

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: 4/2/2015

Well information:

API WELL #	Well Name	Well #	Operator Name	Type	Stat	County	Surf_Owner	UL	Sec	Twp	N/S	Rng	W/E
30-045-26335-00-00	GALLEGOS CANYON UNIT	247E	BP AMERICA PRODUCTION COMPANY	G	A	San Juan	F	P	5	27	N	12	W

Application Type:

☐ P&A ☐ Drilling/Casing Change ☐ Location Change
☐ Recomplete/DHC (For hydraulic fracturing operations review EPA Underground injection control Guidance #84)

X Other: Sidetrack

Conditions of Approval:

Plug to 50' above the Graneros top
Plug from 50' below to 50' above the Gallup top
Submit a plan for TA

NMOCD Approved by Signature

4-2-15
Date

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OIL CONS. DIV DIST. 3

FORM APPROVED
OMB NO. 1004-0135
Expires: July 31, 2010

APR 06 2015

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.***SUBMIT IN TRIPLICATE - Other instructions on reverse side.**

1. Type of Well ☐ Oil Well ☒ Gas Well ☐ Other		5. Lease Serial No. NMSF078902
2. Name of Operator BP AMERICA PRODUCTION CO		6. If Indian, Allottee or Tribe Name EASTERN NAVAJO
3a. Address 200 ENERGY COURT FARMINGTON, NM 87401		7. If Unit or CA/Agreement, Name and/or No. 892000844F
3b. Phone No. (include area code) Ph: 281-366-7148		8. Well Name and No. GALLEGOS CANYON UNIT 247E
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 5 T27N R12W SESE 1050FSL 1090FEL 36.599790 N Lat, 108.129120 W Lon		9. API Well No. 30-045-26335-00-S1
		10. Field and Pool, or Exploratory BASIN DAKOTA
		11. County or Parish, and State SAN JUAN COUNTY, NM

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

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	Drilling Operations
	☐ Convert to Injection	☐ Plug Back	☐ 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 recompleat 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 recompleat 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 site is ready for final inspection.)

BP America Production Company received approval to sidetrack the subject well 01/09/2015 from the BLM and 01/30/2015 from the NMOCD. Before we drill the horizontal sidetrack, BP America Production Company respectfully requests to drill a vertical pilot hole into the Basin Mancos formation of the subject well and run logs for review & evaluation. BP will not produce from the Basin Mancos formation. All drilling will remain on the existing pad with no additional pad expansion.

Please see the attached well plan, drilling procedure including wellbore schematics, and plat.

In accordance with NMOCD Pit Rule 19.15.17.9 NMAC, BP will use a closed-loop system during operations.

CONDITIONS OF APPROVAL

Adhere to previously issued stipulations

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

14. I hereby certify that the foregoing is true and correct. Electronic Submission #296876 verified by the BLM Well Information System For BP AMERICA PRODUCTION CO, sent to the Farmington Committed to AFMSS for processing by WILLIAM TAMBEKOU on 04/02/2015 (15WMT0114SE)	
Name (Printed/Typed) TOYA COLVIN	Title REGULATORY ANALYST
Signature (Electronic Submission)	Date 04/01/2015

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By WILLIAM TAMBEKOU	Title PETROLEUM ENGINEER	Date 04/02/2015
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.		Office Farmington

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.

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

NMOCD

District I
1625 N French Dr., Hobbs, NM 88240
Phone (575) 393-6161 Fax: (575) 393-0720
District II
811 S First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone (505) 476-3460 Fax (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office
☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-045-26335		² Pool Code 97232	³ Pool Name Basin Mancos
⁴ Property Code 000570	⁵ Property Name Gallegos Canyon Unit		⁶ Well Number 247E
⁷ OGRID No. 000778	⁸ Operator Name BP America Production Company		⁹ Elevation 5702

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	05	27N	12W		1040	South	1094	East	San Juan

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
P	05	27N	12W		1023	South	1164	East	San Juan

¹² Dedicated Acres 320	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.

**SECTION 05,
TOWNSHIP 27N,
RANGE 12W,
N.M.P.M.**

LEGEND
FOUND MONUMENT O
PROPOSED SURFACE HOLE LOCATION ●
PROPOSED BOTTOM HOLE LOCATION x

	NMWZ NAD'83	NAD'83	TIES
PROPOSED SURFACE HOLE LOCATION (SHL)	N (Y) = 2,037,787.54' E (X) = 2,636,085.65'	LAT. = 36.59984369°N LON. = 108.12974444°W	FSL = 1040' FEL = 1094'
PROPOSED BOTTOM HOLE LOCATION (BHL)	N (Y) = 2,037,770.79' E (X) = 2,636,015.09'	LAT. = 36.59979708°N LON. = 108.12998464°W	FSL = 1023' FEL = 1164'

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 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.

Toya Colvin 3/27/15
Signature Date

Toya Colvin
Printed Name

Toya.Colvin@bp.com
E-mail Address

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.

12-12-14
Date of Survey

Marshall W. Lindeen
Signature and Seal of Registered Professional Surveyor

NEW MEXICO
17078
3-26-15
PROFESSIONAL SURVEYOR

17078
Certificate Number



GCU 247E

30-045-26335

Unit letter P SEC. 5, T27N, R12W
San Juan, NM
Dakota Formation

The purpose of this procedure is to outline the plug and abandonment of the Dakota formation, the sidetrack of the wellbore to drill a vertical pilot hole through the Mancos formation to run logs, and the subsequent temporary abandonment of the wellbore for future use.

Basic Job Procedure:

1. Pull tubing
2. Set cast iron cement retainer (CICR) at $\pm 5,794'$
3. Pressure test CICR and casing to ± 500 psi verify integrity
4. Pump balanced cement plug on top of CICR 5.9 bbls/29sks
 - a. Cement will be class B, mixed at 15.60 ppg, 1.18 cf/sx
5. Set whipstock at $\pm 4,100'$ and drill a $\pm 6\text{-}1/8''$ open-hole sidetrack to $\pm 5603'$ MD / 5600' TVD per the attached directional plan
 - a. An oil-based mud will be used to drill the sidetrack
 - b. Drilling operations will utilize a closed-loop system
 - c. All cuttings will be hauled to a commercial disposal facility or land farm
 - d. At a minimum, a 2000 psig Class 2 hydraulic BOP will be used and accessories to the BOP will meet BLM requirements for a 2000 psig system, in accordance with Onshore Order #2 (111.A well requirements)
6. Perform surveillance on open-hole to obtain formation properties
7. Set CICR at $\pm 4050'$
8. Pressure test CICR and casing to ± 500 psi verify integrity
9. Pump balanced cement plug on top of CICR 5.9 bbls/29sks to temporarily abandon the well
 - a. Cement will be class B, mixed at 15.60 ppg, 1.18 cf/sx

Note: A separate NOI will be filed to plug and abandon the remaining wellbore

<u>Formation Tops</u>	<u>Surface (TVD)</u>	<u>Thickness</u>
Ojo Alamo	290	80
Kirtland	370	914
Fruitland	1284	129
Pictured Cliff's	1413	179
Lewis Shale	1592	1252
Mesa Verde	2844	892
Point Lookout	3736	314
Mancos	4050	840
Upper Gallup Sand/Siltstone	4890	187
K78	5077	69
Niobrara Silt	5146	103
K75	5249	4
ChaCha SW Sandstone	5253	113
Sanaste	5366'	362'
Greenhorn	5728'	56'
Graneros	5784'	59'

Policy Reminder

Any changes to the written procedure requires an approved MoC
MoC (except BoD/SoR) approvals during execution have been delegated to the OTL

Current Wellbore Diagram

[illegible]

GCU 247E

TOC @ ± 5644'
Cmt on CICR w/ 29 sx CL B
CICR @ ±5794'
DAKOTA Perfs
5844- 5958
Frac w/ 85k gals 69 Q foam &
148K# 20/40

Vertical at $\pm 4,603'$

End of 6-1/8"
OH @ $\pm 5603'$

TD: 6047

BOTTOM HOLE ASSEMBLY DETAIL (Top Down)

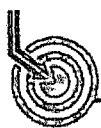
CASING STRINGS	
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98	1000
99	1000
100	1000

PRESSURE & TEMPERATURE DATA

[illegible]

Prepared by: Jacob Wendte	Date: 22-Oct-2014
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Completed: 5/23/1985 **Last Workover:** 1/8/2015



Scientific Drilling

Company: B.P.
Project: San Juan County, NM NAD83
Site: Gallegos Canyon Unit
Well: GCU 247E



Well Details: GCU 247E

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	2037787.54	2636085.85	36.5998437	-108.1297444	

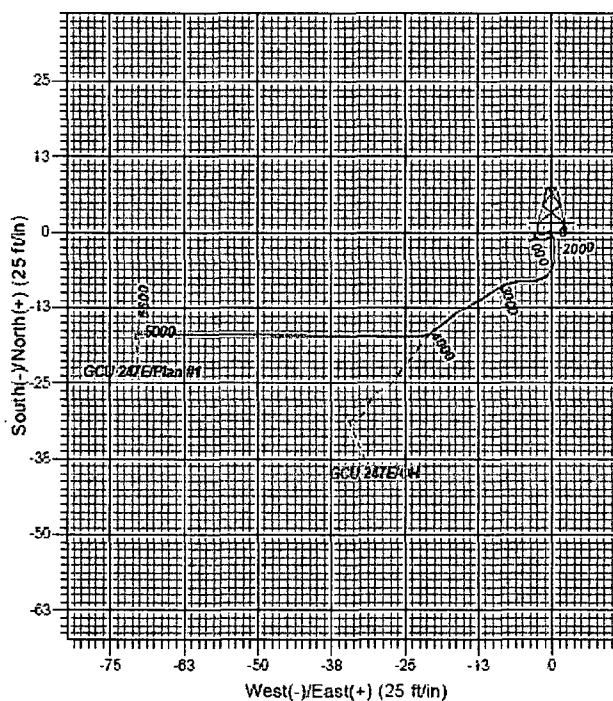
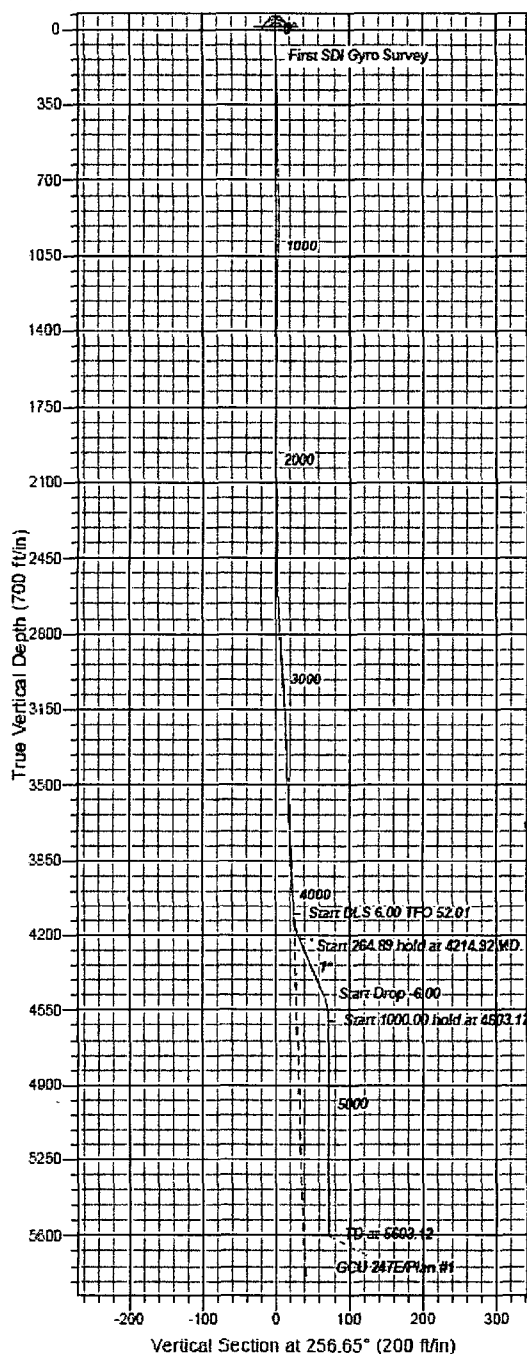
GL 5702.2' & RKB 17' @ 5719.20ft

bp

G T
M

Azimuths to Grid North
True North: 0.18°
Magnetic North: 9.85°

Magnetic Field
Strength: 50144.9nT
Dip Angle: 63.20°
Date: 2/26/2015
Model: BGGM2014



FORMATION TOP DETAILS

No formation data is available

Plan: Plan #1

16:39, February 26 2015
Created By: Janie Collins

PROJECT DETAILS: San Juan County, NM NAD83

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Spheroid: GRS 1980
Zone: New Mexico Western Zone
System Datum: Mean Sea Level

CASING DETAILS

No casing data is available

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSecl	Target
1	4100.00	0.76	223.38	4099.77	-15.75	-20.56	0.00	0.00	23.67	
2	4214.92	7.40	270.66	4214.33	-17.23	-28.50	6.00	52.01	31.71	
3	4479.81	7.40	270.66	4477.04	-15.84	-22.61	0.00	0.00	64.81	
4	4603.12	0.00	270.00	4600.00	-15.75	-70.56	6.00	180.00	72.52	
5	5603.12	0.00	270.00	5603.00	-15.75	-70.56	6.00	270.00	72.52	

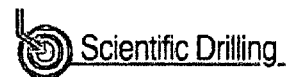
DESIGN TARGET DETAILS

No target data is available.

BP Confidential



Planning Report



Database:	Grand Junction District	Local Co-ordinate Reference:	Well GCU 247E
Company:	B.P.	TVD Reference:	GL 5702.2' & RKB 17' @ 5719.20ft
Project:	San Juan County, NM NAD83	MD Reference:	GL 5702.2' & RKB 17' @ 5719.20ft
Site:	Gallegos Canyon Unit	North Reference:	Grid
Well:	GCU 247E	Survey Calculation Method:	Minimum Curvature
Wellbore:	S-Well		
Design:	Plan #1		

Project:	San Juan County, NM NAD83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site:	Gallegos Canyon Unit		
Site Position:		Northing:	2,037,787.54 usft
From:	Lat/Long	Easting:	2,838,055.65 usft
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in
		Grid Convergence:	-0.18 °

Well:	GCU 247E		
Well Position	+N-S	0.00 ft	Northing:
	+E-W	0.00 ft	Easting:
Position Uncertainty	0.00 ft	Wellhead Elevation:	0.00 ft
		Ground Level:	5,702.20 ft

Wellbore:	S-Well		
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Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	BGGM2014	2/26/2015	(°)	(°)	(nT)
			0.87	63.20	50,145

Design:	Plan #1		
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Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	4,100.00
Vertical Section:	Depth From (TVD)	+N-S	+E-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.00	0.00	0.00	258.65

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
4,100.00	0.78	223.38	4,099.77	-18.75	-20.56	0.00	0.00	0.00	0.00	
4,214.92	7.40	270.66	4,214.35	-17.23	-28.50	6.00	5.78	41.15	52.01	
4,479.51	7.40	270.66	4,477.04	-18.54	-62.61	0.00	0.00	0.00	0.00	
4,603.12	0.00	270.00	4,600.00	-18.75	-70.56	0.00	-0.00	0.00	180.00	
5,603.12	0.00	270.00	5,600.00	-18.75	-70.56	0.00	0.00	0.00	270.00	

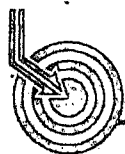


Planning Report



Database:	Grand Junction District	Local Co-ordinate Reference:	Well GCU 247E
Company:	B.P.	TVD Reference:	GL 5792.2' & RKB 17' @ 57 19.20ft
Project:	San Juan County, NM NAD83	MD Reference:	GL 5792.2' & RKB 17' @ 57 19.20ft
Site:	Gallegos Canyon Unit	North Reference:	Grid
Well:	GCU 247E	Survey Calculation Method:	Minimum Curvature
Wellbore:	S-Well		
Design:	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,100.00	0.75	223.36	4,089.77	-16.75	-20.56	23.87	0.00	0.00	0.00
4,200.00	6.51	270.00	4,129.54	-17.24	-28.70	28.96	6.00	5.73	46.64
4,214.62	7.40	270.66	4,214.35	-17.23	-28.50	31.71	6.00	5.95	4.39
4,300.00	7.40	270.66	4,295.72	-17.11	-39.46	42.34	0.00	0.00	0.00
4,400.00	7.40	270.66	4,397.89	-16.98	-52.33	54.84	0.00	0.00	0.00
4,478.81	7.40	270.66	4,477.04	-16.84	-62.61	64.81	0.00	0.00	0.00
4,500.00	8.19	270.66	4,487.08	-16.81	-85.00	87.12	6.00	-6.00	0.00
4,600.00	0.19	270.66	4,586.88	-16.75	-70.55	72.52	6.00	-6.00	0.00
4,603.12	0.00	270.00	4,600.00	-16.75	-70.56	72.52	6.00	-6.00	0.00
4,700.00	0.00	0.00	4,686.88	-16.75	-70.56	72.52	0.00	0.00	0.00
4,800.00	0.00	0.00	4,786.88	-16.75	-70.56	72.52	0.00	0.00	0.00
4,900.00	0.00	0.00	4,886.88	-16.75	-70.56	72.52	0.00	0.00	0.00
5,000.00	0.00	0.00	4,986.88	-16.75	-70.56	72.52	0.00	0.00	0.00
5,100.00	0.00	0.00	5,086.88	-16.75	-70.56	72.52	0.00	0.00	0.00
5,200.00	0.00	0.00	5,186.88	-16.75	-70.56	72.52	0.00	0.00	0.00
5,300.00	0.00	0.00	5,286.88	-16.75	-70.56	72.52	0.00	0.00	0.00
5,400.00	0.00	0.00	5,386.88	-16.75	-70.56	72.52	0.00	0.00	0.00
5,500.00	0.00	0.00	5,486.88	-16.75	-70.56	72.52	0.00	0.00	0.00
5,600.00	0.00	0.00	5,586.88	-16.75	-70.56	72.52	0.00	0.00	0.00
5,603.12	0.00	270.00	5,600.00	-16.75	-70.56	72.52	0.00	0.00	0.00



Scientific Drilling

Company: B.P.
Project: San Juan County, NM NAD83
Site: Gallegos Canyon Unit
Well: GCU 247E

bp

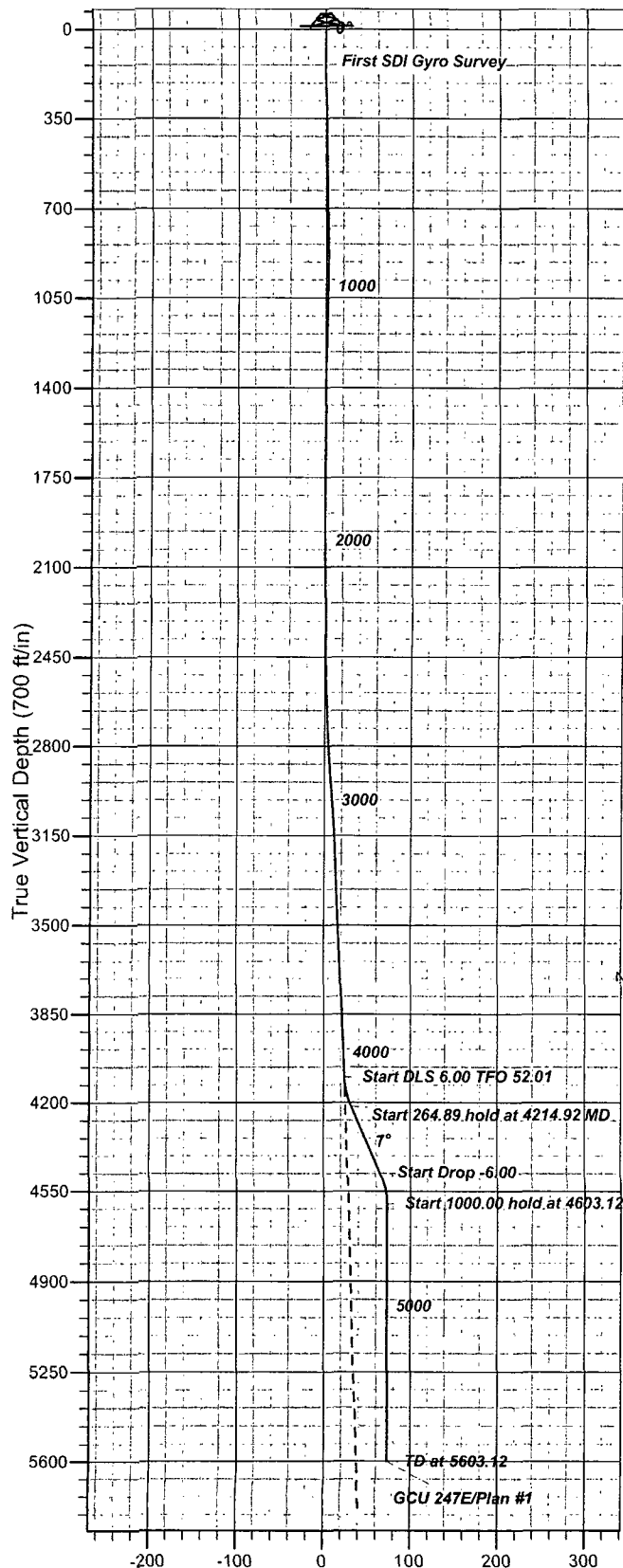


Azimuths to Grid North
True North: 0.18°
Magnetic North: 9.85°

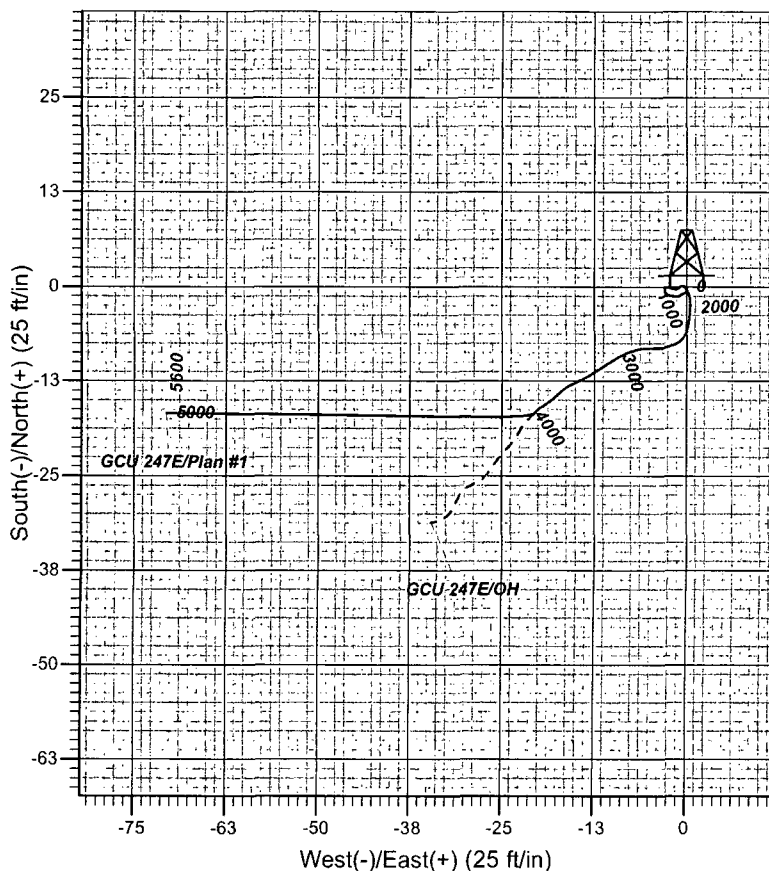
Magnetic Field
Strength: 50144.9snT
Dip Angle: 63.20°
Date: 2/26/2015
Model: BGGM2014

Well Details: GCU 247E

GL 5702.2' & RKB 17' @ 5719.20ft
+N/-S +E/-W Northing Easting Latitude Longitude Slot
0.00 0.00 2037787.54 2636085.65 36.5998437 -108.1297444



Vertical Section at 256.65° (200 ft/in)



FORMATION TOP DETAILS

No formation data is available

Plan: Plan #1

16:39, February 26 2015
Created By: Janie Collins

PROJECT DETAILS: San Juan County, NM NAD83

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Western Zone

System Datum: Mean Sea Level

CASING DETAILS

No casing data is available

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	4100.00	0.78	223.36	4099.77	-16.75	-20.56	0.00	0.00	23.87	
2	4214.92	7.40	270.66	4214.35	-17.23	-28.50	6.00	52.01	31.71	
3	4479.81	7.40	270.66	4477.04	-16.84	-62.61	0.00	0.00	64.81	
4	4603.12	0.00	270.00	4600.00	-16.75	-70.56	6.00	180.00	72.52	
5	5603.12	0.00	270.00	5600.00	-16.75	-70.56	0.00	270.00	72.52	

DESIGN TARGET DETAILS

No target data is available.



B.P.

**San Juan County, NM NAD83
Gallegos Canyon Unit
GCU 247E**

S-Well

Plan: Plan #1

Standard Planning Report

26 February, 2015



www.scientificdrilling.com



Database:	Grand Junction District	Local Co-ordinate Reference:	Well GCU 247E
Company:	B.P.	TVD Reference:	GL 5702.2' & RKB 17' @ 5719.20ft
Project:	San Juan County, NM NAD83	MD Reference:	GL 5702.2' & RKB 17' @ 5719.20ft
Site:	Gallegos Canyon Unit	North Reference:	Grid
Well:	GCU 247E	Survey Calculation Method:	Minimum Curvature
Wellbore:	S-Well		
Design:	Plan #1		

Project	San Juan County, NM NAD83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site	Gallegos Canyon Unit		
Site Position:		Northing:	2,037,787.54 usft
From:	Lat/Long	Easting:	2,636,085.65 usft
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in
		Latitude:	36.5998437
		Longitude:	-108.1297445
		Grid Convergence:	-0.18 °

Well	GCU 247E		
Well Position	+N/-S	0.00 ft	Northing:
	+E/-W	0.00 ft	Easting:
Position Uncertainty	0.00 ft	Wellhead Elevation:	0.00 ft
		Latitude:	36.5998437
		Longitude:	-108.1297445
		Ground Level:	5,702.20 ft

Wellbore	S-Well		
Magnetics	Model Name	Sample Date	Declination
			(°)
	BGGM2014	2/26/2015	9.67
			Dip Angle
			(°)
			63.20
			Field Strength
			(nT)
			50,145

Design	Plan #1		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			4,100.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(ft)	(ft)	(ft)
	0.00	0.00	0.00
			Direction
			(°)
			256.65

Plan Sections										
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Dogleg Rate	Build Rate	Turn Rate	TFO	Target
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(°/100ft)	(°/100ft)	(°/100ft)	(°)	
4,100.00	0.78	223.36	4,099.77	-16.75	-20.56	0.00	0.00	0.00	0.00	
4,214.92	7.40	270.66	4,214.35	-17.23	-28.50	6.00	5.76	41.15	52.01	
4,479.81	7.40	270.66	4,477.04	-16.84	-62.61	0.00	0.00	0.00	0.00	
4,603.12	0.00	270.00	4,600.00	-16.75	-70.56	6.00	-6.00	0.00	180.00	
5,603.12	0.00	270.00	5,600.00	-16.75	-70.56	0.00	0.00	0.00	270.00	



Database:	Grand Junction District	Local Co-ordinate Reference:	Well GCU 247E
Company:	B.P.	TVD Reference:	GL 5702.2' & RKB 17' @ 5719.20ft
Project:	San Juan County, NM NAD83	MD Reference:	GL 5702.2' & RKB 17' @ 5719.20ft
Site:	Gallegos Canyon Unit	North Reference:	Grid
Well:	GCU 247E	Survey Calculation Method:	Minimum Curvature
Wellbore:	S-Well		
Design:	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,100.00	0.78	223.36	4,099.77	-16.75	-20.56	23.87	0.00	0.00	0.00
4,200.00	6.51	270.00	4,199.54	-17.24	-26.70	29.96	6.00	5.73	46.64
4,214.92	7.40	270.66	4,214.35	-17.23	-28.50	31.71	6.00	5.98	4.39
4,300.00	7.40	270.66	4,298.72	-17.11	-39.46	42.34	0.00	0.00	0.00
4,400.00	7.40	270.66	4,397.89	-16.96	-52.33	54.84	0.00	0.00	0.00
4,479.81	7.40	270.66	4,477.04	-16.84	-62.61	64.81	0.00	0.00	0.00
4,500.00	6.19	270.66	4,497.08	-16.81	-65.00	67.12	6.00	-6.00	0.00
4,600.00	0.19	270.66	4,596.88	-16.75	-70.55	72.52	6.00	-6.00	0.00
4,603.12	0.00	270.00	4,600.00	-16.75	-70.56	72.52	6.00	-6.00	0.00
4,700.00	0.00	0.00	4,696.88	-16.75	-70.56	72.52	0.00	0.00	0.00
4,800.00	0.00	0.00	4,796.88	-16.75	-70.56	72.52	0.00	0.00	0.00
4,900.00	0.00	0.00	4,896.88	-16.75	-70.56	72.52	0.00	0.00	0.00
5,000.00	0.00	0.00	4,996.88	-16.75	-70.56	72.52	0.00	0.00	0.00
5,100.00	0.00	0.00	5,096.88	-16.75	-70.56	72.52	0.00	0.00	0.00
5,200.00	0.00	0.00	5,196.88	-16.75	-70.56	72.52	0.00	0.00	0.00
5,300.00	0.00	0.00	5,296.88	-16.75	-70.56	72.52	0.00	0.00	0.00
5,400.00	0.00	0.00	5,396.88	-16.75	-70.56	72.52	0.00	0.00	0.00
5,500.00	0.00	0.00	5,496.88	-16.75	-70.56	72.52	0.00	0.00	0.00
5,600.00	0.00	0.00	5,596.88	-16.75	-70.56	72.52	0.00	0.00	0.00
5,603.12	0.00	270.00	5,600.00	-16.75	-70.56	72.52	0.00	0.00	0.00