NORTH Dakota | Mineral Resources
Be Legendary.™

December 6, 2024

Morningstar Operating LLC
400 W. 7th Street
Fort Worth, TX 76102

RE: CHANGE OF OPERATOR FROM EMEP OPERATING, LLC TO MORNINGSTAR OPERATING LLC.
61 WELLS

Dear Gentlemen,

Please find enclosed a copy of the approved Form 15, Notice of Transfer of Oil and Gas Wells, regarding the above-referenced matter. This transfer has now been approved and subject well is now covered by Bond No. B015535.

If you should have any questions, please feel free to contact this office.

Sincerely,

Rachel Whitney
Administrative Assistant

Enclosure.

EMEP Operating, LLC
1200 Smith St., Ste. 1500
Houston, TX 77002

NOTICE OF TRANSFER OF OIL AND GAS WELLS - FORM 15

DEPARTMENT OF MINERAL RESOURCES
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 474
BISMARCK, ND 58505-0614
SFN 5762 (03-2000)

RECEIVED
SEP 03 2024
ND INDUSTRIAL COMMISSION

FOR STATE USE ONLY

NDIC Bond Number
70117

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM. PLEASE SUBMIT THE ORIGINAL AND SIX COPIES.
THIS NOTICE ALONG WITH A FEE OF $25.00 PER WELL SHALL BE FILED AT LEAST THIRTY DAYS BEFORE THE CLOSING DATE OF TRANSFER.

TRANSFERRING OPERATOR

Name of Operator Representative			
Kyle Dubiel			
Operator Transferring Oil and/or Gas Wells			Telephone Number
EMEP Operating, LLC			**(346) 261-1474**
Address	City	State	Zip Code
1200 Smith St., Suite 1500	**Houston**	**TX**	**77002**

I, the above named representative, acknowledge the transfer of the oil and/or gas wells named below for the purpose of ownership and/or operation to the company named below.

Signature	Title (Must be an officer or power of attorney must be attached)	Date
	VP Business Development, Land and Legal	**July 24, 2024**

Well File Number	Requested Official Well Name and Number	Location (Qtr-Qtr, S-T-R)	Assignment Date
	See attached Well List		**August 30, 2024**

RECEIVING OPERATOR

Name of Operator Representative			
Allen L. Armstrong, Jr.			
Operator Receiving Oil and/or Gas Wells			Telephone Number
MorningStar Operating LLC			**(817) 334-7811**
Address	City	State	Zip Code
400 W. 7th Street	**Fort Worth**	**TX**	**76102**

I, the above named representative, have read the foregoing statement and accept such transfer, also the responsibility of ownership and/or operation of said well or wells, under the said company bond, said bond being tendered to or on file with the Industrial Commission of North Dakota.

Signature	Title (Must be an officer or power of attorney must be attached)	Date
	Vice President - Land, Permian	August 27, 2024

SURETY COMPANY

Surety			Telephone Number	Amount of Bond
U.S. Specialty Insurance Company			(713) 355-3100	$ 100,000.00
Address	City	State	Zip Code	Bond Number
13403 Northwest Freeway	Houston	TX	77040	3015535

The above named SURETY agrees that such bond shall extend to compliance with Chapter 38-08 of North Dakota Century Code and amendments and the rules and regulations of the Industrial Commission of North Dakota prescribed to govern the production of oil and gas on government and private lands within the State of North Dakota, in relation to the above stated transfer; it being further agreed and understood that the bond sum or amount is not to be considered increased because of such extension.

Signature	Title (Must be an officer or power of attorney must be attached)	Date
Michele K. Tyson	Attorney-in-Fact	July 30, 2024

Printed Name
Michele K. Tyson

FOR STATE USE ONLY

Date Approved	December 6, 2024
By	
Title	Field Supervisor

Well Exhibit

Attached to that certain Notice of Transfer of Oil and Gas Wells - Form 15, from EMEP Operating, LLC, to MorningStar Operating LLC, effective August 30, 2024.

API	Well Name	Operator Name	State	County	Section**	Township**	Range**	Qtr Qtr	Field	NDIC Bond
33025011600000	ALFRED SADOWSKY 1-36-1H-141-96	EMEP Operating, LLC	ND	DUNN	SEC 36	T142N	R96W	NENW	RUSSIAN CREEK	700479
33025015460000	BILL CODY 1-20-29H-141-96	EMEP Operating, LLC	ND	DUNN	SEC 20	T141N	R96W	NWNE	ST. ANTHONY	700479
33025016230000	BINSTOCK 1-34-27H-142-96	EMEP Operating, LLC	ND	DUNN	SEC 34	T142N	R96W	SWSW	RUSSIAN CREEK	700479
33025018400000	CHARLES DAVIS 1-4-9H-142-94	EMEP Operating, LLC	ND	DUNN	SEC 4	T142N	R94W	LOT2	MURPHY CREEK	700597
33025014920000	COYOTE CREEK 1-20-17H-142-97	EMEP Operating, LLC	ND	DUNN	SEC 20	T142N	R97W	SESW	WILLMEN	700479
33025007590000	DVORAK 10-1H	EMEP Operating, LLC	ND	DUNN	SEC 10	T142N	R95W	SESW	MURPHY CREEK	700479
33025005780000	DVORAK 11-4H	EMEP Operating, LLC	ND	DUNN	SEC 4	T141N	R96W	NWNW	RUSSIAN CREEK	700479
33025013000000	DVORAK TRUST 1-6-31H-142-96	EMEP Operating, LLC	ND	DUNN	SEC 6	T141N	R96W	SESW	RUSSIAN CREEK	700479
33025016260000	EASTON 1-35-26H-142-95	EMEP Operating, LLC	ND	DUNN	SEC 35	T142N	R95W	SWSE	MURPHY CREEK	700479
33025012430000	ELSIE DVORAK 1-8-17H-141-96	EMEP Operating, LLC	ND	DUNN	SEC 8	T141N	R96W	NWNE	ST. ANTHONY	700479
33025014940000	FEDERAL ANNIE OAKLEY 1-20-17H-142-94	EMEP Operating, LLC	ND	DUNN	SEC 29	T142N	R94W	NWNE	MURPHY CREEK	700479
33025011550000	FISHER STATE 1-21-16H-142-97	EMEP Operating, LLC	ND	DUNN	SEC 21	T142N	R97W	SESW	WILLMEN	700479
33025018110000	FRANK ANDERS 1-27-34H-142-95	EMEP Operating, LLC	ND	DUNN	SEC 27	T142N	R95W	NENW	MURPHY CREEK	700479
33025012380000	GORDON PAVLICEK 1-17-20H-141-95	EMEP Operating, LLC	ND	DUNN	SEC 17	T141N	R95W	NENW	SIMON BUTTE	700479
33025013600000	GEORGE MILLER 1-11-2H-142-95	EMEP Operating, LLC	ND	DUNN	SEC 11	T142N	R95W	SWSE	MURPHY CREEK	700479
33025016270000	HATTIE DVORAK 1-33-28H-142-96	EMEP Operating, LLC	ND	DUNN	SEC 33	T142N	R96W	SWSW	RUSSIAN CREEK	700479
33025015750000	HAVELKA 1-19-18H-142-95	EMEP Operating, LLC	ND	DUNN	SEC 19	T142N	R95W	SWSE	MANNING	700479
33025018790000	HENRY GURKE 1-30-19H-141-96	EMEP Operating, LLC	ND	DUNN	SEC 30	T141N	R96W	SESE	ST. ANTHONY	700479
33025009610000	JAEGER 1-10-15H-141-96	EMEP Operating, LLC	ND	DUNN	SEC 10	T141N	R96W	NWNE	ST. ANTHONY	700479
33007017780000	JOHN KINNE 1-27-34H-142-98	EMEP Operating, LLC	ND	BILLINGS	SEC 22	T142N	R98W	SESW	SNOW	700598
33007018180000	JOHN KINNE 2-27-34H-142-98	EMEP Operating, LLC	ND	BILLINGS	SEC 22	T142N	R98W	SESW	SNOW	700479
33025018180000	JOSEPH CARTER 1-13-12H-141-96	EMEP Operating, LLC	ND	DUNN	SEC 13	T141N	R96W	SESW	ST. ANTHONY	700479
33025008940000	KADRMAS 11-27H	EMEP Operating, LLC	ND	DUNN	SEC 27	T141N	R95W	NWNW	SIMON BUTTE	700479
33025013590000	KATIE HEISER 1-12-1H-142-95	EMEP Operating, LLC	ND	DUNN	SEC 12	T142N	R95W	SWSE	MURPHY CREEK	700479
33025015370000	KEARY KADRMAS 1-32-29H-142-96	EMEP Operating, LLC	ND	DUNN	SEC 32	T142N	R96W	SESW	RUSSIAN CREEK	700479
33025022740000	KEARY KADRMAS 2-32-29H-142-96	EMEP Operating, LLC	ND	DUNN	SEC 32	T142N	R96W	SESW	RUSSIAN CREEK	700479
33025013510000	KUDRNA 1-17	EMEP Operating, LLC	ND	DUNN	SEC 17	T141N	R97W	SWSE	ST. ANTHONY	700532
33007017440000	KUNTZ 1-23-14H-142-98	EMEP Operating, LLC	ND	BILLINGS	SEC 23	T142N	R98W	SESW	SADDLE BUTTE	700479
33025018800000	LOREN HAGEN 1-35-26H-141-97	EMEP Operating, LLC	ND	DUNN	SEC 35	T141N	R97W	SWSE	ST. ANTHONY	700479
33025016110000	LOUIE PAVLICEK 1-28-33H-142-97	EMEP Operating, LLC	ND	DUNN	SEC 28	T142N	R97W	NWNE	WILLMEN	700479
33025013580000	MARLENE STEFFAN 1-5-8H-141-97	EMEP Operating, LLC	ND	DUNN	SEC 32	T142N	R97W	SWSE	ST. ANTHONY	700479
33025014390000	MAURICE HECKER 1-19-18H-142-97	EMEP Operating, LLC	ND	DUNN	SEC 19	T142N	R97W	SESE	WILLMEN	700600
33025024920000	MAURICE HECKER 2-19-18H-142-97	EMEP Operating, LLC	ND	DUNN	SEC 19	T142N	R97W	SESE	WILLMEN	700479
33025018480000	MEDUNA TRUST 1-7-6H-142-94	EMEP Operating, LLC	ND	DUNN	SEC 7	T142N	R94W	SESW	MURPHY CREEK	700479
33025015690000	MONGOOSE 1-13-24H-142-95	EMEP Operating, LLC	ND	DUNN	SEC 12	T142N	R95W	SESE	MURPHY CREEK	700479
33025018700000	NELS WOLD 1-36-25H-141-97	EMEP Operating, LLC	ND	DUNN	SEC 36	T141N	R97W	SWSW	ST. ANTHONY	700479
33025012260000	NOVASIO STATE 1-16-21H-142-95	EMEP Operating, LLC	ND	DUNN	SEC 16	T142N	R95W	NWNE	MURPHY CREEK	700479
33025005810000	PAVLICEK 44-32H	EMEP Operating, LLC	ND	DUNN	SEC 32	T142N	R97W	SESE	WILLMEN	700531
33025014870000	PRIVRATSKY 1-28-33H-141-95	EMEP Operating, LLC	ND	DUNN	SEC 28	T141N	R95W	NENW	SIMON BUTTE	700479
33025015720000	RICHARD JABLONSKY 1-13-24H-141-97	EMEP Operating, LLC	ND	DUNN	SEC 12	T141N	R97W	SWSE	ST. ANTHONY	700479
33007017790000	RICHARD LONGFELLOW 1-22-15H-142-98	EMEP Operating, LLC	ND	BILLINGS	SEC 22	T142N	R98W	SESW	SADDLE BUTTE	700479
33089007390000	RC-SVIHL-140-95-0706H-1	EMEP Operating, LLC	ND	STARK	SEC 7	T140N	R95W	SESW	DAVIS BUTTES	700479
33025018710000	RIDL 1-24-25H-142-96	EMEP Operating, LLC	ND	DUNN	SEC 24	T142N	R96W	NENW	RUSSIAN CREEK	700479
33025017310000	STATE LITTLE KNIFE 1-20-17H-142-95	EMEP Operating, LLC	ND	DUNN	SEC 20	T142N	R95W	SWSE	MANNING	700479
33025033890000	SADOWSKY 14-11-2H	EMEP Operating, LLC	ND	DUNN	SEC 14	T141N	R96W	SESE	ST. ANTHONY	700479
33025008680000	SADOWSKY 24-14H	EMEP Operating, LLC	ND	DUNN	SEC 14	T141N	R96W	SESW	ST. ANTHONY	700479
33025017300000	SCHAFNER 1-29-32H-142-95	EMEP Operating, LLC	ND	DUNN	SEC 20	T142N	R95W	SWSE	MANNING	700479
33025007320000	SICKLER 22-1H	EMEP Operating, LLC	ND	DUNN	SEC 22	T142N	R94W	SESW	MURPHY CREEK	700480
33025009020000	SICKLER STATE 21-4H	EMEP Operating, LLC	ND	DUNN	SEC 4	T141N	R95W	LOT3	SIMON BUTTE	700599
33025016130000	STATE JABLONSKY B 1-36-25H-142-95	EMEP Operating, LLC	ND	DUNN	SEC 36	T142N	R95W	SESW	MURPHY CREEK	700479
33025015840000	STATE LITTLE MISSOURI 1-30-31H-142-95	EMEP Operating, LLC	ND	DUNN	SEC 19	T142N	R95W	SWSE	MANNING	700479
33025012630000	STATE DVORAK 1-9-16H-141-96	EMEP Operating, LLC	ND	DUNN	SEC 9	T141N	R96W	NWNE	ST. ANTHONY	700479
33025017010000	STATE FRANK BUTLER 1-29-32H-142-94	EMEP Operating, LLC	ND	DUNN	SEC 29	T142N	R94W	NWNE	MURPHY CREEK	700479
33025015120000	STATE FISHER 2-21-16H-142-97	EMEP Operating, LLC	ND	DUNN	SEC 28	T142N	R97W	NWNE	WILLMEN	700479
33025014930000	STATE JABLONSKY 1-1-12H-141-95	EMEP Operating, LLC	ND	DUNN	SEC 36	T142N	R95W	SESW	SIMON BUTTE	700479
33025012990000	STATE JAEGER 1-21-16H-142-94	EMEP Operating, LLC	ND	DUNN	SEC 21	T142N	R94W	SWSW	MURPHY CREEK	700479
33025013080000	STATE MARSH 1-34-27H-142-97	EMEP Operating, LLC	ND	DUNN	SEC 34	T142N	R97W	SESW	WILLMEN	700479
33025013040000	STATE POLENSKY 1-35-36H-142-97	EMEP Operating, LLC	ND	DUNN	SEC 35	T142N	R97W	NWSW	WILLMEN	700479
33025013370000	TERRY DVORAK 1-15-22H-142-95	EMEP Operating, LLC	ND	DUNN	SEC 15	T142N	R95W	NENE	MURPHY CREEK	700479
33025011110000	WOLBERG 21-18H	EMEP Operating, LLC	ND	DUNN	SEC 18	T141N	R95W	NENW	SIMON BUTTE	700479
33025019500000	WOODROW KEEBLE 1-21-22H-141-96	EMEP Operating, LLC	ND	DUNN	SEC 21	T141N	R96W	SWSW	ST. ANTHONY	700479

TOKIO MARINE HCC

POWER OF ATTORNEY

AMERICAN CONTRACTORS INDEMNITY COMPANY TEXAS BONDING COMPANY
UNITED STATES SURETY COMPANY U.S. SPECIALTY INSURANCE COMPANY

KNOW ALL MEN BY THESE PRESENTS: That American Contractors Indemnity Company, a California corporation, Texas Bonding Company, an assumed name of American Contractors Indemnity Company, United States Surety Company, a Maryland corporation and U.S. Specialty Insurance Company, a Texas corporation (collectively, the "Companies"), do by these presents make, constitute and appoint:

Edwin H. Frank, III, Michele K. Tyson, Meredith K. Anderson, Stephen Michael Smith,Timothy J. Briggs
or Roxanne J. Molinar of Houston, Texas

its true and lawful Attorney(s)-in-fact, each in their separate capacity if more than one is named above, with full power and authority hereby conferred in its name, place and stead, to execute, acknowledge and deliver **any and all bonds, recognizances, undertakings or other instruments or contracts of suretyship to include riders, amendments, and consents of surety, providing the bond penalty does not exceed** ******Three Million****** Dollars (***3,000,000.00***).

This Power of Attorney shall expire without further action on January 31st 2028. This Power of Attorney is granted under and by authority of the following resolutions adopted by the Boards of Directors of the Companies:

Be it Resolved, that the President, any Vice-President, any Assistant Vice-President, any Secretary or any Assistant Secretary shall be and is hereby vested with full power and authority to appoint any one or more suitable persons as Attorney(s)-in-Fact to represent and act for and on behalf of the Company subject to the following provisions:

Attorney-in-Fact may be given full power and authority for and in the name of and on behalf of the Company, to execute, acknowledge and deliver, any and all bonds, recognizances, contracts, agreements or indemnity and other conditional or obligatory undertakings, including any and all consents for the release of retained percentages and/or final estimates on engineering and construction contracts, and any and all notices and documents canceling or terminating the Company's liability thereunder, and any such instruments so executed by any such Attorney-in-Fact shall be binding upon the Company as if signed by the President and sealed and effected by the Corporate Secretary.

Be it Resolved, that the signature of any authorized officer and seal of the Company heretofore or hereafter affixed to any power of attorney or any certificate relating thereto by facsimile, and any power of attorney or certificate bearing facsimile signature or facsimile seal shall be valid and binding upon the Company with respect to any bond or undertaking to which it is attached.

IN WITNESS WHEREOF, The Companies have caused this instrument to be signed and their corporate seals to be hereto affixed, this 1st day of February 2024.

AMERICAN CONTRACTORS INDEMNITY COMPANY, TEXAS BONDING COMPANY, UNITED STATES SURETY COMPANY, U.S. SPECIALTY INSURANCE COMPANY

By: _____
Daniel P. Aguilar, Vice President

A Notary Public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of Los Angeles

On this 1st day of February 2024, before me, D. Littlefield, a notary public, personally appeared Daniel P. Aguilar, Vice President of American Contractors Indemnity Company, Texas Bonding Company, United States Surety Company and U.S. Specialty Insurance Company who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature _____ (seal)

D. LITTLEFIELD
Notary Public - California
Los Angeles County
Commission # 2478570
My Comm. Expires Jan 31, 2028

I, Kio Lo, Assistant Secretary of American Contractors Indemnity Company, Texas Bonding Company, United States Surety Company and U.S. Specialty Insurance Company, do hereby certify that the above and foregoing is a true and correct copy of a Power of Attorney, executed by said Companies, which is still in full force and effect; furthermore, the resolutions of the Boards of Directors, set out in the Power of Attorney are in full force and effect.

In Witness Whereof, I have hereunto set my hand and affixed the seals of said Companies at Los Angeles, California this 30th day of July, 2024

Bond No. B015535
Agency No. 8353

_____
Kio Lo, Assistant Secretary

HCCSMANPOA02/2024

From: Kyle Dubiel <kdubiel@em-ep.com>
Sent: Wednesday, October 30, 2024 12:20 PM
To: Whitney, Rachel
Subject: RE: Bond release

Ok got it, thanks Rachel.

As to the flowlines, there aren't any owned flowlines to or from the well pads, so nothing was submitted or should be needed there.

Thanks,
-Kyle

From: Whitney, Rachel <rlwhitney@nd.gov>
Sent: Wednesday, October 30, 2024 11:37 AM
To: Kyle Dubiel <kdubiel@em-ep.com>
Subject: RE: Bond release

We're getting closer to the end with just a few departments left to review.

Did you submit flowlines for this transfer yet? We'll need those if there are any owned flowlines going to or from the well pads.

Thank you,

Rachel Whitney
Administrative Assistant II

701.328.8040 (o) • rlwhitney@nd.gov • www.dmr.nd.gov

NORTH Dakota Be Legendary.™ | Mineral Resources

701.328-8020 • oilandgasinfo@nd.gov • www.dmr.nd.gov • 600 E Boulevard Ave, Dept. 474 • Bismarck, ND 58505

From: Kyle Dubiel <kdubiel@em-ep.com>
Sent: Wednesday, October 30, 2024 11:34 AM

AUTHORIZATION TO PURCHASE AND TRANSPORT OIL FROM LEASE - FORM 8

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

RECEIVED
SEP 19 2024
MINERAL RESOURCES

Well File No.
20659

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.
PLEASE SUBMIT THE ORIGINAL.

Well Name and Number	Qtr-Qtr	Section	Township	Range	County
KUDRNA 1-17	**SWSE**	**17**	**141 N**	**97 W**	**DUNN**

Operator	Telephone Number	Field
MORNINGSTAR OPERATING LLC	**(817) 334-8096**	**ST. ANTHONY**

Address	City	State	Zip Code
400 W 7TH STREET	**FORT WORTH**	**TX**	**76102**

Name of First Purchaser	Telephone Number	% Purchased	Date Effective
CONCORD ENERGY	**(303) 468-1900**	**100%**	**August 31, 2024**

Principal Place of Business	City	State	Zip Code
1401 17TH ST SUITE 1500	**DENVER**	**CO**	**80016**

Field Address	City	State	Zip Code
3804 17TH AVE NE	**WATFORD CITY**	**ND**	**58854**

Name of Transporter	Telephone Number	% Transported	Date Effective
BIG LEASE TRUCKING, LLC	**(701) 764-7212**	**100%**	**August 31, 2024**

Address	City	State	Zip Code
2036 ROUGH STOCK RD	**KILLDEER**	**ND**	**58640**

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
Other Transporters Transporting From This Lease	% Transported	Date Effective
Comments		

I hereby swear or affirm that all transporters of Bakken Petroleum System oil listed above implement or adhere to a tariff specification as stringent as the Commission's $VPCR_4$ requirement. ☑ 13.7 $VPCR_4$ Tariff Specification DAPL Tariff Authority

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records.		Date 8/30/2024
Signature A Byars	Printed Name **AMY BYARS**	Title **REGULATORY SUPERVISOR**

Above Signature Witnessed By

Witness Signature	Witness Printed Name	Witness Title
Holly Wood	**HOLLY WOOD**	**REGULATORY ANALYST**

FOR STATE USE ONLY

Date Approved DEC 20 2024	NDIC CTB NO 120659
By Melissa Hall	
Title Oil & Gas Production Analyst	

NORTH Dakota | Mineral Resources
Be Legendary.™

NORTH DAKOTA
OIL AND GAS DIVISION

July 7, 2022

EMEP Operating, LLC
Two Allen Center, 1200 Smith St.
Suite 680
Houston, TX 77002

RE: CHANGE OF OPERATOR FROM ENERPLUS RESOURCES (USA) CORPORATION TO EMEP OPERATING, LLC.
1 Well - #20659 – Kudrna 1-17

Dear Gentlemen,

Please find enclosed a copy of the approved Form 15, Notice of Transfer of Oil and Gas Wells, regarding the above-referenced matter. This transfer has now been approved and subject well is now covered by Bond No. B013889.

If you should have any questions, please feel free to contact this office.

Sincerely,

Rachel Morris
Administrative Assistant

NOTICE OF TRANSFER OF OIL AND GAS WELLS - FORM 15

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 5762 (03-2000)

RECEIVED
JUN - 3 2022
N.D. INDUSTRIAL COMMISSION

FOR STATE USE ONLY
NDIC Bond Number: 700532

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM. PLEASE SUBMIT THE ORIGINAL AND SIX COPIES.
THIS NOTICE ALONG WITH A FEE OF $25.00 PER WELL SHALL BE FILED AT LEAST THIRTY DAYS BEFORE THE CLOSING DATE OF TRANSFER.

TRANSFERRING OPERATOR

Name of Operator Representative			
Nathan Fisher			
Operator Transferring Oil and/or Gas Wells			Telephone Number
Enerplus Resources (USA) Corporation			**(720) 279-5500**
Address	City	State	Zip Code
950 17th Street Suite 2200	**Denver**	**CO**	**80202**

I, the above named representative, acknowledge the transfer of the oil and/or gas wells named below for the purpose of ownership and/or operation to the company named below.

Signature	Title (Must be an officer or power of attorney must be attached)	Date
	VP, US Business Unit	5/19/22

Well File Number	Requested Official Well Name and Number	Location (Qtr-Qtr, S-T-R)	Assignment Date
20659	**KUDRNA 1-17**	**SWSE, 17 - T141N - R97W**	**November 1, 2021**

RECEIVING OPERATOR

Name of Operator Representative			
Kyle Dubiel			
Operator Receiving Oil and/or Gas Wells			Telephone Number
EMEP Operating, LLC			**(346) 261-1474**
Address	City	State	Zip Code
Two Allen Center, 1200 Smith St., Suite 680	**Houston**	**TX**	**77002**

I, the above named representative, have read the foregoing statement and accept such transfer, also the responsibility of ownership and/or operation of said well or wells, under the said company bond, said bond being tendered to or on file with the Industrial Commission of North Dakota.

Signature	Title (Must be an officer or power of attorney must be attached)	Date
	VP BD, Land and Legal	5/20/22

SURETY COMPANY

Surety			Telephone Number	Amount of Bond
U.S. Specialty Insurance Company			**(713) 355-3100**	**$ 220,000**
Address	City	State	Zip Code	Bond Number
13403 Northwest Freeway	**Houston**	**TX**	**77040**	**B013889**

The above named SURETY agrees that such bond shall extend to compliance with Chapter 38-08 of North Dakota Century Code and amendments and the rules and regulations of the Industrial Commission of North Dakota prescribed to govern the production of oil and gas on government and private lands within the State of North Dakota, in relation to the above stated transfer; it being further agreed and understood that the bond sum or amount is not to be considered increased because of such extension.

Signature	Title (Must be an officer or power of attorney must be attached)	Date
Meredith K Anderson	Attorney-in-Fact	May 31, 2022

Printed Name: Meredith K. Anderson

FOR STATE USE ONLY

Date Approved	July 7, 2022
By	David Tabor
Title	Assistant Director

TOKIO MARINE HCC

POWER OF ATTORNEY

AMERICAN CONTRACTORS INDEMNITY COMPANY TEXAS BONDING COMPANY
UNITED STATES SURETY COMPANY U.S. SPECIALTY INSURANCE COMPANY

KNOW ALL MEN BY THESE PRESENTS: That American Contractors Indemnity Company, a California corporation, Texas Bonding Company, an assumed name of American Contractors Indemnity Company, United States Surety Company, a Maryland corporation and U.S. Specialty Insurance Company, a Texas corporation (collectively, the "Companies"), do by these presents make, constitute and appoint:

Edwin H. Frank, III, Michele K. Tyson, Meredith K. Anderson, Stephen Michael Smith, Timothy J. Briggs or Roxanne Jimenez of Houston, Texas

its true and lawful Attorney(s)-in-fact, each in their separate capacity if more than one is named above, with full power and authority hereby conferred in its name, place and stead, to execute, acknowledge and deliver **any and all bonds, recognizances, undertakings or other instruments or contracts of suretyship to include riders, amendments, and consents of surety, providing the bond penalty does not exceed** ******Three Million****** Dollars (***3,000,000.00***). This Power of Attorney shall expire without further action on January 31st, 2024. This Power of Attorney is granted under and by authority of the following resolutions adopted by the Boards of Directors of the Companies:

Be it Resolved, that the President, any Vice-President, any Assistant Vice-President, any Secretary or any Assistant Secretary shall be and is hereby vested with full power and authority to appoint any one or more suitable persons as Attorney(s)-in-Fact to represent and act for and on behalf of the Company subject to the following provisions:

Attorney-in-Fact may be given full power and authority for and in the name of and on behalf of the Company, to execute, acknowledge and deliver, any and all bonds, recognizances, contracts, agreements or indemnity and other conditional or obligatory undertakings, including any and all consents for the release of retained percentages and/or final estimates on engineering and construction contracts, and any and all notices and documents canceling or terminating the Company's liability thereunder, and any such instruments so executed by any such Attorney-in-Fact shall be binding upon the Company as if signed by the President and sealed and effected by the Corporate Secretary.

Be it Resolved, that the signature of any authorized officer and seal of the Company heretofore or hereafter affixed to any power of attorney or any certificate relating thereto by facsimile, and any power of attorney or certificate bearing facsimile signature or facsimile seal shall be valid and binding upon the Company with respect to any bond or undertaking to which it is attached.

IN WITNESS WHEREOF, The Companies have caused this instrument to be signed and their corporate seals to be hereto affixed, this 23rd day of September, 2021.

AMERICAN CONTRACTORS INDEMNITY COMPANY TEXAS BONDING COMPANY
UNITED STATES SURETY COMPANY U.S. SPECIALTY INSURANCE COMPANY

State of California

County of Los Angeles

By: _____
Daniel P. Aguilar, Vice President

A Notary Public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document

On this 23rd day of September, 2021, before me, D. Littlefield, a notary public, personally appeared Daniel P. Aguilar, Vice President of American Contractors Indemnity Company, Texas Bonding Company, United States Surety Company and U.S. Specialty Insurance Company who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

D. LITTLEFIELD
Notary Public - California
Los Angeles County
Commission # 2320307
My Comm. Expires Jan 31, 2024

Signature _____ (seal)

I, Kio Lo, Assistant Secretary of American Contractors Indemnity Company, Texas Bonding Company, United States Surety Company and U.S. Specialty Insurance Company, do hereby certify that the above and foregoing is a true and correct copy of a Power of Attorney, executed by said Companies, which is still in full force and effect; furthermore, the resolutions of the Boards of Directors, set out in the Power of Attorney are in full force and effect.

In Witness Whereof, I have hereunto set my hand and affixed the seals of said Companies at Los Angeles, California this 31st day of May, 2022.

Corporate Seals
Bond No. B013889

Agency No. 8353

_____
Kio Lo, Assistant Secretary

HCCSMANPOA09/2021

visit tmhcc.com/surety for more information

RECEIVED
JAN 1 1 2022
N.D. INDUSTRIAL COMMISSION

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. **20659**

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM.
PLEASE SUBMIT THE ORIGINAL.

Well Name and Number	Qtr-Qtr	Section	Township	Range	County
KUDRNA 1-17	**SWSE**	**17**	**141N**	**97W**	**DUNN**

Operator	Telephone Number	Field
EMEP Operating, LLC	**346-261-1472**	**ST. ANTHONY**

Address	City	State	Zip Code
Two Allen Center, 1200 Smith St., Suite 680	**Houston**	**TX**	**77002**

Name of First Purchaser	Telephone Number	% Purchased	Date Effective
Concord Energy	**(303) 468-1900**	**100%**	**November 1, 2021**

Principal Place of Business	City	State	Zip Code
1401 17TH STR SUITE 1500	**Denver**	**CO**	**80016**

Field Address	City	State	Zip Code
3804 17TH Ave NE	**Watford City**	**ND**	**58854**

Name of Transporter	Telephone Number	% Transported	Date Effective
BIG LEASE TRUCKING, LLC	**(701) 764-7212**	**100%**	**November 1, 2021**

Address	City	State	Zip Code
2036 ROUGH STOCK ROAD	**KILLDEER**	**ND**	**58640**

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
Other Transporters Transporting From This Lease	% Transported	Date Effective

Comments

I hereby swear or affirm that all transporters of Bakken Petroleum System oil listed above implement or adhere to a tariff specification as stringent as the Commissions $VPCR_4$ requirement ☐ _____ $VPCR_4$ Tariff Specification _____ Tariff Authority

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records. Date: **December 20, 2021**

Signature	Printed Name	Title
	Kyle Dubiel	**Vice President BD, Land and Legal**

Above Signature Witnessed By

Witness Signature	Witness Printed Name	Witness Title
	Michael DeKruif	**Vice President Engineering**

FOR STATE USE ONLY

Date Approved	NDIC CTB NO
SEP 0 2 2022	120659
By: Melissa Herz	
Title: Oil & Gas Production Analyst	

AUTHORIZATION TO PURCHASE AND TRANSPORT OIL FROM LEASE - FORM 8

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

Received
APR 13 2021
ND Oil & Gas Division

Well File No.
20659
NDIC CTB No.
120659

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

Well Name and Number	Qtr-Qtr	Section	Township	Range	County
KUDRNA 1-17	SWSE	17	141 N	97 W	DUNN

Operator	Telephone Number	Field
ENERPLUS RESOURCES (USA) CORP	(720) 279-5500	ST ANTHONY

Address	City	State	Zip Code
950 17TH STREET, SUITE 2200	DENVER	CO	80202

Name of First Purchaser	Telephone Number	% Purchased	Date Effective
CONCORD ENERGY LLC	(303) 468-1900	100	March 10, 2021

Principal Place of Business	City	State	Zip Code
1401 17TH STR SUITE 1500	DENVER	CO	80016

Field Address	City	State	Zip Code
3804 17TH Ave NE	WATFORD CITY	ND	58854

Name of Transporter	Telephone Number	% Transported	Date Effective
BIG LEASE TRUCKING, LLC	(701) 764-7212	100	March 10, 2021

Address	City	State	Zip Code
2036 ROUGH STOCK ROAD	KILLDDER	ND	58640

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
Other Transporters Transporting From This Lease	% Transported	Date Effective

Comments

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records. Date: March 26, 2021

Signature	Printed Name	Title
Jamie Krogh	JAMIE KROGH	OPERATIONS TECHNICIAN

Above Signature Witnessed By

Witness Signature	Witness Printed Name	Witness Title
Kim Antle	KIM ANTLE	OPERATIONS TECHNICIAN

FOR STATE USE ONLY

Date Approved	AUG 05 2021
By	Melissa Nagel
Title	Oil & Gas Production Analyst

NOTICE OF TRANSFER OF OIL AND GAS WELLS - FORM 15

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 5762 (03-2000)

JUN 2021
RECEIVED
ND OIL & GAS DIVISION

FOR STATE USE ONLY
NDIC Bond Number 100291

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM. PLEASE SUBMIT THE ORIGINAL AND SIX COPIES.
THIS NOTICE ALONG WITH A FEE OF $25.00 PER WELL SHALL BE FILED AT LEAST THIRTY DAYS BEFORE THE CLOSING DATE OF TRANSFER.

TRANSFERRING OPERATOR

Name of Operator Representative			
Nathan Fisher			
Operator Transferring Oil and/or Gas Wells **Bruin E&P Operating, LLC**			Telephone Number **(720) 279-5500**
Address **602 Sawyer Street #710**	City **Houston**	State **TX**	Zip Code **77007**

I, the above named representative, acknowledge the transfer of the oil and/or gas wells named below for the purpose of ownership and/or operation to the company named below.

Signature	Title (Must be an officer or power of attorney must be attached)	Date
	VP-US Business unit	6/21/21

Well File Number	Requested Official Well Name and Number	Location (Qtr-Qtr, S-T-R)	Assignment Date
	See attached well list.		3/10/21

RECEIVING OPERATOR

Name of Operator Representative			
Nathan Fisher			
Operator Receiving Oil and/or Gas Wells **Enerplus Resources (USA) Corporation**			Telephone Number **(720) 279-5500**
Address **950 17th Street Suite 2200**	City **Denver**	State **CO**	Zip Code **80202**

I, the above named representative, have read the foregoing statement and accept such transfer, also the responsibility of ownership and/or operation of said well or wells, under the said company bond, said bond being tendered to or on file with the Industrial Commission of North Dakota.

Signature	Title (Must be an officer or power of attorney must be attached)	Date
	VP-US Business unit	6/21/21

SURETY COMPANY

Surety			Telephone Number	Amount of Bond
Liberty Mutual Surety			**(469) 997-6767**	**$ $100,000**
Address **7900 Windrose Avenue**	City **Plano**	State **TX**	Zip Code **75024**	Bond Number **022225137**

The above named SURETY agrees that such bond shall extend to compliance with Chapter 38-08 of North Dakota Century Code and amendments and the rules and regulations of the Industrial Commission of North Dakota prescribed to govern the production of oil and gas on government and private lands within the State of North Dakota, in relation to the above stated transfer; it being further agreed and understood that the bond sum or amount is not to be considered increased because of such extension.

Signature	Title (Must be an officer or power of attorney must be attached)	Date
	Attorney-In-Fact	**June 18, 2021**

Printed Name
Jennifer Winters

FOR STATE USE ONLY

Date Approved	August 3, 2021
By	Bruce E. Hicks
Title	Assistant Director

Liberty Mutual SURETY

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

Certificate No: **8197876**

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Harold D. Binggeli, Cara D. Hancock, Jennifer Winters

all of the city of Lubbock state of TX each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 1st day of November, 2018.

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

By: _____
David M. Carey, Assistant Secretary

State of PENNSYLVANIA
County of MONTGOMERY ss

On this 1st day of November, 2018 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Upper Merion Twp., Montgomery County
My Commission Expires March 28, 2021
Member, Pennsylvania Association of Notaries

By: _____
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

ARTICLE IV – OFFICERS: Section 12 Power of Attorney.
Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII – Execution of Contracts: Section 5. Surety Bonds and Undertakings.
Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 18th day of June, 2021.

By: _____
Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

File No	CTB No	Location	Well Name
1871		NENE 31-163-78	H. AND H. NORDMARK 1
16178	116178	NWNW 4-141-96	DVORAK 11-4H
16192	116192	SESE 32-142-97	PAVLICEK 44-32H
16282		SWSE 18-161-78	V&F JOHNSON-FCB 1-18
17234	117234	SESW 10-142-95	DVORAK 10-1H
17569		SWNW 3-163-78	KJELSHUS 5-3
17808	117808	SESW 14-141-96	SADOWSKY 24-14H
17961	117961	NWNW 27-141-95	KADRMAS 11-27H
17984	117984	LOT3 4-141-95	SICKLER STATE 21-4H
18056	118056	SWSE 12-141-97	SADOWSKY 34-12H
18094	218094	SESE 17-148-94	FORT BERTHOLD 148-94-17D-08-1H
18126	118126	SESW 17-152-93	FORT BERTHOLD 152-93-17C-08-1H
18206	218206	NWNE 2-147-94	FORT BERTHOLD 147-94-2A-11-1H
18272	118272	NWNE 10-141-96	JAEGER 1-10-15H-141-96
18313	218313	SWSE 35-148-94	FORT BERTHOLD 148-94-35D-26-1H
18332	118332	NWNE 25-148-94	FORT BERTHOLD 148-94-25A-36-1H
18335	118335	NWNE 22-148-94	FORT BERTHOLD 148-94-22A-27-1H
18341	218341	NWNE 1-147-94	FORT BERTHOLD 147-94-1A-12-1H
18367	118367	SESE 9-148-94	FORT BERTHOLD 148-94-9D-04-1H
18402	118402	SESE 22-152-94	FORT BERTHOLD 152-94-22D-15-1H
18426	218426	SWSW 14-152-94	FORT BERTHOLD 152-94-14C-11-1H
18446	218446	NENW 18-152-93	FORT BERTHOLD 152-93-18B-19-1H
18458	218458	NENE 3-147-94	FORT BERTHOLD 147-94-3A-10-1H
19048	119048	SESE 11-156-101	BORRUD 156-101-11D-2-1H
19088	119088	NENW 18-141-95	WOLBERG 21-18H
19103	219103	NENE 28-157-100	NJOS 157-100-28A-33-1H
19169	119169	NWNW 11-157-103	CARLSON 1-11H
19252	119252	SESE 24-157-102	ANDERSON 1-24-13H
19306	119306	NWNW 28-157-102	SIIRTOLA 1-28-33H
19438	119438	SESW 21-142-97	FISHER STATE 1-21-16H-142-97

19494	119494 NENW 36-142-96	ALFRED SADOWSKY 1-36-1H-141-96
19547	119547 SWSW 21-157-100	STATE 157-100-21C-16-1H
19598	119598 NENE 26-158-99	OPSAL 158-99-26A-35-1H
19646	119646 NWNE 2-157-100	STORHAUG 157-100-2A-11-1H
19670	119670 NENE 26-157-101	MONSON TRUST 157-101-26A-35-1H
19777	119777 NWNW 13-157-101	ERIKSON 157-101-13B-24-1H
19950	119950 SESE 31-157-100	GREV 157-100-31D-30-1H
19976	219976 SWSW 20-148-94	FORT BERTHOLD 148-94-29B-32-1H
20024	120024 NWNE 16-142-95	NOVASIO STATE 1-16-21H-142-95
20063	120063 SWSW 32-157-100	STATE 157-100-32C-29-1H
20065	120065 NWNW 14-157-101	ROSSLAND 157-101-14B-23-1H
20086	220086 LOT 4 3-150-94	FORT BERTHOLD 150-94-3B-10-1H
20088	220088 LOT 4 3-150-94	FORT BERTHOLD 151-94-34C-27-1H
20092	120092 NENW 17-141-95	GORDON PAVLICEK 1-17-20H-141-95
20104	120104 NWNE 8-141-96	ELSIE DVORAK 1-8-17H-141-96
20172	220172 SESE 23-148-95	FORT BERTHOLD 148-95-23D-14-1H
20173	220173 SESE 23-148-95	FORT BERTHOLD 148-95-26A-35-1H
20218	120218 NWNE 9-141-96	STATE DVORAK 1-9-16H-141-96
20252	220252 SESE 19-148-94	FORT BERTHOLD 148-94-19D-18-1H
20253	220253 SESE 19-148-94	FORT BERTHOLD 148-94-30A-31-1H
20269	120269 SWSW 17-152-93	FORT BERTHOLD 152-93-17C-08-2H
20328	220328 NENW 26-151-94	FORT BERTHOLD 151-94-26B-35-1H
20411	120411 SWSW 21-142-94	STATE JAEGER 1-21-16H-142-94
20416	120416 SESW 6-141-96	DVORAK TRUST 1-6-31H-142-96
20425	120425 NWSW 35-142-97	STATE POLENSKY 1-35-36H-142-97
20441	120441 SESW 34-142-97	STATE MARSH 1-34-27H-142-97
20458	220458 SESW 17-152-93	FORT BERTHOLD 152-93-17C-08-3H

20534	120534 LOT4 5-157-101	POECKES 1-32-29H
20535	120535 LOT4 5-157-101	PETERSON TRUST 1-5-8H
20552	120552 SWSW 21-158-103	MULLER 1-21-16H
20553	120553 NENE 25-157-103	RASMUSSEN 1-25-36H
20567	120567 SESE 22-152-94	FORT BERTHOLD 152-94-22D-15-2H
20580	120580 NENE 15-142-95	TERRY DVORAK 1-15-22H-142-95
20614	120614 NWNW 17-157-100	WHITE 157-100-17B-20-1H
20659	120659 SWSE 17-141-97	KUDRNA 1-17
20707	120707 LOT2 1-157-103	PASTERNAK 1-1-12H
20723	120723 SWSE 32-158-99	HOKANSON 158-99-32D-29-1H
20749	120749 SWSE 32-142-97	MARLENE STEFFAN 1-5-8H-141-97
20750	120750 SWSE 12-142-95	KATIE HEISER 1-12-1H-142-95
20765	120765 SWSE 11-142-95	GEORGE MILLER 1-11-2H-142-95
20794	120794 NWNE 25-158-99	STATE 158-99-25A-36-1H
20825	120825 SESE 8-157-100	WILLIAMS AND LARSON TRUST 157-100-8D-5-1H
20844	220844 SESW 21-157-102	RASMUSSEN 1-21-16H
20866	120866 SESE 23-148-95	FORT BERTHOLD 148-95-23D-14-2H
20871	120871 SESE 9-148-94	FORT BERTHOLD 148-94-9D-04-2H
20879	120879 NENE 1-147-94	FORT BERTHOLD 147-94-1A-12-2H
20880	220880 NENE 1-147-94	FORT BERTHOLD 148-94-36D-25-2H
20918	120918 SWSW 24-148-95	FORT BERTHOLD 148-95-24C-13-1H
20919	220919 SWSW 24-148-95	FORT BERTHOLD 148-95-25B-36-1H
20953	120953 LOT2 4-157-100	JOHNSON FAMILY TRUST 157-100-4A-9-1H
20989	120989 NWNE 18-157-100	PASTERNAK TRUST 157-100-18A-19-1H
20990	120990 NENE 18-157-100	BERG 157-100-7D-6-1H
20992	120992 NENW 25-157-101	SYLTE MINERAL TRUST 157-101-25B-36-1H
21040	121040 SESE 34-158-99	HELSTAD 158-99-34D-27-1H
21066	218094 SESE 17-148-94	FORT BERTHOLD 148-94-17D-08-2H

21079	220252	SESE 19-148-94	FORT BERTHOLD 148-94-19D-18-2H
21080	220253	SESE 19-148-94	FORT BERTHOLD 148-94-30A-31-2H
21083	121083	NENW 28-158-102	DORIS 1-28-33H
21161		NESE 2-157-100	OSTAD 157-100-2D-1-1
21185	121185	SWSW 36-158-103	STATE 1-36-25H
21207	121207	NENW 14-157-101	STROMME FAMILY TRUST 157-101-11C-2-1H
21238	121238	NENW 28-158-99	HELSTAD 158-99-28B-33-1H
21293	221293	SESE 19-142-97	MAURICE HECKER 1-19-18H-142-97
21420	121420	LOT2 1-157-99	HOKANSON 157-99-1A-12-1H
21550	121550	NWNE 4-157-103	SEVEN 1-4-9H
21578	121578	SWSE 9-156-101	BERGER 156-101-9-4-1H
21606	121606	NENW 28-141-95	PRIVRATSKY 1-28-33H-141-95
21610	121610	LOT2 5-157-103	ARNSON 1-5-8H
21642	121642	SESW 20-142-97	COYOTE CREEK 1-20-17H-142-97
21652	218446	NENW 18-152-93	FORT BERTHOLD 152-93-18B-19-2H
21653	218446	NENW 18-152-93	FORT BERTHOLD 152-93-18B-19-3H
21669	121669	SESW 36-142-95	STATE JABLONSKY 1-1-12H-141-95
21674	121674	NWNE 29-142-94	FEDERAL ANNIE OAKLEY 1-20-17H-142-94
21703	121703	NENW 13-157-101	MILLER 157-101-12C-1-1H
21719	121719	LOT2 1-157-102	HOUGHT 1-1-12H
21800	221800	SESE 8-152-93	FORT BERTHOLD 152-93-9C-10-1H
21801	221800	SWSW 9-152-93	FORT BERTHOLD 152-93-9C-10-2H
21802	221800	SWSW 9-152-93	FORT BERTHOLD 152-93-9C-10-3H
21803	221800	SWSW 9-152-93	FORT BERTHOLD 152-93-9C-10-4H
21805	221800	SWSW 9-152-93	FORT BERTHOLD 152-93-9C-10-5H
21807	221800	SWSW 9-152-93	FORT BERTHOLD 152-93-9C-10-6H
21844	121844	SESW 32-142-96	KEARY KADRMAS 1-32-29H-142-96
21870	121870	NENW 6-156-101	AGRIBANK 157-101-34C-27-1H
21900	218206	NENE 2-147-94	FORT BERTHOLD 147-94-2A-11-2H
21901	218313	SESE 35-148-94	FORT BERTHOLD 148-94-35D-26-2H
21913	121913	NWNE 20-141-96	BILL CODY 1-20-29H-141-96

21939	121939 NWNE 5-157-102	PASTERNAK 1-32-29H
21940	121940 NWNE 5-157-102	PASTERNAK 1-5-8H
21963	121963 SESE 23-148-95	FORT BERTHOLD 148-95-26A-35-2H
22001	122001 NENW 4-157-102	PASTERNAK 1-4-9H
22054	122054 NENW 29-157-102	BOYDS 1-29-32H
22090	220458 SESW 17-152-93	FORT BERTHOLD 152-93-17C-08-4H
22128	122128 NENW 30-157-102	A & B 1-30-31H
22133	122133 SESE 12-142-95	MONGOOSE 1-13-24H-142-95
22150	122150 SWSE 12-141-97	RICHARD JABLONSKY 1-13-24H-141-97
22172	122172 SWSE 19-142-95	HAVELKA 1-19-18H-142-95
22234	122234 SWSE 19-142-95	STATE LITTLE MISSOURI 1-30-31H-142-95
22300	NWNE 27-148-95	FB BELFORD 148-95-22D-15-2T
22301	NWNE 27-148-95	FB BELFORD 148-95-22D-15-3B
22309	122309 SESW 31-158-102	THOME 1-6-7H
22310	122310 SESW 31-158-102	THOME 1-31-30H
22312	222312 NWNE 28-148-94	FORT BERTHOLD 148-94-28A-33-1H
22313	222312 NWNE 28-148-94	FORT BERTHOLD 148-94-28A-33-2H
22351	122351 NWNE 28-142-97	LOUIE PAVLICEK 1-28-33H-142-97
22352	122352 NWNE 28-142-97	STATE FISHER 2-21-16H-142-97
22369	122369 SESW 36-142-95	STATE JABLONSKY B 1-36-25H-142-95
22441	122441 SWSW 34-142-96	BINSTOCK 1-34-27H-142-96
22444	122444 SWSE 35-142-95	EASTON 1-35-26H-142-95
22445	122445 SWSW 33-142-96	HATTIE DVORAK 1-33-28H-142-96
22447	122447 NENW 26-157-102	J. RASMUSSEN 1-26-35H
22448	122448 NENW 26-157-102	C. RASMUSSEN 1-23-14H
22456	122456 LOT2 1-157-100	HOFF 157-100-1A-12-1H
22469	122469 SESW 31-158-101	HOUGHT 1-6-7H
22470	122470 SESW 31-158-101	HOUGHT 1-31-30H
22495	222495 LOT3 1-156-101	BORRUD 156-101-1-12-1H
22503	220919 SWSW 24-148-95	FORT BERTHOLD 148-95-25B-36-2H
22506	222506 SESW 22-157-101	ROSSLAND 157-101-22C-15-1H

22518	122518 NWNE 27-157-102	QUARNE 1-27-34H
22545	122545 SWSE 9-158-102	J HAUGEN 1-9-4H
22560	222560 SENE 21-148-94	FORT BERTHOLD 148-94-21A-20-1H
22561	222560 SENE 21-148-94	FORT BERTHOLD 148-94-21A-20-2H
22562	222560 SENE 21-148-94	FORT BERTHOLD 148-94-21A-20-3H
22589	122589 LOT3 3-157-101	KING 157-101-3B-10-1H
22672	122672 NWNE 18-158-101	PEDERSON 1-18-19H
22707	220328 NWNW 26-151-94	FORT BERTHOLD 151-94-26B-35-3H
22708	220328 NWNW 26-151-94	FORT BERTHOLD 151-94-26B-35-2H
22822	122822 SWSE 20-157-101	BERG 1-29-32H
22823	122823 SWSE 20-157-101	BERG 1-20-17H
22826	122826 LOT1 2-157-99	HELSTAD 157-99-2A-11-1H
22878	122878 NENW 22-148-94	FORT BERTHOLD 148-94-22B-27-5H
22881	122881 NWNE 29-142-94	STATE FRANK BUTLER 1-29-32H-142-94
22979	222979 SESW 9-148-94	FORT BERTHOLD 148-94-9C-04-5H
22980	222979 SESW 9-148-94	FORT BERTHOLD 148-94-9C-04-4H
22981	222979 SESW 9-148-94	FORT BERTHOLD 148-94-9C-04-3H
22983	219976 SWSW 20-148-94	FORT BERTHOLD 148-94-29B-32-2H
22984	122984 SWSE 20-142-95	SCHAFNER 1-29-32H-142-95
22985	122985 SWSE 20-142-95	STATE LITTLE KNIFE 1-20-17H-142-95
23088	123088 SESW 23-142-98	KUNTZ 1-23-14H-142-98
23120	123120 NWNE 27-157-102	HOUGHT F.T. 1-22-15H
23123	123123 SWSE 19-148-94	FORT BERTHOLD 148-94-19D-18-3H
23124	123124 SWSE 19-148-94	FORT BERTHOLD 148-94-30A-31-3H
23223	223223 NENE 22-148-94	FORT BERTHOLD 148-94-22A-27-2H
23252	123252 SWSE 34-158-102	ANDRE 1-34-27H
23253	123253 SWSE 34-158-102	PASTERNAK 1-3-10H

23258	123258	SESE 34-148-94	FORT BERTHOLD 147-94-3A-10-2H
23353	123353	NENW 27-142-95	FRANK ANDERS 1-27-34H-142-95
23382	123382	NWNW 1-147-94	FORT BERTHOLD 147-94-1B-12-3H
23383	123383	NWNW 1-147-94	FORT BERTHOLD 148-94-36C-25-3H
23384	123384	SESW 13-141-96	JOSEPH CARTER 1-13-12H-141-96
23505	223507	SESE 17-152-93	FORT BERTHOLD 152-93-17D-08-7H
23506	223507	SESE 17-152-93	FORT BERTHOLD 152-93-17D-08-6H
23507	223507	SESE 17-152-93	FORT BERTHOLD 152-93-17D-08-5H
23550	218426	SWSW 14-152-94	FORT BERTHOLD 152-94-14C-11-2H
23554	223554	SESE 14-152-94	FORT BERTHOLD 152-94-14D-11-4H
23555		SESE 14-152-94	FORT BERTHOLD 152-94-14D-11-3H
23596	223596	LOT 3 2-157-102	PASTERNAK FEDERAL 1-2-11H
23597	123597	NENW 30-157-101	BERG 1-30-31H
23621	123621	NENW 30-157-101	BERG 1-19-18H
23676	123676	NWNE 4-142-94	CHARLES DAVIS 1-4-9H-142-94
23685	123685	SESW 7-142-94	MEDUNA TRUST 1-7-6H-142-94
23706	123706	LOT3 2-157-102	MILLER 1-35-26H
23722	123722	LOT3 1-157-102	HOUGHT 2-1-12H
23723	123723	LOT3 1-157-102	H STATE 1-36-25H
23844	123844	SWSW 36-141-97	NELS WOLD 1-36-25H-141-97
23845	123845	NENW 24-142-96	RIDL 1-24-25H-142-96
23928	123928	SESE 30-141-96	HENRY GURKE 1-30-19H-141-96
23932	123932	SWSE 35-141-97	LOREN HAGEN 1-35-26H-141-97
24108	124108	NWNE 14-157-103	G LARSEN 1-14-23H
24150	224150	SWSW 27-148-94	FORT BERTHOLD 148-94-27C-22-3H
24210	124210	SWSW 21-141-96	WOODROW KEEBLE 1-21-22H-141-96
24220	124220	NENW 26-149-98	BERG TRUST FEDERAL 1-26-35H
24231	124231	NWNE 13-158-102	GLIMM 1-13-24H
24248		NENW 14-158-102	OYEN 1-11-2H
24249	124249	NENW 14-158-102	POECKES 1-14-23H

25207	225207 NENW 27-148-95	FORT BERTHOLD 148-95-27B-34-4H
25208	225208 NENW 27-148-95	FORT BERTHOLD 148-95-22C-15-4H
25209	225207 SESW 22-148-95	FORT BERTHOLD 148-95-27B-34-5H
25210	225208 SESW 22-148-95	FORT BERTHOLD 148-95-22C-15-5H
25370	218905 NWNW 13-152-94	FORT BERTHOLD 152-94-13B-24-2H
25399	225399 NENE 13-152-94	FORT BERTHOLD 152-94-13A-24-4H
25400	225399 NENE 13-152-94	FORT BERTHOLD 152-94-13A-24-3H
25443	NWNW 25-157-102	ANN H. THOME 3-25-36H
25444	NWNW 25-157-102	ANN H. THOME 4-25-36H
25445	NENW 25-157-102	ANN H. THOME 5-25-36H
25494	224731 NWNW 15-152-94	FORT BERTHOLD 152-94-15B-22-4H
25499	125499 SWSE 20-157-100	MOLINE 157-100-20D-17-2H
25502	224417 SESW 17-148-94	FORT BERTHOLD 148-94-17C-8-5H
25524	225524 SESW 2-152-94	FORT BERTHOLD 152-94-11B-14-5H
25525	225524 SESW 2-152-94	FORT BERTHOLD 152-94-11B-14-6H
25526	225524 SESW 2-152-94	FORT BERTHOLD 152-94-11B-14-7H
25534	125534 SWSW 33-148-94	FORT BERTHOLD 148-94-33C-28-3H
25556	NWNE 29-148-94	FORT BERTHOLD 148-94-29A-32-8TFH
25557	NWNE 29-148-94	FORT BERTHOLD 148-94-29A-32-9TFH
25570	222226 SESE 24-157-102	JOHNSON 7-25-36H
25596	225597 SESW 35-148-94	FORT BERTHOLD 147-94-2B-11-5H
25597	225597 SESW 35-148-94	FORT BERTHOLD 147-94-2B-11-4H
25598	225597 SESW 35-148-94	FORT BERTHOLD 147-94-2B-11-3H
25793	219103 NWNW 28-157-100	NJOS 157-100-28B-33-2H

25800		NENW 3-147-94	FORT BERTHOLD 147-94-3B-10-8TFH
25801	224270	NENW 3-147-94	FORT BERTHOLD 147-94-3B-10-7H
25988	225988	SWSW 20-148-94	FORT BERTHOLD 148-94-20C-21-5H
25989	225988	SWSW 20-148-94	FORT BERTHOLD 148-94-20C-21-4H
25992	223596	LOT1 2-157-102	PASTERNAK FEDERAL 2-2-11H
26084	220844	SWSE 21-157-102	QUARNE 2-21-16H

File No	CTB No	Location	Well Name
26116	126116	SESW 19-157-100	GREV 157-100-30B-31-3H
26117		LOT4 19-157-100	PASTERNAK TRUST 157-100-19C-18-3H
26118	126118	LOT4 19-157-100	GREV 157-100-30B-31-2H
26119	126119	LOT4 19-157-100	PASTERNAK TRUST 157-100-19C-18-2H
26209		SESE 31-158-102	CHRISTINE JOE 2-31-30H
26210	126210	SWSE 20-157-100	STATE 157-100-29A-32-3H
26211	126211	SWSE 20-157-100	MOLINE 157-100-20D-17-3H
26279	226279	SESW 36-148-94	FORT BERTHOLD 148-94-36C-25-4H
26280	226280	SESW 36-148-94	FORT BERTHOLD 147-94-1B-12-4H
26281	226279	SESW 36-148-94	FORT BERTHOLD 148-94-36C-25-5H
26282	226280	SESW 36-148-94	FORT BERTHOLD 147-94-1B-12-5H
26293	226293	SESW 35-148-94	FORT BERTHOLD 148-94-35C-26-5H
26294	226293	SESW 35-148-94	FORT BERTHOLD 148-94-35C-26-4H
26295	226293	SESW 35-148-94	FORT BERTHOLD 148-94-35C-26-3H
26322	225207	NENW 27-148-95	FORT BERTHOLD 148-95-27B-34-8H
26323	225208	NENW 27-148-95	FORT BERTHOLD 148-95-22C-15-9H
26341	226341	SESE 12-157-101	MILLER 157-101-12D-1-3H
26342	226341	SESE 12-157-101	MILLER 157-101-12D-1-2H
26366	126366	SESW 32-142-96	KEARY KADRMAS 2-32-29H-142-96
26414		NENE 25-157-101	BERG 157-101-24D-13-2H
26415		NENE 25-157-101	WM POLAR 157-101-25A-36-2B
26417		NENE 25-157-101	WM POLAR 157-101-25A-36-4B
26671		NENW 3-147-94	FORT BERTHOLD 147-94-3B-10-9TFH
26796	226796	SWSE 24-152-94	FORT BERTHOLD 152-94-24D-13-7H
26797	226796	SWSE 24-152-94	FORT BERTHOLD 152-94-24D-13-6H
26798	226796	SWSE 24-152-94	FORT BERTHOLD 152-94-24D-13-5H
26815	226815	LOT4 3-157-99	WM HELSTAD 158-99-34C-27-2B
26816	226815	LOT4 3-157-99	WM JOHNSON 157-99-3B-10-2B
26817	226815	LOT3 3-157-99	WM HELSTAD 158-99-34C-27-3B
26818	226815	LOT4 3-157-99	WM JOHNSON 157-99-3B-10-3B
26824		NENE 25-157-101	WM POLAR 157-101-25B-36-6B
26865	226865	SWSW 33-148-94	FORT BERTHOLD 148-94-33C-28-8H
26866	226865	SWSW 33-148-94	FORT BERTHOLD 148-94-33C-28-9H
26867	226865	SWSW 33-148-94	FORT BERTHOLD 148-94-33C-28-10H

26906	226906	SESW 19-152-93	FORT BERTHOLD 152-93-19D-18-7H
26907	226906	SESW 19-152-93	FORT BERTHOLD 152-93-19D-18-6H
26913		SESE 19-152-93	FORT BERTHOLD 152-93-19D-18-5H
26914	226906	SESE 19-152-93	FORT BERTHOLD 152-93-19D-18-4H
26917		SWSE 24-157-103	JANE NELSON 34-24H
27000	219038	NWNE 25-157-100	NELSON 157-100-25A-36-2H
27001	219038	NWNE 25-157-100	NELSON 157-100-25A-36-3H
27002	219038	NWNE 25-157-100	NELSON 157-100-25A-36-4H
27045	225988	SWSW 20-148-94	FORT BERTHOLD 148-94-20C-21-6H
27102		SWSW 27-148-94	FORT BERTHOLD 148-94-27C-22-9H
27103	224150	SWSW 27-148-94	FORT BERTHOLD 148-94-27C-22-8H
27105	224150	SWSW 27-148-94	FORT BERTHOLD 148-94-27C-22-7H
27106	224150	SWSW 27-148-94	FORT BERTHOLD 148-94-27C-22-6H
27107	224150	SWSW 27-148-94	FORT BERTHOLD 148-94-27C-22-4H
27125	220172	SESE 23-148-95	FORT BERTHOLD 148-95-23D-14-6H
27126	220173	SESE 23-148-95	FORT BERTHOLD 148-95-26A-35-10H
27127	220172	SESE 23-148-95	FORT BERTHOLD 148-95-23D-14-7H
27277	227277	SESW 19-148-94	FORT BERTHOLD 148-94-19C-18-4H
27278	227278	SESW 19-148-94	FORT BERTHOLD 148-94-30B-31-4H
27279	227277	SESW 19-148-94	FORT BERTHOLD 148-94-19C-18-5H
27280	227278	SESW 19-148-94	FORT BERTHOLD 148-94-30B-31-5H
27412	220919	SESW 24-148-95	FORT BERTHOLD 148-95-25B-36-7H
27414	220919	SWSW 24-148-95	FORT BERTHOLD 148-95-25B-36-6H
27415	220919	SWSW 24-148-95	FORT BERTHOLD 148-95-25B-36-5H
27416	220919	SWSW 24-148-95	FORT BERTHOLD 148-95-25B-36-4H
27417	220919	SWSW 24-148-95	FORT BERTHOLD 148-95-25B-36-3H
27431	227431	NENW 26-148-95	FORT BERTHOLD 148-95-23C-14-3H
27432	227431	NENW 26-148-95	FORT BERTHOLD 148-95-23C-14-8H
27433	227431	NENW 26-148-95	FORT BERTHOLD 148-95-23C-14-4H
27434	227431	NENW 26-148-95	FORT BERTHOLD 148-95-23C-14-9H
27435	227431	NENW 26-148-95	FORT BERTHOLD 148-95-23C-14-5H
27456	227456	NENW 26-148-95	FORT BERTHOLD 148-95-26B-35-3H
27457	227456	NENW 26-148-95	FORT BERTHOLD 148-95-26B-35-9H
27458	227456	NENW 26-148-95	FORT BERTHOLD 148-95-26B-35-4H
27459	227456	NENW 26-148-95	FORT BERTHOLD 148-95-26B-35-8H
27460	227456	NENW 26-148-95	FORT BERTHOLD 148-95-26B-35-5H

27543	127543	SESW 22-142-98	JOHN KINNE 2-27-34H-142-98
27646	220173	SESE 23-148-95	FORT BERTHOLD 148-95-26A-35-14H
27888	221293	SESE 19-142-97	MAURICE HECKER 2-19-18H-142-97
28280	224417	SESW 17-148-94	FORT BERTHOLD 148-94-17C-8-6H
28281	224417	SESW 17-148-94	FORT BERTHOLD 148-94-17C-8-7H
28296	226906	SESE 19-152-93	FORT BERTHOLD 152-93-19D-18-10H
28297	228297	SESE 19-152-93	FORT BERTHOLD 152-93-19D-18-11H
28298	228297	SESE 19-152-93	FORT BERTHOLD 152-93-19D-18-14H
28628	222312	NWNE 28-148-94	FORT BERTHOLD 148-94-28A-33-13H
28629	128629	NWNE 28-148-94	FORT BERTHOLD 148-94-28A-33-12H
29134	226279	SESW 36-148-94	FORT BERTHOLD 148-94-36C-25-6H
29135	226280	SESW 36-148-94	FORT BERTHOLD 147-94-1B-12-6H
29136	226280	SESW 36-148-94	FORT BERTHOLD 147-94-1B-12-7H
29238	225562	LOT3 2-156-101	BORRUD 156-101-2B-11-3H
29239	225562	LOT3 2-156-101	BORRUD 156-101-2B-11-4H
29240	225562	LOT3 2-156-101	BORRUD 156-101-2B-11-5H
29538		LOT3 1-156-101	BORRUD 156-101-1B-12-3H-P
29539	222495	LOT3 1-156-101	BORRUD 156-101-1B-12-2H
29571	224338	SESE 33-148-94	FORT BERTHOLD 148-94-33D-28-6H
29572	129572	SESE 33-148-94	FORT BERTHOLD 148-94-33D-28-7H
29787	222495	LOT3 1-156-101	BORRUD 156-101-1A-12-1TFH
29847	218458	NENE 3-147-94	FORT BERTHOLD 147-94-3A-10-6H
29848	218458	NENE 3-147-94	FORT BERTHOLD 147-94-3A-10-10H
29849	129849	NENE 3-147-94	FORT BERTHOLD 147-94-3A-10-12H
30241	230241	SESW 7-152-93	FORT BERTHOLD 152-93-7C-6-13H
30242	230241	SESW 7-152-93	FORT BERTHOLD 152-93-7C-6-12H
30243	230243	SESW 7-152-93	FORT BERTHOLD 152-93-7C-6-11H
30244	230243	SESW 7-152-93	FORT BERTHOLD 152-93-7C-6-10H
30245	230243	SESW 7-152-93	FORT BERTHOLD 152-93-7C-6-9H
30246	230243	SESW 7-152-93	FORT BERTHOLD 152-93-7C-6-8H
30247	230243	SESW 7-152-93	FORT BERTHOLD 152-93-7C-6-7H
30248	230243	SESW 7-152-93	FORT BERTHOLD 152-93-7C-6-6H
30268	218094	SESE 17-148-94	FORT BERTHOLD 148-94-17D-8-12H
30269	130269	SESE 17-148-94	FORT BERTHOLD 148-94-17D-8-13H
30541	230541	NENE 26-151-94	FORT BERTHOLD 151-94-26A-35-4H
30542	230541	NENE 26-151-94	FORT BERTHOLD 151-94-26A-35-5H
30543	230541	NENE 26-151-94	FORT BERTHOLD 151-94-26A-35-6H
30544	230541	NENE 26-151-94	FORT BERTHOLD 151-94-26A-35-7H
30545	230541	NENE 26-151-94	FORT BERTHOLD 151-94-26A-35-8H
30546	230541	NENE 26-151-94	FORT BERTHOLD 151-94-26A-35-9H

30555	230555 NWNW 13-148-95	FORT BERTHOLD 148-95-13B-24-2H
30556	230555 NWNW 13-148-95	FORT BERTHOLD 148-95-13B-24-10H
30558	230555 NENW 13-148-95	FORT BERTHOLD 148-95-13B-24-12H
30559	230555 NENW 13-148-95	FORT BERTHOLD 148-95-13B-24-13H
30564	227431 NENW 26-148-95	FORT BERTHOLD 148-95-23C-14-10H
30679	218341 NWNE 1-147-94	FORT BERTHOLD 147-94-1A-12-10H
30680	218341 NWNE 1-147-94	FORT BERTHOLD 147-94-1A-12-9H
30726	230726 NENE 26-149-98	BERG TRUST FEDERAL 149-98-26A-35-6H
30727	230726 NENE 26-149-98	BERG TRUST FEDERAL 149-98-26A-35-7H
30728	230726 NENE 26-149-98	BERG TRUST FEDERAL 149-98-26A-35-9H
30729	130729 NENE 26-149-98	BERG TRUST FEDERAL 149-98-26A-35-10H
30783	226906 SWSE 19-152-93	FORT BERTHOLD 152-93-19D-18-12H
30784	226906 SWSE 19-152-93	FORT BERTHOLD 152-93-19D-18-8H
30785	226906 SWSE 19-152-93	FORT BERTHOLD 152-93-19D-18-9H
31076	225597 SESW 35-148-94	FORT BERTHOLD 147-94-2B-11-6H
31077	225597 SESW 35-148-94	FORT BERTHOLD 147-94-2B-11-7H
31078	225597 SESW 35-148-94	FORT BERTHOLD 147-94-2B-11-8H
31080	225597 SESW 35-148-94	FORT BERTHOLD 147-94-2B-11-9H
31081	226293 SESW 35-148-94	FORT BERTHOLD 148-94-35C-26-10H
31082	226293 SESW 35-148-94	FORT BERTHOLD 148-94-35C-26-7H
31083	226293 SESW 35-148-94	FORT BERTHOLD 148-94-35C-26-9H
31084	226293 SESW 35-148-94	FORT BERTHOLD 148-94-35C-26-8H
31085	226293 SESW 35-148-94	FORT BERTHOLD 148-94-35C-26-6H
31154	224297 NWNE 13-148-95	FORT BERTHOLD 148-95-13A-24-6H
31155	231155 NWNE 13-148-95	FORT BERTHOLD 148-95-13A-24-7H
31156	231155 NWNE 13-148-95	FORT BERTHOLD 148-95-13A-24-8H
31161	223223 NENE 22-148-94	FORT BERTHOLD 148-94-22A-27-11H
31188	220919 SESW 24-148-95	FORT BERTHOLD 148-95-25B-36-8H
31454	231454 LOT3 3-150-94	FB JAMES 150-94-3A-10-10T
31455	231454 LOT3 3-150-94	FB JAMES 150-94-3B-10-11B
31456	231454 LOT3 3-150-94	FB JAMES 150-94-3B-10-12T
31457	231454 LOT3 3-150-94	FB JAMES 150-94-3B-10-13B
31458	231454 LOT3 3-150-94	FB JAMES 150-94-3A-10-6B
31462	226279 SESW 36-148-94	FORT BERTHOLD 148-94-36C-25-7H

31464	226279	SESW 36-148-94	FORT BERTHOLD 148-94-36C-25-8H
31697	131697	NENE 22-148-94	FORT BERTHOLD 148-94-22A-27-12H
31774	231774	NWNW 26-151-94	FORT BERTHOLD 151-94-27A-34-16H
31775	231774	NWNW 26-151-94	FORT BERTHOLD 151-94-26B-35-15H
31776	231776	NWNW 26-151-94	FORT BERTHOLD 151-94-26B-35-12H
31777	231776	NWNW 26-151-94	FORT BERTHOLD 151-94-26B-35-11H
31778	231776	NWNW 26-151-94	FORT BERTHOLD 151-94-26B-35-10H
31889	231889	SESE 22-152-94	FORT BERTHOLD 152-94-22D-15-10H
31890	231889	SESE 22-152-94	FORT BERTHOLD 152-94-22D-15-11H
31994	231994	NENE 13-152-94	FORT BERTHOLD 152-94-13A-24-15H
31995	231994	NENE 13-152-94	FORT BERTHOLD 152-94-13A-24-16H
32156	218905	NENW 13-152-94	FORT BERTHOLD 152-94-13B-24-12H
32157	218905	NENW 13-152-94	FORT BERTHOLD 152-94-13B-24-11H
32158	218905	NWNW 13-152-94	FORT BERTHOLD 152-94-13B-24-13H
32232	224737	NWNE 15-152-94	FORT BERTHOLD 152-94-15A-22-9H
32233	224737	NENW 15-152-94	FORT BERTHOLD 152-94-15B-22-8H
32409		SESE 9-148-94	FORT BERTHOLD 148-94-9D-4-7H
32410		SESE 9-148-94	FORT BERTHOLD 148-94-9D-4-6H
32411		SESE 9-148-94	FORT BERTHOLD 148-94-9D-4-12H
32431	231776	NWNW 26-151-94	FORT BERTHOLD 151-94-26B-35-13H
32503	232503	NENE 1-147-94	FORT BERTHOLD 147-94-1A-12-11H
32504	220880	NENE 1-147-94	FORT BERTHOLD 148-94-36D-25-11H
32505	232503	NENE 1-147-94	FORT BERTHOLD 147-94-1A-12-12H
32506	132506	NENE 1-147-94	FORT BERTHOLD 148-94-36D-25-10H
32579	230243	SESW 7-152-93	FORT BERTHOLD 152-93-7C-6-5H
32580	230243	SESW 7-152-93	FORT BERTHOLD 152-93-7C-6-14H
32608	232608	SESE 35-148-94	FORT BERTHOLD 148-94-35D-26-11H
32609		SESE 35-148-94	FORT BERTHOLD 147-94-2A-11-13H-V
32610		SESE 35-148-94	FORT BERTHOLD 147-94-2A-11-12H-V
32611	218313	SESE 35-148-94	FORT BERTHOLD 148-94-35D-26-12H
32612	218313	SESE 35-148-94	FORT BERTHOLD 148-94-35D-26-13H
32613		SESE 35-148-94	FORT BERTHOLD 147-94-2A-11-11H-V
33124	226280	SESW 36-148-94	FORT BERTHOLD 147-94-1B-12-13H

33125	226280	SESW 36-148-94	FORT BERTHOLD 147-94-1B-12-8H
33335	222495	LOT3 1-156-101	BORRUD 156-101-1A-12-4H
33336	222495	LOT3 1-156-101	BORRUD 156-101-1A-12-5H
33594	230555	NWNW 13-148-95	FORT BERTHOLD 148-95-13B-24-9H
34254	134254	SESE 14-141-96	SADOWSKY 14-11-2H
34528	222312	NWNE 28-148-94	FORT BERTHOLD 148-94-28A-33-14H
34529	222312	NWNE 28-148-94	FORT BERTHOLD 148-94-28A-33-15H
34532	230726	NENE 26-149-98	BERG TRUST FEDERAL 149-98-26A-35-8H
34887	218206	SWSE 35-148-94	FORT BERTHOLD 147-94-2A-11-11H
34888	218206	SWSE 35-148-94	FORT BERTHOLD 147-94-2A-11-12H
34889	134889	SWSE 35-148-94	FORT BERTHOLD 147-94-2A-11-13H
34890	232608	SWSE 35-148-94	FORT BERTHOLD 148-94-35D-26-14H
34961	225524	SESW 2-152-94	FORT BERTHOLD 152-94-11B-14-8H
34962	225524	SESW 2-152-94	FORT BERTHOLD 152-94-11B-14-9H
34963	225524	SESW 2-152-94	FORT BERTHOLD 152-94-11B-14-10H
34964	225524	SESW 2-152-94	FORT BERTHOLD 152-94-11B-14-11H
34965	225524	SESW 2-152-94	FORT BERTHOLD 152-94-11B-14-12H
34966	225524	SESW 2-152-94	FORT BERTHOLD 152-94-11B-14-18H
35487		NENE 27-151-94	FB LEVIATHAN 151-94-27A-34-10T
35488		NENE 27-151-94	FB LEVIATHAN 151-94-27A-34-11B
35489		NENE 27-151-94	FB LEVIATHAN 151-94-27A-34-14T2
35490		NENE 27-151-94	FB LEVIATHAN 151-94-27A-34-13B
35491		NENE 27-151-94	FB LEVIATHAN 151-94-27A-34-15T
35492		NENE 27-151-94	FB LEVIATHAN 151-94-27A-34-16B
35493		NENE 27-151-94	FB LEVIATHAN 151-94-27A-34-19T2
35508		NENW 29-148-94	FB CLINTON 148-94-29B-32-6T
35509		NENW 29-148-94	FB CLINTON 148-94-29B-32-7B
35510		NENW 29-148-94	FB CLINTON 148-94-29B-32-8T
35511		NENW 29-148-94	FB CLINTON 148-94-29B-32-9B
35512		NENW 29-148-94	FB CLINTON 148-94-29B-32-10B
35513		NENW 29-148-94	FB CLINTON 148-94-29B-32-11T
35539	223554	SESE 14-152-94	FORT BERTHOLD 152-94-14D-11-19H
35540	223554	SESE 14-152-94	FORT BERTHOLD 152-94-14D-11-16H
35541	235541	SESE 14-152-94	FORT BERTHOLD 152-94-14D-2-15H3
35542	235541	SESE 14-152-94	FORT BERTHOLD 152-94-14D-2-13H3
35716		NENE 27-151-94	FB LEVIATHAN 151-94-27A-34-12T
35717		NENE 27-151-94	FB LEVIATHAN 151-94-27A-34-17T
35718		NENE 27-151-94	FB LEVIATHAN 151-94-27A-34-18B

35806	222495 LOT3 1-156-101	BORRUD 157-100-33C-21-1H3
35962	231454 LOT3 3-150-94	FB JAMES 150-94-3A-10-7T
35963	231454 LOT3 3-150-94	FB JAMES 150-94-3A-10-8T2
35964	231454 LOT3 3-150-94	FB JAMES 150-94-3A-10-9B
35983	226815 LOT4 3-157-99	WM JOHNSON 157-99-3B-10-4B
35984	226815 LOT3 3-157-99	WM HELSTAD 158-99-34C-27-4B
36127	222495 LOT3 1-156-101	BORRUD 156-101-1B-12-3H
36192	226815 LOT4 3-157-99	WM JOHNSON 157-99-3B-10-1T
36302	NENE 27-148-95	FB BELFORD 148-95-22D-15-14B-LL
36303	NENE 27-148-95	FB BELFORD 148-95-22D-15-13T-LL
36304	NWNE 27-148-95	FB BELFORD 148-95-22D-15-10B
36305	NWNE 27-148-95	FB BELFORD 148-95-22D-15-8T
36306	NWNE 27-148-95	FB BELFORD 148-95-22D-15-7B
36307	NWNE 27-148-95	FB BELFORD 148-95-22D-15-6T
36653	221800 LOT8 8-152-93	FB BONITA 152-93-9B-10-9T
36654	221800 LOT8 8-152-93	FB BONITA 152-93-9B-10-10B
36655	221800 LOT8 8-152-93	FB BONITA 152-93-9B-10-12T
36656	221800 LOT8 8-152-93	FB BONITA 152-93-9B-10-13B
36657	221800 LOT8 8-152-93	FB BONITA 152-93-9B-10-14T
36658	221800 LOT8 8-152-93	FB BONITA 152-93-9B-10-15B
36710	LOT4 19-148-94	FORT BERTHOLD 148-95-25A-36-12H
36711	LOT4 19-148-94	FORT BERTHOLD 148-95-25A-36-10H
36712	SESW 19-148-94	FORT BERTHOLD 148-95-25A-36-9H
36713	LOT4 19-148-94	FORT BERTHOLD 148-94-30B-31-14H
36714	SESW 19-148-94	FORT BERTHOLD 148-94-30B-31-13H
36715	SESW 19-148-94	FORT BERTHOLD 148-94-30B-31-11H
36716	SESW 19-148-94	FORT BERTHOLD 148-94-30B-31-6H
36717	LOT4 19-148-94	FORT BERTHOLD 148-94-19C-18-8H
36718	LOT4 19-148-94	FORT BERTHOLD 148-94-19C-18-7H
36719	LOT4 19-148-94	FORT BERTHOLD 148-94-19C-18-6H
37117	LOT4 1-157-99	WM BROWN 157-99-1B-12-2B-LL
37118	LOT4 1-157-99	WM Brown 157-99-2A-11-3T
37119	LOT4 1-157-99	WM BROWN 157-99-1B-12-4B
37120	LOT4 1-157-99	WM BROWN 157-99-1B-12-5T
37121	LOT4 1-157-99	WM BROWN 157-99-1B-12-6B
37122	LOT4 1-157-99	WM BROWN 158-99-35D-26-3B-LL
37123	LOT4 1-157-99	WM BROWN 158-99-36C-25-5B
37124	LOT4 1-157-99	WM BROWN 158-99-36C-25-4T
37125	LOT4 1-157-99	WM BROWN 158-99-36C-25-7B
37126	LOT4 1-157-99	WM BROWN 158-99-36C-25-6T

37127	LOT4 1-157-99	WM BROWN 158-99-36D-25-9B
37233	NENE 25-157-101	WM POLAR 157-101-24D-13-3B
37234	NENE 25-157-101	WM POLAR 157-101-24D-13-5B
37235	NENE 25-157-101	WM POLAR 157-101-24C-13-7B
37464	NWNW 25-157-102	WM Ann Thome 157-102-24C-13-2B
90154	SESE 1-157-100	WM MARMON SWD 157-100-1D-2
90155	NESE 1-157-100	WM MARMON SWD 157-100-1D-1
90211	SWSW 1-157-103	MANGER 1 SWD
90227	NWNW 28-157-102	SIIRTOLA 1 SWD

NORTH Dakota | Mineral Resources
Be Legendary.

NORTH DAKOTA
OIL AND GAS DIVISION

February 24, 2021

Mr. Mark Johnson
Bruin E&P Operating, LLC
511 16th St., Ste 200
Denver, CO 80202

RE: Kudrna 1-17, SWSE Section 17-T141N-R97W, File #20659

Dear Mr. Johnson:

North Dakota Century Code Section 38-08-04(1)(a)(l2) states in part the Commission has jurisdiction for:

> *The placing of wells in abandoned-well status which have not produced oil or natural gas in paying quantities for one year. A well in abandoned-well status must be promptly returned to production in paying quantities, approved by the Commission for temporarily abandoned status, or plugged and reclaimed within six months. If none of the three preceding conditions are met, the Commission may require the well to be placed immediately on a single-well bond in an amount equal to the cost of plugging the well and reclaiming the well site. In setting the bond amount, the Commission shall use information from recent plugging and reclamation operations.*

A review of the production records for the above captioned well indicate that this well has not produced oil or gas in paying quantities in over one year, therefore it is hereby placed in abandoned-well status. If the well is not returned to production in paying quantities, approved by the Commission for temporarily abandonment status, or plugged and reclaimed by August 24, 2021, the Commission will require the well to be placed immediately on a single-well bond in an amount equal to the cost of plugging the well and reclaiming the well site. If you fail to supply evidence of such bond amount by the deadline, the Commission will estimate such amount using information from recent operations.

Should you have any questions regarding this matter, please contact me at 701-328-8020.

Sincerely,

David Tabor
Field Supervisor

AUTHORIZATION TO PURCHASE AND TRANSPORT OIL FROM LEASE - FORM 8

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

RECEIVED
APR - 3 2018
ND OIL & GAS DIVISION

Well File No.
20659
NDIC CTB No.
120659

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

Well Name and Number	Qtr-Qtr	Section	Township	Range	County
KUDRNA 1-17	SWSE	17	141 N	97 W	DUNN

Operator	Telephone Number	Field
BRUIN E & P OPERATING, LLC	713-456-3000	ST ANTHONY

Address	City	State	Zip Code
602 SAWYER ST, SUITE 710	HOUSTON	TX	77007-7510

Name of First Purchaser	Telephone Number	% Purchased	Date Effective
CONCORD ENERGY LLC	(303) 468-1900	100	April 1, 2017

Principal Place of Business	City	State	Zip Code
1401 17TH STR SUITE 1500	DENVER	CO	80016

Field Address	City	State	Zip Code
3804 17TH Ave NE	WATFORD CITY	ND	58854

Name of Transporter	Telephone Number	% Transported	Date Effective
BIG LEASE TRUCKING, LLC	(701) 764-7212	100	April 1, 2018

Address	City	State	Zip Code
2036 ROUGH STOCK ROAD	KILLDDER	ND	58640

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
Other Transporters Transporting From This Lease	% Transported	Date Effective

Comments

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records. Date: March 28, 2018

Signature	Printed Name	Title
	JANET DASSINGER	LEAD PRODUCTION ANALYST

Above Signature Witnessed By

Witness Signature	Witness Printed Name	Witness Title
	JAMIE KROGH	PRODUCTION ANALYST

FOR STATE USE ONLY

Date Approved	APR 11 2018
By	Melissa Heinz
Title	Oil & Gas Production Analyst

AUTHORIZATION TO PURCHASE AND TRANSPORT OIL FROM LEASE - FORM 8

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

RECEIVED
MAR 2 7 2017
ND OIL & GAS DIVISION

Well File No.
20659
NDIC CTB No.
120659

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

Well Name and Number	Qtr-Qtr	Section	Township	Range	County
KUDRNA 1-17	SWSE	17	141 N	97 W	DUNN

Operator	Telephone Number	Field
Bruin E&P Operating, LLC	(713) 456-3000	ST. ANTHONY

Address	City	State	Zip Code
602 Sawyer St. Ste 710	Houston	TX	77007

Name of First Purchaser	Telephone Number	% Purchased	Date Effective
Concord Energy LLC	(303) 468-1900	100	April 1, 2017

Principal Place of Business	City	State	Zip Code
North Dakota			

Field Address	City	State	Zip Code
1401 17th St. Suite 1500	Denver	CO	80016

Name of Transporter	Telephone Number	% Transported	Date Effective
Concord Energy Transportation LLC	(701) 842-2580	100	April 1, 2017

Address	City	State	Zip Code
3804 17th Ave. NE	Watford City	ND	58854

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
Other Transporters Transporting From This Lease	% Transported	Date Effective

Comments

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records. Date: March 23, 2017

Signature	Printed Name	Title
T. McGhee	Tim McGhee	VP Land

Above Signature Witnessed By

Witness Signature	Witness Printed Name	Witness Title
Bridget Wheatley	Bridget Wheatley	Geotechnical Engineer

FOR STATE USE ONLY

Date Approved	APR 0 3 2017
By	
Title	Evie Peterson Oil & Gas Production Analyst

AUTHORIZATION TO PURCHASE AND TRANSPORT OIL FROM LEASE - FORM 8

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

RECEIVED
JAN 06 2017
ND Oil & Gas Div.

Well File No.
20659
NDIC CTB No.
120659

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

Well Name and Number	Qtr-Qtr	Section	Township	Range	County
KUDRNA 1-17	SWSE	17	141 N	97 W	DUNN

Operator	Telephone Number	Field
Bruin E&P Operating, LLC	(713) 456-3000	ST. ANTHONY

Address	City	State	Zip Code
602 Sawyer St. Ste 710	Houston	TX	77007

Name of First Purchaser	Telephone Number	% Purchased	Date Effective
Eighty-Eight Oil LLC	(307) 237-9301	100	January 2, 2017

Principal Place of Business	City	State	Zip Code
North Dakota	Casper	WY	82602

Field Address	City	State	Zip Code
PO Drawer 2360, 455 N. Poplar			

Name of Transporter	Telephone Number	% Transported	Date Effective
Black Hills Trucking	(307) 237-9301	100	January 2, 2017

Address	City	State	Zip Code
PO Drawer 2360, 455 N. Poplar	Casper	WY	82602

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
Other Transporters Transporting From This Lease	% Transported	Date Effective

Comments

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records. Date 1-4-2017

Signature	Printed Name	Title
	Timothy McGhee	Vice President Land

Above Signature Witnessed By

Witness Signature	Witness Printed Name	Witness Title
	Bridget Wheatley	Geotechnical Engineer

FOR STATE USE ONLY

Date Approved	JAN 23 2017
By	Evie Peterson
Title	Oil & Gas Production Analyst

NORTH DAKOTA
OIL AND GAS DIVISION

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 20, 2017

Bruin E&P Operating, LLC
602 Sawyer St., Ste 710
Houston, TX 77007

RE: CHANGE OF OPERATOR FROM LIME ROCK RESOURCES III-A, L.P. TO BRUIN E&P OPERATING, LLC.
60 Wells

Dear S. Tyler Crabtree,

Please find enclosed a copy of the approved Form 15, Notice of Transfer of Oil and Gas Wells, in regard to the above-referenced matter. This transfer has now been approved and subject well is now covered by Bond No. B010221.

If you should have any questions, please feel free to contact this office.

Sincerely,

Rachel Morris
Administrative Assistant

Enclosure:

cc: Lime Rock Resources III-A, L.P.
1111 Bagby St., Ste 4600
Houston, TX 77002

NOTICE OF TRANSFER OF OIL AND GAS WELLS - FORM 15

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 5762 (03-2000)

RECEIVED
JAN 04 2017
ND Oil & Gas Div.

FOR STATE USE ONLY
NDIC Bond Number B377

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM. PLEASE SUBMIT THE ORIGINAL AND ONE COPY.
THIS NOTICE ALONG WITH A FEE OF $25.00 PER WELL SHALL BE FILED AT LEAST THIRTY DAYS BEFORE THE CLOSING DATE OF TRANSFER.

TRANSFERRING OPERATOR

Name of Operator Representative			
Charles Adcock			
Operator Transferring Oil and/or Gas Wells **Lime Rock Resources III-A, L.P.**			Telephone Number **(713) 292-9510**
Address **1111 Bagby St., Ste. 4600**	City **Houston**	State **TX**	Zip Code **77002**

I, the above named representative, acknowledge the transfer of the oil and/or gas wells named below for the purpose of ownership and/or operation to the company named below.

Signature	Title (Must be an officer or power of attorney must be attached)	Date
	Co-Chief Executive Officer	11/21/2016

Well File Number	Requested Official Well Name and Number	Location (Qtr-Qtr, S-T-R)	Assignment Date
	See Attached Well List CK#1050 $1,500 1-4-17 mh		11/21/2016 TM

RECEIVING OPERATOR

Name of Operator Representative			
S. Tyler Crabtree			
Operator Receiving Oil and/or Gas Wells **Bruin E&P Operating, LLC**			Telephone Number **(713) 456-3000**
Address **602 Sawyer St., Ste 710**	City **Houston**	State **TX**	Zip Code **77007**

I, the above named representative, have read the foregoing statement and accept such transfer, also the responsibility of ownership and/or operation of said well or wells, under the said company bond, said bond being tendered to or on file with the Industrial Commission of North Dakota.

Signature	Title (Must be an officer or power of attorney must be attached)	Date
	CFO	11/21/2016

SURETY COMPANY

Surety			Telephone Number	Amount of Bond
U.S. Specialty Insurance Company			**(713) 355-3100**	**$ $100,000**
Address **13403 Northwest Freeway**	City **Houston**	State **TX**	Zip Code **77040**	Bond Number **B010221**

The above named SURETY agrees that such bond shall extend to compliance with Chapter 38-08 of North Dakota Century Code and amendments and the rules and regulations of the Industrial Commission of North Dakota prescribed to govern the production of oil and gas on government and private lands within the State of North Dakota, in relation to the above stated transfer; it being further agreed and understood that the bond sum or amount is not to be considered increased because of such extension.

Signature	Title (Must be an officer or power of attorney must be attached)	Date
Meredith K Anderson	**Attorney-in-Fact**	**November 17, 2016**

Printed Name
Meredith K. Anderson

FOR STATE USE ONLY

Date Approved	January 20, 2017
By	Bruce E. Hicks
Title	**Assistant Director**

WELL NAME	API	STATE	COUNTY
JOHN KINNE 1-27-34H-142-98	33007017780000	NORTH DAKOTA	BILLINGS
JOHN KINNE 2-27-34H-142-98	33007018180000	NORTH DAKOTA	BILLINGS
KUNTZ 1-23-14H-142-98	33007017440000	NORTH DAKOTA	BILLINGS
RICHARD LONGFELLOW 1-22-15H-142-98	33007017790000	NORTH DAKOTA	BILLINGS
ALFRED SADOWSKY 1-36-1H-141-96	33025011600000	NORTH DAKOTA	DUNN
ANNIE OAKLEY 1-20-17H-142-94	33025014940000	NORTH DAKOTA	DUNN
BILL CODY 1-29-20H-141-96	33025015460000	NORTH DAKOTA	DUNN
BINSTOCK 1-34-27H-142-96	33025016230000	NORTH DAKOTA	DUNN
CHARLES DAVIS 1-4-9H-142-94	33025018400000	NORTH DAKOTA	DUNN
COYOTE CREEK 1-20-17H-142-97	33025014920000	NORTH DAKOTA	DUNN
DVORAK 10-1H	33025007590000	NORTH DAKOTA	DUNN
DVORAK 11-4H	33025005780000	NORTH DAKOTA	DUNN
DVORAK TRUST 1-6-31H-142-96	33025013000000	NORTH DAKOTA	DUNN
EASTON 1-35-26H-142-95	33025016260000	NORTH DAKOTA	DUNN
ELSIE DVORAK 1-8-17H-141-96	33025012430000	NORTH DAKOTA	DUNN
FISHER STATE 1-21-16H-142-97	33025011550000	NORTH DAKOTA	DUNN
FRANK ANDERS 1-27-34H-142-95	33025018110000	NORTH DAKOTA	DUNN
GEORGE MILLER 1-11-2H-142-95	33025013600000	NORTH DAKOTA	DUNN
GORDON PAVLICEK 1-17-20H-141-95	33025012380000	NORTH DAKOTA	DUNN
HATIE DVORAK 1-33-28H-142-96	33025016270000	NORTH DAKOTA	DUNN
HAVELKA 1-19-18H-142-95	33025015750000	NORTH DAKOTA	DUNN
HENRY GURKE 1-30-19H-141-96	33025018790000	NORTH DAKOTA	DUNN
JAEGER 1-10-15H-141-96	33025009610000	NORTH DAKOTA	DUNN
JOESPH CARTER 1-13-12H-141-96	33025018180000	NORTH DAKOTA	DUNN
KADRMAS 11-27H	33025008940000	NORTH DAKOTA	DUNN
KATIE HEISER 1-1-12H-142-95	33025013590000	NORTH DAKOTA	DUNN
KEARY KADRMAS 1-32-29H-142-96	33025015370000	NORTH DAKOTA	DUNN
KEARY KADRMAS 2-32-29H-142-96	33025022740000	NORTH DAKOTA	DUNN
KUDRNA 1-17	33025013510000	NORTH DAKOTA	DUNN
LOREN HAGEN 1-35-26H-141-97	33025018800000	NORTH DAKOTA	DUNN
LOUIE PAVLICEK 1-28-33H-142-97	33025016110000	NORTH DAKOTA	DUNN
MARLENE STEFFAN 1-5-8H-141-97	33025013580000	NORTH DAKOTA	DUNN
MAURICE HECKER 1-19-18H-142-97	33025014390000	NORTH DAKOTA	DUNN
MAURICE HECKER 2-19-18H-142-97	33025024920000	NORTH DAKOTA	DUNN
MEDUNA TRUST 1-7-6H-142-94	33025018480000	NORTH DAKOTA	DUNN
MONGOOSE 1-13-24H-142-95	33025015690000	NORTH DAKOTA	DUNN
NELS WOLD 1-36-25H-141-97	33025018700000	NORTH DAKOTA	DUNN
NOVASIO STATE 1-16-21H	33025012260000	NORTH DAKOTA	DUNN
PAVLICEK 44-32H	33025005810000	NORTH DAKOTA	DUNN
PRIVRATSKY 1-28-33H-141-95	33025014870000	NORTH DAKOTA	DUNN
RICHARD JABLONSKY 1-13-24H-141-97	33025015720000	NORTH DAKOTA	DUNN
RIDL 1-24-25H-142-96	33025018710000	NORTH DAKOTA	DUNN
SADOWSKY 24-14H	33025008680000	NORTH DAKOTA	DUNN
SADOWSKY 34-12H	33025009200000	NORTH DAKOTA	DUNN
SCHAFNER 1-29-32H-142-95	33025017300000	NORTH DAKOTA	DUNN
SICKLER 22-1H	33025007320000	NORTH DAKOTA	DUNN
SICKLER STATE 21-04H	33025009020000	NORTH DAKOTA	DUNN
STATE DVORAK 1-9-16H-141-96	33025012630000	NORTH DAKOTA	DUNN
STATE FISHER 2-21-16H-142-97	33025016120000	NORTH DAKOTA	DUNN
STATE FRANK BUTLER 1-29-32H-142-94	33025017010000	NORTH DAKOTA	DUNN

WELL NAME	API	STATE	COUNTY
STATE JABLONSKY 1-1-12H-141-95	33025014930000	NORTH DAKOTA	DUNN
STATE JAEGER 1-21-16H-142-94	33025012990000	NORTH DAKOTA	DUNN
STATE JOBLONSKY B 1-36-25H-142-95	33025016130000	NORTH DAKOTA	DUNN
STATE LITTLE KNIFE 1-20-17H-142-95	33025017310000	NORTH DAKOTA	DUNN
STATE LITTLE MISSOURI 1-30-31H142-95	33025015840000	NORTH DAKOTA	DUNN
STATE MARSH 1-34-27H-142-97	33025013080000	NORTH DAKOTA	DUNN
STATE POLENSKY 1-35-36H-142-97	33025013040000	NORTH DAKOTA	DUNN
TERRY DVORAK 1-15-22H-142-95	33025013370000	NORTH DAKOTA	DUNN
WOLBERG 21-18H	33025011110000	NORTH DAKOTA	DUNN
WOODROW KEEBLE 1-21-22H-141-96	33025019500000	NORTH DAKOTA	DUNN

NORTH DAKOTA
OIL AND GAS DIVISION

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 11, 2017

LIME ROCK RESOURCES
ATTENTION: REBECCA ZENT
P.O. BOX 2000
DICKINSON, ND 58601

RE: KUDRNA 1-17
SWSE 17-141N-97W
DUNN COUNTY
WELL FILE NO.: 20659

Dear Rebecca:

In reviewing the production records for the above captioned well, our files indicate that this well has not produced oil or gas in paying quantities in over one year. As per our recent phone conversation, below are your options to bring the well back into compliance.

Pursuant to section 38-08-04, paragraph 1, part (l) of the North Dakota Century Code, the Commission has placed this well on abandoned-well status *effective immediately.*

To remove this well from the abandoned-well status, you must within 6 months either;

1. Return the well to production in paying quantities,
2. Obtain a temporarily abandoned status, or
3. Plug the well and reclaim the wellsite.

If none of the preceding conditions are met, the Commission may require the well to be placed immediately on a single-well bond in an amount equal to the cost of plugging the well and reclaiming the well site.

Once a well has been in abandoned-well status for one year, the well's equipment, related equipment, and salable oil at the well site are subject to forfeiture by the Commission. The single-well bond or any other bond covering the well if the single-well bond has not been obtained is subject to forfeiture by the Commission. Should you have any questions regarding this matter, please contact me at 701-328-8020.

Sincerely,

Nicole Ewoniuk

Nicole Ewoniuk
Petroleum Engineer - Field Inspector

NAE/RLR

NORTH DAKOTA
OIL AND GAS DIVISION

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/

June 22, 2016

Mr. Lloyd Armstrong
Lime Rock Resources III-A, L.P.
1111 Bagby Street, Suite 4600
Houston, TX 77002

RE: Kudrna #1-17
SWSE Sec. 17, T.141N., R.97W.
Dunn County, North Dakota
St. Anthony Field
Well File No. 20659
STRIPPER WELL DETERMINATION

Dear Mr. Armstrong:

Lime Rock Resources III-A, L.P. (Lime Rock) filed with the North Dakota Industrial Commission – Oil and Gas Division (Commission) on June 22, 2016 an application for a Stripper Well Property Determination for the above captioned well.

Information contained in the application indicates that the above mentioned well is a property pursuant to statute and rule, and Lime Rock has elected to designate said well as a separate property for stripper well purposes. The well produced from a well depth greater than 10000 feet. During the qualifying period, August 1, 2014 through July 31, 2015, the well produced at a maximum efficient rate and the average daily production from the well was 0.2 barrels of oil per day during this period.

It is therefore determined that the above captioned well qualifies as a "Stripper Well Property" pursuant to Section 57-51.1-01 of the North Dakota Century Code. This determination is applicable only to the Red River Pool in and under said property.

The Commission shall have continuing jurisdiction, and shall have the authority to review the matter, and to amend or rescind the determination if such action is supported by additional or newly discovered information. If you have any questions, do not hesitate to contact me.

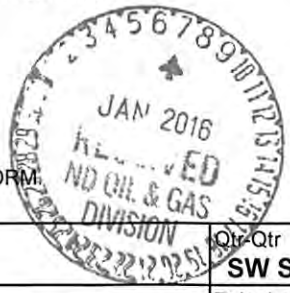
Sincerely,

David J. McCusker
Petroleum Engineer

Cc: ND Tax Department

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.
20659
NDIC CTB No.
120659

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

Well Name and Number	Qtr-Qtr	Section	Township	Range	County
Kudrna 1-17	**SW SE**	**17**	**141 N**	**97 W**	**Dunn**

Operator	Telephone Number	Field
Lime Rock Resources III-A, LP	**713/292-9510**	**St. Anthony**

Address	City	State	Zip Code
1111 Bagby St., Ste. 4600	**Houston**	**TX**	**77002**

Name of First Purchaser	Telephone Number	% Purchased	Date Effective
Lime Rock Resources III-A, LP	**713/292-9510**	**100**	**December 1, 2015**

Principal Place of Business	City	State	Zip Code
1111 Bagby St., Ste. 4600	**Houston**	**TX**	**77002**

Field Address	City	State	Zip Code
3239 Highway 22	**Dickinson**	**ND**	**58601**

Name of Transporter	Telephone Number	% Transported	Date Effective
Black Hills Trucking, Inc.	**307/237-9301**	**100**	**December 1, 2015**

Address	City	State	Zip Code
P.O. Box 2360	**Casper**	**WY**	**82602**

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
Other Transporters Transporting From This Lease	% Transported	Date Effective

Comments

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records. Date 1/5/16

Signature	Printed Name	Title
Carla Martin	**Carla Martin**	**Regulatory Tech**

Above Signature Witnessed By

Witness Signature	Witness Printed Name	Witness Title
Dennis Nelson	**Dennis Nelson**	**Production Analyst**

FOR STATE USE ONLY

Date Approved	MAR 23 2016
By	
Title	Oil & Gas Production Analyst

NORTH DAKOTA
OIL AND GAS DIVISION

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

March 22, 2016

Charles W. Adcock
Lime Rock Resources III-A, L.P.
1111 Bagby St., Ste 4600
Houston, TX 77002

RE: CHANGE OF OPERATOR FROM OXY USA, INC. TO LIME ROCK RESOURCES III-A, L.P.
340 WELLS

Dear Charles W. Adcock:

Please find enclosed a copy of the approved Form 15, Notice of Transfer of Oil and Gas Wells, in regard to the above-referenced matter. This transfer has now been approved and subject well is now covered by Bond No. B009778.

If you should have any questions, please feel free to contact this office.

Sincerely,

Rachel Morris
Administrative Assistant

Enclosure:

cc: Benard F. Figlock, III
Oxy USA, Inc.
5 Greenway Plaza, Ste 110
Houston, TX 77046

NOTICE OF TRANSFER OF OIL AND GAS WELLS - FORM 15

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 5762 (03-2000)

Received
FEB 24 2016
ND Oil & Gas

FOR STATE USE ONLY
NDIC Bond Number
L320

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM. PLEASE SUBMIT THE ORIGINAL AND SIX COPIES.
THIS NOTICE ALONG WITH A FEE OF $25.00 PER WELL SHALL BE FILED AT LEAST THIRTY DAYS BEFORE THE CLOSING DATE OF TRANSFER.

TRANSFERRING OPERATOR

Name of Operator Representative			
Benard F. Figlock, III			
Operator Transferring Oil and/or Gas Wells			Telephone Number
Oxy USA, Inc.			**(713) 215-7000**
Address	City	State	Zip Code
5 Greenway Plaza, Ste. 110	**Houston**	**TX**	**77046**

I, the above named representative, acknowledge the transfer of the oil and/or gas wells named below for the purpose of ownership and/or operation to the company named below.

Signature	Title (Must be an officer or power of attorney must be attached)	Date
	Vice President & Treasurer	2/16/16

Well File Number	Requested Official Well Name and Number	Location (Qtr-Qtr, S-T-R)	Assignment Date
	see attached well listing		**November 20, 2015**

RECEIVING OPERATOR

Name of Operator Representative			
Charles W. Adcock			
Operator Receiving Oil and/or Gas Wells			Telephone Number
Lime Rock Resources III-A, LP			**(713) 292-9510**
Address	City	State	Zip Code
1111 Bagby St., Ste. 4600	**Houston**	**TX**	**77002**

I, the above named representative, have read the foregoing statement and accept such transfer, also the responsibility of ownership and/or operation of said well or wells, under the said company bond, said bond being tendered to or on file with the Industrial Commission of North Dakota.

Signature	Title (Must be an officer or power of attorney must be attached)	Date
	Co-Chief Executive Officer	7/23/16

SURETY COMPANY

Surety			Telephone Number	Amount of Bond
US Specialty Insurance Company			**(713) 355-3100**	**$ 100,000**
Address	City	State	Zip Code	Bond Number
13403 Northwest Freeway	**Houston**	**TX**	**77056**	**B009778**

The above named SURETY agrees that such bond shall extend to compliance with Chapter 38-08 of North Dakota Century Code and amendments and the rules and regulations of the Industrial Commission of North Dakota prescribed to govern the production of oil and gas on government and private lands within the State of North Dakota, in relation to the above stated transfer; it being further agreed and understood that the bond sum or amount is not to be considered increased because of such extension.

Signature	Title (Must be an officer or power of attorney must be attached)	Date
Michele K. Tyson	**Attorney-In-Fact**	February 18, 2016

Printed Name
Michele K. Tyson

FOR STATE USE ONLY

Date Approved	March 22, 2016
By	Bruce E. Hicks
Title	Assistant Director

#20659

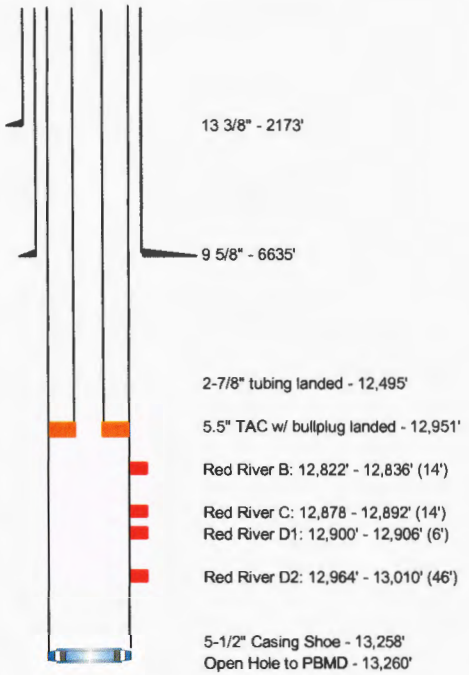
Well Name:	Kudrna 1-17
Field:	Russian Creek
Area:	250' FSL & 2000' FEL
API Number:	33-025-01351

	Size	Weight	Grade	Collapse	Burst	Top MD	Bott MD	ID	Thread
Surface Casing	13 3/8	55	J-55	1,130	2,730	0	2,173	12.62	BTC
Intermediate Csg	9 5/8	54	L-80	6,620	7,930	0	6,635	8.535	BTC
Production Csg	5 1/2	20	L-80	8,830	9,190	0	123	4.778	STC
Production Csg	5 1/2	20	L-80	8,830	9,190	123	521	4.778	BTC
Production Csg	5 1/2	20	L-80	8,830	9,190	521	6,842	4.778	STC
Production Csg	5 1/2	23	L-80	10,460	10,560	6,842	13,258	4.670	STC
Open Hole	8 3/8						13,260		

PLANNED
FIRM

	Description
Insert Pump	1.5" RHBM IP
API D	(16) 1.5" w/ centralizers
Weatherford Electra	(100) 3/4" w/o guides
Weatherford Electra	(92) 3/4" w/ guides
Weatherford Electra	(104) 7/8" w/ guides
Weatherford Electra	(11) 1" w/ guides
Weatherford Electra	(87) 1" w/o guides

PLANNED
FIRM



RR well # 20659 6-11-15

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

OXY USA INC.
ATTENTION: LEE SYLVESTER
P.O. BOX 2000
DICKINSON, ND 58601

COMPLETE THIS SECTION ON DELIVERY

A. Signature
x Lori Vernon ☐ Agent ☐ Addressee

B. Received by (Printed Name) LORI VERNON | C. Date of Delivery 06.13.15

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

JUN 2015
RECEIVED
ND OIL & GAS
DIVISION

3. Service Type
☒ Certified Mail® ☐ Priority Mail Express®
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ Collect on Delivery

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7014 0150 0000 4832 0838

PS Form 3811, July 2013 Domestic Return Receipt

NORTH DAKOTA
OIL AND GAS DIVISION

Oil and Gas Division 20659

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/

June 11, 2015

OXY USA INC.
ATTENTION: LEE SYLVESTER
P.O. BOX 2000
DICKINSON, ND 58601

RE: KUDRNA 1-17
SWSE 17-141N-97W
DUNN COUNTY
WELL FILE NO.: 20659

Dear Mr. Sylvester:

In reviewing the production records for the above captioned well, our files indicate that this well has not produced oil or gas in paying quantities in over one year.

Pursuant to section 38-08-04, paragraph 1, part (l) of the North Dakota Century Code, the Commission has placed this well on abandoned-well status *effective immediately.*

To remove this well from the abandoned-well status, you must within 6 months either;

1. Return the well to production in paying quantities,
2. Obtain a temporarily abandoned status, or
3. Plug the well and reclaim the well site.

If none of the preceding conditions are met, the Commission may require the well to be placed immediately on a single-well bond in an amount equal to the cost of plugging the well and reclaiming the well site.

Once a well has been in abandoned-well status for one year, the well's equipment, related equipment, and salable oil at the well site are subject to forfeiture by the Commission. The single-well bond or any other bond covering the well if the single-well bond has not been obtained is subject to forfeiture by the Commission.

In addition to not producing this well in paying quantities we have never received a wellbore schematic, which has been requested twice by mail, see attached letters from November and January. **Please have this wellbore schematic to us no later than June 22, 2015.**

Should you have any questions regarding this matter, please contact me at 701-328-8020.

Sincerely,

Nicole Nelson /RLR

Nicole Nelson
Field Inspector

NAN/RLR
CERTIFIED MAIL: 7014 0150 0000 4832 0838
ENCLOSED: 2 Letters dated November 19, 2014, January 22, 2015, and Signed Certified Mail Receipt

NORTH DAKOTA
OIL AND GAS DIVISION

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/

20659

November 19, 2014

OXY USA INC
ATTENTION: ELIZABETH BUSH-IVIE
5 GREENWAY PLAZA STE 110
HOUSTON, TX 77046-0506

RE: KUDRNA 1-17
SWSE 17-141N-97W
DUNN COUNTY
WELL FILE NO.: 20659

Dear Ms. Busch-Ivy :

A recent inspection of the above captioned well and review of the file indicates the well is periodically flowing. We have not received a sundry notice on the conversion from pumping to flowing.

At this time we would request that you please submit a Sundry notice (Form 4) detailing the changeover from rod pump to flowing, along with a current wellbore schematic and include any future plans Oxy has for this well.

If you have any questions, feel free to contact our office.

Sincerely,

Nicole Nelson/RLR

Nicole Nelson
Field Inspector

NAN/RLR

NORTH DAKOTA
OIL AND GAS DIVISION

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 22, 2015

OXY USA INC
ATTENTION: ELIZABETH BUSH-IVIE
5 GREENWAY PLAZA STE 110
HOUSTON, TX 77046-0506

RE: KUDRNA 1-17
SWSE 17-141N-97W
DUNN COUNTY
WELL FILE NO.: 20659

Dear Ms. Busch-Ivie:

No response was received to a letter mailed November 14, 2014, see enclosed.
Please respond **no later than February 23, 2015** or we may have to seek to file a complaint with the Attorney General's office.

If you have any questions, feel free to contact our office.

Sincerely,

Nicole Nelson / RLR

Nicole Nelson
Field Inspector

NAN/RLR
CERTIFIED MAIL: 7014 0150 0000 4832 0944

RR well # 20659

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

OXY USA INC
ATTENTION: ELIZABETH BUSH-IVIE
5 GREENWAY PLAZA STE 110
HOUSTON, TX 77046-0506

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) E. mendola
C. Date of Delivery 1-27-15

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail® ☐ Priority Mail Express™
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ Collect on Delivery

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7014 0150 0000 4832 0944

PS Form 3811, July 2013 Domestic Return Receipt

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)

FEB 2015
RECEIVED
ND OIL & GAS
DIVISION

Well File No.
20659

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: December 24, 2013
☐ 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 Name and Number					
KUDRNA 1-17					
Footages	Qtr-Qtr	Section	Township	Range	
250 F S L 2000 F E L	**SWSE**	**17**	**141 N**	**97 W**	
Field	Pool	County			
ST. ANTHONY	**BAKKEN**	**DUNN**			

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

API No: 33-025-01351-00-00

Production method is flowing. When the well builds enough pressure it is opened up to flow.

The pump and rods were removed on 12/24/2013.

Company: **OXY USA, Inc.**		Telephone Number: **(701) 264-4921**
Address: **5 Greenway Plaza**		
City: **Houston**	State: **TX**	Zip Code: **77046**
Signature: Rebecca Zent	Printed Name: **Rebecca Zent**	
Title: **Regulatory Analyst**	Date: **February 20, 2015**	
Email Address: **Rebecca_Zent@oxy.com**		

FOR STATE USE ONLY

☑ Received	☐ Approved
Date: 3-5-2015	
By:	
Title: JARED THUNE Engineering Technician	

RR well #20659

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

OXY USA INC
ATTENTION: ELIZABETH BUSH-IVIE
5 GREENWAY PLAZA STE 110
HOUSTON, TX 77046-0506

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by *(Printed Name)* E. Mendoza

C. Date of Delivery 1-27-15

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail® ☐ Priority Mail Express™
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ Collect on Delivery

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Transfer from service label)* 7014 0150 0000 4832 0944

PS Form 3811, July 2013 Domestic Return Receipt

NORTH DAKOTA
OIL AND GAS DIVISION

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 22, 2015

OXY USA INC
ATTENTION: ELIZABETH BUSH-IVIE
5 GREENWAY PLAZA STE 110
HOUSTON, TX 77046-0506

RE: KUDRNA 1-17
SWSE 17-141N-97W
DUNN COUNTY
WELL FILE NO.: 20659

Dear Ms. Busch-Ivie:

No response was received to a letter mailed November 14, 2014, see enclosed.
Please respond **no later than February 23, 2015** or we may have to seek to file a complaint with the Attorney General's office.

If you have any questions, feel free to contact our office.

Sincerely,

Nicole Nelson / RLR

Nicole Nelson
Field Inspector

NAN/RLR
CERTIFIED MAIL: 7014 0150 0000 4832 0944

NORTH DAKOTA
OIL AND GAS DIVISION

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/

20659

November 19, 2014

OXY USA INC
ATTENTION: ELIZABETH BUSH-IVIE
5 GREENWAY PLAZA STE 110
HOUSTON, TX 77046-0506

RE: KUDRNA 1-17
SWSE 17-141N-97W
DUNN COUNTY
WELL FILE NO.: 20659

Dear Ms. Busch-Ivy :

A recent inspection of the above captioned well and review of the file indicates the well is periodically flowing. We have not received a sundry notice on the conversion from pumping to flowing.

At this time we would request that you please submit a Sundry notice (Form 4) detailing the changeover from rod pump to flowing, along with a current wellbore schematic and include any future plans Oxy has for this well.

If you have any questions, feel free to contact our office.

Sincerely,

Nicole Nelson/RLR

Nicole Nelson
Field Inspector

NAN/RLR

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
JUL 2013
ND OIL & GAS DIVISION

Well File No.
20659

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

☐ Notice of Intent	Approximate Start Date	☐ Drilling Prognosis	☐ Spill Report
☑ Report of Work Done	Date Work Completed: **June 20, 2013**	☐ Redrilling or Repair	☐ Shooting
☐ Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.	Approximate Start Date	☐ Casing or Liner	☐ Acidizing
		☐ Plug Well	☐ Fracture Treatment
		☐ Supplemental History	☐ Change Production Method
		☐ Temporarily Abandon	☐ Reclamation
		☑ Other **Pump Size Increase**	

Well Name and Number: **KUDRNA 1-17**					
Footages: **250 F S L 2000 F E L**	Qtr-Qtr: **SWSE**	Section: **17**	Township: **141 N**	Range: **97 W**	
Field: **ST. ANTHONY**	Pool: **~~BAKKEN~~ Red River**	County: **DUNN**			

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

API No: 33-025-01351-00-00

Production method is artificial lift. The well is on a conventional beam pumping unit and it had a pump failure, so the pump size has been increased.

Weatherford Maximizer II: P114-117-49
1.5": 25-150-RXBM-30-5
322 jts. of 2.875", 6.5#, L-80, EUE 8 Rd tubing. Total Length 10122'; TAC @ 12954'
Rod Details: 98-1"; 103-7/8", 276-3/4", 2 Pony Rods, 1 Polish Rod

Current Production: 45 BOPD, 77 BWPD, 0 MCFPD
Previous Production: 0 BOPD, 0 BWPD, 9 MCFPD

Company: **OXY USA, Inc.**			Telephone Number: **(701) 264-4921**
Address: **5 Greenway Plaza**			
City: **Houston**	State: **TX**	Zip Code: **77046**	
Signature: Rebecca Zent	Printed Name: **Rebecca Zent**		
Title: **Regulatory Analyst**	Date: **June 27, 2013**		
Email Address: **Rebecca_Zent@oxy.com**			

FOR STATE USE ONLY

☑ Received	☐ Approved
Date: July 9, 2013	
By:	
Title: PETROLEUM ENGINEER	

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)

APR 2013
RECEIVED
ND OIL & GAS
DIVISION

Well File No.
20659
NDIC CTB No.
120659

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

Well Name and Number	Qtr-Qtr	Section	Township	Range	County
KUDRNA 1-17	SWSE	17	141 N	97 W	Dunn
Operator	**Telephone Number**	**Field**			
OXY USA Inc.	713-985-6346	ST. ANTHONY			
Address	**City**	**State**	**Zip Code**		
PO Box 27757	Houston	TX	77227-7757		

Name of First Purchaser	Telephone Number	% Purchased	Date Effective
Occidental Energy Marketing, Inc.	713-215-7000	100	February 1, 2013
Principal Place of Business	**City**	**State**	**Zip Code**
5 Greenway Plaza, Suite 2400	Houston	TX	77046
Field Address	**City**	**State**	**Zip Code**
NA			
Name of Transporter	**Telephone Number**	**% Transported**	**Date Effective**
Black Hills Trucking Inc.	(701) 225-6881	100	May 15, 2011
Address	**City**	**State**	**Zip Code**
125 GTA Drive	Dickinson	ND	58602-0250

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
Other Transporters Transporting From This Lease	% Transported	Date Effective

Comments

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records. Date: April 10, 2013

Signature	Printed Name	Title
Leslie Teufel	Leslie Teufel	Regulatory Analyst

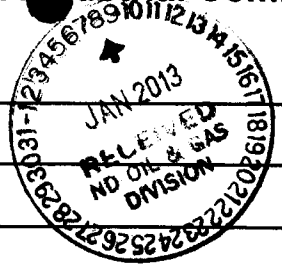
Above Signature Witnessed By

Witness Signature	Witness Printed Name	Witness Title
Elizabeth S. Bush-Ivie	Elizabeth S. Bush-Ivie	Regulatory Team Leader

FOR STATE USE ONLY

Date Approved	APR 22 2013
By	
Title	

North Dakota Industrial Commission Follow-up Spill Report



API Number	Well File or Facility No.
33 - 025 - 01351	20659

Operator	Telephone Number
OXY USA Inc.	713-350-4917

Address	City	State	Zip Code
5 Greenway Plaza, Suite 110	Houston	TX	77046

Well Name and Number or Facility Name	Field
Kudrna 1-17	St Anthony

Location of Well or Facility	Footages	Qtr-Qtr	Section	Township	Range	County
	250 F S L 2000 F E L	SWSE	17	141 N	97 W	Dunn

Description of Spill Location if not on Well or Facility Site and/or Distance and Direction from Well or Facility

Directions to Site
Hwy 22 north of Dickinson to 24th st. West 9 miles to 118 ave south. Go 3 miles to well site.

Release Discovered By	Date Release Discovered	Time Release Discovered	Date Release Controlled	Time Release Controlled
Baker Hughes person	April 27, 2012	2 : 00 AM	April 27, 2012	2 : 10 AM

Company Personnel Notified	How Notified	Date Notified	Time Notified
Burton Bienvenu of OXY	phone	April 27, 2012	8 : 00 AM

Type of Incident	Root Cause of Release	Date Clean up Activities Concluded
Tank Overflow	Human Error	April 27, 2012

Distance to Nearest Residence or Occupied Building	Distance to Nearest Fresh Water Well
1 Miles	1 Miles

Piping Specifics (If Applicable)	Size (Decimal Format)	Type	Location of Piping
	"		

Volume of Release	Oil	Saltwater	Other
	Barrels	Barrels	8.00 Barrels
Volume of Release Recovered	Oil	Saltwater	Other
	Barrels	Barrels	10.00 Barrels

Was Release Contained Within Dike	If No, Was Release Contained on Well Site	If No, Was Release Contained on Facility Site or Pipeline ROW
No	Yes	

Areal Extent of Release if not Within Dike	Affected Medium	General Land Use
Area around the frac tanks	Topsoil	Well/Facility Site

Describe Cause of Release or Fire and Other Type of Incidents, Root Causes of Release, Land Uses, and Released Substances

Baker Hughes was transferring water-based acid (15%HCL) from upright work tanks to awaiting trucks to be hauled off location. Someone closed the valve that equalized the diffuser and closest frac tank. Since the valve was closed, the diffuser tank overflowed spilling about 8 barrels of the mixture on ground.

Action Taken to Control Release and Clean Up Action Undertaken

Wylie Bice had a vacuum truck onsite which Baker Hughes utilized for the spill. They vacuumed up 10 barrels of liquid and soil mixture. The load when then dumped back into the onsite tanks. Solids will settle to the bottom and liquids will be neutralized and taken to an SWD when the well job is over.

Potential Environmental Impacts

No long term impacts

Planned Future Action and/or Action Taken to Prevent Reoccurrence

Reiterate importance of making sure all valves and connections are in their appropriate settings.

Where Were Recovered Liquids Disposed	Where Were Recovered Solids Disposed
Permitted SWD as SBG Disposal or N Dickinson SWD	Prairie Disposal

Weather Conditions	Wind Speed	Wind Direction	Temperature	Skies	Estimated Cleanup Cost	Damage Value
	MPH		° F		$	$

Regulatory Agencies/Others Notified	Person Notified	Date Notified	Time Notified	Notified By
NDIC/NDDH	Rick Nutchins	April 27, 2012	:	
Fee Surface Owner			:	
			:	

Federal Agency Lease Number				
BLM			:	
USFS			:	

Report Originator	Title	Date
Terry Ryland	Senior Environmental Advisor	May 3, 2012
Reviewed By	Title	Date

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.
20659

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

☐ Notice of Intent	Approximate Start Date	☐ Drilling Prognosis	☐ Spill Report
☑ Report of Work Done	Date Work Completed: **February 24, 2012**	☐ Redrilling or Repair	☐ Shooting
☐ Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.	Approximate Start Date	☐ Casing or Liner	☐ Acidizing
		☐ Plug Well	☐ Fracture Treatment
		☐ Supplemental History	☑ Change Production Method
		☐ Temporarily Abandon	☐ Reclamation
		☐ Other	

Well Name and Number					
KUDRNA 1-17					
Footages	Qtr-Qtr	Section	Township	Range	
250 F S L 2000 F E L	**SWSE**	**17**	**141 N**	**97 W**	
Field	Pool	County			
ST. ANTHONY	**BAKKEN** Red River	**DUNN**			

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

API No: 33-025-01351-00-00

Production method is artificial lift. The well was flowing naturally when Oxy obtained the subject well on 5/3/2011 from prior operator (Anschutz).

Lufkin RM-912-427-192
1.5" 25-150-RXBM-30-5
408 jts of 2.875" L-80 EUE 8 Rd tubing; Total Length 12648'; TAC @ 12954'.
Rods: 141-1"; 184-7/8"; 187-3/4"; 1 Pony Rod; 1 Polish Rod

Current Production: 77 BOPD, 13 BWPD, 0 MCFPD
Previous Production: 13 BOPD, 6 BWPD, 0 MCFPD

Company		Telephone Number
OXY USA, Inc.		**(701) 264-4921**
Address		
5 Greenway Plaza		
City	State	Zip Code
Houston	**TX**	**77046**
Signature: Rebecca Zent	Printed Name: **Rebecca Zent**	
Title: **Regulatory Analyst**	Date: 8/21/12	
Email Address: **Rebecca_Zent@oxy.com**		

FOR STATE USE ONLY

☒ Received	☐ Approved
Date: September 12, 2012	
By:	
Title: PETROLEUM ENGINEER	

Industrial Commission of North Dakota
Oil and Gas Division
Spill / Incident Report

Date/Time Reported : Apr 27 2012 / 22:13
State Agency person :
Responsible Party :
Well Operator : OXY USA INC.
Date/Time of Incident : 1/27/2012 12:00:00 AM
NDIC File Number : 20659
Facility Number :
Well or Facility Name : KUDRNA 1-17
Field Name : ST. ANTHONY
County : DUNN
Section : 17
Township : 141
Range : 97
Quarter-Quarter : SW
Quarter : SE
Distance to nearest residence : 1 Miles
Distance to nearest water well : 1 Miles
Release Oil : 0 barrels
Release Brine : 0 barrels
Release Other : 8 barrels
Recovered Oil : 0 barrels
Recovered Brine : 0 barrels
Recovered Other : 0 barrels
Has/Will the incident be reported to the NRC? : No
Was release contained : Yes - on Facility Site
Description of other released substance : Water/15%HCL acid

Immediate risk evaluation : Health hazards associated with low ph liquid. PPE required
Followup Report Requested Y/N : N

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.
20659

JUL 2012
RECEIVED
ND OIL & GAS
DIVISION

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

- [x] Notice of Intent — Approximate Start Date: **May 9, 2012**
- [x] Report of Work Done — Date Work Completed: **May 16, 2012**
- [ ] 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
- [x] Other **RA traced frac sand containment pit**
- [ ] Spill Report
- [ ] Shooting
- [ ] Acidizing
- [ ] Fracture Treatment
- [ ] Change Production Method
- [ ] Reclamation

Well Name and Number					
Kudrna 1-17					
Footages: F L F L	Qtr-Qtr: **SWSE**	Section: **17**	Township: **141 N**	Range: **97 W**	
Field: **St Anthony**	Pool:	County: **Dunn**			

24-HOUR PRODUCTION RATE

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

Name of Contractor(s)			
Big West Oilfield Services			
Address: **1015 W Broadway**	City: **Dickinson**	State: **ND**	Zip Code: **58601**

DETAILS OF WORK

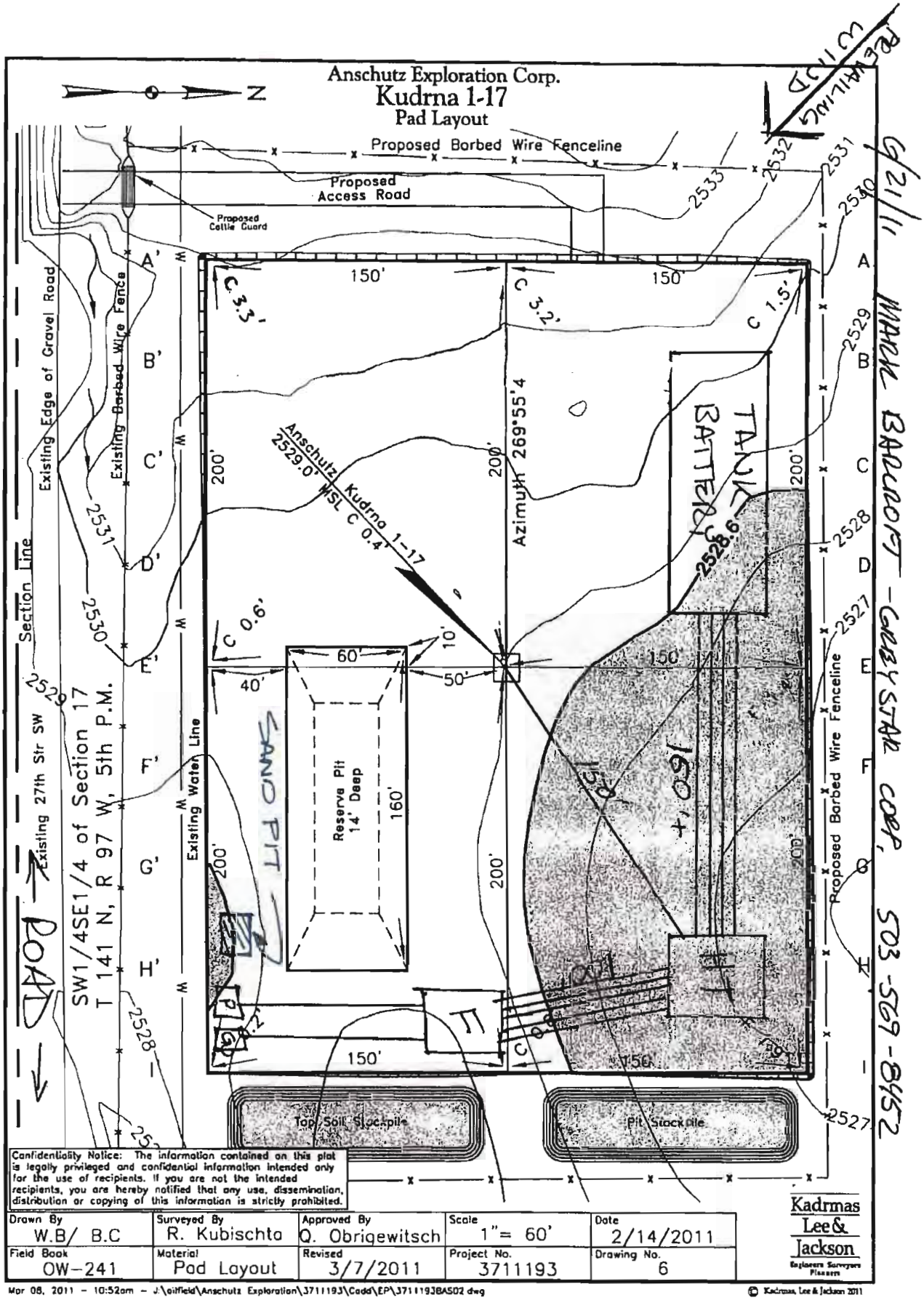
Dig 10' x10'x8' pit on SE corner of location. Line with 30 mil coated woven liner. Place frac sand recovered during flow back in pit. Pull and dispose of free water. Fold liner into envelope. Bury with minimum of 4' dirt. Mark site with signage describing well name, contents and date.

Company	Telephone Number
Oxy USA, Inc	**(701) 264-4123**
Address: **340 A 21st St West**	
City: **Dickinson** / State: **ND** / Zip Code: **58601**	
Signature:	Printed Name: **Bill Mortellaro**
Title: **Completions Superintendent**	Date: **May 18, 2012**
Email Address: **bill_mortellaro@oxy.com**	

FOR STATE USE ONLY

- [x] Received
- [ ] Approved

Date: 7-30-12
By:
Title:


Anschutz Exploration Corp.
Kudrna 1-17
Pad Layout
N
Proposed Barbed Wire Fenceline
Proposed Access Road
Proposed Cattle Guard
Existing Edge of Gravel Road
Existing Barbed Wire Fence
Section Line
Existing 27th Str SW
SW1/4SE1/4 of Section 17
T 141 N, R 97 W, 5th P.M.
Existing Water Line
Anschutz Kudrna 1-17
2529.0' MSL C 0.4
Azimuth 269°55'4
Reserve Pit
14' Deep
160'
60'
40'
50'
150'
200'
10'
C 3.3'
C 3.2'
C 1.5'
C 0.6'
Top Soil Stockpile
Pit Stockpile
Confidentiality Notice: The information contained on this plat is legally privileged and confidential information intended only for the use of recipients. If you are not the intended recipients, you are hereby notified that any use, dissemination, distribution or copying of this information is strictly prohibited.
Drawn By W.B/ B.C
Surveyed By R. Kubischta
Approved By Q. Obrigewitsch
Scale 1"= 60'
Date 2/14/2011
Field Book OW-241
Material Pad Layout
Revised 3/7/2011
Project No. 3711193
Drawing No. 6
Kadrmas Lee & Jackson
Engineers Surveyors Planners
Mar 08, 2011 - 10:52am - J:\oilfield\Anschutz Exploration\3711193\Cadd\EP\3711193BAS02.dwg
© Kadrmas, Lee & Jackson 2011

WELL COMPLETION OR RECOMPLETION REPORT - FORM 6

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

JAN 2012
RECEIVED
ND OIL & GAS DIVISION

Well File No.
20659

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

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

Well Name and Number	Spacing Unit Description
Kudrna 1-17	**S½ Sec. 17 141N 97W and N½ Sec 20**

Operator	Telephone Number	Field
OXY USA Inc.	**713-366-5303**	**St. Anthony**

Address	Pool
P.O. Box 27757	**Red River**

City	State	Zip Code	Permit Type
Houston	**TX**	**77227-7757**	☑ Wildcat ☐ Development ☐ Extension

LOCATION OF WELL

At Surface	Qtr-Qtr	Section	Township	Range	County
250 F S L 2000 F E L	**SWSE**	**17**	**141 N**	**97 W**	**Dunn**

Spud Date	Date TD Reached	Drilling Contractor and Rig Number	KB Elevation (Ft)	Graded Elevation (Ft)
5/6/2011	**7/15/2011**	**Precision 426**	**2562**	**2529**

Type of Electric and Other Logs Run (See Instructions)
Array Induction Resistivity, Sonic Scanner, Density/Neutron/PEF,CMR, Rt-Scanner, GR, MWD, CBL

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**		**2173**	**14 1/2**	**54 1/2**			**696**	**0**
Vertical Hole	**Intermediate**	**9 5/8**		**6635**	**12 1/4**	**53 1/5**			**1411**	**0**
Vertical Hole	**Production**	**5 1/2**	**123**	**13258**	**7 7/8**	**20/23**			**900**	**7100**

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
Vertical Hole	**13260**	**Open Hole**	**12822**	**13010**						

PRODUCTION

Current Producing Open Hole or Perforated Interval(s), This Completion, Top and Bottom, (MD Ft)	Name of Zone (If Different from Pool Name)
12822' - 13010' - Perforated	

Date Well Completed (SEE INSTRUCTIONS)	Producing Method	Pumping-Size & Type of Pump	Well Status (Producing or Shut-In)
11/23/2011	**Flowing**	**N/A**	**Producing**

Date of Test	Hours Tested	Choke Size	Production for Test	Oil (Bbls)	Gas (MCF)	Water (Bbls)	Oil Gravity-API (Corr.)	Disposition of Gas
12/17/2011	**6 1/2**	**20 /64**		**20**	**Trace**	**3**	**40.0 °**	**Flared**

Flowing Tubing Pressure (PSI)	Flowing Casing Pressure (PSI)	Calculated 24-Hour Rate	Oil (Bbls)	Gas (MCF)	Water (Bbls)	Gas-Oil Ratio
	9		**74**	**0**	**11**	**0**

Orig.

GEOLOGICAL MARKERS

Formation	MD (Ft)	TVD (Ft)
See attachment		

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 (ºF)	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 (ºF)	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 (ºF)	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 (ºF)	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 (ºF)	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
12/10/2011	Red River	12964	13010	2	150	Barrels

Type Treatment	Acid %	Lbs Proppant	Maximum Treatment Pressure (PSI)	Maximum Treatment Rate (BBLS/Min)
Acid Frac	15	0	5664	1.6

Details

Date Stimulated	Stimulated Formation	Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units

Type Treatment	Acid %	Lbs Proppant	Maximum Treatment Pressure (PSI)	Maximum Treatment Rate (BBLS/Min)

Details

Date Stimulated	Stimulated Formation	Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units

Type Treatment	Acid %	Lbs Proppant	Maximum Treatment Pressure (PSI)	Maximum Treatment Rate (BBLS/Min)

Details

Date Stimulated	Stimulated Formation	Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units

Type Treatment	Acid %	Lbs Proppant	Maximum Treatment Pressure (PSI)	Maximum Treatment Rate (BBLS/Min)

Details

Date Stimulated	Stimulated Formation	Top (Ft)	Bottom (Ft)	Stimulation Stages	Volume	Volume Units

Type Treatment	Acid %	Lbs Proppant	Maximum Treatment Pressure (PSI)	Maximum Treatment Rate (BBLS/Min)

Details

ADDITIONAL INFORMATION AND/OR LIST OF ATTACHMENTS

2-7/8" 6.5# tubing installed to 11,728' on 10/27/2011.

Formation Tops
Form 4 Request for Confidentiality

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records.	Email Address Shelia_Kennedy@oxy.com		Date 01/04/2012
Signature Shelia Kennedy	Printed Name **Shelia Kennedy**	Title **Contract Regulatory Analyst**	

Kudrna 1-17
33-025-01351-0000 API
File #20659

Formation Top	*Top (ft-MD)*	*Top (ft-TVD)*
Hell Creek	1458	1458
Fox Hills	1692	1692
Pierre Shale	2062	2062
Niobrara	4163	4095
Greenhorn	4740	4648
Mowry	5272	5159
Dakota	5675	5545
Morrison	6019	5871
Rierdon	6565	6397
Dunham Salt	6903	6730
Spearfish	6970	6797
Pine Salt	7110	6937
Minnekahta	7350	7176
Opeche Salt	7438	7264
Minnelusa	7716	7541
Amsden	7967	7792
Tyler	8317	8141
Kibbey Lime	8784	8608
Charles (Madison)	8937	8762
Charles First Salt	8978	8802
Greenpoint Anhydrite	9180	9004
Base Last Salt	9301	9125
Mission Canyon	9428	9252
Fryburg Interval	9597	9421
Lodgepole	9936	9760
False Bakken	10669	10493
Scallion	10700	10524
Upper Bakken Shale	10713	10537
Middle Bakken	10721	10545
Lower Bakken Shale	10733	10557
Three Forks	10736	10560
Birdbear	10936	10759
Duperow	11016	10940
Winnipegosis	11681	11505
Interlake	11877	11701
Red River	12772	12596

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 2012
RECEIVED
ND OIL & GAS DIVISION

Well File No.
20659

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

☐ Notice of Intent	Approximate Start Date	☐ Drilling Prognosis	☐ Spill Report
☐ Report of Work Done	Date Work Completed	☐ Redrilling or Repair	☐ Shooting
☐ Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.	Approximate Start Date	☐ Casing or Liner	☐ Acidizing
		☐ Plug Well	☐ Fracture Treatment
		☐ Supplemental History	☐ Change Production Method
		☐ Temporarily Abandon	☐ Reclamation
		☑ Other	**Request Confidentiality**

Well Name and Number					
Kudrna 1-17					
Footages		Qtr-Qtr	Section	Township	Range
250 F S L 2000 F E L		**SWSE**	**17**	**141 N**	**97 W**
Field	Pool	County			
St. Anthony	**Red River**	**Dunn**			

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

OXY USA Inc. requests confidentiality for this well completion.

Ends 5-22-2012

Company		Telephone Number
OXY USA Inc.		**(713) 366-5303**
Address		
P.O. Box 27757		
City	State	Zip Code
Houston	**TX**	**77227-7757**
Signature: Shelia Kennedy	Printed Name: **Shelia Kennedy**	
Title: **Contract Regulatory Analyst**	Date: 1/4/12	
Email Address: **Shelia_Kennedy@oxy.com**		

FOR STATE USE ONLY

☐ Received	☑ Approved
Date: 1-11-2011	
By: David Fabor	
Title: **Engineering Technician**	

SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4

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

Well File No.
20659

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

RECEIVED
AUG 2011
ND OIL & GAS DIVISION

☐ Notice of Intent	Approximate Start Date	☐ Drilling Prognosis	☐ Spill Report
☑ Report of Work Done	Date Work Completed: **July 26, 2011**	☐ Redrilling or Repair	☐ Shooting
☐ Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.	Approximate Start Date	☐ Casing or Liner	☐ Acidizing
		☐ Plug Well	☐ Fracture Treatment
		☐ Supplemental History	☐ Change Production Method
		☐ Temporarily Abandon	☑ Reclamation
		☐ Other	

Well Name and Number					
Kudma 1-17					
Footages	Qtr-Qtr	Section	Township	Range	
250 F S L 2000 F E L	**NWNW**	**17**	**141 N**	**97 W**	
Field	Pool	County			
St Anthony	**Bakken**	**Dunn**			

24-HOUR PRODUCTION RATE

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

Name of Contractor(s)			
KS Industries			
Address	City	State	Zip Code
6619 Hwy 40	**Tioga**	**North Dakota**	**58852**

DETAILS OF WORK

OXY USA Inc. has closed the pit at this location according to the Sundry notice filed on June 8, 2011 and approved by NDIC on June 13, 2011.

Company		Telephone Number
OXY USA Inc		**713-350-4917**
Address		
5 Greenway Plaza, Suite 110		
City	State	Zip Code
Houston	**Texas**	**77046**
Signature	Printed Name	
Terry Ryland	**Terry Ryland**	
Title	Date	
Senior Environmental Advisor	8-10-11	
Email Address		
terry_ryland@oxy.com		

FOR STATE USE ONLY

☑ Received	☐ Approved
Date: 12-22-11	
By:	
Title:	

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

Well or Facility No **20659**

Tight Hole **No**

OPERATOR

Operator	Representative	Rep Phone
OXY USA INC.	**Ron Miller**	**(701) 264-4126**

WELL INFORMATION

Well Name: **KUDRNA 1-17**

Inspector: **Rick Hutchens**

Well Location	QQ	Sec	Twp		Rng	
	SWSE	**17**	**141**	**N**	**97**	**W**

County: **DUNN**

Field: **ST. ANTHONY**

Footages: **250** Feet From the **S** Line; **2000** Feet From the **E** Line

Pool: **BAKKEN**

Date of First Production Through Permanent Wellhead **11/22/2011** **This Is The First Sales**

PURCHASER / TRANSPORTER

Purchaser	Transporter
EIGHTY-EIGHT OIL LLC	**BLACK HILLS TRUCKING**

TANK BATTERY

Single Well Tank Battery Number :

SALES INFORMATION **This Is The First Sales**

ESTIMATED BARRELS TO BE SOLD	ACTUAL BARRELS SOLD	DATE
BBLS	BBLS	
BBLS	BBLS	
BBLS	BBLS	
BBLS	BBLS	
BBLS	BBLS	
BBLS	BBLS	
BBLS	BBLS	
BBLS	BBLS	
BBLS	BBLS	

DETAILS

Start Date	**11/29/2011**
Date Approved	**11/29/2011**
Approved By	**Nicole Anderson**

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)

NOV 2011
RECEIVED
ND OIL & GAS DIVISION

Well File No.
20659
NDIC CTB No.
120659

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

Well Name and Number	Qtr-Qtr	Section	Township	Range	County
KUDRNA 1-17	SWSE	17	141 N	97 W	Dunn

Operator	Telephone Number	Field
OXY USA Inc.	(713) 366-5303	St. Anthony

Address	City	State	Zip Code
PO Box 27757	Houston	TX	77227-7757

Name of First Purchaser	Telephone Number	% Purchased	Date Effective
Eighty-Eight Oil LLC	(307) 266-0426	100	May 15, 2011

Principal Place of Business	City	State	Zip Code
PO Drawer 2360	Casper	WY	82602

Field Address	City	State	Zip Code
10008 58th St. W.	Williston	ND	58801

Name of Transporter	Telephone Number	% Transported	Date Effective
Black Hills Trucking	(701) 225-6881	100	May 15, 2011

Address	City	State	Zip Code
125 GTA Drive	Dickinson	ND	58602-0250

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
Other Transporters Transporting From This Lease	% Transported	Date Effective

Comments

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records. Date 11/17/11

Signature	Printed Name	Title
Elizabeth S. Bush-Ivie	Elizabeth S. Bush-Ivie	Sr. Regulatory Advisor

Above Signature Witnessed By

Witness Signature	Witness Printed Name	Witness Title
Shelia Kennedy	Shelia Kennedy	Regulatory Analyst

FOR STATE USE ONLY

Date Approved	NOV 30 2011
By	Evie Peterson
Title	Oil & Gas Production Analyst

NORTH DAKOTA
OIL AND GAS DIVISION

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

20659

S

October 25, 2011

ELIZABETH BUSH-IVIE
OXY USA INC
Mid-Continent Business Unit,
5 Greenway Plaza, Suite 110
HOUSTON, TX 77046

RE: KUDRNA 1-17
SWSE 17-141N-97W
DUNN COUNTY
WELL FILE NO. 20659

Dear Elizabeth:

After subsequent review of the form 4 Sundry Notice and supporting documentation submitted 10-24-2011, the requirement to perform remedial cement work (Oct 11, 2011 NIDC letter) is rescinded contingent upon the following stipulations:

1. The 9 5/8" – 5 1/2" production casing annulus must be continuously monitored with an accurate pressure gauge.
2. The pressure gauge must not be any higher than a 300 psi gauge.
3. All valves installed on the annulus must be exposed to the surface; burial will be allowed only in the presence of an Oil and Gas Division inspector.
4. Any pressure development on the annulus must be immediately reported to the Oil and Gas Division
5. Remedial action may be required prior to abandonment if warranted by the Director

If you have any questions, do not hesitate to contact me.

Sincerely,

Richard A. Suggs
Geologist

rwh/ras

20659

SUNDRY NOTICES AND REPORTS ON WELLS - FORM 4

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

OCT 2011
RECEIVED
ND OIL & GAS DIVISION

Well File No.
20659

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

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

Well Name and Number: KUDRNA 1-17

Footages	Qtr-Qtr	Section	Township	Range
250 F S L 2000 F E L		17	141 N	97 W

Field	Pool	County
ST. ANTHONY	BAKKEN	DUNN

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

Additional information provided per letter dated 10/11/11 and subsequent telephone discussions with Richard Suggs

KUDRNA 1-17 REEVALUATION REQUEST:
This well was completed with three strings of casing:

1. **Surface casing: 13-3/8" surface casing set at 2,173 ft and cemented to surface**
2. **Intermediate casing: 9-5/8" intermediate casing set at 6,635 ft and cemented to surface (cement returns)**
3. **Production casing: 5-1/2" production casing set at 13,258 ft and cemented to 7,100 ft (cement bond log)**

Attached are documents that detail the cementing operations on this well:

1. **Wellbore diagram**
2. **OXY 9-5/8" & 5-1/2" casing cement daily reports**
3. **BJ Services 9-5/8" & 5-1/2" casing cement job reports**

After subsequent review of the form 4 Sundry Notice and supporting documentation submitted Oct 24, 2011, the requirement to perform remedial cement work (Oct 11, 2011 NIDC letter) is rescinded per attached letter dated Oct 25, 2011

Company	Telephone Number
OXY USA Inc.	(713) 366-5764

Address		
PO Box 27757		
City: Houston	State: TX	Zip Code: 77227-7757

Signature	Printed Name
	ADEBAYO ONAFOWOKAN
Title: COMPLETIONS ENGINEER	Date: 10-24-2011

Email Address: Adebayo_Onafowokan@oxy.com

FOR STATE USE ONLY

☒ Received ☒ Approved

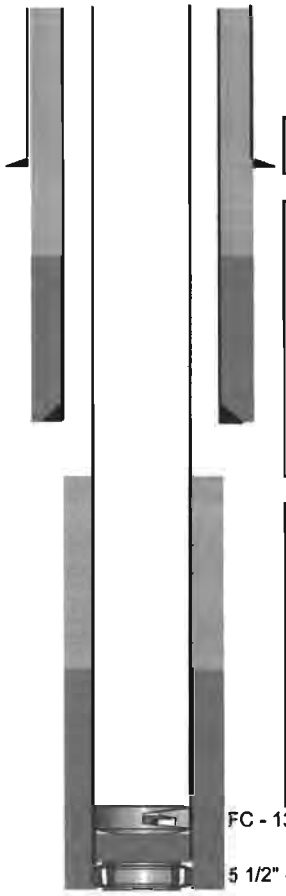
Date: 10-25-2011

By: RCS

Title: Richard A. Suggs Geologist

Well Name:	Kudrna 1-17
Field:	Russian Creek
Area:	250' FSL & 2000' FEL
API Number:	33-025-01351

	Size	Weight	Grade	Collapse	Burst	Top MD	Bott MD	ID	Thread
Surface Casing									
Intermediate Csg									
Production Csg									
Production Csg									
Production Csg									
Production Csg									
Open Hole									



Surface Casing
13 3/8" - 2173 ft

Intermediate Casing
9 5/8" - 6635 ft 12 1/4" OH 40%EXCESS

Cement Date: 6-20-11 BJ Services
910 sks Lead: PL+0.08%SF+5CSE+0.8%R3+3%PC+0.25CF+3K+0.6%52+6%B+0.3%S
12 PPG 2.42 CUFT/SK 13.46 GPS WATER

501 sks Tail: G+0.08%SF+0.3%R3+3%PC+0.125CF+3#KS+0.2%SMS+0.9%32+0.8%52
15.6 PPS 1.21 CUFT/SK 5.03 GPS WATER
EST TOP OF TAIL 4839 FT

Production Casing
5 1/2" - 13258 ft 7 7/8" OH 21%EXCESS

Cement Date: 7/14/11 BJ Services
500 sks Lead: PLC+5#CSE+0.08%SF+0.5%R+3.3%KCL+3#KS+0.8%FL52+6%GEL
12 PPG 2.42 CUFT/SK 13.46 GPS WATER
TOP OF LEAD (CBL): 7100 FT

400 sks Tail: G+0.08%SF+0.4%R3+0.3%CD32+3#KS+0.8%FL52+0.2%SMS+35%S8
15.6 PPG 1.58 CUFT/SK 6.27 GPS WATER
EST TOP OF TAIL 8165 FT

FC - 13175 ft

5 1/2" - 13258 ft

CEMENT JOB REPORT

CUSTOMER	DATE	F.R. #	SERV. SUPV.
Oxy USA, Inc. - Williston	20-JUN-11	726610037	DAVID D BURKE
LEASE & WELL NAME	**LOCATION**		**COUNTY-PARISH-BLOCK**
Kudrna 1-17			Dunn North Dakota
DISTRICT	**DRILLING CONTRACTOR RIG #**		**TYPE OF JOB**
Dickinson	PD-426		Intermediate

SIZE & TYPE OF PLUGS	LIST-CSG-HARDWARE	SACKS OF CEMENT	SLURRY WGT PPG	SLURRY YLD FT³	WATER GPS	PUMP TIME HR:MIN	Bbl SLURRY	Bbl MIX WATER
9-5/8" Top Cem Plug, Nitrile cvr, Phe	Float Collar, Al Flap, 9-5/8 - 8rd							
	Float Shoe 9-5/8 - 8rd							
MATERIALS FURNISHED BY BJ								
PL+.08%SF+5CSE+.8%R3+3%PC+.25CF+3K+.6%52+6%B+.3%S		910	12	2.42	13.46	05:18	392.90	291.56
G+.08%SF+.3%R3+3%PC+.125CF+3#KS+.2%SMS+.9%32+.8%52		501	15.6	1.21	5.03	03:32	108.31	60.02
OBM			10.5				437	
Fresh Water			8.34				24.3	
Surfactant Wash			8.34				20	
Fresh Water			8.34				10	
Fresh Water			8.34				10	
Fresh Water			8.34				20	
						TOTAL	1022.51	351.59

Available Mix Water 1100 Bbl. **Available Displ. Fluid** 800 Bbl.

HOLE			TBG-CSG-D.P.					COLLAR DEPTHS		
SIZE	% EXCESS	DEPTH	SIZE	WGT.	TYPE	DEPTH	GRADE	SHOE	FLOAT	STAGE
12.25	40	6700	9.625	53.5	CSG	6655	P-110	6655	6561.1	

LAST CASING				PKR-CMT RET-BR PL-LINER		PERF. DEPTH		TOP CONN		WELL FLUID	
SIZE	WGT	TYPE	DEPTH	BRAND & TYPE	DEPTH	TOP	BTM	SIZE	THREAD	TYPE	WGT.
13.38	54.5		2175	NO PACKER		0	0	9.625	BUTT	OIL BASED MUD	10

DISPL. VOLUME		DISPL. FLUID		CAL. PSI	CAL. MAX PSI	OP. MAX	MAX TBG PSI		MAX CSG PSI		MIX WATER
VOLUME	UOM	TYPE	WGT.	BUMP PLUG	TO REV.	SQ. PSI	RATED	Operator	RATED	Operator	
464	BBLS	OBM	10.5	1002	0	0	0	0	7930	6344	RIG TANK
		Fresh Water	8.34								

EXPLANATION: TROUBLE SETTING TOOL, RUNNING CSG, ETC. PRIOR TO CEMENTING:

PRESSURE/RATE DETAIL						EXPLANATION
TIME HR:MIN.	PRESSURE - PSI PIPE	PRESSURE - PSI ANNULUS	RATE BPM	Bbl. FLUID PUMPED	FLUID TYPE	SAFETY MEETING: BJ CREW [X] CO. REP. [ ]
						TEST LINES 5500 PSI
						CIRCULATING WELL - RIG [X] BJ [ ]
00:00	0	0	0	0	N/A	ARRIVE ON LOCATION
00:00	0	0	0	0	N/A	CREW WENT OFF DUTY
13:00	0	0	0	0	N/A	CREW BACK ON DUTY
13:15	0	0	0	0	N/A	PRE RIG UP SAFETY MEETING
15:58	0	0	0	0	N/A	STAB HEAD
16:15	0	0	0	0	N/A	SAFETY MEETING
16:45	5202	0	2	2	H20	PRESSURE TEST
16:51	278	0	4.5	20	H20	FRESH WATER SPACER
17:14	253	0	4.5	20	H20	SURFACTANT WASH
17:15	0	0	0	0	N/A	SHUT DOWN DUE TO LEAK
18:10	0	0	0	0	N/A	BACK UP
18:16	5601	0	2	2	H20	PRESSURE TEST
18:18	403	0	6	10	H20	FRESH WATER SPACER
18:32	778	0	7.3	100	LEAD	LEAD SLURRY @12 PPG
18:45	753	0	7.3	100	LEAD	LEAD SLURRY @12 PPG
19:03	178	0	3.7	100	LEAD	LEAD SLURRY @12 PPG
19:22	352	0	3.7	92	LEAD	LEAD SLURRY @12 PPG
19:54	353	0	3.7	107.9	TAIL	TAIL SLURRY @15.6
19:56	0	0	0	0	N/A	SHUT DOWN DROP PLUG

CEMENT JOB REPORT

PRESSURE/RATE DETAIL						EXPLANATION
TIME HR:MIN.	PRESSURE - PSI PIPE	PRESSURE - PSI ANNULUS	RATE BPM	Bbl. FLUID PUMPED	FLUID TYPE	SAFETY MEETING: BJ CREW [X] CO. REP. [ ]
						TEST LINES 5500 PSI
						CIRCULATING WELL - RIG [X] BJ [ ]
20:06	203	0	6.6	10	H20	FRESH WATER DISPLACEMENT
20:19	553	0	7.7	90	OBM	OIL BASS MUD DISPLACEMENT
20:32	527	0	7.7	100	OBM	OIL BASS MUD DISPLACEMENT
20:45	750	0	7.7	100	OBM	OIL BASS MUD DISPLACEMENT
21:26	1727	0	2.3	164	H20	BUMP PLUG
21:29	0	0	0	0	N/A	TEST FLOAT
21:40	0	0	0	0	N/A	RIG DOWN SAFETY MEETING
00:00	0	0	0	0	N/A	TOP OF TAIL @4839.198 FT

BUMPED PLUG	PSI TO BUMP PLUG	TEST FLOAT EQUIP.	BBL.CMT RETURNS/ REVERSED	TOTAL BBL. PUMPED	PSI LEFT ON CSG	SPOT TOP OUT CEMENT	SERVICE SUPERVISOR SIGNATURE:
[Y] N	1727	[Y] N	122	1014	0	Y [N]	

CEMENT JOB REPORT

CUSTOMER	DATE	F.R. #	SERV. SUPV.
Oxy USA, Inc. - Williston	14-JUL-11	708410067	CHRISTOPHER A VASQUEZ
LEASE & WELL NAME	**LOCATION**		**COUNTY-PARISH-BLOCK**
Kudma 1-17 - API 33025013510000	17-141N-97W		Dunn North Dakota
DISTRICT	**DRILLING CONTRACTOR RIG #**		**TYPE OF JOB**
Dickinson	PD-426		Long String

SIZE & TYPE OF PLUGS	LIST-CSG-HARDWARE
5" Top Cem Plug, Nitrile cvr, Phen	Float Collar, Al Flap, 5-1/2 - 8rd
	Float Shoe 5-1/2 - 8rd

MATERIALS FURNISHED BY BJ	SACKS OF CEMENT	SLURRY WGT PPG	SLURRY YLD FT³	WATER GPS	PUMP TIME HR:MIN	Bbl SLURRY	Bbl MIX WATER
BJ SealBond		11				50	
g,.08%sf,.4%r3,.3%cd32,3#ks,.8%fl52,.2%sms,35%s8,	400	15.6	1.58	6.27	04:26	112.26	59.74
Brine Water		10.2				276	
plc,5#cse,.08%sf,.5%r3,3%kcl,3#ks,.8%fl52,6%gel,	500	12	2.42	13.46	04:37	215.58	160.25
Fresh Water		8.34				10	
					TOTAL	663.84	219.99

Available Mix Water 400 Bbl. Available Displ. Fluid 400 Bbl.

HOLE			TBG-CSG-D.P.					COLLAR DEPTHS		
SIZE	% EXCESS	DEPTH	SIZE	WGT.	TYPE	DEPTH	GRADE	SHOE	FLOAT	STAGE
7.875	21	13260	5.5	20	CSG	6894	N-80	13187	13102.04	
			5.5	23	CSG	6377	N-80			

LAST CASING				PKR-CMT RET-BR PL-LINER		PERF. DEPTH		TOP CONN		WELL FLUID	
SIZE	WGT	TYPE	DEPTH	BRAND & TYPE	DEPTH	TOP	BTM	SIZE	THREAD	TYPE	WGT.
9.625	47		6635	NO PACKER		0	0	5.5	8RD	OIL BASED MUD	10

DISPL. VOLUME		DISPL. FLUID		CAL. PSI	CAL. MAX PSI	OP. MAX	MAX TBG PSI		MAX CSG PSI		MIX WATER
VOLUME	UOM	TYPE	WGT.	BUMP PLUG	TO REV.	SQ. PSI	RATED	Operator	RATED	Operator	
286.2	BBLS	Brine Water	10.2	1498	0	0	0	0	9190	7352	FRAC TANK

EXPLANATION: TROUBLE SETTING TOOL, RUNNING CSG, ETC. PRIOR TO CEMENTING:

PRESSURE/RATE DETAIL						EXPLANATION
TIME HR:MIN.	PRESSURE - PSI		RATE BPM	Bbl. FLUID PUMPED	FLUID TYPE	SAFETY MEETING: BJ CREW [X] CO. REP. [X]
	PIPE	ANNULUS				TEST LINES 3500 PSI
						CIRCULATING WELL - RIG [X] BJ [ ]
17:00	0	0	0	0	N/A	GOT TO LOCATION
17:45	0	0	0	0	N/A	RIG UP MEETING
19:30	0	0	0	0	N/A	STAB HEAD
20:30	0	0	0	0	N/A	SAFETY MEETING
20:58	5811	0	2	2	FRESH	PRESSURE TEST LINES
21:08	623	0	5.5	10	FRESH	FRESH WATER SPACER
21:19	557	0	5.5	50	SEALBOND	SEAL BOND SPACER
21:46	550	0	5.1	100	CMT	LEAD SLURRY
22:16	70	0	2.8	115	CMT	LEAD SLURRY
21:54	534	0	2.8	112	CMT	TAIL SLURRY
23:01	0	0	0	0	N/A	DROP PLUG
21:09	108	0	4.2	10	FRESH	RATE AND PRESSURE
21:24	402	0	7.1	90	BRINE	RATE AND PRESSURE
21:39	770	0	7.1	100	BRINE	RATE AND PRESSURE
21:49	1496	0	5.3	50	BRINE	RATE AND PRESSURE
23:59	2387	0	2.4	36	BRINE	BUMP PLUG
00:04	0	0	0	0	N/A	TEST FLOATS FLOATS HELD
00:15	4800	0	2	2	BRINE	PRESSURE UP CASEING TO 5000 PSI AND LOST PRESSURE TO 1648 PSI
00:29	722	0	1	2	BRINE	BLEEDS PRESSURE TO 722 AND 1.5 BBLS CAME BACK
00:50	1158	0	0	0	BRINE	SHUT IN HEAD AT 1158 PSI
01:00	0	0	0	0	N/A	TURNED OVER TO RIG

CEMENT JOB REPORT

PRESSURE/RATE DETAIL						EXPLANATION
TIME HR:MIN.	PRESSURE - PSI		RATE BPM	Bbl. FLUID PUMPED	FLUID TYPE	SAFETY MEETING: BJ CREW [X] CO. REP. [X]
	PIPE	ANNULUS				TEST LINES 3500 PSI
						CIRCULATING WELL - RIG [X] BJ [ ]
00:00	0	0	0	0	N/A	TOP OF TAIL @ 8164.8 FT

BUMPED PLUG	PSI TO BUMP PLUG	TEST FLOAT EQUIP.	BBL.CMT RETURNS/ REVERSED	TOTAL BBL. PUMPED	PSI LEFT ON CSG	SPOT TOP OUT CEMENT	SERVICE SUPERVISOR SIGNATURE:
[Y] N	2387	[Y] N	0	674	1158	Y [N]	

OCCIDENTAL WILLISTON

DAILY OPERATIONS REPORT

Event:	DEV DRILLING	KUDRNA 1-17		Date:	06/20/2011
Prim. Reason:	ORIG DRILL VERT	USA		Report No:	44

Wellbore / Top MD:	00 / 0 ft	Rig:	PRECISION 426	Ref Datum:	ORIGINAL KB @2,561.90ft	DFS:	23.19
Today's MD:	6635 ft	Progress:	0 ft	Ground Elev:	2,529.00 ft	Daily Cost:	$163,494
Prev MD:	6635 ft	Rot Hrs Today:	0.00 hr	AFE MD/Days:	13,238.0 / 25.0 days	Cum Cost:	$3,177,168
PBMD:		Avg ROP Today:	0.0 ft/hr	AFE Number:	1117289#0102	AFE Cost:	$2,806,275

Current Formation: @ **Lithology:**

Current Ops:

24-Hr Summary: RAN 9.625 CASING TO TD @6635 WITHOUT ANY HOLE PROBLEMS, CIRC & COND PRIOR TO CEMENTING W/BJ SERVICES, SAFETY MEE

24-Hr Forecast: NIPPLE DOWN AND RAISE STACK TO SET SLIPS ON CASING, LAND CASING AND INSTALL WELL HEAD, NIPPLE UP AND TEST BOP'S, P/U

CASING/WELL CONTROL		HOOKLOAD & TORQUE		HYDRAULICS		MUD GAS	Avg	Max
Last Casing:	9.625in @ 6,635ft	Str Wt Up/Dn:	/	Pump Rate:	0.0 gpm	Conn:		
Next Casing:	5.500in @ 13,238ft	Str Wt Rot:		Pump Press:	0	Trip:		
Last BOP Press Test:	06/05/2011	Torq Off Btm:				Backgr:		
Form Test/EMW:	LOT / 15.87 ppg	Torq On Btm:						

PERSONNEL	
Supervisor 1:	JAMES HILEMAN
Supervisor 2:	AL LUNDA
Engineer:	PIERRE CASTRO
Geologist:	DALE WALKER
Oxy Personnel:	2
Contractor Personnel:	22
Total on Site:	24

SURVEY DATA (LAST 6)

MD	Incl	Azi	TVD	N/-S	E/-W	VS	DLS	Build
6,573.0	13.75	228.06	6,404.89	-626.1	-975.3	-626.1	0.70	-0.56
6,511.0	14.10	229.14	6,344.71	-616.2	-964.1	-616.2	0.70	-0.54
6,281.0	15.34	233.24	6,122.26	-579.7	-918.6	-579.7	0.15	-0.13
6,233.0	15.40	233.38	6,075.98	-572.1	-908.4	-572.1	1.00	-0.76
6,188.0	15.74	234.49	6,032.63	-565.0	-898.6	-565.0	1.49	-1.36
6,124.0	16.61	235.87	5,971.16	-554.8	-884.0	-554.8	1.46	-1.42

BIT RECORD

Bit No	Size	Manufacturer	Model	Serial No	IADC Code	Nozzles	MD In	MD Out	I-O-D-L	B-G-O-R
5RR4	12.250	SECURITY DBS	FX 65M	11650822	M223	6x13	6207	6635	1-1-WT-A	1-1-WT-BHA

BIT OPERATING PARAMETERS TODAY

Bit No	Rot Hrs	Cum Rot Hrs	Prog	Cum Prog	ROP	Cum ROP	WOB min/max	RPM min/max	TFA	P Drop Bit	Noz Vel	HHPSI

MUD DATA - NEWPARK-AVA

Engineer:	STEVE BROWN	MBT:	
Sample From:	PIT	pH:	
Mud Type:	DIESEL OBM	Pm / Pom:	1.00
Time / MD:	8:00 / 6,635.0	Pf / Mf:	/
Density @ Temp:	10.10 / 80	Chlorides:	
Rheology Temp:	120	Ca+ / K+:	/
Viscosity:	74.00	CaCl2:	
PV / YP:	22 / 10	Clom:	
Gels 10s/10m/30m:	6 / 10 / 12	Lime:	4.14
API WL:		ES:	637.00
HTHP WL:	22.00	ECD:	10.10
Cake API / HTHP:	2.0 /	n / K:	/
Solids / Sol Corr:	15.00 / 13.00	Carbonate:	
Oil / Water:	69.0 / 16.0	Bicarbonate:	
Sand:		Form Loss:	0.0 / 69.0
Water Added:		Fluid Disch:	/
Oil Added:		Daily Mud Cost:	$350
LGS:	7.80 / 70.54	Cum Mud Cost:	$40,828

VG Meter: 3@3 / 4@6 / 13@100 / 21@200 / 32@300 / 54@600

Comments:

MUD PRODUCTS

Product	Units	Qty Used
Engineering (24-hr)	ea	1.00

LAST OR CURRENT BHA

BHA No: 5 Bit No: 5RR4 MD In: 6207 ft

Purpose: COMPLETE DROP BACK IN VERTICAL 12.25" MD Out: 6635 ft

Component	OD	ID	Jts	Length
PDC BIT	12.250	3.500	1	1.10
BENT HOUSING	8.500	3.000	1	29.07
ORIENTING SUB	8.050	3.125	1	4.26
NON-MAG DRILL COLLAR	7.900	3.250	1	30.02
NON-MAG DRILL COLLAR	7.940	3.250	1	30.55
CROSSOVER	6.750	2.780	1	4.05
HWDP	5.000	2.870	45	1,361.15

Total Length: 1,460.20 ft **Wt below Jars:**

DAILY COSTS (Top 15)

Cost Description	Vendor	Amount
Cementing	BJ SERVICES COMPANY USA	$55,882
Miscellaneous Services	WYOMING CASING SERVICE	$27,787
Rig Work	PRECISION DRILLING COMPA	$21,150
HES & Industrial Waste Hndlg	POWER FUELS	$10,362
Directional Drilling & LWD	WEATHERFORD	$7,582
Location & Roads + Maintenance		$4,938
Rental Downhole Eqpmnt & Tools	QUAIL TOOLS LLP	$4,310
Drilling & Completion Fluids	NEWPARK DRILLING FLUIDS	$4,199
Miscellaneous Services	PEAK ENERGY SERVICES US	$3,395
Location & Roads + Maintenance		$2,948
Direct Supervision	EXPERT E&P CONSULTING LL	$2,533
Direct Supervision	DRILLTECH INC	$2,532
Mud Logging	NESET CONSULTING SERVIC	$2,500
Rental Downhole Eqpmnt & Tools	WEATHERFORD	$2,414
Rental Surface Eqpmnt & Tools	WEATHERFORD	$1,400

OCCIDENTAL WILLISTON

DAILY OPERATIONS REPORT

Event: DEV DRILLING
Prim. Reason: ORIG DRILL VERT

KUDRNA 1-17
USA

Date: 06/20/2011
Report No: 44

OPERATIONS

From	To	Hrs	Op Phase	Op Code	Op Sub	Op Type	Operation Details
0:00	13:00	13.00	21INDR	CSG	RUNCSG	P	RUN 9 5/8" CASING.MADE UP SHOE TRACK AND TESTED FLOATS. RAN CASING TO TD AT 6635'. NO HOLE PROBLEMS. ALL CASING IS 9 5/8", 53.50 PPF, L-80. TOTAL JOINTS RAN WAS 148, TOTAL DELIVERED TO RIG WAS 198. THERE IS 42 JOINT OF 9 5/8" , 47PPF, L-80 CASING STORED AT H&P 325. THAT ARE NOT INCLUDED IN THE 198 JOINTS 53.50 PPF PIPE.
13:00	15:00	2.00	21INDR	CIRC	CNDHOL	P	CIRCULATED TWO BOTTOMS UP AND RECIPROCATED PIPE.
15:00	16:30	1.50	21INDR	CMT	RIGUP	P	RIGGED DOWN CASING FILL & CIRCULATING TOOL, RIGGED UP "BJ" CEMENTING HEAD. HELD PJSM WITH ALL CREWS ON CEMENT JOB.
16:30	17:30	1.00	21INDR	CMT	RIGUP	P	TESTED LINES TO 4000 PSI.. STARTED PUMPING SPACERS, THE "BJ" ADAPTER, BETWEEN CASING AND CEMENTING HEAD LEAKED, UNABLE TO EFFECT REPAIRS.
17:30	18:30	1.00	21INDR	CMT	RIGUP	P	REMOVED THE CEMENT HEAD AND TIGHTEN THE ADAPTER. INSTALLED THE CEMENT HEAD AND LINES. RETESTED THE LINES TO 4000 PSI.
18:30	21:30	3.00	21INDR	CMT	PRIM	P	START CEMENT OPERATIONS: PUMP 50 BBL OF SPACERS,20 BBLS FRESH WATER,20 BBLS SURFACTANT WASH,10 BBL FRESH WATER SPACER: PRIMARY CEMENT JOB= 392 BBL LEAD SLURRY @ 12 PPG, 910 SACKS OF PREMIUM LITE CEMENT W/ .08%SF+5CSE+8%R3+3%PC+.25CF+3K+.6%52+6%B=.3%S. FOLLOW WITH 107.9 BBL TAIL SLURRY @ 15.6 PPG, 501 SACKS OF CLASS G CEMENT W/ .08%SF+.3%R3+3%PC+.125CF+3#KS+.2%SMS+.9%32+.8%52. DISPLACE W/ 437 BBLS OBM, 24.3 BBLS SURFACTANT WASH, 40 BBLS FRESH WATER. YIELD ON LEAD SLURRY=2.42 YIELD ON TAIL SLURRY=1.21 BUMPED PLUG @750 PSI INCREASE TO 1727 PSI AND HOLD FOR 5 MIN. BLEED OFF PSI AND CHECK FLOATS, OK. CEMENT IN PLACE @21:30 HRS APPROXIMATELY 80 BBLS EXCESS CEMENT BACK TOP OF TAIL @4840' SHOE @ 6635' FLOAT COLLAR @ 6541'
21:30	0:00	2.50	21INDR	CMT	RIGUP	P	RIG DOWN BJ CEMENTERS AND RELEASE EQUIPMENT ON LOCATION FOR CEMENT JOB,
Total Time		24.00					

Safety Incident?	N	**Days since Last RI:**		**Weather Comments:**
Environ Incident?	N	**Days since Last LTA:**	44.00	OVERCAST 50°

Incident Comments:
No incidents reported last 24 hours.

Other Remarks: NO ACCIDENTS / NO SPILLS JSA'S PRIOR TO ALL TASKS
JIMMY HILEMAN CELL NUMBER: 512.587.1147
ALLEN L LUNDA CELL NUMBER: 907-301-6065
OXY RIG OFFICE NUMBERS: 701-355-6902; 701-355-6852

OCCIDENTAL WILLISTON

DAILY OPERATIONS REPORT

KUDRNA 1-17

USA

Event:	DEV DRILLING	Date:	07/13/2011
Prim. Reason:	ORIG DRILL VERT	Report No:	67

Wellbore / Top MD:	00 / 0 ft	Rig:	PRECISION 426	Ref Datum:	ORIGINAL KB @2,561.90ft	DFS:	46.19
Today's MD:	13,260 ft	Progress:	0 ft	Ground Elev:	2,529.00 ft	Daily Cost:	$467,916
Prev MD:	13,260 ft	Rot Hrs Today:	0.00 hr	AFE MD/Days:	13,238.0 / 25.0 days	Cum Cost:	$5,987,527
PBMD:		Avg ROP Today:	0.0 ft/hr	AFE Number:	1117289#0102	AFE Cost:	$2,806,275
Current Formation:	@			Lithology:			
Current Ops:							
24-Hr Summary:	Completed running casing to 13260', set depth will be 13250'. Circulated 15.5 hours, while waiting on BJ equipment and crew.						
24-Hr Forecast:	Wait on cement. Raise BOP stack and set slips. Rough cut pipe and flange up BOP with 6 bolts. Start rig down.						

CASING/WELL CONTROL		HOOKLOAD & TORQUE		HYDRAULICS		MUD GAS	Avg	Max
Last Casing:	5.500in @ 13,250ft	Str Wt Up/Dn:	/	Pump Rate:	0.0 gpm	Conn:		
Next Casing:	5.500in @ 13,238ft	Str Wt Rot:		Pump Press:	0	Trip:		
Last BOP Press Test:	06/21/2011	Torq Off Btm:				Backgr:		
Form Test/EMW:	FIT / 16.85 ppg	Torq On Btm:						

PERSONNEL	
Supervisor 1:	JIMMY HILEMAN
Supervisor 2:	AL LUNDA
Engineer:	PIERRE CASTRO
Geologist:	DALE WALKER
Oxy Personnel:	2
Contractor Personnel:	32
Total on Site:	34

SURVEY DATA (LAST 6)

MD	Incl	Azi	TVD	N/-S	E/-W	VS	DLS	Build
13,203.0	0.60	296.66	13,026.69	-620.5	-951.7	-620.5	0.15	0.14
13,138.0	0.51	292.87	12,961.69	-620.8	-951.2	-620.8	0.28	-0.05
13,043.0	0.56	264.76	12,866.69	-620.9	-950.3	-620.9	0.31	-0.11
12,950.0	0.66	290.67	12,773.70	-621.1	-949.4	-621.1	0.34	0.03
12,857.0	0.63	262.54	12,680.70	-621.2	-948.4	-621.2	0.03	-0.03
12,764.0	0.66	262.21	12,587.71	-621.0	-947.3	-621.0	0.33	-0.27

BIT RECORD

Bit No	Size	Manufacturer	Model	Serial No	IADC Code	Nozzles	MD In	MD Out	I-O-D-L	B-G-O-R
									- -	- -

BIT OPERATING PARAMETERS TODAY

Bit No	Rot Hrs	Cum Rot Hrs	Prog	Cum Prog	ROP	Cum ROP	WOB min/max	RPM min/max	TFA	P Drop Bit	Noz Vel	HHPSI

MUD DATA - NEWPARK-AVA

Engineer:	STEVE BROWN	MBT:	
Sample From:	OUT	pH:	
Mud Type:	DIESEL OBM	Pm / Pom:	3.20
Time / MD:	5:00 / 13,260.0	Pf / Mf:	/
Density @ Temp:	10.30 / 105	Chlorides:	
Rheology Temp:	150	Ca+ / K+:	/
Viscosity:	68.00	CaCl2:	
PV / YP:	31 / 9	Clom:	
Gels 10s/10m/30m:	9 / 15 / 17	Lime:	4.14
API WL:		ES:	783.00
HTHP WL:	18.00	ECD:	10.30
Cake API / HTHP:	/ 2.0	n / K:	/
Solids / Sol Corr:	14.00 / 12.80	Carbonate:	
Oil / Water:	73.0 / 13.0	Bicarbonate:	
Sand:		Form Loss:	0.0 / 478.7
Water Added:		Fluid Disch:	/
Oil Added:		Daily Mud Cost:	$350
LGS:	4.90 / 44.21	Cum Mud Cost:	$135,165

VG Meter: 7@3 / 7@6 / 21@100 / 34@200 / 40@300 / 71@600

Comments:

LAST OR CURRENT BHA

Component	OD	ID	Jts	Length

MUD PRODUCTS

Product	Units	Qty Used
Engineering (24-hr)	ea	1.00

DAILY COSTS (Top 15)

Cost Description	Vendor	Amount
Casing & Accessories		$301,200
Cementing	BJ SERVICES COMPANY USA	$60,100
Miscellaneous Services	WYOMING CASING SERVICE I	$32,700
Rig Work	PRECISION DRILLING COMPA	$21,375
Bits, Reamers, Scrapers, HOs	BAKER HUGHES	$11,500
Miscellaneous Services	WYOMING CASING SERVICE I	$11,260
Casing & Accessories	WEATHERFORD	$5,370
Rental Downhole Eqpmnt & Tools	QUAIL TOOLS LLP	$4,310
Miscellaneous Services	PEAK ENERGY SERVICES US	$3,395
Direct Supervision	DRILTEK	$2,533
Direct Supervision	EXPERT E&P CONSULTING LL	$2,533
Rental Downhole Eqpmnt & Tools	WEATHERFORD	$2,414
Rental Downhole Eqpmnt & Tools	QUAIL TOOLS LLP	$1,795
Rental Surface Eqpmnt & Tools	WEATHERFORD	$1,400
Communications & IT	PASON SYSTEMS USA CORP	$625

OCCIDENTAL WILLISTON

DAILY OPERATIONS REPORT

KUDRNA 1-17
USA

Event: DEV DRILLING
Prim. Reason: ORIG DRILL VERT

Date: 07/13/2011
Report No: 67

OPERATIONS

From	To	Hrs	Op Phase	Op Code	Op Sub	Op Type	Operation Details
0:00	1:30	1.50	31PRRC	CSG	RUNCSG	P	CONTINUE RIH W/ 5.5" PRODUCTION CASING, TAG @ 13260' W/ 156 JTS OF 23# (HC L-80) AND 153 JTS OF 20# (L- 80). ALL PIPE WAS LT&C, EXCEPT 8 JOINTS WERE BTC, AND WE RAN TWO CROSS OVER JOINTS. TOTAL PIPE DELIVERED TO RIG WAS 318 JOINTS. (13588.25')
1:30	9:00	7.50	31PRRC	WAIT	WOEQ	PT	CIRCULATE AND CONDITION HOLE AND FLUID FOR CEMENT JOB @ 3BBL/MIN W/350 PSI. THE "BJ" CEMENTERS ARE DELAYED,THEIR EQUIPMENT IS ON OTHER JOBS. THE CURRENT E.T.A. IS 10 AM, THEY ARE GOING TO UPDATE US AT 8 AM.
9:00	14:00	5.00	31PRRC	WAIT	WOEQ	PT	NEW E.T.A. FOR CEMENT TRUCKS IS 1400 HRS. INCREASE CIRCULATING RATE FROM 3 BPM TO 5 BPM. FOR ONE BOTTOMS UP, THEN REDUCED RATE BACK TO 3 BPM.
14:00	17:00	3.00	31PRRC	WAIT	WOEQ	PT	NEW E.T.A., 1800 HRS. CONTINUE CIRCULATING AT 3 BPM. PIPE STILL FREE. BJ CEMENTERS ARRIVED AT RIG AT 1700 HRS. SPOTTED TRUCKS. HELD PJSM ON RIGGING UP.
17:00	21:00	4.00	31PRRC	SRFEQ	RIGUP	PT	SPOT BJ CEMENTERS EQUIPMENT, RIG UP CEMENT HEAD AND CEMENT LINES, MONITOR ANNULUS ON TRIP TANK WHILE RIGGING UP, TRANSFER FLUID FROM PITS TO STOCK TANKS TO MAKE ROOM FOR DISPLACEMENT, HOLD PJSM WITH ALL INVOLVED IN CEMENT JOB
21:00	0:00	3.00	31PRRC	CMT	PRIM	P	START CEMENTING @ 21:00 HRS , CEMENT IN PLACE @ 00:00 HRS,BTTM PLUG PRELOADED, PUMP 2 BBLS H2O, TEST LINES TO 5500 PSI-OK, CONTINUE W/SPACER COMPRISED OF 50 BBLS BJ SEALBOND+ 2 GAL/BBL US-2 + 141 LBS/BBL BARITE, BULK +3 GAL/BBL SS-2 @ 11 PPG. FOLLOW W/ LEAD SLURRY 1210 CU-FT 2.42 CU/FT PER SACK = 500 SX PREMIUM LITE CEMENT+.08% BWOC STATIC FREE+ 5 LBS/SX CSE + .5% BWOC R-3+ 3% BWOW POTASSIUM CHLORIDE+ 3LBS/SX KOL SEAL + .8% BWOC FL-52 + 6%BWOC BENTONITE + .3% BWOC SODIUM METASILICATE + 129% FRESH WATER. FOLLOW WITH TAIL SLURRY 630 CU-FT 1.58 CU/FT PER SACK=400 SX CLASS G CEMENT + .08% BWOC STATIC FREE + .4% BWOC R-3 +.3% BWOC CD-32 + 3 LBS/SX KOL SEAL + .8% BWOC FL-52 + .2%BWOC SODIUM METASILICATE + 35% BWOC SILICA SAND, 100 MESH, SACKED + 55.7% FRESH WATER. KICK OUT TOP PLUG AND PUMP 10 BBLS FRESH WATER @ 8.34 PPG AND DISPLACE W/BRINE WATER @ 10.2 PPG. BUMP PLUG W/2387 PSI. CHECK FLOATS OK. CIP @ 00:00 HRS
Total Time		24.00					

Safety Incident?	N	**Days since Last RI:**		**Weather Comments:**
Environ Incident?	N	**Days since Last LTA:**	67.00	LIGHT RAIN 63°

Incident Comments:
No incidents reported last 24 hours. Talk about traffic around location and high pressure lines.

Other Remarks: JSA'S PRIOR TO ALL TASKS ,
JAMES HILEMAN CELL NUMBER: 512-587-1147
AL LUNDA CELL NUMBER: 907.301.6065
OXY RIG OFFICE NUMBERS: 701-355-6902; 701-355-6852

Oil and Gas Division

20659

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

October 11, 2011

ELIZABETH BUSH-IVIE
OXY USA INC
Mid-Continent Business Unit,
5 Greenway Plaza, Suite 110
HOUSTON, TX 77046

RE: KUDRNA 1-17
SWSE 17-141N-97W
DUNN COUNTY
WELL FILE NO. 20659

Dear Elizabeth:

After reviewing the Cement Bond Log run on the above referenced well September 25, 2011, it has been determined remedial cement work will be required. The top of cement behind the 7 inch casing string as picked from the Cement Bond Log is at a depth of 7417 feet. The North Dakota Administrative Code Section 43-02-03-21 requires that sufficient cement be used to isolate above the upper most sand within the Dakota Group.

We are concerned that the PERMIAN-MINNEKAHTA FM - 7357', CRETACEOUS-INYAN KARA FM. - 5648' are not isolated with cement. **Prior to stimulating the well, OXY USA INC must submit a Form 4 Sundry, detailing OXY USA INC's plans for this remedial cement work, and receive NDIC approval.**

Until a sundry notice is approved and the remedial work is completed, the stipulations below must be followed:

1. The surface - production casing annulus must be continuously monitored with an accurate pressure gauge.
2. The pressure gauge must not be any higher than a 300-psi gauge.
3. All valves installed on the annulus must be exposed to the surface; burial will be allowed only in the presence of an NDIC Oil and Gas Division Inspector.
4. Any pressure development on the annulus must be immediately reported to the Oil and Gas Division.

If you have any questions, do not hesitate to contact me.

Sincerely,

Richard A. Suggs
Geologist

rwh/ras

9251 E 104th Ave.
Commerce City, CO 80640
(303) 439-5500

SUB-SURFACE
SURVEY CERTIFICATION REPORT

Oxy		**May 30, 2011**
Company		Date
	Kudma 1-17	**Dunn, ND**
Lease		County/State

Survey Depths	**198**	to	**2049**	ft
Type of Survey	**Measurements While Drilling (MWD)**			
Survey Depths				ft
Type of Survey				
Survey Depths		to		ft
Type of Survey				
Site Supervisor	**Jeromy Haggerty**			

The data submitted in this report conforms to the standards and procedures as set forth by Schlumberger. This report represents a true and correct directional wellbore survey based on original survey data obtained at the well site.

Jing Jing Huang
DEC Engineer

Kudma 1-17 MWD 0' to 2049' Survey Report

(Non-Def Survey)

Report Date:	May 30, 2011 - 08:04 PM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	Oxy	**Vertical Section Azimuth:**	0.000 ° (True North)
Field:	ND, Dunn County (NAD 83 SZ) 2011	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Oxy (Kudma 1-17) / Oxy (Kudma 1-17)	**TVD Reference Datum:**	RKB
Well:	Kudma 1-17	**TVD Reference Elevation:**	2561.900 ft above Unknown
Borehole:	Original Hole	**Seabed / Ground Elevation:**	2529.000 ft above Unknown
UWI / API#:	Unknown / Unknown	**Magnetic Declination:**	8.298 °
Survey Name:	Kudma 1-17 MWD 0' to 2049'	**Total Field Strength:**	56339.999 nT
Survey Date:	May 30, 2011	**Magnetic Dip Angle:**	72.441 °
Tort / AHD / DDI / ERD Ratio:	5.213 ° / 12.776 ft / 1.824 / 0.006	**Declination Date:**	May 30, 2011
Coordinate Reference System:	NAD83 North Dakota State Plane, Southern Zone, US Feet	**Magnetic Declination Model:**	BGGM 2010
Location Lat / Long:	N 47° 1' 28.92000", W 102° 59' 53.88000"	**North Reference:**	True North
Location Grid N/E Y/X:	N 505167.387 ftUS, E 1345535.491 ftUS	**Grid Convergence Used:**	0.000 °
CRS Grid Convergence Angle:	-1.82221655 °	**Total Corr Mag North->True North:**	8.298 °
Grid Scale Factor:	0.99994134	**Local Coord Referenced To:**	Structure Reference Point

Comments	MD (ft)	Incl (°)	Azim True (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
Surface	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	505167.39	1345535.49	N 47 1 28.92	W 102 59 53.88
Begin Extreme Survey	198.00	0.18	221.52	198.00	-0.23	-0.23	-0.21	0.09	505167.16	1345535.28	N 47 1 28.92	W 102 59 53.88
	290.00	0.44	222.22	290.00	-0.60	-0.60	-0.54	0.28	505166.80	1345534.93	N 47 1 28.91	W 102 59 53.89
	379.00	0.18	195.77	379.00	-0.99	-0.99	-0.81	0.33	505166.42	1345534.65	N 47 1 28.91	W 102 59 53.89
	474.00	0.26	302.91	474.00	-1.02	-1.02	-1.03	0.38	505166.40	1345534.43	N 47 1 28.91	W 102 59 53.89
	562.00	0.26	240.24	562.00	-1.01	-1.01	-1.37	0.31	505166.42	1345534.09	N 47 1 28.91	W 102 59 53.90
	655.00	0.44	219.50	654.99	-1.39	-1.39	-1.78	0.23	505166.06	1345533.67	N 47 1 28.91	W 102 59 53.91
	744.00	0.60	250.90	743.99	-1.80	-1.80	-2.44	0.36	505165.66	1345533.00	N 47 1 28.90	W 102 59 53.92
	835.00	0.44	263.18	834.99	-2.00	-2.00	-3.23	0.21	505165.49	1345532.19	N 47 1 28.90	W 102 59 53.93
	1024.00	0.18	201.92	1023.98	-2.36	-2.36	-4.07	0.20	505165.15	1345531.35	N 47 1 28.90	W 102 59 53.94
	1117.00	0.44	172.92	1116.98	-2.85	-2.85	-4.08	0.32	505164.67	1345531.33	N 47 1 28.89	W 102 59 53.94
	1233.00	0.40	133.70	1232.98	-3.57	-3.57	-3.73	0.25	505163.93	1345531.65	N 47 1 28.88	W 102 59 53.93
	1304.00	0.50	124.10	1303.98	-3.92	-3.92	-3.29	0.18	505163.57	1345532.07	N 47 1 28.88	W 102 59 53.93
	1398.00	0.60	155.30	1397.97	-4.60	-4.60	-2.75	0.33	505162.88	1345532.60	N 47 1 28.87	W 102 59 53.92
	1494.00	0.50	160.70	1493.97	-5.45	-5.45	-2.40	0.12	505162.02	1345532.92	N 47 1 28.87	W 102 59 53.91
	1585.00	0.00	313.70	1584.97	-5.82	-5.82	-2.27	0.55	505161.64	1345533.04	N 47 1 28.86	W 102 59 53.91
	1680.00	0.20	14.00	1679.97	-5.66	-5.66	-2.23	0.21	505161.80	1345533.08	N 47 1 28.86	W 102 59 53.91
	1773.00	0.50	330.50	1772.97	-5.15	-5.15	-2.39	0.41	505162.31	1345532.94	N 47 1 28.87	W 102 59 53.91
	1862.00	0.60	318.80	1861.96	-4.46	-4.46	-2.89	0.17	505163.02	1345532.46	N 47 1 28.88	W 102 59 53.92
	1956.00	0.60	335.70	1955.96	-3.64	-3.64	-3.41	0.19	505163.85	1345531.96	N 47 1 28.88	W 102 59 53.93
Last Extreme Survey	2049.00	0.80	334.50	2048.95	-2.61	-2.61	-3.89	0.22	505164.90	1345531.52	N 47 1 28.89	W 102 59 53.94

Survey Type: Non-Def Survey

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma

Survey Program:

MD From (ft)	MD To (ft)	EOU Freq (ft)	Survey Tool Type	Borehole / Survey
0.000	32.900	Act Stns	SLB_MWD-STD-Depth Only	Original Hole / Kudma 1-17 MWD 0' to 2049'
32.900	2049.000	Act Stns	SLB_MWD-STD	Original Hole / Kudma 1-17 MWD 0' to 2049'

Weatherford International Ltd.
2000 Oil Drive
Casper, WY 82604
Tel. 307-268-7900 Fax 307-235-3958

North Dakota Industrial Commission
Department of Mineral Resources
Oil & Gas Division
600 East Boulevard Avenue
Department 405
Bismarck, ND 58505-0840

Date: September 18, 2012

Attention: JARED THUNE

re: OXY USA
KUDRNA 1-17
DUNN COUNTY, ND

Attached to this letter is a copy of the surveys taken by Precision Energy Services, a Weatherford International Ltd. company, MWD equipment on the subject well. The surveys from 2242' to 13138.00' MD represent, to the best of our knowledge, a true and accurate survey of the wellbore at the time the survey was run

Jeremy Underwood
Well Planning Department

Cc:

Weatherford International Ltd.

Survey Report

Company:	OXY USA	**Local Co-ordinate Reference:**	Site KUDRNA 1-17
Project:	DUNN COUNTY, ND	**TVD Reference:**	WELL @ 2559.90ft (PRECISION 426)
Site:	KUDRNA 1-17	**MD Reference:**	WELL @ 2559.90ft (PRECISION 426)
Well:	KUDRNA 1-17	**North Reference:**	True
Wellbore:	KUDRNA 1-17	**Survey Calculation Method:**	Minimum Curvature
Design:	KUDRNA 1-17	**Database:**	EDM 2003.21 Single User Db

Project DUNN COUNTY, ND

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

Site KUDRNA 1-17

Site Position:		**Northing:**	505,165.10 ft	**Latitude:**	47° 1' 28.900 N
From:	Lat/Long	**Easting:**	1,345,543.74 ft	**Longitude:**	102° 59' 53.760 W
Position Uncertainty:	0.00 ft	**Slot Radius:**	"	**Grid Convergence:**	-1.82 °

Well KUDRNA 1-17

Well Position	**+N/-S**	0.00 ft	**Northing:**	505,165.10 ft	**Latitude:**	47° 1' 28.900 N
	+E/-W	0.00 ft	**Easting:**	1,345,543.74 ft	**Longitude:**	102° 59' 53.760 W
Position Uncertainty		0.00 ft	**Wellhead Elevation:**	ft	**Ground Level:**	2,529.00 ft

Wellbore KUDRNA 1-17

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2010	5/9/2011	8.30	72.44	56,347

Design KUDRNA 1-17

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	236.92

Survey Program **Date** 7/12/2011

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
2,049.00	13,203.00	Survey #1 (KUDRNA 1-17)	MWD	MWD - Standard

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)
2,049.00	0.80	334.50	2,048.95	-2.61	-3.89	4.68	0.00	0.00	0.00
2,242.00	0.69	39.49	2,241.94	-0.50	-3.73	3.40	0.42	-0.06	33.67
2,336.00	0.73	272.71	2,335.93	-0.03	-3.97	3.34	1.35	0.04	-134.87
2,368.00	1.39	251.13	2,367.93	-0.15	-4.54	3.88	2.38	2.06	-67.44
2,399.00	2.90	246.56	2,398.91	-0.58	-5.62	5.02	4.90	4.87	-14.74
2,431.00	4.35	244.97	2,430.84	-1.42	-7.46	7.02	4.54	4.53	-4.97
2,463.00	6.00	245.13	2,462.71	-2.63	-10.07	9.88	5.16	5.16	0.50
2,494.00	6.99	244.32	2,493.51	-4.13	-13.24	13.35	3.21	3.19	-2.61
2,524.00	7.79	242.44	2,523.26	-5.86	-16.69	17.19	2.79	2.67	-6.27
2,555.00	8.54	239.73	2,553.95	-8.00	-20.54	21.58	2.72	2.42	-8.74
2,587.00	8.87	240.27	2,585.58	-10.42	-24.74	26.41	1.06	1.03	1.69
2,617.00	9.52	238.86	2,615.19	-12.85	-28.87	31.20	2.29	2.17	-4.70
2,649.00	10.13	240.07	2,646.72	-15.62	-33.57	36.66	2.01	1.91	3.78

Company:	OXY USA	**Local Co-ordinate Reference:**	Site KUDRNA 1-17
Project:	DUNN COUNTY, ND	**TVD Reference:**	WELL @ 2559.90ft (PRECISION 426)
Site:	KUDRNA 1-17	**MD Reference:**	WELL @ 2559.90ft (PRECISION 426)
Well:	KUDRNA 1-17	**North Reference:**	True
Wellbore:	KUDRNA 1-17	**Survey Calculation Method:**	Minimum Curvature
Design:	KUDRNA 1-17	**Database:**	EDM 2003.21 Single User Db

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)
2,681.00	10.84	240.67	2,678.19	-18.50	-38.64	42.47	2.24	2.22	1.88
2,712.00	11.35	240.71	2,708.61	-21.42	-43.84	48.42	1.65	1.65	0.13
2,743.00	12.24	240.07	2,738.95	-24.55	-49.35	54.75	2.90	2.87	-2.06
2,773.00	13.04	240.37	2,768.23	-27.81	-55.04	61.30	2.68	2.67	1.00
2,804.00	14.23	238.86	2,798.35	-31.51	-61.35	68.60	4.01	3.84	-4.87
2,835.00	15.13	238.78	2,828.34	-35.58	-68.07	76.45	2.90	2.90	-0.26
2,867.00	16.28	238.39	2,859.14	-40.09	-75.46	85.11	3.61	3.59	-1.22
2,899.00	17.25	238.06	2,889.78	-44.95	-83.30	94.34	3.05	3.03	-1.03
2,931.00	17.59	238.37	2,920.32	-50.00	-91.45	103.92	1.10	1.06	0.97
2,962.00	17.89	238.18	2,949.84	-54.97	-99.48	113.36	0.99	0.97	-0.61
2,994.00	18.31	238.12	2,980.26	-60.21	-107.93	123.30	1.31	1.31	-0.19
3,088.00	19.19	238.50	3,069.27	-76.08	-133.64	153.50	0.95	0.94	0.40
3,182.00	19.56	238.64	3,157.95	-92.35	-160.25	184.68	0.40	0.39	0.15
3,272.00	19.32	236.83	3,242.82	-108.33	-185.57	214.62	0.72	-0.27	-2.01
3,367.00	19.17	237.47	3,332.51	-125.32	-211.88	245.93	0.27	-0.16	0.67
3,462.00	17.79	236.81	3,422.61	-141.65	-237.18	276.05	1.47	-1.45	-0.69
3,556.00	16.42	236.82	3,512.45	-156.78	-260.31	303.69	1.46	-1.46	0.01
3,649.00	16.33	237.62	3,601.67	-170.98	-282.36	329.91	0.26	-0.10	0.86
3,744.00	16.30	238.93	3,692.85	-185.01	-305.05	356.59	0.39	-0.03	1.38
3,837.00	16.92	238.52	3,781.97	-198.81	-327.77	383.16	0.68	0.67	-0.44
3,930.00	16.76	235.20	3,870.98	-213.53	-350.33	410.09	1.05	-0.17	-3.57
4,024.00	15.66	232.11	3,961.24	-229.06	-371.47	436.28	1.49	-1.17	-3.29
4,120.00	16.24	236.84	4,053.55	-244.36	-392.93	462.62	1.48	0.60	4.93
4,213.00	16.80	240.95	4,142.72	-258.00	-415.57	489.03	1.39	0.60	4.42
4,308.00	16.46	237.29	4,233.75	-271.94	-438.90	516.18	1.16	-0.36	-3.85
4,402.00	17.10	235.92	4,323.74	-286.88	-461.55	543.32	0.80	0.68	-1.46
4,494.00	16.73	235.10	4,411.76	-302.04	-483.61	570.08	0.48	-0.40	-0.89
4,585.00	16.16	235.46	4,499.04	-316.71	-504.79	595.83	0.64	-0.63	0.40
4,676.00	17.06	239.19	4,586.24	-330.73	-526.68	621.83	1.53	0.99	4.10
4,770.00	16.85	233.98	4,676.16	-345.80	-549.55	649.21	1.63	-0.22	-5.54
4,865.00	16.68	234.27	4,767.13	-361.86	-571.75	676.58	0.20	-0.18	0.31
4,959.00	15.96	236.73	4,857.34	-376.83	-593.51	702.98	1.06	-0.77	2.62
5,053.00	15.94	238.15	4,947.72	-390.73	-615.28	728.81	0.42	-0.02	1.51
5,149.00	16.36	236.31	5,039.93	-405.19	-637.72	755.51	0.69	0.44	-1.92
5,243.00	15.98	236.19	5,130.21	-419.73	-659.49	781.69	0.41	-0.40	-0.13
5,335.00	15.83	236.69	5,218.69	-433.67	-680.50	806.90	0.22	-0.16	0.54
5,429.00	15.64	236.62	5,309.17	-447.68	-701.79	832.39	0.20	-0.20	-0.07
5,523.00	16.60	238.87	5,399.47	-461.59	-723.87	858.48	1.22	1.02	2.39
5,618.00	17.39	240.15	5,490.32	-475.68	-747.80	886.22	0.92	0.83	1.35
5,713.00	17.19	240.40	5,581.03	-489.68	-772.32	914.40	0.22	-0.21	0.26
5,810.00	18.36	241.31	5,673.40	-504.09	-798.18	943.94	1.24	1.21	0.94
5,906.00	19.87	241.29	5,764.10	-519.19	-825.76	975.29	1.57	1.57	-0.02
5,968.00	18.81	239.99	5,822.60	-529.25	-843.65	995.77	1.85	-1.71	-2.10
5,999.00	18.14	239.05	5,852.01	-534.23	-852.12	1,005.59	2.37	-2.16	-3.03
6,029.00	17.70	238.80	5,880.55	-538.99	-860.03	1,014.81	1.49	-1.47	-0.83
6,061.00	17.12	236.95	5,911.08	-544.08	-868.14	1,024.38	2.51	-1.81	-5.78
6,093.00	17.05	236.23	5,941.67	-549.26	-875.98	1,033.79	0.70	-0.22	-2.25
6,124.00	16.61	235.87	5,971.34	-554.27	-883.43	1,042.76	1.46	-1.42	-1.16
6,188.00	15.74	234.49	6,032.81	-564.44	-898.07	1,060.58	1.49	-1.36	-2.16
6,233.00	15.40	233.38	6,076.16	-571.55	-907.83	1,072.64	1.00	-0.76	-2.47
6,281.00	15.34	233.24	6,122.44	-579.16	-918.03	1,085.34	0.15	-0.13	-0.29
6,328.00	15.12	232.19	6,167.79	-586.63	-927.86	1,097.65	0.75	-0.47	-2.23
6,420.00	14.77	230.62	6,256.68	-601.43	-946.40	1,121.27	0.58	-0.38	-1.71
6,466.00	14.75	230.19	6,301.16	-608.90	-955.43	1,132.91	0.24	-0.04	-0.93

Company:	OXY USA	**Local Co-ordinate Reference:**	Site KUDRNA 1-17
Project:	DUNN COUNTY, ND	**TVD Reference:**	WELL @ 2559.90ft (PRECISION 426)
Site:	KUDRNA 1-17	**MD Reference:**	WELL @ 2559.90ft (PRECISION 426)
Well:	KUDRNA 1-17	**North Reference:**	True
Wellbore:	KUDRNA 1-17	**Survey Calculation Method:**	Minimum Curvature
Design:	KUDRNA 1-17	**Database:**	EDM 2003.21 Single User Db

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)
6,511.00	14.10	229.14	6,344.74	-616.15	-963.98	1,144.03	1.56	-1.44	-2.33
6,560.00	13.83	228.41	6,392.30	-623.95	-972.87	1,155.73	0.66	-0.55	-1.49
6,573.00	13.75	228.06	6,404.92	-626.01	-975.18	1,158.80	0.89	-0.62	-2.69
6,649.00	13.57	228.96	6,478.77	-637.90	-988.63	1,176.55	0.37	-0.24	1.18
6,681.00	12.47	227.27	6,509.95	-642.71	-994.00	1,183.68	3.64	-3.44	-5.28
6,713.00	10.72	226.82	6,541.29	-647.09	-998.70	1,190.01	5.48	-5.47	-1.41
6,745.00	8.89	225.86	6,572.82	-650.85	-1,002.65	1,195.37	5.74	-5.72	-3.00
6,776.00	7.43	228.64	6,603.51	-653.84	-1,005.87	1,199.70	4.88	-4.71	8.97
6,806.00	6.69	229.24	6,633.28	-656.27	-1,008.65	1,203.36	2.48	-2.47	2.00
6,838.00	6.40	229.71	6,665.07	-658.64	-1,011.43	1,206.97	0.92	-0.91	1.47
6,902.00	5.09	233.16	6,728.75	-662.64	-1,016.42	1,213.34	2.12	-2.05	5.39
6,933.00	4.15	233.15	6,759.65	-664.14	-1,018.42	1,215.84	3.03	-3.03	-0.03
6,964.00	2.87	225.58	6,790.59	-665.36	-1,019.87	1,217.72	4.38	-4.13	-24.42
6,996.00	1.50	217.82	6,822.57	-666.25	-1,020.70	1,218.90	4.37	-4.28	-24.25
7,028.00	0.56	155.25	6,854.56	-666.72	-1,020.89	1,219.32	4.18	-2.94	-195.53
7,124.00	3.68	70.21	6,950.49	-666.11	-1,017.79	1,216.38	3.83	3.25	-88.58
7,216.00	3.72	65.25	7,042.30	-663.86	-1,012.30	1,210.56	0.35	0.04	-5.39
7,310.00	3.10	63.56	7,136.14	-661.45	-1,007.26	1,205.02	0.67	-0.66	-1.80
7,588.00	3.17	54.38	7,413.72	-653.62	-994.28	1,189.87	0.18	0.03	-3.30
7,683.00	2.77	56.25	7,508.59	-650.82	-990.24	1,184.95	0.43	-0.42	1.97
7,775.00	3.43	56.48	7,600.46	-648.06	-986.09	1,179.98	0.72	0.72	0.25
7,871.00	3.36	54.99	7,696.29	-644.86	-981.39	1,174.29	0.12	-0.07	-1.55
7,963.00	3.48	58.05	7,788.13	-641.84	-976.82	1,168.81	0.24	0.13	3.33
8,059.00	3.34	51.27	7,883.96	-638.55	-972.16	1,163.11	0.44	-0.15	-7.06
8,152.00	3.15	50.85	7,976.81	-635.24	-968.07	1,157.87	0.21	-0.20	-0.45
8,340.00	2.54	52.89	8,164.58	-629.47	-960.74	1,148.58	0.33	-0.32	1.09
8,433.00	2.77	49.53	8,257.48	-626.76	-957.39	1,144.30	0.30	0.25	-3.61
8,525.00	2.59	37.86	8,349.38	-623.68	-954.42	1,140.13	0.62	-0.20	-12.68
8,619.00	2.31	42.51	8,443.29	-620.61	-951.84	1,136.29	0.37	-0.30	4.95
8,714.00	2.13	43.27	8,538.22	-617.91	-949.33	1,132.72	0.19	-0.19	0.80
8,808.00	1.93	35.29	8,632.16	-615.35	-947.22	1,129.55	0.37	-0.21	-8.49
8,899.00	1.98	40.16	8,723.11	-612.89	-945.32	1,126.62	0.19	0.05	5.35
8,996.00	1.53	41.74	8,820.06	-610.65	-943.38	1,123.76	0.47	-0.46	1.63
9,148.00	1.58	36.98	8,972.00	-607.46	-940.77	1,119.83	0.09	0.03	-3.13
9,184.00	1.38	41.77	9,007.99	-606.74	-940.18	1,118.95	0.65	-0.56	13.31
9,279.00	1.70	43.05	9,102.96	-604.86	-938.46	1,116.48	0.34	0.34	1.35
9,371.00	0.70	39.46	9,194.94	-603.42	-937.17	1,114.62	1.09	-1.09	-3.90
9,466.00	0.56	39.58	9,289.93	-602.62	-936.50	1,113.62	0.15	-0.15	0.13
9,559.00	0.58	44.09	9,382.93	-601.93	-935.89	1,112.73	0.05	0.02	4.85
9,651.00	0.58	29.75	9,474.92	-601.19	-935.33	1,111.86	0.16	0.00	-15.59
9,744.00	0.60	39.65	9,567.92	-600.41	-934.79	1,110.98	0.11	0.02	10.65
9,838.00	0.49	34.39	9,661.91	-599.70	-934.25	1,110.13	0.13	-0.12	-5.60
9,932.00	0.63	188.12	9,755.91	-599.88	-934.09	1,110.10	1.16	0.15	163.54
10,024.00	0.66	175.13	9,847.91	-600.91	-934.12	1,110.69	0.16	0.03	-14.12
10,116.00	0.73	184.41	9,939.90	-602.02	-934.12	1,111.29	0.14	0.08	10.09
10,212.00	0.63	189.08	10,035.89	-603.15	-934.25	1,112.02	0.12	-0.10	4.86
10,306.00	0.44	174.68	10,129.89	-604.02	-934.30	1,112.54	0.25	-0.20	-15.32
10,400.00	0.28	149.43	10,223.89	-604.58	-934.15	1,112.71	0.24	-0.17	-26.86
10,492.00	0.38	111.86	10,315.88	-604.88	-933.75	1,112.55	0.25	0.11	-40.84
10,584.00	0.36	106.91	10,407.88	-605.08	-933.19	1,112.19	0.04	-0.02	-5.38
10,678.00	0.31	141.26	10,501.88	-605.36	-932.75	1,111.97	0.22	-0.05	36.54
10,772.00	0.20	142.04	10,595.88	-605.69	-932.49	1,111.93	0.12	-0.12	0.83
10,867.00	0.16	259.31	10,690.88	-605.85	-932.52	1,112.04	0.32	-0.04	123.44
10,961.00	0.49	231.95	10,784.88	-606.12	-932.96	1,112.56	0.38	0.35	-29.11

Company:	OXY USA	**Local Co-ordinate Reference:**	Site KUDRNA 1-17
Project:	DUNN COUNTY, ND	**TVD Reference:**	WELL @ 2559.90ft (PRECISION 426)
Site:	KUDRNA 1-17	**MD Reference:**	WELL @ 2559.90ft (PRECISION 426)
Well:	KUDRNA 1-17	**North Reference:**	True
Wellbore:	KUDRNA 1-17	**Survey Calculation Method:**	Minimum Curvature
Design:	KUDRNA 1-17	**Database:**	EDM 2003.21 Single User Db

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
11,055.00	0.66	236.61	10,878.87	-606.67	-933.73	1,113.50	0.19	0.18	4.96
11,149.00	0.56	215.44	10,972.87	-607.34	-934.45	1,114.47	0.26	-0.11	-22.52
11,241.00	0.51	208.65	11,064.86	-608.06	-934.91	1,115.25	0.09	-0.05	-7.38
11,334.00	0.56	219.25	11,157.86	-608.78	-935.39	1,116.05	0.12	0.05	11.40
11,426.00	0.64	191.57	11,249.86	-609.63	-935.78	1,116.84	0.32	0.09	-30.09
11,521.00	0.84	195.99	11,344.85	-610.82	-936.08	1,117.74	0.22	0.21	4.65
11,615.00	0.75	205.65	11,438.84	-612.04	-936.53	1,118.79	0.17	-0.10	10.28
11,710.00	0.74	215.08	11,533.83	-613.10	-937.16	1,119.89	0.13	-0.01	9.93
11,803.00	0.69	221.85	11,626.82	-614.01	-937.87	1,120.98	0.11	-0.05	7.28
11,897.00	0.22	172.44	11,720.82	-614.61	-938.23	1,121.61	0.61	-0.50	-52.56
11,991.00	0.49	185.91	11,814.82	-615.19	-938.25	1,121.94	0.30	0.29	14.33
12,101.00	0.74	233.49	11,924.81	-616.08	-938.86	1,122.94	0.50	0.23	43.25
12,196.00	0.78	236.38	12,019.80	-616.80	-939.90	1,124.20	0.06	0.04	3.04
12,291.00	0.66	231.91	12,114.80	-617.50	-940.87	1,125.39	0.14	-0.13	-4.71
12,386.00	0.92	239.92	12,209.79	-618.22	-941.96	1,126.70	0.30	0.27	8.43
12,482.00	0.91	233.97	12,305.78	-619.05	-943.24	1,128.23	0.10	-0.01	-6.20
12,577.00	1.00	240.39	12,400.76	-619.90	-944.57	1,129.81	0.15	0.09	6.76
12,671.00	0.91	248.58	12,494.75	-620.58	-945.98	1,131.36	0.17	-0.10	8.71
12,764.00	0.66	262.21	12,587.74	-620.92	-947.20	1,132.57	0.33	-0.27	14.66
12,856.00	0.63	262.54	12,679.73	-621.06	-948.22	1,133.51	0.03	-0.03	0.36
12,951.00	0.66	290.67	12,774.73	-620.94	-949.25	1,134.30	0.33	0.03	29.61
13,044.00	0.56	264.76	12,867.72	-620.79	-950.21	1,135.02	0.31	-0.11	-27.86
LAST SVY									
13,138.00	0.51	292.87	12,961.72	-620.67	-951.05	1,135.66	0.28	-0.05	29.90
PROJ SVY									
13,203.00	0.51	292.87	13,026.72	-620.44	-951.58	1,135.98	0.00	0.00	0.00

Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
13,138.00	12,961.72	-620.67	-951.05	LAST SVY
13,203.00	13,026.72	-620.44	-951.58	PROJ SVY

Checked By: _____ Approved By: _____ Date: _____

20659

Oxy USA, Inc.

Kudrna 1-17

Section 17 T141N R97W
Dunn County, North Dakota

Nathan Schrum,
Wellsite Geologist

NCS NESET CONSULTING SERVICE

117 North Welo Street PO Box 730 Tioga ND, 58852 701-664-1492

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WELL SUMMARY

OPERATOR:	**Oxy USA, INC**	
LEASE:	**Kudrna 1-17**	
API#:	***33-025-01351***	
LOCATION:	Field:	Red River
	Footage:	250' FSL & 2,000' FEL
	Legal:	Section 17 T141N R97W
	Bottom Hole:	360' FNL & 2,330' FEL Section 20 T141N R97W
	County:	Dunn County, North Dakota
ELEVATION:	Kelly Bushing:	2,562'
	Ground Level:	2,529'
SPUD DATE:	May 24, 2011	
CEASE DRILLING:	July 8, 2011	
TOTAL DEPTH:	13,261' MD 13,079'TVD 1,136.68' VS	
CONTRACTOR:	Rig:	Precision Drilling Company, LP
	Toolpusher:	Mark Yhard, Mark Jones
	Drillers:	Cody Deutsch, Bryce Murray
CASING RECORD:	Surface:	9 5/8" casing to at 6,635'
	Intermediate:	5 1/2" casing set to 13,238'
MUD RECORD:	Mud company:	Newpark Drilling Fluids, L.L.C.
	Mud engineer:	Nick Latham, Steve Brown
	Mud up depth:	5,000'
	Mud type:	Invert, Oil Based Mud
DIRECTIONAL DRILLING PROGRAM:	Directional company:	Weatherford International
	Directional drillers:	Shawn Boyles, Jeff Novotny
	MWD company:	Weatherford International
	MWD supervisors:	David Harns, Clae Bilek
MUDLOGGING PROGRAM:	Mud logging company:	Neset Consulting Service
	Mudloggers:	Nathan Schrum, Thomas Haase
	Services:	NCS Total Gas & Chromatograph

SAMPLE PROGRAM:	Caught:	10', 30', 50'
	Examined:	All
	Saved:	All
	Quality:	Good to excellent
LOGGING PROGRAM:	None	
WELL STATUS:	Awaiting Completion	
COMPANY ENGINEER:	Pierre Castro	
WELLSITE SUPERVISOR:	Philp Guy, Jimmy Hileman	
COMPANY GEOLOGIST:	Dale A. Walker	
WELLSITE GEOLOGIST:	Nathan Schrum	

GEOLOGIC SUMMARY

The Oxy USA, Inc. Kudrna 1-17 was drilled as a single vertical oil well, cutting vertical in one section, targeting the Red River. It was located in the SW, SE Section 17, T141N, R97W, Dunn County, North Dakota.

The Kudrna 1-17 was spud on May 24, 2011. Well site geological services consisted of a two person mud-logging team from a depth of 5,000' ft in the Greenhorn / Mowry formation until the end of the well. A Total Gas Detection computerized gas detector with chromatograph was used for gas detection. Two sets of lagged samples in ten, twenty, and thirty foot intervals were caught and saved to be archived. Lateral one reached a total measured depth of 13,079' TVD and 13,260' ft on July 8, 2011 (45) days after spud.

Vertical ***5,000' – 13,260' MD***

Mudlogging began in the Greenhorn / Mowry formation at a depth of 5,000' ft. Total Gas Detection was utilized for monitoring gas. Logging services began on June 14, 2011. The Greenhorn / Mowry formation consisted of dark gray shale, scattered limestone and anhydrite. The Minnelusa formation consisted of shale. The rate of penetration averaged around 80 – 100 ft/hr in the shale and anhydrite. Background gases in the Minnelusa read very low between 11 – 17 units.

Kibbey Limestone ***8,756' MD*** ***8,580' TVD*** ***-6,018' SS***

The Kibbey Formation was encountered at a measured depth of 8,756' ft. The samples composed of Dolomite, light medium gray to gray, microcrystalline, argillaceous, moderate induration, calcareous, fair amount of sandstone, 20% anhydrite interbedding, white, light grey, chalky, moderate to poor induration, even spotted fluorescence and dull streaming cut.

Charles Salt ***8,950' MD*** ***8,774' TVD*** ***-6,212' SS***

The Charles Salt was encountered at a measured depth of 8,950', one foot low of prognosis. The Charles consisted of scattered siltstone, anhydrite, and salt benches. The penetration rates averaged around 20-25 ft/hr through the limestone. While drilling through the salts, penetration rates increased to around 45– 50 ft/hr with the samples showing a salt, limestone, and anhydrite mixture. Background gases throughout the Charles read very low.

Mission Canyon: ***9,490' MD*** ***9,313' TVD*** ***-6,751' SS***

The Mission Canyon was encountered at a measured depth of 9,490', two feet low of prognosis. The Mission Canyon formation was chosen from a lithology change from limestone, anhydrite, and dolomite. The penetration rates averaged around 55-60 ft/hr. It was very fine to fine crystalline, and had a sucrosic texture, with minor dark brown staining. The samples were limey in part, with poor intercrystalline porosity. The fluorescence was trace spotty, with a slow to moderate cloudy cut. The samples changed to limestone, with a mudstone to wackestone sample size. The limestone was dolomitic and argillaceous, to clean in part, with poor to fair induration. The intergranular porosity was poor to fair. The limestone showed trace fluorescence, with weak streaming cuts, milky cuts, and bright instant cuts.

Lodgepole ***10,010' MD*** ***9,833' TVD*** ***-7,271' SS***

The Lodgepole was encountered at a measured depth of 10,010', twenty eight feet low of prognosis. It was composed of medium to light gray limestone. It had a wackestone grain size and was argillaceous to clean in part, with moderate induration. Scattered brown staining and chert were seen in

some samples. The intergranular porosity was poor to fair. Most samples showed even very dull yellow, green fluorescence, cloudy, milky, weak instant streaming cuts.

Upper Bakken Shale ***10,758' MD*** ***10,581' TVD*** ***-8,019' SS***

The Bakken Shale was encountered at a measured depth of 10,758', twenty eight feet low. The shale was brownish black, with a slightly silty appearance. It was firm, slightly calcareous and subblocky to blocky. Occasional micro-pyrite was seen in the samples. The shale had no fluorescence and a fast streaming yellow cut, which dried to a good yellow gold halo. Under white light, the solvent gradually turned a strong amber color and dried to a good yellow brown oil ring. The background gas increased from 80 - 110 units.

Middle Bakken ***10,766' MD*** ***10,590' TVD,*** ***-8,028' SS***

The Middle Bakken was encountered at a measured depth of 10,766', twenty eight feet low. The samples were composed of grainstone to packestone limestone. After placing chips in acid, 90%+ dissolved leaving abundant silty to lower very fine sandy insoluble residue. The limestone had poor to moderate induration, with fair to poor intergranular porosity. The fluorescence was even light yellow, with a moderate streaming cut. Background gas while drilling decreased in the Bakken Siltstone; Limestone was near 5 – 20 units of total gas.

Three Forks ***10,801' MD*** ***10,625' TVD,*** ***-8,063' SS***

The Three Forks was encountered at a measured depth of 10,801', twenty eight feet low. The samples were composed of siltstone and limestone. The Siltstone in this area was red, tan to brown, white, gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, trace shale, black, green trace salt, clear, scattered yellow fluorescence, slow streaming cut. The limestone had poor to moderate induration, with fair to poor intergranular porosity. The fluorescence was even light yellow, with a moderate streaming cut. Background gas while drilling in the Three Forks, was 5 – 20 units of total gas.

Birdbear ***11,000' MD*** ***10,823' TVD,*** ***-8,261' SS***

The Birdbear was encountered at a measured depth of 11,000', thirty two feet low. The samples were composed of siltstone and limestone. The Siltstone in this area Light to medium gray, medium to dark gray, light to medium cream tan, orange, red, interbedded limestone, dolomitic, trace anhydrite, weak to moderate induration, moderately sorted. Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, slow broad streaming cut. The limestone had poor to moderate induration, with fair to poor intergranular porosity. The fluorescence was even bright yellow / green, with a pinpoint streaming cut. Background gas while drilling in the Birdbear, was 15 – 30 units of total gas.

Duperow ***11,074' MD*** ***10,897' TVD,*** ***-8,335***

The Duperow was encountered at a measured depth of 11,074', thirteen feet low. The samples were composed of limestone. The Limestone in this area is light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, . Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, pinpoint streaming cut. Background gas while drilling in the Duperow, was 20 – 40 units of total gas.

Dawson Bay ***11,540' MD*** ***11,363' TVD,*** ***-8,801' SS***

The Dawson Bay was encountered at a measured depth of 11,540', fifteen feet low. The samples were composed of limestone. The Limestone in this area is light brown to bark brown, tan to dark tan, gray, brown, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, moderate induration, spotted green yellow fluorescence, slow broad streaming cut. Background gas while drilling in the Dawson Bay, was 20 – 30 units of total gas.

Winnipegosis ***11,733' MD*** ***11,556' TVD,*** ***-8,994' SS***

The Winnipegosis was encountered at a measured depth of 11,733', three feet low of prognosis. The samples were composed of limestone and dolomite. The limestone in this area is light to medium gray, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered green yellow fluorescence, slow broad streaming cut. The dolomite in this area consisted of light to medium tan, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, dense, brittle, sub-rounded, blocky, sub-angular, sub-rounded, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered green yellow fluorescence, instant milky cut. Background gas while drilling in the Winnipegosis, was 40 – 60 units of total gas.

Interlake ***11,902' MD*** ***11,722' TVD,*** ***-9,160 SS***

The Interlake was encountered at a measured depth of 11,902', three feet low of prognosis. The samples were composed of dolomite. The dolomite in this area is light to medium brown, light to medium tan, light to medium cream, cream, and tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, and carbonaceous, trace anhydrite, trace limestone, moderate induration, bright yellow green fluorescence, bright instant milky cut. Background gas while drilling in the Interlake, was 20 – 50 units of total gas.

Gunton ***12,671' MD*** ***12,494' TVD,*** ***-9,932 SS***

The Interlake was encountered at a measured depth of 12,671', four feet low of prognosis. The samples were composed of limestone. The limestone in this area consisted of Medium to dark gray, olive grey, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, poor to no visible intergranular porosity, bright spotted yellow fluorescence, slow broad streaming cut. Background gas while drilling in the Gunton, was 20 – 40 units of total gas.

Red River ***12,814' MD*** ***12,636' TVD,*** ***-10,0074 SS***

The Red River was encountered at a measured depth of 12,814', one feet low of prognosis. The samples were composed of limestone. The limestone in this area light to medium gray, light to medium cream, cream, gray, cream gray, light to medium tan, tan, light to medium cream, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, trace anhydrite, moderate induration, bright scattered green yellow fluorescence, instant slow broad streaming cut. Background gas while drilling in the Red River, was 30 – 40 units of total gas.

Wellbore **6,635' – 13,260'**

After casing was run, drilling resumed at 6:30 am MDT on June 23, 2011. The proposed build was three degrees starting at 2,400' MD and drop three degrees at 6,635' MD. While drilling in the Fryburg

formation porosity shows were fair. Background gas remained between 100 – 200 units. This decreased while drilling ahead to 20 – 100 units at a measured depth of 8,000' – 13,260'.

During the evening of July 6, 2011, we continued to drill the vertical. The Dawson Bay, Winnipegosis, and Interlake formations all came in low of prognosis ranging from three to fifteen low. Once entering in the Interlake formation which consists of a dense dolomite ROP continued to slow down. Drilling was suspended at 12,142' MD, to replace the BHA and MWD tool.

From 12,142' to 13,260' MD, the dense dolomite from the Interlake formation came in at 11,902' MD and 11,722' TVD. The Gunton formation came in at 12,671' and 12,494' TVD which was four feet below prognosis. The Red River formation came in 12,814' MD and 12,636' TVD which was a foot below prognosis. The formation in the Red River consisted of LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, light to medium tan, tan, light to medium cream, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, trace anhydrite, moderate induration, bright scattered green yellow fluorescence, bright pinpoint streaming cut. The rates of penetration during these three formations ranged from an average of 1.0 – 1.8 min/ft.

Conclusion

The Kudrna 1 - 17 was drilled methodically using a high level of attention to detail on every aspect of the drilling procedure with a heavy emphasis on safety. In part of the Mission Canyon known as the Fryburg marker showed some intergranular porosity. HW gas remained consist from 20 units to over 160 in the Mission Canyon.

The Oxy USA, Inc, Kudrna 1-17 reached a total measured depth of 13,260' ft. On July 8, 2011, 45 days after spud date. This was called total depth due to hard-line restrictions.

Nathan Schrum,
Well Site Geologist

DAILY LOG OF OPERATIONS

6:00 AM DEPTH

DATE	DEPTH	FOOTAGE	DAY	FORMATION	OPERATIONS
14-Jun-2011	3,425	371	1	Pierre Shale	Completed Transfer From upright tanks to new active mud tanks. Repaired a 480 volt plug on the #2 Shale shaker. Circulated through surface equipment, post repairs, had no leaks. Pickup MWD and RIH for surface test. Circulate at a slow rate due to mud running over shakers. Staged pumps up till rate needed to test MWD. Changed out transducer. Trouble shoot MWD, performed surface test, good. Pull up and make up bit. Tripped in hole to 3024 feet. Circulated 30 feet off bottom, conditioned mud, rig down time ended at 1100hrs. 6.14.2011. Drill and slide F/3,054' - T/3,305ft. WOB 5-7k, RPM 166, TOP RPM 60. Pump rate 680 GPM at 3200 PSI, on BTM. Torque 5800. Drill and slide F/3305 - T/3425. Lubricate rig and take slow pump rates.
15-Jun-2011	4,951	1897	2	Greenhorn	Drill ahead F/3425 - T/4951ft, Slide to hold in tangent section of well, Lubricate rig, BOP drill, crew change, safety meeting, Cond / Circ hole clean, Deviation survey, Luricate rig/function HCR 5 sec,
16-Jun-2011	5,973	1022	3	Dakota	Drill ahead F/4951 - T/5973, safety meeting, lubricate rig and top drive, crew change, pretour safety meeting, deviation survey and connection, lubricate rig and function annulur = 28 sec, circ hole remove cuttings.
17-Jun-2011	6,207	234	4	Dakota	Drill ahead F/5973 - T/6207, safety meeting, lubricate rig and top drive, trouble with slides, SPR's, deviation survey and ACC connection time, lube rig, safety meeting, clean out fill up line and get trip tank running, POOH F/441 T/8" Drill collars and lay down same, check for flow and break bit. lay down mud motor and mwd, UBHO sub called threads, change out.
18-Jun-2011	6,390	183	5	Rierdon	Drill ahead F/6207 - T/6390, Changed out mud motor, and UBHO sub, programmed mwd tool, tested mwd tool, tour operational meeting, tripped in hole from 100' to 2490'. Test mwd tools and circulated out slug, completed tripping in hole, F/2490 - T/6207, Hole in good condition. Rotary drilled from 6207-6220'. Weatherford tool face monitor on rig floor down, effect repairs, tied weatherford tool face into petron system, Slide drill F/6220 - T/6221' unable to slide, Surveyed on connection at 6188' MD, inc = 15.74, AZM = 234.49 at 6030.90 TVD. Slide drilled F/6248' - T/6249', Rig generators down on gen set. Unable to slide drill, rotary drill ahead F/6249' - T/6299, control drill at 50FPH, with maximum pump and rotary, taking check shots 30' to 45' intervals. start slide @ 6299, not working go back to rotating, rotary drill F/6299 - T/6390, H2S drill.

DAILY LOG OF OPERATIONS

6:00 AM DEPTH

DATE	DEPTH	FOOTAGE	DAY	FORMATION	OPERATIONS
19-Jun-2011	6,635	245	6	Rierdon	Drill ahead F/6390' - T/6635, TD 12 1/4" Section for 9 5/8" casing. Survey at 6560. Circulated and conditioned mud at 6635' for casing run. POOH to casing shoe at 2175'. Cut drill line, Completed POOH, had no excessive drag, hole took proper fill. Bit had no wear, unable to pull the mwd probe, weatherford will have to retrieve it at the shop. Strapped drill pipe, no correction. safety meeting with both drilling crews. Retrieve wear bushing, rig up wyoming casing to run 9.625x53 5# Casing
20-Jun-2011	6,635	0	7	Rierdon	RUN 9 5/8" CASING.MADE UP SHOE TRACK AND TESTED FLOATS. RAN
21-Jun-2011	6,635	0	8	Rierdon	R/UP GREEN'S BOP JACKS & NIPPLE DOWN BOPS TO SET SLIPS WITH 260 KLBS, ON 9.625 CASING AND INSTALL 13.625" x 5m TO 11" x 10m WELL HEAD.(VETCO C-29) CUT CASING AND LAY DOWN CUT JOINT. INSTALL WELLHEAD AND DSA. RIG DOWN CASING ELEVATORS AND BAILS. STAB BOP STACK. TORQUE ALL CONNECTIONS. PRESSURE TEST WELL HEAD TO 5000 PSI. 10 MINUTES. INSTALL HCR LINE, DRILL PIPE ELEVATORS AND BAILS, AND BOP HOLD BACK LINES. CONNECT FLOW LINE AND KILL LINE. FUNCTION TEST BLIND RAMS.PRESSURE TEST CHOKE MANIFOLD VALVES TO 250 PSI. LOW/ 6600 PSI. HIGH WHILE CONTINUING TO RIG UP POLLUTION PANS AND FLOWLINE UNDER DRILL FLOOR.PICK UP AND RUN BOP TEST PLUG. MAKE UP TOP DRIVE. PRESSURE TEST BOP'S TO 250 PSI. LOW/ 6600 PSI. HIGH.
22-Jun-2011	6,635	0	9	Rierdon	TESTING BOPE TO 250 LOW AND 6600 HIGH W/GREENS TESTERS. CEMENT IN KILL AND CHOKE VALVES, CLEAN OUT TEST OK. TESTED STANDPIPE AND PUMP MANIFOLD TO 250 LOW AND 3000 HIGH. ATTEMPTING TO TEST 9.625 CASING W/GREENE'S OILFIELD SERVICES, TEST UNIT RUNNING UP T/4000 PSI UNABLE TO BUILD ANY HIGHER, TROUBLE SHOOT LOOK FOR LEAKS, TEST PUMP AGAINST CLOSED VALVES UNABLE TO BUILD PRESSURE, SEALS GONE IN PUMP. INSTALL POLLUTION PAN UNDER RIG FLOOR, TEST ROTATING HEAD AND DRILLING CHOKE TO 1500 PSI, GOOD . INSTALL WEAR BUSHING. PICK UP AND MAKE UP 8 3/8 DIRECTIONAL BHA. ISSUE SEATING MWD TOOLS INSIDE MONEL. PRESSURE TEST CASING TO 5600 PSI. 30 MINUTES. WITH PANTHER PRESSURE TESTERS. TIH WITH 8 3/8" BHA ON 5" DRILL PIPE TO 3238'. LUBRICATE RIG AND TOP DRIVE. CORRECT PIPE TALLY ON PASON. CONTINUE TIH/ FILLING PIPE EVERY 20 STNDS AND CIRC TO SHEAR OIL BASE. CHOKE DRILL- TROUBLE SHOOT PASON CASING PSI GAUGE, AUTO CHOKE NOT FUNCTIONING PROPERLY. PERFORM CHOKE DRILL AS PER OXY SOP. INSTALL ROTATING HEAD PREPARE TO CIRC AND TAG CEMENT.

DAILY LOG OF OPERATIONS

6:00 AM DEPTH

DATE	DEPTH	FOOTAGE	DAY	FORMATION	OPERATIONS
23-Jun-2011	6,635	0	10	Rierdon	Tripping in the hole and make up Bha, skate ops, lubricate top drive, continue TIH from 3238 to 6427, choke drill, install head and wash bottom@100hpm
24-Jun-2011	6,946	311	11	Opeche salt	Rotate from 6822 to 6835, sliode from 6835 to 6840 , rotate 6840 to 6865, slide from 6835 to 6870, rotate from 6870 to 6897, lubricate top drive, slide from 6897 to 6902, rotate from 6902 to 6938, slide from 6930 to 6946, rotate from 6946 to 6992.
25-Jun-2011	8,305	1359	12	Rierdon	DRILL WITH ROTATION F/8234'T8305', LUBRICATE RIG, TAKE SLOW CIRCULATION RATES, DRILL ROTATION F/8305T/8839, GAINS IN ROP ACHIEVED THRU LIMESTONES SECTIONS
26-Jun-2011	8,354	533	13	Tyler	Rotate drill from 8305 to 8838
27-Jun-2011	8,838	455	14	First Charles Salt	Rotate drill from 8838 to 8863, lubricate rig and top drive, deviation survey accum com, rotate drill from from 8863 to 8900
28-Jun-2011	8,900	312	15	Base Last Salt	Rotate drill from 9147-9163, conditioning mud and circulate bottom up/buiold pump 20bbl pill, TOOH from 9163 to 8000 mud motor bit function/com
29-Jun-2011	9,163	0	16	Base Last Salt	Drill with rotation from 9163bto 9147, lubricate rig, drill with rotation from 9147 to 9163, circulate bottom up, prepare to tooh and flow chech the well, pooh for bit from 9163, continue to pooh, pull mwd probe lid, directional change motor, battreies in mwd tools, install mwd tools into the monels and continue to make up bha, surface testmwd, make up bit, tih t/6336.
30-Jun-2011	9,163	559	17	Fryburg	CONTINUE TIH WITH 8 3/8" DIRECTIONAL ASSEMBLY T/ 6600'., INSTALL WEATHERFORD ROTATING HEAD. CHANGE LOWER SEAL ON PACKER. SLIP AND CUT DRILL LINE. LUBRICATE RIG. CONTINUE TIH WITH 8 3/8" DIRECTIONAL ASSEMBLY. BREAK CIRCULATION AND TAKE CHECK SURVEY WITH MWD OUTSIDE OF SHOE. TIH F/ 6551' T/ 7461' . RE-LOG HOLE SECTION F/ 7461' T/ 7554'. TIH F/ 7554' T/ 8992'. WASH & REAM TIGHT HOLE F/ 8992' T/ 9055. TIH F/ 9055 T/ 9163, TD UP & FILL PIPE. DIRECTIONAL DRILL 8-3/8 HOLE F/ 9163' T/ 9353' ROP 27.1 FPH WOB 5-16 K, 122 SPM @ 505 GPM WITH 2620 PSI. 61 RPM, TQ 13-15, P/U 285, S/O 265, R/W 270 .. DIRECTIONAL DRILL 8-3/8 HOLE F/ 9353' T/9437' ROP 28 FPH WOB 5-16 K, 125 SPM @ 518 GPM WITH 2712 PSI. 61 RPM, TQ 13-15, P/U 285, S/O 265, R/W 270 DIRECTIONAL DRILL 8-3/8 HOLE F/ 9437' T/9607' ROP 56.6 FPH WOB 5-30 K, 125 SPM @ 518 GPM WITH 2970 PSI. 61 RPM, TQ 13-15, P/U 290, S/O 265, R/W 270.

DAILY LOG OF OPERATIONS

6:00 AM DEPTH

DATE	DEPTH	FOOTAGE	DAY	FORMATION	OPERATIONS
1-Jul-2011	10,183	461	18	Lodgepole	DIRECTIONAL DRILL 8-3/8 HOLE F/9607' T/9722 FT ROP 38.3 FPH WOB 5-30 K, 125 SPM @ 518 GPM WITH 2970 PSI. 61 RPM, TQ 13-15, P/U 290, S/O 265, R/W 270 HOLE TAKING 5.1 BPH. A TOTAL OF 30 BBLS TO THE FORMATION. MIXING NEW CARB FOR LCM. CIRCULATE AT A REDUCED RATE WHILE PREPARING RESERVE MUD TO BE ADDED TO THE SYSTEM. CONTINUE TO ADD NEW CARB (CARBONATE) AND DYNA FIBER WHILE CIRCULATING. DIRECTIONAL DRILL 8-3/8 HOLE F/ 9722' T/9883' ROP 26.8 FPH WOB 15-22 K, 100 SPM @ 408 GPM WITH 2140 PSI. 60 RPM, TQ 13-16, P/U 290, S/O 265, R/W 270
2-Jul-2011	10,405	222	19	Lodgepole	DIRECTIONAL DRILL 8-3/8 HOLE F/10083' T/10162' ROP 26.3 FPH WOB 24-28 K, 100 SPM @ 408 GPM WITH 2190 PSI. 60 RPM, TQ 13-16, P/U 305, S/O 270, R/W 290 NON ROTATE: P/U 315K, S/O 275K. DIRECTIONAL DRILL 8-3/8 HOLE F/10162' T/10217 FT ROP 18.3 FPH WOB 24-28 K, 100 SPM @ 408 GPM WITH 2190 PSI. 60 RPM, TQ 13-16, P/U 305, S/O 270, R/W 290. RECEIVED NBEW ORDERS. STOPPED DRILLING AND CIRCULATE HOLE MIXING 150 BLS MUD WITH 30 PPB LCM @ 10.3 PPG. PUMP SAME FOLLOWED BY 20 BLS 10.3 PPG DRLG MUD. PUMPED WIEGHTED SLUG WELL NOT LOOSING FLUID WHILE CIRCULATING.FLOW CHECK WELL, WELL STATIC. TOOH 2 STANDS. HOSE BROKE ON TOP DRIVE. REPAIR HOSE ON TOP DRIVE. TOOH TO 9,240' WHERE ENCOUNTERED TIGHT HOLE IN SALTS. WORK PIPE, CIRCULATE & ROTATE THROUGH TIGHT SPOT @ 9,240'. CONTINUE TOOH F/ 9240' T/ 6615' PULLING THROUGH MINOR TIGHT SPOTS @ 8,990' & 7,700' WITHOUT PROBLEMS. WAITING ON ORDERS. MONITORING WELL, WELL STATIC NOT LOOSING ANY FLUID. RECEIVED NEW ORDERS TO TRIP BACK IN HOLE AND CONTINUE DRILLING. TOOH FROM 6615' TO 10175' WASHED FROM 10175' TO 10229', NO FILL. DIRECTIONAL DRILL 8-3/8 HOLE F/10229 FT TO 10296 ROP 26.8 FPH WOB 22-25 K, 100 SPM @ 408 GPM WITH 2190 PSI. 60 RPM, TQ 14-18, P/U 305, S/O 270, R/W 290. MAINTAIN 20 PPB OF LCM IN THE SYSTEM. ADDING DEISEL TO MAINTAIN MUD WT. NON ROTATE: P/U 315K, S/O 275K

DAILY LOG OF OPERATIONS

6:00 AM DEPTH

DATE	DEPTH	FOOTAGE	DAY	FORMATION	OPERATIONS
3-Jul-2011	11,020	615	20	Middle Bakken	DIRECTIONAL DRILL 8-3/8 HOLE F/ 10296 T/10365 ROP 23 FPH WOB 22-25 K, 110 SPM @ 449 GPM WITH 2547 PSI. 60 RPM, TQ 14-18, P/U 305, S/O 270, R/W 290. MAINTAIN 20 PPB OF LCM IN THE SYSTEM. ADDING DEISEL TO MAINTAIN MUD WT @ 10.2 PPG. HOLE NOT TAKING ANY MUD.. NON ROTATE: P/U 315K, S/O 275K . DIRECTIONAL DRILL 8-3/8 HOLE F/ 10365 T/10469 ROP 34.6 FPH WOB 25-30 K, 110 SPM @ 449 GPM WITH 2547 PSI. 60 RPM, TQ 14-18, P/U 305, S/O 270, R/W 290. A TOTAL OF 10 BBLS NON ROTATE: P/U 315K, S/O 275K. DIRECTIONAL DRILL ROTATING F/ 10469' T/ 11550 ROP = 40.5' / HR. WOB 22-25 K, 100 SPM @ 419 GPM WITH 2547 PSI. 60 RPM, TQ 12-19, P/U 305, S/O 270, R/W 290. MAINTAIN 20 PPB OF LCM IN THE SYSTEM. ADDING DEISEL TO MAINTAIN MUD WT @ 10.2 PPG. SURVEY @ 10550' DIRECTIONAL DRILL ROTATING F/ 10550' T/ 10661 ROP = 31.7 / HR. WOB 22-25 K, 100 SPM @ 419 GPM WITH 2547 PSI. 60 RPM, TQ 12-22, P/U 335, S/O 280, R/W 285. MAINTAIN 20 PPB OF LCM IN THE SYSTEM. DIRECTIONAL DRILL ROTATING F/ 10661' T/ 10750' TOPPED FALSE BAKKEN @ 10703' MD / 10523 TVD TOPPED THE BAKKEN @ 10,766' MD / 10590 TVD ROP = 22.25' / HR. WOB 22-25 K, 100 SPM @ 419 GPM WITH 2547 PSI. 60 RPM @ SURF., 120 RPM @ MOTOR, TQ 12-18, P/U 335 S/O 280, R/W 290. MAINTAIN 20 PPB OF LCM IN THE SYSTEM. DIRECTIONAL DRILL ROTATING F/ 10750' T/10832' ROP = 20.5 / HR. WOB 22-25 K, 100 SPM @ 419 GPM WITH 2547 PSI. 60 RPM, TQ 12-20, P/U 340, S/O 285, R/W 300. MAINTAIN 20 PPB OF LCM IN THE SYSTEM. DIRECTIONAL DRILL ROTATING F/10832' T/ 10928' ROP = 24 / HR. WOB 24-28 K, 100 SPM @ 419 GPM WITH 2547 PSI. 60 RPM, TQ 14-18, P/U 335, S/O 285, R/W 300. MAINTAIN 20 PPB OF LCM
4-Jul-2011	11,602	582	21	Middle Bakken	DIRECTIONAL DRILL ROTATING F/11505' T/ 11580' ROP = 25' / HR. WOB 26-32 K, 100 SPM @ 419 GPM WITH 2250 PSI. 60 RPM, TQ 13-18, P/U 335, S/O 285, R/W 300. MAINTAIN 10.2 - 10.3 PPG WITH 20 PPB OF LCM IN THE SYSTEM. DIRECTIONAL DRILL ROTATING F/ 11580' T/ 11630 ROP = 20' / HR. WOB 26-32 K, 100 SPM @ 419 GPM WITH 2250 PSI. 60 RPM, TQ 13-18, P/U 335, S/O 285, R/W 300. MAINTAIN 10.2 - 10.3 PPG WITH 20 PPB OF LCM IN THE SYSTEM. CIR AND CONDITION THE MUD WHILE PREPARING TO SPOT 30 PPB LCM PILL TO PULL OUT OF THE HOLE. PUMP 200 BLS 30 PPB LCM FOLLOWED BY 20 BLS DRILL MUD AND PUMP 55 BLS WEIGHTED SLUG. FLOW CHECK WELL - WELL STATIC. TOOH TO CHG BIT & MOTOR. LAY DOWN BIT AND DIRECTIONAL TOOLS (MOTOR, MWD AND UBHO SUB) P/U MOTOR AND UBHO SUB. SURFACE TESTED DIRECTIONAL EQUIPMENT, OK. M/U BIT. TIH WITH 8-3/8 DIRECTIONAL ASSEMBLY T/6748'

DAILY LOG OF OPERATIONS

6:00 AM DEPTH

DATE	DEPTH	FOOTAGE	DAY	FORMATION	OPERATIONS
5-Jul-2011	11,674	44	22	Duperow	FLOW CHECK : CONTINUE TO TRIP IN THE HOLE FROM 6748' WITH 8-3/8 DIRECTIONAL ASSEMBLY TO 11630'. DIRECTIONAL DRILL ROTATING F/11630 T/ 11674' ROP = 29' / HR. WOB 20-23 K, 100 SPM @ 419 GPM WITH 2600 PSI. 60 RPM, TQ 14-16K, P/U 335, S/O 285, R/W 300. MAINTAIN 10.2 - 10.3 PPG WITH 20 PPB OF LCM IN THE SYSTEM. CHANGE OUT ROTATING HEAD BEARING ASSEMBLY DUE TO LEAKING PACKER. RELOG HOLE F/11632' T/11674'. DIRECTIONAL DRILL ROTATING F/11674' T/11714' ROP = 40' / HR. WOB 27-30 K, 100 SPM @ 419 GPM WITH 2600 PSI. 60 RPM, TQ 14-16K, P/U 335, S/O 285, R/W 300. MAINTAIN 10.2 - 10.3 PPG WITH 20 PPB OF LCM IN THE SYSTEM. DIRECTIONAL DRILL ROTATING F/11714' T/11971' ROP = 42.8 / HR. WOB 27-30 K, 100 SPM @ 419 GPM WITH 2240 PSI. 60 RPM, TQ 14-16K, P/U 335, S/O 285, R/W 300. MAINTAIN 10.2 - 10.3 PPG WITH 20 PPB OF LCM IN THE SYSTEM. CIRCULATE BTTM UP FOR BIT TRIP. MIX 200 BBLS OF 30 PPB LCM PILL TO SPOT IN HOLE FOR LOSSES. PUMP 200 BBLS OF 30 PPB LCM, 29 BBLS OF DRILL WT MUD AND 55 BBLS OF SLUG. CLEAR LINES. FLOW CHECK, OK. POOH FROM 12117' TO 8800'.
6-Jul-2011	12,117	443	23	Interlake	POOH TO CHECK BIT # 6. THE BIT WAS DAMAGED AND CANNOT BE REPAIRED. PICTURES E-MAILED TO OFFICE. CLEAN RIG FLOOR AND SERVICE RIG. PULLED MWD PROBE. LAY DOWN 6.75" DIRECTIONAL TOOLS AND 5" HWDP, IN PREPARATION TO REDUCE HOLE SIZE TO 7.875". THE 6.25" DIRECTIONAL TOOLS AND THE 4.5" HWDP WILL BE AT RIG, THIS MORNING. SLIP AND CUT DRILL LINE. PICK UP 7-7/8 DRILLING ASSEMBLY: MOTOR, UBHO SUB, MWD. STRAP 39 JOINTS OF 4.5" HWDP. CHANGE ELEVATORS. SERVICED RIG, AND INSPECTED TOP DRIVE. PRECISION PJSM, AND JSA'S. P/UP 51 JOINTS OF 4.5" HWDP. BIT DEPTH 1656'. TRIPPING IN HOLE WITH BHA # 9 AND BIT # 7 TO 7686'.
7-Jul-2011	12,142	25	24	Interlake	TRIP IN HOLE FROM 7686' TO 11877'. HOLE CONDITION IS GOOD. WASH AND REAM FROM 11877' TO 12117'. FAN BOTTOM, FOR DEBRIS, FROM BIT # 6. HAD NO UNDER GAUGED HOLE. DRILL FROM 12117' TO 12230" (113', 37.6' AROP). WOB - 28K, GPM 395 @ 2930 PSI., TORQUE - 17300 FT/LBS.. NO MUD LOSSES. MAINTAIN LCM IN MUD SYSTEM. DRILL FROM 12230' T/12348' (118', 39.3' AROP). WOB - 28K, GPM 395 @ 2930 PSI., TORQUE - 17300 FT/LBS.. NO MUD LOSSES. MAINTAIN LCM IN MUD SYSTEM. DRILL FROM 12348' T/12443 (95', 38' AROP). WOB - 29K, GPM 395 @ 2930 PSI., TORQUE - 17300 FT/LBS.. NO MUD LOSSES. MAINTAIN LCM IN MUD SYSTEM. SERVICE RIG . DRILL FROM 12719' to 12917 (198', 33' AROP). WOB - 30K, GPM 395 @ 2930 PSI., TORQUE - 17300 FT/LBS.. NO MUD LOSSES. MAINTAIN LCM IN MUD SYSTEM

BIT RECORD

BIT NO.	BIT SIZE	BIT MFGR	BIT TYPE	SERIAL NO.	JET SIZE	DEPTH OUT	FTGE	HRS RUN	ACC HRS	FT/HR	WOB	RPM	SPM	DEV	PP	MUD WT/VIS
1	14.75	Smith	XRT	37074	3x20	2175	2175	12.92	28.85	70	25/30	145/145	60	0	2223	9.2/31
2	14.75	Smith	XRT	37074	3x20	2175	2175	54.5	72.75	70	25/30	145/145	60	0-2	2542	9.45/34
3	12.25	Security	FX65M	1165822	6x13	3054	879	16.75	23.75	50	5/12	175/175	60	2-18	2659	9.6/107
4	8.375	Security	MSI	JD7539	6x16	9163	6109	93.5	110.5	63	3/3	60/60	60	2-18	2621	10.2/66
5	8.375	Smith	Msi	JY9498	6x16	11630	2494	79.5	101.5	36	3/4	60/61	61	2-19	2622	10.2/67
6	8.385	Security	FM2465	5008596	4x20	12117	437	13.5	18.75	36	10/33	60/60	62	2-17	2502	10.2/55
7	7.875	Hughes	Q506FX	70119038	6x14	13260	1143	26.25	32	38	25/30	50/60	58	2-18	2967	10.2/62

MUD RECORD

DATE	DEPTH	WT	VIS	API/HPHT WL	PV	YP	GELS	ES	CHLOM	CAKE	CORR SOLIDS	OWR	CUMM COST
15-Jun-2011	4585	9.8	97	2	42	12	5/7/9	650	30,000	2.00	15.50	86/14	$23,632.00
16-Jun-2011	5909	9.9	57	2	29	10	6/11/12	407	28,000	2.00	15.60	84/16	$26,722.00
17-Jun-2011	6207	10.1	65	2	33	12	7/13/14	386	34,000	2.00	15.40	84/16	$33,709.00
18-Jun-2011	6207	10.1	60	2	23	11	7/13/15	420	30,000	2.00	14.20	82/18	$36,290.00
19-Jun-2011	6635	10	28	2	28	10	8/11/12	665	32,000	2.00	14.00	81/19	$40,459.00
20-Jun-2011	6635	10.1	74	4	22	10	6/10/11	637	33,000	2.00	15.40	81/19	$40,809.00
21-Jun-2011	6635	10.2	66	2	23	10	7/11/12	732	33,000	2.00	14.20	81/19	$41,159.00
22-Jun-2011	6635	10.2	66	2	24	10	6/11/12	698	33,000	2.00	14.20	81/19	$41,159.00
23-Jun-2011	6666	10	76	2	37	10	9/13/14	464	34,000	2.00	14.00	81/19	$44,340.00
26-Jun-2011	8735	10	71	2	41	12	9/15/16	614	24,000	2.00	18.00	79/21	$53,694.00
27-Jun-2011	9049	10.1	64	2	39	12	8/14/16	846	24,000	2.00	17.60	84/16	$59,688.00
28-Jun-2011	9163	10.4	81	2	33	12	11/16/18	717	22,000	2.00	17.70	84/16	$64,295.00
29-Jun-2011	9358	10.4	86	2	34	12	8/14/16	685	22,000	2.00	15.70	86/14	N/A
30-Jun-2011	9890	10.3	83	2	34	14	7/15/18	690	20,000	2.00	14.80	81/19	N/A
1-Jul-2011	10229	10.3	83	2	36	13	4/10/18	705	20,000	2.00	14.80	82/18	N/A
2-Jul-2011	10793	10.3	60	2	38	10	6/9/19	715	20,000	2.00	14.80	83/17	N/A
3-Jul-2011	11388	10.2	55	2	38	10	4/11/18	715	30,000	2.00	14.20	82/18	N/A
4-Jul-2011	11630	10.1	58	2	29	12	6/11/18	715	20,000	2.00	13.80	84/16	N/A
5-Jul-2011	12116	10.2	56	2	29	15	9/13/20	720	30,000	2.00	11.20	84/16	N/A
6-Jul-2011	12116	10.1	65	2	31	13	8/12/18	725	20,000	2.00	12.90	82/18	N/A
7-Jul-2011	12671	10.2	62	2	25	13	9/16/18	705	20,000	2.00	14.00	85/15	N/A
8-Jul-2011	13261	10.2	65	2	26	13	10/14/18	717	20,000	2.00	13.00	83/17	N/A

DEVIATION RECORD

DEPTH	DEGREES		DEPTH	DEGREES
0-6635	00 - 03			
6635 - 13261	03 - 01			

FORMATION TOPS									
Oxy USA, INC									
Kudrna 1-17									
Section 17 T141N R97W Dunn County, North Dakota									
FORMATION		***Kudrna 1-17***			***Kudrna 1-17***				
		KB 2562			KB 2562				
		Sample Tops			**Prognosis Tops**				
Greenhorn		*	*		*	4692			
Mowry		*	*		*	5168			
Dakota		*	*		*	5527			
Rierdon		*	*		*	6358			
Pine Salt		*	*		*	*			
Tyler		8375	8199		*	8199			
Kibbey Lime		8756	8580		*	8581			
Charles		8,950	8,774		*	8775			
Base Last Charles Salt		9,301	9,124		*	9122			
Mission Canyon		9,490	9,313		*	9302			
Fryburg GR marker		9,665	9,488		*	9478			
Lodgepole		10,010	9,833		*	9805			
False Bakken		10,723	10,547		*	10547			
Upper Bakken Shale		10,758	10,581		*	10562			
Middle Bakken		10,766	10,590		*	*			
Middle Bakken Target		*	*		*	*			
Lower Bakken Shale		*	*		*	*			
Three Forks		10,801	10,625		*	10597			
Birdbear		11,000	10,823		*	10791			
Duperow		11,074	10,897		*	10884			
Dawson Bay		11,540	11,363		*	11348			
Winnipegosis		11,733	11,556		*	11553			
Interlake		11,902	11,722		*	11719			
Gunton		12,671	12,494		*	12490			
Red River		12,814	12,636		*	12635			
* = not logged									

SURVEY REPORT

Weatherford®

Report Date: **7/8/2011**
Customer: **OXY**
Job Name: **4021731**
Well Name: **Kudrna 1-17**

Field: **Kudrna**
Rig: **Precision 426**
Rig Loc: **Dunn County**

Survey Calculation Method: **Minimum Curvature**

Magnetic Reference	Target Direction	Total Magnetic Field	Magnetic Dip Angle	Magnetic Declination	Grid Convergence	Total Correction
True North	**236.92 deg**	**56348 nT**	**72.44 deg**	**8.30 deg**	**0.00 deg**	**8.30 deg**

Survey Tie-On	Depth	INC	AZ	TVD	NS	EW
	2049.00 ft	**0.80 deg**	**334.50 deg**	**2048.95 ft**	**-2.61 ft**	**-3.89 ft**

Depth (ft)	Inc (deg)	Azm (deg)	TVD (ft)	Well Head NS (ft)	Well Head EW (ft)	VSect (ft)	Dogleg (deg/100ft)
2242.00	0.69	39.49	2241.94	-0.50	-3.73	3.40	0.42
2336.00	0.73	272.71	2335.93	-0.03	-3.97	3.34	1.35
2368.00	1.39	251.13	2367.93	-0.15	-4.54	3.88	2.38
2399.00	2.90	246.56	2398.91	-0.58	-5.62	5.02	4.90
2431.00	4.35	244.97	2430.84	-1.42	-7.46	7.02	4.54
2463.00	6.00	245.13	2462.71	-2.63	-10.07	9.88	5.16
2494.00	6.99	244.32	2493.51	-4.13	-13.24	13.35	3.21
2524.00	7.79	242.44	2523.26	-5.86	-16.69	17.19	2.79
2555.00	8.54	239.73	2553.95	-8.00	-20.54	21.58	2.72
2587.00	8.87	240.27	2585.58	-10.42	-24.74	26.41	1.06
2617.00	9.52	238.86	2615.19	-12.85	-28.87	31.20	2.29
2649.00	10.13	240.07	2646.72	-15.62	-33.57	36.66	2.01
2681.00	10.84	240.67	2678.19	-18.50	-38.64	42.47	2.24
2712.00	11.35	240.71	2708.61	-21.42	-43.84	48.42	1.65
2743.00	12.24	240.07	2738.95	-24.55	-49.35	54.75	2.90
2773.00	13.04	240.37	2768.23	-27.81	-55.04	61.30	2.68
2804.00	14.23	238.86	2798.35	-31.51	-61.35	68.60	4.01
2835.00	15.13	238.78	2828.34	-35.58	-68.07	76.45	2.90
2867.00	16.28	238.39	2859.14	-40.09	-75.46	85.11	3.61
2899.00	17.25	238.06	2889.78	-44.95	-83.30	94.34	3.05
2931.00	17.59	238.37	2920.32	-50.00	-91.45	103.92	1.10
2962.00	17.89	238.18	2949.84	-54.97	-99.48	113.36	0.99
2994.00	18.31	238.12	2980.26	-60.21	-107.93	123.30	1.31
3088.00	19.19	238.55	3069.27	-76.07	-133.64	153.50	0.95
3182.00	19.56	238.64	3157.95	-92.32	-160.26	184.67	0.39
3272.00	19.32	236.83	3242.82	-108.31	-185.59	214.62	0.72
3367.00	19.17	237.47	3332.51	-125.29	-211.89	245.93	0.27
3462.00	17.79	236.81	3422.61	-141.63	-237.19	276.04	1.47
3556.00	16.42	236.82	3512.45	-156.76	-260.33	303.69	1.46
3649.00	16.33	237.62	3601.67	-170.95	-282.37	329.91	0.26
3744.00	16.30	238.93	3692.85	-184.99	-305.07	356.59	0.39
3837.00	16.92	238.52	3781.97	-198.79	-327.79	383.16	0.68
3930.00	16.76	235.20	3870.98	-213.51	-350.34	410.09	1.05
4024.00	15.66	232.11	3961.24	-229.04	-371.48	436.28	1.49
4120.00	16.24	236.84	4053.55	-244.34	-392.95	462.62	1.48

Depth (ft)	Inc (deg)	Azm (deg)	TVD (ft)	Well Head NS (ft)	Well Head EW (ft)	VSect (ft)	Dogleg (deg/100ft)
4213.00	16.80	240.95	4142.72	-257.98	-415.58	489.03	1.39
4308.00	16.46	237.29	4233.74	-271.92	-438.91	516.18	1.16
4402.00	17.10	235.92	4323.74	-286.86	-461.56	543.32	0.80
4494.00	16.73	235.10	4411.76	-302.01	-483.63	570.08	0.48
4585.00	16.16	235.46	4499.04	-316.69	-504.80	595.83	0.64
4679.00	17.06	239.19	4589.12	-331.17	-527.42	622.68	1.48
4770.00	16.85	233.98	4676.17	-345.76	-549.55	649.19	1.68
4865.00	16.68	234.27	4767.13	-361.82	-571.76	676.56	0.20
4959.00	15.96	236.73	4857.34	-376.79	-593.51	702.96	1.06
5053.00	15.94	238.15	4947.72	-390.69	-615.28	728.79	0.42
5149.00	16.36	236.31	5039.94	-405.14	-637.73	755.49	0.69
5243.00	15.98	236.19	5130.22	-419.69	-659.50	781.67	0.41
5335.00	15.83	236.69	5218.70	-433.63	-680.50	806.88	0.22
5429.00	15.64	236.62	5309.17	-447.64	-701.80	832.37	0.20
5523.00	16.60	238.87	5399.48	-461.55	-723.88	858.46	1.22
5618.00	17.39	240.15	5490.33	-475.63	-747.80	886.20	0.92
5713.00	17.19	240.40	5581.03	-489.63	-772.32	914.38	0.22
5810.00	18.36	241.31	5673.40	-504.05	-798.19	943.92	1.24
5906.00	19.87	241.29	5764.11	-519.14	-825.76	975.27	1.57
5968.00	18.81	239.99	5822.61	-529.20	-843.66	995.76	1.85
5999.00	18.14	239.05	5852.01	-534.19	-852.13	1005.57	2.37
6029.00	17.70	238.80	5880.55	-538.95	-860.03	1014.79	1.49
6061.00	17.12	236.95	5911.09	-544.04	-868.14	1024.37	2.51
6093.00	17.05	236.23	5941.68	-549.22	-875.99	1033.77	0.70
6124.00	16.61	235.87	5971.35	-554.23	-883.43	1042.74	1.46
6188.00	15.74	234.49	6032.82	-564.40	-898.07	1060.56	1.49
6233.00	15.40	233.38	6076.16	-571.51	-907.84	1072.62	1.00
6281.00	15.34	233.24	6122.45	-579.11	-918.04	1085.32	0.15
6323.00	15.12	232.19	6162.97	-585.80	-926.82	1096.32	0.84
6373.00	15.15	231.72	6211.24	-593.84	-937.10	1109.33	0.25
6420.00	14.77	230.63	6256.64	-601.45	-946.55	1121.40	1.01
6466.00	14.75	230.19	6301.13	-608.92	-955.58	1133.04	0.25
6511.00	14.10	229.14	6344.71	-616.17	-964.13	1144.16	1.56
6560.00	13.83	228.41	6392.26	-623.96	-973.02	1155.87	0.66
6573.00	13.75	228.06	6404.88	-626.03	-975.33	1158.93	0.89
6649.00	13.57	228.96	6478.74	-637.92	-988.78	1176.69	0.37
6681.00	12.47	227.27	6509.91	-642.73	-994.15	1183.81	3.64
6713.00	10.72	226.82	6541.26	-647.11	-998.86	1190.15	5.48
6745.00	8.89	225.86	6572.79	-650.87	-1002.80	1195.50	5.74
6776.00	7.43	228.64	6603.47	-653.86	-1006.02	1199.84	4.88
6806.00	6.68	229.24	6633.25	-656.28	-1008.80	1203.49	2.51
6838.00	6.40	229.71	6665.04	-658.65	-1011.57	1207.10	0.89
6870.00	5.67	231.10	6696.86	-660.79	-1014.16	1210.44	2.33
6902.00	5.09	233.16	6728.72	-662.64	-1016.53	1213.43	1.91
6933.00	4.15	233.15	6759.62	-664.14	-1018.53	1215.92	3.03
6964.00	2.87	225.68	6790.56	-665.35	-1019.98	1217.81	4.38
6996.00	1.50	217.82	6822.54	-666.24	-1020.81	1218.99	4.37
7028.00	0.56	155.25	6854.53	-666.71	-1021.00	1219.41	4.18
7091.00	3.31	72.60	6917.50	-666.45	-1019.14	1217.70	5.22
7124.00	3.68	70.21	6950.43	-665.81	-1017.23	1215.75	1.20

Depth (ft)	Inc (deg)	Azm (deg)	TVD (ft)	Well Head NS (ft)	Well Head EW (ft)	VSect (ft)	Dogleg (deg/100ft)
7216.00	3.72	65.25	7042.24	-663.56	-1011.74	1209.92	0.35
7310.00	3.10	63.56	7136.08	-661.15	-1006.70	1204.38	0.67
7402.00	3.04	49.59	7227.94	-658.46	-1002.61	1199.49	0.81
7495.00	2.62	60.06	7320.83	-655.80	-998.89	1194.92	0.71
7588.00	3.17	54.38	7413.71	-653.24	-994.96	1190.23	0.67
7683.00	2.77	56.25	7508.59	-650.44	-990.92	1185.31	0.43
7775.00	3.43	56.48	7600.45	-647.68	-986.77	1180.34	0.72
7871.00	3.36	54.99	7696.28	-644.48	-982.08	1174.65	0.12
7963.00	3.48	58.05	7788.12	-641.46	-977.50	1169.17	0.24
8059.00	3.34	51.27	7883.95	-638.17	-972.84	1163.47	0.44
8152.00	3.15	50.85	7976.80	-634.86	-968.75	1158.23	0.21
8247.00	2.87	58.00	8071.67	-631.95	-964.71	1153.26	0.49
8340.00	2.54	52.89	8164.56	-629.47	-961.09	1148.88	0.44
8433.00	2.77	49.53	8257.46	-626.77	-957.74	1144.59	0.30
8525.00	2.59	37.86	8349.36	-623.69	-954.77	1140.42	0.62
8619.00	2.31	42.51	8443.28	-620.61	-952.19	1136.58	0.37
8714.00	2.13	43.27	8538.21	-617.92	-949.68	1133.01	0.19
8808.00	1.93	35.29	8632.15	-615.35	-947.57	1129.84	0.37
8899.00	1.98	40.16	8723.10	-612.90	-945.67	1126.91	0.19
8996.00	1.53	41.74	8820.05	-610.65	-943.73	1124.06	0.47
9089.00	1.58	36.98	8913.02	-608.70	-942.13	1121.66	0.15
9184.00	1.38	41.77	9007.98	-606.80	-940.58	1119.32	0.25
9279.00	1.70	43.05	9102.95	-604.92	-938.86	1116.85	0.34
9371.00	0.70	39.46	9194.93	-603.49	-937.57	1114.99	1.09
9466.00	0.56	39.58	9289.92	-602.68	-936.90	1113.99	0.15
9559.00	0.58	44.09	9382.92	-601.99	-936.29	1113.10	0.05
9651.00	0.58	29.75	9474.91	-601.26	-935.73	1112.23	0.16
9744.00	0.60	39.65	9567.91	-600.47	-935.19	1111.35	0.11
9838.00	0.49	34.39	9661.90	-599.76	-934.65	1110.50	0.13
9932.00	0.63	188.12	9755.90	-599.94	-934.49	1110.47	1.16
10024.00	0.66	175.13	9847.90	-600.97	-934.52	1111.06	0.16
10116.00	0.73	184.41	9939.89	-602.08	-934.52	1111.66	0.14
10212.00	0.63	189.08	10035.88	-603.21	-934.65	1112.39	0.12
10306.00	0.44	174.68	10129.88	-604.08	-934.70	1112.91	0.25
10400.00	0.28	149.43	10223.88	-604.64	-934.55	1113.08	0.24
10492.00	0.38	111.86	10315.87	-604.95	-934.15	1112.92	0.25
10584.00	0.36	106.91	10407.87	-605.14	-933.59	1112.56	0.04
10678.00	0.31	141.26	10501.87	-605.43	-933.15	1112.34	0.22
10772.00	0.20	142.04	10595.87	-605.76	-932.89	1112.30	0.12
10867.00	0.16	259.31	10690.87	-605.91	-932.92	1112.41	0.32
10961.00	0.49	231.95	10784.87	-606.18	-933.36	1112.93	0.38
11055.00	0.66	236.61	10878.86	-606.73	-934.13	1113.88	0.19
11149.00	0.56	215.44	10972.86	-607.40	-934.85	1114.84	0.26
11241.00	0.51	208.65	11064.85	-608.13	-935.31	1115.62	0.09
11334.00	0.56	219.25	11157.85	-608.84	-935.79	1116.42	0.12
11426.00	0.64	191.57	11249.84	-609.69	-936.18	1117.21	0.32
11521.00	0.84	195.99	11344.84	-610.88	-936.48	1118.11	0.22
11605.00	0.75	205.65	11428.83	-611.97	-936.89	1119.04	0.19
11710.00	0.74	215.08	11533.82	-613.15	-937.57	1120.26	0.12
11803.00	0.69	221.85	11626.81	-614.05	-938.29	1121.36	0.11

Depth (ft)	Inc (deg)	Azm (deg)	TVD (ft)	Well Head NS (ft)	Well Head EW (ft)	VSect (ft)	Dogleg (deg/100ft)
11897.00	0.22	172.44	11720.81	-614.65	-938.65	1121.98	0.61
11991.00	0.49	185.91	11814.81	-615.23	-938.66	1122.31	0.30
12101.00	0.74	233.49	11924.80	-616.12	-939.28	1123.32	0.50
12195.71	0.78	236.38	12019.50	-616.84	-940.31	1124.57	0.06
12291.00	0.66	231.91	12114.79	-617.54	-941.28	1125.77	0.14
12386.00	0.92	239.92	12209.78	-618.26	-942.37	1127.08	0.30
12482.00	0.91	233.27	12305.76	-619.10	-943.65	1128.61	0.11
12577.00	1.00	240.39	12400.75	-619.96	-944.98	1130.19	0.16
12671.00	0.91	248.58	12494.74	-620.64	-946.38	1131.74	0.17
12764.00	0.66	262.21	12587.73	-620.99	-947.60	1132.94	0.33
12856.00	0.63	262.54	12679.72	-621.12	-948.63	1133.88	0.03
12951.00	0.66	290.67	12774.72	-621.00	-949.66	1134.67	0.33
13044.00	0.56	264.76	12867.71	-620.85	-950.61	1135.39	0.31
13138.00	0.51	292.87	12961.71	-620.73	-951.46	1136.03	0.28
13203.00	0.60	296.66	13026.71	-620.46	-952.03	1136.37	0.15

Vertical Section is 1136.68 ft along the target direction of 236.92 deg at a measured depth of 13261.65 ft.
Horizontal Displacement is 1136.68 ft along the well bore azimuth of 236.93 deg.
The total correction is 8.30 deg relative to True North.

Oxy USA, INC
Kudrna 1-17
Section 17 T141N R97W
Dunn County, North Dakota
API# 33-025-01351

SAMPLE DESCRIPTIONS

Vertical & Curve
5,000' – 13,261' MD

Began logging at 5,000'

5000 – 5030	SHALE: Light to medium gray, dark gray, very limey, slightly calcareous, light to medium gray anhydrite, trace limestone, patchy yellow green fluorescence, weak cloudy cut.
5030 – 5060	SHALE: Light to medium gray, dark gray, very limey, slightly calcareous, light to medium gray anhydrite, trace limestone, patchy yellow green fluorescence, dull instant cut.
5060 – 5090	SHALE: Light to medium gray, dark gray, very limey, slightly calcareous, light to medium gray anhydrite, trace limestone, scattered yellow green fluorescence, weak streaming cut.
5090 – 5120	SHALE: Light to medium gray, dark gray, very limey, slightly calcareous, light to medium gray anhydrite, trace limestone, scattered yellow green fluorescence, slow pinpoint streaming cut.
5120 – 5150	SHALE: Light to medium gray, dark gray, very limey, slightly calcareous, light to medium gray anhydrite, trace limestone, patchy yellow green fluorescence, dull instant cut.
5150 – 5180	SHALE: Light to medium gray, dark gray, very limey, slightly calcareous, light to medium gray anhydrite, trace limestone, scattered yellow green fluorescence, slow pinpoint streaming cut.
5180 – 5210	SHALE: Light to medium gray, dark gray, very limey, slightly calcareous, light to medium gray anhydrite, trace limestone, scattered yellow green fluorescence, weak streaming cut.
5210 – 5240	SHALE: Light to medium gray, dark gray, very limey, slightly calcareous, light to medium gray anhydrite, trace limestone, scattered yellow green fluorescence, weak streaming cut.
5240 – 5270	SHALE: Light to medium gray, dark gray, very limey, slightly calcareous, light to medium gray anhydrite, trace limestone, scattered yellow green fluorescence, weak streaming cut.
5270 – 5300	SHALE: Light to medium gray, dark gray, very limey, slightly calcareous, light to medium gray anhydrite, trace limestone, patchy yellow green fluorescence, dull instant cut.

5300 – 5330 SHALE: Light to medium gray, dark gray, very limey, slightly calcareous, light to medium gray anhydrite, trace limestone, scattered yellow green fluorescence, weak streaming cut.

5330 – 5360 SHALE: Light to medium gray, dark gray, very limey, slightly calcareous, light to medium gray anhydrite, trace limestone, patchy yellow green fluorescence, dull instant cut.

5360 – 5390 SHALE: Light to medium gray, dark gray, very limey, slightly calcareous, light to medium gray anhydrite, trace limestone, scattered yellow green fluorescence, weak streaming cut.

5390 – 5420 SHALE: Light to medium gray, dark gray, very limey, slightly calcareous, light to medium gray anhydrite, trace limestone, scattered yellow green fluorescence, weak broad streaming cut.

5420 – 5450 SHALE: Light to medium gray, dark gray, very limey, slightly calcareous, light to medium gray anhydrite, trace limestone, patchy yellow green fluorescence, dull pinpoint slow streaming cut.

5450 – 5480 SHALE: Light to medium gray, dark gray, very limey, slightly calcareous, light to medium gray anhydrite, trace limestone, silty, scattered yellow green fluorescence, weak streaming cut.

5480 – 5510 SHALE: Light to medium gray, dark gray, very limey, slightly calcareous, light to medium gray anhydrite, trace limestone, silty, scattered yellow green fluorescence, weak streaming cut.

5510 – 5540 SHALE: Light to medium gray, dark gray, very limey, slightly calcareous, light to medium gray anhydrite, trace limestone, silty, scattered yellow green fluorescence, dull instant pinpoint streaming cut.

5540 – 5570 SHALE: Light to medium gray, dark gray, very limey, slightly calcareous, light to medium gray anhydrite, trace limestone, silty, scattered yellow green fluorescence, dull instant pinpoint streaming cut.

5570 – 5600 SHALE: Light to medium gray, dark gray, very limey, slightly calcareous, light to medium gray anhydrite, trace limestone, silty, scattered yellow green fluorescence, weak streaming cut.

5600 – 5630 SHALE: Light to medium gray, dark gray, very limey, slightly calcareous, light to medium gray anhydrite, trace limestone, silty, scattered yellow green fluorescence, instant cloudy milky cut.

5630 – 5660 SHALE: Light to medium gray, dark gray, very limey, slightly calcareous, light to medium gray anhydrite, trace limestone, silty, scattered yellow green fluorescence, instant pinpoint dull streaming cut.

5660 – 5690 SHALE: Light to medium gray, dark gray, very limey, slightly calcareous, light to medium gray anhydrite, trace limestone, silty, scattered yellow green fluorescence, weak streaming cut.

5690 – 5720 SHALE: Light to medium gray, dark gray, very limey, slightly calcareous, light to medium gray anhydrite, trace limestone, scattered yellow green fluorescence, weak streaming cut.

5720 – 5750	SHALE: Light to medium gray, dark gray, very limey, slightly calcareous, light to medium gray anhydrite, trace limestone, scattered yellow green fluorescence, weak streaming cut.
5750 – 5780	SANDSTONE: White, clear, tan to light brown, firm to hard, quartzose, microcrystalline to grainy, trace shale, gray to dark gray, pasty, spotted yellow green fluorescence, dull cloudy, slight streaming cut.
5780 – 5810	SANDSTONE: White, clear, tan to light brown, firm to hard, microcrystalline to grainy, trace shale, gray to dark gray, pasty, spotted yellow green fluorescence, dull cloudy, slight streaming cut.
5810 – 5840	SANDSTONE: White, clear, tan to light brown, firm to hard, microcrystalline to grainy, trace shale, gray to dark gray, pasty, trace anhydrite, cream to light brown, spotted yellow green fluorescence, cloudy, slight streaming cut.
5840 – 5870	SANDSTONE: White, clear, tan to light brown, firm to hard, microcrystalline to grainy, trace shale, gray to dark gray, pasty, trace anhydrite, cream to light brown, spotted yellow green fluorescence, slight streaming cut.
5870 – 5900	SANDSTONE: White, clear, tan to light brown, firm to hard, microcrystalline to grainy, trace shale, gray to dark gray, pasty, trace anhydrite, cream to light brown, spotted yellow green fluorescence, cloudy weak streaming cut.
5900 – 5930	SHALE: Green, light tan to brown, pasty, fissile, waxy, trace limestone, gray, cream, white, gritty, trace sandstone, white, clear, firm to hard, scatter white fluorescence, dull cut.
5930 – 5960	SHALE: Gray to dark gray, white, cream, pasty, waxy, trace sandstone, orange clear, firm to hard, spotted fluorescence, dim yellow cloudy cut.
5960 – 5990	SHALE: Gray to dark gray, red, white, cream, pasty, waxy, trace sandstone, orange clear, firm to hard, scattered fluorescence, dull yellow cloudy cut.
5990 – 6020	SHALE: Light to medium gray, dark gray, light to medium tan, cream tan, tan, limestone cementation, slightly calcareous, light to medium gray anhydrite, trace limestone, silty, even yellow green fluorescence, instant bright milky cut.
6020 – 6050	SHALE: Light to medium gray, dark gray, light to medium tan, cream tan, tan, limestone cementation, slightly calcareous, light to medium gray anhydrite, trace limestone, silty, even yellow green fluorescence, bright slow broad streaming cut.
6050 – 6080	SHALE: Light to medium gray, dark gray, light to medium tan, cream tan, tan, limestone cementation, slightly calcareous, light to medium gray anhydrite, trace limestone, silty, even yellow green fluorescence, bright pinpoint streaming cut.
6080 – 6110	SHALE: Light to medium gray, dark gray, light to medium tan, cream tan, tan, limestone cementation, slightly calcareous, light to medium gray anhydrite, trace limestone, silty, even yellow green fluorescence, bright milky cut.
6110 – 6140	SHALE: Light to medium gray, dark gray, light to medium tan, cream tan, tan, limestone cementation, slightly calcareous, light to medium gray anhydrite, trace limestone, silty, even yellow green fluorescence, instant pinpoint streaming cut.

6140 – 6170 SHALE: Light to medium gray, dark gray, light to medium tan, cream tan, tan, limestone cementation, slightly calcareous, light to medium gray anhydrite, trace limestone, silty, even yellow green fluorescence, bright slow broad streaming cut.

6170 – 6200 SHALE: Light to medium gray, dark gray, light to medium tan, cream tan, tan, limestone cementation, slightly calcareous, light to medium gray anhydrite, trace limestone, silty, even yellow green fluorescence, instant pinpoint streaming cut.

6200 – 6230 SHALE: Light to medium gray, dark gray, light to medium tan, cream tan, tan, limestone cementation, slightly calcareous, light to medium gray anhydrite, trace limestone, silty, even yellowish green fluorescence, instant pinpoint streaming cut.

6230 – 6260 SHALE: Light to medium gray, dark gray, light to medium tan, cream tan, tan, limestone cementation, slightly calcareous, light to medium gray anhydrite, trace limestone, silty, even yellowish green fluorescence, instant yellow pinpoint streaming cut.

6260 – 6290 SHALE: Light to medium gray, dark gray, light to medium tan, cream tan, tan, limestone cementation, slightly calcareous, light to medium gray anhydrite, trace limestone, silty, even yellowish green fluorescence, instant yellow green pinpoint streaming cut.

6290 – 6320 SHALE: Light to medium gray, dark gray, light to medium tan, cream tan, tan, limestone cementation, moderate calcareous, light to medium gray anhydrite, moderate limestone, silty, even dull yellow fluorescence, cloudy pinpoint streaming cut.

6320 – 6350 SHALE: Light to medium gray, dark gray, light to medium tan, cream tan, tan, limestone cementation, moderate calcareous, light to medium gray anhydrite, trace limestone, silty, even cloudy yellow fluorescence, yellow pinpoint streaming cut.

6350 – 6380 SHALE: Light to medium gray, dark gray, light to medium tan, cream tan, tan, limestone cementation, moderate calcareous, light to medium gray anhydrite, trace limestone, silty, cloudy yellow fluorescence, instant green yellow pinpoint streaming cut.

6380 – 6410 SHALE: Light to medium gray, dark gray, light to medium tan, cream tan, tan, limestone cementation, moderate calcareous, light to medium gray anhydrite, sandstone, gritty, silty, cloudy yellow fluorescence, slow pinpoint streaming cut.

6410 – 6440 SHALE: Light to medium gray, dark gray, light to medium tan, cream tan, tan, limestone cementation, moderate calcareous, light to medium gray anhydrite, trace limestone, silty, cloudy yellow fluorescence, instant pinpoint streaming cut.

6440 – 6470 SHALE: Light to medium gray, dark gray, light to medium tan, cream tan, tan, limestone cementation, moderate calcareous, light to medium gray anhydrite, trace limestone, silty, spotted cloudy yellow fluorescence, slow pinpoint streaming cut.

6470 – 6500 SHALE: Light to medium gray, dark gray, light to medium tan, cream tan, tan, limestone cementation, slightly calcareous, light to medium gray anhydrite, trace limestone, silty, even yellow green fluorescence, instant pinpoint streaming cut

6500 – 6530 SHALE: Light to medium gray, dark gray, light to medium tan, cream tan, tan, limestone cementation, moderate calcareous, light to medium gray anhydrite, trace limestone, silty, cloudy yellow fluorescence, instant green yellow pinpoint streaming cut.

6530 – 6560 SHALE: Light to medium gray, dark gray, light to medium tan, cream tan, tan, limestone cementation, slightly calcareous, light to medium gray anhydrite, trace limestone, silty, even yellow green fluorescence, bright slow broad streaming cut.

6560 – 6590 SHALE: Light to medium gray, dark gray, light to medium tan, cream tan, tan, limestone cementation, moderate calcareous, light to medium gray anhydrite, trace limestone, silty, spotted cloudy yellow fluorescence, slow pinpoint streaming cut.

6590 – 6620 SHALE: Light to medium gray, dark gray, light to medium tan, cream tan, tan, limestone cementation, slightly calcareous, light to medium gray anhydrite, trace limestone, silty, even yellow green fluorescence, bright milky cut.

6620 – 6635 SHALE: Light to medium gray, dark gray, light to medium tan, cream tan, tan, moderate salt, clear, limestone cementation, slightly calcareous, light to medium gray anhydrite, trace limestone, silty, even yellow green fluorescence, instant milky cut.

6635 – 6660 SHALE: Light to medium gray, dark gray, light to medium tan, cream tan, tan, limestone cementation, slightly calcareous, light to medium gray, moderate salt, clear, anhydrite, trace limestone, bright milky fluorescence, slow pin point streaming cut.

6660 – 6690 SHALE: Light to medium gray, dark gray, light to medium tan, cream tan, tan, limestone cementation, slightly calcareous, light to medium gray anhydrite, trace limestone, silty, dull yellow fluorescence, slow milky yellow pin point streaming cut.

6690 – 6720 SHALE: Red, light to medium gray, dark gray, limestone cementation, calcareous, light to medium gray anhydrite, trace limestone, silty, dim scattered fluorescence, dull milky point streaming cut.

6720 – 6750 SHALE: Light to medium gray, dark gray, light to medium tan, cream tan, tan, limestone cementation, calcareous, light to medium gray anhydrite, trace limestone, silty, bright spotted fluorescence, instant cloudy pin point cut.

6750 – 6780 SHALE: Light to medium gray, dark gray, light to medium tan, cream tan, tan, limestone cementation, calcareous, light to medium gray anhydrite, trace limestone, silty, bright scattered fluorescence, instant milky pin point cut.

6780 – 6810 SHALE: White, light to medium gray, dark gray, light to medium tan, cream tan, tan, limestone cementation, slightly calcareous, light to medium gray anhydrite, trace limestone, silty, bright scattered fluorescence, instant milky pin point cut.

6810 – 6840 LIMESTONE: White to buff, brown, gray, dolomitic, shale, red, gray, purple, silty, gypsum, anhydrite, gray, white, light brown to tan, cementation, calcareous, bright spotted fluorescence, instant cloudy pin point cut.

6840 – 6870 LIMESTONE: White to buff, brown, gray, dolomitic, shale, red, gray, purple, gritty, gypsum, anhydrite, gray, white, light brown to tan, cementation, calcareous, bright spotted fluorescence, instant cloudy pin point cut.

6870 -6900 LIMESTONE: White to buff, brown, gray, dolomitic, shale, red, gray, purple, gritty, gypsum, anhydrite, gray, white, light brown to tan, cementation, calcareous, bright spotted fluorescence, instant cloudy pin point cut.

6900 – 6930 SHALE: Light to medium red, light to medium tan, off-white, soft, gummy, chalky in part, slightly argillaceous, weak induration, limestone in part, moderately calcareous, microcrystalline, moderately argillaceous, weak to moderate induration, trace to moderate light red shale, patchy yellow green fluorescence, trace cloudy cut.

6930 – 6960 SHALE: Light to medium red, light to medium tan, off-white, soft, gummy, chalky in part, slightly argillaceous, weak induration, limestone in part, moderately calcareous,

microcrystalline, moderately argillaceous, weak to moderate induration, trace to moderate light red shale, patchy yellow green fluorescence, trace cloudy cut.

6960 – 6990 SHALE: Light to medium red, light to medium tan, off-white, soft, gummy, chalky in part, slightly argillaceous, weak induration, limestone in part, moderately calcareous, microcrystalline, moderately argillaceous, weak to moderate induration, trace to moderate light red shale, patchy yellow green fluorescence, trace cloudy cut.

6990 – 7020 SHALE: Light to medium red, light to medium tan, off-white, soft, gummy, chalky in part, slightly argillaceous, weak induration, limestone in part, moderately calcareous, microcrystalline, moderately argillaceous, weak to moderate induration, trace to moderate light red shale, patchy yellow green fluorescence, trace cloudy cut.

7020 – 7050 SHALE: Light to medium red, light to medium tan, off-white, soft, gummy, chalky in part, slightly argillaceous, weak induration, limestone in part, moderately calcareous, microcrystalline, moderately argillaceous, weak to moderate induration, trace to moderate light red shale, patchy yellow green fluorescence, trace cloudy cut.

7050 – 7080 SHALE: Light to medium red, light to medium tan, off-white, soft, gummy, chalky in part, slightly argillaceous, weak induration, limestone in part, moderately calcareous, microcrystalline, moderately argillaceous, weak to moderate induration, trace to moderate light red shale, patchy yellow green fluorescence, trace cloudy cut.

7080 – 7110 SHALE: Light to medium red, light to medium tan, off-white, soft, gummy, chalky in part, slightly argillaceous, weak induration, limestone in part, moderately calcareous, microcrystalline, moderately argillaceous, weak to moderate induration, trace to moderate light red shale, patchy yellow green fluorescence, trace cloudy cut.

7110 – 7140 SALT: White, opaque, translucent, trace medium gray brown limestone, anhydrite: Light to medium red, light to medium tan, off-white, soft, gummy, chalky in part, slightly argillaceous, weak induration, limestone in part, moderately calcareous, microcrystalline, moderately argillaceous, weak to moderate induration, trace light red shale, no fluorescence, no cut.

7140 – 7170 SALT: White, opaque, translucent, trace medium gray brown limestone, anhydrite: Light to medium red, light to medium tan, off-white, soft, gummy, chalky in part, slightly argillaceous, weak induration, limestone in part, moderately calcareous, microcrystalline, moderately argillaceous, weak to moderate induration, trace light red shale, no fluorescence, no cut.

7170 – 7200 ANHYDRITE: Light to medium red , red / cream, soft, mudstone 10% limestone light to medium tan to tan brown, brown, tan, calcareous, 20% shale, gray to medium gray, gritty in part, very dull pin-pointed yellow, green fluorescence, slow very weak cloudy yellow, green cut.

7200 – 7230 ANHYDRITE: Light to medium red , red / cream, soft, mudstone 10% limestone light to medium tan to tan brown, brown, tan, calcareous, 20% shale, gray to medium gray, gritty in part, very dull pin-pointed yellow, green fluorescence, slow very weak cloudy yellow, green cut.

7230 – 7260 ANHYDRITE: Light to medium red , red / cream, soft, mudstone 10% limestone light to medium tan to tan brown, brown, tan, calcareous, 20% shale, gray to medium gray, gritty in part, very dull pin-pointed yellow, green fluorescence, slow very weak cloudy yellow, green cut.

7260 – 7290	ANHYDRITE: Light to medium red , red / cream, soft, mudstone 10% limestone light to medium tan to tan brown, brown, tan, calcareous, 20% shale, gray to medium gray, gritty in part, very dull pin-pointed yellow, green fluorescence, slow very weak cloudy yellow, green cut.
7290 – 7320	ANHYDRITE: Light to medium red , red / cream, soft, mudstone 10% limestone light to medium tan to tan brown, brown, tan, calcareous, 20% shale, gray to medium gray, gritty in part, very dull pin-pointed yellow, green fluorescence, slow very weak cloudy yellow, green cut.
7320 – 7350	ANHYDRITE: Light to medium red , red / cream, soft, mudstone 10% limestone light to medium tan to tan brown, brown, tan, calcareous, 20% shale, gray to medium gray, gritty in part, very dull pin-pointed yellow, weak green / yellow fluorescence, slow pinpoint streaming cut.
7350 – 7380	LIMESTONE: Creamy, pink to red, white, firm to hard, mottled, chalky, trace anhydrites, cream, white, clayey, calcareous, trace shale, spotted bright cloudy fluorescence, instant pin point streaming cut.
7380 – 7410	LIMESTONE: Creamy, pink to red, white, firm to hard, mottled, chalky, trace anhydrites, cream, white, clayey, calcareous, trace shale, trace salt, clear, spotted bright cloudy fluorescence, instant pin point streaming cut.
7410 – 7440	LIMESTONE: Creamy, pink to red, white, firm to hard, mottled, chalky, trace anhydrites, cream, white, clayey, calcareous, trace shale, trace salt, clear, dull scattered cloudy fluorescence, instant pin point streaming cut.
7440 – 7470	LIMESTONE: Creamy, pink to red, white, firm to hard, mottled, chalky, trace anhydrites, cream, white, clayey, calcareous, trace shale, trace salt, clear, bright yellow cloudy fluorescence, instant pin point streaming cut.
7470 – 7500	SALT: White, opaque, translucent, trace limestone, medium gray, brown, trace anhydrite: Light to medium red, light to medium tan, off-white, soft, gummy, chalky in part, slightly argillaceous, limestone in part, mild calcareous, microcrystalline, moderately argillaceous, trace light red shale, dim fluorescence, cloudy cut.
7500 – 7530	SALT: White, opaque, translucent, trace limestone, medium gray, brown, trace anhydrite: Light to medium red, light to medium tan, off-white, soft, gummy, chalky in part, slightly argillaceous, limestone in part, mild calcareous, microcrystalline, moderately argillaceous, trace light red shale, dull fluorescence, no cut.
7530 – 7560	SALT: White, opaque, translucent, trace limestone, medium gray, brown, trace anhydrite: Light to medium red, light to medium tan, off-white, soft, gummy, chalky in part, slightly argillaceous, limestone in part, mild calcareous, microcrystalline, moderately argillaceous, trace light red shale, light fluorescence, no cut.
7560 – 7590	SALT: White, opaque, translucent, trace limestone, medium gray, brown, trace anhydrite: Light to medium red, light to medium tan, off-white, soft, gummy, chalky in part, slightly argillaceous, limestone in part, mild calcareous, microcrystalline, moderately argillaceous, trace light red shale, cloudy fluorescence, no cut.
7590 – 7620	SILTSTONE: Moderate to light brown, reddish brown, dolomitic, trace sandstone, fine grain, anhydrite, trace salt, clear, translucent, trace shale, red, fissile, mudstone, no fluorescence, cloudy cut.

7620 – 7650	SILTSTONE: Moderate to light brown, reddish brown, dolomitic, trace sandstone, fine grain, anhydrite, trace salt, clear, translucent, trace shale, red, fissile, mudstone, no fluorescence, milky cut.
7650 -7680	SHALE: Red, slightly dolomitic, silty, trace anhydrite, trace, gypsum, soft , moderately calcareous, , light scattered fluorescence, dim milky pin point streaming cut.
7680 – 7710	SHALE: Red, slightly dolomitic, silty, trace anhydrite, trace, gypsum, soft, moderately calcareous, dim spotted fluorescence, dull milky pin point streaming cut.
7710 – 7740	SHALE: Red, slightly dolomitic, silty, trace anhydrite, trace, gypsum, soft , moderately calcareous, , dull spotted fluorescence, bright cloudy pin point streaming cut.
7740 – 7770	SHALE: Red, slightly dolomitic, silty, trace anhydrite, trace, gypsum, soft , moderately calcareous, , bright scattered fluorescence, bright milky pin point streaming cut.
7770 – 7800	ANHYDRITE: Light to medium red, light to medium tan, off-white, soft, gummy, chalky in part, slightly argillaceous, weak induration, limestone in part, moderately calcareous, microcrystalline, moderately argillaceous, weak to moderate induration, trace light red shale, patchy yellow green fluorescence, trace cloudy cut.
7800 – 7830	ANHYDRITE: Light to medium red, light to medium tan, off-white, soft, gummy, chalky in part, slightly argillaceous, weak induration, limestone in part, moderately calcareous, microcrystalline, moderately argillaceous, weak to moderate induration, trace light red shale, patchy yellow green fluorescence, trace cloudy cut.
7830 – 7860	ANHYDRITE: Light to medium red, light to medium tan, off-white, soft, gummy, chalky in part, slightly argillaceous, weak induration, limestone in part, moderately calcareous, microcrystalline, moderately argillaceous, weak to moderate induration, trace light red shale, patchy yellow green fluorescence, trace cloudy cut.
7860 – 7890	ANHYDRITE: Light to medium red, light to medium tan, off-white, soft, gummy, chalky in part, slightly argillaceous, weak induration, limestone in part, moderately calcareous, microcrystalline, moderately argillaceous, weak to moderate induration, trace light red shale, patchy yellow green fluorescence, trace cloudy cut.
7890 – 7920	ANHYDRITE: Light to medium red, light to medium tan, off-white, soft, gummy, chalky in part, slightly argillaceous, weak induration, limestone in part, moderately calcareous, microcrystalline, moderately argillaceous, weak to moderate induration, trace light red shale, patchy yellow green fluorescence, trace cloudy cut.
7920 – 7950	ANHYDRITE: opaque to translucent, white, cream, beige, tan, pink-red, light gray to gray, waxy, smooth, slightly carbonaceous, trace mica, Shale: Dark gray, red/orange to amber, flakey compaction platy, gritty, slight petroliferous odor intense white to light yellow scattered fluorescence, slow streaming pinpoint cloudy cut.
7950 – 7980	ANHYDRITE: White, cream, beige, tan, pink-red, opaque to translucent, light gray to gray, waxy, smooth, slightly carbonaceous, trace mica, Shale: gray, red/orange to amber, flakey compaction platy, gritty, light yellow scattered fluorescence, instant streaming pinpoint cloudy cut.
7980 – 8010	ANHYDRITE: opaque to translucent, white, cream, beige, tan, pink-red, light gray to gray, waxy, smooth, slightly carbonaceous, trace mica, Shale: Dark gray, red/orange to amber, flakey compaction platy, gritty, slight petroliferous odor intense white to light yellow scattered fluorescence, slow streaming pinpoint cloudy cut.

8010 – 8040 ANHYDRITE: Red to brown, opaque to translucent, white, cream, beige, tan, pink-red, light gray to gray, waxy, smooth, slightly carbonaceous, trace mica, Shale: Dark gray, red/orange to amber, flakey compaction platy, gritty, slight petroliferous odor intense white to light yellow scattered fluorescence, slow streaming pinpoint cloudy cut.

8040 – 8070 ANHYDRITE: Red to brown, opaque to translucent, white, cream, beige, tan, pink-red, light gray to gray, waxy, smooth, slightly carbonaceous, trace mica, Shale: Dark gray, red/orange to amber, flakey compaction platy, gritty, slight petroliferous odor intense white to light yellow scattered fluorescence, slow streaming pinpoint cloudy cut.

8070 – 8100 ANHYDRITE: Red to brown, opaque to translucent, white, cream, beige, tan, pink-red, light gray to gray, waxy, smooth, slightly carbonaceous, trace mica, Shale: Dark gray, red/orange to amber, flakey compaction platy, gritty, moderate dolomitic, fissility, microcrystalline, slight petroliferous odor intense dull white to light yellow scattered fluorescence, slow streaming pinpoint cloudy cut.

8100 – 8130 ANHYDRITE: Red to brown, opaque to translucent, white, cream, beige, tan, pink-red, light gray to gray, waxy, smooth, slightly carbonaceous, trace mica, Shale: Dark gray, red/orange to amber, flakey compaction platy, gritty, moderate dolomitic, fissility, slight petroliferous odor, dim white to light yellow scattered fluorescence, slow streaming pinpoint cut.

8130 – 8160 ANHYDRITE: Red to brown, opaque to translucent, white, cream, beige, tan, pink-red, light gray to gray, waxy, smooth, slightly carbonaceous, trace mica, Shale: Dark gray, red/orange to amber, flakey compaction platy, gritty, moderate dolomitic, fissility, slight petroliferous odor, white to light yellow scattered fluorescence, slow streaming pinpoint cut.

8160 – 8190 ANHYDRITE: Red to brown, opaque to translucent, white, cream, beige, tan, pink-red, light gray to gray, waxy, smooth, slightly carbonaceous, trace mica, Shale: Dark gray, red/orange to amber, flakey compaction platy, gritty, moderate dolomitic, fissility, slight petroliferous odor, bright white to light yellow scattered fluorescence, fast streaming pinpoint cloudy cut.

8190 – 8220 ANHYDRITE: Red to brown, opaque to translucent, white, cream, beige, tan, pink-red, light gray to gray, waxy, smooth, slightly carbonaceous, trace mica, Shale: Dark gray, red/orange to amber, flakey compaction platy, gritty, moderate dolomitic, fissility, slight petroliferous odor, bright white to light yellow scattered fluorescence, fast streaming pinpoint cloudy cut.

8220 – 8250 ANHYDRITE: Tan to brown, white, cream, beige, tan, pink-red, light gray to gray, waxy, smooth, slightly carbonaceous, trace limestone, Shale: Dark gray, red/orange to amber, flakey compaction platy, gritty, moderate dolomitic, fissility, slight petroliferous odor, white yellow scattered fluorescence, cloudy cut.

8250 – 8280 LIMESTONE: Light brown to brown, light tan, tan brown, light gray brown, light gray to gray, dark gray, firm to hard, silty, grainy rough surface, trace calcite, poor to fair intergranular porosity, trace anhydrite, creamy off white, buff light tan, soft, pasty, even very dull yellow, green fluorescence, cloudy yellow green cut.

8280 – 8310 HALITE: Clear, frosty clear, firm, compacted, scattered siltstone, light orange, rusty orange, chalky, soft, argillaceous, imbedded sand and silt grains, trace anhydrite, slight mineral fluorescence, slight cut.

8310 – 8340	LIMESTONE: light brown to brown, tan , microcrystalline, argillaceous, moderate induration , interbedding anhydrite, calcareous, fair amount of sandstone, 20% Anhydrite, white, light grey, bright mineral fluorescence, cloudy cut.
8340 – 8370	LIMESTONE: light brown to tan, medium gray, microcrystalline, argillaceous, moderate induration, interbedding anhydrite, calcareous, fair amount of sandstone, 30% Anhydrite, white, light grey, bright mineral fluorescence, cloudy cut.
8370 – 8400	LIMESTONE: Light brown to brown, light tan, tan brown, light gray brown, light gray to gray, dark gray, firm to hard, silty, grainy rough surface, trace calcite, poor to fair intergranular porosity, trace anhydrite, creamy off white, buff light tan, soft, pasty, even very dull yellow, green fluorescence, cloudy yellow green cut
8400 – 8430	LIMESTONE: light brown to tan, medium gray, microcrystalline, argillaceous, moderate induration, interbedding anhydrite, calcareous, fair amount of sandstone, 30% Anhydrite, white, light grey, bright mineral fluorescence, cloudy cut.
8430 – 8460	LIMESTONE: light brown to tan, medium gray, microcrystalline, argillaceous, moderate induration, interbedding anhydrite, calcareous, fair amount of sandstone, Anhydrite, white, light grey, bright mineral fluorescence, cloudy cut.
8460 – 8490	LIMESTONE: light medium gray to gray, microcrystalline, argillaceous, moderate induration, interbedding anhydrite, calcareous, fair amount of sandstone, 20% Anhydrite, white, light grey, bright mineral fluorescence, cloudy cut.
8490 – 8520	LIMESTONE: light gray to tan, microcrystalline, argillaceous, moderate induration, interbedding anhydrite, calcareous, trace sandstone, trace Anhydrite, white, light grey, bright mineral fluorescence, cloudy cut.
8520 – 8550	LIMESTONE: light gray to medium gray, microcrystalline, argillaceous, moderate induration, interbedding anhydrite, calcareous, fair amount of sandstone, trace anhydrite, white, and light grey, bright mineral fluorescence, cloudy cut.
8550 – 8580	LIMESTONE: Light to medium gray, tan, off white, microcrystalline, argillaceous, moderate induration, highly calcareous, fair amount of sandstone, trace anhydrite, white, light gray, interbedding sandstone, bright mineral fluorescence, cloudy cut.
8580 – 8610	LIMESTONE: light gray to tan, microcrystalline, argillaceous, moderate induration, interbedding anhydrite, calcareous, trace sandstone, trace Anhydrite, white, light grey, bright mineral fluorescence, cloudy cut.
8610 – 8640	LIMESTONE: light medium gray to gray, microcrystalline, argillaceous, moderate induration, interbedding anhydrite, calcareous, fair amount of sandstone, 20% Anhydrite, white, light grey, bright mineral fluorescence, cloudy cut.
8640 – 8670	DOLOMITE: : Light medium gray to gray, microcrystalline, argillaceous, moderate induration, calcareous, fair amount of sandstone, 20% Anhydrite interbedding, white, light grey, chalky, moderate to poor induration, poor intercrystalline porosity, even scattered light yellow fluorescence, moderate streaming cut.
8670 – 8700	DOLOMITE: : Light medium gray to gray, microcrystalline, argillaceous, moderate induration, calcareous, fair amount of sandstone, 20% Anhydrite interbedding, white, light grey, chalky, moderate to poor induration, poor intercrystalline porosity, even spotted light yellow fluorescence, moderate streaming cut.

8700 – 8730	DOLOMITE: : Light medium gray to gray, microcrystalline, argillaceous, moderate induration, calcareous, fair amount of sandstone, 20% Anhydrite interbedding, white, light grey, chalky, moderate to poor induration, poor intercrystalline porosity, even spotted dim yellow fluorescence, moderate streaming cut.
8730 – 8760	DOLOMITE: : Light medium gray to gray, microcrystalline, argillaceous, moderate induration, calcareous, fair amount of sandstone, 20% Anhydrite interbedding, white, light grey, chalky, moderate to poor induration, poor intercrystalline porosity, even spotted fluorescence, dull streaming cut.
8760 - 8790	ANHYDRITE: Light to medium tan, light to dark gray, soft, gummy, minor dolomite, microcrystalline, chalky, trace limestone, slightly argillaceous, moderate induration, poor to no visible porosity, no fluorescence, trace cloudy cut.
8790 – 8820	ANHYDRITE: Light to medium tan, light to dark brown, soft, gummy, minor dolomite, microcrystalline, chalky, trace limestone, slightly argillaceous, moderate induration, poor to no visible porosity, no fluorescence, trace cloudy cut.
8820 – 8850	ANHYDRITE: Light to medium tan, light to dark brown, soft, gummy, minor dolomite, microcrystalline, chalky, trace limestone, slightly argillaceous, moderate induration, poor to no visible porosity, no fluorescence, trace cloudy cut.
8850 – 8880	ANHYDRITE: Tan to medium gray, white, cream, beige, tan, pink-red, light gray to gray, waxy, smooth, slightly carbonaceous, trace limestone, Shale: Dark gray, red/orange to amber, flakey compaction platy, gritty, moderate dolomitic, fissility, slight petroliferous odor, white yellow scattered fluorescence, cloudy cut.
8880 – 8910	LIMESTONE: Medium brown, tan, brown gray, light to medium gray, medium tan, gray, soft to firm, chalky, microcrystalline, moderate induration, poor porosity, calcareous, partly argillaceous, 25% Dolomite, gray creamy gray, light gray, trace amount of anhydrite, creamy off white, fair yellow, scattered fluorescence, cloudy yellow cut.
8910 -- 8940	DOLOMITE: Light tan brown, tan brown, brown gray, light brown, medium tan, medium gray, soft to firm, chalky, microcrystalline, moderate induration, poor porosity, calcareous, partly argillaceous, 35% limestone, gray creamy gray, light gray, trace abundant anhydrite, creamy off white, fair yellow, trace pinpoint scattered white/orange fluorescence, cloudy yellow cut.
8940 – 8970	HALITE: Clear, frosty clear, firm, compacted, scattered siltstone, light orange, rusty orange, chalky, soft, argillaceous, imbedded sand and silt grains, trace anhydrite, slight mineral fluorescence, cloudy yellow green cut.
8970 – 9000	ANHYDRITE: Tan to medium gray, white, cream, beige, tan, pink-red, light gray to gray, waxy, smooth, slightly carbonaceous, trace limestone, Shale: Dark gray, red/orange to amber, flakey compaction platy, gritty, moderate dolomitic, fissility, slight petroliferous odor, white yellow scattered fluorescence, cloudy cut.
9000 – 9030	LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, chalky, microcrystalline, moderate induration, poor porosity, calcareous, partly argillaceous, 20% Dolomite, gray creamy gray, light gray, trace amount of anhydrite, creamy off white, fair yellow, scattered fluorescence, cloudy yellow cut.

9030 – 9060 LIMESTONE: Medium brown, tan, brown gray, white light to medium gray, medium tan, gray, soft to firm, chalky, microcrystalline, moderate induration, poor porosity, calcareous, partly argillaceous, 25% Dolomite, gray creamy gray, light gray, trace amount of anhydrite, creamy off white, fair yellow, scattered fluorescence, cloudy yellow cut.

9060 – 9090 ANHYDRITE: White, medium to light gray brown, dark cream, varicolored soft, opaque, argillaceous in part, minor dolomite, very fine grained, slightly argillaceous, poor intercrystalline porosity, dull spotty fluorescence, slow streaming milky cut.

9090 – 9120 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, chalky, microcrystalline, moderate induration, poor porosity, calcareous, partly argillaceous, 20% Dolomite, gray creamy gray, light gray, trace amount of anhydrite, creamy off white, fair yellow, scattered fluorescence, cloudy yellow cut.

9120 – 9150 Dolomite: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, very grainy, chalky, microcrystalline, moderate induration, poor porosity, calcareous, partly argillaceous, limestone, gray creamy gray, light gray, trace amount of anhydrite, creamy off white, fair yellow, spotted fluorescence, bright cloudy yellow cut.

9150 – 9180 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate induration, poor porosity, calcareous, partly argillaceous, Salt, clear , translucent, Dolomite, gray creamy gray, light gray, trace amount of anhydrite, creamy off white, fair yellow, scattered fluorescence, bright milky green yellow cut.

9180 – 9210 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, very grainy, chalky, microcrystalline, moderate induration, poor porosity, calcareous, partly argillaceous, Salt, clear , translucent, 30% Dolomite, gray creamy gray, light gray, trace amount of anhydrite, creamy off white, fair yellow, spotted fluorescence, bright cloudy yellow cut.

9210 – 9220 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grain, chalky, microcrystalline, moderate induration, poor porosity, calcareous, partly argillaceous, Salt, clear , translucent, 20% Dolomite, gray creamy gray, light gray, trace amount of anhydrite, creamy off white, fair yellow, scattered fluorescence, bright milky yellow green cut.

9220 -9230 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, chalky, moderate grainy, microcrystalline, moderate induration, poor porosity, calcareous, partly argillaceous, Salt, clear , translucent, 20% Dolomite, gray creamy gray, light gray, trace amount of anhydrite, creamy off white, fair yellow, spotted fluorescence, cloudy yellow cut.

9230 – 9240 Dolomite: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, very grainy, chalky, microcrystalline, moderate induration, poor porosity, calcareous, partly argillaceous, Salt, clear , translucent , limestone, gray creamy gray, light gray, trace amount of anhydrite, creamy off white, fair yellow, spotted fluorescence, bright cloudy yellow cut.

9240 – 9250 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate induration, poor porosity, calcareous, partly argillaceous, Salt, clear , translucent, Dolomite, gray

creamy gray, light gray, trace amount of anhydrite, creamy off white, fair yellow, scattered fluorescence, bright milky green yellow cut.

9250 – 9260 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, very grainy, chalky, microcrystalline, moderate induration, poor porosity, calcareous, partly argillaceous, Salt, clear , translucent, 30% Dolomite, gray creamy gray, light gray, trace amount of anhydrite, creamy off white, fair yellow, spotted fluorescence, bright cloudy yellow cut.

9260 – 9270 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, chalky, moderate grainy, microcrystalline, moderate induration, poor porosity, calcareous, partly argillaceous, Salt, clear , translucent , 20% Dolomite, gray creamy gray, light gray, trace amount of anhydrite, creamy off white, fair yellow, spotted fluorescence, cloudy yellow cut.

9270 – 9280 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate induration, poor porosity, calcareous, partly argillaceous, Salt, clear , translucent, Dolomite, gray creamy gray, light gray, trace amount of anhydrite, creamy off white, fair yellow, scattered fluorescence, bright milky green yellow cut.

9280 – 9290 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, very grainy, chalky, microcrystalline, moderate induration, poor porosity, calcareous, partly argillaceous, Salt, clear , translucent, 30% Dolomite, gray creamy gray, light gray, trace amount of anhydrite, creamy off white, fair yellow, spotted fluorescence, bright cloudy yellow cut.

9290 – 9300 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, very grainy, chalky, microcrystalline, moderate induration, poor porosity, calcareous, partly argillaceous, 30% Dolomite, gray creamy gray, light gray, trace amount of anhydrite, creamy off white, fair yellow, spotted fluorescence, bright cloudy yellow cut.

9300 – 9310 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate induration, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, trace amount of anhydrite, creamy off white, fair yellow, scattered fluorescence, bright milky green yellow cut.

9310 – 9320 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, trace amount of anhydrite, creamy off white, fair yellow, scattered fluorescence, milky green yellow cut.

9320 – 9330 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, trace amount of anhydrite, creamy off white, fair yellow, scattered fluorescence, bright milky yellow cut.

9330 – 9340 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, trace amount of anhydrite, creamy off white, fair yellow, scattered fluorescence, bright milky yellow cut.

9340 – 9350 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, scattered fluorescence, bright cloudy green yellow cut.

9350 – 9360 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, spotted fluorescence, bright cloudy yellow cut.

9360 – 9370 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, fair yellow, spotted fluorescence, bright milky green yellow cut.

9370 – 9380 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, scattered fluorescence, bright milky green yellow cut.

9380 – 9390 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, scattered fluorescence, bright milky yellow cut.

9390 – 9400 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, scattered fluorescence, bright cloudy yellow cut.

9400 – 9410 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, scattered fluorescence, cloudy yellow cut.

9410 – 9420 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, scattered fluorescence, bright milky green yellow cut.

9420 – 9430 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, spotted fluorescence, bright green yellow cut.

9430 – 9440 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, scattered fluorescence, bright cloudy yellow cut.

9440 – 9450 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, scattered fluorescence, milky green yellow cut.

9450 – 9460 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, spotted fluorescence, bright green yellow cut.

9460 – 9470 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, scattered fluorescence, bright milky green yellow cut.

9470 – 9480 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, scattered fluorescence, bright milky yellow cut.

9480 – 9490 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, spotted fluorescence, bright milky green yellow cut.

9490 – 9500 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray cream gray, light gray, fair yellow, spotted fluorescence, bright milky yellow cut.

9500 – 9510 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, scattered fluorescence, dull cloudy yellow cut.

9510 – 9520 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, scattered fluorescence, dim milky green yellow cut.

9520 – 9530 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, spotted fluorescence, milky green yellow cut.

9530 – 9540 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, scattered fluorescence, bright milky green yellow cut.

9540 – 9550 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, spotted fluorescence, bright green yellow cut.

9550 – 9560 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, spotted fluorescence, dim cloudy green yellow cut.

9560 – 9570 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, scattered fluorescence, bright milky yellow cut.

9570 – 9580 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, sorted fluorescence, bright cloudy green yellow cut.

9580 – 9590 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, spotted fluorescence, bright milky green yellow cut.

9590 – 9600 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, spotted fluorescence, bright milky yellow cut.

9600 – 9610 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, spotted fluorescence, bright cloudy green yellow cut.

9610 – 9620 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, spotted fluorescence, bright green yellow cut.

9620 – 9630 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, spotted fluorescence, bright green yellow cut.

9630 – 9640 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, sorted fluorescence, bright cloudy green yellow cut.

9640 – 9650 LIMESTONE: Medium brown, tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, spotted fluorescence, dull cloudy yellow cut.

9650 – 9660 LIMESTONE: Tan, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, spotted fluorescence, dim milky yellow cut.

9660 – 9670 LIMESTONE: Tan, white, brown gray, light to medium gray, medium tan, gray, soft to firm, moderate grainy, chalky, microcrystalline, moderate indurations, poor porosity, calcareous, partly argillaceous, Dolomite, gray creamy gray, light gray, spotted fluorescence, bright milky green yellow cut.

9670 – 9680 LIMESTONE: Light tan gray, cream gray, tan, light tan to brown, buff, firm, soft to hard in part, tight, dense, microcrystalline, fragmental, trace anhydrite, poor intergranular porosity, dull yellow fluorescence, slow faint cloudy yellow cut.

9680 – 9690 LIMESTONE: Light tan gray, cream gray, tan, light tan to brown, buff, firm, soft to hard in part, tight, dense, microcrystalline, fragmental, trace anhydrite, poor intergranular porosity, dull yellow fluorescence, slow faint cloudy yellow cut.

9690 – 9700 LIMESTONE: Light brown, light to medium brown, cream gray, tan, light tan to brown, buff, firm, soft to hard in part, tight, dense, microcrystalline, slightly argillaceous, fragmental, trace anhydrite, poor intergranular porosity, dull yellow fluorescence, slow cloudy yellow cut.

9700 – 9710 LIMESTONE: Light brown, light to medium brown, cream gray, tan, light tan to brown, buff, firm, soft to hard in part, tight, dense, microcrystalline, slightly argillaceous, fragmental, trace anhydrite, poor intergranular porosity, dull yellow fluorescence, slow cloudy yellow cut.

9710 – 9720 LIMESTONE: Light to medium brown, cream brown, cream gray, light tan to brown, buff, firm, soft to hard in part, tight, dense, microcrystalline, slightly argillaceous, fragmental, trace anhydrite, poor intergranular porosity, dull yellow fluorescence, slow pinpoint streaming cloudy yellow cut.

9720 –9730 LIMESTONE: Light to medium brown, cream brown, cream gray, light tan to brown, buff, firm, soft to hard in part, tight, dense, microcrystalline, slightly argillaceous, fragmental, trace anhydrite, poor intergranular porosity, dull yellow fluorescence, slow pinpoint streaming cloudy yellow cut.

9730 – 9740 LIMESTONE: Light gray, cream gray brown, cream gray, light tan brown, off-white, buff, firm, soft to hard in part, tight, dense, microcrystalline, slightly argillaceous, fragmental, trace anhydrite, no to poor intergranular porosity, dull yellow fluorescence, slow pinpoint streaming cloudy yellow cut.

9740 –9750 LIMESTONE: Light gray, cream gray brown, cream gray, light tan brown, off-white, buff, firm, soft to hard in part, tight, dense, microcrystalline, slightly argillaceous, fragmental, trace anhydrite, no to poor intergranular porosity, dull yellow fluorescence, slow pinpoint streaming cloudy yellow cut.

9750 – 9760 LIMESTONE: Light to cream gray, cream gray brown, cream gray, light tan brown, off-white, buff, firm, soft to hard in part, tight, dense, microcrystalline, slightly argillaceous, fragmental, trace anhydrite, no to poor intergranular porosity, even yellow fluorescence, and slow cloudy yellow cut.

9760 – 9770 LIMESTONE: Light tan, cream tan, light gray tan, cream, buff, mottled, mostly blocky, fragmental in part, trace silty, lightly argillaceous, microcrystalline, no visible porosity, no fluorescence, and slow cloudy cut

9770 – 9780 LIMESTONE: Gray tan, light to medium gray, cream gray, cream, firm to hard, tight, dense, microcrystalline, fragmental, argillaceous in part, no visible porosity, scattered pale yellow fluorescence, instant cloudy to slow fair streaming cut.

9780 – 9790 LIMESTONE: Gray tan, light to medium gray, cream gray, cream, firm to hard, tight, dense, microcrystalline, fragmental, argillaceous in part, no visible porosity, scattered pale yellow fluorescence, instant cloudy to slow fair streaming cut.

9790 – 9800 LIMESTONE: Light tan, light gray tan, cream tan, light cream gray, cream, buff, mottled, blocky, soft to firm, brittle, lightly argillaceous, silty in part, microcrystalline, no visible porosity, scattered dull yellow fluorescence, slow cloudy to fair streaming cut.

9800 –9810 LIMESTONE: Light to medium tan, cream tan, light tan gray, buff, blocky, firm to hard, brittle in part, platy, microcrystalline, lightly argillaceous, somewhat silty, trace pale yellow fluorescence, slow diffuse cut.

9810 – 9820 LIMESTONE: Light to medium tan, cream tan, light tan gray, buff, blocky, firm to hard, brittle in part, platy, microcrystalline, lightly argillaceous, somewhat silty, trace pale yellow fluorescence, slow diffuse cut.

9820 – 9830 LIMESTONE: Light to medium cream, cream to tan, light tan gray, buff, blocky, firm to hard, brittle in part, platy, microcrystalline, lightly argillaceous, 5% silty, pale yellow fluorescence, slow cloudy cut.

9830 – 9840 LIMESTONE: Light to medium cream, cream to tan, light tan gray, buff, blocky, firm to hard, brittle in part, platy, microcrystalline, lightly argillaceous, 5% silty, pale yellow fluorescence, slow cloudy cut.

9840 – 9850 LIMESTONE: Light to medium tan, tan to cream to tan gray, buff, blocky, firm to hard, brittle in part, platy, microcrystalline, lightly argillaceous, 5% silty, trace pale yellow fluorescence, slow diffuse to faint streaming cut.

9850 – 9860 LIMESTONE: Light to medium tan, tan to cream to tan gray, buff, blocky, firm to hard, brittle in part, platy, microcrystalline, lightly argillaceous, 5% silty, trace pale yellow fluorescence, slow diffuse to faint streaming cut.

9860 – 9870 LIMESTONE: Light to medium tan, cream tan, light gray tan, buff, cream, blocky, fragmental, firm to hard, microcrystalline, argillaceous, silty in part, no visible porosity, no fluorescence, no cut.

9870 – 9880 LIMESTONE: Light to medium tan, cream tan, light gray tan, buff, cream, blocky, fragmental, firm to hard, microcrystalline, argillaceous, silty in part, no visible porosity, no fluorescence, no cut.

9880 – 9890 LIMESTONE: Light to medium tan, light brown, light to medium gray, tan gray, buff, mostly flaky, soft to firm, brittle, microcrystalline, lightly sucrosic, silty in part, moderately argillaceous, trace pale yellow fluorescence, instant diffuse to faint streaming cut.

9890 – 9900 LIMESTONE: Light to medium cream, cream to tan, light tan gray, buff, blocky, firm to hard, brittle in part, platy, microcrystalline, lightly argillaceous, 5% silty, pale yellow fluorescence, slow cloudy cut.

9900 – 9910 LIMESTONE: Medium to dark gray, dark beige olive grey, wackestone to pack stone, argillaceous, carbonaceous, mottled, fair indurations, poor to no visible intergranular porosity, dull even yellow fluorescence, slow broad streaming cut.

9910 – 9920 LIMESTONE: Medium to dark gray, dark beige olive grey, wackestone to pack stone, argillaceous, carbonaceous, mottled, fair indurations, poor to no visible intergranular porosity, dim spotted yellow fluorescence, slow yellow streaming cut.

9920 – 9930 LIMESTONE: Medium to dark gray, dark beige olive grey, wackestone to pack stone, argillaceous, carbonaceous, mottled, fair indurations, poor to no visible intergranular porosity, dull sorted yellow fluorescence, slow streaming cut.

9930 – 9940	LIMESTONE: Medium to dark gray, dark beige olive grey, wackestone to pack stone, argillaceous, carbonaceous, mottled, fair indurations, poor to no visible intergranular porosity, dim spotted yellow fluorescence, slow yellow streaming cut.
9940 – 9950	LIMESTONE: Medium to dark gray, dark beige olive grey, wackestone to pack stone, argillaceous, carbonaceous, mottled, fair indurations, poor to no visible intergranular porosity, dull yellow fluorescence, cloudy cut.
9950 – 9960	LIMESTONE: Medium to dark gray, dark beige olive grey, wackestone to pack stone, argillaceous, carbonaceous, mottled, fair indurations, poor to no visible intergranular porosity, even yellow fluorescence, bright yellow cut.
9960 – 9970	LIMESTONE: Medium to dark gray, dark beige olive grey, wackestone to pack stone, argillaceous, carbonaceous, mottled, fair indurations, poor to no visible intergranular porosity, bright scattered yellow fluorescence, slow cloudy streaming cut.
9970 – 9980	LIMESTONE: Medium to dark gray, dark beige olive grey, wackestone to pack stone, argillaceous, carbonaceous, mottled, fair indurations, poor to no visible intergranular porosity, dull even yellow fluorescence, slow broad streaming cut.
9980 – 9990	LIMESTONE: Medium to dark gray, dark beige olive grey, wackestone to pack stone, argillaceous, carbonaceous, mottled, fair indurations, poor to no visible intergranular porosity, dull even yellow fluorescence, slow broad streaming cut.
9990 – 10000	LIMESTONE: Medium to dark gray, dark beige olive grey, argillaceous, carbonaceous, mottled, fair indurations, poor to no visible intergranular porosity, dull even yellow fluorescence, slow broad streaming cut.
10000 – 10010	LIMESTONE: Dark gray to brown, argillaceous, carbonaceous, mottled, fair indurations, poor to no visible intergranular porosity, dim scattered yellow fluorescence, slow streaming cut.
10010 – 10020	LIMESTONE: Dark gray to brown, argillaceous, carbonaceous, mottled, fair indurations, poor to no visible intergranular porosity, dull even yellow fluorescence, slow broad streaming cut.
10020 – 10030	LIMESTONE: Dark gray to brown, argillaceous, carbonaceous, mottled, fair indurations, poor to no visible intergranular porosity, dull even yellow fluorescence, slow broad streaming cut.
10030 – 10040	LIMESTONE: Dark gray to brown, argillaceous, carbonaceous, mottled, fair indurations, poor to no visible intergranular porosity, bright even yellow fluorescence, bright broad streaming cut
10040 – 10050	LIMESTONE: Dark gray to brown, argillaceous, carbonaceous, mottled, fair indurations, poor to no visible intergranular porosity, bright scattered yellow fluorescence, instant pin point streaming cut.
10050 – 10060	LIMESTONE: Dark gray to brown, argillaceous, carbonaceous, mottled, fair indurations, poor to no visible intergranular porosity, bright spotted yellow fluorescence, instant bright cloudy streaming cut
10060 – 10070	LIMESTONE: Dark gray to brown, argillaceous, carbonaceous, mottled, fair indurations, poor to no visible intergranular porosity, bright yellow fluorescence, quick yellow streaming cut.

10070 – 10080 LIMESTONE: Dark gray to brown, argillaceous, carbonaceous, mottled, fair indurations, poor to no visible intergranular porosity, bright scattered yellow fluorescence, instant milky streaming cut.

10080 – 10090 LIMESTONE: Dark gray to brown, argillaceous, carbonaceous, mottled, fair indurations, poor to no visible intergranular porosity, bright green yellow fluorescence, instant broad streaming cut.

10090 – 10100 LIMESTONE: Dark gray to brown, argillaceous, carbonaceous, mottled, fair indurations, poor to no visible intergranular porosity, bright even yellow fluorescence, fast pin point streaming cut.

10100 – 10110 LIMESTONE: Dark gray to brown, argillaceous, carbonaceous, mottled, fair indurations, poor to no visible intergranular porosity, bright even yellow fluorescence, bright broad streaming cut

10110 – 10120 LIMESTONE: Dark gray to brown, argillaceous, carbonaceous, mottled, fair indurations, poor to no visible intergranular porosity, bright scattered yellow fluorescence, instant pin point streaming cut.

10120 – 10130 LIMESTONE: Dark gray to brown, argillaceous, carbonaceous, mottled, fair indurations, poor to no visible intergranular porosity, bright yellow fluorescence, quick yellow streaming cut.

10130 – 10140 LIMESTONE: Dark gray to brown, argillaceous, carbonaceous, mottled, fair indurations, poor to no visible intergranular porosity, bright green yellow fluorescence, instant broad streaming cut.

10140 – 10150 LIMESTONE: Dark gray to brown, argillaceous, carbonaceous, mottled, fair indurations, poor to no visible intergranular porosity, dull even yellow fluorescence, slow broad streaming cut.

10150 – 10160 LIMESTONE: Light gray, cream, gray, cream gray, light cream, dark gray, trace dark gray striations, firm, hard, brittle, blocky, platy, sub-rounded, sub-angular, microcrystalline, grainy, argillaceous, moderately carbonaceous, calcareous, trace anhydrite, yellow fluorescence, streaming green cut.

10160 – 10170 LIMESTONE: Cream, light gray, light cream, gray, gray brown, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, blocky, sub-rounded, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, interbedded dolomite, calcareous, trace anhydrite, trace calcite, yellow fluorescence, streaming white cut.

10170 – 10180 LIMESTONE: Light gray, cream, gray, cream gray, light cream, dark gray, trace dark gray striations, firm, hard, brittle, blocky, platy, sub-rounded, sub-angular, microcrystalline, grainy, argillaceous, moderately carbonaceous, calcareous, trace anhydrite, yellow fluorescence, streaming green cut.

10180 – 10190 LIMESTONE: Cream, light gray, light cream, gray, gray brown, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, blocky, sub-rounded, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, interbedded dolomite, calcareous, trace anhydrite, trace calcite, yellow fluorescence, slow streaming green cut

10190 – 10200 LIMESTONE: Cream, light gray, light cream, gray, gray brown, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, blocky, sub-rounded, platy, sub-angular,

microcrystalline, carbonaceous, argillaceous, interbedded dolomite, calcareous, trace anhydrite, trace calcite, yellow fluorescence, slow streaming green cut

10200 – 10210 LIMESTONE: Cream, light gray, light cream, gray, gray brown, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, blocky, sub-rounded, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, interbedded dolomite, calcareous, trace anhydrite, trace calcite, bright yellow fluorescence, slow yellow streaming green cut.

10210 – 10220 LIMESTONE: Cream, light gray, light cream, gray, gray brown, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, blocky, sub-rounded, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, interbedded dolomite, calcareous, trace anhydrite, trace calcite, bright yellow fluorescence, slow cloudy streaming green cut.

10220 – 10230 LIMESTONE: Cream, light gray, light cream, gray, gray brown, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, blocky, sub-rounded, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, interbedded dolomite, calcareous, trace anhydrite, trace shale, red, black, trace calcite, dim yellow fluorescence, milky green cut.

10230 – 10240 LIMESTONE: Cream, light gray, light cream, gray, gray brown, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, blocky, sub-rounded, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, interbedded dolomite, calcareous, trace anhydrite, trace calcite, dull yellow fluorescence, slow cloudy streaming green cut.

10240 – 10250 LIMESTONE: Cream, light gray, light cream, gray, gray brown, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, blocky, sub-rounded, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, interbedded dolomite, calcareous, trace anhydrite, trace calcite, moderate yellow fluorescence, slow milky streaming green cut.

10250 – 10260 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, mild yellow fluorescence, yellow cloudy streaming cut.

10260 – 10270 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, mild yellow fluorescence, yellow cloudy streaming cut.

10270 – 10280 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite; blue fluorescence, streaming blue green cut.

10280 – 10290 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite; blue fluorescence, streaming blue green cut.

10290 – 10300 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite; blue fluorescence, weak streaming green cut.

10310 – 10320 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, yellow green fluorescence, yellow streaming cut.

10320 – 10330 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, yellow green fluorescence, yellow streaming cut.

10330 – 10340 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, moderate yellow fluorescence, bright yellow milk streaming cut.

10340 – 10350 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, mild yellow fluorescence, yellow cloudy streaming cut.

10350 – 10360 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, moderate green yellow fluorescence, sharp yellow cloudy streaming cut.

10360 – 10370 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, bright green yellow fluorescence, bright yellow cloudy streaming cut.

10370 – 10380 LIMESTONE: Light cream, cream, light gray, cream gray, gray, gray brown, trace dark gray, firm, hard, brittle, sub-rounded, blocky, sub-angular, platy, microcrystalline, carbonaceous, calcareous, argillaceous, interbedded limestone, trace anhydrite, scattered yellow fluorescence, bright cloudy white streaming cut.

10380 – 10390 LIMESTONE: Light cream, cream, light gray, cream gray, gray, gray brown, trace dark gray, firm, hard, brittle, sub-rounded, blocky, sub-angular, platy, microcrystalline, carbonaceous, calcareous, argillaceous, interbedded limestone, trace anhydrite, spotted yellow fluorescence, bright white milky streaming cut.

10390 – 10400 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, mild yellow fluorescence, yellow cloudy streaming cut.

10400 – 10410 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, patchy green yellow fluorescence, bright green yellow cloudy streaming cut.

10410 – 10420 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, spotted mild yellow fluorescence, yellow cloudy pin-point streaming cut.

10420 – 10430 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous,

trace anhydrite, scattered mild yellow green fluorescence, moderate green yellow milky streaming cut.

10430 – 10440 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, moderate green yellow fluorescence, bright green yellow cloudy streaming cut.

10440 – 10450 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, mild yellow green fluorescence, moderate green yellow milky streaming cut.

10450 – 10460 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, mild scattered yellow green fluorescence, moderate green yellow milky streaming cut.

10460 – 10470 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, scattered yellow green fluorescence, bright green yellow milky streaming cut.

10470 – 10480 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, scattered yellow green fluorescence, bright yellow milky streaming cut.

10480 – 10490 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, spotty yellow green fluorescence, moderate green yellow cloudy streaming cut.

10490 – 10500 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, mild patchy yellow green fluorescence, bright green yellow milky streaming cut.

10500 – 10510 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, scattered yellow green fluorescence, moderate green yellow milky streaming cut.

10510 – 10520 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, scattered yellow green fluorescence, moderate green yellow milky streaming cut.

10520 – 10530 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, even dull yellow fluorescence, dull yellow milky cut.

10530 – 10540 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, even dull yellow fluorescence, dull yellow milky cut.

10540 – 10550 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, even dull yellow fluorescence, weak milky cut.

10550 – 10560 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, even dull yellow fluorescence, milky cut.

10560 – 10570 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, even dull yellow fluorescence, dull instant streaming cut.

10570 – 10580 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, even dull yellow fluorescence, dull instant streaming cut.

10580 – 10590 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, even dull yellow fluorescence, weak slow broad streaming cut.

10590 – 10600 LIMESTONE: Light gray, medium to dark gray, light tan to tan, light brown to brown, mottled, medium to fine grained, argillaceous, carbonaceous, fair indurations, poor porosity, spotted yellow green florescence, quick yellow green cloudy cut.

10600 – 10610 LIMESTONE: Light gray, medium to dark gray, light tan to tan, light brown to brown, mottled, medium to fine grained, dolomitic, argillaceous, carbonaceous, fair in duration, poor porosity, scattered yellow florescence, instant yellow milky cut

10610 – 10620 LIMESTONE: Light gray, medium to dark gray, light tan to tan, light brown to brown, mottled, medium to fine grained, dolomitic, argillaceous, carbonaceous, fair induration, poor porosity, scattered yellow florescence, instant yellow milky cut

10620 – 10630 LIMESTONE: Light gray, medium to dark gray, light tan to tan, light brown to brown, mottled, medium to fine grained, dolomitic, argillaceous, carbonaceous, fair induration, poor porosity, scattered yellow florescence, instant yellow milky cut

10630 – 10640 LIMESTONE: Light gray, medium to dark gray, light tan to tan, light brown to brown, mottled, medium to fine grained, argillaceous, carbonaceous, fair induration, poor porosity, spotted yellow green florescence, quick yellow green cloudy cut.

10640 – 10650 LIMESTONE: Light gray, medium to dark gray, light tan to tan, light brown to brown, mottled, medium to fine grained, argillaceous, carbonaceous, fair induration, poor porosity, spotted yellow green florescence, quick yellow green cloudy cut.

10650 – 10660 LIMESTONE: Light gray, medium to dark gray, light tan to tan, light brown to brown, mottled, medium to fine grained, argillaceous, carbonaceous, fair induration, poor porosity, spotted yellow green florescence, quick yellow green cloudy cut.

10660 – 10670 LIMESTONE: Light gray, medium to dark gray, light tan to tan, light brown to brown, mottled, medium to fine grained, argillaceous, carbonaceous, fair induration, poor porosity, dull even yellow green florescence, and dull green cloudy cut.

10670 – 10680 LIMESTONE: Light gray, medium to dark gray, light tan to tan, light brown to brown, mottled, medium to fine grained, argillaceous, carbonaceous, fair induration, poor porosity, spotted yellow green florescence, quick yellow green cloudy cut.

10680 – 10690 LIMESTONE: Light gray, medium to dark gray, light tan to tan, light brown to brown, mottled, medium to fine grained, argillaceous, carbonaceous, fair induration, poor porosity, spotted yellow green florescence, yellow green cloudy cut.

10690 – 10700 LIMESTONE: Light gray, medium to dark gray, light tan to tan, light brown to brown, mottled, medium to fine grained, argillaceous, carbonaceous, fair induration, poor porosity, spotted yellow green florescence, quick yellow green cloudy cut.

10700 – 10710 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, even dull yellow fluorescence, weak slow broad streaming cut.

10710 – 10720 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, even dim yellow fluorescence, slow broad streaming cut.

10720 – 10730 LIMESTONE: Light gray, cream, light cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, even dull yellow fluorescence, weak slow broad streaming cut.

10730 – 10740 LIMESTONE: Red, tan to brown, white, gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, trace shale, black, dim yellow fluorescence, slow milky streaming cut.

10740 – 10750 LIMESTONE: Red, tan to brown, white, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, trace shale, black, even yellow fluorescence, weak streaming cut.

10750 – 10760 LIMESTONE: Red, tan to brown, white, gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, trace shale, black, even dull fluorescence, slow streaming cut.

10760 – 10770 LIMESTONE: Red, tan to brown, white, gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, spotted dull yellow fluorescence, weak yellow streaming cut.

10770 – 10780 LIMESTONE: Red, tan to brown, white, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, scattered dull fluorescence, weak slow streaming cut.

10780 – 10790 LIMESTONE: Red, tan to brown, white, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, even dull yellow fluorescence, weak slow streaming cut.

10790 – 10800 LIMESTONE: Red, tan to brown, white, gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, trace shale, black, trace salt, clear, spotted dim yellow fluorescence, slow milky cut.

10800 – 10810 LIMESTONE: Red, tan to brown, white, gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, trace shale, black, trace salt, clear, scattered, yellow fluorescence, slow milky cut.

10810 – 10820 LIMESTONE: Red, tan to brown, white, gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, trace shale, black, green trace salt, clear, spotted, yellow fluorescence, bright milky cut.

10820 – 10830 LIMESTONE: Red, tan to brown, white, gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, trace shale, black, green trace salt, clear, spotted yellow fluorescence, bright slow milky cut.

10830 – 10840 LIMESTONE: Red, tan to brown, white, gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, trace shale, black, green trace salt, clear, scattered yellow fluorescence, bright slow milky cut.

10840 – 10850 LIMESTONE: Red, tan to brown, white, gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, trace shale, black, green trace salt, clear, spotted yellow fluorescence, bright slow milky cut.

10850 – 10860 LIMESTONE: Red, tan to brown, white, gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, trace shale, black, green trace salt, clear, yellow fluorescence, bright instant pin point streaming cut.

10860 – 10870 LIMESTONE: Red, tan to brown, white, gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, trace shale, black, green trace salt, clear, spotted yellow fluorescence, bright instant pin point streaming cut.

10870 – 10880 LIMESTONE: Red, tan to brown, white, gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, trace shale, black, green trace salt, clear, scattered yellow fluorescence, slow streaming cut.

10880 – 10890 SILTSTONE: Red, tan to brown, white, gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, trace shale, black, green trace salt, clear, scattered yellow fluorescence, bright pin point streaming cut.

10890 – 10900 SILTSTONE: Red, tan to brown, white, gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, trace shale, black, green trace salt, clear, spotted yellowish fluorescence, bright pin point streaming cut.

10900 – 10910 SILTSTONE: Red, tan to brown, white, gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, trace shale, black, green trace salt, clear, scattered yellow fluorescence, slow pin point streaming cut.

10910 – 10920 SILTSTONE: Red, tan to brown, white, gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, trace shale, black, green trace salt, clear, spotted yellow fluorescence, bright instant streaming cut.

10920 – 10930 SILTSTONE: Red, tan to brown, white, gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, trace shale, black, green trace salt, clear, yellow fluorescence, bright instant streaming cut.

10930 – 10940 SILTSTONE: Red, tan to brown, white, gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, trace shale, black, green trace salt, clear, dull, yellow fluorescence, cloudy cut.

10940 – 10950 SILTSTONE: Red, tan to brown, white, gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, grainy, carbonaceous, argillaceous, interbedded dolomite; calcareous, trace anhydrite, trace shale, black, green trace salt, clear, dim yellow fluorescence, milky yellow cut.

10950 – 10960 SILTSTONE: Light gray to medium gray, light gray, tan to brown, cream white tan, very fine, argillaceous, strongly calcareous, subrounded, trace limestone, medium to dark gray blocky, very grainy, weak to moderate induration, slightly dolomitic, weak spotty yellow fluorescence, weak streaming cloudy cut.

10960 – 10970 SILTSTONE: Light gray to medium gray, light gray, tan to brown, cream white tan, very fine, argillaceous, strongly calcareous, subrounded, trace limestone, medium to dark gray blocky, very grainy, weak to moderate induration, slightly dolomitic, moderately sorted, subangular, weak spotted yellow fluorescence, weak streaming milky cut.

10970 – 10980 SILTSTONE: Light gray to medium gray, light gray, tan, cream white tan, very fine, argillaceous, strongly calcareous, subrounded, trace limestone, medium to dark gray blocky, very platy, weak to moderate induration, slightly dolomitic, moderately sorted, spotty yellow fluorescence, weak streaming cloudy cut.

10980 – 10990 SILTSTONE: Light to medium gray, medium to dark gray, light to medium cream tan, orange, red, interbedded limestone, dolomitic, trace anhydrite, weak to moderate induration, moderately sorted. Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, bright instant cloudy cut.

10990 – 11000 SILTSTONE: Light to medium gray, medium to dark gray, light to medium cream tan, orange, red, interbedded limestone, dolomitic, trace anhydrite, weak to moderate induration, moderately sorted. Shale: black, dark gray, carbonaceous, moderate induration, even green / yellow fluorescence, instant cloudy cut.

11000 – 11010 SILTSTONE: Light to medium gray, medium to dark gray, light to medium cream tan, orange, red, interbedded limestone, dolomitic, trace anhydrite, weak to moderate induration, moderately sorted. Shale: black, dark gray, carbonaceous, moderate induration, even green / yellow fluorescence, slow pinpoint streaming cut.

11010 – 11020 SILTSTONE: Light to medium gray, medium to dark gray, light to medium cream tan, orange, red, interbedded limestone, dolomitic, trace anhydrite, weak to moderate induration, moderately sorted. Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, slow broad streaming cut.

11020 – 11030 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, . Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, slow broad streaming cut.

11030 – 11040 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, . Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, instant broad streaming cut.

11040 – 11050 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, . Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, pinpoint streaming cut.

11050 – 11060 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, . Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, instant cloudy streaming cut.

11060 – 11070 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, . Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, instant cloudy streaming cut.

11070 – 11080 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, . Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, instant cloudy streaming cut.

11080 – 11090 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, . Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, bright slow milky cut.

11070 – 11080 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, . Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, bright slow milky cut.

11080 – 11090 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, . Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, slow white streaming cut.

11090 – 11100 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, . Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, dull instant pinpoint streaming cut.

11100 – 11110 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, . Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, instant broad streaming cut.

11110 – 11120 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, . Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, instant cloudy cut.

11120 – 11130 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, . Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, slow streaming cut.

11130 – 11140 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, . Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, instant cloudy streaming cut.

11140 – 11150 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, . Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, instant white cut.

11150 – 11160 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, . Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, slow white streaming cut.

11160 – 11170 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, . Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, instant cloudy streaming cut.

11170 – 11180 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, . Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, bright slow milky cut.

11180 – 11190 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, . Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, slow white streaming cut.

11190 – 11200 SILTSTONE: Light to medium gray, gray, light to medium tan, tan, light to medium brown, very fine to fine, hard, argillaceous, platy, limestone cementation, trace limestone, light to medium tan, cream to cream tan, cryptocrystalline, firm to hard, brittle, slightly dolomitic, moderately sorted, subangular to subrounded, even yellow fluorescence, milky yellow pinpoint streaming cut.

11200 – 11210 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, bright slow milky cut.

11210 – 11220 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, instant broad streaming cut.

11220 – 11230 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, dull instant pinpoint streaming cut.

11230 – 11240 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, instant cloudy streaming cut.

11240 – 11250 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, instant cloudy streaming cut.

11250 – 11260 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, instant cloudy streaming cut.

11260 – 11270 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, instant cloudy streaming cut.

11270 – 11280 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, Shale: black, dark gray, carbonaceous, moderate induration, dull even green / yellow fluorescence, milky streaming cut.

11280 – 11290 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, Shale: black, dark gray, carbonaceous, moderate induration, bright even green / yellow fluorescence, cloudy streaming cut.

11290 – 11300 LIMESTONE: Light to medium gray, light cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, Shale: black, dark gray, carbonaceous, moderate induration, bright green yellow fluorescence, milky streaming cut.

11300 – 11310 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, Shale: black, dark gray, carbonaceous, moderate induration, bright green yellow fluorescence, cloudy streaming cut.

11310 – 11320 LIMESTONE: Light to medium gray, light cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, Shale: black, dark gray, carbonaceous, moderate induration, bright even green yellow fluorescence, milky streaming cut.

11320 – 11330 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, Shale: black, dark gray, carbonaceous, moderate induration, green yellow fluorescence, milky streaming cut.

11330 – 11340 LIMESTONE: Light to medium gray, light cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, Shale: black, dark gray, carbonaceous, moderate induration, bright yellow fluorescence, milky streaming cut.

11340 – 11350 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, Shale: black, dark gray, carbonaceous, moderate induration, even yellow fluorescence, cloudy cut.

11350 – 11360 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, Shale: black, dark gray, carbonaceous, moderate induration, dull even green yellow fluorescence, milky streaming cut.

11360 – 11370 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, Shale: black, dark gray, carbonaceous, moderate induration, dim green yellow fluorescence, milky streaming cut.

11370 – 11380 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, Shale: black, dark gray, carbonaceous, moderate induration, green yellow fluorescence, milky slow streaming cut.

11380 – 11390 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, Shale: black, dark gray, carbonaceous, moderate induration, scattered green yellow fluorescence, milky slow yellow streaming cut.

11390 – 11400 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, Shale: black, dark gray, carbonaceous, moderate induration, spotted yellow fluorescence, milky yellow cut.

11400 – 11410 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, Shale: black, dark gray, carbonaceous, moderate induration, scattered green yellow fluorescence, cloudy yellow cut.

11410 – 11420 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, Shale: black, dark gray, carbonaceous, moderate induration, spotted yellow fluorescence, bright milky cut.

11420 – 11430 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, Shale: black, dark

gray, carbonaceous, moderate induration, spotted green yellow fluorescence, milky streaming cut.

11430 – 11440 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, Shale: black, dark gray, carbonaceous, moderate induration, spotted green yellow fluorescence, milky cut.

11440 – 11450 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, Shale: black, dark gray, carbonaceous, moderate induration, spotted green yellow fluorescence, cloudy cut.

11450 – 11460 LIMESTONE: Light brown to bark brown, tan to dark tan, gray, brown, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, Shale: black, dark gray, carbonaceous, moderate induration, spotted green yellow fluorescence, milky cut.

11460 – 11470 LIMESTONE: Light brown to bark brown, tan to dark tan, gray, brown , gray, cream gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, Shale: black, dark gray, carbonaceous, moderate induration, spotted green yellow fluorescence, cloudy streaming cut.

11470 – 11480 LIMESTONE: Light brown to bark brown, tan to dark tan, gray, brown, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, Shale: black, dark gray, carbonaceous, moderate induration, spotted green yellow fluorescence, milky cut.

11480 – 11490 LIMESTONE: Light brown to bark brown, tan to dark tan, gray, brown, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, Shale: black, dark gray, carbonaceous, moderate induration, spotted green yellow fluorescence, cloudy streaming cut.

11490 – 11500 LIMESTONE: Light brown to bark brown, tan to dark tan, gray, brown, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, carbonaceous, moderate induration, spotted green yellow fluorescence, cloudy streaming cut.

11500 – 11510 LIMESTONE: Light brown to bark brown, tan to dark tan, gray, brown, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, carbonaceous, moderate induration, spotted yellow fluorescence, bright cloudy streaming cut.

11510 – 11520 LIMESTONE: Light brown to bark brown, tan to dark tan, gray, brown, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, carbonaceous, moderate induration, spotted green yellow fluorescence, bright milky streaming cut.

11520 – 11530 LIMESTONE: Light brown to bark brown, tan to dark tan, gray, brown, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, carbonaceous, moderate induration, scattered yellow fluorescence, cloudy yellow streaming cut.

11530 – 11540 LIMESTONE: Light brown to bark brown, tan to dark tan, gray, brown, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, carbonaceous, moderate induration, spotted yellow fluorescence, milky streaming cut.

11540 – 11550 LIMESTONE: Light brown to bark brown, tan to dark tan, gray, brown, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, carbonaceous, moderate induration, spotted green yellow fluorescence, milky yellow streaming cut.

11550 – 11560 LIMESTONE: Light brown to bark brown, tan to dark tan, gray, brown, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, carbonaceous, moderate induration, spotted yellow fluorescence, milky streaming cut.

11560 – 11570 LIMESTONE: Light brown to bark brown, tan to dark tan, gray, brown, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, carbonaceous, moderate induration, spotted yellow fluorescence, milky streaming cut.

11570 – 11580 LIMESTONE: Light brown to bark brown, tan to dark tan, gray, brown, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, carbonaceous, moderate induration, spotted green yellow fluorescence, milky yellow streaming cut.

11580 – 11590 LIMESTONE: Light brown to bark brown, tan to dark tan, gray, brown, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, carbonaceous, moderate induration, spotted green yellow fluorescence, milky yellow streaming cut.

11590 – 11600 LIMESTONE: Light brown to bark brown, tan to dark tan, gray, brown, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, Shale: black, dark gray, carbonaceous, moderate induration, spotted green yellow fluorescence, dull pinpoint streaming cut.

11600 – 11610 LIMESTONE: Light brown to bark brown, tan to dark tan, gray, brown, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, moderate induration, spotted green yellow fluorescence, instant pinpoint streaming cut.

11610 – 11620 LIMESTONE: Light brown to bark brown, tan to dark tan, gray, brown, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, moderate induration, spotted green yellow fluorescence, slow broad streaming cut.

11620 – 11630 LIMESTONE: Light brown to bark brown, tan to dark tan, gray, brown, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, moderate induration, spotted green yellow fluorescence, slow broad streaming cut.

11630 – 11640 LIMESTONE: Light brown to bark brown, tan to dark tan, gray, brown, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, moderate induration, spotted green yellow fluorescence, instant streaming cut.

11640 – 11650 LIMESTONE: Light brown to bark brown, tan to dark tan, gray, brown, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, moderate induration, spotted green yellow fluorescence, instant streaming cut.

11650 – 11660 LIMESTONE: Light brown to bark brown, tan to dark tan, gray, brown, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, moderate induration, spotted green yellow fluorescence, instant streaming cut.

11660 – 11670 LIMESTONE: Light brown to bark brown, tan to dark tan, gray, brown, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, moderate induration, spotted green yellow fluorescence, instant milky streaming cut.

11670 – 11680 LIMESTONE: Light brown to bark brown, tan to dark tan, gray, brown, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, moderate induration, spotted green yellow fluorescence, instant milky streaming cut.

11680 – 11690 LIMESTONE: Light brown to bark brown, tan to dark tan, gray, brown, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, moderate induration, spotted green yellow fluorescence, instant milky streaming cut.

11690 – 11700 LIMESTONE: Light brown to bark brown, tan to dark tan, gray, brown, gray, cream gray, dark gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, carbonaceous, argillaceous, trace anhydrite, moderate induration, spotted green yellow fluorescence, instant milky streaming cut.

11700 – 11710 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered green yellow fluorescence, cloudy yellow cut..

11710 – 11720 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered green yellow fluorescence, cloudy yellow cut.

11720 – 11730 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered green yellow fluorescence, cloudy yellow cut.

11730 – 11740 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered green yellow fluorescence, instant cloudy cut.

11740 – 11750 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered green yellow fluorescence, instant milky cut.

11750 – 11760 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered green yellow fluorescence, instant pinpoint cut.

11760 – 11770 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered green yellow fluorescence, instant pinpoint cut.

11770 – 11780 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered green yellow fluorescence, instant pinpoint cut.

11780 – 11790 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered green yellow fluorescence, slow broad streaming cut.

11790 – 11800 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered green yellow fluorescence, slow broad streaming cut.

11800 – 11810 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered green yellow fluorescence, slow broad streaming cut.

11810 – 11820 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered green yellow fluorescence, instant milky cut.

11820 – 11830 DOLOMITE: Light to medium tan, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, dense, brittle, sub-rounded, blocky, sub-angular, sub-rounded, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered green yellow fluorescence, instant milky cut.

11830 – 11840 DOLOMITE: Light to medium tan, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, dense, brittle, sub-rounded, blocky, sub-angular, sub-rounded, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered green yellow fluorescence, instant milky cut

11840 – 11850 DOLOMITE: Light to medium tan, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, dense, brittle, sub-rounded, blocky, sub-angular, sub-rounded, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered green yellow fluorescence, instant milky cut

11850 – 11860 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered green yellow fluorescence, instant milky cut.

11860 – 11870 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered green yellow fluorescence, instant milky cut.

11870 – 11880 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered green yellow fluorescence, instant milky cut.

11880 – 11890 DOLOMITE: Light to medium tan, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, dense, brittle, sub-rounded, blocky, sub-angular, sub-rounded, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered green yellow fluorescence, instant milky cut

11890 – 11900 DOLOMITE: Light to medium tan, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, dense, brittle, sub-rounded, blocky, sub-angular, sub-rounded, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered green yellow fluorescence, instant milky cut

11900 – 11910 DOLOMITE: Light to medium tan, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, dense, brittle, sub-rounded, blocky, sub-angular, sub-rounded, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered green yellow fluorescence, slow pinpoint streaming cut.

11910 – 11920 DOLOMITE: Light to medium tan, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, dense, brittle, sub-rounded, blocky, sub-angular, sub-rounded, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, spotted yellow fluorescence, slow yellow streaming cut.

11920 – 11930 DOLOMITE: Light to medium tan, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, dense, brittle, sub-rounded, blocky, sub-angular, sub-rounded, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered yellow fluorescence, slow broad yellow streaming cut.

11930 – 11940 DOLOMITE: Light to medium tan, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, dense, brittle, sub-rounded, blocky, sub-angular, sub-rounded, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered yellow fluorescence, cloudy slow broad yellow streaming cut.

11940 – 11950 DOLOMITE: Light to medium tan, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, dense, brittle, sub-rounded, blocky, sub-angular, sub-rounded, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace

anhydrite, moderate induration, spotted green yellow fluorescence, cloudy broad yellow streaming cut.

11950 – 11960 DOLOMITE: Light to medium tan, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, dense, brittle, sub-rounded, blocky, sub-angular, sub-rounded, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered yellow fluorescence, cloudy slow broad yellow streaming cut.

11960 – 11970 DOLOMITE: Light to medium tan, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, dense, brittle, sub-rounded, blocky, sub-angular, sub-rounded, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, yellow fluorescence, milky slow broad yellow streaming cut.

11970 – 11980 DOLOMITE: Light to medium tan, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, dense, brittle, sub-rounded, blocky, sub-angular, sub-rounded, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered yellow fluorescence, cloudy slow pin point yellow streaming cut.

11980 – 11990 DOLOMITE: Light to medium tan, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, dense, brittle, sub-rounded, blocky, sub-angular, sub-rounded, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered green yellow fluorescence, cloudy broad yellow streaming cut.

11990 – 12000 DOLOMITE: Light to medium tan, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, dense, brittle, sub-rounded, blocky, sub-angular, sub-rounded, microcrystalline, silty, trace shale, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered yellow fluorescence, cloudy slow broad yellow streaming cut.

12000 – 12010 DOLOMITE: Medium to dark gray, gray, cream gray, cream, light cream, trace dark gray laminations, firm, hard, dense, brittle, sub-rounded, blocky, sub-angular, sub-rounded, microcrystalline, silty, trace shale, black, carbonaceous, argillaceous, trace anhydrite, moderate induration, bright scattered yellow fluorescence, milky slow broad yellow streaming cut.

12010 – 12020 DOLOMITE: Medium to dark gray, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, dense, brittle, sub-rounded, blocky, sub-angular, sub-rounded, microcrystalline, silty, trace shale, black, carbonaceous, argillaceous, trace anhydrite, moderate induration, bright scattered green yellow fluorescence, milky slow broad yellowish streaming cut.

12020 – 12030 DOLOMITE: Medium to dark gray, gray, light to medium cream, cream, cream gray, trace dark gray laminations, firm, hard, dense, brittle, sub-rounded, blocky, sub-angular, sub-rounded, microcrystalline, silty, trace shale, black carbonaceous, argillaceous, trace anhydrite, moderate induration, bright scattered yellow fluorescence, milky slow broad yellow streaming cut.

12030 – 12040 DOLOMITE: Medium to dark gray, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, dense, brittle, sub-rounded, blocky, sub-angular, sub-rounded, microcrystalline, silty, trace shale, black, carbonaceous, argillaceous, trace anhydrite, moderate induration, dull spotted yellow fluorescence, bright milky slow broad yellowish streaming cut.

12040 – 12050 DOLOMITE: Medium to dark gray, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, dense, brittle, sub-rounded, blocky, sub-angular, sub-rounded, microcrystalline, silty, trace shale, black, carbonaceous, argillaceous, trace anhydrite, moderate induration, dull scattered yellow fluorescence, bright milky slow broad yellow streaming cut.

12050 – 12060 DOLOMITE: Medium to dark gray, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, dense, brittle, sub-rounded, blocky, sub-angular, sub-rounded, microcrystalline, silty, trace shale, black, carbonaceous, argillaceous, trace anhydrite, moderate induration, dim scattered green yellow fluorescence, bright cloudy slow broad yellowish streaming cut.

12060 – 12070 DOLOMITE: Medium to dark gray, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, dense, brittle, sub-rounded, blocky, sub-angular, sub-rounded, microcrystalline, silty, trace shale, black, carbonaceous, argillaceous, trace anhydrite, moderate induration, dim yellow fluorescence, dull yellowish streaming cut.

12070 – 12080 DOLOMITE: Medium to dark gray, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, dense, brittle, sub-rounded, blocky, sub-angular, sub-rounded, microcrystalline, silty, trace shale, black, carbonaceous, argillaceous, trace anhydrite, moderate induration, dull green yellow fluorescence, light cloudy streaming cut.

12080 – 12090 DOLOMITE: Medium to dark gray, light to medium cream, cream, gray, cream gray, trace dark gray laminations, firm, hard, dense, brittle, sub-rounded, blocky, sub-angular, sub-rounded, microcrystalline, silty, trace shale, black, carbonaceous, argillaceous, trace anhydrite, moderate induration, dim scattered green yellow fluorescence, cloudy yellowish cut.

12090 – 12100 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, moderate induration, bright yellow / white fluorescence, instant pinpoint streaming cut.

12100 – 12110 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace limestone, moderate induration, bright yellow / white fluorescence, instant pinpoint streaming cut.

12110 – 12120 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace limestone, moderate induration, bright yellow / white fluorescence, instant pinpoint streaming cut.

12120 – 12130 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace limestone, moderate induration, bright yellow / white fluorescence, instant pinpoint streaming cut.

12130 – 12140 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace limestone, moderate induration, bright yellow / white fluorescence, instant cloudy cut..

12140 – 12150 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace limestone, moderate induration, bright yellow / white fluorescence, instant cloudy cut..

12150 – 12160 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace limestone, moderate induration, bright yellow / white fluorescence, instant cloudy cut.

12160 – 12170 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace limestone, moderate induration, bright yellow fluorescence, instant broad streaming cut.

12170 – 12180 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace limestone, moderate induration, bright yellow fluorescence, instant broad streaming cut.

12180 – 12190 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace limestone, moderate induration, bright yellow fluorescence, instant broad streaming cut.

12190 – 12200 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace limestone, moderate induration, bright yellow fluorescence, instant broad streaming cut.

12200 – 12210 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace limestone, moderate induration, bright yellow green fluorescence, instant milky cut.

12210 – 12220 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace limestone, moderate induration, bright yellow green fluorescence, instant milky cut.

12220 – 12230 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace limestone, moderate induration, bright yellow green fluorescence, instant milky cut.

12230 – 12240 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace limestone, moderate induration, bright yellow green fluorescence, bright instant pinpoint cut.

12240 – 12250 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace limestone, moderate induration, bright yellow green fluorescence, bright instant pinpoint cut.

12250 – 12260 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace limestone, moderate induration, bright yellow green fluorescence, bright instant pinpoint cut.

12260 – 12270 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace limestone, moderate induration, bright yellow green fluorescence, bright instant pinpoint cut.

12270 – 12280 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace limestone, moderate induration, bright yellow green fluorescence, bright instant milky cut.

12280 – 12290 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace limestone, moderate induration, bright yellow green fluorescence, bright instant milky cut.

12300 – 12310 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace limestone, moderate induration, bright yellow green fluorescence, bright instant milky cut.

12310 – 12320 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace limestone, moderate induration, bright yellow green fluorescence, bright instant milky cut.

12320 – 12330 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace limestone, moderate induration, bright yellow green fluorescence, bright instant milky cut.

12330 – 12340 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace to moderate limestone, moderate induration, bright yellow fluorescence, bright pinpoint streaming cut.

12340 – 12350 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace to moderate limestone, moderate induration, bright yellow fluorescence, bright pinpoint streaming cut.

12350 – 12360 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace to moderate limestone, moderate induration, bright yellow fluorescence, bright pinpoint streaming cut.

12360 – 12370 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace to moderate limestone, moderate induration, bright yellow fluorescence, instant streaming cut.

12370 – 12380 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace to moderate limestone, moderate induration, bright yellow fluorescence, instant streaming cut.

12380 – 12390 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace to moderate limestone, moderate induration, bright yellow fluorescence, instant streaming cut.

12390 – 12400 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace to moderate limestone, moderate induration, bright yellow fluorescence, instant streaming cut.

12400 – 12410 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace to moderate limestone, moderate induration, bright yellow fluorescence, instant streaming cut.

12410 – 12420 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace to moderate limestone, moderate induration, bright yellow fluorescence, instant streaming cut.

12420 – 12430 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace to moderate limestone, moderate induration, bright yellow fluorescence, instant bright cloudy cut.

12430 – 12440 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace to moderate limestone, moderate induration, bright yellow fluorescence, instant bright cloudy cut.

12440 – 12450 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace to moderate limestone, moderate induration, bright yellow fluorescence, instant bright cloudy cut.

12450 – 12460 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace to moderate limestone, moderate induration, bright yellow fluorescence, bright slow broad streaming cut.

12460 – 12470 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace to moderate limestone, moderate induration, bright yellow fluorescence, bright slow broad streaming cut.

12470 – 12480 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace to moderate limestone, moderate induration, bright yellow fluorescence, bright slow broad streaming cut.

12480 – 12490 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace to moderate limestone, moderate induration, bright yellow fluorescence, quick milky streaming cut.

12490 – 12500 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace to moderate limestone, moderate induration, bright yellow fluorescence, quick milky streaming cut.

12500 – 12510 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace to moderate limestone, moderate induration, bright yellow fluorescence, quick milky streaming cut.

12510 – 12520 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace to moderate limestone, moderate induration, bright yellow fluorescence, quick milky streaming cut.

12520 – 12530 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace to moderate limestone, moderate induration, bright yellow fluorescence, quick milky streaming cut.

12530 – 12540 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace to moderate limestone, moderate induration, bright yellow fluorescence, quick milky streaming cut.

12540 – 12550 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace to moderate limestone, moderate induration, bright yellow fluorescence, instant bright milky cut

12550 – 12560 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace to moderate limestone, moderate induration, bright yellow fluorescence, instant bright milky cut

12560 – 12570 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace to moderate limestone, moderate induration, bright yellow fluorescence, instant bright milky cut

12570 – 12580 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace to moderate limestone, moderate induration, bright yellow fluorescence, instant bright milky cut

12580 – 12590 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace to moderate limestone, moderate induration, bright yellow fluorescence, instant bright milky cut

12590 – 12600 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace to moderate limestone, moderate induration, dull yellow fluorescence, instant milky cut

12600 – 12610 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace to moderate limestone, moderate induration, dim yellow fluorescence, instant bright milky cut

12610 – 12620 DOLOMITE: Light to medium brown, light to medium tan, light to medium cream, cream, tan, brown, hard to dense, trace medium to dark gray laminations, sub-rounded, sub-angular, microcrystalline, silty, carbonaceous, trace anhydrite, trace to moderate limestone, moderate induration, dull yellow fluorescence, bright milky cut

12620 – 12630 LIMESTONE: Medium to dark gray, olive grey, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, poor to no visible intergranular porosity, bright yellow fluorescence, yellow streaming cut.

12630 – 12640 LIMESTONE: Medium to dark gray, olive grey, wackestone to packstone, argillaceous, trace anhydrite, carbonaceous, mottled, fair induration, poor to no visible intergranular porosity, bright yellowish green fluorescence, cloudy streaming cut.

12640 – 12650 LIMESTONE: Medium to dark gray, olive grey, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, poor to no visible intergranular porosity, bright yellow green fluorescence, slow yellowish green streaming cut.

12650 – 12660 LIMESTONE: Medium to dark gray, olive grey, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, poor to no visible intergranular porosity, bright spotted yellow fluorescence, slow broad streaming cut.

12660 – 12670 LIMESTONE: Medium to dark gray, olive grey, wackestone to packstone, trace anhydrite argillaceous, carbonaceous, mottled, fair induration, poor to no visible intergranular porosity, bright scattered yellow fluorescence, slow milky streaming cut.

12670 – 12680 LIMESTONE: Medium to dark gray, olive grey, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, poor to no visible intergranular porosity, bright yellow green fluorescence, slow cloudy broad streaming cut.

12680 – 12690 LIMESTONE: Medium to dark gray, olive grey, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, poor to no visible intergranular porosity, bright yellowish fluorescence, slow cloudy cut.

12690 – 12700 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, poor to no visible intergranular porosity, bright yellow green fluorescence, cloudy cut.

12700 – 12710 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, poor to no visible intergranular porosity, dim yellow green fluorescence, slow yellow streaming cut.

12710 – 12720 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, poor to no visible intergranular porosity, dim yellowish green fluorescence, slow milky pin point streaming cut.

12720 – 12730 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, poor to no visible intergranular porosity, bright yellowish green fluorescence, slow cloudy pin point streaming cut.

12730 – 12740 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, poor to no visible intergranular porosity, bright yellowish green fluorescence, slow pin point streaming cut.

12740 – 12750 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, poor to no visible intergranular porosity, bright yellowish fluorescence, slow streaming cut.

12750 – 12760 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, poor to no visible intergranular porosity, bright yellowish green fluorescence, slow pin point streaming cut.

12760 – 12770 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, poor to no visible intergranular porosity, bright yellow green fluorescence, slow milky pin point streaming cut.

12770 – 12780 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, poor to no visible intergranular porosity, dim yellowish green fluorescence, slow cloudy pin point streaming cut.

12780 – 12790 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, poor to no visible intergranular porosity, bright yellow green fluorescence, slow pin point streaming cut.

12790 – 12800 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, no visible intergranular porosity, bright yellow fluorescence, slow streaming cut.

12800 – 12810 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, no visible intergranular porosity, dull yellow fluorescence, slow streaming cut.

12810 – 12820 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, no visible intergranular porosity, cloudy yellow fluorescence, slow milky streaming cut.

12820 – 12830 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, no visible intergranular porosity, green yellow fluorescence, streaming cut.

12830 – 12840 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, no visible intergranular porosity, bright yellow fluorescence, slow streaming cut.

12840 – 12850 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, no visible intergranular porosity, dull green yellow fluorescence, slow milky streaming cut.

12850 – 12860 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, no visible intergranular porosity, even yellow fluorescence, yellow streaming cut.

12860 – 12870 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, no visible intergranular porosity, spotted yellow fluorescence, slow pin point streaming cut.

12870 – 12880 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, no visible intergranular porosity, bright yellow green fluorescence, slow streaming cut.

12880 – 12890 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, no visible intergranular porosity, bright green yellow fluorescence, slow pin point streaming cut.

12890 – 12900 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, no visible intergranular porosity, scattered yellow fluorescence, slow broad streaming cut.

12900 – 12910 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, no visible intergranular porosity, bright green yellow fluorescence, slow milky cut.

12910 – 12920 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, no visible intergranular porosity, bright yellow fluorescence, slow cloudy cut.

12920 – 12930 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, no visible intergranular porosity, dim yellow fluorescence, slow milky cut.

12930 – 12940 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, no visible intergranular porosity, bright yellow fluorescence, slow streaming cut.

12940 – 12950 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, no visible intergranular porosity, bright green yellow fluorescence, slow streaming cut.

12950 – 12960 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, no visible intergranular porosity, even yellow fluorescence, yellow streaming cut.

12960 – 12970 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, no visible intergranular porosity, scattered yellow fluorescence, slow broad streaming cut.

12970 – 12980 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, no visible intergranular porosity, dull green yellow fluorescence, slow milky streaming cut.

12980 – 12990 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, no visible intergranular porosity, bright yellow fluorescence, slow cloudy cut.

12990 – 13000 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, no visible intergranular porosity, bright yellow green fluorescence, slow streaming cut.

13000 – 13010 LIMESTONE: Medium to dark gray, olive grey, white to cream, tan to brown, wackestone to packstone, trace anhydrite, argillaceous, carbonaceous, mottled, fair induration, no visible intergranular porosity, dim yellow fluorescence, slow milky cut

13010 – 13020 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, light to medium tan, tan, light to medium cream, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered green yellow fluorescence, instant milky cut.

13020 – 13030 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, light to medium tan, tan, light to medium cream, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered green yellow fluorescence, instant milky cut.

13030 – 13040 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, light to medium tan, tan, light to medium cream, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered green yellow fluorescence, instant milky cut.

13040 – 13050 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, light to medium tan, tan, light to medium cream, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, trace anhydrite, moderate induration, scattered green yellow fluorescence, instant milky cut.

13050 – 13060 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, light to medium tan, tan, light to medium cream, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, trace anhydrite, moderate induration, bright scattered green yellow fluorescence, instant slow broad streaming cut.

13060 – 13070 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, light to medium tan, tan, light to medium cream, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, trace anhydrite, moderate induration, bright scattered green yellow fluorescence, instant slow broad streaming cut.

13070 – 13080 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, light to medium tan, tan, light to medium cream, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, trace anhydrite, moderate induration, bright scattered green yellow fluorescence, instant slow broad streaming cut.

13080 – 13090 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, light to medium tan, tan, light to medium cream, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, trace anhydrite, moderate induration, bright scattered green yellow fluorescence, instant slow broad streaming cut.

13090 – 13100 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, light to medium tan, tan, light to medium cream, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, trace anhydrite, moderate induration, bright scattered green yellow fluorescence, instant cloudy / pinpoint streaming cut.

13100 – 13110 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, light to medium tan, tan, light to medium cream, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, trace anhydrite, moderate induration, bright scattered green yellow fluorescence, instant cloudy / pinpoint streaming cut.

13110 – 13120 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, light to medium tan, tan, light to medium cream, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, trace anhydrite, moderate induration, bright scattered green yellow fluorescence, instant cloudy / pinpoint streaming cut.

13120 – 13130 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, light to medium tan, tan, light to medium cream, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, trace anhydrite, moderate induration, bright scattered green yellow fluorescence, instant cloudy / pinpoint streaming cut.

13130 – 13140 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, light to medium tan, tan, light to medium cream, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, trace anhydrite, moderate induration, bright scattered green yellow fluorescence, instant bright milky cut.

13140 – 13150 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, light to medium tan, tan, light to medium cream, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, trace anhydrite, moderate induration, bright scattered green yellow fluorescence, instant bright milky cut.

13150 – 13160 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, light to medium tan, tan, light to medium cream, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, trace anhydrite, moderate induration, bright scattered green yellow fluorescence, instant bright milky cut.

13160 – 13170 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, light to medium tan, tan, light to medium cream, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, trace anhydrite, moderate induration, bright scattered green yellow fluorescence, instant bright milky cut.

13170 – 13180 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, light to medium tan, tan, light to medium cream, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, trace anhydrite, moderate induration, bright scattered green yellow fluorescence, instant bright broad streaming cut.

13180 – 13190 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, light to medium tan, tan, light to medium cream, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, trace anhydrite, moderate induration, bright scattered green yellow fluorescence, instant bright broad streaming cut.

13190 – 13200 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, light to medium tan, tan, light to medium cream, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, trace anhydrite, moderate induration, bright scattered green yellow fluorescence, instant bright broad streaming cut.

13200 – 13210 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, light to medium tan, tan, light to medium cream, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, trace anhydrite, moderate induration, bright scattered green yellow fluorescence, instant bright cloudy cut.

13210 – 13220 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, light to medium tan, tan, light to medium cream, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, trace anhydrite, moderate induration, bright scattered green yellow fluorescence, instant bright cloudy cut.

13220 – 13230 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, light to medium tan, tan, light to medium cream, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, trace anhydrite, moderate induration, bright scattered green yellow fluorescence, instant bright cloudy cut.

13230 – 13240 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, light to medium tan, tan, light to medium cream, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, trace anhydrite, moderate induration, bright scattered green yellow fluorescence, bright pinpoint streaming cut.

13240 – 13250 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, light to medium tan, tan, light to medium cream, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, trace anhydrite, moderate induration, bright scattered green yellow fluorescence, bright pinpoint streaming cut.

13250 – 13260 LIMESTONE: Light to medium gray, light to medium cream, cream, gray, cream gray, light to medium tan, tan, light to medium cream, trace dark gray laminations, firm, hard, brittle, sub-rounded, blocky, platy, sub-angular, microcrystalline, carbonaceous, argillaceous, trace anhydrite, moderate induration, bright scattered green yellow fluorescence, bright pinpoint streaming cut.

TD was reached at 13,261' MD on July 8, 2011.

1. One final paper mudlog and report to:

Richard Ellis, President
WEPCO Energy, LLC
12943 Horizon Trail
Castle Rock, CO 80108

2. One final paper mudlog and report to:

Cheyenne Petroleum Company
Attn: Bill Spurgeon
14000 Quail Springs Parkway,
Suite 2200
Oklahoma City, OK 73134

3. One paper copy final mud log and report to HALLIBURTON OIL & GAS ASSETS

Halliburton Oil & Gas Assets
Attn: Rick Smothermon
2107 CityWest Blvd., Building 2
P.O. Box 42806 (77242)
Houston, TX 77042-3051

4. One final paper mudlog and report to:

North Dakota Industrial Commission
Oil & Gas Division
Attn: Mr. Lynn D. Helms, Director
600 East Boulevard Ave. Dept 405
Bismarck, North Dakota 58505-0840

5. One final paper mudlog, reports and cuttings to:

Dale A. Walker
Williston Basin Business Unit
Occidental Oil and Gas Corporation
Office GWP-5 21.071
5 Greenway Plaza Suite 110
Houston, Texas 77046-0521

6. One set of cuttings to:

ND Geological Survey Core Library
Campus Road and Cornell
Grand Forks, ND 58202

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
JUN 2011
ND OIL & GAS DIVISION

Well File No.
20659

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

☑ Notice of Intent	Approximate Start Date	☐ Drilling Prognosis	☐ Spill Report
☐ Report of Work Done	Date Work Completed	☐ Redrilling or Repair	☐ Shooting
☐ Notice of Intent to Begin a Workover Project that may Qualify for a Tax Exemption Pursuant to NDCC Section 57-51.1-03.	Approximate Start Date	☐ Casing or Liner	☐ Acidizing
		☐ Plug Well	☐ Fracture Treatment
		☐ Supplemental History	☐ Change Production Method
		☐ Temporarily Abandon	☐ Reclamation
		☑ Other	**Change in casing design**

Well Name and Number					
Kudrna 1-17					
Footages		Qtr-Qtr	Section	Township	Range
362 F **S** L **2331** F **W** L		**NENW**	**20**	**141 N**	**97 W**
Field	Pool	County			
St. Anthony	Bakken	**Dunn**			

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

Change in casing design:

Surface: Drill 17" hole, run 13 3/8" to 2300' (new casing point)
Production: Drill 1201/2" hole to TD. Run 5 1/2" 20# & 23#. Cement to 5152'

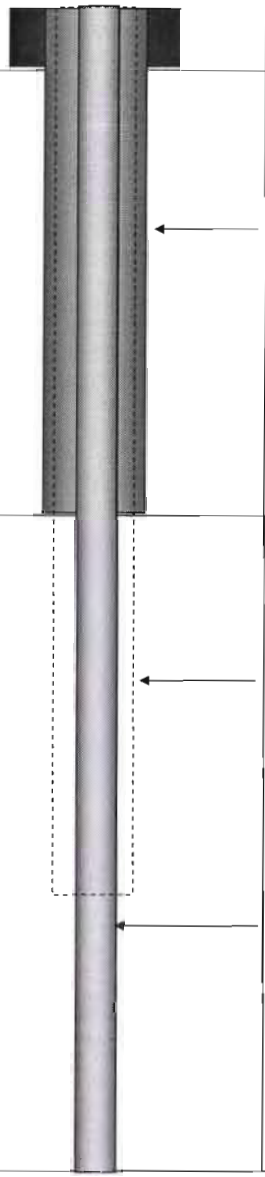
Company		Telephone Number
OXY USA Inc.		**713-366-5303**
Address		
5 Greenway Plaza		
City	State	Zip Code
Houston	**TX**	**77046-0521**
Signature	Printed Name	
Elizabeth S. Bush-Ivie	**Elizabeth S. Bush-Ivie**	
Title	Date	
Senior Regulatory Advisor	5/27/11	
Email Address		
Elizabeth_Bush@oxy.com		

FOR STATE USE ONLY

☐ Received	☒ Approved
Date	6/2/11
By	
Title	Mineral Resources Permit Manager

KUDRNA 1-17

MD RKB	TVD RKB	Casing	Bit Size	Cement
113'	113'	16" Conductor, (15.4" ID) Preset	N/A	N/A
2162'	2162'	13 3/8", 54.5 ppf, J55, STC Set at 100' into Pierre Shale SCP 2175' MD/TVD	14 3/4" Tricone Bit (Drill to TD) After bit run use under reamer to open up hole to 17.5".	Lead: Premium Lite Cement Density: 11.5 ppg Yield: 2.76 scf/sack TOC: Surface Sacks: 726 Slurry Details: 0.08% bwoc Static Free + 3% Calcium Chloride+0.25 Cello Flakes+12% Bentonite+1% Sodium Metasillicate+0.01 gps FP-13L+ 156.8 % FW Tail: Class G Cement Density: 15.8 ppg Yield: 1.17 scf/sack TOC: 1660' Sacks: 477 Slurry Details: 0.08% bwoc Static Free + 2% Calcium chloride+0.125 Cello Flakes+0.01 gps FP-13L+ 44.2% FW
13283'	13079'	Contingent String 9 5/8" CSG 5 1/2" CSG 20 ppf, L-80, LTC (6720' - 0') 5 1/2" CSG 23ppf, L-80, LTC (13238' - 6720')	12 1/4" to TD	Lead: Premium Lite Cement Density:12.0 ppg Yield: 2.41 scf/sack TOC:5000' Sacks: 1200 Slurry Details: 0.8% Static Free+ 5% CSE+0.8% R-3 +3 lb/sack Kol Seal+0.6% FL-52+0.3% Sodium Metasillicate+128.4 % FW Tail: Class G Density: 15.6 ppg Yield: 1.58 scf/sack TOC: 8400' Sacks: 2616 Slurry Details: 0.8% Static Free+0.4% R-3+0.3% CD-32+3 lbs/sack Kol Seal+0.8% FL-52+0.2% Sodium Metasillicate+35% Silica Sand+ 100 mesh, sacked+ 55.7% FW



Holweger, Todd L.

From: Craig_DArcy@oxy.com
Sent: Tuesday, May 31, 2011 7:05 PM
To: Holweger, Todd L.
Cc: Elizabeth_Bush@oxy.com; Bob_Bell@oxy.com; Evan_Harness@oxy.com; Roy_Escobedo@oxy.com; Pierre_Castro@oxy.com; Craig_DArcy@oxy.com
Subject: Kudrna 1-17: Revised Casing Schematic
Attachments: KUDRNA 1-17 Cementing Casing Data Rev1.xls

Mr. Holweger,

Further to our conversation on Friday, please find attached the revised casing program and cementing details for the subject well. Note, the directional program remains unchanged from that originally submitted and approved.

As per our phone discussion on Friday afternoon (5-27-11) we are presently under a verbal approval to continue operations up to the point of drilling out the surface shoe. We are currently finishing the underreaming operations and anticipate running 13-3/8" surface casing tomorrow evening. We will drill out the shoe following a successful cement job and BOP test. This will likely be Thursday mid-morning for the drill out.

This email is in support of the previously submitted Form-4. During our discussion I was advised that the two documents would be sufficient for your consideration to approve continuing operations to the successful TD of the well at the original permitted depth.

I will be happy to answer any questions and submit any further information the NDIC require.

Regards,
Craig

Craig D'Arcy
Drilling Engineering Supervisor - WBU
Occidental Petroleum Corporation
Cell: 713.302.7471
Office: 713.350.4892
craig_darcy@oxy.com
5 Greenway Plaza, 8th floor
Houston, Texas 77046

RESERVE PIT DIAGRAM

Well Name & No.: KUDRNA 1-17 Well File No. 20659

Operator: OXY USA INC Location: 17-141N-97W SWSE

Inspector: Nicole Anderson Date: 5/12/11

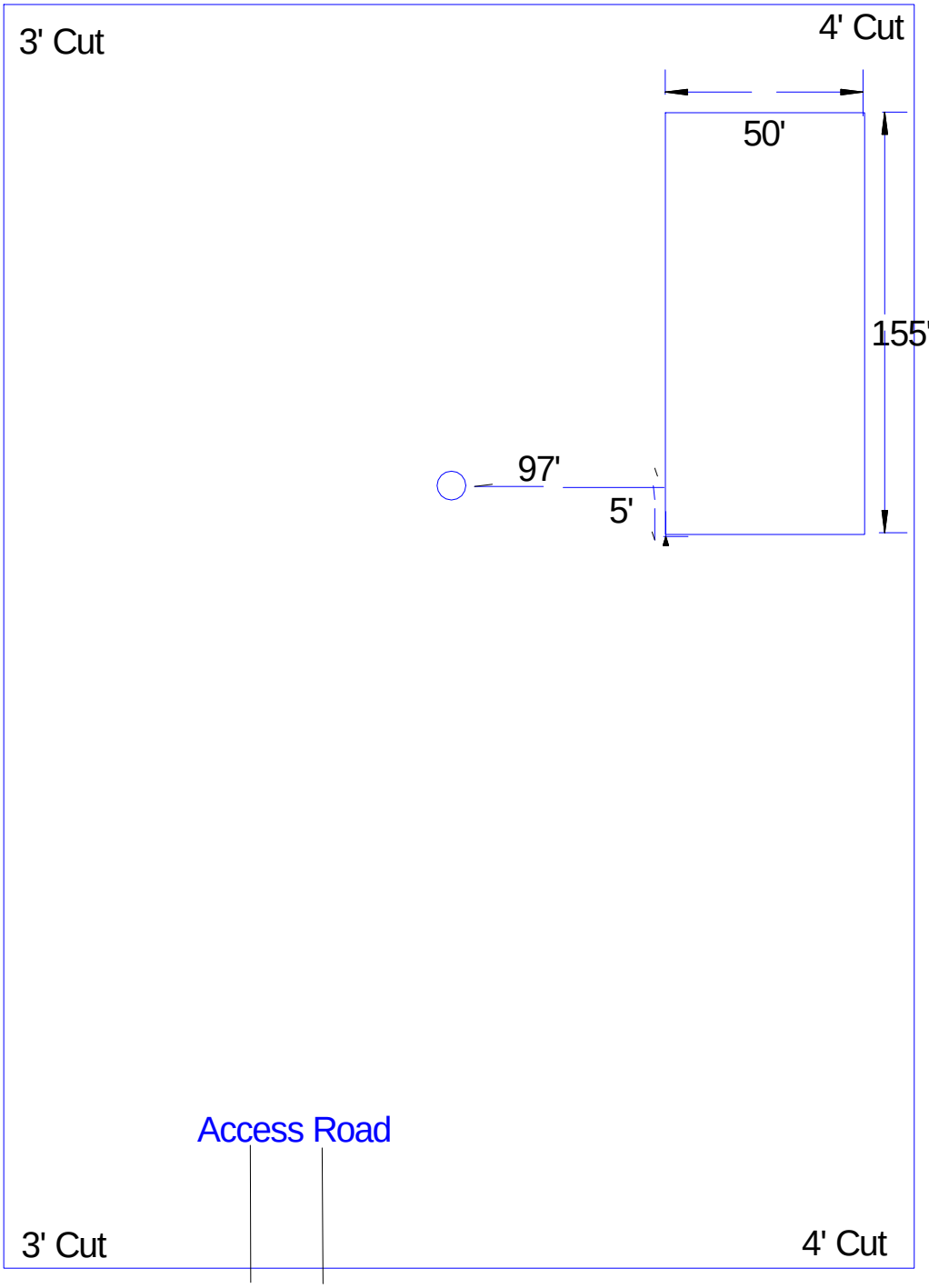
Maximum Depth 14 Ft.

Lined Y

Azimuth of Long Axis
of Pit 276 Degrees.

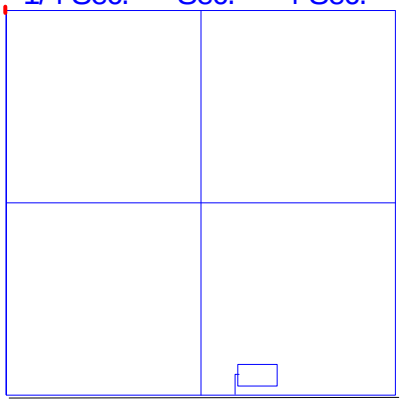
Sediment Description:

Lined with clay



Location of Access Road

1/4 Sec. Sec. 4-Sec.



NOTE: Diagram shows approximate dimensions and orientation of the reserve pit in relation to the well loction. Not a surveyed plat.

Industrial Commission of North Dakota
Oil and Gas Division Verbal Approval Procedures
Other

Well or Facility No **20659**

Tight Hole **No**

OPERATOR

Operator	Representative	Rep Phone
OXY USA INC.	**CRAIG D'ARCY**	**(713) 350-4892**

WELL INFORMATION

Well Name
KUDRNA 1-17

Inspector
Rick Hutchens

Well Location	QQ	Sec	Twp		Rng	
	SWSE	**17**	**141**	**N**	**97**	**W**

County
DUNN

Field
ST. ANTHONY

Footages
250 Feet From the **S** Line
2000 Feet From the **E** Line

Pool
RED RIVER

OTHER INFORMATION

Contractor

Rig Operator
PRECISION DRILLING

Surface Owner

Pit Water Disposal

DETAILS OF PROCEDURE

Craig called and requested to modify casing design as follows:
Revise sfc csg from 9 5/8" to 13 3/8" (w/17" hole) @ approved APD setting depth of 2162'.
Drill below surface casing w/13" hole: if no problems run 5 1/2" casing to permitted TD depth. If encounter pressure issues run 9 5/8" casing @ 6000' (cement behind pipe will be calculated into the sfc csg ann).
See email from Craig:
Mr. Holweger,

RE: Phone Conversation 1600hrs 5-27-2011

Oxy intends to modify the planned existing permitted casing sizes on the Kudrna well. As per our phone conversation today it is understood that the NDIC has given verbal permission to drill 17in hole and case with 13-3/8" surface casing to the original permitted depth.

It is further understood that prior to drilling out from the surface casing shoe Oxy are required to submit a diagram of the intended design, including contingency casing string, to include casing detail, setting depths and cement volumes. This will be provided as soon as possible to the NDIC. This information, in addition to the previously submitted Form 4, was discussed as being sufficient for the NDIC to approve operations to continue.

Start Date	**5/27/2011**
Date Approved	**5/27/2011**
Approved By	**Todd L. Holweger**

Bean, Jeanette A.

From: Holweger, Todd L.

Sent: Friday, May 27, 2011 5:04 PM

To: -Info-Oil & Gas Division; Bean, Jeanette A.; Erbele, Nathaniel H.; Joersz, Kyle W.; Hutchens, Rick W.; Anderson, Nicole A.

Subject: RE: Verbal Approval Procedure OTHR - 20659

ENTIRE VERBAL INCLUDES THE FOLLOWING:

Craig called and requested to modify casing design as follows:
Revise sfc csg from 9 5/8" to 13 3/8" (w/17" hole) @ approved APD setting depth of 2162'.
Drill below surface casing w/13" hole: if no problems run 5 1/2" casing to permitted TD depth. If encounter pressure issues run 9 5/8" casing @ 6000' (cement behind pipe will be calculated into the sfc csg ann).
See email from Craig:
Mr. Holweger,

RE: Phone Conversation 1600hrs 5-27-2011

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It is further understood that prior to drilling out from the surface casing shoe Oxy are required to submit a diagram of the intended design, including contingency casing string, to include casing detail, setting depths and cement volumes. This will be provided as soon as possible to the NDIC. This information, in addition to the previously submitted Form 4, was discussed as being sufficient for the NDIC to approve operations to continue.

The TD of the well remains unchanged from the original permitted total depth.

Thank you for your time and cooperation and feel free to contact myself or Liz Bush (Oxy Regulatory - CC'd) any time.

Best Regards,
Craig

Craig D'Arcy
Drilling Engineering Supervisor - WBU
Occidental Petroleum Corporation
Cell: 713.302.7471
Office: 713.350.4892
craig_darcy@oxy.com
5 Greenway Plaza, 8th floor
Houston, Texas 77046

From: oilandgasinfo@nd.gov [mailto:oilandgasinfo@nd.gov]

Sent: Friday, May 27, 2011 4:57 PM
To: Bean, Jeanette A.; Holweger, Todd L.; Erbele, Nathaniel H.; Joersz, Kyle W.; Holweger, Todd L.; Hutchens, Rick W.; Anderson, Nicole A.
Subject: Verbal Approval Procedure OTHR - 20659

Type of Verbal Procedure : **OTHR**
NDIC file no :**20659**
Well Confidential :**No**
Well name :**KUDRNA 1-17**
Well operator :**OXY USA INC.**
Company Representative :**CRAIG D'ARCY**
Representative Phone Number :**(713)350-4892**
Field name :**ST. ANTHONY**
Pool name :**RED RIVER**
County :**DUNN**
Location STR : **17-141N-97W**
Feet From N/S : **250 S**
Feet From E/W : **2000 E**
Contractor :
Rig Operator : **PRECISION DRILLING**
Details :**Craig called and requested to modify casing design as follows: Revise sfc csg from 9 5/8" to 13 3/8" (w/17@ approved APD setting depth of 2162'. Drill below surface casing w/13" bit**

Date Approved :**May 27 2011**
Approved By :**TLH**
Date Start :**May 27 2011**
Inspector :**RWH**

NORTH DAKOTA
OIL AND GAS DIVISION

Oil and Gas Division

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

Department of Mineral Resources

Lynn D. Helms - Director

20659

North Dakota Industrial Commission

www.oilgas.nd.gov

May 11, 2011

Joseph DeDominic
OXY USA Inc.
5 Greenway Plaza, Ste 110
Houston, TX 77046

RE: CHANGE OF OPERATOR FROM ANSCHUTZ EXPLORATION CORPORATION
TO OXY USA INC.
30 WELLS

Dear Joseph DeDominic:

Please find enclosed a copy of the approved Form 15, Notice of Transfer of Oil and Gas Wells, in regard to the above-referenced matter. This transfer has now been approved and subject wells are now covered by Bond No. 105480746, Travelers Casualty and Surety Company of America as Surety.

If you should have any questions, please feel free to contact this office.

Sincerely,

Evie Roberson

Evie Roberson
Administrative Assistant

Enclosure

cc: William Miller
Anschutz Exploration Corporation
555 17th St. Ste 2400
Denver, CO 80202

NOTICE OF TRANSFER OF OIL AND GAS WELLS - FORM 15

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 5762 (03-2000)

APR 2011
RECEIVED
ND OIL & GAS DIVISION

FOR STATE USE ONLY
NDIC Bond Number

20659

PLEASE READ INSTRUCTIONS BEFORE FILLING OUT FORM. PLEASE SUBMIT THE ORIGINAL AND SIX COPIES.
THIS NOTICE ALONG WITH A FEE OF $25.00 PER WELL SHALL BE FILED AT LEAST THIRTY DAYS BEFORE THE CLOSING DATE OF TRANSFER.

TRANSFERRING OPERATOR

Name of Operator Representative			
William Miller			
Operator Transferring Oil and/or Gas Wells			Telephone Number
Anschutz Exploration Corporation			
Address	City	State	Zip Code
555 17th Street, Suite 2400	**Denver**	**CO**	**80202**

I, the above named representative, acknowledge the transfer of the oil and/or gas wells named below for the purpose of ownership and/or operation to the company named below.

Signature	Title (Must be an officer or power of attorney must be attached)	Date
William Miller	**President, Anschutz Exploration Corporation**	**April 18, 2011**

Well File Number	Requested Official Well Name and Number	Location (Qtr-Qtr, S-T-R)	Assignment Date
	See attached well listing ***Transition agreement between Anschutz Exploration Corporation and Oxy USA Inc. is due to expire on June 1, 2011. Oxy USA Inc. to assume operations of the listed wells on May 1, 2011.**		**May 1, 2011***

RECEIVING OPERATOR

Name of Operator Representative			
Joseph DeDominic			
Operator Receiving Oil and/or Gas Wells			Telephone Number
OXY USA Inc.			**713.215.7000**
Address	City	State	Zip Code
5 Greenway Plaza, Suite 110	**Houston**	**TX**	**77046**

I, the above named representative, have read the foregoing statement and accept such transfer, also the responsibility of ownership and/or operation of said well or wells, under the said company bond, said bond being tendered to or on file with the Industrial Commission of North Dakota.

Signature	Title (Must be an officer or power of attorney must be attached)	Date
	President & Gen.Manager,Williston Bus.Unit	**April 19, 2011**

SURETY COMPANY

Surety			Telephone Number	Amount of Bond
Travelers Casualty and Surety Company of America			**800.252.4633**	**$ 100,000**
Address	City	State	Zip Code	Bond Number
One Tower Square	**Hartford**	**CT**	**06183**	**105480746**

The above named SURETY agrees that such bond shall extend to compliance with Chapter 38-08 of North Dakota Century Code and amendments and the rules and regulations of the Industrial Commission of North Dakota prescribed to govern the production of oil and gas on government and private lands within the State of North Dakota, in relation to the above stated transfer; it being further agreed and understood that the bond sum or amount is not to be considered increased because of such extension.

Signature	Title (Must be an officer or power of attorney must be attached)	Date
Lisa A. Ward	**Attorney-in-Fact**	**April 18, 2011**

Printed Name
~~Jennifer Sperlak~~ Lisa A. Ward

FOR STATE USE ONLY

Date Approved	May 11, 2011
By	Bruce E. Hicks
Title	Assistant Director

NoN-Activated APDs--AEC to OXY

Well Name	API	Regulatory Data: North Dakota File No.	Permit date	Status Code	Status	Regulatory Data	Location Data: Spot	Section	Township	Range	Field	County
Brian Sadowsky 1-10-3H-142-97	33-025-01336	20572	3/8/2011	5	Permitted		SWSW	10	142N	97W	Willmen	Dunn
Cecilia Stroh 1-18-19H-143-96	33-025-01008	18503	12/10/2009	5	Permitted		NWNE	18	143N	96W	Fayette	Dunn
David Kovash 1-12-13H-142-96	33-025-01279	20278	1/10/2011	5	Location Built		SE SW	1	142N	96W	Manning	Dunn
Delvin Dukart 1-31-30H-143-95	33-025-01183	19726	10/12/2010	5	Permitted		SWSE	31	143N	95W	Manning	Dunn
Dvorak Trust 1-6-31H-142-96	33-025-01300	20416	2/3/2011	5	Permitted		SESW	6	141N	96W	Russian Creek	Dunn
Elizabeth Stroh 1-7-6H-143-96	33-025-01003	18463	11/25/2009	5	Permitted		NWNE	18	143N	96W	Cabernet	Dunn
Elsie Dvorak 1-8-17H-141-96	33-025-01243	20104	11/30/2010	5	Permitted		NWNE	8	141N	96W	St. Anthony	Dunn
George Miller 1-11-2H-142-95	33-025-01360	20765	4/20/2011		Permitted		SWSE	11 (&2)	142N	95W	Murphy Creek	Dunn
George Miller 1-2-11H-142-95	33-025-01314	20473	2/14/2011	5	Permitted		SWSE	35	143N	95W	Murphy Creek	Dunn
Gordon Pavlicek 1-17-20H-141-95	33-025-01238	20092	11/29/2010	5	Permitted		NENW	17	141N	95W	Simon Butte	Dunn
Henry Kovash 1-6-7H-142-95	33-025-01296	20395	2/2/2011	5	Permitted		SWSE	31(&7)	143N	95W	Manning	Dunn
Katie Heiser 1-1-12H-142-95	33-025-01316	20480	2/16/2011	5	Permitted		SWSE	36	143N	95W	Murphy Creek	Dunn
Katie Heiser 1-12-1H-142-95	33-025-01359	20750	4/15/2011		Permitted		SWSE	12 (&1)	142N	95W	Murphy Creek	Dunn
Kudrna 1-17	33-025-01351	20659	4/25/2011	5	Location Built		SWSE	17	141N	97W	St. Anthony	Dunn
Laura Sadowsky 1-1-36H-142-96	33-025-01232	20080	11/24/2010	5	Location Built		SESW	1	142N	96W	Manning	Dunn
Lillian Sadowsky 1-15-22H-142-96	33-025-01283	20300	1/13/2011	5	Permitted		SESW	10	142N	96W	Manning	Dunn
Louis Sadowsky 1-10-3H-142-96	33-025-01209	19877	11/1/2010	5	Permitted		SESW	10	142N	96W	Manning	Dunn
Marsh State 1-34-27H-142-97	33-025-01308	20441	2/8/2011	5	Permitted		SESW	34 (&27)	142N	97W	Willmen	Dunn
Marlene Steffan 1-5-8H-141-97	33-025-01358	20749	4/15/2011		Permitted		SWSE	5 (&8)	141N	97W	St Anthony	Dunn
Mildred Sadowsky 1-14-11H-142-97	33-025-01335	20571	3/8/2011	5	Permitted		SESW	14	142N	97W	Willmen	Dunn

NoN-Activated APDs--AEC to OXY

Well Name	API	Regulatory Data: North Dakota File No.	Permit date	Status Code	Status	Regulatory Data	Location Data: Spot	Section	Township	Range	Field	County
Polensky State 1-35-36H-142-97	33-025-01304	20425	2/4/2011	5	Permitted		NWSW	35	142N	97W	Willmen	Dunn
Ralph Tormaschy 1-8-5H-142-96	33-025-01340	20585	3/10/2011	5	Permitted		NWNE	17	142N	96W	Manning	Dunn
Rebsom 1-23-14H-143-95	33-025-01216	19914	11/3/2010	5	Permitted		SESWSE	23	143N	96W	Murphy Creek	Dunn
Sharon Rainey 1-17-20H-142-96	33-025-01339	20584	3/10/2011	5	Permitted		NWNE	17	142N	96W	Manning	Dunn
State Dvorak 1- 9-16H-141-96	33-025-01263	20218	12/22/2010	5	Permitted		NWNE	9	141N	96W	St. Anthony	Dunn
Steve Kudma 1-32-29H-143-95	33-025-01135	19234	7/8/2010	5	Permitted		SWSE	32	143N	95W	Manning	Dunn
Terry Dvorak 1-15-22H-142-95	33-025-01337	20580	3/8/2011	5	Permitted		NENE	15 (&22)	142N	95W	Murphy Creek	Dunn
Tony Kralicek 1-5-8H-142-95	33-025-01282	20299	1/12/2011	5	Permitted		SWSE	32	143N	95W	Manning	Dunn
Tuhy State 1-36-25H-143-95	33-025-01315	20479	2/16/2011	5	Permitted		SWSE	36	143N	95W	Murphy Creek	Dunn
Watkins State 1-35-26H-143-95	33-025-01313	20472	2/14/2011	5	Permitted		SWSE	35	143N	95W	Murphy Creek	Dunn

Oil and Gas Division 20659

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

JAMES P. OURSLAND
ANSCHUTZ EXPLORATION CORPORATION
555 17TH STREET SUITE 2400
DENVER, CO 80202 USA

Date: **3/30/2011**

RE: CORES AND SAMPLES

Well Name: **KUDRNA 1-17** Well File No.: **20659**
Location: **SWSE 17-141-97** County: DUNN
Permit Type: **Development - DIRECTIONAL**
Field: **ST. ANTHONY** Target Horizon: RED RIVER

Dear James P. Oursland:

North Dakota Century Code (NDCC) 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 the NDCC Section 38-08-04 and North Dakota Administrative Code 43-02-03-38.1.

2) Samples shall include all cuttings from:

Pennsylvanian Tyler (Heath)

Samples of cuttings shall be taken at 30' maximum intervals through all vertical, build and horizontal sections. Samples must be washed, dried, packed in sample envelopes in correct order with labels showing operator, well name, location and depth, and forwarded in standard boxes to the State Geologist within 30 days of the completion of drilling operations.

3) Cores: ALL CORES cut shall be preserved in correct order, properly boxed, and forwarded to the State Geologist within 90 days of completion of drilling operations. Any extension of time must have written approval from the State Geologist.

4) All cores, core chips, and samples must be shipped, prepaid, to the State Geologist at the following address:

ND Geological Survey Core Library
Campus Road and Cornell
Grand Forks, ND 58202

5) NDCC 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

Richard A. Suggs
Geologist

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

March 25, 2011

CHRISTINE CAMPBELL
GEOSCIENCE TECHNICIAN
ANSCHUTZ EXPLORATION CORPORATION
555 17TH STREET, SUITE 2400
DENVER, CO 80202

RE: DIRECTIONAL WELL
KUDRNA 1-17
SWSE Section 17-141N-97W
Dunn County
Well File # 20659

Dear CHRISTINE :

Pursuant to Commission Order No. 9075, 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 660' setback within the 640 acre drilling unit consisting of S/2 Section 17 & N/2 Section 20-141-97 **FOR ALL FORMATIONS ENCOUNTERED DOWN TO A DEPTH OF 50' BELOW THE RED RIVER FORMATION.**

PERMIT STIPULATIONS: APPROVAL TO SIDETRACK AND DRILL HORIZONTALLY INTO THE BAKKEN POOL IS HEREBY DENIED PER ICO 16113. ANSCHUTZ EXPL CORP must contact NDIC Field Inspector Rick Hutchens at 701-290-7425 prior to location construction. LASTLY, DUE TO HIGH H2S IN THIS AREA, A REMOTE BATTERY MAY BE REQUIRED.

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.

Reserve pit

Please be advised that conditions may be imposed on the use and reclamation of a drilling reserve pit on this site if specific site conditions warrant.

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 a Cement Bond Log from which the presence of cement can be determined in every well in which production or intermediate casing has been set and a Gamma Ray Log must be run from total depth to ground level elevation of the well bore. All logs must be submitted as one paper copy and one digital copy in LAS (Log ASCII) format, or a format approved by the Director. Image logs that include, but are not limited to, Mud Logs, Cement Bond Logs, and Cyberlook Logs, cannot be produced in their entirety as LAS (Log ASCII) files. To create a solution and establish a standard format for industry to follow when submitting image logs, the Director has given approval for the operator to submit an image log as a TIFF (*.tif) formatted file. The TIFF (*.tif) format will be accepted only when the log cannot be produced in its entirety as a LAS (Log ASCII) file format. The digital copy may be submitted on a 3.5" floppy diskette, a standard CD, or attached to an email sent to digitallogs@nd.gov
Thank you for your cooperation.

Sincerely,

Todd L. Holweger
Mineral Resources Permit Manager

APPLICATION FOR PERMIT TO DRILL - FORM 1

INDUSTRIAL COMMISSION OF NORTH DAKOTA
OIL AND GAS DIVISION
600 EAST BOULEVARD DEPT 405
BISMARCK, ND 58505-0840
SFN 4615 (03-2006)

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**	**3 / 31 / 2011**	**No**

Operator	Telephone Number
ANSCHUTZ EXPLORATION CORPORATION	**(303) 298-1000**

Address	City	State	Zip Code
555 17TH STREET, SUITE 2400	**DENVER**	**CO**	**80202**

Name of Surface Owner or Tenant: **Deanna Steffan as Trustee of the George & Betty Tr**

Address	City	State	Zip Code
11948 24th Street SW	**Dickinson**	**ND**	**58601**

☑ 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

Well Name	Well Number
KUDRNA	**1-17**

	Qtr-Qtr	Section	Township	Range	County
At Surface: **250** F **S** L **2000** F **E** L	**SWSE**	**17**	**141 N**	**97 W**	**Dunn**
If Directional, Top of Pay: **362** F **N** L **2331** F **W** L	**NENW**	**20**	**141 N**	**97 W**	**Dunn**
Proposed Bottom Hole Location: **362** F **N** L **2331** F **W** L	**NENW**	**20**	**141 N**	**97 W**	**Dunn**

Latitude of Well Head	Longitude of Well Head	NAD Reference	Description of (Subject to NDIC Approval)
47 ° 01 ' 28.90 "	**-102 ° 59 ' 53.76 "**	**NAD83**	**Drilling Unit: S/2 Sec. 17 & N/2 Sec. 20-141-97**

Ground Elevation	Acres in Spacing/Drilling Unit	Spacing/Drilling Unit Setback Requirement	Industrial Commission Order
2529 Feet Above S.L.	**640**	**660** Feet	**9075**

Objective Horizons			Pierre Shale Top
RED RIVER	**FRYBURG**	**DUPEROW**	**2062**

	Size	Weight	Depth	Cement Volume	
Proposed Surface Casing	**9 - 5/8 "**	**36** Lb./Ft.	**2162** Feet	**702** Sacks	**NOTE: Surface hole must be drilled with fresh water and surface casing must be cemented back to surface.**

	Size	Weight(s)	Longstring Total Depth	Cement Volume	Cement Top	Top Dakota Sand
Proposed Longstring Casing	**5 - 1/2 "**	**20 & 23** Lb./Ft.	**13238** Feet MD **13079** Feet TVD	**1561** Sacks	**5152** Feet	**5527** Feet

Base Last Charles Salt (If Applicable)	Estimated Total Depth (feet)	Drilling Mud Type (Vertical Hole - Below Surface Casing)
9122 Feet	**13238** Feet MD **13079** Feet TVD	**Other - See Comments**

Proposed Logs: **RES & BHC base of surf csg to TD, DN 7000' to TD, GR surf to TD**

Comments

Additional logs to be run: Sonic scanner 8700'-10700', CMR-Optional-8700'-10700'
Drilling Mud Type: Oil based mud to be used below surface casing

I hereby swear or affirm that the information provided is true, complete and correct as determined from all available records. Date: **3 / 22 / 2011**

	Printed Name	Title
ePermit	**CHRISTINE CAMPBELL**	**GEOSCIENCE TECHNICIAN**

FOR STATE USE ONLY

Permit and File Number	API Number
20659	**33 - 025 - 01351**
Field: **ST. ANTHONY**	
Pool: **RED RIVER**	Permit Type: **DEVELOPMENT**

FOR STATE USE ONLY

Date Approved	By	Title
3 / 25 / 2011	**Todd L. Holweger**	**Mineral Resources Permit Manager**

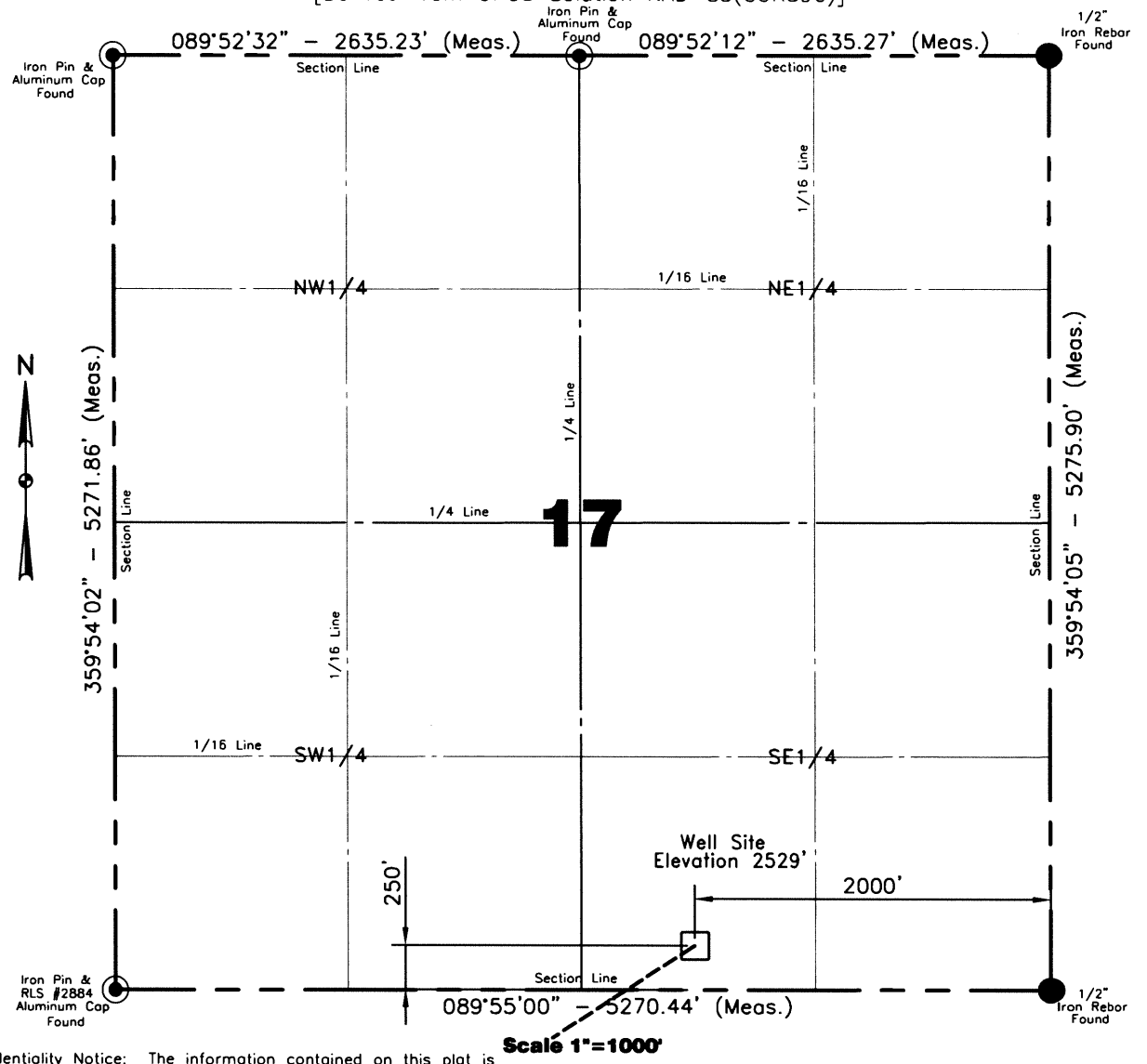
REQUIRED ATTACHMENTS: Certified surveyors plat, estimated geological tops, proposed mud/cementing plans, $100 fee.

WELL LOCATION PLAT

Anschutz Exploration Corp.
555 17th Street, Suite 2400 Denver, Colorado 80202

Kudrna 1-17

250 feet from the south line and 2000 feet from the east line (surface location)
Section 17, T. 141 N., R. 97 W., 5th P.M.
360 feet from the north line and 2330 feet from the west line (bottom location)
Section 20, T. 141 N., R. 97 W., 5th P.M.
Dunn County, North Dakota
Surface owner @ well site – George & Betty Kudrna
Latitude 47°01'28.90" North; Longitude 102°59'53.76" West (surface location)
Latitude 47°01'22.86" North; Longitude 103°00'07.32" West (bottom hole location)
[Derived from OPUS Solution NAD-83(CORS96)]



Scale 1"=1000'

Confidentiality Notice: The information contained on this plat is legally privileged and confidential information intended only for the use of recipients. If you are not the intended recipients, you are hereby notified that any use, dissemination, distribution or copying of this information is strictly prohibited.

NOTE: All land corners are assumed unless otherwise noted. The well location shown hereon is not an as-built location.

I, Quentin Obrigewitsch, Professional Land Surveyor, N.D. No. 5999, do hereby certify that the survey plat shown hereon was made by me, or under my direction, from notes made in the field, and the same is true and correct to the best of my knowledge and belief.

REGISTERED LAND SURVEYOR
QUENTIN OBRIGEWITSCH
LS-5999
DATE 3/8/11
NORTH DAKOTA

Roger Kubischta **3/3/2011**
Surveyed By N.D.P.L.S. #5999 Date

Vertical Control Datum Used
Sea-Level Datum of NAVD 88

Based on elevation derived from OPUS Solution on GPS*KLJ#8, in the NE¼SE¼ of Section 8, T141N, R97W, 5th P.M., located on an azimuth of 358°24'14", a distance of 1,722.22 from the NE corner of Section 17, being at 2636.58' Elevation MSL.

Project No. 3711193

Book OW-241 Pg. 24-26 Staking

Professional Consulting Engineers and Surveyors
Registered in
North Dakota, South Dakota
Montana, Wyoming & Minnesota
Tele-Fax No. 701-483-2795
Bus. Phone No. 701-483-1284
P.O. Box 290
677 27th Ave. E.
Dickinson, North Dakota 58602
Certificate of Authorization #C-061

Revised 3/7/2011

Kadrmas Lee & Jackson
Engineers Surveyors Planners

Mar 08, 2011 – 10:38am – J:\oilfield\Anschutz Exploration\3711193\Cadd\EP\3711193BAS01.dwg

Anschutz Exploration Corporation

Well Prognosis

GENERAL INFORMATION

AFE No.	Date
	3/9/2011

Lease/Well Name & Number:	APC Prospect Number
Kudrna 1-17	
Prospect Name:	**API No.**
Red River	

			Sec.	Twp.	Rng.
Location:	SW SE Sec 17 T141N R97W, Black Hills Meridian				
County:	Dunn				
State:	North Dakota				
Surface Loc:	250 ft FSL, 2000 ft FEL		17	141N	97W
Zone Entry:	(Wellbore over BHL by 9400' MD)				
BHL:	360 ft FNL, 2330 ft FWL		20	141N	97W
Spacing:	640 acres	S/2 17 & N/2 20		141N	97W

Location Directions:

Elevation	GL	KB	
	2,529'	2,562'	GL elevation from survey; KB estimated.

GEOLOGICAL INFORMATION

Proposed TD	Primary Objective	Secondary Objective
13,079' TVD 13,238' MD	Red River	Madison
	Type Production (oil or gas)	**Type Production (oil or gas)**
	Oil	Oil

Anticipated Formation Tops

Reference Elevation: **2,562'** KB

Formation Name	Lithology	Top (md)	Top (TVD)	Comment
Pierre Shale			2062	Pierre depth - est. from state map
Greenhorn			4692	
Mowry			5168	
Dakota			5527	
Rierdon			6358	
Dunham Salt	SALT		6727	Gross salt interval: 0 to 100'
Spearfish			6852	
Minnekahta			7150	
Opeche salt	SALT		7179	Gross salt interval: 0?
Tyler			8199	*R.U. Mudlogger*
Kibbey Limestone			8581	
Madison			8709	
First Charles Salt			8775	Gross salt interval: 413'
Base last salt	SALT		9122	
Mission Canyon	Limestone		9302	
Fryburg GR Marker			9478	
Lodgepole			9805	
Bakken			10562	
Three Forks			10597	
Birdbear			10791	
Duperow			10884	
Dawson Bay			11348	
Winnipegosis			11553	
Interlake			11,719'	
Gunton			12,490'	
Red River			12,635'	
TD			13,079'	

Open Hole Logging Program

Type Log Suite	Interval Top	Interval Bottom	Log Scale
Resistivity	Base of surface casing	TD	
Density-Neutron	7,000'	TD	
Spectral GR run w/ Density-Neutron			
Gamma Ray	Surface	TD	
Note - GR to surface required by State of North Dakota			
BHC	Base of surface casing	TD	
Sonic Scanner	8,700	10,700	
CMR (optional)	8,700	10,700	

Coring Program

Core No.	Formation	Est. Depth	Core Length (ft)
None			

DrillStem Test Program

Formation	Estimated Depth (ft)	Estimated Pressure (psi)	Cushion (ft)	Test Times (min)			
				Initial Flow	Initial Shut-in	Second Flow	Second Shut-in
Fryburg	9478	4300		15	60	120	180
Duperow	10,900	4300		15	60	120	180
Red River	12635	4300		15	60	120	180

Wellsite Geology

Service	Description of Services	Start Depth	End Depth
Mudlogger / Geologist	Chromatotgraph supplied by wellsite geologist	7,000'	TD
	7000 ft to TD		

Sample Collection

Depth Interval		Foot per Sample	Special Instructions
Top	Base		
Base surf csg	9,200'	30 foot samples	One complete set of cleaned and dried samples
9,200'	TD	10 foot samples	Two sets to TD

ENGINEERING INFORMATION

Mud Program

Interval	Mud Description	Weight	Viscosity	Wtr Loss
Surface to 2,162'	Water, gel w/ polymer sweeps	8.6 - 8.9	NC	NC
2,162' to 6,720'	Oil Base Mud	9.5 - 9.6	15-25	20-25
6,720' to TD'	Oil Base Mud	9.5 - 11.0	15-25	20-25

Casing Program

Hole Size (in)	Casing Size (in)	Casing Weight & Grade	Setting Depth (ft)	Thread	Notes
13 1/2	9 5/8	36# J55	0' - 2,162'	ST&C	19 surface centralizers total
8 3/4	5 1/2	20# L80	0' - 6,720'	LT&C	49 production centralizers total
8 3/4	5 1/2	23# L80	6,720' - 13,238'	LT&C	All salts to be covered by 23 ppf pipe

Cementing Program

(Permit data only, see service company procedure)

String	Cement Depth (ft)	Type and Amount
Surface Lead	0' - 1,862'	479 sx Control Set C w/ 1% CaCl2, 0.25 lbs/sk cellophane flakes, 1% OGC-60, 1% SMS, 17.46 ga/sk water. 11.5 ppg & 2.85 cf/sk.
Surface Tail	1,862' - 2,162'	223 sx Class G w/ 0.25 lbs/sack cello flake, 1% CaCl2. 15.8 ppg & 1.15 cf/sk.
Surface Topout		Class G as needed to get cement back to surface
Production Lead 1	5,152' - 8,434'	602 sx WBL w/ 0.5% CFL-4, 0.7% LTR, 0.3% DDF-2, 0.25 lb per sk PS flake (additives to be adjusted based on final testing). 12.0 ppg & 2.54 cf/sack.
	-	
Production Tail	8,434' - 13,238'	959 sx Thermal 35 + 0.8% CFR, 0.7% CFL-2, 0.1% LTR, 3% KCl (BWOW) + 0.25 lb/sk celloflake (additives to be adjusted based on final testing). 15.6 ppg & 1.58 cf/sack.

Completion Program

The Bakken formation will be fracture stimulated and production tested.

Pressure and Pressure Control

Estimated bottomhole pressure is 7400 psi.

BOP equipment will consist of an 11" hydraulic double ram with a 5000 psi working pressure hydraulic actuated double ram and an annular preventer with choke manifold and kill line.

Other Notes

Anschutz Exploration Corporation intends to survey a portion of the lateral for the subject well allowing up to 2.8 degrees of error in the azimuth measurement, relative to the standard tool error of less than 1 degree.

Due to the orientation of the earth's magnetic field, it is more difficult to obtain azimuth readings when drilling horizontally with an east-west orientation. To obtain this reading with less than 1 degree of error, a 30' monel collar must be added to reduce the interference seen by the MWD tool. The addition of this collar places the MWD tool an additional 30' from the bit, which makes steering more difficult. (The results of slides are seen 30' later.) Adding a 10' monel collar in place of the 30' collar increases the maximum error to 2.8 degrees. AEC will account for this amount of error while monitoring the well's path relative to the required setbacks.

Company Contacts

	Name	Office Phone	Mobile/Pager/Cellular	Home Phone
Operations				
	Jerry Gentry	(303) 299-1231	(303) 915-0651	
	jerry.gentry@aec-denver.com			
Geology	George Carlstrom	(303) 299-1517	(303) 506-1201	(303) 741-1249
	George.Carlstrom@aec-denver.com			
Engineering	Galen Brenize	(303) 299-1269	(303) 249-1931	
Rig				
Field				

Special Instructions:

Prepared By:

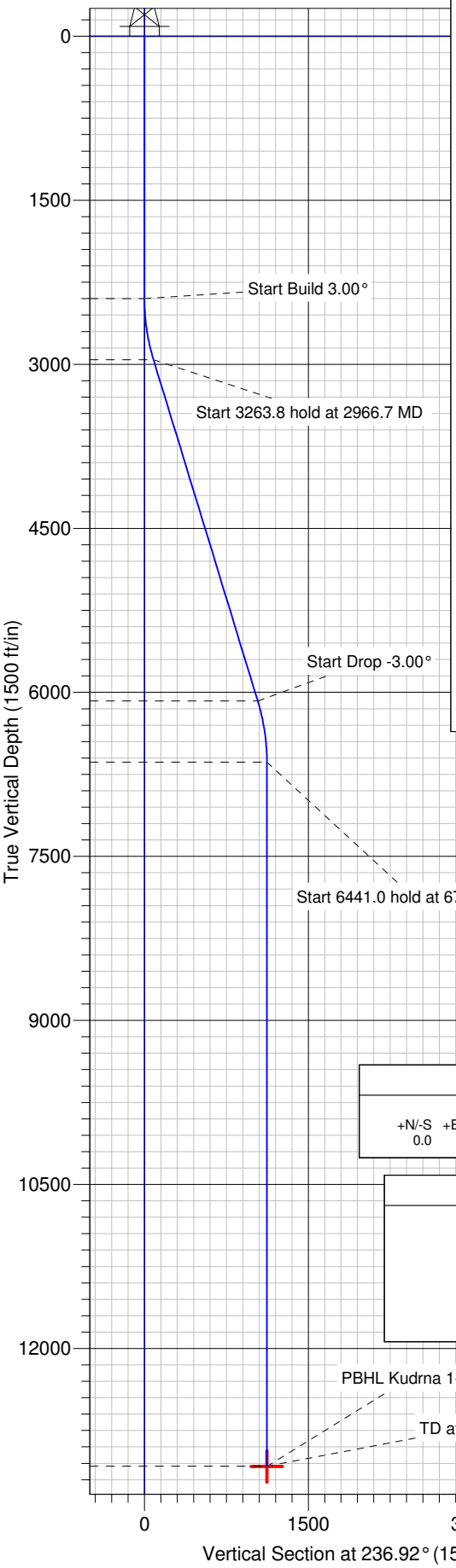
	Name & Title	Date
Geology	George Carlstrom Geologist	3/22/2011
Seismic		
Engineering		
Operations	Jerry Gentry Drilling Manager	3/22/2011
Land		

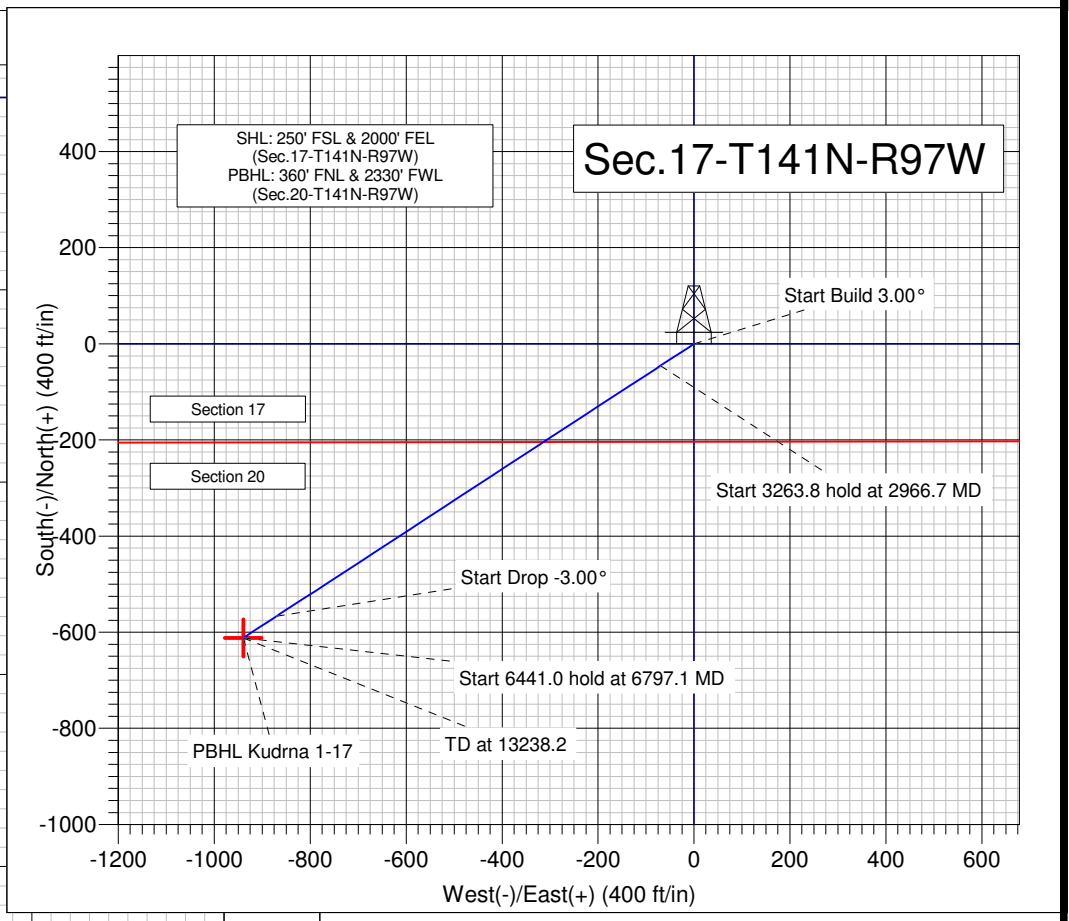
Participating Companies

Company & Address		Interest
Anschutz Exploration Corporation		
555 17th Street, Suite 2505	Office(303) 298-1000	
Denver, Colorado 80202	Fax Number (303) 299-1444	
	Continuous Fax: (303) 299-1540	

Company: Anschutz Exploration Corp.
Project: Dunn Co., ND
Site: Sec.17-T141N-R97W
Well: Kudrna 1-17
Wellbore: Wellbore #1
Plan: Plan #1 (Kudrna 1-17/Wellbore #1)

PATHFINDER
A Schlumberger Company





WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL Kudrna 1-17	13079.0	-611.9	-939.4	504583.39	1344585.33	47° 1' 22.860 N	103° 0' 7.320 W	Point

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	2400.0	0.00	0.00	2400.0	0.0	0.0	0.00	0.00	0.0	
3	2966.7	17.00	236.92	2958.4	-45.5	-69.9	3.00	236.92	83.5	PBHL Kudrna 1-17
4	6230.5	17.00	236.92	6079.6	-566.3	-869.5	0.00	0.00	1037.7	
5	6797.1	0.00	0.00	6638.0	-611.9	-939.4	3.00	180.00	1121.1	
6	13238.2	0.00	0.00	13079.0	-611.9	-939.4	0.00	0.00	1121.1	PBHL Kudrna 1-17

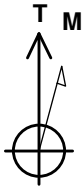
WELL DETAILS: Kudrna 1-17

Ground Level: 2529.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	505165.10	1345543.74	47° 1' 28.900 N	102° 59' 53.760 W	

ANNOTATIONS

TVD	MD	Annotation
2400.0	2400.0	Start Build 3.00°
2958.4	2966.7	Start 3263.8 hold at 2966.7 MD
6079.6	6230.5	Start Drop -3.00°
6638.0	6797.1	Start 6441.0 hold at 6797.1 MD
13078.0	13238.2	TD at 13238.2



Azimuths to True North
Magnetic North: 8.31°

Magnetic Field
Strength: 56438.4snT
Dip Angle: 72.46°
Date: 2011/03/11
Model: IGRF2010

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
2062.0	2062.0	Pierre Shale
4692.0	4779.5	Greenhorn
5168.0	5277.2	Mowry
5527.0	5652.6	Dakota
6358.0	6516.2	Rierdon
6727.0	6886.2	Dunham Salt
6852.0	7011.2	Spearfish
7150.0	7309.2	Minnekahta
7179.0	7338.2	Opeche salt
8199.0	8358.2	Tyler
8581.0	8740.2	Kibbey Limestone
8709.0	8868.2	Madison
8775.0	8934.2	First Charles Salt
9122.0	9281.2	Base last salt
9302.0	9461.2	Mission Canyon
9478.0	9637.2	Fryburg GR Marker
9805.0	9964.2	Lodgepole
10562.0	10721.2	Bakken
10597.0	10756.2	Three Forks
10791.0	10950.2	Birdbear
10884.0	11043.2	Duperow
11348.0	11507.2	Dawson Bay
11553.0	11712.2	Winnipegosis
11719.0	11878.2	Interlake
12490.0	12649.2	Gunton
12635.0	12794.2	Red River
13079.0	13238.2	TD

Anschutz Exploration Corp.

Dunn Co., ND
Sec.17-T141N-R97W
Kudrna 1-17
Wellbore #1

Plan: Plan #1

Pathfinder Planning Report

22 March, 2011

PATHFINDER
A Schlumberger Company

Database:	EDM 2003.16 Single User Db	**Local Co-ordinate Reference:**	Well Kudrna 1-17
Company:	Anschutz Exploration Corp.	**TVD Reference:**	WELL @ 2562.0ft (Original Well Elev)
Project:	Dunn Co., ND	**MD Reference:**	WELL @ 2562.0ft (Original Well Elev)
Site:	Sec.17-T141N-R97W	**North Reference:**	True
Well:	Kudrna 1-17	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Project Dunn Co., ND

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

Site Sec.17-T141N-R97W

Site Position:		**Northing:**	505,165.10 ft	**Latitude:**	47° 1' 28.900 N
From:	Lat/Long	**Easting:**	1,345,543.74 ft	**Longitude:**	102° 59' 53.760 W
Position Uncertainty:	0.0 ft	**Slot Radius:**	"	**Grid Convergence:**	-1.82 °

Well Kudrna 1-17

Well Position	**+N/-S**	0.0 ft	**Northing:**	505,165.10 ft	**Latitude:**	47° 1' 28.900 N
	+E/-W	0.0 ft	**Easting:**	1,345,543.74 ft	**Longitude:**	102° 59' 53.760 W
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	2,529.0 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2011/03/11	8.31	72.46	56,438

Design Plan #1

Audit Notes:

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

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	236.92

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	
2,966.7	17.00	236.92	2,958.4	-45.5	-69.9	3.00	3.00	0.00	236.92	PBHL Kudrna 1-17
6,230.5	17.00	236.92	6,079.6	-566.3	-869.5	0.00	0.00	0.00	0.00	
6,797.1	0.00	0.00	6,638.0	-611.9	-939.4	3.00	-3.00	0.00	180.00	
13,238.2	0.00	0.00	13,079.0	-611.9	-939.4	0.00	0.00	0.00	0.00	PBHL Kudrna 1-17

Database:	EDM 2003.16 Single User Db	**Local Co-ordinate Reference:**	Well Kudrna 1-17
Company:	Anschutz Exploration Corp.	**TVD Reference:**	WELL @ 2562.0ft (Original Well Elev)
Project:	Dunn Co., ND	**MD Reference:**	WELL @ 2562.0ft (Original Well Elev)
Site:	Sec.17-T141N-R97W	**North Reference:**	True
Well:	Kudrna 1-17	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
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
Pierre Shale									
2,062.0	0.00	0.00	2,062.0	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
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
Start Build 3.00°									
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	3.00	236.92	2,500.0	-1.4	-2.2	2.6	3.00	3.00	0.00
2,600.0	6.00	236.92	2,599.6	-5.7	-8.8	10.5	3.00	3.00	0.00
2,700.0	9.00	236.92	2,698.8	-12.8	-19.7	23.5	3.00	3.00	0.00
2,800.0	12.00	236.92	2,797.1	-22.8	-35.0	41.7	3.00	3.00	0.00
2,900.0	15.00	236.92	2,894.3	-35.5	-54.5	65.1	3.00	3.00	0.00
Start 3263.8 hold at 2966.7 MD									
2,966.7	17.00	236.92	2,958.4	-45.5	-69.9	83.5	3.00	3.00	0.00
3,000.0	17.00	236.92	2,990.3	-50.9	-78.1	93.2	0.00	0.00	0.00
3,100.0	17.00	236.92	3,085.9	-66.8	-102.6	122.4	0.00	0.00	0.00
3,200.0	17.00	236.92	3,181.5	-82.8	-127.1	151.7	0.00	0.00	0.00
3,300.0	17.00	236.92	3,277.2	-98.7	-151.6	180.9	0.00	0.00	0.00
3,400.0	17.00	236.92	3,372.8	-114.7	-176.1	210.1	0.00	0.00	0.00
3,500.0	17.00	236.92	3,468.4	-130.6	-200.6	239.4	0.00	0.00	0.00
3,600.0	17.00	236.92	3,564.0	-146.6	-225.1	268.6	0.00	0.00	0.00
3,700.0	17.00	236.92	3,659.7	-162.6	-249.6	297.9	0.00	0.00	0.00
3,800.0	17.00	236.92	3,755.3	-178.5	-274.1	327.1	0.00	0.00	0.00
3,900.0	17.00	236.92	3,850.9	-194.5	-298.6	356.3	0.00	0.00	0.00
4,000.0	17.00	236.92	3,946.6	-210.4	-323.1	385.6	0.00	0.00	0.00
4,100.0	17.00	236.92	4,042.2	-226.4	-347.6	414.8	0.00	0.00	0.00
4,200.0	17.00	236.92	4,137.8	-242.3	-372.1	444.0	0.00	0.00	0.00
4,300.0	17.00	236.92	4,233.5	-258.3	-396.6	473.3	0.00	0.00	0.00
4,400.0	17.00	236.92	4,329.1	-274.3	-421.1	502.5	0.00	0.00	0.00
4,500.0	17.00	236.92	4,424.7	-290.2	-445.6	531.8	0.00	0.00	0.00
4,600.0	17.00	236.92	4,520.4	-306.2	-470.1	561.0	0.00	0.00	0.00
4,700.0	17.00	236.92	4,616.0	-322.1	-494.6	590.2	0.00	0.00	0.00

Database:	EDM 2003.16 Single User Db	**Local Co-ordinate Reference:**	Well Kudrna 1-17
Company:	Anschutz Exploration Corp.	**TVD Reference:**	WELL @ 2562.0ft (Original Well Elev)
Project:	Dunn Co., ND	**MD Reference:**	WELL @ 2562.0ft (Original Well Elev)
Site:	Sec.17-T141N-R97W	**North Reference:**	True
Well:	Kudrna 1-17	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
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)
Greenhorn									
4,779.5	17.00	236.92	4,692.0	-334.8	-514.0	613.5	0.00	0.00	0.00
4,800.0	17.00	236.92	4,711.6	-338.1	-519.1	619.5	0.00	0.00	0.00
4,900.0	17.00	236.92	4,807.2	-354.0	-543.6	648.7	0.00	0.00	0.00
5,000.0	17.00	236.92	4,902.9	-370.0	-568.1	677.9	0.00	0.00	0.00
5,100.0	17.00	236.92	4,998.5	-386.0	-592.6	707.2	0.00	0.00	0.00
5,200.0	17.00	236.92	5,094.1	-401.9	-617.1	736.4	0.00	0.00	0.00
Mowry									
5,277.2	17.00	236.92	5,168.0	-414.2	-636.0	759.0	0.00	0.00	0.00
5,300.0	17.00	236.92	5,189.8	-417.9	-641.6	765.7	0.00	0.00	0.00
5,400.0	17.00	236.92	5,285.4	-433.8	-666.1	794.9	0.00	0.00	0.00
5,500.0	17.00	236.92	5,381.0	-449.8	-690.6	824.1	0.00	0.00	0.00
5,600.0	17.00	236.92	5,476.7	-465.7	-715.1	853.4	0.00	0.00	0.00
Dakota									
5,652.6	17.00	236.92	5,527.0	-474.1	-728.0	868.8	0.00	0.00	0.00
5,700.0	17.00	236.92	5,572.3	-481.7	-739.6	882.6	0.00	0.00	0.00
5,800.0	17.00	236.92	5,667.9	-497.7	-764.1	911.8	0.00	0.00	0.00
5,900.0	17.00	236.92	5,763.5	-513.6	-788.6	941.1	0.00	0.00	0.00
6,000.0	17.00	236.92	5,859.2	-529.6	-813.1	970.3	0.00	0.00	0.00
6,100.0	17.00	236.92	5,954.8	-545.5	-837.6	999.5	0.00	0.00	0.00
6,200.0	17.00	236.92	6,050.4	-561.5	-862.1	1,028.8	0.00	0.00	0.00
Start Drop -3.00°									
6,230.5	17.00	236.92	6,079.6	-566.3	-869.5	1,037.7	0.00	0.00	0.00
6,300.0	14.91	236.92	6,146.4	-576.8	-885.5	1,056.8	3.00	-3.00	0.00
6,400.0	11.91	236.92	6,243.7	-589.4	-905.0	1,080.0	3.00	-3.00	0.00
6,500.0	8.91	236.92	6,342.0	-599.3	-920.1	1,098.1	3.00	-3.00	0.00
Rierdon									
6,516.2	8.43	236.92	6,358.0	-600.6	-922.2	1,100.5	3.00	-3.00	0.00
6,600.0	5.91	236.92	6,441.2	-606.3	-930.9	1,111.0	3.00	-3.00	0.00
6,700.0	2.91	236.92	6,540.9	-610.5	-937.4	1,118.7	3.00	-3.00	0.00
Start 6441.0 hold at 6797.1 MD									
6,797.1	0.00	0.00	6,638.0	-611.9	-939.4	1,121.1	3.00	-3.00	0.00
6,800.0	0.00	0.00	6,640.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
Dunham Salt									
6,886.2	0.00	0.00	6,727.0	-611.9	-939.4	1,121.1	0.00	0.00	0.00
6,900.0	0.00	0.00	6,740.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
7,000.0	0.00	0.00	6,840.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
Spearfish									
7,011.2	0.00	0.00	6,852.0	-611.9	-939.4	1,121.1	0.00	0.00	0.00
7,100.0	0.00	0.00	6,940.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
7,200.0	0.00	0.00	7,040.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
7,300.0	0.00	0.00	7,140.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
Minnekahta									
7,309.2	0.00	0.00	7,150.0	-611.9	-939.4	1,121.1	0.00	0.00	0.00
Opeche salt									
7,338.2	0.00	0.00	7,179.0	-611.9	-939.4	1,121.1	0.00	0.00	0.00
7,400.0	0.00	0.00	7,240.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
7,500.0	0.00	0.00	7,340.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
7,600.0	0.00	0.00	7,440.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
7,700.0	0.00	0.00	7,540.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
7,800.0	0.00	0.00	7,640.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
7,900.0	0.00	0.00	7,740.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00

Database:	EDM 2003.16 Single User Db	**Local Co-ordinate Reference:**	Well Kudrna 1-17
Company:	Anschutz Exploration Corp.	**TVD Reference:**	WELL @ 2562.0ft (Original Well Elev)
Project:	Dunn Co., ND	**MD Reference:**	WELL @ 2562.0ft (Original Well Elev)
Site:	Sec.17-T141N-R97W	**North Reference:**	True
Well:	Kudrna 1-17	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
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)
8,000.0	0.00	0.00	7,840.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
8,100.0	0.00	0.00	7,940.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
8,200.0	0.00	0.00	8,040.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
8,300.0	0.00	0.00	8,140.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
Tyler									
8,358.2	0.00	0.00	8,199.0	-611.9	-939.4	1,121.1	0.00	0.00	0.00
8,400.0	0.00	0.00	8,240.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
8,500.0	0.00	0.00	8,340.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
8,600.0	0.00	0.00	8,440.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
8,700.0	0.00	0.00	8,540.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
Kibbey Limestone									
8,740.2	0.00	0.00	8,581.0	-611.9	-939.4	1,121.1	0.00	0.00	0.00
8,800.0	0.00	0.00	8,640.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
Madison									
8,868.2	0.00	0.00	8,709.0	-611.9	-939.4	1,121.1	0.00	0.00	0.00
8,900.0	0.00	0.00	8,740.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
First Charles Salt									
8,934.2	0.00	0.00	8,775.0	-611.9	-939.4	1,121.1	0.00	0.00	0.00
9,000.0	0.00	0.00	8,840.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
9,100.0	0.00	0.00	8,940.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
9,200.0	0.00	0.00	9,040.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
Base last salt									
9,281.2	0.00	0.00	9,122.0	-611.9	-939.4	1,121.1	0.00	0.00	0.00
9,300.0	0.00	0.00	9,140.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
9,400.0	0.00	0.00	9,240.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
Mission Canyon									
9,461.2	0.00	0.00	9,302.0	-611.9	-939.4	1,121.1	0.00	0.00	0.00
9,500.0	0.00	0.00	9,340.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
9,600.0	0.00	0.00	9,440.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
Fryburg GR Marker									
9,637.2	0.00	0.00	9,478.0	-611.9	-939.4	1,121.1	0.00	0.00	0.00
9,700.0	0.00	0.00	9,540.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
9,800.0	0.00	0.00	9,640.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
9,900.0	0.00	0.00	9,740.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
Lodgepole									
9,964.2	0.00	0.00	9,805.0	-611.9	-939.4	1,121.1	0.00	0.00	0.00
10,000.0	0.00	0.00	9,840.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
10,100.0	0.00	0.00	9,940.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
10,200.0	0.00	0.00	10,040.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
10,300.0	0.00	0.00	10,140.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
10,400.0	0.00	0.00	10,240.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
10,500.0	0.00	0.00	10,340.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
10,600.0	0.00	0.00	10,440.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
10,700.0	0.00	0.00	10,540.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
Bakken									
10,721.2	0.00	0.00	10,562.0	-611.9	-939.4	1,121.1	0.00	0.00	0.00
Three Forks									
10,756.2	0.00	0.00	10,597.0	-611.9	-939.4	1,121.1	0.00	0.00	0.00
10,800.0	0.00	0.00	10,640.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
10,900.0	0.00	0.00	10,740.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
Birdbear									
10,950.2	0.00	0.00	10,791.0	-611.9	-939.4	1,121.1	0.00	0.00	0.00

Database:	EDM 2003.16 Single User Db	**Local Co-ordinate Reference:**	Well Kudrna 1-17
Company:	Anschutz Exploration Corp.	**TVD Reference:**	WELL @ 2562.0ft (Original Well Elev)
Project:	Dunn Co., ND	**MD Reference:**	WELL @ 2562.0ft (Original Well Elev)
Site:	Sec.17-T141N-R97W	**North Reference:**	True
Well:	Kudrna 1-17	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
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)
11,000.0	0.00	0.00	10,840.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
Duperow									
11,043.2	0.00	0.00	10,884.0	-611.9	-939.4	1,121.1	0.00	0.00	0.00
11,100.0	0.00	0.00	10,940.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
11,200.0	0.00	0.00	11,040.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
11,300.0	0.00	0.00	11,140.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
11,400.0	0.00	0.00	11,240.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
11,500.0	0.00	0.00	11,340.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
Dawson Bay									
11,507.2	0.00	0.00	11,348.0	-611.9	-939.4	1,121.1	0.00	0.00	0.00
11,600.0	0.00	0.00	11,440.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
11,700.0	0.00	0.00	11,540.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
Winnipegosis									
11,712.2	0.00	0.00	11,553.0	-611.9	-939.4	1,121.1	0.00	0.00	0.00
11,800.0	0.00	0.00	11,640.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
Interlake									
11,878.2	0.00	0.00	11,719.0	-611.9	-939.4	1,121.1	0.00	0.00	0.00
11,900.0	0.00	0.00	11,740.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
12,000.0	0.00	0.00	11,840.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
12,100.0	0.00	0.00	11,940.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
12,200.0	0.00	0.00	12,040.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
12,300.0	0.00	0.00	12,140.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
12,400.0	0.00	0.00	12,240.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
12,500.0	0.00	0.00	12,340.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
12,600.0	0.00	0.00	12,440.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
Gunton									
12,649.2	0.00	0.00	12,490.0	-611.9	-939.4	1,121.1	0.00	0.00	0.00
12,700.0	0.00	0.00	12,540.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
Red River									
12,794.2	0.00	0.00	12,635.0	-611.9	-939.4	1,121.1	0.00	0.00	0.00
12,800.0	0.00	0.00	12,640.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
12,900.0	0.00	0.00	12,740.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
13,000.0	0.00	0.00	12,840.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
13,100.0	0.00	0.00	12,940.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
13,200.0	0.00	0.00	13,040.8	-611.9	-939.4	1,121.1	0.00	0.00	0.00
TD at 13238.2									
13,237.2	0.00	0.00	13,078.0	-611.9	-939.4	1,121.1	0.00	0.00	0.00
TD - PBHL Kudrna 1-17 - PBHL Kudrna 1-17									
13,238.2	0.00	0.00	13,079.0	-611.9	-939.4	1,121.1	0.00	0.00	0.00

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
PBHL Kudrna 1-17 - plan hits target center - Point	0.00	0.00	13,079.0	-611.9	-939.4	504,583.39	1,344,585.33	47° 1' 22.860 N	103° 0' 7.320 W

Database:	EDM 2003.16 Single User Db	**Local Co-ordinate Reference:**	Well Kudrna 1-17
Company:	Anschutz Exploration Corp.	**TVD Reference:**	WELL @ 2562.0ft (Original Well Elev)
Project:	Dunn Co., ND	**MD Reference:**	WELL @ 2562.0ft (Original Well Elev)
Site:	Sec.17-T141N-R97W	**North Reference:**	True
Well:	Kudrna 1-17	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,062.0	2,062.0	Pierre Shale		0.00	
4,779.5	4,692.0	Greenhorn		0.00	
5,277.2	5,168.0	Mowry		0.00	
5,652.6	5,527.0	Dakota		0.00	
6,516.2	6,358.0	Rierdon		0.00	
6,886.2	6,727.0	Dunham Salt		0.00	
7,011.2	6,852.0	Spearfish		0.00	
7,309.2	7,150.0	Minnekahta		0.00	
7,338.2	7,179.0	Opeche salt		0.00	
8,358.2	8,199.0	Tyler		0.00	
8,740.2	8,581.0	Kibbey Limestone		0.00	
8,868.2	8,709.0	Madison		0.00	
8,934.2	8,775.0	First Charles Salt		0.00	
9,281.2	9,122.0	Base last salt		0.00	
9,461.2	9,302.0	Mission Canyon		0.00	
9,637.2	9,478.0	Fryburg GR Marker		0.00	
9,964.2	9,805.0	Lodgepole		0.00	
10,721.2	10,562.0	Bakken		0.00	
10,756.2	10,597.0	Three Forks		0.00	
10,950.2	10,791.0	Birdbear		0.00	
11,043.2	10,884.0	Duperow		0.00	
11,507.2	11,348.0	Dawson Bay		0.00	
11,712.2	11,553.0	Winnipegosis		0.00	
11,878.2	11,719.0	Interlake		0.00	
12,649.2	12,490.0	Gunton		0.00	
12,794.2	12,635.0	Red River		0.00	
13,238.2	13,079.0	TD			

Plan Annotations

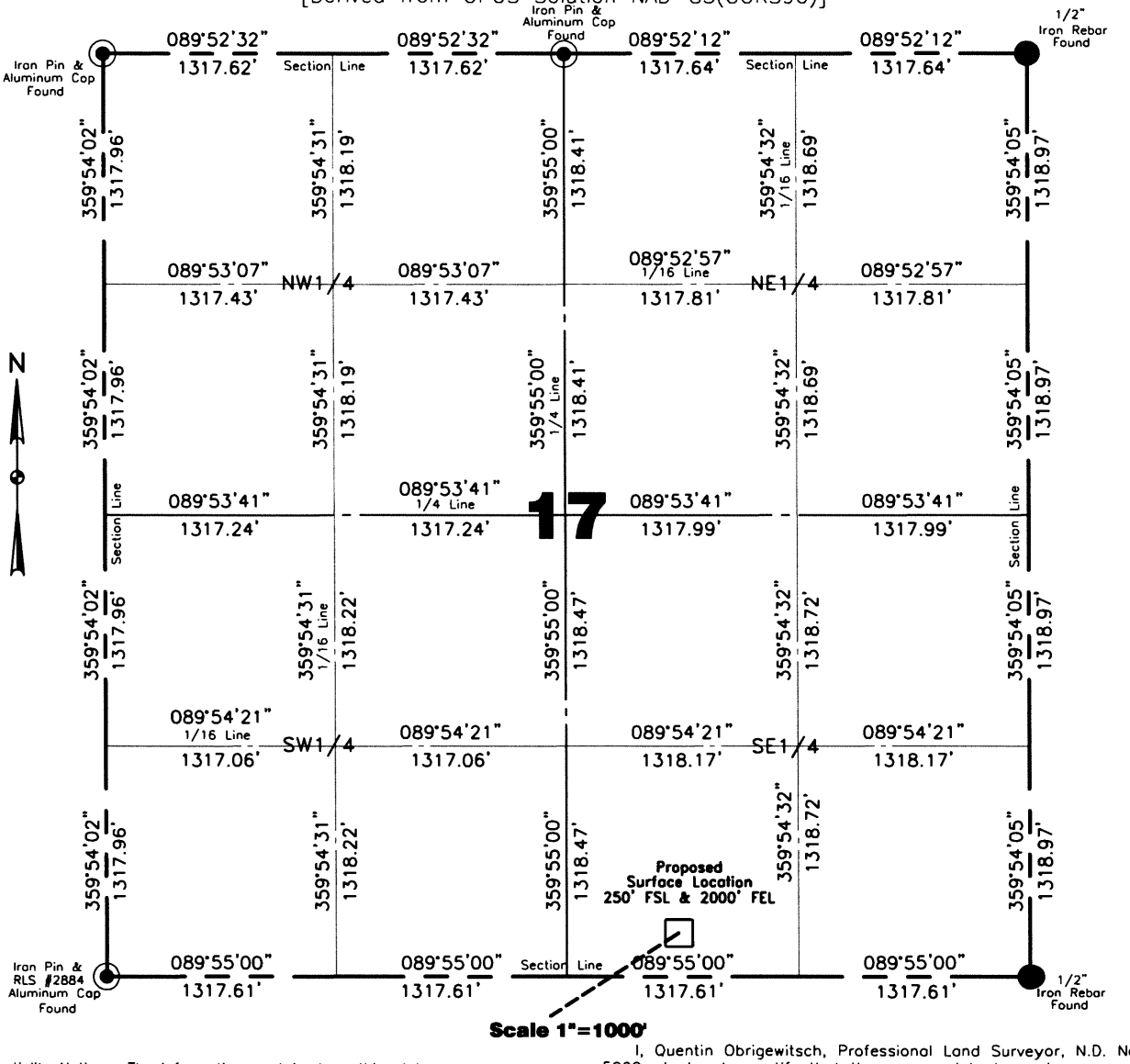
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
2,400.0	2,400.0	0.0	0.0	Start Build 3.00°
2,966.7	2,958.4	-45.5	-69.9	Start 3263.8 hold at 2966.7 MD
6,230.5	6,079.6	-566.3	-869.5	Start Drop -3.00°
6,797.1	6,638.0	-611.9	-939.4	Start 6441.0 hold at 6797.1 MD
13,237.2	13,078.0	-611.9	-939.4	TD at 13238.2

HORIZONTAL SECTION PLAT

Anschutz Exploration Corp.
555 17th Street, Suite 2400 Denver, Colorado 80202

Kudrna 1-17

250 feet from the south line and 2000 feet from the east line (surface location)
Section 17, T. 141 N., R. 97 W., 5th P.M.
360 feet from the north line and 2330 feet from the west line (bottom location)
Section 20, T. 141 N., R. 97 W., 5th P.M.
Dunn County, North Dakota
Surface owner @ well site – George & Betty Kudrna
Latitude 47°01'28.90" North; Longitude 102°59'53.76" West (surface location)
Latitude 47°01'22.86" North; Longitude 103°00'07.32" West (bottom location)
[Derived from OPUS Solution NAD-83(CORS96)]



Scale 1"=1000'

Confidentiality Notice: The information contained on this plat is legally privileged and confidential information intended only for the use of recipients. If you are not the intended recipients, you are hereby notified that any use, dissemination, distribution or copying of this information is strictly prohibited.

I, Quentin Obrigewitsch, Professional Land Surveyor, N.D. No. 5999, do hereby certify that the survey plat shown hereon was made by me, or under my direction, from notes made in the field, and the same is true and correct to the best of my knowledge and belief.

REGISTERED LAND SURVEYOR
QUENTIN OBRIGEWITSCH
LS-5999
DATE 3/8/11
NORTH DAKOTA

DATE

All corners shown on this plat were found in the field during Anschutz Exploration Corp. Kudrna 1-17 oil well survey on March 3, 2011. Distances to all others are calculated. All azimuths are based on the south line of Section 17, being on an azimuth of 089°55'00".

Surveyed By	Field Book
R. Kubischta	OW-241
Computed & Drawn By	Project No.
B.C	3711193

Revised 3/7/2011

Kadrmas Lee & Jackson
Engineers Surveyors Planners

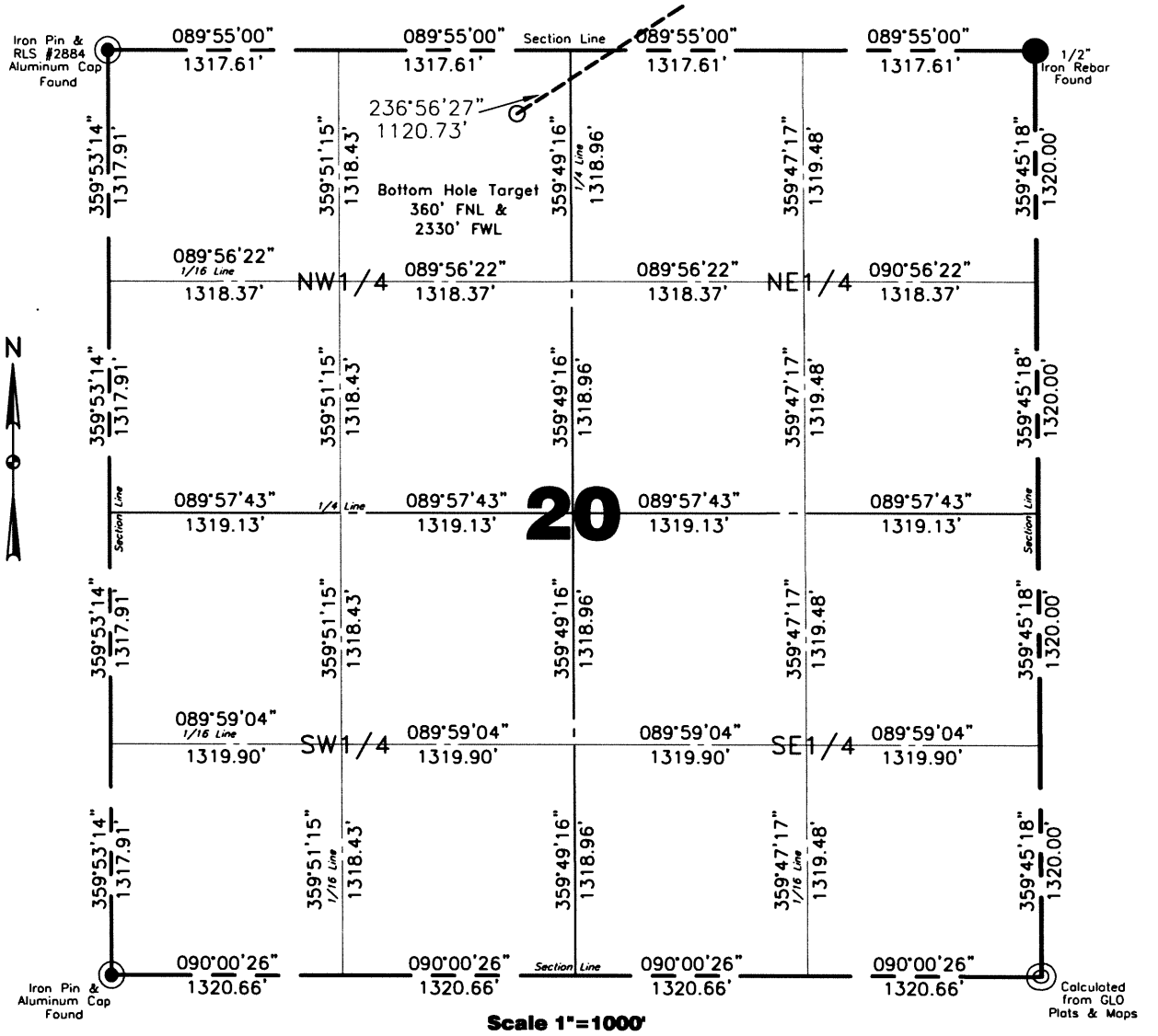
Mar 08, 2011 – 11:01am – J:\oilfield\Anschutz Exploration\3711193\Cadd\EP\3711193BAS01.dwg

HORIZONTAL SECTION PLAT

Anschutz Exploration Corp.
555 17th Street, Suite 2400 Denver, Colorado 80202

Kudrna 1-17

250 feet from the south line and 2000 feet from the east line (surface location)
Section 17, T. 141 N., R. 97 W., 5th P.M.
360 feet from the north line and 2330 feet from the west line (bottom location)
Section 20, T. 141 N., R. 97 W., 5th P.M.
Dunn County, North Dakota
Surface owner @ well site – George & Betty Kudrna
Latitude 47°01'28.90" North; Longitude 102°59'53.76" West (surface location)
Latitude 47°01'22.86" North; Longitude 103°00'07.32" West (bottom location)
[Derived from OPUS Solution NAD-83(CORS96)]



Scale 1"=1000'

Confidentiality Notice: The information contained on this plat is legally privileged and confidential information intended only for the use of recipients. If you are not the intended recipients, you are hereby notified that any use, dissemination, distribution or copying of this information is strictly prohibited.

All corners shown on this plat were found in the field during Anschutz Exploration Corp. Kudrna 1-17 oil well survey on March 3, 2011. Distances to all others are calculated. All azimuths are based on the south line of Section 17, being on an azimuth of 089°55'00".

I, Quentin Obrigewitsch, Professional Land Surveyor, N.D. No. 5999, do hereby certify that the survey plat shown hereon was made by me, or under my direction, from notes made in the field, and the same is true and correct to the best of my knowledge and belief.

REGISTERED LAND SURVEYOR
QUENTIN OBRIGEWITSCH
LS-5999
DATE 3/8/11
NORTH DAKOTA
DATE

Surveyed By	Field Book
R. Kubischta	OW-241
Computed & Drawn By	Project No.
B.C	3711193

Revised 3/7/2011

Kadrmas Lee & Jackson
Engineers Surveyors Planners

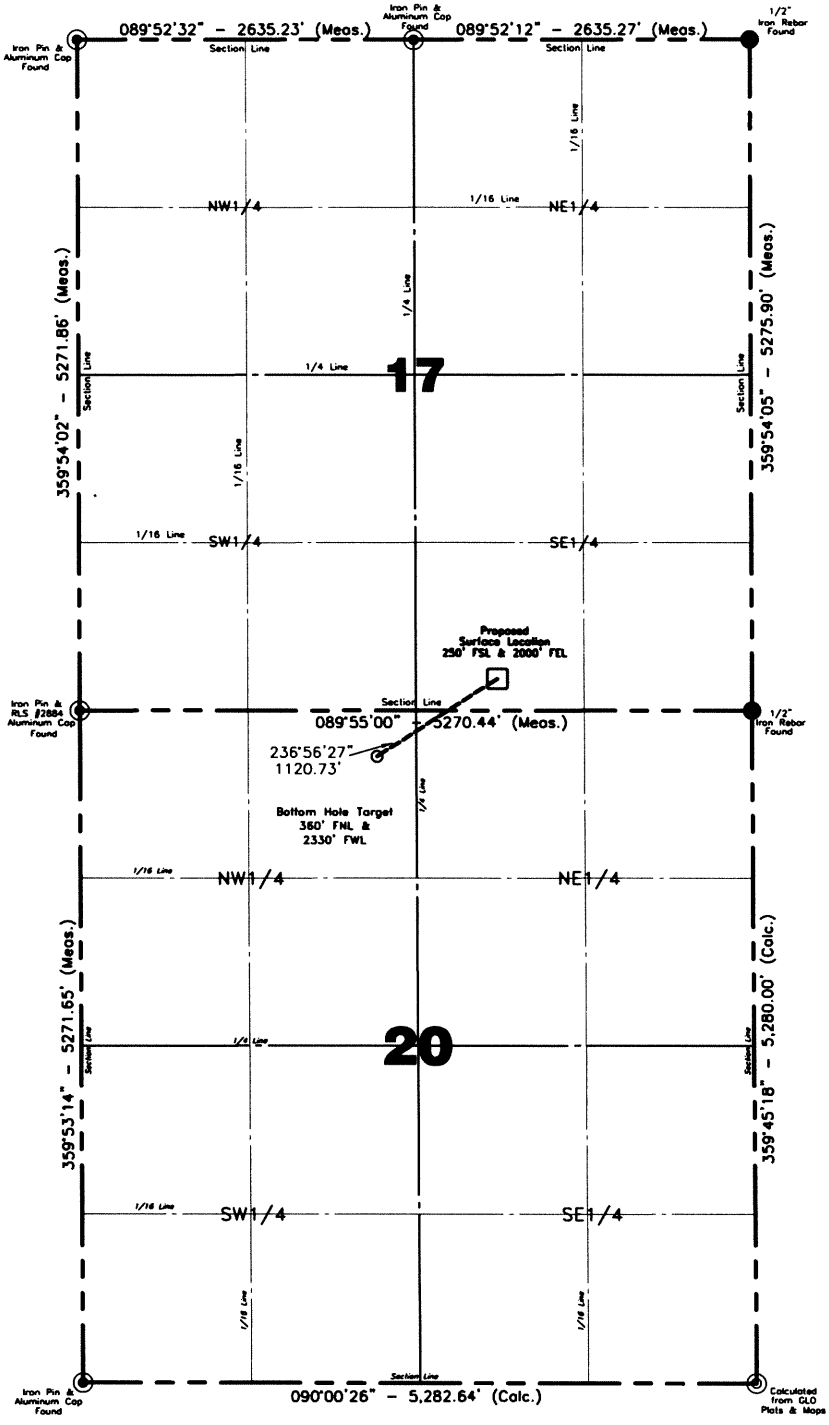
Mar 08, 2011 – 11:01am – J:\oilfield\Anschutz Exploration\3711193\Codd\EP\3711193BAS01.dwg

BOTTOM HOLE LOCATION PLAT

Anschutz Exploration Corp.
555 17th Street, Suite 2400 Denver, Colorado 80202

Kudrna 1-17

250 feet from the south line and 2000 feet from the east line (surface location)
Section 17, T. 141 N., R. 97 W., 5th P.M.
360 feet from the north line and 2330 feet from the west line (bottom location)
Section 20, T. 141 N., R. 97 W., 5th P.M.
Dunn County, North Dakota
Surface owner @ well site – George & Betty Kudrna
Latitude 47°01'28.90" North; Longitude 102°59'53.76" West (surface location)
Latitude 47°01'22.86" North; Longitude 103°00'07.32" West (bottom location)
[Derived from OPUS Solution NAD-83(CORS96)]



Computed & Drawn By	Surveyed By	Approved By	Scale	Date
B. Chism	R. Kubischta	Q. Obrigewitsch	1"=1500'	2/14/2011
Field Book	**Moteriol**	**Revised**	**Project No.**	**Drawing No.**
OW. 241	B.H. Layout	3/7/2011	3711193	4

Kadrmas Lee & Jackson
Engineers Surveyors Planners

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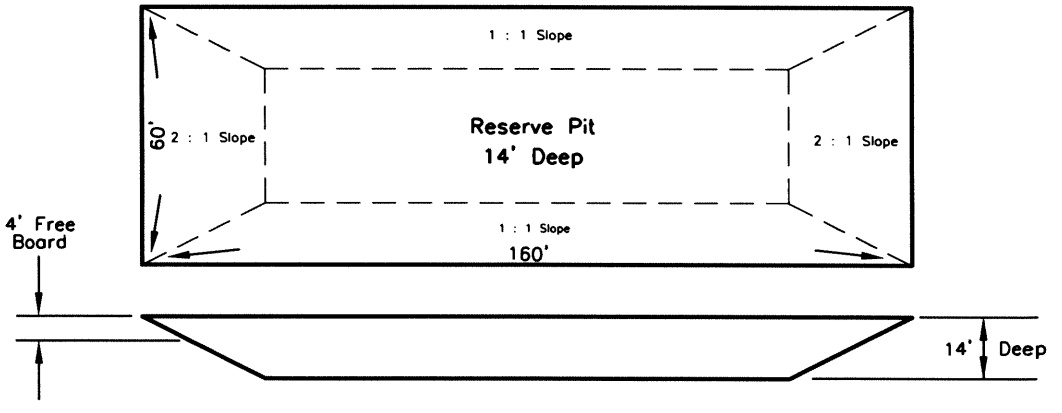
Anschutz Exploration Corp.
Kudrna 1-17
Section 17, T. 141 N., R. 97 W., 5th P.M.
Dunn County, North Dakota

Well Site Elevation	2529.0' MSL
Well Pad Elevation	2528.6' MSL

Excavation	4,120 C.Y.
Plus Pit	3,150 C.Y.
	7,270 C.Y.
Embankment	1,100 C.Y.
Plus Shrinkage (+25%)	330 C.Y.
	1,430 C.Y.
Stockpile Pit	3,150 C.Y.
Stockpile Top Soil (6")	2,285 C.Y.
Road Embankment from Pad or Stockpile with Pit	405 C.Y.
Disturbed Area for Pad	2.83 Acres

NOTE :
All cut end slopes are designed at 1:1 slopes & all fill end slopes are designed at 1 1/2:1 slopes

Well Site Location
250' FSL
2000' FEL



Drawn By: W.B/ B.C	Checked By: R. Kubischta	Approved By: Q. Obrigewitsch	Scale: None	Date: 2/14/2011
Field Book: OW-241	Material: Quantities	Revised: 3/7/2011	Project No.: 3711193	Drawing No.: 5

Kadrmas Lee & Jackson
Engineers Surveyors Planners

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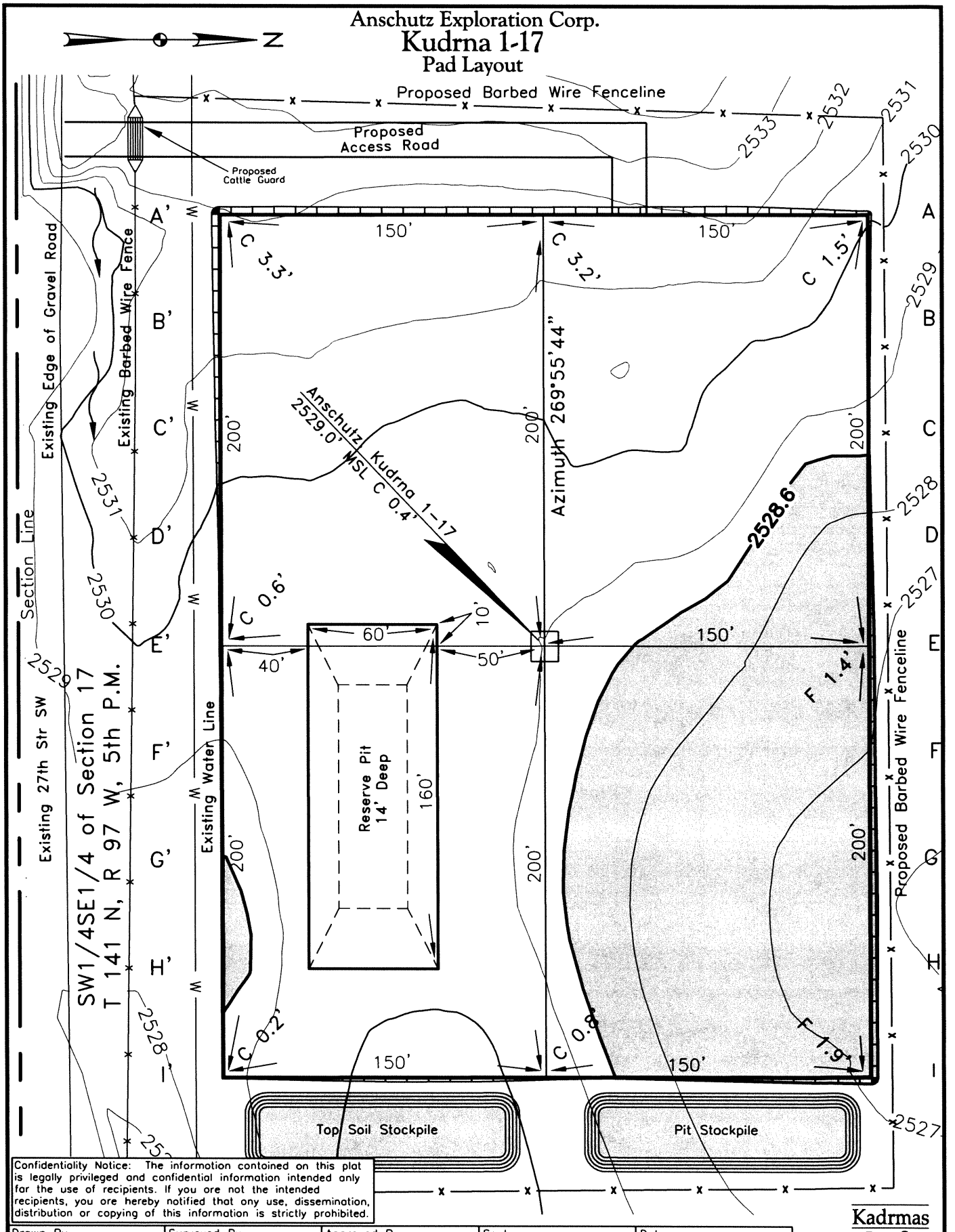
Anschutz Exploration Corp.
Kudrna 1-17
Pad Layout

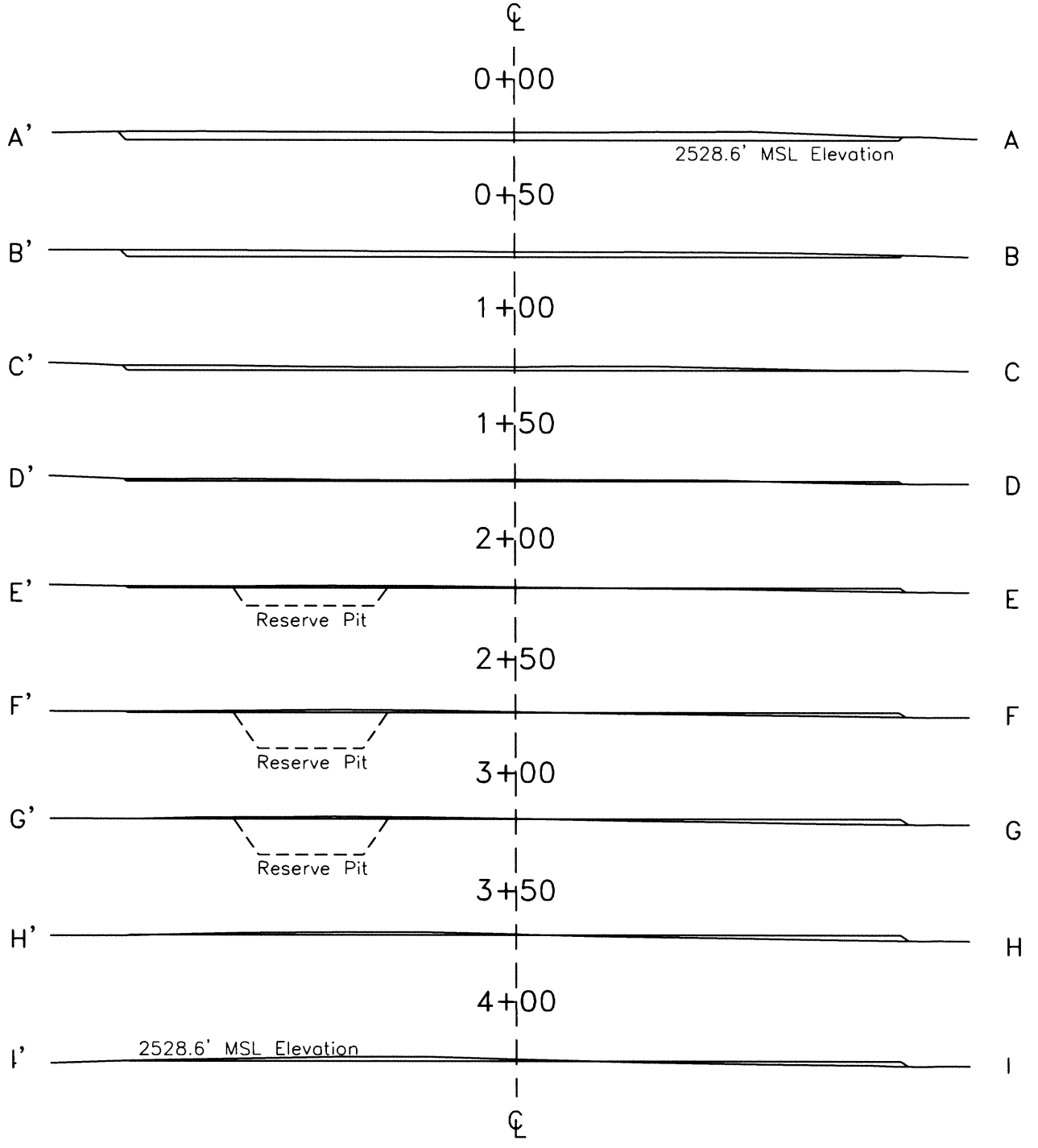


Drawn By	Surveyed By	Approved By	Scale	Date
W.B/ B.C	R. Kubischta	Q. Obrigewitsch	1"= 60'	2/14/2011
Field Book	**Material**	**Revised**	**Project No.**	**Drawing No.**
OW-241	Pad Layout	3/7/2011	3711193	6

Kadrmas Lee & Jackson
Engineers Surveyors Planners

Mar 08, 2011 - 10:52am - J:\oilfield\Anschutz Exploration\3711193\Cadd\EP\3711193BAS02.dwg

Anschutz Exploration Corp.
Kudrna 1-17
Cross Sections



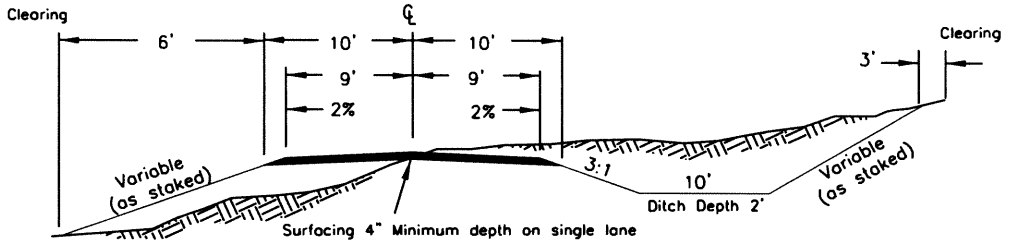
Drawn By	Surveyed By	Approved By	Scale	Date
W.B/ B.C	R. Kubischta	Q. Obrigewitsch	1"= 60'	2/14/2011
Field Book	**Material**	**Revised**	**Project No.**	**Drawing No.**
OW-241	Cross Sections	3/7/2011	3711193	7

Kadrmas Lee & Jackson
Engineers Surveyors Planners

Mar 08, 2011 - 7:24am - J:\oilfield\Anschutz Exploration\3711193\Codd\EP\3711193BAS02.dwg

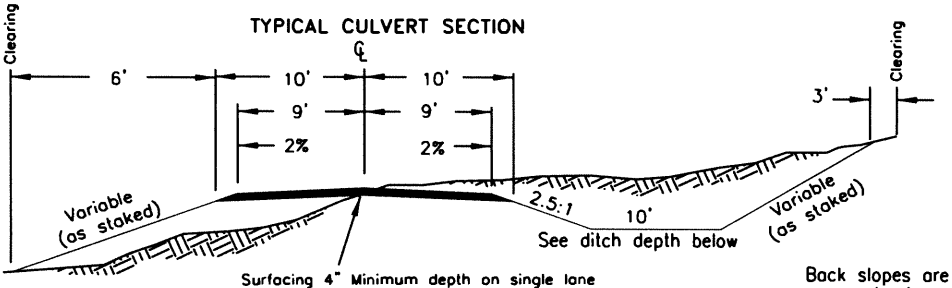
Roadway Typical Sections
Anschutz Exploration Corp.
Kudrna 1-17

TYPICAL SECTION 10' BOTTOM DITCH ROAD



TYPICAL "A"
No Scale

TYPICAL CULVERT SECTION



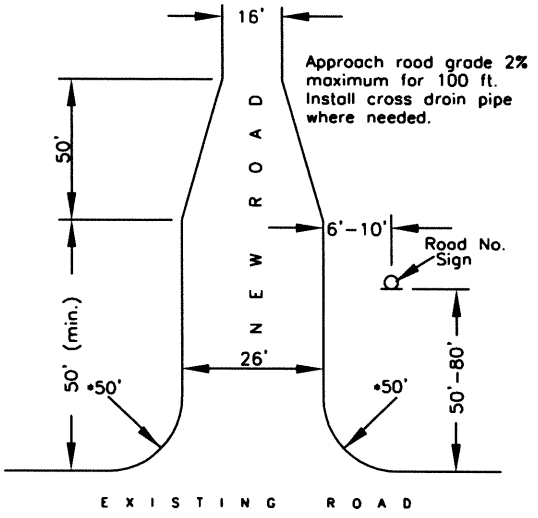
Fill slopes are V1 H1.5 (1.5:1) or as staked

Back slopes are V1 H1 (1:1) or as staked

TYPICAL "B"
No Scale

Ditch width shall be the larger of the fallawing:	Ditch depth shall be: CMP diameter	Ditch depth
A. Standard ditch width	18"	2.5'
B. 2 times the pipe diameter	24"	3.0'
C. 4.25'	36"	4.0'
	48"	5.0'

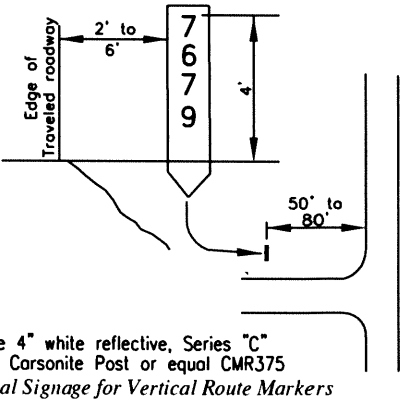
TYPICAL APPROACH ROAD CONNECTION



*As noted on road sheets

TYPICAL "C"
No Scale

TYPICAL SECTION VERTICAL ROUTE MARKER



Letters shall be 4" white reflective, Series "C" on Brown 6' 6" Carsonite Post or equal CMR375

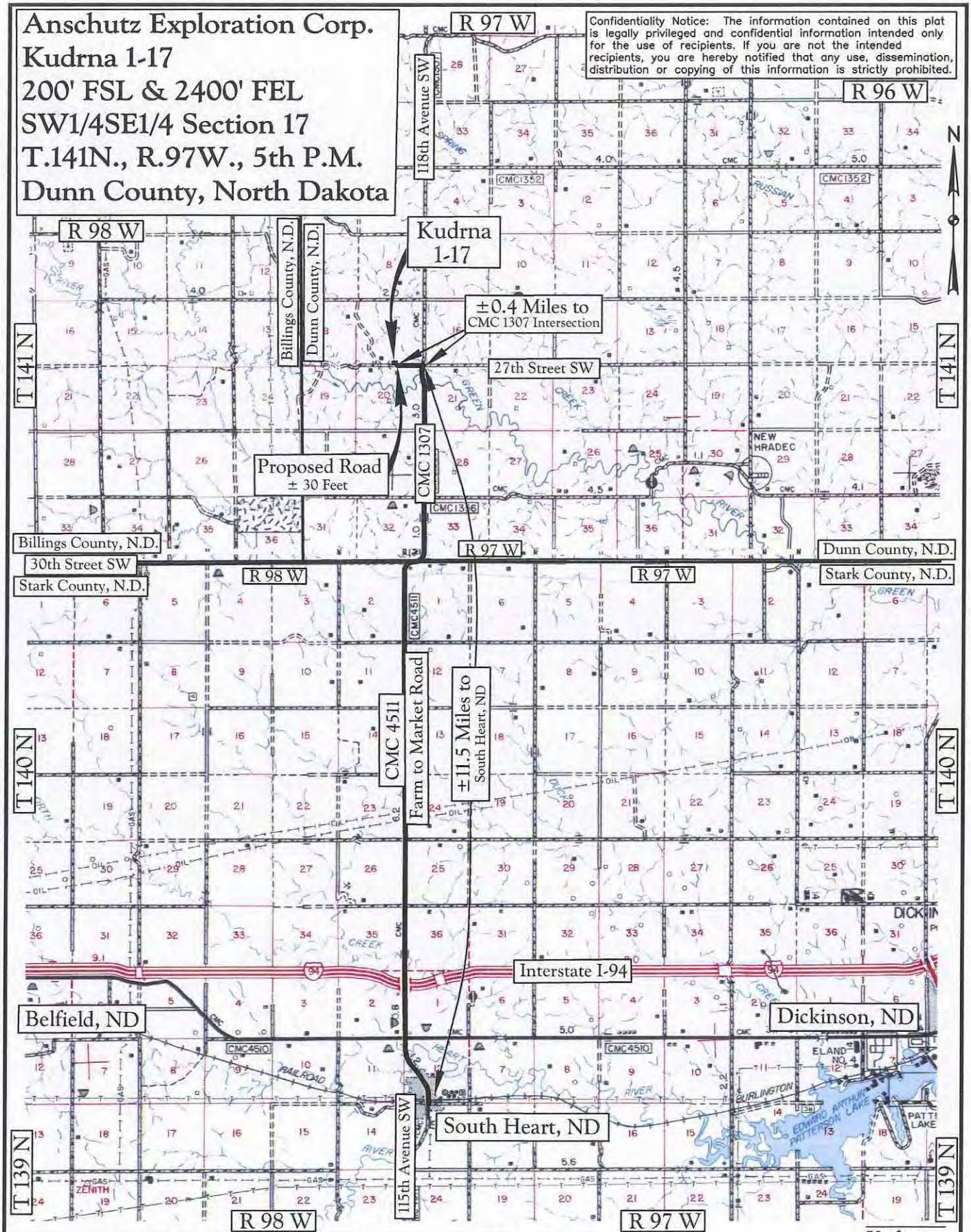
Figure 11-28.- Typical Signage for Vertical Route Markers

TYPICAL "D"
No Scale

Drawn By	Surveyed By	Approved By	Scale	Date
W.B/ B.C	R. Kubischta	Q. Obrigewitsch	None	2/14/2011
Field Book	**Material**	**Revised**	**Project No.**	**Drawing No.**
OW-241	Road Typical	3/7/2011	3711193	8

Kadrmas Lee & Jackson
Engineers Surveyors Planners

Anschutz Exploration Corp.
Kudrna 1-17
200' FSL & 2400' FEL
SW1/4SE1/4 Section 17
T.141N., R.97W., 5th P.M.
Dunn County, North Dakota



Map "A"
County Access Route

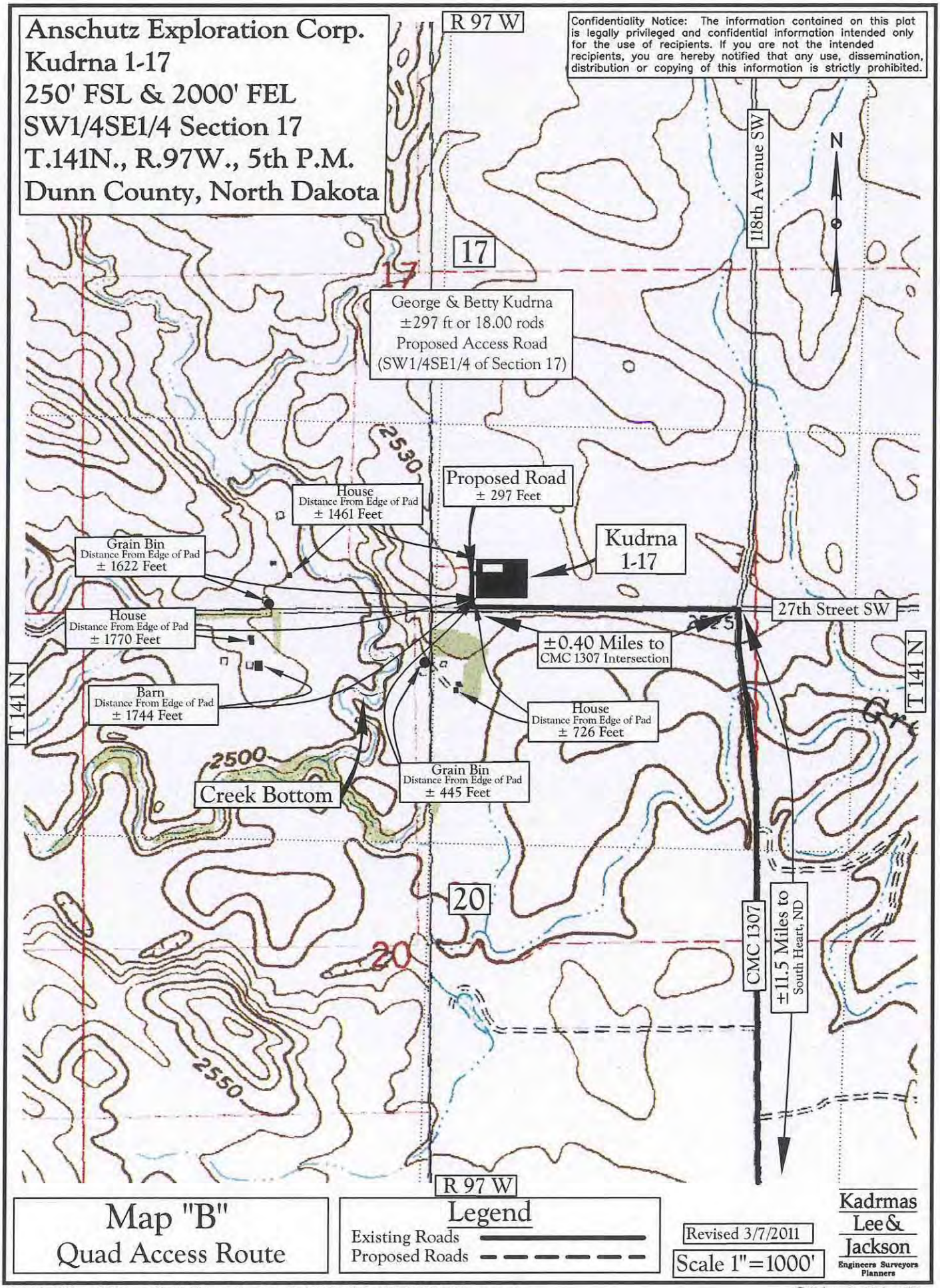
Legend
Existing Roads
Proposed Roads

Revised 2/22/2011

Scale 1"=2 Miles

Kadrmas Lee & Jackson
Engineers Surveyors Planners

Mar 08, 2011 – 10:55am – J:\oilfield\Anschutz Exploration\3711193\Cadd\3711193LOC01.DWG



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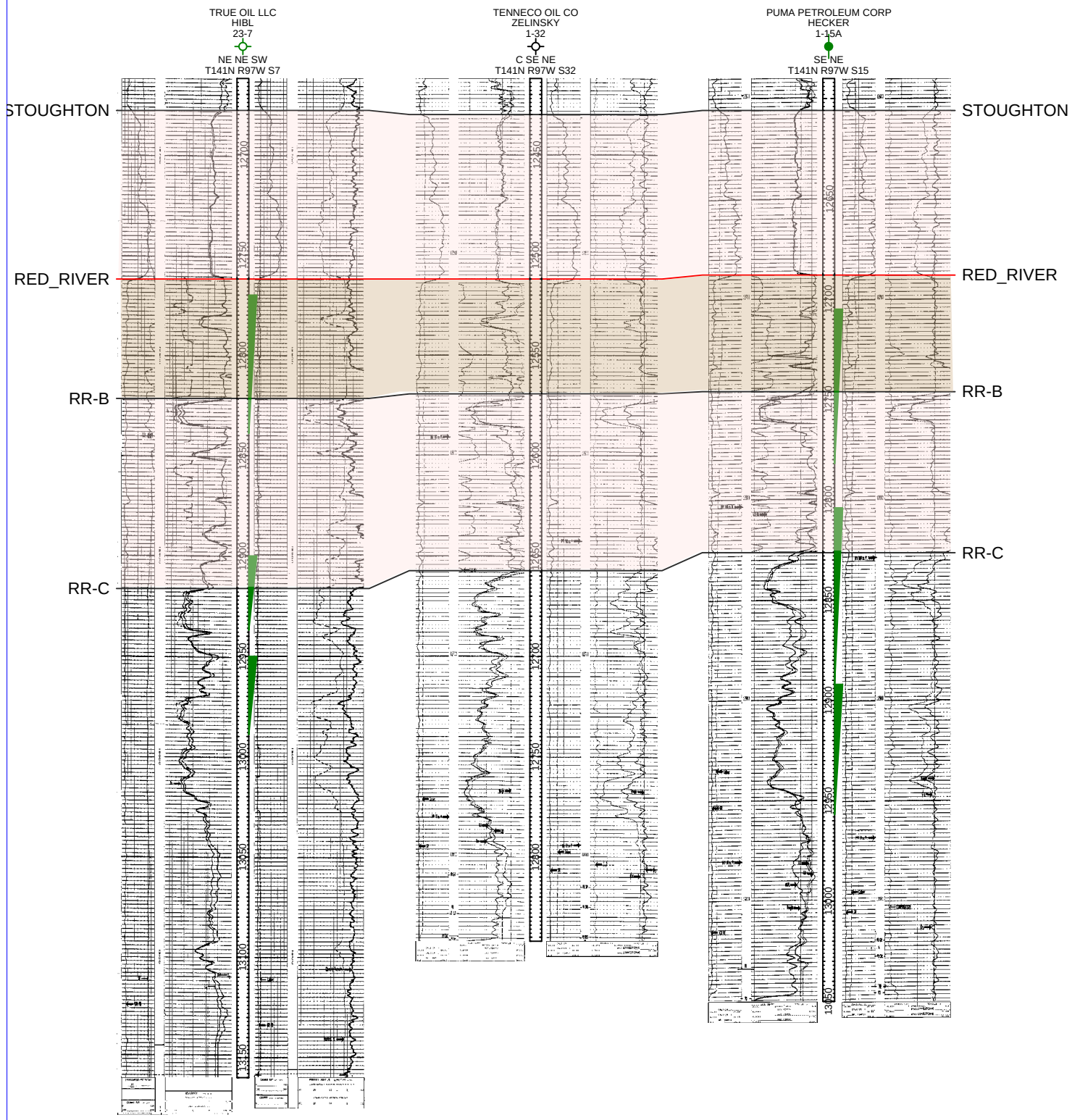
Williston Basin



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