

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018

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 page 2

5. Lease Serial No. NMNM113944
6. If Indian, Allottee or Tribe Name
7. If Unit or CA/Agreement, Name and/or No.
8. Well Name and No. COTTONWOOD 29-32 FED COM WCA 9H
9. API Well No. 30-015-44919-00-X1
10. Field and Pool or Exploratory Area PURPLE SAGE-WOLFCAMP (GAS)
11. County or Parish, State EDDY COUNTY, NM

1. Type of Well ☐ Oil Well ☒ Gas Well ☐ Other	
2. Name of Operator CHISHOLM ENERGY OPERATING LLC Contact: JENNIFER ELROD Email: jelrod@chisholmenergy.com	
3a. Address 801 CHERRY STREET FORT WORTH, TX 76012	3b. Phone No. (include area code) Ph: 817-953-3728
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 29 T26S R26E 100FNL 1205FWL 32.020229 N Lat, 104.319679 W Lon	

12. CHECK THE 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	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	Change to Original A PD
	☐ 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 must 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 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

SUNDRY TO CHANGE LP AND BHL LOCATION

LANDING POINT:
FROM: 435 FNL/1584 FWL
TO: 330 FNL/1310 FWL

BOTTOM HOLE:
FROM: 330 FSL/1584 FWL
TO: 330 FSL/1310 FWL

NEW DIRECTIONAL PLAN AND C-102 ATTACHED.

Carlsbad Field Office
OCD Artesia RECEIVED

MAY 07 2018

DISTRICT II-ARTESIA O.C.D.

All Previous COA still apply.

14. I hereby certify that the foregoing is true and correct.
Electronic Submission #413075 verified by the BLM Well Information System
For CHISHOLM ENERGY OPERATING LLC, sent to the Carlsbad
Committed to AFMSS for processing by ZOTA STEVENS on 05/02/2018 (18ZS0112SE)

Name (Printed/Typed) JENNIFER ELROD	Title SENIOR REGULATORY TECH
Signature (Electronic Submission)	Date 05/01/2018

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By <u>ZOTA STEVENS</u>	Title <u>PETROLEUM ENGINEER</u>	Date <u>05/02/2018</u>
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 <u>Carlsbad</u>		

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 page 2) ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED **

RW 5-8-18

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 Rd., Aztec, NM 87410
Phone (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV
1226 S. St. Francis Dr., Santa Fe, NM 87505
Phone (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
1226 South St. Francis Dr.
Santa Fe, New Mexico 87505

RECEIVED
MAY 07 2018

Form C-102
Revised August 1, 2011

Submit one copy to appropriate
District Office

DISTRICT II-ARTESIA O.C.D.

☒ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015-44919	Pool Code 98220	Pool Name PURPLE SAGE; WOLFCAMP
Property Code 319571	Property Name COTTONWOOD 29-32 FED COM WCA	Well Number 9H
OGRID No. 372137	Operator Name CHISHOLM ENERGY OPERATING, LLC	Elevation 3433'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	FEET from the	North/SOUTH LINE	FEET from the	East/West Line	County
D	29	26 S	26 E		100	NORTH	1205	WEST	EDDY

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
LOT 4	32	26 S	26 E		330	SOUTH	1310	WEST	EDDY
Dedicated Acres 447.97	Joint or Infill	Consolidation Code	Order No.						

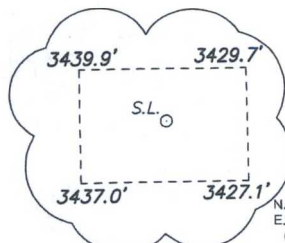
NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

SURFACE LOCATION

Lat - N 32.02023030°
Long - W 104.31968087°
NMSPCE - N 371098.9
E 545568.7
(NAD-83)

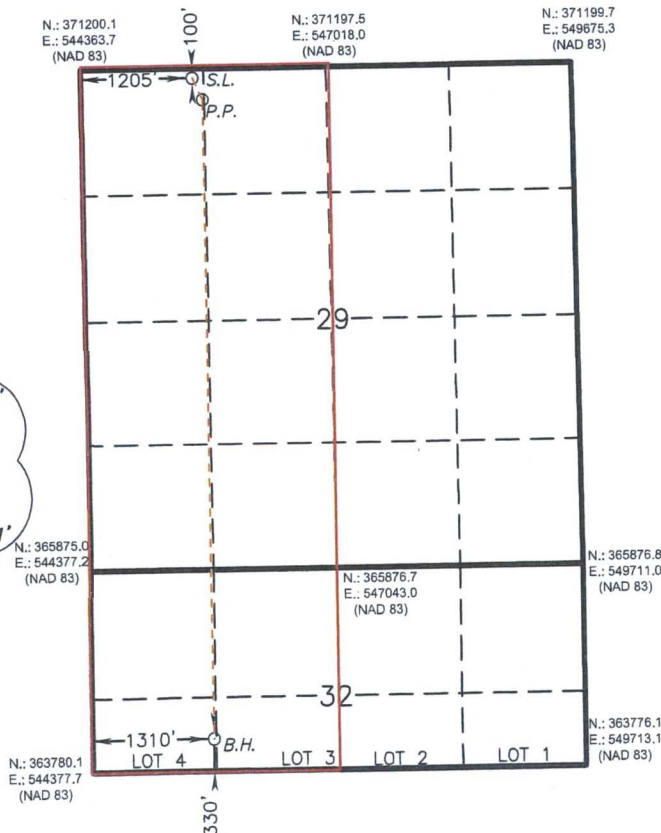
PENETRATION POINT
330' FNL & 1310' FWL

Lat - N 32.01959776°
Long - W 104.31933941°
NMSPCE - N 370868.9
E 545674.5
(NAD-83)



BOTTOM HOLE LOCATION

Lat - N 32.00101466°
Long - W 104.31930009°
NMSPCE - N 364108.9
E 545687.6
(NAD-83)



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.

Jennifer Elrod 05/01/18
Signature Date

JENNIFER ELROD

Printed Name
jelrod@chisholmenergy.com
Email Address

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.

APRIL 30, 2018
Date Surveyed

Signature & Seal of
Professional Surveyor
7977

Certificate No. Gary Jones 7977
BASIN SURVEYS

Scale: 1" = 2000'
WO Num.: 33113

Job#
Rig: 22' KB

Chisholm Energy Holdings

Eddy County, NM (NAD 83) Cottonwood 29-32 Fed

API#

WCA 9H

Wellbore #1

Sperry Drilling Services

Ellipse Separation Anticollision Report

Minimum Magnetic Interference Warning level is 50' center to center

Closest Approach 3D Proximity Scan on Current Survey Data (Highside Reference)
Reference Design: Cottonwood 29-32 Fed - WCA 9H - Wellbore #1 - Plan 1

Well Coordinates: 32° 01' 12.83" N
104° 19' 10.85" W

North American Datum 1983
New Mexico Eastern Zone
371,098.90 N
545,568.70 E

Ground Level: 3,433.00 usft

Scan Range: 0.00 to 14,930.58 usft. Measured Depth.

Scan Radius is 1,731.92 usft . Clearance Factor cutoff is Unlimited. Max Ellipse Separation is Unlimited

Version: 5000.1 Build: 81E

Report Version: Midcon Ellipse v1.50

HALLIBURTON

HALLIBURTON

Anticollision Report for WCA 9H - Plan 1

Anticollision Summary

Reference Design: Cottonwood 29-32 Fed - WCA 9H - Wellbore #1 - Plan 1

Closest Approach 3D Proximity Scan on Current Survey Data (Highside Reference)

Scan Range: 0.00 to 14,930.58 usft. Measured Depth.

Scan Radius is 1,731.92 usft. Clearance Factor cutoff is Unlimited. Max Ellipse Separation is Unlimited

Site Name	Measured Depth (usft)	Minimum Distance (usft)	@Measured Depth (usft)	Ellipse Separation (usft)	@Measured Depth usft	Clearance Factor	Summary Based on Minimum
Comparison Well Name - Wellbore Name - Design							
Cottonwood 29-32 Fed							
2BS 1H - Wellbore #1 - Wellbore #1	5,500.00	121.64	5,500.00	96.70	5,500.29	4.878	Ellipse Separation
	6,000.00	128.02	6,000.00	100.92	5,997.91	4.724	Clearance Factor
2BS 2H - Wellbore #1 - Wellbore #1	3,052.76	76.07	3,052.76	61.73	3,053.30	5.305	Centre Distance
	3,300.00	76.71	3,300.00	61.29	3,300.13	4.977	Ellipse Separation
	5,500.00	103.20	5,500.00	78.22	5,499.05	4.131	Clearance Factor
WCA 6H (Re-stake) - Wellbore #1 - Plan 2	7,412.96	60.00	7,412.96	25.65	7,412.96	1.747	Centre Distance
	7,500.00	60.09	7,500.00	25.36	7,498.88	1.730	Ellipse Separation / Clearance Factor

Anticollision Report for WCA 9H - Plan 1

Offset Design: Cottonwood 29-32 Fed - 2BS 1H - Wellbore #1 - Wellbore #1

119-MWD

Closest Approach 3D Proximity Scan on Current Survey Data (Highside Reference)

Scan Range: 0.00 to 14,930.58 usft. Measured Depth.

Scan Radius is 1,731.92 usft . Clearance Factor cutoff is Unlimited. Max Ellipse Separation is Unlimited

Uncertainty Data for Reference Well					Uncertainty Data for Comparison Well					Separation (Ref. > Comp.)				
Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	Ellipse Centre +E/-W (usft)	Ellipse Major Axis/2	Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	Ellipse Centre +E/-W (usft)	Ellipse Major Axis/2	Between Centres (usft)	Between Ellipsoids (usft)	Relative Highside Bearing	Clearance Factor	
100.00	100.00	0.00	0.00	0.51	99.93	99.92	-100.11	-59.50	0.51	116.46	114.16	-149.27	50.582	
200.00	200.00	0.00	0.00	0.59	199.91	199.90	-100.62	-58.70	0.58	116.49	114.04	-149.74	47.499	
300.00	300.00	0.00	0.00	0.73	299.62	299.61	-101.33	-58.02	0.70	116.77	114.05	-150.20	42.941	
400.00	400.00	0.00	0.00	0.91	399.16	399.14	-102.10	-57.73	0.86	117.30	114.24	-150.51	38.415	
500.00	500.00	0.00	0.00	1.11	499.00	498.98	-102.71	-58.28	1.04	118.10	114.67	-150.43	34.446	
600.00	600.00	0.00	0.00	1.31	599.15	599.12	-102.79	-59.79	1.23	118.92	115.09	-149.82	31.095	
700.00	700.00	0.00	0.00	1.52	698.51	698.47	-103.02	-61.34	1.42	119.91	115.68	-149.23	28.366	
800.00	800.00	0.00	0.00	1.73	799.59	799.54	-103.65	-62.38	1.62	120.97	116.34	-148.96	26.095	
900.00	900.00	0.00	0.00	1.95	899.83	899.77	-103.49	-62.87	1.82	121.09	116.04	-148.72	23.971	
1,000.00	1,000.00	0.00	0.00	2.17	1,000.11	1,000.06	-103.18	-63.60	2.02	121.21	115.74	-148.35	22.148	
1,022.07	1,022.07	0.00	0.00	2.22	1,022.12	1,022.07	-103.09	-63.73	2.06	121.20	115.63	-148.28	21.775	
1,100.00	1,100.00	0.00	0.00	2.39	1,098.95	1,098.89	-102.92	-64.66	2.22	121.55	115.66	-147.86	20.624	
1,200.00	1,200.00	0.00	0.00	2.61	1,199.90	1,199.83	-103.05	-65.67	2.43	122.19	115.87	-147.49	19.336	
1,300.00	1,300.00	0.00	0.00	2.83	1,301.42	1,301.35	-103.13	-64.61	2.63	121.70	114.96	-147.94	18.046	
1,400.00	1,400.00	0.00	0.00	3.05	1,401.72	1,401.63	-102.86	-62.61	2.84	120.43	113.26	-148.67	16.793	
1,500.00	1,500.00	0.00	0.00	3.27	1,500.51	1,500.39	-102.97	-60.91	3.04	119.64	112.04	-149.39	15.748	
1,600.00	1,600.00	0.00	0.00	3.50	1,600.60	1,600.48	-103.28	-59.70	3.25	119.29	111.26	-149.97	14.861	
1,700.00	1,700.00	0.00	0.00	3.72	1,700.45	1,700.32	-103.65	-58.18	3.45	118.86	110.40	-150.70	14.056	
1,749.21	1,749.21	0.00	0.00	3.83	1,749.35	1,749.21	-103.93	-57.53	3.55	118.79	110.12	-151.03	13.705	
1,800.00	1,800.00	0.00	0.00	3.94	1,799.57	1,799.43	-104.31	-57.09	3.66	118.91	110.02	-151.31	13.382	
1,900.00	1,900.00	0.00	0.00	4.16	1,899.16	1,899.02	-105.35	-56.76	3.87	119.67	110.36	-151.69	12.845	
2,000.00	2,000.00	0.00	0.00	4.39	1,998.52	1,998.37	-106.70	-56.34	4.07	120.67	110.92	-152.17	12.381	
2,100.00	2,100.00	0.00	0.00	4.61	2,098.19	2,098.02	-108.41	-56.43	4.28	122.24	112.06	-152.50	12.008	
2,200.00	2,200.00	0.00	0.00	4.83	2,198.98	2,198.80	-109.94	-56.51	4.50	123.62	113.00	-152.79	11.647	
2,300.00	2,300.00	0.00	0.00	5.06	2,298.95	2,298.76	-110.97	-56.48	4.71	124.52	113.48	-153.02	11.273	
2,400.00	2,400.00	0.00	0.00	5.28	2,397.92	2,397.72	-112.29	-56.87	4.92	125.89	114.41	-153.14	10.967	
2,500.00	2,500.00	0.00	0.00	5.50	2,498.62	2,498.41	-113.81	-57.42	5.13	127.49	115.57	-153.23	10.701	
2,600.00	2,600.00	0.00	0.00	5.73	2,598.41	2,598.19	-115.22	-57.54	5.33	128.80	116.45	-153.46	10.435	
2,700.00	2,700.00	0.00	0.00	5.95	2,698.65	2,698.42	-116.83	-57.18	5.54	130.09	117.31	-153.92	10.184	
2,800.00	2,800.00	0.00	0.00	6.18	2,798.47	2,798.22	-118.45	-57.17	5.75	131.54	118.33	-154.24	9.960	

HALLIBURTON

Anticollision Report for WCA 9H - Plan 1

Offset Design: Cottonwood 29-32 Fed - 2BS 1H - Wellbore #1 - Wellbore #1

119-MWD

Closest Approach 3D Proximity Scan on Current Survey Data (Highside Reference)

Scan Range: 0.00 to 14,930.58 usft. Measured Depth.

Scan Radius is 1,731.92 usft. Clearance Factor cutoff is Unlimited. Max Ellipse Separation is Unlimited

Uncertainty Data for Reference Well					Uncertainty Data for Comparison Well					Separation (Ref. > Comp.)			
Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	Ellipse Centre +E/-W (usft)	Ellipse Major Axis/2	Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	Ellipse Centre +E/-W (usft)	Ellipse Major Axis/2	Between Centres (usft)	Between Ellipsoids (usft)	Relative Highside Bearing	Clearance Factor
2,900.00	2,900.00	0.00	0.00	6.40	2,901.64	2,901.38	-118.11	-57.53	5.97	131.39	117.74	-154.03	9.627
3,000.00	3,000.00	0.00	0.00	6.62	3,000.82	3,000.56	-116.97	-58.32	6.17	130.70	116.62	-153.50	9.283
3,100.00	3,100.00	0.00	0.00	6.85	3,100.36	3,100.09	-116.19	-59.15	6.38	130.38	115.87	-153.02	8.985
3,108.13	3,108.13	0.00	0.00	6.87	3,108.40	3,108.13	-116.14	-59.24	6.40	130.38	115.83	-152.98	8.963
3,200.00	3,200.00	0.00	0.00	7.07	3,199.52	3,199.24	-115.85	-60.53	6.59	130.71	115.77	-152.42	8.747
3,300.00	3,300.00	0.00	0.00	7.30	3,299.89	3,299.59	-115.55	-62.35	6.80	131.30	115.92	-151.65	8.537
3,400.00	3,400.00	0.00	0.00	7.52	3,400.60	3,400.28	-114.48	-64.09	7.01	131.20	115.39	-150.76	8.296
3,472.45	3,472.45	0.00	0.00	7.68	3,472.78	3,472.45	-113.67	-65.32	7.16	131.10	114.97	-150.11	8.129
3,500.00	3,500.00	0.00	0.00	7.75	3,500.10	3,499.77	-113.48	-65.69	7.22	131.13	114.88	-149.93	8.071
3,600.00	3,600.00	0.00	0.00	7.97	3,599.36	3,599.01	-113.53	-66.56	7.43	131.60	114.92	-149.62	7.890
3,700.00	3,700.00	0.00	0.00	8.19	3,699.27	3,698.92	-113.94	-67.59	7.64	132.48	115.37	-149.32	7.742
3,800.00	3,800.00	0.00	0.00	8.42	3,799.24	3,798.89	-114.27	-68.53	7.85	133.25	115.71	-149.05	7.595
3,900.00	3,900.00	0.00	0.00	8.64	3,898.48	3,898.11	-114.64	-69.94	8.06	134.31	116.33	-148.61	7.471
4,000.00	4,000.00	0.00	0.00	8.87	3,999.31	3,998.93	-115.23	-71.48	8.27	135.61	117.19	-148.19	7.364
4,100.00	4,100.00	0.00	0.00	9.09	4,102.20	4,101.81	-114.53	-72.27	8.48	135.44	116.59	-147.75	7.185
4,200.00	4,200.00	0.00	0.00	9.32	4,201.84	4,201.43	-112.65	-72.63	8.69	134.04	114.76	-147.19	6.951
4,300.00	4,300.00	0.00	0.00	9.54	4,301.35	4,300.93	-111.30	-73.13	8.90	133.18	113.46	-146.69	6.755
4,400.00	4,400.00	0.00	0.00	9.77	4,401.11	4,400.69	-110.38	-73.42	9.10	132.57	112.42	-146.37	6.579
4,500.00	4,500.00	0.00	0.00	9.99	4,502.01	4,501.58	-108.83	-74.12	9.31	131.68	111.09	-145.74	6.397
4,600.00	4,600.00	0.00	0.00	10.21	4,601.67	4,601.21	-106.97	-75.16	9.52	130.75	109.73	-144.91	6.220
4,700.00	4,700.00	0.00	0.00	10.44	4,704.21	4,703.73	-104.82	-74.45	9.74	128.62	107.17	-144.61	5.997
4,800.00	4,800.00	0.00	0.00	10.66	4,803.60	4,803.07	-102.70	-72.79	9.94	125.92	104.04	-144.67	5.754
4,900.00	4,900.00	0.00	0.00	10.89	4,902.66	4,902.11	-100.95	-71.71	10.15	123.85	101.53	-144.61	5.548
5,000.00	5,000.00	0.00	0.00	11.11	5,001.75	5,001.20	-99.77	-71.08	10.36	122.50	99.74	-144.53	5.382
5,100.00	5,100.00	0.00	0.00	11.34	5,101.10	5,100.54	-99.01	-71.03	10.57	121.86	98.66	-144.34	5.253
5,200.00	5,200.00	0.00	0.00	11.56	5,200.70	5,200.14	-98.50	-71.19	10.79	121.53	97.90	-144.14	5.142
5,220.44	5,220.44	0.00	0.00	11.61	5,221.00	5,220.44	-98.42	-71.27	10.83	121.52	97.80	-144.09	5.122
5,300.00	5,300.00	0.00	0.00	11.79	5,300.52	5,299.96	-98.16	-71.77	11.00	121.60	97.53	-143.83	5.052
5,400.00	5,400.00	0.00	0.00	12.01	5,400.59	5,400.03	-97.56	-72.48	11.21	121.54	97.03	-143.39	4.960

Anticollision Report for WCA 9H - Plan 1

Offset Design: Cottonwood 29-32 Fed - 2BS 1H - Wellbore #1 - Wellbore #1
119-MWD

Closest Approach 3D Proximity Scan on Current Survey Data (Highside Reference)

Scan Range: 0.00 to 14,930.58 usft. Measured Depth.

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Uncertainty Data for Reference Well					Uncertainty Data for Comparison Well					Separation (Ref. > Comp.)			
Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	Ellipse Centre +E/-W (usft)	Ellipse Major Axis/2	Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	Ellipse Centre +E/-W (usft)	Ellipse Major Axis/2	Between Centres (usft)	Between Ellipsoids (usft)	Relative Highside Bearing	Clearance Factor
5,409.71	5,409.71	0.00	0.00	12.03	5,410.28	5,409.71	-97.52	-72.53	11.23	121.54	96.99	-143.36	4.951
5,500.00	5,500.00	0.00	0.00	12.24	5,500.29	5,499.72	-97.34	-72.94	11.42	121.64	96.70	-143.16	4.878
5,600.00	5,600.00	0.00	0.00	12.46	5,599.34	5,598.77	-97.72	-73.30	11.63	122.16	96.79	-143.13	4.815
5,700.00	5,700.00	0.00	0.00	12.68	5,698.45	5,697.87	-99.01	-73.92	11.84	123.58	97.78	-143.25	4.789
5,800.00	5,800.00	0.00	0.00	12.91	5,798.59	5,797.99	-100.72	-74.59	12.05	125.35	99.10	-143.48	4.777
5,900.00	5,900.00	0.00	0.00	13.13	5,899.04	5,898.43	-102.36	-74.76	12.26	126.76	100.09	-143.86	4.752
6,000.00	6,000.00	0.00	0.00	13.36	5,997.91	5,997.29	-103.54	-75.25	12.46	128.02	100.92	-143.99	4.724
6,100.00	6,100.00	0.00	0.00	13.58	6,089.00	6,087.99	-103.94	-82.95	12.66	133.53	106.10	-141.41	4.868
6,200.00	6,200.00	0.00	0.00	13.81	6,178.96	6,175.84	-102.45	-102.03	12.86	146.59	118.97	-135.12	5.307
6,300.00	6,300.00	0.00	0.00	14.03	6,268.31	6,261.34	-98.35	-127.58	13.08	165.66	137.95	-127.63	5.977
6,400.00	6,400.00	0.00	0.00	14.26	6,337.94	6,325.63	-96.20	-154.08	13.27	196.28	169.31	-121.98	7.277
6,500.00	6,500.00	0.00	0.00	14.48	6,401.05	6,380.72	-96.99	-184.78	13.49	240.37	214.41	-117.69	9.259
6,600.00	6,600.00	0.00	0.00	14.71	6,457.85	6,427.42	-98.73	-217.03	13.72	294.34	269.43	-114.46	11.817
6,700.00	6,700.00	0.00	0.00	14.93	6,509.08	6,466.71	-103.02	-249.60	13.98	356.84	332.88	-112.43	14.896
6,800.00	6,800.00	0.00	0.00	15.16	6,565.00	6,508.01	-111.55	-286.31	14.31	423.88	400.36	-111.29	18.019
6,900.00	6,900.00	0.00	0.00	15.38	6,607.84	6,538.11	-119.59	-315.71	14.60	494.92	472.10	-110.75	21.695
7,000.00	7,000.00	0.00	0.00	15.60	6,644.92	6,562.58	-127.52	-342.41	14.89	569.95	547.81	-110.43	25.746
7,100.00	7,100.00	0.00	0.00	15.83	6,680.57	6,584.79	-136.58	-368.77	15.19	648.13	626.51	-110.32	29.974
7,200.00	7,200.00	0.00	0.00	16.05	6,724.00	6,610.51	-149.69	-401.21	15.59	728.61	707.13	-110.46	33.910
7,300.00	7,300.00	0.00	0.00	16.28	6,755.00	6,627.98	-161.00	-424.17	15.89	810.84	789.72	-110.79	38.391
7,400.00	7,400.00	0.00	0.00	16.50	6,787.00	6,645.11	-174.46	-447.61	16.21	894.79	873.90	-111.29	42.831
7,500.00	7,500.00	0.00	0.00	16.73	6,818.00	6,660.91	-189.24	-469.80	16.53	980.10	959.37	-111.94	47.291
7,600.00	7,599.98	0.00	0.85	16.94	6,831.92	6,667.66	-196.41	-479.63	16.68	1,067.08	1,046.78	155.14	52.552
7,700.00	7,698.69	-1.20	16.01	17.14	6,850.00	6,675.99	-206.23	-492.33	16.88	1,160.33	1,140.09	116.94	57.318
7,800.00	7,795.02	-18.66	35.47	17.32	6,860.82	6,680.74	-212.38	-499.85	17.00	1,251.29	1,231.25	66.57	62.441
7,900.00	7,885.67	-56.16	53.92	17.50	6,881.00	6,689.21	-224.44	-513.64	17.22	1,334.90	1,314.91	46.26	66.779
8,000.00	7,966.66	-112.08	70.56	17.72	6,913.00	6,701.69	-244.99	-534.75	17.58	1,408.62	1,388.45	36.80	69.855
8,100.00	8,034.47	-183.96	84.66	18.03	6,945.00	6,713.04	-267.27	-554.70	17.93	1,470.34	1,449.90	31.68	71.940
8,200.00	8,086.11	-268.68	95.60	18.46	7,218.45	6,784.53	-509.50	-646.53	20.29	1,517.52	1,494.18	31.46	65.013
8,300.00	8,119.35	-362.51	102.91	19.03	7,262.00	6,791.23	-552.51	-646.63	20.55	1,536.82	1,513.07	29.79	64.723

HALLIBURTON**Anticollision Report for WCA 9H - Plan 1**

Offset Design: Cottonwood 29-32 Fed - 2BS 1H - Wellbore #1 - Wellbore #1
119-MWD

Closest Approach 3D Proximity Scan on Current Survey Data (Highside Reference)

Scan Range: 0.00 to 14,930.58 usft. Measured Depth.

Scan Radius is 1,731.92 usft. Clearance Factor cutoff is Unlimited. Max Ellipse Separation is Unlimited

Uncertainty Data for Reference Well					Uncertainty Data for Comparison Well				Separation (Ref. > Comp.)				
Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	Ellipse Centre +E/-W (usft)	Ellipse Major Axis/2	Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	Ellipse Centre +E/-W (usft)	Ellipse Major Axis/2	Between Centres (usft)	Between Ellipsoids (usft)	Relative Highside Bearing	Clearance Factor
8,400.00	8,132.72	-461.37	106.27	19.73	7,275.62	6,792.33	-566.08	-646.32	20.63	1,540.78	1,516.62	29.31	63.770
8,500.00	8,131.05	-561.35	106.62	20.56	7,315.35	6,793.50	-605.77	-645.05	20.87	1,534.93	1,509.99	29.36	61.555
8,600.00	8,128.61	-661.32	106.81	21.50	7,385.00	6,793.63	-675.39	-643.31	21.32	1,531.35	1,505.38	29.35	58.963
8,700.00	8,126.17	-761.29	107.00	22.56	7,481.93	6,792.96	-772.31	-641.53	21.98	1,529.01	1,501.77	29.32	56.145
8,800.00	8,123.73	-861.26	107.19	23.70	7,596.70	6,793.00	-887.04	-638.65	22.88	1,525.71	1,497.02	29.29	53.179
8,900.00	8,121.29	-961.23	107.38	24.93	7,702.94	6,792.90	-993.19	-634.35	23.86	1,521.78	1,491.58	29.20	50.391
9,000.00	8,118.85	-1,061.20	107.57	26.23	7,796.71	6,792.52	-1,086.83	-629.55	24.82	1,517.61	1,485.91	29.08	47.874
9,100.00	8,116.41	-1,161.17	107.76	27.59	7,874.97	6,791.33	-1,165.00	-625.92	25.66	1,514.64	1,481.48	28.98	45.667
9,200.00	8,113.97	-1,261.14	107.95	29.00	7,955.00	6,789.31	-1,244.94	-622.60	26.58	1,512.85	1,478.16	28.87	43.616
9,300.00	8,111.53	-1,361.11	108.14	30.46	8,049.00	6,785.78	-1,338.79	-618.74	27.75	1,512.11	1,475.79	28.73	41.633
9,318.12	8,111.09	-1,379.22	108.18	30.73	8,058.49	6,785.35	-1,348.26	-618.36	27.86	1,512.08	1,475.50	28.71	41.336
9,400.00	8,109.09	-1,461.08	108.33	31.95	8,131.43	6,782.10	-1,421.09	-615.98	28.79	1,512.33	1,474.41	28.61	39.883
9,500.00	8,106.65	-1,561.05	108.53	33.48	8,219.66	6,777.93	-1,509.20	-613.91	29.95	1,513.31	1,473.72	28.51	38.224
9,600.00	8,104.21	-1,661.02	108.72	35.04	8,292.20	6,773.63	-1,581.59	-612.34	30.96	1,515.48	1,474.28	28.42	36.785
9,700.00	8,101.77	-1,760.99	108.91	36.62	8,362.92	6,768.08	-1,652.09	-611.38	31.98	1,519.68	1,476.87	28.32	35.502
9,800.00	8,099.33	-1,860.96	109.10	38.22	8,443.85	6,760.28	-1,732.64	-610.60	33.15	1,525.61	1,481.15	28.20	34.310
9,900.00	8,096.89	-1,960.93	109.29	39.84	8,600.35	6,746.96	-1,888.55	-608.54	35.35	1,530.63	1,484.09	27.97	32.884
10,000.00	8,094.45	-2,060.90	109.48	41.48	8,707.39	6,740.86	-1,995.40	-606.78	36.91	1,532.82	1,484.42	27.86	31.666
10,100.00	8,092.02	-2,160.87	109.67	43.14	8,790.47	6,735.68	-2,078.30	-605.51	38.20	1,535.56	1,485.41	27.77	30.621
10,200.00	8,089.58	-2,260.84	109.86	44.81	8,917.47	6,728.60	-2,205.09	-604.41	40.12	1,538.04	1,485.86	27.67	29.477
10,300.00	8,087.14	-2,360.81	110.05	46.49	8,996.00	6,725.23	-2,283.55	-604.80	41.30	1,540.06	1,486.11	27.66	28.548
10,400.00	8,084.70	-2,460.78	110.24	48.18	9,091.00	6,720.50	-2,378.42	-606.45	42.79	1,543.20	1,487.32	27.68	27.616
10,500.00	8,082.26	-2,560.75	110.44	49.88	9,175.39	6,715.66	-2,462.64	-608.43	44.15	1,547.25	1,489.49	27.70	26.789
10,600.00	8,079.82	-2,660.72	110.63	51.59	9,364.57	6,710.91	-2,651.72	-609.82	47.13	1,546.94	1,486.54	27.76	25.611
10,700.00	8,077.38	-2,760.69	110.82	53.30	9,469.12	6,710.00	-2,756.26	-609.03	48.80	1,545.29	1,482.87	27.77	24.753
10,800.00	8,074.94	-2,860.66	111.01	55.03	9,562.04	6,709.11	-2,849.17	-608.36	50.30	1,543.74	1,479.35	27.78	23.976
10,900.00	8,072.50	-2,960.63	111.20	56.76	9,655.73	6,708.13	-2,942.86	-608.41	51.80	1,542.62	1,476.24	27.81	23.241
10,986.78	8,070.38	-3,047.38	111.37	58.27	9,728.37	6,707.15	-3,015.49	-609.04	52.99	1,542.21	1,474.14	27.85	22.657
11,000.00	8,070.06	-3,060.60	111.39	58.49	9,739.36	6,706.97	-3,026.48	-609.19	53.17	1,542.22	1,473.89	27.85	22.572

HALLIBURTON

Anticollision Report for WCA 9H - Plan 1

Offset Design: Cottonwood 29-32 Fed - 2BS 1H - Wellbore #1 - Wellbore #1
119-MWD

Closest Approach 3D Proximity Scan on Current Survey Data (Highside Reference)

Scan Range: 0.00 to 14,930.58 usft. Measured Depth.

Scan Radius is 1,731.92 usft. Clearance Factor cutoff is Unlimited. Max Ellipse Separation is Unlimited

Uncertainty Data for Reference Well					Uncertainty Data for Comparison Well					Separation (Ref. > Comp.)			
Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	Ellipse Centre +E/-W (usft)	Ellipse Major Axis/2	Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	Ellipse Centre +E/-W (usft)	Ellipse Major Axis/2	Between Centres (usft)	Between Ellipsoids (usft)	Relative Highside Bearing	Clearance Factor
11,100.00	8,067.62	-3,160.57	111.58	60.24	9,852.84	6,705.06	-3,139.94	-610.35	55.03	1,542.14	1,471.63	27.91	21.873
11,200.00	8,065.18	-3,260.54	111.77	61.98	10,021.71	6,704.41	-3,308.69	-604.93	57.77	1,538.73	1,465.92	27.80	21.135
11,300.00	8,062.74	-3,360.51	111.96	63.74	10,127.10	6,706.16	-3,413.97	-600.42	59.45	1,533.19	1,458.42	27.74	20.507
11,400.00	8,060.30	-3,460.48	112.16	65.49	10,215.37	6,707.33	-3,502.15	-596.68	60.90	1,527.98	1,451.32	27.68	19.934
11,500.00	8,057.86	-3,560.45	112.35	67.25	10,297.74	6,707.35	-3,584.43	-592.83	62.28	1,523.73	1,445.24	27.59	19.415
11,600.00	8,055.42	-3,660.42	112.54	69.01	10,378.11	6,706.51	-3,664.73	-589.60	63.64	1,520.71	1,440.41	27.51	18.938
11,700.00	8,052.98	-3,760.39	112.73	70.78	10,465.29	6,704.76	-3,751.85	-586.76	65.12	1,518.90	1,436.75	27.42	18.489
11,800.00	8,050.54	-3,860.36	112.92	72.55	10,557.43	6,702.47	-3,843.91	-583.87	66.70	1,517.59	1,433.57	27.33	18.063
11,900.00	8,048.10	-3,960.33	113.11	74.32	10,643.67	6,699.64	-3,930.07	-581.17	68.18	1,517.00	1,431.17	27.23	17.674
11,907.29	8,047.93	-3,967.62	113.12	74.45	10,649.69	6,699.41	-3,936.08	-580.99	68.28	1,517.00	1,431.04	27.23	17.648
12,000.00	8,045.66	-4,060.30	113.30	76.10	10,746.82	6,695.30	-4,033.08	-578.08	69.93	1,517.31	1,429.60	27.11	17.300
12,100.00	8,043.22	-4,160.27	113.49	77.87	10,863.81	6,692.40	-4,149.98	-574.57	71.88	1,516.00	1,426.32	26.99	16.904
12,200.00	8,040.78	-4,260.24	113.68	79.65	10,955.75	6,690.03	-4,241.84	-571.73	73.45	1,514.81	1,423.29	26.90	16.551
12,300.00	8,038.34	-4,360.21	113.87	81.44	11,068.75	6,687.22	-4,354.77	-568.78	75.36	1,513.79	1,420.30	26.81	16.191
12,400.00	8,035.91	-4,460.18	114.07	83.22	11,217.55	6,688.82	-4,503.53	-566.79	77.79	1,509.99	1,414.18	26.84	15.759
12,500.00	8,033.47	-4,560.15	114.26	85.01	11,312.21	6,691.46	-4,598.14	-566.05	79.35	1,505.07	1,407.15	26.91	15.371
12,600.00	8,031.03	-4,660.12	114.45	86.79	11,398.97	6,693.04	-4,684.89	-565.22	80.83	1,500.93	1,400.97	26.95	15.017
12,700.00	8,028.59	-4,760.09	114.64	88.58	11,488.28	6,694.06	-4,774.20	-564.66	82.37	1,497.53	1,395.52	26.99	14.680
12,800.00	8,026.15	-4,860.06	114.83	90.37	11,576.93	6,694.55	-4,862.84	-564.54	83.91	1,494.90	1,390.82	27.04	14.364
12,900.00	8,023.71	-4,960.03	115.02	92.16	11,668.25	6,694.65	-4,954.16	-564.97	85.48	1,492.92	1,386.74	27.10	14.060
13,000.00	8,021.27	-5,060.00	115.21	93.96	11,760.63	6,694.43	-5,046.54	-565.82	87.08	1,491.47	1,383.15	27.17	13.770
13,100.00	8,018.83	-5,159.97	115.40	95.75	11,848.97	6,693.67	-5,134.87	-566.84	88.62	1,490.68	1,380.27	27.23	13.501
13,167.11	8,017.19	-5,227.06	115.53	96.96	11,910.16	6,692.71	-5,196.04	-567.50	89.69	1,490.55	1,378.72	27.27	13.329
13,200.00	8,016.39	-5,259.94	115.59	97.55	11,941.20	6,692.10	-5,227.07	-567.78	90.23	1,490.58	1,378.06	27.29	13.247
13,300.00	8,013.95	-5,359.91	115.78	99.35	12,079.59	6,689.67	-5,365.43	-565.98	92.58	1,489.48	1,374.72	27.25	12.979
13,400.00	8,011.51	-5,459.88	115.98	101.14	12,188.53	6,688.81	-5,474.28	-561.85	94.42	1,486.33	1,369.67	27.15	12.740
13,500.00	8,009.07	-5,559.85	116.17	102.94	12,290.66	6,687.99	-5,576.34	-558.21	96.17	1,483.35	1,364.79	27.06	12.512
13,600.00	8,006.63	-5,659.82	116.36	104.74	12,396.62	6,688.46	-5,682.28	-556.03	97.93	1,479.92	1,359.33	27.04	12.272
13,700.00	8,004.19	-5,759.79	116.55	106.55	12,488.09	6,689.10	-5,773.74	-554.64	99.48	1,476.54	1,353.92	27.05	12.042
13,800.00	8,001.75	-5,859.76	116.74	108.35	12,584.68	6,689.56	-5,870.32	-553.89	101.13	1,473.67	1,348.96	27.08	11.817

Anticollision Report for WCA 9H - Plan 1

Offset Design: Cottonwood 29-32 Fed - 2BS 1H - Wellbore #1 - Wellbore #1
119-MWD

Closest Approach 3D Proximity Scan on Current Survey Data (Highside Reference)

Scan Range: 0.00 to 14,930.58 usft. Measured Depth.

Scan Radius is 1,731.92 usft. Clearance Factor cutoff is Unlimited. Max Ellipse Separation is Unlimited

Uncertainty Data for Reference Well					Uncertainty Data for Comparison Well					Separation (Ref. > Comp.)			
Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre		Ellipse Major Axis/2	Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre		Ellipse Major Axis/2	Between Centres (usft)	Between Ellipsoids (usft)	Relative Highside Bearing	Clearance Factor
		+N/-S (usft)	+E/-W (usft)				+N/-S (usft)	+E/-W (usft)					
13,900.00	7,999.31	-5,959.73	116.93	110.15	12,672.42	6,689.98	-5,958.06	-554.00	102.64	1,471.22	1,344.41	27.14	11.601
14,000.00	7,996.87	-6,059.70	117.12	111.95	12,755.34	6,689.81	-6,040.97	-554.88	104.08	1,469.81	1,340.89	27.21	11.401
14,100.00	7,994.43	-6,159.67	117.31	113.76	12,862.28	6,688.90	-6,147.90	-556.35	105.92	1,469.14	1,337.91	27.29	11.195
14,200.00	7,991.99	-6,259.64	117.50	115.56	12,970.50	6,688.19	-6,256.12	-555.94	107.76	1,467.46	1,334.06	27.32	11.001
14,300.00	7,989.55	-6,359.61	117.70	117.37	13,090.58	6,687.70	-6,376.17	-553.82	109.78	1,464.93	1,329.42	27.30	10.810
14,400.00	7,987.11	-6,459.58	117.89	119.18	13,196.52	6,688.08	-6,482.08	-551.28	111.56	1,461.43	1,323.90	27.27	10.626
14,500.00	7,984.67	-6,559.55	118.08	120.98	13,296.07	6,688.45	-6,581.60	-548.79	113.27	1,457.87	1,318.35	27.24	10.449
14,600.00	7,982.23	-6,659.52	118.27	122.79	13,393.02	6,688.44	-6,678.50	-545.48	114.95	1,454.24	1,312.81	27.17	10.282
14,700.00	7,979.80	-6,759.49	118.46	124.60	13,485.24	6,687.57	-6,770.64	-541.97	116.54	1,451.26	1,308.02	27.08	10.132
14,800.00	7,977.36	-6,859.46	118.65	126.41	13,584.34	6,686.60	-6,869.67	-538.21	118.24	1,448.32	1,303.27	26.98	9.985
14,900.00	7,974.92	-6,959.43	118.84	128.22	13,680.09	6,685.47	-6,965.36	-534.98	119.90	1,445.75	1,298.87	26.90	9.843
14,930.58	7,974.17	-6,990.00	118.90	128.77	13,710.00	6,685.10	-6,995.25	-533.99	120.42	1,444.98	1,297.54	26.87	9.800

HALLIBURTON**Anticollision Report for WCA 9H - Plan 1**Offset Design: Cottonwood 29-32 Fed - 2BS 2H - Wellbore #1 - Wellbore #1
96-MWD

Closest Approach 3D Proximity Scan on Current Survey Data (Highside Reference)

Scan Range: 0.00 to 14,930.58 usft. Measured Depth.

Scan Radius is 1,731.92 usft . Clearance Factor cutoff is Unlimited. Max Ellipse Separation is Unlimited

Uncertainty Data for Reference Well					Uncertainty Data for Comparison Well					Separation (Ref. > Comp.)			
Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre		Ellipse Major Axis/2	Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre		Ellipse Major Axis/2	Between Centres (usft)	Between Ellipsoids (usft)	Relative Highside Bearing	Clearance Factor
		+N/-S (usft)	+E/-W (usft)				+N/-S (usft)	+E/-W (usft)					
100.00	100.00	0.00	0.00	0.51	100.10	100.10	-99.83	-0.16	0.51	99.83	97.53	-179.91	43.357
114.33	114.33	0.00	0.00	0.51	114.33	114.33	-99.82	-0.26	0.52	99.82	97.51	-179.85	43.109
200.00	200.00	0.00	0.00	0.59	199.51	199.50	-100.07	-1.00	0.59	100.08	97.61	-179.43	40.608
300.00	300.00	0.00	0.00	0.73	299.55	299.54	-100.54	-2.47	0.73	100.58	97.83	-178.59	36.586
400.00	400.00	0.00	0.00	0.91	399.62	399.59	-100.89	-4.32	0.90	100.98	97.89	-177.55	32.619
500.00	500.00	0.00	0.00	1.11	500.09	500.04	-100.98	-6.10	1.07	101.17	97.70	-176.54	29.192
600.00	600.00	0.00	0.00	1.31	600.57	600.51	-100.60	-7.66	1.26	100.89	97.04	-175.64	26.179
700.00	700.00	0.00	0.00	1.52	700.83	700.75	-99.85	-8.95	1.45	100.26	96.00	-174.88	23.570
800.00	800.00	0.00	0.00	1.73	800.46	800.37	-99.15	-10.52	1.65	99.71	95.04	-173.94	21.367
900.00	900.00	0.00	0.00	1.95	900.71	900.60	-98.40	-12.59	1.85	99.20	94.11	-172.71	19.491
1,000.00	1,000.00	0.00	0.00	2.17	1,000.63	1,000.49	-97.54	-14.68	2.06	98.64	93.12	-171.44	17.890
1,100.00	1,100.00	0.00	0.00	2.39	1,100.39	1,100.23	-96.92	-16.39	2.26	98.30	92.36	-170.40	16.559
1,200.00	1,200.00	0.00	0.00	2.61	1,200.38	1,200.20	-96.34	-18.45	2.47	98.09	91.73	-169.16	15.415
1,300.00	1,300.00	0.00	0.00	2.83	1,300.55	1,300.36	-95.79	-19.85	2.67	97.83	91.04	-168.29	14.407
1,400.00	1,400.00	0.00	0.00	3.05	1,400.73	1,400.53	-95.19	-20.29	2.88	97.33	90.11	-167.97	13.491
1,500.00	1,500.00	0.00	0.00	3.27	1,500.46	1,500.27	-94.71	-20.22	3.08	96.85	89.21	-167.95	12.676
1,546.08	1,546.08	0.00	0.00	3.38	1,546.28	1,546.08	-94.64	-20.26	3.18	96.78	88.95	-167.92	12.349
1,600.00	1,600.00	0.00	0.00	3.50	1,600.11	1,599.92	-94.67	-20.40	3.29	96.84	88.77	-167.84	12.003
1,700.00	1,700.00	0.00	0.00	3.72	1,700.29	1,700.09	-94.56	-20.59	3.49	96.78	88.28	-167.71	11.390
1,800.00	1,800.00	0.00	0.00	3.94	1,801.94	1,801.74	-93.97	-20.64	3.70	96.23	87.30	-167.61	10.778
1,900.00	1,900.00	0.00	0.00	4.16	1,903.01	1,902.76	-91.50	-18.88	3.91	93.47	84.11	-168.34	9.988
2,000.00	2,000.00	0.00	0.00	4.39	2,002.83	2,002.54	-88.90	-17.18	4.12	90.58	80.79	-169.06	9.255
2,100.00	2,100.00	0.00	0.00	4.61	2,102.74	2,102.41	-86.40	-15.57	4.33	87.83	77.61	-169.78	8.596
2,200.00	2,200.00	0.00	0.00	4.83	2,202.37	2,201.99	-84.06	-14.05	4.53	85.25	74.60	-170.51	8.005
2,300.00	2,300.00	0.00	0.00	5.06	2,302.31	2,301.90	-82.00	-12.61	4.74	82.98	71.90	-171.25	7.490
2,400.00	2,400.00	0.00	0.00	5.28	2,401.66	2,401.23	-80.25	-11.08	4.95	81.02	69.52	-172.14	7.040
2,500.00	2,500.00	0.00	0.00	5.50	2,501.38	2,500.93	-79.13	-9.59	5.16	79.72	67.77	-173.09	6.676
2,600.00	2,600.00	0.00	0.00	5.73	2,601.15	2,600.68	-78.29	-8.03	5.37	78.70	66.33	-174.15	6.360
2,700.00	2,700.00	0.00	0.00	5.95	2,701.16	2,700.67	-77.58	-6.34	5.58	77.85	65.04	-175.33	6.079
2,800.00	2,800.00	0.00	0.00	6.18	2,801.07	2,800.56	-76.91	-4.55	5.79	77.05	63.81	-176.62	5.820

Anticollision Report for WCA 9H - Plan 1

Offset Design: Cottonwood 29-32 Fed - 2BS 2H - Wellbore #1 - Wellbore #1

96-MWD

Closest Approach 3D Proximity Scan on Current Survey Data (Highside Reference)

Scan Range: 0.00 to 14,930.58 usft. Measured Depth.

Scan Radius is 1,731.92 usft. Clearance Factor cutoff is Unlimited. Max Ellipse Separation is Unlimited

Uncertainty Data for Reference Well					Uncertainty Data for Comparison Well					Separation (Ref. > Comp.)			
Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	Ellipse Centre +E/-W (usft)	Ellipse Major Axis/2	Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	Ellipse Centre +E/-W (usft)	Ellipse Major Axis/2	Between Centres (usft)	Between Ellipsoids (usft)	Relative Highside Bearing	Clearance Factor
2,900.00	2,900.00	0.00	0.00	6.40	2,900.84	2,900.32	-76.43	-2.90	6.00	76.48	62.81	-177.83	5.593
3,000.00	3,000.00	0.00	0.00	6.62	3,000.72	3,000.19	-76.12	-1.26	6.21	76.13	62.02	-179.05	5.396
3,052.76	3,052.76	0.00	0.00	6.74	3,053.30	3,052.76	-76.06	-0.46	6.32	76.07	61.73	-179.65	5.305
3,100.00	3,100.00	0.00	0.00	6.85	3,100.44	3,099.89	-76.11	0.12	6.42	76.11	61.57	179.91	5.233
3,200.00	3,200.00	0.00	0.00	7.07	3,200.35	3,199.80	-76.27	1.10	6.63	76.28	61.30	179.18	5.093
3,300.00	3,300.00	0.00	0.00	7.30	3,300.13	3,299.58	-76.68	2.14	6.84	76.71	61.29	178.40	4.977
3,400.00	3,400.00	0.00	0.00	7.52	3,399.99	3,399.43	-77.27	3.20	7.05	77.34	61.49	177.63	4.879
3,500.00	3,500.00	0.00	0.00	7.75	3,499.71	3,499.14	-78.11	4.17	7.26	78.23	61.94	176.94	4.803
3,600.00	3,600.00	0.00	0.00	7.97	3,599.39	3,598.80	-79.36	5.63	7.47	79.56	62.84	175.94	4.758
3,700.00	3,700.00	0.00	0.00	8.19	3,699.28	3,698.67	-80.87	6.83	7.68	81.17	64.02	175.17	4.731
3,800.00	3,800.00	0.00	0.00	8.42	3,799.13	3,798.50	-82.45	7.95	7.89	82.85	65.26	174.49	4.711
3,900.00	3,900.00	0.00	0.00	8.64	3,898.74	3,898.09	-84.34	9.14	8.10	84.86	66.84	173.81	4.709
4,000.00	4,000.00	0.00	0.00	8.87	3,999.36	3,998.67	-86.27	10.99	8.31	86.98	68.52	172.74	4.713
4,100.00	4,100.00	0.00	0.00	9.09	4,099.76	4,099.06	-87.31	11.83	8.52	88.11	69.22	172.28	4.664
4,200.00	4,200.00	0.00	0.00	9.32	4,199.72	4,199.02	-88.30	12.54	8.73	89.19	69.86	171.92	4.614
4,300.00	4,300.00	0.00	0.00	9.54	4,299.66	4,298.95	-89.35	13.15	8.94	90.32	70.56	171.63	4.569
4,400.00	4,400.00	0.00	0.00	9.77	4,400.46	4,399.74	-90.14	13.36	9.15	91.13	70.92	171.57	4.510
4,500.00	4,500.00	0.00	0.00	9.99	4,500.72	4,500.00	-90.29	13.06	9.36	91.23	70.60	171.77	4.421
4,512.09	4,512.09	0.00	0.00	10.02	4,512.80	4,512.09	-90.30	13.02	9.38	91.23	70.54	171.79	4.410
4,600.00	4,600.00	0.00	0.00	10.21	4,600.58	4,599.86	-90.41	12.66	9.57	91.30	70.23	172.03	4.334
4,700.00	4,700.00	0.00	0.00	10.44	4,700.34	4,699.62	-90.76	12.16	9.78	91.57	70.07	172.37	4.258
4,800.00	4,800.00	0.00	0.00	10.66	4,799.97	4,799.25	-91.48	11.47	10.00	92.20	70.25	172.85	4.201
4,900.00	4,900.00	0.00	0.00	10.89	4,899.75	4,899.01	-92.50	10.62	10.21	93.11	70.73	173.45	4.160
5,000.00	5,000.00	0.00	0.00	11.11	4,999.24	4,998.49	-93.94	9.66	10.43	94.45	71.63	174.13	4.138
5,100.00	5,100.00	0.00	0.00	11.34	5,098.94	5,098.17	-95.84	8.66	10.64	96.25	72.99	174.83	4.138
5,200.00	5,200.00	0.00	0.00	11.56	5,199.00	5,198.21	-97.75	8.07	10.85	98.10	74.41	175.28	4.141
5,300.00	5,300.00	0.00	0.00	11.79	5,299.03	5,298.22	-99.62	7.66	11.05	99.93	75.81	175.60	4.143
5,400.00	5,400.00	0.00	0.00	12.01	5,399.20	5,398.37	-101.36	7.26	11.26	101.63	77.08	175.90	4.140
5,500.00	5,500.00	0.00	0.00	12.24	5,499.05	5,498.20	-103.00	6.23	11.47	103.20	78.22	176.54	4.131

Anticollision Report for WCA 9H - Plan 1

Offset Design: Cottonwood 29-32 Fed - 2BS 2H - Wellbore #1 - Wellbore #1

96-MWD

Closest Approach 3D Proximity Scan on Current Survey Data (Highside Reference)

Scan Range: 0.00 to 14,930.58 usft. Measured Depth.

Scan Radius is 1,731.92 usft. Clearance Factor cutoff is Unlimited. Max Ellipse Separation is Unlimited

Uncertainty Data for Reference Well					Uncertainty Data for Comparison Well					Separation (Ref. > Comp.)			
Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	Ellipse Centre +E/-W (usft)	Ellipse Major Axis/2	Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	Ellipse Centre +E/-W (usft)	Ellipse Major Axis/2	Between Centres (usft)	Between Ellipsoids (usft)	Relative Highside Bearing	Clearance Factor
5,600.00	5,600.00	0.00	0.00	12.46	5,598.71	5,597.83	-105.04	4.75	11.68	105.17	79.75	177.41	4.138
5,700.00	5,700.00	0.00	0.00	12.68	5,698.06	5,697.15	-107.32	3.39	11.89	107.41	81.56	178.19	4.155
5,800.00	5,800.00	0.00	0.00	12.91	5,798.56	5,797.61	-110.06	2.70	12.10	110.12	83.84	178.60	4.189
5,900.00	5,900.00	0.00	0.00	13.13	5,899.20	5,898.23	-111.81	2.14	12.31	111.85	85.13	178.90	4.186
6,000.00	6,000.00	0.00	0.00	13.36	5,998.95	5,997.97	-113.46	1.48	12.51	113.49	86.34	179.25	4.180
6,100.00	6,100.00	0.00	0.00	13.58	6,098.96	6,097.95	-115.29	1.24	12.72	115.32	87.73	179.38	4.181
6,200.00	6,200.00	0.00	0.00	13.81	6,198.56	6,197.51	-117.06	3.00	12.93	117.12	89.11	178.53	4.181
6,300.00	6,300.00	0.00	0.00	14.03	6,297.54	6,295.92	-119.34	13.06	13.14	120.12	91.69	173.76	4.225
6,400.00	6,400.00	0.00	0.00	14.26	6,389.81	6,385.73	-120.27	33.63	13.34	125.70	96.99	164.38	4.378
6,500.00	6,500.00	0.00	0.00	14.48	6,470.44	6,459.41	-122.77	65.96	13.53	145.16	116.86	151.75	5.129
6,600.00	6,600.00	0.00	0.00	14.71	6,539.43	6,516.52	-123.31	104.52	13.74	181.93	154.99	139.72	6.754
6,700.00	6,700.00	0.00	0.00	14.93	6,590.52	6,554.26	-123.52	138.90	13.96	236.19	211.39	131.65	9.523
6,800.00	6,800.00	0.00	0.00	15.16	6,631.12	6,581.07	-124.42	169.37	14.18	303.47	280.63	126.30	13.285
6,900.00	6,900.00	0.00	0.00	15.38	6,663.11	6,599.89	-125.38	195.20	14.39	379.33	358.11	122.71	17.876
7,000.00	7,000.00	0.00	0.00	15.60	6,688.70	6,613.32	-126.13	216.96	14.58	460.98	441.04	120.17	23.117
7,100.00	7,100.00	0.00	0.00	15.83	6,710.00	6,623.34	-126.57	235.75	14.76	546.63	527.66	118.23	28.817
7,200.00	7,200.00	0.00	0.00	16.05	6,728.24	6,631.07	-126.61	252.27	14.94	635.10	616.86	116.65	34.817
7,300.00	7,300.00	0.00	0.00	16.28	6,742.00	6,636.40	-126.33	264.95	15.07	725.62	707.97	115.49	41.125
7,400.00	7,400.00	0.00	0.00	16.50	6,758.25	6,642.19	-125.75	280.12	15.24	817.66	800.36	114.18	47.261
7,500.00	7,500.00	0.00	0.00	16.73	6,773.00	6,647.00	-125.10	294.05	15.40	910.89	893.83	113.05	53.405
7,600.00	7,599.98	0.00	0.85	16.94	6,813.02	6,660.05	-125.00	331.86	15.89	1,004.33	986.96	17.92	57.832
7,700.00	7,698.69	-1.20	16.01	17.14	6,865.65	6,678.23	-131.15	380.83	16.58	1,091.47	1,073.76	-0.15	61.634
7,800.00	7,795.02	-18.66	35.47	17.32	6,900.00	6,690.16	-138.66	412.14	17.07	1,173.46	1,155.82	-19.96	66.516
7,900.00	7,885.67	-56.16	53.92	17.50	6,931.00	6,700.10	-147.59	440.10	17.53	1,250.23	1,232.69	-22.70	71.305
8,000.00	7,966.66	-112.08	70.56	17.72	6,943.99	6,703.87	-151.89	451.77	17.73	1,319.67	1,302.41	-21.19	76.438
8,100.00	8,034.47	-183.96	84.66	18.03	6,963.00	6,708.98	-158.66	468.78	18.03	1,380.25	1,362.94	-19.54	79.713
8,200.00	8,086.11	-268.68	95.60	18.46	7,137.04	6,754.70	-241.46	614.38	20.87	1,429.17	1,409.45	-23.13	72.490
8,300.00	8,119.35	-362.51	102.91	19.03	7,197.21	6,770.77	-279.03	658.46	21.84	1,460.91	1,440.08	-23.30	70.111
8,400.00	8,132.72	-461.37	106.27	19.73	7,437.35	6,810.70	-486.80	763.38	24.74	1,476.55	1,452.92	-26.41	62.492
8,500.00	8,131.05	-561.35	106.62	20.56	7,502.00	6,814.57	-550.93	770.06	25.21	1,474.24	1,449.46	-26.75	59.478

HALLIBURTON

Anticollision Report for WCA 9H - Plan 1

Offset Design: Cottonwood 29-32 Fed - 2BS 2H - Wellbore #1 - Wellbore #1
96-MWD

Closest Approach 3D Proximity Scan on Current Survey Data (Highside Reference)

Scan Range: 0.00 to 14,930.58 usft. Measured Depth.

Scan Radius is 1,731.92 usft. Clearance Factor cutoff is Unlimited. Max Ellipse Separation is Unlimited

Uncertainty Data for Reference Well					Uncertainty Data for Comparison Well					Separation (Ref. > Comp.)			
Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	Ellipse Centre +E/-W (usft)	Ellipse Major Axis/2	Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	Ellipse Centre +E/-W (usft)	Ellipse Major Axis/2	Between Centres (usft)	Between Ellipsoids (usft)	Relative Highside Bearing	Clearance Factor
8,536.94	8,130.15	-598.28	106.69	20.90	7,515.99	6,814.59	-564.91	770.51	25.30	1,473.93	1,448.72	-26.77	58.466
8,600.00	8,128.61	-661.32	106.81	21.50	7,534.00	6,814.06	-582.91	770.87	25.41	1,474.84	1,448.89	-26.78	56.831
8,700.00	8,126.17	-761.29	107.00	22.56	7,626.80	6,808.29	-675.52	771.77	26.01	1,478.54	1,451.28	-26.74	54.233
8,800.00	8,123.73	-861.26	107.19	23.70	7,734.73	6,803.11	-783.30	774.45	26.79	1,481.67	1,452.99	-26.79	51.651
8,900.00	8,121.29	-961.23	107.38	24.93	7,834.25	6,798.47	-882.68	776.88	27.60	1,484.67	1,454.47	-26.82	49.166
9,000.00	8,118.85	-1,061.20	107.57	26.23	7,926.53	6,793.81	-974.82	778.93	28.43	1,487.92	1,456.16	-26.85	46.839
9,100.00	8,116.41	-1,161.17	107.76	27.59	8,020.85	6,788.72	-1,068.97	781.43	29.34	1,491.68	1,458.29	-26.88	44.674
9,200.00	8,113.97	-1,261.14	107.95	29.00	8,153.34	6,782.90	-1,201.25	785.69	30.71	1,494.88	1,459.75	-26.97	42.549
9,300.00	8,111.53	-1,361.11	108.14	30.46	8,324.07	6,781.96	-1,371.92	789.50	32.62	1,494.03	1,457.00	-27.14	40.346
9,400.00	8,109.09	-1,461.08	108.33	31.95	8,410.88	6,782.15	-1,458.73	789.37	33.64	1,491.50	1,452.71	-27.18	38.450
9,500.00	8,106.65	-1,561.05	108.53	33.48	8,499.95	6,781.26	-1,547.79	788.66	34.73	1,489.77	1,449.20	-27.17	36.721
9,600.00	8,104.21	-1,661.02	108.72	35.04	8,596.41	6,779.39	-1,644.22	787.23	35.95	1,488.56	1,446.19	-27.12	35.136
9,700.00	8,101.77	-1,760.99	108.91	36.62	8,691.05	6,777.05	-1,738.81	785.35	37.19	1,487.60	1,443.43	-27.05	33.684
9,800.00	8,099.33	-1,860.96	109.10	38.22	8,786.31	6,774.14	-1,834.00	783.10	38.47	1,486.99	1,441.03	-26.96	32.351
9,858.91	8,097.90	-1,919.85	109.21	39.18	8,838.57	6,772.25	-1,886.21	781.71	39.18	1,486.85	1,439.83	-26.89	31.624
9,900.00	8,096.89	-1,960.93	109.29	39.84	8,874.39	6,770.85	-1,921.99	780.86	39.66	1,486.92	1,439.17	-26.85	31.141
10,000.00	8,094.45	-2,060.90	109.48	41.48	8,960.74	6,766.94	-2,008.24	779.00	40.84	1,487.73	1,438.19	-26.75	30.033
10,100.00	8,092.02	-2,160.87	109.67	43.14	9,066.45	6,761.91	-2,113.81	777.32	42.32	1,489.01	1,437.65	-26.65	28.995
10,200.00	8,089.58	-2,260.84	109.86	44.81	9,170.41	6,758.26	-2,217.70	776.97	43.82	1,489.73	1,436.49	-26.61	27.985
10,300.00	8,087.14	-2,360.81	110.05	46.49	9,256.70	6,754.83	-2,303.92	776.52	45.10	1,490.79	1,435.69	-26.56	27.057
10,400.00	8,084.70	-2,460.78	110.24	48.18	9,345.03	6,750.38	-2,392.13	775.96	46.44	1,492.74	1,435.79	-26.50	26.208
10,500.00	8,082.26	-2,560.75	110.44	49.88	9,471.31	6,744.59	-2,518.28	775.49	48.34	1,494.48	1,435.60	-26.43	25.384
10,600.00	8,079.82	-2,660.72	110.63	51.59	9,556.00	6,741.09	-2,602.90	775.63	49.63	1,495.91	1,435.15	-26.40	24.619
10,700.00	8,077.38	-2,760.69	110.82	53.30	9,699.17	6,737.43	-2,746.00	776.97	51.82	1,496.48	1,433.67	-26.44	23.828
10,800.00	8,074.94	-2,860.66	111.01	55.03	9,819.15	6,738.63	-2,865.95	779.29	53.67	1,494.10	1,429.19	-26.58	23.017
10,900.00	8,072.50	-2,960.63	111.20	56.76	9,915.05	6,740.03	-2,961.82	781.51	55.17	1,491.57	1,424.56	-26.71	22.256
11,000.00	8,070.06	-3,060.60	111.39	58.49	10,015.62	6,741.32	-3,062.35	783.96	56.76	1,489.26	1,420.11	-26.86	21.537
11,100.00	8,067.62	-3,160.57	111.58	60.24	10,104.28	6,742.26	-3,150.98	786.18	58.17	1,487.19	1,415.92	-26.98	20.868
11,200.00	8,065.18	-3,260.54	111.77	61.98	10,195.69	6,742.48	-3,242.35	788.57	59.66	1,485.91	1,412.51	-27.10	20.243

Anticollision Report for WCA 9H - Plan 1

Offset Design: Cottonwood 29-32 Fed - 2BS 2H - Wellbore #1 - Wellbore #1

96-MWD

Closest Approach 3D Proximity Scan on Current Survey Data (Highside Reference)

Scan Range: 0.00 to 14,930.58 usft. Measured Depth.

Scan Radius is 1,731.92 usft. Clearance Factor cutoff is Unlimited. Max Ellipse Separation is Unlimited

Uncertainty Data for Reference Well					Uncertainty Data for Comparison Well					Separation (Ref. > Comp.)				
Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	+E/-W (usft)	Ellipse Major Axis/2	Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	+E/-W (usft)	Ellipse Major Axis/2	Between Centres (usft)	Between Ellipsoids (usft)	Relative Highside Bearing	Clearance Factor	
11,300.00	8,062.74	-3,360.51	111.96	63.74	10,287.20	6,742.25	-3,333.83	791.13	61.15	1,485.15	1,409.60	-27.22	19.658	
11,400.00	8,060.30	-3,460.48	112.16	65.49	10,426.23	6,742.42	-3,472.82	793.57	63.39	1,483.67	1,405.92	-27.35	19.081	
11,500.00	8,057.86	-3,560.45	112.35	67.25	10,530.00	6,743.06	-3,576.58	792.55	65.07	1,480.42	1,400.62	-27.37	18.551	
11,600.00	8,055.42	-3,660.42	112.54	69.01	10,627.90	6,743.17	-3,674.46	790.52	66.68	1,477.12	1,395.32	-27.34	18.059	
11,700.00	8,052.98	-3,760.39	112.73	70.78	10,722.05	6,742.64	-3,768.57	787.89	68.23	1,474.08	1,390.33	-27.27	17.602	
11,800.00	8,050.54	-3,860.36	112.92	72.55	10,812.96	6,741.51	-3,859.44	785.19	69.73	1,471.57	1,385.90	-27.19	17.177	
11,900.00	8,048.10	-3,960.33	113.11	74.32	10,901.99	6,739.70	-3,948.41	782.44	71.19	1,469.72	1,382.15	-27.10	16.784	
12,000.00	8,045.66	-4,060.30	113.30	76.10	10,991.68	6,736.97	-4,038.01	779.73	72.67	1,468.78	1,379.34	-26.99	16.423	
12,100.00	8,043.22	-4,160.27	113.49	77.87	11,110.13	6,734.79	-4,156.40	776.80	74.57	1,466.97	1,375.65	-26.89	16.064	
12,200.00	8,040.78	-4,260.24	113.68	79.65	11,204.61	6,733.03	-4,250.84	774.64	76.11	1,465.32	1,372.09	-26.82	15.717	
12,300.00	8,038.34	-4,360.21	113.87	81.44	11,322.07	6,731.53	-4,368.26	772.11	78.00	1,463.26	1,368.12	-26.74	15.381	
12,400.00	8,035.91	-4,460.18	114.07	83.22	11,423.71	6,732.04	-4,469.89	771.20	79.66	1,460.13	1,362.96	-26.76	15.026	
12,500.00	8,033.47	-4,560.15	114.26	85.01	11,518.49	6,732.00	-4,564.68	770.19	81.26	1,457.42	1,358.21	-26.76	14.690	
12,600.00	8,031.03	-4,660.12	114.45	86.79	11,607.48	6,731.45	-4,653.65	769.04	82.78	1,455.14	1,353.92	-26.74	14.376	
12,700.00	8,028.59	-4,760.09	114.64	88.58	11,697.01	6,729.90	-4,743.16	767.69	84.30	1,453.73	1,350.55	-26.70	14.089	
12,800.00	8,026.15	-4,860.06	114.83	90.37	11,788.74	6,727.75	-4,834.85	766.34	85.85	1,452.91	1,347.79	-26.64	13.821	
12,880.95	8,024.17	-4,940.98	114.98	91.82	11,861.98	6,725.49	-4,908.05	765.09	87.10	1,452.68	1,346.02	-26.59	13.619	
12,900.00	8,023.71	-4,960.03	115.02	92.16	11,879.00	6,724.89	-4,925.05	764.77	87.39	1,452.70	1,345.67	-26.57	13.574	
13,000.00	8,021.27	-5,060.00	115.21	93.96	11,983.82	6,721.06	-5,029.79	763.02	89.17	1,452.97	1,344.06	-26.48	13.342	
13,100.00	8,018.83	-5,159.97	115.40	95.75	12,093.89	6,719.25	-5,139.84	763.34	90.99	1,452.28	1,341.31	-26.50	13.087	
13,200.00	8,016.39	-5,259.94	115.59	97.55	12,191.25	6,718.07	-5,237.19	764.08	92.63	1,451.44	1,338.37	-26.54	12.836	
13,290.76	8,014.17	-5,350.68	115.77	99.18	12,271.85	6,716.56	-5,317.77	764.41	94.03	1,451.07	1,336.13	-26.55	12.624	
13,300.00	8,013.95	-5,359.91	115.78	99.35	12,279.84	6,716.36	-5,325.77	764.43	94.16	1,451.08	1,335.94	-26.55	12.603	
13,400.00	8,011.51	-5,459.88	115.98	101.14	12,384.60	6,713.37	-5,430.47	764.02	95.96	1,451.20	1,334.07	-26.53	12.390	
13,449.74	8,010.30	-5,509.61	116.07	102.04	12,430.83	6,712.06	-5,476.69	763.49	96.74	1,451.09	1,333.00	-26.50	12.288	
13,500.00	8,009.07	-5,559.85	116.17	102.94	12,472.56	6,710.82	-5,518.40	763.40	97.44	1,451.23	1,332.16	-26.49	12.188	
13,600.00	8,006.63	-5,659.82	116.36	104.74	12,549.88	6,708.04	-5,595.67	764.00	98.74	1,452.54	1,331.50	-26.49	12.000	
13,700.00	8,004.19	-5,759.79	116.55	106.55	12,619.77	6,704.17	-5,665.44	764.55	99.94	1,455.63	1,332.71	-26.47	11.842	
13,800.00	8,001.75	-5,859.76	116.74	108.35	12,687.00	6,698.30	-5,732.41	764.53	101.10	1,461.11	1,336.49	-26.39	11.725	
13,900.00	7,999.31	-5,959.73	116.93	110.15	12,933.27	6,688.73	-5,978.30	766.95	105.19	1,463.04	1,336.02	-26.39	11.518	

HALLIBURTON**Anticollision Report for WCA 9H - Plan 1**

Offset Design: Cottonwood 29-32 Fed - 2BS 2H - Wellbore #1 - Wellbore #1

96-MWD

Closest Approach 3D Proximity Scan on Current Survey Data (Highside Reference)

Scan Range: 0.00 to 14,930.58 usft. Measured Depth.

Scan Radius is 1,731.92 usft . Clearance Factor cutoff is Unlimited. Max Ellipse Separation is Unlimited

Uncertainty Data for Reference Well					Uncertainty Data for Comparison Well				Separation (Ref. > Comp.)				
Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	Ellipse Centre +E/-W (usft)	Ellipse Major Axis/2	Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	Ellipse Centre +E/-W (usft)	Ellipse Major Axis/2	Between Centres (usft)	Between Ellipsoids (usft)	Relative Highside Bearing	Clearance Factor
14,000.00	7,996.87	-6,059.70	117.12	111.95	13,050.34	6,693.20	-6,095.26	769.31	107.16	1,458.14	1,328.68	-26.60	11.264
14,100.00	7,994.43	-6,159.67	117.31	113.76	13,150.83	6,696.72	-6,195.67	770.93	108.90	1,453.47	1,321.63	-26.75	11.024
14,200.00	7,991.99	-6,259.64	117.50	115.56	13,244.76	6,699.73	-6,289.54	772.11	110.54	1,448.91	1,314.71	-26.88	10.797
14,300.00	7,989.55	-6,359.61	117.70	117.37	13,338.90	6,702.16	-6,383.65	773.03	112.19	1,444.79	1,308.26	-26.99	10.582
14,400.00	7,987.11	-6,459.58	117.89	119.18	13,432.23	6,704.08	-6,476.95	773.84	113.83	1,441.09	1,302.25	-27.09	10.379
14,500.00	7,984.67	-6,559.55	118.08	120.98	13,522.03	6,705.36	-6,566.75	774.63	115.39	1,437.97	1,296.85	-27.18	10.189
14,600.00	7,982.23	-6,659.52	118.27	122.79	13,645.31	6,707.72	-6,689.99	775.81	117.48	1,434.46	1,291.01	-27.31	9.999
14,700.00	7,979.80	-6,759.49	118.46	124.60	13,742.09	6,710.48	-6,786.72	776.93	119.10	1,430.21	1,284.38	-27.44	9.807
14,800.00	7,977.36	-6,859.46	118.65	126.41	13,840.79	6,713.11	-6,885.39	778.01	120.82	1,426.09	1,277.87	-27.56	9.621
14,900.00	7,974.92	-6,959.43	118.84	128.22	13,939.89	6,715.57	-6,984.45	778.91	122.57	1,422.07	1,271.45	-27.68	9.442
14,930.58	7,974.17	-6,990.00	118.90	128.77	13,960.00	6,716.06	-7,004.55	779.09	122.93	1,420.88	1,269.54	-27.70	9.389

Anticollision Report for WCA 9H - Plan 1

Offset Design: Cottonwood 29-32 Fed - WCA 6H (Re-stake) - Wellbore #1 - Plan 2

0-MWD

Closest Approach 3D Proximity Scan on Current Survey Data (Highside Reference)

Scan Range: 0.00 to 14,930.58 usft. Measured Depth.

Scan Radius is 1,731.92 usft. Clearance Factor cutoff is Unlimited. Max Ellipse Separation is Unlimited

Uncertainty Data for Reference Well					Uncertainty Data for Comparison Well					Separation (Ref. > Comp.)			
Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	Ellipse Centre +E/-W (usft)	Ellipse Major Axis/2	Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	Ellipse Centre +E/-W (usft)	Ellipse Major Axis/2	Between Centres (usft)	Between Ellipsoids (usft)	Relative Highside Bearing	Clearance Factor
100.00	100.00	0.00	0.00	0.51	100.00	100.00	0.00	-60.00	0.51	60.00	57.70	-90.00	26.068
200.00	200.00	0.00	0.00	0.59	200.00	200.00	0.00	-60.00	0.59	60.00	57.53	-90.00	24.335
300.00	300.00	0.00	0.00	0.73	300.00	300.00	0.00	-60.00	0.73	60.00	57.25	-90.00	21.785
400.00	400.00	0.00	0.00	0.91	400.00	400.00	0.00	-60.00	0.91	60.00	56.89	-90.00	19.298
500.00	500.00	0.00	0.00	1.11	500.00	500.00	0.00	-60.00	1.11	60.00	56.50	-90.00	17.149
600.00	600.00	0.00	0.00	1.31	600.00	600.00	0.00	-60.00	1.31	60.00	56.09	-90.00	15.354
700.00	700.00	0.00	0.00	1.52	700.00	700.00	0.00	-60.00	1.52	60.00	55.67	-90.00	13.863
800.00	800.00	0.00	0.00	1.73	800.00	800.00	0.00	-60.00	1.73	60.00	55.24	-90.00	12.616
900.00	900.00	0.00	0.00	1.95	900.00	900.00	0.00	-60.00	1.95	60.00	54.81	-90.00	11.564
1,000.00	1,000.00	0.00	0.00	2.17	1,000.00	1,000.00	0.00	-60.00	2.17	60.00	54.38	-90.00	10.668
1,100.00	1,100.00	0.00	0.00	2.39	1,100.00	1,100.00	0.00	-60.00	2.39	60.00	53.94	-90.00	9.896
1,200.00	1,200.00	0.00	0.00	2.61	1,200.00	1,200.00	0.00	-60.00	2.61	60.00	53.50	-90.00	9.226
1,300.00	1,300.00	0.00	0.00	2.83	1,300.00	1,300.00	0.00	-60.00	2.83	60.00	53.05	-90.00	8.639
1,400.00	1,400.00	0.00	0.00	3.05	1,400.00	1,400.00	0.00	-60.00	3.05	60.00	52.61	-90.00	8.121
1,500.00	1,500.00	0.00	0.00	3.27	1,500.00	1,500.00	0.00	-60.00	3.27	60.00	52.17	-90.00	7.661
1,600.00	1,600.00	0.00	0.00	3.50	1,600.00	1,600.00	0.00	-60.00	3.50	60.00	51.72	-90.00	7.249
1,700.00	1,700.00	0.00	0.00	3.72	1,700.00	1,700.00	0.00	-60.00	3.72	60.00	51.28	-90.00	6.879
1,800.00	1,800.00	0.00	0.00	3.94	1,800.00	1,800.00	0.00	-60.00	3.94	60.00	50.83	-90.00	6.545
1,900.00	1,900.00	0.00	0.00	4.16	1,900.00	1,900.00	0.00	-60.00	4.16	60.00	50.39	-90.00	6.241
2,000.00	2,000.00	0.00	0.00	4.39	2,000.00	2,000.00	0.00	-60.00	4.39	60.00	49.94	-90.00	5.964
2,100.00	2,100.00	0.00	0.00	4.61	2,100.00	2,100.00	0.00	-60.00	4.61	60.00	49.49	-90.00	5.711
2,200.00	2,200.00	0.00	0.00	4.83	2,200.00	2,200.00	0.00	-60.00	4.83	60.00	49.05	-90.00	5.478
2,300.00	2,300.00	0.00	0.00	5.06	2,300.00	2,300.00	0.00	-60.00	5.06	60.00	48.60	-90.00	5.263
2,400.00	2,400.00	0.00	0.00	5.28	2,400.00	2,400.00	0.00	-60.00	5.28	60.00	48.15	-90.00	5.064
2,500.00	2,500.00	0.00	0.00	5.50	2,500.00	2,500.00	0.00	-60.00	5.50	60.00	47.70	-90.00	4.880
2,600.00	2,600.00	0.00	0.00	5.73	2,600.00	2,600.00	0.00	-60.00	5.73	60.00	47.26	-90.00	4.708
2,700.00	2,700.00	0.00	0.00	5.95	2,700.00	2,700.00	0.00	-60.00	5.95	60.00	46.81	-90.00	4.548
2,800.00	2,800.00	0.00	0.00	6.18	2,800.00	2,800.00	0.00	-60.00	6.18	60.00	46.36	-90.00	4.399
2,900.00	2,900.00	0.00	0.00	6.40	2,900.00	2,900.00	0.00	-60.00	6.40	60.00	45.91	-90.00	4.259
3,000.00	3,000.00	0.00	0.00	6.62	3,000.00	3,000.00	0.00	-60.00	6.62	60.00	45.46	-90.00	4.128

Anticollision Report for WCA 9H - Plan 1

Offset Design: Cottonwood 29-32 Fed - WCA 6H (Re-stake) - Wellbore #1 - Plan 2

0-MWD

Closest Approach 3D Proximity Scan on Current Survey Data (Highside Reference)

Scan Range: 0.00 to 14,930.58 usft. Measured Depth.

Scan Radius is 1,731.92 usft. Clearance Factor cutoff is Unlimited. Max Ellipse Separation is Unlimited

Uncertainty Data for Reference Well					Uncertainty Data for Comparison Well					Separation (Ref. > Comp.)			
Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	Ellipse Centre +E/-W (usft)	Ellipse Major Axis/2	Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	Ellipse Centre +E/-W (usft)	Ellipse Major Axis/2	Between Centres (usft)	Between Ellipsoids (usft)	Relative Highside Bearing	Clearance Factor
3,100.00	3,100.00	0.00	0.00	6.85	3,100.00	3,100.00	0.00	-60.00	6.85	60.00	45.02	-90.00	4.004
3,200.00	3,200.00	0.00	0.00	7.07	3,200.00	3,200.00	0.00	-60.00	7.07	60.00	44.57	-90.00	3.888
3,300.00	3,300.00	0.00	0.00	7.30	3,300.00	3,300.00	0.00	-60.00	7.30	60.00	44.12	-90.00	3.778
3,400.00	3,400.00	0.00	0.00	7.52	3,400.00	3,400.00	0.00	-60.00	7.52	60.00	43.67	-90.00	3.674
3,500.00	3,500.00	0.00	0.00	7.75	3,500.00	3,500.00	0.00	-60.00	7.75	60.00	43.22	-90.00	3.576
3,600.00	3,600.00	0.00	0.00	7.97	3,600.00	3,600.00	0.00	-60.00	7.97	60.00	42.77	-90.00	3.483
3,700.00	3,700.00	0.00	0.00	8.19	3,700.00	3,700.00	0.00	-60.00	8.19	60.00	42.32	-90.00	3.395
3,800.00	3,800.00	0.00	0.00	8.42	3,800.00	3,800.00	0.00	-60.00	8.42	60.00	41.88	-90.00	3.310
3,900.00	3,900.00	0.00	0.00	8.64	3,900.00	3,900.00	0.00	-60.00	8.64	60.00	41.43	-90.00	3.231
4,000.00	4,000.00	0.00	0.00	8.87	4,000.00	4,000.00	0.00	-60.00	8.87	60.00	40.98	-90.00	3.154
4,100.00	4,100.00	0.00	0.00	9.09	4,100.00	4,100.00	0.00	-60.00	9.09	60.00	40.53	-90.00	3.082
4,200.00	4,200.00	0.00	0.00	9.32	4,200.00	4,200.00	0.00	-60.00	9.32	60.00	40.08	-90.00	3.012
4,300.00	4,300.00	0.00	0.00	9.54	4,300.00	4,300.00	0.00	-60.00	9.54	60.00	39.63	-90.00	2.946
4,400.00	4,400.00	0.00	0.00	9.77	4,400.00	4,400.00	0.00	-60.00	9.77	60.00	39.18	-90.00	2.882
4,500.00	4,500.00	0.00	0.00	9.99	4,500.00	4,500.00	0.00	-60.00	9.99	60.00	38.73	-90.00	2.821
4,600.00	4,600.00	0.00	0.00	10.21	4,600.00	4,600.00	0.00	-60.00	10.21	60.00	38.28	-90.00	2.763
4,700.00	4,700.00	0.00	0.00	10.44	4,700.00	4,700.00	0.00	-60.00	10.44	60.00	37.84	-90.00	2.707
4,800.00	4,800.00	0.00	0.00	10.66	4,800.00	4,800.00	0.00	-60.00	10.66	60.00	37.39	-90.00	2.653
4,900.00	4,900.00	0.00	0.00	10.89	4,900.00	4,900.00	0.00	-60.00	10.89	60.00	36.94	-90.00	2.602
5,000.00	5,000.00	0.00	0.00	11.11	5,000.00	5,000.00	0.00	-60.00	11.11	60.00	36.49	-90.00	2.552
5,100.00	5,100.00	0.00	0.00	11.34	5,100.00	5,100.00	0.00	-60.00	11.34	60.00	36.04	-90.00	2.504
5,200.00	5,200.00	0.00	0.00	11.56	5,200.00	5,200.00	0.00	-60.00	11.56	60.00	35.59	-90.00	2.458
5,300.00	5,300.00	0.00	0.00	11.79	5,300.00	5,300.00	0.00	-60.00	11.79	60.00	35.14	-90.00	2.414
5,400.00	5,400.00	0.00	0.00	12.01	5,400.00	5,400.00	0.00	-60.00	12.01	60.00	34.69	-90.00	2.371
5,500.00	5,500.00	0.00	0.00	12.24	5,500.00	5,500.00	0.00	-60.00	12.24	60.00	34.24	-90.00	2.329
5,600.00	5,600.00	0.00	0.00	12.46	5,600.00	5,600.00	0.00	-60.00	12.46	60.00	33.79	-90.00	2.290
5,700.00	5,700.00	0.00	0.00	12.68	5,700.00	5,700.00	0.00	-60.00	12.68	60.00	33.34	-90.00	2.251
5,800.00	5,800.00	0.00	0.00	12.91	5,800.00	5,800.00	0.00	-60.00	12.91	60.00	32.90	-90.00	2.214
5,900.00	5,900.00	0.00	0.00	13.13	5,900.00	5,900.00	0.00	-60.00	13.13	60.00	32.45	-90.00	2.178

Anticollision Report for WCA 9H - Plan 1

Offset Design: Cottonwood 29-32 Fed - WCA 6H (Re-stake) - Wellbore #1 - Plan 2

O-MWD

Closest Approach 3D Proximity Scan on Current Survey Data (Highside Reference)

Scan Range: 0.00 to 14,930.58 usft. Measured Depth.

Scan Radius is 1,731.92 usft. Clearance Factor cutoff is Unlimited. Max Ellipse Separation is Unlimited

Uncertainty Data for Reference Well					Uncertainty Data for Comparison Well				Separation (Ref. > Comp.)				
Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	Ellipse Centre +E/-W (usft)	Ellipse Major Axis/2	Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	Ellipse Centre +E/-W (usft)	Ellipse Major Axis/2	Between Centres (usft)	Between Ellipsoids (usft)	Relative Highside Bearing	Clearance Factor
6,000.00	6,000.00	0.00	0.00	13.36	6,000.00	6,000.00	0.00	-60.00	13.36	60.00	32.00	-90.00	2.143
6,100.00	6,100.00	0.00	0.00	13.58	6,100.00	6,100.00	0.00	-60.00	13.58	60.00	31.55	-90.00	2.109
6,200.00	6,200.00	0.00	0.00	13.81	6,200.00	6,200.00	0.00	-60.00	13.81	60.00	31.10	-90.00	2.076
6,300.00	6,300.00	0.00	0.00	14.03	6,300.00	6,300.00	0.00	-60.00	14.03	60.00	30.65	-90.00	2.044
6,400.00	6,400.00	0.00	0.00	14.26	6,400.00	6,400.00	0.00	-60.00	14.26	60.00	30.20	-90.00	2.013
6,500.00	6,500.00	0.00	0.00	14.48	6,500.00	6,500.00	0.00	-60.00	14.48	60.00	29.75	-90.00	1.984
6,600.00	6,600.00	0.00	0.00	14.71	6,600.00	6,600.00	0.00	-60.00	14.71	60.00	29.30	-90.00	1.955
6,700.00	6,700.00	0.00	0.00	14.93	6,700.00	6,700.00	0.00	-60.00	14.93	60.00	28.85	-90.00	1.926
6,800.00	6,800.00	0.00	0.00	15.16	6,800.00	6,800.00	0.00	-60.00	15.16	60.00	28.40	-90.00	1.899
6,900.00	6,900.00	0.00	0.00	15.38	6,900.00	6,900.00	0.00	-60.00	15.38	60.00	27.95	-90.00	1.872
7,000.00	7,000.00	0.00	0.00	15.60	7,000.00	7,000.00	0.00	-60.00	15.60	60.00	27.50	-90.00	1.846
7,100.00	7,100.00	0.00	0.00	15.83	7,100.00	7,100.00	0.00	-60.00	15.83	60.00	27.06	-90.00	1.821
7,200.00	7,200.00	0.00	0.00	16.05	7,200.00	7,200.00	0.00	-60.00	16.05	60.00	26.61	-90.00	1.797
7,300.00	7,300.00	0.00	0.00	16.28	7,300.00	7,300.00	0.00	-60.00	16.28	60.00	26.16	-90.00	1.773
7,400.00	7,400.00	0.00	0.00	16.50	7,400.00	7,400.00	0.00	-60.00	16.50	60.00	25.71	-90.00	1.750
7,412.96	7,412.96	0.00	0.00	16.53	7,412.96	7,412.96	0.00	-60.00	16.53	60.00	25.65	-90.00	1.747
7,500.00	7,500.00	0.00	0.00	16.73	7,498.88	7,498.88	0.00	-60.08	16.72	60.09	25.36	-90.00	1.730
7,600.00	7,599.98	0.00	0.85	16.94	7,586.23	7,585.58	0.00	-69.66	16.90	71.97	37.41	180.00	2.083
7,700.00	7,698.69	-1.20	16.01	17.14	7,662.16	7,658.45	0.00	-90.70	17.06	114.06	80.39	158.74	3.388
7,800.00	7,795.02	-18.66	35.47	17.32	7,725.00	7,715.63	0.00	-116.67	17.21	172.63	140.02	121.08	5.295
7,900.00	7,885.67	-56.16	53.92	17.50	7,775.00	7,758.38	0.00	-142.56	17.35	240.76	208.99	104.08	7.580
8,000.00	7,966.66	-112.08	70.56	17.72	7,807.46	7,784.58	0.00	-161.70	17.45	315.69	284.59	90.52	10.149
8,100.00	8,034.47	-183.96	84.66	18.03	7,833.26	7,804.45	0.00	-178.17	17.54	394.75	363.56	77.89	12.655
8,200.00	8,086.11	-268.68	95.60	18.46	7,850.00	7,816.85	0.00	-189.41	17.61	475.31	443.63	65.50	15.003
8,300.00	8,119.35	-362.51	102.91	19.03	7,860.85	7,824.67	0.00	-196.93	17.66	555.12	522.64	54.73	17.093
8,400.00	8,132.72	-461.37	106.27	19.73	7,864.62	7,827.35	0.00	-199.58	17.67	632.19	598.82	45.90	18.948
8,500.00	8,131.05	-561.35	106.62	20.56	7,863.87	7,826.82	0.00	-199.05	17.67	707.88	673.67	43.78	20.691
8,600.00	8,128.61	-661.32	106.81	21.50	7,862.89	7,826.13	0.00	-198.36	17.66	788.65	753.78	43.65	22.620
8,700.00	8,126.17	-761.29	107.00	22.56	7,861.91	7,825.43	0.00	-197.67	17.66	873.40	838.04	43.52	24.702
8,800.00	8,123.73	-861.26	107.19	23.70	9,188.94	8,088.29	-861.85	-802.51	28.17	910.39	861.97	87.77	18.804

Anticollision Report for WCA 9H - Plan 1

Offset Design: Cottonwood 29-32 Fed - WCA 6H (Re-stake) - Wellbore #1 - Plan 2

0-MWD

Closest Approach 3D Proximity Scan on Current Survey Data (Highside Reference)

Scan Range: 0.00 to 14,930.58 usft. Measured Depth.

Scan Radius is 1,731.92 usft. Clearance Factor cutoff is Unlimited. Max Ellipse Separation is Unlimited

Uncertainty Data for Reference Well					Uncertainty Data for Comparison Well					Separation (Ref. > Comp.)			
Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	Ellipse Centre +E/-W (usft)	Ellipse Major Axis/2	Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	Ellipse Centre +E/-W (usft)	Ellipse Major Axis/2	Between Centres (usft)	Between Ellipsoids (usft)	Relative Highside Bearing	Clearance Factor
8,900.00	8,121.29	-961.23	107.38	24.93	9,288.93	8,085.14	-961.80	-802.32	28.96	910.42	859.64	87.72	17.930
9,000.00	8,118.85	-1,061.20	107.57	26.23	9,388.93	8,082.00	-1,061.75	-802.13	29.85	910.45	857.16	87.68	17.086
9,100.00	8,116.41	-1,161.17	107.76	27.59	9,488.93	8,078.85	-1,161.69	-801.95	30.82	910.48	854.56	87.63	16.280
9,200.00	8,113.97	-1,261.14	107.95	29.00	9,588.93	8,075.70	-1,261.64	-801.76	31.88	910.52	851.84	87.59	15.518
9,300.00	8,111.53	-1,361.11	108.14	30.46	9,688.92	8,072.55	-1,361.59	-801.57	33.02	910.55	849.03	87.55	14.801
9,400.00	8,109.09	-1,461.08	108.33	31.95	9,788.92	8,069.41	-1,461.54	-801.38	34.23	910.58	846.13	87.50	14.129
9,500.00	8,106.65	-1,561.05	108.53	33.48	9,888.92	8,066.26	-1,561.49	-801.19	35.49	910.62	843.17	87.46	13.501
9,600.00	8,104.21	-1,661.02	108.72	35.04	9,988.92	8,063.11	-1,661.43	-801.01	36.82	910.65	840.14	87.41	12.915
9,700.00	8,101.77	-1,760.99	108.91	36.62	10,088.91	8,059.97	-1,761.38	-800.82	38.19	910.69	837.06	87.37	12.368
9,800.00	8,099.33	-1,860.96	109.10	38.22	10,188.91	8,056.82	-1,861.33	-800.63	39.61	910.72	833.93	87.32	11.859
9,900.00	8,096.89	-1,960.93	109.29	39.84	10,288.91	8,053.67	-1,961.28	-800.44	41.06	910.76	830.76	87.28	11.384
10,000.00	8,094.45	-2,060.90	109.48	41.48	10,388.91	8,050.53	-2,061.22	-800.26	42.55	910.80	827.55	87.23	10.941
10,100.00	8,092.02	-2,160.87	109.67	43.14	10,488.90	8,047.38	-2,161.17	-800.07	44.07	910.83	824.31	87.19	10.527
10,200.00	8,089.58	-2,260.84	109.86	44.81	10,588.90	8,044.23	-2,261.12	-799.88	45.61	910.87	821.04	87.15	10.140
10,300.00	8,087.14	-2,360.81	110.05	46.49	10,688.90	8,041.08	-2,361.07	-799.69	47.17	910.91	817.75	87.10	9.778
10,400.00	8,084.70	-2,460.78	110.24	48.18	10,788.90	8,037.94	-2,461.02	-799.51	48.76	910.95	814.44	87.06	9.439
10,500.00	8,082.26	-2,560.75	110.44	49.88	10,888.89	8,034.79	-2,560.96	-799.32	50.37	910.99	811.10	87.01	9.120
10,600.00	8,079.82	-2,660.72	110.63	51.59	10,988.89	8,031.64	-2,660.91	-799.13	51.99	911.03	807.75	86.97	8.821
10,700.00	8,077.38	-2,760.69	110.82	53.30	11,088.89	8,028.50	-2,760.86	-798.94	53.62	911.07	804.38	86.92	8.539
10,800.00	8,074.94	-2,860.66	111.01	55.03	11,188.89	8,025.35	-2,860.81	-798.75	55.27	911.11	800.99	86.88	8.274
10,900.00	8,072.50	-2,960.63	111.20	56.76	11,288.88	8,022.20	-2,960.75	-798.57	56.93	911.16	797.60	86.83	8.024
11,000.00	8,070.06	-3,060.60	111.39	58.49	11,388.88	8,019.05	-3,060.70	-798.38	58.60	911.20	794.19	86.79	7.787
11,100.00	8,067.62	-3,160.57	111.58	60.24	11,488.88	8,015.91	-3,160.65	-798.19	60.29	911.24	790.77	86.75	7.564
11,200.00	8,065.18	-3,260.54	111.77	61.98	11,588.88	8,012.76	-3,260.60	-798.00	61.98	911.29	787.34	86.70	7.352
11,300.00	8,062.74	-3,360.51	111.96	63.74	11,688.87	8,009.61	-3,360.55	-797.82	63.68	911.33	783.90	86.66	7.152
11,400.00	8,060.30	-3,460.48	112.16	65.49	11,788.87	8,006.47	-3,460.49	-797.63	65.38	911.37	780.45	86.61	6.961
11,500.00	8,057.86	-3,560.45	112.35	67.25	11,888.87	8,003.32	-3,560.44	-797.44	67.10	911.42	777.00	86.57	6.780
11,600.00	8,055.42	-3,660.42	112.54	69.01	11,988.87	8,000.17	-3,660.39	-797.25	68.82	911.47	773.54	86.52	6.608
11,700.00	8,052.98	-3,760.39	112.73	70.78	12,088.86	7,997.02	-3,760.34	-797.06	70.54	911.51	770.07	86.48	6.444

Anticollision Report for WCA 9H - Plan 1

Offset Design: Cottonwood 29-32 Fed - WCA 6H (Re-stake) - Wellbore #1 - Plan 2

0-MWD

Closest Approach 3D Proximity Scan on Current Survey Data (Highside Reference)

Scan Range: 0.00 to 14,930.58 usft. Measured Depth.

Scan Radius is 1,731.92 usft. Clearance Factor cutoff is Unlimited. Max Ellipse Separation is Unlimited

Uncertainty Data for Reference Well					Uncertainty Data for Comparison Well					Separation (Ref. > Comp.)			
Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	Ellipse Centre +E/-W (usft)	Ellipse Major Axis/2	Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	Ellipse Centre +E/-W (usft)	Ellipse Major Axis/2	Between Centres (usft)	Between Ellipsoids (usft)	Relative Highside Bearing	Clearance Factor
11,800.00	8,050.54	-3,860.36	112.92	72.55	12,188.86	7,993.88	-3,860.28	-796.88	72.27	911.56	766.60	86.43	6.288
11,900.00	8,048.10	-3,960.33	113.11	74.32	12,288.86	7,990.73	-3,960.23	-796.69	74.01	911.61	763.12	86.39	6.139
12,000.00	8,045.66	-4,060.30	113.30	76.10	12,388.86	7,987.58	-4,060.18	-796.50	75.75	911.65	759.64	86.35	5.997
12,100.00	8,043.22	-4,160.27	113.49	77.87	12,488.85	7,984.44	-4,160.13	-796.31	77.49	911.70	756.15	86.30	5.861
12,200.00	8,040.78	-4,260.24	113.68	79.65	12,588.85	7,981.29	-4,260.08	-796.13	79.24	911.75	752.66	86.26	5.731
12,300.00	8,038.34	-4,360.21	113.87	81.44	12,688.85	7,978.14	-4,360.02	-795.94	80.99	911.80	749.16	86.21	5.606
12,400.00	8,035.91	-4,460.18	114.07	83.22	12,788.85	7,975.00	-4,459.97	-795.75	82.75	911.85	745.66	86.17	5.487
12,500.00	8,033.47	-4,560.15	114.26	85.01	12,888.84	7,971.85	-4,559.92	-795.56	84.51	911.90	742.16	86.12	5.372
12,600.00	8,031.03	-4,660.12	114.45	86.79	12,988.84	7,968.70	-4,659.87	-795.38	86.27	911.95	738.66	86.08	5.262
12,700.00	8,028.59	-4,760.09	114.64	88.58	13,088.84	7,965.55	-4,759.81	-795.19	88.04	912.01	735.15	86.03	5.157
12,800.00	8,026.15	-4,860.06	114.83	90.37	13,188.84	7,962.41	-4,859.76	-795.00	89.80	912.06	731.64	85.99	5.055
12,900.00	8,023.71	-4,960.03	115.02	92.16	13,288.83	7,959.26	-4,959.71	-794.81	91.57	912.11	728.13	85.95	4.958
13,000.00	8,021.27	-5,060.00	115.21	93.96	13,388.83	7,956.11	-5,059.66	-794.62	93.34	912.17	724.62	85.90	4.864
13,100.00	8,018.83	-5,159.97	115.40	95.75	13,488.83	7,952.97	-5,159.61	-794.44	95.12	912.22	721.10	85.86	4.773
13,200.00	8,016.39	-5,259.94	115.59	97.55	13,588.83	7,949.82	-5,259.55	-794.25	96.90	912.27	717.59	85.81	4.686
13,300.00	8,013.95	-5,359.91	115.78	99.35	13,688.82	7,946.67	-5,359.50	-794.06	98.67	912.33	714.07	85.77	4.602
13,400.00	8,011.51	-5,459.88	115.98	101.14	13,788.82	7,943.52	-5,459.45	-793.87	100.45	912.39	710.55	85.72	4.520
13,500.00	8,009.07	-5,559.85	116.17	102.94	13,888.82	7,940.38	-5,559.40	-793.69	102.24	912.44	707.03	85.68	4.442
13,600.00	8,006.63	-5,659.82	116.36	104.74	13,988.82	7,937.23	-5,659.34	-793.50	104.02	912.50	703.51	85.64	4.366
13,700.00	8,004.19	-5,759.79	116.55	106.55	14,088.81	7,934.08	-5,759.29	-793.31	105.81	912.56	699.98	85.59	4.293
13,800.00	8,001.75	-5,859.76	116.74	108.35	14,188.81	7,930.94	-5,859.24	-793.12	107.59	912.61	696.46	85.55	4.222
13,900.00	7,999.31	-5,959.73	116.93	110.15	14,288.81	7,927.79	-5,959.19	-792.93	109.38	912.67	692.94	85.50	4.153
14,000.00	7,996.87	-6,059.70	117.12	111.95	14,388.81	7,924.64	-6,059.14	-792.75	111.17	912.73	689.41	85.46	4.087
14,100.00	7,994.43	-6,159.67	117.31	113.76	14,488.80	7,921.49	-6,159.08	-792.56	112.96	912.79	685.88	85.41	4.023
14,200.00	7,991.99	-6,259.64	117.50	115.56	14,588.80	7,918.35	-6,259.03	-792.37	114.75	912.85	682.36	85.37	3.960
14,300.00	7,989.55	-6,359.61	117.70	117.37	14,688.80	7,915.20	-6,358.98	-792.18	116.54	912.91	678.83	85.33	3.900
14,400.00	7,987.11	-6,459.58	117.89	119.18	14,788.80	7,912.05	-6,458.93	-792.00	118.34	912.97	675.30	85.28	3.841
14,500.00	7,984.67	-6,559.55	118.08	120.98	14,888.79	7,908.91	-6,558.87	-791.81	120.13	913.03	671.78	85.24	3.784
14,600.00	7,982.23	-6,659.52	118.27	122.79	14,988.79	7,905.76	-6,658.82	-791.62	121.93	913.10	668.25	85.19	3.729
14,700.00	7,979.80	-6,759.49	118.46	124.60	15,088.79	7,902.61	-6,758.77	-791.43	123.73	913.16	664.72	85.15	3.676

Anticollision Report for WCA 9H - Plan 1

Offset Design: Cottonwood 29-32 Fed - WCA 6H (Re-stake) - Wellbore #1 - Plan 2

0-MWD

Closest Approach 3D Proximity Scan on Current Survey Data (Highside Reference)

Scan Range: 0.00 to 14,930.58 usft. Measured Depth.

Scan Radius is 1,731.92 usft . Clearance Factor cutoff is Unlimited. Max Ellipse Separation is Unlimited

Uncertainty Data for Reference Well					Uncertainty Data for Comparison Well				Separation (Ref. > Comp.)				
Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	+E/-W (usft)	Ellipse Major Axis/2	Measured Depth (usft)	Vertical Depth (usft)	Ellipse Centre +N/-S (usft)	+E/-W (usft)	Ellipse Major Axis/2	Between Centres (usft)	Between Ellipsoids (usft)	Relative Highside Bearing	Clearance Factor
14,800.00	7,977.36	-6,859.46	118.65	126.41	15,188.79	7,899.47	-6,858.72	-791.24	125.53	913.22	661.19	85.10	3.623
14,900.00	7,974.92	-6,959.43	118.84	128.22	15,288.78	7,896.32	-6,958.67	-791.06	127.32	913.29	657.66	85.06	3.573
14,930.58	7,974.17	-6,990.00	118.90	128.77	15,319.23	7,895.36	-6,989.10	-791.00	127.87	913.31	656.59	85.05	3.558

Anticollision Report for WCA 9H - Plan 1

Reference Well Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	14,930.58	Plan 1	MWD

Anticollision Info

Error Model: ISCWSA
Scan Method: Closest Approach 3D

Output errors are at 2.00 sigma

Ellipse error terms are correlated across survey tool tie-on points.

Calculated ellipses incorporate surface errors.

Separation is the actual distance between ellipsoids.

Distance Between centres is the straight line distance between wellbore centres.

Clearance Factor = Distance Between Profiles / (Distance Between Profiles - Ellipse Separation).

All station coordinates were calculated using the Minimum Curvature method.

Anticollision Report for WCA 9H - Plan 1

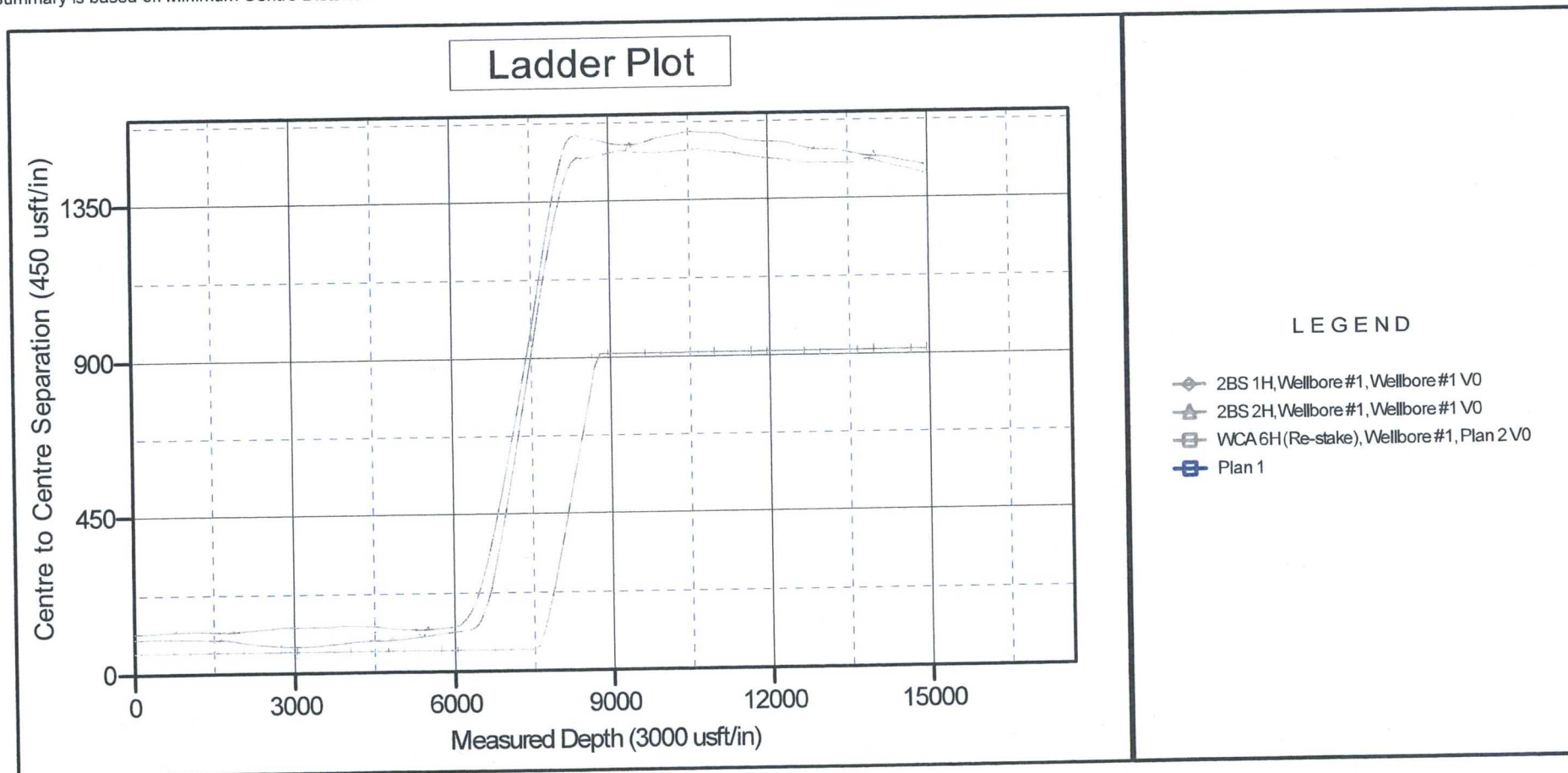
Direction and Coordinates are relative to Grid North Reference.

Vertical Depths are relative to GE 3433 + 22' KB @ 3455.00usft (22' KB). Northing and Easting are relative to WCA 9H.

Coordinate System is US State Plane 1983, New Mexico Eastern Zone.

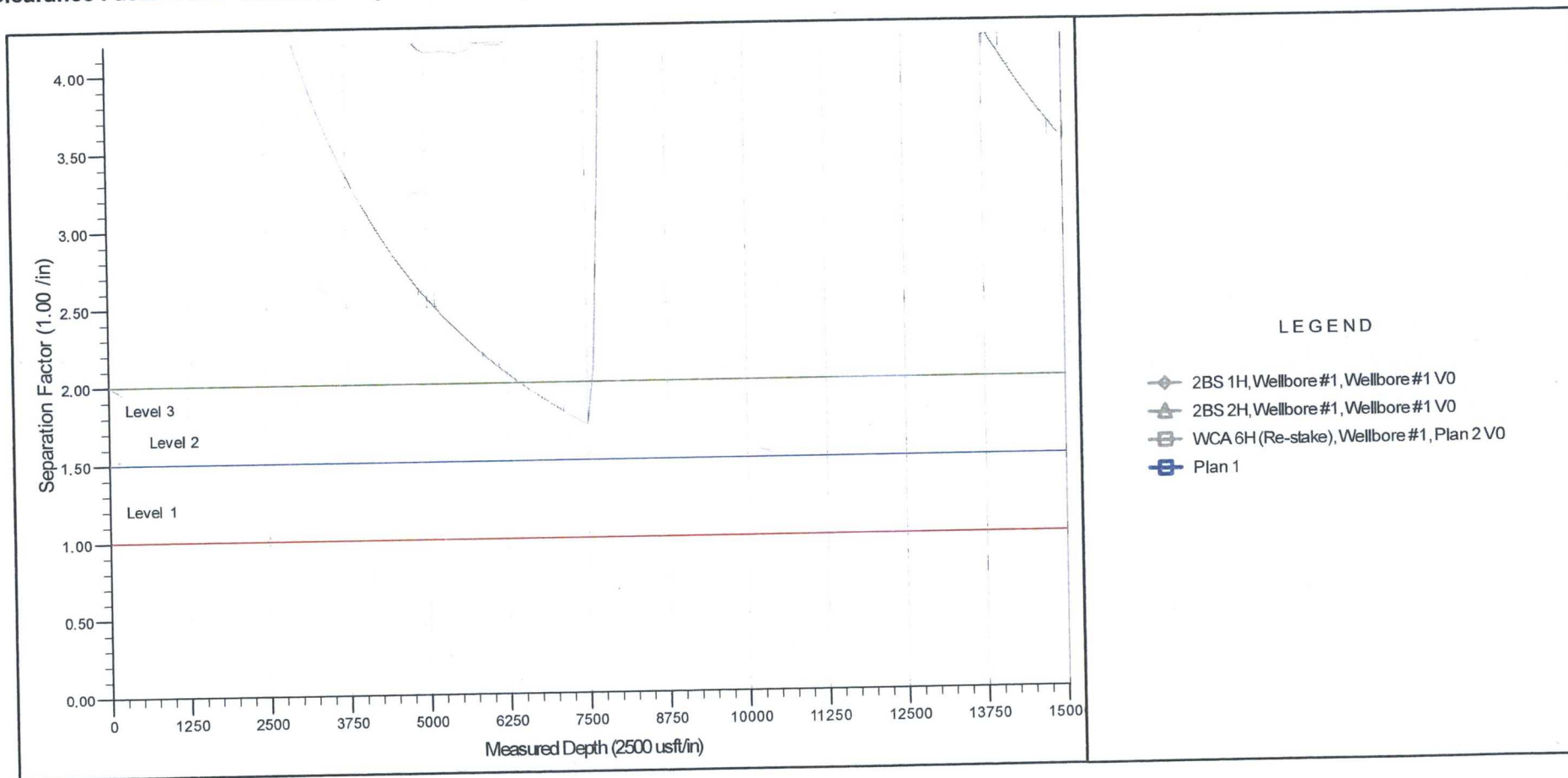
Central Meridian is -104.00°, Grid Convergence at Surface is: 0.00724 °.

Summary is based on Minimum Centre Distance



Anticollision Report for WCA 9H - Plan 1

Clearance Factor Plot: Measured Depth versus Separation(Clearance) Factor





Chisholm Energy Holdings

GE 3433 + 22' KB @ 3455.00usft (22' KB)

Ground Level: 3433.00

Project: Eddy County, NM (NAD 83)

Site: Cottonwood 29-32 Fed

Well: WCA 9H

Wellbore: Wellbore #1

Design: Plan 1

Rig: 22' KB

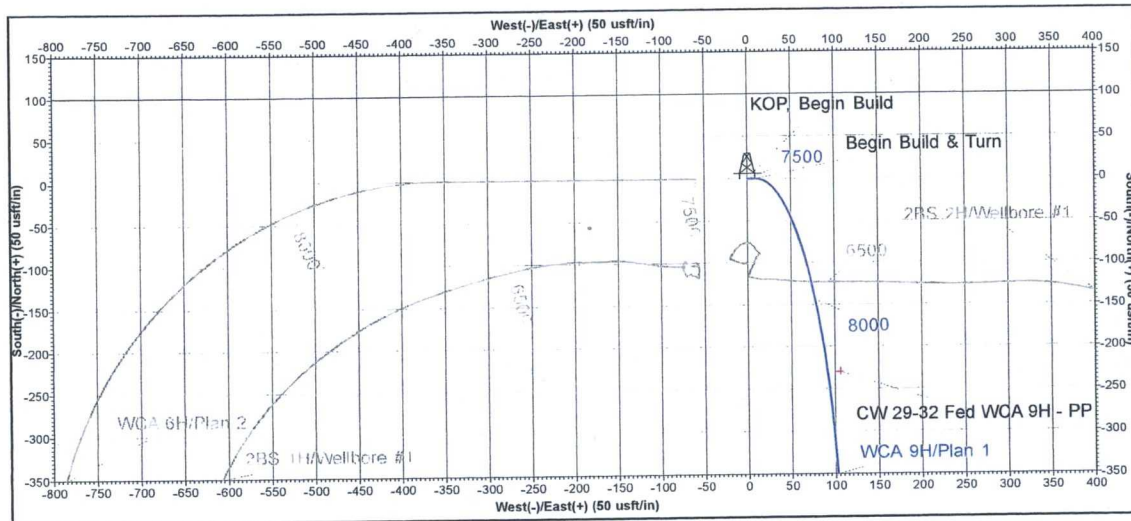


Azimuths to Grid North
True North: -0.01°
Magnetic North: 7.28°

Magnetic Field
Strength: 47693.95nT
Dip Angle: 59.89°
Date: 5/1/2018
Model: BGM2017

Map System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone Name: New Mexico Eastern Zone

WELL DETAILS					
Ground Level:	3433.00				
+N-S	+E-W	Northing	Easting	Latitude	Longitude
0.00	0.00	371098.90	545568.70	32° 1' 12.829 N	104° 19' 10.851 W



SECTION DETAILS

MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	VSec	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00000	0.00	
7571.50	0.00	0.00	7571.50	0.00	0.00	0.00	0.00000	0.00	KOP, Begin Build
7666.08	11.35	90.00	7665.47	0.00	9.34	12.00	90.00000	0.00	Begin Build & Turn
8427.33	91.40	179.89	8132.82	-488.69	106.48	12.00	89.61749	488.69	Landing Point
14930.58	91.40	179.89	7974.17	-6990.00	118.90	0.00	0.00000	6990.00	TD @ 14930.58' MD

DESIGN TARGET DETAILS

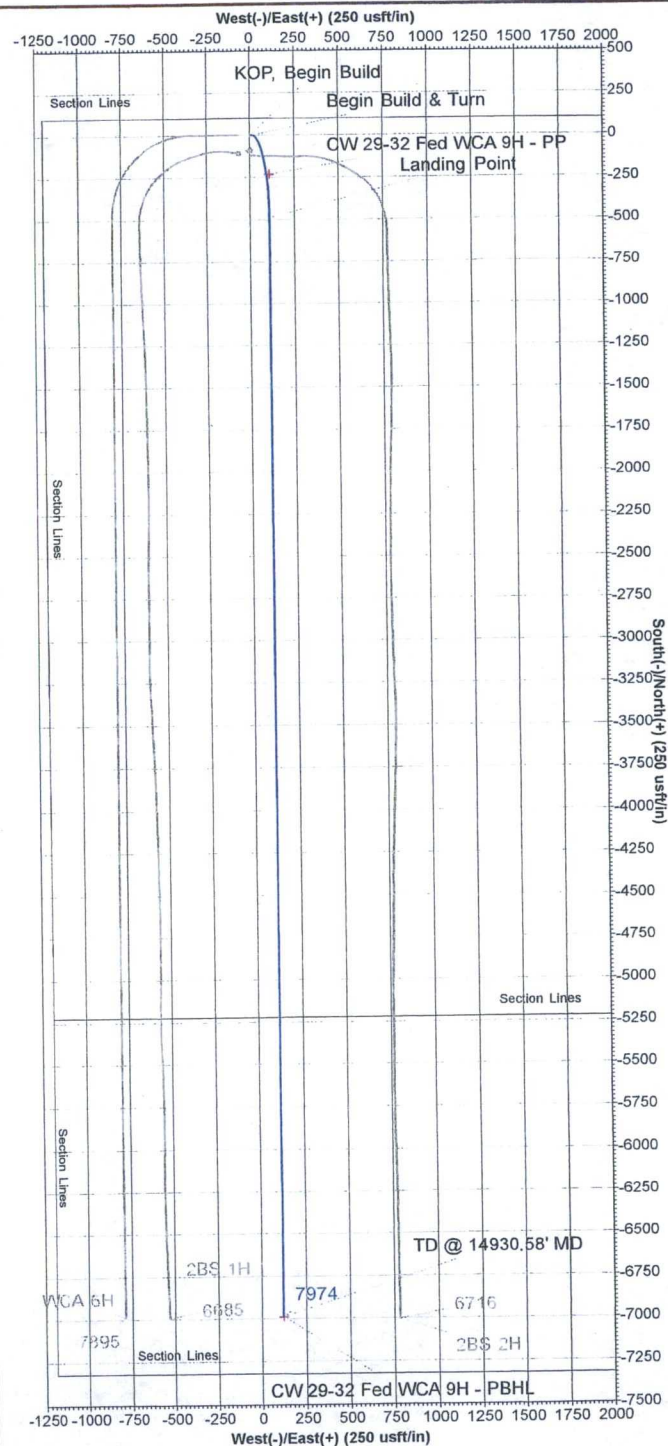
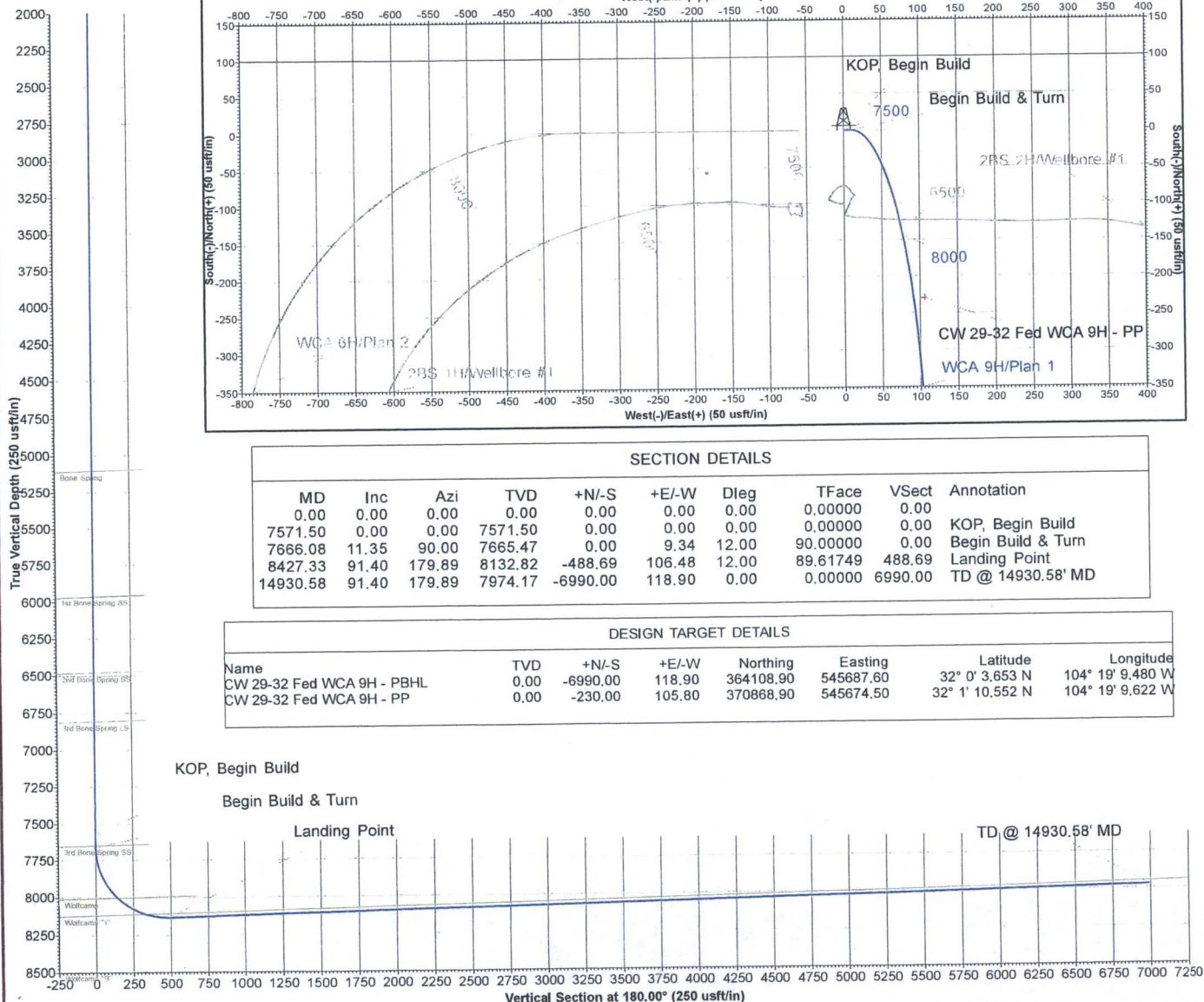
Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
CW 29-32 Fed WCA 9H - PBHL	0.00	-6990.00	118.90	364108.90	545687.60	32° 0' 3.653 N	104° 19' 9.480 W
CW 29-32 Fed WCA 9H - PP	0.00	-230.00	105.80	370868.90	545674.50	32° 1' 10.552 N	104° 19' 9.622 W

KOP, Begin Build

Begin Build & Turn

Landing Point

TD @ 14930.58' MD



22' KB

Chisholm Energy Holdings

Eddy County, NM (NAD 83) Cottonwood 29-32 Fed

API#

WCA 9H

Wellbore #1

Plan: Plan 1

Sperry Drilling Services

Combo Report

01 May, 2018

Well Coordinates: 32° 01' 12.83" N
104° 19' 10.85" W

North American Datum 1983
New Mexico Eastern Zone
371,098.90 N
545,568.70 E

Ground Level: 3,433.00 usft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Centered on Well WCA 9H
GE 3433 + 22' KB @ 3455.00usft (22' KB)

N

Grid

API US Survey Feet

Version: 5000.1 Build: 81E

Report Version: Midcon Combo v1.12

HALLIBURTON

Plan Report for WCA 9H - Plan 1

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
				Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)				
0.00	0.00	0.00	0.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
100.00	0.00	0.00	100.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
400.00	0.00	0.00	400.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
500.00	0.00	0.00	500.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
600.00	0.00	0.00	600.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
700.00	0.00	0.00	700.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
800.00	0.00	0.00	800.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
900.00	0.00	0.00	900.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
1,000.00	0.00	0.00	1,000.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
1,100.00	0.00	0.00	1,100.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
1,200.00	0.00	0.00	1,200.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
1,300.00	0.00	0.00	1,300.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
1,400.00	0.00	0.00	1,400.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
1,500.00	0.00	0.00	1,500.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
1,600.00	0.00	0.00	1,600.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
1,700.00	0.00	0.00	1,700.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
1,800.00	0.00	0.00	1,800.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
1,900.00	0.00	0.00	1,900.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
2,000.00	0.00	0.00	2,000.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
2,100.00	0.00	0.00	2,100.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
2,200.00	0.00	0.00	2,200.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
2,300.00	0.00	0.00	2,300.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
2,400.00	0.00	0.00	2,400.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
2,500.00	0.00	0.00	2,500.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
2,600.00	0.00	0.00	2,600.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
2,700.00	0.00	0.00	2,700.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
2,800.00	0.00	0.00	2,800.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
2,900.00	0.00	0.00	2,900.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
3,000.00	0.00	0.00	3,000.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
3,100.00	0.00	0.00	3,100.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
3,200.00	0.00	0.00	3,200.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
3,300.00	0.00	0.00	3,300.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
3,400.00	0.00	0.00	3,400.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
3,500.00	0.00	0.00	3,500.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	

HALLIBURTON**Plan Report for WCA 9H - Plan 1**

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
				Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)				
3,600.00	0.00	0.00	3,600.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
3,700.00	0.00	0.00	3,700.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
3,800.00	0.00	0.00	3,800.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
3,900.00	0.00	0.00	3,900.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
4,000.00	0.00	0.00	4,000.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
4,100.00	0.00	0.00	4,100.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
4,200.00	0.00	0.00	4,200.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
4,300.00	0.00	0.00	4,300.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
4,400.00	0.00	0.00	4,400.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
4,500.00	0.00	0.00	4,500.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
4,600.00	0.00	0.00	4,600.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
4,700.00	0.00	0.00	4,700.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
4,800.00	0.00	0.00	4,800.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
4,900.00	0.00	0.00	4,900.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
5,000.00	0.00	0.00	5,000.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
5,100.00	0.00	0.00	5,100.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
5,200.00	0.00	0.00	5,200.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
5,300.00	0.00	0.00	5,300.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
5,400.00	0.00	0.00	5,400.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
5,500.00	0.00	0.00	5,500.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
5,600.00	0.00	0.00	5,600.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
5,700.00	0.00	0.00	5,700.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
5,800.00	0.00	0.00	5,800.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
5,900.00	0.00	0.00	5,900.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
6,000.00	0.00	0.00	6,000.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
6,100.00	0.00	0.00	6,100.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
6,200.00	0.00	0.00	6,200.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
6,300.00	0.00	0.00	6,300.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
6,400.00	0.00	0.00	6,400.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
6,500.00	0.00	0.00	6,500.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
6,600.00	0.00	0.00	6,600.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
6,700.00	0.00	0.00	6,700.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
6,800.00	0.00	0.00	6,800.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
6,900.00	0.00	0.00	6,900.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
7,000.00	0.00	0.00	7,000.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
7,100.00	0.00	0.00	7,100.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
7,200.00	0.00	0.00	7,200.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	



Plan Report for WCA 9H - Plan 1

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
				Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)				
7,300.00	0.00	0.00	7,300.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
7,400.00	0.00	0.00	7,400.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
7,500.00	0.00	0.00	7,500.00	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	
7,571.50	0.00	0.00	7,571.50	0.00 N	0.00 E	371,098.90	545,568.70	0.00	0.00	0.00	KOP, Begin Build
7,575.00	0.42	90.00	7,575.00	0.00 S	0.01 E	371,098.90	545,568.71	12.00	0.00	90.00	
7,600.00	3.42	90.00	7,599.98	0.00 S	0.85 E	371,098.90	545,569.55	12.00	0.00	0.00	
7,625.00	6.42	90.00	7,624.89	0.00 S	2.99 E	371,098.90	545,571.69	12.00	0.00	0.00	
7,650.00	9.42	90.00	7,649.65	0.00 S	6.44 E	371,098.90	545,575.14	12.00	0.00	0.00	
7,666.08	11.35	90.00	7,665.47	0.00 S	9.34 E	371,098.90	545,578.04	12.00	0.00	0.00	Begin Build & Turn
7,675.00	11.41	95.42	7,674.21	0.08 S	11.09 E	371,098.82	545,579.79	12.00	0.08	89.62	
7,700.00	12.07	109.83	7,698.69	1.20 S	16.01 E	371,097.70	545,584.71	12.00	1.20	84.31	
7,725.00	13.39	122.11	7,723.08	3.63 S	20.93 E	371,095.27	545,589.63	12.00	3.63	70.19	
7,750.00	15.18	131.89	7,747.31	7.36 S	25.82 E	371,091.54	545,594.52	12.00	7.36	58.21	
7,775.00	17.30	139.49	7,771.31	12.37 S	30.67 E	371,086.53	545,599.37	12.00	12.37	48.73	
7,800.00	19.65	145.40	7,795.02	18.66 S	35.47 E	371,080.24	545,604.17	12.00	18.66	41.43	
7,825.00	22.15	150.06	7,818.38	26.20 S	40.21 E	371,072.70	545,608.91	12.00	26.20	35.82	
7,850.00	24.75	153.81	7,841.31	34.99 S	44.87 E	371,063.91	545,613.57	12.00	34.99	31.47	
7,875.00	27.44	156.87	7,863.76	44.98 S	49.45 E	371,053.92	545,618.15	12.00	44.98	28.03	
7,900.00	30.17	159.41	7,885.67	56.16 S	53.92 E	371,042.74	545,622.62	12.00	56.16	25.28	
7,925.00	32.95	161.57	7,906.97	68.50 S	58.28 E	371,030.40	545,626.98	12.00	68.50	23.05	
7,950.00	35.77	163.43	7,927.61	81.95 S	62.51 E	371,016.95	545,631.21	12.00	81.95	21.21	
7,975.00	38.60	165.05	7,947.52	96.49 S	66.61 E	371,002.41	545,635.31	12.00	96.49	19.68	
8,000.00	41.46	166.48	7,966.66	112.08 S	70.56 E	370,986.82	545,639.26	12.00	112.08	18.39	
8,025.00	44.33	167.75	7,984.98	128.66 S	74.35 E	370,970.24	545,643.05	12.00	128.66	17.29	
8,050.00	47.21	168.90	8,002.41	146.21 S	77.97 E	370,952.69	545,646.67	12.00	146.21	16.36	
8,075.00	50.11	169.95	8,018.92	164.66 S	81.41 E	370,934.24	545,650.11	12.00	164.66	15.55	
8,100.00	53.01	170.91	8,034.47	183.96 S	84.66 E	370,914.94	545,653.36	12.00	183.96	14.86	
8,125.00	55.92	171.81	8,048.99	204.08 S	87.71 E	370,894.82	545,656.41	12.00	204.08	14.26	
8,150.00	58.84	172.64	8,062.47	224.94 S	90.56 E	370,873.96	545,659.26	12.00	224.94	13.74	
8,175.00	61.76	173.42	8,074.85	246.49 S	93.19 E	370,852.41	545,661.89	12.00	246.49	13.30	
8,200.00	64.69	174.16	8,086.11	268.68 S	95.60 E	370,830.22	545,664.30	12.00	268.68	12.91	
8,225.00	67.62	174.87	8,096.22	291.44 S	97.79 E	370,807.46	545,666.49	12.00	291.44	12.57	
8,250.00	70.55	175.55	8,105.14	314.70 S	99.74 E	370,784.20	545,668.44	12.00	314.70	12.29	
8,275.00	73.49	176.20	8,112.86	338.42 S	101.45 E	370,760.48	545,670.15	12.00	338.42	12.05	
8,300.00	76.42	176.83	8,119.35	362.51 S	102.91 E	370,736.39	545,671.61	12.00	362.51	11.84	
8,325.00	79.36	177.45	8,124.59	386.92 S	104.13 E	370,711.98	545,672.83	12.00	386.92	11.68	
8,350.00	82.30	178.05	8,128.58	411.58 S	105.10 E	370,687.32	545,673.80	12.00	411.58	11.55	

Plan Report for WCA 9H - Plan 1

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
				Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)				
8,375.00	85.24	178.65	8,131.29	436.42 S	105.81 E	370,662.48	545,674.51	12.00	436.42	11.45	
8,400.00	88.18	179.25	8,132.72	461.37 S	106.27 E	370,637.53	545,674.97	12.00	461.37	11.39	
8,427.33	91.40	179.89	8,132.82	488.69 S	106.48 E	370,610.21	545,675.18	12.00	488.69	11.36	Landing Point
8,500.00	91.40	179.89	8,131.05	561.35 S	106.62 E	370,537.55	545,675.32	0.00	561.35	0.00	
8,600.00	91.40	179.89	8,128.61	661.32 S	106.81 E	370,437.58	545,675.51	0.00	661.32	0.00	
8,700.00	91.40	179.89	8,126.17	761.29 S	107.00 E	370,337.61	545,675.70	0.00	761.29	0.00	
8,800.00	91.40	179.89	8,123.73	861.26 S	107.19 E	370,237.64	545,675.89	0.00	861.26	0.00	
8,900.00	91.40	179.89	8,121.29	961.23 S	107.38 E	370,137.67	545,676.08	0.00	961.23	0.00	
9,000.00	91.40	179.89	8,118.85	1,061.20 S	107.57 E	370,037.70	545,676.27	0.00	1,061.20	0.00	
9,100.00	91.40	179.89	8,116.41	1,161.17 S	107.76 E	369,937.73	545,676.46	0.00	1,161.17	0.00	
9,200.00	91.40	179.89	8,113.97	1,261.14 S	107.95 E	369,837.76	545,676.65	0.00	1,261.14	0.00	
9,300.00	91.40	179.89	8,111.53	1,361.11 S	108.14 E	369,737.79	545,676.84	0.00	1,361.11	0.00	
9,400.00	91.40	179.89	8,109.09	1,461.08 S	108.33 E	369,637.82	545,677.03	0.00	1,461.08	0.00	
9,500.00	91.40	179.89	8,106.65	1,561.05 S	108.53 E	369,537.85	545,677.23	0.00	1,561.05	0.00	
9,600.00	91.40	179.89	8,104.21	1,661.02 S	108.72 E	369,437.88	545,677.42	0.00	1,661.02	0.00	
9,700.00	91.40	179.89	8,101.77	1,760.99 S	108.91 E	369,337.91	545,677.61	0.00	1,760.99	0.00	
9,800.00	91.40	179.89	8,099.33	1,860.96 S	109.10 E	369,237.94	545,677.80	0.00	1,860.96	0.00	
9,900.00	91.40	179.89	8,096.89	1,960.93 S	109.29 E	369,137.97	545,677.99	0.00	1,960.93	0.00	
10,000.00	91.40	179.89	8,094.45	2,060.90 S	109.48 E	369,038.00	545,678.18	0.00	2,060.90	0.00	
10,100.00	91.40	179.89	8,092.02	2,160.87 S	109.67 E	368,938.03	545,678.37	0.00	2,160.87	0.00	
10,200.00	91.40	179.89	8,089.58	2,260.84 S	109.86 E	368,838.06	545,678.56	0.00	2,260.84	0.00	
10,300.00	91.40	179.89	8,087.14	2,360.81 S	110.05 E	368,738.09	545,678.75	0.00	2,360.81	0.00	
10,400.00	91.40	179.89	8,084.70	2,460.78 S	110.24 E	368,638.12	545,678.94	0.00	2,460.78	0.00	
10,500.00	91.40	179.89	8,082.26	2,560.75 S	110.44 E	368,538.15	545,679.14	0.00	2,560.75	0.00	
10,600.00	91.40	179.89	8,079.82	2,660.72 S	110.63 E	368,438.18	545,679.33	0.00	2,660.72	0.00	
10,700.00	91.40	179.89	8,077.38	2,760.69 S	110.82 E	368,338.21	545,679.52	0.00	2,760.69	0.00	
10,800.00	91.40	179.89	8,074.94	2,860.66 S	111.01 E	368,238.24	545,679.71	0.00	2,860.66	0.00	
10,900.00	91.40	179.89	8,072.50	2,960.63 S	111.20 E	368,138.27	545,679.90	0.00	2,960.63	0.00	
11,000.00	91.40	179.89	8,070.06	3,060.60 S	111.39 E	368,038.30	545,680.09	0.00	3,060.60	0.00	
11,100.00	91.40	179.89	8,067.62	3,160.57 S	111.58 E	367,938.33	545,680.28	0.00	3,160.57	0.00	
11,200.00	91.40	179.89	8,065.18	3,260.54 S	111.77 E	367,838.36	545,680.47	0.00	3,260.54	0.00	
11,300.00	91.40	179.89	8,062.74	3,360.51 S	111.96 E	367,738.39	545,680.66	0.00	3,360.51	0.00	
11,400.00	91.40	179.89	8,060.30	3,460.48 S	112.16 E	367,638.42	545,680.86	0.00	3,460.48	0.00	
11,500.00	91.40	179.89	8,057.86	3,560.45 S	112.35 E	367,538.45	545,681.05	0.00	3,560.45	0.00	
11,600.00	91.40	179.89	8,055.42	3,660.42 S	112.54 E	367,438.48	545,681.24	0.00	3,660.42	0.00	
11,700.00	91.40	179.89	8,052.98	3,760.39 S	112.73 E	367,338.51	545,681.43	0.00	3,760.39	0.00	

Plan Report for WCA 9H - Plan 1

Measured Depth (usft)	Inclination (°)	Grid Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Map Coordinates		Dogleg Rate (°/100usft)	Vertical Section (usft)	Toolface Angle (°)	Comments
				Northing (usft)	Easting (usft)	Northing (usft)	Easting (usft)				
11,800.00	91.40	179.89	8,050.54	3,860.36 S	112.92 E	367,238.54	545,681.62	0.00	3,860.36	0.00	
11,900.00	91.40	179.89	8,048.10	3,960.33 S	113.11 E	367,138.57	545,681.81	0.00	3,960.33	0.00	
12,000.00	91.40	179.89	8,045.66	4,060.30 S	113.30 E	367,038.60	545,682.00	0.00	4,060.30	0.00	
12,100.00	91.40	179.89	8,043.22	4,160.27 S	113.49 E	366,938.63	545,682.19	0.00	4,160.27	0.00	
12,200.00	91.40	179.89	8,040.78	4,260.24 S	113.68 E	366,838.66	545,682.38	0.00	4,260.24	0.00	
12,300.00	91.40	179.89	8,038.34	4,360.21 S	113.87 E	366,738.69	545,682.57	0.00	4,360.21	0.00	
12,400.00	91.40	179.89	8,035.91	4,460.18 S	114.07 E	366,638.72	545,682.77	0.00	4,460.18	0.00	
12,500.00	91.40	179.89	8,033.47	4,560.15 S	114.26 E	366,538.75	545,682.96	0.00	4,560.15	0.00	
12,600.00	91.40	179.89	8,031.03	4,660.12 S	114.45 E	366,438.78	545,683.15	0.00	4,660.12	0.00	
12,700.00	91.40	179.89	8,028.59	4,760.09 S	114.64 E	366,338.81	545,683.34	0.00	4,760.09	0.00	
12,800.00	91.40	179.89	8,026.15	4,860.06 S	114.83 E	366,238.84	545,683.53	0.00	4,860.06	0.00	
12,900.00	91.40	179.89	8,023.71	4,960.03 S	115.02 E	366,138.87	545,683.72	0.00	4,960.03	0.00	
13,000.00	91.40	179.89	8,021.27	5,060.00 S	115.21 E	366,038.90	545,683.91	0.00	5,060.00	0.00	
13,100.00	91.40	179.89	8,018.83	5,159.97 S	115.40 E	365,938.93	545,684.10	0.00	5,159.97	0.00	
13,200.00	91.40	179.89	8,016.39	5,259.94 S	115.59 E	365,838.96	545,684.29	0.00	5,259.94	0.00	
13,300.00	91.40	179.89	8,013.95	5,359.91 S	115.78 E	365,738.99	545,684.48	0.00	5,359.91	0.00	
13,400.00	91.40	179.89	8,011.51	5,459.88 S	115.98 E	365,639.02	545,684.68	0.00	5,459.88	0.00	
13,500.00	91.40	179.89	8,009.07	5,559.85 S	116.17 E	365,539.05	545,684.87	0.00	5,559.85	0.00	
13,600.00	91.40	179.89	8,006.63	5,659.82 S	116.36 E	365,439.08	545,685.06	0.00	5,659.82	0.00	
13,700.00	91.40	179.89	8,004.19	5,759.79 S	116.55 E	365,339.11	545,685.25	0.00	5,759.79	0.00	
13,800.00	91.40	179.89	8,001.75	5,859.76 S	116.74 E	365,239.14	545,685.44	0.00	5,859.76	0.00	
13,900.00	91.40	179.89	7,999.31	5,959.73 S	116.93 E	365,139.17	545,685.63	0.00	5,959.73	0.00	
14,000.00	91.40	179.89	7,996.87	6,059.70 S	117.12 E	365,039.20	545,685.82	0.00	6,059.70	0.00	
14,100.00	91.40	179.89	7,994.43	6,159.67 S	117.31 E	364,939.23	545,686.01	0.00	6,159.67	0.00	
14,200.00	91.40	179.89	7,991.99	6,259.64 S	117.50 E	364,839.26	545,686.20	0.00	6,259.64	0.00	
14,300.00	91.40	179.89	7,989.55	6,359.61 S	117.70 E	364,739.29	545,686.40	0.00	6,359.61	0.00	
14,400.00	91.40	179.89	7,987.11	6,459.58 S	117.89 E	364,639.32	545,686.59	0.00	6,459.58	0.00	
14,500.00	91.40	179.89	7,984.67	6,559.55 S	118.08 E	364,539.35	545,686.78	0.00	6,559.55	0.00	
14,600.00	91.40	179.89	7,982.23	6,659.52 S	118.27 E	364,439.38	545,686.97	0.00	6,659.52	0.00	
14,700.00	91.40	179.89	7,979.80	6,759.49 S	118.46 E	364,339.41	545,687.16	0.00	6,759.49	0.00	
14,800.00	91.40	179.89	7,977.36	6,859.46 S	118.65 E	364,239.44	545,687.35	0.00	6,859.46	0.00	
14,900.00	91.40	179.89	7,974.92	6,959.43 S	118.84 E	364,139.47	545,687.54	0.00	6,959.43	0.00	
14,930.58	91.40	179.89	7,974.17	6,990.00 S	118.90 E	364,108.90	545,687.60	0.00	6,990.00	0.00	TD @ 14930.58' MD

Plan Report for WCA 9H - Plan 1

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,571.50	7,571.50	0.00	0.00	KOP, Begin Build
7,666.08	7,665.47	0.00	9.34	Begin Build & Turn
8,427.33	8,132.82	-488.69	106.48	Landing Point
14,930.58	7,974.17	-6,990.00	118.90	TD @ 14930.58' MD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (usft)	Origin +E/-W (usft)	Start TVD (usft)
User	No Target (Freehand)	180.00	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	14,930.58	Plan 1	MWD

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	TVDSS (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
45.00	45.00	-3,410.00	Castile		-1.40000	179.89
1,580.00	1,580.00	-1,875.00	Delaware Mtn Gr		-1.40000	179.89
5,105.00	5,105.00	1,650.00	Bone Spring		-1.40000	179.89
5,965.00	5,965.00	2,510.00	1st Bone Spring SS		-1.40000	179.89
6,480.00	6,480.00	3,025.00	2nd Bone Spring SS		-1.40000	179.89
6,805.00	6,805.00	3,350.00	3rd Bone Spring LS		-1.40000	179.89
7,650.36	7,650.00	4,195.00	3rd Bone Spring SS		-1.40000	179.89
8,048.58	8,005.00	4,550.00	Wolfcamp		-1.40000	179.89
8,271.35	8,120.00	4,665.00	Wolfcamp "Y"		-1.40000	179.89

Plan Report for WCA 9H - Plan 1

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
CW 29-32 Fed WCA 9H - PBHL ()									
	0.00	0.00	0.00	-6,990.00	118.90	364,108.90	545,687.60	32° 0' 3.653 N	104° 19' 9.480 W
- plan misses target center by 6991.01usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Point									
CW 29-32 Fed WCA 9H - PP ()									
	0.00	0.00	0.00	-230.00	105.80	370,868.90	545,674.50	32° 1' 10.552 N	104° 19' 9.622 W
- plan misses target center by 253.17usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Point									

Directional Difficulty Index

Average Dogleg over Survey:	0.69 °/100usft	Maximum Dogleg over Survey:	12.00 °/100usft at 7,666.08 usft
Net Tortosity applicable to Plans:	0.69 °/100usft	Directional Difficulty Index:	6.349

Audit Info

North Reference Sheet for Cottonwood 29-32 Fed - WCA 9H - Wellbore #1

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to Grid North Reference.

Vertical Depths are relative to GE 3433 + 22' KB @ 3455.00usft (22' KB). Northing and Easting are relative to WCA 9H

Coordinate System is US State Plane 1983, New Mexico Eastern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Transverse Mercator (Gauss-Kruger)

Central Meridian is 104° 20' 0.000 W°, Longitude Origin:0° 0' 0.000 E°, Latitude Origin:0° 0' 0.000 N°

False Easting: 541,337.50usft, False Northing: 0.00usft, Scale Reduction: 0.99990911

Grid Coordinates of Well: 371,098.90 usft N, 545,568.70 usft E

Geographical Coordinates of Well: 32° 01' 12.83" N, 104° 19' 10.85" W

Grid Convergence at Surface is: 0.00724°

Based upon Minimum Curvature type calculations, at a Measured Depth of 14,930.58usft the Bottom Hole Displacement is 6,991.01usft in the Direction of 179.03° (Grid).

Magnetic Convergence at surface is: -7.28000° (1 May 2018, , BGGM2017)

