

EXTRACTION OIL & GAS

WELD COUNTY, COLORADO (NAD 83)

SW SW SEC. 22 T4N R68W 6th P.M.

HFE 6

ORIGINAL WELLBORE

PROPOSAL #3

Anticollision Report

17 January, 2017



Anticollision Report



Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well HFE 6
Project:	WELD COUNTY, COLORADO (NAD 83)	TVD Reference:	KB-EST @ 4934.0usft
Reference Site:	SW SW SEC. 22 T4N R68W 6th P.M.	MD Reference:	KB-EST @ 4934.0usft
Site Error:	0.0 usft	North Reference:	True
Reference Well:	HFE 6	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	Database:	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3	Offset TVD Reference:	Offset Datum

Reference	PROPOSAL #3		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD + Stations Interval 100.0usft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.0 us	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date 17/01/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	11,862.4	PROPOSAL #3 (ORIGINAL WELLBORE)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
SW SW SEC. 22 T4N R68W 6th P.M.						
ABDN VERT CRESSWELL #2 - Wellbore #1 - Design #1	11,021.0	7,016.0	277.3	26.9	1.108	Level 2, CC, ES, SF
EXIST DD HFE #14-22 - Wellbore #1 - Wellbore #1	0.0	1.9	219.8			
EXIST DD HFE #14-22 - Wellbore #1 - Wellbore #1	800.0	799.4	221.8	218.6	68.675	ES
EXIST DD HFE #14-22 - Wellbore #1 - Wellbore #1	7,800.0	7,016.0	596.5	550.9	13.078	SF
EXIST DD HFE #22SE - Wellbore #1 - Wellbore #1	11,010.4	7,095.3	80.5	-51.6	0.609	Level 1, CC, ES, SF
EXIST DD HFE #24-22 - Wellbore #1 - Wellbore #1	1,743.1	1,771.4	134.7	126.4	16.157	CC, ES
EXIST DD HFE #24-22 - Wellbore #1 - Wellbore #1	9,100.0	7,153.6	573.5	488.6	6.756	SF
EXIST DD HFE #34-22 - Wellbore #1 - Wellbore #1	10,310.4	7,049.9	569.6	463.1	5.348	CC, ES
EXIST DD HFE #34-22 - Wellbore #1 - Wellbore #1	10,400.0	7,049.0	576.6	467.7	5.293	SF
EXIST DD HFE #44-22 - Wellbore #1 - Wellbore #1	11,650.8	7,293.3	579.2	417.8	3.589	CC, ES
EXIST DD HFE #44-22 - Wellbore #1 - Wellbore #1	11,700.0	7,293.4	581.3	418.5	3.572	SF
EXIST DD MLD #13-22 - Wellbore #1 - Wellbore #1	0.0	2.0	205.0			
EXIST DD MLD #13-22 - Wellbore #1 - Wellbore #1	200.0	200.8	205.4	204.7	308.072	ES
EXIST DD MLD #13-22 - Wellbore #1 - Wellbore #1	7,900.0	6,980.6	837.2	789.0	17.379	SF
EXIST DD MLD #23-22 - Wellbore #1 - Wellbore #1	1,340.1	1,356.6	102.6	96.6	17.108	CC, ES
EXIST DD MLD #23-22 - Wellbore #1 - Wellbore #1	9,200.0	7,178.3	770.2	682.2	8.745	SF
EXIST DD MLD #33-22 - Wellbore #1 - Wellbore #1	10,351.5	7,081.5	754.3	645.7	6.947	CC, ES
EXIST DD MLD #33-22 - Wellbore #1 - Wellbore #1	10,500.0	7,079.7	768.8	656.2	6.828	SF
EXIST DD MLD #43-22 - Wellbore #1 - Wellbore #1	11,671.6	7,322.6	745.4	583.4	4.602	CC
EXIST DD MLD #43-22 - Wellbore #1 - Wellbore #1	11,700.0	7,322.6	746.0	583.2	4.583	ES
EXIST DD MLD #43-22 - Wellbore #1 - Wellbore #1	11,800.0	7,322.8	756.4	590.9	4.570	SF
HFE 1 - ORIGINAL WELLBORE - PROPOSAL #3	0.0	1.0	140.1			
HFE 1 - ORIGINAL WELLBORE - PROPOSAL #3	1,600.0	1,600.7	143.9	137.1	21.407	ES
HFE 1 - ORIGINAL WELLBORE - PROPOSAL #3	11,862.8	12,477.3	980.2	776.8	4.819	SF
HFE 2 - ORIGINAL WELLBORE - PROPOSAL #3	1,666.3	1,667.3	112.2	104.9	15.509	CC
HFE 2 - ORIGINAL WELLBORE - PROPOSAL #3	1,700.0	1,700.0	112.2	104.8	15.196	ES
HFE 2 - ORIGINAL WELLBORE - PROPOSAL #3	11,862.8	11,976.0	1,240.5	975.6	4.683	SF
HFE 3 - ORIGINAL WELLBORE - PROPOSAL #3	1,766.0	1,768.0	84.3	76.6	10.968	CC
HFE 3 - ORIGINAL WELLBORE - PROPOSAL #3	1,800.0	1,802.0	84.3	76.4	10.755	ES
HFE 3 - ORIGINAL WELLBORE - PROPOSAL #3	11,862.8	12,093.7	949.9	690.7	3.665	SF
HFE 4 - ORIGINAL WELLBORE - PROPOSAL #3	1,866.3	1,867.3	56.1	47.9	6.897	CC
HFE 4 - ORIGINAL WELLBORE - PROPOSAL #3	1,900.0	1,901.0	56.1	47.8	6.771	ES
HFE 4 - ORIGINAL WELLBORE - PROPOSAL #3	11,862.8	11,869.5	620.0	354.7	2.337	SF
HFE 5 - ORIGINAL WELLBORE - PROPOSAL #3	1,966.3	1,967.3	28.2	19.6	3.284	CC
HFE 5 - ORIGINAL WELLBORE - PROPOSAL #3	2,000.0	2,001.0	28.2	19.4	3.227	ES
HFE 5 - ORIGINAL WELLBORE - PROPOSAL #3	11,862.8	12,038.6	365.7	136.9	1.599	SF
HFE 7 - ORIGINAL WELLBORE - PROPOSAL #3	2,100.0	2,100.0	27.9	18.7	3.040	CC, ES

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report



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Reference Site:	SW SW SEC. 22 T4N R68W 6th P.M.	MD Reference:	KB-EST @ 4934.0usft
Site Error:	0.0 usft	North Reference:	True
Reference Well:	HFE 6	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	ORIGINAL WELLBORE	Database:	EDM 5000.1 Single User Db
Reference Design:	PROPOSAL #3	Offset TVD Reference:	Offset Datum

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
SW SW SEC. 22 T4N R68W 6th P.M.						
HFE 7 - ORIGINAL WELLBORE - PROPOSAL #3	11,862.8	12,077.9	366.2	137.8	1.603	SF
HFE 8 - ORIGINAL WELLBORE - PROPOSAL #3	2,100.0	2,100.0	55.8	46.6	6.079	CC, ES
HFE 8 - ORIGINAL WELLBORE - PROPOSAL #3	11,862.8	11,965.3	619.9	352.4	2.317	SF
MLD 1 - ORIGINAL WELLBORE - PROPOSAL #1	6,625.9	7,391.1	930.0	878.7	18.125	CC
MLD 1 - ORIGINAL WELLBORE - PROPOSAL #1	11,862.8	12,513.1	938.8	676.3	3.577	ES, SF
MLD 12 - ORIGINAL WELLBORE - PROPOSAL #1	6,569.2	7,087.2	711.8	647.3	11.032	CC
MLD 12 - ORIGINAL WELLBORE - PROPOSAL #1	11,862.8	12,716.2	775.0	526.8	3.122	ES, SF
WILSON RANCH 30C-27HZ - Wellbore #1 - Design #1	7,456.9	16,444.6	1,321.8	1,039.5	4.683	CC, ES
WILSON RANCH 30C-27HZ - Wellbore #1 - Design #1	7,469.1	16,444.6	1,321.9	1,039.6	4.683	SF

Offset Design		SW SW SEC. 22 T4N R68W 6th P.M. - ABDN VERT CRESSWELL #2 - Wellbore #1 - Design #1										Offset Site Error:		0.0 usft
Survey Program: 0-INC												Offset Well Error:		0.0 usft
Reference		Offset		Semi Major Axis			Distance					Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)		Separation Factor	
0.0	0.0	46.0	46.0	0.0	0.2	81.23	460.3	2,984.5	3,019.8					
100.0	100.0	146.0	146.0	0.1	1.7	81.23	460.3	2,984.5	3,019.8	3,018.0	1.76	1,714.511		
200.0	200.0	246.0	246.0	0.3	4.0	81.23	460.3	2,984.5	3,019.8	3,015.5	4.27	706.499		
300.0	300.0	346.0	346.0	0.5	6.0	81.23	460.3	2,984.5	3,019.8	3,013.2	6.56	460.297		
400.0	400.0	446.0	446.0	0.8	8.1	81.23	460.3	2,984.5	3,019.8	3,010.9	8.82	342.397		
500.0	500.0	546.0	546.0	1.0	10.1	81.23	460.3	2,984.5	3,019.8	3,008.7	11.07	272.818		
600.0	600.0	646.0	646.0	1.2	12.1	81.23	460.3	2,984.5	3,019.8	3,006.5	13.31	226.821		
700.0	700.0	746.0	746.0	1.4	14.1	81.23	460.3	2,984.5	3,019.8	3,004.2	15.56	194.129		
800.0	800.0	846.0	846.0	1.7	16.1	81.23	460.3	2,984.5	3,019.8	3,002.0	17.80	169.689		
900.0	900.0	946.0	946.0	1.9	18.1	81.23	460.3	2,984.5	3,019.8	2,999.7	20.04	150.722		
1,000.0	1,000.0	1,046.0	1,046.0	2.1	20.2	81.23	460.3	2,984.5	3,019.8	2,997.5	22.27	135.574		
1,100.0	1,100.0	1,146.0	1,146.0	2.3	22.2	81.23	460.3	2,984.5	3,019.8	2,995.3	24.51	123.195		
1,200.0	1,200.0	1,246.0	1,246.0	2.6	24.2	81.23	460.3	2,984.5	3,019.8	2,993.0	26.75	112.889		
1,300.0	1,300.0	1,346.0	1,346.0	2.8	26.2	81.23	460.3	2,984.5	3,019.8	2,990.8	28.99	104.176		
1,400.0	1,400.0	1,446.0	1,446.0	3.0	28.2	81.23	460.3	2,984.5	3,019.8	2,988.5	31.22	96.712		
1,500.0	1,500.0	1,546.0	1,546.0	3.2	30.2	81.23	460.3	2,984.5	3,019.8	2,986.3	33.46	90.247		
1,600.0	1,600.0	1,646.0	1,646.0	3.5	32.2	81.23	460.3	2,984.5	3,019.8	2,984.1	35.70	84.592		
1,700.0	1,700.0	1,746.0	1,746.0	3.7	34.2	81.23	460.3	2,984.5	3,019.8	2,981.8	37.93	79.604		
1,800.0	1,800.0	1,846.0	1,846.0	3.9	36.3	81.23	460.3	2,984.5	3,019.8	2,979.6	40.17	75.172		
1,900.0	1,900.0	1,946.0	1,946.0	4.1	38.3	81.23	460.3	2,984.5	3,019.8	2,977.4	42.41	71.208		
2,000.0	2,000.0	2,046.0	2,046.0	4.4	40.3	81.23	460.3	2,984.5	3,019.8	2,975.1	44.64	67.641		
2,100.0	2,100.0	2,146.0	2,146.0	4.6	42.3	81.23	460.3	2,984.5	3,019.8	2,972.9	46.88	64.414		
2,200.0	2,200.0	2,246.0	2,246.0	4.8	44.3	166.75	460.3	2,984.5	3,021.5	2,972.4	49.08	61.568		
2,300.0	2,299.8	2,345.8	2,345.8	5.0	46.3	166.74	460.3	2,984.5	3,026.6	2,975.4	51.20	59.118		
2,400.0	2,399.5	2,445.5	2,445.5	5.2	48.3	166.74	460.3	2,984.5	3,035.0	2,981.8	53.25	57.001		
2,500.0	2,498.7	2,544.7	2,544.7	5.4	50.3	166.74	460.3	2,984.5	3,046.9	2,991.7	55.22	55.181		
2,600.0	2,597.5	2,643.5	2,643.5	5.7	52.3	166.74	460.3	2,984.5	3,062.1	3,005.0	57.10	53.627		
2,700.0	2,695.6	2,741.6	2,741.6	6.0	54.3	166.73	460.3	2,984.5	3,080.7	3,021.8	58.89	52.313		
2,800.0	2,793.1	2,839.1	2,839.1	6.3	56.2	166.72	460.3	2,984.5	3,102.7	3,042.1	60.58	51.217		
2,900.0	2,889.6	2,935.6	2,935.6	6.6	58.2	166.71	460.3	2,984.5	3,127.9	3,065.7	62.16	50.321		
3,000.0	2,985.3	3,031.3	3,031.3	7.0	60.1	166.70	460.3	2,984.5	3,156.4	3,092.8	63.63	49.609		
3,047.1	3,029.9	3,075.9	3,075.9	7.3	61.0	166.69	460.3	2,984.5	3,171.0	3,106.7	64.27	49.334		
3,100.0	3,080.0	3,126.0	3,126.0	7.5	62.0	166.76	460.3	2,984.5	3,187.7	3,122.4	65.36	48.770		
3,200.0	3,174.6	3,220.6	3,220.6	8.0	63.9	166.89	460.3	2,984.5	3,219.4	3,152.0	67.42	47.751		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation