

RECEIVED

JUN 01 2011

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Farmington Field Office
Bureau of Land Management

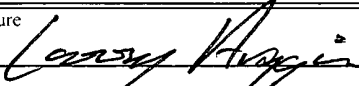
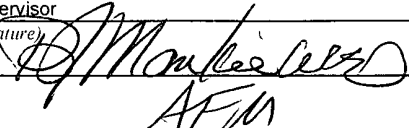
APPLICATION FOR PERMIT TO DRILL OR REENTER

5 Lease Serial No
NMSF-078764
6 If Indian, Allottee or Tribe Name

1a Type of Work: ☒ DRILL ☐ REENTER		7. If Unit or CA Agreement, Name and No Rosa Unit	
1b Type of Well ☐ Oil Well ☒ Gas Well ☐ Other ☐ Single Zone ☒ Multiple Zone		8 Lease Name and Well No Rosa Unit #166C	
2 Name of Operator Williams Production Company, LLC		9 API Well No 30-039-31068	
3a Address P.O. Box 640 Aztec, NM 87410	3b. Phone No (include area code) (505) 634-4222	10. Field and Pool, or Exploratory Blanco Mesa Verde/Basin Dakota	
4 Location of Well (Report location clearly and in accordance with any State requirements *) At surface 1165' FNL & 1045' FEL A At proposed prod. zone 330' FNL & 330' FEL B		11. Sec., T., R., M., or Blk. and Survey or Area Section 30, T31N, R5W	
14. Distance in miles and direction from nearest town or post office* approximately 19.7 miles northeast of Blanco, New Mexico		12 County or Parish Rio Arriba	13 State NM
15. Distance from proposed* location to nearest property or lease line, ft (Also to nearest drg unit line, if any) 995'	16. No. of Acres in lease 2507.3	17. Spacing Unit dedicated to this well 232.69	
18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 50' Rosa 166	19 Proposed Depth 8398'	20. BLM/BIA Bond No on file UT0899	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 6362 GR	22. Approximate date work will start* August 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) Larry Higgins	Date 6/1/2011
Title Permit Supervisor		
Approved by (Signature) 	Name (Printed/Typed) AFM	Date 7/14/11
Title AFM	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 112.7 feet would be required for this well

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

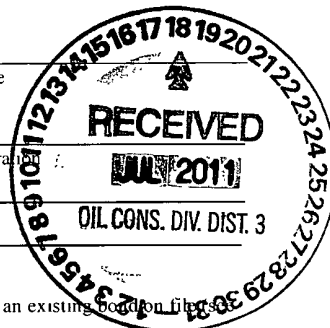
Hold C104
for Directional Survey
and "As Drilled" plat

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

AUG 01 2011

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

NMOC
NOTIFY AZTEC OCD 24 HRS.
PRIOR TO CASING & CEMENT



Hold C104
for Directional Survey
and "As Drilled" plat

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

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

RECEIVED

JUN 01 2011

Alamogordo Field Office
Bureau of Land Management

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

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number 30-039-31068		*Pool Code 72319 / 71599	*Pool Name BLANCO MESAVERDE / BASIN DAKOTA
*Property Code 17033	*Property Name ROSA UNIT		*Well Number 166C
*OGRID No. 120782	*Operator Name WILLIAMS PRODUCTION COMPANY		*Elevation 6362'

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
A	30	31N	5W		1165	NORTH	1045	EAST	RIO ARriba

11 Bottom Hole Location If Different From Surface

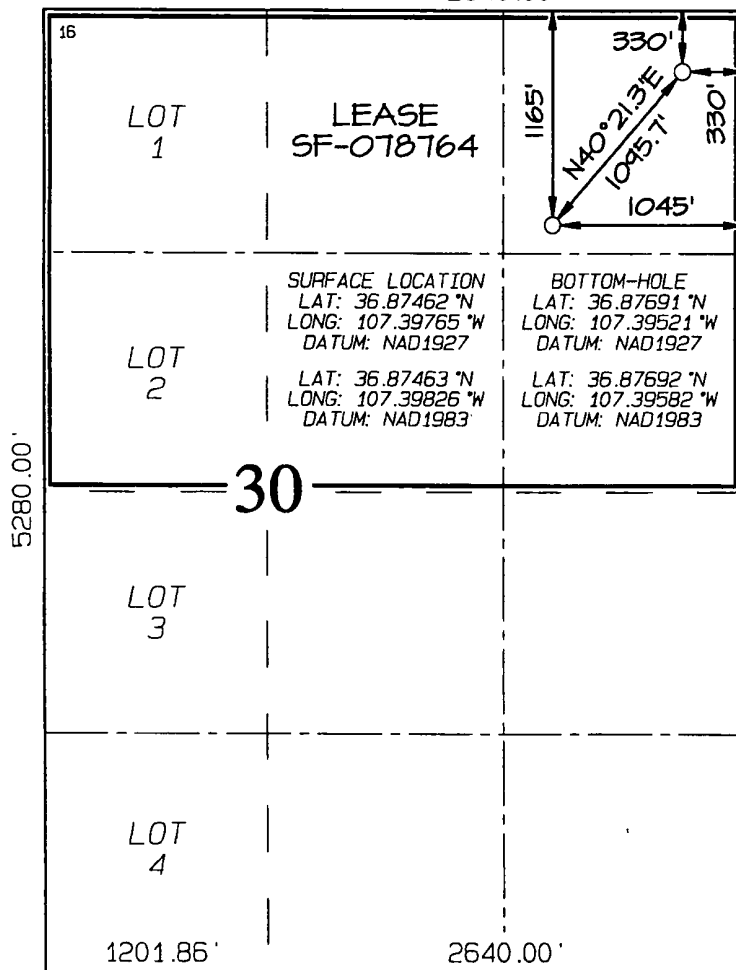
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	30	31N	5W		330	NORTH	330	EAST	RIO ARriba

12 Dedicated Acres 232.69 Acres - (N/2)	13 Joint or Infill	14 Consolidation Code	15 Order No.
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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

1198.56'

2640.00'



17 OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom-hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Larry Higgins 6-1-11
Signature Date
LARRY HIGGINS
Printed Name

18 SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief

Date of Revisions: MAY 21, 2011

Date of Survey: MARCH 5, 2011

Signature and Seal of Professional Surveyor



JASON C. EDWARDS
Certificate Number 15269



WILLIAMS PRODUCTION COMPANY

Operations Plan

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

DATE: 6/1/2011 **FIELD:** Basin DK/ BlancoMV
WELL NAME: Rosa #166C **SURFACE:** BLM
BH LOCATION: NENE Sec 30-31N-5W **MINERALS:** BLM
Rio Arriba, NM
ELEVATION: 6,362' GR **LEASE #** SF-078764
MEASURED DEPTH: 8,398'

I. GEOLOGY: Surface formation - San Jose

A. FORMATION TOPS: (KB)

Name		TVD	MD		Name		TVD	MD
Ojo Alamo		2,486	2,643		Point Lookout		5,671	5,873
Kirtland		2,601	2,768		Mancos		5,986	6,188
Fruitland		2,976	3,165		Gallup		7,006	7,208
Pictured Cliffs		3,221	3,417		Greenhorn		7,721	7,923
Lewis		3,516	3,716		Graneros		7,771	7,973
Cliff House		5,421	5,623		Dakota		7,896	8,098
Menefee		5,461	5,663		Morrison		8,146	8,348
					TD		8,196	8,398

- 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	3,898	7	23	K-55
Longstring	6 1/4	8,398	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: 200sx (359.2 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 1500psi.
2. INTERMEDIATE: Lead - 400 sx (1089.2 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 = 1207 cu.ft. Bump Plug to 1,500 psi. Notify engineering if cement is not circulated to surface
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 Gilsomite + 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.

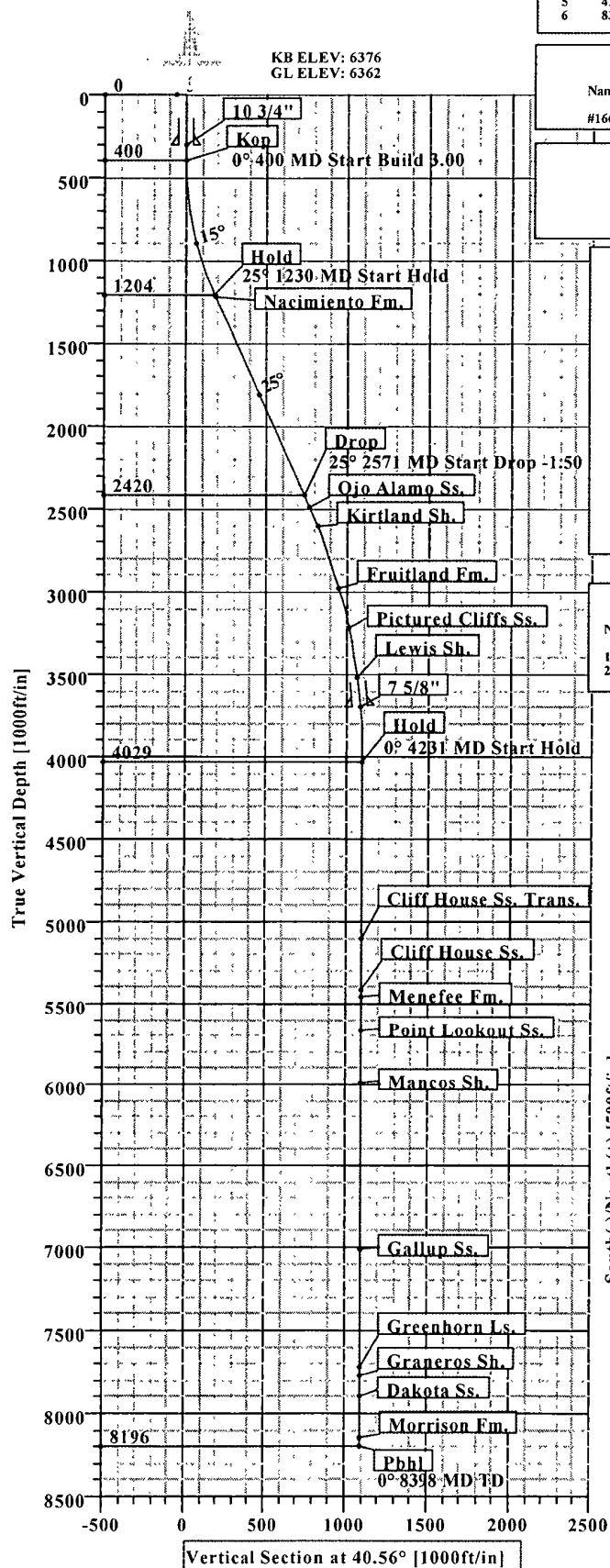
D. RUNNING TUBING

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

for 
Gary Sizemore
Sr. Drilling Engineer



Rosa Unit #166C
RIO ARriba CO. NM



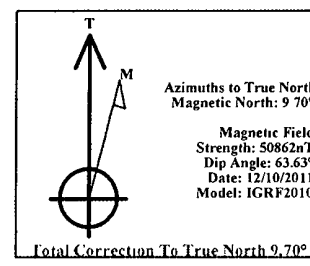
SECTION DETAILS									
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec Target
1	0.00	0.00	40.56	0.00	0.00	0.00	0.00	0.00	0.00
2	400.00	0.00	40.56	400.00	0.00	0.00	0.00	0.00	0.00
3	1230.33	24.91	40.56	1204.42	134.98	115.54	3.00	40.56	177.67
4	2570.67	24.91	40.56	2420.07	563.85	482.65	0.00	0.00	742.22
5	4231.34	0.00	40.56	4028.91	833.80	713.73	1.50	180.00	1097.56
6	8398.43	0.00	40.56	8196.00	833.80	713.73	0.00	0.00	1097.56 Pbhl

WELL DETAILS							
Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
#166C	0.00	0.00	2139678.31	1304567.58	36°52'28.668N	107°23'53.736W	N/A

TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape	
Pbhl	8196.00	833.80	713.73	36°52'36.912N	107°23'44.952W	Point	

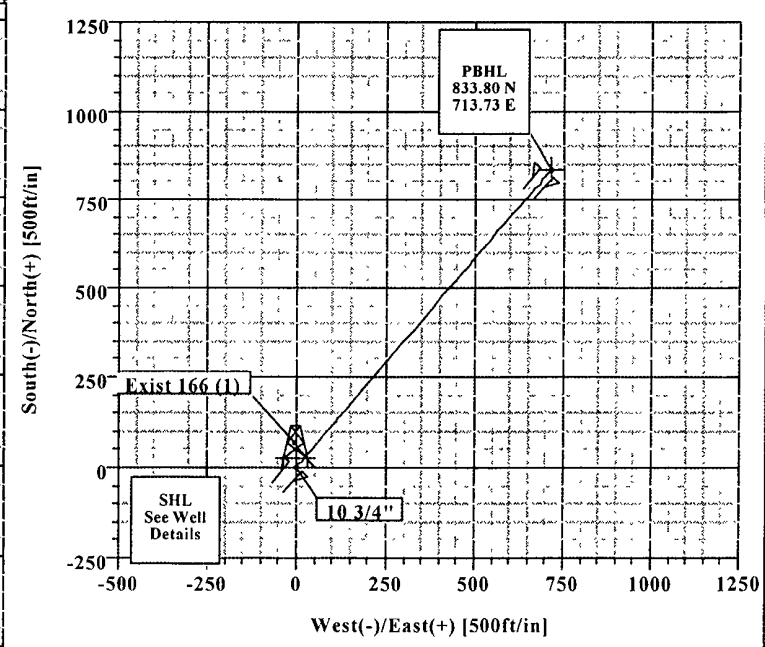
FORMATION TOP DETAILS			
No.	TVDPath	MDPath	Formation
1	1221.00	1248.61	Nacimiento Fm.
2	2486.00	2643.05	Ojo Alamo Ss.
3	2601.00	2767.88	Kirtland Sh.
4	2976.00	3164.61	Fruitland Fm.
5	3221.00	3417.28	Pictured Cliffs Ss.
6	3516.00	3716.87	Lewis Sh.
7	5106.00	5308.43	Cliff House Ss. Trans.
8	5421.00	5623.43	Cliff House Ss.
9	5461.00	5663.43	Menefee Fm.
10	5671.00	5873.43	Point Lookout Ss.
11	5986.00	6188.43	Mancos Sh.
12	7006.00	7208.43	Gallup Ss.
13	7721.00	7923.43	Greenhorn Ls.
14	7771.00	7973.43	Graneros Sh.
15	7896.00	8098.43	Dakota Ss.
16	8146.00	8348.43	Morrison Fm.

SITE DETAILS
Rosa Unit #166C
Site Centre Latitude: 36°52'28.668N
Longitude: 107°23'53.736W
Ground Level: 6362.00
Positional Uncertainty: 0.00
Convergence: -0.69



CASING DETAILS				
No.	TVD	MD	Name	Size
1	300.00	300.00	10 3/4"	10.750
2	3696.00	3898.00	7 5/8"	0.000

LEGEND
Exist 166 (1)
1 Plan #1





Weatherford International Ltd.

WFT Plan Report Lat, Long



Weatherford

Company: Williams Production	Date: 6/1/2011	Time: 09:22:01	Page: 1
Field: RIO ARRIBA CO. NM (NAD 83)	Co-ordinate(NE) Reference: Well: #166C, True North		
Site: Rosa Unit #166C	Vertical (TVD) Reference: SITE 6376.0		
Well: #166C	Section (VS) Reference: Well (0.00N, 0.00E, 40.56Azi)		
Wellpath: 1	Survey Calculation Method: Minimum Curvature	Db: Sybase	

Plan: Plan #1	Date Composed: 6/1/2011
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 #166C													
Site Position:		Northing:		2139678.31		ft		Latitude:		36 52 28.668		N	
From: Geographic		Easting:		1304567.58		ft		Longitude:		107 23 53.736		W	
Position Uncertainty:		0.00		ft				North Reference:		True			
Ground Level:		6362.00		ft				Grid Convergence:		-0 69		deg	

Well: #166C		Slot Name:						
Well Position:	+N/-S	0.00 ft	Northing:	2139678.31 ft	Latitude:	36	52	28.668 N
	+E/-W	0.00 ft	Easting :	1304567.58 ft	Longitude:	107	23	53.736 W
Position Uncertainty:		0.00 ft						

Wellpath: 1		Drilled From: Surface	
Current Datum: SITE	Height 6376 00 ft	Tie-on Depth: 0 00 ft	
Magnetic Data: 12/10/2011		Above System Datum: Mean Sea Level	
Field Strength: 50862 nT		Declination: 9.70 deg	
Vertical Section: Depth From (TVD)		Mag Dip Angle: 63.63 deg	
ft	+N/-S ft	+E/-W ft	Direction deg
0 00	0 00	0.00	40 56

Plan Section Information										
MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	TFO deg	Target
0.00	0.00	40.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
400.00	0.00	40.56	400.00	0.00	0.00	0.00	0.00	0.00	0.00	
1230.33	24.91	40.56	1204.42	134.98	115.54	3.00	3.00	0.00	40.56	
2570.67	24.91	40.56	2420.07	563.85	482.65	0.00	0.00	0.00	0.00	
4231.34	0.00	40.56	4028.91	833.80	713.73	1.50	-1.50	0.00	180.00	
8398.43	0.00	40.56	8196.00	833.80	713.73	0.00	0.00	0.00	0.00	Pbhl

Survey														
MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	Lat deg	Min	Sec	Long deg	Min	Sec	Comment
300.00	0.00	40.56	300.00	0.00	0.00	0.00	0.00	36	52	28.668	107	23	53.736	10 3/4"
400.00	0.00	40.56	400.00	0.00	0.00	0.00	0.00	36	52	28.668	107	23	53.736	Kop
500.00	3.00	40.56	499.95	1.99	1.70	2.62	3.00	36	52	28.688	107	23	53.715	
600.00	6.00	40.56	599.63	7.95	6.80	10.46	3.00	36	52	28.747	107	23	53.652	
700.00	9.00	40.56	698.77	17.86	15.29	23.51	3.00	36	52	28.845	107	23	53.548	
800.00	12.00	40.56	797.08	31.71	27.14	41.74	3.00	36	52	28.981	107	23	53.402	
900.00	15.00	40.56	894.31	49.44	42.32	65.08	3.00	36	52	29.157	107	23	53.215	
1000.00	18.00	40.56	990.18	71.01	60.79	93.48	3.00	36	52	29.370	107	23	52.988	
1100.00	21.00	40.56	1084.43	96.37	82.49	126.85	3.00	36	52	29.621	107	23	52.721	
1200.00	24.00	40.56	1176.81	125.44	107.37	165.12	3.00	36	52	29.908	107	23	52.415	
1230.33	24.91	40.56	1204.42	134.98	115.54	177.67	3.00	36	52	30.003	107	23	52.314	Hold
1248.61	24.91	40.56	1221.00	140.83	120.54	185.37	0.00	36	52	30.060	107	23	52.252	Nacimiento
1300.00	24.91	40.56	1267.61	157.27	134.62	207.02	0.00	36	52	30.223	107	23	52.079	
1400.00	24.91	40.56	1358.30	189.27	162.01	249.14	0.00	36	52	30.539	107	23	51.742	
1500.00	24.91	40.56	1449.00	221.26	189.40	291.25	0.00	36	52	30.856	107	23	51.405	



Weatherford International Ltd.

WFT Plan Report Lat, Long

**Weatherford**

Company: Williams Production	Date: 6/1/2011	Time: 09:22:01	Page: 2
Field: RIO ARRIBA CO. NM (NAD 83)	Co-ordinate(NE) Reference:	Well: #166C True North	
Site: Rosa Unit #166C	Vertical (TVD) Reference:	SITE 6376.0	
Well: #166C	Section (VS) Reference:	Well (0.00N 0.00E 40.56Azi)	
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
1600.00	24.91	40.56	1539.70	253.26	216.79	333.37	0.00	36	52	31.172	107	23	51.068	
1700.00	24.91	40.56	1630.40	285.26	244.18	375.49	0.00	36	52	31.488	107	23	50.731	
1800.00	24.91	40.56	1721.09	317.26	271.57	417.61	0.00	36	52	31.805	107	23	50.394	
1900.00	24.91	40.56	1811.79	349.25	298.96	459.73	0.00	36	52	32.121	107	23	50.057	
2000.00	24.91	40.56	1902.49	381.25	326.35	501.85	0.00	36	52	32.438	107	23	49.720	
2100.00	24.91	40.56	1993.18	413.25	353.74	543.97	0.00	36	52	32.754	107	23	49.383	
2200.00	24.91	40.56	2083.88	445.25	381.13	586.09	0.00	36	52	33.070	107	23	49.045	
2300.00	24.91	40.56	2174.58	477.24	408.52	628.21	0.00	36	52	33.387	107	23	48.708	
2400.00	24.91	40.56	2265.28	509.24	435.91	670.33	0.00	36	52	33.703	107	23	48.371	
2500.00	24.91	40.56	2355.97	541.24	463.29	712.45	0.00	36	52	34.019	107	23	48.034	
2570.67	24.91	40.56	2420.07	563.85	482.65	742.22	0.00	36	52	34.243	107	23	47.796	Drop
2600.00	24.47	40.56	2446.72	573.16	490.62	754.47	1.50	36	52	34.335	107	23	47.698	
2643.05	23.82	40.56	2486.00	586.54	502.07	772.08	1.50	36	52	34.467	107	23	47.557	Ojo Alamo S
2700.00	22.97	40.56	2538.27	603.72	516.78	794.69	1.50	36	52	34.637	107	23	47.376	
2767.88	21.95	40.56	2601.00	623.42	533.64	820.63	1.50	36	52	34.832	107	23	47.168	Kirtland Sh
2800.00	21.47	40.56	2630.84	632.45	541.37	832.51	1.50	36	52	34.921	107	23	47.073	
2900.00	19.97	40.56	2724.37	659.32	564.37	867.89	1.50	36	52	35.187	107	23	46.790	
3000.00	18.47	40.56	2818.79	684.33	585.78	900.80	1.50	36	52	35.434	107	23	46.527	
3100.00	16.97	40.56	2914.04	707.45	605.57	931.24	1.50	36	52	35.663	107	23	46.283	
3164.61	16.00	40.56	2976.00	721.38	617.50	949.58	1.50	36	52	35.800	107	23	46.136	Fruitland F
3200.00	15.47	40.56	3010.06	728.67	623.74	959.17	1.50	36	52	35.873	107	23	46.060	
3300.00	13.97	40.56	3106.77	747.98	640.26	984.58	1.50	36	52	36.063	107	23	45.856	
3400.00	12.47	40.56	3204.12	765.35	655.13	1007.45	1.50	36	52	36.235	107	23	45.673	
3417.28	12.21	40.56	3221.00	768.15	657.53	1011.14	1.50	36	52	36.263	107	23	45.644	Pictured C
3500.00	10.97	40.56	3302.03	780.78	668.34	1027.76	1.50	36	52	36.388	107	23	45.511	
3600.00	9.47	40.56	3400.45	794.26	679.88	1045.50	1.50	36	52	36.521	107	23	45.369	
3700.00	7.97	40.56	3499.29	805.78	689.73	1060.66	1.50	36	52	36.635	107	23	45.247	
3716.87	7.72	40.56	3516.00	807.52	691.23	1062.97	1.50	36	52	36.652	107	23	45.229	Lewis Sh.
3800.00	6.47	40.56	3598.49	815.32	697.91	1073.23	1.50	36	52	36.729	107	23	45.147	
3898.00	5.00	40.56	3696.00	822.76	704.28	1083.02	1.50	36	52	36.803	107	23	45.068	7 5/8"
3900.00	4.97	40.56	3697.99	822.89	704.39	1083.20	1.50	36	52	36.804	107	23	45.067	
4000.00	3.47	40.56	3797.72	828.48	709.17	1090.56	1.50	36	52	36.859	107	23	45.008	
4100.00	1.97	40.56	3897.60	832.09	712.26	1095.30	1.50	36	52	36.895	107	23	44.970	
4200.00	0.47	40.56	3997.57	833.71	713.64	1097.43	1.50	36	52	36.911	107	23	44.953	
4231.34	0.00	40.56	4028.91	833.80	713.73	1097.56	1.50	36	52	36.912	107	23	44.952	Hold
4300.00	0.00	40.56	4097.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
4400.00	0.00	40.56	4197.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
4500.00	0.00	40.56	4297.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
4600.00	0.00	40.56	4397.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
4700.00	0.00	40.56	4497.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
4800.00	0.00	40.56	4597.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
4900.00	0.00	40.56	4697.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
5000.00	0.00	40.56	4797.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
5100.00	0.00	40.56	4897.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
5200.00	0.00	40.56	4997.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
5300.00	0.00	40.56	5097.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
5308.43	0.00	40.56	5106.00	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	Cliff House
5400.00	0.00	40.56	5197.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
5500.00	0.00	40.56	5297.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
5600.00	0.00	40.56	5397.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
5623.43	0.00	40.56	5421.00	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	Cliff House
5663.43	0.00	40.56	5461.00	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	Menefee Fm.
5700.00	0.00	40.56	5497.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	



Weatherford International Ltd.

WFT Plan Report Lat, Long

**Weatherford**

Company:	Williams Production	Date:	6/1/2011	Time:	09:22:01	Page:	3
Field:	RIO ARRIBA CO NM (NAD 83)	Co-ordinate(NE) Reference:	Well: #166C, True North				
Site:	Rosa Unit #166C	Vertical (TVD) Reference:	SITE 6376.0				
Well:	#166C	Section (VS) Reference:	Well (0:00N,0.00E,40.56Azi)				
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	40.56	5597.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	Point Lookout
5873.43	0.00	40.56	5671.00	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
5900.00	0.00	40.56	5697.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
6000.00	0.00	40.56	5797.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	Mancos Sh.
6100.00	0.00	40.56	5897.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
6188.43	0.00	40.56	5986.00	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
6200.00	0.00	40.56	5997.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
6300.00	0.00	40.56	6097.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
6400.00	0.00	40.56	6197.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
6500.00	0.00	40.56	6297.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
6600.00	0.00	40.56	6397.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
6700.00	0.00	40.56	6497.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
6800.00	0.00	40.56	6597.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
6900.00	0.00	40.56	6697.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
7000.00	0.00	40.56	6797.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
7100.00	0.00	40.56	6897.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
7200.00	0.00	40.56	6997.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
7208.43	0.00	40.56	7006.00	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
7300.00	0.00	40.56	7097.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	Gallup Ss
7400.00	0.00	40.56	7197.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
7500.00	0.00	40.56	7297.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
7600.00	0.00	40.56	7397.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
7700.00	0.00	40.56	7497.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
7800.00	0.00	40.56	7597.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
7900.00	0.00	40.56	7697.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
7923.43	0.00	40.56	7721.00	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
7973.43	0.00	40.56	7771.00	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
8000.00	0.00	40.56	7797.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	Greenhorn L Graneros Sh
8098.43	0.00	40.56	7896.00	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
8100.00	0.00	40.56	7897.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
8200.00	0.00	40.56	7997.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
8300.00	0.00	40.56	8097.57	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
8348.43	0.00	40.56	8146.00	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	Dakota Ss
8398.43	0.00	40.56	8196.00	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	
8348.43	0.00	40.56	8146.00	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	Morrison Fm Pbhl
8398.43	0.00	40.56	8196.00	833.80	713.73	1097.56	0.00	36	52	36.912	107	23	44.952	

Targets

Name	Description	Dir	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	Latitude Deg Min Sec	Longitude Deg Min Sec
Pbhl			8196.00	833.80	713.73	2140503.47	1305291.28	36 52 36.912 N	107 23 44.952 W
-Plan hit target									

Casing Points

MD ft	TVD ft	Diameter in	Hole Size in	Name
300.00	300.00	10.750	12.250	10 3/4"
3898.00	3696.00	0.000	0.000	7 5/8"



Weatherford International Ltd.
WFT Plan Report Lat, Long



Weatherford

Company: Williams Production Date: 6/1/2011 Time: 09:22:01 Page: 4
Field: RIO ARRIBA CO NM (NAD 83) Co-ordinate(NE) Reference: Well: #166C True North
Site: Rosa Unit #166C Vertical (TVD) Reference: SITE 6376.0
Well: #166C Section (VS) Reference: Well (0.00N:0.00E:40.56Azi)
Wellpath: 1 Survey Calculation Method: Minimum Curvature Db: Sybase

Formations

MD ft	TVD ft	Formations	Lithology	Dip Angle deg	Dip Direction deg
1248.61	1221.00	Nacimiento Fm.		0.00	0.00
2643.05	2486.00	Ojo Alamo Ss.		0.00	0.00
2767.88	2601.00	Kirtland Sh		0.00	0.00
3164.61	2976.00	Fruitland Fm.		0.00	0.00
3417.28	3221.00	Pictured Cliffs Ss.		0.00	0.00
3716.87	3516.00	Lewis Sh		0.00	0.00
5308.43	5106.00	Cliff House Ss Trans.		0.00	0.00
5623.43	5421.00	Cliff House Ss.		0.00	0.00
5663.43	5461.00	Menefee Fm.		0.00	0.00
5873.43	5671.00	Point Lookout Ss.		0.00	0.00
6188.43	5986.00	Mancos Sh.		0.00	0.00
7208.43	7006.00	Gallup Ss.		0.00	0.00
7923.43	7721.00	Greenhorn Ls.		0.00	0.00
7973.43	7771.00	Graneros Sh.		0.00	0.00
8098.43	7896.00	Dakota Ss.		0.00	0.00
8348.43	8146.00	Morrison Fm.		0.00	0.00

Annotation

MD ft	TVD ft	
400.00	400.00	Kop
1230.33	1204.42	Hold
2570.67	2420.07	Drop
4231.34	4028.91	Hold
8398.42	8195.99	Pbhl



Weatherford International Ltd.

Anticollision Report

**Weatherford**

Company: Williams Production Date: 6/1/2011 Time: 09:20:12 Page: 1
Field: RIO ARRIBA CO. NM (NAD 83)
Reference Site: Rosa Unit #166C Co-ordinate(NE) Reference: Well: #166C True North
Reference Well: #166C Vertical (TVD) Reference: SITE 6376.0
Reference Wellpath: 1 Db: Sybase

NO GLOBAL SCAN: Using user defined selection & scan criteria
Interpolation Method: MD Interval: 100.00 ft
Depth Range: 0 00 to 8398.43 ft
Maximum Radius: 10000 00 ft

Reference: Plan: Plan #1
Error Model: ISCWSA Ellipse
Scan Method: Closest Approach 3D
Error Surface: Ellipse

Plan: Plan #1

Date Composed: 6/1/2011

Principal: Yes

Version: 1

Tied-to: From Surface

Summary

Site	Offset Wellpath	Reference MD	Offset MD	Ctr-Ctr Distance	Edge Distance	Separation Factor	Warning
Well	Wellpath	ft	ft	ft	ft		
Rosa Unit #166C	Exist 166	1 V0	800.00	797.70	33.09	29.84	10.20

Site: Rosa Unit #166C

Well: Exist 166

Wellpath: 1 V0

Inter-Site Error: 0.00 ft

Reference MD	TVD	Offset MD	TVD	Semi-Major Axis Ref	Offset	TFO-HS	Offset Location North	East	Ctr-Ctr Distance	Edge Distance	Separation Factor	Warning
ft	ft	ft	ft	ft	ft	deg	ft	ft	ft	ft		
0.00	0.00	0.00	0.00	0.00	0.00	90.70	-0.64	52.20	52.20			No Data
100.00	100.00	100.10	100.10	0.10	0.11	90.58	-0.53	52.11	52.11	51.91	255.42	
200.00	200.00	200.19	200.19	0.32	0.21	90.22	-0.20	51.83	51.83	51.30	96.69	
300.00	300.00	300.29	300.28	0.55	0.32	89.61	0.35	51.37	51.37	50.50	59.18	
400.00	400.00	400.34	400.33	0.77	0.54	88.78	1.08	50.76	50.77	49.46	38.69	
500.00	499.95	500.35	500.34	1.00	0.77	49.54	1.95	50.02	48.32	46.56	27.42	
600.00	599.63	600.10	600.07	1.23	0.99	56.35	2.96	49.18	42.67	40.45	19.24	
700.00	698.77	699.31	699.27	1.50	1.22	72.44	4.10	48.22	35.69	32.99	13.21	
800.00	797.08	797.70	797.65	1.82	1.44	102.14	5.37	47.16	33.09	29.84	10.20	
900.00	894.31	894.95	894.89	2.21	1.63	133.54	6.63	46.10	42.98	39.26	11.56	
1000.00	990.18	990.85	990.78	2.69	1.83	152.27	7.80	45.11	65.12	60.99	15.76	
1100.00	1084.43	1085.14	1085.06	3.26	2.02	162.00	8.90	44.19	95.49	90.93	20.97	
1200.00	1176.81	1177.56	1177.47	3.93	2.21	167.40	9.92	43.34	132.08	127.08	26.43	
1300.00	1267.61	1268.41	1268.30	4.69	2.39	170.77	10.86	42.55	172.95	167.47	31.56	
1400.00	1358.30	1359.18	1359.07	5.46	2.58	172.90	11.77	41.79	214.38	208.39	35.77	
1500.00	1449.00	1449.96	1449.84	6.25	2.77	174.35	12.68	41.02	255.98	249.46	39.29	
1600.00	1539.70	1540.74	1540.62	7.05	2.96	175.39	13.59	40.26	297.67	290.62	42.25	
1700.00	1630.40	1631.52	1631.39	7.85	3.14	176.17	14.50	39.50	339.42	331.84	44.77	
1800.00	1721.09	1722.30	1722.16	8.65	3.33	176.79	15.41	38.73	381.21	373.09	46.94	
1900.00	1811.79	1813.11	1812.96	9.46	3.53	177.28	16.33	37.96	423.04	414.37	48.79	
2000.00	1902.49	1903.97	1903.81	10.27	3.73	177.69	17.29	37.16	464.87	455.64	50.37	
2100.00	1993.18	1994.83	1994.66	11.09	3.93	178.05	18.30	36.31	506.70	496.91	51.75	
2200.00	2083.88	2085.70	2085.52	11.90	4.13	178.36	19.37	35.41	548.54	538.18	52.98	
2300.00	2174.58	2176.58	2176.39	12.72	4.33	178.63	20.50	34.46	590.37	579.45	54.07	
2400.00	2265.28	2267.47	2267.27	13.54	4.53	178.87	21.68	33.47	632.20	620.71	55.05	
2500.00	2355.97	2358.08	2357.86	14.35	4.72	179.08	22.84	32.50	674.04	662.00	55.99	
2600.00	2446.72	2448.66	2448.44	15.15	4.91	179.25	23.86	31.64	715.82	703.22	56.85	
2700.00	2538.27	2540.12	2539.88	15.79	5.10	179.39	24.76	30.89	755.83	742.72	57.65	
2800.00	2630.84	2632.60	2632.36	16.40	5.28	179.51	25.59	30.19	793.46	779.84	58.27	
2900.00	2724.37	2726.03	2725.79	16.99	5.47	179.61	26.35	29.55	828.67	814.56	58.74	
3000.00	2818.79	2820.34	2820.09	17.55	5.65	179.69	27.04	28.97	861.43	846.85	59.06	
3100.00	2914.04	2915.47	2915.21	18.07	5.84	179.76	27.65	28.46	891.73	876.69	59.26	
3200.00	3010.06	3011.34	3011.08	18.56	6.03	179.81	28.18	28.01	919.55	904.05	59.35	
3300.00	3106.77	3107.90	3107.64	19.01	6.23	179.85	28.63	27.64	944.86	928.94	59.33	
3400.00	3204.12	3205.09	3204.84	19.42	6.42	179.88	29.00	27.33	967.65	951.31	59.22	
3500.00	3302.03	3303.43	3303.17	19.80	6.63	179.92	29.43	26.97	987.87	971.12	58.99	



Weatherford International Ltd.

Anticollision Report

**Weatherford**

Company: Williams Production Date: 6/1/2011 Time: 09:20:12 Page: 2
Field: RIO ARRIBA CO. NM (NAD:83)
Reference Site: Rosa Unit #166C Co-ordinate(NE) Reference: Well: #166C, True North
Reference Well: #166C Vertical (TVD) Reference: SITE 6376.0
Reference Wellpath: 1 Db: Sybase

Site: Rosa Unit #166C
Well: Exist 166
Wellpath: 1 V0

Inter-Site Error: 0.00 ft

Reference		Offset		Semi-Major Axis			Offset Location		Ctr-Ctr		Edge	Separation	Warning
MD	TVD	MD	TVD	Ref	Offset	TFO-HS	North	East	Distance	Distance	Factor		
ft	ft	ft	ft	ft	ft	deg	ft	ft	ft	ft			
3600.00	3400.45	3402.28	3402.02	20.14	6.84	179.97	30.05	26.45	1005.48	988.34		58.67	
3700.00	3499.29	3501.57	3501.30	20.44	7.04	180.03	30.87	25.76	1020.46	1002.95		58.28	
3800.00	3598.49	3601.22	3600.94	20.70	7.25	180.10	31.89	24.91	1032.82	1014.95		57.81	
3900.00	3697.99	3701.16	3700.87	20.93	7.46	180.19	33.10	23.88	1042.53	1024.32		57.27	
4000.00	3797.72	3800.94	3800.63	21.11	7.68	180.28	34.44	22.77	1049.61	1031.08		56.65	
4100.00	3897.60	3900.82	3900.50	21.26	7.90	180.37	35.77	21.65	1054.08	1035.24		55.96	
4200.00	3997.57	4000.79	4000.45	21.37	8.11	180.46	37.11	20.52	1055.93	1036.80		55.21	
4300.00	4097.57	4100.77	4100.42	21.46	8.33	221.12	38.45	19.40	1055.79	1031.08		42.72	
4400.00	4197.57	4200.76	4200.39	21.54	8.55	221.21	39.78	18.28	1055.52	1030.47		42.13	
4500.00	4297.57	4300.74	4300.36	21.63	8.77	221.31	41.12	17.16	1055.26	1029.86		41.55	
4600.00	4397.57	4400.73	4400.33	21.71	8.99	221.40	42.46	16.04	1054.99	1029.25		40.98	
4700.00	4497.57	4500.71	4500.30	21.80	9.20	221.49	43.79	14.92	1054.73	1028.64		40.42	
4800.00	4597.57	4600.70	4600.27	21.90	9.42	221.59	45.13	13.79	1054.48	1028.03		39.88	
4900.00	4697.57	4700.68	4700.24	21.99	9.64	221.68	46.47	12.67	1054.22	1027.43		39.34	
5000.00	4797.57	4800.66	4800.21	22.09	9.86	221.78	47.80	11.55	1053.97	1026.82		38.82	
5100.00	4897.57	4900.67	4900.19	22.18	10.08	221.87	49.14	10.43	1053.72	1026.22		38.31	
5200.00	4997.57	5000.70	5000.21	22.28	10.30	221.97	50.50	9.29	1053.47	1025.61		37.80	
5300.00	5097.57	5100.73	5100.22	22.38	10.52	222.06	51.88	8.13	1053.22	1024.99		37.31	
5400.00	5197.57	5200.76	5200.24	22.49	10.74	222.16	53.29	6.95	1052.97	1024.37		36.82	
5500.00	5297.57	5300.79	5300.25	22.59	10.96	222.26	54.73	5.74	1052.72	1023.75		36.34	
5600.00	5397.57	5400.82	5400.26	22.70	11.18	222.37	56.19	4.52	1052.46	1023.13		35.88	
5700.00	5497.57	5500.85	5500.27	22.81	11.41	222.47	57.67	3.27	1052.21	1022.50		35.42	
5800.00	5597.57	5600.87	5600.28	22.92	11.63	222.58	59.18	2.00	1051.95	1021.87		34.97	
5900.00	5697.57	5700.90	5700.28	23.03	11.85	222.69	60.72	0.72	1051.69	1021.24		34.53	
6000.00	5797.57	5800.92	5800.28	23.14	12.07	222.80	62.28	-0.59	1051.44	1020.60		34.10	
6100.00	5897.57	5900.94	5900.28	23.25	12.29	222.91	63.86	-1.93	1051.18	1019.96		33.68	
6200.00	5997.57	6000.96	6000.28	23.37	12.52	223.02	65.48	-3.28	1050.92	1019.33		33.26	
6300.00	6097.57	6100.98	6100.28	23.49	12.74	223.14	67.11	-4.65	1050.66	1018.69		32.86	
6400.00	6197.57	6188.00	6187.28	23.61	12.93	223.24	68.56	-5.86	1050.49	1018.16		32.49	
6500.00	6297.57	6188.00	6187.28	23.73	12.93	223.24	68.56	-5.86	1056.21	1023.74		32.53	
6600.00	6397.57	6188.00	6187.28	23.85	12.93	223.24	68.56	-5.86	1071.28	1038.66		32.84	
6700.00	6497.57	6188.00	6187.28	23.98	12.93	223.24	68.56	-5.86	1095.31	1062.54		33.43	
6800.00	6597.57	6188.00	6187.28	24.10	12.93	223.24	68.56	-5.86	1127.72	1094.81		34.26	
6900.00	6697.57	6188.00	6187.28	24.23	12.93	223.24	68.56	-5.86	1167.83	1134.76		35.31	
7000.00	6797.57	6188.00	6187.28	24.36	12.93	223.24	68.56	-5.86	1214.86	1181.64		36.57	
7100.00	6897.57	6188.00	6187.28	24.49	12.93	223.24	68.56	-5.86	1268.05	1234.67		37.99	
7200.00	6997.57	6188.00	6187.28	24.62	12.93	223.24	68.56	-5.86	1326.65	1293.12		39.56	
7300.00	7097.57	6188.00	6187.28	24.75	12.93	223.24	68.56	-5.86	1389.99	1356.30		41.26	
7400.00	7197.57	6188.00	6187.28	24.88	12.93	223.24	68.56	-5.86	1457.44	1423.59		43.06	
7500.00	7297.57	6188.00	6187.28	25.02	12.93	223.24	68.56	-5.86	1528.46	1494.45		44.95	
7600.00	7397.57	6188.00	6187.28	25.16	12.93	223.24	68.56	-5.86	1602.57	1568.41		46.91	
7700.00	7497.57	6188.00	6187.28	25.29	12.93	223.24	68.56	-5.86	1679.37	1645.05		48.93	
7800.00	7597.57	6188.00	6187.28	25.43	12.93	223.24	68.56	-5.86	1758.51	1724.02		50.99	
7900.00	7697.57	6188.00	6187.28	25.57	12.93	223.24	68.56	-5.86	1839.68	1805.03		53.09	
8000.00	7797.57	6188.00	6187.28	25.71	12.93	223.24	68.56	-5.86	1922.62	1887.81		55.22	
8100.00	7897.57	6188.00	6187.28	25.86	12.93	223.24	68.56	-5.86	2007.12	1972.14		57.38	
8200.00	7997.57	6188.00	6187.28	26.00	12.93	223.24	68.56	-5.86	2092.99	2057.84		59.55	
8300.00	8097.57	6188.00	6187.28	26.14	12.93	223.24	68.56	-5.86	2180.06	2144.74		61.73	
8398.43	8196.00	6188.00	6187.28	26.29	12.93	223.24	68.56	-5.86	2266.80	2231.32		63.89	

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

GeoDec v5.03

Report Date: June 01, 2011
Job Number: _____
Customer: Williams
Well Name: Rosa Unit #166C
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 36.8746300 DEG	Latitude 36 52 28.6680000 DMS
Longitude -107.3982600 DEG	Longitude -107 23 53.7360000 DMS

Geodetic Location WGS84 Elevation = 0.0 Meters
Latitude = 36.87463° N 36° 52 min 28.668 sec
Longitude = 107.39826° W 107° 23 min 53.736 sec

Magnetic Declination =	9.70°	[True North Offset]	
Local Gravity =	9.992 g	Checksum =	6676
Local Field Strength =	50858 nT	Magnetic Vector X =	22263 nT
Magnetic Dip =	63.63°	Magnetic Vector Y =	3806 nT
Magnetic Model =	IGRF-2010g11	Magnetic Vector Z =	45567 nT
Spud Date =	Dec 10, 2011	Magnetic Vector H =	22586 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)

