

Chevron U.S.A Inc.
Hayhurst 16 25 27 1H
Eddy County, New Mexico
Ensign 767
API# 30-015-41120-0000

RD 10/15/2014
Accepted for Record
NMOCD

May 19, 2014- June 4, 2014
HD-MJ-0901331874

Sperry Drilling
MWD End of Well Report

Submitted by Lance Smith
3950 Interwood South Parkway
Houston, TX 77032
Ph: 281.986.4400

HALLIBURTON

**Drilling and Formation
Evaluation**

NM OIL CONSERVATION
ARTESIA DISTRICT

OCT 14 2014

RECEIVED

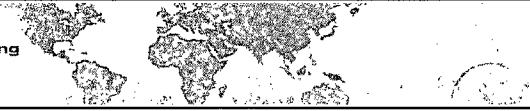


TABLE OF CONTENTS

1. General Information
2. Operational Overview
3. Summary of MWD Runs
4. Bitrun Summary
5. Directional Survey Data
6. Service Interrupt Report

GENERAL INFORMATION

Company : Chevron USA , Inc.
Rig : Ensign 767
Well : Hayhurst 16 25 27
Field : Wildcat
Lease Name : Hayhurst
State : New Mexico
County : Eddy
Country : USA
API Number : 30-015-41120
Sperry Drilling Job Number : HD-XX-0901331874
Job Start Date : 19-May-14
Job End Date : 04-Jun-14
North Reference : Grid
Total Correction (deg) : 7.556
Dip Angle (deg) : 59.906
Total Magnetic Field (nT) : 48196
Date of Magnetic Data : 20 May, 2014
Well Head coordinates N : 32 deg. 8 min 12.35 sec North
Well Head coordinates E : 104 deg. 11 min 45.56 sec West
Vertical section direction (deg) : 179.80
Unit Number : 11009812
MWD Engineers : Lance Smith, Logan Roberts

Company Representatives : Brad Osburn, John Akin

Company Geologist: : Ryan Jensen

OPERATIONAL OVERVIEW

SPERRY DRILLING SERVICES WAS CONTRACTED BY CHEVRON USA INC. TO PROVIDE DIRECTIONAL DRILLING AND MWD SERVICES FOR THE WELL HAYHURST 16 25 27 STATE 1H EDDY COUNTY NEW MEXICO. TOOLS AND CREW ARRIVED ON LOCATION 19-MAY-14 AND RIGGED UP ACCORDINGLY.

RUN 100: 20-MAY-14 PICKED UP 8" DWD TOOLS. DRILLED FROM 458' MD TO 2276' MD. 23-MAY-14. POOH TO RUN CASING AND DOWNSIZE TO 6.75 TOOLS 100% MWD

RUN 200: 24-MAY-14 PICKED UP 6.75" DGWD TOOLS. DRILLED FROM 2276' MD TO 7110' MD. 28-MAY-14. POOH TO P/U CURVE AND LATERAL ASSEMBLY 100% MWD

RUN 300: 28-MAY-14 PICKED UP 6.75" DGWD TOOLS. DRILLED FROM 7110' MD TO 10937' MD. 2-JUNE-14. POOH DUE TO MWD FAILURE.

RUN 400: 2-JUNE-14 PICKED UP 6.75" DGWD TOOLS. DRILLED FROM 10937' MD TO 12304' MD. 4-JUNE-14. POOH TD WELL

HALLIBURTON

Sperry Drilling

SUMMARY OF MWD RUNS

Run No.	Rig Run No.	Hole Size (in)	MWD Service	Start Depth (ft)	End Depth (ft)	Drill/Wipe Distance (ft)	Run Start Date Time	Run End Date Time	BRT Hrs	Oper. Hrs	Circ.
100	0100	12.25	DWD	458.00	2276.00	1818.00	20-May-14 17:30	23-May-14 06:30	61.00	61.000	49.5
200	0200	8.75	D/GWD	2276.00	7110.00	4834.00	24-May-14 08:00	28-May-14 10:00	98.00	98.000	65.0
300	300	8.75	D/GWD	7110.00	10937.00	3827.00	28-May-14 12:00	02-Jun-14 06:00	114.00	114.000	82.0
400	0400	8.75	D/GWD	10937.00	12304.00	1367.00	02-Jun-14 08:00	04-Jun-14 22:30	62.50	62.500	39.5

Job No: HD-XX-0901331874 Well Name: Hayhurst 16 25 27

End of Well Report



BIT RUN SUMMARY

RUN TIME DATA

MWD Run : 100	Run Start : 20-May-14 17:30	BRT Hrs : 61.00	Circ. Hrs : 49.50
Rig Run No. : 0100	Run End : 23-May-14 06:30	Hole Size (in) : 12.25	Oper. Hrs : 61.00

DRILLING DATA

Start Depth (ft) : 458.00	Footage (ft) : 1818.00	Avg WOB (klb) : 11.0	Avg ROP (fph) : 50.00
End Depth (ft) : 2276.00	Avg Flow Rate (gpm) : 498	Avg TOB (ft-lb) : 8000	Avg SPP (psig) : 1800
Drilling Hrs (hr) : 38.838	Avg RPM (rpm) : 68	Avg Bend (ft-lb) : NA	

MUD DATA

Mud Type : Fresh Water Gel			
Weight (ppg) : 10.05	Viscosity (spqt) : 29.00	PV (cP) : 2	YP (lbf/ft ²) : 3.00
Chlorides (ppm) : 180000	Max Temp (degF) : 120.00	% Solids (%) : 1.20	% Sand (%) : 0.10
pH (pH) : 10.00	Fluid Loss (mptm) : NA	% Oil (%) :	O:W :

MWD PERFORMANCE

Tool OD (in) : 8	Type : DWD	Min. Inc. (deg) : 0.00	Min. Inc. Depth (ft) : 400.00
Final Az. (deg) : 104.33	Max Op. Press. (psig) : 1193	Max. Inc. (deg) : 4.48	Max. Inc. Depth (ft) : 493.00
MWD Real Time % : 100		MWD Recorded % : 100	

COMMENTS

20-MAY TIH. DRILLED FROM 458' MD TO 2276' MD. 23-MAY POOH TO RUN CASING AND DOWNSIZE TO 6.75 TOOLS

	Length (ft)	Cumulative Length (ft)		Length (ft)	Sensor Dist From Bit (ft)
(1) NMDC 8.06 in OD / 3.25 in ID SN : DR24112					
(2) MWD		105.90			
(3) NMDC 8.13 in OD / 3.25 in ID SN : DR24380	(1) 31.48		HOS 8.00 in OD / 2.88 in ID SN : 11230608		[2] 63.81
(4) Stabilizer 8.00 in OD / 2.88 in ID SN : AWSS4945	(2) 5.79	74.42	*[1]Positive Pulser - SN : 11050339		
(5) Float Sub 7.94 in OD / 3.25 in ID SN : E011926813	(3) 30.97	68.63	*[2]PCDC Sonde 2.0" - SN : 11833343	5.79	[3] 69.79
(6) 8" SperryDrill Lobe 6/7 - 4.0 stg 8.00 in OD / 5.25 in ID SN : 800-650	(4) 7.14	37.66	*[3]PCM Sonde 2.0" - SN : 11400828		
(7) PDC 8.00 in OD / 1.00 in ID SN : 22690	(5) 2.17	30.52			
	(6) 26.85	28.35			
	(7) 1.50	1.50			

BIT RUN SUMMARY

RUN TIME DATA

MWD Run : 200	Run Start : 24-May-14 08:00	BRT Hrs : 98.00	Circ. Hrs : 65.00
Rig Run No. : 0200	Run End : 28-May-14 10:00	Hole Size (in) : 8.75	Oper. Hrs : 98.00

DRILLING DATA

Start Depth (ft) : 2276.00	Footage (ft) : 4834.00	Avg WOB (klb) : 11.0	Avg ROP (fph) : 80.00
End Depth (ft) : 7110.00	Avg Flow Rate(gpm) : 500	Avg TOB (ft-lb) : 9000	Avg SPP (psig) : 1900
Drilling Hrs (hr) : 50.314	Avg RPM (rpm) : 45	Avg Bend (ft-lb) : NA	

MUD DATA

Mud Type : Fresh Water Gel			
Weight (ppg) : 9.40	Viscosity (spqt) : 29.00	PV (cP) : 2	YP (lbf2) : 3.00
Chlorides (ppm) : 72000	Max Temp (degF) : 124.00	% Solids (%) : 3.80	% Sand (%) : 0.10
pH (pH) : 9.10	Fluid Loss(mptm) : NA	% Oil (%) :	O:W :

MWD PERFORMANCE

Tool OD (in) : 6.75	Type : D/GWD	Min. Inc. (deg): 0.07	Min. Inc. Depth (ft) : 5510.00
Final Az. (deg) : 36.62	Max Op. Press. (psig) 3510	Max. Inc. (deg): 3.06	Max. Inc. Depth (ft) : 4181.00
MWD Real Time % : 90		MWD Recorded % : 100	

COMMENTS

24-MAY TIH. DRILLED FROM 2276' MD TO 7110' MD. 27-MAY POOH TO P/U CURVE AND LATERAL ASSEMBLY

(1) NMDC
6.88 in OD / 2.81 in ID
SN : DR26526

(2) MWD

(3) NMDC
6.75 in OD / 2.81 in ID
SN : DR8776

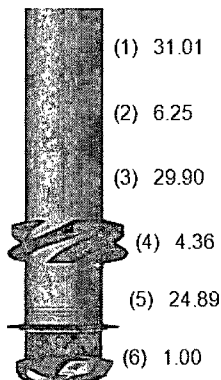
(4) Stabilizer
6.69 in OD / 2.88 in ID
SN : SIG842

(5) 6 3/4" SperryDrill Lobe 6/7 -
5.0 stg
6.75 in OD / 4.50 in ID
SN : 12067765

(6) PDC
6.75 in OD / 1.00 in ID
SN : 24536

Length
(ft)

Cumulative
Length (ft)



97.41

66.40

60.15

30.25

25.89

1.00

Length
(ft)

Sensor Dist
From Bit
(ft)



6.25

HOS

6.69 in OD / 2.88 in ID
SN : 11633626

*[1]PCG Sonde 2.0" - SN :
11681096

*[2]Positive Pulser - SN : 10437935
*[3]PCDC Sonde 2.0" - SN :

11833343

*[4]PCM Sonde 2.0" - SN :
11400828

[1] 54.42

[3] 49.84

[4] 60.66

BIT RUN SUMMARY

RUN TIME DATA

MWD Run	: 300	Run Start	: 28-May-14 12:00	BRT Hrs	: 114.00	Circ. Hrs	: 82.00
Rig Run No.	: 300	Run End	: 02-Jun-14 06:00	Hole Size (in)	: 8.75	Oper. Hrs	: 114.00

DRILLING DATA

Start Depth (ft)	: 7110.00	Footage (ft)	: 3827.00	Avg WOB (klb)	: 20.0	Avg ROP (fph)	: 80.00
End Depth (ft)	: 10937.00	Avg Flow Rate(gpm)	: 500	Avg TOB (ft-lb)	: 15000	Avg SPP (psig)	: 1500
Drilling Hrs (hr)	: 72.000	Avg RPM (rpm)	: 43	Avg Bend (ft-lb)	: NA		

MUD DATA

Mud Type	: Fresh Water Gel						
Weight (ppg)	: 9.50	Viscosity (spqt)	: 28.00	PV (cP)	: 2	YP (lbf2)	: 3.00
Chlorides (ppm)	: 111000	Max Temp (degF)	: 145.00	% Solids (%)	: 0.90	% Sand (%)	: 0.10
pH (pH)	: 9.20	Fluid Loss(mptm)	: NA	% Oil (%)	:	O:W	:

MWD PERFORMANCE

Tool OD (in)	: 6.75	Type	: D/GWD	Min. Inc. (deg)	: 0.50	Min. Inc. Depth (ft)	: 7076.00
Final Az. (deg)	: 182.54	Max Op. Press. (psig)	: 3746	Max. Inc. (deg)	: 92.34	Max. Inc. Depth (ft)	: 8026.00
MWD Real Time %	: 100	MWD Recorded %	: 100				

COMMENTS

28-MAY TIH. DRILLED FROM 7110' MD TO 10937' MD. 2-JUNE POOH DUE TO MWD FAILIURE

	Length (ft)	Cumulative Length (ft)		Length (ft)	Sensor Dist From Bit (ft)
(1) NMDC 6.88 in OD / 2.81 in ID SN : DR26526					
(2) MWD		100.55	HOS		
(3) NMDC 6.75 in OD / 2.81 in ID SN : DR8776	(1) 31.01		6.69 in OD / 2.88 in ID SN : 11633626		[1] 57.56
(4) Float Sub 6.68 in OD / 2.81 in ID SN : 1192556	(2) 6.25	69.54	*[1]PCG Sonde 2.0" - SN : 12037359	6.25	[3] 52.98
(5) Stabilizer 6.69 in OD / 2.88 in ID SN : SIG842	(3) 29.90	63.29	*[2]Positive Pulser - SN : 11050339		[4] 63.80
(6) 6 3/4" SperryDrill Lobe 6/7 - 5.0 stg 6.75 in OD / 4.50 in ID SN : 11841933	(4) 3.19	33.39	*[3]PCDC Sonde 2.0" - SN : 11638516		
(7) PDC 6.75 in OD / 1.00 in ID SN : 24535	(5) 4.36	30.20	*[4]PCM Sonde 2.0" - SN : 12000939		
	(6) 24.84	25.84			
	(7) 1.00	1.00			

BIT RUN SUMMARY

RUN TIME DATA

MWD Run : 400	Run Start : 02-Jun-14 08:00	BRT Hrs : 62.50	Circ. Hrs : 39.50
Rig Run No. : 0400	Run End : 04-Jun-14 22:30	Hole Size (in) : 8.75	Oper. Hrs : 65.50

DRILLING DATA

Start Depth (ft) : 10937.00	Footage (ft) : 1367.00	Avg WOB (klb) : 25.0	Avg ROP (fph) : 80.00
End Depth (ft) : 12304.00	Avg Flow Rate (gpm) : 510	Avg TOB (ft-lb) : 15000	Avg SPP (psig) : 2200
Drilling Hrs (hr) : 29.577	Avg RPM (rpm) : 45	Avg Bend (ft-lb) : NA	

MUD DATA

Mud Type : Fresh Water Gel			
Weight (ppg) : 9.45	Viscosity (spqt) : 28.00	PV (cP) : 2	YP (lbf2) : 3.00
Chlorides (ppm) : 108000	Max Temp (degF) : 150.00	% Solids (%) : 2.30	% Sand (%) : 0.10
pH (pH) : 9.20	Fluid Loss (mptm) : NA	% Oil (%) :	O:W :

MWD PERFORMANCE

Tool OD (in) : 6.75	Type : D/GWD	Min. Inc. (deg) : 85.57	Min. Inc. Depth (ft) : 11356.00
Final Az. (deg) : 177.09	Max Op. Press. (psig) : 3766	Max. Inc. (deg) : 90.68	Max. Inc. Depth (ft) : 11926.00
MWD Real Time % : 100		MWD Recorded % : 100	

COMMENTS

2-JUNE TIH. DRILLED FROM 10937' MD TO 12304' MD. 4-JUNE POOH

(1) NMDC
6.88 in OD / 2.81 in ID
SN : DR26526

(2) MWD

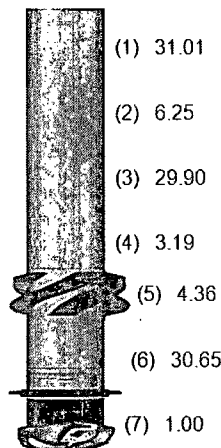
(3) NMDC
6.75 in OD / 2.81 in ID
SN : DR8776

(4) Float Sub
6.68 in OD / 2.81 in ID
SN : 1192556

(5) Stabilizer
6.69 in OD / 2.88 in ID
SN : SIG842

(6) 6 3/4" SperryDrill Lobe 6/7 -
5.0 stg
6.75 in OD / 4.50 in ID
SN : 7001270

(7) PDC
6.75 in OD / 1.00 in ID
SN : 25056



Length
(ft)

Cumulative
Length (ft)

(1) 31.01

(2) 6.25

(3) 29.90

(4) 3.19

(5) 4.36

(6) 30.65

(7) 1.00

106.36

75.35

69.10

39.20

36.01

31.65

1.00

HOS

6.69 in OD / 2.88 in ID
SN : 11633626

*[1]PCG Sonde 2.0" - SN :
11681096

*[2]Positive Pulser - SN : 10437935

*[3]PCDC Sonde 2.0" - SN :
11833343

*[4]PCM Sonde 2.0" - SN :
11400828

Length
(ft)

Sensor Dist
From Bit
(ft)

6.25

[1] 57.12

[3] 52.54

[4] 63.36



DIRECTIONAL SURVEY DATA

Tie-in

0.00

0.00

0.00

0.00

0.00 N

0.00 E

Measured Depth (ft)	Inclination (deg)	Direction (deg)	Vertical Depth (ft)	Latitude (ft)	Departure (ft)	Vertical Section (ft)	Dogleg (°/100)
493.00	4.48	242.54	492.50	8.89 S	17.10 W	8.83	0.91
583.00	3.47	234.72	582.28	12.09 S	22.45 W	12.01	1.27
674.00	2.34	220.84	673.16	15.09 S	25.92 W	15.00	1.45
768.00	2.79	229.70	767.07	18.02 S	28.92 W	17.92	0.64
857.00	2.16	224.87	855.98	20.61 S	31.76 W	20.50	0.75
949.00	2.00	227.12	947.92	22.93 S	34.16 W	22.81	0.20
1047.00	2.07	229.11	1,045.86	25.25 S	36.74 W	25.12	0.10
1144.00	2.45	232.98	1,142.79	27.64 S	39.72 W	27.51	0.42
1239.00	2.65	238.95	1,237.69	30.00 S	43.22 W	29.85	0.35
1335.00	3.55	245.06	1,333.55	32.40 S	47.82 W	32.23	1.00
1430.00	2.69	223.23	1,428.41	35.26 S	52.01 W	35.08	1.53
1526.00	1.77	145.80	1,524.36	38.12 S	52.72 W	37.94	3.00
1621.00	2.97	104.90	1,619.28	39.97 S	49.51 W	39.80	2.11
1716.00	2.51	100.13	1,714.17	40.97 S	45.09 W	40.81	0.54
1811.00	3.95	104.46	1,809.02	42.15 S	39.87 W	42.01	1.53
1905.00	3.94	100.98	1,902.80	43.58 S	33.57 W	43.46	0.25
2000.00	3.33	97.55	1,997.61	44.56 S	27.63 W	44.46	0.69
2096.00	1.97	99.04	2,093.50	45.19 S	23.24 W	45.10	1.41
2191.00	0.88	104.33	2,188.47	45.62 S	20.92 W	45.55	1.16
2281.00	0.85	106.41	2,278.46	45.98 S	19.60 W	45.92	0.05
2376.00	1.01	102.67	2,373.45	46.37 S	18.11 W	46.30	0.18
2472.00	0.66	113.96	2,469.44	46.78 S	16.78 W	46.72	0.40
2661.00	0.84	124.15	2,658.42	48.00 S	14.63 W	47.95	0.12
2851.00	0.70	124.90	2,848.40	49.45 S	12.52 W	49.41	0.07
3041.00	0.49	105.85	3,038.39	50.34 S	10.77 W	50.30	0.15
3232.00	0.68	96.15	3,229.38	50.69 S	8.85 W	50.66	0.11
3420.00	0.66	111.26	3,417.37	51.20 S	6.71 W	51.18	0.09
3515.00	1.94	285.45	3,512.36	50.98 S	7.75 W	50.95	2.73
3705.00	2.10	277.16	3,702.24	49.69 S	14.30 W	49.64	0.18
3896.00	2.14	270.16	3,893.11	49.24 S	21.35 W	49.17	0.14
4086.00	2.79	295.88	4,082.94	47.21 S	29.06 W	47.11	0.67
4181.00	3.06	339.98	4,177.82	43.82 S	32.01 W	43.71	2.33
4370.00	1.64	21.13	4,366.67	36.55 S	32.76 W	36.43	1.12
4560.00	0.90	7.76	4,556.62	32.54 S	31.58 W	32.43	0.42
4750.00	0.73	7.47	4,746.60	29.86 S	31.22 W	29.75	0.09
4940.00	0.58	357.55	4,936.59	27.71 S	31.11 W	27.60	0.10
5130.00	0.25	356.45	5,126.59	26.34 S	31.17 W	26.23	0.17
5319.00	0.37	355.35	5,315.58	25.32 S	31.25 W	25.21	0.07
5510.00	0.07	148.84	5,506.58	24.80 S	31.24 W	24.69	0.23
5700.00	0.58	232.31	5,696.58	25.49 S	31.94 W	25.38	0.30
5891.00	1.84	176.21	5,887.54	29.13 S	32.50 W	29.02	0.83

DIRECTIONAL SURVEY DATA

Measured Depth (ft)	Inclination (deg)	Direction (deg)	Vertical Depth (ft)	Latitude (ft)	Departure (ft)	Vertical Section (ft)	Dogleg (%/100')
6082.00	1.51	208.84	6,078.46	34.39 S	33.51 W	34.27	0.52
6272.00	0.82	185.14	6,268.42	37.94 S	34.84 W	37.82	0.44
6462.00	0.70	142.37	6,458.41	40.21 S	34.26 W	40.09	0.30
6652.00	0.56	296.59	6,648.40	40.71 S	34.38 W	40.59	0.64
6842.00	1.19	283.48	6,838.38	39.84 S	37.12 W	39.71	0.35
6969.00	0.41	349.36	6,965.37	39.08 S	38.48 W	38.94	0.85
7059.00	0.20	36.62	7,055.37	38.63 S	38.45 W	38.50	0.35
7076.00	0.50	98.43	7,072.37	38.62 S	38.36 W	38.49	2.61
7139.00	3.21	178.52	7,135.33	40.42 S	38.04 W	40.29	5.02
7171.00	6.82	190.86	7,167.20	43.19 S	38.38 W	43.05	11.72
7203.00	11.77	191.29	7,198.77	48.26 S	39.38 W	48.12	15.45
7234.00	16.27	190.21	7,228.84	55.64 S	40.77 W	55.49	14.55
7266.00	20.10	186.03	7,259.24	65.52 S	42.14 W	65.37	12.62
7298.00	24.56	183.93	7,288.83	77.63 S	43.17 W	77.48	14.16
7329.00	29.16	183.57	7,316.48	91.60 S	44.08 W	91.45	14.87
7361.00	32.86	185.64	7,343.91	108.03 S	45.42 W	107.87	12.02
7393.00	36.88	187.74	7,370.16	126.19 S	47.57 W	126.02	13.11
7425.00	40.44	187.90	7,395.14	145.99 S	50.29 W	145.81	11.12
7456.00	44.44	185.60	7,418.02	166.76 S	52.73 W	166.57	13.84
7487.00	49.06	184.97	7,439.25	189.24 S	54.81 W	189.04	14.99
7519.00	53.17	183.72	7,459.33	214.07 S	56.69 W	213.87	13.20
7550.00	56.76	181.97	7,477.13	239.41 S	57.94 W	239.21	12.45
7582.00	59.02	179.61	7,494.14	266.51 S	58.31 W	266.31	9.44
7614.00	60.77	178.51	7,510.19	294.19 S	57.85 W	293.99	6.22
7645.00	62.92	178.17	7,524.82	321.51 S	57.06 W	321.31	7.01
7677.00	66.86	177.86	7,538.40	350.46 S	56.06 W	350.26	12.34
7709.00	69.90	178.00	7,550.18	380.19 S	54.98 W	379.99	9.52
7740.00	71.15	178.09	7,560.52	409.39 S	53.98 W	409.20	4.02
7772.00	73.33	178.15	7,570.28	439.85 S	52.98 W	439.66	6.81
7803.00	76.38	179.18	7,578.38	469.76 S	52.28 W	469.58	10.36
7835.00	78.79	179.11	7,585.26	501.01 S	51.82 W	500.82	7.54
7867.00	81.07	179.20	7,590.85	532.51 S	51.36 W	532.33	7.13
7899.00	84.22	179.10	7,594.95	564.24 S	50.89 W	564.06	9.86
7931.00	88.03	179.53	7,597.11	596.16 S	50.51 W	595.98	11.96
8026.00	92.34	178.54	7,596.81	691.12 S	48.91 W	690.94	4.66
8095.00	91.97	178.83	7,594.21	760.05 S	47.33 W	759.88	0.68
8121.00	91.94	178.92	7,593.32	786.03 S	46.82 W	785.86	0.36
8217.00	90.71	177.97	7,591.10	881.97 S	44.21 W	881.81	1.62
8312.00	91.76	177.97	7,589.06	976.89 S	40.85 W	976.74	1.11
8407.00	90.86	176.30	7,586.88	1,071.74 S	36.10 W	1071.60	2.00
8502.00	90.00	175.39	7,586.17	1,166.48 S	29.21 W	1166.37	1.32
8598.00	91.08	175.06	7,585.26	1,262.14 S	21.22 W	1262.06	1.17
8693.00	89.51	173.78	7,584.78	1,356.69 S	11.98 W	1356.64	2.13
8788.00	90.77	173.84	7,584.55	1,451.13 S	1.74 W	1451.12	1.33
8883.00	89.01	174.53	7,584.73	1,545.64 S	7.89 E	1545.66	1.99



DIRECTIONAL SURVEY DATA

Measured Depth (ft)	Inclination (deg)	Direction (deg)	Vertical Depth (ft)	Latitude (ft)	Departure (ft)	Vertical Section (ft)	Dogleg (°/100')
8978.00	90.31	174.93	7,585.29	1,640.23 S	16.62 E	1640.28	1.43
9072.00	88.40	176.45	7,586.35	1,733.95 S	23.69 E	1734.02	2.60
9167.00	87.91	178.38	7,589.41	1,828.80 S	27.98 E	1828.89	2.10
9263.00	88.61	180.97	7,592.33	1,924.75 S	28.52 E	1924.83	2.80
9358.00	89.48	183.21	7,593.92	2,019.66 S	25.06 E	2019.74	2.53
9454.00	90.89	183.67	7,593.60	2,115.49 S	19.29 E	2115.54	1.55
9548.00	89.69	182.62	7,593.12	2,209.34 S	14.13 E	2209.38	1.70
9642.00	90.77	182.27	7,592.75	2,303.25 S	10.12 E	2303.27	1.21
9737.00	90.92	181.85	7,591.34	2,398.18 S	6.71 E	2398.19	0.48
9832.00	89.54	181.77	7,590.96	2,493.13 S	3.71 E	2493.13	1.46
9926.00	90.96	181.83	7,590.55	2,587.08 S	0.76 E	2587.07	1.51
10021.00	92.10	182.21	7,588.02	2,681.99 S	2.58 W	2681.96	1.27
10115.00	90.09	182.32	7,586.23	2,775.89 S	6.29 W	2775.85	2.14
10211.00	90.86	182.97	7,585.43	2,871.78 S	10.72 W	2871.73	1.05
10305.00	89.54	183.25	7,585.10	2,965.64 S	15.83 W	2965.57	1.44
10400.00	88.70	183.27	7,586.56	3,060.48 S	21.23 W	3060.38	0.88
10495.00	89.78	183.33	7,587.81	3,155.31 S	26.70 W	3155.20	1.14
10590.00	91.14	183.83	7,587.04	3,250.12 S	32.63 W	3249.99	1.52
10685.00	89.88	182.53	7,586.20	3,344.96 S	37.89 W	3344.81	1.91
10779.00	91.11	182.70	7,585.39	3,438.86 S	42.18 W	3438.69	1.33
10875.00	90.71	182.54	7,583.87	3,534.75 S	46.57 W	3534.57	0.45
10976.00	89.26	181.96	7,583.90	3,635.67 S	50.54 W	3635.47	1.54
11071.00	88.58	182.55	7,585.68	3,730.58 S	54.28 W	3730.36	0.94
11166.00	86.13	181.79	7,590.07	3,825.40 S	57.87 W	3825.17	2.71
11261.00	85.96	181.28	7,596.63	3,920.14 S	60.41 W	3919.90	0.57
11356.00	85.57	180.63	7,603.64	4,014.87 S	61.98 W	4014.62	0.80
11452.00	87.75	178.65	7,609.23	4,110.69 S	61.37 W	4110.45	3.06
11547.00	88.21	176.64	7,612.58	4,205.54 S	57.47 W	4205.32	2.17
11642.00	89.69	176.71	7,614.32	4,300.37 S	51.95 W	4300.16	1.56
11737.00	89.88	177.24	7,614.68	4,395.23 S	46.94 W	4395.04	0.60
11831.00	89.75	176.60	7,614.98	4,489.10 S	41.89 W	4488.92	0.70
11926.00	90.68	176.57	7,614.62	4,583.93 S	36.23 W	4583.77	0.97
12021.00	90.28	176.39	7,613.83	4,678.74 S	30.40 W	4678.61	0.46
12116.00	89.69	176.40	7,613.86	4,773.55 S	24.42 W	4773.44	0.62
12211.00	88.30	177.09	7,615.52	4,868.38 S	19.03 W	4868.29	1.63
12304.00	88.30	177.09	7,618.27	4,961.22 S	14.31 W	4961.14	0.01

SURVEY FOOTER

SURVEYS CALCULATED USING THE SHORT COLLAR METHOD.

WELL ASSUMED VERTICAL FROM SURFACE TO 400' MD.

SURVEYS FROM 493' MD TO 12211' MD PROVIDED BY SPERRY DRILLING SERVICES.

SURVEY AT 12211' MD IS PROJECTED TO TD AT 12304' MD.

SPERRY DRILLING ENGINEERS: LANCE SMITH, LOGAN ROBERTS

DIRECTIONAL SURVEY DATA NOTES

- Calculation based on minimum curvature method.
- Survey coordinates relative to well system reference point.
- TVD values given relative to drilling measurement point.
- Vertical section relative to well head.
- Vertical section is computed along a direction of 179.80 degrees (Grid)
- A total correction of 7.56 deg from Magnetic north to Grid north has been applied
- Horizontal displacement is relative to the well head.
- Horizontal displacement (closure) at 12,304.00 feet is 4,961.24 feet along 180.17 degrees (Grid)

WARRANTY

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SERVICE INTERRUPT REPORT

MWD Run Number	:300	Time / Date of Failure	:02-Jun-14 09:34
Rig Bit Number	:300	Depth at Time of Failure (ft)	:10937
MWD Run Start Time / Date	:28-May-14 12:00	Lost Rig Hours	:
MWD Run End Time / Date	:02-Jun-14 06:00		

RIG ACTIVITY

Drilling ahead and sliding when needed

DESCRIPTION OF FAILURE

HD-XX-0901331874r300:Rig pump lost 800 psi and the tool flat lined. After getting the pumps back on line the tool tried to pulse then flat lined again

ACTION TAKEN

Tried increasing the flow to see if anything was stuck by the poppet. Also tried changing data rate, list and changed out transducer. Pulser Failed resistance test on ground and I could not get the probes to show a surface test with red box or running rig. Failing whole tool string

OPERATION IMPACT

REASON FOR FAILURE

HALLIBURTON

Sperry Drilling



Halliburton / Sperry Drilling Services
3950 Interwood Dr.
Houston, Texas 77032
Phone: 281-986-4400
Fax: 281-986-4498