

RECEIVED

FORM APPROVED
OMB No. 1004-0136
Expires January 31, 2004

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

MAR 15 2011

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No. NMSF-078771
6. If Indian, Allottee or Tribe Name
7. If Unit or CA Agreement, Name and No. Rosa Unit NMNM-78407A-MV
8. Lease Name and Well No. NMNM-78407X-DK Rosa Unit #014D
9. API Well No. 30-039-31054
10. Field and Pool, or Exploratory Blanco Mesa Verde/Basin Dakota
11. Sec., T., R., M., or Blk. and Survey or Area Section 23, 31N, 6W
12. County or Parish Rio Arriba
13. State NM
14. Distance in miles and direction from nearest town or post office* approximately 24.8 miles northeast of Blanco, New Mexico
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 1020'
16. No. of Acres in lease 2560
17. Spacing Unit dedicated to this well 320 E/2- MV 320 N/2- DK
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 55' Rosa 213
19. Proposed Depth 8351'
20. BLM/BIA Bond No. on file UTB000178
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 6,287' GR
22. Approximate date work will start* April 15, 2011
23. Estimated duration 1 month

1a. Type of Work: ☒ DRILL ☐ REENTER
1b. Type of Well: ☐ Oil Well ☒ Gas Well ☐ Other ☐ Single Zone ☒ Multiple Zone
2. Name of Operator Williams Production Company, LLC
3a. Address P.O. Box 640 Aztec, NM 87410
3b. Phone No. (include area code) (505) 634-4222
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface B 1020' FNL & 1515' FEL At proposed prod. zone A 500' FNL & 500' FEL
14. Distance in miles and direction from nearest town or post office* approximately 24.8 miles northeast of Blanco, New Mexico
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 1020'
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22. Approximate date work will start* April 15, 2011
23. Estimated duration 1 month

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, shall be attached to this form:

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO shall be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be required by the authorized officer.

25. Signature 	Name (Printed/Typed) Heather Riley	Date 3/15/2011
Title Regulatory Specialist		
Approved by (Signature) 	Name (Printed/Typed) AEM	Date 5/16/11
Title AEM	Office FFO	

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*(Instructions on reverse)

Williams Production Company, LLC, proposes to develop the Blanco Mesa Verde / Basin Dakota / formations at the above described location in accordance with the attached drilling and surface use plans.

The well pad surface is under jurisdiction of the Bureau of Land Management, Farmington Field Office (BLM/FFO).

This location has been archaeologically surveyed by La Plata Archaeological Consultants. Copies of their report have been submitted directly to the BLM.

No new access road will be required for this proposed well.

This APD is also serving as an application to obtain a pipeline right-of-way. An associated pipeline tie of 172.6 feet would be required for this well.

A COMPLETE C-144 MUST BE SUBMITTED TO AND APPROVED BY THE NMOCD FOR: A PIT, CLOSED LOOP SYSTEM, BELOW GRADE TANK, OR PROPOSED ALTERNATIVE METHOD, PURSUANT TO NMOCD PART 19.15.17, PRIOR TO THE USE OR CONSTRUCTION OF THE ABOVE APPLICATIONS.

Hold C104
for Directional Survey
and "As Drilled" plat
JUN 02 2011
NMOC

BLM'S APPROVAL OR ACCEPTANCE OF THIS ACTION DOES NOT RELIEVE THE LESSEE AND OPERATOR FROM OBTAINING ANY OTHER AUTHORIZATION REQUIRED FOR OPERATIONS ON FEDERAL AND INDIAN LANDS

This action is subject to technical and procedural review pursuant to 43 CFR 3165.3 and appeal pursuant to 43 CFR 3165.4

NOTIFY AZTEC OCD 24 HRS.
PRIOR TO CASING & CEMENT

DRILLING OPERATIONS AUTHORIZED ARE SUBJECT TO COMPLIANCE WITH ATTACHED "GENERAL REQUIREMENTS".

Hold C104
for Directional Survey
and "As Drilled" plat

RCVD MAY 20 '11
OIL CONS. DIV.
DIST. 3

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102
Revised October 12, 2005
Instructions on back
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

OIL CONSERVATION DIVISION

1220 South St. Francis
Santa Fe, NM 87505

Farmington Field Office
Bureau of Land Management

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-039-31054	² Pool Code 72319 / 71599	³ Pool Name BLANCO MESAVERDE / BASIN DAKOTA
⁴ Property Code 17033	⁵ Property Name ROSA UNIT	⁶ Well Number 14D
⁷ GRID No. 120782	⁸ Operator Name WILLIAMS PRODUCTION COMPANY	⁹ Elevation 6287'

¹⁰ Surface Location

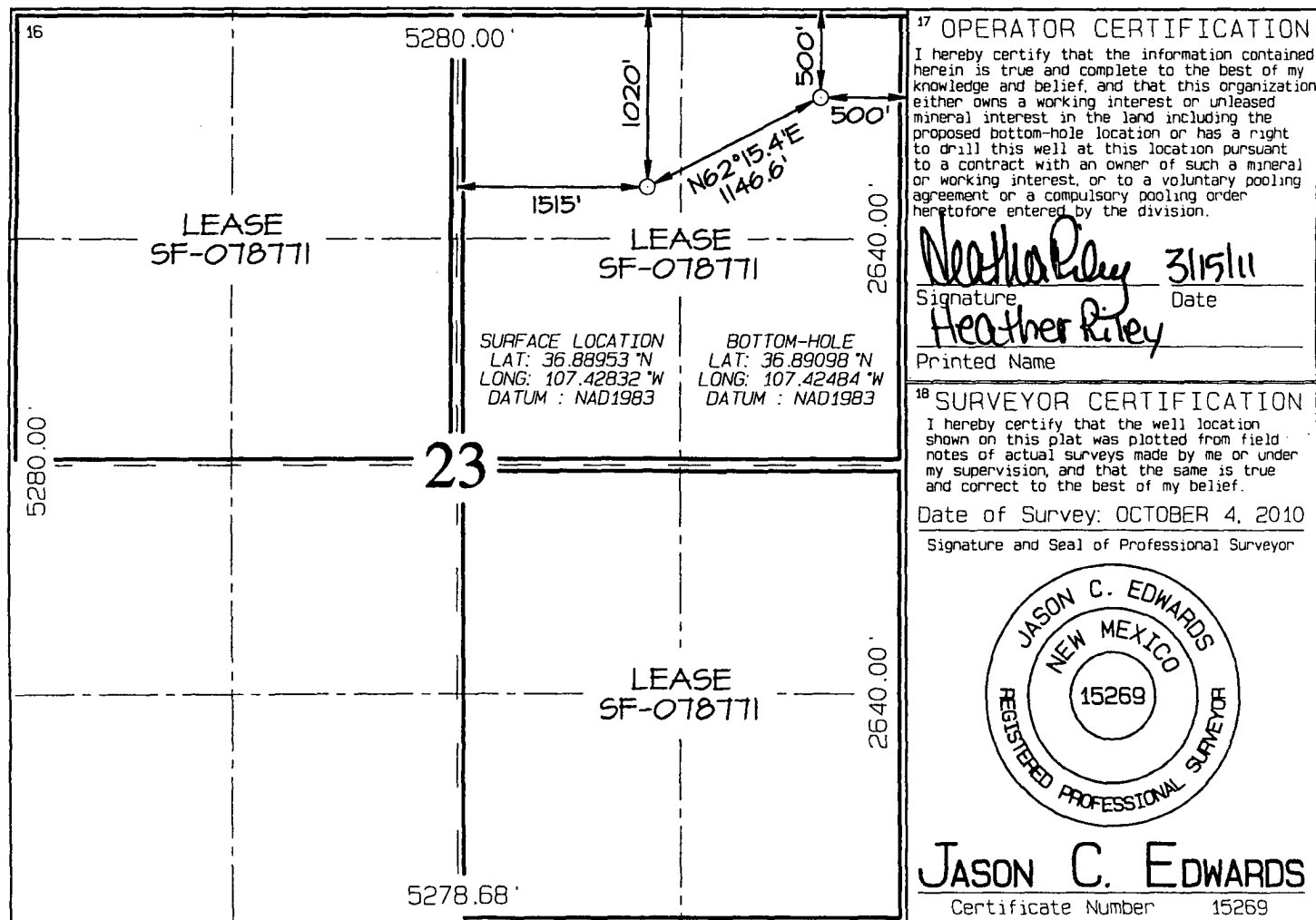
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	23	31N	6W		1020	NORTH	1515	EAST	RIO ARRIBA

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	23	31N	6W		500	NORTH	500	EAST	RIO ARRIBA

¹² Dedicated Acres 320.0 Acres (E/2) - MV 320.0 Acres (N/2) - DK, MS	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No. R 13123A
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION





WILLIAMS PRODUCTION COMPANY

Operations Plan

(Note: This procedure will be adjusted on site based upon actual conditions)

DATE: 3/14/2011 **FIELD:** Basin DK/ BlancoMV
WELL NAME: Rosa #14D **SURFACE:** BLM
BH LOCATION: NENE Sec 23-31N-6W **MINERALS:** BLM
Rio Arriba, NM
ELEVATION: 6,287' GR **LEASE #** SF-078771
MEASURED DEPTH: 8,351'

I. **GEOLOGY:** Surface formation - San Jose

A. **FORMATION TOPS:** (KB)

Name	TVD	MD	Name	TVD	MD
Ojo Alamo	2,331	2,516	Point Lookout	5,591	5,826
Kirtland	2,471	2,668	Mancos	5,896	6,131
Fruitland	2,866	3,087	Gallup	6,876	7,111
Pictured Cliffs	3,121	3,350	Greenhorn	7,631	7,866
Lewis	3,426	3,660	Graneros	7,686	7,921
Cliff House	5,316	5,551	Dakota	7,816	8,051
Menefee	5,361	5,596	Morrison	8,066	8,301
			TD	8,116	8,351

B. **MUD LOGGING PROGRAM:** Mudlogger on location from intermediate csg to TD. Mud logger to pick TD.

C. **LOGGING PROGRAM:** HRI/Temp/SDL/DSN from intermediate casing to TD

D. **NATURAL GAUGES:** Gauge any noticeable increases in gas flow. Record all gauges in Tour book and on morning reports.

II. **DRILLING**

A. **MUD PROGRAM:** Clear water with benex to 7" casing point. Convert to a LSND mud to log and run pipe. Treat for lost circulation as necessary. Obtain 100% returns prior to cementing. Notify Engineering of any mud losses. Use air w/Air Hammer from 7" csg. to TD.

B. **BOP TESTING:** While drill pipe is in use, the pipe rams and the blind rams will be function tested once each trip. The anticipated reservoir is expected to be less than 1300 psi, so the BOPE will be tested to **250 psi (Low) for 5 minutes and 1500 psi (High) for 10 minutes**. Utilize a BOPE Testing Unit with a recording chart and appropriate test plug for testing. The drum brakes will be inspected and tested each tour. **All tests and inspections will be recorded in the tour book as to time and results.**

III. **MATERIALS**

A. CASING PROGRAM:

CASING TYPE	OH SIZE (IN)	DEPTH (MD) (FT)	CASING SIZE (IN)	WEIGHT(LB)	GRADE
Surface	12 1/4	300	9 5/8	36	K-55
Intermediate	8 3/4	3,831	7	23	K-55
Longstring	6 1/4	8,351	4 1/2	11.6	P-110

B. FLOAT EQUIPMENT:

1. SURFACE CASING: 9-5/8" notched regular pattern guide shoe. Run (1) standard centralizer on each of the bottom (4) joints of Surface Casing. ✓
2. INTERMEDIATE CASING: 7" cement nose guide shoe with a self-fill insert float. Place float collar one joint above the shoe. Install (1) Turbulent centralizer on each of the bottom (3) joints and one standard centralizer every (3) joints to 2,500 ft. Run (1) Turbulent centralizer at 2,700 ft., 2,500 ft., 2,300ft., 2,000ft., 1,500 ft., and 1,000 ft. (NTL-FRA 90-1). ✓
3. PRODUCTION LINER / CASING: 4-1/2" whirler type cement nose guide shoe with a latch collar on top of 20' bottom joint. Place marker joint above 5,400'. Place centralizers as needed across selected production intervals.

C. CEMENTING:

(Note: Volumes may be adjusted onsite due to actual conditions)

1. SURFACE: Slurry: 290sx (521 cu.ft.) of "Type III" + 2% Cal-Seal 60 + ¼ # of poly-e-flake/sk + 0.3% Versaset + 2% Econolite + 6% Salt (Yield = 1.796 cu.ft./sk, Weight = 13.5 #/gal.). The 100% excess should circulate cement to the surface. WOC 12 hours. Test csg to 600psi, **For 30 minutes**
2. INTERMEDIATE: Lead - 550 sx (1498 cu.ft.) of "EXTENDACEM" + 5 #/sk pheno-seal + 5% Cal-Seal 60 (Yield = 2.723 cu.ft./sk, Weight = 11.5 #/gal.). Tail - 100 sx (117.8cu.ft.) of Premium cement + 0.125 #/sk Poly-E-Flake, (Yield = 1.178 cu.ft./sk, Weight = 15.6#/gal.). Total volume = 1615 cu.ft. Bump Plug to 1,500 psi. Notify engineering if cement is not circulated to surface WOC 12 hours. Test csg to 1,500 psi, **For 30 minutes**
3. PRODUCTION CASING: 10 bbl Gelled Water spacer. Cement: 610 sx (853 ft³) of "FRACCCEM" + 0.8% Halad-9 + 0.1% CFR-3 + 5 #/sk Gilsonite + 0.125 #/sk Poly-E-Flake + 0.15% HR-800. (Yield = 1.398 ft³/sk, Weight = 13.1 #/gal.). Displace cement at a minimum of 8 BPM. Total volume (853) ft³. WOC 12 hours.

IV. IV COMPLETION**A. CBL**

1. Run Cement Bond Log across all intervals to be perforated and find Top of Cement behind all casing strings if cement not circulated to surface. ✓

B. PRESSURE TEST

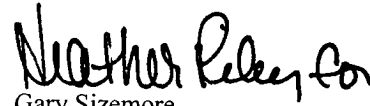
1. Pressure test 4-1/2" casing to 6000 psi max, hold at 1500 psi for 30 minutes. ✓

C. STIMULATION

1. Stimulate Dakota with approximately 5000# 100 mesh sand and 120,000# Ottawa Sand in slick water.
2. Isolate Dakota with a RBP.
3. Stimulate Point Lookout with approximately 40,000# 20/40 Ottawa sand in slick water.
4. Isolate Point Lookout with a RBP.
5. Perforate the Menefee/Cliff House as determined from the open hole logs.
6. Stimulate with approximately 40,000# 20/40 Ottawa sand in slick water.
7. Test each zone before removing bridge plugs.

D. RUNNING TUBING

1. Production Tubing: Run 2-3/8", 4.7#, J-55, EUE tubing with a SN (1.91" ID) on top of bottom joint. Land tubing approximately 25' above the bottom Point Lookout perforation

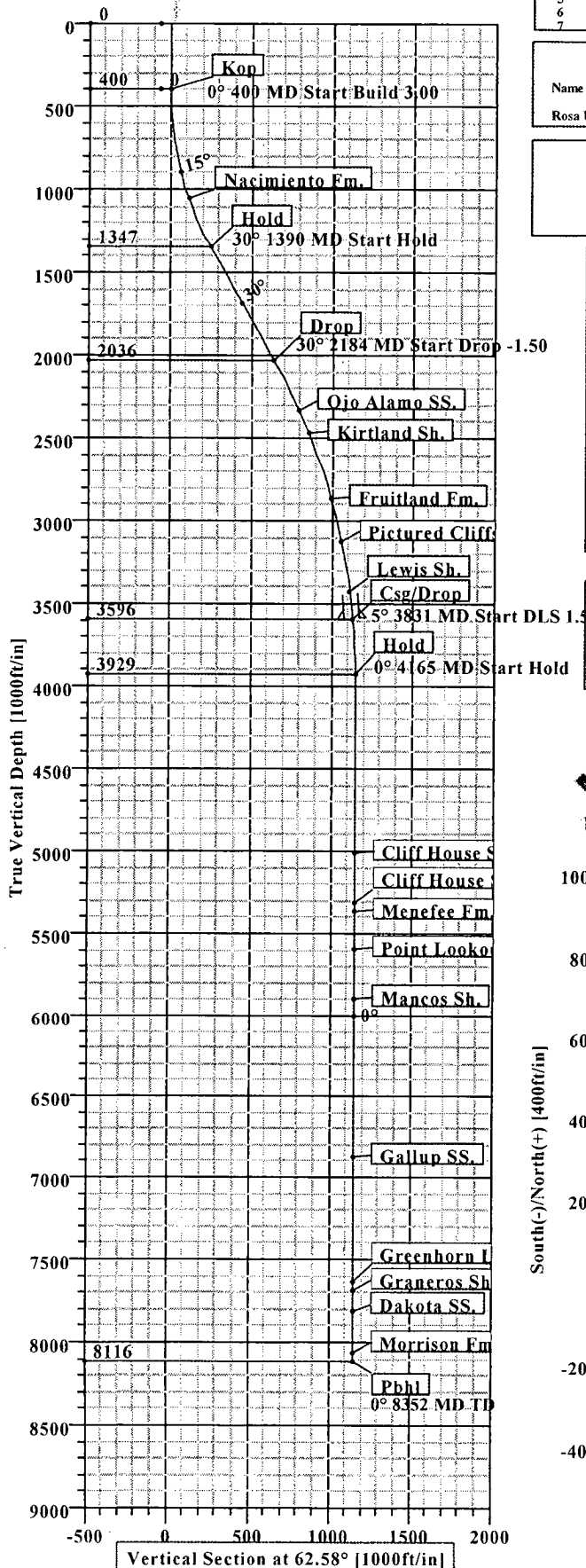
A handwritten signature in black ink, appearing to read "Gary Sizemore".

Gary Sizemore
Sr. Drilling Engineer



Rosa Unit 14D RIO ARRIBA CO. NM

KB ELEV: 6301
GL ELEV: 6287



Vertical Section at 62.58° [1000ft/in]

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	62.58	0.00	0.00	0.00	0.00	0.00	0.00	
2	400.00	0.00	62.58	400.00	0.00	0.00	0.00	0.00	0.00	
3	1390.46	29.71	62.58	1346.65	115.64	222.91	3.00	62.58	251.12	
4	2183.71	29.71	62.58	2035.60	296.70	571.93	0.00	0.00	644.31	
5	3831.29	5.00	62.58	3596.00	521.28	1004.86	1.50	180.00	1132.02	Cst/Tgt
6	4164.62	0.00	0.00	3928.91	527.97	1017.76	1.50	-180.00	1146.56	
7	8351.71	0.00	0.00	8116.00	527.97	1017.76	0.00	0.00	1146.56	Pbh1

WELL DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
Rosa Unit 14D	0.00	0.00	2145210.20	1295842.01	36°53'22.308N	107°25'41.952W	N/A

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Cst/Tgt	3596.00	521.28	1004.86	36°53'27.462N	107°25'29.583W	Point
Pbh1	8116.00	527.97	1017.76	36°53'27.528N	107°25'29.424W	Point

FORMATION TOP DETAILS

No.	TVDPath	MDPath	Formation
1	1056.00	1069.64	Nacimiento Fm.
2	2331.00	2516.00	Ojo Alamo SS.
3	2471.00	2668.77	Kirtland Sh.
4	2866.00	3087.50	Fruitland Fm.
5	3121.00	3350.57	Pictured Cliffs SS.
6	3426.00	3660.25	Lewis Sh.
7	5006.00	5241.71	Cliff House SS. Trans.
8	5316.00	5551.71	Cliff House SS.
9	5361.00	5596.71	Menefee Fm.
10	5591.00	5826.71	Point Lookout SS.
11	5896.00	6131.71	Mancos Sh.
12	6876.00	7111.71	Gallup SS.
13	7631.00	7866.71	Greenhorn Ls.
14	7686.00	7921.71	Graneros Sh.
15	7816.00	8051.71	Dakota SS.
16	8066.00	8301.71	Morrison Fm.

SITE DETAILS

Rosa Unit 14D

Site Centre Latitude: 36°53'22.308N
Longitude: 107°25'41.952W

Ground Level: 6287.00
Positional Uncertainty: 0.00
Convergence: -0.71



Azimuths to True North
Magnetic North: 9.72°
Magnetic Field
Strength: 50873nT
Dip Angle: 63.64°
Date: 11/15/2011
Model: IGRF2010

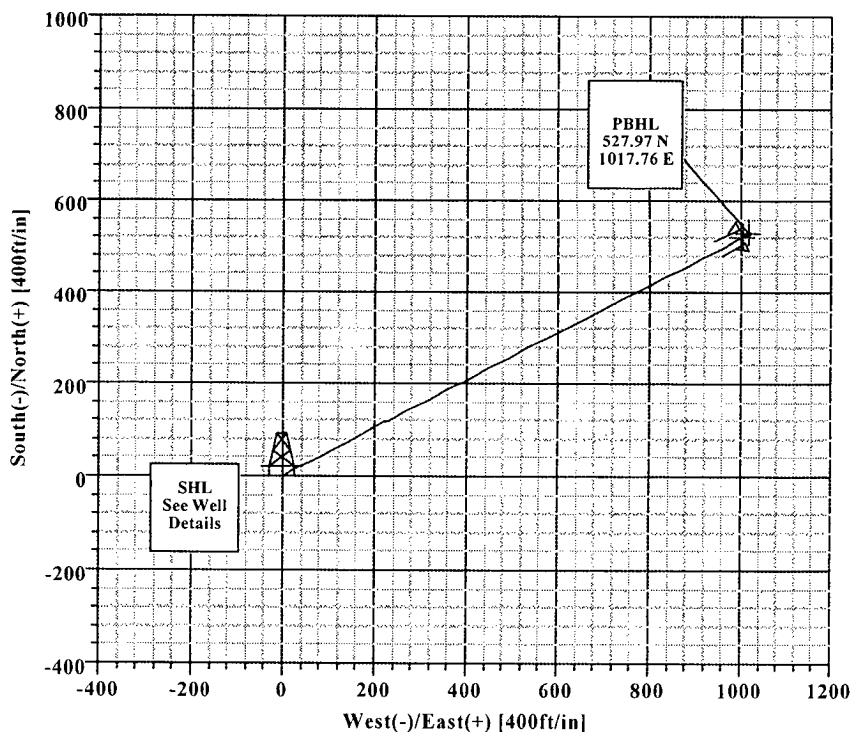
Total Correction To True North 9.72°

CASING DETAILS

No.	TVD	MD	Name	Size
1	3596.00	3831.29	7"	7.000



Weatherford



Plan: Plan #1 (Rosa Unit 14D/1)

Created By: Russell W. Joyner

Date: 3/14/2011



Weatherford International Ltd.

WFT Plan Report Lat, Long



Weatherford

Company: Williams Production		Date: 3/14/2011	Time: 10:48:11	Page: 1
Field: RIO ARRIBA CO. NM (NAD 83)		Co-ordinate(NE) Reference: Well: Rosa Unit 14D, True North		
Site: Rosa Unit 14D		Vertical (TVD) Reference: SITE 6301.0		
Well: Rosa Unit 14D		Section (VS) Reference: Well (0.00N,0.00E,62.58Azi)		
Wellpath: 1		Survey Calculation Method: Minimum Curvature Db: Sybase		

Plan: Plan #1	Date Composed: 3/14/2011
Principal: Yes	Version: 1
	Tied-to: From Surface

Field: RIO ARRIBA CO. NM (NAD 83)	
Map System: US State Plane Coordinate System 1983	Map Zone: New Mexico, Central Zone
Geo Datum: GRS 1980	Coordinate System: Well Centre
Sys Datum: Mean Sea Level	Geomagnetic Model: IGRF2010

Site: Rosa Unit 14D		
Site Position:	Northing: 2145210.20 ft	Latitude: 36 53 22.308 N
From: Geographic	Easting: 1295842.01 ft	Longitude: 107 25 41.952 W
Position Uncertainty: 0.00 ft		North Reference: True
Ground Level: 6287.00 ft		Grid Convergence: -0.71 deg

Well: Rosa Unit 14D		Slot Name:	
Well Position:	+N/-S 0.00 ft	Northing: 2145210.20 ft	Latitude: 36 53 22.308 N
	+E/-W 0.00 ft	Easting: 1295842.01 ft	Longitude: 107 25 41.952 W
Position Uncertainty: 0.00 ft			

Wellpath: 1	Drilled From: Surface		
Current Datum: SITE	Tie-on Depth: 0.00 ft		
Magnetic Data: 11/15/2011	Above System Datum: Mean Sea Level		
Field Strength: 50873 nT	Declination: 9.72 deg		
Vertical Section: Depth From (TVD)	Mag Dip Angle: 63.64 deg		
ft	+N/-S ft	+E/-W ft	Direction deg
8116.00	0.00	0.00	62.58

Plan Section Information										
MD	Incl	Azim	TVD	+N/-S	+E/-W	DLS	Build	Turn	TFO	Target
ft	deg	deg	ft	ft	ft	deg/100ft	deg/100ft	deg/100ft	deg	
0.00	0.00	62.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
400.00	0.00	62.58	400.00	0.00	0.00	0.00	0.00	0.00	0.00	
1390.46	29.71	62.58	1346.65	115.64	222.91	3.00	3.00	0.00	62.58	
2183.71	29.71	62.58	2035.60	296.70	571.93	0.00	0.00	0.00	0.00	
3831.29	5.00	62.58	3596.00	521.28	1004.86	1.50	-1.50	0.00	180.00	Cst/Tgt
4164.62	0.00	0.00	3928.91	527.97	1017.76	1.50	-1.50	-18.77	-180.00	
8351.71	0.00	0.00	8116.00	527.97	1017.76	0.00	0.00	0.00	0.00	Pbhl

Survey														
MD	Incl	Azim	TVD	N/S	E/W	VS	DLS	Lat	Min	Sec	Long	Min	Sec	Comment
ft	deg	deg	ft	ft	ft	ft	deg/100ft							
400.00	0.00	62.58	400.00	0.00	0.00	0.00	0.00	36	53	22.308	107	25	41.952	Kop
500.00	3.00	62.58	499.95	1.21	2.32	2.62	3.00	36	53	22.320	107	25	41.923	
600.00	6.00	62.58	599.63	4.82	9.29	10.46	3.00	36	53	22.356	107	25	41.838	
700.00	9.00	62.58	698.77	10.83	20.87	23.51	3.00	36	53	22.415	107	25	41.695	
800.00	12.00	62.58	797.08	19.22	37.05	41.74	3.00	36	53	22.498	107	25	41.496	
900.00	15.00	62.58	894.31	29.97	57.77	65.08	3.00	36	53	22.604	107	25	41.241	
1000.00	18.00	62.58	990.18	43.04	82.97	93.48	3.00	36	53	22.734	107	25	40.931	
1069.64	20.09	62.58	1056.00	53.51	103.14	116.20	3.00	36	53	22.837	107	25	40.682	Nacimiento
1100.00	21.00	62.58	1084.43	58.41	112.60	126.85	3.00	36	53	22.886	107	25	40.566	
1200.00	24.00	62.58	1176.81	76.03	146.57	165.12	3.00	36	53	23.060	107	25	40.148	
1300.00	27.00	62.58	1267.06	95.86	184.78	208.16	3.00	36	53	23.256	107	25	39.678	
1390.46	29.71	62.58	1346.65	115.64	222.91	251.12	3.00	36	53	23.451	107	25	39.208	Hold
1400.00	29.71	62.58	1354.94	117.82	227.11	255.85	0.00	36	53	23.473	107	25	39.156	
1500.00	29.71	62.58	1441.79	140.64	271.11	305.42	0.00	36	53	23.699	107	25	38.615	
1600.00	29.71	62.58	1528.64	163.47	315.11	354.99	0.00	36	53	23.924	107	25	38.073	



Weatherford International Ltd.

WFT Plan Report Lat, Long

**Weatherford**

Company:	Williams Production	Date:	3/14/2011	Time:	10:48:11	Page:	2
Field:	RIO ARRIBA CO. NM. (NAD 83)	Co-ordinate(NE) Reference:	Well: Rosa Unit 14D, True North				
Site:	Rosa Unit 14D	Vertical (TVD) Reference:	SITE 6301.0				
Well:	Rosa Unit 14D	Section (VS) Reference:	Well (0.00N,0.00E 62.58Azi)				
Wellpath:	1	Survey Calculation Method:	Minimum Curvature Db: Sybase				

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	Lat	Min	Sec	Long	Min	Sec	Comment
1700.00	29.71	62.58	1615.50	186.29	359.11	404.55	0.00	36	53	24.150	107	25	37.532	
1800.00	29.71	62.58	1702.35	209.12	403.11	454.12	0.00	36	53	24.376	107	25	36.990	
1900.00	29.71	62.58	1789.20	231.94	447.11	503.69	0.00	36	53	24.601	107	25	36.448	
2000.00	29.71	62.58	1876.05	254.76	491.10	553.25	0.00	36	53	24.827	107	25	35.907	
2100.00	29.71	62.58	1962.90	277.59	535.10	602.82	0.00	36	53	25.053	107	25	35.365	
2183.71	29.71	62.58	2035.60	296.70	571.93	644.31	0.00	36	53	25.241	107	25	34.912	Drop
2200.00	29.47	62.58	2049.77	300.40	579.07	652.36	1.50	36	53	25.278	107	25	34.824	
2300.00	27.97	62.58	2137.46	322.53	621.73	700.41	1.50	36	53	25.497	107	25	34.299	
2400.00	26.47	62.58	2226.39	343.59	662.33	746.14	1.50	36	53	25.705	107	25	33.799	
2500.00	24.97	62.58	2316.48	363.57	700.85	789.54	1.50	36	53	25.903	107	25	33.325	
2516.00	24.73	62.58	2331.00	366.67	706.82	796.26	1.50	36	53	25.933	107	25	33.252	Ojo Alamo S
2600.00	23.47	62.58	2407.67	382.46	737.26	830.56	1.50	36	53	26.089	107	25	32.877	
2668.77	22.44	62.58	2471.00	394.81	761.07	857.38	1.50	36	53	26.211	107	25	32.584	Kirtland Sh
2700.00	21.97	62.58	2499.91	400.25	771.54	869.18	1.50	36	53	26.265	107	25	32.455	
2800.00	20.47	62.58	2593.13	416.91	803.67	905.38	1.50	36	53	26.430	107	25	32.059	
2900.00	18.97	62.58	2687.26	432.45	833.62	939.12	1.50	36	53	26.584	107	25	31.691	
3000.00	17.47	62.58	2782.25	446.85	861.37	970.38	1.50	36	53	26.726	107	25	31.349	
3087.50	16.16	62.58	2866.00	458.50	883.84	995.69	1.50	36	53	26.841	107	25	31.073	Fruitland F
3100.00	15.97	62.58	2878.02	460.09	886.91	999.15	1.50	36	53	26.857	107	25	31.035	
3200.00	14.47	62.58	2974.51	472.18	910.21	1025.40	1.50	36	53	26.976	107	25	30.748	
3300.00	12.97	62.58	3071.65	483.10	931.26	1049.11	1.50	36	53	27.084	107	25	30.489	
3350.57	12.21	62.58	3121.00	488.18	941.05	1060.14	1.50	36	53	27.135	107	25	30.368	Pictured C
3400.00	11.47	62.58	3169.38	492.85	950.05	1070.28	1.50	36	53	27.181	107	25	30.257	
3500.00	9.97	62.58	3267.63	501.41	966.56	1088.88	1.50	36	53	27.265	107	25	30.054	
3600.00	8.47	62.58	3366.34	508.79	980.78	1104.90	1.50	36	53	27.338	107	25	29.879	
3660.25	7.57	62.58	3426.00	512.66	988.24	1113.30	1.50	36	53	27.377	107	25	29.787	Lewis Sh.
3700.00	6.97	62.58	3465.43	514.98	992.71	1118.33	1.50	36	53	27.400	107	25	29.732	
3800.00	5.47	62.58	3564.84	519.96	1002.32	1129.17	1.50	36	53	27.449	107	25	29.614	
3831.29	5.00	62.58	3596.00	521.28	1004.86	1132.02	1.50	36	53	27.462	107	25	29.583	Cst/Tgt
3900.00	3.97	62.58	3664.50	523.75	1009.63	1137.39	1.50	36	53	27.486	107	25	29.524	
4000.00	2.47	62.58	3764.34	526.34	1014.61	1143.01	1.50	36	53	27.512	107	25	29.463	
4100.00	0.97	62.58	3864.29	527.72	1017.27	1146.01	1.50	36	53	27.526	107	25	29.430	
4164.62	0.00	0.00	3928.91	527.97	1017.76	1146.56	1.50	36	53	27.528	107	25	29.424	Hold
4200.00	0.00	0.00	3964.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
4300.00	0.00	0.00	4064.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
4400.00	0.00	0.00	4164.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
4500.00	0.00	0.00	4264.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
4600.00	0.00	0.00	4364.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
4700.00	0.00	0.00	4464.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
4800.00	0.00	0.00	4564.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
4900.00	0.00	0.00	4664.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
5000.00	0.00	0.00	4764.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
5100.00	0.00	0.00	4864.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
5200.00	0.00	0.00	4964.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
5241.71	0.00	0.00	5006.00	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	Cliff House
5300.00	0.00	0.00	5064.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
5400.00	0.00	0.00	5164.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
5500.00	0.00	0.00	5264.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
5551.71	0.00	0.00	5316.00	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	Cliff House Menefee Fm.
5596.71	0.00	0.00	5361.00	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
5600.00	0.00	0.00	5364.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
5700.00	0.00	0.00	5464.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	



Weatherford International Ltd.

WFT Plan Report Lat, Long



Weatherford

Company:	Williams Production	Date:	3/14/2011	Time:	10:48:11	Page:	3
Field:	RIO ARRIBA CO NM (NAD 83)	Co-ordinate(NE) Reference:	Well: Rosa Unit 14D, True North				
Site:	Rosa Unit 14D	Vertical (TVD) Reference:	SITE 6301.0				
Well:	Rosa Unit 14D	Section (VS) Reference:	Well (0.00N 0.00E 62.58Azi)				
Wellpath:	1	Survey Calculation Method:	Minimum Curvature	Db:	Sybase		

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	Lat	Min	Sec	Long	Min	Sec	Comment
5800.00	0.00	0.00	5564.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	Point Looko
5826.71	0.00	0.00	5591.00	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
5900.00	0.00	0.00	5664.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
6000.00	0.00	0.00	5764.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	Mancos Sh.
6100.00	0.00	0.00	5864.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
6131.71	0.00	0.00	5896.00	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
6200.00	0.00	0.00	5964.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
6300.00	0.00	0.00	6064.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
6400.00	0.00	0.00	6164.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
6500.00	0.00	0.00	6264.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
6600.00	0.00	0.00	6364.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
6700.00	0.00	0.00	6464.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
6800.00	0.00	0.00	6564.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
6900.00	0.00	0.00	6664.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	Gallup SS.
7000.00	0.00	0.00	6764.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
7100.00	0.00	0.00	6864.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
7111.71	0.00	0.00	6876.00	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
7200.00	0.00	0.00	6964.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
7300.00	0.00	0.00	7064.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
7400.00	0.00	0.00	7164.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
7500.00	0.00	0.00	7264.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
7600.00	0.00	0.00	7364.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
7700.00	0.00	0.00	7464.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
7800.00	0.00	0.00	7564.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	Greenhorn L
7866.71	0.00	0.00	7631.00	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
7900.00	0.00	0.00	7664.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
7921.71	0.00	0.00	7686.00	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	Graneros Sh
8000.00	0.00	0.00	7764.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	Dakota SS.
8051.71	0.00	0.00	7816.00	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
8100.00	0.00	0.00	7864.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
8200.00	0.00	0.00	7964.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
8300.00	0.00	0.00	8064.29	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	
8301.71	0.00	0.00	8066.00	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	Morrison Fm
8351.71	0.00	0.00	8116.00	527.97	1017.76	1146.56	0.00	36	53	27.528	107	25	29.424	Pbhl

Targets

Name	Description Dip Dir.	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	Latitude Deg Min Sec	Longitude Deg Min Sec
Cst/Tgt		3596.00	521.28	1004.86	2145719.04	1296853.22	36 53 27.462 N	107 25 29.583 W
-Plan hit target								
Pbhl		8116.00	527.97	1017.76	2145725.57	1296866.21	36 53 27.528 N	107 25 29.424 W
-Plan hit target								

Casing Points

MD ft	TVD ft	Diameter in	Hole Size in	Name
3831.29	3596.00	7.000	8.500	7"



Weatherford International Ltd.
WFT Plan Report Lat, Long



Weatherford

Company:	Williams Production	Date:	3/14/2011	Time:	10:48:11	Page:	4
Field:	RIO ARRIBA CO. NM (NAD 83)	Co-ordinate(NE) Reference:	Well: Rosa Unit 14D, True North				
Site:	Rosa Unit 14D	Vertical (TVD) Reference:	SITE 6301.0				
Well:	Rosa Unit 14D	Section (VS) Reference:	Well (0.00N,0.00E;62.58Azi)				
Wellpath:	1	Survey Calculation Method:	Minimum Curvature			Db:	Sybase

Formations

MD ft	TVD ft	Formations	Lithology	Dip Angle deg	Dip Direction deg
1069.64	1056.00	Nacimiento Fm.		0.00	0.00
2516.00	2331.00	Ojo Alamo SS.		0.00	0.00
2668.77	2471.00	Kirtland Sh.		0.00	0.00
3087.50	2866.00	Fruitland Fm.		0.00	0.00
3350.57	3121.00	Pictured Cliffs SS.		0.00	0.00
3660.25	3426.00	Lewis Sh.		0.00	0.00
5241.71	5006.00	Cliff House SS. Trans.		0.00	0.00
5551.71	5316.00	Cliff House SS.		0.00	0.00
5596.71	5361.00	Menefee Fm.		0.00	0.00
5826.71	5591.00	Point Lookout SS.		0.00	0.00
6131.71	5896.00	Mancos Sh.		0.00	0.00
7111.71	6876.00	Gallup SS.		0.00	0.00
7866.71	7631.00	Greenhorn Ls.		0.00	0.00
7921.71	7686.00	Graneros Sh.		0.00	0.00
8051.71	7816.00	Dakota SS.		0.00	0.00
8301.71	8066.00	Morrison Fm.		0.00	0.00

Annotation

MD ft	TVD ft	
400.00	400.00	Kop
1390.46	1346.66	Hold
2183.71	2035.60	Drop
3831.29	3596.00	Csg/Drop
4164.62	3928.91	Hold
8351.71	8116.00	Pbhl

**Weatherford****Weatherford Drilling Services**

GeoDec v5.03

Report Date: March 14, 2011
Job Number: _____
Customer: Williams
Well Name: Rosa Unit 14D
API Number: _____
Rig Name: _____
Location: Rio Arriba Co, NM (Nad 83)
Block: _____
Engineer: RWJ

Geodetic Latitude / Longitude	Geodetic Latitude / Longitude
System: Latitude / Longitude	System: Latitude / Longitude
Projection: Geodetic Latitude and Longitude	Projection: Geodetic Latitude and Longitude
Datum: North American Datum 1983	Datum: North American Datum 1983
Ellipsoid: GRS 1980	Ellipsoid: GRS 1980
Latitude 36.8895300 DEG	Latitude 36.8895300 DEG
Longitude -107.4283200 DEG	Longitude -107.4283200 DEG

Geodetic Location WGS84 Elevation = 0.0 Meters
Latitude = 36.88953° N 36° 53 min 22.308 sec
Longitude = 107.42832° W 107° 25 min 41.952 sec

Magnetic Declination =	9.72°	[True North Offset]	
Local Gravity =	.9992 g	Checksum =	6721
Local Field Strength =	50869 nT	Magnetic Vector X =	22260 nT
Magnetic Dip =	63.64°	Magnetic Vector Y =	3815 nT
Magnetic Model =	IGRF-2010g11	Magnetic Vector Z =	45581 nT
Spud Date =	Nov 15, 2011	Magnetic Vector H =	22584 nT

Signed: _____

Date: _____

Well Control Equipment Schematic for 2M Service

Attachment to Drilling Technical Program

Exhibit #1 Typical BOP setup

Location: San Juan Basin, New Mexico

Date: August 20, 2001

By: John Thompson (Walsh E&P)

