

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

David R. Catanach, Division Director
Oil Conservation Division



New Mexico Oil Conservation Division approval and conditions listed below are made in accordance with OCD Rule 19.15.7.11 and are in addition to the actions approved by BLM on the following 3160-4 or 3160-5 form.

Operator Signature Date: 8/3/2015
Well information:

API WELL #	Well Name	Well #	Operator Name	Type	Stat	County	Surf_Owner	UL	Sec	Twp	N/S	Rng	W/E
30-043-21234-00-00	CHACON JICARILLA	602H	ENERGEN RESOURCES CORPORATION	O	N	Sandoval	J	M	23	23	N	3	W

Drilling/Casing Change

Conditions of Approval:

(See the below checked and additional conditions)

- ✓ Notify Aztec OCD 24hrs prior to casing & cement.
- ✓ Hold C-104 for directional survey & "As Drilled" Plat
- ✓ Hold C-104 for ✓ NSL, NSP, DHC

Spacing rule violation. Operator must follow up with change of status notification on other well to be shut in or abandoned

Ensure compliance with 19.15.17

Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string

- ✓ Regarding Hydraulic Fracturing, review EPA Underground Injection Control Guidance 84
- ✓ Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system.
- ✓ Well-bore communication is regulated under 19.15.29 NMAC. This requires well-bore Communication to be reported in accordance with 19.15.29.8.

Additional requirements

As stated previously:

- Submit an NOI for review and approval for the plug back of the pilot hole, and include all formation tops affected.
- All open hole plugs are required to be woc'd and tagged.
- The 13 3/8 inch casing string will not be considered conductor pipe and will be required to be pressure tested in accordance with 19.15.16.10I



NMOCD Approved by Signature

8-17-15
Date

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

CONFIDENTIAL
TIGHT HOLE

FORM APPROVED
OMB NO. 1004-0137
Expires July 31, 2010

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

RECEIVED

SUBMIT IN TRIPLICATE - Other instructions on page 2

AUG 03 2015

5. Lease Serial No.
Jicarilla Apache 183

6. If Indian, Allottee or Tribe Name
Jicarilla Apache

7. If Unit or CA/Agreement, Name and/or No.

8. Well Name and No.
Chacon Jicarilla 602H

9. API Well No.
30-043-21234

10. Field and Pool, or Exploratory Area
West Lindrieth Gallup-Dakota

11. County or Parish, State
Sandoval NM

1. Type of Well
 Oil Well Gas Well Other

2. Name of Operator
Energen Resources Corporation

3a. Address
2010 Afton Place, Farmington, NM 87401

3b. Phone No. (include area code)
(505) 325-6800

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
SHL - 892' FSL 775' FWL Sec. 23 T23N R03W (M) SW/SW
BHL - 450' FSL 200' FWL Sec. 22 T23N R03W (M) SW/SW

Farmington Field Office
Bureau of Land Management

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input type="checkbox"/> Other _____
	<input checked="" type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplate horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recomplate in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the final site is ready for final inspection.)

Energen Resources would like to make the following changes to the Chacon Jicarilla #602H.

-Change the Direction Plan for the pilot hole formation evaluation.

Because of this change, Energen will:

Change the set depth of the 9 -5/8" surface to 3350' (TVD); 3362' (MD) and increase the cement to 560 sks.

Change the set depth of the 7" intermediate to 6432' (TVD); 6839' (MD) and decrease the cement to 740 sks followed by 100 sks.

Change the set depth of the 4 1/2" liner to 6432' - 6326' (TVD); 6639' - 11714' (MD) and increase the cement to 580 sks.

Attached is a revised drilling operations plan and directional plans depicting this change. The cement plug back procedure will follow on form 3160-5.

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

CONDITIONS OF APPROVAL
Adhere to previously issued stipulations
OIL CONS. DIV DIST. 3

AUG 11 2015

14. I hereby certify that the foregoing is true and correct
Name (Printed/Typed) **Anna Stotts** Title **Regulatory Analyst**

Signature *Anna Stotts* Date **8/3/15**

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by *[Signature]* Title **PE** Date **8/6/2015**

Office **FFO**

Conditions of approval, if any, are attached. Approval of this notice 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.

Title 18 U.S.C. Section 1001, and Title 43 U.S.C. Section 1212, makes 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.

NMOCDAV

Drilling Plan
Energen Resources Corporation
Revised 8/03/2015

Chacon Jicarilla #602H

Surface Location: 892 FSL, 775 FWL

Legal Description: Sec 23, T23N, R3W (36.204331° N, 107.132422° W – NAD83)

Bottom Hole Location: 450 FSL, 200 FWL

Legal Description: Sec 22, T23N, R3W (36.203113° N, 107.152092° W – NAD83)

Sandoval, NM

1. The elevation of the unprepared ground is 7,457 feet above sea level.
2. The geological name of the surface formation is the San Jose
3. A rotary rig will be used to drill the well to a Final Proposed Total Depth of 6,432' TVD/11,714' MD.
4. Estimated top of important geological markers:

<u>Formation</u>	<u>Depth (TVD) (ft)</u>	<u>Depth (MD) (ft)</u>
San Jose	Surface	Surface
Nacimiento	1,474	1,474
Ojo Alamo	2,731	2,739
Kirtland	2,885	2,894
Fruitland	3,043	3,053
Pictured Cliffs	3,135	3,146
Lewis	3,220	3,231
Huerfanito Bentonite	3,466	3,479
Chacra	3,961	3,977
Cliff House	4,655	4,676
Menefee	4,699	4,720
Point Lookout	5,235	5,260
Mancos	5,545	5,572
Land Curve	6,432	6,466
Greenhorn	7,265	7,305
Graneros	7,323	7,363
Total Depth (Pilot Hole)	7,400	7,441

5. Estimated depth at which anticipated water, oil, gas or other mineral bearing formations are expected to be encountered:

<u>Formation</u>	<u>Depth (TVD)(ft)</u>	<u>Water/HydroCarbon</u>
Fruitland	3,043	Gas
Pictured Cliffs	3,135	Gas
Cliffhouse	4,655	Gas
Point Lookout	5,235	Gas
Mancos	5,545	Oil/Gas

6. All proposed casing is new and the program is as follows:

Casing	Size	Depth		Grade	Weight	Connection	PSI		
		MD	TVD				Burst	Collapse	Tension
Conductor	13-3/8"	0-200'	0-200'	H-40	48.0	STC	1730	770	322
Surface	9-5/8"	0-3,362'	0-3,350'	K-55	36.0	LTC	3520	2020	394
Intermediate	7"	0-6,839'	0-6,432'	L-80	26.0	DQX Ultra	7240	5410	830
Production	4-1/2"	6,639'-11,714'	6,432' - 6,326'	P-110	11.60	DQX Ultra	10690	7560	367

7. Cementing Program:

- a. 17-1/2" hole x 13-3/8" casing at 200' will have cement circulated to surface with 240 sks (100% excess true hole) Class H Cement with 1.0 % CaCl₂, 1/2 #/sk Poly-E-Flake 15.8 ppg, 1.17 ft³/sk. Note: CEMENT MUST BE CIRCULATED TO SURFACE. STANDARD BOW SPRING CENTRALIZERS SHALL BE PLACED ON THE FIRST 3 (BOTTOM 3) JOINTS OF CASING (1 PER JOINT) AND 1 EVERY 3RD JOINT TO SURFACE. 20 BBLs OF WATER AHEAD OF CEMENT AS SPACER
- b. 12-1/4" hole x 9-5/8" casing at 3,362' will have cement circulated to surface with 560 sks (50% excess true hole) of HALCEM™ SYSTEM 0.125 #/sk Poly-E-Flake – 12.3 ppg, 1.93 ft³/sk followed 200 sks (50% excess true hole) VARICEM™ SYSTEM – 13.5 ppg, 1.29 ft³/sk. Note: CEMENT MUST BE CIRCULATED TO SURFACE. STANDARD BOW SPRING CENTRALIZERS SHALL BE PLACED ON THE FIRST 3 (BOTTOM 3) JOINTS OF CASING (1 PER JOINT) AND 1 EVERY 3RD JOINT TO SURFACE. 20 BBLs OF WATER FOLLOWED BY 20 BBLs OF MUDFLUSH AHEAD OF CEMENT AS SPACER Test 9-5/8" Intermediate Casing to 2500 psi. NOTE: TOTAL PRESSURE WILL CONSIST OF HYDROSTATIC AND APPLIED PRESSURE!!
- c. 8-3/4" hole x 7" casing at 6,839'. Cement will be circulated to surface with 740 sks (50% excess true hole) of HALCEM™ SYSTEM 0.125 #/sk Poly-E-Flake – 12.3 ppg, 1.93 ft³/sk followed 100 sks (50% excess true hole) VARICEM™ SYSTEM – 13.5 ppg, 1.29 ft³/sk. ONE CENTRALIZER PER JOINT FOR THE FIRST 3 JOINTS, THEN EVERY 3RD JOINT TO SURFACE. 10 BBLs OF WATER FOLLOWED BY 30 BBLs OF MUDFLUSH AHEAD OF CEMENT AS SPACER. Test 7" Intermediate Casing to 2500 psi. NOTE: TOTAL PRESSURE WILL CONSIST OF HYDROSTATIC AND APPLIED PRESSURE!!
- d. 6-1/4" hole x 4-1/2" liner at 11,714'. A fluid caliper will be run to determine base slurry cement to have TOC at 6,639'. Base slurry to consist of 580 sks BONDCEM™ SYSTEM CEMENT – 13.3 ppg, 1.35 ft³/sk (50% excess. ONE CENTRALIZER PER JOINT FOR THE FIRST 3 JOINTS, THEN EVERY 3RD JOINT TO 6,925' THEN ONE PER JOINT TO 6,725'. Liner to be Pressure Tested During Completion Operations.

8. Pressure Control Equipment

- a. BOPE to be installed prior to Surface Casing drillout.
- b. Pressure control equipment will be used to meet 2,000 (2M) psi specifications.
- c. BOPE working pressure of 5,000 psi.
- d. Function test and visual inspection to be done at each casing size change prior to drill out.
- e. BOP annular to be tested to 50% of working pressure.
- f. All BOP and related equipment will be tested in accordance with the requirements outlined in Onshore Order No. 2 and Notice to Operators dated May 27, 2005.
- g. BOP remote controls to be located on rig floor and readily accessible, master control on ground at accumulator will be able to function all preventors.
- h. Kill line will be 2 in min and have two kill line valves, one being a check valve.
- i. Choke line will be 2 in min and have two choke line valves, choke manifold with have two adjustable chokes, one manual and one remote. All choke lines will be as straight as possible.

Any turns will be properly targeted using block and/or running tees. Choke line and manifold to be pressure tested to 1,500 psi.

- j. Float sub and TIW valve will be on the rig floor at all times.
- k. If high pressure co-flex hoses are used, they will be run as straight as possible and anchored to prevent whip.
- l. The main discharge line (panic line) will be at least 100' from the choke manifold and discharged into an appropriately sized discharge facility.

9. Mud Program:

0' – 3,362'	Fresh water/Spud Mud. Paper for losses and seepage. 8.5 to 9.0 ppg, 32 to 75 vis, PV 3 to 5, YP 5 to 7, WL NC
3,362' – 6,839'	Fresh water/LSND. As needed LCM for losses and seepage. 8.5 to 9.5 ppg, pH 10, 28 to 60 vis, PV 1, YP 1, WL 8-15
6,839' – 11,714'	WBM with shale and clay stabilizers. As needed LCM for losses and seepage. 8.3 to 9.3 ppg, 15 to 35 vis, PV 4-6, YP 4-6, WL < 20

****During drilling operations, all necessary products will be sufficiently stored on location for abnormal situations. The characteristics, use, testing of drilling mud and the implementation of related drilling procedures shall be designed to prevent the loss of well control. Sufficient quantities of mud materials shall be maintained or readily accessible for the purpose of assuring well control.**

****A pH of 10 or above in the fresh water base mud system shall be maintained to control the effects corrosion has on metallurgy of equipment used.**

Operating and Maintenance

Energen Resources Corporation will be using all above ground steel pits for fluid and cuttings while drilling. If any tank develops a leak we will have immediate visual discovery, we would then transfer the fluid to another tank then remove any contaminated soil and dispose of it in the cuttings bins for transportation. Any leaks, spills or other undesirable events will be reported in accordance with BLM NTL 3A. Rig crews will monitor the tanks at all times. A trip/surge tank will be used to monitor returns for any “kicks” of formation fluids.

Equipment:

- 2-Mongoose Shale Shakers
- 2-3400 High Speed Centrifuges with stands and pumps
- 2-Roll off bins with Tracks
- 2-200 bbl Open top Frac tanks
- 1-Mud/Gas Separator and Degasser
- 1-Trip/Surge Tank
- Electronic or Visual monitoring system to indicate lost returns

10. Testing, Logging and Coring Program:

- a. Testing Program: No drillstem tests are anticipated
- b. Electric Logging Program: Triple Combo, FMI, Sonic Scanner
- c. LWD Program: TBD
- d. Coring Program: Sidewall in Mancos Formation
- e. CBL's and/or Temperature Surveys Will Be Performed as Needed or Required.

11. Bottom Hole Pressure expected to be 2,500 +/- psi
12. Bottom Hole Temperature expected to be 160 deg F.

Energen Resources

**Chacon Jicarilla
Mancos Shale/Niobrara "C"
Chacon Jicarilla #602H
Re-Staked**

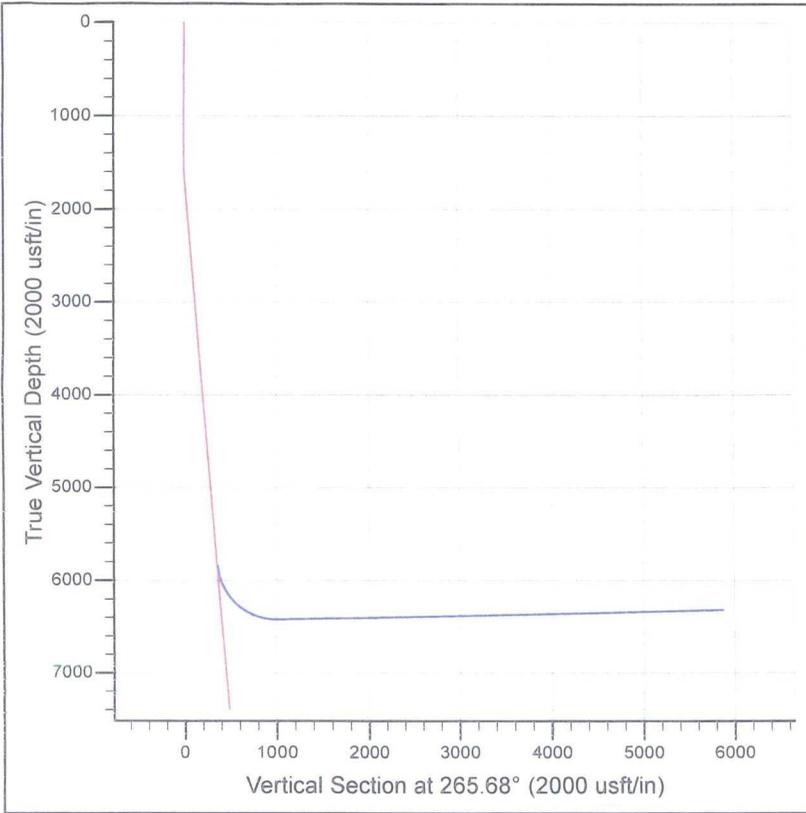
Plan: Design #2

Preliminary Design

03 August, 2015

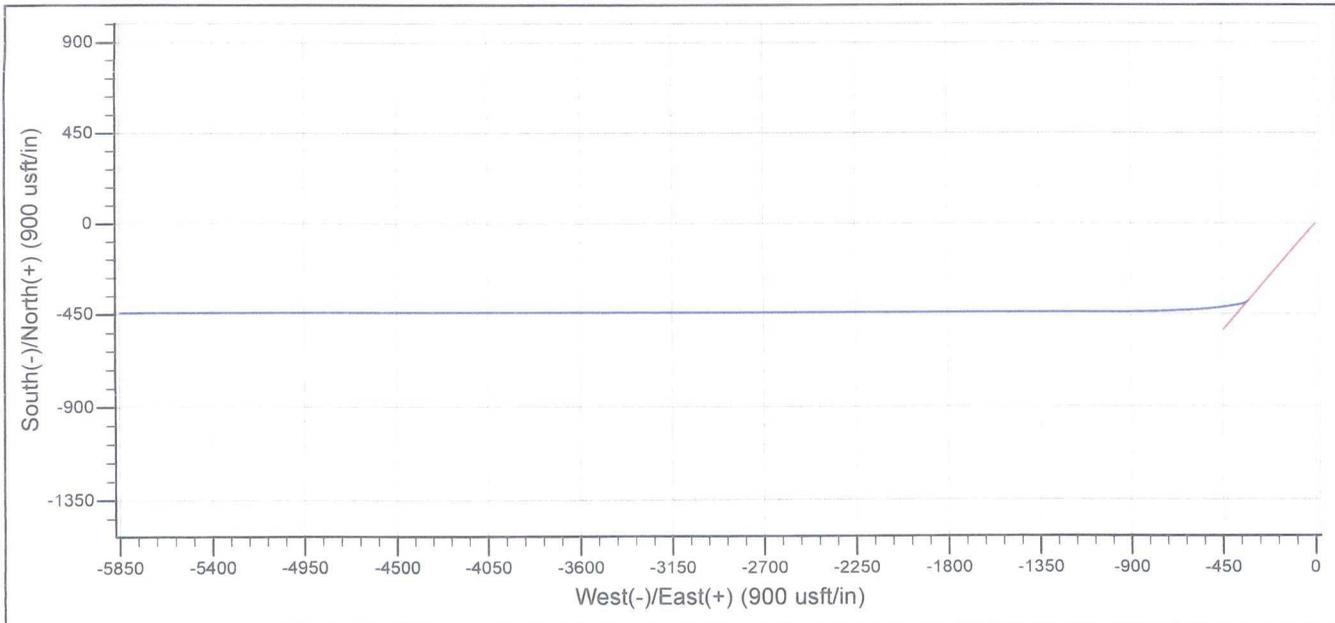
Company Name: Energen Resources

Project: Chacon Jicarilla
Site: Mancos Shale/Niobrara "C"
Well: Chacon Jicarilla #602H
Wellbore: Re-Staked
Design: Design #2



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
1	5876.6	6.78	220.33	5846.6	-391.0	-329.2	0.00	0.00	357.4
2	5946.4	11.85	244.36	5915.5	-397.2	-338.3	9.01	49.78	367.0
3	6839.0	91.00	270.00	6432.0	-445.0	-975.0	9.00	26.04	1005.5
4	11714.0	91.50	270.00	6325.7	-445.0	-5848.8	0.01	0.00	5865.5



Energen

Preliminary Design

Company:	Energen Resources	Local Co-ordinate Reference:	Site Mancos Shale/Niobrara "C"
Project:	Chacon Jicarilla	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Mancos Shale/Niobrara "C"	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	Chacon Jicarilla #602H	North Reference:	Grid
Wellbore:	Re-Staked	Survey Calculation Method:	Minimum Curvature
Design:	Design #2	Database:	EDM 5000.1 Single User Db

Project	Chacon Jicarilla		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Central Zone		

Site	Mancos Shale/Niobrara "C"				
Site Position:		Northing:	1,894,826.63 usft	Latitude:	36° 12' 15.592 N
From:	Lat/Long	Easting:	1,380,083.55 usft	Longitude:	107° 7' 56.719 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	-0.52 °

Well	Chacon Jicarilla #602H					
Well Position	+N/-S	-3.3 usft	Northing:	1,894,823.35 usft	Latitude:	36° 12' 15.559 N
	+E/-W	0.0 usft	Easting:	1,380,083.52 usft	Longitude:	107° 7' 56.719 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	0.0 usft

Wellbore	Re-Staked				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/31/2009	9.73	63.17	50,736

Design	Design #2				
Audit Notes:					
Version:	Phase:	PROTOTYPE	Tie On Depth:	5,876.6	
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	-3.3	0.0	265.68	

Survey Tool Program	Date	8/3/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
5,876.6	11,714.0	Design #2 (Re-Staked)	MWD	MWD - Standard	

Planned Survey								
TVD (usft)	MD (usft)	Inc (°)	Azi (azimuth) (°)	N/S (usft)	E/W (usft)	Build (°/100usft)	V. Sec (usft)	
5,846.6	5,876.6	6.78	220.33	-391.0	-329.2	0.00	357.4	
5,869.8	5,900.0	8.30	231.55	-393.1	-331.4	6.48	359.8	
5,915.5	5,946.4	11.85	244.36	-397.2	-338.3	7.66	367.0	
5,919.0	5,950.0	12.14	245.03	-397.6	-339.0	8.11	367.7	
5,967.5	6,000.0	16.32	251.90	-402.0	-350.5	8.36	379.5	
6,014.9	6,050.0	20.63	256.00	-406.3	-365.7	8.62	395.0	
6,061.0	6,100.0	25.01	258.72	-410.5	-384.6	8.75	414.2	
6,105.4	6,150.0	29.42	260.67	-414.5	-407.1	8.82	436.9	
6,148.0	6,200.0	33.85	262.15	-418.4	-433.0	8.87	463.0	
6,188.4	6,250.0	38.30	263.33	-422.1	-462.2	8.89	492.4	
6,226.4	6,300.0	42.75	264.29	-425.6	-494.5	8.91	524.9	
6,261.7	6,350.0	47.22	265.10	-428.9	-529.7	8.93	560.2	

Energen

Preliminary Design

Company:	Energen Resources	Local Co-ordinate Reference:	Site Mancos Shale/Niobrara "C"
Project:	Chacon Jicarilla	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Mancos Shale/Niobrara "C"	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	Chacon Jicarilla #602H	North Reference:	Grid
Wellbore:	Re-Staked	Survey Calculation Method:	Minimum Curvature
Design:	Design #2	Database:	EDM 5000.1 Single User Db

Planned Survey

TVD (usft)	MD (usft)	Inc (°)	Azi (azimuth) (°)	N/S (usft)	E/W (usft)	Build (°/100usft)	V. Sec (usft)
6,294.2	6,400.0	51.68	265.81	-431.9	-567.6	8.94	598.2
6,323.7	6,450.0	56.16	266.43	-434.6	-607.9	8.94	638.6
6,349.9	6,500.0	60.63	266.99	-437.1	-650.4	8.95	681.2
6,372.7	6,550.0	65.11	267.50	-439.2	-694.8	8.95	725.6
6,391.9	6,600.0	69.59	267.98	-441.0	-740.9	8.96	771.7
6,407.5	6,650.0	74.06	268.43	-442.5	-788.4	8.96	819.2
6,419.3	6,700.0	78.55	268.86	-443.6	-836.9	8.96	867.7
6,427.3	6,750.0	83.03	269.28	-444.4	-886.3	8.96	916.9
6,431.5	6,800.0	87.51	269.68	-444.9	-936.1	8.96	966.7
6,432.0	6,839.0	91.00	270.00	-445.0	-975.0	8.95	1,005.5
7"							
6,430.9	6,900.0	91.01	270.00	-445.0	-1,036.0	0.01	1,066.3
6,429.2	7,000.0	91.02	270.00	-445.0	-1,136.0	0.01	1,166.0
6,427.4	7,100.0	91.03	270.00	-445.0	-1,236.0	0.01	1,265.7
6,425.6	7,200.0	91.04	270.00	-445.0	-1,336.0	0.01	1,365.4
6,423.8	7,300.0	91.05	270.00	-445.0	-1,436.0	0.01	1,465.1
6,421.9	7,400.0	91.06	270.00	-445.0	-1,535.9	0.01	1,564.8
6,420.1	7,500.0	91.07	270.00	-445.0	-1,635.9	0.01	1,664.5
6,418.2	7,600.0	91.08	270.00	-445.0	-1,735.9	0.01	1,764.2
6,416.3	7,700.0	91.09	270.00	-445.0	-1,835.9	0.01	1,863.9
6,414.4	7,800.0	91.10	270.00	-445.0	-1,935.9	0.01	1,963.6
6,412.5	7,900.0	91.11	270.00	-445.0	-2,035.9	0.01	2,063.3
6,410.5	8,000.0	91.12	270.00	-445.0	-2,135.8	0.01	2,163.0
6,408.6	8,100.0	91.13	270.00	-445.0	-2,235.8	0.01	2,262.7
6,406.6	8,200.0	91.14	270.00	-445.0	-2,335.8	0.01	2,362.4
6,404.6	8,300.0	91.15	270.00	-445.0	-2,435.8	0.01	2,462.1
6,402.6	8,400.0	91.16	270.00	-445.0	-2,535.8	0.01	2,561.8
6,400.5	8,500.0	91.17	270.00	-445.0	-2,635.7	0.01	2,661.5
6,398.5	8,600.0	91.18	270.00	-445.0	-2,735.7	0.01	2,761.2
6,396.4	8,700.0	91.19	270.00	-445.0	-2,835.7	0.01	2,860.9
6,394.3	8,800.0	91.20	270.00	-445.0	-2,935.7	0.01	2,960.6
6,392.2	8,900.0	91.21	270.00	-445.0	-3,035.7	0.01	3,060.3
6,390.1	9,000.0	91.22	270.00	-445.0	-3,135.6	0.01	3,160.0
6,388.0	9,100.0	91.23	270.00	-445.0	-3,235.6	0.01	3,259.7
6,385.8	9,200.0	91.24	270.00	-445.0	-3,335.6	0.01	3,359.3
6,383.6	9,300.0	91.25	270.00	-445.0	-3,435.6	0.01	3,459.0
6,381.4	9,400.0	91.26	270.00	-445.0	-3,535.5	0.01	3,558.7
6,379.2	9,500.0	91.27	270.00	-445.0	-3,635.5	0.01	3,658.4
6,377.0	9,600.0	91.28	270.00	-445.0	-3,735.5	0.01	3,758.1
6,374.7	9,700.0	91.29	270.00	-445.0	-3,835.5	0.01	3,857.8
6,372.5	9,800.0	91.30	270.00	-445.0	-3,935.4	0.01	3,957.5
6,370.2	9,900.0	91.31	270.00	-445.0	-4,035.4	0.01	4,057.2
6,367.9	10,000.0	91.32	270.00	-445.0	-4,135.4	0.01	4,156.9
6,365.6	10,100.0	91.33	270.00	-445.0	-4,235.4	0.01	4,256.6

Energen

Preliminary Design

Company: Energen Resources Project: Chacon Jicarilla Site: Mancos Shale/Niobrara "C" Well: Chacon Jicarilla #602H Wellbore: Re-Staked Design: Design #2	Local Co-ordinate Reference: Site Mancos Shale/Niobrara "C" TVD Reference: WELL @ 0.0usft (Original Well Elev) MD Reference: WELL @ 0.0usft (Original Well Elev) North Reference: Grid Survey Calculation Method: Minimum Curvature Database: EDM 5000.1 Single User Db	
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Planned Survey

TVD (usft)	MD (usft)	Inc (°)	Azi (azimuth) (°)	N/S (usft)	E/W (usft)	Build (°/100usft)	V. Sec (usft)
6,363.2	10,200.0	91.34	270.00	-445.0	-4,335.3	0.01	4,356.3
6,360.9	10,300.0	91.35	270.00	-445.0	-4,435.3	0.01	4,455.9
6,358.5	10,400.0	91.37	270.00	-445.0	-4,535.3	0.01	4,555.6
6,356.1	10,500.0	91.38	270.00	-445.0	-4,635.2	0.01	4,655.3
6,353.7	10,600.0	91.39	270.00	-445.0	-4,735.2	0.01	4,755.0
6,351.3	10,700.0	91.40	270.00	-445.0	-4,835.2	0.01	4,854.7
6,348.8	10,800.0	91.41	270.00	-445.0	-4,935.2	0.01	4,954.4
6,346.4	10,900.0	91.42	270.00	-445.0	-5,035.1	0.01	5,054.1
6,343.9	11,000.0	91.43	270.00	-445.0	-5,135.1	0.01	5,153.7
6,341.4	11,100.0	91.44	270.00	-445.0	-5,235.1	0.01	5,253.4
6,338.9	11,200.0	91.45	270.00	-445.0	-5,335.0	0.01	5,353.1
6,336.3	11,300.0	91.46	270.00	-445.0	-5,435.0	0.01	5,452.8
6,333.8	11,400.0	91.47	270.00	-445.0	-5,535.0	0.01	5,552.5
6,331.2	11,500.0	91.48	270.00	-445.0	-5,634.9	0.01	5,652.2
6,328.6	11,600.0	91.49	270.00	-445.0	-5,734.9	0.01	5,751.9
6,326.0	11,700.0	91.50	270.00	-445.0	-5,834.9	0.01	5,851.5
6,325.7	11,714.0	91.50	270.00	-445.0	-5,848.8	0.01	5,865.5
11,714.0		6,325.7	4-1/2			4-1/2	6-1/8
6,839.0		6,432.0	7"			7	8-3/4

Checked By: _____	Approved By: _____	Date: _____
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Energen Resources

**Chacon Jicarilla
Mancos Shale/Niobrara "C"
Chacon Jicarilla #602H
Re-Staked**

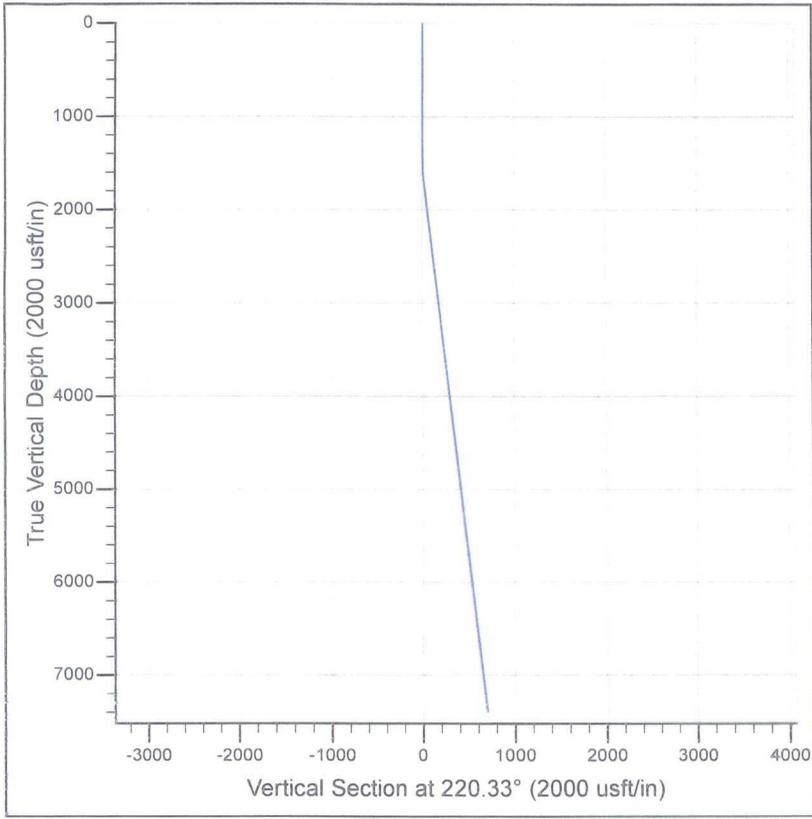
Plan: Drill Thru, Version 2

Preliminary Design

03 August, 2015

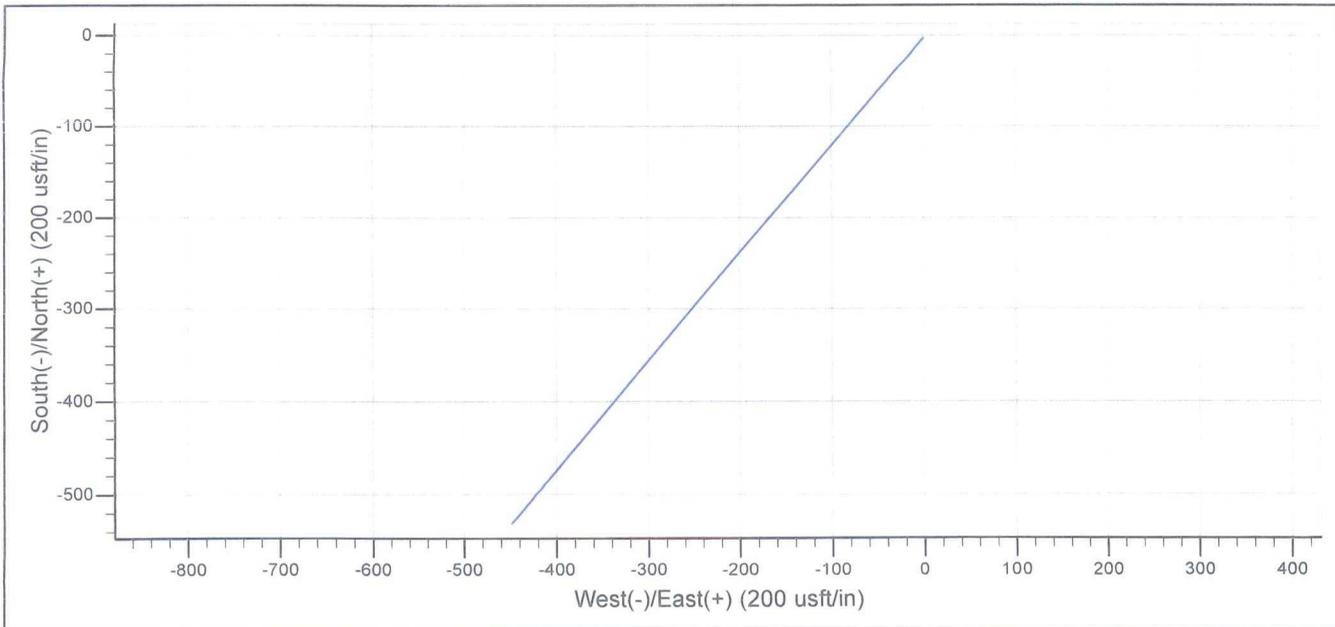
Company Name: Energen Resources

Project: Chacon Jicarilla
Site: Mancos Shale/Niobrara "C"
Well: Chacon Jicarilla #602H
Wellbore: Re-Staked
Design: Drill Thru, Version 2



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
1	0.0	0.00	0.00	0.0	-3.3	0.0	0.00	0.00	0.0
2	1500.0	0.00	0.00	1500.0	-3.3	0.0	0.00	0.00	0.0
3	1635.6	6.78	220.33	1635.3	-9.4	-5.2	5.00	220.33	8.0
4	7440.9	6.78	220.33	7400.0	-531.9	-448.8	0.00	0.00	693.4



Energen

Preliminary Design

Company:	Energen Resources	Local Co-ordinate Reference:	Site Mancos Shale/Niobrara "C"
Project:	Chacon Jicarilla	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Mancos Shale/Niobrara "C"	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	Chacon Jicarilla #602H	North Reference:	Grid
Wellbore:	Re-Staked	Survey Calculation Method:	Minimum Curvature
Design:	Drill Thru, Version 2	Database:	EDM 5000.1 Single User Db

Project	Chacon Jicarilla		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Central Zone		

Site	Mancos Shale/Niobrara "C"				
Site Position:		Northing:	1,894,826.63 usft	Latitude:	36° 12' 15.592 N
From:	Lat/Long	Easting:	1,380,083.55 usft	Longitude:	107° 7' 56.719 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	-0.52 °

Well	Chacon Jicarilla #602H					
Well Position	+N/-S	-3.3 usft	Northing:	1,894,823.35 usft	Latitude:	36° 12' 15.559 N
	+E/-W	0.0 usft	Easting:	1,380,083.52 usft	Longitude:	107° 7' 56.719 W
Position Uncertainty	0.0 usft		Wellhead Elevation:	usft	Ground Level:	0.0 usft

Wellbore	Re-Staked				
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/31/2009	9.73	63.17	50,736

Design	Drill Thru, Version 2				
Audit Notes:					
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0	
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	-3.3	0.0	220.33	

Survey Tool Program	Date	8/3/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.0	7,440.9	Drill Thru, Version 2 (Re-Staked)	MWD	MWD - Standard	

TVD (usft)	MD (usft)	Inc (°)	Azi (azimuth) (°)	N/S (usft)	E/W (usft)	Build (°/100usft)	V. Sec (usft)
0.0	0.0	0.00	0.00	-3.3	0.0	0.00	0.0
100.0	100.0	0.00	0.00	-3.3	0.0	0.00	0.0
200.0	200.0	0.00	0.00	-3.3	0.0	0.00	0.0
13 3/8"							
300.0	300.0	0.00	0.00	-3.3	0.0	0.00	0.0
400.0	400.0	0.00	0.00	-3.3	0.0	0.00	0.0
500.0	500.0	0.00	0.00	-3.3	0.0	0.00	0.0
600.0	600.0	0.00	0.00	-3.3	0.0	0.00	0.0
700.0	700.0	0.00	0.00	-3.3	0.0	0.00	0.0
800.0	800.0	0.00	0.00	-3.3	0.0	0.00	0.0
900.0	900.0	0.00	0.00	-3.3	0.0	0.00	0.0
1,000.0	1,000.0	0.00	0.00	-3.3	0.0	0.00	0.0

Energen

Preliminary Design

Company: Energen Resources
Project: Chacon Jicarilla
Site: Mancos Shale/Niobrara "C"
Well: Chacon Jicarilla #602H
Wellbore: Re-Staked
Design: Drill Thru, Version 2

Local Co-ordinate Reference: Site Mancos Shale/Niobrara "C"
TVD Reference: WELL @ 0.0usft (Original Well Elev)
MD Reference: WELL @ 0.0usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Planned Survey

TVD (usft)	MD (usft)	Inc (°)	Azi (azimuth) (°)	N/S (usft)	E/W (usft)	Build (°/100usft)	V. Sec (usft)
1,100.0	1,100.0	0.00	0.00	-3.3	0.0	0.00	0.0
1,200.0	1,200.0	0.00	0.00	-3.3	0.0	0.00	0.0
1,300.0	1,300.0	0.00	0.00	-3.3	0.0	0.00	0.0
1,400.0	1,400.0	0.00	0.00	-3.3	0.0	0.00	0.0
1,500.0	1,500.0	0.00	0.00	-3.3	0.0	0.00	0.0
1,599.9	1,600.0	5.00	220.33	-6.6	-2.9	5.00	4.4
1,635.3	1,635.6	6.78	220.33	-9.4	-5.2	5.00	8.0
1,699.2	1,700.0	6.78	220.33	-15.2	-10.1	0.00	15.6
1,798.5	1,800.0	6.78	220.33	-24.2	-17.8	0.00	27.4
1,897.8	1,900.0	6.78	220.33	-33.2	-25.4	0.00	39.2
1,997.1	2,000.0	6.78	220.33	-42.2	-33.1	0.00	51.0
2,096.4	2,100.0	6.78	220.33	-51.2	-40.7	0.00	62.8
2,195.7	2,200.0	6.78	220.33	-60.2	-48.3	0.00	74.6
2,295.0	2,300.0	6.78	220.33	-69.2	-56.0	0.00	86.4
2,394.3	2,400.0	6.78	220.33	-78.2	-63.6	0.00	98.3
2,493.6	2,500.0	6.78	220.33	-87.2	-71.3	0.00	110.1
2,592.9	2,600.0	6.78	220.33	-96.2	-78.9	0.00	121.9
2,692.2	2,700.0	6.78	220.33	-105.2	-86.5	0.00	133.7
2,791.5	2,800.0	6.78	220.33	-114.2	-94.2	0.00	145.5
2,890.8	2,900.0	6.78	220.33	-123.2	-101.8	0.00	157.3
2,990.1	3,000.0	6.78	220.33	-132.2	-109.5	0.00	169.1
3,089.4	3,100.0	6.78	220.33	-141.2	-117.1	0.00	180.9
3,188.7	3,200.0	6.78	220.33	-150.2	-124.7	0.00	192.7
3,288.0	3,300.0	6.78	220.33	-159.2	-132.4	0.00	204.5
3,350.0	3,362.4	6.78	220.33	-164.8	-137.2	0.00	211.9
9 5/8"							
3,387.3	3,400.0	6.78	220.33	-168.2	-140.0	0.00	216.3
3,486.6	3,500.0	6.78	220.33	-177.2	-147.7	0.00	228.1
3,585.9	3,600.0	6.78	220.33	-186.2	-155.3	0.00	239.9
3,685.2	3,700.0	6.78	220.33	-195.2	-162.9	0.00	251.7
3,784.5	3,800.0	6.78	220.33	-204.2	-170.6	0.00	263.5
3,883.8	3,900.0	6.78	220.33	-213.2	-178.2	0.00	275.3
3,983.1	4,000.0	6.78	220.33	-222.2	-185.9	0.00	287.1
4,082.4	4,100.0	6.78	220.33	-231.2	-193.5	0.00	299.0
4,181.8	4,200.0	6.78	220.33	-240.2	-201.1	0.00	310.8
4,281.1	4,300.0	6.78	220.33	-249.2	-208.8	0.00	322.6
4,380.4	4,400.0	6.78	220.33	-258.2	-216.4	0.00	334.4
4,479.7	4,500.0	6.78	220.33	-267.2	-224.1	0.00	346.2
4,579.0	4,600.0	6.78	220.33	-276.2	-231.7	0.00	358.0
4,678.3	4,700.0	6.78	220.33	-285.2	-239.4	0.00	369.8
4,777.6	4,800.0	6.78	220.33	-294.2	-247.0	0.00	381.6
4,876.9	4,900.0	6.78	220.33	-303.2	-254.6	0.00	393.4
4,976.2	5,000.0	6.78	220.33	-312.2	-262.3	0.00	405.2
5,075.5	5,100.0	6.78	220.33	-321.2	-269.9	0.00	417.0
5,174.8	5,200.0	6.78	220.33	-330.2	-277.6	0.00	428.8

Energen

Preliminary Design

Company: Energen Resources	Local Co-ordinate Reference: Site Mancos Shale/Niobrara "C"
Project: Chacon Jicarilla	TVD Reference: WELL @ 0.0usft (Original Well Elev)
Site: Mancos Shale/Niobrara "C"	MD Reference: WELL @ 0.0usft (Original Well Elev)
Well: Chacon Jicarilla #602H	North Reference: Grid
Wellbore: Re-Staked	Survey Calculation Method: Minimum Curvature
Design: Drill Thru, Version 2	Database: EDM 5000.1 Single User Db

Planned Survey

TVD (usft)	MD (usft)	Inc (°)	Azi (azimuth) (°)	N/S (usft)	E/W (usft)	Build (°/100usft)	V. Sec (usft)
5,274.1	5,300.0	6.78	220.33	-339.2	-285.2	0.00	440.6
5,373.4	5,400.0	6.78	220.33	-348.2	-292.8	0.00	452.4
5,472.7	5,500.0	6.78	220.33	-357.2	-300.5	0.00	464.2
5,572.0	5,600.0	6.78	220.33	-366.2	-308.1	0.00	476.0
5,671.3	5,700.0	6.78	220.33	-375.2	-315.8	0.00	487.8
5,770.6	5,800.0	6.78	220.33	-384.2	-323.4	0.00	499.7
5,869.9	5,900.0	6.78	220.33	-393.2	-331.0	0.00	511.5
5,969.2	6,000.0	6.78	220.33	-402.2	-338.7	0.00	523.3
6,068.5	6,100.0	6.78	220.33	-411.2	-346.3	0.00	535.1
6,167.8	6,200.0	6.78	220.33	-420.2	-354.0	0.00	546.9
6,267.1	6,300.0	6.78	220.33	-429.2	-361.6	0.00	558.7
6,366.4	6,400.0	6.78	220.33	-438.2	-369.2	0.00	570.5
6,465.7	6,500.0	6.78	220.33	-447.2	-376.9	0.00	582.3
6,565.0	6,600.0	6.78	220.33	-456.2	-384.5	0.00	594.1
6,664.3	6,700.0	6.78	220.33	-465.2	-392.2	0.00	605.9
6,763.6	6,800.0	6.78	220.33	-474.2	-399.8	0.00	617.7
6,862.9	6,900.0	6.78	220.33	-483.2	-407.4	0.00	629.5
6,962.2	7,000.0	6.78	220.33	-492.2	-415.1	0.00	641.3
7,061.5	7,100.0	6.78	220.33	-501.2	-422.7	0.00	653.1
7,160.8	7,200.0	6.78	220.33	-510.2	-430.4	0.00	664.9
7,260.1	7,300.0	6.78	220.33	-519.2	-438.0	0.00	676.7
7,359.4	7,400.0	6.78	220.33	-528.2	-445.6	0.00	688.5
7,400.0	7,440.9	6.78	220.33	-531.9	-448.8	0.00	693.4
3,362.4		3,350.0		9 5/8"		9-5/8	12-1/4
200.0		200.0		13 3/8"		13-3/8	17-1/2

Checked By: _____	Approved By: _____	Date: _____
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BLM CONDITION OF APPROVAL for Chacon Jicarilla 602H

CASING REPAIR, WORKOVER AND RECOMPLETION OPERATIONS:

1. Prior to commencing drilling operations, an NOI to plug back must be submitted to obtain approval from this office. If a CBL or other logs are run, provide this office with a copy.
2. Contact this office at (505) 564-7750 prior to conducting any cementing operations.

SPECIAL STIPULATIONS:

1. Pits will be fenced during work-over operation.
2. All disturbance will be kept on existing pad.
3. All pits will be pulled and closed immediately upon completion of the recompletion and work-over activities.
4. Pits will be lined with an impervious material at least 12 mils thick.