9	99.9	12.00	12.00	0.00
10,600.0	44.90	125.10	10,562.6	-130.1	114.0	114.0	12.00	12.00	0.00
10,625.0	47.90	125.10	10,579.9	-140.5	128.8	128.8	12.00	12.00	0.00
10,643.5	50.12	125.10	10,592.0	-148.5	140.2	140.2	12.00	12.00	0.00
False Bakken									
10,650.0	50.90	125.10	10,596.1	-151.4	144.3	144.3	12.00	12.00	0.00
10,659.4	52.03	125.10	10,602.0	-155.6	150.3	150.3	12.00	12.00	0.00
Upper Bakken Shale									
10,675.0	53.90	125.10	10,611.4	-162.8	160.5	160.5	12.00	12.00	0.00
10,686.4	55.27	125.10	10,618.0	-168.1	168.1	168.1	12.00	12.00	0.00
Middle Bakken									
10,700.0	56.90	125.10	10,625.6	-174.6	177.3	177.3	12.00	12.00	0.00
10,725.0	59.90	125.10	10,638.7	-186.8	194.8	194.8	12.00	12.00	0.00
10,750.0	62.90	125.10	10,650.6	-199.5	212.7	212.7	12.00	12.00	0.00
10,753.0	63.26	125.10	10,652.0	-201.0	214.9	214.9	12.00	12.00	0.00
Lower Bakken Shale									
10,775.0	65.90	125.10	10,661.4	-212.4	231.2	231.2	12.00	12.00	0.00
10,786.5	67.28	125.10	10,666.0	-218.5	239.8	239.8	12.00	12.00	0.00
Pronghorn									
10,800.0	68.90	125.10	10,671.0	-225.7	250.0	250.0	12.00	12.00	0.00
10,825.0	71.90	125.10	10,679.4	-239.2	269.3	269.3	12.00	12.00	0.00
10,844.1	74.20	125.10	10,685.0	-249.8	284.3	284.3	12.00	12.00	0.00
Threeforks									

Ryan Directional Services

Planning Report

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Company:	Oasis	TVD Reference:	well @ 1967.0usft
Project:	Indian Hills	MD Reference:	well @ 1967.0usft
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Well:	Chalmers 5301 44-24 12TXR	Survey Calculation Method:	Minimum Curvature
Wellbore:	Chalmers 5301 44-24 12TXR		
Design:	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (/100usft)	Build Rate (/100usft)	Turn Rate (/100usft)
10,850.0	74.90	125.10	10,686.6	-253.0	288.9	288.9	12.00	12.00	0.00
10,875.0	77.90	125.10	10,692.4	-267.0	308.8	308.8	12.00	12.00	0.00
10,899.7	80.87	125.10	10,697.0	-281.0	328.7	328.7	12.00	12.00	0.00
Threeforks(Top of Target)									
10,900.0	80.90	125.10	10,697.0	-281.1	328.9	328.9	12.00	12.00	0.00
10,925.0	83.90	125.10	10,700.3	-295.4	349.2	349.2	12.00	12.00	0.00
10,950.0	86.90	125.10	10,702.3	-309.7	369.5	369.5	12.00	12.00	0.00
10,972.0	89.54	125.10	10,703.0	-322.3	387.5	387.5	12.00	12.00	0.00
EOC									
11,000.0	89.55	124.54	10,703.3	-338.3	410.5	410.5	2.00	0.02	-2.00
11,100.0	89.54	122.54	10,704.0	-393.6	493.9	493.9	2.00	0.00	-2.00
11,200.0	89.54	120.54	10,704.8	-445.9	579.1	579.1	2.00	0.00	-2.00
11,300.0	89.54	118.54	10,705.6	-495.2	666.1	666.1	2.00	0.00	-2.00
11,400.0	89.53	116.54	10,706.5	-541.4	754.7	754.7	2.00	0.00	-2.00
11,500.0	89.53	114.54	10,707.3	-584.5	845.0	845.0	2.00	0.00	-2.00
11,540.0	89.53	113.74	10,707.6	-600.9	881.5	881.5	2.00	0.00	-2.00
7"									
11,588.4	89.53	112.77	10,708.0	-620.0	925.9	925.9	2.00	0.00	-2.00
Threeforks(Base of Target) - Claystone									
11,600.0	89.53	112.54	10,708.1	-624.5	936.6	936.6	2.00	0.00	-2.00
11,700.0	89.53	110.54	10,708.9	-661.2	1,029.6	1,029.6	2.00	0.00	-2.00
11,800.0	89.53	108.54	10,709.7	-694.6	1,123.9	1,123.9	2.00	0.00	-2.00
11,900.0	89.53	106.54	10,710.6	-724.8	1,219.2	1,219.2	2.00	0.00	-2.00
12,000.0	89.53	104.54	10,711.4	-751.5	1,315.5	1,315.5	2.00	0.00	-2.00
12,100.0	89.53	102.54	10,712.2	-775.0	1,412.8	1,412.8	2.00	0.00	-2.00
12,200.0	89.53	100.54	10,713.0	-795.0	1,510.7	1,510.7	2.00	0.00	-2.00
12,300.0	89.53	98.54	10,713.8	-811.5	1,609.3	1,609.3	2.00	0.00	-2.00
12,400.0	89.54	96.54	10,714.7	-824.6	1,708.5	1,708.5	2.00	0.00	-2.00
12,500.0	89.54	94.54	10,715.5	-834.3	1,808.0	1,808.0	2.00	0.00	-2.00
12,600.0	89.54	92.54	10,716.3	-840.5	1,907.8	1,907.8	2.00	0.00	-2.00
12,700.0	89.55	90.54	10,717.1	-843.2	2,007.7	2,007.7	2.00	0.00	-2.00
12,727.0	89.55	90.00	10,717.3	-843.3	2,034.7	2,034.7	2.00	0.00	-2.00
12,800.0	89.55	90.00	10,717.8	-843.3	2,107.7	2,107.7	0.00	0.00	0.00
12,900.0	89.55	90.00	10,718.6	-843.3	2,207.7	2,207.7	0.00	0.00	0.00
13,000.0	89.55	90.00	10,719.4	-843.3	2,307.7	2,307.7	0.00	0.00	0.00
13,100.0	89.55	90.00	10,720.2	-843.3	2,407.7	2,407.7	0.00	0.00	0.00
13,200.0	89.55	90.00	10,721.0	-843.3	2,507.7	2,507.7	0.00	0.00	0.00
13,300.0	89.55	90.00	10,721.8	-843.3	2,607.7	2,607.7	0.00	0.00	0.00
13,400.0	89.55	90.00	10,722.5	-843.3	2,707.7	2,707.7	0.00	0.00	0.00
13,500.0	89.55	90.00	10,723.3	-843.3	2,807.7	2,807.7	0.00	0.00	0.00
13,600.0	89.55	90.00	10,724.1	-843.3	2,907.7	2,907.7	0.00	0.00	0.00
13,700.0	89.55	90.00	10,724.9	-843.3	3,007.7	3,007.7	0.00	0.00	0.00
13,800.0	89.55	90.00	10,725.7	-843.3	3,107.7	3,107.7	0.00	0.00	0.00
13,900.0	89.55	90.00	10,726.5	-843.3	3,207.7	3,207.7	0.00	0.00	0.00
14,000.0	89.55	90.00	10,727.3	-843.3	3,307.7	3,307.7	0.00	0.00	0.00
14,100.0	89.55	90.00	10,728.0	-843.3	3,407.7	3,407.7	0.00	0.00	0.00
14,200.0	89.55	90.00	10,728.8	-843.3	3,507.7	3,507.7	0.00	0.00	0.00
14,300.0	89.55	90.00	10,729.6	-843.3	3,607.7	3,607.7	0.00	0.00	0.00
14,400.0	89.55	90.00	10,730.4	-843.3	3,707.7	3,707.7	0.00	0.00	0.00
14,500.0	89.55	90.00	10,731.2	-843.3	3,807.7	3,807.7	0.00	0.00	0.00
14,600.0	89.55	90.00	10,732.0	-843.3	3,907.7	3,907.7	0.00	0.00	0.00
14,700.0	89.55	90.00	10,732.8	-843.3	4,007.7	4,007.7	0.00	0.00	0.00
14,800.0	89.55	90.00	10,733.5	-843.3	4,107.7	4,107.7	0.00	0.00	0.00

Ryan Directional Services

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Chalmers 5301 44-24 12TXR
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 12TXR	Survey Calculation Method:	Minimum Curvature
Wellbore:	Chalmers 5301 44-24 12TXR		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
14,900.0	89.55	90.00	10,734.3	-843.3	4,207.7	4,207.7	0.00	0.00	0.00
15,000.0	89.55	90.00	10,735.1	-843.3	4,307.7	4,307.7	0.00	0.00	0.00
15,100.0	89.55	90.00	10,735.9	-843.3	4,407.7	4,407.7	0.00	0.00	0.00
15,200.0	89.55	90.00	10,736.7	-843.3	4,507.7	4,507.7	0.00	0.00	0.00
15,300.0	89.55	90.00	10,737.5	-843.3	4,607.7	4,607.7	0.00	0.00	0.00
15,400.0	89.55	90.00	10,738.3	-843.3	4,707.7	4,707.7	0.00	0.00	0.00
15,500.0	89.55	90.00	10,739.0	-843.3	4,807.7	4,807.7	0.00	0.00	0.00
15,600.0	89.55	90.00	10,739.8	-843.3	4,907.6	4,907.6	0.00	0.00	0.00
15,700.0	89.55	90.00	10,740.6	-843.3	5,007.6	5,007.6	0.00	0.00	0.00
15,800.0	89.55	90.00	10,741.4	-843.3	5,107.6	5,107.6	0.00	0.00	0.00
15,900.0	89.55	90.00	10,742.2	-843.3	5,207.6	5,207.6	0.00	0.00	0.00
16,000.0	89.55	90.00	10,743.0	-843.3	5,307.6	5,307.6	0.00	0.00	0.00
16,100.0	89.55	90.00	10,743.8	-843.3	5,407.6	5,407.6	0.00	0.00	0.00
16,200.0	89.55	90.00	10,744.5	-843.3	5,507.6	5,507.6	0.00	0.00	0.00
16,300.0	89.55	90.00	10,745.3	-843.3	5,607.6	5,607.6	0.00	0.00	0.00
16,400.0	89.55	90.00	10,746.1	-843.3	5,707.6	5,707.6	0.00	0.00	0.00
16,500.0	89.55	90.00	10,746.9	-843.3	5,807.6	5,807.6	0.00	0.00	0.00
16,600.0	89.55	90.00	10,747.7	-843.3	5,907.6	5,907.6	0.00	0.00	0.00
16,700.0	89.55	90.00	10,748.5	-843.3	6,007.6	6,007.6	0.00	0.00	0.00
16,800.0	89.55	90.00	10,749.3	-843.3	6,107.6	6,107.6	0.00	0.00	0.00
16,900.0	89.55	90.00	10,750.0	-843.3	6,207.6	6,207.6	0.00	0.00	0.00
17,000.0	89.55	90.00	10,750.8	-843.3	6,307.6	6,307.6	0.00	0.00	0.00
17,100.0	89.55	90.00	10,751.6	-843.3	6,407.6	6,407.6	0.00	0.00	0.00
17,200.0	89.55	90.00	10,752.4	-843.3	6,507.6	6,507.6	0.00	0.00	0.00
17,300.0	89.55	90.00	10,753.2	-843.3	6,607.6	6,607.6	0.00	0.00	0.00
17,400.0	89.55	90.00	10,754.0	-843.3	6,707.6	6,707.6	0.00	0.00	0.00
17,500.0	89.55	90.00	10,754.7	-843.3	6,807.6	6,807.6	0.00	0.00	0.00
17,600.0	89.55	90.00	10,755.5	-843.3	6,907.6	6,907.6	0.00	0.00	0.00
17,700.0	89.55	90.00	10,756.3	-843.3	7,007.6	7,007.6	0.00	0.00	0.00
17,800.0	89.55	90.00	10,757.1	-843.3	7,107.6	7,107.6	0.00	0.00	0.00
17,900.0	89.55	90.00	10,757.9	-843.3	7,207.6	7,207.6	0.00	0.00	0.00
18,000.0	89.55	90.00	10,758.7	-843.3	7,307.6	7,307.6	0.00	0.00	0.00
18,100.0	89.55	90.00	10,759.5	-843.3	7,407.6	7,407.6	0.00	0.00	0.00
18,200.0	89.55	90.00	10,760.2	-843.3	7,507.6	7,507.6	0.00	0.00	0.00
18,300.0	89.55	90.00	10,761.0	-843.3	7,607.6	7,607.6	0.00	0.00	0.00
18,400.0	89.55	90.00	10,761.8	-843.3	7,707.6	7,707.6	0.00	0.00	0.00
18,500.0	89.55	90.00	10,762.6	-843.3	7,807.6	7,807.6	0.00	0.00	0.00
18,600.0	89.55	90.00	10,763.4	-843.3	7,907.6	7,907.6	0.00	0.00	0.00
18,700.0	89.55	90.00	10,764.2	-843.3	8,007.6	8,007.6	0.00	0.00	0.00
18,800.0	89.55	90.00	10,765.0	-843.3	8,107.6	8,107.6	0.00	0.00	0.00
18,900.0	89.55	90.00	10,765.7	-843.3	8,207.5	8,207.5	0.00	0.00	0.00
19,000.0	89.55	90.00	10,766.5	-843.3	8,307.5	8,307.5	0.00	0.00	0.00
19,100.0	89.55	90.00	10,767.3	-843.3	8,407.5	8,407.5	0.00	0.00	0.00
19,200.0	89.55	90.00	10,768.1	-843.3	8,507.5	8,507.5	0.00	0.00	0.00
19,300.0	89.55	90.00	10,768.9	-843.3	8,607.5	8,607.5	0.00	0.00	0.00
19,400.0	89.55	90.00	10,769.7	-843.3	8,707.5	8,707.5	0.00	0.00	0.00
19,500.0	89.55	90.00	10,770.5	-843.3	8,807.5	8,807.5	0.00	0.00	0.00
19,600.0	89.55	90.00	10,771.2	-843.3	8,907.5	8,907.5	0.00	0.00	0.00
19,700.0	89.55	90.00	10,772.0	-843.3	9,007.5	9,007.5	0.00	0.00	0.00
19,800.0	89.55	90.00	10,772.8	-843.3	9,107.5	9,107.5	0.00	0.00	0.00
19,900.0	89.55	90.00	10,773.6	-843.3	9,207.5	9,207.5	0.00	0.00	0.00
20,000.0	89.55	90.00	10,774.4	-843.3	9,307.5	9,307.5	0.00	0.00	0.00
20,100.0	89.55	90.00	10,775.2	-843.3	9,407.5	9,407.5	0.00	0.00	0.00
20,200.0	89.55	90.00	10,776.0	-843.3	9,507.5	9,507.5	0.00	0.00	0.00

Ryan Directional Services

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Chalmers 5301 44-24 12TXR
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 12TXR	Survey Calculation Method:	Minimum Curvature
Wellbore:	Chalmers 5301 44-24 12TXR		
Design:	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/S (usft)	+E/W (usft)	Vertical Section (usft)	Dogleg Rate (/100usft)	Build Rate (/100usft)	Turn Rate (/100usft)
20,300.0	89.55	90.00	10,776.7	-843.3	9,607.5	9,607.5	0.00	0.00	0.00
20,400.0	89.55	90.00	10,777.5	-843.3	9,707.5	9,707.5	0.00	0.00	0.00
20,500.0	89.55	90.00	10,778.3	-843.3	9,807.5	9,807.5	0.00	0.00	0.00
20,600.0	89.55	90.00	10,779.1	-843.3	9,907.5	9,907.5	0.00	0.00	0.00
20,700.0	89.55	90.00	10,779.9	-843.3	10,007.5	10,007.5	0.00	0.00	0.00
20,800.0	89.55	90.00	10,780.7	-843.3	10,107.5	10,107.5	0.00	0.00	0.00
20,900.0	89.55	90.00	10,781.5	-843.3	10,207.5	10,207.5	0.00	0.00	0.00
21,000.0	89.55	90.00	10,782.2	-843.3	10,307.5	10,307.5	0.00	0.00	0.00
21,100.0	89.55	90.00	10,783.0	-843.3	10,407.5	10,407.5	0.00	0.00	0.00
21,200.0	89.55	90.00	10,783.8	-843.3	10,507.5	10,507.5	0.00	0.00	0.00
21,226.5	89.55	90.00	10,784.0	-843.3	10,534.0	10,534.0	0.00	0.00	0.00
5301 44-24 12TXR PBHL									

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/S (usft)	+E/W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
- hit/miss target										
- Shape										
5301 44-24 12TXR PBH 0.00 0.00 10,784.0 -844.0 10,534.0 399,040.10 1,219,816.19 48° 3' 11.321 N 103° 33' 43.490 W										
- plan misses target center by 0.7usft at 21226.5usft MD (10784.0 TVD, -843.3 N, 10534.0 E)										
- Point										

Casing Points									
Measured Depth (usft)	Vertical Depth (usft)	Name				Casing Diameter ("")	Hole Diameter ("")		
11,540.0	10,707.6	7"				7	8-3/4		

Ryan Directional Services

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Chalmers 5301 44-24 12TXR
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 12TXR	Survey Calculation Method:	Minimum Curvature
Wellbore:	Chalmers 5301 44-24 12TXR		
Design:	Design #1		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,917.0	1,917.0	Pierre			
4,510.1	4,510.0	Greenhorn			
4,915.1	4,915.0	Mowry			
5,303.1	5,303.0	Dakota			
6,349.2	6,349.0	Rierdon			
6,777.2	6,777.0	Dunham Salt			
6,846.2	6,846.0	Dunham Salt Base			
7,143.2	7,143.0	Pine Salt			
7,176.2	7,176.0	Pine Salt Base			
7,237.2	7,237.0	Opeche Salt			
7,312.2	7,312.0	Opeche Salt Base			
7,548.2	7,548.0	Amsden			
7,714.2	7,714.0	Tyler			
7,918.2	7,918.0	Otter/Base Minnelusa			
8,270.2	8,270.0	Kibbey Lime			
8,420.2	8,420.0	Charles Salt			
9,095.2	9,095.0	Base Last Salt			
9,315.2	9,315.0	Mission Canyon			
9,879.2	9,879.0	Lodgepole			
10,643.5	10,592.0	False Bakken			
10,659.4	10,602.0	Upper Bakken Shale			
10,686.4	10,618.0	Middle Bakken			
10,753.0	10,652.0	Lower Bakken Shale			
10,786.5	10,666.0	Pronghorn			
10,844.1	10,685.0	Threeforks			
10,899.7	10,697.0	Threeforks(Top of Target)			
11,588.4	10,708.0	Threeforks(Base of Target)			
11,588.4	10,708.0	Claystone			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			Comment
		+N-S (usft)	+E-W (usft)		
10,225.8	10,225.6	-50.0	0.0	KOP Build 12°/100'	
10,972.0	10,703.0	-322.3	387.5	EOC	

Oasis

Indian Hills

153N-100W-19/20_Altered

Chalmers 5301 44-24 12TXR

Chalmers 5301 44-24 12TXR

Design #1

Anticollision Report

22 May, 2014

Ryan Directional Services

Anticollision Report

Company:	Oasis	Local Co-ordinate Reference:	Well Chalmers 5301 44-24 12TXR
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 12TXR	Survey Calculation Method:	Minimum Curvature
Well Error:	2.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 12TXR	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Reference	Design #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.0 usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date	5/22/2014	
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	21,225.7	Design #1 (Chalmers 5301 44-24 12TXR)	MWD	MWD - Standard

Summary		Site Name		Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance			Separation Factor		Warning
		Offset Well - Wellbore - Design				Between Centres (usft)	Between Ellipses (usft)				
153N-100W-19/20_Altered		Chalmers 5300 44-24 4T2R - Chalmers 5300 44-24 4T2R		2,200.0	2,200.0	33.4	23.0	3.213	CC		
		Chalmers 5300 44-24 4T2R - Chalmers 5300 44-24 4T2R		21,226.5	21,106.3	579.9	-34.3	0.944	Level 1, ES, SF		
		Chalmers 5301 44-24 2TX - Chalmers #2T - Plan #1		2,166.7	2,166.7	115.7	105.8	11.725	CC		
		Chalmers 5301 44-24 2TX - Chalmers #2T - Plan #1		2,200.0	2,200.0	115.7	105.6	11.556	ES		
		Chalmers 5301 44-24 2TX - Chalmers #2T - Plan #1		21,226.5	21,028.7	1,030.0	415.5	1.676	SF		
		Chalmers 5301 44-24 3BR - Chalmers 5301 44-24 3BR -		2,200.0	2,200.0	82.1	72.1	8.201	CC, ES		
		Chalmers 5301 44-24 3BR - Chalmers 5301 44-24 3BR -		21,226.5	20,938.2	684.6	75.1	1.123	Level 2, 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	
Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance				
0.0	0.0	0.0	0.0	2.0	2.0	0.00	33.4	0.0	33.4				
100.0	100.0	100.0	100.0	2.0	2.0	0.00	33.4	0.0	33.4	29.4	4.00	8.353	
200.0	200.0	200.0	200.0	2.0	2.0	0.00	33.4	0.0	33.4	29.4	4.05	8.262	
300.0	300.0	300.0	300.0	2.1	2.1	0.00	33.4	0.0	33.4	29.3	4.14	8.078	
400.0	400.0	400.0	400.0	2.1	2.1	0.00	33.4	0.0	33.4	29.2	4.28	7.817	
500.0	500.0	500.0	500.0	2.2	2.2	0.00	33.4	0.0	33.4	29.0	4.46	7.503	
600.0	600.0	600.0	600.0	2.3	2.3	0.00	33.4	0.0	33.4	28.8	4.67	7.156	
700.0	700.0	700.0	700.0	2.5	2.5	0.00	33.4	0.0	33.4	28.5	4.92	6.796	
800.0	800.0	800.0	800.0	2.6	2.6	0.00	33.4	0.0	33.4	28.2	5.20	6.437	
900.0	900.0	900.0	900.0	2.7	2.7	0.00	33.4	0.0	33.4	27.9	5.49	6.088	
1,000.0	1,000.0	1,000.0	1,000.0	2.9	2.9	0.00	33.4	0.0	33.4	27.6	5.81	5.755	
1,100.0	1,100.0	1,100.0	1,100.0	3.1	3.1	0.00	33.4	0.0	33.4	27.3	6.14	5.443	
1,200.0	1,200.0	1,200.0	1,200.0	3.2	3.2	0.00	33.4	0.0	33.4	26.9	6.49	5.151	
1,300.0	1,300.0	1,300.0	1,300.0	3.4	3.4	0.00	33.4	0.0	33.4	26.6	6.85	4.881	
1,400.0	1,400.0	1,400.0	1,400.0	3.6	3.6	0.00	33.4	0.0	33.4	26.2	7.22	4.631	
1,500.0	1,500.0	1,500.0	1,500.0	3.8	3.8	0.00	33.4	0.0	33.4	25.8	7.60	4.400	
1,600.0	1,600.0	1,600.0	1,600.0	4.0	4.0	0.00	33.4	0.0	33.4	25.5	7.99	4.188	
1,700.0	1,700.0	1,700.0	1,700.0	4.2	4.2	0.00	33.4	0.0	33.4	25.1	8.38	3.992	
1,800.0	1,800.0	1,800.0	1,800.0	4.4	4.4	0.00	33.4	0.0	33.4	24.7	8.78	3.811	
1,900.0	1,900.0	1,900.0	1,900.0	4.6	4.6	0.00	33.4	0.0	33.4	24.3	9.18	3.644	
2,000.0	2,000.0	2,000.0	2,000.0	4.8	4.8	0.00	33.4	0.0	33.4	23.9	9.58	3.489	

CC - Min centre to center distance or convergent 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 12TXR
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 12TXR	Survey Calculation Method:	Minimum Curvature
Well Error:	2.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 12TXR	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	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		Offset		Semi Major Axis				Distance					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Highside Toolface		Offset Wellbore Centre +N/S (usft)	+E/W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor
2,100.0	2,100.0	2,100.0	2,100.0	5.0	5.0	0.00		33.4	0.0	33.4	23.4	9.99	3.346
2,200.0	2,200.0	2,200.0	2,200.0	5.2	5.2	0.00		33.4	0.0	33.4	23.0	10.41	3.213 CC
2,216.7	2,216.7	2,216.7	2,216.7	5.2	5.2	-180.00		33.4	0.0	33.5	23.0	10.47	3.200
2,300.0	2,300.0	2,300.0	2,300.0	5.4	5.4	-180.00		33.4	0.0	34.2	23.5	10.78	3.178
2,400.0	2,400.0	2,400.0	2,400.0	5.5	5.6	-180.00		33.4	0.0	35.1	24.0	11.14	3.151
2,500.0	2,500.0	2,500.0	2,500.0	5.7	5.8	-180.00		33.4	0.0	36.0	24.5	11.52	3.124
2,600.0	2,600.0	2,600.0	2,600.0	5.9	6.0	-180.00		33.4	0.0	36.9	25.0	11.90	3.098
2,700.0	2,700.0	2,700.0	2,700.0	6.0	6.3	-180.00		33.4	0.0	37.7	25.4	12.28	3.072
2,800.0	2,800.0	2,800.0	2,800.0	6.2	6.5	-180.00		33.4	0.0	38.6	25.9	12.67	3.046
2,900.0	2,900.0	2,900.0	2,900.0	6.4	6.7	-180.00		33.4	0.0	39.5	26.4	13.07	3.022
3,000.0	3,000.0	3,000.0	3,000.0	6.6	6.9	-180.00		33.4	0.0	40.4	26.9	13.46	2.997
3,100.0	3,100.0	3,100.0	3,100.0	6.7	7.1	-180.00		33.4	0.0	41.2	27.4	13.86	2.974
3,200.0	3,200.0	3,200.0	3,200.0	6.9	7.3	-180.00		33.4	0.0	42.1	27.8	14.26	2.951
3,300.0	3,300.0	3,300.0	3,300.0	7.1	7.5	-180.00		33.4	0.0	43.0	28.3	14.67	2.929
3,400.0	3,400.0	3,400.0	3,400.0	7.3	7.8	-180.00		33.4	0.0	43.8	28.8	15.08	2.908
3,500.0	3,500.0	3,500.0	3,500.0	7.5	8.0	-180.00		33.4	0.0	44.7	29.2	15.49	2.887
3,600.0	3,599.9	3,599.9	3,599.9	7.7	8.2	-180.00		33.4	0.0	45.6	29.7	15.90	2.868
3,700.0	3,699.9	3,699.9	3,699.9	7.9	8.4	-180.00		33.4	0.0	46.5	30.1	16.31	2.848
3,800.0	3,799.9	3,799.9	3,799.9	8.1	8.6	-180.00		33.4	0.0	47.3	30.6	16.73	2.830
3,900.0	3,899.9	3,899.9	3,899.9	8.3	8.9	-180.00		33.4	0.0	48.2	31.1	17.14	2.812
4,000.0	3,999.9	3,999.9	3,999.9	8.5	9.1	-180.00		33.4	0.0	49.1	31.5	17.56	2.794
4,100.0	4,099.9	4,099.9	4,099.9	8.7	9.3	-180.00		33.4	0.0	49.9	32.0	17.98	2.777
4,200.0	4,199.9	4,199.9	4,199.9	8.9	9.5	-180.00		33.4	0.0	50.8	32.4	18.41	2.761
4,300.0	4,299.9	4,299.9	4,299.9	9.1	9.7	-180.00		33.4	0.0	51.7	32.9	18.83	2.745
4,400.0	4,399.9	4,399.9	4,399.9	9.3	10.0	-180.00		33.4	0.0	52.6	33.3	19.25	2.730
4,500.0	4,499.9	4,499.9	4,499.9	9.5	10.2	-180.00		33.4	0.0	53.4	33.8	19.68	2.715
4,600.0	4,599.9	4,599.9	4,599.9	9.7	10.4	-180.00		33.4	0.0	54.3	34.2	20.11	2.701
4,700.0	4,699.9	4,699.9	4,699.9	9.9	10.6	-180.00		33.4	0.0	55.2	34.7	20.53	2.687
4,800.0	4,799.9	4,799.9	4,799.9	10.1	10.8	-180.00		33.4	0.0	56.1	35.1	20.96	2.674
4,900.0	4,899.9	4,899.9	4,899.9	10.4	11.1	-180.00		33.4	0.0	56.9	35.5	21.39	2.661
5,000.0	4,999.9	4,999.9	4,999.9	10.6	11.3	-180.00		33.4	0.0	57.8	36.0	21.82	2.649
5,100.0	5,099.9	5,099.9	5,099.9	10.8	11.5	-180.00		33.4	0.0	58.7	36.4	22.25	2.637
5,200.0	5,199.9	5,199.9	5,199.9	11.0	11.7	-180.00		33.4	0.0	59.5	36.9	22.69	2.625
5,300.0	5,299.9	5,299.9	5,299.9	11.2	11.9	-180.00		33.4	0.0	60.4	37.3	23.12	2.614
5,400.0	5,399.9	5,399.9	5,399.9	11.4	12.2	-180.00		33.4	0.0	61.3	37.7	23.55	2.603
5,500.0	5,499.9	5,499.9	5,499.9	11.6	12.4	-180.00		33.4	0.0	62.2	38.2	23.99	2.592
5,600.0	5,599.9	5,599.9	5,599.9	11.8	12.6	-180.00		33.4	0.0	63.0	38.6	24.42	2.581
5,700.0	5,699.9	5,699.9	5,699.9	12.0	12.8	-180.00		33.4	0.0	63.9	39.1	24.85	2.571
5,800.0	5,799.9	5,799.9	5,799.9	12.3	13.0	-180.00		33.4	0.0	64.8	39.5	25.29	2.562
5,900.0	5,899.9	5,899.9	5,899.9	12.5	13.3	-180.00		33.4	0.0	65.7	39.9	25.73	2.552
6,000.0	5,999.9	5,999.9	5,999.9	12.7	13.5	-180.00		33.4	0.0	66.5	40.4	26.16	2.543
6,100.0	6,099.9	6,099.9	6,099.9	12.9	13.7	-180.00		33.4	0.0	67.4	40.8	26.60	2.534
6,200.0	6,199.8	6,199.8	6,199.8	13.1	13.9	-180.00		33.4	0.0	68.3	41.2	27.04	2.525
6,300.0	6,299.8	6,299.8	6,299.8	13.3	14.2	-180.00		33.4	0.0	69.1	41.7	27.47	2.517
6,400.0	6,399.8	6,399.8	6,399.8	13.6	14.4	-180.00		33.4	0.0	70.0	42.1	27.91	2.509
6,500.0	6,499.8	6,499.8	6,499.8	13.8	14.6	-180.00		33.4	0.0	70.9	42.5	28.35	2.501
6,600.0	6,599.8	6,599.8	6,599.8	14.0	14.8	-180.00		33.4	0.0	71.8	43.0	28.79	2.493
6,700.0	6,699.8	6,699.8	6,699.8	14.2	15.1	-180.00		33.4	0.0	72.6	43.4	29.23	2.485
6,800.0	6,799.8	6,799.8	6,799.8	14.4	15.3	-180.00		33.4	0.0	73.5	43.8	29.67	2.478
6,900.0	6,899.8	6,899.8	6,899.8	14.6	15.5	-180.00		33.4	0.0	74.4	44.3	30.11	2.471
7,000.0	6,999.8	6,999.8	6,999.8	14.9	15.7	-180.00		33.4	0.0	75.3	44.7	30.55	2.464
7,100.0	7,099.8	7,099.8	7,099.8	15.1	15.9	-180.00		33.4	0.0	76.1	45.1	30.99	2.457

CC - Min centre to center distance or convergent 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 12TXR
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 12TXR	Survey Calculation Method:	Minimum Curvature
Well Error:	2.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 12TXR	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	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		Distance												Offset Well Error:	2.0 usft
Reference		Offset		Semi Major Axis				Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			Warning
7,200.0	7,199.8	7,199.8	7,199.8	15.3	16.2	-180.00	33.4	0.0	77.0	45.6	31.43	2.450			
7,300.0	7,299.8	7,299.8	7,299.8	15.5	16.4	-180.00	33.4	0.0	77.9	46.0	31.87	2.444			
7,400.0	7,399.8	7,399.8	7,399.8	15.7	16.6	-180.00	33.4	0.0	78.7	46.4	32.31	2.437			
7,500.0	7,499.8	7,499.8	7,499.8	16.0	16.8	-180.00	33.4	0.0	79.6	46.9	32.75	2.431			
7,600.0	7,599.8	7,599.8	7,599.8	16.2	17.1	-180.00	33.4	0.0	80.5	47.3	33.19	2.425			
7,700.0	7,699.8	7,699.8	7,699.8	16.4	17.3	-180.00	33.4	0.0	81.4	47.7	33.63	2.419			
7,800.0	7,799.8	7,799.8	7,799.8	16.6	17.5	-180.00	33.4	0.0	82.2	48.2	34.08	2.413			
7,900.0	7,899.8	7,899.8	7,899.8	16.8	17.7	-180.00	33.4	0.0	83.1	48.6	34.52	2.408			
7,926.7	7,926.4	7,926.4	7,926.4	16.9	17.8	-180.00	33.4	0.0	83.3	48.7	34.64	2.406			
7,943.3	7,943.1	7,943.1	7,943.1	16.9	17.8	0.00	33.4	0.0	83.4	48.7	34.74	2.401			
8,000.0	7,999.8	7,999.8	7,999.8	17.1	18.0	0.00	33.4	0.0	83.4	48.4	34.99	2.384			
8,100.0	8,099.8	8,099.8	8,099.8	17.2	18.2	0.00	33.4	0.0	83.4	48.0	35.40	2.356			
8,200.0	8,199.8	8,199.8	8,199.8	17.4	18.4	0.00	33.4	0.0	83.4	47.6	35.81	2.329			
8,300.0	8,299.8	8,299.8	8,299.8	17.6	18.6	0.00	33.4	0.0	83.4	47.2	36.23	2.302			
8,400.0	8,399.8	8,399.8	8,399.8	17.8	18.8	0.00	33.4	0.0	83.4	46.8	36.65	2.276			
8,500.0	8,499.8	8,499.8	8,499.8	18.0	19.1	0.00	33.4	0.0	83.4	46.4	37.06	2.251			
8,600.0	8,599.8	8,599.8	8,599.8	18.2	19.3	0.00	33.4	0.0	83.4	45.9	37.48	2.226			
8,700.0	8,699.8	8,699.8	8,699.8	18.4	19.5	0.00	33.4	0.0	83.4	45.5	37.90	2.201			
8,800.0	8,799.8	8,799.8	8,799.8	18.6	19.7	0.00	33.4	0.0	83.4	45.1	38.32	2.177			
8,900.0	8,899.8	8,899.8	8,899.8	18.8	20.0	0.00	33.4	0.0	83.4	44.7	38.74	2.153			
9,000.0	8,999.8	8,999.8	8,999.8	19.0	20.2	0.00	33.4	0.0	83.4	44.3	39.16	2.130			
9,100.0	9,099.8	9,099.8	9,099.8	19.2	20.4	0.00	33.4	0.0	83.4	43.8	39.58	2.108			
9,200.0	9,199.8	9,199.8	9,199.8	19.4	20.6	0.00	33.4	0.0	83.4	43.4	40.00	2.085			
9,300.0	9,299.8	9,299.8	9,299.8	19.6	20.9	0.00	33.4	0.0	83.4	43.0	40.42	2.063			
9,400.0	9,399.8	9,399.8	9,399.8	19.8	21.1	0.00	33.4	0.0	83.4	42.6	40.85	2.042			
9,500.0	9,499.8	9,499.8	9,499.8	20.0	21.3	0.00	33.4	0.0	83.4	42.1	41.27	2.021			
9,600.0	9,599.8	9,599.8	9,599.8	20.2	21.5	0.00	33.4	0.0	83.4	41.7	41.70	2.001			
9,700.0	9,699.8	9,699.8	9,699.8	20.4	21.8	0.00	33.4	0.0	83.4	41.3	42.12	1.980			
9,800.0	9,799.8	9,799.8	9,799.8	20.6	22.0	0.00	33.4	0.0	83.4	40.9	42.54	1.961			
9,900.0	9,899.8	9,899.8	9,899.8	20.8	22.2	0.00	33.4	0.0	83.4	40.4	42.97	1.941			
10,000.0	9,999.8	9,999.8	9,999.8	21.0	22.4	0.00	33.4	0.0	83.4	40.0	43.40	1.922			
10,100.0	10,099.8	10,099.8	10,099.8	21.2	22.6	0.00	33.4	0.0	83.4	39.6	43.82	1.903			
10,200.0	10,199.8	10,199.8	10,199.8	21.4	22.9	0.00	33.4	0.0	83.4	39.2	44.25	1.885			
10,225.8	10,225.6	10,225.6	10,225.6	21.4	22.9	0.00	33.4	0.0	83.4	39.1	44.36	1.880			
10,250.0	10,249.8	10,249.8	10,249.8	21.5	23.0	-125.41	33.4	0.0	83.8	39.3	44.43	1.885			
10,275.0	10,274.7	10,275.7	10,275.7	21.5	23.0	-126.23	33.4	0.3	84.8	40.3	44.50	1.906			
10,300.0	10,299.5	10,302.2	10,302.2	21.6	23.1	-126.91	32.8	1.8	86.2	41.7	44.53	1.936			
10,325.0	10,324.1	10,328.9	10,328.6	21.7	23.1	-127.36	31.8	4.8	87.9	43.4	44.52	1.975			
10,350.0	10,348.4	10,355.6	10,354.9	21.7	23.2	-127.58	30.4	9.1	89.9	45.4	44.49	2.021			
10,375.0	10,372.4	10,382.4	10,381.0	21.8	23.3	-127.57	28.5	14.9	92.2	47.8	44.43	2.076			
10,400.0	10,395.9	10,409.2	10,406.7	21.8	23.3	-127.36	26.1	22.1	94.8	50.4	44.36	2.137			
10,425.0	10,419.1	10,436.0	10,432.0	21.9	23.4	-126.95	23.2	30.6	97.7	53.4	44.28	2.206			
10,450.0	10,441.6	10,462.8	10,456.7	22.0	23.4	-126.37	19.9	40.4	100.8	56.6	44.19	2.281			
10,475.0	10,463.6	10,489.6	10,480.8	22.0	23.5	-125.63	16.2	51.6	104.2	60.1	44.12	2.361			
10,500.0	10,485.0	10,516.5	10,504.2	22.1	23.6	-124.75	12.1	64.0	107.8	63.8	44.06	2.447			
10,525.0	10,505.6	10,543.2	10,526.8	22.2	23.6	-123.75	7.5	77.7	111.8	67.7	44.04	2.538			
10,550.0	10,525.4	10,570.0	10,548.6	22.3	23.7	-122.65	2.6	92.4	115.9	71.9	44.06	2.632			
10,575.0	10,544.5	10,596.7	10,569.4	22.3	23.8	-121.45	-2.7	108.3	120.4	76.3	44.12	2.729			
10,600.0	10,562.6	10,623.4	10,589.1	22.5	23.9	-120.19	-8.4	125.3	125.1	80.8	44.24	2.827			
10,625.0	10,579.9	10,650.0	10,607.9	22.6	24.0	-118.87	-14.3	143.2	130.0	85.6	44.41	2.928			
10,650.0	10,596.1	10,676.5	10,625.5	22.7	24.2	-117.51	-20.6	162.0	135.2	90.5	44.64	3.028			
10,675.0	10,611.4	10,702.9	10,641.9	22.8	24.3	-116.12	-27.2	181.7	140.6	95.6	44.94	3.128			

CC - Min centre to center distance or convergent 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 12TXR
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 12TXR	Survey Calculation Method:	Minimum Curvature
Well Error:	2.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 12TXR	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	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		Distance												Offset Well Error:	2.0 usft
Reference		Offset		Semi Major Axis				Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			Warning
10,700.0	10,625.6	10,729.3	10,657.1	23.0	24.5	-114.70	-34.0	202.1	146.2	100.9	45.30	3.228			
10,725.0	10,638.7	10,755.7	10,671.1	23.2	24.6	-113.26	-41.1	223.3	152.0	106.3	45.72	3.325			
10,750.0	10,650.6	10,781.9	10,683.7	23.4	24.8	-111.82	-48.3	245.1	158.1	111.9	46.20	3.422			
10,775.0	10,661.4	10,808.1	10,695.1	23.6	25.0	-110.38	-55.8	267.5	164.3	117.6	46.73	3.516			
10,800.0	10,671.0	10,834.2	10,705.1	23.8	25.3	-108.94	-63.4	290.3	170.6	123.3	47.31	3.607			
10,825.0	10,679.4	10,860.3	10,713.8	24.0	25.5	-107.52	-71.2	313.6	177.2	129.2	47.93	3.697			
10,850.0	10,686.6	10,886.3	10,721.1	24.3	25.8	-106.10	-79.1	337.3	183.8	135.2	48.58	3.783			
10,875.0	10,692.4	10,912.2	10,727.1	24.5	26.0	-104.71	-87.1	361.3	190.6	141.3	49.27	3.868			
10,900.0	10,697.0	10,938.1	10,731.6	24.8	26.3	-103.33	-95.1	385.4	197.4	147.4	49.99	3.950			
10,925.0	10,700.3	10,963.9	10,734.8	25.1	26.6	-101.97	-103.3	409.8	204.4	153.6	50.72	4.029			
10,950.0	10,702.3	10,989.8	10,736.6	25.4	27.0	-100.64	-111.4	434.2	211.3	159.9	51.47	4.106			
10,972.0	10,703.0	11,011.6	10,737.0	25.7	27.3	-99.51	-118.3	455.0	217.5	165.4	52.13	4.173			
11,000.0	10,703.3	11,036.5	10,737.2	26.1	27.6	-99.16	-126.1	478.6	225.5	172.6	52.87	4.265			
11,100.0	10,704.0	11,125.0	10,737.8	27.6	28.9	-98.10	-151.9	563.2	253.7	198.0	55.71	4.554			
11,200.0	10,704.8	11,121.8	10,738.4	29.2	30.4	-97.26	-174.9	648.0	281.6	222.7	58.88	4.783			
11,300.0	10,705.6	11,300.0	10,739.0	31.1	32.0	-96.58	-195.2	732.8	309.2	246.8	62.34	4.959			
11,400.0	10,706.5	11,386.5	10,739.6	33.1	33.7	-96.01	-212.7	817.5	336.3	270.2	66.03	5.093			
11,500.0	10,707.3	11,472.4	10,740.2	35.2	35.5	-95.53	-227.6	902.0	363.0	293.0	69.91	5.192			
11,600.0	10,708.1	11,557.7	10,740.8	37.4	37.3	-95.13	-239.9	986.5	389.2	315.3	73.93	5.264			
11,700.0	10,708.9	11,642.5	10,741.4	39.7	39.2	-94.77	-249.6	1,070.7	414.9	336.9	78.06	5.315			
11,800.0	10,709.7	11,726.7	10,742.0	42.1	41.1	-94.47	-256.7	1,154.6	440.1	357.9	82.26	5.351			
11,900.0	10,710.6	11,810.4	10,742.6	44.5	43.1	-94.20	-261.4	1,238.1	464.8	378.3	86.51	5.373			
12,000.0	10,711.4	11,900.0	10,743.2	47.0	45.3	-93.94	-263.7	1,327.7	489.0	398.1	90.93	5.378			
12,100.0	10,712.2	11,984.8	10,743.8	49.5	47.3	-93.73	-263.9	1,412.5	512.1	416.8	95.26	5.376			
12,200.0	10,713.0	12,082.8	10,744.5	52.0	49.8	-93.54	-263.9	1,510.5	532.0	432.1	99.93	5.324			
12,300.0	10,713.8	12,181.4	10,745.2	54.5	52.2	-93.39	-263.9	1,609.1	548.6	444.0	104.61	5.244			
12,400.0	10,714.7	12,280.5	10,745.9	57.1	54.8	-93.26	-263.9	1,708.2	561.7	452.4	109.29	5.139			
12,500.0	10,715.5	12,380.1	10,746.6	59.7	57.4	-93.17	-263.9	1,807.8	571.3	457.4	113.92	5.015			
12,600.0	10,716.3	12,479.9	10,747.3	62.2	60.0	-93.10	-263.9	1,907.6	577.5	459.0	118.50	4.873			
12,700.0	10,717.1	12,579.8	10,748.0	64.8	62.7	-93.06	-263.9	2,007.5	580.1	457.1	122.99	4.717			
12,727.0	10,717.3	12,606.8	10,748.2	65.5	63.4	-93.05	-263.9	2,034.5	580.3	456.1	124.19	4.672			
12,800.0	10,717.8	12,679.8	10,748.7	67.3	65.4	-93.05	-263.9	2,107.5	580.3	452.1	128.15	4.528			
12,900.0	10,718.6	12,779.8	10,749.4	69.9	68.1	-93.04	-263.9	2,207.5	580.3	446.7	133.60	4.343			
13,000.0	10,719.4	12,879.8	10,750.1	72.5	70.8	-93.03	-263.9	2,307.5	580.3	441.2	139.09	4.172			
13,100.0	10,720.2	12,979.8	10,750.8	75.2	73.5	-93.02	-263.9	2,407.5	580.2	435.6	144.61	4.013			
13,200.0	10,721.0	13,079.8	10,751.5	77.8	76.3	-93.01	-263.9	2,507.5	580.2	430.1	150.15	3.864			
13,300.0	10,721.8	13,179.8	10,752.2	80.5	79.0	-93.01	-263.9	2,607.5	580.2	424.5	155.71	3.726			
13,400.0	10,722.5	13,279.8	10,752.9	83.2	81.8	-93.00	-263.9	2,707.5	580.2	418.9	161.30	3.597			
13,500.0	10,723.3	13,379.8	10,753.6	85.9	84.6	-92.99	-263.9	2,807.5	580.2	413.3	166.90	3.476			
13,600.0	10,724.1	13,479.8	10,754.3	88.6	87.4	-92.98	-263.9	2,907.5	580.2	407.7	172.52	3.363			
13,700.0	10,724.9	13,579.8	10,755.0	91.3	90.2	-92.97	-263.9	3,007.5	580.2	402.1	178.16	3.257			
13,800.0	10,725.7	13,679.8	10,755.7	94.1	93.0	-92.96	-263.9	3,107.5	580.2	396.4	183.81	3.157			
13,900.0	10,726.5	13,779.8	10,756.4	96.8	95.8	-92.95	-263.9	3,207.5	580.2	390.7	189.47	3.062			
14,000.0	10,727.3	13,879.8	10,757.1	99.6	98.7	-92.95	-263.9	3,307.5	580.2	385.1	195.15	2.973			
14,100.0	10,728.0	13,979.8	10,757.8	102.4	101.5	-92.94	-263.9	3,407.5	580.2	379.4	200.83	2.889			
14,200.0	10,728.8	14,079.8	10,758.5	105.2	104.3	-92.93	-263.9	3,507.5	580.2	373.7	206.52	2.809			
14,300.0	10,729.6	14,179.8	10,759.2	108.0	107.2	-92.92	-263.9	3,607.5	580.2	368.0	212.23	2.734			
14,400.0	10,730.4	14,279.8	10,759.9	110.8	110.0	-92.91	-263.9	3,707.5	580.2	362.3	217.94	2.662			
14,500.0	10,731.2	14,379.8	10,760.6	113.6	112.9	-92.90	-263.9	3,807.5	580.2	356.5	223.65	2.594			
14,600.0	10,732.0	14,479.8	10,761.3	116.4	115.7	-92.89	-263.9	3,907.5	580.2	350.8	229.38	2.529			
14,700.0	10,732.8	14,579.8	10,762.0	119.2	118.6	-92.88	-263.9	4,007.5	580.2	345.1	235.11	2.468			
14,800.0	10,733.5	14,679.8	10,762.7	122.0	121.4	-92.88	-263.9	4,107.5	580.2	339.3	240.85	2.409			

CC - Min centre to center distance or convergent 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 12TXR
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 12TXR	Survey Calculation Method:	Minimum Curvature
Well Error:	2.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 12TXR	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	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		Offset		Semi Major Axis				Distance					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,900.0	10,734.3	14,779.8	10,763.4	124.9	124.3	-92.87	-263.9	4,207.5	580.2	333.6	246.59	2.353	
15,000.0	10,735.1	14,879.8	10,764.1	127.7	127.2	-92.86	-263.9	4,307.5	580.2	327.8	252.34	2.299	
15,100.0	10,735.9	14,979.8	10,764.8	130.5	130.0	-92.85	-263.9	4,407.5	580.2	322.1	258.10	2.248	
15,200.0	10,736.7	15,079.8	10,765.4	133.4	132.9	-92.84	-263.9	4,507.5	580.2	316.3	263.85	2.199	
15,300.0	10,737.5	15,179.8	10,766.1	136.2	135.8	-92.83	-263.9	4,607.5	580.1	310.5	269.62	2.152	
15,400.0	10,738.3	15,279.8	10,766.8	139.1	138.7	-92.82	-263.9	4,707.5	580.1	304.8	275.38	2.107	
15,500.0	10,739.0	15,379.8	10,767.5	141.9	141.6	-92.82	-263.9	4,807.5	580.1	299.0	281.15	2.063	
15,600.0	10,739.8	15,479.8	10,768.2	144.8	144.4	-92.81	-263.9	4,907.5	580.1	293.2	286.93	2.022	
15,700.0	10,740.6	15,579.8	10,768.9	147.6	147.3	-92.80	-263.9	5,007.4	580.1	287.4	292.71	1.982	
15,800.0	10,741.4	15,679.8	10,769.6	150.5	150.2	-92.79	-263.9	5,107.4	580.1	281.6	298.49	1.944	
15,900.0	10,742.2	15,779.8	10,770.3	153.4	153.1	-92.78	-263.9	5,207.4	580.1	275.9	304.27	1.907	
16,000.0	10,743.0	15,879.8	10,771.0	156.2	156.0	-92.77	-263.9	5,307.4	580.1	270.1	310.06	1.871	
16,100.0	10,743.8	15,979.8	10,771.7	159.1	158.9	-92.76	-263.9	5,407.4	580.1	264.3	315.84	1.837	
16,200.0	10,744.5	16,079.8	10,772.4	162.0	161.8	-92.76	-263.9	5,507.4	580.1	258.5	321.64	1.804	
16,300.0	10,745.3	16,179.8	10,773.1	164.9	164.7	-92.75	-263.9	5,607.4	580.1	252.7	327.43	1.772	
16,400.0	10,746.1	16,279.8	10,773.8	167.7	167.6	-92.74	-263.9	5,707.4	580.1	246.9	333.23	1.741	
16,500.0	10,746.9	16,379.8	10,774.5	170.6	170.5	-92.73	-263.9	5,807.4	580.1	241.1	339.02	1.711	
16,600.0	10,747.7	16,479.8	10,775.2	173.5	173.4	-92.72	-263.9	5,907.4	580.1	235.3	344.82	1.682	
16,700.0	10,748.5	16,579.8	10,775.9	176.4	176.3	-92.71	-263.9	6,007.4	580.1	229.5	350.63	1.654	
16,800.0	10,749.3	16,679.8	10,776.6	179.2	179.2	-92.70	-263.9	6,107.4	580.1	223.7	356.43	1.627	
16,900.0	10,750.0	16,779.8	10,777.3	182.1	182.1	-92.70	-263.9	6,207.4	580.1	217.8	362.24	1.601	
17,000.0	10,750.8	16,879.8	10,778.0	185.0	185.0	-92.69	-263.9	6,307.4	580.1	212.0	368.05	1.576	
17,100.0	10,751.6	16,979.8	10,778.7	187.9	187.9	-92.68	-263.9	6,407.4	580.1	206.2	373.85	1.552	
17,200.0	10,752.4	17,079.8	10,779.4	190.8	190.8	-92.67	-263.9	6,507.4	580.1	200.4	379.67	1.528	
17,300.0	10,753.2	17,179.8	10,780.1	193.7	193.7	-92.66	-263.9	6,607.4	580.1	194.6	385.48	1.505	
17,400.0	10,754.0	17,279.8	10,780.8	196.6	196.6	-92.65	-263.9	6,707.4	580.1	188.8	391.29	1.482 Level 3	
17,500.0	10,754.7	17,379.8	10,781.5	199.5	199.5	-92.64	-263.9	6,807.4	580.1	182.9	397.11	1.461 Level 3	
17,600.0	10,755.5	17,479.8	10,782.2	202.4	202.4	-92.64	-263.9	6,907.4	580.1	177.1	402.92	1.440 Level 3	
17,700.0	10,756.3	17,579.8	10,782.9	205.3	205.3	-92.63	-263.9	7,007.4	580.0	171.3	408.74	1.419 Level 3	
17,800.0	10,757.1	17,679.8	10,783.6	208.1	208.2	-92.62	-263.9	7,107.4	580.0	165.5	414.56	1.399 Level 3	
17,900.0	10,757.9	17,779.8	10,784.3	211.0	211.1	-92.61	-263.9	7,207.4	580.0	159.7	420.38	1.380 Level 3	
18,000.0	10,758.7	17,879.8	10,785.0	213.9	214.0	-92.60	-263.9	7,307.4	580.0	153.8	426.20	1.361 Level 3	
18,100.0	10,759.5	17,979.8	10,785.7	216.8	216.9	-92.59	-263.9	7,407.4	580.0	148.0	432.02	1.343 Level 3	
18,200.0	10,760.2	18,079.8	10,786.4	219.7	219.8	-92.58	-263.9	7,507.4	580.0	142.2	437.85	1.325 Level 3	
18,300.0	10,761.0	18,179.8	10,787.1	222.6	222.7	-92.57	-263.9	7,607.4	580.0	136.4	443.67	1.307 Level 3	
18,400.0	10,761.8	18,279.8	10,787.8	225.5	225.7	-92.57	-263.9	7,707.4	580.0	130.5	449.50	1.290 Level 3	
18,500.0	10,762.6	18,379.8	10,788.5	228.4	228.6	-92.56	-263.9	7,807.4	580.0	124.7	455.32	1.274 Level 3	
18,600.0	10,763.4	18,479.8	10,789.2	231.3	231.5	-92.55	-263.9	7,907.4	580.0	118.9	461.15	1.258 Level 3	
18,700.0	10,764.2	18,579.8	10,789.9	234.2	234.4	-92.54	-263.9	8,007.4	580.0	113.0	466.98	1.242 Level 2	
18,800.0	10,765.0	18,679.8	10,790.6	237.1	237.3	-92.53	-263.9	8,107.4	580.0	107.2	472.81	1.227 Level 2	
18,900.0	10,765.7	18,779.8	10,791.3	240.1	240.2	-92.52	-263.9	8,207.4	580.0	101.4	478.64	1.212 Level 2	
19,000.0	10,766.5	18,879.8	10,792.0	243.0	243.1	-92.51	-263.9	8,307.4	580.0	95.5	484.47	1.197 Level 2	
19,100.0	10,767.3	18,979.8	10,792.7	245.9	246.1	-92.51	-263.9	8,407.4	580.0	89.7	490.30	1.183 Level 2	
19,200.0	10,768.1	19,079.8	10,793.4	248.8	249.0	-92.50	-263.9	8,507.4	580.0	83.9	496.13	1.169 Level 2	
19,300.0	10,768.9	19,179.8	10,794.1	251.7	251.9	-92.49	-263.9	8,607.4	580.0	78.0	501.96	1.155 Level 2	
19,400.0	10,769.7	19,279.8	10,794.8	254.6	254.8	-92.48	-263.9	8,707.4	580.0	72.2	507.80	1.142 Level 2	
19,500.0	10,770.5	19,379.8	10,795.5	257.5	257.7	-92.47	-263.9	8,807.4	580.0	66.3	513.63	1.129 Level 2	
19,600.0	10,771.2	19,479.8	10,796.2	260.4	260.6	-92.46	-263.9	8,907.4	580.0	60.5	519.46	1.116 Level 2	
19,700.0	10,772.0	19,579.8	10,796.9	263.3	263.5	-92.45	-263.9	9,007.3	580.0	54.7	525.30	1.104 Level 2	
19,800.0	10,772.8	19,679.8	10,797.6	266.2	266.5	-92.45	-263.9	9,107.3	580.0	48.8	531.13	1.092 Level 2	
19,900.0	10,773.6	19,779.8	10,798.3	269.1	269.4	-92.44	-263.9	9,207.3	580.0	43.0	536.97	1.080 Level 2	
20,000.0	10,774.4	19,879.8	10,799.0	272.0	272.3	-92.43	-263.9	9,307.3	580.0	37.2	542.81	1.068 Level 2	

CC - Min centre to center distance or convergent 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 12TXR
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 12TXR	Survey Calculation Method:	Minimum Curvature
Well Error:	2.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 12TXR	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	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		Offset		Semi Major Axis				Distance					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
20,100.0	10,775.2	19,979.8	10,799.7	274.9	275.2	-92.42	-263.9	9,407.3	580.0	31.3	548.65	1.057	Level 2
20,200.0	10,776.0	20,079.8	10,800.4	277.9	278.1	-92.41	-263.9	9,507.3	580.0	25.5	554.48	1.046	Level 2
20,300.0	10,776.7	20,179.8	10,801.1	280.8	281.1	-92.40	-263.9	9,607.3	579.9	19.6	560.32	1.035	Level 2
20,400.0	10,777.5	20,279.8	10,801.8	283.7	284.0	-92.39	-263.9	9,707.3	579.9	13.8	566.16	1.024	Level 2
20,500.0	10,778.3	20,379.8	10,802.4	286.6	286.9	-92.39	-263.9	9,807.3	579.9	7.9	572.00	1.014	Level 2
20,600.0	10,779.1	20,479.8	10,803.1	289.5	289.8	-92.38	-263.9	9,907.3	579.9	2.1	577.84	1.004	Level 2
20,700.0	10,779.9	20,579.8	10,803.8	292.4	292.7	-92.37	-263.9	10,007.3	579.9	-3.7	583.68	0.994	Level 1
20,800.0	10,780.7	20,679.8	10,804.5	295.3	295.6	-92.36	-263.9	10,107.3	579.9	-9.6	589.52	0.984	Level 1
20,900.0	10,781.5	20,779.8	10,805.2	298.2	298.6	-92.35	-263.9	10,207.3	579.9	-15.4	595.36	0.974	Level 1
21,000.0	10,782.2	20,879.8	10,805.9	301.2	301.5	-92.34	-263.9	10,307.3	579.9	-21.3	601.20	0.965	Level 1
21,100.0	10,783.0	20,979.8	10,806.6	304.1	304.4	-92.33	-263.9	10,407.3	579.9	-27.1	607.05	0.955	Level 1
21,200.0	10,783.8	21,079.8	10,807.3	307.0	307.3	-92.33	-263.9	10,507.3	579.9	-33.0	612.89	0.946	Level 1
21,226.5	10,784.0	21,106.3	10,807.5	307.5	308.1	-92.32	-263.9	10,533.8	579.9	-34.3	614.17	0.944	Level 1, ES, SF

Ryan Directional Services

Anticollision Report

Company:	Oasis	Local Co-ordinate Reference:	Well Chalmers 5301 44-24 12TXR
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 12TXR	Survey Calculation Method:	Minimum Curvature
Well Error:	2.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 12TXR	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design 153N-100W-19/20_Altered - Chalmers 5301 44-24 2TX - Chalmers #2T - Plan #1												Offset Site Error:	0.0 usft	
Survey Program: 0-MWD												Offset Well Error:	0.0 usft	
Reference		Offset		Semi Major Axis				Distance						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Highside Toolface (°)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	2.0	0.0	0.00		115.7	0.0	115.7				
100.0	100.0	100.0	100.0	2.0	0.1	0.00		115.7	0.0	115.7	113.6	2.09	55.442	
200.0	200.0	200.0	200.0	2.0	0.3	0.00		115.7	0.0	115.7	113.3	2.33	49.578	
300.0	300.0	300.0	300.0	2.1	0.5	0.00		115.7	0.0	115.7	113.1	2.60	44.418	
400.0	400.0	400.0	400.0	2.1	0.8	0.00		115.7	0.0	115.7	112.8	2.90	39.914	
500.0	500.0	500.0	500.0	2.2	1.0	0.00		115.7	0.0	115.7	112.4	3.21	36.007	
600.0	600.0	600.0	600.0	2.3	1.2	0.00		115.7	0.0	115.7	112.1	3.54	32.628	
700.0	700.0	700.0	700.0	2.5	1.4	0.00		115.7	0.0	115.7	111.8	3.89	29.707	
800.0	800.0	800.0	800.0	2.6	1.7	0.00		115.7	0.0	115.7	111.4	4.26	27.179	
900.0	900.0	900.0	900.0	2.7	1.9	0.00		115.7	0.0	115.7	111.0	4.63	24.985	
1,000.0	1,000.0	1,000.0	1,000.0	2.9	2.1	0.00		115.7	0.0	115.7	110.6	5.01	23.074	
1,100.0	1,100.0	1,100.0	1,100.0	3.1	2.3	0.00		115.7	0.0	115.7	110.3	5.40	21.402	
1,200.0	1,200.0	1,200.0	1,200.0	3.2	2.6	0.00		115.7	0.0	115.7	109.9	5.80	19.931	
1,300.0	1,300.0	1,300.0	1,300.0	3.4	2.8	0.00		115.7	0.0	115.7	109.4	6.21	18.632	
1,400.0	1,400.0	1,400.0	1,400.0	3.6	3.0	0.00		115.7	0.0	115.7	109.0	6.62	17.479	
1,500.0	1,500.0	1,500.0	1,500.0	3.8	3.2	0.00		115.7	0.0	115.7	108.6	7.03	16.450	
1,600.0	1,600.0	1,600.0	1,600.0	4.0	3.5	0.00		115.7	0.0	115.7	108.2	7.45	15.527	
1,700.0	1,700.0	1,700.0	1,700.0	4.2	3.7	0.00		115.7	0.0	115.7	107.8	7.87	14.697	
1,800.0	1,800.0	1,800.0	1,800.0	4.4	3.9	0.00		115.7	0.0	115.7	107.4	8.29	13.946	
1,900.0	1,900.0	1,900.0	1,900.0	4.6	4.1	0.00		115.7	0.0	115.7	106.9	8.72	13.265	
2,000.0	2,000.0	2,000.0	2,000.0	4.8	4.4	0.00		115.7	0.0	115.7	106.5	9.15	12.644	
2,100.0	2,100.0	2,100.0	2,100.0	5.0	4.6	0.00		115.7	0.0	115.7	106.1	9.58	12.077	
2,166.7	2,166.7	2,166.7	2,166.7	5.1	4.7	0.00		115.7	0.0	115.7	105.8	9.86	11.725 CC	
2,200.0	2,200.0	2,200.0	2,200.0	5.2	4.8	0.00		115.7	0.0	115.7	105.6	10.01	11.556 ES	
2,216.7	2,216.7	2,215.7	2,215.7	5.2	4.8	-180.00		115.7	0.0	115.8	105.8	10.07	11.498	
2,300.0	2,300.0	2,299.0	2,299.0	5.4	5.0	-180.00		116.5	0.0	117.3	106.9	10.39	11.288	
2,400.0	2,400.0	2,399.0	2,399.0	5.5	5.3	-180.00		117.3	0.0	119.0	108.3	10.77	11.047	
2,500.0	2,500.0	2,498.9	2,498.9	5.7	5.5	-180.00		118.2	0.0	120.8	109.6	11.16	10.818	
2,600.0	2,600.0	2,598.9	2,598.9	5.9	5.7	-180.00		119.1	0.0	122.5	111.0	11.56	10.601	
2,700.0	2,700.0	2,698.9	2,698.9	6.0	5.9	-180.00		120.0	0.0	124.3	112.3	11.95	10.396	
2,800.0	2,800.0	2,798.9	2,798.9	6.2	6.2	-180.00		120.8	0.0	126.0	113.7	12.35	10.200	
2,900.0	2,900.0	2,898.9	2,898.9	6.4	6.4	-180.00		121.7	0.0	127.8	115.0	12.76	10.015	
3,000.0	3,000.0	2,998.9	2,998.8	6.6	6.6	-180.00		122.6	0.0	129.5	116.3	13.16	9.838	
3,100.0	3,100.0	3,098.9	3,098.8	6.7	6.8	-180.00		123.5	0.0	131.2	117.7	13.57	9.671	
3,200.0	3,200.0	3,198.8	3,198.8	6.9	7.0	-180.00		124.3	0.0	133.0	119.0	13.98	9.511	
3,300.0	3,300.0	3,298.8	3,298.8	7.1	7.3	-180.00		125.2	0.0	134.7	120.3	14.40	9.359	
3,400.0	3,400.0	3,398.8	3,398.8	7.3	7.5	-180.00		126.1	0.0	136.5	121.7	14.81	9.215	
3,500.0	3,500.0	3,498.8	3,498.7	7.5	7.7	-180.00		126.9	0.0	138.2	123.0	15.23	9.077	
3,600.0	3,599.9	3,598.8	3,598.7	7.7	7.9	-180.00		127.8	0.0	140.0	124.3	15.65	8.945	
3,700.0	3,699.9	3,698.8	3,698.7	7.9	8.2	-180.00		128.7	0.0	141.7	125.6	16.07	8.820	
3,800.0	3,799.9	3,798.7	3,798.7	8.1	8.4	-180.00		129.6	0.0	143.5	127.0	16.49	8.700	
3,900.0	3,899.9	3,898.7	3,898.7	8.3	8.6	-180.00		130.4	0.0	145.2	128.3	16.91	8.585	
4,000.0	3,999.9	3,998.7	3,998.6	8.5	8.8	-180.00		131.3	0.0	146.9	129.6	17.34	8.475	
4,100.0	4,099.9	4,098.7	4,098.6	8.7	9.1	-180.00		132.2	0.0	148.7	130.9	17.76	8.370	
4,200.0	4,199.9	4,198.7	4,198.6	8.9	9.3	-180.00		133.1	0.0	150.4	132.2	18.19	8.270	
4,300.0	4,299.9	4,298.7	4,298.6	9.1	9.5	-180.00		133.9	0.0	152.2	133.6	18.62	8.173	
4,400.0	4,399.9	4,398.7	4,398.6	9.3	9.7	-180.00		134.8	0.0	153.9	134.9	19.05	8.081	
4,500.0	4,499.9	4,498.6	4,498.6	9.5	10.0	-180.00		135.7	0.0	155.7	136.2	19.48	7.992	
4,600.0	4,599.9	4,598.6	4,598.5	9.7	10.2	-180.00		136.5	0.0	157.4	137.5	19.91	7.906	
4,700.0	4,699.9	4,698.6	4,698.5	9.9	10.4	-180.00		137.4	0.0	159.2	138.8	20.34	7.824	
4,800.0	4,799.9	4,798.6	4,798.5	10.1	10.6	-180.00		138.3	0.0	160.9	140.1	20.77	7.746	
4,900.0	4,899.9	4,898.6	4,898.5	10.4	10.9	-180.00		139.2	0.0	162.7	141.4	21.21	7.670	

CC - Min centre to center distance or convergent 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 12TXR
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 12TXR	Survey Calculation Method:	Minimum Curvature
Well Error:	2.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 12TXR	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design 153N-100W-19/20_Altered - Chalmers 5301 44-24 2TX - Chalmers #2T - Plan #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis				Distance					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,000.0	4,999.9	4,998.6	4,998.5	10.6	11.1	-180.00	140.0	0.0	164.4	142.8	21.64	7.596	
5,100.0	5,099.9	5,098.5	5,098.4	10.8	11.3	-180.00	140.9	0.0	166.1	144.1	22.08	7.526	
5,200.0	5,199.9	5,198.5	5,198.4	11.0	11.5	-180.00	141.8	0.0	167.9	145.4	22.51	7.458	
5,300.0	5,299.9	5,298.5	5,298.4	11.2	11.8	-180.00	142.7	0.0	169.6	146.7	22.95	7.392	
5,400.0	5,399.9	5,398.5	5,398.4	11.4	12.0	-180.00	143.5	0.0	171.4	148.0	23.38	7.329	
5,500.0	5,499.9	5,498.5	5,498.4	11.6	12.2	-180.00	144.4	0.0	173.1	149.3	23.82	7.268	
5,600.0	5,599.9	5,598.5	5,598.3	11.8	12.4	-180.00	145.3	0.0	174.9	150.6	24.26	7.209	
5,700.0	5,699.9	5,698.5	5,698.3	12.0	12.7	-180.00	146.1	0.0	176.6	151.9	24.70	7.152	
5,800.0	5,799.9	5,798.4	5,798.3	12.3	12.9	-180.00	147.0	0.0	178.4	153.2	25.13	7.097	
5,900.0	5,899.9	5,898.4	5,898.3	12.5	13.1	-180.00	147.9	0.0	180.1	154.5	25.57	7.043	
6,000.0	5,999.9	5,998.4	5,998.3	12.7	13.3	-180.00	148.8	0.0	181.9	155.8	26.01	6.991	
6,100.0	6,099.9	6,098.4	6,098.2	12.9	13.6	-180.00	149.6	0.0	183.6	157.1	26.45	6.941	
6,200.0	6,199.8	6,198.4	6,198.2	13.1	13.8	-180.00	150.5	0.0	185.3	158.5	26.89	6.893	
6,300.0	6,299.8	6,298.4	6,298.2	13.3	14.0	-180.00	151.4	0.0	187.1	159.8	27.33	6.846	
6,400.0	6,399.8	6,398.3	6,398.2	13.6	14.2	-180.00	152.2	0.0	188.8	161.1	27.77	6.800	
6,500.0	6,499.8	6,498.3	6,498.2	13.8	14.5	-180.00	153.1	0.0	190.6	162.4	28.21	6.755	
6,600.0	6,599.8	6,598.3	6,598.2	14.0	14.7	-180.00	154.0	0.0	192.3	163.7	28.65	6.712	
6,700.0	6,699.8	6,698.3	6,698.1	14.2	14.9	-180.00	154.9	0.0	194.1	165.0	29.09	6.671	
6,800.0	6,799.8	6,798.3	6,798.1	14.4	15.1	-180.00	155.7	0.0	195.8	166.3	29.53	6.630	
6,900.0	6,899.8	6,898.3	6,898.1	14.6	15.4	-180.00	156.6	0.0	197.6	167.6	29.98	6.591	
7,000.0	6,999.8	6,998.3	6,998.1	14.9	15.6	-180.00	157.5	0.0	199.3	168.9	30.42	6.552	
7,100.0	7,099.8	7,098.2	7,098.1	15.1	15.8	-180.00	158.4	0.0	201.1	170.2	30.86	6.515	
7,200.0	7,199.8	7,198.2	7,198.0	15.3	16.0	-180.00	159.2	0.0	202.8	171.5	31.30	6.479	
7,300.0	7,299.8	7,298.2	7,298.0	15.5	16.3	-180.00	160.1	0.0	204.5	172.8	31.75	6.443	
7,400.0	7,399.8	7,398.2	7,398.0	15.7	16.5	-180.00	161.0	0.0	206.3	174.1	32.19	6.409	
7,500.0	7,499.8	7,498.2	7,498.0	16.0	16.7	-180.00	161.8	0.0	208.0	175.4	32.63	6.375	
7,600.0	7,599.8	7,598.2	7,598.0	16.2	16.9	-180.00	162.7	0.0	209.8	176.7	33.07	6.343	
7,700.0	7,699.8	7,698.2	7,697.9	16.4	17.2	-180.00	163.6	0.0	211.5	178.0	33.52	6.311	
7,800.0	7,799.8	7,798.1	7,797.9	16.6	17.4	-180.00	164.5	0.0	213.3	179.3	33.96	6.280	
7,900.0	7,899.8	7,898.1	7,897.9	16.8	17.6	-180.00	165.3	0.0	215.0	180.6	34.40	6.250	
7,926.7	7,926.4	7,924.8	7,924.6	16.9	17.7	-180.00	165.6	0.0	215.5	181.0	34.52	6.242	
7,943.3	7,943.1	7,943.3	7,943.1	16.9	17.7	0.00	165.7	0.0	215.6	181.0	34.62	6.229	
8,000.0	7,999.8	8,000.0	7,999.8	17.1	17.8	0.00	165.7	0.0	215.6	180.8	34.85	6.188	
8,100.0	8,099.8	8,100.0	8,099.8	17.2	18.0	0.00	165.7	0.0	215.6	180.4	35.26	6.115	
8,200.0	8,199.8	8,200.0	8,199.8	17.4	18.3	0.00	165.7	0.0	215.6	180.0	35.68	6.044	
8,300.0	8,299.8	8,300.0	8,299.8	17.6	18.5	0.00	165.7	0.0	215.6	179.5	36.09	5.974	
8,400.0	8,399.8	8,400.0	8,399.8	17.8	18.7	0.00	165.7	0.0	215.6	179.1	36.51	5.906	
8,500.0	8,499.8	8,500.0	8,499.8	18.0	18.9	0.00	165.7	0.0	215.6	178.7	36.93	5.839	
8,600.0	8,599.8	8,600.0	8,599.8	18.2	19.2	0.00	165.7	0.0	215.6	178.3	37.35	5.774	
8,700.0	8,699.8	8,700.0	8,699.8	18.4	19.4	0.00	165.7	0.0	215.6	177.9	37.77	5.710	
8,800.0	8,799.8	8,800.0	8,799.8	18.6	19.6	0.00	165.7	0.0	215.6	177.4	38.19	5.647	
8,900.0	8,899.8	8,900.0	8,899.8	18.8	19.8	0.00	165.7	0.0	215.6	177.0	38.61	5.585	
9,000.0	8,999.8	9,000.0	8,999.8	19.0	20.1	0.00	165.7	0.0	215.6	176.6	39.03	5.525	
9,100.0	9,099.8	9,100.0	9,099.8	19.2	20.3	0.00	165.7	0.0	215.6	176.2	39.45	5.466	
9,200.0	9,199.8	9,200.0	9,199.8	19.4	20.5	0.00	165.7	0.0	215.6	175.8	39.87	5.408	
9,300.0	9,299.8	9,300.0	9,299.8	19.6	20.7	0.00	165.7	0.0	215.6	175.3	40.30	5.351	
9,400.0	9,399.8	9,400.0	9,399.8	19.8	21.0	0.00	165.7	0.0	215.6	174.9	40.72	5.295	
9,500.0	9,499.8	9,500.0	9,499.8	20.0	21.2	0.00	165.7	0.0	215.6	174.5	41.15	5.241	
9,600.0	9,599.8	9,600.0	9,599.8	20.2	21.4	0.00	165.7	0.0	215.6	174.1	41.57	5.187	
9,700.0	9,699.8	9,700.0	9,699.8	20.4	21.6	0.00	165.7	0.0	215.6	173.6	42.00	5.135	
9,800.0	9,799.8	9,800.0	9,799.8	20.6	21.9	0.00	165.7	0.0	215.6	173.2	42.42	5.083	
9,900.0	9,899.8	9,900.0	9,899.8	20.8	22.1	0.00	165.7	0.0	215.6	172.8	42.85	5.032	

CC - Min centre to center distance or convergent 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 12TXR
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 12TXR	Survey Calculation Method:	Minimum Curvature
Well Error:	2.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 12TXR	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design 153N-100W-19/20_Altered - Chalmers 5301 44-24 2TX - Chalmers #2T - Plan #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD				Distance								Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis				Distance					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,000.0	9,999.8	10,000.0	9,999.8	21.0	22.3	0.00	165.7	0.0	215.6	172.4	43.27	4.983	
10,100.0	10,099.8	10,100.0	10,099.8	21.2	22.5	0.00	165.7	0.0	215.6	171.9	43.70	4.934	
10,200.0	10,199.8	10,200.0	10,199.8	21.4	22.8	0.00	165.7	0.0	215.6	171.5	44.13	4.886	
10,215.5	10,215.3	10,215.5	10,215.3	21.4	22.8	0.00	165.7	0.0	215.6	171.4	44.20	4.879	
10,225.8	10,225.6	10,225.7	10,225.5	21.4	22.8	0.00	165.7	0.0	215.6	171.4	44.24	4.874	
10,250.0	10,249.8	10,249.5	10,249.3	21.5	22.9	-124.98	165.7	0.8	216.0	171.7	44.32	4.874	
10,275.0	10,274.7	10,274.0	10,273.7	21.5	22.9	-124.72	165.8	2.9	217.2	172.8	44.39	4.893	
10,300.0	10,299.5	10,298.4	10,297.9	21.6	23.0	-124.34	165.9	6.2	219.2	174.8	44.43	4.933	
10,325.0	10,324.1	10,322.7	10,321.7	21.7	23.0	-123.83	166.1	10.7	222.0	177.5	44.46	4.992	
10,350.0	10,348.4	10,346.8	10,345.2	21.7	23.1	-123.21	166.3	16.3	225.5	181.1	44.48	5.071	
10,375.0	10,372.4	10,370.8	10,368.1	21.8	23.1	-122.47	166.6	23.1	229.9	185.4	44.48	5.169	
10,400.0	10,395.9	10,394.5	10,390.5	21.8	23.2	-121.63	166.9	30.9	235.0	190.5	44.48	5.284	
10,425.0	10,419.1	10,417.9	10,412.2	21.9	23.2	-120.70	167.2	39.8	240.9	196.4	44.48	5.416	
10,450.0	10,441.6	10,441.1	10,433.3	22.0	23.3	-119.68	167.6	49.6	247.5	203.0	44.50	5.563	
10,475.0	10,463.6	10,464.0	10,453.5	22.0	23.4	-118.58	168.0	60.2	254.9	210.3	44.52	5.724	
10,500.0	10,485.0	10,486.7	10,473.0	22.1	23.4	-117.41	168.5	71.7	262.9	218.3	44.57	5.898	
10,525.0	10,505.6	10,509.0	10,491.7	22.2	23.5	-116.18	168.9	83.9	271.6	226.9	44.64	6.083	
10,550.0	10,525.4	10,531.0	10,509.5	22.3	23.6	-114.88	169.4	96.7	280.9	236.2	44.75	6.278	
10,575.0	10,544.5	10,552.7	10,526.5	22.3	23.7	-113.53	170.0	110.2	290.9	246.0	44.88	6.481	
10,600.0	10,562.6	10,574.0	10,542.7	22.5	23.7	-112.13	170.5	124.2	301.4	256.3	45.05	6.690	
10,625.0	10,579.9	10,595.1	10,557.9	22.6	23.8	-110.68	171.1	138.7	312.5	267.2	45.26	6.903	
10,650.0	10,596.1	10,615.9	10,572.3	22.7	23.9	-109.19	171.6	153.7	324.0	278.5	45.51	7.120	
10,675.0	10,611.4	10,636.4	10,585.9	22.8	24.0	-107.66	172.2	169.0	336.1	290.3	45.80	7.339	
10,700.0	10,625.6	10,656.6	10,598.6	23.0	24.1	-106.09	172.9	184.7	348.6	302.5	46.11	7.559	
10,725.0	10,638.7	10,676.5	10,610.5	23.2	24.2	-104.49	173.5	200.7	361.5	315.0	46.46	7.780	
10,750.0	10,650.6	10,696.3	10,621.6	23.4	24.4	-102.87	174.1	217.0	374.7	327.9	46.84	8.000	
10,775.0	10,661.4	10,715.8	10,631.9	23.6	24.5	-101.23	174.8	233.6	388.3	341.1	47.24	8.220	
10,800.0	10,671.0	10,735.1	10,641.5	23.8	24.6	-99.56	175.4	250.4	402.2	354.6	47.66	8.439	
10,825.0	10,679.4	10,754.3	10,650.2	24.0	24.8	-97.88	176.1	267.4	416.4	368.3	48.09	8.657	
10,850.0	10,686.6	10,773.3	10,658.2	24.3	24.9	-96.20	176.8	284.6	430.7	382.2	48.53	8.875	
10,875.0	10,692.4	10,792.2	10,665.5	24.5	25.1	-94.51	177.4	302.1	445.3	396.3	48.98	9.091	
10,900.0	10,697.0	10,811.0	10,672.1	24.8	25.3	-92.83	178.1	319.7	460.0	410.6	49.43	9.307	
10,925.0	10,700.3	10,829.8	10,677.9	25.1	25.5	-91.15	178.8	337.5	474.9	425.0	49.87	9.522	
10,950.0	10,702.3	10,848.6	10,683.1	25.4	25.7	-89.50	179.5	355.5	489.8	439.5	50.31	9.736	
10,972.0	10,703.0	10,865.1	10,687.0	25.7	25.8	-88.05	180.1	371.6	503.0	452.3	50.69	9.923	
11,000.0	10,703.3	10,886.4	10,691.2	26.1	26.1	-88.69	181.0	392.4	519.7	468.5	51.25	10.141	
11,100.0	10,704.0	10,965.8	10,698.8	27.6	27.1	-89.68	184.0	471.4	578.1	524.6	53.46	10.813	
11,200.0	10,704.8	11,073.6	10,699.5	29.2	28.6	-89.71	186.6	579.1	632.5	576.2	56.35	11.224	
11,300.0	10,705.6	11,160.6	10,700.1	31.1	30.1	-89.73	186.6	666.1	681.8	622.4	59.45	11.469	
11,400.0	10,706.5	11,249.3	10,700.8	33.1	31.7	-89.73	186.6	754.8	728.0	665.2	62.87	11.579	
11,500.0	10,707.3	11,339.5	10,701.4	35.2	33.4	-89.73	186.6	845.0	771.2	704.5	66.62	11.576	
11,600.0	10,708.1	11,431.2	10,702.0	37.4	35.3	-89.73	186.6	936.7	811.1	740.5	70.64	11.483	
11,700.0	10,708.9	11,524.2	10,702.7	39.7	37.4	-89.73	186.6	1,029.7	847.8	772.9	74.89	11.320	
11,800.0	10,709.7	11,618.4	10,703.4	42.1	39.5	-89.72	186.6	1,123.9	881.2	801.9	79.35	11.105	
11,900.0	10,710.6	11,713.8	10,704.0	44.5	41.7	-89.71	186.6	1,219.2	911.4	827.4	83.98	10.853	
12,000.0	10,711.4	11,810.1	10,704.7	47.0	44.1	-89.70	186.6	1,315.6	938.2	849.4	88.73	10.574	
12,100.0	10,712.2	11,907.3	10,705.4	49.5	46.5	-89.69	186.6	1,412.8	961.6	868.0	93.57	10.276	
12,200.0	10,713.0	12,005.3	10,706.1	52.0	48.9	-89.67	186.6	1,510.8	981.6	883.1	98.48	9.967	
12,300.0	10,713.8	12,103.9	10,706.8	54.5	51.5	-89.66	186.6	1,609.4	998.2	894.7	103.42	9.651	
12,400.0	10,714.7	12,203.0	10,707.5	57.1	54.0	-89.64	186.6	1,708.5	1,011.3	902.9	108.37	9.332	
12,500.0	10,715.5	12,302.6	10,708.2	59.7	56.7	-89.63	186.6	1,808.0	1,020.9	907.6	113.29	9.012	
12,600.0	10,716.3	12,402.4	10,708.9	62.2	59.3	-89.61	186.6	1,907.8	1,027.1	908.9	118.16	8.692	

CC - Min centre to center distance or convergent 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 12TXR
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 12TXR	Survey Calculation Method:	Minimum Curvature
Well Error:	2.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 12TXR	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design 153N-100W-19/20_Altered - Chalmers 5301 44-24 2TX - Chalmers #2T - Plan #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis				Distance					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/S (usft)	Centre +E/W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
12,700.0	10,717.1	12,502.3	10,709.6	64.8	62.0	-89.59	186.6	2,007.8	1,029.8	906.8	122.96	8.375	
12,727.0	10,717.3	12,529.3	10,709.7	65.5	62.7	-89.58	186.6	2,034.8	1,029.9	905.7	124.24	8.290	
12,800.0	10,717.8	12,602.3	10,710.3	67.3	64.7	-89.58	186.6	2,107.8	1,029.9	901.7	128.20	8.034	
12,900.0	10,718.6	12,702.3	10,711.0	69.9	67.4	-89.57	186.6	2,207.8	1,029.9	896.3	133.66	7.705	
13,000.0	10,719.4	12,802.3	10,711.7	72.5	70.2	-89.57	186.6	2,307.8	1,029.9	890.8	139.16	7.401	
13,100.0	10,720.2	12,902.3	10,712.4	75.2	72.9	-89.56	186.6	2,407.8	1,029.9	885.2	144.68	7.119	
13,200.0	10,721.0	13,002.3	10,713.1	77.8	75.7	-89.56	186.6	2,507.8	1,029.9	879.7	150.23	6.856	
13,300.0	10,721.8	13,102.3	10,713.8	80.5	78.5	-89.56	186.6	2,607.8	1,029.9	874.1	155.80	6.610	
13,400.0	10,722.5	13,202.3	10,714.5	83.2	81.3	-89.55	186.6	2,707.8	1,029.9	868.5	161.40	6.381	
13,500.0	10,723.3	13,302.3	10,715.2	85.9	84.1	-89.55	186.6	2,807.8	1,029.9	862.9	167.01	6.167	
13,600.0	10,724.1	13,402.3	10,715.9	88.6	86.9	-89.54	186.6	2,907.8	1,029.9	857.3	172.63	5.966	
13,700.0	10,724.9	13,502.3	10,716.6	91.3	89.7	-89.54	186.6	3,007.8	1,029.9	851.7	178.28	5.777	
13,800.0	10,725.7	13,602.3	10,717.3	94.1	92.5	-89.53	186.6	3,107.8	1,029.9	846.0	183.93	5.599	
13,900.0	10,726.5	13,702.3	10,718.0	96.8	95.4	-89.53	186.6	3,207.8	1,029.9	840.3	189.60	5.432	
14,000.0	10,727.3	13,802.3	10,718.7	99.6	98.2	-89.52	186.6	3,307.8	1,029.9	834.7	195.28	5.274	
14,100.0	10,728.0	13,902.3	10,719.4	102.4	101.0	-89.52	186.6	3,407.8	1,029.9	829.0	200.97	5.125	
14,200.0	10,728.8	14,002.3	10,720.1	105.2	103.9	-89.51	186.6	3,507.8	1,029.9	823.3	206.67	4.983	
14,300.0	10,729.6	14,102.3	10,720.8	108.0	106.7	-89.51	186.6	3,607.8	1,029.9	817.6	212.38	4.849	
14,400.0	10,730.4	14,202.3	10,721.5	110.8	109.6	-89.50	186.6	3,707.7	1,029.9	811.8	218.10	4.722	
14,500.0	10,731.2	14,302.3	10,722.2	113.6	112.4	-89.50	186.6	3,807.7	1,029.9	806.1	223.82	4.602	
14,600.0	10,732.0	14,402.3	10,722.9	116.4	115.3	-89.49	186.6	3,907.7	1,029.9	800.4	229.55	4.487	
14,700.0	10,732.8	14,502.3	10,723.6	119.2	118.2	-89.49	186.6	4,007.7	1,029.9	794.6	235.29	4.377	
14,800.0	10,733.5	14,602.3	10,724.3	122.0	121.0	-89.49	186.6	4,107.7	1,029.9	788.9	241.03	4.273	
14,900.0	10,734.3	14,702.3	10,725.0	124.9	123.9	-89.48	186.6	4,207.7	1,029.9	783.2	246.78	4.173	
15,000.0	10,735.1	14,802.3	10,725.7	127.7	126.8	-89.48	186.6	4,307.7	1,029.9	777.4	252.54	4.078	
15,100.0	10,735.9	14,902.3	10,726.4	130.5	129.7	-89.47	186.6	4,407.7	1,029.9	771.6	258.29	3.987	
15,200.0	10,736.7	15,002.3	10,727.1	133.4	132.5	-89.47	186.6	4,507.7	1,029.9	765.9	264.06	3.900	
15,300.0	10,737.5	15,102.3	10,727.8	136.2	135.4	-89.46	186.6	4,607.7	1,029.9	760.1	269.82	3.817	
15,400.0	10,738.3	15,202.3	10,728.5	139.1	138.3	-89.46	186.6	4,707.7	1,029.9	754.3	275.60	3.737	
15,500.0	10,739.0	15,302.3	10,729.2	141.9	141.2	-89.45	186.6	4,807.7	1,029.9	748.6	281.37	3.660	
15,600.0	10,739.8	15,402.3	10,729.9	144.8	144.1	-89.45	186.6	4,907.7	1,029.9	742.8	287.15	3.587	
15,700.0	10,740.6	15,502.3	10,730.6	147.6	147.0	-89.44	186.6	5,007.7	1,029.9	737.0	292.93	3.516	
15,800.0	10,741.4	15,602.3	10,731.3	150.5	149.9	-89.44	186.6	5,107.7	1,029.9	731.2	298.72	3.448	
15,900.0	10,742.2	15,702.3	10,732.0	153.4	152.8	-89.43	186.6	5,207.7	1,029.9	725.4	304.50	3.382	
16,000.0	10,743.0	15,802.3	10,732.7	156.2	155.6	-89.43	186.6	5,307.7	1,029.9	719.7	310.29	3.319	
16,100.0	10,743.8	15,902.3	10,733.4	159.1	158.5	-89.42	186.6	5,407.7	1,029.9	713.9	316.09	3.258	
16,200.0	10,744.5	16,002.3	10,734.1	162.0	161.4	-89.42	186.6	5,507.7	1,030.0	708.1	321.88	3.200	
16,300.0	10,745.3	16,102.3	10,734.8	164.9	164.3	-89.42	186.6	5,607.7	1,030.0	702.3	327.68	3.143	
16,400.0	10,746.1	16,202.3	10,735.5	167.7	167.2	-89.41	186.6	5,707.7	1,030.0	696.5	333.48	3.089	
16,500.0	10,746.9	16,302.3	10,736.2	170.6	170.1	-89.41	186.6	5,807.7	1,030.0	690.7	339.28	3.036	
16,600.0	10,747.7	16,402.3	10,736.9	173.5	173.0	-89.40	186.6	5,907.7	1,030.0	684.9	345.08	2.985	
16,700.0	10,748.5	16,502.3	10,737.6	176.4	175.9	-89.40	186.6	6,007.7	1,030.0	679.1	350.89	2.935	
16,800.0	10,749.3	16,602.3	10,738.3	179.2	178.8	-89.39	186.6	6,107.7	1,030.0	673.3	356.70	2.887	
16,900.0	10,750.0	16,702.3	10,739.0	182.1	181.7	-89.39	186.6	6,207.7	1,030.0	667.5	362.51	2.841	
17,000.0	10,750.8	16,802.3	10,739.7	185.0	184.6	-89.38	186.6	6,307.7	1,030.0	661.6	368.32	2.796	
17,100.0	10,751.6	16,902.3	10,740.4	187.9	187.5	-89.38	186.6	6,407.7	1,030.0	655.8	374.13	2.753	
17,200.0	10,752.4	17,002.3	10,741.1	190.8	190.5	-89.37	186.6	6,507.7	1,030.0	650.0	379.94	2.711	
17,300.0	10,753.2	17,102.3	10,741.8	193.7	193.4	-89.37	186.6	6,607.7	1,030.0	644.2	385.76	2.670	
17,400.0	10,754.0	17,202.3	10,742.5	196.6	196.3	-89.36	186.6	6,707.7	1,030.0	638.4	391.58	2.630	
17,500.0	10,754.7	17,302.3	10,743.2	199.5	199.2	-89.36	186.6	6,807.7	1,030.0	632.6	397.39	2.592	
17,600.0	10,755.5	17,402.3	10,743.9	202.4	202.1	-89.36	186.6	6,907.7	1,030.0	626.8	403.21	2.554	
17,700.0	10,756.3	17,502.3	10,744.6	205.3	205.0	-89.35	186.6	7,007.7	1,030.0	620.9	409.03	2.518	

CC - Min centre to center distance or convergent 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 12TXR
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 12TXR	Survey Calculation Method:	Minimum Curvature
Well Error:	2.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 12TXR	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design 153N-100W-19/20_Altered - Chalmers 5301 44-24 2TX - Chalmers #2T - Plan #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis				Distance					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
17,800.0	10,757.1	17,602.3	10,745.3	208.1	207.9	-89.35	186.6	7,107.7	1,030.0	615.1	414.85	2.483	
17,900.0	10,757.9	17,702.3	10,746.0	211.0	210.8	-89.34	186.6	7,207.7	1,030.0	609.3	420.68	2.448	
18,000.0	10,758.7	17,802.3	10,746.7	213.9	213.7	-89.34	186.6	7,307.7	1,030.0	603.5	426.50	2.415	
18,100.0	10,759.5	17,902.3	10,747.4	216.8	216.6	-89.33	186.6	7,407.7	1,030.0	597.6	432.32	2.382	
18,200.0	10,760.2	18,002.3	10,748.1	219.7	219.5	-89.33	186.6	7,507.7	1,030.0	591.8	438.15	2.351	
18,300.0	10,761.0	18,102.3	10,748.9	222.6	222.5	-89.32	186.6	7,607.7	1,030.0	586.0	443.97	2.320	
18,400.0	10,761.8	18,202.3	10,749.6	225.5	225.4	-89.32	186.6	7,707.6	1,030.0	580.2	449.80	2.290	
18,500.0	10,762.6	18,302.3	10,750.3	228.4	228.3	-89.31	186.6	7,807.6	1,030.0	574.3	455.63	2.261	
18,600.0	10,763.4	18,402.3	10,751.0	231.3	231.2	-89.31	186.6	7,907.6	1,030.0	568.5	461.46	2.232	
18,700.0	10,764.2	18,502.3	10,751.7	234.2	234.1	-89.30	186.6	8,007.6	1,030.0	562.7	467.29	2.204	
18,800.0	10,765.0	18,602.3	10,752.4	237.1	237.0	-89.30	186.6	8,107.6	1,030.0	556.9	473.12	2.177	
18,900.0	10,765.7	18,702.3	10,753.1	240.1	239.9	-89.29	186.6	8,207.6	1,030.0	551.0	478.95	2.150	
19,000.0	10,766.5	18,802.3	10,753.8	243.0	242.9	-89.29	186.6	8,307.6	1,030.0	545.2	484.78	2.125	
19,100.0	10,767.3	18,902.3	10,754.5	245.9	245.8	-89.29	186.6	8,407.6	1,030.0	539.4	490.61	2.099	
19,200.0	10,768.1	19,002.3	10,755.2	248.8	248.7	-89.28	186.6	8,507.6	1,030.0	533.5	496.45	2.075	
19,300.0	10,768.9	19,102.3	10,755.9	251.7	251.6	-89.28	186.6	8,607.6	1,030.0	527.7	502.28	2.051	
19,400.0	10,769.7	19,202.3	10,756.6	254.6	254.5	-89.27	186.6	8,707.6	1,030.0	521.9	508.11	2.027	
19,500.0	10,770.5	19,302.3	10,757.3	257.5	257.4	-89.27	186.6	8,807.6	1,030.0	516.0	513.95	2.004	
19,600.0	10,771.2	19,402.3	10,758.0	260.4	260.4	-89.26	186.6	8,907.6	1,030.0	510.2	519.78	1.982	
19,700.0	10,772.0	19,502.3	10,758.7	263.3	263.3	-89.26	186.6	9,007.6	1,030.0	504.4	525.62	1.960	
19,800.0	10,772.8	19,602.3	10,759.4	266.2	266.2	-89.25	186.6	9,107.6	1,030.0	498.5	531.46	1.938	
19,900.0	10,773.6	19,702.3	10,760.1	269.1	269.1	-89.25	186.6	9,207.6	1,030.0	492.7	537.29	1.917	
20,000.0	10,774.4	19,802.3	10,760.8	272.0	272.0	-89.24	186.6	9,307.6	1,030.0	486.9	543.13	1.896	
20,100.0	10,775.2	19,902.3	10,761.5	274.9	274.9	-89.24	186.6	9,407.6	1,030.0	481.0	548.97	1.876	
20,200.0	10,776.0	20,002.3	10,762.2	277.9	277.9	-89.23	186.6	9,507.6	1,030.0	475.2	554.81	1.856	
20,300.0	10,776.7	20,102.3	10,762.9	280.8	280.8	-89.23	186.6	9,607.6	1,030.0	469.3	560.65	1.837	
20,400.0	10,777.5	20,202.3	10,763.6	283.7	283.7	-89.22	186.6	9,707.6	1,030.0	463.5	566.48	1.818	
20,500.0	10,778.3	20,302.3	10,764.3	286.6	286.6	-89.22	186.6	9,807.6	1,030.0	457.7	572.32	1.800	
20,600.0	10,779.1	20,402.3	10,765.0	289.5	289.5	-89.22	186.6	9,907.6	1,030.0	451.8	578.16	1.781	
20,700.0	10,779.9	20,502.3	10,765.7	292.4	292.5	-89.21	186.6	10,007.6	1,030.0	446.0	584.00	1.764	
20,800.0	10,780.7	20,602.3	10,766.4	295.3	295.4	-89.21	186.6	10,107.6	1,030.0	440.2	589.85	1.746	
20,900.0	10,781.5	20,702.3	10,767.1	298.2	298.3	-89.20	186.6	10,207.6	1,030.0	434.3	595.69	1.729	
21,000.0	10,782.2	20,802.3	10,767.8	301.2	301.2	-89.20	186.6	10,307.6	1,030.0	428.5	601.53	1.712	
21,100.0	10,783.0	20,902.3	10,768.5	304.1	304.1	-89.19	186.6	10,407.6	1,030.0	422.6	607.37	1.696	
21,200.0	10,783.8	21,002.3	10,769.2	307.0	307.1	-89.19	186.6	10,507.6	1,030.0	416.8	613.21	1.680	
21,210.6	10,783.9	21,013.0	10,769.3	307.2	307.4	-89.19	186.6	10,518.2	1,030.0	416.3	613.73	1.678	
21,226.5	10,784.0	21,028.7	10,769.4	307.5	307.8	-89.19	186.6	10,534.0	1,030.0	415.5	614.49	1.676 SF	

CC - Min centre to center distance or convergent 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 12TXR
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 12TXR	Survey Calculation Method:	Minimum Curvature
Well Error:	2.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 12TXR	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design 153N-100W-19/20_Altered - Chalmers 5301 44-24 3BR - Chalmers 5301 44-24 3BR - Design #1											Offset Site Error:	0.0 usft		
Survey Program: 0-MWD		Distance											Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	2.0	0.0	0.00	82.1	0.0	82.1					
100.0	100.0	100.0	100.0	2.0	0.1	0.00	82.1	0.0	82.1	80.0	2.09	39.346		
200.0	200.0	200.0	200.0	2.0	0.3	0.00	82.1	0.0	82.1	79.7	2.33	35.185		
300.0	300.0	300.0	300.0	2.1	0.5	0.00	82.1	0.0	82.1	79.5	2.60	31.522		
400.0	400.0	400.0	400.0	2.1	0.8	0.00	82.1	0.0	82.1	79.2	2.90	28.326		
500.0	500.0	500.0	500.0	2.2	1.0	0.00	82.1	0.0	82.1	78.9	3.21	25.554		
600.0	600.0	600.0	600.0	2.3	1.2	0.00	82.1	0.0	82.1	78.5	3.54	23.155		
700.0	700.0	700.0	700.0	2.5	1.4	0.00	82.1	0.0	82.1	78.2	3.89	21.083		
800.0	800.0	800.0	800.0	2.6	1.7	0.00	82.1	0.0	82.1	77.8	4.26	19.289		
900.0	900.0	900.0	900.0	2.7	1.9	0.00	82.1	0.0	82.1	77.4	4.63	17.732		
1,000.0	1,000.0	1,000.0	1,000.0	2.9	2.1	0.00	82.1	0.0	82.1	77.1	5.01	16.375		
1,100.0	1,100.0	1,100.0	1,100.0	3.1	2.3	0.00	82.1	0.0	82.1	76.7	5.40	15.188		
1,200.0	1,200.0	1,200.0	1,200.0	3.2	2.6	0.00	82.1	0.0	82.1	76.3	5.80	14.145		
1,300.0	1,300.0	1,300.0	1,300.0	3.4	2.8	0.00	82.1	0.0	82.1	75.9	6.21	13.223		
1,400.0	1,400.0	1,400.0	1,400.0	3.6	3.0	0.00	82.1	0.0	82.1	75.5	6.62	12.404		
1,500.0	1,500.0	1,500.0	1,500.0	3.8	3.2	0.00	82.1	0.0	82.1	75.0	7.03	11.674		
1,600.0	1,600.0	1,600.0	1,600.0	4.0	3.5	0.00	82.1	0.0	82.1	74.6	7.45	11.019		
1,700.0	1,700.0	1,700.0	1,700.0	4.2	3.7	0.00	82.1	0.0	82.1	74.2	7.87	10.430		
1,800.0	1,800.0	1,800.0	1,800.0	4.4	3.9	0.00	82.1	0.0	82.1	73.8	8.29	9.897		
1,900.0	1,900.0	1,900.0	1,900.0	4.6	4.1	0.00	82.1	0.0	82.1	73.4	8.72	9.414		
2,000.0	2,000.0	2,000.0	2,000.0	4.8	4.4	0.00	82.1	0.0	82.1	72.9	9.15	8.973		
2,100.0	2,100.0	2,100.0	2,100.0	5.0	4.6	0.00	82.1	0.0	82.1	72.5	9.58	8.570		
2,200.0	2,200.0	2,200.0	2,200.0	5.2	4.8	0.00	82.1	0.0	82.1	72.1	10.01	8.201 CC, ES		
2,216.7	2,216.7	2,216.7	2,216.7	5.2	4.8	-179.95	82.1	0.1	82.2	72.1	10.07	8.155		
2,300.0	2,300.0	2,300.0	2,300.0	5.4	5.0	-179.45	82.1	0.8	82.9	72.5	10.37	7.995		
2,400.0	2,400.0	2,400.0	2,400.0	5.5	5.2	-178.86	82.1	1.7	83.8	73.0	10.73	7.810		
2,500.0	2,500.0	2,500.0	2,500.0	5.7	5.4	-178.28	82.1	2.5	84.7	73.6	11.09	7.633		
2,600.0	2,600.0	2,600.0	2,600.0	5.9	5.6	-177.71	82.1	3.4	85.6	74.1	11.46	7.464		
2,700.0	2,700.0	2,700.0	2,699.9	6.0	5.8	-177.16	82.1	4.3	86.5	74.6	11.84	7.304		
2,800.0	2,800.0	2,800.0	2,799.9	6.2	6.0	-176.61	82.1	5.2	87.4	75.2	12.22	7.151		
2,900.0	2,900.0	2,899.9	2,899.9	6.4	6.2	-176.08	82.1	6.0	88.3	75.7	12.61	7.005		
3,000.0	3,000.0	2,999.9	2,999.9	6.6	6.4	-175.56	82.1	6.9	89.3	76.3	13.00	6.867		
3,100.0	3,100.0	3,099.9	3,099.9	6.7	6.6	-175.05	82.1	7.8	90.2	76.8	13.39	6.735		
3,200.0	3,200.0	3,199.9	3,199.9	6.9	6.9	-174.55	82.1	8.7	91.1	77.4	13.79	6.610		
3,300.0	3,300.0	3,299.9	3,299.9	7.1	7.1	-174.06	82.1	9.5	92.1	77.9	14.19	6.491		
3,400.0	3,400.0	3,399.9	3,399.9	7.3	7.3	-173.58	82.1	10.4	93.1	78.5	14.59	6.377		
3,500.0	3,500.0	3,499.9	3,499.9	7.5	7.5	-173.12	82.1	11.3	94.0	79.0	15.00	6.269		
3,600.0	3,599.9	3,599.9	3,599.8	7.7	7.7	-172.66	82.1	12.1	95.0	79.6	15.41	6.166		
3,700.0	3,699.9	3,699.9	3,699.8	7.9	7.9	-172.21	82.1	13.0	96.0	80.2	15.82	6.068		
3,800.0	3,799.9	3,799.9	3,799.8	8.1	8.1	-171.76	82.1	13.9	97.0	80.7	16.23	5.975		
3,900.0	3,899.9	3,899.9	3,899.8	8.3	8.4	-171.33	82.1	14.8	98.0	81.3	16.64	5.885		
4,000.0	3,999.9	3,999.9	3,999.8	8.5	8.6	-170.91	82.1	15.6	99.0	81.9	17.06	5.800		
4,100.0	4,099.9	4,099.9	4,099.8	8.7	8.8	-170.49	82.1	16.5	100.0	82.5	17.48	5.719		
4,200.0	4,199.9	4,199.8	4,199.8	8.9	9.0	-170.09	82.1	17.4	101.0	83.1	17.90	5.641		
4,300.0	4,299.9	4,299.8	4,299.8	9.1	9.2	-169.69	82.1	18.3	102.0	83.7	18.32	5.566		
4,400.0	4,399.9	4,399.8	4,399.7	9.3	9.4	-169.30	82.1	19.1	103.0	84.3	18.74	5.495		
4,500.0	4,499.9	4,499.8	4,499.7	9.5	9.7	-168.92	82.1	20.0	104.0	84.9	19.17	5.427		
4,600.0	4,599.9	4,599.8	4,599.7	9.7	9.9	-168.54	82.1	20.9	105.0	85.5	19.59	5.362		
4,700.0	4,699.9	4,699.8	4,699.7	9.9	10.1	-168.17	82.1	21.7	106.1	86.1	20.02	5.299		
4,800.0	4,799.9	4,799.8	4,799.7	10.1	10.3	-167.81	82.1	22.6	107.1	86.7	20.44	5.239		
4,900.0	4,899.9	4,899.8	4,899.7	10.4	10.5	-167.46	82.1	23.5	108.1	87.3	20.87	5.181		
5,000.0	4,999.9	4,999.8	4,999.7	10.6	10.8	-167.11	82.1	24.4	109.2	87.9	21.30	5.126		

CC - Min centre to center distance or convergent 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 12TXR
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 12TXR	Survey Calculation Method:	Minimum Curvature
Well Error:	2.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 12TXR	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design 153N-100W-19/20_Altered - Chalmers 5301 44-24 3BR - Chalmers 5301 44-24 3BR - Design #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis				Distance					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.0	5,099.9	5,099.8	5,099.7	10.8	11.0	-166.77	82.1	25.2	110.2	88.5	21.73	5.073	
5,200.0	5,199.9	5,199.8	5,199.7	11.0	11.2	-166.43	82.1	26.1	111.3	89.1	22.16	5.022	
5,300.0	5,299.9	5,299.8	5,299.6	11.2	11.4	-166.11	82.1	27.0	112.3	89.8	22.59	4.972	
5,400.0	5,399.9	5,399.8	5,399.6	11.4	11.6	-165.78	82.1	27.9	113.4	90.4	23.03	4.925	
5,500.0	5,499.9	5,499.7	5,499.6	11.6	11.9	-165.47	82.1	28.7	114.5	91.0	23.46	4.879	
5,600.0	5,599.9	5,599.7	5,599.6	11.8	12.1	-165.16	82.1	29.6	115.5	91.6	23.89	4.835	
5,700.0	5,699.9	5,699.7	5,699.6	12.0	12.3	-164.85	82.1	30.5	116.6	92.3	24.33	4.793	
5,800.0	5,799.9	5,799.7	5,799.6	12.3	12.5	-164.55	82.1	31.3	117.7	92.9	24.76	4.752	
5,900.0	5,899.9	5,899.7	5,899.6	12.5	12.7	-164.26	82.1	32.2	118.7	93.6	25.20	4.713	
6,000.0	5,999.9	5,999.7	5,999.6	12.7	13.0	-163.97	82.1	33.1	119.8	94.2	25.63	4.675	
6,100.0	6,099.9	6,099.7	6,099.6	12.9	13.2	-163.69	82.1	34.0	120.9	94.8	26.07	4.638	
6,200.0	6,199.8	6,199.7	6,199.5	13.1	13.4	-163.41	82.1	34.8	122.0	95.5	26.51	4.602	
6,300.0	6,299.8	6,299.7	6,299.5	13.3	13.6	-163.14	82.1	35.7	123.1	96.1	26.94	4.568	
6,400.0	6,399.8	6,399.7	6,399.5	13.6	13.9	-162.87	82.1	36.6	124.2	96.8	27.38	4.535	
6,500.0	6,499.8	6,499.7	6,499.5	13.8	14.1	-162.60	82.1	37.4	125.3	97.4	27.82	4.503	
6,600.0	6,599.8	6,599.7	6,599.5	14.0	14.3	-162.34	82.1	38.3	126.4	98.1	28.26	4.471	
6,700.0	6,699.8	6,699.7	6,699.5	14.2	14.5	-162.09	82.1	39.2	127.5	98.8	28.70	4.441	
6,800.0	6,799.8	6,799.7	6,799.5	14.4	14.7	-161.84	82.1	40.1	128.6	99.4	29.14	4.412	
6,900.0	6,899.8	6,899.6	6,899.5	14.6	15.0	-161.59	82.1	40.9	129.7	100.1	29.58	4.384	
7,000.0	6,999.8	6,999.6	6,999.5	14.9	15.2	-161.35	82.1	41.8	130.8	100.7	30.02	4.356	
7,100.0	7,099.8	7,099.6	7,099.4	15.1	15.4	-161.11	82.1	42.7	131.9	101.4	30.46	4.330	
7,200.0	7,199.8	7,199.6	7,199.4	15.3	15.6	-160.88	82.1	43.6	133.0	102.1	30.90	4.304	
7,300.0	7,299.8	7,299.6	7,299.4	15.5	15.9	-160.65	82.1	44.4	134.1	102.7	31.34	4.279	
7,400.0	7,399.8	7,399.6	7,399.4	15.7	16.1	-160.42	82.1	45.3	135.2	103.4	31.78	4.254	
7,500.0	7,499.8	7,499.6	7,499.4	16.0	16.3	-160.20	82.1	46.2	136.3	104.1	32.22	4.231	
7,600.0	7,599.8	7,599.6	7,599.4	16.2	16.5	-159.98	82.1	47.0	137.4	104.8	32.66	4.208	
7,700.0	7,699.8	7,699.6	7,699.4	16.4	16.7	-159.76	82.1	47.9	138.6	105.4	33.10	4.185	
7,800.0	7,799.8	7,799.6	7,799.4	16.6	17.0	-159.55	82.1	48.8	139.7	106.1	33.55	4.164	
7,900.0	7,899.8	7,899.6	7,899.3	16.8	17.2	-159.34	82.1	49.7	140.8	106.8	33.99	4.142	
7,926.7	7,926.4	7,926.2	7,926.0	16.9	17.3	-159.29	82.1	49.9	141.1	107.0	34.11	4.137	
7,943.3	7,943.1	7,943.1	7,943.1	16.9	17.3	-159.23	82.1	50.0	141.2	107.0	34.19	4.130	
8,000.0	7,999.8	8,000.0	7,999.8	17.1	17.4	20.73	82.1	50.0	141.2	106.8	34.42	4.102	
8,100.0	8,099.8	8,100.0	8,099.8	17.2	17.6	20.73	82.1	50.0	141.2	106.4	34.82	4.055	
8,200.0	8,199.8	8,200.0	8,199.8	17.4	17.8	20.73	82.1	50.0	141.2	106.0	35.22	4.009	
8,300.0	8,299.8	8,300.0	8,299.8	17.6	18.0	20.73	82.1	50.0	141.2	105.6	35.62	3.964	
8,400.0	8,399.8	8,400.0	8,399.8	17.8	18.2	20.73	82.1	50.0	141.2	105.2	36.02	3.920	
8,500.0	8,499.8	8,500.0	8,499.8	18.0	18.5	20.73	82.1	50.0	141.2	104.8	36.42	3.876	
8,600.0	8,599.8	8,600.0	8,599.8	18.2	18.7	20.73	82.1	50.0	141.2	104.4	36.83	3.834	
8,700.0	8,699.8	8,700.0	8,699.8	18.4	18.9	20.73	82.1	50.0	141.2	104.0	37.24	3.792	
8,800.0	8,799.8	8,800.0	8,799.8	18.6	19.1	20.73	82.1	50.0	141.2	103.6	37.64	3.751	
8,900.0	8,899.8	8,900.0	8,899.8	18.8	19.3	20.73	82.1	50.0	141.2	103.1	38.05	3.711	
9,000.0	8,999.8	9,000.0	8,999.8	19.0	19.5	20.73	82.1	50.0	141.2	102.7	38.46	3.671	
9,100.0	9,099.8	9,100.0	9,099.8	19.2	19.7	20.73	82.1	50.0	141.2	102.3	38.87	3.633	
9,200.0	9,199.8	9,200.0	9,199.8	19.4	19.9	20.73	82.1	50.0	141.2	101.9	39.28	3.595	
9,300.0	9,299.8	9,300.0	9,299.8	19.6	20.1	20.73	82.1	50.0	141.2	101.5	39.69	3.557	
9,400.0	9,399.8	9,400.0	9,399.8	19.8	20.4	20.73	82.1	50.0	141.2	101.1	40.10	3.521	
9,500.0	9,499.8	9,500.0	9,499.8	20.0	20.6	20.73	82.1	50.0	141.2	100.7	40.51	3.485	
9,600.0	9,599.8	9,600.0	9,599.8	20.2	20.8	20.73	82.1	50.0	141.2	100.3	40.93	3.450	
9,700.0	9,699.8	9,700.0	9,699.8	20.4	21.0	20.73	82.1	50.0	141.2	99.9	41.34	3.415	
9,800.0	9,799.8	9,800.0	9,799.8	20.6	21.2	20.73	82.1	50.0	141.2	99.4	41.76	3.381	
9,900.0	9,899.8	9,900.0	9,899.8	20.8	21.4	20.73	82.1	50.0	141.2	99.0	42.17	3.348	
10,000.0	9,999.8	10,000.0	9,999.8	21.0	21.6	20.73	82.1	50.0	141.2	98.6	42.59	3.315	

CC - Min centre to center distance or convergent 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 12TXR
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 12TXR	Survey Calculation Method:	Minimum Curvature
Well Error:	2.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 12TXR	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design 153N-100W-19/20_Altered - Chalmers 5301 44-24 3BR - Chalmers 5301 44-24 3BR - Design #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD				Distance								Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis				Distance					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,100.0	10,099.8	10,100.0	10,099.8	21.2	21.9	20.73	82.1	50.0	141.2	98.2	43.01	3.283	
10,140.4	10,140.1	10,140.4	10,140.1	21.3	21.9	20.73	82.1	50.0	141.2	98.0	43.17	3.270	
10,200.0	10,199.8	10,198.7	10,198.5	21.4	22.1	21.66	81.4	52.2	141.4	98.0	43.42	3.256	
10,225.8	10,225.6	10,223.6	10,223.1	21.4	22.1	22.90	80.6	55.1	141.7	98.2	43.53	3.256	
10,250.0	10,249.8	10,246.6	10,245.8	21.5	22.2	-100.75	79.5	59.0	142.4	98.8	43.65	3.263	
10,275.0	10,274.7	10,270.2	10,268.8	21.5	22.2	-99.24	78.0	64.0	143.6	99.8	43.76	3.282	
10,300.0	10,299.5	10,293.6	10,291.3	21.6	22.3	-97.74	76.2	70.1	145.3	101.4	43.87	3.312	
10,325.0	10,324.1	10,316.9	10,313.4	21.7	22.4	-96.25	74.2	77.1	147.5	103.5	43.99	3.353	
10,350.0	10,348.4	10,339.9	10,334.9	21.7	22.4	-94.80	71.9	85.1	150.1	106.0	44.11	3.404	
10,375.0	10,372.4	10,362.8	10,355.7	21.8	22.5	-93.38	69.3	94.0	153.2	109.0	44.23	3.465	
10,400.0	10,395.9	10,385.4	10,376.0	21.8	22.6	-92.02	66.4	103.8	156.8	112.4	44.36	3.534	
10,425.0	10,419.1	10,407.9	10,395.6	21.9	22.6	-90.71	63.4	114.4	160.7	116.2	44.49	3.612	
10,450.0	10,441.6	10,430.2	10,414.5	22.0	22.7	-89.47	60.1	125.7	165.0	120.4	44.63	3.698	
10,475.0	10,463.6	10,452.3	10,432.7	22.0	22.8	-88.28	56.6	137.8	169.7	124.9	44.77	3.790	
10,500.0	10,485.0	10,475.0	10,450.7	22.1	22.9	-87.14	52.7	151.1	174.7	129.8	44.92	3.889	
10,525.0	10,505.6	10,496.1	10,466.8	22.2	23.0	-86.10	48.9	164.1	180.0	134.9	45.07	3.994	
10,550.0	10,525.4	10,517.7	10,482.7	22.3	23.1	-85.10	44.8	178.1	185.6	140.4	45.23	4.104	
10,575.0	10,544.5	10,539.1	10,497.8	22.3	23.2	-84.17	40.6	192.8	191.4	146.1	45.39	4.218	
10,600.0	10,562.6	10,560.5	10,512.1	22.5	23.3	-83.28	36.2	207.9	197.5	152.0	45.56	4.335	
10,625.0	10,579.9	10,581.6	10,525.7	22.6	23.4	-82.46	31.7	223.5	203.8	158.1	45.75	4.456	
10,650.0	10,596.1	10,602.7	10,538.4	22.7	23.6	-81.68	27.0	239.7	210.3	164.4	45.94	4.578	
10,675.0	10,611.4	10,625.0	10,551.0	22.8	23.7	-80.96	21.8	257.3	217.0	170.9	46.16	4.701	
10,700.0	10,625.6	10,644.4	10,561.3	23.0	23.9	-80.27	17.3	273.1	223.9	177.5	46.38	4.826	
10,725.0	10,638.7	10,665.1	10,571.6	23.2	24.0	-79.62	12.2	290.4	230.8	184.2	46.63	4.951	
10,750.0	10,650.6	10,685.7	10,581.0	23.4	24.2	-79.02	7.1	308.0	237.9	191.0	46.89	5.074	
10,775.0	10,661.4	10,706.3	10,589.6	23.6	24.4	-78.46	1.9	325.9	245.1	197.9	47.18	5.196	
10,800.0	10,671.0	10,725.0	10,596.7	23.8	24.6	-77.89	-2.9	342.6	252.4	205.0	47.47	5.317	
10,825.0	10,679.4	10,747.2	10,604.2	24.0	24.8	-77.43	-8.7	362.6	259.8	212.0	47.83	5.431	
10,850.0	10,686.6	10,767.5	10,610.3	24.3	25.0	-76.96	-14.2	381.2	267.2	219.0	48.20	5.544	
10,875.0	10,692.4	10,787.9	10,615.5	24.5	25.3	-76.53	-19.6	400.1	274.7	226.1	48.59	5.652	
10,900.0	10,697.0	10,808.2	10,619.9	24.8	25.5	-76.12	-25.2	419.2	282.1	233.1	49.02	5.756	
10,925.0	10,700.3	10,828.5	10,623.4	25.1	25.8	-75.74	-30.8	438.4	289.6	240.2	49.47	5.855	
10,950.0	10,702.3	10,850.0	10,626.2	25.4	26.0	-75.42	-36.7	458.8	297.1	247.2	49.97	5.947	
10,972.0	10,703.0	10,866.8	10,627.8	25.7	26.3	-75.10	-41.4	474.9	303.7	253.3	50.40	6.026	
11,000.0	10,703.3	10,889.7	10,628.9	26.1	26.6	-75.68	-47.8	496.9	312.1	261.0	51.14	6.103	
11,100.0	10,704.0	10,974.9	10,629.6	27.6	27.9	-76.96	-70.5	579.0	342.2	288.3	53.97	6.342	
11,200.0	10,704.8	11,059.8	10,630.2	29.2	29.3	-78.01	-90.8	661.4	372.0	314.9	57.11	6.514	
11,300.0	10,705.6	11,144.1	10,630.8	31.1	30.8	-78.90	-108.5	743.8	401.4	340.9	60.53	6.631	
11,400.0	10,706.5	11,227.7	10,631.3	33.1	32.5	-79.64	-123.7	826.0	430.4	366.2	64.18	6.706	
11,500.0	10,707.3	11,310.8	10,631.9	35.2	34.2	-80.28	-136.4	908.1	458.8	390.8	68.01	6.746	
11,600.0	10,708.1	11,400.0	10,632.6	37.4	36.1	-80.87	-147.4	996.6	486.8	414.6	72.13	6.748	
11,700.0	10,708.9	11,475.2	10,633.1	39.7	37.8	-81.32	-154.5	1,071.5	514.1	438.0	76.07	6.758	
11,800.0	10,709.7	11,556.6	10,633.7	42.1	39.7	-81.74	-159.9	1,152.8	540.9	460.6	80.23	6.741	
11,900.0	10,710.6	11,637.6	10,634.2	44.5	41.6	-82.12	-163.1	1,233.6	567.0	482.6	84.44	6.715	
12,000.0	10,711.4	11,720.0	10,634.8	47.0	43.6	-82.45	-163.9	1,316.1	592.6	503.8	88.72	6.679	
12,100.0	10,712.2	11,817.2	10,635.5	49.5	45.9	-82.77	-163.9	1,413.3	615.8	522.4	93.39	6.594	
12,200.0	10,713.0	11,915.2	10,636.2	52.0	48.4	-83.02	-163.9	1,511.3	635.7	537.6	98.10	6.480	
12,300.0	10,713.8	12,013.8	10,636.9	54.5	50.9	-83.22	-163.9	1,609.9	652.1	549.3	102.83	6.342	
12,400.0	10,714.7	12,113.0	10,637.6	57.1	53.5	-83.35	-163.9	1,709.0	665.2	557.7	107.54	6.186	
12,500.0	10,715.5	12,212.5	10,638.2	59.7	56.1	-83.45	-163.9	1,808.5	674.8	562.6	112.21	6.013	
12,600.0	10,716.3	12,312.3	10,638.9	62.2	58.7	-83.49	-163.9	1,908.3	680.9	564.1	116.82	5.829	
12,700.0	10,717.1	12,412.3	10,639.6	64.8	61.4	-83.50	-163.9	2,008.3	683.6	562.3	121.35	5.633	

CC - Min centre to center distance or convergent 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 12TXR
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 12TXR	Survey Calculation Method:	Minimum Curvature
Well Error:	2.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 12TXR	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design 153N-100W-19/20_Altered - Chalmers 5301 44-24 3BR - Chalmers 5301 44-24 3BR - Design #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD				Distance								Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis				Distance					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
12,727.0	10,717.3	12,439.2	10,639.8	65.5	62.1	-83.50	-163.9	2,035.3	683.7	561.2	122.56	5.579	
12,800.0	10,717.8	12,512.3	10,640.3	67.3	64.1	-83.49	-163.9	2,108.3	683.8	557.3	126.50	5.405	
12,900.0	10,718.6	12,612.3	10,641.0	69.9	66.8	-83.48	-163.9	2,208.3	683.8	551.8	131.93	5.183	
13,000.0	10,719.4	12,712.3	10,641.7	72.5	69.5	-83.48	-163.9	2,308.3	683.8	546.4	137.40	4.977	
13,100.0	10,720.2	12,812.3	10,642.4	75.2	72.3	-83.47	-163.9	2,408.3	683.8	540.9	142.89	4.785	
13,200.0	10,721.0	12,912.3	10,643.1	77.8	75.0	-83.46	-163.9	2,508.3	683.8	535.4	148.41	4.607	
13,300.0	10,721.8	13,012.3	10,643.8	80.5	77.8	-83.46	-163.9	2,608.3	683.8	529.8	153.96	4.442	
13,400.0	10,722.5	13,112.3	10,644.5	83.2	80.6	-83.45	-163.9	2,708.3	683.8	524.3	159.52	4.287	
13,500.0	10,723.3	13,212.3	10,645.2	85.9	83.4	-83.44	-163.9	2,808.3	683.8	518.7	165.10	4.142	
13,600.0	10,724.1	13,312.3	10,645.9	88.6	86.2	-83.43	-163.9	2,908.3	683.8	513.1	170.70	4.006	
13,700.0	10,724.9	13,412.3	10,646.6	91.3	89.0	-83.43	-163.9	3,008.3	683.8	507.5	176.31	3.879	
13,800.0	10,725.7	13,512.3	10,647.3	94.1	91.8	-83.42	-163.9	3,108.3	683.9	501.9	181.93	3.759	
13,900.0	10,726.5	13,612.3	10,648.0	96.8	94.7	-83.41	-163.9	3,208.2	683.9	496.3	187.57	3.646	
14,000.0	10,727.3	13,712.3	10,648.7	99.6	97.5	-83.40	-163.9	3,308.2	683.9	490.7	193.22	3.539	
14,100.0	10,728.0	13,812.3	10,649.4	102.4	100.3	-83.40	-163.9	3,408.2	683.9	485.0	198.87	3.439	
14,200.0	10,728.8	13,912.3	10,650.1	105.2	103.2	-83.39	-163.9	3,508.2	683.9	479.4	204.54	3.344	
14,300.0	10,729.6	14,012.3	10,650.8	108.0	106.0	-83.38	-163.9	3,608.2	683.9	473.7	210.22	3.253	
14,400.0	10,730.4	14,112.3	10,651.5	110.8	108.9	-83.38	-163.9	3,708.2	683.9	468.0	215.90	3.168	
14,500.0	10,731.2	14,212.3	10,652.2	113.6	111.7	-83.37	-163.9	3,808.2	683.9	462.3	221.59	3.086	
14,600.0	10,732.0	14,312.3	10,652.9	116.4	114.6	-83.36	-163.9	3,908.2	683.9	456.6	227.29	3.009	
14,700.0	10,732.8	14,412.3	10,653.6	119.2	117.5	-83.35	-163.9	4,008.2	683.9	451.0	232.99	2.936	
14,800.0	10,733.5	14,512.3	10,654.3	122.0	120.3	-83.35	-163.9	4,108.2	684.0	445.3	238.70	2.865	
14,900.0	10,734.3	14,612.3	10,655.0	124.9	123.2	-83.34	-163.9	4,208.2	684.0	439.6	244.41	2.798	
15,000.0	10,735.1	14,712.3	10,655.7	127.7	126.1	-83.33	-163.9	4,308.2	684.0	433.8	250.13	2.734	
15,100.0	10,735.9	14,812.3	10,656.4	130.5	129.0	-83.32	-163.9	4,408.2	684.0	428.1	255.85	2.673	
15,200.0	10,736.7	14,912.3	10,657.1	133.4	131.8	-83.32	-163.9	4,508.2	684.0	422.4	261.58	2.615	
15,300.0	10,737.5	15,012.3	10,657.8	136.2	134.7	-83.31	-163.9	4,608.2	684.0	416.7	267.31	2.559	
15,400.0	10,738.3	15,112.3	10,658.5	139.1	137.6	-83.30	-163.9	4,708.2	684.0	411.0	273.05	2.505	
15,500.0	10,739.0	15,212.3	10,659.2	141.9	140.5	-83.30	-163.9	4,808.2	684.0	405.2	278.79	2.454	
15,600.0	10,739.8	15,312.3	10,659.9	144.8	143.4	-83.29	-163.9	4,908.2	684.0	399.5	284.53	2.404	
15,700.0	10,740.6	15,412.3	10,660.6	147.6	146.3	-83.28	-163.9	5,008.2	684.0	393.8	290.27	2.357	
15,800.0	10,741.4	15,512.3	10,661.3	150.5	149.2	-83.27	-163.9	5,108.2	684.1	388.0	296.02	2.311	
15,900.0	10,742.2	15,612.3	10,662.0	153.4	152.0	-83.27	-163.9	5,208.2	684.1	382.3	301.77	2.267	
16,000.0	10,743.0	15,712.3	10,662.7	156.2	154.9	-83.26	-163.9	5,308.2	684.1	376.6	307.52	2.224	
16,100.0	10,743.8	15,812.3	10,663.4	159.1	157.8	-83.25	-163.9	5,408.2	684.1	370.8	313.28	2.184	
16,200.0	10,744.5	15,912.3	10,664.1	162.0	160.7	-83.25	-163.9	5,508.2	684.1	365.1	319.04	2.144	
16,300.0	10,745.3	16,012.3	10,664.8	164.9	163.6	-83.24	-163.9	5,608.2	684.1	359.3	324.80	2.106	
16,400.0	10,746.1	16,112.3	10,665.5	167.7	166.5	-83.23	-163.9	5,708.2	684.1	353.6	330.56	2.070	
16,500.0	10,746.9	16,212.3	10,666.2	170.6	169.4	-83.22	-163.9	5,808.2	684.1	347.8	336.32	2.034	
16,600.0	10,747.7	16,312.3	10,666.9	173.5	172.3	-83.22	-163.9	5,908.2	684.1	342.0	342.09	2.000	
16,700.0	10,748.5	16,412.3	10,667.6	176.4	175.2	-83.21	-163.9	6,008.2	684.1	336.3	347.85	1.967	
16,800.0	10,749.3	16,512.3	10,668.3	179.2	178.1	-83.20	-163.9	6,108.2	684.2	330.5	353.62	1.935	
16,900.0	10,750.0	16,612.3	10,669.0	182.1	181.0	-83.19	-163.9	6,208.2	684.2	324.8	359.39	1.904	
17,000.0	10,750.8	16,712.3	10,669.7	185.0	183.9	-83.19	-163.9	6,308.2	684.2	319.0	365.16	1.874	
17,100.0	10,751.6	16,812.3	10,670.4	187.9	186.8	-83.18	-163.9	6,408.2	684.2	313.3	370.94	1.844	
17,200.0	10,752.4	16,912.3	10,671.1	190.8	189.7	-83.17	-163.9	6,508.2	684.2	307.5	376.71	1.816	
17,300.0	10,753.2	17,012.3	10,671.8	193.7	192.7	-83.17	-163.9	6,608.2	684.2	301.7	382.49	1.789	
17,400.0	10,754.0	17,112.2	10,672.5	196.6	195.6	-83.16	-163.9	6,708.2	684.2	296.0	388.26	1.762	
17,500.0	10,754.7	17,212.2	10,673.2	199.5	198.5	-83.15	-163.9	6,808.2	684.2	290.2	394.04	1.736	
17,600.0	10,755.5	17,312.2	10,673.8	202.4	201.4	-83.14	-163.9	6,908.2	684.2	284.4	399.82	1.711	
17,700.0	10,756.3	17,412.2	10,674.5	205.3	204.3	-83.14	-163.9	7,008.2	684.3	278.7	405.60	1.687	
17,800.0	10,757.1	17,512.2	10,675.2	208.1	207.2	-83.13	-163.9	7,108.2	684.3	272.9	411.38	1.663	

CC - Min centre to center distance or convergent 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 12TXR
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 12TXR	Survey Calculation Method:	Minimum Curvature
Well Error:	2.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 12TXR	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Offset Design 153N-100W-19/20_Altered - Chalmers 5301 44-24 3BR - Chalmers 5301 44-24 3BR - Design #1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD				Distance								Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis				Distance					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
17,900.0	10,757.9	17,612.2	10,675.9	211.0	210.1	-83.12	-163.9	7,208.2	684.3	267.1	417.16	1.640	
18,000.0	10,758.7	17,712.2	10,676.6	213.9	213.0	-83.11	-163.9	7,308.1	684.3	261.3	422.94	1.618	
18,100.0	10,759.5	17,812.2	10,677.3	216.8	215.9	-83.11	-163.9	7,408.1	684.3	255.6	428.73	1.596	
18,200.0	10,760.2	17,912.2	10,678.0	219.7	218.8	-83.10	-163.9	7,508.1	684.3	249.8	434.51	1.575	
18,300.0	10,761.0	18,012.2	10,678.7	222.6	221.8	-83.09	-163.9	7,608.1	684.3	244.0	440.29	1.554	
18,400.0	10,761.8	18,112.2	10,679.4	225.5	224.7	-83.09	-163.9	7,708.1	684.3	238.2	446.08	1.534	
18,500.0	10,762.6	18,212.2	10,680.1	228.4	227.6	-83.08	-163.9	7,808.1	684.3	232.5	451.87	1.514	
18,600.0	10,763.4	18,312.2	10,680.8	231.3	230.5	-83.07	-163.9	7,908.1	684.3	226.7	457.65	1.495 Level 3	Level 3
18,700.0	10,764.2	18,412.2	10,681.5	234.2	233.4	-83.06	-163.9	8,008.1	684.4	220.9	463.44	1.477 Level 3	Level 3
18,800.0	10,765.0	18,512.2	10,682.2	237.1	236.3	-83.06	-163.9	8,108.1	684.4	215.1	469.23	1.458 Level 3	Level 3
18,900.0	10,765.7	18,612.2	10,682.9	240.1	239.2	-83.05	-163.9	8,208.1	684.4	209.4	475.02	1.441 Level 3	Level 3
19,000.0	10,766.5	18,712.2	10,683.6	243.0	242.2	-83.04	-163.9	8,308.1	684.4	203.6	480.80	1.423 Level 3	Level 3
19,100.0	10,767.3	18,812.2	10,684.3	245.9	245.1	-83.03	-163.9	8,408.1	684.4	197.8	486.59	1.407 Level 3	Level 3
19,200.0	10,768.1	18,912.2	10,685.0	248.8	248.0	-83.03	-163.9	8,508.1	684.4	192.0	492.38	1.390 Level 3	Level 3
19,300.0	10,768.9	19,012.2	10,685.7	251.7	250.9	-83.02	-163.9	8,608.1	684.4	186.2	498.17	1.374 Level 3	Level 3
19,400.0	10,769.7	19,112.2	10,686.4	254.6	253.8	-83.01	-163.9	8,708.1	684.4	180.5	503.96	1.358 Level 3	Level 3
19,500.0	10,770.5	19,212.2	10,687.1	257.5	256.7	-83.01	-163.9	8,808.1	684.4	174.7	509.75	1.343 Level 3	Level 3
19,600.0	10,771.2	19,312.2	10,687.8	260.4	259.7	-83.00	-163.9	8,908.1	684.5	168.9	515.55	1.328 Level 3	Level 3
19,700.0	10,772.0	19,412.2	10,688.5	263.3	262.6	-82.99	-163.9	9,008.1	684.5	163.1	521.34	1.313 Level 3	Level 3
19,800.0	10,772.8	19,512.2	10,689.2	266.2	265.5	-82.98	-163.9	9,108.1	684.5	157.3	527.13	1.298 Level 3	Level 3
19,900.0	10,773.6	19,612.2	10,689.9	269.1	268.4	-82.98	-163.9	9,208.1	684.5	151.6	532.92	1.284 Level 3	Level 3
20,000.0	10,774.4	19,712.2	10,690.6	272.0	271.3	-82.97	-163.9	9,308.1	684.5	145.8	538.71	1.271 Level 3	Level 3
20,100.0	10,775.2	19,812.2	10,691.3	274.9	274.2	-82.96	-163.9	9,408.1	684.5	140.0	544.51	1.257 Level 3	Level 3
20,200.0	10,776.0	19,912.2	10,692.0	277.9	277.2	-82.95	-163.9	9,508.1	684.5	134.2	550.30	1.244 Level 2	
20,300.0	10,776.7	20,012.2	10,692.7	280.8	280.1	-82.95	-163.9	9,608.1	684.5	128.4	556.09	1.231 Level 2	
20,400.0	10,777.5	20,112.2	10,693.4	283.7	283.0	-82.94	-163.9	9,708.1	684.5	122.6	561.89	1.218 Level 2	
20,500.0	10,778.3	20,212.2	10,694.1	286.6	285.9	-82.93	-163.9	9,808.1	684.5	116.9	567.68	1.206 Level 2	
20,600.0	10,779.1	20,312.2	10,694.8	289.5	288.8	-82.93	-163.9	9,908.1	684.6	111.1	573.48	1.194 Level 2	
20,700.0	10,779.9	20,412.2	10,695.5	292.4	291.8	-82.92	-163.9	10,008.1	684.6	105.3	579.27	1.182 Level 2	
20,800.0	10,780.7	20,512.2	10,696.2	295.3	294.7	-82.91	-163.9	10,108.1	684.6	99.5	585.06	1.170 Level 2	
20,900.0	10,781.5	20,612.2	10,696.9	298.2	297.6	-82.90	-163.9	10,208.1	684.6	93.7	590.86	1.159 Level 2	
21,000.0	10,782.2	20,712.2	10,697.6	301.2	300.5	-82.90	-163.9	10,308.1	684.6	87.9	596.65	1.147 Level 2	
21,100.0	10,783.0	20,812.2	10,698.3	304.1	303.5	-82.89	-163.9	10,408.1	684.6	82.2	602.45	1.136 Level 2	
21,200.0	10,783.8	20,912.2	10,699.0	307.0	306.4	-82.88	-163.9	10,508.1	684.6	76.4	608.25	1.126 Level 2	
21,210.0	10,783.9	20,922.2	10,699.1	307.2	306.7	-82.88	-163.9	10,518.1	684.6	75.9	608.73	1.125 Level 2	
21,226.5	10,784.0	20,938.2	10,699.2	307.5	307.1	-82.88	-163.9	10,534.0	684.6	75.1	609.50	1.123 Level 2, SF	

CC - Min centre to center distance or convergent 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 12TXR
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 12TXR	Survey Calculation Method:	Minimum Curvature
Well Error:	2.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 12TXR	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to well @ 1967.0usft

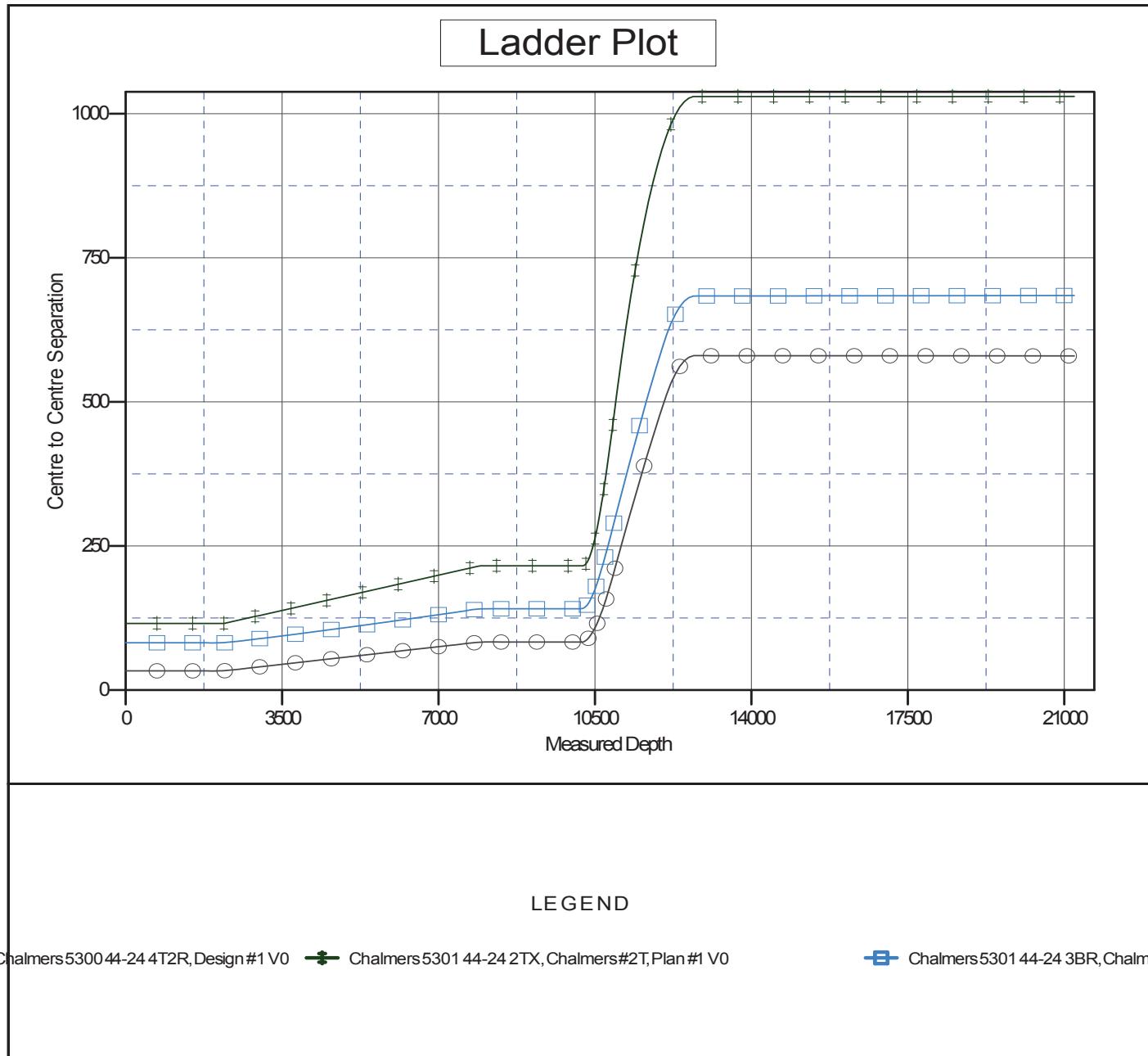
Offset Depths are relative to Offset Datum

Central Meridian is 100° 30' 0.000 W

Coordinates are relative to: Chalmers 5301 44-24 12TXR

Coordinate System is US State Plane 1983, North Dakota Northern Zone

Grid Convergence at Surface is: -2.31°



Ryan Directional Services

Anticollision Report

Company:	Oasis	Local Co-ordinate Reference:	Well Chalmers 5301 44-24 12TXR
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 12TXR	Survey Calculation Method:	Minimum Curvature
Well Error:	2.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	Chalmers 5301 44-24 12TXR	Database:	EDM 5000.1 Single User Db
Reference Design:	Design #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to well @ 1967.0usft

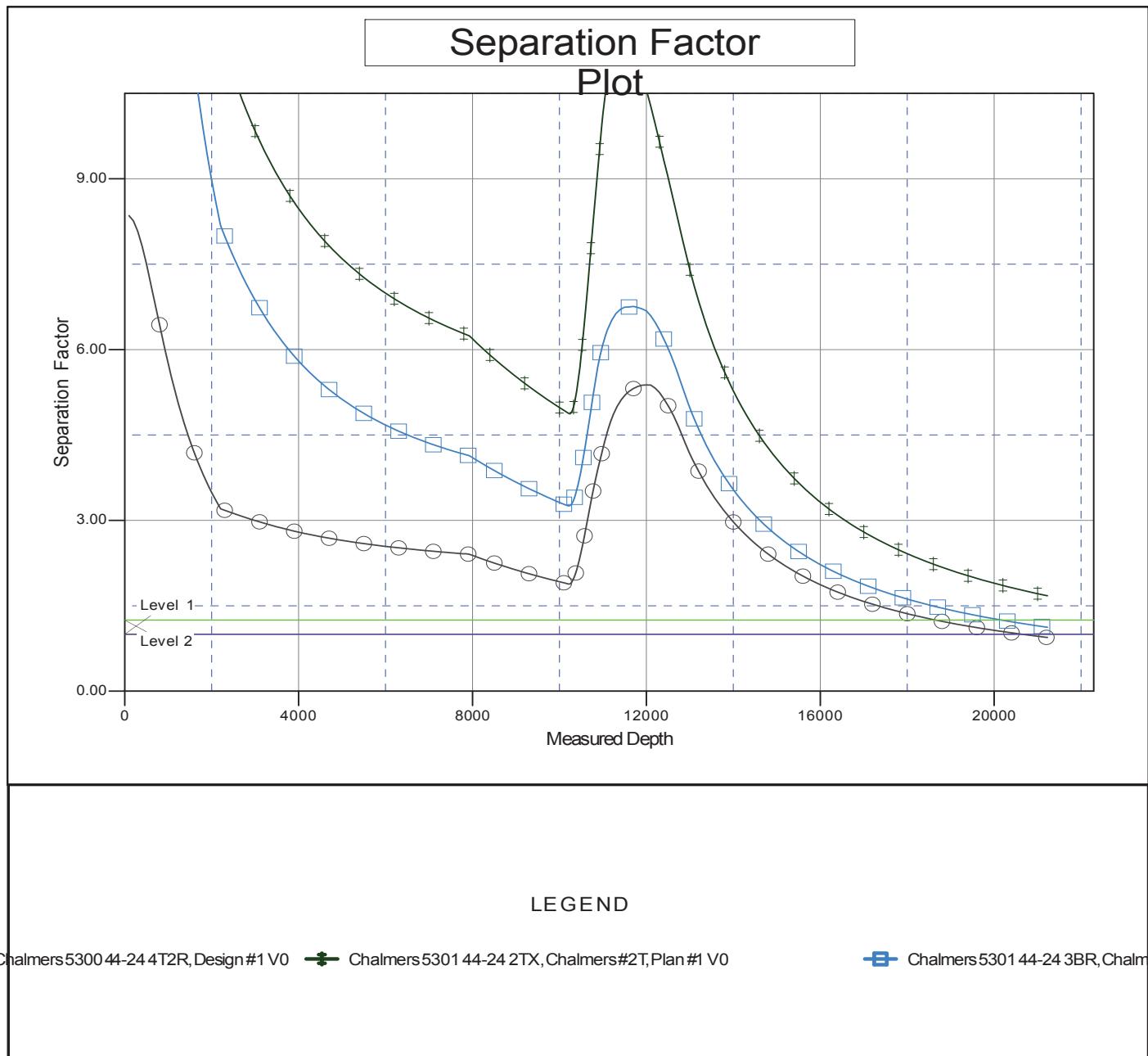
Coordinates are relative to: Chalmers 5301 44-24 12TXR

Offset Depths are relative to Offset Datum

Coordinate System is US State Plane 1983, North Dakota Northern Zone

Central Meridian is 100° 30' 0.000 W

Grid Convergence at Surface is: -2.31°



SECTION BREAKDOWN

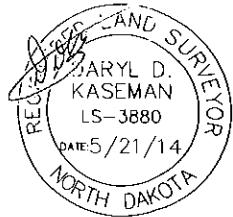
OASIS PETROLEUM NORTH AMERICA, LLC

001 FANNIN, SUITE 1500, HOUSTON, TX 77002
CHAMBERS WARD FEDERAL 500144-11-1774

"CHALMERS WADE FEDERAL 5301 44-24 12TXR"
844 FEET FROM SOUTH LINE AND 246 FEET FROM EAST LINE

SECTION 24, T153N, R101W, & SECTION 19 & 20, T153N, R100W, 5th P.M. MCKENZIE COUNTY, NORTH DAKOTA

ALL AZIMUTHS ARE BASED ON G.P.S.
OBSERVATIONS. THE ORIGINAL SURVEY OF THIS
AREA FOR THE GENERAL LAND OFFICE (G.L.O.)
WAS 1891. THE CORNERS FOUND ARE AS
INDICATED AND ALL OTHERS ARE COMPUTED FROM
THOSE CORNERS FOUND AND BASED ON G.L.O.
DATA. THE MAPPING ANGLE FOR THIS AREA IS
APPROXIMATELY -003°.

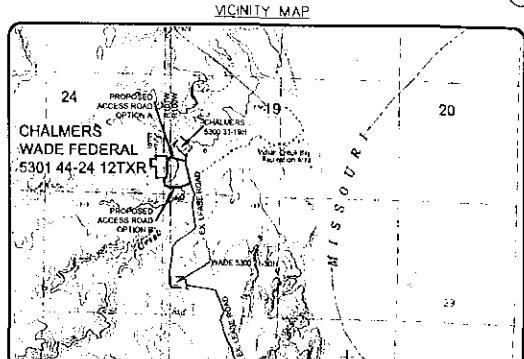


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1" = 1000

 - MONUMENT - RECOVERED
 - MONUMENT - NOT RECOVERED



2/8



OASIS RETROFIT

CROSSING - ECOLOGY INTERNATIONAL, LLC	
SECTION 24, T15S0N, RIGID 4, SECTIONS 19 & 20, T15S0N, RIGID 4	
MCKENZIE COUNTY, NORTH DAKOTA	
Drawn By:	J.A.S.
Checked By:	D.D.K.
Project No.:	515000000000000000
Date:	MAY 2014

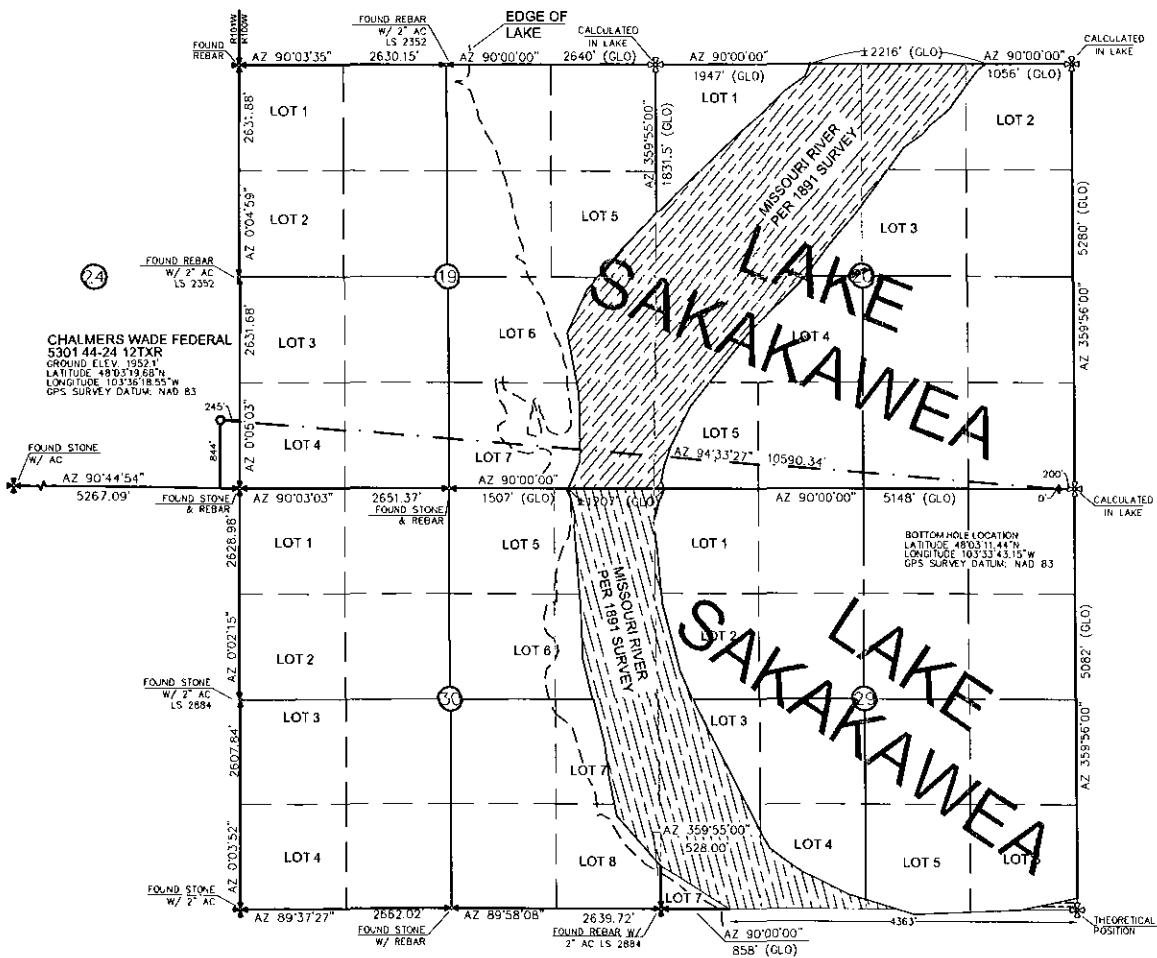
WELL LOCATION PLAT

A S I S P E T R O L E U M N O R T H A M E R I C A , L L C

1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
1-877-244-4444

CHALMERS WADE FEDERAL 5301 44-24 12TXR*

844 FEET FROM SOUTH LINE AND 245 FEET FROM EAST LINE
SECTION 24, T153N, R101W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA



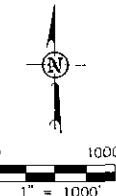
STAKED ON 9/3/13
VERTICAL CONTROL DATUM WAS BASED UPON
CONTROL POINT 16 WITH AN ELEVATION OF 2014.2'

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

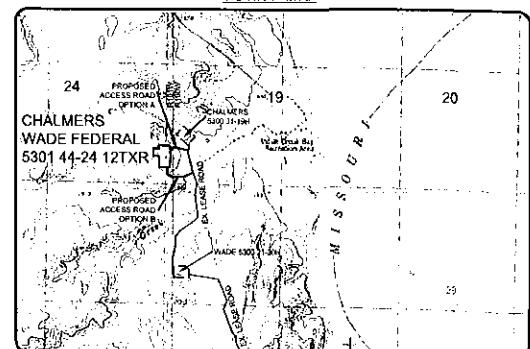


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 - MONUMENT - RECOVERED
 - MONUMENT - NOT RECOVERED

VICINITY MAP



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Hamilton No.	Date	By	Description
REV 1	5/20/14	LAS	ADDED MELL TO PAD
REV 2	5/20/14	LAS	CHANGED NAME, MOVED MELL

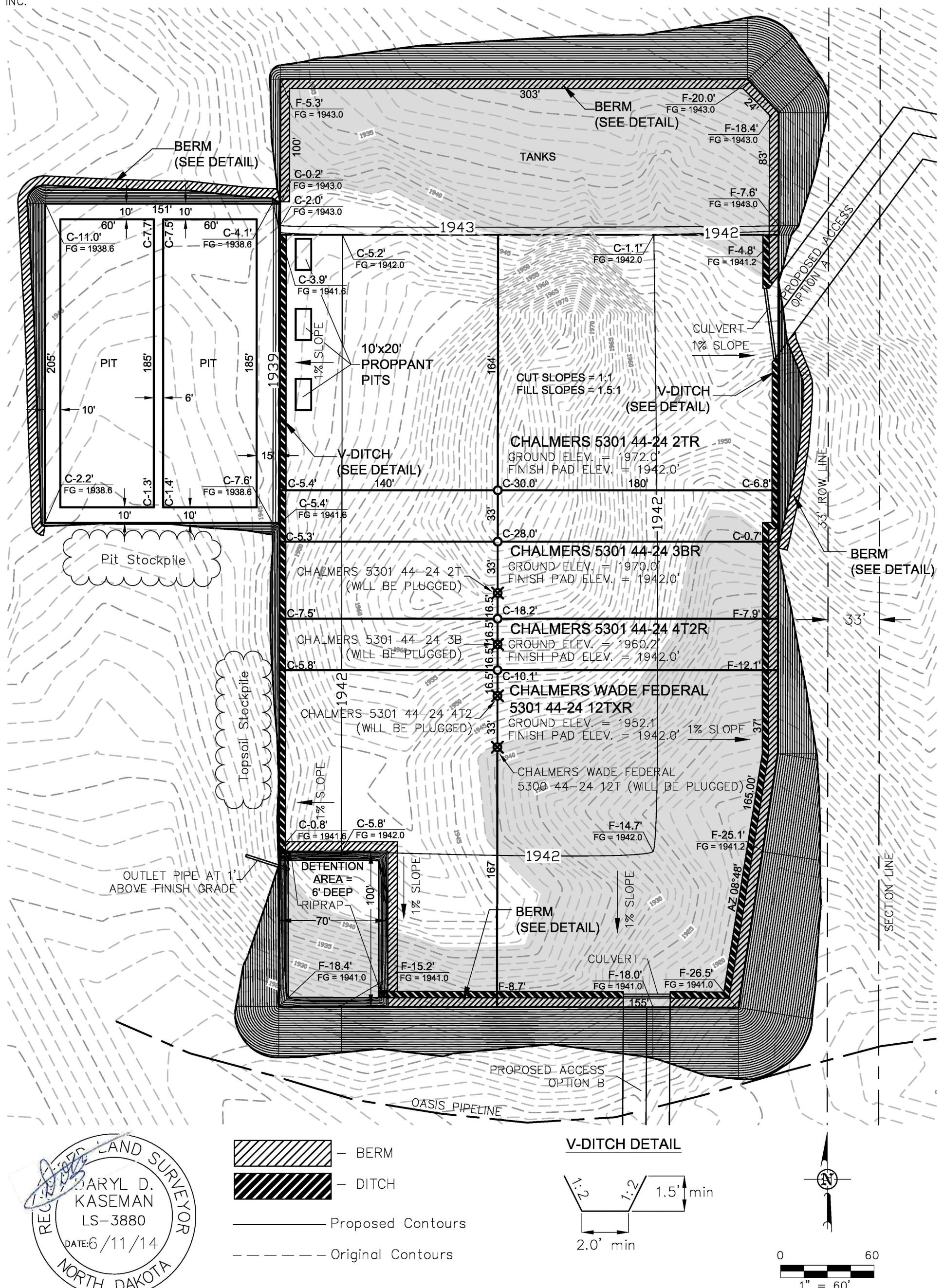
OASIS PETROLEUM NORTH AMERICA, LLC		Project No.:	515-042-0504
WELL LOCATION PLAT		Date:	May 2014
SECTION 24, T15S, R10W			
MCKENZIE COUNTY, NORTH DAKOTA			
Drawn By:	J.S.		
Checked By:	D.D.S.		

INTERSTATE
ENGINEERING

18

THIS DOCUMENT WAS ORIGINALLY ISSUED
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INC.

PAD LAYOUT
OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"CHALMERS 5301 44-24 4T2R"
877 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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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.J.S. Project No.: S13-09-235.02

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

Revision No.	Date	By	Description
REV 3	1/20/14	BH	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

CHALMERS 5301 44-24 4T2R.dwg - 5/20/14 10:45 AM
31-BH\CAD\UPDATED CHALMERS 4T2R.dwg - 6/11/2014 9:40 AM Jookle miller

WELL LOCATION SITE QUANTITIES
 OASIS PETROLEUM NORTH AMERICA, LLC
 1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
 "CHALMERS 5301 44-24 4T2R"
 877 FEET FROM SOUTH LINE AND 245 FEET FROM EAST LINE
 SECTION 24, T153N, R101W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

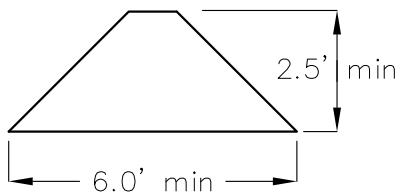
WELL SITE ELEVATION	1960.2
WELL PAD ELEVATION	1942.0
EXCAVATION	55,136
PLUS PIT	<u>9,450</u>
	64,586
EMBANKMENT	37,558
PLUS SHRINKAGE (30%)	<u>11,267</u>
	48,825
STOCKPILE PIT	9,450
STOCKPILE TOP SOIL (6")	4,770
BERMS	1,711 LF = 554 CY
DITCHES	1,029 LF = 157 CY
DETENTION AREA	1,428 CY
STOCKPILE MATERIAL	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

877' FSL
245' FEL

BERM DETAIL



DITCH DETAIL



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8/8



SHEET NO.

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

Other offices in Minnesota, North Dakota and South Dakota

OASIS PETROLEUM NORTH AMERICA, LLC
QUANTITIES
SECTION 24, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA
Drawn By: J.J.S. Project No.: S13-09-235.02
Checked By: D.D.K. Date: MAY 2014

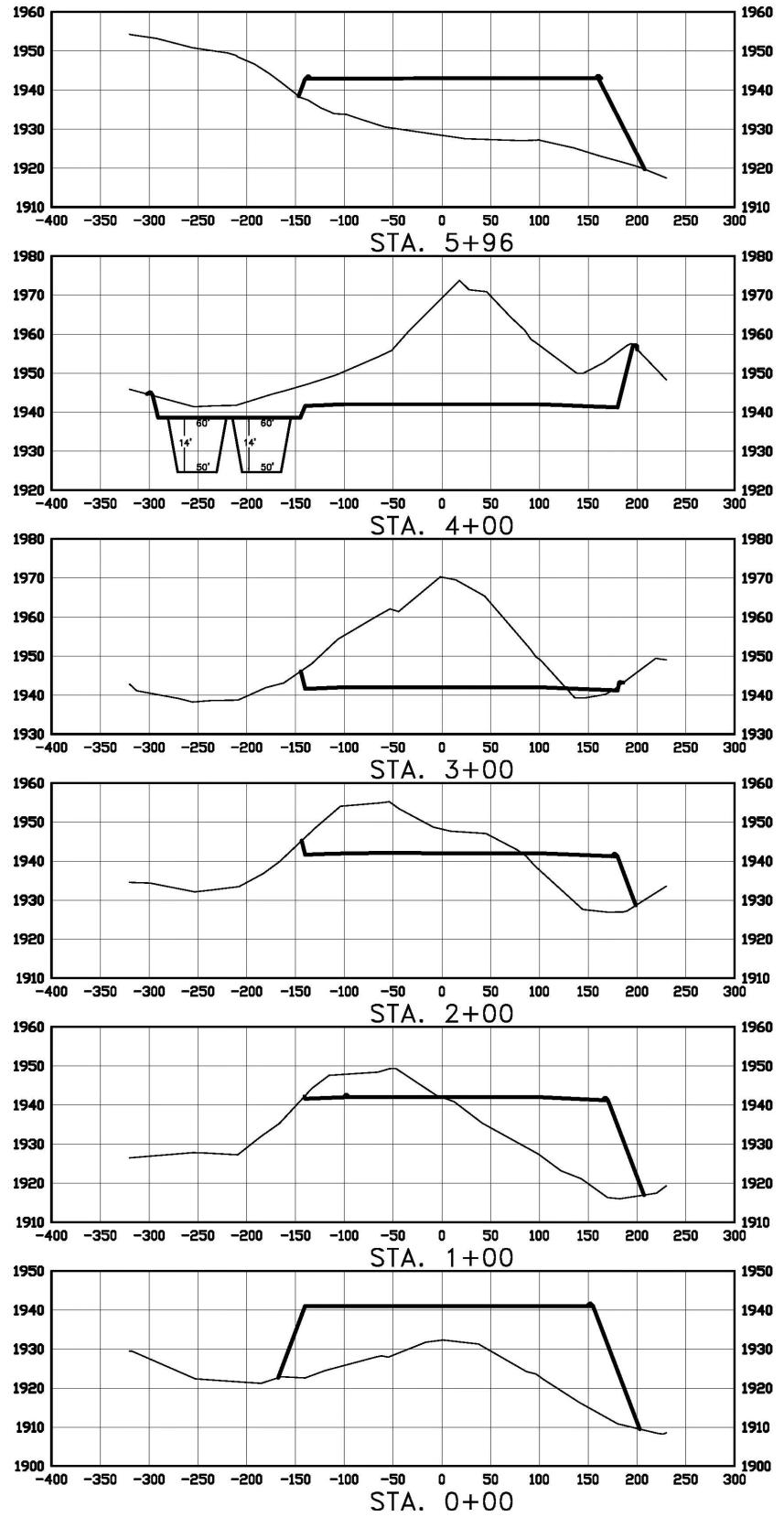
Revision No.	Date	By	Description
REV 2	12/5/13	JJS	CHANGED PAD LAYOUT
REV 3	1/20/14	BHH	CHANGED PAD LAYOUT
REV 4	5/09/14	JJS	ADDED WELL TO PAD
REV 5	5/20/14	JJS	CHANGED NAME, MOVED WELL
REV 6	6/11/14	JDM	ADDED DIMENSIONS

CROSS SECTIONS
 OASIS PETROLEUM NORTH AMERICA, LLC
 1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
 "CHALMERS 5301 44-24 4T2R"
 877 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
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 INC.



SCALE
 HORIZ 1"=180'
 VERT 1"=45'



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

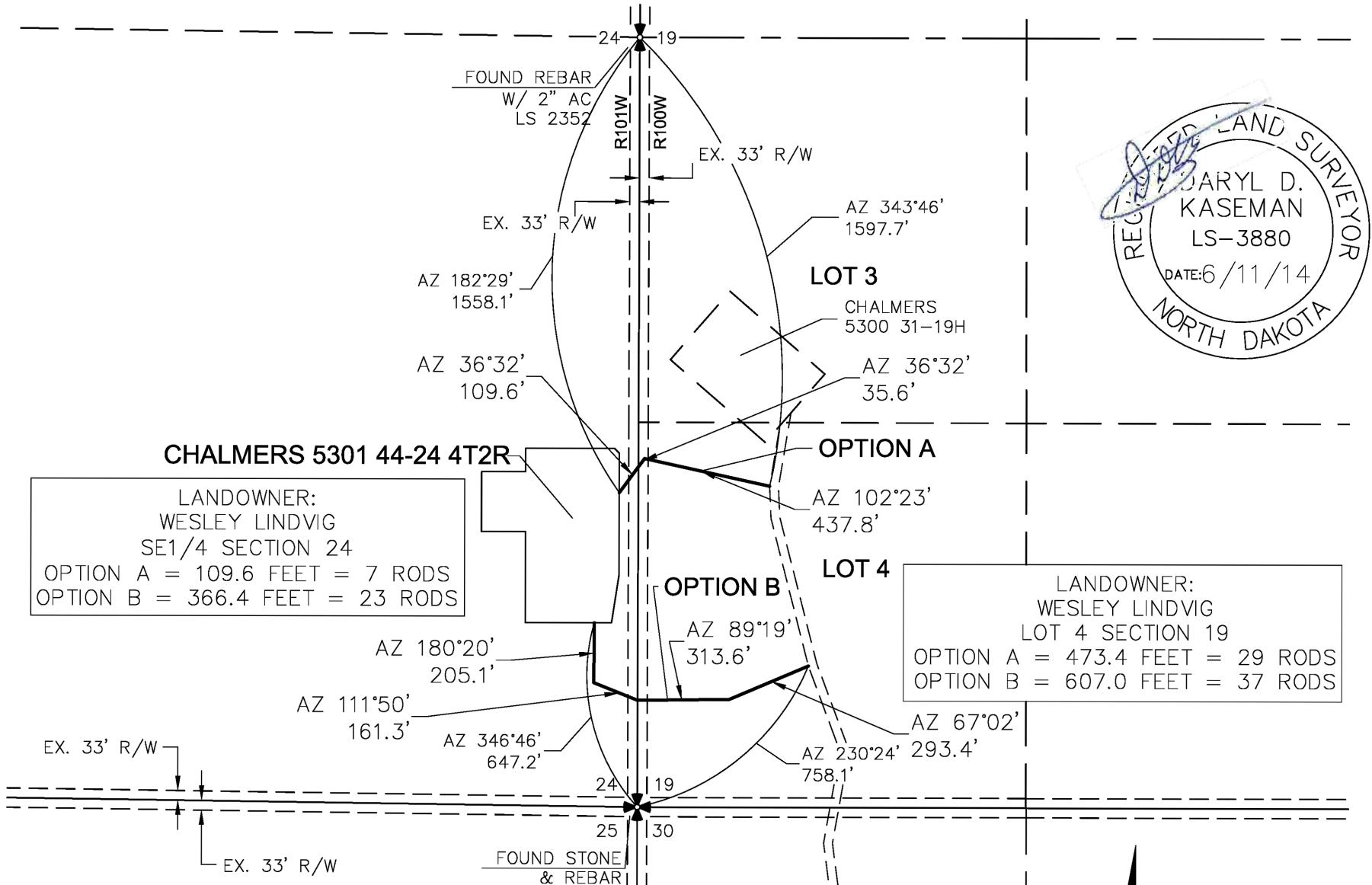
Other offices in Minnesota, North Dakota and South Dakota

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

Drawn By:	J.J.S.	Project No.:	S13-09-235.02
Checked By:	D.D.K.	Date:	MAY 2014

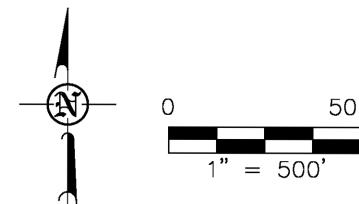
Revision No.	Date	By	Description
REV 2	12/5/13	JJS	CHANGED PAD LAYOUT
REV 3	1/20/14	BH+	CHANGED PAD LAYOUT
REV 4	5/09/14	JJS	ADDED WELL TO PAD
REV 5	5/20/14	JJS	CHANGED NAME, MOVED WELL
REV 6	6/11/14	JWS	ADDED DIMENSIONS

ACCESS APPROACH
 OASIS PETROLEUM NORTH AMERICA, LLC
 1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
 "CHALMERS 5301 44-24 4T2R"
 877 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
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NOTE: All utilities shown are preliminary only, a complete
 utilities location is recommended before construction.



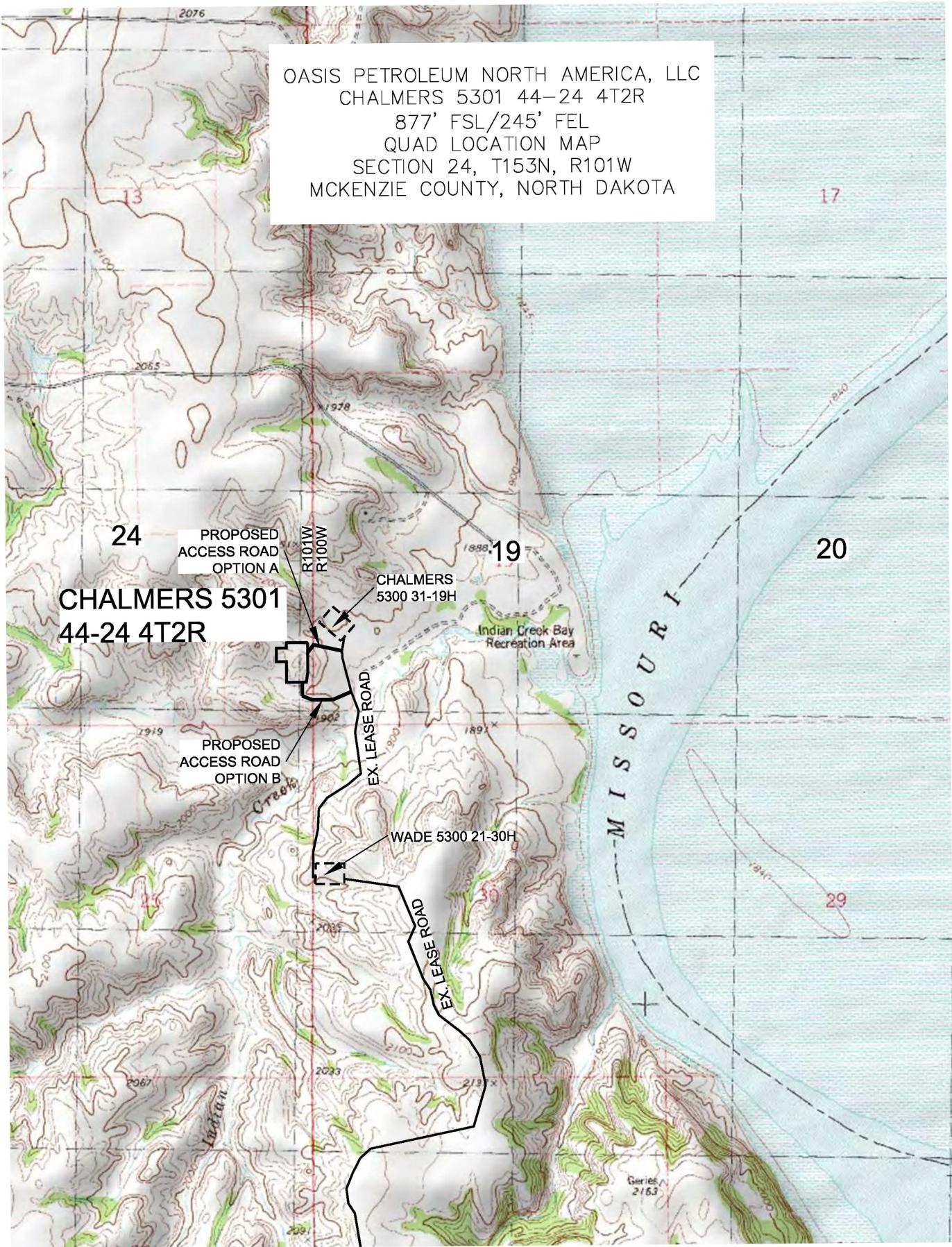
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Revision No.	Date	By	Description
REV 2	12/5/13	US	CHANGED PAD LAYOUT
REV 3	1/20/14	BHJ	CHANGED PAD LAYOUT
REV 4	5/6/14	US	ADDED WELL TO PAD
REV 5	5/20/14	US	CHANGED NAME, MOVED WELL
REV 6	6/11/14	DM	ADDED DIMENSIONS
REV 7	MAY 2014	D.D.K.	



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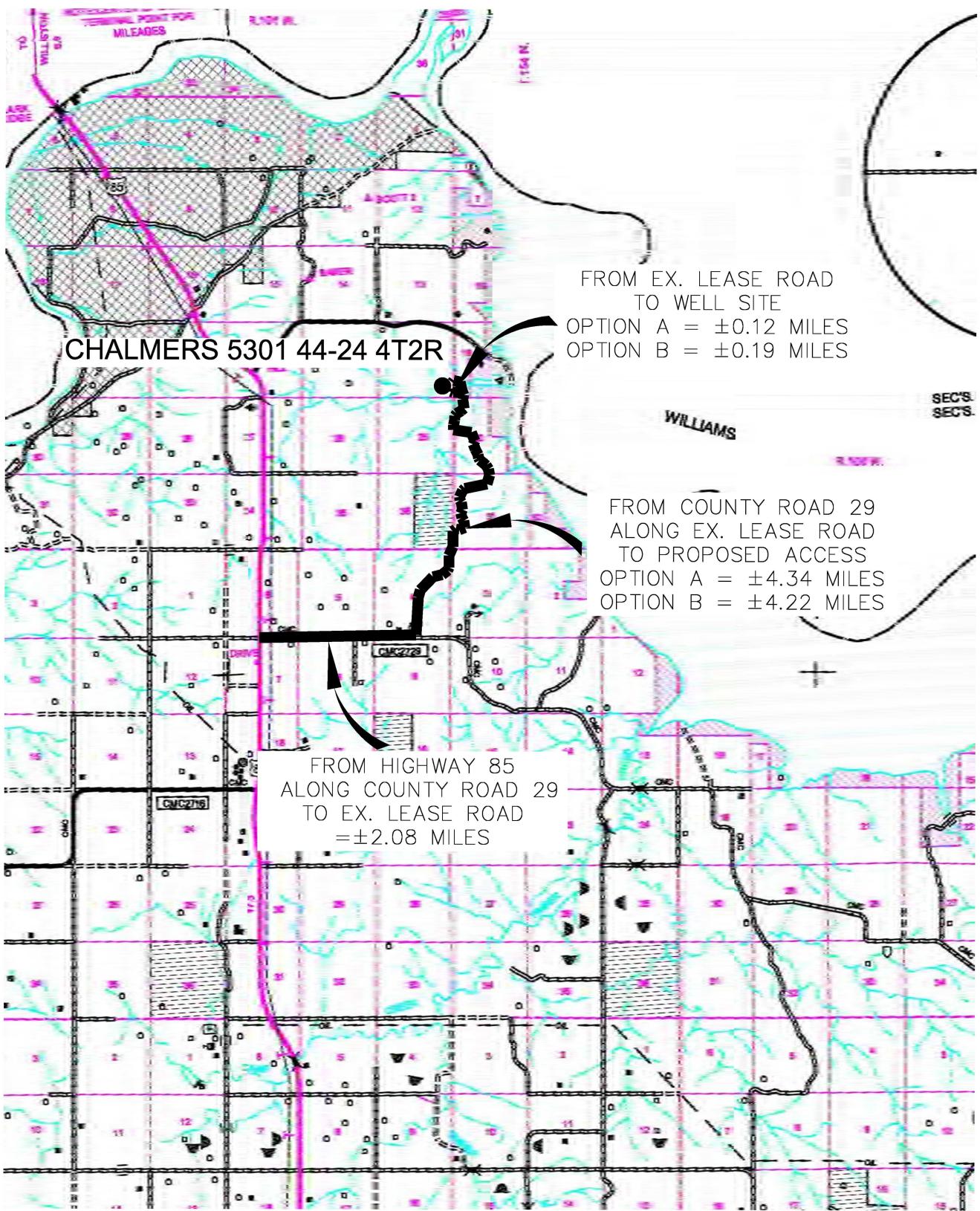
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OASIS PETROLEUM NORTH AMERICA, LLC
QUAD LOCATION MAP
SECTION 24, T153N, R101W
MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: J.J.S. Project No.: S13-09-235.02
Checked By: D.D.K. Date: MAY 2014

Revision No.	Date	By	Description
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REV 4	5/08/14	JJS	ADDED WELL TO PAD
REV 5	5/20/14	JJS	CHANGED NAME, MOVED WELL
REV 6	6/11/14	JDM	ADDED DIMENSIONS

COUNTY ROAD MAP
 OASIS PETROLEUM NORTH AMERICA, LLC
 1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
 "CHALMERS 5301 44-24 4T2R"
 877 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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SCALE: 1" = 2 MILE

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OASIS PETROLEUM NORTH AMERICA, LLC
 COUNTY ROAD MAP
 SECTION 24, T153N, R101W
 MCKENZIE COUNTY, NORTH DAKOTA
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6/2/2014

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
Chalmers 5301 44-24 12TXR
Request for a legal street address

Dear NDIC:

Oasis Petroleum has requested a physical street address for the Chalmers 5301 44-24 3BR, Chalmers 5301 44-24 4T2R and Chalmers 5301 44-24 12TXR. 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,

A handwritten signature in blue ink that reads "Heather McCowan". The signature is fluid and cursive, with "Heather" on top and "McCowan" below it.

Heather McCowan
Regulatory Assistant
Oasis Petroleum North America, LLC