

Results of Directional Survey

API number:	30-025-41551	DD
OGRID:		Operator: OCCIDENTAL PERMIAN LTD
	Property:	NORTH HOBBS G/SA UNIT # 947

surface	ULSTR:	A	19	T	18S	R	38E
				278	FNL	1123	FEL

BH Loc	ULSTR:	A	19	T	18S	R	38E
4692	MD	4585.3	TVD	431	FNL	428	FEL

Top Perf/OH	ULSTR:	A	19	T	18S	R	38E
4403	MD	4311.9	TVD	404	FNL	518	FEL

Bot Perf/OH	ULSTR:	A	19	T	18S	R	38E
4572	MD	4471.8	TVD	420	FNL	465	FEL

	MD	N/S	E/W	VD
	4288	-116.20	568.90	4203.2
TOP PERFS/OH	4403	-126.49	604.93	4311.94
	4468	-132.30	625.30	4373.40
	4468	-132.30	625.30	4373.40
BOT PERFS/OH	4572	-141.90	657.68	4471.77
	4636	-147.80	677.60	4532.30

NEXT TO LAST	4636	-147.80	677.60	4532.30
LAST READING	4692	-153.10	695.00	4585.30
TD	4692	-153.10	695.00	4585.30

Surface Location	278	FN	1123	FE
Projected BHL	431	FN	428	FE
Location of				
Top Perfs/OH	404	FN	518	FE
Bottom Perfs/OH	420	FN	465	FE

SUMMARY of Subsurface Locations

Surface Location	A-19-18S-38E	278	FN	1123	FE	Vert. Depth
Top Perfs/OH	A-19-18S-38E	404	FN	518	FE	4311.94
Bottom Perfs/OH	A-19-18S-38E	420	FN	465	FE	4471.77
Projected TD	A-19-18S-38E	431	FN	428	FE	4585.30

MAY 19 2014

HOBBS OCD

MAY 09 2014

RECEIVED

OCCIDENTAL PERMIAN LTD.

Hobbs (Grayburg San Andres)
Lea County, NM (Grid North)
North Hobbs G/SA Unit #947
VH - Job #320214-KW-245

Survey: Gyro

SDI Survey Report

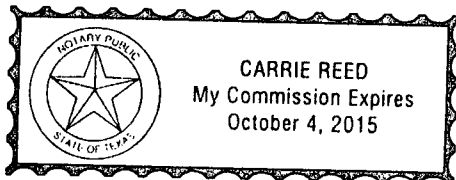
This survey is correct to the best of my knowledge and is supported by actual field data.

Robert

Notarized this date 28th of February, 2014.

Carrie Reed

Notary Signature
County of Midland
State of Texas



SDI

SDI Survey Report

Company:	OCCIDENTAL PERMIAN LTD	Local Co-ordinate Reference:	Well North Hobbs G/SA Unit #947
Project:	Hobbs (Grayburg San Andres)	TVD Reference:	Mean Sea Level (System)
Site:	Lea County, NM (Grid North)	MD Reference:	Mean Sea Level (System)
Well:	North Hobbs G/SA Unit #947	North Reference:	Grid
Wellbore:	VH - Job #320214-KW-245	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #320214-KW-245	Database:	EDM-Regulatory

Project:	Hobbs (Grayburg San Andres)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site:	Lea County, NM (Grid North)		
Site Position:		Northing:	634,606.02 usft
From:	Lat/Long	Easting:	853,884.25 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"
		Grid Convergence:	0.62 °

Well:	North Hobbs G/SA Unit #947, Directional		
Well Position	+N/-S	0.0 usft	Northing: 634,606.02 usft
	+E/-W	0.0 usft	Easting: 853,884.25 usft
			Latitude: 32° 44' 21.633 N
			Longitude: 103° 10' 56.833 W
Position Uncertainty	0.0 usft	Wellhead Elevation:	0.0 usft
		Ground Level:	0.0 usft

Wellbore:	VH - Job #320214-KW-245		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	2/23/2014	7.11
			(°)
			Dip Angle
			(°)
			Field Strength
			(nT)
			60.66
			48,723

Design:	VH - Job #320214-KW-245		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction
			(°)
			102.10

Survey Program	Date: 3/2/2014		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
111.0	1,503.0	Gyro (VH - Job #320214-KW-245)	Keeper
			Description
			Keeper Surface Readout

Survey	MD	Inc	Azi (azimuth)	TVD	N/S	E/W	Closure Azimuth	Closure Distance
	(usft)	(°)	(°)	(usft)	(usft)	(usft)	(°)	(usft)
	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.0
	111.0	0.39	83.47	111.0	0.0	0.4	83.47	0.4
	176.0	0.35	14.43	176.0	0.3	0.6	68.00	0.7
	270.0	0.37	0.70	270.0	0.8	0.7	40.53	1.1
	361.0	0.39	349.31	361.0	1.4	0.7	24.82	1.6
	466.0	0.44	306.57	466.0	2.0	0.3	7.73	2.1
	556.0	0.32	339.95	556.0	2.5	-0.1	357.97	2.5
	646.0	0.35	335.64	646.0	3.0	-0.3	354.45	3.0
	737.0	0.37	318.13	737.0	3.4	-0.6	350.11	3.5
	782.0	0.50	298.45	782.0	3.6	-0.9	346.57	3.7
	872.0	0.61	289.23	872.0	4.0	-1.7	337.29	4.3
	962.0	0.56	279.48	962.0	4.2	-2.6	328.77	4.9

SDI

SDI Survey Report

Company:	OCCIDENTAL PERMIAN LTD.	Local Co-ordinate Reference:	Well North Hobbs G/SA Unit #947
Project:	Hobbs (Grayburg San Andres)	TVD Reference:	Mean Sea Level (System)
Site:	Lea County, NM (Grid North)	MD Reference:	Mean Sea Level (System)
Well:	North Hobbs G/SA Unit #947	North Reference:	Grid
Wellbore:	VH - Job #320214-KW-245	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #320214-KW-245	Database:	EDM-Regulatory

Survey								
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Azimuth (°)	Closure Distance (usft)	
1,052.0	0.57	280.03	1,052.0	4.4	-3.4	321.83	5.5	
1,142.0	0.54	267.81	1,142.0	4.4	-4.3	315.86	6.2	
1,232.0	0.41	248.27	1,232.0	4.3	-5.0	310.52	6.6	
1,322.0	0.21	250.97	1,322.0	4.1	-5.5	306.94	6.8	
1,413.0	0.06	223.47	1,413.0	4.0	-5.7	305.41	6.9	
1,503.0	0.43	300.01	1,503.0	4.2	-6.0	304.80	7.3	



Scientific Drilling

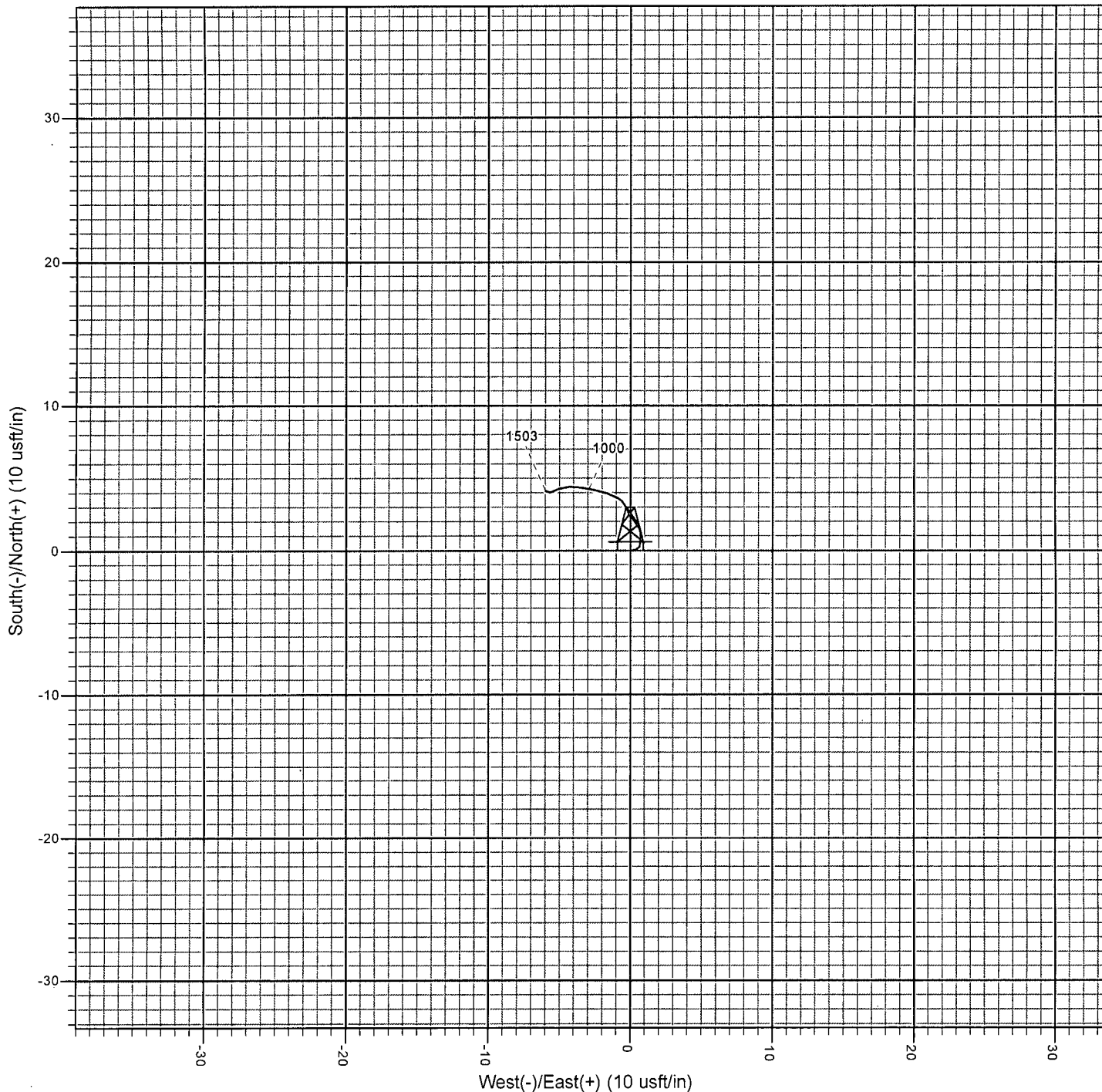
Project: Hobbs (Grayburg San Andres)
Lea County, NM (Grid North)
Well: North Hobbs G/SA Unit #947
Wellbore: VH - Job #320214-KW-245
Design: VH - Job #320214-KW-245

WELL DETAILS: North Hobbs G/SA Unit #947

Mean Sea Level (System)

Ground Level: 0.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	634606.02	853884.25	32° 44' 21.633 N	103° 10' 56.833 W	



PROJECT DETAILS: Hobbs (Grayburg San Andres)	SITE DETAILS: Lea County, NM (Grid North)
Geodetic System: US State Plane 1927 (Exact solution)	Site Centre Latitude: 32° 44' 21.633 N
Datum: NAD 1927 (NADCON CONUS)	Longitude: 103° 10' 56.833 W
Ellipsoid: Clarke 1866	Positional Uncertainty: 0.0
Zone: New Mexico East 3001	Convergence: 0.62
System Datum: Mean Sea Level	Local North: Grid

HOBBS OCD

MAY 09 2014

RECEIVED

OCCIDENTAL PERMIAN LTD.

Hobbs (Grayburg San Andres)
Lea County, NM (True North)
North Hobbs G/SA Unit #947
DH - Job #320214-MPD-236

Survey: MWD

SDI Survey Report

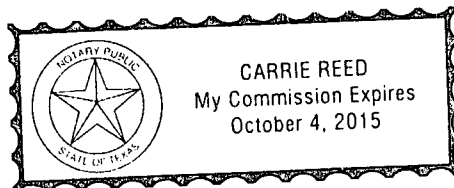
This survey is correct to the best of my knowledge and is supported by actual field data.

Richard

Notarized this date 32nd of April, 2014.

Carrie Reed

Notary Signature
County of Midland
State of Texas



SDI

SDI Survey Report

Company:	OCCIDENTAL PERMIAN LTD.	Local Co-ordinate Reference:	Well North Hobbs G/SA Unit #947
Project:	Hobbs (Grayburg San Andres)	TVD Reference:	Mean Sea Level (System)
Site:	Lea County - NM (True North)	MD Reference:	Mean Sea Level (System)
Well:	North Hobbs G/SA Unit #947	North Reference:	True
Wellbore:	DH - Job #320214-MPD-236	Survey Calculation Method:	Minimum Curvature
Design:	DH - Job #320214-MPD-236	Database:	EDM-Regulatory

Project	Hobbs (Grayburg San Andres)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Lea County - NM (True North)		
Site Position:		Northing:	613,684.60 usft
From:	Lat/Long	Easting:	861,006.44 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"
		Latitude:	32° 40' 53.873 N
		Longitude:	103° 9' 36.174 W
		Grid Convergence:	0.63 °

Well	North Hobbs G/SA Unit #947, Directional		
Well Position	+N/-S	0.0 usft	Northing: 634,606.02 usft
	+E/-W	0.0 usft	Easting: 853,884.25 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	0.0 usft
		Latitude:	32° 44' 21.633 N
		Longitude:	103° 10' 56.833 W
		Ground Level:	0.0 usft

Wellbore:	DH - Job #320214-MPD-236				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/23/2014	7.11	60.66	48,723

Design	DH - Job #320214-MPD-236			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.0	0.0	0.0	102.00

Survey Program	Date 4/22/2014			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
1,628.0	4,692.0	MWD (DH - Job #320214-MPD-236)	MWD	MWD

Survey							
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Azimuth (°)	Closure Distance (usft)
1,503.0	0.43	300.01	1,503.0	4.2	-6.0	304.82	7.3
1,628.0	0.35	270.51	1,628.0	4.4	-6.8	303.02	8.1
First SDI MWD Survey							
1,809.0	1.41	79.96	1,808.9	4.8	-5.1	313.06	7.0
1,989.0	3.08	97.45	1,988.8	4.6	1.8	22.11	4.9
2,169.0	5.54	92.18	2,168.3	3.6	15.3	76.81	15.7
2,350.0	8.79	96.05	2,347.8	1.8	37.8	87.27	37.9
2,530.0	10.82	103.60	2,525.2	-3.6	67.9	93.05	68.0
2,710.0	11.78	107.73	2,701.7	-13.2	101.8	97.38	102.7
2,891.0	13.10	106.06	2,878.5	-24.5	139.2	99.98	141.3
3,071.0	14.25	104.04	3,053.4	-35.5	180.3	101.14	183.7
3,251.0	17.67	103.16	3,226.4	-47.1	228.4	101.66	233.2

SDI

SDI Survey Report

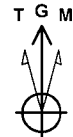
Company:	OCCIDENTAL PERMIAN LTD.	Local Co-ordinate Reference:	Well North Hobbs G/SA Unit #947
Project:	Hobbs (Grayburg San Andres)	TVD Reference:	Mean Sea Level (System)
Site:	Lea County - NM (True North)	MD Reference:	Mean Sea Level (System)
Well:	North Hobbs G/SA Unit #947	North Reference:	True
Wellbore:	DH - Job #320214-MPD-236	Survey Calculation Method:	Minimum Curvature
Design:	DH - Job #320214-MPD-236	Database:	EDM-Regulatory

Survey							
MD (usft)	Inc. (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Azimuth (°)	Closure Distance (usft)
3,431.0	19.79	101.14	3,396.9	-59.2	284.9	101.74	291.0
3,611.0	18.03	97.98	3,567.1	-69.0	342.4	101.39	349.2
3,792.0	20.40	99.47	3,738.0	-78.1	401.2	101.01	408.7
3,972.0	20.58	102.99	3,906.7	-90.3	463.0	101.04	471.7
4,107.0	20.66	103.08	4,033.0	-101.0	509.3	101.22	519.2
4,288.0	19.08	105.63	4,203.2	-116.2	568.9	101.55	580.7
4,468.0	18.91	106.15	4,373.4	-132.3	625.3	101.95	639.1
4,636.0	18.99	106.86	4,532.3	-147.8	677.6	102.30	693.5
Last SDI MWD Survey							
4,692.0	18.99	106.86	4,585.3	-153.1	695.0	102.42	711.7
Projection to Bit							

Survey Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
1,628.0	1,628.0	4.4	-6.8	First SDI MWD Survey	
4,636.0	4,532.3	-147.8	677.6	Last SDI MWD Survey	
4,692.0	4,585.3	-153.1	695.0	Projection to Bit	



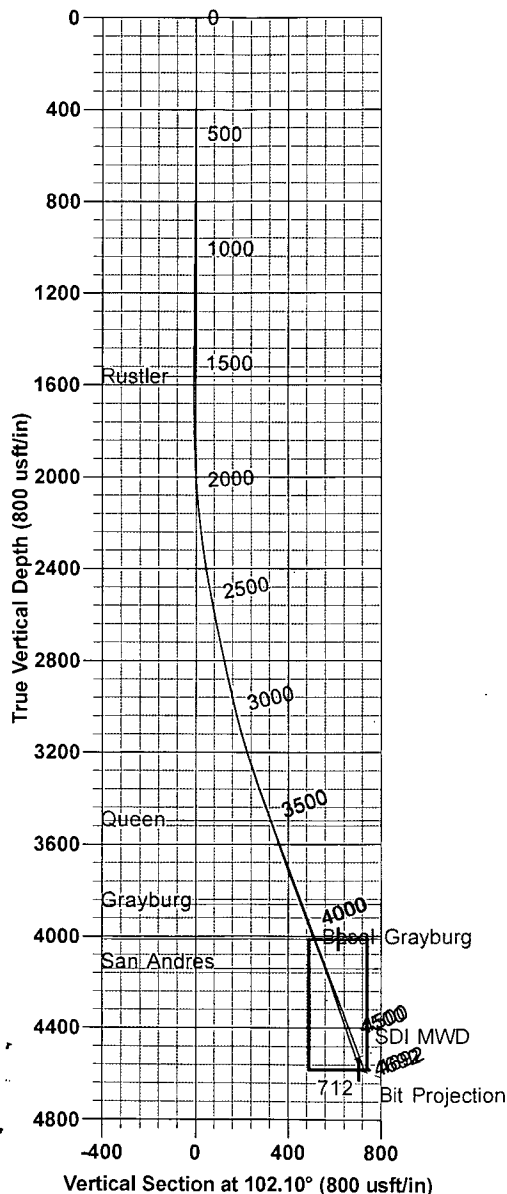
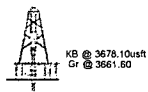
NHU 19-947
Hobbs Grayburg San Andres
Northing: 634606.02
Easting: 853884.24
Design #5



To convert a Magnetic Direction to a Grid Direction, Add 6.49°
 To convert a True Direction to a Grid Direction, Subtract 0.62°

Azimuths to Grid North
 True North: -0.62°
 Magnetic North: 6.49°

Magnetic Field
 Strength: 48698.9snT
 Dip Angle: 60.66°
 Date: 02/11/2014
 Model: IGRF2010



WELL DETAILS NHU 19-947						
Ground Level: 3661.60						
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	
0.00	0.00	634606.02	853884.24	32.739	-103.182	

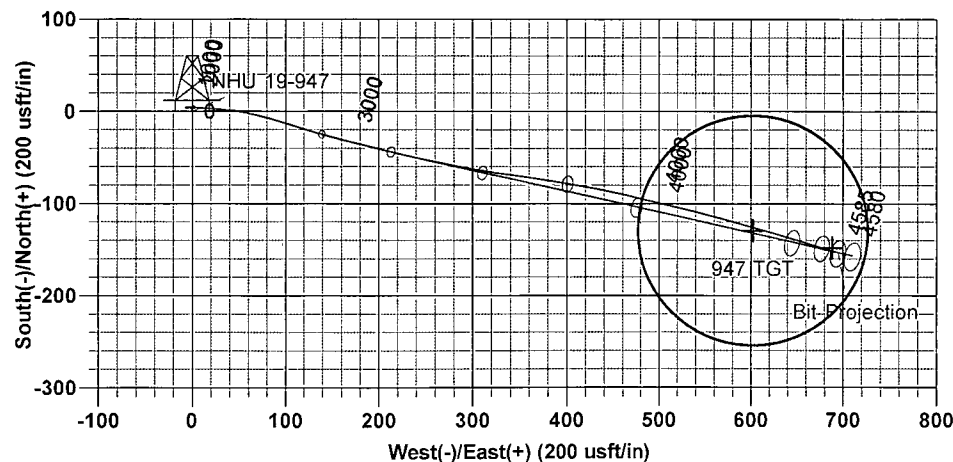
FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
1563.00	1563.04	Rustler
3498.00	3538.14	Queen
3863.00	3925.36	Grayburg
4013.00	4085.60	Basal Grayburg
4143.00	4224.15	San Andres

SECTION DETAILS										
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target	
2891.00	13.10	106.06	2878.47	-24.49	139.15	0.00	0.00	141.16		
3068.00	14.25	104.04	3050.45	-35.33	179.56	0.70	-23.54	182.96		
3467.62	20.35	102.74	3431.81	-62.61	295.17	1.53	-4.26	301.73		
3513.69	20.35	102.74	3475.00	-66.14	310.80	0.00	0.00	317.75		
4692.27	20.35	102.74	4580.00	-156.52	710.64	0.00	0.00	727.67	947 BHL	

SITE DETAILS:	
North Hobbs Unit 19 947	
Site Centre Northing:	634606.00
Easting:	853884.20
Positional Uncertainty:	0.00
Convergence:	0.62
Local North:	Grid

DESIGN TARGET DETAILS					
Name	TVD	+N/-S	+E/-W	Northing	Easting
947 TGT	4013.00	-129.12	602.16	634476.90	854486.40
947 BHL	4580.00	-147.61	688.38	634458.41	854572.62

PROJECT DETAILS:	
Hobbs Grayburg San Andres	
Geodetic System:	US State Plane 1927
Datum:	NAD 1927 (NADCON CONUS)
Ellipsoid:	Clarke 1866
Zone:	New Mexico East 3001
System Datum:	Mean Sea Level



Jody Barclay
 7:06, February 27 2014

Scientific Drilling
 2740 N. Highway 287
 Decatur, TX 76234