

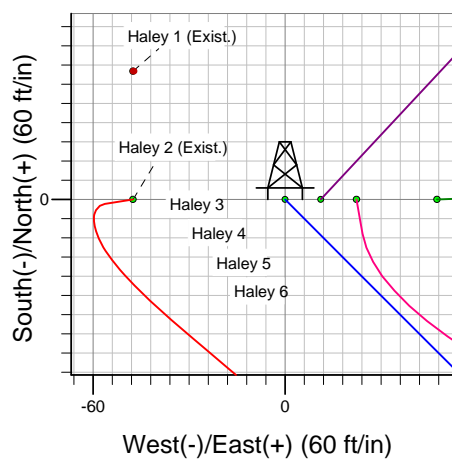
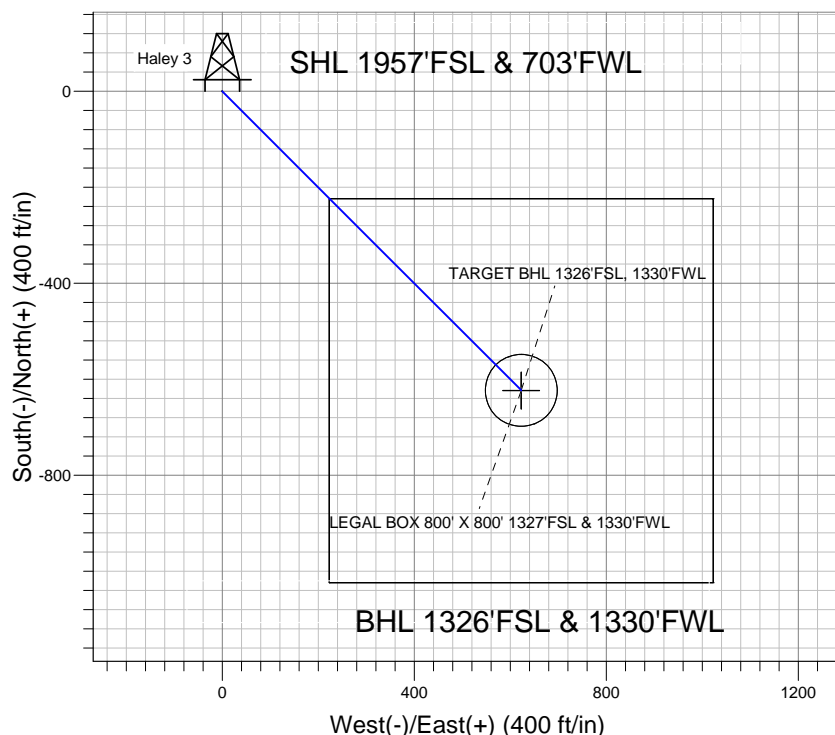
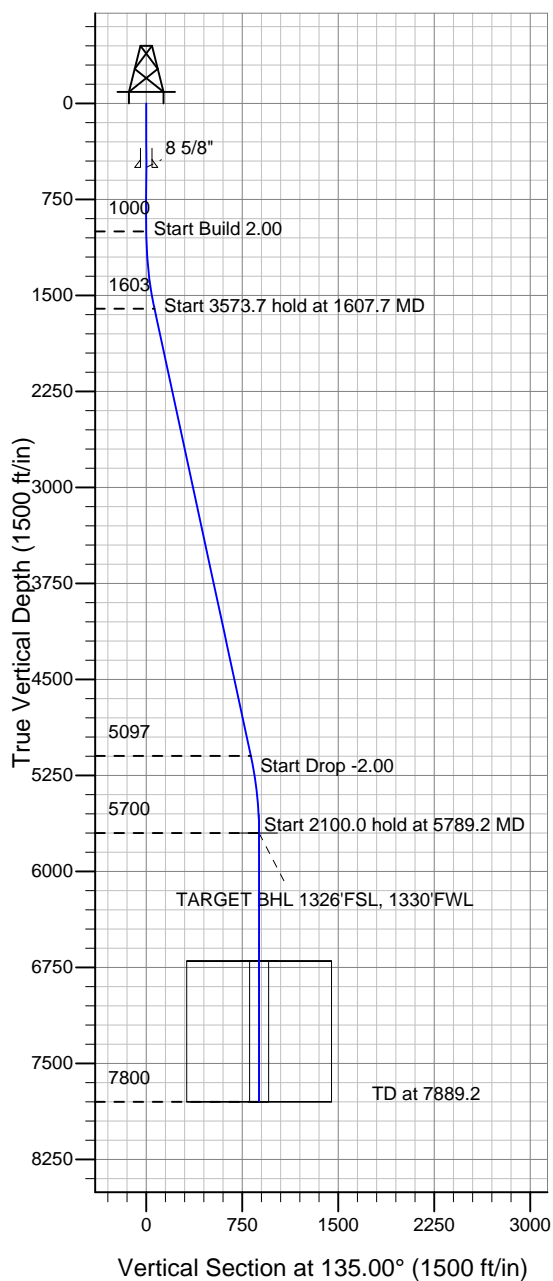
Well Name: Haley 3

Surface Location: Haley 1 Pad Sec.20-T3N-R68W
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
 Ground Elevation: 5078.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1319403.36	3130195.14	40.209220	-105.033840	

Original Well Elev WELL @ 5091.0ft (Original Well Elev)

Top Operating Company



Haley 1 Pad Sec.20-T3N-R68W
 Haley 3
 Plan #1 (11-07-12)
 12:55, November 09 2012



Azimuths to True North
 Magnetic North: 8.80°

Magnetic Field
 Strength: 52852.8nT
 Dip Angle: 66.80°
 Date: 11/7/2012
 Model: IGRF2010

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
TARGET BHL 1326'FSL, 1330'FWL	5700.0	-622.9	622.9	40.207510	-105.031610	Point
LEGAL BOX 800' X 800' 1327'FSL & 1330'FWL	6700.0	-623.9	622.9	40.207507	-105.031610	Rectangle (Sides: L800.0 W800.0)
TARGET CIRCLE 1326'FSL & 1330'FWL	6700.0	-622.9	622.9	40.207510	-105.031610	Circle (Radius: 75.0)

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1000.0	0.00	0.00	1000.0	0.0	0.0	0.00	0.00	0.0	
3	1607.7	12.15	135.00	1603.2	-45.4	45.4	2.00	135.00	64.2	
4	5181.5	12.15	135.00	5096.8	-577.5	577.5	0.00	0.00	816.7	
5	5789.2	0.00	0.00	5700.0	-622.9	622.9	2.00	180.00	880.9	TARGET BHL 1326'FSL, 1330'FWL
6	7889.2	0.00	0.00	7800.0	-622.9	622.9	0.00	0.00	880.9	



Top Operating Company

SEC.20-T3N-R68W

Haley 1 Pad Sec.20-T3N-R68W

Haley 3

Wellbore #1

Plan: Plan #1 (11-07-12)

Standard Planning Report

09 November, 2012

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,607.7	12.15	135.00	1,603.2	-45.4	45.4	2.00	2.00	0.00	135.00	
5,181.5	12.15	135.00	5,096.8	-577.5	577.5	0.00	0.00	0.00	0.00	
5,789.2	0.00	0.00	5,700.0	-622.9	622.9	2.00	-2.00	0.00	180.00	TARGET BHL 1326
7,889.2	0.00	0.00	7,800.0	-622.9	622.9	0.00	0.00	0.00	0.00	

Database:	Landmark	Local Co-ordinate Reference:	Well Haley 3
Company:	Top Operating Company	TVD Reference:	WELL @ 5091.0ft (Original Well Elev)
Project:	SEC.20-T3N-R68W	MD Reference:	WELL @ 5091.0ft (Original Well Elev)
Site:	Haley 1 Pad Sec.20-T3N-R68W	North Reference:	True
Well:	Haley 3	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (11-07-12)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
40.0	0.00	0.00	40.0	0.0	0.0	0.0	0.00	0.00	0.00
80.0	0.00	0.00	80.0	0.0	0.0	0.0	0.00	0.00	0.00
120.0	0.00	0.00	120.0	0.0	0.0	0.0	0.00	0.00	0.00
160.0	0.00	0.00	160.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
240.0	0.00	0.00	240.0	0.0	0.0	0.0	0.00	0.00	0.00
280.0	0.00	0.00	280.0	0.0	0.0	0.0	0.00	0.00	0.00
320.0	0.00	0.00	320.0	0.0	0.0	0.0	0.00	0.00	0.00
360.0	0.00	0.00	360.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
440.0	0.00	0.00	440.0	0.0	0.0	0.0	0.00	0.00	0.00
480.0	0.00	0.00	480.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
8 5/8"									
520.0	0.00	0.00	520.0	0.0	0.0	0.0	0.00	0.00	0.00
560.0	0.00	0.00	560.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
640.0	0.00	0.00	640.0	0.0	0.0	0.0	0.00	0.00	0.00
680.0	0.00	0.00	680.0	0.0	0.0	0.0	0.00	0.00	0.00
720.0	0.00	0.00	720.0	0.0	0.0	0.0	0.00	0.00	0.00
760.0	0.00	0.00	760.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
840.0	0.00	0.00	840.0	0.0	0.0	0.0	0.00	0.00	0.00
880.0	0.00	0.00	880.0	0.0	0.0	0.0	0.00	0.00	0.00
920.0	0.00	0.00	920.0	0.0	0.0	0.0	0.00	0.00	0.00
960.0	0.00	0.00	960.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,040.0	0.80	135.00	1,040.0	-0.2	0.2	0.3	2.00	2.00	0.00
1,080.0	1.60	135.00	1,080.0	-0.8	0.8	1.1	2.00	2.00	0.00
1,120.0	2.40	135.00	1,120.0	-1.8	1.8	2.5	2.00	2.00	0.00
1,160.0	3.20	135.00	1,159.9	-3.2	3.2	4.5	2.00	2.00	0.00
1,200.0	4.00	135.00	1,199.8	-4.9	4.9	7.0	2.00	2.00	0.00
1,240.0	4.80	135.00	1,239.7	-7.1	7.1	10.0	2.00	2.00	0.00
1,280.0	5.60	135.00	1,279.6	-9.7	9.7	13.7	2.00	2.00	0.00
1,320.0	6.40	135.00	1,319.3	-12.6	12.6	17.9	2.00	2.00	0.00
1,360.0	7.20	135.00	1,359.1	-16.0	16.0	22.6	2.00	2.00	0.00
1,400.0	8.00	135.00	1,398.7	-19.7	19.7	27.9	2.00	2.00	0.00
1,440.0	8.80	135.00	1,438.3	-23.8	23.8	33.7	2.00	2.00	0.00
1,480.0	9.60	135.00	1,477.8	-28.4	28.4	40.1	2.00	2.00	0.00
1,520.0	10.40	135.00	1,517.1	-33.3	33.3	47.1	2.00	2.00	0.00
1,560.0	11.20	135.00	1,556.4	-38.6	38.6	54.6	2.00	2.00	0.00
1,600.0	12.00	135.00	1,595.6	-44.3	44.3	62.6	2.00	2.00	0.00
1,607.7	12.15	135.00	1,603.2	-45.4	45.4	64.2	2.00	2.00	0.00
1,640.0	12.15	135.00	1,634.7	-50.2	50.2	71.0	0.00	0.00	0.00
1,680.0	12.15	135.00	1,673.8	-56.2	56.2	79.4	0.00	0.00	0.00
1,720.0	12.15	135.00	1,712.9	-62.1	62.1	87.9	0.00	0.00	0.00
1,760.0	12.15	135.00	1,752.0	-68.1	68.1	96.3	0.00	0.00	0.00
1,800.0	12.15	135.00	1,791.1	-74.0	74.0	104.7	0.00	0.00	0.00
1,840.0	12.15	135.00	1,830.2	-80.0	80.0	113.1	0.00	0.00	0.00
1,880.0	12.15	135.00	1,869.3	-86.0	85.9	121.5	0.00	0.00	0.00
1,920.0	12.15	135.00	1,908.5	-91.9	91.9	130.0	0.00	0.00	0.00
1,960.0	12.15	135.00	1,947.6	-97.9	97.9	138.4	0.00	0.00	0.00
2,000.0	12.15	135.00	1,986.7	-103.8	103.8	146.8	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Haley 3
Company:	Top Operating Company	TVD Reference:	WELL @ 5091.0ft (Original Well Elev)
Project:	SEC.20-T3N-R68W	MD Reference:	WELL @ 5091.0ft (Original Well Elev)
Site:	Haley 1 Pad Sec.20-T3N-R68W	North Reference:	True
Well:	Haley 3	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (11-07-12)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
2,040.0	12.15	135.00	2,025.8	-109.8	109.8	155.2	0.00	0.00	0.00
2,080.0	12.15	135.00	2,064.9	-115.7	115.7	163.7	0.00	0.00	0.00
2,120.0	12.15	135.00	2,104.0	-121.7	121.7	172.1	0.00	0.00	0.00
2,160.0	12.15	135.00	2,143.1	-127.6	127.6	180.5	0.00	0.00	0.00
2,200.0	12.15	135.00	2,182.2	-133.6	133.6	188.9	0.00	0.00	0.00
2,240.0	12.15	135.00	2,221.3	-139.6	139.5	197.3	0.00	0.00	0.00
2,280.0	12.15	135.00	2,260.4	-145.5	145.5	205.8	0.00	0.00	0.00
2,320.0	12.15	135.00	2,299.5	-151.5	151.4	214.2	0.00	0.00	0.00
2,360.0	12.15	135.00	2,338.6	-157.4	157.4	222.6	0.00	0.00	0.00
2,400.0	12.15	135.00	2,377.7	-163.4	163.4	231.0	0.00	0.00	0.00
2,440.0	12.15	135.00	2,416.8	-169.3	169.3	239.5	0.00	0.00	0.00
2,480.0	12.15	135.00	2,455.9	-175.3	175.3	247.9	0.00	0.00	0.00
2,520.0	12.15	135.00	2,495.0	-181.2	181.2	256.3	0.00	0.00	0.00
2,560.0	12.15	135.00	2,534.1	-187.2	187.2	264.7	0.00	0.00	0.00
2,600.0	12.15	135.00	2,573.2	-193.2	193.1	273.1	0.00	0.00	0.00
2,640.0	12.15	135.00	2,612.3	-199.1	199.1	281.6	0.00	0.00	0.00
2,680.0	12.15	135.00	2,651.4	-205.1	205.0	290.0	0.00	0.00	0.00
2,720.0	12.15	135.00	2,690.5	-211.0	211.0	298.4	0.00	0.00	0.00
2,760.0	12.15	135.00	2,729.6	-217.0	217.0	306.8	0.00	0.00	0.00
2,800.0	12.15	135.00	2,768.7	-222.9	222.9	315.3	0.00	0.00	0.00
2,840.0	12.15	135.00	2,807.8	-228.9	228.9	323.7	0.00	0.00	0.00
2,880.0	12.15	135.00	2,846.9	-234.8	234.8	332.1	0.00	0.00	0.00
2,920.0	12.15	135.00	2,886.0	-240.8	240.8	340.5	0.00	0.00	0.00
2,960.0	12.15	135.00	2,925.1	-246.8	246.7	348.9	0.00	0.00	0.00
3,000.0	12.15	135.00	2,964.2	-252.7	252.7	357.4	0.00	0.00	0.00
3,040.0	12.15	135.00	3,003.3	-258.7	258.6	365.8	0.00	0.00	0.00
3,080.0	12.15	135.00	3,042.4	-264.6	264.6	374.2	0.00	0.00	0.00
3,120.0	12.15	135.00	3,081.5	-270.6	270.6	382.6	0.00	0.00	0.00
3,160.0	12.15	135.00	3,120.7	-276.5	276.5	391.1	0.00	0.00	0.00
3,200.0	12.15	135.00	3,159.8	-282.5	282.5	399.5	0.00	0.00	0.00
3,240.0	12.15	135.00	3,198.9	-288.4	288.4	407.9	0.00	0.00	0.00
3,280.0	12.15	135.00	3,238.0	-294.4	294.4	416.3	0.00	0.00	0.00
3,320.0	12.15	135.00	3,277.1	-300.4	300.3	424.7	0.00	0.00	0.00
3,360.0	12.15	135.00	3,316.2	-306.3	306.3	433.2	0.00	0.00	0.00
3,400.0	12.15	135.00	3,355.3	-312.3	312.2	441.6	0.00	0.00	0.00
3,440.0	12.15	135.00	3,394.4	-318.2	318.2	450.0	0.00	0.00	0.00
3,480.0	12.15	135.00	3,433.5	-324.2	324.1	458.4	0.00	0.00	0.00
3,520.0	12.15	135.00	3,472.6	-330.1	330.1	466.9	0.00	0.00	0.00
3,560.0	12.15	135.00	3,511.7	-336.1	336.1	475.3	0.00	0.00	0.00
3,600.0	12.15	135.00	3,550.8	-342.0	342.0	483.7	0.00	0.00	0.00
3,640.0	12.15	135.00	3,589.9	-348.0	348.0	492.1	0.00	0.00	0.00
3,680.0	12.15	135.00	3,629.0	-354.0	353.9	500.5	0.00	0.00	0.00
3,720.0	12.15	135.00	3,668.1	-359.9	359.9	509.0	0.00	0.00	0.00
3,760.0	12.15	135.00	3,707.2	-365.9	365.8	517.4	0.00	0.00	0.00
3,800.0	12.15	135.00	3,746.3	-371.8	371.8	525.8	0.00	0.00	0.00
3,840.0	12.15	135.00	3,785.4	-377.8	377.7	534.2	0.00	0.00	0.00
3,880.0	12.15	135.00	3,824.5	-383.7	383.7	542.7	0.00	0.00	0.00
3,920.0	12.15	135.00	3,863.6	-389.7	389.7	551.1	0.00	0.00	0.00
3,960.0	12.15	135.00	3,902.7	-395.6	395.6	559.5	0.00	0.00	0.00
4,000.0	12.15	135.00	3,941.8	-401.6	401.6	567.9	0.00	0.00	0.00
4,040.0	12.15	135.00	3,980.9	-407.6	407.5	576.3	0.00	0.00	0.00
4,080.0	12.15	135.00	4,020.0	-413.5	413.5	584.8	0.00	0.00	0.00
4,120.0	12.15	135.00	4,059.1	-419.5	419.4	593.2	0.00	0.00	0.00
4,160.0	12.15	135.00	4,098.2	-425.4	425.4	601.6	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Haley 3
Company:	Top Operating Company	TVD Reference:	WELL @ 5091.0ft (Original Well Elev)
Project:	SEC.20-T3N-R68W	MD Reference:	WELL @ 5091.0ft (Original Well Elev)
Site:	Haley 1 Pad Sec.20-T3N-R68W	North Reference:	True
Well:	Haley 3	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (11-07-12)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,200.0	12.15	135.00	4,137.3	-431.4	431.3	610.0	0.00	0.00	0.00
4,240.0	12.15	135.00	4,176.4	-437.3	437.3	618.5	0.00	0.00	0.00
4,280.0	12.15	135.00	4,215.5	-443.3	443.3	626.9	0.00	0.00	0.00
4,320.0	12.15	135.00	4,254.6	-449.3	449.2	635.3	0.00	0.00	0.00
4,360.0	12.15	135.00	4,293.8	-455.2	455.2	643.7	0.00	0.00	0.00
4,400.0	12.15	135.00	4,332.9	-461.2	461.1	652.1	0.00	0.00	0.00
4,440.0	12.15	135.00	4,372.0	-467.1	467.1	660.6	0.00	0.00	0.00
4,480.0	12.15	135.00	4,411.1	-473.1	473.0	669.0	0.00	0.00	0.00
4,520.0	12.15	135.00	4,450.2	-479.0	479.0	677.4	0.00	0.00	0.00
4,560.0	12.15	135.00	4,489.3	-485.0	484.9	685.8	0.00	0.00	0.00
4,600.0	12.15	135.00	4,528.4	-490.9	490.9	694.3	0.00	0.00	0.00
4,640.0	12.15	135.00	4,567.5	-496.9	496.8	702.7	0.00	0.00	0.00
4,680.0	12.15	135.00	4,606.6	-502.9	502.8	711.1	0.00	0.00	0.00
4,720.0	12.15	135.00	4,645.7	-508.8	508.8	719.5	0.00	0.00	0.00
4,760.0	12.15	135.00	4,684.8	-514.8	514.7	727.9	0.00	0.00	0.00
4,800.0	12.15	135.00	4,723.9	-520.7	520.7	736.4	0.00	0.00	0.00
4,840.0	12.15	135.00	4,763.0	-526.7	526.6	744.8	0.00	0.00	0.00
4,880.0	12.15	135.00	4,802.1	-532.6	532.6	753.2	0.00	0.00	0.00
4,920.0	12.15	135.00	4,841.2	-538.6	538.5	761.6	0.00	0.00	0.00
4,960.0	12.15	135.00	4,880.3	-544.5	544.5	770.1	0.00	0.00	0.00
5,000.0	12.15	135.00	4,919.4	-550.5	550.4	778.5	0.00	0.00	0.00
5,040.0	12.15	135.00	4,958.5	-556.5	556.4	786.9	0.00	0.00	0.00
5,080.0	12.15	135.00	4,997.6	-562.4	562.4	795.3	0.00	0.00	0.00
5,120.0	12.15	135.00	5,036.7	-568.4	568.3	803.7	0.00	0.00	0.00
5,160.0	12.15	135.00	5,075.8	-574.3	574.3	812.2	0.00	0.00	0.00
5,181.5	12.15	135.00	5,096.8	-577.5	577.5	816.7	0.00	0.00	0.00
5,200.0	11.78	135.00	5,114.9	-580.2	580.2	820.5	2.00	-2.00	0.00
5,240.0	10.98	135.00	5,154.1	-585.8	585.8	828.4	2.00	-2.00	0.00
5,280.0	10.18	135.00	5,193.5	-591.0	591.0	835.8	2.00	-2.00	0.00
5,320.0	9.38	135.00	5,232.9	-595.8	595.8	842.6	2.00	-2.00	0.00
5,360.0	8.58	135.00	5,272.4	-600.2	600.2	848.8	2.00	-2.00	0.00
5,400.0	7.78	135.00	5,312.0	-604.3	604.2	854.5	2.00	-2.00	0.00
5,440.0	6.98	135.00	5,351.7	-607.9	607.8	859.7	2.00	-2.00	0.00
5,480.0	6.18	135.00	5,391.4	-611.1	611.1	864.2	2.00	-2.00	0.00
5,520.0	5.38	135.00	5,431.2	-614.0	613.9	868.3	2.00	-2.00	0.00
5,560.0	4.58	135.00	5,471.0	-616.5	616.4	871.8	2.00	-2.00	0.00
5,600.0	3.78	135.00	5,510.9	-618.5	618.5	874.7	2.00	-2.00	0.00
5,640.0	2.98	135.00	5,550.9	-620.2	620.1	877.0	2.00	-2.00	0.00
5,680.0	2.18	135.00	5,590.8	-621.5	621.4	878.8	2.00	-2.00	0.00
5,720.0	1.38	135.00	5,630.8	-622.3	622.3	880.1	2.00	-2.00	0.00
5,760.0	0.58	135.00	5,670.8	-622.8	622.8	880.8	2.00	-2.00	0.00
5,789.2	0.00	0.00	5,700.0	-622.9	622.9	880.9	2.00	-2.00	0.00
TARGET BHL 1326'FSL, 1330'FWL									
5,800.0	0.00	0.00	5,710.8	-622.9	622.9	880.9	0.00	0.00	0.00
5,840.0	0.00	0.00	5,750.8	-622.9	622.9	880.9	0.00	0.00	0.00
5,880.0	0.00	0.00	5,790.8	-622.9	622.9	880.9	0.00	0.00	0.00
5,920.0	0.00	0.00	5,830.8	-622.9	622.9	880.9	0.00	0.00	0.00
5,960.0	0.00	0.00	5,870.8	-622.9	622.9	880.9	0.00	0.00	0.00
6,000.0	0.00	0.00	5,910.8	-622.9	622.9	880.9	0.00	0.00	0.00
6,040.0	0.00	0.00	5,950.8	-622.9	622.9	880.9	0.00	0.00	0.00
6,080.0	0.00	0.00	5,990.8	-622.9	622.9	880.9	0.00	0.00	0.00
6,120.0	0.00	0.00	6,030.8	-622.9	622.9	880.9	0.00	0.00	0.00
6,160.0	0.00	0.00	6,070.8	-622.9	622.9	880.9	0.00	0.00	0.00
6,200.0	0.00	0.00	6,110.8	-622.9	622.9	880.9	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Haley 3
Company:	Top Operating Company	TVD Reference:	WELL @ 5091.0ft (Original Well Elev)
Project:	SEC.20-T3N-R68W	MD Reference:	WELL @ 5091.0ft (Original Well Elev)
Site:	Haley 1 Pad Sec.20-T3N-R68W	North Reference:	True
Well:	Haley 3	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (11-07-12)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,240.0	0.00	0.00	6,150.8	-622.9	622.9	880.9	0.00	0.00	0.00
6,280.0	0.00	0.00	6,190.8	-622.9	622.9	880.9	0.00	0.00	0.00
6,320.0	0.00	0.00	6,230.8	-622.9	622.9	880.9	0.00	0.00	0.00
6,360.0	0.00	0.00	6,270.8	-622.9	622.9	880.9	0.00	0.00	0.00
6,400.0	0.00	0.00	6,310.8	-622.9	622.9	880.9	0.00	0.00	0.00
6,440.0	0.00	0.00	6,350.8	-622.9	622.9	880.9	0.00	0.00	0.00
6,480.0	0.00	0.00	6,390.8	-622.9	622.9	880.9	0.00	0.00	0.00
6,520.0	0.00	0.00	6,430.8	-622.9	622.9	880.9	0.00	0.00	0.00
6,560.0	0.00	0.00	6,470.8	-622.9	622.9	880.9	0.00	0.00	0.00
6,600.0	0.00	0.00	6,510.8	-622.9	622.9	880.9	0.00	0.00	0.00
6,640.0	0.00	0.00	6,550.8	-622.9	622.9	880.9	0.00	0.00	0.00
6,680.0	0.00	0.00	6,590.8	-622.9	622.9	880.9	0.00	0.00	0.00
6,720.0	0.00	0.00	6,630.8	-622.9	622.9	880.9	0.00	0.00	0.00
6,760.0	0.00	0.00	6,670.8	-622.9	622.9	880.9	0.00	0.00	0.00
6,789.2	0.00	0.00	6,700.0	-622.9	622.9	880.9	0.00	0.00	0.00
LEGAL BOX 800' X 800' 1327'FSL & 1330'FWL - TARGET CIRCLE 1326'FSL & 1330'FWL									
6,800.0	0.00	0.00	6,710.8	-622.9	622.9	880.9	0.00	0.00	0.00
6,840.0	0.00	0.00	6,750.8	-622.9	622.9	880.9	0.00	0.00	0.00
6,880.0	0.00	0.00	6,790.8	-622.9	622.9	880.9	0.00	0.00	0.00
6,920.0	0.00	0.00	6,830.8	-622.9	622.9	880.9	0.00	0.00	0.00
6,960.0	0.00	0.00	6,870.8	-622.9	622.9	880.9	0.00	0.00	0.00
7,000.0	0.00	0.00	6,910.8	-622.9	622.9	880.9	0.00	0.00	0.00
7,040.0	0.00	0.00	6,950.8	-622.9	622.9	880.9	0.00	0.00	0.00
7,080.0	0.00	0.00	6,990.8	-622.9	622.9	880.9	0.00	0.00	0.00
7,120.0	0.00	0.00	7,030.8	-622.9	622.9	880.9	0.00	0.00	0.00
7,160.0	0.00	0.00	7,070.8	-622.9	622.9	880.9	0.00	0.00	0.00
7,200.0	0.00	0.00	7,110.8	-622.9	622.9	880.9	0.00	0.00	0.00
7,240.0	0.00	0.00	7,150.8	-622.9	622.9	880.9	0.00	0.00	0.00
7,280.0	0.00	0.00	7,190.8	-622.9	622.9	880.9	0.00	0.00	0.00
7,320.0	0.00	0.00	7,230.8	-622.9	622.9	880.9	0.00	0.00	0.00
7,360.0	0.00	0.00	7,270.8	-622.9	622.9	880.9	0.00	0.00	0.00
7,400.0	0.00	0.00	7,310.8	-622.9	622.9	880.9	0.00	0.00	0.00
7,440.0	0.00	0.00	7,350.8	-622.9	622.9	880.9	0.00	0.00	0.00
7,480.0	0.00	0.00	7,390.8	-622.9	622.9	880.9	0.00	0.00	0.00
7,520.0	0.00	0.00	7,430.8	-622.9	622.9	880.9	0.00	0.00	0.00
7,560.0	0.00	0.00	7,470.8	-622.9	622.9	880.9	0.00	0.00	0.00
7,600.0	0.00	0.00	7,510.8	-622.9	622.9	880.9	0.00	0.00	0.00
7,640.0	0.00	0.00	7,550.8	-622.9	622.9	880.9	0.00	0.00	0.00
7,680.0	0.00	0.00	7,590.8	-622.9	622.9	880.9	0.00	0.00	0.00
7,720.0	0.00	0.00	7,630.8	-622.9	622.9	880.9	0.00	0.00	0.00
7,760.0	0.00	0.00	7,670.8	-622.9	622.9	880.9	0.00	0.00	0.00
7,800.0	0.00	0.00	7,710.8	-622.9	622.9	880.9	0.00	0.00	0.00
7,840.0	0.00	0.00	7,750.8	-622.9	622.9	880.9	0.00	0.00	0.00
7,880.0	0.00	0.00	7,790.8	-622.9	622.9	880.9	0.00	0.00	0.00
7,889.2	0.00	0.00	7,800.0	-622.9	622.9	880.9	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Haley 3
Company:	Top Operating Company	TVD Reference:	WELL @ 5091.0ft (Original Well Elev)
Project:	SEC.20-T3N-R68W	MD Reference:	WELL @ 5091.0ft (Original Well Elev)
Site:	Haley 1 Pad Sec.20-T3N-R68W	North Reference:	True
Well:	Haley 3	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (11-07-12)		

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
TARGET BHL 1326'F: - plan hits target center - Point	0.00	0.00	5,700.0	-622.9	622.9	1,318,783.74	3,130,821.25	40.207510	-105.031610
LEGAL BOX 800' X 800' - plan misses target center by 1.0ft at 6789.2ft MD (6700.0 TVD, -622.9 N, 622.9 E) - Rectangle (sides W800.0 H800.0 D1,100.0)	0.00	0.00	6,700.0	-623.9	622.9	1,318,782.77	3,130,821.29	40.207507	-105.031610
TARGET CIRCLE 1326'F: - plan hits target center - Circle (radius 75.0)	0.00	0.00	6,700.0	-622.9	622.9	1,318,783.74	3,130,821.25	40.207510	-105.031610

Casing Points					
	Measured Depth	Vertical Depth		Casing Diameter	Hole Diameter
	(ft)	(ft)	Name	(")	(")
	500.0	500.0	8 5/8"	8-5/8	12-1/4



Top Operating Company

SEC.20-T3N-R68W

Haley 1 Pad Sec.20-T3N-R68W

Haley 3

Wellbore #1

Plan #1 (11-07-12)

Anticollision Report

09 November, 2012

Company:	Top Operating Company	Local Co-ordinate Reference:	Well Haley 3
Project:	SEC.20-T3N-R68W	TVD Reference:	WELL @ 5091.0ft (Original Well Elev)
Reference Site:	Haley 1 Pad Sec.20-T3N-R68W	MD Reference:	WELL @ 5091.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Haley 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (11-07-12)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7800-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
1,700.0	1,693.4	1,694.4	1,694.4	3.9	33.9	177.89	40.1	-47.5	145.7	109.0	36.63	3.977		
1,800.0	1,791.1	1,792.1	1,792.1	4.2	35.8	178.16	40.1	-47.5	166.7	127.9	38.77	4.300		
1,900.0	1,888.9	1,889.9	1,889.9	4.6	37.8	178.36	40.1	-47.5	187.7	146.8	40.91	4.589		
2,000.0	1,986.7	1,987.7	1,987.7	5.0	39.8	178.53	40.1	-47.5	208.8	165.7	43.06	4.849		
2,100.0	2,084.4	2,085.4	2,085.4	5.4	41.7	178.66	40.1	-47.5	229.8	184.6	45.21	5.083		
2,200.0	2,182.2	2,183.2	2,183.2	5.9	43.7	178.78	40.1	-47.5	250.9	203.5	47.37	5.296		
2,300.0	2,279.9	2,280.9	2,280.9	6.3	45.6	178.87	40.1	-47.5	271.9	222.4	49.53	5.491		
2,400.0	2,377.7	2,378.7	2,378.7	6.7	47.6	178.95	40.1	-47.5	293.0	241.3	51.69	5.668		
2,500.0	2,475.4	2,476.4	2,476.4	7.2	49.5	179.02	40.1	-47.5	314.0	260.2	53.85	5.832		
2,600.0	2,573.2	2,574.2	2,574.2	7.6	51.5	179.08	40.1	-47.5	335.1	279.1	56.02	5.982		
2,700.0	2,671.0	2,672.0	2,672.0	8.1	53.4	179.14	40.1	-47.5	356.2	298.0	58.18	6.121		
2,800.0	2,768.7	2,769.7	2,769.7	8.5	55.4	179.19	40.1	-47.5	377.2	316.9	60.35	6.250		
2,900.0	2,866.5	2,867.5	2,867.5	9.0	57.3	179.23	40.1	-47.5	398.3	335.7	62.52	6.370		
3,000.0	2,964.2	2,965.2	2,965.2	9.4	59.3	179.27	40.1	-47.5	419.3	354.6	64.69	6.482		
3,100.0	3,062.0	3,063.0	3,063.0	9.9	61.3	179.30	40.1	-47.5	440.4	373.5	66.86	6.586		
3,200.0	3,159.8	3,160.8	3,160.8	10.3	63.2	179.33	40.1	-47.5	461.4	392.4	69.03	6.684		
3,300.0	3,257.5	3,258.5	3,258.5	10.8	65.2	179.36	40.1	-47.5	482.5	411.3	71.20	6.776		
3,400.0	3,355.3	3,356.3	3,356.3	11.2	67.1	179.39	40.1	-47.5	503.5	430.2	73.38	6.862		
3,500.0	3,453.0	3,454.0	3,454.0	11.7	69.1	179.41	40.1	-47.5	524.6	449.0	75.55	6.944		
3,600.0	3,550.8	3,551.8	3,551.8	12.1	71.0	179.44	40.1	-47.5	545.6	467.9	77.72	7.020		
3,700.0	3,648.5	3,649.5	3,649.5	12.6	73.0	179.46	40.1	-47.5	566.7	486.8	79.90	7.093		
3,800.0	3,746.3	3,747.3	3,747.3	13.1	74.9	179.48	40.1	-47.5	587.7	505.7	82.07	7.161		
3,900.0	3,844.1	3,845.1	3,845.1	13.5	76.9	179.50	40.1	-47.5	608.8	524.6	84.25	7.226		
4,000.0	3,941.8	3,942.8	3,942.8	14.0	78.9	179.51	40.1	-47.5	629.9	543.4	86.42	7.288		
4,100.0	4,039.6	4,040.6	4,040.6	14.5	80.8	179.53	40.1	-47.5	650.9	562.3	88.60	7.347		
4,200.0	4,137.3	4,138.3	4,138.3	14.9	82.8	179.54	40.1	-47.5	672.0	581.2	90.77	7.403		
4,300.0	4,235.1	4,236.1	4,236.1	15.4	84.7	179.56	40.1	-47.5	693.0	600.1	92.95	7.456		
4,400.0	4,332.9	4,333.9	4,333.9	15.9	86.7	179.57	40.1	-47.5	714.1	619.0	95.13	7.507		
4,500.0	4,430.6	4,431.6	4,431.6	16.3	88.6	179.58	40.1	-47.5	735.1	637.8	97.30	7.555		
4,600.0	4,528.4	4,529.4	4,529.4	16.8	90.6	179.59	40.1	-47.5	756.2	656.7	99.48	7.601		
4,700.0	4,626.1	4,627.1	4,627.1	17.2	92.5	179.60	40.1	-47.5	777.2	675.6	101.66	7.646		
4,800.0	4,723.9	4,724.9	4,724.9	17.7	94.5	179.62	40.1	-47.5	798.3	694.5	103.84	7.688		
4,900.0	4,821.6	4,822.6	4,822.6	18.2	96.5	179.63	40.1	-47.5	819.4	713.3	106.01	7.729		
5,000.0	4,919.4	4,920.4	4,920.4	18.6	98.4	179.63	40.1	-47.5	840.4	732.2	108.19	7.768		
5,100.0	5,017.2	5,018.2	5,018.2	19.1	100.4	179.64	40.1	-47.5	861.5	751.1	110.37	7.805		
5,181.5	5,096.8	5,097.8	5,097.8	19.5	102.0	179.65	40.1	-47.5	878.6	766.5	112.14	7.835		
5,200.0	5,114.9	5,115.9	5,115.9	19.6	102.3	179.65	40.1	-47.5	882.5	769.8	112.69	7.831		
5,300.0	5,213.2	5,214.2	5,214.2	19.9	104.3	179.66	40.1	-47.5	901.2	785.7	115.52	7.801		
5,400.0	5,312.0	5,313.0	5,313.0	20.2	106.3	179.67	40.1	-47.5	916.4	798.2	118.24	7.751		
5,500.0	5,411.3	5,412.3	5,412.3	20.4	108.2	179.67	40.1	-47.5	928.3	807.4	120.84	7.682		
5,600.0	5,510.9	5,511.9	5,511.9	20.6	110.2	179.68	40.1	-47.5	936.6	813.3	123.30	7.596		
5,700.0	5,610.8	5,611.8	5,611.8	20.8	112.2	179.68	40.1	-47.5	941.5	815.8	125.62	7.495		
5,789.2	5,700.0	5,701.0	5,701.0	20.9	114.0	-45.32	40.1	-47.5	942.8	815.3	127.56	7.391		
5,800.0	5,710.8	5,711.8	5,711.8	20.9	114.2	-45.32	40.1	-47.5	942.8	815.0	127.80	7.378		
5,900.0	5,810.8	5,811.8	5,811.8	21.0	116.2	-45.32	40.1	-47.5	942.8	812.9	129.97	7.254		
6,000.0	5,910.8	5,911.8	5,911.8	21.1	118.2	-45.32	40.1	-47.5	942.8	810.7	132.15	7.135		
6,100.0	6,010.8	6,011.8	6,011.8	21.2	120.2	-45.32	40.1	-47.5	942.8	808.5	134.32	7.019		
6,200.0	6,110.8	6,111.8	6,111.8	21.4	122.2	-45.32	40.1	-47.5	942.8	806.3	136.50	6.907		
6,300.0	6,210.8	6,211.8	6,211.8	21.5	124.2	-45.32	40.1	-47.5	942.8	804.2	138.68	6.799		
6,400.0	6,310.8	6,311.8	6,311.8	21.6	126.2	-45.32	40.1	-47.5	942.8	802.0	140.86	6.693		
6,500.0	6,410.8	6,411.8	6,411.8	21.7	128.2	-45.32	40.1	-47.5	942.8	799.8	143.04	6.591		
6,600.0	6,510.8	6,511.8	6,511.8	21.9	130.2	-45.32	40.1	-47.5	942.8	797.6	145.23	6.492		

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

Company:	Top Operating Company	Local Co-ordinate Reference:	Well Haley 3
Project:	SEC.20-T3N-R68W	TVD Reference:	WELL @ 5091.0ft (Original Well Elev)
Reference Site:	Haley 1 Pad Sec.20-T3N-R68W	MD Reference:	WELL @ 5091.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Haley 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (11-07-12)	Offset TVD Reference:	Offset Datum

Offset Design Haley 1 Pad Sec.20-T3N-R68W - Haley 1 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7800-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
6,700.0	6,610.8	6,611.8	6,611.8	22.0	132.2	-45.32	40.1	-47.5	942.8	795.4	147.41	6.396		
6,800.0	6,710.8	6,711.8	6,711.8	22.1	134.2	-45.32	40.1	-47.5	942.8	793.2	149.60	6.303		
6,900.0	6,810.8	6,811.8	6,811.8	22.3	136.2	-45.32	40.1	-47.5	942.8	791.1	151.78	6.212		
7,000.0	6,910.8	6,911.8	6,911.8	22.4	138.2	-45.32	40.1	-47.5	942.8	788.9	153.97	6.124		
7,100.0	7,010.8	7,011.8	7,011.8	22.5	140.2	-45.32	40.1	-47.5	942.8	786.7	156.16	6.038		
7,200.0	7,110.8	7,111.8	7,111.8	22.7	142.2	-45.32	40.1	-47.5	942.8	784.5	158.35	5.954		
7,300.0	7,210.8	7,211.8	7,211.8	22.8	144.2	-45.32	40.1	-47.5	942.8	782.3	160.54	5.873		
7,400.0	7,310.8	7,311.8	7,311.8	22.9	146.2	-45.32	40.1	-47.5	942.8	780.1	162.73	5.794		
7,500.0	7,410.8	7,411.8	7,411.8	23.1	148.2	-45.32	40.1	-47.5	942.8	777.9	164.92	5.717		
7,600.0	7,510.8	7,511.8	7,511.8	23.2	150.2	-45.32	40.1	-47.5	942.8	775.7	167.11	5.642		
7,700.0	7,610.8	7,611.8	7,611.8	23.4	152.2	-45.32	40.1	-47.5	942.8	773.5	169.30	5.569		
7,800.0	7,710.8	7,711.8	7,711.8	23.5	154.2	-45.32	40.1	-47.5	942.8	771.3	171.50	5.498		
7,859.1	7,769.9	7,770.9	7,770.9	23.6	155.4	-45.32	40.1	-47.5	942.8	770.0	172.80	5.456		
7,889.2	7,800.0	7,800.0	7,800.0	23.6	156.0	-45.32	40.1	-47.5	942.8	769.4	173.44	5.436		

Company:	Top Operating Company	Local Co-ordinate Reference:	Well Haley 3
Project:	SEC.20-T3N-R68W	TVD Reference:	WELL @ 5091.0ft (Original Well Elev)
Reference Site:	Haley 1 Pad Sec.20-T3N-R68W	MD Reference:	WELL @ 5091.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Haley 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (11-07-12)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 489-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-90.00	0.0	-47.5	47.6	47.6	0.00	N/A CC, ES		
100.0	100.0	96.7	96.7	0.1	0.1	-90.07	-0.1	-47.8	47.8	47.6	0.22	214.722		
200.0	200.0	196.3	196.3	0.3	0.2	-90.26	-0.2	-48.9	48.9	48.4	0.56	87.150		
300.0	300.0	295.9	295.9	0.6	0.3	-90.58	-0.5	-50.7	50.7	49.8	0.90	56.393		
400.0	400.0	395.5	395.4	0.8	0.5	-90.99	-0.9	-53.3	53.3	52.1	1.24	43.052		
500.0	500.0	495.1	495.0	1.0	0.6	-91.46	-1.4	-56.6	56.6	55.0	1.58	35.766		
600.0	600.0	596.0	595.8	1.2	0.8	-93.81	-4.0	-59.4	59.5	57.5	2.02	29.391		
700.0	700.0	698.1	697.7	1.5	1.0	-99.76	-10.1	-59.0	59.9	57.4	2.47	24.233		
800.0	800.0	799.9	799.1	1.7	1.2	-109.21	-18.9	-54.1	57.4	54.4	2.93	19.578		
900.0	900.0	900.7	898.8	1.9	1.5	-123.00	-29.1	-44.8	53.5	50.1	3.41	15.676		
988.4	988.4	988.5	985.4	2.1	1.8	-138.85	-39.0	-34.1	51.8	47.9	3.87	13.371		
1,000.0	1,000.0	999.9	996.7	2.1	1.8	-141.10	-40.3	-32.5	51.8	47.9	3.93	13.165		
1,100.0	1,100.0	1,098.2	1,093.1	2.3	2.2	65.64	-52.4	-18.2	54.9	50.5	4.38	12.538 SF		
1,200.0	1,199.8	1,195.6	1,188.1	2.5	2.6	51.01	-66.5	-2.0	62.6	57.8	4.84	12.944		
1,300.0	1,299.5	1,292.3	1,281.5	2.7	3.0	39.85	-83.1	16.8	73.8	68.5	5.29	13.947		
1,400.0	1,398.7	1,388.1	1,373.2	3.0	3.6	32.43	-102.1	36.7	87.1	81.3	5.75	15.145		
1,500.0	1,497.5	1,483.9	1,464.0	3.2	4.1	27.60	-124.1	58.1	101.9	95.7	6.23	16.359		
1,607.7	1,603.2	1,586.2	1,559.7	3.5	4.9	23.65	-149.7	83.5	118.1	111.4	6.76	17.464		
1,700.0	1,693.4	1,674.0	1,640.8	3.9	5.5	20.86	-173.7	107.4	133.9	126.6	7.25	18.464		
1,800.0	1,791.1	1,771.6	1,730.3	4.2	6.2	18.34	-201.4	134.7	152.5	144.7	7.79	19.591		
1,900.0	1,888.9	1,870.3	1,820.7	4.6	7.0	15.79	-228.5	163.7	171.2	162.9	8.30	20.620		
2,000.0	1,986.7	1,968.7	1,910.8	5.0	7.7	13.43	-254.5	193.3	189.8	181.0	8.82	21.516		
2,100.0	2,084.4	2,066.9	2,000.8	5.4	8.4	11.41	-280.3	223.0	208.6	199.2	9.35	22.316		
2,200.0	2,182.2	2,162.0	2,087.8	5.9	9.1	9.95	-306.0	251.5	228.0	218.1	9.88	23.070		
2,300.0	2,279.9	2,258.8	2,176.0	6.3	9.9	8.79	-333.2	280.6	248.6	238.1	10.44	23.807		
2,400.0	2,377.7	2,353.7	2,262.3	6.7	10.7	8.00	-360.8	308.9	269.8	258.8	11.00	24.521		
2,500.0	2,475.4	2,459.1	2,358.4	7.2	11.5	7.35	-391.2	339.6	290.5	278.9	11.59	25.059		
2,600.0	2,573.2	2,559.5	2,450.7	7.6	12.2	6.65	-418.2	368.4	309.3	297.2	12.15	25.453		
2,700.0	2,671.0	2,657.7	2,541.2	8.1	12.9	6.04	-444.4	396.4	327.7	315.0	12.71	25.777		
2,800.0	2,768.7	2,750.7	2,626.5	8.5	13.6	5.59	-470.0	423.1	347.1	333.8	13.27	26.147		
2,900.0	2,866.5	2,847.9	2,715.4	9.0	14.4	5.11	-496.9	451.6	367.1	353.3	13.85	26.497		
3,000.0	2,964.2	2,939.6	2,798.8	9.4	15.2	4.45	-522.1	480.5	388.4	374.0	14.41	26.943		
3,100.0	3,062.0	3,045.8	2,895.4	9.9	16.0	3.66	-550.3	514.1	409.2	394.2	15.02	27.248		
3,200.0	3,159.8	3,150.5	2,991.6	10.3	16.8	3.08	-577.3	545.3	428.1	412.5	15.61	27.424		
3,300.0	3,257.5	3,247.1	3,080.8	10.8	17.5	2.86	-603.1	572.2	446.3	430.1	16.19	27.567		
3,400.0	3,355.3	3,340.6	3,166.6	11.2	18.3	2.68	-629.0	598.8	465.8	449.0	16.77	27.778		
3,500.0	3,453.0	3,437.4	3,255.3	11.7	19.0	2.37	-655.2	627.3	485.4	468.1	17.35	27.972		
3,600.0	3,550.8	3,529.5	3,339.3	12.1	19.8	1.86	-679.2	656.4	505.9	488.0	17.93	28.222		
3,700.0	3,648.5	3,618.5	3,420.1	12.6	20.6	1.41	-703.2	685.2	527.8	509.3	18.50	28.532		
3,800.0	3,746.3	3,707.9	3,500.5	13.1	21.3	1.14	-729.3	714.2	551.4	532.3	19.08	28.899		
3,900.0	3,844.1	3,805.5	3,588.0	13.5	22.2	1.07	-759.6	744.9	575.7	556.0	19.69	29.232		
4,000.0	3,941.8	3,913.5	3,685.4	14.0	23.1	1.08	-793.1	777.5	599.0	578.7	20.34	29.456		
4,100.0	4,039.6	4,017.6	3,780.1	14.5	23.9	1.03	-823.6	808.1	620.5	599.5	20.96	29.603		
4,200.0	4,137.3	4,109.4	3,863.5	14.9	24.7	0.82	-849.3	836.5	642.0	620.5	21.54	29.803		
4,300.0	4,235.1	4,199.1	3,944.6	15.4	25.5	0.71	-875.8	864.3	664.8	642.7	22.13	30.043		
4,400.0	4,332.9	4,294.5	4,030.5	15.9	26.3	0.64	-904.7	894.1	688.4	665.6	22.74	30.277		
4,500.0	4,430.6	4,402.8	4,128.2	16.3	27.2	0.62	-937.7	927.0	711.4	688.0	23.38	30.422		
4,600.0	4,528.4	4,514.8	4,230.3	16.8	28.1	0.65	-970.7	959.1	732.4	708.4	24.04	30.472		
4,700.0	4,626.1	4,609.8	4,317.2	17.2	28.8	0.73	-998.7	985.4	752.7	728.1	24.63	30.558		
4,800.0	4,723.9	4,692.8	4,392.7	17.7	29.5	0.82	-1,024.0	1,008.7	774.1	748.9	25.19	30.725		
4,900.0	4,821.6	4,791.1	4,481.7	18.2	30.4	0.95	-1,055.1	1,036.7	796.6	770.8	25.81	30.862		
5,000.0	4,919.4	4,886.7	4,568.3	18.6	31.1	0.99	-1,084.3	1,064.7	818.9	792.5	26.42	31.002		

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

Offset Design													Haley 1 Pad Sec.20-T3N-R68W - Haley 2 (Exist.) - Wellbore #1 - Wellbore #1		Offset Site Error: 0.0 ft	
Survey Program: 489-MWD													Offset Well Error: 0.0 ft			
Reference		Offset		Semi Major Axis			Distance									
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)					
5,100.0	5,017.2	5,047.7	4,716.2	19.1	32.4	0.83	-1,128.0	1,111.0	838.4	811.2	27.22	30.801				
5,181.5	5,096.8	5,173.1	4,834.6	19.5	33.2	0.78	-1,156.7	1,140.4	848.2	820.4	27.82	30.485				
5,200.0	5,114.9	5,199.0	4,859.3	19.6	33.3	0.77	-1,162.1	1,146.0	850.0	822.1	27.93	30.431				
5,300.0	5,213.2	5,344.9	4,999.6	19.9	34.1	0.71	-1,189.8	1,174.6	858.9	830.4	28.48	30.162				
5,400.0	5,312.0	5,485.4	5,136.6	20.2	34.7	0.68	-1,211.6	1,196.9	866.0	837.0	28.92	29.939				
5,500.0	5,411.3	5,628.8	5,277.8	20.4	35.2	0.71	-1,229.5	1,214.0	871.4	842.1	29.30	29.738				
5,600.0	5,510.9	5,753.0	5,401.0	20.6	35.6	0.74	-1,241.8	1,225.5	876.6	847.0	29.57	29.645				
5,700.0	5,610.8	5,885.7	5,532.8	20.8	35.9	0.81	-1,252.3	1,234.6	882.2	852.4	29.79	29.613				
5,789.2	5,700.0	6,005.9	5,652.8	20.9	36.1	135.79	-1,257.8	1,240.4	886.8	856.8	29.94	29.616				
5,800.0	5,710.8	6,020.3	5,667.2	20.9	36.1	135.79	-1,258.3	1,240.9	887.3	857.3	29.99	29.590				
5,900.0	5,810.8	6,150.9	5,797.8	21.0	36.2	135.78	-1,260.6	1,243.5	889.9	859.5	30.36	29.311				
6,000.0	5,910.8	6,259.0	5,905.8	21.1	36.3	135.79	-1,261.1	1,243.8	890.4	859.7	30.69	29.012				
6,100.0	6,010.8	6,360.6	6,007.4	21.2	36.4	135.82	-1,261.6	1,243.4	890.5	859.5	31.01	28.715				
6,200.0	6,110.8	6,460.8	6,107.7	21.4	36.5	135.87	-1,262.1	1,242.9	890.5	859.2	31.33	28.421				
6,300.0	6,210.8	6,561.4	6,208.2	21.5	36.5	135.96	-1,263.1	1,241.9	890.5	858.9	31.66	28.128				
6,400.0	6,310.8	6,661.8	6,308.6	21.6	36.6	136.07	-1,264.2	1,240.7	890.4	858.4	31.99	27.835				
6,500.0	6,410.8	6,769.1	6,415.9	21.7	36.7	136.20	-1,265.2	1,238.9	890.0	857.7	32.33	27.529				
6,600.0	6,510.8	6,871.7	6,518.5	21.9	36.7	136.35	-1,266.1	1,236.4	888.9	856.3	32.66	27.214				
6,700.0	6,610.8	6,970.9	6,617.6	22.0	36.8	136.54	-1,267.3	1,233.5	887.8	854.8	33.00	26.906				
6,800.0	6,710.8	7,076.5	6,723.2	22.1	36.8	136.72	-1,268.2	1,230.4	886.4	853.0	33.34	26.588				
6,900.0	6,810.8	7,179.2	6,825.8	22.3	36.9	136.89	-1,268.5	1,227.2	884.4	850.7	33.67	26.265				
7,000.0	6,910.8	7,277.6	6,924.1	22.4	36.9	137.07	-1,269.0	1,223.8	882.4	848.4	34.01	25.950				
7,100.0	7,010.8	7,375.7	7,022.2	22.5	37.0	137.20	-1,269.1	1,221.2	880.7	846.4	34.34	25.649				
7,200.0	7,110.8	7,474.8	7,121.3	22.7	37.1	137.29	-1,268.8	1,219.1	879.1	844.5	34.67	25.356				
7,300.0	7,210.8	7,573.1	7,219.6	22.8	37.1	137.37	-1,268.6	1,217.3	877.7	842.7	35.01	25.072				
7,400.0	7,310.8	7,672.7	7,319.1	22.9	37.2	137.43	-1,268.4	1,215.7	876.4	841.1	35.35	24.794				
7,500.0	7,410.8	7,771.8	7,418.2	23.1	37.2	137.50	-1,268.1	1,214.0	875.1	839.4	35.69	24.519				
7,600.0	7,510.8	7,869.0	7,515.4	23.2	37.3	137.55	-1,267.9	1,212.8	874.1	838.0	36.03	24.258				
7,700.0	7,610.8	7,967.5	7,613.9	23.4	37.4	137.57	-1,267.5	1,212.0	873.3	836.9	36.38	24.007				
7,800.0	7,710.8	8,069.7	7,716.1	23.5	37.4	137.59	-1,267.1	1,211.3	872.5	835.8	36.73	23.754				
7,866.9	7,777.7	8,128.0	7,774.4	23.6	37.5	137.60	-1,266.8	1,210.8	871.9	834.9	36.96	23.594				
7,889.2	7,800.0	8,128.0	7,774.4	23.6	37.5	137.60	-1,266.8	1,210.8	872.2	835.2	37.00	23.574				

Company:	Top Operating Company	Local Co-ordinate Reference:	Well Haley 3
Project:	SEC.20-T3N-R68W	TVD Reference:	WELL @ 5091.0ft (Original Well Elev)
Reference Site:	Haley 1 Pad Sec.20-T3N-R68W	MD Reference:	WELL @ 5091.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Haley 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (11-07-12)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	90.02	0.0	11.2	11.2	11.2	0.00	N/A		
100.0	100.0	100.0	100.0	0.1	0.1	90.02	0.0	11.2	11.2	10.9	0.22	49.706		
200.0	200.0	200.0	200.0	0.3	0.3	90.02	0.0	11.2	11.2	10.5	0.67	16.569		
300.0	300.0	300.0	300.0	0.6	0.6	90.02	0.0	11.2	11.2	10.0	1.12	9.941		
400.0	400.0	400.0	400.0	0.8	0.8	90.02	0.0	11.2	11.2	9.6	1.57	7.101 CC, ES		
500.0	500.0	499.7	499.7	1.0	1.0	84.16	1.3	12.4	12.4	10.4	2.02	6.155 SF		
600.0	600.0	599.1	599.0	1.2	1.2	72.36	5.1	15.9	16.7	14.2	2.47	6.776		
700.0	700.0	698.1	697.6	1.5	1.5	62.50	11.3	21.7	24.6	21.7	2.93	8.422		
800.0	800.0	796.4	795.1	1.7	1.7	56.17	20.0	29.9	36.3	32.9	3.40	10.664		
900.0	900.0	893.7	891.3	1.9	2.0	52.30	31.0	40.1	51.5	47.6	3.90	13.207		
1,000.0	1,000.0	990.8	986.6	2.1	2.4	49.88	44.2	52.4	69.9	65.5	4.42	15.827		
1,100.0	1,100.0	1,088.9	1,082.9	2.3	2.7	-87.36	58.0	65.4	89.0	84.2	4.75	18.746		
1,200.0	1,199.8	1,186.8	1,179.0	2.5	3.1	-90.53	71.8	78.2	108.2	103.0	5.17	20.929		
1,300.0	1,299.5	1,284.5	1,274.9	2.7	3.5	-94.20	85.6	91.1	127.9	122.3	5.61	22.779		
1,400.0	1,398.7	1,381.8	1,370.3	3.0	3.9	-98.10	99.3	103.9	148.5	142.4	6.09	24.378		
1,500.0	1,497.5	1,478.6	1,465.3	3.2	4.3	-102.08	112.9	116.6	170.4	163.8	6.61	25.777		
1,607.7	1,603.2	1,582.2	1,567.0	3.5	4.7	-106.30	127.5	130.2	196.0	188.8	7.23	27.117		
1,700.0	1,693.4	1,670.6	1,653.7	3.9	5.1	-109.90	140.0	141.9	219.2	211.4	7.80	28.105		
1,800.0	1,791.1	1,766.4	1,747.7	4.2	5.5	-113.02	153.5	154.5	245.2	236.7	8.44	29.042		
1,900.0	1,888.9	1,862.2	1,841.7	4.6	5.8	-115.56	167.0	167.1	271.7	262.6	9.10	29.860		
2,000.0	1,986.7	1,958.0	1,935.7	5.0	6.2	-117.64	180.4	179.7	298.6	288.8	9.76	30.578		
2,100.0	2,084.4	2,053.7	2,029.7	5.4	6.6	-119.38	193.9	192.3	325.8	315.4	10.44	31.214		
2,200.0	2,182.2	2,149.5	2,123.7	5.9	7.0	-120.86	207.4	204.9	353.3	342.2	11.12	31.779		
2,300.0	2,279.9	2,245.3	2,217.7	6.3	7.4	-122.12	220.9	217.4	380.9	369.1	11.80	32.285		
2,400.0	2,377.7	2,341.1	2,311.6	6.7	7.8	-123.21	234.4	230.0	408.7	396.2	12.48	32.740		
2,500.0	2,475.4	2,436.9	2,405.6	7.2	8.2	-124.16	247.9	242.6	436.6	423.5	13.17	33.150		
2,600.0	2,573.2	2,532.7	2,499.6	7.6	8.7	-125.00	261.4	255.2	464.6	450.8	13.86	33.523		
2,700.0	2,671.0	2,628.5	2,593.6	8.1	9.1	-125.74	274.9	267.8	492.7	478.2	14.55	33.862		
2,800.0	2,768.7	2,724.2	2,687.6	8.5	9.5	-126.41	288.4	280.4	520.9	505.7	15.24	34.173		
2,900.0	2,866.5	2,820.0	2,781.6	9.0	9.9	-127.00	301.9	293.0	549.1	533.2	15.94	34.457		
3,000.0	2,964.2	2,915.8	2,875.6	9.4	10.3	-127.54	315.4	305.6	577.4	560.8	16.63	34.719		
3,100.0	3,062.0	3,011.6	2,969.6	9.9	10.7	-128.03	328.9	318.2	605.7	588.4	17.33	34.961		
3,200.0	3,159.8	3,107.4	3,063.6	10.3	11.1	-128.47	342.4	330.8	634.1	616.0	18.02	35.185		
3,300.0	3,257.5	3,203.2	3,157.6	10.8	11.5	-128.88	355.9	343.4	662.4	643.7	18.72	35.393		
3,400.0	3,355.3	3,299.0	3,251.6	11.2	11.9	-129.25	369.3	356.0	690.9	671.4	19.41	35.587		
3,500.0	3,453.0	3,394.7	3,345.5	11.7	12.3	-129.59	382.8	368.6	719.3	699.2	20.11	35.768		
3,600.0	3,550.8	3,490.5	3,439.5	12.1	12.7	-129.91	396.3	381.2	747.7	726.9	20.81	35.936		
3,700.0	3,648.5	3,586.3	3,533.5	12.6	13.1	-130.21	409.8	393.8	776.2	754.7	21.51	36.095		
3,800.0	3,746.3	3,682.1	3,627.5	13.1	13.5	-130.48	423.3	406.4	804.7	782.5	22.20	36.243		
3,900.0	3,844.1	3,777.9	3,721.5	13.5	13.9	-130.73	436.8	419.0	833.2	810.3	22.90	36.383		
4,000.0	3,941.8	3,873.7	3,815.5	14.0	14.3	-130.97	450.3	431.6	861.7	838.1	23.60	36.514		
4,100.0	4,039.6	3,969.5	3,909.5	14.5	14.7	-131.19	463.8	444.2	890.3	866.0	24.30	36.638		
4,200.0	4,137.3	4,065.2	4,003.5	14.9	15.1	-131.40	477.3	456.8	918.8	893.8	25.00	36.755		
4,300.0	4,235.1	4,161.0	4,097.5	15.4	15.5	-131.60	490.8	469.4	947.4	921.7	25.70	36.866		
4,400.0	4,332.9	4,256.8	4,191.5	15.9	15.9	-131.78	504.3	482.0	976.0	949.6	26.40	36.971		
4,500.0	4,430.6	4,352.6	4,285.5	16.3	16.3	-131.96	517.8	494.6	1,004.5	977.4	27.10	37.071		
4,600.0	4,528.4	4,448.4	4,379.4	16.8	16.7	-132.12	531.3	507.2	1,033.1	1,005.3	27.80	37.166		
4,700.0	4,626.1	4,544.2	4,473.4	17.2	17.1	-132.28	544.8	519.8	1,061.7	1,033.2	28.50	37.256		
4,800.0	4,723.9	4,640.0	4,567.4	17.7	17.5	-132.43	558.2	532.4	1,090.3	1,061.1	29.20	37.342		
4,900.0	4,821.6	4,735.8	4,661.4	18.2	17.9	-132.57	571.7	545.0	1,118.9	1,089.0	29.90	37.424		
5,000.0	4,919.4	4,831.5	4,755.4	18.6	18.4	-132.70	585.2	557.6	1,147.5	1,116.9	30.60	37.502		
5,100.0	5,017.2	4,927.3	4,849.4	19.1	18.8	-132.82	598.7	570.2	1,176.1	1,144.8	31.30	37.576		

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

Company:	Top Operating Company	Local Co-ordinate Reference:	Well Haley 3
Project:	SEC.20-T3N-R68W	TVD Reference:	WELL @ 5091.0ft (Original Well Elev)
Reference Site:	Haley 1 Pad Sec.20-T3N-R68W	MD Reference:	WELL @ 5091.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Haley 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (11-07-12)	Offset TVD Reference:	Offset Datum

Offset Design		Haley 1 Pad Sec.20-T3N-R68W - Haley 4 - Wellbore #1 - Plan #1 (11-07-12)											Offset Site Error:		0.0 ft	
Survey Program: 0-MWD														Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning		
Measured Depth Depth (ft)	Vertical Depth (ft)	Measured Depth Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor				
5,181.5	5,096.8	5,005.4	4,926.0	19.5	19.1	-132.92	609.7	580.5	1,199.5	1,167.6	31.87	37.634				
5,200.0	5,114.9	5,023.1	4,943.4	19.6	19.2	-133.02	612.2	582.8	1,204.7	1,172.7	32.01	37.633				
5,300.0	5,213.2	5,161.9	5,080.2	19.9	19.6	-133.55	629.5	598.9	1,230.2	1,197.4	32.75	37.560				
5,400.0	5,312.0	5,305.9	5,223.0	20.2	20.0	-134.03	642.3	610.9	1,249.8	1,216.4	33.39	37.428				
5,500.0	5,411.3	5,452.0	5,368.8	20.4	20.3	-134.47	649.9	618.0	1,263.3	1,229.3	33.93	37.228				
5,600.0	5,510.9	5,594.2	5,510.9	20.6	20.5	-134.87	652.1	620.0	1,270.6	1,236.3	34.38	36.962				
5,700.0	5,610.8	5,694.1	5,610.8	20.8	20.6	-135.07	652.1	620.0	1,274.1	1,239.3	34.73	36.687				
5,789.2	5,700.0	5,783.3	5,700.0	20.9	20.7	-0.13	652.1	620.0	1,275.1	1,240.0	35.01	36.419				
5,800.0	5,710.8	5,794.1	5,710.8	20.9	20.7	-0.13	652.1	620.0	1,275.1	1,240.0	35.04	36.386				
5,900.0	5,810.8	5,894.1	5,810.8	21.0	20.8	-0.13	652.1	620.0	1,275.1	1,239.7	35.34	36.080				
6,000.0	5,910.8	5,994.1	5,910.8	21.1	21.0	-0.13	652.1	620.0	1,275.1	1,239.4	35.64	35.777				
6,100.0	6,010.8	6,094.1	6,010.8	21.2	21.1	-0.13	652.1	620.0	1,275.1	1,239.1	35.94	35.475				
6,200.0	6,110.8	6,194.1	6,110.8	21.4	21.2	-0.13	652.1	620.0	1,275.1	1,238.8	36.25	35.175				
6,300.0	6,210.8	6,294.1	6,210.8	21.5	21.4	-0.13	652.1	620.0	1,275.1	1,238.5	36.56	34.878				
6,400.0	6,310.8	6,394.1	6,310.8	21.6	21.5	-0.13	652.1	620.0	1,275.1	1,238.2	36.87	34.583				
6,500.0	6,410.8	6,494.1	6,410.8	21.7	21.7	-0.13	652.1	620.0	1,275.1	1,237.9	37.18	34.290				
6,600.0	6,510.8	6,594.1	6,510.8	21.9	21.8	-0.13	652.1	620.0	1,275.1	1,237.6	37.50	34.000				
6,700.0	6,610.8	6,694.1	6,610.8	22.0	21.9	-0.13	652.1	620.0	1,275.1	1,237.2	37.82	33.712				
6,800.0	6,710.8	6,794.1	6,710.8	22.1	22.1	-0.13	652.1	620.0	1,275.1	1,236.9	38.15	33.426				
6,900.0	6,810.8	6,894.1	6,810.8	22.3	22.2	-0.13	652.1	620.0	1,275.1	1,236.6	38.47	33.144				
7,000.0	6,910.8	6,994.1	6,910.8	22.4	22.4	-0.13	652.1	620.0	1,275.1	1,236.3	38.80	32.864				
7,100.0	7,010.8	7,094.1	7,010.8	22.5	22.5	-0.13	652.1	620.0	1,275.1	1,235.9	39.13	32.586				
7,200.0	7,110.8	7,194.1	7,110.8	22.7	22.7	-0.13	652.1	620.0	1,275.1	1,235.6	39.46	32.312				
7,300.0	7,210.8	7,294.1	7,210.8	22.8	22.8	-0.13	652.1	620.0	1,275.1	1,235.3	39.80	32.040				
7,400.0	7,310.8	7,394.1	7,310.8	22.9	23.0	-0.13	652.1	620.0	1,275.1	1,234.9	40.13	31.770				
7,500.0	7,410.8	7,494.1	7,410.8	23.1	23.1	-0.13	652.1	620.0	1,275.1	1,234.6	40.47	31.504				
7,600.0	7,510.8	7,594.1	7,510.8	23.2	23.3	-0.13	652.1	620.0	1,275.1	1,234.2	40.81	31.241				
7,700.0	7,610.8	7,694.1	7,610.8	23.4	23.4	-0.13	652.1	620.0	1,275.1	1,233.9	41.16	30.980				
7,800.0	7,710.8	7,794.1	7,710.8	23.5	23.6	-0.13	652.1	620.0	1,275.1	1,233.5	41.50	30.722				
7,889.2	7,800.0	7,883.3	7,800.0	23.6	23.7	-0.13	652.1	620.0	1,275.1	1,233.2	41.81	30.494				

Company:	Top Operating Company	Local Co-ordinate Reference:	Well Haley 3
Project:	SEC.20-T3N-R68W	TVD Reference:	WELL @ 5091.0ft (Original Well Elev)
Reference Site:	Haley 1 Pad Sec.20-T3N-R68W	MD Reference:	WELL @ 5091.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Haley 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (11-07-12)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	90.03	0.0	22.3	22.3					
100.0	100.0	100.0	100.0	0.1	0.1	90.03	0.0	22.3	22.3	22.1	0.22	99.412		
200.0	200.0	200.0	200.0	0.3	0.3	90.03	0.0	22.3	22.3	21.7	0.67	33.137 CC		
300.0	300.0	299.8	299.8	0.6	0.5	94.36	-1.7	22.6	22.7	21.6	1.10	20.618 ES		
400.0	400.0	399.4	399.2	0.8	0.7	106.21	-6.8	23.5	24.5	23.0	1.54	15.979		
500.0	500.0	498.4	497.9	1.0	1.0	120.49	-14.9	25.4	29.5	27.5	1.99	14.873 SF		
600.0	600.0	596.9	595.8	1.2	1.2	128.14	-23.7	30.2	38.6	36.2	2.43	15.909		
700.0	700.0	694.8	693.0	1.5	1.5	130.52	-32.8	38.3	50.9	48.0	2.89	17.622		
800.0	800.0	792.0	789.1	1.7	1.9	130.24	-42.1	49.7	66.0	62.6	3.37	19.569		
900.0	900.0	888.3	883.9	1.9	2.2	128.78	-51.5	64.1	83.8	80.0	3.88	21.608		
1,000.0	1,000.0	983.5	976.9	2.1	2.6	126.88	-61.2	81.5	104.5	100.1	4.41	23.674		
1,100.0	1,100.0	1,077.7	1,068.4	2.3	3.0	-10.18	-71.0	101.8	126.4	121.7	4.72	26.784		
1,200.0	1,199.8	1,171.2	1,158.5	2.5	3.5	-12.42	-80.9	124.9	147.9	142.8	5.14	28.751		
1,300.0	1,299.5	1,264.1	1,247.1	2.7	4.0	-14.78	-91.0	150.7	169.2	163.6	5.58	30.297		
1,400.0	1,398.7	1,356.1	1,334.0	3.0	4.6	-17.21	-101.3	179.1	190.4	184.3	6.04	31.499		
1,500.0	1,497.5	1,447.4	1,419.2	3.2	5.3	-19.67	-111.6	210.0	211.6	205.1	6.52	32.447		
1,607.7	1,603.2	1,544.7	1,509.0	3.5	6.0	-22.33	-122.9	246.0	234.7	227.6	7.08	33.167		
1,700.0	1,693.4	1,632.9	1,589.6	3.9	6.7	-24.73	-133.2	280.3	255.3	247.6	7.62	33.493		
1,800.0	1,791.1	1,729.7	1,678.0	4.2	7.5	-26.97	-144.5	318.0	278.0	269.8	8.24	33.734		
1,900.0	1,888.9	1,826.6	1,766.5	4.6	8.3	-28.88	-155.8	355.8	301.1	292.2	8.89	33.870		
2,000.0	1,986.7	1,923.4	1,855.0	5.0	9.2	-30.51	-167.1	393.5	324.5	314.9	9.56	33.924		
2,100.0	2,084.4	2,020.3	1,943.4	5.4	10.0	-31.92	-178.4	431.3	348.1	337.8	10.26	33.917		
2,200.0	2,182.2	2,117.1	2,031.9	5.9	10.8	-33.16	-189.7	469.0	371.8	360.8	10.98	33.866		
2,300.0	2,279.9	2,213.9	2,120.4	6.3	11.7	-34.25	-201.0	506.8	395.7	384.0	11.71	33.785		
2,400.0	2,377.7	2,310.8	2,208.8	6.7	12.5	-35.21	-212.3	544.5	419.7	407.3	12.46	33.683		
2,500.0	2,475.4	2,407.6	2,297.3	7.2	13.3	-36.07	-223.7	582.2	443.9	430.6	13.22	33.568		
2,600.0	2,573.2	2,504.5	2,385.7	7.6	14.2	-36.84	-235.0	620.0	468.1	454.1	14.00	33.446		
2,700.0	2,671.0	2,601.3	2,474.2	8.1	15.0	-37.54	-246.3	657.7	492.4	477.6	14.78	33.319		
2,800.0	2,768.7	2,698.2	2,562.7	8.5	15.9	-38.17	-257.6	695.5	516.7	501.1	15.57	33.192		
2,900.0	2,866.5	2,795.0	2,651.1	9.0	16.7	-38.74	-268.9	733.2	541.1	524.7	16.36	33.065		
3,000.0	2,964.2	2,891.8	2,739.6	9.4	17.6	-39.26	-280.2	771.0	565.5	548.4	17.17	32.940		
3,100.0	3,062.0	2,988.7	2,828.1	9.9	18.4	-39.74	-291.5	808.7	590.0	572.0	17.98	32.819		
3,200.0	3,159.8	3,085.5	2,916.5	10.3	19.3	-40.19	-302.8	846.4	614.5	595.7	18.79	32.701		
3,300.0	3,257.5	3,182.4	3,005.0	10.8	20.1	-40.60	-314.1	884.2	639.1	619.5	19.61	32.588		
3,400.0	3,355.3	3,279.2	3,093.5	11.2	21.0	-40.97	-325.5	921.9	663.7	643.2	20.43	32.478		
3,500.0	3,453.0	3,376.1	3,181.9	11.7	21.8	-41.33	-336.8	959.7	688.3	667.0	21.26	32.373		
3,600.0	3,550.8	3,472.9	3,270.4	12.1	22.7	-41.65	-348.1	997.4	712.9	690.8	22.09	32.272		
3,700.0	3,648.5	3,569.7	3,358.8	12.6	23.5	-41.96	-359.4	1,035.2	737.5	714.6	22.92	32.176		
3,800.0	3,746.3	3,666.6	3,447.3	13.1	24.4	-42.24	-370.7	1,072.9	762.2	738.5	23.76	32.083		
3,900.0	3,844.1	3,763.4	3,535.8	13.5	25.2	-42.51	-382.0	1,110.7	786.9	762.3	24.59	31.994		
4,000.0	3,941.8	3,860.3	3,624.2	14.0	26.1	-42.76	-393.3	1,148.4	811.6	786.2	25.43	31.909		
4,100.0	4,039.6	3,957.1	3,712.7	14.5	27.0	-43.00	-404.6	1,186.1	836.3	810.0	26.28	31.828		
4,200.0	4,137.3	4,054.0	3,801.2	14.9	27.8	-43.22	-416.0	1,223.9	861.0	833.9	27.12	31.750		
4,300.0	4,235.1	4,150.8	3,889.6	15.4	28.7	-43.43	-427.3	1,261.6	885.8	857.8	27.96	31.676		
4,400.0	4,332.9	4,247.6	3,978.1	15.9	29.5	-43.63	-438.6	1,299.4	910.5	881.7	28.81	31.604		
4,500.0	4,430.6	4,344.5	4,066.6	16.3	30.4	-43.82	-449.9	1,337.1	935.3	905.6	29.66	31.536		
4,600.0	4,528.4	4,441.3	4,155.0	16.8	31.2	-44.00	-461.2	1,374.9	960.0	929.5	30.51	31.470		
4,700.0	4,626.1	4,538.2	4,243.5	17.2	32.1	-44.17	-472.5	1,412.6	984.8	953.5	31.36	31.407		
4,800.0	4,723.9	4,635.0	4,332.0	17.7	32.9	-44.33	-483.8	1,450.3	1,009.6	977.4	32.21	31.346		
4,900.0	4,821.6	4,731.8	4,420.4	18.2	33.8	-44.49	-495.1	1,488.1	1,034.4	1,001.3	33.06	31.288		
5,000.0	4,919.4	4,828.7	4,508.9	18.6	34.7	-44.63	-506.5	1,525.8	1,059.2	1,025.3	33.91	31.232		
5,100.0	5,017.2	4,925.5	4,597.3	19.1	35.5	-44.77	-517.8	1,563.6	1,084.0	1,049.2	34.77	31.178		

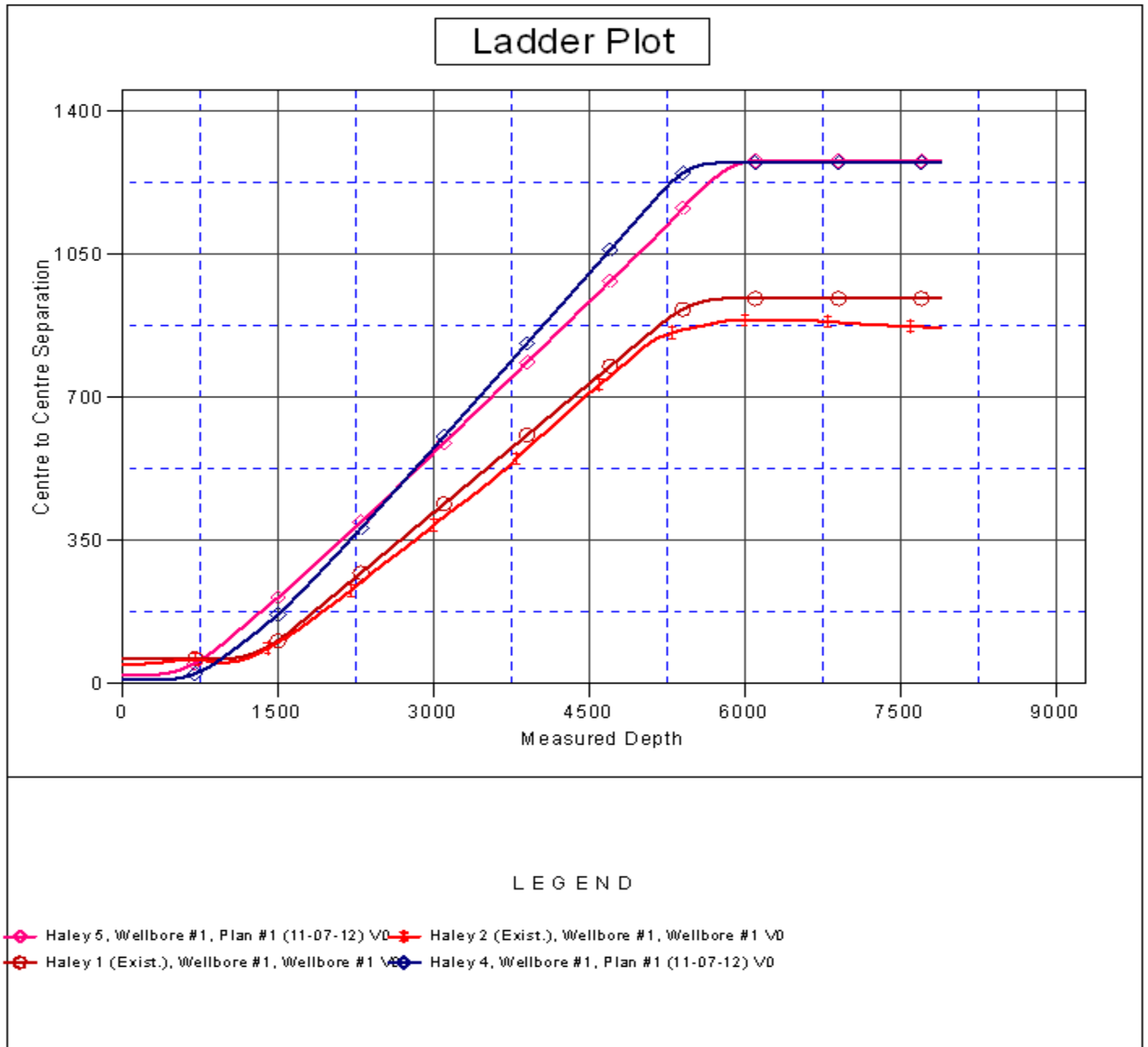
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	Top Operating Company	Local Co-ordinate Reference:	Well Haley 3
Project:	SEC.20-T3N-R68W	TVD Reference:	WELL @ 5091.0ft (Original Well Elev)
Reference Site:	Haley 1 Pad Sec.20-T3N-R68W	MD Reference:	WELL @ 5091.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Haley 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (11-07-12)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,181.5	5,096.8	5,004.4	4,669.4	19.5	36.2	-44.88	-527.0	1,594.3	1,104.2	1,068.7	35.46	31.136	
5,200.0	5,114.9	5,022.4	4,685.8	19.6	36.4	-44.97	-529.1	1,601.3	1,108.8	1,073.2	35.62	31.128	
5,300.0	5,213.2	5,118.8	4,773.9	19.9	37.2	-45.40	-540.3	1,638.9	1,135.3	1,098.9	36.39	31.201	
5,400.0	5,312.0	5,233.1	4,878.5	20.2	38.1	-45.72	-553.6	1,683.1	1,163.8	1,126.7	37.12	31.356	
5,500.0	5,411.3	5,391.2	5,025.6	20.4	39.2	-45.88	-570.2	1,738.5	1,190.9	1,153.1	37.82	31.488	
5,600.0	5,510.9	5,552.8	5,179.0	20.6	40.0	-45.95	-584.7	1,787.0	1,215.3	1,176.9	38.40	31.648	
5,700.0	5,610.8	5,717.6	5,338.2	20.8	40.8	-45.91	-597.0	1,827.9	1,236.7	1,197.8	38.85	31.834	
5,789.2	5,700.0	5,867.3	5,484.6	20.9	41.3	89.21	-605.8	1,857.4	1,253.2	1,214.1	39.14	32.018	
5,800.0	5,710.8	5,885.5	5,502.6	20.9	41.4	89.25	-606.7	1,860.4	1,255.1	1,215.9	39.18	32.037	
5,900.0	5,810.8	6,056.5	5,671.7	21.0	41.8	89.59	-613.8	1,884.1	1,268.9	1,229.4	39.47	32.149	
6,000.0	5,910.8	6,229.8	5,844.4	21.1	42.1	89.78	-618.0	1,898.1	1,276.9	1,237.2	39.77	32.105	
6,100.0	6,010.8	6,396.2	6,010.8	21.2	42.2	89.83	-619.2	1,902.1	1,279.3	1,239.2	40.09	31.914	
6,200.0	6,110.8	6,496.2	6,110.8	21.4	42.3	89.83	-619.2	1,902.1	1,279.3	1,238.9	40.33	31.718	
6,300.0	6,210.8	6,596.2	6,210.8	21.5	42.4	89.83	-619.2	1,902.1	1,279.3	1,238.7	40.58	31.521	
6,400.0	6,310.8	6,696.2	6,310.8	21.6	42.4	89.83	-619.2	1,902.1	1,279.3	1,238.4	40.84	31.325	
6,500.0	6,410.8	6,796.2	6,410.8	21.7	42.5	89.83	-619.2	1,902.1	1,279.3	1,238.2	41.10	31.129	
6,600.0	6,510.8	6,896.2	6,510.8	21.9	42.6	89.83	-619.2	1,902.1	1,279.3	1,237.9	41.36	30.932	
6,700.0	6,610.8	6,996.2	6,610.8	22.0	42.7	89.83	-619.2	1,902.1	1,279.3	1,237.6	41.62	30.736	
6,800.0	6,710.8	7,096.2	6,710.8	22.1	42.7	89.83	-619.2	1,902.1	1,279.3	1,237.4	41.89	30.540	
6,900.0	6,810.8	7,196.2	6,810.8	22.3	42.8	89.83	-619.2	1,902.1	1,279.3	1,237.1	42.16	30.344	
7,000.0	6,910.8	7,296.2	6,910.8	22.4	42.9	89.83	-619.2	1,902.1	1,279.3	1,236.8	42.43	30.148	
7,100.0	7,010.8	7,396.2	7,010.8	22.5	43.0	89.83	-619.2	1,902.1	1,279.3	1,236.6	42.71	29.953	
7,200.0	7,110.8	7,496.2	7,110.8	22.7	43.0	89.83	-619.2	1,902.1	1,279.3	1,236.3	42.99	29.758	
7,300.0	7,210.8	7,596.2	7,210.8	22.8	43.1	89.83	-619.2	1,902.1	1,279.3	1,236.0	43.27	29.564	
7,400.0	7,310.8	7,696.2	7,310.8	22.9	43.2	89.83	-619.2	1,902.1	1,279.3	1,235.7	43.56	29.371	
7,500.0	7,410.8	7,796.2	7,410.8	23.1	43.3	89.83	-619.2	1,902.1	1,279.3	1,235.4	43.84	29.178	
7,600.0	7,510.8	7,896.2	7,510.8	23.2	43.3	89.83	-619.2	1,902.1	1,279.3	1,235.1	44.13	28.986	
7,700.0	7,610.8	7,996.2	7,610.8	23.4	43.4	89.83	-619.2	1,902.1	1,279.3	1,234.8	44.43	28.795	
7,800.0	7,710.8	8,096.2	7,710.8	23.5	43.5	89.83	-619.2	1,902.1	1,279.3	1,234.5	44.72	28.605	
7,889.2	7,800.0	8,185.5	7,800.0	23.6	43.6	89.83	-619.2	1,902.1	1,279.3	1,234.3	44.99	28.436	

Company:	Top Operating Company	Local Co-ordinate Reference:	Well Haley 3
Project:	SEC.20-T3N-R68W	TVD Reference:	WELL @ 5091.0ft (Original Well Elev)
Reference Site:	Haley 1 Pad Sec.20-T3N-R68W	MD Reference:	WELL @ 5091.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Haley 3	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (11-07-12)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 5091.0ft (Original Well Elev) Coordinates are relative to: Haley 3
 Offset Depths are relative to Offset Datum
 Central Meridian is -105.500000 °
 Coordinate System is US State Plane 1983, Colorado Northern Zone
 Grid Convergence at Surface is: 0.30°



Company:	Top Operating Company	Local Co-ordinate Reference:	Well Haley 3
Project:	SEC.20-T3N-R68W	TVD Reference:	WELL @ 5091.0ft (Original Well Elev)
Reference Site:	Haley 1 Pad Sec.20-T3N-R68W	MD Reference:	WELL @ 5091.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Haley 3	Survey Calculation Method:	Minimum Curvature
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Reference Wellbore	Wellbore #1	Database:	Landmark
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Central Meridian is -105.500000 ° Grid Convergence at Surface is: 0.30°

