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
ND OIL & GAS DIVISION

Well File No.
~~29316~~
29317

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: **February 1, 2016**
☐ Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.	Approximate Start Date

☐ Drilling Prognosis	☐ 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 pump**	

Well Name and Number					
Gramma Federal 5300 41-31 13T					
Footages	Qtr-Qtr	Section	Township	Range	
647 F **S** L **320** F **W** L	**LOT4**	**31**	**153 N**	**100 W**	
Field	Pool	County			
Baker	**Bakken**	**McKenzie**			

24-HOUR PRODUCTION RATE

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

Name of Contractor(s)			
Address	City	State	Zip Code

DETAILS OF WORK

Effective 02/01/2016 the above referenced well is on pump.

End of Tubing: 2-7/8" L-80 tubing @ 8134.78'

Pump: 2-1/2" x 2.0" x 24' insert pump @ 8026.63'

Company: **Oasis Petroleum North America LLC**		Telephone Number: **281 404-9436**
Address: **1001 Fannin, Suite 1500**		
City: **Houston**	State: **TX**	Zip Code: **77002**
Signature	Printed Name: **Jennifer Swenson**	
Title: **Regulatory Specialist**	Date: **March 17, 2016**	
Email Address: **jswenson@oasispetroleum.com**		

FOR STATE USE ONLY

☑ Received	☐ Approved
Date: 11-2-2017	
By:	
Title: JARED THUNE 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/

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

Tom Delling
Petroleum Engineer - Field Inspector

TKD/RSD/RLR

600 E Boulevard Ave - Dept 405, Bismarck, North Dakota 58505-0840 Phone (701)328-8020 Fax (701)328-8022

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

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

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

ELERY 1-13H
NENE 13-151N-100W
MCKENZIE COUNTY
WELL FILE NO.: 26136

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

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

BONNER 9-12H
NESW 12-151N-100W
MCKENZIE COUNTY
WELL FILE NO.: 26852

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

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

DIXIE 12X-35H
NWSW 35-152N-100W
MCKENZIE COUNTY
WELL FILE NO.: 27624

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

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

TRACY 13-35H
SWSW 35-152N-100W
MCKENZIE COUNTY
WELL FILE NO.: 27769

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

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

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

TH

AUTHORIZATION TO PURCHASE AND TRANSPORT OIL FROM LEASE – Form 8

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

Well File No.
29317
NDIC CTB No.
~~To be assigned~~ 229316

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

Well Name and Number	Qtr-Qtr	Section	Township	Range	County
GRAMMA FEDERAL 5300 41-31 13T2	LOT4	31	153	100	Williams McKenzie

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

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

Name of First Purchaser	Telephone Number	% Purchased	Date Effective
Oasis Petroleum Marketing LLC	(281) 404-9627	100%	July 5, 2015

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

Transporter	Telephone Number	% Transported	Date Effective
Hiland Crude, LLC	(580) 616-2058	75%	July 5, 2015

Address	City	State	Zip Code
P.O. Box 3886	Enid	OK	73702

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

Other First Purchasers Purchasing From This Lease	% Purchased	Date Effective
Other First Purchasers Purchasing From This Lease	% Purchased	Date Effective
Other Transporters Transporting From This Lease	% Transported	Date Effective
Hofmann Trucking	25%	July 5, 2015
Other Transporters Transporting From This Lease	% Transported	Date Effective
		July 5, 2015

Comments

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records.		Date
		August 13, 2015
Signature	Printed Name	Title
	Brianna Salinas	Marketing Assistant

Above Signature Witnessed By:

Signature	Printed Name	Title
	Dina Barron	Mktg. Contracts Administrator

AUG 2015
RECEIVED
ND OIL & GAS
DIVISION

FOR STATE USE ONLY

Date Approved	AUG 20 2015
By	Eric Robertson
Title	Oil & Gas Production Analyst

TH

WELL COMPLETION OR RECOMPLETION REPORT - FORM 6

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

JUL 2015 RECEIVED ND OIL & GAS DIVISION

Well File No. **29317**

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

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

Well Name and Number: **Gramma Federal 5300 41-31 13T**			Spacing Unit Description: **Sec. 31/32 T153N R100W**
Operator: **Oasis Petroleum North America**	Telephone Number: **(281) 404-9591**		Field: **Baker**
Address: **1001 Fannin, Suite 1500**			Pool: **Bakken**
City: **Houston**	State: **TX**	Zip Code: **77002**	Permit Type: ☐ Wildcat ☑ Development ☐ Extension

LOCATION OF WELL

At Surface	Qtr-Qtr	Section	Township	Range	County
647 F S L 320 F WL	LOT4	31	153 N	100 W	McKenzie

Spud Date	Date TD Reached	Drilling Contractor and Rig Number	KB Elevation (Ft)	Graded Elevation (Ft)
December 24, 2014 (23)	March 3, 2015	Nabors B27	2183	2158

Type of Electric and Other Logs Run (See Instructions)
MWD/GR FROM KOP TO TD; CBL FROM INT. TD TO SURFACE

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

Well Bore	String Type	String Size (Inch)	Top Set (MD Ft)	Depth Set (MD Ft)	Hole Size (Inch)	Weight (Lbs/Ft)	Anchor Set (MD Ft)	Packer Set (MD Ft)	Sacks Cement	Top of Cement
Surface Hole	Surface	13 3/8	0	2325	17 1/2	54.5			1211	0
Vertical Hole	Intermediate	9 5/8	0	5994	13 1/2	36			1202	4500
Vertical Hole	Intermediate	7	0	11228	8 3/4	32			948	8400
Lateral1	Liner	4 1/2	10259	20545	6	13.5			505	10259

PERFORATION & OPEN HOLE INTERVALS

Well Bore	Well Bore TD Drillers Depth (MD Ft)	Completion Type	Open Hole/Perforated Interval (MD,Ft) Top	Bottom	Kick-off Point (MD Ft)	Top of Casing Window (MD Ft)	Date Perf'd or Drilled	Date Isolated	Isolation Method	Sacks Cement
Lateral1	20550	Perforations	11228	20545	10331		06/26/2015			

PRODUCTION

Current Producing Open Hole or Perforated Interval(s), This Completion, Top and Bottom, (MD Ft)	Name of Zone (If Different from Pool Name)
Lateral 1- 11228' TO 20545'	

Date Well Completed (SEE INSTRUCTIONS)	Producing Method	Pumping-Size & Type of Pump	Well Status (Producing or Shut-In)
July 5, 2015	Flowing		Producing

Date of Test	Hours Tested	Choke Size	Production for Test	Oil (Bbls)	Gas (MCF)	Water (Bbls)	Oil Gravity-API (Corr.)	Disposition of Gas
07/05/2015	24	46 /64		1358	1821	3006	°	Sold

Flowing Tubing Pressure (PSI)	Flowing Casing Pressure (PSI)	Calculated 24-Hour Rate	Oil (Bbls)	Gas (MCF)	Water (Bbls)	Gas-Oil Ratio
	1150		1358	1821	3006	1341

GEOLOGICAL MARKERS

Formation	MD (Ft)	TVD (Ft)
Dakota	5560	5560
Kibbey Lime	8460	8459
First Charles Salt	8610	8409
UB		
Base Last Salt	9276	9275
Ratcliffe		
Mission Canyon	9492	9491
Lodgepole	10032	10031
False Bakken	10855	10679
Scallion		
Upper Bakken	10872	10779
Middle Bakken	10906	10797
Lower Bakken	10990	10833
Pronghorn	11012	10840
Three Forks	11082	10862

PLUG BACK INFORMATION

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

CORES CUT

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

Drill Stem Test

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

Well Specific Stimulations

Date Stimulated	Stimulated Formation	Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units
06/26/2015	Three Forks	11228	20545	50	170334	Barrels

Type Treatment	Acid %	Lbs Proppant	Maximum Treatment Pressure (PSI)	Maximum Treatment Rate (BBLS/Min)
Sand Frac		9246908	8985	10.4

Details
40/70 White: 1185500
20/40 White: 6423398
20/40 Resin Coated: 1396960
100 Mesh White: 241050

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	Date
	jswenson@oasispetroleum.com	07/27/2015
Signature	Printed Name	Title
	Jennifer Swenson	Regulatory Specialist

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

Well or Facility No **29317**

Tight Hole **Yes**

OPERATOR

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

WELL INFORMATION

Well Name
GRAMMA FEDERAL 5300 41-31 13T

Inspector
Richard Dunn

Well Location	QQ	Sec	Twp	Rng
	LOT4	**31**	**153 N**	**100 W**

County
MCKENZIE

Field
BAKER

Footages
713 Feet From the **S** Line
320 Feet From the **W** Line

Pool
BAKKEN

Date of First Production Through Permanent Wellhead **7/4/2015** **This Is The First Sales**

PURCHASER / TRANSPORTER

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

TANK BATTERY

Central Tank Battery Number : 229316-01

SALES INFORMATION **This Is The First Sales**

ESTIMATED BARRELS TO BE SOLD	ACTUAL BARRELS SOLD	DATE
15000 BBLS	**240** BBLS	**7/4/2015**
BBLS	BBLS	
BBLS	BBLS	
BBLS	BBLS	
BBLS	BBLS	
BBLS	BBLS	
BBLS	BBLS	
BBLS	BBLS	

DETAILS

Must E-Mail or Call Inspector at 701-770-3554/rsdunn@nd.gov on first date of sales and report amount sold, date sold, and first date of production through the permanent wellhead

Start Date	**7/4/2015**
Date Approved	**7/13/2015**
Approved By	**Richard Dunn**

SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4

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

MAY 2015
RECEIVED
ND OIL & GAS
DIVISION

Well File No.
29317

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

- [ ] Notice of Intent — Approximate Start Date
- [x] Report of Work Done — Date Work Completed: **March 31, 2015**
- [ ] Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03. — Approximate Start Date

- [ ] Drilling Prognosis
- [ ] Spill Report
- [ ] Redrilling or Repair
- [ ] Shooting
- [ ] Casing or Liner
- [ ] Acidizing
- [ ] Plug Well
- [ ] Fracture Treatment
- [ ] Supplemental History
- [ ] Change Production Method
- [ ] Temporarily Abandon
- [x] Reclamation
- [ ] Other: **Reserve pit reclamation**

Well Name and Number					
Gramma Federal 5300 41-31 13T2					
Footages	Qtr-Qtr	Section	Township	Range	
713 F S L 320 F W L	LOT4	24	153 N	100 W	
Field	Pool	County			
Baker	Bakken	McKenzie			

24-HOUR PRODUCTION RATE

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

Name of Contractor(s)			
Neu Construction			
Address	City	State	Zip Code
602 W. 9th Street	Fairview	MT	59221

DETAILS OF WORK

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

The NDIC field inspector, Rick Dunn (NDIC) was notified on 03/20/2015

The surface owner, Wes Lindvig, was contacted on 03/20/2015 at 14705 41st Street NW Alexander ND 58831

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

Company		Telephone Number
Oasis Petroleum North America LLC		**281-404-9436**
Address		
1001 Fannin, Suite 1500		
City	State	Zip Code
Houston	**TX**	**77002**
Signature	Printed Name	
	Jennifer Swenson	
Title	Date	
Regulatory Specialist	**May 4, 2015**	
Email Address		
jswenson@oasispetroleum.com		

FOR STATE USE ONLY

[x] Received	[ ] Approved
Date: 6-1-15	
By:	
Title:	

5

SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4

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

JUN 2015 RECEIVED ND OIL & GAS DIVISION

Well File No. **29317**

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

- [x] Notice of Intent — Approximate Start Date: **June 2, 2015**
- [ ] Report of Work Done — Date Work Completed:
- [ ] Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03. — Approximate Start Date:

- [ ] Drilling Prognosis
- [ ] Spill Report
- [ ] Redrilling or Repair
- [ ] Shooting
- [ ] Casing or Liner
- [ ] Acidizing
- [ ] Plug Well
- [ ] Fracture Treatment
- [ ] Supplemental History
- [ ] Change Production Method
- [ ] Temporarily Abandon
- [ ] Reclamation
- [ ] Other: **Waiver from tubing/packer requirement**

Well Name and Number					
Gramma Federal 5300 41-31 13T					
Footages	Qtr-Qtr	Section	Township	Range	
713 F S L 320 F W L	**LOT4**	**31**	**153 N**	**100 W**	
Field	Pool	County			
Baker	**Bakken**	**McKenzie**			

24-HOUR PRODUCTION RATE

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

Name of Contractor(s)			
Address	City	State	Zip Code

DETAILS OF WORK

Oasis Petroleum 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 ise 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 montioring equipement;
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		Telephone Number
Oasis Petroleum North America LLC		**281-404-9436**
Address		
1001 Fannin, Suite 1500		
City	State	Zip Code
Houston	**TX**	**77002**
Signature	Printed Name	
	Jennifer Swenson	
Title	Date	
Regulatory Specialist	**June 2, 2015**	
Email Address		
jswenson@oasispetroleum.com		

FOR STATE USE ONLY

[ ] Received	[x] Approved
Date	June 4, 2015
By	
Title	PETROLEUM ENGINEER

SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4

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

JUN 2015 RECEIVED ND OIL & GAS DIVISION

Well File No. 29317

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

- [x] Notice of Intent — Approximate Start Date: 60/02/2015
- [ ] Report of Work Done — Date Work Completed:
- [ ] Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03. — Approximate Start Date:

- [ ] Drilling Prognosis
- [ ] Redrilling or Repair
- [ ] Casing or Liner
- [ ] Plug Well
- [ ] Supplemental History
- [ ] Temporarily Abandon
- [ ] Spill Report
- [ ] Shooting
- [ ] Acidizing
- [ ] Fracture Treatment
- [ ] Change Production Method
- [ ] Reclamation
- [x] Other: Change well status to CONFIDENTIAL

Well Name and Number					
Gramma Federal 5300 41-31 13T					
Footages	Qtr-Qtr	Section	Township	Range	
713 F S L 320 F W L	LOT4	31	153 N	100 W	
Field	Pool	County			
Baker	BAKKEN	McKenzie			

24-HOUR PRODUCTION RATE

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

Name of Contractor(s)			
Address	City	State	Zip Code

DETAILS OF WORK

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

This well has not been completed

OFF CONFIDENTIAL 12/02/15.

Company		Telephone Number
Oasis Petroleum North America LLC		281-404-9436
Address		
1001 Fannin, Suite 1500		
City	State	Zip Code
Houston	TX	77002
Signature	Printed Name	
	Jennifer Swenson	
Title	Date	
Regulatory Specialist	June 2, 2015	
Email Address		
jswenson@oasispetroleum.com		

FOR STATE USE ONLY

- [ ] Received
- [x] Approved

Date: 6/03/15

By: Alice D. Webber

Title: Engineering Technician

Gramma Federal 5300 41-31 13T
End of Well Report

Gramma Federal 5300 41-31 13T

713' FSL & 320' FWL
SEC 31, T153N, R100W
Williams County, North Dakota

Prepared by:
Mark Miller, Adam Harris, *well-site geologists*
Columbine Logging, Inc.
602 S. Lipan St.
Denver CO 80223

Prepared for:

Michael Steed, *operations geologist*
Oasis Petroleum North America, LLC
1001 Fannin
Suite 1500
Houston, TX 77002

1.0 INTRODUCTION

Gramma Federal 5300 41-31 13T is an east lateral Three Forks first bench well located in SW SW SEC 31, T153N, R100W in McKenzie County, North Dakota. The primary pay zone extended from 13'-24' below the top of the Three Forks. This pay zone was picked for its production potential and quality of reservoir rock. The objective was to steer the well within the defined pay zone and within the legal requirements of the state. Directional drilling was performed by RPM and MWD services were performed by Ryan Directional Services. Mark Miller and Adam Harris were the primary well site geologists; providing geo-steering and mud logging from Columbine Logging, Inc.

Well Information

API #: 33-053-06232 **Field:** Baker

Spud Date: 01/19/2015 **TD Date:** 3/2/2015

Surface Location: SW SW SEC 31, T153N, R100W, 713' FSL & 320'FWL, McKenzie County, North Dakota

Intermediate Casing Point: SW SW SEC 31, T153N, R100W, McKenzie County, North Dakota; 11,295' MD, 10,883' TVD

Bottom Hole Location: SE SE SEC 32, T153N, R100W, McKenzie County, North Dakota, 20,550' MD, 10932.38' TVD

Surface Elevation: 2,158' **KB:** 2183'

Casing Shoe: 11,295' MD, 10,883' TVD **Total Depth Drilled:** 20550'

Operator: Oasis Petroleum North America LLC **Rig:** Nabors B27

Well-site Geologist: Mark Miller, Adam Harris **DD:** RPM

Mud logging: Columbine Logging **Mud Service:** Mi Swaco

MWD: Ryan Directional Services **Drilling Mud:** Invert, Brine

2.0 SERVICES

2.1 Well site Geology *(Columbine Logging, Inc.)*

Geological consulting and mud logging started on 1/19/2015. Services provided included; morning reports, evening reports, noon and midnight reports, sample examination, sample recording via pictures, production of vertical and horizontal mudlog, geo steering, sample collection and bagging, sample mailing and a final end of well report.

2.1.1 Geosteering

Our primary offset GR TVD log was the Gramma Federal 5300 41-31 31T well, located 33' south on the same pad. From this offset log the Three Forks was determined to be approximately 26' feet thick. Within the Three Forks, the primary objective was to stay within an 6' thick target window within the Three Forks "A" unit, which extended from 13' to 26' below the top of the Three Forks. Gamma patterns were compared with the offset log and a TVD log was created while landing the curve to in order to land in the targeted zone. Steering in the lateral was accomplished by calculating dip from relevant gamma markers, as well as by using lithology, total gas and ROP to determine our position within the formation.

2.1.2 Gamma and Surveys

Gamma and survey MWD services were provided by Ryan Directional Services. The upper 13' of the Three Forks, referred to as the "B" unit, consisted of overall high gamma compared to the "A" unit. The highest gamma readings of 170 api were just above the target line. The top of the "A" was marked by a gamma peak of approximately 120 api. The "A" unit extended from 14' to 26' below the upper shale. The upper portion of the "A" consisted of lower gamma readings of 55 – 85 api.
The "A" unit was expected to extend from 14' to 26' below the top of the Three Forks, based on an offset Three Forks well on the same pad. The 13T wellbore dropped into the claystone, confirming the basic thickness of the zone. The base of the "A" had a clean section of gamma, followed by the Claystone 1. After landing the curve, the wellbore was drilled almost entirely within the "B" and "A" units.

2.2 Mud Logging (Columbine Logging, Inc.)

2.2.1 Sample Examination

Samples were collected every 30 ft in the straight hole and build section, and every 30 ft while drilling the lateral. Descriptions included; mineralogy, color, firmness, argillaceous content, structure, texture, allochems, porosity, oil stain, and hydrocarbon fluorescence. Carbonate identification was determined with 10% dilute HCl^-, alizarin red and calcimeter. Hydrocarbon fluorescence was determined using a fluoroscope with a UV lamp.

2.2.2 Gas Detection

Gas was logged using a Bloodhound total gas/chromatograph system. The gas detection system uses an infra-red detector to measure total gas and the chromatograph separates and measures gases C1, C2, C3, iC4 and nC4. Gas was recorded in units where 1 unit equals 100 ppm. The gas detection system measured gases: C1, C2, C3, IC4, NC4, IC5, NC5, H2S, O2 and CO_2.

The Bloodhound Gas Detection and Chromatograph system use digital signal processing techniques and non-dispersive infrared and chemical sensors for gas detection. The system uses a proprietary chromatograph, which has the capability to detect from 0 to 10,000 gas units. This translates as 0 to 100% typical naturally-occurring hydrocarbon gas mixtures. Calibration is performed using National Institute of Standards and Technology (NIST) traceable calibration gases. Lab calibration points include 0%, 2.5%, and 100% pure methane. Complete immunity to saturation or damage in the presence of high concentrations of both light and heavy hydrocarbon gases precludes the necessity of constant re-calibration or zero referencing. This allows the Bloodhound to react to hydrocarbon based gases from zero to 100% in concentration without dilution.

Lag time was approximated from a calculation of annular velocity based on: pump output, open-hole diameter, cased hole diameter, collar diameter, drill pipe diameter and bottom hole assembly. Connection gases were monitored to confirm lag time calculations and thereby adjust lag time when needed.

3.0 GEOLOGY

3.1 Formation Tops Formation tops are picked using ROP, lithology, and gamma ray. (Table 3.1).

FORMATION TOPS						
Formation/Marker Beds	ACTUAL				**Prognosis**	
Vertical Section	Top MD (ft)	Top TVD (ft)	THICKNESS	H/L TO PROG	TVD KB/DF(ft)	TVDSS (ft)
Kibbey Lime	8,460’	8,459’	150’	-1’ Low	8,458’	**(6,275)**
Charles Salt	8,610’	8,609’	603’	-3’ Low	8,606’	**(6,423)**
Base Last Salt	9,276’	9,275’	37’	3’ High	9,278’	**(7,095)**
Mission Canyon	9,492’	9,491’	540’	-3’ Low	9,488’	**(7,305)**
Lodgepole	10,032’	10,031’	648’	2’ High	10,033’	**(7,850)**
False Bakken	10,855	10,679’	10’	-4 Low	10,765’	**(8,582)**
Upper Bakken Shale	10,872’	10,779’	36’	-3 Low	10,776’	**(8,593)**
Middle Bakken	10,906’	10,797’	18’	-5 Low	10,792’	**(8,609)**
Lower Bakken Shale	10,990’	10,833’	7’	-2 Low	10,831’	**(8,648)**
Pronghorn	11,012’	10,840’	22’	-1 Low	10,839’	**(8,656)**
Threeforks	11,082’	10,862’		-1 Low	10,858’	**(8,675)**
Threeforks(Top of Target)					10,869’	**(8,686)**
Threeforks(Base of Target)					10,879’	**(8,696)**
Claystone					10,879’	**(8,696)**

Table 3.1 Gramma Federal 5300 41-31 13T Formation Tops

3.2 Lithology
Sample analysis began at 8,200’ MD in the Kibbey Formation. See appendices “A” beginning on page 23, for lithologic pictures.

3.3 Formation Dip
The formation had an average apparent dip of 89.6 degrees. Dip changes are shown in table 3.3, on the following page

STRUCTURE (MD - TVD)									
MD (ft)	Pronghorn Top	Three Forks Top	3 Forks Target Top	3 Forks Target Bottom	Target line (gamma peak)	Target Base	Claystone 1	Dip (angle)	Dip Rate (ft/100)
11000.0	10841.5	10861.5	10874.5	10880.5	10883.5	10885.5	10887.5		
11391.0	10842.8	10862.8	10875.8	10881.8	10884.8	10886.8	10888.8	89.8	0.3
12075.0	10846.6	10866.6	10879.6	10885.6	10888.6	10890.6	10892.6	89.68	0.6
12375.0	10848.9	10868.9	10881.9	10887.9	10890.9	10892.9	10894.9	89.56	0.8
13000.0	10853.7	10873.7	10886.7	10892.7	10895.7	10897.7	10899.7	89.56	0.8
14000.0	10862.5	10882.5	10895.5	10901.5	10904.5	10906.5	10908.5	89.50	0.9
14540.0	10869.0	10889.0	10902.0	10908.0	10911.0	10913.0	10915.0	89.31	1.2
15097.0	10874.0	10894.0	10907.0	10913.0	10916.0	10918.0	10920.0	89.49	0.9
15500.0	10877.5	10897.5	10910.5	10916.5	10919.5	10921.5	10923.5	89.50	0.9
15993.0	10880.5	10900.5	10913.5	10919.5	10922.5	10924.5	10926.5	89.65	0.6
16288.0	10880.0	10900.0	10913.0	10919.0	10922.0	10924.0	10926.0	90.10	-0.2
16700.0	10883.0	10903.0	10916.0	10922.0	10925.0	10927.0	10929.0	89.58	0.7
17050.0	10882.4	10902.4	10915.4	10921.4	10924.4	10926.4	10928.4	90.10	-0.2
17350.0	10883.5	10903.5	10916.5	10922.5	10925.5	10927.5	10929.5	89.79	0.4
18300.0	10892.1	10912.1	10925.1	10931.1	10934.1	10936.1	10938.1	89.48	0.9
19225.0	10898.6	10918.6	10931.6	10937.6	10940.6	10942.6	10944.6	89.60	0.7
19800.0	10902.6	10922.6	10935.6	10941.6	10944.6	10946.6	10948.6	89.60	0.7
20550.0	10905.0	10925.0	10938.0	10944.0	10947.0	10949.0	10951.0	89.82	0.3

Table 3.3 Gramma Federal 5300 41-31 13T formation dip changes

3.4 Shows

The vertical-build section was drilled with invert mud and the lateral was drilled with brine/production water. The oil-based mud contributed a background gas of 100-150 units, and saturated cuttings with oil, making all cuttings in the vertical show the same cut and fluorescence. Within the lateral, Gas shows increased as the lateral progressed. The beginning of the lateral had shows of 600-1500 units, which slightly increased to peaks of 2000 units at connections, with a background of 1500 units. Flares were intermittent at 3' to 10'.

3.5 Oil Shows

Invert mud was used in the vertical, masking any oil shows. In the lateral part of the well the oil shows were described as: Frequent-abundant dull to bright yellow-green florescence with a moderate to flash streaming-diffuse bright blue cut fluorescence and a medium brown residue ring.

3.6 Gas Shows

Gas logged while drilling the lateral is shown in Figure 3.6.

Figure 3.6 Total hydrocarbons (black) where 1 unit = 100 ppm methane eq, and chromatograph data (ppm)

4.0 WELL HISTORY

A summary of the daily progress of the well is listed below (Table 4.0).

24 HR. FOOTAGE TALLY				
Day	Date	12AM Depth	24 hr. Footage	Current 24 hr. Operations
1	1/21/2015	2,340’	0’	Drill vertical
2	1/22/2015	5,071’	2731'	Drilling ahead in vertical
3	1/23/2015	6005’	934'	Drilled ahead to casing point, casing operations
4	1/24/2015	6005’	0'	TIH, TOOH to replace MWD tool
5	1/25/2015	7007’	1545'	TIH and drill curve from 05:00 hrs.
6	1/26/2015	8709’	1517'	Drilling ahead in Vertical
7	1/27/2015	10005’	1196'	Drilling ahead in Vertical
8	1/28/2015	10331’	68'	Drilled to KOP, TOOH, TIH with BHA
9	1/29/2015	10925’	849'	Drill ahead in Curve
10	1/30/2015	11295’	0'	Landed Curve, TOOH
11	2/24/2015	11,526'	545’	TIH, Drill Lateral
12	2/25/2015	13334’	1752’	Drill lateral
13	2/26/2015	15020’	1900’	Drill lateral
14	2/27/2015	16656’	1164’	TOOH New Mud Motor
15	2/28/2015	16656’	84’	TIH, TOOH bad MWD tools, TIH
16	3/1/2015	17543’	1250’	Drill lateral
17	3/2/2015	19397’	1709	Drill lateral, TD @ 20550’

Table 4.0 Gramma Federal 5300 41-31 13T well history

5.0 WELLBORE

The surface location is SW SW SEC 31, T153N, R100W, 713' FSL & 320'FWL, McKenzie County, North Dakota. Ground elevation is 2,158' and KB elevation was 2,183', referenced to the kelly bushing of Nabors B27. The curve was landed in the Three Forks at 11,295' MD; 10,884.15' TVD. The lateral was drilled to TD at: 20,550' MD, with a projection to bit at: 10,932.98' TVD, 9,893.94' VS, SE SE SEC 32, T153N, R100W. Figure 5.1 shows a cross-section of the lateral.

Oasis Petroleum North America, LLC | Gramma Federal 5300 41-31 13T | SEC 31, T153N, R100W, 713' FSL & 320' FWL, McKenzie County, ND

Figure 5.0 Wellbore Cross Section

5.1 DEVIATION SURVEYS

No.	Tool Type	MD (ft)	INC (°)	AZI (°)	CL (ft)	TVD (ft)	VS (ft)	Coordinates N/S (ft)		E/W (ft)	
0	TIE-IN	2243	0.4	39.6		2242.95	-5.89	1.73		-5.89	
1	MWD	2376	0.60	29.10	133	2375.94	-5.26	2.70	N	-5.26	W
2	MWD	2470	0.50	38.90	94	2469.94	-4.76	3.45	N	-4.76	W
3	MWD	2564	0.70	40.40	94	2563.94	-4.13	4.20	N	-4.13	W
4	MWD	2658	0.80	29.70	94	2657.93	-3.43	5.21	N	-3.43	W
5	MWD	2752	1.10	28.10	94	2751.91	-2.68	6.58	N	-2.68	W
6	MWD	2847	1.20	42.80	95	2846.90	-1.58	8.11	N	-1.58	W
7	MWD	2941	1.30	58.70	94	2940.87	0.00	9.39	N	0.00	E
8	MWD	3035	1.30	68.80	94	3034.85	1.91	10.33	N	1.91	E
9	MWD	3129	1.40	69.00	94	3128.82	3.98	11.12	N	3.98	E
10	MWD	3223	0.60	333.70	94	3222.81	4.83	11.98	N	4.83	E
11	MWD	3318	0.80	306.20	95	3317.81	4.07	12.81	N	4.07	E
12	MWD	3412	0.70	290.60	94	3411.80	3.01	13.40	N	3.01	E
13	MWD	3506	0.70	306.30	94	3505.79	2.01	13.94	N	2.01	E
14	MWD	3600	0.90	289.60	94	3599.78	0.85	14.53	N	0.85	E
15	MWD	3694	0.80	295.10	94	3693.77	-0.44	15.06	N	-0.44	W
16	MWD	3788	0.40	302.20	94	3787.77	-1.31	15.51	N	-1.31	W
17	MWD	3882	0.40	302.20	94	3881.76	-1.87	15.86	N	-1.87	W
18	MWD	3976	0.20	336.00	94	3975.76	-2.21	16.19	N	-2.21	W
19	MWD	4071	0.10	345.20	95	4070.76	-2.30	16.42	N	-2.30	W
20	MWD	4165	0.30	312.80	94	4164.76	-2.50	16.66	N	-2.50	W
21	MWD	4259	0.30	327.70	94	4258.76	-2.82	17.04	N	-2.82	W
22	MWD	4353	0.30	354.30	94	4352.76	-2.97	17.49	N	-2.97	W
23	MWD	4448	0.40	15.10	95	4447.76	-2.91	18.06	N	-2.91	W
24	MWD	4542	0.60	20.90	94	4541.75	-2.65	18.84	N	-2.65	W
25	MWD	4636	0.70	39.40	94	4635.75	-2.11	19.74	N	-2.11	W
26	MWD	4730	0.80	40.20	94	4729.74	-1.32	20.68	N	-1.32	W
27	MWD	4824	0.80	48.00	94	4823.73	-0.41	21.62	N	-0.41	W
28	MWD	4919	0.90	59.90	95	4918.72	0.73	22.44	N	0.73	E
29	MWD	5013	0.90	71.80	94	5012.71	2.07	23.04	N	2.07	E
30	MWD	5107	1.00	82.20	94	5106.69	3.58	23.39	N	3.58	E
31	MWD	5201	1.20	97.70	94	5200.68	5.37	23.36	N	5.37	E
32	MWD	5295	1.60	99.50	94	5294.65	7.64	23.02	N	7.64	E

33	MWD	5389	0.70	112.60	94	5388.63	9.47	22.58	N	9.47	E
34	MWD	5483	0.60	124.00	94	5482.62	10.40	22.08	N	10.40	E
35	MWD	5577	0.70	114.50	94	5576.62	11.33	21.57	N	11.33	E
36	MWD	5672	0.70	112.50	95	5671.61	12.40	21.11	N	12.40	E
37	MWD	5765	0.70	87.90	93	5764.60	13.49	20.91	N	13.49	E
38	MWD	5859	0.80	82.30	94	5858.59	14.72	21.02	N	14.72	E
39	MWD	5948	0.90	93.50	89	5947.58	16.03	21.06	N	16.03	E
40	MWD	6037	0.80	102.80	89	6036.58	17.33	20.88	N	17.33	E
41	MWD	6131	0.60	280.60	94	6130.57	17.49	20.82	N	17.49	E
42	MWD	6225	0.40	326.40	94	6224.57	16.82	21.19	N	16.82	E
43	MWD	6319	0.60	16.40	94	6318.57	16.78	21.93	N	16.78	E
44	MWD	6414	0.80	42.10	95	6413.56	17.37	22.90	N	17.37	E
45	MWD	6508	0.60	18.70	94	6507.55	17.96	23.86	N	17.96	E
46	MWD	6602	0.40	24.60	94	6601.55	18.26	24.62	N	18.26	E
47	MWD	6696	0.90	51.20	94	6695.54	18.97	25.38	N	18.97	E
48	MWD	6791	1.20	330.70	95	6790.53	19.06	26.72	N	19.06	E
49	MWD	6885	1.50	337.00	94	6884.50	18.10	28.71	N	18.10	E
50	MWD	6979	1.70	345.30	94	6978.47	17.27	31.19	N	17.27	E
51	MWD	7073	1.80	348.30	94	7072.42	16.61	33.98	N	16.61	E
52	MWD	7167	1.50	348.40	94	7166.39	16.07	36.63	N	16.07	E
53	MWD	7261	1.60	351.10	94	7260.35	15.62	39.14	N	15.62	E
54	MWD	7356	1.50	357.30	95	7355.32	15.35	41.69	N	15.35	E
55	MWD	7450	1.60	357.90	94	7449.28	15.25	44.23	N	15.25	E
56	MWD	7544	1.80	354.40	94	7543.24	15.05	47.01	N	15.05	E
57	MWD	7638	1.30	281.50	94	7637.21	13.87	48.69	N	13.87	E
58	MWD	7732	1.50	283.00	94	7731.18	11.62	49.18	N	11.62	E
59	MWD	7827	1.70	289.20	95	7826.15	9.08	49.92	N	9.08	E
60	MWD	7921	1.40	280.30	94	7920.11	6.63	50.59	N	6.63	E
61	MWD	8015	1.10	269.20	94	8014.09	4.60	50.78	N	4.60	E
62	MWD	8109	0.80	253.20	94	8108.08	3.07	50.58	N	3.07	E
63	MWD	8204	0.70	256.40	95	8203.07	1.87	50.25	N	1.87	E
64	MWD	8298	0.70	264.20	94	8297.06	0.74	50.06	N	0.74	E
65	MWD	8392	0.70	247.20	94	8391.06	-0.36	49.78	N	-0.36	W
66	MWD	8486	0.70	249.30	94	8485.05	-1.42	49.35	N	-1.42	W
67	MWD	8580	0.60	240.60	94	8579.04	-2.39	48.91	N	-2.39	W
68	MWD	8675	0.40	219.10	95	8674.04	-3.03	48.40	N	-3.03	W
69	MWD	8769	0.40	200.10	94	8768.04	-3.35	47.84	N	-3.35	W
70	MWD	8863	0.40	215.80	94	8862.03	-3.66	47.27	N	-3.66	W

71	MWD	8958	0.30	249.40	95	8957.03	-4.08	46.91	N	-4.08	W
72	MWD	9052	0.10	227.50	94	9051.03	-4.38	46.77	N	-4.38	W
73	MWD	9146	0.30	253.00	94	9145.03	-4.67	46.64	N	-4.67	W
74	MWD	9240	0.40	209.20	94	9239.03	-5.07	46.28	N	-5.07	W
75	MWD	9335	0.20	212.40	95	9334.03	-5.32	45.85	N	-5.32	W
76	MWD	9429	0.10	236.30	94	9428.03	-5.47	45.67	N	-5.47	W
77	MWD	9523	0.10	205.00	94	9522.03	-5.58	45.55	N	-5.58	W
78	MWD	9618	0.30	199.60	95	9617.03	-5.69	45.24	N	-5.69	W
79	MWD	9712	0.40	176.10	94	9711.03	-5.75	44.68	N	-5.75	W
80	MWD	9806	0.40	179.30	94	9805.02	-5.73	44.03	N	-5.73	W
81	MWD	9900	0.40	183.10	94	9899.02	-5.74	43.37	N	-5.74	W
82	MWD	9995	0.30	232.00	95	9994.02	-5.96	42.89	N	-5.96	W
83	MWD	10089	0.30	246.70	94	10088.02	-6.38	42.64	N	-6.38	W
84	MWD	10183	0.30	234.00	94	10182.02	-6.80	42.40	N	-6.80	W
85	MWD	10277	0.30	203.80	94	10276.02	-7.10	42.03	N	-7.10	W
86	MWD	10293	0.30	213.80	16	10292.02	-7.14	41.95	N	-7.14	W
87	MWD	10325	0.80	78.90	32	10324.01	-6.97	41.93	N	-6.97	W
88	MWD	10356	4.40	76.90	31	10354.98	-5.60	42.24	N	-5.60	W
89	MWD	10388	8.50	77.20	32	10386.77	-2.09	43.04	N	-2.09	W
90	MWD	10419	12.70	77.90	31	10417.23	3.48	44.26	N	3.48	E
91	MWD	10450	16.10	80.30	31	10447.25	11.05	45.70	N	11.05	E
92	MWD	10482	19.90	81.50	32	10477.68	20.81	47.25	N	20.81	E
93	MWD	10513	23.30	81.60	31	10506.50	32.10	48.93	N	32.10	E
94	MWD	10544	25.50	80.80	31	10534.73	44.75	50.89	N	44.75	E
95	MWD	10576	28.50	80.30	32	10563.24	59.08	53.28	N	59.08	E
96	MWD	10607	31.50	79.60	31	10590.08	74.34	55.99	N	74.34	E
97	MWD	10639	33.10	79.50	32	10617.13	91.15	59.09	N	91.15	E
98	MWD	10670	36.00	79.70	31	10642.66	108.44	62.26	N	108.44	E
99	MWD	10701	40.30	79.50	31	10667.03	127.27	65.72	N	127.27	E
100	MWD	10733	42.90	79.70	32	10690.96	148.17	69.56	N	148.17	E
101	MWD	10764	46.30	80.10	31	10713.03	169.60	73.37	N	169.60	E
102	MWD	10795	51.10	80.50	31	10733.48	192.55	77.29	N	192.55	E
103	MWD	10827	53.80	80.10	32	10752.99	217.55	81.57	N	217.55	E
104	MWD	10858	54.40	79.60	31	10771.16	242.27	85.99	N	242.27	E
105	MWD	10890	57.40	77.40	32	10789.10	268.23	91.28	N	268.23	E
106	MWD	10921	61.50	75.40	31	10804.86	294.17	97.57	N	294.17	E
107	MWD	10952	65.60	75.30	31	10818.66	321.01	104.59	N	321.01	E
108	MWD	10984	69.70	75.10	32	10830.83	349.62	112.14	N	349.62	E

109	MWD	11015	70.10	74.80	31	10841.48	377.73	119.70	N	377.73	E
110	MWD	11046	70.90	75.00	31	10851.83	405.95	127.32	N	405.95	E
111	MWD	11078	75.30	76.40	32	10861.13	435.61	134.87	N	435.61	E
112	MWD	11109	77.80	76.40	31	10868.34	464.91	141.96	N	464.91	E
113	MWD	11140	78.50	76.30	31	10874.71	494.39	149.12	N	494.39	E
114	MWD	11172	82.30	77.50	32	10880.04	525.12	156.27	N	525.12	E
115	MWD	11203	86.80	79.00	31	10882.99	555.32	162.55	N	555.32	E
116	MWD	11230	89.70	79.70	27	10883.81	581.84	167.54	N	581.84	E
117	MWD	11307	91.20	77.90	77	10883.21	657.37	182.49	N	657.37	E
118	MWD	11338	91.60	78.40	31	10882.45	687.70	188.86	N	687.70	E
119	MWD	11368	91.60	79.00	30	10881.61	717.10	194.73	N	717.10	E
120	MWD	11399	91.70	81.00	31	10880.72	747.62	200.11	N	747.62	E
121	MWD	11430	91.10	81.60	31	10879.96	778.25	204.80	N	778.25	E
122	MWD	11460	89.10	82.60	30	10879.91	807.97	208.92	N	807.97	E
123	MWD	11491	88.70	83.40	31	10880.50	838.73	212.70	N	838.73	E
124	MWD	11523	87.30	84.90	32	10881.62	870.54	215.96	N	870.54	E
125	MWD	11555	87.00	87.00	32	10883.21	902.42	218.22	N	902.42	E
126	MWD	11586	88.00	89.50	31	10884.56	933.37	219.16	N	933.37	E
127	MWD	11682	90.20	91.20	96	10886.07	1029.35	218.58	N	1029.35	E
128	MWD	11778	89.80	91.60	96	10886.07	1125.32	216.23	N	1125.32	E
129	MWD	11809	90.00	91.70	31	10886.13	1156.31	215.34	N	1156.31	E
130	MWD	11873	91.60	92.40	64	10885.23	1220.26	213.05	N	1220.26	E
131	MWD	11969	88.50	90.30	96	10885.15	1316.22	210.79	N	1316.22	E
132	MWD	12064	89.00	90.30	95	10887.22	1411.19	210.29	N	1411.19	E
133	MWD	12160	90.20	91.30	96	10887.89	1507.18	208.95	N	1507.18	E
134	MWD	12191	89.10	91.40	31	10888.08	1538.17	208.22	N	1538.17	E
135	MWD	12255	89.10	91.30	64	10889.09	1602.14	206.71	N	1602.14	E
136	MWD	12287	89.80	91.50	32	10889.39	1634.13	205.93	N	1634.13	E
137	MWD	12350	91.50	92.50	63	10888.68	1697.08	203.73	N	1697.08	E
138	MWD	12446	91.00	91.90	96	10886.58	1792.99	200.05	N	1792.99	E
139	MWD	12541	89.20	90.40	95	10886.42	1887.96	198.14	N	1887.96	E
140	MWD	12573	88.10	90.20	32	10887.17	1919.95	197.97	N	1919.95	E
141	MWD	12636	89.20	90.10	63	10888.66	1982.94	197.81	N	1982.94	E
142	MWD	12732	90.80	90.20	96	10888.66	2078.93	197.56	N	2078.93	E
143	MWD	12827	89.90	89.80	95	10888.08	2173.93	197.56	N	2173.93	E
144	MWD	12923	88.60	87.70	96	10889.33	2269.89	199.65	N	2269.89	E
145	MWD	13018	88.30	87.70	95	10891.90	2364.78	203.46	N	2364.78	E
146	MWD	13114	89.50	88.00	96	10893.75	2460.69	207.06	N	2460.69	E

147	MWD	13209	89.00	89.20	95	10894.99	2555.65	209.38	N	2555.65	E
148	MWD	13305	90.60	89.40	96	10895.32	2651.64	210.56	N	2651.64	E
149	MWD	13400	89.00	88.30	95	10895.66	2746.62	212.46	N	2746.62	E
150	MWD	13496	88.90	89.80	96	10897.41	2842.59	214.05	N	2842.59	E
151	MWD	13591	88.80	90.50	95	10899.32	2937.57	213.81	N	2937.57	E
152	MWD	13686	90.20	89.80	95	10900.15	3032.56	213.56	N	3032.56	E
153	MWD	13782	90.40	90.70	96	10899.65	3128.56	213.14	N	3128.56	E
154	MWD	13877	88.80	91.30	95	10900.31	3223.54	211.48	N	3223.54	E
155	MWD	13973	87.20	91	96	10903.66	3319.45	209.55	N	3319.45	E
156	MWD	14068	87.30	91.2	95	10908.22	3414.33	207.73	N	3414.33	E
157	MWD	14164	88.50	91.6	96	10911.74	3510.23	205.39	N	3510.23	E
158	MWD	14259	90.20	91.3	95	10912.81	3605.19	202.99	N	3605.19	E
159	MWD	14355	89.50	90.3	96	10913.07	3701.18	201.64	N	3701.18	E
160	MWD	14450	89.00	90.6	95	10914.31	3796.17	200.90	N	3796.17	E
161	MWD	14546	88.90	91.00	96	10916.07	3892.14	199.56	N	3892.14	E
162	MWD	14641	88.80	90.90	95	10917.98	3987.11	197.98	N	3987.11	E
163	MWD	14736	90.80	90.80	95	10918.31	4082.10	196.57	N	4082.10	E
164	MWD	14832	90.60	89.80	96	10917.13	4178.09	196.07	N	4178.09	E
165	MWD	14927	90.70	90.00	95	10916.06	4273.08	196.24	N	4273.08	E
166	MWD	15023	89.30	89.90	96	10916.06	4369.08	196.32	N	4369.08	E
167	MWD	15118	88.70	89.20	95	10917.71	4464.06	197.07	N	4464.06	E
168	MWD	15214	90.10	89.90	96	10918.72	4560.05	197.82	N	4560.05	E
169	MWD	15309	89.40	89.40	95	10919.13	4655.04	198.40	N	4655.04	E
170	MWD	15404	88.20	88.80	95	10921.12	4750.01	199.89	N	4750.01	E
171	MWD	15500	90.80	88.70	96	10921.96	4845.97	201.99	N	4845.97	E
172	MWD	15595	89.00	87.50	95	10922.13	4940.92	205.14	N	4940.92	E
173	MWD	15691	89.20	88.40	96	10923.63	5036.84	208.57	N	5036.84	E
174	MWD	15786	90.00	88.40	95	10924.30	5131.80	211.22	N	5131.80	E
175	MWD	15882	88.90	88.40	96	10925.22	5227.76	213.90	N	5227.76	E
176	MWD	15977	89.20	89.90	95	10926.79	5322.73	215.31	N	5322.73	E
177	MWD	16073	89.70	90.80	96	10927.72	5418.72	214.73	N	5418.72	E
178	MWD	16168	90.50	90.60	95	10927.55	5513.72	213.57	N	5513.72	E
179	MWD	16264	91.70	89.90	96	10925.71	5609.70	213.15	N	5609.70	E
180	MWD	16359	91.60	90.70	95	10922.97	5704.65	212.65	N	5704.65	E
181	MWD	16455	87.10	89.00	96	10924.06	5800.62	212.90	N	5800.62	E
182	MWD	16551	87.70	89.30	96	10928.42	5896.51	214.32	N	5896.51	E
183	MWD	16647	88.40	88.30	96	10931.68	5992.43	216.33	N	5992.43	E
184	MWD	16742	89.40	88.90	95	10933.51	6087.38	218.65	N	6087.38	E

185	MWD	16838	90.00	88.80	96	10934.01	6183.36	220.58	N	6183.36	E
186	MWD	16933	90.90	88.90	95	10933.26	6278.34	222.49	N	6278.34	E
187	MWD	17029	91.40	89.20	96	10931.34	6374.31	224.08	N	6374.31	E
188	MWD	17124	91.90	89.90	95	10928.60	6469.26	224.82	N	6469.26	E
189	MWD	17220	92.00	90.80	96	10925.33	6565.21	224.24	N	6565.21	E
190	MWD	17315	91.70	92.00	95	10922.27	6660.13	221.92	N	6660.13	E
191	MWD	17411	90.50	92.60	96	10920.42	6756.03	218.06	N	6756.03	E
192	MWD	17507	88.90	91.20	96	10920.93	6851.97	214.88	N	6851.97	E
193	MWD	17602	88.50	91.30	95	10923.08	6946.92	212.81	N	6946.92	E
194	MWD	17698	89.10	92.10	96	10925.09	7042.86	209.96	N	7042.86	E
195	MWD	17793	89.70	92.30	95	10926.09	7137.78	206.32	N	7137.78	E
196	MWD	17889	89.50	91.70	96	10926.76	7233.72	202.97	N	7233.72	E
197	MWD	17984	89.80	91.40	95	10927.34	7328.68	200.40	N	7328.68	E
198	MWD	18080	89.10	90.00	96	10928.26	7424.67	199.22	N	7424.67	E
199	MWD	18175	89.80	89.70	95	10929.17	7519.66	199.47	N	7519.66	E
200	MWD	18271	90.40	89.20	96	10929.00	7615.66	200.39	N	7615.66	E
201	MWD	18366	89.90	89.90	95	10928.76	7710.65	201.14	N	7710.65	E
202	MWD	18462	89.20	90.40	96	10929.51	7806.65	200.89	N	7806.65	E
203	MWD	18557	89.10	89.60	95	10930.92	7901.64	200.89	N	7901.64	E
204	MWD	18653	89.50	89.40	96	10932.09	7997.63	201.73	N	7997.63	E
205	MWD	18748	90.10	88.80	95	10932.42	8092.61	203.22	N	8092.61	E
206	MWD	18843	89.90	89.10	95	10932.42	8187.60	204.96	N	8187.60	E
207	MWD	18940	89.40	89.20	97	10933.02	8284.59	206.40	N	8284.59	E
208	MWD	19035	88.80	88.40	95	10934.51	8379.55	208.39	N	8379.55	E
209	MWD	19131	90.20	89.20	96	10935.35	8475.52	210.40	N	8475.52	E
210	MWD	19226	90.30	88.30	95	10934.93	8570.50	212.47	N	8570.50	E
211	MWD	19321	90.50	89.10	95	10934.27	8665.47	214.63	N	8665.47	E
212	MWD	19417	90.50	89.80	96	10933.43	8761.46	215.55	N	8761.46	E
213	MWD	19512	88.10	90.60	95	10934.59	8856.45	215.22	N	8856.45	E
214	MWD	19608	88.40	91.70	96	10937.52	8952.38	213.29	N	8952.38	E
215	MWD	19703	88.80	90.90	95	10939.84	9047.33	211.13	N	9047.33	E
216	MWD	19799	89.80	90.80	96	10941.02	9143.31	209.71	N	9143.31	E
217	MWD	19894	90.90	90.30	95	10940.44	9238.30	208.80	N	9238.30	E
218	MWD	19990	88.30	89.90	96	10941.11	9334.29	208.63	N	9334.29	E
219	MWD	20085	88.00	88.90	95	10944.17	9429.23	209.63	N	9429.23	E
220	MWD	20180	92.20	91.00	95	10944.01	9524.21	209.71	N	9524.21	E
221	MWD	20276	92.60	91.00	96	10939.99	9620.11	208.03	N	9620.11	E
222	MWD	20371	91.40	91.10	95	10936.67	9715.03	206.29	N	9715.03	E
223	MWD	20467	91.10	91.30	96	10934.58	9810.99	204.28	N	9810.99	E
224	MWD	20483	91.10	91.60	16	10934.27	9826.98	203.88	N	9826.98	E
225	MWD	20550	91.10	91.60	67	10932.98	9893.94	202.01	N	9893.94	E

Previous Pages: Deviation Surveys for Gramma Federal 5300 41-31 13T

5.2 BOTTOM HOLE ASSEMBLY INFORMATION

The following pages contain copies of the bottom hole assembly sheets provided to Columbine Logging, Inc. while drilling the vertical through lateral wellbore

RYAN DIRECTIONAL SERVICES, INC.
A NABORS COMPANY

BOTTOM HOLE ASSEMBLY 1

WELL INFORMATION			DIRECTIONAL RESPONSE				BIT INFO.	
OIL COMPANY	Oasis Petroleum		Date:	IN	OUT	CHANGE RATE	SIZE	6"
RIG #:	NABORS B-27		DATE	2/23/2015	2/27/2015		TYPE	T406X
LOCATION	MCKENZIE CO, ND		DEPTH (MD)	11295	16656		JETS	6 x 18's
WELL	MMA FEDERAL 5300 41-3		DEPTH (TVD)	10883	10928		SER #	7153945
JOB NUMBER	8527		INCLINATION	89.7	87.7		FEET	5361
MWD SUPERVISOR	JOHN LANGLOIS	DAVID FOLEY	AZIMUTH	79.7	89.3		HOURS	
CUSTOMER OFFICE CONTACT			SLIDE PERCENT				ROP	
CUSTOMER WELLSITE SUPERVISOR	RICHARD CEYNAR		MUD-WT.-TYPE	Saltwater	Saltwater		DULL	
OBJECTIVE:	DRILL LATERAL							
							Pin-CL	1.68
COMMENTS:	Bit to Sensor:	68	Bit to Gamma:	56			CL--Box	3.22

ITEM #	TOOL	COMPANY	SER. #	CONN. UP	CONN. DOWN	O.D.	I.D.	FISH NECK	BLADE O.D.	LENGTH	SUBTOTAL
	BIT	BAKER	7153945			6"				1.00	1.00
	MUD MOTOR	BAKER	10148180			4 3/4"				32.90	33.90
	NM PONY COLLAR	RYAN	DR8426	3 1/2" IF	3 1/2" IF	4 5/8"	2 11/16"			9.16	43.06
	UBHO (NON MAG)	RYAN	RY8779	3 1/2" IF	3 1/2" IF	4 5/8"	2 3/4"			4.90	47.96
	NMDC	RYAN	RY4751686	3 1/2" IF	3 1/2" IF	4 3/4"	2 5/8"			30.77	78.73
	NMDC	RYAN	RY4751729	3 1/2" IF	3 1/2" IF	4 11/16"	2 11/16"			30.20	108.93
	XO	RIG		XT-39	3 1/2" IF					3.12	112.05
										TOTAL	112.05

RYAN DIRECTIONAL SERVICES, INC.

A NABORS COMPANY

BOTTOM HOLE ASSEMBLY	2

WELL INFORMATION			DIRECTIONAL RESPONSE					BIT INFO.	
OIL COMPANY	Oasis Petroleum		Date:	IN	OUT	CHANGE RATE		SIZE	6"
RIG #:	Nabors B-27		DATE	2/27/2015				TYPE	T406X
LOCATION	McKenzie Co, ND		DEPTH (MD)	16656				JETS	6 x 18's
WELL	mma Federal 5300 41-31		DEPTH (TVD)	10928				SER #	7155695
JOB NUMBER	8527		INCLINATION	87.7				FEET	- 16656
MWD SUPERVISOR	David Foley	Carlo Marrufo	AZIMUTH	89.3				HOURS	
CUSTOMER OFFICE CONTACT			SLIDE PERCENT					ROP	
CUSTOMER WELLSITE SUPERVISOR	RICHARD CEYNAR		MUD-WT.-TYPE	Saltwater				DULL	
OBJECTIVE:	Run 2. Drill Lateral.								
								Pin-CL	1.68
COMMENTS:	Bit to Sensor:		68	Bit to Gamma:		56		CL--Box	3.22

ITEM #	TOOL	COMPANY	SER. #	CONN. UP	CONN. DOWN	O.D.	I.D.	FISH NECK	BLADE O.D.	LENGTH	SUBTOTAL
	BIT	BAKER	7155695			6"				1.00	1.00
	MUD MOTOR	BAKER	13395423			4 3/4"				32.84	33.84
	NM PONY COLLAR	RYAN	DR8426	3 1/2" IF	3 1/2" IF	4 5/8"	2 11/16"			9.16	43.00
	UBHO (NON MAG)	RYAN	RY8779	3 1/2" IF	3 1/2" IF	4 5/8"	2 3/4"			4.90	47.90
	NMDC	RYAN	RY4751686	3 1/2" IF	3 1/2" IF	4 3/4"	2 5/8"			30.77	78.67
	NMDC	RYAN	RY4751729	3 1/2" IF	3 1/2" IF	4 11/16"	2 11/16"			30.20	108.87
	XO	RIG		XT-39	3 1/2" IF					3.12	111.99
										TOTAL	111.99

RYAN DIRECTIONAL SERVICES, INC.

A NABORS COMPANY

BOTTOM HOLE ASSEMBLY	3

WELL INFORMATION		DIRECTIONAL RESPONSE				BIT INFO.	
OIL COMPANY	Oasis Petroleum	Date:	IN	OUT	CHANGE RATE	SIZE	6"
RIG #:	Nabors B-27	DATE	2/27/2015			TYPE	T406X
LOCATION	McKenzie Co, ND	DEPTH (MD)	16656			JETS	6 x 18's
WELL	mma Federal 5300 41-31	DEPTH (TVD)	10928			SER #	7155695
JOB NUMBER	8527	INCLINATION	87.7			FEET	- 16656
MWD SUPERVISOR	David Foley | Caito Marrufo	AZIMUTH	89.3			HOURS	
CUSTOMER OFFICE CONTACT		SLIDE PERCENT				ROP	
CUSTOMER WELLSITE SUPERVISOR	RICHARD CEYNAR	MUD-WT.-TYPE	Saltwater			DULL	
OBJECTIVE:	Run 3. Drill Lateral.						
						Pin-CL	3.22
COMMENTS:	Bit to Sensor:	67	Bit to Gamma:	56		CL--Box	1.68

ITEM #	TOOL	COMPANY	SER. #	CONN. UP	CONN. DOWN	O.D.	I.D.	FISH NECK	BLADE O.D.	LENGTH	SUBTOTAL
	BIT	BAKER	7155695			6"				1.00	1.00
	MUD MOTOR	BAKER	13395423			4 3/4"				32.84	33.84
	NM PONY COLLAR	RYAN	DR8426	3 1/2" IF	3 1/2" IF	4 5/8"	2 11/16"			9.16	43.00
	UBHO (NON MAG)	RYAN	RY8780	3 1/2" IF	3 1/2" IF	4 5/8"	2 3/4"			4.86	47.86
	NMDC	RYAN	RY4751686	3 1/2" IF	3 1/2" IF	4 3/4"	2 5/8"			30.77	78.63
	NMDC	RYAN	RY4751729	3 1/2" IF	3 1/2" IF	4 11/16"	2 11/16"			30.20	108.83
	XO	RIG		XT-39	3 1/2" IF					3.12	111.95
										TOTAL	111.95

Preceding pages: Vertical, curve, and lateral BHA's

6.0 SUMMARY AND CONCLUSION

Gramma Federal 5300 41-31 13T is an east lateral Three Forks well located in SW SW SEC 31, T153N, R100W, 713' FSL & 320' FWL, McKenzie County, North Dakota. The well was drilled to completion at 17:30 hours, 3/02/2015. The projected bottom hole location is: SE SE SEC 32, T153N, R100W, McKenzie County, North Dakota, with a projected TVD of 10,932.98'.

The targeted pay zone for the wellbore was a window within the Three Forks first bench. This window extended from 13' to 24' below the top of the Three Forks. The anticipated dip of the formation was 0.5 degrees down overall, with a possibly dip reversal structure between 16000' MD and 17500' MD. Anticipated dip was based on a subsurface structure map provided by Oasis Petroleum, and nearby laterals. Our primary offset GR TVD log was from the Gramma Federal 5300 41-31 31T, located on the same pad, 33' to the south. From this offset log the Three Forks was determined to be approximately 26' feet thick

The formation had an average dip of 89.6 degrees. The anticipated dip reversal was encountered. We did see a flattening to 90.1 degrees between 16000' and 17500'. Gas readings and oil shows were best in the lower 5'-6' of the Three Forks "A".

Currently the well is awaiting completion.

Mark Miller, Adam Harris, Well-Site Geologists
Columbine Logging, Inc.
602 S. Lipan St.
Denver CO 80223
(303) 289-7764

APPENDIX A:

Vertical/Curve Section Geology:

Otter @ 8230' MD; 8230' TVD
Figure A.1, Otter

Kibbey @ 8460' MD; 8459' TVD
Figure A.2, Kibbey

Charles@ 8610'MD; 8609' TVD
Figure A.3, Charles

UB @ 9213’ MD, 9212’ TVD
Figure A.4, UB

Base of Last Charles Salt @ 9276’ MD; 9275 TVD
Figure A.5, Base of Last Charles Salt

Ratcliffe @ 9313’ MD; 9312 'TVD
Figure A.6, Ratcliffe

Mission Canyon @ 9492' MD; 9491' TVD
Figure A.7, Mission Canyon

Lodgepole @ 10032' MD; 10031 TVD
Figure A.8, Lodgepole

Lodgepole A @ 10137' MD; 10136' TVD
Figure A.9, Lodgepole A

Lodgepole B @ 10280' MD; 10279'TVD
Figure A.10, Lodgepole B

Lodgepole C @ 10340' MD; 10339' TVD
Figure A.11, Lodgepole C

Lodgepole D @ 10450' MD; 10447' TVD
Figure A.12, Lodgepole D

Lodgepole E @ 10652' MD; 10629' TVD
Figure A.13, Lodgepole E

Lodgepole F @ 10726' MD; 10685' TVD
Figure A.14, Lodgepole F

False Bakken@ 10855' MD; 10769 TVD
Figure A.15, False Bakken

Upper Bakken Shale @ 10872' MD; 10779' TVD
Figure A.16, Upper Bakken Shale

Middle Bakken@ 10906' MD; 10797' TVD

Figure A.17, Middle Bakken

Lower Bakken Shale @ 10990' MD, 10833' TVD

Figure A.18 Lower Bakken Shale

Pronghorn @ 11012' MD, 10840' TVD

Figure A.19 Pronghorn

Three Forks @ 11082' MD, 10862' TVD

Figure A.20 Three Forks

29317

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

January 8, 2016

Michael Kukuk
OASIS PETRO NO AMER
1001 FANNIN ST. SUITE 1500
HOUSTON, TX 77002

RE: See Attached List of Wells
List Reference WF# 29317

Dear Michael Kukuk:

We have not received the geological reports on the referenced well list. Please submit one paper copy and one digital pdf file of this report for each well.

If you have any questions, please contact Richard Suggs at (701) 328-8020.

Sincerely,

Taylor Roth
Engineering Technician

ENSECO
Directional Drilling

Directional Survey Certification

Operator: Oasis Petroleum LLC **Well Name:** Gramma Federal 5300 41-31 13T2 **API:** 33-053-06232

Enseco Job#: S14065-02 **Job Type:** MWD D&I **County, State:** McKenzie County, N. Dakota

Well Surface Hole Location (SHL): Lot 4 , Sec. 31, T153N, R100W (713' FSL & 320 FWL)

Latitude: 48° 01' 34.88 N **Longitude:** 103° 36' 10.35 W **Datum:** Nad 83

Final MWD Report Date: Dec. 25, 2014 **MWD Survey Run Date:** Dec. 23, 2014 to Dec. 24, 2014

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

MWD Surveyed from 00 **ft to** 2,261.0 **ft MD** **Survey Type:** Positive Pulse D&I MWD **Sensor to Bit:** 39 **ft**

Rig Contractor: Nabors **Rig Number:** B25 **RKB Height:** 2,183.0 **ft** **GL Elevation:** 2,158.0 **ft**

MWD Surveyor Name: Brett McClain

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

Jonathan Hovland, Well Planner	Jonathan Hovland	January 2nd 2015
Enseco Representative Name, Title	**Signature**	**Date Signed**

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

Seal: _____ _____

Notary Public **Commission Expiry**

Enseco Survey Report

02 January, 2015

Oasis Petroleum LLC

McKenzie County, North Dakota
Lot 4 Sec.31 Twp.153N Rge,100W
Gramma Federal 5300 41-31 13T2
Job # S14065-02
API#: 33-053-06232

Survey: Final Surveys Vertical Section

Company:	Oasis Petroleum LLC	**Local Co-ordinate Reference:**	Well Gramma Federal 5300 41-31 13T2
Project:	McKenzie County, North Dakota	**Ground Level Elevation:**	2,158.00usft
Site:	Lot 4 Sec.31 Twp.153N Rge,100W	**Wellhead Elevation:**	KB 25 @ 2183.00usft (Nabors B25)
Well:	Gramma Federal 5300 41-31 13T2	**North Reference:**	True
Wellbore:	Job # S14065-02	**Survey Calculation Method:**	Minimum Curvature
Design:	Final Surveys Vertical Section	**Database:**	EDM5000

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

Site	Lot 4 Sec.31 Twp.153N Rge,100W				
Site Position:		**Northing:**	389,608.43 usft	**Latitude:**	48° 1' 34.220 N
From:	Lat/Long	**Easting:**	1,209,450.86 usft	**Longitude:**	103° 36' 10.350 W
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-2.309°

Well	Gramma Federal 5300 41-31 13T2 | API#: 33-053-06232				
Well Position	**+N/-S** 66.88 usft	**Northing:**	389,675.25 usft	**Latitude:**	48° 1' 34.880 N
	+E/-W 0.00 usft	**Easting:**	1,209,453.55 usft	**Longitude:**	103° 36' 10.350 W
Position Uncertainty	0.00 usft	**Wellhead Elevation:**	2,183.00 usft	**Ground Level:**	2,158.00usft

Wellbore	Job # S14065-02				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	1/2/2015	8.169	72.928	56,355

Design:	Final Surveys Vertical Section	**Survey Error Model:**	Standard ISCWSA MWD Tool
Audit Notes:			
Version:	1.0	**Phase:** ACTUAL	**Tie On Depth:** 0.00

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.00	0.00	0.00	286.38

Company:	Oasis Petroleum LLC	**Local Co-ordinate Reference:**	Well Gramma Federal 5300 41-31 13T2
Project:	McKenzie County, North Dakota	**Ground Level Elevation:**	2,158.00usft
Site:	Lot 4 Sec.31 Twp.153N Rge,100W	**Wellhead Elevation:**	KB 25 @ 2183.00usft (Nabors B25)
Well:	Gramma Federal 5300 41-31 13T2	**North Reference:**	True
Wellbore:	Job # S14065-02	**Survey Calculation Method:**	Minimum Curvature
Design:	Final Surveys Vertical Section	**Database:**	EDM5000

Survey

MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
Tie-in from Surface										
0.00	**0.00**	**0.00**	**0.00**	**2,183.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
155.00	0.50	289.60	155.00	2,028.00	0.23	-0.64	0.68	0.32	0.32	0.00
246.00	0.50	269.50	245.99	1,937.01	0.36	-1.41	1.45	0.19	0.00	-22.09
339.00	0.50	270.60	338.99	1,844.01	0.36	-2.22	2.23	0.01	0.00	1.18
427.00	0.20	248.80	426.99	1,756.01	0.31	-2.75	2.72	0.37	-0.34	-24.77
516.00	0.00	282.90	515.99	1,667.01	0.25	-2.89	2.84	0.22	-0.22	0.00
604.00	0.40	188.50	603.99	1,579.01	-0.05	-2.94	2.80	0.45	0.45	0.00
693.00	0.50	190.80	692.99	1,490.01	-0.74	-3.06	2.72	0.11	0.11	2.58
780.00	0.40	153.50	779.98	1,403.02	-1.39	-2.99	2.48	0.35	-0.11	-42.87
866.00	0.50	161.60	865.98	1,317.02	-2.01	-2.74	2.06	0.14	0.12	9.42
955.00	0.50	213.60	954.98	1,228.02	-2.70	-2.83	1.95	0.49	0.00	58.43
1,043.00	0.40	282.20	1,042.98	1,140.02	-2.96	-3.34	2.37	0.58	-0.11	77.95
1,130.00	0.40	20.60	1,129.97	1,053.03	-2.61	-3.53	2.65	0.70	0.00	113.10
1,220.00	0.40	52.90	1,219.97	963.03	-2.13	-3.17	2.44	0.25	0.00	35.89
1,311.00	0.40	70.90	1,310.97	872.03	-1.83	-2.62	2.00	0.14	0.00	19.78
1,398.00	0.40	282.20	1,397.97	785.03	-1.67	-2.63	2.05	0.89	0.00	-170.92
1,481.00	0.50	311.30	1,480.97	702.03	-1.37	-3.18	2.67	0.30	0.12	35.06
1,569.00	0.50	276.90	1,568.96	614.04	-1.07	-3.85	3.40	0.34	0.00	-39.09
1,656.00	0.20	225.60	1,655.96	527.04	-1.13	-4.34	3.85	0.47	-0.34	-58.97
1,743.00	0.70	347.60	1,742.96	440.04	-0.72	-4.56	4.18	0.95	0.57	140.23
1,830.00	0.50	327.90	1,829.96	353.04	0.12	-4.88	4.72	0.33	-0.23	-22.64
1,918.00	0.50	312.80	1,917.95	265.05	0.71	-5.36	5.35	0.15	0.00	-17.16
2,005.00	0.40	356.00	2,004.95	178.05	1.27	-5.66	5.79	0.40	-0.11	49.66
2,091.00	0.40	293.10	2,090.95	92.05	1.69	-5.96	6.19	0.49	0.00	-73.14
2,181.00	0.20	158.10	2,180.95	2.05	1.67	-6.19	6.41	0.62	-0.22	-150.00
Last MWD Survey										
2,261.00	**0.40**	**39.60**	**2,260.95**	**-77.95**	**1.75**	**-5.96**	**6.21**	**0.66**	**0.25**	**-148.12**

Survey Annotations

MD (usft)	TVD (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
0.00	0.00	0.00	0.00	Tie-in from Surface
2,261.00	2,260.95	1.75	-5.96	Last MWD Survey

RYAN DIRECTIONAL SERVICES, INC.
A NABORS COMPANY

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

Wednesday, March 04, 2015

State of North Dakota

Subject: **Surveys**

Re: **Oasis**
Gramma Federal 5300 41-31 13T
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*
David Foley	MWD Operator	O.H.	2261'	20483'	01/21/15	03/03/15	MWD	20550'

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

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

Monday, March 02, 2015

State of North Dakota
County of MCKENZIE

Subject: **Survey Certification Letter**

Survey Company:	**Ryan Directional Services, Inc.**		
Job Number:	**8527**	Surface:	**48° 1' 34.880 N / 103° 36' 10.350 W**
Survey Job Type:	**Ryan MWD**	A.P.I. No:	**33-053-06232**
Customer:	**OASIS PETROLEUM**	Location:	**MCKENZIE, ND**
Well Name:	**Gramma Federal 5300 41-31 13T**	RKB Height:	**2183'**
Rig Name:	**NABORS B27**	Distance to Bit:	**67'**

Surveyor Name	*Surveyor Title*	*Borehole Number*	*Start Depth*	*End Depth*	*Start Date*	*End Date*	*Type of*	*TD Straight Line Projection*
David Foley	MWD Supervisor	OH	2261'	20483'	01/21/15	03/03/15	MWD	20550'

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.

David Foley
MWD Supervisor
Ryan Directional Services, Inc.

Report #: 1

Date: 28-Feb-15

RYAN DIRECTIONAL SERVICES, INC.

A NABORS COMPANY

Ryan Job # 8527

SURVEY REPORT

Customer: OASIS PETROLEUM

Well Name: Gramma Federal 5300 41-31 13T

Rig #: NABORS B27

API #: 33-053-06232

Calculation Method: Minimum Curvature Calculation

MWD Operator: D Foley/J Lanclos

Directional Drillers: RPM

Survey Corrected To: True North

Vertical Section Direction: 90

Total Correction: 8.38

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	**2261**	**0.40**	**39.60**		**2260.95**	**-5.89**	**1.75**	**-5.96**	
1	2376	0.60	29.10	66.00	2375.94	-5.41	2.59	-5.41	0.19
2	2470	0.50	38.90	69.00	2469.94	-4.92	3.34	-4.92	0.15
3	2564	0.70	40.40	75.00	2563.93	-4.29	4.09	-4.29	0.21
4	2658	0.80	29.70	77.00	2657.92	-3.59	5.10	-3.59	0.18
5	**2752**	**1.10**	**28.10**	**78.00**	**2751.91**	**-2.84**	**6.47**	**-2.84**	**0.32**
6	2847	1.20	42.80	82.00	2846.89	-1.73	8.00	-1.73	0.33
7	2941	1.30	58.70	84.00	2940.87	-0.15	9.28	-0.15	0.38
8	3035	1.30	68.80	86.00	3034.85	1.75	10.22	1.75	0.24
9	3129	1.40	69.00	87.00	3128.82	3.82	11.01	3.82	0.11
10	**3223**	**0.60**	**333.70**	**91.00**	**3222.81**	**4.67**	**11.87**	**4.67**	**1.67**
11	3318	0.80	306.20	95.00	3317.80	3.92	12.70	3.92	0.41
12	3412	0.70	290.60	96.00	3411.79	2.85	13.29	2.85	0.24
13	3506	0.70	306.30	100.00	3505.79	1.85	13.84	1.85	0.20
14	3600	0.90	289.60	102.00	3599.78	0.69	14.42	0.69	0.32
15	**3694**	**0.80**	**295.10**	**104.00**	**3693.77**	**-0.60**	**14.95**	**-0.60**	**0.14**
16	3788	0.40	302.20	107.00	3787.76	-1.47	15.40	-1.47	0.43
17	3882	0.40	302.20	107.00	3881.76	-2.03	15.75	-2.03	0.00
18	3976	0.20	336.00	110.00	3975.76	-2.37	16.08	-2.37	0.28
19	4071	0.10	345.20	113.00	4070.76	-2.46	16.31	-2.46	0.11
20	**4165**	**0.30**	**312.80**	**114.00**	**4164.76**	**-2.66**	**16.55**	**-2.66**	**0.24**
21	4259	0.30	327.70	116.00	4258.76	-2.97	16.93	-2.97	0.08
22	4353	0.30	354.30	118.00	4352.76	-3.13	17.38	-3.13	0.15
23	4448	0.40	15.10	114.00	4447.75	-3.07	17.95	-3.07	0.17
24	4542	0.60	20.90	118.00	4541.75	-2.81	18.73	-2.81	0.22
25	**4636**	**0.70**	**39.40**	**122.00**	**4635.74**	**-2.27**	**19.63**	**-2.27**	**0.25**
26	4730	0.80	40.20	122.00	4729.74	-1.48	20.58	-1.48	0.11
27	4824	0.80	48.00	124.00	4823.73	-0.57	21.52	-0.57	0.12
28	4919	0.90	59.90	125.00	4918.72	0.57	22.33	0.57	0.21
29	5013	0.90	71.80	127.00	5012.71	1.91	22.93	1.91	0.20
30	**5107**	**1.00**	**82.20**	**129.00**	**5106.69**	**3.43**	**23.28**	**3.43**	**0.21**
31	5201	1.20	97.70	129.00	5200.68	5.21	23.26	5.21	0.38
32	5295	1.60	99.50	127.00	5294.65	7.48	22.91	7.48	0.43
33	5389	0.70	112.60	129.00	5388.63	9.31	22.47	9.31	0.99
34	5483	0.60	124.00	131.00	5482.62	10.25	21.97	10.25	0.17
35	**5577**	**0.70**	**114.50**	**132.00**	**5576.62**	**11.18**	**21.46**	**11.18**	**0.16**
36	5672	0.70	112.50	136.00	5671.61	12.24	21.00	12.24	0.03
37	5765	0.70	87.90	140.00	5764.60	13.33	20.80	13.33	0.32
38	5859	0.80	82.30	141.00	5858.59	14.56	20.91	14.56	0.13
39	5948	0.90	93.50	147.00	5947.58	15.87	20.95	15.87	0.22
40	**6037**	**0.80**	**102.80**	**98.00**	**6036.57**	**17.18**	**20.77**	**17.18**	**0.19**
41	6131	0.60	280.60	104.00	6130.57	17.33	20.72	17.33	1.49
42	6225	0.40	326.40	111.00	6224.57	16.67	21.08	16.67	0.46
43	6319	0.60	16.40	116.00	6318.56	16.62	21.83	16.62	0.49
44	6414	0.80	42.10	120.00	6413.56	17.21	22.79	17.21	0.39
45	**6508**	**0.60**	**18.70**	**123.00**	**6507.55**	**17.81**	**23.75**	**17.81**	**0.37**
46	6602	0.40	24.60	129.00	6601.55	18.10	24.51	18.10	0.22
47	6696	0.90	51.20	132.00	6695.54	18.81	25.27	18.81	0.61
48	6791	1.20	330.70	136.00	6790.53	18.91	26.61	18.91	1.45
49	6885	1.50	337.00	140.00	6884.50	17.94	28.60	17.94	0.36
50	**6979**	**1.70**	**345.30**	**141.00**	**6978.47**	**17.11**	**31.08**	**17.11**	**0.33**
51	7073	1.80	348.30	143.00	7072.42	16.46	33.87	16.46	0.14
52	7167	1.50	348.40	145.00	7166.38	15.91	36.53	15.91	0.32
53	7261	1.60	351.10	147.00	7260.35	15.46	39.03	15.46	0.13
54	7356	1.50	357.30	149.00	7355.31	15.20	41.58	15.20	0.21
55	**7450**	**1.60**	**357.90**	**150.00**	**7449.28**	**15.09**	**44.12**	**15.09**	**0.11**
56	7544	1.80	354.40	152.00	7543.24	14.90	46.90	14.90	0.24
57	7638	1.30	281.50	150.00	7637.21	13.71	48.58	13.71	2.01
58	7732	1.50	283.00	154.00	7731.18	11.47	49.07	11.47	0.22
59	7827	1.70	289.20	156.00	7826.15	8.92	49.82	8.92	0.28
60	**7921**	**1.40**	**280.30**	**158.00**	**7920.11**	**6.48**	**50.48**	**6.48**	**0.41**

Report #: 1
Date: 28-Feb-15

RYAN DIRECTIONAL SERVICES, INC.
A NABORS COMPANY

Ryan Job # 8527

SURVEY REPORT

Customer: OASIS PETROLEUM
Well Name: Gramma Federal 5300 41-31 13T
Rig #: NABORS B27
API #: 33-053-06232
Calculation Method: Minimum Curvature Calculation

MWD Operator: D Foley/J Lanclos
Directional Drillers: RPM
Survey Corrected To: True North
Vertical Section Direction: 90
Total Correction: 8.38
Temperature Forecasting Model (Chart Only): Logarithmic

Survey #	MD	Inc	Azm	Temp	TVD	VS	N/S	E/W	DLS
61	8015	1.10	269.20	159.00	8014.09	4.44	50.67	4.44	0.41
62	8109	0.80	253.20	161.00	8108.08	2.91	50.47	2.91	0.42
63	8204	0.70	256.40	163.00	8203.07	1.71	50.14	1.71	0.11
64	8298	0.70	264.20	163.00	8297.06	0.59	49.95	0.59	0.10
65	**8392**	**0.70**	**247.20**	**163.00**	**8391.06**	**-0.52**	**49.67**	**-0.52**	**0.22**
66	8486	0.70	249.30	163.00	8485.05	-1.58	49.24	-1.58	0.03
67	8580	0.60	240.60	163.00	8579.04	-2.55	48.80	-2.55	0.15
68	8675	0.40	219.10	163.00	8674.04	-3.19	48.30	-3.19	0.29
69	8769	0.40	200.10	165.00	8768.04	-3.51	47.73	-3.51	0.14
70	**8863**	**0.40**	**215.80**	**165.00**	**8862.03**	**-3.81**	**47.16**	**-3.81**	**0.12**
71	8958	0.30	249.40	167.00	8957.03	-4.24	46.80	-4.24	0.24
72	9052	0.10	227.50	168.00	9051.03	-4.53	46.66	-4.53	0.22
73	9146	0.30	253.00	170.00	9145.03	-4.83	46.53	-4.83	0.23
74	9240	0.40	209.20	170.00	9239.03	-5.22	46.17	-5.22	0.29
75	**9335**	**0.20**	**212.40**	**170.00**	**9334.03**	**-5.47**	**45.75**	**-5.47**	**0.21**
76	9429	0.10	236.30	174.00	9428.03	-5.63	45.56	-5.63	0.12
77	9523	0.10	205.00	177.00	9522.03	-5.73	45.44	-5.73	0.06
78	9618	0.30	199.60	179.00	9617.03	-5.85	45.13	-5.85	0.21
79	9712	0.40	176.10	179.00	9711.03	-5.91	44.57	-5.91	0.18
80	**9806**	**0.40**	**179.30**	**183.00**	**9805.02**	**-5.89**	**43.92**	**-5.89**	**0.02**
81	9900	0.40	183.10	183.00	9899.02	-5.90	43.26	-5.90	0.03
82	9995	0.30	232.00	177.00	9994.02	-6.11	42.78	-6.11	0.32
83	10089	0.30	246.70	183.00	10088.02	-6.53	42.53	-6.53	0.08
84	10183	0.30	234.00	185.00	10182.02	-6.96	42.29	-6.96	0.07
85	**10277**	**0.30**	**203.80**	**185.00**	**10276.02**	**-7.26**	**41.92**	**-7.26**	**0.17**
86	10293	0.30	213.80	163.00	10292.02	-7.30	41.84	-7.30	0.33
87	10325	0.80	78.90	167.00	10324.01	-7.12	41.82	-7.12	3.23
88	10356	4.40	76.90	168.00	10354.98	-5.75	42.13	-5.75	11.61
89	10388	8.50	77.20	170.00	10386.77	-2.25	42.93	-2.25	12.81
90	**10419**	**12.70**	**77.90**	**174.00**	**10417.23**	**3.32**	**44.15**	**3.32**	**13.55**
91	10450	16.10	80.30	174.00	10447.25	10.89	45.59	10.89	11.13
92	10482	19.90	81.50	174.00	10477.68	20.65	47.15	20.65	11.93
93	10513	23.30	81.60	177.00	10506.50	31.94	48.82	31.94	10.97
94	10544	25.50	80.80	176.00	10534.73	44.59	50.78	44.59	7.18
95	**10576**	**28.50**	**80.30**	**176.00**	**10563.24**	**58.92**	**53.17**	**58.92**	**9.40**
96	10607	31.50	79.60	176.00	10590.08	74.18	55.88	74.18	9.74
97	10639	33.10	79.50	174.00	10617.13	91.00	58.98	91.00	5.00
98	10670	36.00	79.70	170.00	10642.66	108.29	62.15	108.29	9.36
99	10701	40.30	79.50	179.00	10667.03	127.12	65.61	127.12	13.88
100	**10733**	**42.90**	**79.70**	**177.00**	**10690.96**	**148.01**	**69.45**	**148.01**	**8.14**
101	10764	46.30	80.10	179.00	10713.03	169.44	73.26	169.44	11.01
102	10795	51.10	80.50	183.00	10733.48	192.39	77.18	192.39	15.51
103	10827	53.80	80.10	183.00	10752.99	217.39	81.46	217.39	8.50
104	10858	54.40	79.60	181.00	10771.16	242.11	85.88	242.11	2.34
105	**10890**	**57.40**	**77.40**	**183.00**	**10789.10**	**268.07**	**91.17**	**268.07**	**10.97**
106	10921	61.50	75.40	183.00	10804.86	294.01	97.46	294.01	14.34
107	10952	65.60	75.30	183.00	10818.66	320.85	104.48	320.85	13.23
108	10984	69.70	75.10	185.00	10830.83	349.46	112.04	349.46	12.83
109	11015	70.10	74.80	185.00	10841.48	377.58	119.60	377.58	1.58
110	**11046**	**70.90**	**75.00**	**185.00**	**10851.83**	**405.79**	**127.21**	**405.79**	**2.65**
111	11078	75.30	76.40	186.00	10861.13	435.45	134.76	435.45	14.37
112	11109	77.80	76.40	186.00	10868.34	464.75	141.85	464.75	8.06
113	11140	78.50	76.30	186.00	10874.71	494.24	149.01	494.24	2.28
114	11172	82.30	77.50	188.00	10880.04	524.96	156.16	524.96	12.44
115	**11203**	**86.80**	**79.00**	**190.00**	**10882.99**	**555.17**	**162.44**	**555.17**	**15.29**
116	11230	89.70	79.70	190.00	10883.81	581.68	167.43	581.68	11.05
117	11307	91.20	77.90	224.00	10883.21	657.21	182.38	657.21	3.04
118	11338	91.60	78.40	221.00	10882.45	687.54	188.75	687.54	2.07
119	11368	91.60	79.00	221.00	10881.61	716.95	194.62	716.95	2.00
120	**11399**	**91.70**	**81.00**	**217.00**	**10880.72**	**747.46**	**200.00**	**747.46**	**6.46**

Report #: 1
Date: 28-Feb-15

RYAN DIRECTIONAL SERVICES, INC.
A NABORS COMPANY

Ryan Job # 8527

SURVEY REPORT

Customer: OASIS PETROLEUM
Well Name: Gramma Federal 5300 41-31 13T
Rig #: NABORS B27
API #: 33-053-06232
Calculation Method: Minimum Curvature Calculation

MWD Operator: D Foley/J Lanclos
Directional Drillers: RPM
Survey Corrected To: True North
Vertical Section Direction: 90
Total Correction: 8.38
Temperature Forecasting Model (Chart Only): Logarithmic

Survey #	MD	Inc	Azm	Temp	TVD	VS	N/S	E/W	DLS
121	11430	91.10	81.60	217.00	10879.96	778.10	204.69	778.10	2.74
122	11460	89.10	82.60	215.00	10879.91	807.81	208.81	807.81	7.45
123	11491	88.70	83.40	213.00	10880.50	838.57	212.59	838.57	2.88
124	11523	87.30	84.90	213.00	10881.62	870.39	215.85	870.39	6.41
125	**11555**	**87.00**	**87.00**	**213.00**	**10883.21**	**902.26**	**218.11**	**902.26**	**6.62**
126	11586	88.00	89.50	215.00	10884.56	933.22	219.05	933.22	8.68
127	11682	90.20	91.20	219.00	10886.07	1029.19	218.47	1029.19	2.90
128	11778	89.80	91.60	221.00	10886.07	1125.16	216.12	1125.16	0.59
129	11809	90.00	91.70	221.00	10886.13	1156.15	215.23	1156.15	0.72
130	**11873**	**91.60**	**92.40**	**221.00**	**10885.23**	**1220.10**	**212.94**	**1220.10**	**2.73**
131	11969	88.50	90.30	222.00	10885.15	1316.06	210.68	1316.06	3.90
132	12064	89.00	90.30	226.00	10887.22	1411.03	210.18	1411.03	0.53
133	12160	90.20	91.30	226.00	10887.89	1507.02	208.84	1507.02	1.63
134	12191	89.10	91.40	226.00	10888.08	1538.01	208.11	1538.01	3.56
135	**12255**	**89.10**	**91.30**	**228.00**	**10889.09**	**1601.98**	**206.60**	**1601.98**	**0.16**
136	12287	89.80	91.50	230.00	10889.39	1633.97	205.82	1633.97	2.28
137	12350	91.50	92.50	228.00	10888.68	1696.93	203.62	1696.93	3.13
138	12446	91.00	91.90	228.00	10886.58	1792.83	199.94	1792.83	0.81
139	12541	89.20	90.40	230.00	10886.42	1887.81	198.03	1887.81	2.47
140	**12573**	**88.10**	**90.20**	**231.00**	**10887.17**	**1919.80**	**197.86**	**1919.80**	**3.49**
141	12636	89.20	90.10	231.00	10888.66	1982.78	197.70	1982.78	1.75
142	12732	90.80	90.20	233.00	10888.66	2078.78	197.45	2078.78	1.67
143	12827	89.90	89.80	233.00	10888.08	2173.77	197.45	2173.77	1.04
144	12923	88.60	87.70	233.00	10889.33	2269.73	199.54	2269.73	2.57
145	**13018**	**88.30**	**87.70**	**235.00**	**10891.90**	**2364.62**	**203.35**	**2364.62**	**0.32**
146	13114	89.50	88.00	235.00	10893.75	2460.54	206.95	2460.54	1.29
147	13209	89.00	89.20	235.00	10894.99	2555.50	209.27	2555.50	1.37
148	13305	90.60	89.40	239.00	10895.32	2651.49	210.45	2651.49	1.68
149	13400	89.00	88.30	237.00	10895.66	2746.46	212.35	2746.46	2.04
150	**13496**	**88.90**	**89.80**	**239.00**	**10897.41**	**2842.43**	**213.95**	**2842.43**	**1.57**
151	13591	88.80	90.50	239.00	10899.32	2937.41	213.70	2937.41	0.74
152	13686	90.20	89.80	240.00	10900.15	3032.40	213.45	3032.40	1.65
153	13782	90.40	90.70	237.00	10899.65	3128.40	213.03	3128.40	0.96
154	13877	88.80	91.30	235.00	10900.31	3223.38	211.37	3223.38	1.80
155	**13973**	**87.20**	**91.00**	**239.00**	**10903.66**	**3319.30**	**209.45**	**3319.30**	**1.70**
156	14068	87.30	91.20	233.00	10908.22	3414.17	207.62	3414.17	0.24
157	14164	88.50	91.60	233.00	10911.74	3510.08	205.28	3510.08	1.32
158	14259	90.20	91.30	235.00	10912.81	3605.04	202.88	3605.04	1.82
159	14355	89.50	90.30	239.00	10913.07	3701.02	201.54	3701.02	1.27
160	**14450**	**89.00**	**90.60**	**240.00**	**10914.31**	**3796.01**	**200.79**	**3796.01**	**0.61**
161	14546	88.90	91.00	242.00	10916.07	3891.99	199.45	3891.99	0.43
162	14641	88.80	90.90	237.00	10917.98	3986.96	197.88	3986.96	0.15
163	14736	90.80	90.80	240.00	10918.31	4081.94	196.47	4081.94	2.11
164	14832	90.60	89.80	240.00	10917.13	4177.93	195.96	4177.93	1.06
165	**14927**	**90.70**	**90.00**	**242.00**	**10916.06**	**4272.92**	**196.13**	**4272.92**	**0.24**
166	15023	89.30	89.90	242.00	10916.06	4368.92	196.21	4368.92	1.46
167	15118	88.70	89.20	246.00	10917.71	4463.90	196.96	4463.90	0.97
168	15214	90.10	89.90	244.00	10918.72	4559.89	197.71	4559.89	1.63
169	15309	89.40	89.40	246.00	10919.13	4654.89	198.29	4654.89	0.91
170	**15404**	**88.20**	**88.80**	**248.00**	**10921.12**	**4749.85**	**199.78**	**4749.85**	**1.41**
171	15500	90.80	88.70	246.00	10921.96	4845.82	201.88	4845.82	2.71
172	15595	89.00	87.50	248.00	10922.13	4940.76	205.03	4940.76	2.28
173	15691	89.20	88.40	246.00	10923.64	5036.69	208.46	5036.69	0.96
174	15786	90.00	88.40	249.00	10924.30	5131.65	211.11	5131.65	0.84
175	**15882**	**88.90**	**88.40**	**251.00**	**10925.22**	**5227.60**	**213.79**	**5227.60**	**1.15**
176	15977	89.20	89.90	249.00	10926.79	5322.58	215.20	5322.58	1.61
177	16073	89.70	90.80	249.00	10927.72	5418.57	214.62	5418.57	1.07
178	16168	90.50	90.60	249.00	10927.55	5513.56	213.46	5513.56	0.87
179	16264	91.70	89.90	251.00	10925.71	5609.54	213.04	5609.54	1.45
180	**16359**	**91.60**	**90.70**	**249.00**	**10922.97**	**5704.50**	**212.54**	**5704.50**	**0.85**

Report #: 1
Date: 28-Feb-15

RYAN DIRECTIONAL SERVICES, INC.
A NABORS COMPANY

Ryan Job # 8527

SURVEY REPORT

Customer: OASIS PETROLEUM
Well Name: Gramma Federal 5300 41-31 13T
Rig #: NABORS B27
API #: 33-053-06232
Calculation Method: Minimum Curvature Calculation

MWD Operator: D Foley/J Lanclos
Directional Drillers: RPM
Survey Corrected To: True North
Vertical Section Direction: 90
Total Correction: 8.38
Temperature Forecasting Model (Chart Only): Logarithmic

Survey #	MD	Inc	Azm	Temp	TVD	VS	N/S	E/W	DLS
181	16455	87.10	89.00	249.00	10924.06	5800.46	212.79	5800.46	5.01
182	16551	87.70	89.30	249.00	10928.42	5896.35	214.21	5896.35	0.70
183	16647	88.40	88.30	251.00	10931.68	5992.27	216.22	5992.27	1.27
184	16742	89.40	88.90	249.00	10933.51	6087.23	218.54	6087.23	1.23
185	**16838**	**90.00**	**88.80**	**249.00**	**10934.01**	**6183.21**	**220.47**	**6183.21**	**0.63**
186	16933	90.90	88.90	249.00	10933.26	6278.18	222.38	6278.18	0.95
187	17029	91.40	89.20	248.00	10931.34	6374.15	223.97	6374.15	0.61
188	17124	91.90	89.90	248.00	10928.60	6469.11	224.71	6469.11	0.91
189	17220	92.00	90.80	249.00	10925.33	6565.05	224.13	6565.05	0.94
190	**17315**	**91.70**	**92.00**	**248.00**	**10922.27**	**6659.97**	**221.81**	**6659.97**	**1.30**
191	17411	90.50	92.60	251.00	10920.42	6755.87	217.96	6755.87	1.40
192	17507	88.90	91.20	251.00	10920.93	6851.81	214.77	6851.81	2.21
193	17602	88.50	91.30	251.00	10923.08	6946.76	212.70	6946.76	0.43
194	17698	89.10	92.10	253.00	10925.09	7042.70	209.85	7042.70	1.04
195	**17793**	**89.70**	**92.30**	**253.00**	**10926.09**	**7137.62**	**206.21**	**7137.62**	**0.67**
196	17889	89.50	91.70	251.00	10926.76	7233.56	202.86	7233.56	0.66
197	17984	89.80	91.40	251.00	10927.34	7328.53	200.29	7328.53	0.45
198	18080	89.10	90.00	253.00	10928.26	7424.51	199.11	7424.51	1.63
199	18175	89.80	89.70	255.00	10929.17	7519.51	199.36	7519.51	0.80
200	**18271**	**90.40**	**89.20**	**253.00**	**10929.00**	**7615.50**	**200.28**	**7615.50**	**0.81**
201	18366	89.90	89.90	253.00	10928.76	7710.50	201.03	7710.50	0.91
202	18462	89.20	90.40	255.00	10929.51	7806.49	200.78	7806.49	0.90
203	18557	89.10	89.60	255.00	10930.92	7901.48	200.78	7901.48	0.85
204	18653	89.50	89.40	255.00	10932.09	7997.47	201.62	7997.47	0.47
205	**18748**	**90.10**	**88.80**	**257.00**	**10932.42**	**8092.46**	**203.11**	**8092.46**	**0.89**
206	18844	89.90	89.10	255.00	10932.42	8188.44	204.87	8188.44	0.38
207	18940	89.40	89.20	255.00	10933.01	8284.43	206.29	8284.43	0.53
208	19035	88.80	88.40	257.00	10934.50	8379.39	208.28	8379.39	1.05
209	19131	90.20	89.20	257.00	10935.34	8475.37	210.29	8475.37	1.68
210	**19226**	**90.30**	**88.30**	**255.00**	**10934.92**	**8570.34**	**212.36**	**8570.34**	**0.95**
211	19321	90.50	89.10	255.00	10934.26	8665.31	214.52	8665.31	0.87
212	19417	90.50	89.80	253.00	10933.42	8761.31	215.44	8761.31	0.73
213	19512	88.10	90.60	255.00	10934.58	8856.29	215.11	8856.29	2.66
214	19608	88.40	91.70	257.00	10937.52	8952.23	213.18	8952.23	1.19
215	**19703**	**88.80**	**90.90**	**257.00**	**10939.84**	**9047.17**	**211.03**	**9047.17**	**0.94**
216	19799	89.80	90.80	258.00	10941.01	9143.15	209.61	9143.15	1.05
217	19894	90.90	90.30	255.00	10940.43	9238.14	208.69	9238.14	1.27
218	19990	88.30	89.90	255.00	10941.10	9334.13	208.53	9334.13	2.74
219	20085	88.00	88.90	257.00	10944.17	9429.08	209.52	9429.08	1.10
220	**20180**	**92.20**	**91.00**	**257.00**	**10944.00**	**9524.05**	**209.60**	**9524.05**	**4.94**
221	20276	92.60	91.00	253.00	10939.98	9619.95	207.93	9619.95	0.42
222	20371	91.40	91.10	253.00	10936.67	9714.88	206.19	9714.88	1.27
223	20467	91.10	91.30	255.00	10934.57	9810.83	204.18	9810.83	0.38
224	20483	91.10	91.60	255.00	10934.26	9826.82	203.77	9826.82	1.87
Projection	**20550**	**91.10**	**91.60**	**255.00**	**10932.98**	**9893.79**	**201.90**	**9893.79**	**0.00**

SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4

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

JAN 2015 RECEIVED ND OIL & GAS DIVISION

Well File No. **29317**

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

☑ Notice of Intent — Approximate Start Date: **January 14, 2015**

☐ Report of Work Done — Date Work Completed:

☐ Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03. — Approximate Start Date:

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

Well Name and Number				
Gramma Federal 5300 41-31 13T2				
Footages	Qtr-Qtr	Section	Township	Range
713 F S L 320 F W L	Lot 4	31	153 N	100 W
Field	Pool	County		
Baker	Bakken	McKenzie		

24-HOUR PRODUCTION RATE

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

Name of Contractor(s)			
Address	City	State	Zip Code

DETAILS OF WORK

Oasis Petroleum respectfully requests approval to make the following changes to the original APD as follows:

Name Change: Gramma Federal 5300 41-31 13T (previously 13T2)

Formation Change: Three Forks 1st Bench (previously 2nd Bench)

274 FEL NDIC Calc.

BHL change: 918' FSL & 250' FEL Sec 32 T153N R100W
(previously: 1285' FSL & 224' FEL Sec 32 T153N R100W)

Casing Design Change:
~~**Surface Casing of 13 3/8" set at 2,223' (Previously set at 2,230)**~~
Intermediate Casing of 7" set at 11,144' (previously set at 11,232')
Production liner of 4 1/2" set from 10,347' to 20,625' (previously set from 10,419' to 20,858')

See attached supporting documents. CC 25.00 1-16-15 KB CC 25.00

Company		Telephone Number
Oasis Petroleum North America LLC		**(281) 404-9652**
Address		
1001 Fannin Suite 1500		
City	State	Zip Code
Houston	**TX**	**77002**
Signature	Printed Name	
	Victoria Siemieniewski	
Title	Date	
Regulatory Specialist	**January 6, 2015**	
Email Address		
vsiemieniewski@oasispetroleum.com		

FOR STATE USE ONLY

☐ Received ☑ Approved

Date: 1-15-2015

By: David Burns

Title: Engineering Tech.

DRILLING PLAN

OPERATOR	Oasis Petroleum	**COUNTY/STATE**	McKenzie Co., ND
WELL NAME	Gramma Federal 5300 41-31 13T	**RIG**	Nabors B-Series
WELL TYPE	Horizontal Three Forks 1st Bench		
LOCATION	SWSW 31-153N-100W Surface Location (survey plat): 713' fsl 320' fwl		
EST. T.D.	20,625'	**GROUND ELEV:**	2158 Finished Pad Elev. **Sub Height:** 25
	TOTAL LATERAL: 9,481' (est)	**KB ELEV:**	2183

PROGNOSIS: Based on 2,183' KB(est)

MARKER		DEPTH (Surf Loc)	DATUM (Surf Loc)
Pierre	NDIC MAP	2,123	60'
Greenhorn		4,738	-2,555'
Mowry		5,129	-2,946'
Dakota		5,558	-3,375'
Rierdon		6,346	-4,163'
Dunham Salt		6,903	-4,720'
Dunham Salt Base		7,020	-4,837'
Spearfish		7,036	-4,853'
Pine Salt		7,363	-5,180'
Pine Salt Base		7,385	-5,202'
Opeche Salt		7,437	-5,254'
Opeche Salt Base		7,503	-5,320'
Broom Creek (Top of Minnelusa Gp.)		7,669	-5,486'
Amsden		7,734	-5,551'
Tyler		7,878	-5,695'
Otter (Base of Minnelusa Gp.)		8,102	-5,919'
Kibbey		8,400	-6,217'
Charles Salt		8,606	-6,423'
UB		9,202	-7,019'
Base Last Salt		9,278	-7,095'
Ratcliffe		9,313	-7,130'
Mission Canyon		9,488	-7,305'
Lodgepole		10,033	-7,850'
Lodgepole Fracture Zone		10,496	-8,313'
False Bakken		10,765	-8,582'
Upper Bakken		10,776	-8,593'
Middle Bakken		10,792	-8,609'
Lower Bakken		10,831	-8,648'
Pronghorn		10,839	-8,656'
Three Forks 1st Bench		10,858	-8,675'
Three Forks 1st Bench Claystone		10,879	-8,696'
Three Forks 2nd Bench		10,934	-8,751'
Three Forks 2nd Bench Claystone		10,958	-8,775'
Three Forks 3rd Bench		10,994	-8,811'

Dip Rate: -0.3

Max. Anticipated BHP: 4748

LOGS:

Type	Interval
OH Logs: Triple Combo KOP to Kibby (or min run of 1800' whichever is greater); GR/Res to BSC; GR to surf; CND through the Dakota	
CBL/GR: Above top of cement/GR to base of casing	
MWD GR: KOP to lateral TD	

DEVIATION:

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

DST'S:

None planned

CORES:

None planned

MUDLOGGING:

Two-Man: 8,406'
~200' above the Charles (Kibbey) to Casing point; Casing point to TD
30' samples at direction of wellsite geologist; 10' through target @ curve land

BOP:

11" 5000 psi blind, pipe & annular

Surface Formation: *Glacial till*

MUD:	Interval		Type	WT	Vis	WL	Remarks
Surface:	0' -	2,223'	FW	8.4-9.0	28-32	NC	Circ Mud Tanks
Intermediate:	2,223' -	11,144'	Invert	9.5-10.4	40-50	30+HtHp	Circ Mud Tanks
Lateral:	11,144' -	20,625'	Salt Water	9.8-10.2	28-32	NC	Circ Mud Tanks

CASING:	Size	Wt ppf	Hole	Depth		Cement	WOC	Remarks
Surface:	13-3/8"	54.5#	13-1/2"	2,223'		To Surface	12	100' into Pierre
Intermediate (Dakota):	9-5/8"	40#	12-1/4"	6,346'		2223	24	Set Casing across Dakota
Intermediate:	7"	32#	8-3/4"	11,144'		4058	24	TOC 1500' above Dakota
Production Liner:	4.5"	13.5#	6"	20,625'	TOL @ 10,347'			50' above KOP

PROBABLE PLUGS, IF REQ'D:

OTHER:

	MD	TVD	FNL/FSL	FEL/FWL	S-T-R	AZI	
Surface:	2,223	2,223	713' FSL	320' FWL	Sec. 31-T153N-R100W	Survey Company:	
KOP:	10,397'	10,397'	763' FSL	320' FWL	Sec. 31-T153N-R100W	Build Rate:	12 deg /100'
EOC:	11,144'	10,674'	859' FSL	785' FWL	Sec. 31-T153N-R100W	78.4 Turn Rate:	2 deg /100'
Casing Point:	11,144'	10,874'	859' FSL	785' FWL	Sec. 31-T153N-R100W	78.4	
Three Forks Lateral TD:	20,625'	10,924'	918' FSL	250' FEL	Sec. 32-T153N-R100W	90.0	

Comments:

Request Sundry to Waive Open Hole Logs

Justification Well - LOG WAIVER REQUESTED Oasis Petroleum Lewis 5300 31-31H 700' north in sec. 31

No frac string planned

35 packers and 25 sleeves

Oasis Petroleum does not use Diesel Fuel, as defined by the US EPA in the list below, in our hydraulic fracture operations.

68334-30-5 (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 PETROLEUM

Geology: M.Steed 3/18/2014 **Engineering:** DA 12-30-14

Project: Indian Hills
Site: 153N-100W-31/32
Well: Gramma Federal 5300 41-31 13T
Wellbore: Gramma Federal 5300 41-31 13T
Design: Plan #1

OASIS PETROLEUM

WELL DETAILS: Gramma Federal 5300 41-31 13T

Ground Level: 2158.0

Northing	Easting	Latitude	Longitude
389675.24	1209453.55	48° 1' 34.880 N	103° 36' 10.350 W

Azimuths to True North
Magnetic North: 8.29°

Magnetic Field
Strength: 56436.6snT
Dip Angle: 72.97°
Date: 3/28/2014
Model: IGRF2010

CASING DETAILS

TVD	MD	Name	Size
2223.0	2223.0	13 3/8"	13.375
6345.8	6346.0	9 5/8"	9.625
10874.0	11144.2	7"	7.000

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	
2323.0	0.00	0.00	2323.0	0.0	0.0	0.00	
2339.7	0.50	0.00	2339.7	0.1	0.0	3.00	
8052.7	0.50	0.00	8052.4	49.9	0.0	0.00	
8069.3	0.00	0.00	8069.1	50.0	0.0	3.00	
10396.7	0.00	0.00	10396.5	50.0	0.0	0.00	
11144.2	89.70	78.35	10874.0	145.9	465.2	12.00	
11726.7	89.70	90.00	10877.0	204.9	1043.6	2.00	
20625.2	89.70	90.00	10924.0	205.0	9942.0	0.00	Gramma Federal 5300 41-31 13T - PBHL

Oasis

Indian Hills
153N-100W-31/32
Gramma Federal 5300 41-31 13T
T153N R101W SECTION 31
Gramma Federal 5300 41-31 13T

Plan: Plan #1

Standard Planning Report

30 December, 2014

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	**Local Co-ordinate Reference:**	Well Gramma Federal 5300 41-31 13T
Company:	Oasis	**TVD Reference:**	WELL @ 2183.0usft (Original Well Elev)
Project:	Indian Hills	**MD Reference:**	WELL @ 2183.0usft (Original Well Elev)
Site:	153N-100W-31/32	**North Reference:**	True
Well:	Gramma Federal 5300 41-31 13T	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Gramma Federal 5300 41-31 13T		
Design:	Plan #1		

Project Indian Hills

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

Site 153N-100W-31/32

Site Position:		**Northing:**	390,397.86 usft	**Latitude:**	48° 1' 42.010 N
From:	Lat/Long	**Easting:**	1,209,464.32 usft	**Longitude:**	103° 36' 10.620 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13.200 in	**Grid Convergence:**	-2.31 °

Well Gramma Federal 5300 41-31 13T

Well Position	**+N/-S**	-722.5 usft	**Northing:**	389,675.24 usft	**Latitude:**	48° 1' 34.880 N
	+E/-W	18.4 usft	**Easting:**	1,209,453.55 usft	**Longitude:**	103° 36' 10.350 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**		**Ground Level:**	2,158.0 usft

Wellbore Gramma Federal 5300 41-31 13T

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	3/28/2014	8.29	72.97	56,437

Design Plan #1

Audit Notes:

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

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.0	0.0	0.0	90.00

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,323.0	0.00	0.00	2,323.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,339.7	0.50	0.00	2,339.7	0.1	0.0	3.00	3.00	0.00	0.00	
8,052.7	0.50	0.00	8,052.4	49.9	0.0	0.00	0.00	0.00	0.00	
8,069.3	0.00	0.00	8,069.1	50.0	0.0	3.00	-3.00	0.00	180.00	
10,396.7	0.00	0.00	10,396.5	50.0	0.0	0.00	0.00	0.00	0.00	
11,144.2	89.70	78.35	10,874.0	145.9	465.2	12.00	12.00	0.00	78.35	
11,726.7	89.70	90.00	10,877.0	204.9	1,043.6	2.00	0.00	2.00	90.04	
20,625.2	89.70	90.00	10,924.0	205.0	9,942.0	0.00	0.00	0.00	0.00	Gramma Federal 530

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	**Local Co-ordinate Reference:**	Well Gramma Federal 5300 41-31 13T
Company:	Oasis	**TVD Reference:**	WELL @ 2183.0usft (Original Well Elev)
Project:	Indian Hills	**MD Reference:**	WELL @ 2183.0usft (Original Well Elev)
Site:	153N-100W-31/32	**North Reference:**	True
Well:	Gramma Federal 5300 41-31 13T	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Gramma Federal 5300 41-31 13T		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
2,223.0	0.00	0.00	2,223.0	0.0	0.0	0.0	0.00	0.00	0.00
13 3/8"									
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,323.0	0.00	0.00	2,323.0	0.0	0.0	0.0	0.00	0.00	0.00
Start Build 3.00									
2,339.7	0.50	0.00	2,339.7	0.1	0.0	0.0	3.00	3.00	0.00
Start 5713.0 hold at 2339.7 MD									
2,400.0	0.50	0.00	2,400.0	0.6	0.0	0.0	0.00	0.00	0.00
2,500.0	0.50	0.00	2,500.0	1.5	0.0	0.0	0.00	0.00	0.00
2,600.0	0.50	0.00	2,600.0	2.3	0.0	0.0	0.00	0.00	0.00
2,700.0	0.50	0.00	2,700.0	3.2	0.0	0.0	0.00	0.00	0.00
2,800.0	0.50	0.00	2,800.0	4.1	0.0	0.0	0.00	0.00	0.00
2,900.0	0.50	0.00	2,900.0	5.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.50	0.00	3,000.0	5.8	0.0	0.0	0.00	0.00	0.00
3,100.0	0.50	0.00	3,100.0	6.7	0.0	0.0	0.00	0.00	0.00
3,200.0	0.50	0.00	3,200.0	7.6	0.0	0.0	0.00	0.00	0.00
3,300.0	0.50	0.00	3,300.0	8.5	0.0	0.0	0.00	0.00	0.00
3,400.0	0.50	0.00	3,400.0	9.3	0.0	0.0	0.00	0.00	0.00
3,500.0	0.50	0.00	3,500.0	10.2	0.0	0.0	0.00	0.00	0.00
3,600.0	0.50	0.00	3,600.0	11.1	0.0	0.0	0.00	0.00	0.00
3,700.0	0.50	0.00	3,699.9	11.9	0.0	0.0	0.00	0.00	0.00
3,800.0	0.50	0.00	3,799.9	12.8	0.0	0.0	0.00	0.00	0.00
3,900.0	0.50	0.00	3,899.9	13.7	0.0	0.0	0.00	0.00	0.00
4,000.0	0.50	0.00	3,999.9	14.6	0.0	0.0	0.00	0.00	0.00
4,100.0	0.50	0.00	4,099.9	15.4	0.0	0.0	0.00	0.00	0.00
4,200.0	0.50	0.00	4,199.9	16.3	0.0	0.0	0.00	0.00	0.00
4,300.0	0.50	0.00	4,299.9	17.2	0.0	0.0	0.00	0.00	0.00
4,400.0	0.50	0.00	4,399.9	18.1	0.0	0.0	0.00	0.00	0.00
4,500.0	0.50	0.00	4,499.9	18.9	0.0	0.0	0.00	0.00	0.00
4,600.0	0.50	0.00	4,599.9	19.8	0.0	0.0	0.00	0.00	0.00
4,700.0	0.50	0.00	4,699.9	20.7	0.0	0.0	0.00	0.00	0.00
4,738.1	0.50	0.00	4,738.0	21.0	0.0	0.0	0.00	0.00	0.00
Greenhorn									
4,800.0	0.50	0.00	4,799.9	21.5	0.0	0.0	0.00	0.00	0.00
4,900.0	0.50	0.00	4,899.9	22.4	0.0	0.0	0.00	0.00	0.00
5,000.0	0.50	0.00	4,999.9	23.3	0.0	0.0	0.00	0.00	0.00
5,100.0	0.50	0.00	5,099.9	24.2	0.0	0.0	0.00	0.00	0.00
5,129.1	0.50	0.00	5,129.0	24.4	0.0	0.0	0.00	0.00	0.00
Mowry									
5,200.0	0.50	0.00	5,199.9	25.0	0.0	0.0	0.00	0.00	0.00
5,300.0	0.50	0.00	5,299.9	25.9	0.0	0.0	0.00	0.00	0.00
5,400.0	0.50	0.00	5,399.9	26.8	0.0	0.0	0.00	0.00	0.00
5,500.0	0.50	0.00	5,499.9	27.7	0.0	0.0	0.00	0.00	0.00
5,558.1	0.50	0.00	5,558.0	28.2	0.0	0.0	0.00	0.00	0.00
Dakota									
5,600.0	0.50	0.00	5,599.9	28.5	0.0	0.0	0.00	0.00	0.00
5,700.0	0.50	0.00	5,699.9	29.4	0.0	0.0	0.00	0.00	0.00
5,800.0	0.50	0.00	5,799.9	30.3	0.0	0.0	0.00	0.00	0.00
5,900.0	0.50	0.00	5,899.9	31.1	0.0	0.0	0.00	0.00	0.00
6,000.0	0.50	0.00	5,999.9	32.0	0.0	0.0	0.00	0.00	0.00
6,100.0	0.50	0.00	6,099.9	32.9	0.0	0.0	0.00	0.00	0.00
6,200.0	0.50	0.00	6,199.9	33.8	0.0	0.0	0.00	0.00	0.00
6,300.0	0.50	0.00	6,299.8	34.6	0.0	0.0	0.00	0.00	0.00
6,346.0	0.50	0.00	6,345.8	35.0	0.0	0.0	0.00	0.00	0.00

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	**Local Co-ordinate Reference:**	Well Gramma Federal 5300 41-31 13T
Company:	Oasis	**TVD Reference:**	WELL @ 2183.0usft (Original Well Elev)
Project:	Indian Hills	**MD Reference:**	WELL @ 2183.0usft (Original Well Elev)
Site:	153N-100W-31/32	**North Reference:**	True
Well:	Gramma Federal 5300 41-31 13T	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Gramma Federal 5300 41-31 13T		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
9 5/8"									
6,346.2	0.50	0.00	6,346.0	35.0	0.0	0.0	0.00	0.00	0.00
Rierdon									
6,400.0	0.50	0.00	6,399.8	35.5	0.0	0.0	0.00	0.00	0.00
6,500.0	0.50	0.00	6,499.8	36.4	0.0	0.0	0.00	0.00	0.00
6,600.0	0.50	0.00	6,599.8	37.3	0.0	0.0	0.00	0.00	0.00
6,700.0	0.50	0.00	6,699.8	38.1	0.0	0.0	0.00	0.00	0.00
6,800.0	0.50	0.00	6,799.8	39.0	0.0	0.0	0.00	0.00	0.00
6,900.0	0.50	0.00	6,899.8	39.9	0.0	0.0	0.00	0.00	0.00
6,903.2	0.50	0.00	6,903.0	39.9	0.0	0.0	0.00	0.00	0.00
Dunham Salt									
7,000.0	0.50	0.00	6,999.8	40.7	0.0	0.0	0.00	0.00	0.00
7,020.2	0.50	0.00	7,020.0	40.9	0.0	0.0	0.00	0.00	0.00
Dunham Salt Base									
7,036.2	0.50	0.00	7,036.0	41.1	0.0	0.0	0.00	0.00	0.00
Spearfish									
7,100.0	0.50	0.00	7,099.8	41.6	0.0	0.0	0.00	0.00	0.00
7,200.0	0.50	0.00	7,199.8	42.5	0.0	0.0	0.00	0.00	0.00
7,300.0	0.50	0.00	7,299.8	43.4	0.0	0.0	0.00	0.00	0.00
7,363.2	0.50	0.00	7,363.0	43.9	0.0	0.0	0.00	0.00	0.00
Pine Salt									
7,385.2	0.50	0.00	7,385.0	44.1	0.0	0.0	0.00	0.00	0.00
Pine Salt Base									
7,400.0	0.50	0.00	7,399.8	44.2	0.0	0.0	0.00	0.00	0.00
7,437.2	0.50	0.00	7,437.0	44.6	0.0	0.0	0.00	0.00	0.00
Opeche Salt									
7,500.0	0.50	0.00	7,499.8	45.1	0.0	0.0	0.00	0.00	0.00
7,503.2	0.50	0.00	7,503.0	45.1	0.0	0.0	0.00	0.00	0.00
Opeche Salt Base									
7,600.0	0.50	0.00	7,599.8	46.0	0.0	0.0	0.00	0.00	0.00
7,669.2	0.50	0.00	7,669.0	46.6	0.0	0.0	0.00	0.00	0.00
Broom Creek (Top of Minnelusa Gp.)									
7,700.0	0.50	0.00	7,699.8	46.8	0.0	0.0	0.00	0.00	0.00
7,734.2	0.50	0.00	7,734.0	47.1	0.0	0.0	0.00	0.00	0.00
Amsden									
7,800.0	0.50	0.00	7,799.8	47.7	0.0	0.0	0.00	0.00	0.00
7,878.2	0.50	0.00	7,878.0	48.4	0.0	0.0	0.00	0.00	0.00
Tyler									
7,900.0	0.50	0.00	7,899.8	48.6	0.0	0.0	0.00	0.00	0.00
8,000.0	0.50	0.00	7,999.8	49.5	0.0	0.0	0.00	0.00	0.00
8,052.7	0.50	0.00	8,052.4	49.9	0.0	0.0	0.00	0.00	0.00
Start Drop -3.00									
6,069.3	0.00	0.00	8,069.1	50.0	0.0	0.0	3.00	-3.00	0.00
Start 2327.4 hold at 8069.3 MD									
8,100.0	0.00	0.00	8,099.8	50.0	0.0	0.0	0.00	0.00	0.00
8,102.2	0.00	0.00	8,102.0	50.0	0.0	0.0	0.00	0.00	0.00
Otter (Base of Minnelusa Gp.)									
8,200.0	0.00	0.00	8,199.8	50.0	0.0	0.0	0.00	0.00	0.00
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	6,399.8	50.0	0.0	0.0	0.00	0.00	0.00
8,400.2	0.00	0.00	8,400.0	50.0	0.0	0.0	0.00	0.00	0.00
Kibbey									
8,500.0	0.00	0.00	8,499.8	50.0	0.0	0.0	0.00	0.00	0.00

Oasis Petroleum

Planning Report

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Company:	Oasis	**TVD Reference:**	WELL @ 2183.0usft (Original Well Elev)
Project:	Indian Hills	**MD Reference:**	WELL @ 2183.0usft (Original Well Elev)
Site:	153N-100W-31/32	**North Reference:**	True
Well:	Gramma Federal 5300 41-31 13T	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Gramma Federal 5300 41-31 13T		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,600.0	0.00	0.00	8,599.8	50.0	0.0	0.0	0.00	0.00	0.00
8,606.2	0.00	0.00	8,606.0	50.0	0.0	0.0	0.00	0.00	0.00
Charles Salt									
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
9,100.0	0.00	0.00	9,099.8	50.0	0.0	0.0	0.00	0.00	0.00
9,200.0	0.00	0.00	9,199.8	50.0	0.0	0.0	0.00	0.00	0.00
9,202.2	0.00	0.00	9,202.0	50.0	0.0	0.0	0.00	0.00	0.00
UB									
9,278.2	0.00	0.00	9,278.0	50.0	0.0	0.0	0.00	0.00	0.00
Base Last Salt									
9,300.0	0.00	0.00	9,299.8	50.0	0.0	0.0	0.00	0.00	0.00
9,313.2	0.00	0.00	9,313.0	50.0	0.0	0.0	0.00	0.00	0.00
Ratcliffe									
9,400.0	0.00	0.00	9,399.8	50.0	0.0	0.0	0.00	0.00	0.00
9,488.2	0.00	0.00	9,488.0	50.0	0.0	0.0	0.00	0.00	0.00
Mission Canyon									
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
9,900.0	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
10,033.2	0.00	0.00	10,033.0	50.0	0.0	0.0	0.00	0.00	0.00
Lodgepole									
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
10,300.0	0.00	0.00	10,299.8	50.0	0.0	0.0	0.00	0.00	0.00
10,396.7	0.00	0.00	10,396.5	50.0	0.0	0.0	0.00	0.00	0.00
Start Build 12.00 - KOP									
10,400.0	0.39	78.35	10,399.8	50.0	0.0	0.0	12.00	12.00	0.00
10,497.0	12.03	78.35	10,496.0	52.1	10.3	10.3	12.00	12.00	0.00
Lodgepole Fracture Zone									
10,500.0	12.39	78.35	10,499.0	52.2	10.9	10.9	12.00	12.00	0.00
10,600.0	24.39	78.35	10,593.7	58.6	41.7	41.7	12.00	12.00	0.00
10,700.0	36.39	78.35	10,679.8	68.8	91.2	91.2	12.00	12.00	0.00
10,800.0	48.39	78.35	10,753.5	82.4	157.1	157.1	12.00	12.00	0.00
10,817.7	50.51	78.35	10,765.0	85.1	170.3	170.3	12.00	12.00	0.00
False Bakken									
10,835.4	52.64	78.35	10,776.0	87.9	183.9	183.9	12.00	12.00	0.00
Upper Bakken									
10,862.8	55.93	78.35	10,792.0	92.4	205.6	205.6	12.00	12.00	0.00
Middle Bakken									
10,900.0	60.39	78.35	10,811.6	98.8	236.6	236.6	12.00	12.00	0.00
10,942.6	65.51	78.35	10,831.0	106.4	273.8	273.8	12.00	12.00	0.00
Lower Bakken									
10,962.9	67.94	78.35	10,839.0	110.2	292.0	292.0	12.00	12.00	0.00
Pronghorn									
11,000.0	72.39	78.35	10,851.6	117.3	326.2	326.2	12.00	12.00	0.00
11,022.9	75.14	78.35	10,858.0	121.7	347.7	347.7	12.00	12.00	0.00
Three Forks 1st Bench									

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	**Local Co-ordinate Reference:**	Well Gramma Federal 5300 41-31 13T
Company:	Oasis	**TVD Reference:**	WELL @ 2183.0usft (Original Well Elev)
Project:	Indian Hills	**MD Reference:**	WELL @ 2183.0usft (Original Well Elev)
Site:	153N-100W-31/32	**North Reference:**	True
Well:	Gramma Federal 5300 41-31 13T	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Gramma Federal 5300 41-31 13T		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
11,100.0	84.39	78.35	10,871.7	137.0	421.9	421.9	12.00	12.00	0.00
11,144.2	89.70	78.35	10,874.0	145.9	465.2	465.2	12.00	12.00	0.00
Start DLS 2.00 TFO 90.04 - EOC - 7"									
11,200.0	89.70	79.47	10,874.2	156.6	519.9	519.9	2.00	0.00	2.00
11,300.0	89.70	81.47	10,874.8	173.2	618.5	618.5	2.00	0.00	2.00
11,400.0	89.70	83.47	10,875.3	186.3	717.7	717.7	2.00	0.00	2.00
11,500.0	89.70	85.47	10,875.8	196.0	817.2	817.2	2.00	0.00	2.00
11,600.0	89.70	87.47	10,876.4	202.1	917.0	917.0	2.00	0.00	2.00
11,700.0	89.70	89.47	10,876.9	204.8	1,017.0	1,017.0	2.00	0.00	2.00
11,726.7	89.70	90.00	10,877.0	204.9	1,043.6	1,043.6	2.00	0.00	2.00
Start 8898.5 hold at 11726.7 MD									
11,800.0	89.70	90.00	10,877.4	204.9	1,116.9	1,116.9	0.00	0.00	0.00
11,900.0	89.70	90.00	10,877.9	204.9	1,216.9	1,216.9	0.00	0.00	0.00
12,000.0	89.70	90.00	10,878.5	204.9	1,316.9	1,316.9	0.00	0.00	0.00
12,099.9	89.70	90.00	10,879.0	204.9	1,416.8	1,416.8	0.00	0.00	0.00
Three Forks 1st Bench Claystone									
12,100.0	89.70	90.00	10,879.0	204.9	1,416.9	1,416.9	0.00	0.00	0.00
12,200.0	89.70	90.00	10,879.5	204.9	1,516.9	1,516.9	0.00	0.00	0.00
12,300.0	89.70	90.00	10,880.1	204.9	1,616.9	1,616.9	0.00	0.00	0.00
12,400.0	89.70	90.00	10,880.6	204.9	1,716.9	1,716.9	0.00	0.00	0.00
12,500.0	89.70	90.00	10,881.1	204.9	1,816.9	1,816.9	0.00	0.00	0.00
12,600.0	89.70	90.00	10,881.6	204.9	1,916.9	1,916.9	0.00	0.00	0.00
12,700.0	89.70	90.00	10,882.2	204.9	2,016.9	2,016.9	0.00	0.00	0.00
12,800.0	89.70	90.00	10,882.7	204.9	2,116.9	2,116.9	0.00	0.00	0.00
12,900.0	89.70	90.00	10,883.2	204.9	2,216.9	2,216.9	0.00	0.00	0.00
13,000.0	89.70	90.00	10,883.8	204.9	2,316.9	2,316.9	0.00	0.00	0.00
13,100.0	89.70	90.00	10,884.3	204.9	2,416.9	2,416.9	0.00	0.00	0.00
13,200.0	89.70	90.00	10,884.8	204.9	2,516.9	2,516.9	0.00	0.00	0.00
13,300.0	89.70	90.00	10,885.3	204.9	2,616.9	2,616.9	0.00	0.00	0.00
13,400.0	89.70	90.00	10,885.9	204.9	2,716.9	2,716.9	0.00	0.00	0.00
13,500.0	89.70	90.00	10,886.4	204.9	2,816.9	2,816.9	0.00	0.00	0.00
13,600.0	89.70	90.00	10,886.9	204.9	2,916.9	2,916.9	0.00	0.00	0.00
13,700.0	89.70	90.00	10,887.4	204.9	3,016.9	3,016.9	0.00	0.00	0.00
13,800.0	89.70	90.00	10,888.0	204.9	3,116.9	3,116.9	0.00	0.00	0.00
13,900.0	89.70	90.00	10,888.5	204.9	3,216.9	3,216.9	0.00	0.00	0.00
14,000.0	89.70	90.00	10,889.0	204.9	3,316.9	3,316.9	0.00	0.00	0.00
14,100.0	89.70	90.00	10,889.6	204.9	3,416.9	3,416.9	0.00	0.00	0.00
14,200.0	89.70	90.00	10,890.1	204.9	3,516.9	3,516.9	0.00	0.00	0.00
14,300.0	89.70	90.00	10,890.6	204.9	3,616.9	3,616.9	0.00	0.00	0.00
14,400.0	89.70	90.00	10,891.1	204.9	3,716.9	3,716.9	0.00	0.00	0.00
14,500.0	89.70	90.00	10,891.7	204.9	3,816.9	3,816.9	0.00	0.00	0.00
14,600.0	89.70	90.00	10,892.2	204.9	3,916.9	3,916.9	0.00	0.00	0.00
14,700.0	89.70	90.00	10,892.7	205.0	4,016.9	4,016.9	0.00	0.00	0.00
14,800.0	89.70	90.00	10,893.3	205.0	4,116.9	4,116.9	0.00	0.00	0.00
14,900.0	89.70	90.00	10,893.8	205.0	4,216.9	4,216.9	0.00	0.00	0.00
15,000.0	89.70	90.00	10,894.3	205.0	4,316.9	4,316.9	0.00	0.00	0.00
15,100.0	89.70	90.00	10,894.8	205.0	4,416.9	4,416.9	0.00	0.00	0.00
15,200.0	89.70	90.00	10,895.4	205.0	4,516.9	4,516.9	0.00	0.00	0.00
15,300.0	89.70	90.00	10,895.9	205.0	4,616.9	4,616.9	0.00	0.00	0.00
15,400.0	89.70	90.00	10,896.4	205.0	4,716.9	4,716.9	0.00	0.00	0.00
15,500.0	89.70	90.00	10,896.9	205.0	4,816.9	4,816.9	0.00	0.00	0.00
15,600.0	89.70	90.00	10,897.5	205.0	4,916.9	4,916.9	0.00	0.00	0.00
15,700.0	89.70	90.00	10,898.0	205.0	5,016.9	5,016.9	0.00	0.00	0.00
15,800.0	89.70	90.00	10,898.5	205.0	5,116.9	5,116.9	0.00	0.00	0.00
15,900.0	89.70	90.00	10,899.1	205.0	5,216.9	5,216.9	0.00	0.00	0.00

Database:	OpenWellsCompass - EDM Prod	**Local Co-ordinate Reference:**	Well Gramma Federal 5300 41-31 13T
Company:	Oasis	**TVD Reference:**	WELL @ 2183.0usft (Original Well Elev)
Project:	Indian Hills	**MD Reference:**	WELL @ 2183.0usft (Original Well Elev)
Site:	153N-100W-31/32	**North Reference:**	True
Well:	Gramma Federal 5300 41-31 13T	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Gramma Federal 5300 41-31 13T		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
16,000.0	89.70	90.00	10,899.6	205.0	5,316.9	5,316.9	0.00	0.00	0.00
16,100.0	89.70	90.00	10,900.1	205.0	5,416.9	5,416.9	0.00	0.00	0.00
16,200.0	89.70	90.00	10,900.6	205.0	5,516.9	5,516.9	0.00	0.00	0.00
16,300.0	89.70	90.00	10,901.2	205.0	5,616.9	5,616.9	0.00	0.00	0.00
16,400.0	89.70	90.00	10,901.7	205.0	5,716.9	5,716.9	0.00	0.00	0.00
16,500.0	89.70	90.00	10,902.2	205.0	5,816.9	5,816.9	0.00	0.00	0.00
16,600.0	89.70	90.00	10,902.8	205.0	5,916.9	5,916.9	0.00	0.00	0.00
16,700.0	89.70	90.00	10,903.3	205.0	6,016.9	6,016.9	0.00	0.00	0.00
16,800.0	89.70	90.00	10,903.8	205.0	6,116.9	6,116.9	0.00	0.00	0.00
16,900.0	89.70	90.00	10,904.3	205.0	6,216.9	6,216.9	0.00	0.00	0.00
17,000.0	89.70	90.00	10,904.9	205.0	6,316.9	6,316.9	0.00	0.00	0.00
17,100.0	89.70	90.00	10,905.4	205.0	6,416.9	6,416.9	0.00	0.00	0.00
17,200.0	89.70	90.00	10,905.9	205.0	6,516.9	6,516.9	0.00	0.00	0.00
17,300.0	89.70	90.00	10,906.4	205.0	6,616.9	6,616.9	0.00	0.00	0.00
17,400.0	89.70	90.00	10,907.0	205.0	6,716.9	6,716.9	0.00	0.00	0.00
17,500.0	89.70	90.00	10,907.5	205.0	6,816.9	6,816.9	0.00	0.00	0.00
17,600.0	89.70	90.00	10,908.0	205.0	6,916.9	6,916.9	0.00	0.00	0.00
17,700.0	89.70	90.00	10,908.6	205.0	7,016.9	7,016.9	0.00	0.00	0.00
17,800.0	89.70	90.00	10,909.1	205.0	7,116.9	7,116.9	0.00	0.00	0.00
17,900.0	89.70	90.00	10,909.6	205.0	7,216.9	7,216.9	0.00	0.00	0.00
18,000.0	89.70	90.00	10,910.1	205.0	7,316.9	7,316.9	0.00	0.00	0.00
18,100.0	89.70	90.00	10,910.7	205.0	7,416.9	7,416.9	0.00	0.00	0.00
18,200.0	89.70	90.00	10,911.2	205.0	7,516.9	7,516.9	0.00	0.00	0.00
18,300.0	89.70	90.00	10,911.7	205.0	7,616.9	7,616.9	0.00	0.00	0.00
18,400.0	89.70	90.00	10,912.3	205.0	7,716.9	7,716.9	0.00	0.00	0.00
18,500.0	89.70	90.00	10,912.8	205.0	7,816.9	7,816.9	0.00	0.00	0.00
18,600.0	89.70	90.00	10,913.3	205.0	7,916.9	7,916.9	0.00	0.00	0.00
18,700.0	89.70	90.00	10,913.8	205.0	8,016.9	8,016.9	0.00	0.00	0.00
18,800.0	89.70	90.00	10,914.4	205.0	8,116.9	8,116.9	0.00	0.00	0.00
18,900.0	89.70	90.00	10,914.9	205.0	8,216.8	8,216.8	0.00	0.00	0.00
19,000.0	89.70	90.00	10,915.4	205.0	8,316.8	8,316.8	0.00	0.00	0.00
19,100.0	89.70	90.00	10,915.9	205.0	8,416.8	8,416.8	0.00	0.00	0.00
19,200.0	89.70	90.00	10,916.5	205.0	8,516.8	8,516.8	0.00	0.00	0.00
19,300.0	89.70	90.00	10,917.0	205.0	8,616.8	8,616.8	0.00	0.00	0.00
19,400.0	89.70	90.00	10,917.5	205.0	8,716.8	8,716.8	0.00	0.00	0.00
19,500.0	89.70	90.00	10,918.1	205.0	8,816.8	8,816.8	0.00	0.00	0.00
19,600.0	89.70	90.00	10,918.6	205.0	8,916.8	8,916.8	0.00	0.00	0.00
19,700.0	89.70	90.00	10,919.1	205.0	9,016.8	9,016.8	0.00	0.00	0.00
19,800.0	89.70	90.00	10,919.6	205.0	9,116.8	9,116.8	0.00	0.00	0.00
19,900.0	89.70	90.00	10,920.2	205.0	9,216.8	9,216.8	0.00	0.00	0.00
20,000.0	89.70	90.00	10,920.7	205.0	9,316.8	9,316.8	0.00	0.00	0.00
20,100.0	89.70	90.00	10,921.2	205.0	9,416.8	9,416.8	0.00	0.00	0.00
20,200.0	89.70	90.00	10,921.8	205.0	9,516.8	9,516.8	0.00	0.00	0.00
20,300.0	89.70	90.00	10,922.3	205.0	9,616.8	9,616.8	0.00	0.00	0.00
20,400.0	89.70	90.00	10,922.8	205.0	9,716.8	9,716.8	0.00	0.00	0.00
20,500.0	89.70	90.00	10,923.3	205.0	9,816.8	9,816.8	0.00	0.00	0.00
20,600.0	89.70	90.00	10,923.9	205.0	9,916.8	9,916.8	0.00	0.00	0.00

Oasis Petroleum

Planning Report

Database:	OpenWellsCompass - EDM Prod	**Local Co-ordinate Reference:**	Well Gramma Federal 5300 41-31 13T
Company:	Oasis	**TVD Reference:**	WELL @ 2183.0usft (Original Well Elev)
Project:	Indian Hills	**MD Reference:**	WELL @ 2183.0usft (Original Well Elev)
Site:	153N-100W-31/32	**North Reference:**	True
Well:	Gramma Federal 5300 41-31 13T	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Gramma Federal 5300 41-31 13T		
Design:	Plan #1		

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Gramma Federal 5300 4	0.00	0.00	10,924.0	205.0	9,942.0	389,479.53	1,219,395.74	48° 1' 36.877 N	103° 33' 44.079 W
- plan misses target center by 25.2usft at 20600.0usft MD (10923.9 TVD, 205.0 N, 9916.8 E)									
- Point									

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
2,223.0	2,223.0	13 3/8"	13.375	17.500
6,346.0	6,345.8	9 5/8"	9.625	12.250
11,144.2	10,874.0	7"	7.000	8.750

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,123.0	2,123.0	Pierre			
4,738.1	4,738.0	Greenhorn			
5,129.1	5,129.0	Mowry			
5,558.1	5,558.0	Dakota			
6,346.2	6,346.0	Rierdon			
6,903.2	6,903.0	Dunham Salt			
7,020.2	7,020.0	Dunham Salt Base			
7,036.2	7,036.0	Spearfish			
7,363.2	7,363.0	Pine Salt			
7,385.2	7,385.0	Pine Salt Base			
7,437.2	7,437.0	Opeche Salt			
7,503.2	7,503.0	Opeche Salt Base			
7,669.2	7,669.0	Broom Creek (Top of Minnelusa Gp.)			
7,734.2	7,734.0	Amsden			
7,878.2	7,878.0	Tyler			
8,102.2	8,102.0	Otter (Base of Minnelusa Gp.)			
8,400.2	8,400.0	Kibbey			
8,606.2	8,606.0	Charles Salt			
9,202.2	9,202.0	UB			
9,278.2	9,278.0	Base Last Salt			
9,313.2	9,313.0	Ratcliffe			
9,488.2	9,488.0	Mission Canyon			
10,033.2	10,033.0	Lodgepole			
10,497.0	10,496.0	Lodgepole Fracture Zone			
10,817.7	10,765.0	False Bakken			
10,835.4	10,776.0	Upper Bakken			
10,862.8	10,792.0	Middle Bakken			
10,942.6	10,831.0	Lower Bakken			
10,962.9	10,839.0	Pronghorn			
11,022.9	10,858.0	Three Forks 1st Bench			
12,099.9	10,879.0	Three Forks 1st Bench Claystone			

Database:	OpenWellsCompass - EDM Prod	**Local Co-ordinate Reference:**	Well Gramma Federal 5300 41-31 13T
Company:	Oasis	**TVD Reference:**	WELL @ 2183.0usft (Original Well Elev)
Project:	Indian Hills	**MD Reference:**	WELL @ 2183.0usft (Original Well Elev)
Site:	153N-100W-31/32	**North Reference:**	True
Well:	Gramma Federal 5300 41-31 13T	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Gramma Federal 5300 41-31 13T		
Design:	Plan #1		

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
2,323.0	2,323.0	0.0	0.0	Start Build 3.00
2,339.7	2,339.7	0.1	0.0	Start 5713.0 hold at 2339.7 MD
8,052.7	8,052.4	49.9	0.0	Start Drop -3.00
8,069.3	8,069.1	50.0	0.0	Start 2327.4 hold at 8069.3 MD
10,396.7	10,396.5	50.0	0.0	Start Build 12.00 - KOP
11,144.2	10,874.0	145.9	465.2	Start DLS 2.00 TFO 90.04 - EOC
11,726.7	10,877.0	204.9	1,043.6	Start 8898.5 hold at 11726.7 MD
20,625.2	10,924.0	205.0	9,942.0	TD at 20625.2

Oasis Petroleum
Well Summary
Gramma Federal 5300 41-31 13T
Section 31 T153N R100W
McKenzie County, ND

SURFACE CASING AND CEMENT DESIGN

							Make-up Torque (ft-lbs)		
Size	Interval	Weight	Grade	Coupling	I.D.	Drift	Minimum	Optimum	Max
13-3/8"	0' - 2223'	54.5	J-55	STC	12.615"	12.459"	4100	5470	6840

Interval	Description	Collapse	Burst	Tension
		(psi) / a	(psi) / b	(1000 lbs) / c
0' - 2223'	13-3/8", 54.5#, J-55, LTC, 8rd	1130 / 1.08	2730 / 1.81	514 / 2.51

API Rating & Safety Factor

a) Collapse based on full casing evacuation with 9 ppg fluid on backside (2223' setting depth).
b) Burst pressure based on 13 ppg fluid with no fluid on backside (2223' setting depth).
c) Based on string weight in 9 ppg fluid at 2223' TVD plus 100k# overpull. (Buoyed weight equals 104k lbs.)

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

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

Lead Slurry: **753 sks** (389 bbls), 11.5 lb/gal, 2.97 cu. Ft./sk Varicem Cement with 0.125 il/sk Lost Circulation Additive

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

Oasis Petroleum
Well Summary
Gramma Federal 5300 41-31 13T
Section 31 T153N R100W
McKenzie County, ND

Contingency INTERMEDIATE CASING AND CEMENT DESIGN

							Make-up Torque (ft-lbs)		
Size	Interval	Weight	Grade	Coupling	I.D.	Drift	Minimum	Optimum	Max
9-5/8"	0' - 6346'	36	HCL-80	LTC	8.835"	8.75"	5450	7270	9090

Interval	Description	Collapse	Burst	Tension
		(psi) / a	(psi) / b	(1000 lbs) / c
0' - 6346'	9-5/8", 36#, J-55, LTC, 8rd	2020 / 2.29	3520 / 1.30	453 / 1.55

API Rating & Safety Factor

a) Collapse based on full casing evacuation with 10.4 ppg fluid on backside (6346' setting depth).

b) Burst pressure calculated from a gas kick coming from the production zone (Bakken Pool) at 9,000psi and a subsequent breakdown at the 9-5/8" shoe, based on a 15.2#/ft fracture gradient. Backup of 9 ppg fluid..

c) Tension based on string weight in 10.4 ppg fluid at 6346' TVD plus 100k# overpull. (Buoyed weight equals 192k lbs.)

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

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

Lead Slurry: **584 sks** (302 bbls), 2.90 ft3/sk, 11.5 lb/gal Conventional system with 94 lb/sk cement, 4% D079 extender, 2% D053 expanding agent, 2% CaCl2 and 0.250 lb/sk D130 lost circulation control agent.

Tail Slurry: **548 sks** (113 bbls), 1.16 ft3/sk 15.8 lb/gal Conventional system with 94 lb/sk cement, 0.25% CaCl2, and 0.250 lb/sk lost circulation control agent

Oasis Petroleum
Well Summary
Gramma Federal 5300 41-31 13T
Section 31 T153N R100W
McKenzie County, ND

INTERMEDIATE CASING AND CEMENT DESIGN

							Make-up Torque (ft-lbs)		
Size	Interval	Weight	Grade	Coupling	I.D.	Drift**	Minimum	Optimum	Max
7"	0' - 11144'	32	HCP-110	LTC	6.094"	6.000"**	6730	8970	9870

****Special Drift 7"32# to 6.0"**

Interval	Length	Description	Collapse	Burst	Tension
			(psi) a	(psi) b	(1000 lbs) / c
0' - 8458'	8458'	7", 32#, P-110, LTC, 8rd	11820 / 2.09*	12460 / 1.28	897 / 2.23
5431' - 6683'	1252'	7", 32#, HCP-110, LTC, 8rd	11820 / 1.47**	12460 / 1.32	

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 10874' TVD.

c) Based on string weight in 10 ppg fluid, (302k lbs buoyed weight) plus 100k lbs overpull.

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

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

Lead Slurry: **177 sks** (82 bbls), 11.8 ppg, 2.55 cu. ft./sk Econocem Cement with .3% Fe-2 and .25 lb/sk Lost Circulation Additive

Tail Slurry: **579 sks** (169 bbls), 14.0 ppg, 1.55 cu. ft./sk Extendcem System with .2% HR-5 Retarder and .25 lb/sk Lost Circulation Additive

Oasis Petroleum
Well Summary
Gramma Federal 5300 41-31 13T
Section 31 T153N R100W
McKenzie County, ND

PRODUCTION LINER

							Make-up Torque (ft-lbs)		
Size	Interval	Weight	Grade	Coupling	I.D.	Drift	Minimum	Optimum	Max
4-1/2"	10347' - 20625'	13.5	P-110	BTC	3.920"	3.795"	2270	3020	3780

Interval	Length	Desctiption	Collapse	Burst	Tension
			(psi) a	(psi) b	(1000 lbs) c
10347' - 20625'	10278	4-1/2", 13.5 lb, P-110, BTC	10670 / 1.97	12410 / 1.28	443 / 2.02

API Rating & Safety Factor

a) Based on full casing evacuation with 9.5 ppg fluid on backside @ 10924' TVD.

b) Burst pressure based on 9000 psi treating pressure with 10.2 ppg internal fluid gradient and 9 ppg external fluid gradient @ 10924' TVD.

c) Based on string weight in 9.5 ppg fluid (Buoyed weight: 119k lbs.) plus 100k lbs overpull.

WELL LOCATION PLAT

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"GRAMMA FEDERAL 5300 41-31 13T"
713 FEET FROM SOUTH LINE AND 320 FEET FROM WEST LINE
SECTION 31, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY DARYL D. KASEMAN, PLS, REGISTRATION NUMBER 3880 ON 12/31/14 AND THE ORIGINAL DOCUMENTS ARE STORED AT THE OFFICES OF INTERSTATE ENGINEERING, INC.

0 1000
1" = 1000'

● - MONUMENT - RECOVERED
○ - MONUMENT - NOT RECOVERED

STAKED ON 2/28/14
VERTICAL CONTROL DATUM WAS BASED UPON CONTROL POINT 705 WITH AN ELEVATION OF 2158.3'

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

DARYL D. KASEMAN LS-3880

REGISTERED LAND SURVEYOR
DARYL D. KASEMAN
LS-3880
DATE: 12/31/14
NORTH DAKOTA

VICINITY MAP

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Revision No.	Date	By	Description
REV 1	12/5/14	JJS	CORRECTED WELL CALLS
REV 2	12/31/14	JJS	CHANGED WELL NAME & BH

OASIS PETROLEUM NORTH AMERICA, LLC
WELL LOCATION PLAT
SECTION 31, T153N, R100W
MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.H.H. | Project No.: S13-06-372.01
Checked By: D.D.K. | Date: FEB. 2014

Interstate Engineering, Inc.
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Fax: (406) 433-5618
www.interstateeng.com
Other offices in Minnesota, North Dakota and South Dakota

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SECTION BREAKDOWN

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"GRAMMA FEDERAL 5300 41-31 13T"
713 FEET FROM SOUTH LINE AND 320 FEET FROM WEST LINE
SECTIONS 31 & 32, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

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✠ – MONUMENT – NOT RECOVERED

0 1000
1" = 1000'

ALL AZIMUTHS ARE BASED ON G.P.S. OBSERVATIONS. THE ORIGINAL SURVEY OF THIS AREA FOR THE GENERAL LAND OFFICE (G.L.O.) WAS 1897. THE CORNERS FOUND ARE AS INDICATED AND ALL OTHERS ARE COMPUTED FROM THOSE CORNERS FOUND AND BASED ON G.L.O. DATA. THE MAPPING ANGLE FOR THIS AREA IS APPROXIMATELY 0°03'.

REGISTERED LAND SURVEYOR
DARYL D. KASEMAN
LS-3880
DATE: 12/31/14
NORTH DAKOTA

VICINITY MAP

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Revision No.	Date	By	Description
REV 1	3/5/14	JJS	CORRECTED WELL CALLS
REV 2	12/31/14	JJS	CHANGED WELL NAME & BH

OASIS PETROLEUM NORTH AMERICA, LLC
SECTION BREAKDOWN
SECTIONS 31 & 32, T153N, R100W
MKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.H.H. Project No.: S13-09-372.01
Checked By: D.D.K. Date: FEB. 2014

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PAD LAYOUT

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"GRAMMA FEDERAL 5300 41-31 13T"
713 FEET FROM SOUTH LINE AND 320 FEET FROM WEST LINE
SECTION 31, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

REGISTERED LAND SURVEYOR
DARYL D. KASEMAN
LS-3880
DATE: 12/31/14
NORTH DAKOTA

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

0 60
1" = 60'

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

Drawn By: B.H.H. | Project No.: S13-09-372.01
Checked By: D.D.K. | Date: FEB 2014

Revision No.	Date	By	Description
REV 1	3/5/14	JJS	CORRECTED WELL CALLS
REV 2	12/31/14	JJS	CHANGED WELL NAME & BH

ACCESS APPROACH

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"GRAMMA FEDERAL 5300 41-31 13T"
713 FEET FROM SOUTH LINE AND 320 FEET FROM WEST LINE
SECTION 31, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

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REGISTERED LAND SURVEYOR
DARYL D. KASEMAN
LS-3880
DATE: 12/31/14
NORTH DAKOTA

0 500
1" = 500'

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

Drawn By: B.H.H. | Project No.: S13-09-372.01
Checked By: D.D.K. | Date: FEB. 2014

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

Drawn By: B.H.H. | Project No.: S13-09-372.01
Checked By: D.D.K. | Date: FEB. 2014

Revision No.	Date	By	Description
REV 1	3/5/14	JJS	CORRECTED WELL CALLS
REV 2	12/31/14	JJS	CHANGED WELL NAME & BH

COUNTY ROAD MAP

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"GRAMMA FEDERAL 5300 41-31 13T"
713 FEET FROM SOUTH LINE AND 320 FEET FROM WEST LINE
SECTION 31, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

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SCALE: 1" = 2 MILE

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

Drawn By: B.H.H. | Project No.: S13-09-372.01
Checked By: D.D.K. | Date: FEB. 2014

Revision No.	Date	By	Description
REV 1	3/5/14	JJS	CORRECTED WELL CALLS
REV 2	12/31/14	JJS	CHANGED WELL NAME & BH

CROSS SECTIONS

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"GRAMMA FEDERAL 5300 41-31 13T"
713 FEET FROM SOUTH LINE AND 320 FEET FROM WEST LINE
SECTION 31, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

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REGISTERED LAND SURVEYOR
DARYL D. KASEMAN
LS-3880
DATE: 12/31/14
NORTH DAKOTA

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

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OASIS PETROLEUM NORTH AMERICA, LLC
PAD CROSS SECTIONS
SECTION 31, T153N, R100W
MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.H.H. | Project No.: S13-09-372.01
Checked By: D.D.K. | Date: FEB. 2014

Revision No.	Date	By	Description
REV 1	3/5/14	JJS	CORRECTED WELL CALLS
REV 2	12/31/14	JJS	CHANGED WELL NAME & BH

WELL LOCATION SITE QUANTITIES

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"GRAMMA FEDERAL 5300 41-31 13T"
713 FEET FROM SOUTH LINE AND 320 FEET FROM WEST LINE
SECTION 31, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

WELL PAD EXTENSION ELEVATION	2157.0
EXCAVATION	1,596
PLUS PIT	6,300
	7,896
EMBANKMENT	517
PLUS SHRINKAGE (30%)	155
	672
STOCKPILE PIT	6,300
STOCKPILE TOP SOIL (6")	563
STOCKPILE MATERIAL	361
DISTURBED AREA FROM PAD	0.70 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
713' FSL
320' FWL

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

Drawn By: B.H.H. Project No.: S13-09-372.01
Checked By: D.D.K. Date: FEB. 2014

Revision No.	Date	By	Description
REV 1	3/5/14	JJS	CORRECTED WELL CALLS
REV 2	12/31/14	JJS	CHANGED WELL NAME & BH

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. 29317

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

☑ Notice of Intent — Approximate Start Date: May 20, 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 NDAC 43-02-03-55 Waiver

Well Name and Number				
Gramma Federal 5300 41-31 13T2				
Footages	Qtr-Qtr	Section	Township	Range
713 F S L 320 F W L	Lot4	31	153 N	100 W
Field	Pool	County		
Baker	Bakken/~~Three Forks~~	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 requests permission for suspension of drilling for up to 90 days for the referenced well under NDAC 43-02-03-55. Oasis 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 understands NDAC 43-02-03-31 requirements regarding confidentiality pertaining to this permit. The lined reserve pit will be fenced immediately after construction if the well pad is located in a pasture (NDAC 43-02-03-19 & 19.1). Oasis 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 & TD INFO

Company		Telephone Number
Oasis Petroleum North America, LLC		(281) 404-9562
Address		
1001 Fannin, Suite 1500		
City	State	Zip Code
Houston	TX	77002
Signature	Printed Name	
	Lauri M. Stanfield	
Title	Date	
Regulatory Specialist	April 7, 2014	
Email Address		
lstanfield@oasispetroleum.com		

FOR STATE USE ONLY

☐ Received ☒ Approved

Date 9/3/2014

By Matthew Mavarn

Title **ENGINEERING TECHNICIAN**

Oil and Gas Division 29317

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

Department of Mineral Resources

Lynn D. Helms - Director

North Dakota Industrial Commission

www.dmr.nd.gov/oilgas/

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

Date: **9/8/2014**

RE: CORES AND SAMPLES

Well Name: **GRAMMA FEDERAL 5300 41-31 13T2** Well File No.: **29317**
Location: **LOT4 31-153-100** County: MCKENZIE
Permit Type: **Development - HORIZONTAL**
Field: **BAKER** Target Horizon: THREE FORKS B2

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:
     - 30' maximum intervals through all vertical and build sections.
     - 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)

RECEIVED ND OIL & GAS DIVISION JUN 2014

Well File No. 29317

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

☑ Notice of Intent	Approximate Start Date **May 20, 2014**	☐ Drilling Prognosis	☐ Spill Report
☐ Report of Work Done	Date Work Completed	☐ Redrilling or Repair	☐ Shooting
		☐ Casing or Liner	☐ Acidizing
		☐ Plug Well	☐ Fracture Treatment
☐ 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	☐ Supplemental History	☐ Change Production Method
		☐ Temporarily Abandon	☐ Reclamation
		☑ Other	**Variance to Rule 43-02-03-31**

Well Name and Number					
Gramma Federal 5300 41-31 13T2					
Footages	Qtr-Qtr	Section	Township	Range	
713 F S L 320 F W L	Lot4	31	153 N	100 W	
Field	Pool	County			
Baker	**Bakken/Three Forks**	**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 rule 43-02-03-31 requiring electrical, radioactive or other similar logs to be run to determine formation tops and zones of porosity. The surface location of this well will be very near our Lewis Federal 5300 31-31H (API #33-053-03433 NDIC # 20314) in Lot 4 Section 31, T153N, R100W and the logs run on this well should be sufficient to determine formation tops in the vertical section of the well bore. As outlined in our application for permit to drill, Oasis Petroleum North America, LLC will run gamma ray logs from KOP to the total depth and cement bond log from the production casing total depth to surface. Two digital copies of all mud logs (one tif and one las) will be submitted to the NDIC.

Company **Oasis Petroleum North America, LLC**		Telephone Number **(281) 404-9562**
Address **1001 Fannin, Suite 1500**		
City **Houston**	State **TX**	Zip Code **77002**
Signature	Printed Name **Lauri M. Stanfield**	
Title **Regulatory Specialist**	Date **April 7, 2014**	
Email Address **lstanfield@oasispetroleum.com**		

FOR STATE USE ONLY

☐ Received	☒ Approved
Date 9-3-2014	
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. 29317

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

☑ Notice of Intent — Approximate Start Date: May 20, 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 NDAC 43-02-03-55 Waiver

Well Name and Number					
Gramma Federal 5300 41-31 13T2					
Footages	Qtr-Qtr	Section	Township	Range	
713 F S L 320 F W L	Lot4	31	153 N	100 W	
Field	Pool	County			
Baker	Bakken/~~Three Forks~~	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 requests permission for suspension of drilling for up to 90 days for the referenced well under NDAC 43-02-03-55. Oasis 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 understands NDAC 43-02-03-31 requirements regarding confidentiality pertaining to this permit. The lined reserve pit will be fenced immediately after construction if the well pad is located in a pasture (NDAC 43-02-03-19 & 19.1). Oasis 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 & TD INFO

Company		Telephone Number
Oasis Petroleum North America, LLC		(281) 404-9562
Address		
1001 Fannin, Suite 1500		
City	State	Zip Code
Houston	TX	77002
Signature	Printed Name	
	Lauri M. Stanfield	
Title	Date	
Regulatory Specialist	April 7, 2014	
Email Address		
lstanfield@oasispetroleum.com		

FOR STATE USE ONLY

☐ Received ☒ Approved

Date 9/3/2014

By Matthew Messarra

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.oilgas.nd.gov

September 3, 2014

Lauri M. Stanfield
Regulatory Specialist
OASIS PETROLEUM NORTH AMERICA LLC
1001 Fannin Street, Suite 1500
Houston, TX 77002

RE: HORIZONTAL WELL
GRAMMA FEDERAL 5300 41-31 13T2
LOT4 Section 31-153N-100W
McKenzie County
Well File # 29317

Dear Lauri:

Pursuant to Commission Order No. 23752, approval to drill the above captioned well is hereby given. The approval is granted on the condition that all portions of the well bore not isolated by cement, be no closer than the **500' setback** from the north & south boundaries and **200' setback** from the east & west boundaries within the 1280 acre spacing unit consisting of Sections 31 & 32 T153N R100W.

PERMIT STIPULATIONS: Effective June 1, 2014, a covered leak-proof container (with placard) for filter sock disposal must be maintained on the well site beginning when the well is spud, and must remain on-site during clean-out, completion, and flow-back whenever filtration operations are conducted. Also, OASIS PETROLEUM NORTH AMERICA LLC must contact NDIC Field Inspector Richard Dunn at 701-770-3554 prior to location construction.

Drilling pit

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

Form 1 Changes & Hard Lines

Any changes, shortening of casing point or lengthening at Total Depth must have prior approval by the NDIC. The proposed directional plan is at a legal location. Based on the azimuth of the proposed lateral the maximum legal coordinate from the well head is: 10016' E.

Location Construction Commencement (Three Day Waiting Period)

Operators shall not commence operations on a drill site until the 3rd business day following publication of the approved drilling permit on the NDIC - OGD Daily Activity Report. If circumstances require operations to commence before the 3rd business day following publication on the Daily Activity Report, the waiting period may be waived by the Director. Application for a waiver must be by sworn affidavit providing the information necessary to evaluate the extenuating circumstances, the factors of NDAC 43-02-03-16.2 (1), (a)-(f), and any other information that would allow the Director to conclude that in the event another owner seeks revocation of the drilling permit, the applicant should retain the permit.

Permit Fee & Notification

Payment was received in the amount of $100 via credit card .The permit fee has been received. It is requested that notification be given immediately upon the spudding of the well. This information should be relayed to the Oil & Gas Division, Bismarck, via telephone. The following information must be included: Well name, legal location, permit number, drilling contractor, company representative, date and time of spudding. Office hours are 8:00 a.m. to 12:00 p.m. and 1:00 p.m. to 5:00 p.m. Central Time. Our telephone number is (701) 328-8020, leave a message if after hours or on the weekend.

Survey Requirements for Horizontal, Horizontal Re-entry, and Directional Wells

NDAC Section 43-02-03-25 (Deviation Tests and Directional Surveys) states in part (that) the survey contractor shall file a certified copy of all surveys with the director free of charge within thirty days of completion. Surveys must be submitted as one electronic copy, or in a form approved by the director. However, the director may require the directional survey to be filed immediately after completion if the survey is needed to conduct the operation of the director's office in a timely manner. Certified surveys must be submitted via email in one adobe document, with a certification cover page to certsurvey@nd.gov.

Survey points shall be of such frequency to accurately determine the entire location of the well bore.

Specifically, the Horizontal and Directional well survey frequency is 100 feet in the vertical, 30 feet in the curve (or when sliding) and 90 feet in the lateral.

Surface casing cement

Tail cement utilized on surface casing must have a minimum compressive strength of 500 psi within 12 hours, and tail cement utilized on production casing must have a minimum compressive strength of 500 psi before drilling the plug or initiating tests.

Logs

NDAC Section 43-02-03-31 requires the running of (1) a suite of open hole logs from which formation tops and porosity zones can be determined, (2) a Gamma Ray Log run from total depth to ground level elevation of the well bore, and (3) a log from which the presence and quality of cement can be determined (Standard CBL or Ultrasonic cement evaluation log) in every well in which production or intermediate casing has been set, this log must be run prior to completing the well. All logs run must be submitted free of charge, as one digital TIFF (tagged image file format) copy and one digital LAS (log ASCII) formatted copy. Digital logs may be submitted on a standard CD, DVD, or attached to an email sent to digitallogs@nd.gov

Thank you for your cooperation.

Sincerely,

Matt Messana
Engineering Technician

APPLICATION FOR PERMIT TO DRILL HORIZONTAL WELL - FORM 1H

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 54269 (08-2005)

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

Type of Work	Type of Well	Approximate Date Work Will Start	Confidential Status
New Location	Oil & Gas	05 / 20 / 2014	No

Operator	Telephone Number
OASIS PETROLEUM NORTH AMERICA LLC	281-404-9562

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

☑ Notice has been provided to the owner of any permanently occupied dwelling within 1,320 feet.

☑ This well is not located within five hundred feet of an occupied dwelling.

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

Well Name	Well Number
GRAMMA FEDERAL	5300 41-31 13T2

Surface Footages	Qtr-Qtr	Section	Township	Range	County
713 F S L 320 F W L	LOT4	31	153 N	100 W	McKenzie
Longstring Casing Point Footages	**Qtr-Qtr**	**Section**	**Township**	**Range**	**County**
1004 F S L 738 F W L	LOT4	31	153 N	100 W	McKenzie

Longstring Casing Point Coordinates From Well Head	Azimuth	Longstring Total Depth
291 N From WH 418 E From WH	59 °	11232 Feet MD 10947 Feet TVD

Bottom Hole Footages From Nearest Section Line	Qtr-Qtr	Section	Township	Range	County
1285 F S L 224 F E L	SESE	32	153 N	100 W	McKenzie

Bottom Hole Coordinates From Well Head	KOP Lateral 1	Azimuth Lateral 1	Estimated Total Depth Lateral 1
572 N From WH 9992 E From WH	10469 Feet MD	90 °	20858 Feet MD 10998 Feet TVD

Latitude of Well Head	Longitude of Well Head	NAD Reference	Description of (Subject to NDIC Approval)
48 ° 01 ' 34.88 "	-103 ° 36 ' 10.35 "	NAD83	Spacing Unit: Sections 31 & 32 T153N R100W

Ground Elevation	Acres in Spacing/Drilling Unit	Spacing/Drilling Unit Setback Requirement	Industrial Commission Order
2158 Feet Above S.L.	1280	500 Feet N/S 200 Feet E/W	23752

North Line of Spacing/Drilling Unit	South Line of Spacing/Drilling Unit	East Line of Spacing/Drilling Unit	West Line of Spacing/Drilling Unit
10582 Feet	10536 Feet	5280 Feet	5249 Feet

Objective Horizons	Pierre Shale Top
Three Forks B2	2123

Proposed	Size	Weight	Depth	Cement Volume	
Surface Casing	13 - 3/8 "	54 Lb./Ft.	2230 Feet	1214 Sacks	NOTE: Surface hole must be drilled with fresh water and surface casing must be cemented back to surface.

Proposed	Size	Weight(s)	Longstring Total Depth	Cement Volume	Cement Top	Top Dakota Sand
Longstring Casing	7 - "	32 Lb./Ft.	11232 Feet MD 10947 Feet TVD	838 Sacks	4058 Feet	5558 Feet

Base Last Charles Salt (If Applicable)	
9278 Feet	NOTE: Intermediate or longstring casing string must be cemented above the top Dakota Group Sand.

Proposed Logs
Triple Combo: KOP to Kibbey GR/RES to BSC GR to Surf CND through the Dakota

Drilling Mud Type (Vertical Hole - Below Surface Casing)	Drilling Mud Type (Lateral)
Invert	Salt Water Gel

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

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

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

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

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

See Page 2 for Comments section and signature block.

COMMENTS, ADDITIONAL INFORMATION, AND/OR LIST OF ATTACHMENTS

Lateral 2

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

Lateral 3

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

Lateral 4

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

Lateral 5

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

I hereby swear or affirm the information provided is true, complete and correct as determined from all available records.		Date 04 / 09 / 2014
ePermit	Printed Name **Lauri M. Stanfield**	Title **Regulatory Specialist**

FOR STATE USE ONLY

Permit and File Number **29317**	API Number **33 - 053 - 06232**
Field **BAKER**	
Pool **BAKKEN**	Permit Type **DEVELOPMENT**

FOR STATE USE ONLY

Date Approved **9 / 3 / 2014**
By **Matt Messana**
Title **Engineering Technician**

WELL LOCATION PLAT

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"GRAMMA FEDERAL 5300 41-31 13T2"
713 FEET FROM SOUTH LINE AND 320 FEET FROM WEST LINE
SECTION 31, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

VICINITY MAP

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY DARYL D. KASEMAN, PLS, REGISTRATION NUMBER 3880 ON 3/5/14 AND THE ORIGINAL DOCUMENTS ARE STORED AT THE OFFICES OF INTERSTATE ENGINEERING, INC.

0 1000
1" = 1000'

✠ – MONUMENT – RECOVERED
✠ – MONUMENT – NOT RECOVERED

STAKED ON 2/28/14
VERTICAL CONTROL DATUM WAS BASED UPON CONTROL POINT 705 WITH AN ELEVATION OF 2158.3'

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

DARYL D. KASEMAN LS-3880

REGISTERED LAND SURVEYOR
DARYL D. KASEMAN
LS-3880
DATE: 3/5/14
NORTH DAKOTA

Revision No.	Date	By	Description
REV 1	3/5/14	JJS	CORRECTED WELL CALLS

OASIS PETROLEUM NORTH AMERICA, LLC
WELL LOCATION PLAT
SECTION 31, T153N, R100W
MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.H.H. | Project No.: S13-09-372.01
Checked By: D.D.K. | Date: FEB. 2014

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www.interstateeng.com
Other offices in Minnesota, North Dakota and South Dakota

INTERSTATE ENGINEERING
Professionals you need, people you trust

SHEET NO. 1/8

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

600 E Boulevard Ave - Dept 405, Bismarck, North Dakota 58505-0840 Phone (701)328-8020 Fax (701)328-8022

DRILLING PLAN

OPERATOR	Oasis Petroleum	**COUNTY/STATE**	McKenzie Co., ND
WELL NAME	Gramma Federal 5300 41-31 13T2	**RIG**	Nabors B-Series
WELL TYPE	Horizontal Three Forks 2nd Bench		
LOCATION	SWSW 31-153N-100W Surface Location (survey plat): 713' fsl	320' fwl	
EST. T.D.	20,858'	**GROUND ELEV:**	2158 Finished Pad Elev. **Sub Height:** 25
	TOTAL LATERAL: 9,626' (est)	**KB ELEV:**	2183

PROGNOSIS: Based on 2,183' KB(est)

MARKER		DEPTH (Surf Loc)	DATUM (Surf Loc)
Pierre	NDIC MAP	2,123	60'
Greenhorn		4,738	-2,555'
Mowry		5,129	-2,946'
Dakota		5,558	-3,375'
Rierdon		6,346	-4,163'
Dunham Salt		6,903	-4,720'
Dunham Salt Base		7,020	-4,837'
Spearfish		7,036	-4,853'
Pine Salt		7,363	-5,180'
Pine Salt Base		7,385	-5,202'
Opeche Salt		7,437	-5,254'
Opeche Salt Base		7,503	-5,320'
Broom Creek (Top of Minnelusa Gp.)		7,669	-5,486'
Amsden		7,734	-5,551'
Tyler		7,878	-5,695'
Otter (Base of Minnelusa Gp.)		8,102	-5,919'
Kibbey		8,400	-6,217'
Charles Salt		8,606	-6,423'
UB		9,202	-7,019'
Base Last Salt		9,278	-7,095'
Ratcliffe		9,313	-7,130'
Mission Canyon		9,488	-7,305'
Lodgepole		10,033	-7,850'
Lodgepole Fracture Zone		10,496	-8,313'
False Bakken		10,765	-8,582'
Upper Bakken		10,776	-8,593'
Middle Bakken		10,792	-8,609'
Lower Bakken		10,831	-8,648'
Pronghorn		10,839	-8,656'
Three Forks 1st Bench		10,858	-8,675'
Three Forks 1st Bench Claystone		10,879	-8,696'
Three Forks 2nd Bench		10,934	-8,751'
Three Forks 2nd Bench Claystone		10,958	-8,775'
Three Forks 3rd Bench		10,994	-8,811'

Dip Rate: -0.3

Max. Anticipated BHP: 4748

LOGS:

	Type	Interval
OH Logs:	Triple Combo KOP to Kibby (or min run of 1800' whichever is greater); GR/Res to BSC; GR to surf; CND through the Dakota	
CBL/GR:	Above top of cement/GR to base of casing	
MWD GR:	KOP to lateral TD	

DEVIATION:

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

DST'S: None planned

CORES: None planned

MUDLOGGING:

Two-Man: 8,406' ~200' above the Charles (Kibbey) to Casing point; Casing point to TD

30' samples at direction of wellsite geologist; 10' through target @ curve land

BOP: 11" 5000 psi blind, pipe & annular

Surface Formation: *Glacial till*

MUD:	Interval		Type	WT	Vis	WL	Remarks
Surface:	0' -	2,230'	FW	8.4-9.0	28-32	NC	Circ Mud Tanks
Intermediate:	2,230' -	11,232'	Invert	9.5-10.4	40-50	30+HtHp	Circ Mud Tanks
Lateral:	11,232' -	20,858'	Salt Water	9.8-10.2	28-32	NC	Circ Mud Tanks

CASING:	Size	Wt ppf	Hole	Depth	Cement	WOC	Remarks
Surface:	13-3/8"	54.5#	13-1/2"	2,230'	To Surface	12	100' into Pierre
Intermediate (Dakota):	9-5/8"	40#	12-1/4"	6,400'	2230	24	Set Casing across Dakota
Intermediate:	7"	32#	8-3/4"	11,232'	4058	24	TOC 1500' above Dakota
Production Liner:	4.5"	13.5#	6"	20,858'	TOL @ 10,419'		50' above KOP

PROBABLE PLUGS, IF REQ'D:

OTHER:

	MD	TVD	FNL/FSL	FEL/FWL	S-T-R	AZI		
Surface:	2,230	2,230	713' FSL	320' FWL	Sec. 31-T153N-R100W		Survey Company:	
KOP:	10,469'	10,469'	748' FSL	320' FWL	Sec. 31-T153N-R100W		Build Rate:	12 deg /100'
EOC:	11,217'	10,947'	996' FSL	725' FWL	Sec. 31-T153N-R100W	58.0	Turn Rate:	3 deg /100'
Casing Point:	11,232'	10,947'	1004' FSL	738' FWL	Sec. 31-T153N-R100W	58.0		
Three Forks Lateral TD:	20,858'	10,998'	1285' FSL	200' FEL	Sec. 32-T153N-R100W	90.0		

Comments:

Request Sundry to Waive Open Hole Logs

Justification Well - LOG WAIVER REQUESTED Oasis Petroleum Lewis 5300 31-31H 700' north in sec. 31

No frac string planned

35 packers and 25 sleeves

Geology: M.Steed 3/18/2014 **Engineering:** M. Brown 3-31-14

Oasis Petroleum
Well Summary
Gramma Federal 5300 41-31 13T2
Section 31 T153N R100W
McKenzie County, ND

SURFACE CASING AND CEMENT DESIGN

							Make-up Torque (ft-lbs)		
Size	**Interval**	**Weight**	**Grade**	**Coupling**	**I.D.**	**Drift**	**Minimum**	**Optimum**	**Max**
13-3/8”	0’ to 2230	54.5	J-55	STC	12.615"	12.459"	4,100	5,470	6,840

Interval	Description	Collapse	Burst	Tension
		(psi) a	(psi) b	(1000 lbs) c
0’ to 2230	13-3/8", 54.5#, J-55, STC, 8rd	1400 / 1.93	2730 / 2.61	689 / 3.36

API Rating & Safety Factor

a) Based on full casing evacuation with 9 ppg fluid on backside (2230' setting depth).
b) Burst pressure based on 9 ppg fluid with no fluid on backside (2230' setting depth).
c) Based on string weight in 9 ppg fluid at 2230' TVD plus 100k# overpull. (Buoyed weight equals 105k lbs.)

Cement volumes are based on 13-3/8" casing set in 17-1/2" hole with 40% excess to circulate cement back to surface.
Mix and pump the following slurry.

Pre-flush (Spacer): **10 bbls** fresh water

Lead Slurry: **914 sks** (324 bbls) Conventional system with 75 lb/sk cement, 2% extender, 10% expanding agent, 2% $CaCl_2$ and 0.5 lb/sk lost circulation control agent

Tail Slurry: **300 sks** (62 bbls) Conventional system with 94 lb/sk cement, 0.2% $CaCl_2$, and .3 lb/sk lost circulation control agent

Oasis Petroleum
Well Summary
Gramma Federal 5300 41-31 13T2
Section 31 T153N R100W
McKenzie County, ND

INTERMEDIATE CASING AND CEMENT DESIGN

Intermediate Casing Design

							Make-up Torque (ft-lbs)		
Size	**Interval**	**Weight**	**Grade**	**Coupling**	**I.D.**	**Drift**	**Minimum**	**Optimum**	**Max**
9-5/8”	0' - 6400'	40	L-80	LTC	8.835”	8.75”**	5,450	7,270	9,090

**Special Drift

Interval	Description	Collapse	Burst	Tension
		(psi) a	(psi) b	(1000 lbs) c
0' - 6400'	9-5/8”, 40#, HCP-110, LTC, 8rd	3090 / 3.71*	5750 / 1.24	837 / 3.86

API Rating & Safety Factor

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

Cement volumes are estimates based on 9-5/8" casing set in an 12-1/4" hole with 30% excess. TOC at SFC shoe.

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

Lead Slurry: **592 sks** (210 bbls) Conventional system with 75 lb/sk cement, 0.5lb/sk lost circulation, 10% expanding agent, 2% extender, 2% CaCl2, 0.2% anti foam, and 0.4% fluid loss

Tail Slurry: **521 sks** (108 bbls) Conventional system with 94 lb/sk cement, 0.3% anti-settling agent, 0.3% fluid loss agent, 0.3 lb/sk lost circulation control agent, 0.2% anti foam, and 0.1% retarder

Oasis Petroleum
Well Summary
Gramma Federal 5300 41-31 13T2
Section 31 T153N R100W
McKenzie County, ND

INTERMEDIATE CASING AND CEMENT DESIGN

Intermediate Casing Design

							Make-up Torque (ft-lbs)		
Size	**Interval**	**Weight**	**Grade**	**Coupling**	**I.D.**	**Drift**	**Minimum**	**Optimum**	**Max**
7”	0' - 11232'	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' - 11232'	7”, 32#, HCP-110, LTC, 8rd	11820 / 2.07*	12460 / 1.28	897 / 2.21
6903' - 9300'	7”, 32#, HCP-110, LTC, 8rd	11820 / 1.05**	12460 / 1.30	

API Rating & Safety Factor

a) *Assume full casing evacuation with 10 ppg fluid on backside. **Assume full casing evacuation with 1.2 psi/ft equivalent fluid gradient across salt intervals.
b) Burst pressure based on 9000 psig max press for stimulation plus 10.2 ppg fluid in casing and 9 ppg fluid on backside-to 10947' TVD.
c) Based on string weight in 10 ppg fluid, (303k lbs buoyed weight) plus 100k lbs overpull.

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

Pre-flush (Spacer): **20 bbls** Chem wash
70 bbls 10.6# Scavenger

Lead Slurry: **190 sks** (76 bbls) Conventional system with 24 lb/sk cement, 54lb/sk extender, 3% KCl, 0.5% viscosifier, 0.2% anti foam, 0.5lb/sk lost circulation

Tail Slurry: **648 sks** (177 bbls) Conventional system with 94 lb/sk cement, 3% KCl, 35% Silica, 0.2% fluid loss agent, 0.5 lb/sk lost circulation control agent and 0.4% retarder

Oasis Petroleum
Well Summary
Gramma Federal 5300 41-31 13T2
Section 31 T153N R100W
McKenzie County, ND

PRODUCTION LINER

Size	Interval	Weight	Grade	Coupling	I.D.	Drift	Estimated Torque
4-1/2”	10419' - 20858'	13.5	P-110	BTC	3.920"	3.795"	4500

Interval	Description	Collapse	Burst	Tension
		(psi) **a**	(psi) **b**	(1000 lbs) **c**
10419' - 20858'	4-1/2”, 13.5 lb, P-110, BTC, 8rd	10670 / 1.96	12410 / 1.28	443 / 2.00

API Rating & Safety Factor

a) Based on full casing evacuation with 9.5 ppg fluid on backside @ 10998' TVD.
b) Burst pressure based on 9000 psi treating pressure with 10.2 ppg internal fluid gradient and 9 ppg external fluid gradient @ 10998' TVD.
c) Based on string weight in 9.5 ppg fluid (Buoyed weight: 120k 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)

Azimuths to True North
Magnetic North: 8.29°

Magnetic Field
Strength: 56436.6snT
Dip Angle: 72.97°
Date: 3/28/2014
Model: IGRF2010

OASIS PETROLEUM

Project: Indian Hills
Site: 153N-100W-31/32
Well: Gramma Federal 5300 41-31 13T2
Wellbore: Gramma Fed #13T2
Design: Plan #1

SITE DETAILS: 153N-100W-31/32

Site Centre Latitude: 48° 1' 34.880 N
Longitude: 103° 36' 10.350 W

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

CASING DETAILS

TVD	MD	Name	Size
2230.0	2230.0	13 3/8"	13.375
6399.8	6400.0	9 5/8"	9.625
10947.0	11232.0	7"	7.000

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	
2400.0	0.00	0.00	2400.0	0.0	0.0	0.00	
2412.0	0.60	0.00	2412.0	0.1	0.0	5.00	
5742.3	0.60	0.00	5742.1	34.9	0.0	0.00	
5754.3	0.00	0.00	5754.1	35.0	0.0	5.00	
10000.2	0.00	0.00	10000.0	35.0	0.0	0.00	
10469.6	0.00	0.00	10469.5	35.0	0.0	0.00	
11217.1	89.70	58.53	10946.9	283.0	405.1	12.00	
11232.5	89.70	58.53	10947.0	291.0	418.2	0.00	
12281.6	89.70	90.00	10952.7	572.0	1415.3	3.00	
13803.1	89.70	90.00	10960.7	572.0	2936.8	0.00	
20858.4	89.70	90.00	10998.0	572.0	9992.0	0.00	PBHL

Oasis

Indian Hills
153N-100W-31/32
Gramma Federal 5300 41-31 13T2

Gramma Fed #13T2

Plan: Plan #1

Standard Planning Report

28 March, 2014

Planning Report

Database:	OpenWellsCompass - EDM Prod	**Local Co-ordinate Reference:**	Well Gramma Federal 5300 41-31 13T2
Company:	Oasis	**TVD Reference:**	WELL @ 2183.0ft (Original Well Elev)
Project:	Indian Hills	**MD Reference:**	WELL @ 2183.0ft (Original Well Elev)
Site:	153N-100W-31/32	**North Reference:**	True
Well:	Gramma Federal 5300 41-31 13T2	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Gramma Fed #13T2		
Design:	Plan #1		

Project Indian Hills

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

Site 153N-100W-31/32

Site Position:		**Northing:**	390,399.32 ft	**Latitude:**	48° 1' 42.010 N
From:	Lat/Long	**Easting:**	1,209,468.83 ft	**Longitude:**	103° 36' 10.620 W
Position Uncertainty:	0.0 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	-2.31 °

Well Gramma Federal 5300 41-31 13T2

Well Position	**+N/-S**	-722.5 ft	**Northing:**	389,676.70 ft	**Latitude:**	48° 1' 34.880 N
	+E/-W	18.4 ft	**Easting:**	1,209,458.06 ft	**Longitude:**	103° 36' 10.350 W
Position Uncertainty		0.0 ft	**Wellhead Elevation:**		**Ground Level:**	2,158.0 ft

Wellbore Gramma Fed #13T2

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	3/28/2014	8.29	72.97	56,437

Design Plan #1

Audit Notes:

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

Vertical Section:	**Depth From (TVD) (ft)**	**+N/-S (ft)**	**+E/-W (ft)**	**Direction (°)**
	0.0	0.0	0.0	86.72

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,412.0	0.60	0.00	2,412.0	0.1	0.0	5.00	5.00	0.00	0.00	
5,742.3	0.60	0.00	5,742.1	34.9	0.0	0.00	0.00	0.00	0.00	
5,754.3	0.00	0.00	5,754.1	35.0	0.0	5.00	-5.00	0.00	180.00	
10,000.2	0.00	0.00	10,000.0	35.0	0.0	0.00	0.00	0.00	0.00	
10,469.6	0.00	0.00	10,469.5	35.0	0.0	0.00	0.00	0.00	0.00	
11,217.1	89.70	58.53	10,946.9	283.0	405.1	12.00	12.00	0.00	58.53	
11,232.5	89.70	58.53	10,947.0	291.0	418.2	0.00	0.00	0.00	0.00	
12,281.6	89.70	90.00	10,952.7	572.0	1,415.3	3.00	0.00	3.00	90.09	
13,803.1	89.70	90.00	10,960.7	572.0	2,936.8	0.00	0.00	0.00	0.00	
20,858.4	89.70	90.00	10,998.0	572.0	9,992.0	0.00	0.00	0.00	0.00	Gramma #13T2 PBHL

Database:	OpenWellsCompass - EDM Prod	**Local Co-ordinate Reference:**	Well Gramma Federal 5300 41-31 13T2
Company:	Oasis	**TVD Reference:**	WELL @ 2183.0ft (Original Well Elev)
Project:	Indian Hills	**MD Reference:**	WELL @ 2183.0ft (Original Well Elev)
Site:	153N-100W-31/32	**North Reference:**	True
Well:	Gramma Federal 5300 41-31 13T2	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Gramma Fed #13T2		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,123.0	0.00	0.00	2,123.0	0.0	0.0	0.0	0.00	0.00	0.00
Pierre									
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,230.0	0.00	0.00	2,230.0	0.0	0.0	0.0	0.00	0.00	0.00
13 3/8"									
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
Start Build 5.00									
2,412.0	0.60	0.00	2,412.0	0.1	0.0	0.0	5.00	5.00	0.00
Start 3330.3 hold at 2412.0 MD									
2,500.0	0.60	0.00	2,500.0	1.0	0.0	0.1	0.00	0.00	0.00
2,600.0	0.60	0.00	2,600.0	2.0	0.0	0.1	0.00	0.00	0.00
2,700.0	0.60	0.00	2,700.0	3.1	0.0	0.2	0.00	0.00	0.00
2,800.0	0.60	0.00	2,800.0	4.1	0.0	0.2	0.00	0.00	0.00
2,900.0	0.60	0.00	2,900.0	5.2	0.0	0.3	0.00	0.00	0.00
3,000.0	0.60	0.00	3,000.0	6.2	0.0	0.4	0.00	0.00	0.00
3,100.0	0.60	0.00	3,100.0	7.3	0.0	0.4	0.00	0.00	0.00
3,200.0	0.60	0.00	3,200.0	8.3	0.0	0.5	0.00	0.00	0.00
3,300.0	0.60	0.00	3,300.0	9.4	0.0	0.5	0.00	0.00	0.00
3,400.0	0.60	0.00	3,399.9	10.4	0.0	0.6	0.00	0.00	0.00
3,500.0	0.60	0.00	3,499.9	11.5	0.0	0.7	0.00	0.00	0.00
3,600.0	0.60	0.00	3,599.9	12.5	0.0	0.7	0.00	0.00	0.00
3,700.0	0.60	0.00	3,699.9	13.6	0.0	0.8	0.00	0.00	0.00
3,800.0	0.60	0.00	3,799.9	14.6	0.0	0.8	0.00	0.00	0.00
3,900.0	0.60	0.00	3,899.9	15.6	0.0	0.9	0.00	0.00	0.00
4,000.0	0.60	0.00	3,999.9	16.7	0.0	1.0	0.00	0.00	0.00
4,100.0	0.60	0.00	4,099.9	17.7	0.0	1.0	0.00	0.00	0.00
4,200.0	0.60	0.00	4,199.9	18.8	0.0	1.1	0.00	0.00	0.00
4,300.0	0.60	0.00	4,299.9	19.8	0.0	1.1	0.00	0.00	0.00
4,400.0	0.60	0.00	4,399.9	20.9	0.0	1.2	0.00	0.00	0.00
4,500.0	0.60	0.00	4,499.9	21.9	0.0	1.3	0.00	0.00	0.00
4,600.0	0.60	0.00	4,599.9	23.0	0.0	1.3	0.00	0.00	0.00
4,700.0	0.60	0.00	4,699.9	24.0	0.0	1.4	0.00	0.00	0.00

Database:	OpenWellsCompass - EDM Prod	**Local Co-ordinate Reference:**	Well Gramma Federal 5300 41-31 13T2
Company:	Oasis	**TVD Reference:**	WELL @ 2183.0ft (Original Well Elev)
Project:	Indian Hills	**MD Reference:**	WELL @ 2183.0ft (Original Well Elev)
Site:	153N-100W-31/32	**North Reference:**	True
Well:	Gramma Federal 5300 41-31 13T2	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Gramma Fed #13T2		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,738.1	0.60	0.00	4,738.0	24.4	0.0	1.4	0.00	0.00	0.00
Greenhorn									
4,800.0	0.60	0.00	4,799.9	25.1	0.0	1.4	0.00	0.00	0.00
4,900.0	0.60	0.00	4,899.9	26.1	0.0	1.5	0.00	0.00	0.00
5,000.0	0.60	0.00	4,999.9	27.2	0.0	1.6	0.00	0.00	0.00
5,100.0	0.60	0.00	5,099.9	28.2	0.0	1.6	0.00	0.00	0.00
5,129.1	0.60	0.00	5,129.0	28.5	0.0	1.6	0.00	0.00	0.00
Mowry									
5,200.0	0.60	0.00	5,199.8	29.3	0.0	1.7	0.00	0.00	0.00
5,300.0	0.60	0.00	5,299.8	30.3	0.0	1.7	0.00	0.00	0.00
5,400.0	0.60	0.00	5,399.8	31.4	0.0	1.8	0.00	0.00	0.00
5,500.0	0.60	0.00	5,499.8	32.4	0.0	1.9	0.00	0.00	0.00
5,558.2	0.60	0.00	5,558.0	33.0	0.0	1.9	0.00	0.00	0.00
Dakota									
5,600.0	0.60	0.00	5,599.8	33.4	0.0	1.9	0.00	0.00	0.00
5,700.0	0.60	0.00	5,699.8	34.5	0.0	2.0	0.00	0.00	0.00
5,742.3	0.60	0.00	5,742.1	34.9	0.0	2.0	0.00	0.00	0.00
Start Drop -5.00									
5,754.3	0.00	0.00	5,754.1	35.0	0.0	2.0	5.00	-5.00	0.00
Start 4245.9 hold at 5754.3 MD									
5,800.0	0.00	0.00	5,799.8	35.0	0.0	2.0	0.00	0.00	0.00
5,900.0	0.00	0.00	5,899.8	35.0	0.0	2.0	0.00	0.00	0.00
6,000.0	0.00	0.00	5,999.8	35.0	0.0	2.0	0.00	0.00	0.00
6,100.0	0.00	0.00	6,099.8	35.0	0.0	2.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,199.8	35.0	0.0	2.0	0.00	0.00	0.00
6,300.0	0.00	0.00	6,299.8	35.0	0.0	2.0	0.00	0.00	0.00
6,346.2	0.00	0.00	6,346.0	35.0	0.0	2.0	0.00	0.00	0.00
Rierdon									
6,400.0	0.00	0.00	6,399.8	35.0	0.0	2.0	0.00	0.00	0.00
9 5/8"									
6,500.0	0.00	0.00	6,499.8	35.0	0.0	2.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,599.8	35.0	0.0	2.0	0.00	0.00	0.00
6,700.0	0.00	0.00	6,699.8	35.0	0.0	2.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,799.8	35.0	0.0	2.0	0.00	0.00	0.00
6,900.0	0.00	0.00	6,899.8	35.0	0.0	2.0	0.00	0.00	0.00
6,903.2	0.00	0.00	6,903.0	35.0	0.0	2.0	0.00	0.00	0.00
Dunham Salt									
7,000.0	0.00	0.00	6,999.8	35.0	0.0	2.0	0.00	0.00	0.00
7,020.2	0.00	0.00	7,020.0	35.0	0.0	2.0	0.00	0.00	0.00
Dunham Salt Base									
7,036.2	0.00	0.00	7,036.0	35.0	0.0	2.0	0.00	0.00	0.00
Spearfish									
7,100.0	0.00	0.00	7,099.8	35.0	0.0	2.0	0.00	0.00	0.00
7,200.0	0.00	0.00	7,199.8	35.0	0.0	2.0	0.00	0.00	0.00
7,300.0	0.00	0.00	7,299.8	35.0	0.0	2.0	0.00	0.00	0.00
7,363.2	0.00	0.00	7,363.0	35.0	0.0	2.0	0.00	0.00	0.00
Pine Salt									
7,385.2	0.00	0.00	7,385.0	35.0	0.0	2.0	0.00	0.00	0.00
Pine Salt Base									
7,400.0	0.00	0.00	7,399.8	35.0	0.0	2.0	0.00	0.00	0.00
7,437.2	0.00	0.00	7,437.0	35.0	0.0	2.0	0.00	0.00	0.00
Opeche Salt									
7,500.0	0.00	0.00	7,499.8	35.0	0.0	2.0	0.00	0.00	0.00
7,503.2	0.00	0.00	7,503.0	35.0	0.0	2.0	0.00	0.00	0.00

Database:	OpenWellsCompass - EDM Prod	**Local Co-ordinate Reference:**	Well Gramma Federal 5300 41-31 13T2
Company:	Oasis	**TVD Reference:**	WELL @ 2183.0ft (Original Well Elev)
Project:	Indian Hills	**MD Reference:**	WELL @ 2183.0ft (Original Well Elev)
Site:	153N-100W-31/32	**North Reference:**	True
Well:	Gramma Federal 5300 41-31 13T2	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Gramma Fed #13T2		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
Opeche Salt Base									
7,600.0	0.00	0.00	7,599.8	35.0	0.0	2.0	0.00	0.00	0.00
7,669.2	0.00	0.00	7,669.0	35.0	0.0	2.0	0.00	0.00	0.00
Broom Creek (Top of Minnelusa Gp.)									
7,700.0	0.00	0.00	7,699.8	35.0	0.0	2.0	0.00	0.00	0.00
7,734.2	0.00	0.00	7,734.0	35.0	0.0	2.0	0.00	0.00	0.00
Amsden									
7,800.0	0.00	0.00	7,799.8	35.0	0.0	2.0	0.00	0.00	0.00
7,878.2	0.00	0.00	7,878.0	35.0	0.0	2.0	0.00	0.00	0.00
Tyler									
7,900.0	0.00	0.00	7,899.8	35.0	0.0	2.0	0.00	0.00	0.00
8,000.0	0.00	0.00	7,999.8	35.0	0.0	2.0	0.00	0.00	0.00
8,100.0	0.00	0.00	8,099.8	35.0	0.0	2.0	0.00	0.00	0.00
8,102.2	0.00	0.00	8,102.0	35.0	0.0	2.0	0.00	0.00	0.00
Otter (Base of Minnelusa Gp.)									
8,200.0	0.00	0.00	8,199.8	35.0	0.0	2.0	0.00	0.00	0.00
8,300.0	0.00	0.00	8,299.8	35.0	0.0	2.0	0.00	0.00	0.00
8,400.0	0.00	0.00	8,399.8	35.0	0.0	2.0	0.00	0.00	0.00
8,400.2	0.00	0.00	8,400.0	35.0	0.0	2.0	0.00	0.00	0.00
Kibbey									
8,500.0	0.00	0.00	8,499.8	35.0	0.0	2.0	0.00	0.00	0.00
8,600.0	0.00	0.00	8,599.8	35.0	0.0	2.0	0.00	0.00	0.00
8,606.2	0.00	0.00	8,606.0	35.0	0.0	2.0	0.00	0.00	0.00
Charles Salt									
8,700.0	0.00	0.00	8,699.8	35.0	0.0	2.0	0.00	0.00	0.00
8,800.0	0.00	0.00	8,799.8	35.0	0.0	2.0	0.00	0.00	0.00
8,900.0	0.00	0.00	8,899.8	35.0	0.0	2.0	0.00	0.00	0.00
9,000.0	0.00	0.00	8,999.8	35.0	0.0	2.0	0.00	0.00	0.00
9,100.0	0.00	0.00	9,099.8	35.0	0.0	2.0	0.00	0.00	0.00
9,200.0	0.00	0.00	9,199.8	35.0	0.0	2.0	0.00	0.00	0.00
9,202.2	0.00	0.00	9,202.0	35.0	0.0	2.0	0.00	0.00	0.00
UB									
9,278.2	0.00	0.00	9,278.0	35.0	0.0	2.0	0.00	0.00	0.00
Base Last Salt									
9,300.0	0.00	0.00	9,299.8	35.0	0.0	2.0	0.00	0.00	0.00
9,313.2	0.00	0.00	9,313.0	35.0	0.0	2.0	0.00	0.00	0.00
Ratcliffe									
9,400.0	0.00	0.00	9,399.8	35.0	0.0	2.0	0.00	0.00	0.00
9,488.2	0.00	0.00	9,488.0	35.0	0.0	2.0	0.00	0.00	0.00
Mission Canyon									
9,500.0	0.00	0.00	9,499.8	35.0	0.0	2.0	0.00	0.00	0.00
9,600.0	0.00	0.00	9,599.8	35.0	0.0	2.0	0.00	0.00	0.00
9,700.0	0.00	0.00	9,699.8	35.0	0.0	2.0	0.00	0.00	0.00
9,800.0	0.00	0.00	9,799.8	35.0	0.0	2.0	0.00	0.00	0.00
9,900.0	0.00	0.00	9,899.8	35.0	0.0	2.0	0.00	0.00	0.00
10,000.2	0.00	0.00	10,000.0	35.0	0.0	2.0	0.00	0.00	0.00
Start 469.5 hold at 10000.2 MD									
10,033.2	0.00	0.00	10,033.0	35.0	0.0	2.0	0.00	0.00	0.00
Lodgepole									
10,100.0	0.00	0.00	10,099.8	35.0	0.0	2.0	0.00	0.00	0.00
10,200.0	0.00	0.00	10,199.8	35.0	0.0	2.0	0.00	0.00	0.00
10,300.0	0.00	0.00	10,299.8	35.0	0.0	2.0	0.00	0.00	0.00
10,400.0	0.00	0.00	10,399.8	35.0	0.0	2.0	0.00	0.00	0.00
10,469.6	0.00	0.00	10,469.5	35.0	0.0	2.0	0.00	0.00	0.00

Database:	OpenWellsCompass - EDM Prod	**Local Co-ordinate Reference:**	Well Gramma Federal 5300 41-31 13T2
Company:	Oasis	**TVD Reference:**	WELL @ 2183.0ft (Original Well Elev)
Project:	Indian Hills	**MD Reference:**	WELL @ 2183.0ft (Original Well Elev)
Site:	153N-100W-31/32	**North Reference:**	True
Well:	Gramma Federal 5300 41-31 13T2	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Gramma Fed #13T2		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
Start Build 12.00									
10,475.0	0.64	58.53	10,474.8	35.0	0.0	2.0	12.00	12.00	0.00
10,496.2	3.19	58.53	10,496.0	35.4	0.6	2.7	12.00	12.00	0.00
Lodgepole Fracture Zone									
10,500.0	3.64	58.53	10,499.8	35.5	0.8	2.9	12.00	12.00	0.00
10,525.0	6.64	58.53	10,524.7	36.7	2.7	4.8	12.00	12.00	0.00
10,550.0	9.64	58.53	10,549.4	38.5	5.8	7.9	12.00	12.00	0.00
10,575.0	12.64	58.53	10,574.0	41.0	9.9	12.2	12.00	12.00	0.00
10,600.0	15.64	58.53	10,598.2	44.2	15.1	17.6	12.00	12.00	0.00
10,625.0	18.64	58.53	10,622.1	48.1	21.4	24.1	12.00	12.00	0.00
10,650.0	21.64	58.53	10,645.6	52.6	28.7	31.7	12.00	12.00	0.00
10,675.0	24.64	58.53	10,668.5	57.7	37.1	40.3	12.00	12.00	0.00
10,700.0	27.64	58.53	10,691.0	63.5	46.5	50.0	12.00	12.00	0.00
10,725.0	30.64	58.53	10,712.8	69.8	56.9	60.8	12.00	12.00	0.00
10,750.0	33.64	58.53	10,734.0	76.8	68.2	72.5	12.00	12.00	0.00
10,775.0	36.64	58.53	10,754.4	84.3	80.5	85.2	12.00	12.00	0.00
10,788.3	38.24	58.53	10,765.0	88.5	87.4	92.3	12.00	12.00	0.00
False Bakken									
10,800.0	39.64	58.53	10,774.1	92.3	93.6	98.8	12.00	12.00	0.00
10,802.5	39.94	58.53	10,776.0	93.2	95.0	100.2	12.00	12.00	0.00
Upper Bakken									
10,823.8	42.49	58.53	10,792.0	100.5	107.0	112.5	12.00	12.00	0.00
Middle Bakken									
10,825.0	42.64	58.53	10,792.9	100.9	107.7	113.3	12.00	12.00	0.00
10,850.0	45.64	58.53	10,810.8	110.0	122.5	128.6	12.00	12.00	0.00
10,875.0	48.64	58.53	10,827.8	119.6	138.1	144.8	12.00	12.00	0.00
10,879.8	49.22	58.53	10,831.0	121.5	141.2	147.9	12.00	12.00	0.00
Lower Bakken									
10,892.2	50.71	58.53	10,839.0	126.4	149.4	156.3	12.00	12.00	0.00
Pronghorn									
10,900.0	51.64	58.53	10,843.9	129.6	154.5	161.7	12.00	12.00	0.00
10,923.5	54.46	58.53	10,858.0	139.4	170.5	178.2	12.00	12.00	0.00
Three Forks 1st Bench									
10,925.0	54.64	58.53	10,858.9	140.0	171.6	179.3	12.00	12.00	0.00
10,950.0	57.64	58.53	10,872.8	150.9	189.3	197.6	12.00	12.00	0.00
10,961.8	59.06	58.53	10,879.0	156.1	197.9	206.5	12.00	12.00	0.00
Three Forks 1st Bench Claystone									
10,975.0	60.64	58.53	10,885.6	162.1	207.6	216.5	12.00	12.00	0.00
11,000.0	63.64	58.53	10,897.3	173.6	226.4	236.0	12.00	12.00	0.00
11,025.0	66.64	58.53	10,907.8	185.5	245.8	256.0	12.00	12.00	0.00
11,050.0	69.64	58.53	10,917.1	197.6	265.6	276.4	12.00	12.00	0.00
11,075.0	72.64	58.53	10,925.2	209.9	285.7	297.3	12.00	12.00	0.00
11,100.0	75.64	58.53	10,932.0	222.5	306.2	318.5	12.00	12.00	0.00
11,108.3	76.64	58.53	10,934.0	226.7	313.1	325.6	12.00	12.00	0.00
Three Forks 2nd Bench									
11,125.0	78.64	58.53	10,937.6	235.2	327.0	339.9	12.00	12.00	0.00
11,150.0	81.64	58.53	10,941.9	248.0	348.0	361.6	12.00	12.00	0.00
11,175.0	84.64	58.53	10,944.8	261.0	369.2	383.5	12.00	12.00	0.00
11,200.0	87.64	58.53	10,946.5	274.0	390.5	405.5	12.00	12.00	0.00
11,217.1	89.70	58.53	10,946.9	283.0	405.1	420.6	12.00	12.00	0.00
Start 15.4 hold at 11217.1 MD									
11,232.0	89.70	58.53	10,947.0	290.7	417.8	433.7	0.00	0.00	0.00
7"									
11,232.5	89.70	58.53	10,947.0	291.0	418.2	434.1	0.00	0.00	0.00

Database:	OpenWellsCompass - EDM Prod	**Local Co-ordinate Reference:**	Well Gramma Federal 5300 41-31 13T2
Company:	Oasis	**TVD Reference:**	WELL @ 2183.0ft (Original Well Elev)
Project:	Indian Hills	**MD Reference:**	WELL @ 2183.0ft (Original Well Elev)
Site:	153N-100W-31/32	**North Reference:**	True
Well:	Gramma Federal 5300 41-31 13T2	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Gramma Fed #13T2		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
Start DLS 3.00 TFO 90.09									
11,300.0	89.70	60.55	10,947.4	325.2	476.4	494.2	3.00	0.00	3.00
11,400.0	89.69	63.55	10,947.9	372.1	564.7	585.0	3.00	0.00	3.00
11,500.0	89.69	66.55	10,948.4	414.2	655.4	678.0	3.00	0.00	3.00
11,600.0	89.69	69.55	10,949.0	451.6	748.1	772.7	3.00	0.00	3.00
11,700.0	89.69	72.55	10,949.5	484.1	842.7	868.9	3.00	0.00	3.00
11,800.0	89.69	75.55	10,950.1	511.6	938.8	966.5	3.00	0.00	3.00
11,900.0	89.69	78.55	10,950.6	534.0	1,036.2	1,065.1	3.00	0.00	3.00
12,000.0	89.69	81.55	10,951.2	551.2	1,134.7	1,164.4	3.00	0.00	3.00
12,100.0	89.69	84.55	10,951.7	563.3	1,234.0	1,264.2	3.00	0.00	3.00
12,200.0	89.69	87.55	10,952.2	570.2	1,333.7	1,364.1	3.00	0.00	3.00
12,281.6	89.70	90.00	10,952.7	572.0	1,415.3	1,445.7	3.00	0.00	3.00
Start 1521.5 hold at 12281.6 MD									
12,300.0	89.70	90.00	10,952.8	572.0	1,433.7	1,464.0	0.00	0.00	0.00
12,400.0	89.70	90.00	10,953.3	572.0	1,533.7	1,563.9	0.00	0.00	0.00
12,500.0	89.70	90.00	10,953.8	572.0	1,633.7	1,663.7	0.00	0.00	0.00
12,600.0	89.70	90.00	10,954.3	572.0	1,733.7	1,763.6	0.00	0.00	0.00
12,700.0	89.70	90.00	10,954.9	572.0	1,833.7	1,863.4	0.00	0.00	0.00
12,800.0	89.70	90.00	10,955.4	572.0	1,933.7	1,963.2	0.00	0.00	0.00
12,900.0	89.70	90.00	10,955.9	572.0	2,033.7	2,063.1	0.00	0.00	0.00
13,000.0	89.70	90.00	10,956.5	572.0	2,133.7	2,162.9	0.00	0.00	0.00
13,100.0	89.70	90.00	10,957.0	572.0	2,233.7	2,262.7	0.00	0.00	0.00
13,200.0	89.70	90.00	10,957.5	572.0	2,333.7	2,362.6	0.00	0.00	0.00
13,300.0	89.70	90.00	10,958.0	572.0	2,433.7	2,462.4	0.00	0.00	0.00
13,400.0	89.70	90.00	10,958.6	572.0	2,533.7	2,562.2	0.00	0.00	0.00
13,500.0	89.70	90.00	10,959.1	572.0	2,633.7	2,662.1	0.00	0.00	0.00
13,600.0	89.70	90.00	10,959.6	572.0	2,733.7	2,761.9	0.00	0.00	0.00
13,700.0	89.70	90.00	10,960.2	572.0	2,833.7	2,861.7	0.00	0.00	0.00
13,803.1	89.70	90.00	10,960.7	572.0	2,936.8	2,964.7	0.00	0.00	0.00
Start 7055.3 hold at 13803.1 MD									
13,900.0	89.70	90.00	10,961.2	572.0	3,033.7	3,061.4	0.00	0.00	0.00
14,000.0	89.70	90.00	10,961.7	572.0	3,133.7	3,161.2	0.00	0.00	0.00
14,100.0	89.70	90.00	10,962.3	572.0	3,233.7	3,261.1	0.00	0.00	0.00
14,200.0	89.70	90.00	10,962.8	572.0	3,333.7	3,360.9	0.00	0.00	0.00
14,300.0	89.70	90.00	10,963.3	572.0	3,433.7	3,460.8	0.00	0.00	0.00
14,400.0	89.70	90.00	10,963.9	572.0	3,533.7	3,560.6	0.00	0.00	0.00
14,500.0	89.70	90.00	10,964.4	572.0	3,633.7	3,660.4	0.00	0.00	0.00
14,600.0	89.70	90.00	10,964.9	572.0	3,733.7	3,760.3	0.00	0.00	0.00
14,700.0	89.70	90.00	10,965.4	572.0	3,833.7	3,860.1	0.00	0.00	0.00
14,800.0	89.70	90.00	10,966.0	572.0	3,933.7	3,959.9	0.00	0.00	0.00
14,900.0	89.70	90.00	10,966.5	572.0	4,033.7	4,059.8	0.00	0.00	0.00
15,000.0	89.70	90.00	10,967.0	572.0	4,133.7	4,159.6	0.00	0.00	0.00
15,100.0	89.70	90.00	10,967.6	572.0	4,233.7	4,259.4	0.00	0.00	0.00
15,200.0	89.70	90.00	10,968.1	572.0	4,333.7	4,359.3	0.00	0.00	0.00
15,300.0	89.70	90.00	10,968.6	572.0	4,433.7	4,459.1	0.00	0.00	0.00
15,400.0	89.70	90.00	10,969.1	572.0	4,533.7	4,558.9	0.00	0.00	0.00
15,500.0	89.70	90.00	10,969.7	572.0	4,633.7	4,658.8	0.00	0.00	0.00
15,600.0	89.70	90.00	10,970.2	572.0	4,733.7	4,758.6	0.00	0.00	0.00
15,700.0	89.70	90.00	10,970.7	572.0	4,833.7	4,858.4	0.00	0.00	0.00
15,800.0	89.70	90.00	10,971.3	572.0	4,933.7	4,958.3	0.00	0.00	0.00
15,900.0	89.70	90.00	10,971.8	572.0	5,033.7	5,058.1	0.00	0.00	0.00
16,000.0	89.70	90.00	10,972.3	572.0	5,133.7	5,157.9	0.00	0.00	0.00
16,100.0	89.70	90.00	10,972.8	572.0	5,233.7	5,257.8	0.00	0.00	0.00
16,200.0	89.70	90.00	10,973.4	572.0	5,333.7	5,357.6	0.00	0.00	0.00

Database:	OpenWellsCompass - EDM Prod	**Local Co-ordinate Reference:**	Well Gramma Federal 5300 41-31 13T2
Company:	Oasis	**TVD Reference:**	WELL @ 2183.0ft (Original Well Elev)
Project:	Indian Hills	**MD Reference:**	WELL @ 2183.0ft (Original Well Elev)
Site:	153N-100W-31/32	**North Reference:**	True
Well:	Gramma Federal 5300 41-31 13T2	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Gramma Fed #13T2		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
16,300.0	89.70	90.00	10,973.9	572.0	5,433.6	5,457.5	0.00	0.00	0.00
16,400.0	89.70	90.00	10,974.4	572.0	5,533.6	5,557.3	0.00	0.00	0.00
16,500.0	89.70	90.00	10,975.0	572.0	5,633.6	5,657.1	0.00	0.00	0.00
16,600.0	89.70	90.00	10,975.5	572.0	5,733.6	5,757.0	0.00	0.00	0.00
16,700.0	89.70	90.00	10,976.0	572.0	5,833.6	5,856.8	0.00	0.00	0.00
16,800.0	89.70	90.00	10,976.5	572.0	5,933.6	5,956.6	0.00	0.00	0.00
16,900.0	89.70	90.00	10,977.1	572.0	6,033.6	6,056.5	0.00	0.00	0.00
17,000.0	89.70	90.00	10,977.6	572.0	6,133.6	6,156.3	0.00	0.00	0.00
17,100.0	89.70	90.00	10,978.1	572.0	6,233.6	6,256.1	0.00	0.00	0.00
17,200.0	89.70	90.00	10,978.7	572.0	6,333.6	6,356.0	0.00	0.00	0.00
17,300.0	89.70	90.00	10,979.2	572.0	6,433.6	6,455.8	0.00	0.00	0.00
17,400.0	89.70	90.00	10,979.7	572.0	6,533.6	6,555.6	0.00	0.00	0.00
17,500.0	89.70	90.00	10,980.2	572.0	6,633.6	6,655.5	0.00	0.00	0.00
17,600.0	89.70	90.00	10,980.8	572.0	6,733.6	6,755.3	0.00	0.00	0.00
17,700.0	89.70	90.00	10,981.3	572.0	6,833.6	6,855.1	0.00	0.00	0.00
17,800.0	89.70	90.00	10,981.8	572.0	6,933.6	6,955.0	0.00	0.00	0.00
17,900.0	89.70	90.00	10,982.4	572.0	7,033.6	7,054.8	0.00	0.00	0.00
18,000.0	89.70	90.00	10,982.9	572.0	7,133.6	7,154.7	0.00	0.00	0.00
18,100.0	89.70	90.00	10,983.4	572.0	7,233.6	7,254.5	0.00	0.00	0.00
18,200.0	89.70	90.00	10,983.9	572.0	7,333.6	7,354.3	0.00	0.00	0.00
18,300.0	89.70	90.00	10,984.5	572.0	7,433.6	7,454.2	0.00	0.00	0.00
18,400.0	89.70	90.00	10,985.0	572.0	7,533.6	7,554.0	0.00	0.00	0.00
18,500.0	89.70	90.00	10,985.5	572.0	7,633.6	7,653.8	0.00	0.00	0.00
18,600.0	89.70	90.00	10,986.1	572.0	7,733.6	7,753.7	0.00	0.00	0.00
18,700.0	89.70	90.00	10,986.6	572.0	7,833.6	7,853.5	0.00	0.00	0.00
18,800.0	89.70	90.00	10,987.1	572.0	7,933.6	7,953.3	0.00	0.00	0.00
18,900.0	89.70	90.00	10,987.6	572.0	8,033.6	8,053.2	0.00	0.00	0.00
19,000.0	89.70	90.00	10,988.2	572.0	8,133.6	8,153.0	0.00	0.00	0.00
19,100.0	89.70	90.00	10,988.7	572.0	8,233.6	8,252.8	0.00	0.00	0.00
19,200.0	89.70	90.00	10,989.2	572.0	8,333.6	8,352.7	0.00	0.00	0.00
19,300.0	89.70	90.00	10,989.8	572.0	8,433.6	8,452.5	0.00	0.00	0.00
19,400.0	89.70	90.00	10,990.3	572.0	8,533.6	8,552.3	0.00	0.00	0.00
19,500.0	89.70	90.00	10,990.8	572.0	8,633.6	8,652.2	0.00	0.00	0.00
19,600.0	89.70	90.00	10,991.3	572.0	8,733.6	8,752.0	0.00	0.00	0.00
19,700.0	89.70	90.00	10,991.9	572.0	8,833.6	8,851.9	0.00	0.00	0.00
19,800.0	89.70	90.00	10,992.4	572.0	8,933.6	8,951.7	0.00	0.00	0.00
19,900.0	89.70	90.00	10,992.9	572.0	9,033.6	9,051.5	0.00	0.00	0.00
20,000.0	89.70	90.00	10,993.5	572.0	9,133.6	9,151.4	0.00	0.00	0.00
20,100.0	89.70	90.00	10,994.0	572.0	9,233.6	9,251.2	0.00	0.00	0.00
20,200.0	89.70	90.00	10,994.5	572.0	9,333.6	9,351.0	0.00	0.00	0.00
20,300.0	89.70	90.00	10,995.0	572.0	9,433.6	9,450.9	0.00	0.00	0.00
20,400.0	89.70	90.00	10,995.6	572.0	9,533.6	9,550.7	0.00	0.00	0.00
20,500.0	89.70	90.00	10,996.1	572.0	9,633.6	9,650.5	0.00	0.00	0.00
20,600.0	89.70	90.00	10,996.6	572.0	9,733.6	9,750.4	0.00	0.00	0.00
20,700.0	89.70	90.00	10,997.2	572.0	9,833.6	9,850.2	0.00	0.00	0.00
20,800.0	89.70	90.00	10,997.7	572.0	9,933.6	9,950.0	0.00	0.00	0.00
20,858.4	89.70	90.00	10,998.0	572.0	9,992.0	10,008.4	0.00	0.00	0.00

TD at 20858.4 - Gramma #13T2 PBHL

Database:	OpenWellsCompass - EDM Prod	**Local Co-ordinate Reference:**	Well Gramma Federal 5300 41-31 13T2
Company:	Oasis	**TVD Reference:**	WELL @ 2183.0ft (Original Well Elev)
Project:	Indian Hills	**MD Reference:**	WELL @ 2183.0ft (Original Well Elev)
Site:	153N-100W-31/32	**North Reference:**	True
Well:	Gramma Federal 5300 41-31 13T2	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Gramma Fed #13T2		
Design:	Plan #1		

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Gramma #13T2 PBHL - plan hits target center - Point	0.00	0.00	10,998.0	572.0	9,992.0	389,845.68	1,219,465.01	48° 1' 40.499 N	103° 33' 43.340 W

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
2,230.0	2,230.0	13 3/8"	13.375	17.500
6,400.0	6,399.8	9 5/8"	9.625	12.250
11,232.0	10,947.0	7"	7.000	8.750

Database:	OpenWellsCompass - EDM Prod	**Local Co-ordinate Reference:**	Well Gramma Federal 5300 41-31 13T2
Company:	Oasis	**TVD Reference:**	WELL @ 2183.0ft (Original Well Elev)
Project:	Indian Hills	**MD Reference:**	WELL @ 2183.0ft (Original Well Elev)
Site:	153N-100W-31/32	**North Reference:**	True
Well:	Gramma Federal 5300 41-31 13T2	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Gramma Fed #13T2		
Design:	Plan #1		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,123.0	2,123.0	Pierre			
4,738.1	4,738.0	Greenhorn			
5,129.1	5,129.0	Mowry			
5,558.2	5,558.0	Dakota			
6,346.2	6,346.0	Rierdon			
6,903.2	6,903.0	Dunham Salt			
7,020.2	7,020.0	Dunham Salt Base			
7,036.2	7,036.0	Spearfish			
7,363.2	7,363.0	Pine Salt			
7,385.2	7,385.0	Pine Salt Base			
7,437.2	7,437.0	Opeche Salt			
7,503.2	7,503.0	Opeche Salt Base			
7,669.2	7,669.0	Broom Creek (Top of Minnelusa Gp.)			
7,734.2	7,734.0	Amsden			
7,878.2	7,878.0	Tyler			
8,102.2	8,102.0	Otter (Base of Minnelusa Gp.)			
8,400.2	8,400.0	Kibbey			
8,606.2	8,606.0	Charles Salt			
9,202.2	9,202.0	UB			
9,278.2	9,278.0	Base Last Salt			
9,313.2	9,313.0	Ratcliffe			
9,488.2	9,488.0	Mission Canyon			
10,033.2	10,033.0	Lodgepole			
10,496.2	10,496.0	Lodgepole Fracture Zone			
10,788.3	10,765.0	False Bakken			
10,802.5	10,776.0	Upper Bakken			
10,823.8	10,792.0	Middle Bakken			
10,879.8	10,831.0	Lower Bakken			
10,892.2	10,839.0	Pronghorn			
10,923.5	10,858.0	Three Forks 1st Bench			
10,961.8	10,879.0	Three Forks 1st Bench Claystone			
11,108.3	10,934.0	Three Forks 2nd Bench			

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
2,400.0	2,400.0	0.0	0.0	Start Build 5.00
2,412.0	2,412.0	0.1	0.0	Start 3330.3 hold at 2412.0 MD
5,742.3	5,742.1	34.9	0.0	Start Drop -5.00
5,754.3	5,754.1	35.0	0.0	Start 4245.9 hold at 5754.3 MD
10,000.2	10,000.0	35.0	0.0	Start 469.5 hold at 10000.2 MD
10,469.6	10,469.5	35.0	0.0	Start Build 12.00
11,217.1	10,946.9	283.0	405.1	Start 15.4 hold at 11217.1 MD
11,232.5	10,947.0	291.0	418.2	Start DLS 3.00 TFO 90.09
12,281.6	10,952.7	572.0	1,415.3	Start 1521.5 hold at 12281.6 MD
13,803.1	10,960.7	572.0	2,936.8	Start 7055.3 hold at 13803.1 MD
20,858.4	10,998.0	572.0	9,992.0	TD at 20858.4

OASIS PETROLEUM

STATEMENT

This statement is being sent in order to comply with NDAC 43-02-03-16 (Application for permit to drill and recomplete) which states (in part that) "confirmation that a legal street address has been requested for the well site, and well facility if separate from the well site, and the proposed road access to the nearest existing public road". On the date noted below a legal street address was requested from the appropriate county office.

McKenzie County
Aaron Chisholm – McKenzie County GIS Specialist

Gramma Federal 5300 41-31 12T – 153N-100W-31/32 – 06/02/2014
Gramma Federal 5300 41-31 13T2– 153N-100W-31/32 – 06/02/2014

Lauri M. Stanfield
Regulatory Specialist
Oasis Petroleum North America, LLC

From: Michael Kukuk
To: Messana, Matt A.; Lauri Stanfield
Cc: Karyme Martin; Damon Jorgensen; Jeff Savela; Terry Weisz; Zach Dekruif
Subject: RE: Gramma Federal 5300 41-31 12T, 13T2 - Production Layout
Date: Wednesday, September 03, 2014 3:41:39 PM
Attachments: image001.png

Hi Matt,

I affirm that there are no occupied dwellings within 1000 feet of the Gramma Federal wells. I also affirm that we will not place any production equipment within 1000 feet of any occupied dwellings.

We will send a Form 4 sundry for both wells indicating the final production layout before December 1, 2014.

Thank you,

Michael P. Kukuk
Regulatory Supervisor
1001 Fannin, Suite 1500
Houston, Texas 77002
281-404-9575
281-382-5877 (cell)
mkukuk@oasispetroleum.com

From: Messana, Matt A. [mailto:mamessana@nd.gov]
Sent: Wednesday, September 03, 2014 2:40 PM
To: Lauri Stanfield
Cc: Michael Kukuk
Subject: Gramma Federal 5300 41-31 12T, 13T2 - Production Layout

Lauri,

I am going to be issuing the Gramma Federal wells in a little bit. I noticed that they do not have a production layout on them.

- If a production pad layout has been made for this pad, please send it to me at your earliest convenience.

- If not, please send me an email affirming that there are no occupied dwellings within 1000 feet of the wells and production equipment. Also, please give me an approximate timetable as to when the production layout can be made. Eventually, when you have the layout, you

will need to send me a copy with a Form 4 sundry for both wells.

Thanks,

Matt Messana
Engineering Technician
NDIC, Oil and Gas Division
https://www.dmr.nd.gov/oilgas/
701-328-7999

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SECTION BREAKDOWN

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"GRAMMA FEDERAL 5300 41-31 13T2"
713 FEET FROM SOUTH LINE AND 320 FEET FROM WEST LINE
SECTIONS 31 & 32, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

VICINITY MAP

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY DARYL D. KASEMAN, PLS, REGISTRATION NUMBER 3880 ON 3/5/14 AND THE ORIGINAL DOCUMENTS ARE STORED AT THE OFFICES OF INTERSTATE ENGINEERING, INC.

– MONUMENT – RECOVERED

– MONUMENT – NOT RECOVERED

0 1000
1" = 1000'

ALL AZIMUTHS ARE BASED ON G.P.S. OBSERVATIONS. THE ORIGINAL SURVEY OF THIS AREA FOR THE GENERAL LAND OFFICE (G.L.O.) WAS 1897. THE CORNERS FOUND ARE AS INDICATED AND ALL OTHERS ARE COMPUTED FROM THOSE CORNERS FOUND AND BASED ON G.L.O. DATA. THE MAPPING ANGLE FOR THIS AREA IS APPROXIMATELY 0°03'.

REGISTERED LAND SURVEYOR
DARYL D. KASEMAN
LS-3880
DATE: 3/5/14
NORTH DAKOTA

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Revision No.	Date	By	Description
REV 1	3/5/14	JJS	CORRECTED WELL CALLS

OASIS PETROLEUM NORTH AMERICA, LLC
SECTION BREAKDOWN
SECTIONS 31 & 32, T153N, R100W
MKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.H.H. Project No.: S13-09-372.01
Checked By: D.D.K. Date: FEB. 2014

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Other offices in Minnesota, North Dakota and South Dakota

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PAD LAYOUT

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"GRAMMA FEDERAL 5300 41-31 13T2"
713 FEET FROM SOUTH LINE AND 320 FEET FROM WEST LINE
SECTION 31, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

REGISTERED LAND SURVEYOR
DARYL D. KASEMAN
LS-3880
DATE: 3/5/14
NORTH DAKOTA

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

0 60
1" = 60'

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Other offices in Minnesota, North Dakota and South Dakota

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

Drawn By: B.H.H. | Project No.: S13-09-372.01
Checked By: D.D.K. | Date: FEB 2014

Revision No.	Date	By	Description
REV 1	3/5/14	JJS	CORRECTED WELL CALLS

WELL LOCATION SITE QUANTITIES

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"GRAMMA FEDERAL 5300 41-31 13T2"
713 FEET FROM SOUTH LINE AND 320 FEET FROM WEST LINE
SECTION 31, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

WELL PAD EXTENSION ELEVATION	2157.0

EXCAVATION	1,596
PLUS PIT	6,300
	7,896
EMBANKMENT	517
PLUS SHRINKAGE (30%)	155
	672
STOCKPILE PIT	6,300
STOCKPILE TOP SOIL (6")	563
STOCKPILE MATERIAL	361
DISTURBED AREA FROM PAD	0.70 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
713' FSL
320' FWL

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

Drawn By: B.H.H. | Project No.: S13-09-372.01
Checked By: D.D.K. | Date: FEB. 2014

Revision No.	Date	By	Description
REV 1	3/5/14	JJS	CORRECTED WELL CALLS

CROSS SECTIONS

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"GRAMMA FEDERAL 5300 41-31 13T2"
713 FEET FROM SOUTH LINE AND 320 FEET FROM WEST LINE
SECTION 31, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

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REGISTERED LAND SURVEYOR
DARYL D. KASEMAN
LS-3880
DATE: 3/5/14
NORTH DAKOTA

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

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OASIS PETROLEUM NORTH AMERICA, LLC
PAD CROSS SECTIONS
SECTION 31, T153N, R100W
MCKENZIE COUNTY, NORTH DAKOTA

Drawn By: B.H.H. | Project No.: S13-09-372.01
Checked By: D.D.K. | Date: FEB. 2014

Revision No.	Date	By	Description
REV 1	3/5/14	JJS	CORRECTED WELL CALLS

ACCESS APPROACH

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"GRAMMA FEDERAL 5300 41-31 13T2"
713 FEET FROM SOUTH LINE AND 320 FEET FROM WEST LINE
SECTION 31, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

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REGISTERED LAND SURVEYOR
DARYL D. KASEMAN
LS-3880
DATE: 3/5/14
NORTH DAKOTA

0 500
1" = 500'

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

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

Drawn By: B.H.H. | Project No.: S13-09-372.01
Checked By: D.D.K. | Date: FEB. 2014

Revision No.	Date	By	Description
REV 1	3/5/14	JJS	CORRECTED WELL CALLS

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

Drawn By:	B.H.H.	Project No.:	S13-09-372.01
Checked By:	D.D.K.	Date:	FEB. 2014

Revision No.	Date	By	Description
REV 1	3/5/14	JJS	CORRECTED WELL CALLS

COUNTY ROAD MAP

OASIS PETROLEUM NORTH AMERICA, LLC
1001 FANNIN, SUITE 1500, HOUSTON, TX 77002
"GRAMMA FEDERAL 5300 41-31 13T2"
713 FEET FROM SOUTH LINE AND 320 FEET FROM WEST LINE
SECTION 31, T153N, R100W, 5th P.M., MCKENZIE COUNTY, NORTH DAKOTA

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SCALE: 1" = 2 MILE

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

Drawn By: B.H.H. | Project No.: S13-09-372.01
Checked By: D.D.K. | Date: FEB. 2014

Revision No.	Date	By	Description
REV 1	3/5/14	JJS	CORRECTED WELL CALLS

Oasis

Indian Hills
153N-100W-31/32
Gramma Federal 5300 41-31 13T2

Gramma Fed #13T2
Plan #1

Anticollision Report

28 March, 2014

Anticollision Report

Company:	Oasis	**Local Co-ordinate Reference:**	Well Gramma Federal 5300 41-31 13T2
Project:	Indian Hills	**TVD Reference:**	WELL @ 2183.0ft (Original Well Elev)
Reference Site:	153N-100W-31/32	**MD Reference:**	WELL @ 2183.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Gramma Federal 5300 41-31 13T2	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Gramma Fed #13T2	**Database:**	OpenWellsCompass - EDM Prod
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Plan #1

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

Survey Tool Program **Date** 3/28/2014

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	12,260.9	Plan #1 (Gramma Fed #13T2)	MWD	MWD - Standard

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
153N-100W-31/32						
Gramma (Plugged) - Gramma Gyro - Gyro	3,194.4	3,169.7	24.6	11.0	1.810	CC
Gramma (Plugged) - Gramma Gyro - Gyro	8,900.0	8,875.4	46.8	8.4	1.220	Level 2, ES
Gramma (Plugged) - Gramma Gyro - Gyro	9,000.0	8,975.3	47.3	8.5	1.220	Level 2, SF

Offset Design 153N-100W-31/32 - Gramma (Plugged) - Gramma Gyro - Gyro

Survey Program: 100-MWD

Offset Site Error: 0.0 ft
Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	180.00	-33.4	0.0	41.8				
100.0	100.0	75.1	75.1	0.1	0.1	179.97	-33.4	0.0	33.4	33.2	0.17	197.814	
200.0	200.0	175.1	175.1	0.3	0.3	179.81	-33.2	0.1	33.2	32.6	0.58	57.427	
300.0	300.0	275.1	275.1	0.5	0.5	179.62	-33.0	0.2	33.0	32.0	1.01	32.774	
400.0	400.0	375.1	375.1	0.8	0.7	179.48	-32.9	0.3	32.9	31.4	1.44	22.781	
500.0	500.0	475.0	475.0	1.0	0.9	179.38	-32.7	0.4	32.7	30.9	1.88	17.445	
600.0	600.0	575.0	575.0	1.2	1.1	179.41	-32.7	0.3	32.7	30.4	2.31	14.155	
700.0	700.0	675.0	675.0	1.4	1.3	179.75	-32.6	0.1	32.6	29.9	2.75	11.862	
800.0	800.0	775.0	775.0	1.7	1.5	-179.70	-32.6	-0.2	32.6	29.4	3.19	10.223	
900.0	900.0	875.0	875.0	1.9	1.7	-179.22	-32.5	-0.4	32.5	28.8	3.62	8.972	
1,000.0	1,000.0	975.0	975.0	2.1	1.9	-178.77	-32.4	-0.7	32.4	28.3	4.05	7.987	
1,071.8	1,071.8	1,046.8	1,046.8	2.3	2.1	-178.49	-32.3	-0.8	32.3	27.9	4.36	7.402	
1,100.0	1,100.0	1,075.0	1,075.0	2.3	2.2	-178.35	-32.3	-0.9	32.3	27.8	4.48	7.203	
1,200.0	1,200.0	1,174.9	1,174.9	2.6	2.4	-177.91	-32.5	-1.2	32.5	27.6	4.92	6.606	
1,300.0	1,300.0	1,274.9	1,274.9	2.8	2.6	-177.88	-32.6	-1.2	32.7	27.3	5.35	6.109	
1,400.0	1,400.0	1,375.0	1,375.0	3.0	2.8	-177.90	-32.8	-1.2	32.8	27.0	5.78	5.671	
1,500.0	1,500.0	1,475.0	1,475.0	3.2	3.0	-177.62	-32.8	-1.4	32.8	26.6	6.22	5.274	
1,600.0	1,600.0	1,575.0	1,575.0	3.5	3.2	-177.09	-32.7	-1.7	32.7	26.1	6.65	4.922	
1,700.0	1,700.0	1,675.1	1,675.1	3.7	3.4	-175.91	-32.4	-2.3	32.5	25.4	7.09	4.584	
1,800.0	1,800.0	1,775.2	1,775.2	3.9	3.6	-174.80	-31.8	-2.9	32.0	24.5	7.52	4.250	
1,900.0	1,900.0	1,875.2	1,875.1	4.1	3.8	-174.08	-31.3	-3.2	31.4	23.5	7.96	3.949	
2,000.0	2,000.0	1,975.2	1,975.2	4.4	4.0	-173.36	-30.7	-3.6	30.9	22.5	8.39	3.682	
2,100.0	2,100.0	2,075.3	2,075.3	4.6	4.2	-172.03	-29.7	-4.2	30.0	21.2	8.83	3.399	
2,200.0	2,200.0	2,175.4	2,175.3	4.8	4.5	-170.08	-28.5	-5.0	28.9	19.6	9.27	3.119	
2,300.0	2,300.0	2,275.3	2,275.3	5.0	4.7	-167.83	-27.2	-5.9	27.8	18.1	9.70	2.866	
2,400.0	2,400.0	2,375.3	2,375.3	5.3	4.9	-165.33	-25.9	-6.8	26.8	16.7	10.14	2.644	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

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Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Gramma Federal 5300 41-31 13T2	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Gramma Fed #13T2	**Database:**	OpenWellsCompass - EDM Prod
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design 153N-100W-31/32 - Gramma (Plugged) - Gramma Gyro - Gyro

Survey Program: 100-MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
2,411.6	2,411.6	2,387.0	2,386.9	5.3	4.9	-165.05	-25.8	-6.9	26.7	16.6	10.19	2.625	
2,412.0	2,412.0	2,387.3	2,387.3	5.3	4.9	-165.04	-25.8	-6.9	26.7	16.6	10.19	2.625	
2,500.0	2,500.0	2,475.3	2,475.2	5.5	5.1	-163.18	-24.7	-7.8	26.8	16.2	10.57	2.534	
2,600.0	2,600.0	2,575.4	2,575.3	5.7	5.3	-161.22	-23.3	-8.6	26.8	15.8	11.01	2.433	
2,700.0	2,700.0	2,675.5	2,675.4	5.9	5.5	-159.41	-21.6	-9.3	26.4	15.0	11.44	2.309	
2,800.0	2,800.0	2,775.5	2,775.4	6.2	5.7	-157.79	-19.8	-9.8	25.8	14.0	11.88	2.176	
2,900.0	2,900.0	2,875.5	2,875.3	6.4	5.9	-156.68	-18.1	-10.0	25.3	13.0	12.31	2.058	
3,000.0	3,000.0	2,975.4	2,975.3	6.6	6.1	-157.11	-16.7	-9.7	24.9	12.1	12.74	1.953	
3,100.0	3,100.0	3,075.4	3,075.2	6.8	6.4	-158.47	-15.7	-9.0	24.6	11.5	13.17	1.871	
3,194.4	3,194.3	3,169.7	3,169.6	7.0	6.5	-160.04	-14.8	-8.4	24.6	11.0	13.58	1.810	CC
3,200.0	3,200.0	3,175.4	3,175.2	7.1	6.6	-160.13	-14.8	-8.4	24.6	11.0	13.61	1.807	
3,300.0	3,300.0	3,275.3	3,275.1	7.3	6.8	-161.56	-14.1	-7.8	24.7	10.7	14.04	1.760	
3,400.0	3,399.9	3,375.1	3,375.0	7.5	7.0	-162.92	-13.7	-7.4	25.2	10.8	14.47	1.743	
3,500.0	3,499.9	3,475.1	3,474.9	7.7	7.2	-164.29	-13.8	-7.1	26.3	11.4	14.90	1.763	
3,600.0	3,599.9	3,575.0	3,574.9	8.0	7.4	-165.91	-14.2	-6.7	27.6	12.2	15.34	1.796	
3,700.0	3,699.9	3,675.0	3,674.8	8.2	7.6	-167.22	-14.6	-6.4	28.9	13.1	15.77	1.831	
3,800.0	3,799.9	3,775.0	3,774.8	8.4	7.8	-168.32	-15.0	-6.1	30.2	14.0	16.21	1.865	
3,900.0	3,899.9	3,875.0	3,874.8	8.6	8.0	-169.27	-15.4	-5.9	31.6	14.9	16.64	1.898	
4,000.0	3,999.9	3,975.0	3,974.8	8.9	8.2	-170.08	-15.7	-5.7	32.9	15.8	17.07	1.924	
4,100.0	4,099.9	4,075.0	4,074.9	9.1	8.4	-170.90	-15.9	-5.4	34.1	16.5	17.51	1.945	
4,200.0	4,199.9	4,175.1	4,174.9	9.3	8.6	-171.54	-16.0	-5.2	35.2	17.2	17.94	1.961	
4,300.0	4,299.9	4,275.1	4,274.9	9.5	8.9	-172.28	-16.0	-4.9	36.2	17.8	18.38	1.970	
4,400.0	4,399.9	4,375.1	4,374.9	9.8	9.1	-173.19	-16.0	-4.4	37.2	18.4	18.81	1.976	
4,500.0	4,499.9	4,475.1	4,474.9	10.0	9.3	-174.17	-16.1	-3.9	38.2	19.0	19.24	1.987	
4,600.0	4,599.9	4,575.1	4,574.9	10.2	9.5	-175.29	-16.1	-3.2	39.2	19.5	19.68	1.993	
4,700.0	4,699.9	4,675.2	4,675.0	10.4	9.7	-176.43	-16.0	-2.5	40.1	20.0	20.11	1.992	
4,800.0	4,799.9	4,775.3	4,775.1	10.6	9.9	-177.42	-15.5	-1.8	40.6	20.1	20.55	1.976	
4,900.0	4,899.9	4,875.2	4,875.0	10.9	10.1	-178.44	-14.9	-1.1	41.0	20.1	20.98	1.956	
5,000.0	4,999.9	4,975.0	4,974.8	11.1	10.3	-179.86	-14.8	-0.1	41.9	20.5	21.42	1.958	
5,100.0	5,099.9	5,074.8	5,074.6	11.3	10.5	178.62	-15.2	1.0	43.4	21.5	21.85	1.986	
5,200.0	5,199.8	5,174.7	5,174.5	11.5	10.7	176.97	-15.9	2.4	45.2	22.9	22.28	2.028	
5,300.0	5,299.8	5,275.1	5,274.9	11.8	11.0	175.09	-16.1	4.0	46.6	23.9	22.72	2.051	
5,400.0	5,399.8	5,375.2	5,375.0	12.0	11.2	172.56	-15.6	6.1	47.4	24.2	23.16	2.046	
5,500.0	5,499.8	5,475.2	5,474.9	12.2	11.4	169.73	-15.0	8.6	48.2	24.6	23.59	2.041	
5,600.0	5,599.8	5,575.2	5,574.9	12.4	11.6	166.94	-14.3	11.1	49.0	25.0	24.03	2.040	
5,700.0	5,699.8	5,675.5	5,675.2	12.7	11.8	163.95	-13.2	13.7	49.6	25.2	24.47	2.028	
5,742.3	5,742.1	5,718.0	5,717.6	12.8	11.9	162.45	-12.4	15.0	49.7	25.0	24.65	2.015	
5,754.3	5,754.1	5,730.0	5,729.7	12.8	11.9	162.00	-12.2	15.3	49.6	24.9	24.69	2.009	
5,800.0	5,799.8	5,775.8	5,775.4	12.9	12.0	160.17	-11.2	16.6	49.1	24.2	24.88	1.973	
5,900.0	5,899.8	5,875.3	5,874.8	13.1	12.2	157.08	-9.4	18.8	48.2	22.9	25.31	1.906	
5,903.7	5,903.5	5,879.0	5,878.5	13.1	12.2	157.03	-9.4	18.8	48.2	22.9	25.33	1.905	
6,000.0	5,999.8	5,975.1	5,974.6	13.3	12.4	156.34	-9.5	19.5	48.5	22.8	25.74	1.886	
6,100.0	6,099.8	6,075.1	6,074.6	13.6	12.6	155.54	-9.5	20.3	48.9	22.7	26.18	1.869	
6,200.0	6,199.8	6,175.2	6,174.8	13.8	12.9	154.26	-9.3	21.4	49.2	22.6	26.61	1.848	
6,300.0	6,299.8	6,275.4	6,274.9	14.0	13.1	152.44	-8.6	22.8	49.2	22.1	27.05	1.818	
6,400.0	6,399.8	6,375.4	6,374.9	14.2	13.3	150.33	-7.6	24.2	49.0	21.5	27.49	1.782	
6,500.0	6,499.8	6,475.6	6,475.0	14.5	13.5	147.93	-6.2	25.8	48.6	20.7	27.93	1.741	
6,600.0	6,599.8	6,575.6	6,575.0	14.7	13.7	144.87	-4.4	27.7	48.2	19.8	28.37	1.698	
6,700.0	6,699.8	6,675.7	6,675.1	14.9	13.9	141.78	-2.5	29.5	47.7	18.9	28.80	1.656	
6,800.0	6,799.8	6,775.9	6,775.3	15.1	14.1	140.14	-0.9	30.0	46.8	17.6	29.24	1.601	
6,900.0	6,899.8	6,875.8	6,875.2	15.4	14.3	138.36	0.8	30.4	45.7	16.1	29.67	1.542	
7,000.0	6,999.8	6,975.6	6,975.0	15.6	14.6	135.95	2.6	31.4	45.1	15.0	30.11	1.499	Level 3Level 3
7,100.0	7,099.8	7,075.6	7,075.0	15.8	14.8	133.50	4.1	32.5	44.8	14.3	30.54	1.468	Level 3Level 3

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

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Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Gramma Fed #13T2	**Database:**	OpenWellsCompass - EDM Prod
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design 153N-100W-31/32 - Gramma (Plugged) - Gramma Gyro - Gyro

Offset Site Error: 0.0 ft

Survey Program: 100-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,200.0	7,199.8	7,175.7	7,175.0	16.0	15.0	130.76	6.0	33.7	44.5	13.5	30.98	1.435	Level 3Level 3
7,300.0	7,299.8	7,275.6	7,274.9	16.3	15.2	127.99	7.9	34.7	44.1	12.7	31.41	1.403	Level 3Level 3
7,400.0	7,399.8	7,375.7	7,374.9	16.5	15.4	125.34	9.6	35.8	43.9	12.0	31.84	1.378	Level 3Level 3
7,500.0	7,499.8	7,475.6	7,474.9	16.7	15.6	122.67	11.4	36.7	43.6	11.4	32.28	1.352	Level 3Level 3
7,555.7	7,555.6	7,531.3	7,530.6	16.8	15.7	121.02	12.5	37.4	43.6	11.1	32.52	1.341	Level 3Level 3
7,600.0	7,599.8	7,575.5	7,574.8	16.9	15.8	119.80	13.3	37.9	43.6	10.9	32.71	1.334	Level 3Level 3
7,700.0	7,699.8	7,675.6	7,674.8	17.2	16.0	117.32	14.9	38.9	43.7	10.6	33.14	1.320	Level 3Level 3
7,774.8	7,774.6	7,750.4	7,749.6	17.3	16.2	115.74	16.0	39.4	43.7	10.3	33.47	1.307	Level 3Level 3
7,800.0	7,799.8	7,775.6	7,774.8	17.4	16.2	115.32	16.3	39.5	43.7	10.2	33.57	1.303	Level 3Level 3
7,900.0	7,899.8	7,875.6	7,874.8	17.6	16.4	114.25	17.0	39.9	43.8	9.8	34.01	1.288	Level 3Level 3
8,000.0	7,999.8	7,975.5	7,974.7	17.8	16.7	113.87	17.2	40.2	44.0	9.5	34.44	1.277	Level 3Level 3
8,100.0	8,099.8	8,075.5	8,074.7	18.0	16.9	113.91	17.1	40.4	44.2	9.3	34.87	1.268	Level 3Level 3
8,200.0	8,199.8	8,175.4	8,174.6	18.3	17.1	114.02	16.9	40.6	44.5	9.2	35.30	1.260	Level 3Level 3
8,300.0	8,299.8	8,275.5	8,274.7	18.5	17.3	114.17	16.6	41.0	44.9	9.2	35.73	1.257	Level 3Level 3
8,400.0	8,399.8	8,375.5	8,374.7	18.7	17.5	114.33	16.4	41.2	45.2	9.0	36.17	1.250	Level 3Level 3
8,500.0	8,499.8	8,475.4	8,474.6	18.9	17.7	114.56	16.1	41.4	45.5	8.9	36.60	1.244	Level 2
8,600.0	8,599.8	8,575.5	8,574.7	19.2	17.9	114.85	15.7	41.6	45.9	8.9	37.03	1.239	Level 2
8,700.0	8,699.8	8,675.5	8,674.7	19.4	18.1	115.00	15.5	41.8	46.1	8.7	37.47	1.231	Level 2
8,800.0	8,799.8	8,775.5	8,774.7	19.6	18.3	114.98	15.4	42.1	46.5	8.6	37.90	1.226	Level 2
8,900.0	8,899.8	8,875.4	8,874.6	19.8	18.5	114.96	15.3	42.4	46.8	8.4	38.33	1.220	Level 2, ES
9,000.0	8,999.8	8,975.3	8,974.5	20.1	18.7	114.88	15.1	42.9	47.3	8.5	38.77	1.220	Level 2, SF
9,100.0	9,099.8	9,075.3	9,074.4	20.3	18.9	114.98	14.7	43.5	48.0	8.8	39.20	1.226	Level 2
9,200.0	9,199.8	9,175.3	9,174.4	20.5	19.2	115.34	14.1	44.1	48.8	9.2	39.63	1.231	Level 2
9,300.0	9,299.8	9,275.0	9,274.2	20.7	19.4	115.54	13.6	44.9	49.7	9.7	40.07	1.242	Level 2
9,400.0	9,399.8	9,375.0	9,374.2	21.0	19.6	115.73	12.8	46.0	51.1	10.6	40.50	1.261	Level 3Level 3
9,500.0	9,499.8	9,475.2	9,474.4	21.2	19.8	115.96	12.2	46.9	52.1	11.2	40.94	1.274	Level 3Level 3
9,600.0	9,599.8	9,575.3	9,574.4	21.4	20.0	116.30	11.5	47.5	52.9	11.6	41.37	1.280	Level 3Level 3
9,700.0	9,699.8	9,675.4	9,674.5	21.6	20.2	116.87	10.8	47.8	53.6	11.8	41.80	1.283	Level 3Level 3
9,800.0	9,799.8	9,775.4	9,774.5	21.9	20.4	117.56	10.0	48.0	54.1	11.9	42.23	1.281	Level 3Level 3
9,900.0	9,899.8	9,875.4	9,874.5	22.1	20.6	118.28	9.1	48.1	54.6	12.0	42.67	1.280	Level 3Level 3
10,000.2	10,000.0	9,975.6	9,974.8	22.3	20.8	118.95	8.3	48.2	55.1	12.0	43.10	1.279	Level 3Level 3
10,100.0	10,099.8	10,075.5	10,074.6	22.5	21.0	119.40	7.7	48.4	55.5	12.0	43.53	1.276	Level 3Level 3
10,200.0	10,199.8	10,175.4	10,174.6	22.8	21.2	119.63	7.4	48.6	55.9	11.9	43.97	1.271	Level 3Level 3
10,300.0	10,299.8	10,275.5	10,274.6	23.0	21.5	119.78	7.0	48.9	56.3	11.9	44.40	1.268	Level 3Level 3
10,400.0	10,399.8	10,373.6	10,372.7	23.2	21.7	118.82	7.1	50.7	57.9	13.1	44.83	1.292	Level 3Level 3
10,469.6	10,469.4	10,437.8	10,436.7	23.4	21.8	116.08	7.6	56.0	62.8	17.7	45.13	1.391	Level 3Level 3
10,475.0	10,474.8	10,442.6	10,441.4	23.4	21.8	57.05	7.6	56.7	63.5	18.3	45.17	1.405	Level 3Level 3
10,500.0	10,499.8	10,464.6	10,463.1	23.4	21.9	55.89	7.6	60.4	66.8	21.5	45.25	1.476	Level 3Level 3
10,525.0	10,524.7	10,486.4	10,484.4	23.5	21.9	55.31	7.6	65.1	70.5	25.1	45.31	1.555	
10,550.0	10,549.4	10,508.3	10,505.5	23.5	22.0	55.21	7.4	70.7	74.4	29.1	45.36	1.641	
10,575.0	10,574.0	10,530.3	10,526.5	23.6	22.0	55.45	7.3	77.2	78.5	33.2	45.38	1.730	
10,600.0	10,598.2	10,552.1	10,547.1	23.7	22.1	55.95	7.3	84.5	82.8	37.4	45.40	1.824	
10,625.0	10,622.1	10,573.8	10,567.3	23.7	22.1	56.67	7.4	92.5	87.2	41.8	45.40	1.920	
10,650.0	10,645.6	10,600.0	10,591.1	23.8	22.2	57.84	7.7	103.3	91.8	46.4	45.42	2.022	
10,675.0	10,668.5	10,616.9	10,606.2	23.8	22.2	58.53	8.0	110.9	96.4	51.0	45.41	2.123	
10,700.0	10,691.0	10,638.2	10,624.9	23.9	22.3	59.53	8.6	121.2	101.3	55.8	45.43	2.229	
10,725.0	10,712.8	10,659.5	10,643.1	24.0	22.4	60.54	9.4	132.2	106.3	60.8	45.45	2.338	
10,750.0	10,734.0	10,680.8	10,660.7	24.0	22.5	61.54	10.4	144.0	111.5	66.0	45.49	2.450	
10,775.0	10,754.4	10,700.0	10,676.3	24.1	22.5	62.39	11.6	155.3	116.8	71.3	45.53	2.565	
10,800.0	10,774.1	10,721.6	10,693.2	24.2	22.6	63.42	13.0	168.7	122.4	76.8	45.62	2.683	
10,825.0	10,792.9	10,741.2	10,707.9	24.3	22.7	64.29	14.2	181.5	128.4	82.7	45.71	2.810	
10,850.0	10,810.8	10,760.6	10,721.8	24.4	22.8	65.13	15.5	195.0	134.8	89.0	45.82	2.943	
10,875.0	10,827.8	10,779.8	10,735.1	24.5	22.9	65.93	16.7	208.9	141.6	95.7	45.94	3.082	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	Oasis	**Local Co-ordinate Reference:**	Well Gramma Federal 5300 41-31 13T2
Project:	Indian Hills	**TVD Reference:**	WELL @ 2183.0ft (Original Well Elev)
Reference Site:	153N-100W-31/32	**MD Reference:**	WELL @ 2183.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Gramma Federal 5300 41-31 13T2	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Gramma Fed #13T2	**Database:**	OpenWellsCompass - EDM Prod
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design 153N-100W-31/32 - Gramma (Plugged) - Gramma Gyro - Gyro

Survey Program: 100-MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,900.0	10,843.9	10,800.0	10,748.3	24.6	23.0	66.76	18.0	224.1	148.8	102.7	46.11	3.227	
10,925.0	10,858.9	10,819.1	10,760.1	24.7	23.1	67.43	19.3	239.0	156.2	109.9	46.29	3.375	
10,950.0	10,872.8	10,839.5	10,771.9	24.9	23.2	68.09	21.0	255.5	163.8	117.3	46.51	3.521	
10,975.0	10,885.6	10,859.9	10,783.0	25.0	23.4	68.65	22.9	272.5	171.4	124.7	46.74	3.667	
11,000.0	10,897.3	10,874.8	10,790.5	25.2	23.5	68.76	24.4	285.3	179.3	132.4	46.92	3.822	
11,025.0	10,907.8	10,886.0	10,795.8	25.4	23.6	68.61	24.8	295.2	188.5	141.4	47.07	4.004	
11,050.0	10,917.1	10,901.0	10,802.4	25.5	23.7	68.74	24.9	308.7	198.5	151.2	47.31	4.195	
11,075.0	10,925.2	10,917.0	10,808.8	25.8	23.8	68.90	25.0	323.3	208.8	161.2	47.58	4.389	
11,100.0	10,932.0	10,934.7	10,815.3	26.0	24.0	69.13	25.0	339.8	219.4	171.5	47.90	4.580	
11,125.0	10,937.6	10,948.0	10,819.5	26.2	24.1	68.89	25.0	352.4	230.3	182.2	48.14	4.784	
11,150.0	10,941.8	10,967.3	10,824.9	26.4	24.3	69.08	24.9	371.0	241.4	192.9	48.53	4.975	
11,175.0	10,944.8	10,984.6	10,828.9	26.7	24.5	69.03	24.8	387.8	252.8	203.9	48.89	5.170	
11,200.0	10,946.5	11,004.8	10,832.9	27.0	24.7	69.20	24.7	407.5	264.1	214.7	49.34	5.352	
11,217.1	10,946.9	11,019.2	10,835.5	27.1	24.9	69.39	24.7	421.7	271.7	222.0	49.68	5.469	
11,234.9	10,947.0	11,034.6	10,838.3	27.3	25.1	70.59	24.7	436.8	279.6	229.4	50.21	5.569	
11,300.0	10,947.3	11,086.8	10,846.5	28.1	25.8	74.23	25.0	488.4	308.6	256.4	52.13	5.920	
11,400.0	10,947.9	11,162.0	10,849.7	29.6	26.8	76.78	25.9	563.5	352.4	297.6	54.83	6.427	
11,500.0	10,948.4	11,162.0	10,849.7	31.2	26.8	77.18	25.9	563.5	404.5	347.9	56.52	7.156	
11,600.0	10,949.0	11,162.0	10,849.7	32.9	26.8	77.72	25.9	563.5	468.7	410.4	58.34	8.034	
11,700.0	10,949.5	11,162.0	10,849.7	34.8	26.8	78.35	25.9	563.5	540.6	480.4	60.25	8.974	
11,800.0	10,950.0	11,162.0	10,849.7	36.8	26.8	79.04	25.9	563.5	617.4	555.2	62.21	9.924	
11,900.0	10,950.6	11,162.0	10,849.7	38.9	26.8	79.75	25.9	563.5	697.3	633.0	64.21	10.859	
12,000.0	10,951.1	11,162.0	10,849.7	41.1	26.8	80.47	25.9	563.5	779.0	712.8	66.21	11.767	
12,100.0	10,951.7	11,162.0	10,849.7	43.3	26.8	81.16	25.9	563.5	862.0	793.9	68.18	12.644	
12,200.0	10,952.2	11,162.0	10,849.7	45.6	26.8	81.82	25.9	563.5	945.7	875.6	70.10	13.491	
12,278.3	10,952.6	11,162.0	10,849.7	47.4	26.8	82.30	25.9	563.5	1,011.5	939.9	71.56	14.134	

Company:	Oasis	**Local Co-ordinate Reference:**	Well Gramma Federal 5300 41-31 13T2
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Reference Site:	153N-100W-31/32	**MD Reference:**	WELL @ 2183.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Gramma Federal 5300 41-31 13T2	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Gramma Fed #13T2	**Database:**	OpenWellsCompass - EDM Prod
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 2183.0ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is 100° 30' 0.000 W

Coordinates are relative to: Gramma Federal 5300 41-31 13T2
Coordinate System is US State Plane 1983, North Dakota Northern Zone
Grid Convergence at Surface is: -2.31°

L E G E N D

Gramma (Plugged), Gramma Gyro, Gyro V0

Company:	Oasis	**Local Co-ordinate Reference:**	Well Gramma Federal 5300 41-31 13T2
Project:	Indian Hills	**TVD Reference:**	WELL @ 2183.0ft (Original Well Elev)
Reference Site:	153N-100W-31/32	**MD Reference:**	WELL @ 2183.0ft (Original Well Elev)
Site Error:	0.0 ft	**North Reference:**	True
Reference Well:	Gramma Federal 5300 41-31 13T2	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Gramma Fed #13T2	**Database:**	OpenWellsCompass - EDM Prod
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 2183.0ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is 100° 30' 0.000 W

Coordinates are relative to: Gramma Federal 5300 41-31 13T2
Coordinate System is US State Plane 1983, North Dakota Northern Zone
Grid Convergence at Surface is: -2.31°

L E G E N D

Gramma (Plugged), Gramma Gyro, Gyro V0