

RECEIVED

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

MAR 14 2011

Farmington Field Office
Bureau of Land Management

APPLICATION FOR PERMIT TO DRILL OR REENTER

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 #154C
2. Name of Operator Williams Production Company, LLC		9. API Well No. 30-039-31045
3a. Address P.O. Box 640 Aztec, NM 87410	3b. Phone No. (include area code) (505) 634-4206	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 P 895' FSL & 900' FEL Section 7, T31N., R5W At proposed prod. zone I 1500' FSL & 330' FEL Section 7, T31N R5W		11. Sec., T., R., M., or Blk. and Survey or Area Section 7, 31N, 5W
14. Distance in miles and direction from nearest town or post office* approximately 27 miles northeast of Blanco, New Mexico		12. County or Parish Rio Arriba
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drg. unit line, if any) 895'		13. State NM
16. No. of Acres in lease 2,518 040	17. Spacing Unit dedicated to this well 231.90 (S/2)	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 50' Rosa 154A	19. Proposed Depth 8333'	20. BLM/BIA Bond No. on file UT0899
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 6,355' GR	22. Approximate date work will start* April 15, 2011	23. Estimated duration 1 month
24. Attachments This action is subject to technical and procedural review pursuant to 43 CFR 3165.3 and appeal pursuant to 43 CFR 3165.4		

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

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

- Well plat certified by a registered surveyor.
- A Drilling Plan
- A Surface Use Plan (if the location is on National Forest System Lands, the SUPO shall be filed with the appropriate Forest Service Office).

- Bond to cover the operations unless covered by an existing bond on file (see Item 20 above)
- Operator certification.
- Such other site specific information and/or plans as may be required by the authorized officer

25. Signature 	Name (Printed/Typed) Ben Mitchell	Date 3/14/2011
Title Regulatory Specialist		
Approved by (Signature) 	Name (Printed/Typed) AEM	Date 3/17/11
Title 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 85.2 feet would be required for this well

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

HOLD C104
for Directional Survey and "As Drilled" plan
NMOC
* Hold C-104 for change of status to PA for Rosa Unit #154B OR Special Spacing order *

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

NOTIFY AZTEC OCD 24 HRS. PRIOR TO CASING & CEMENT

RCVD MAY 20 11
OIL CONS. DIV.

DIST. 3

JUL 01 2011

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

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

Farmington Field Office
Bureau of Land Management
AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number 30-039-31045	*Pool Code 72319 / 71599	*Pool Name BLANCO MESAVERDE / BASIN DAKOTA
*Property Code 17033	*Property Name ROSA UNIT	*Well Number 154C
*GRID No. 120782	*Operator Name WILLIAMS PRODUCTION COMPANY	*Elevation 6355'

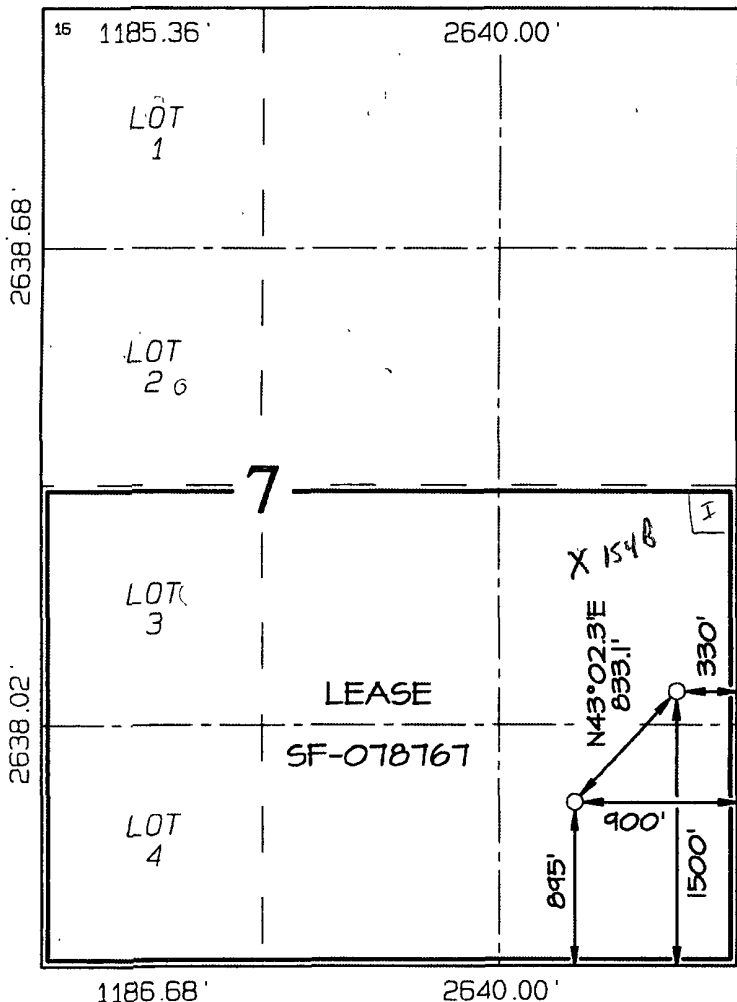
10 Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	7	31N	5W		895	SOUTH	900	EAST	RIO ARriba

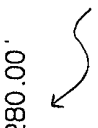
11 Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	7	31N	5W		1500	SOUTH	330	EAST	RIO ARriba
12 Dedicated Acres 231.90 Acres - (S/2)					13 Joint or Infill	14 Consolidation Code	15 Order No.		

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



30-039-30804
154B has
a BHL in "I"



BOTTOM-HOLE
LAT: 36.91090°N
LONG: 107.39586°W
DATUM: NAD1983

SURFACE LOCATION
LAT: 36.90924°N
LONG: 107.39781°W
DATUM: NAD1983

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.	
Signature <i>B. Mitchell</i>	Date 3/14/2011
Printed Name Ben Mitchell	

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.	
Survey Date: SEPTEMBER 9, 2010	
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: 3/9/2011 **FIELD:** Basin DK/ BlancoMV
WELL NAME: Rosa #154C **SURFACE:** BLM
BH LOCATION: NESW Sec 7-31N-5W **MINERALS:** BLM
Rio Arriba, NM
ELEVATION: 6,355' GR **LEASE #** SF-078767
MEASURED DEPTH: 8,333'

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

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

Name	TVD	MD	Name	TVD	MD
Ojo Alamo	2,459	2,532	Point Lookout	5,669	5,778
Kirtland	2,599	2,678	Mancos	6,014	6,123
Fruitland	2,964	3,059	Gallup	7,009	7,118
Pictured Cliffs	3,219	3,322	Greenhorn	7,734	7,843
Lewis	3,499	3,606	Graneros	7,794	7,903
Cliff House	5,409	5,518	Dakota	7,924	8,033
Menefee	5,459	5,568	Morrison	8,174	8,283
			TD	8,224	8,333

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	3,802	7	23	K-55
Longstring	6 1/4	8,333	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 + 1/4 # 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.
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 1500psi.
3. **PRODUCTION CASING:** 10 bbl Gelled Water spacer. Cement: 610 sx (853 ft³) of "FRACCEM" + 0.8% Halad-9 + 0.1% CFR-3 + 5 #/sk Gilonite + 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

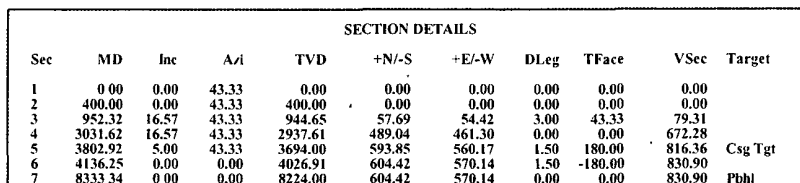
1. Stimulate Dakota with approximately 5000# 100 mesh sand and 120,000# Ottawa Sand in slick water.
2. Isolate Dakota with a RBP.
3. Stimulate Point Lookout with approximately 40,000# 20/40 Ottawa sand in slick water.
4. Isolate Point Lookout with a RBP.
5. Perforate the Menefee/Cliff House as determined 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



Gary Sizemore
Sr. Drilling Engineer



WELL DETAILS							
Name	+N/-S	+E/-W	Northng	Easting	Latitude	Longitude	Slot
154C	0.00	0.00	2152277.44	1304850.76	36°54'33.264N	107°23'52.116W	N/A

TARGET DETAILS						
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Csg Tgt	3694.00	593.85	560.17	36°54'39.135N	107°23'45.219W	Point
Pbhl	8274.00	604.42	570.14	36°54'39.240N	107°23'45.096W	Point

FORMATION TOP DETAILS		
No.	TVPDPath	MDPATH Formation
1	1119.00	Nacimiento Fm
2	2459.00	Ojo Alamo Ss
3	2599.00	Kirtland Sh
4	2964.00	Fruitland Fm
5	3219.00	Pictured Cliffs Ss
6	3499.00	Lewis Sh
7	5104.00	Cliff House Ss. Trans
8	5409.00	Cliff House Ss.
9	5459.00	Meneefee Fm.
10	5669.00	Point Lookout 55.
11	6014.00	Mancos Sh
12	7009.00	Gallup Ss
13	7734.00	Greenhorn Ls
14	7794.00	Graneros Sh
15	7924.00	Dakota Ss
16	8174.00	Morrison Fm

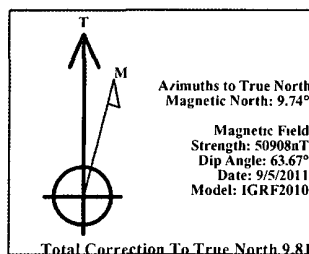
CASING DETAILS				
No.	TVD	MD	Name	Size
1	300.00	300.00	9 5/8"	9.625
2	3694.00	3802.92	7"	7.000

SITE DETAILS

Rosa Unit 154C

Site Centre Latitude: 36°54'33.264N
Longitude: 107°23'52.116W

Ground Level: 6355.00
Positional Uncertainty: 0.00
Convergence: -0.69

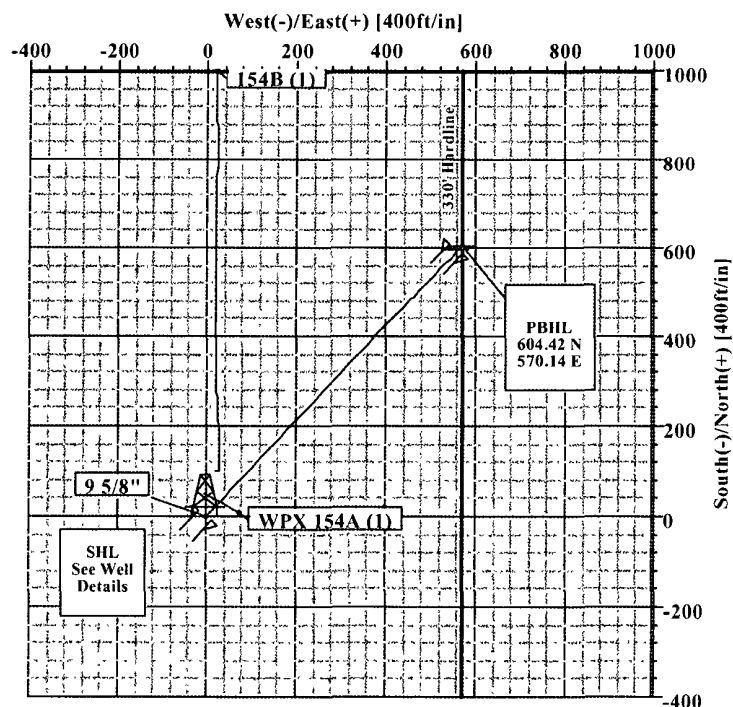


LEGEND

	154B (1)
	WPX 154A (1)
	Plan #1



Weatherford

**Plan: Plan #1 (154C/1)**

Created By: Russell W. Joyner

Date: 2/10/2011



Weatherford International Ltd.

WFT Plan Report Lat, Long



Weatherford

Company: Williams Production Date: 2/10/2011 Time: 11:45:25 Page: 1
 Field: RIO ARRIBA CO NM (NAD 83) Co-ordinate(NE) Reference: Well: 154C, True North
 Site: Rosa Unit 154C Vertical (TVD) Reference: SITE 6369.0
 Well: 154C Section (VS) Reference: Well: (0.00N, 0.00E, 43.33Azi)
 Wellpath: 1 Survey Calculation Method: Minimum Curvature Db: Sybase

Plan: Plan #1 Date Composed: 2/10/2011
 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 154C

Site Position: Northing: 2152277.44 ft Latitude: 36 54 33.264 N
 From: Geographic Easting: 1304850.76 ft Longitude: 107 23 52.116 W
 Position Uncertainty: 0.00 ft North Reference: True
 Ground Level: 6355.00 ft Grid Convergence: -0.69 deg

Well: 154C Slot Name:
 Well Position: +N/-S 0.00 ft Northing: 2152277.44 ft Latitude: 36 54 33.264 N
 +E/-W 0.00 ft Easting: 1304850.76 ft Longitude: 107 23 52.116 W
 Position Uncertainty: 0.00 ft

Wellpath: 1 Drilled From: Surface
 Current Datum: SITE Tie-on Depth: 0.00 ft
 Magnetic Data: 9/5/2011 Height 6369.00 ft Above System Datum: Mean Sea Level
 Field Strength: 50908 nT Declination: 9.74 deg
 Vertical Section: Depth From (TVD) +N/-S Mag Dip Angle: 63.67 deg
 ft ft +E/-W Direction
 ft deg
 0.00 0.00 0.00 43.33

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	43.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
400.00	0.00	43.33	400.00	0.00	0.00	0.00	0.00	0.00	0.00	
952.32	16.57	43.33	944.65	57.69	54.42	3.00	3.00	0.00	43.33	
3031.62	16.57	43.33	2937.61	489.04	461.30	0.00	0.00	0.00	0.00	
3802.92	5.00	43.33	3694.00	593.85	560.17	1.50	-1.50	0.00	180.00	Csg Tgt
4136.25	0.00	0.00	4026.91	604.42	570.14	1.50	-1.50	-13.00	-180.00	
8333.34	0.00	0.00	8224.00	604.42	570.14	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 Min	Sec	Long Min	Sec	Comment
400.00	0.00	43.33	400.00	0.00	0.00	0.00	0.00	36	54	33.264	107	23 52 116 Kop
500.00	3.00	43.33	499.95	1.90	1.80	2.62	3.00	36	54	33.283	107	23 52.094
600.00	6.00	43.33	599.63	7.61	7.18	10.46	3.00	36	54	33.339	107	23 52.028
700.00	9.00	43.33	698.77	17.10	16.13	23.51	3.00	36	54	33.433	107	23 51.917
800.00	12.00	43.33	797.08	30.36	28.64	41.74	3.00	36	54	33.564	107	23 51.763
900.00	15.00	43.33	894.31	47.34	44.65	65.08	3.00	36	54	33.732	107	23 51.566
952.32	16.57	43.33	944.65	57.69	54.42	79.31	3.00	36	54	33.834	107	23 51.446 Hold
1000.00	16.57	43.33	990.35	67.58	63.75	92.91	0.00	36	54	33.932	107	23 51.331
1100.00	16.57	43.33	1086.20	88.33	83.32	121.42	0.00	36	54	34.137	107	23 51.090
1134.22	16.57	43.33	1119.00	95.43	90.01	131.18	0.00	36	54	34.208	107	23 51.008 Nacimiento
1200.00	16.57	43.33	1182.05	109.07	102.89	149.94	0.00	36	54	34.342	107	23 50.849
1300.00	16.57	43.33	1277.90	129.82	122.46	178.46	0.00	36	54	34.548	107	23 50.608
1400.00	16.57	43.33	1373.74	150.56	142.02	206.98	0.00	36	54	34.753	107	23 50.367
1500.00	16.57	43.33	1469.59	171.31	161.59	235.50	0.00	36	54	34.958	107	23 50.126
1600.00	16.57	43.33	1565.44	192.05	181.16	264.01	0.00	36	54	35.163	107	23 49.885



Weatherford International Ltd.

WFT Plan Report Lat, Long



Weatherford

Company: Williams Production	Date: 2/10/2011	Time: 11:45:25	Page: 2
Field: RIO ARRIBA CO. NM (NAD 83)	Co-ordinate(NE) Reference:	Well: 154C True North	
Site: Rosa Unit 154C	Vertical (TVD) Reference:	SITE 6369.0	
Well: 154C	Section (VS) Reference:	Well (0.00N 0.00E 43.33Azi)	
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	16.57	43.33	1661.29	212.80	200.73	292.53	0.00	36	54	35.368	107	23 49.645
1800.00	16.57	43.33	1757.13	233.54	220.30	321.05	0.00	36	54	35.573	107	23 49.404
1900.00	16.57	43.33	1852.98	254.29	239.87	349.57	0.00	36	54	35.778	107	23 49.163
2000.00	16.57	43.33	1948.83	275.03	259.43	378.08	0.00	36	54	35.983	107	23 48.922
2100.00	16.57	43.33	2044.68	295.78	279.00	406.60	0.00	36	54	36.188	107	23 48.681
2200.00	16.57	43.33	2140.52	316.52	298.57	435.12	0.00	36	54	36.393	107	23 48.440
2300.00	16.57	43.33	2236.37	337.26	318.14	463.64	0.00	36	54	36.599	107	23 48.199
2400.00	16.57	43.33	2332.22	358.01	337.71	492.16	0.00	36	54	36.804	107	23 47.958
2500.00	16.57	43.33	2428.07	378.75	357.28	520.67	0.00	36	54	37.009	107	23 47.717
2532.27	16.57	43.33	2459.00	385.45	363.59	529.88	0.00	36	54	37.075	107	23 47.639 Ojo Alamo S
2600.00	16.57	43.33	2523.91	399.50	376.84	549.19	0.00	36	54	37.214	107	23 47.476
2678.34	16.57	43.33	2599.00	415.75	392.17	571.53	0.00	36	54	37.375	107	23 47.287 Kirtland Sh
2700.00	16.57	43.33	2619.76	420.24	396.41	577.71	0.00	36	54	37.419	107	23 47.235
2800.00	16.57	43.33	2715.61	440.99	415.98	606.23	0.00	36	54	37.624	107	23 46.994
2900.00	16.57	43.33	2811.46	461.73	435.55	634.74	0.00	36	54	37.829	107	23 46.753
3000.00	16.57	43.33	2907.30	482.48	455.12	663.26	0.00	36	54	38.034	107	23 46.512
3031.62	16.57	43.33	2937.61	489.04	461.30	672.28	0.00	36	54	38.099	107	23 46.436 Drop
3059.12	16.16	43.33	2964.00	494.67	466.62	680.03	1.50	36	54	38.155	107	23 46.371 Fruitland F
3100.00	15.54	43.33	3003.32	502.80	474.28	691.19	1.50	36	54	38.235	107	23 46.276
3200.00	14.04	43.33	3100.00	521.37	491.80	716.73	1.50	36	54	38.419	107	23 46.061
3300.00	12.54	43.33	3197.32	538.10	507.58	739.72	1.50	36	54	38.584	107	23 45.866
3322.19	12.21	43.33	3219.00	541.56	510.85	744.48	1.50	36	54	38.618	107	23 45.826 Pictured C
3400.00	11.04	43.33	3295.21	552.96	521.61	760.16	1.50	36	54	38.731	107	23 45.694
3500.00	9.54	43.33	3393.59	565.96	533.87	778.03	1.50	36	54	38.860	107	23 45.543
3600.00	8.04	43.33	3492.42	577.08	544.36	793.31	1.50	36	54	38.970	107	23 45.414
3606.65	7.94	43.33	3499.00	577.75	544.99	794.24	1.50	36	54	38.976	107	23 45.406 Lewis Sh
3700.00	6.54	43.33	3591.60	586.32	553.07	806.01	1.50	36	54	39.061	107	23 45.306
3800.00	5.04	43.33	3691.09	593.66	559.99	816.10	1.50	36	54	39.134	107	23 45.221
3802.92	5.00	43.33	3694.00	593.85	560.17	816.36	1.50	36	54	39.135	107	23 45.219 Csg Tgt
3900.00	3.54	43.33	3790.81	599.11	565.13	823.59	1.50	36	54	39.187	107	23 45.158
4000.00	2.04	43.33	3890.69	602.65	568.48	828.47	1.50	36	54	39.223	107	23 45.117
4100.00	0.54	43.33	3990.66	604.29	570.03	830.72	1.50	36	54	39.239	107	23 45.097
4136.25	0.00	0.00	4026.91	604.42	570.14	830.90	1.50	36	54	39.240	107	23 45.096 Hold
4200.00	0.00	0.00	4090.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23 45.096
4300.00	0.00	0.00	4190.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23 45.096
4400.00	0.00	0.00	4290.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23 45.096
4500.00	0.00	0.00	4390.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23 45.096
4600.00	0.00	0.00	4490.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23 45.096
4700.00	0.00	0.00	4590.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23 45.096
4800.00	0.00	0.00	4690.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23 45.096
4900.00	0.00	0.00	4790.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23 45.096
5000.00	0.00	0.00	4890.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23 45.096
5100.00	0.00	0.00	4990.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23 45.096
5200.00	0.00	0.00	5090.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23 45.096
5213.34	0.00	0.00	5104.00	604.42	570.14	830.90	0.00	36	54	39.240	107	23 45.096 Cliff House
5300.00	0.00	0.00	5190.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23 45.096
5400.00	0.00	0.00	5290.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23 45.096
5500.00	0.00	0.00	5390.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23 45.096
5518.34	0.00	0.00	5409.00	604.42	570.14	830.90	0.00	36	54	39.240	107	23 45.096 Cliff House
5568.34	0.00	0.00	5459.00	604.42	570.14	830.90	0.00	36	54	39.240	107	23 45.096 Menefee Fm
5600.00	0.00	0.00	5490.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23 45.096
5700.00	0.00	0.00	5590.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23 45.096



Weatherford International Ltd.

WFT Plan Report Lat, Long



Weatherford

Company: Williams Production Date: 2/10/2011 Time: 11:45:25 Page: 3
 Field: RIO ARRIBA CO NM (NAD 83) Co-ordinate(NE) Reference: Well: 154C True North
 Site: Rosa Unit 154C Vertical (TVD) Reference: SITE 6369 0
 Well: 154C Section (VS) Reference: Well (0.00N, 0.00E, 43.33Azi)
 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
5778.34	0.00	0.00	5669.00	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	Point Lookout
5800.00	0.00	0.00	5690.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	
5900.00	0.00	0.00	5790.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	
6000.00	0.00	0.00	5890.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	Mancos Sh
6100.00	0.00	0.00	5990.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	
6123.34	0.00	0.00	6014.00	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	
6200.00	0.00	0.00	6090.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	
6300.00	0.00	0.00	6190.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	
6400.00	0.00	0.00	6290.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	Gallup Ss
6500.00	0.00	0.00	6390.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	
6600.00	0.00	0.00	6490.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	
6700.00	0.00	0.00	6590.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	
6800.00	0.00	0.00	6690.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	
6900.00	0.00	0.00	6790.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	Graneros Sh
7000.00	0.00	0.00	6890.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	
7100.00	0.00	0.00	6990.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	
7118.34	0.00	0.00	7009.00	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	
7200.00	0.00	0.00	7090.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	
7300.00	0.00	0.00	7190.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	Dakota Ss
7400.00	0.00	0.00	7290.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	
7500.00	0.00	0.00	7390.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	
7600.00	0.00	0.00	7490.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	
7700.00	0.00	0.00	7590.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	
7800.00	0.00	0.00	7690.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	Morrison Fm
7843.34	0.00	0.00	7734.00	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	
7900.00	0.00	0.00	7790.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	
7903.34	0.00	0.00	7794.00	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	
8000.00	0.00	0.00	7890.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	
8033.34	0.00	0.00	7924.00	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	Pbhl
8100.00	0.00	0.00	7990.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	
8200.00	0.00	0.00	8090.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	
8283.34	0.00	0.00	8174.00	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	
8300.00	0.00	0.00	8190.66	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	
8333.34	0.00	0.00	8224.00	604.42	570.14	830.90	0.00	36	54	39.240	107	23	45.096	

Targets

Name	Description	TVD ft	+N/S ft	+E/W ft	Map Northing ft	Map Easting ft	Latitude Deg Min Sec	Longitude Deg Min Sec
Csg Tgt		3694.00	593.85	560.17	2152864.51	1305418.03	36 54 39 135 N	107 23 45 219 W
-Plan hit target								
Pbhl		8224.00	604.42	570.14	2152874.96	1305428.14	36 54 39.240 N	107 23 45 096 W
-Plan hit target								

Casing Points

MD ft	TVD ft	Diameter in	Hole Size in	Name
300.00	300.00	9.625	12.250	9 5/8"
3802.92	3694.00	7.000	8.500	7"



Weatherford International Ltd.
WFT Plan Report Lat, Long



Weatherford

Company: Williams Production Date: 2/10/2011 Time: 11:45:25 Page: 4
Field: RIO ARRIBA CO NM (NAD 83) Co-ordinate(NE) Reference: Well: 154C, True North
Site: Rosa Unit 154C Vertical (TVD) Reference: SITE 6369.0
Well: 154C Section (VS) Reference: Well (0.00N, 0.00E, 43.33Azi)
Wellpath: 1 Survey Calculation Method: Minimum Curvature Db: Sybase

Formations

MD ft	TVD ft	Formations	Lithology	Dip Angle deg	Dip Direction deg
1134.22	1119.00	Nacimiento Fm		0.00	0.00
2532.27	2459.00	Ojo Alamo Ss		0.00	0.00
2678.34	2599.00	Kirtland Sh		0.00	0.00
3059.12	2964.00	Fruitland Fm		0.00	0.00
3322.19	3219.00	Pictured Cliffs Ss		0.00	0.00
3606.65	3499.00	Lewis Sh		0.00	0.00
5213.34	5104.00	Cliff House Ss. Trans		0.00	0.00
5518.34	5409.00	Cliff House Ss		0.00	0.00
5568.34	5459.00	Menefee Fm		0.00	0.00
5778.34	5669.00	Point Lookout 55.		0.00	0.00
6123.34	6014.00	Mancos Sh		0.00	0.00
7118.34	7009.00	Gallup Ss		0.00	0.00
7843.34	7734.00	Greenhorn Ls		0.00	0.00
7903.34	7794.00	Graneros Sh		0.00	0.00
8033.34	7924.00	Dakota Ss		0.00	0.00
8283.34	8174.00	Morrison Fm		0.00	0.00

Annotation

MD ft	TVD ft	
400.00	400.00	Kop
952.32	944.65	Hold
3031.62	2937.61	Drop
3802.92	3694.00	Csg/Tgt/Drop
4136.25	4026.91	Hold
8333.34	8224.00	Pbhl



Weatherford International Ltd.

Anticollision Report



Weatherford

Company: Williams Production Date: 2/10/2011 Time: 11:30:42 Page: 1
 Field: RIO ARRIBA CO NM (NAD 83)
 Reference Site: Rosa Unit 154C Co-ordinate(NE) Reference: Well: 154C, True North
 Reference Well: 154C Vertical (TVD) Reference: SITE 6369 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 8333.34 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
 Principal: Yes

Date Composed: 2/10/2011
 Version: 1
 Tied-to: From Surface

Summary

Site	Well	Wellpath	Reference MD ft	Offset MD ft	Ctr-Ctr Distance ft	Edge Distance ft	Separation Factor	Warning
Rosa Unit #154B	154B	1 V0	8100 00	8215.30	1059.25	1014.51	23.68	
Rosa Unit 154C	WPX 154A	1 V0	800.00	797 64	29 80	26.32	8 57	

Site: Rosa Unit #154B
 Well: 154B
 Wellpath: 1 V0

Inter-Site Error: 0.00 ft

Reference MD ft	TVD ft	Offset MD ft	TVD ft	Semi-Major Axis Ref ft	Offset ft	TFO-HS deg	Offset Location North ft	East ft	Ctr-Ctr Distance ft	Edge Distance ft	Separation Factor	Warning
0 00	0.00	0 00	0.00	0 00	0.00	11.89	98.71	20.79	100.88			No Data
100.00	100 00	99.94	99 94	0 10	0.11	12.10	98.67	21.15	100.91	100.70	477.24	
200.00	200 00	199.87	199 86	0 32	0.23	12.71	98 53	22 22	101.01	100.46	183 38	
300.00	300 00	299 78	299 75	0 55	0 34	13 72	98 31	24.00	101 19	100.30	113 69	
400.00	400 00	398 88	398 83	0 77	0 50	14 94	98 08	26.18	101.52	100.25	79 88	
500 00	499 95	493.44	493.31	1 00	0 70	331.38	101.31	27 77	102 96	101 27	60 73	
600.00	599 63	586 71	586 14	1 23	0 92	328.66	110.17	28.47	105.61	103 49	49 67	
700.00	698 77	677.84	675.98	1 50	1 19	324 20	125 32	28.98	111.33	108 76	43.25	
800.00	797 08	768.86	764 31	1 82	1.55	318 48	147.21	29.05	121 36	118.29	39 51	
900.00	894 31	859 11	850.49	2 21	2.00	312.25	173.96	28 49	134 96	131.30	36 88	
1000.00	990.35	949 47	935 19	2 69	2.54	305 86	205 37	27.03	152.90	148 50	34 78	
1100 00	1086.20	1039.07	1017.64	3 20	3.16	300.65	240.37	24 77	176 77	171.52	33.66	
1200.00	1182 05	1130.09	1100.37	3 73	3 83	296.85	278.23	22 50	204 32	198.13	33 00	
1300 00	1277.90	1224 43	1185.48	4 27	4.53	294 28	318.90	21.36	233.48	226.29	32 46	
1400.00	1373 74	1320.41	1271.78	4 82	5.26	292.31	360 90	20 17	263 60	255.37	32.02	
1500.00	1469.59	1416 50	1358 39	5 37	5 98	290.91	402 52	20.21	292.94	283.65	31.54	
1600 00	1565 44	1510.62	1442 82	5 93	6 72	290.06	444 10	21 33	322.66	312.31	31.17	
1700 00	1661 29	1608.21	1530 57	6 49	7 43	289.22	486 78	22.12	352.22	340 80	30.85	
1800 00	1757 13	1699 77	1613 01	7 05	8 13	288.37	526 62	21.60	382.29	369 81	30.64	
1900.00	1852.98	1791 22	1694 95	7 61	8 86	287 75	567 22	21.43	413.06	399 50	30 48	
2000.00	1948.83	1895.77	1788 56	8 18	9 65	287 22	613.79	21 81	443 75	429.06	30 22	
2100 00	2044.68	1992 67	1876 37	8 74	10 37	286 61	654.76	21 94	472 52	456.74	29.94	
2200 00	2140.52	2084 17	1959 12	9 31	11 08	286 09	693 79	21 83	501.83	484.96	29.75	
2300 00	2236.37	2187 22	2052.44	9 88	11 85	285.60	737 48	22.10	530.70	512.69	29 46	
2400 00	2332.22	2286 17	2142 24	10 44	12 58	285 23	779 05	23 25	558.80	539.67	29 22	
2500.00	2428.07	2367 05	2215 43	11 01	13 20	284 92	813.45	23 49	587 87	567.72	29 18	
2600 00	2523 91	2457 98	2297 16	11 58	13 92	284.64	853 31	23.22	618 40	597.16	29 12	
2700 00	2619 76	2565 67	2393.76	12 15	14 76	284 34	900.89	22.70	649 43	627.01	28.97	
2800 00	2715.61	2662 39	2481 27	12 72	15 50	284 04	942.09	22.61	678.79	655.25	28.84	
2900.00	2811.46	2746 52	2557 11	13 29	16 16	283.83	978 49	22.66	708.67	684.08	28.82	
3000.00	2907.30	2837.35	2638 64	13 86	16 88	283 63	1018 51	22 16	739.57	713.89	28 80	
3100 00	3003.32	2935 72	2726 95	14 39	17 64	283 18	1061 86	21.99	770.39	743 63	28.79	
3200 00	3100.00	3027 69	2809.88	14 81	18 32	282.60	1101.55	19.86	802.19	774.51	28.98	
3300 00	3197.32	3170.92	2941.60	15 20	19 32	281.97	1157.61	15.70	831 34	802.54	28.86	
3400 00	3295.21	3374 22	3134.85	15 56	20 45	281 38	1220.12	15 60	852.56	822.58	28 44	
3500 00	3393.59	3489 21	3246 73	15 89	20 95	280.93	1246.63	16 86	867 29	836 57	28 23	



Weatherford International Ltd.

Anticollision Report

**Weatherford**

Company: Williams Production Date: 2/10/2011 Time: 11:30:42 Page: 2
Field: RIO ARRIBA CO NM (NAD 83)
Reference Site: Rosa Unit 154C Co-ordinate(NE) Reference: Well: 154C True North
Reference Well: 154C Vertical (TVD) Reference: SITE 6369.0
Reference Wellpath: 1 Db: Sybase

Site: Rosa Unit #154B
Well: 154B
Wellpath: 1 V0

Inter-Site Error: 0 00 ft

Reference		Offset		Semi-Major Axis		Offset Location		Cfr-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	3492.42	3616.79	3371.79	16.19	21.44	280.49	1271.73	17.41	880.21	848.81	28.03	
3700.00	3591.60	3753.65	3507.00	16.45	21.87	280.08	1292.81	17.83	890.37	858.33	27.78	
3800.00	3691.09	3890.56	3643.53	16.68	22.10	279.33	1301.99	15.16	894.90	862.41	27.55	
3900.00	3790.81	3990.82	3743.66	16.87	22.25	278.83	1306.50	12.33	899.01	866.09	27.31	
4000.00	3890.69	4091.23	3843.93	17.03	22.40	278.49	1310.95	9.53	903.49	870.22	27.16	
4100.00	3990.66	4191.70	3944.26	17.16	22.55	278.32	1315.35	6.77	908.30	874.74	27.07	
4200.00	4090.66	4292.18	4044.61	17.26	22.70	321.64	1319.69	4.04	913.35	879.56	27.03	
4300.00	4190.66	4392.67	4144.97	17.37	22.85	321.67	1323.98	1.35	918.36	884.33	26.99	
4400.00	4290.66	4493.16	4245.34	17.48	23.00	321.71	1328.21	-1.31	923.30	889.03	26.94	
4500.00	4390.66	4593.66	4345.72	17.59	23.15	321.74	1332.38	-3.93	928.17	893.66	26.89	
4600.00	4490.66	4694.17	4446.10	17.71	23.30	321.77	1336.49	-6.52	932.98	898.22	26.84	
4700.00	4590.66	4794.68	4546.50	17.82	23.45	321.80	1340.55	-9.07	937.72	902.71	26.78	
4800.00	4690.66	4895.20	4646.91	17.94	23.60	321.83	1344.55	-11.58	942.40	907.14	26.72	
4900.00	4790.66	4995.72	4747.33	18.06	23.74	321.86	1348.50	-14.06	947.01	911.49	26.66	
5000.00	4890.66	5096.25	4847.75	18.18	23.89	321.89	1352.38	-16.51	951.55	915.78	26.60	
5100.00	4990.66	5196.79	4948.19	18.31	24.04	321.92	1356.21	-18.91	956.03	919.99	26.53	
5200.00	5090.66	5297.33	5048.63	18.43	24.19	321.95	1359.99	-21.29	960.44	924.14	26.46	
5300.00	5190.66	5397.88	5149.08	18.56	24.34	321.97	1363.70	-23.62	964.78	928.22	26.39	
5400.00	5290.66	5498.43	5249.55	18.69	24.49	322.00	1367.36	-25.92	969.05	932.23	26.31	
5500.00	5390.66	5599.00	5350.02	18.83	24.64	322.03	1370.96	-28.19	973.26	936.17	26.24	
5600.00	5490.66	5699.56	5450.50	18.96	24.79	322.05	1374.51	-30.41	977.40	940.04	26.16	
5700.00	5590.66	5800.13	5550.98	19.09	24.94	322.08	1378.00	-32.61	981.48	943.84	26.08	
5800.00	5690.66	5900.71	5651.48	19.23	25.09	322.10	1381.43	-34.76	985.49	947.58	25.99	
5900.00	5790.66	6001.29	5751.98	19.37	25.24	322.12	1384.80	-36.88	989.43	951.24	25.91	
6000.00	5890.66	6101.88	5852.49	19.51	25.39	322.14	1388.12	-38.97	993.31	954.84	25.82	
6100.00	5990.66	6202.47	5953.01	19.65	25.54	322.17	1391.38	-41.02	997.12	958.37	25.73	
6200.00	6090.66	6303.07	6053.54	19.80	25.69	322.19	1394.58	-43.03	1000.86	961.82	25.64	
6300.00	6190.66	6403.68	6154.08	19.94	25.84	322.21	1397.73	-45.01	1004.53	965.21	25.55	
6400.00	6290.66	6504.28	6254.62	20.09	25.99	322.23	1400.82	-46.95	1008.14	968.54	25.45	
6500.00	6390.66	6604.90	6355.17	20.23	26.14	322.25	1403.85	-48.85	1011.68	971.79	25.36	
6600.00	6490.66	6705.52	6455.72	20.38	26.29	322.27	1406.82	-50.72	1015.16	974.97	25.26	
6700.00	6590.66	6806.14	6556.29	20.53	26.44	322.29	1409.74	-52.56	1018.56	978.09	25.16	
6800.00	6690.66	6906.77	6656.86	20.69	26.59	322.31	1412.60	-54.35	1021.90	981.13	25.07	
6900.00	6790.66	7007.40	6757.44	20.84	26.74	322.32	1415.40	-56.11	1025.18	984.11	24.96	
7000.00	6890.66	7108.03	6858.02	20.99	26.89	322.34	1418.15	-57.84	1028.39	987.02	24.86	
7100.00	6990.66	7208.68	6958.61	21.15	27.04	322.36	1420.83	-59.53	1031.53	989.86	24.76	
7200.00	7090.66	7309.32	7059.21	21.31	27.18	322.37	1423.46	-61.18	1034.60	992.64	24.66	
7300.00	7190.66	7409.97	7159.81	21.47	27.33	322.39	1426.04	-62.80	1037.61	995.34	24.55	
7400.00	7290.66	7510.62	7260.42	21.62	27.48	322.41	1428.55	-64.38	1040.54	997.98	24.44	
7500.00	7390.66	7611.28	7361.03	21.79	27.63	322.42	1431.01	-65.93	1043.42	1000.55	24.34	
7600.00	7490.66	7711.94	7461.66	21.95	27.78	322.44	1433.41	-67.44	1046.22	1003.04	24.23	
7700.00	7590.66	7812.60	7562.28	22.11	27.93	322.45	1435.76	-68.91	1048.96	1005.47	24.12	
7800.00	7690.66	7913.27	7662.91	22.27	28.08	322.46	1438.05	-70.35	1051.63	1007.84	24.01	
7900.00	7790.66	8013.94	7763.55	22.44	28.23	322.48	1440.28	-71.75	1054.24	1010.13	23.90	
8000.00	7890.66	8114.62	7864.19	22.60	28.38	322.49	1442.45	-73.11	1056.77	1012.36	23.79	
8100.00	7990.66	8215.30	7964.84	22.77	28.53	322.50	1444.56	-74.44	1059.25	1014.51	23.68	
8200.00	8090.66	8222.00	7971.54	22.94	28.54	322.50	1444.70	-74.53	1065.77	1020.86	23.73	
8300.00	8190.66	8222.00	7971.54	23.11	28.54	322.50	1444.70	-74.53	1081.52	1036.45	23.99	
8333.34	8224.00	8222.00	7971.54	23.16	28.54	322.50	1444.70	-74.53	1088.77	1043.64	24.12	



Weatherford International Ltd.

Anticollision Report

**Weatherford**

Company: Williams Production Date: 2/10/2011 Time: 11:30:42 Page: 3
Field: RIO ARRIBA CO NM (NAD 83)
Reference Site: Rosa Unit 154C Co-ordinate(N/E) Reference: Well: 154C, True North
Reference Well: 154C Vertical (TVD) Reference: SITE 6369.0
Reference Wellpath: Db: Sybase

Site: Rosa Unit 154C
Well: WPX 154A
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-IIS	North	East	Distance	Distance		Factor
ft	ft	ft	ft	ft	ft	deg	ft	ft	ft	ft		
0.00	0.00	0.00	0.00	0.00	0.00	355.30	52.03	-4.28	52.21		No Data	
100.00	100.00	100.13	100.13	0.10	0.10	355.50	51.92	-4.09	52.08	51.89		269.02
200.00	200.00	200.30	200.29	0.32	0.32	356.16	51.56	-3.46	51.67	51.03		80.27
300.00	300.00	300.38	300.37	0.55	0.55	357.32	50.94	-2.38	50.99	49.90		46.62
400.00	400.00	400.39	400.37	0.77	0.78	358.64	50.25	-1.20	50.26	48.72	32.56	
500.00	499.95	500.36	500.33	1.00	1.00	314.51	49.53	0.05	47.66	45.67	23.89	
600.00	599.63	600.07	600.03	1.23	1.23	308.40	48.79	1.34	41.59	39.14	16.96	
700.00	698.77	699.25	699.20	1.50	1.45	292.79	48.01	2.68	33.71	30.77	11.48	
800.00	797.08	797.64	797.57	1.82	1.68	261.11	47.21	4.06	29.80	26.32	8.57	
900.00	894.31	894.96	894.88	2.21	1.90	226.12	46.39	5.48	39.19	35.23	9.90	
1000.00	990.35	991.10	991.00	2.69	2.10	206.37	45.56	6.92	60.95	56.57	13.93	
1100.00	1086.20	1087.00	1086.90	3.20	2.30	197.17	44.77	8.29	86.75	81.94	18.04	
1200.00	1182.05	1182.90	1182.78	3.73	2.49	192.26	44.02	9.59	113.74	108.47	21.61	
1300.00	1277.90	1278.79	1278.66	4.27	2.68	189.27	43.31	10.82	141.23	135.50	24.66	
1400.00	1373.74	1374.67	1374.53	4.82	2.87	187.28	42.65	11.97	169.00	162.80	27.26	
1500.00	1469.59	1470.58	1470.43	5.37	3.07	185.87	42.02	13.06	196.92	190.24	29.48	
1600.00	1565.44	1566.50	1566.35	5.93	3.27	184.81	41.39	14.14	224.93	217.77	31.40	
1700.00	1661.29	1662.43	1662.26	6.49	3.47	183.99	40.76	15.23	252.99	245.34	33.06	
1800.00	1757.13	1758.35	1758.18	7.05	3.66	183.33	40.14	16.32	281.09	272.95	34.53	
1900.00	1852.98	1854.28	1854.10	7.61	3.86	182.79	39.51	17.41	309.22	300.59	35.82	
2000.00	1948.83	1950.20	1950.01	8.18	4.07	182.34	38.88	18.49	337.37	328.23	36.92	
2100.00	2044.68	2046.13	2045.93	8.74	4.28	181.96	38.25	19.58	365.54	355.89	37.89	
2200.00	2140.52	2142.05	2141.85	9.31	4.50	181.64	37.63	20.67	393.72	383.56	38.75	
2300.00	2236.37	2237.98	2237.77	9.88	4.71	181.35	37.00	21.76	421.91	411.23	39.53	
2400.00	2332.22	2333.91	2333.68	10.44	4.93	181.11	36.37	22.84	450.10	438.92	40.24	
2500.00	2428.07	2429.92	2429.69	11.01	5.14	180.88	35.72	23.97	478.30	466.60	40.88	
2600.00	2523.91	2525.95	2525.71	11.58	5.36	180.68	35.04	25.15	506.48	494.26	41.46	
2700.00	2619.76	2621.98	2621.73	12.15	5.58	180.48	34.31	26.41	534.65	521.92	42.00	
2800.00	2715.61	2718.02	2717.76	12.72	5.79	180.30	33.55	27.73	562.81	549.56	42.49	
2900.00	2811.46	2814.07	2813.79	13.29	6.01	180.13	32.75	29.11	590.95	577.19	42.94	
3000.00	2907.30	2910.08	2909.79	13.86	6.22	179.97	31.92	30.55	619.08	604.80	43.35	
3100.00	3003.32	3006.20	3005.89	14.39	6.44	179.82	31.08	32.00	646.63	631.84	43.73	
3200.00	3100.00	3102.97	3102.65	14.81	6.66	179.68	30.24	33.46	671.78	656.53	44.04	
3300.00	3197.32	3200.36	3200.03	15.20	6.88	179.56	29.39	34.94	694.39	678.69	44.20	
3400.00	3295.21	3298.31	3297.96	15.56	7.10	179.44	28.53	36.42	714.45	698.30	44.24	
3500.00	3393.59	3396.73	3396.37	15.89	7.31	179.32	27.68	37.90	731.94	715.38	44.19	
3600.00	3492.42	3495.55	3495.17	16.19	7.51	179.21	26.83	39.37	746.86	729.90	44.04	
3700.00	3591.60	3594.73	3594.34	16.45	7.72	179.10	26.00	40.81	759.19	741.86	43.79	
3800.00	3691.09	3694.20	3693.79	16.68	7.92	178.99	25.17	42.24	768.93	751.23	43.44	
3900.00	3790.81	3793.88	3793.46	16.87	8.13	178.89	24.36	43.65	776.07	758.02	43.00	
4000.00	3890.69	3893.72	3893.29	17.03	8.33	178.78	23.56	45.04	780.61	762.23	42.47	
4100.00	3990.66	3993.64	3993.20	17.16	8.54	178.67	22.77	46.40	782.54	763.84	41.85	
4200.00	4090.66	4093.59	4093.13	17.26	8.74	221.89	22.00	47.74	782.39	763.34	41.08	
4300.00	4190.66	4193.53	4193.06	17.37	8.95	221.78	21.24	49.05	782.08	762.65	40.25	
4400.00	4290.66	4293.47	4292.99	17.48	9.15	221.67	20.49	50.34	781.77	761.96	39.45	
4500.00	4390.66	4393.42	4392.93	17.59	9.36	221.57	19.76	51.61	781.48	761.28	38.68	
4600.00	4490.66	4493.37	4492.87	17.71	9.57	221.47	19.04	52.85	781.19	760.60	37.94	
4700.00	4590.66	4593.31	4592.80	17.82	9.77	221.37	18.34	54.07	780.91	759.93	37.22	
4800.00	4690.66	4693.26	4692.74	17.94	9.98	221.27	17.65	55.27	780.64	759.27	36.53	
4900.00	4790.66	4793.21	4792.68	18.06	10.18	221.17	16.97	56.44	780.38	758.61	35.85	
5000.00	4890.66	4893.16	4892.62	18.18	10.39	221.07	16.31	57.59	780.12	757.96	35.20	



Weatherford International Ltd.

Anticollision Report

**Weatherford**

Company: Williams Production Date: 2/10/2011 Time: 11:30:42 Page: 4
Field: RIO ARRIBA CO NM (NAD 83)
Reference Site: Rosa Unit 154C Co-ordinate(NE) Reference: Well: 154C, True North
Reference Well: 154C Vertical (TVD) Reference: SITE 6369.0
Reference Wellpath: 1 Db: Sybase

Site: Rosa Unit 154C
Well: WPX 154A
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	Factor	Factor	Factor	
ft	ft	ft	ft	ft	ft	deg	ft	ft	ft	ft	ft	ft	ft	ft	
5100.00	4990.66	4993.20	4992.65	18.31	10.60	220.98	15.65	58.73	779.87	757.31	34.57				
5200.00	5090.66	5093.24	5092.68	18.43	10.80	220.88	14.97	59.91	779.61	756.65	33.96				
5300.00	5190.66	5193.28	5192.72	18.56	11.01	220.78	14.27	61.12	779.35	755.99	33.36				
5400.00	5290.66	5293.32	5292.75	18.69	11.22	220.68	13.56	62.36	779.08	755.32	32.79				
5500.00	5390.66	5393.37	5392.78	18.83	11.43	220.57	12.82	63.63	778.81	754.65	32.23				
5600.00	5490.66	5493.40	5492.81	18.96	11.64	220.46	12.07	64.93	778.54	753.97	31.69				
5700.00	5590.66	5593.44	5592.83	19.09	11.85	220.35	11.30	66.27	778.26	753.29	31.16				
5800.00	5690.66	5693.48	5692.86	19.23	12.05	220.24	10.51	67.63	777.98	752.60	30.65				
5900.00	5790.66	5793.52	5792.88	19.37	12.26	220.12	9.71	69.02	777.69	751.91	30.16				
6000.00	5890.66	5893.55	5892.90	19.51	12.47	220.00	8.89	70.45	777.41	751.21	29.68				
6100.00	5990.66	5993.58	5992.92	19.65	12.68	219.88	8.05	71.90	777.12	750.51	29.21				
6200.00	6090.66	6093.62	6092.94	19.80	12.89	219.75	7.19	73.39	776.82	749.81	28.76				
6300.00	6190.66	6125.00	6124.32	19.94	12.95	219.71	6.91	73.86	779.56	752.28	28.58				
6400.00	6290.66	6125.00	6124.32	20.09	12.95	219.71	6.91	73.86	794.34	766.86	28.90				
6500.00	6390.66	6125.00	6124.32	20.23	12.95	219.71	6.91	73.86	821.12	793.44	29.66				
6600.00	6490.66	6125.00	6124.32	20.38	12.95	219.71	6.91	73.86	858.79	830.90	30.80				
6700.00	6590.66	6125.00	6124.32	20.53	12.95	219.71	6.91	73.86	905.97	877.88	32.25				
6800.00	6690.66	6125.00	6124.32	20.69	12.95	219.71	6.91	73.86	961.27	932.98	33.98				
6900.00	6790.66	6125.00	6124.32	20.84	12.95	219.71	6.91	73.86	1023.38	994.89	35.91				
7000.00	6890.66	6125.00	6124.32	20.99	12.95	219.71	6.91	73.86	1091.14	1062.44	38.02				
7100.00	6990.66	6125.00	6124.32	21.15	12.95	219.71	6.91	73.86	1163.55	1134.64	40.25				
7200.00	7090.66	6125.00	6124.32	21.31	12.95	219.71	6.91	73.86	1239.81	1210.69	42.59				
7300.00	7190.66	6125.00	6124.32	21.47	12.95	219.71	6.91	73.86	1319.24	1289.92	45.00				
7400.00	7290.66	6125.00	6124.32	21.62	12.95	219.71	6.91	73.86	1401.31	1371.78	47.46				
7500.00	7390.66	6125.00	6124.32	21.79	12.95	219.71	6.91	73.86	1485.57	1455.84	49.96				
7600.00	7490.66	6125.00	6124.32	21.95	12.95	219.71	6.91	73.86	1571.68	1541.74	52.49				
7700.00	7590.66	6125.00	6124.32	22.11	12.95	219.71	6.91	73.86	1659.36	1629.21	55.04				
7800.00	7690.66	6125.00	6124.32	22.27	12.95	219.71	6.91	73.86	1748.35	1717.99	57.59				
7900.00	7790.66	6125.00	6124.32	22.44	12.95	219.71	6.91	73.86	1838.48	1807.91	60.15				
8000.00	7890.66	6125.00	6124.32	22.60	12.95	219.71	6.91	73.86	1929.58	1898.80	62.70				
8100.00	7990.66	6125.00	6124.32	22.77	12.95	219.71	6.91	73.86	2021.52	1990.53	65.24				
8200.00	8090.66	6125.00	6124.32	22.94	12.95	219.71	6.91	73.86	2114.19	2083.00	67.77				
8300.00	8190.66	6125.00	6124.32	23.11	12.95	219.71	6.91	73.86	2207.50	2176.10	70.29				
8333.34	8224.00	6125.00	6124.32	23.16	12.95	219.71	6.91	73.86	2238.74	2207.27	71.13				

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

GeoDec v5.03

Report Date: February 09, 2011
Job Number: _____
Customer: Williams
Well Name: Rosa Unit 154C
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 36.9092400 DEG	Latitude 36.9092400 DEG
Longitude -107.3978100 DEG	Longitude -107.3978100 DEG

Geodetic Location WGS84 Elevation = 0.0 Meters
Latitude = 36.90924° N 36° 54 min 33.264 sec
Longitude = 107.39781° W 107° 23 min 52.116 sec

Magnetic Declination =	9.74°	[True North Offset]	
Local Gravity =	.9992 g	Checksum =	6743
Local Field Strength =	50904 nT	Magnetic Vector X =	22253 nT
Magnetic Dip =	63.67°	Magnetic Vector Y =	3819 nT
Magnetic Model =	IGRF-2010g11	Magnetic Vector Z =	45623 nT
Spud Date =	Sep 05, 2011	Magnetic Vector H =	22578 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)

