

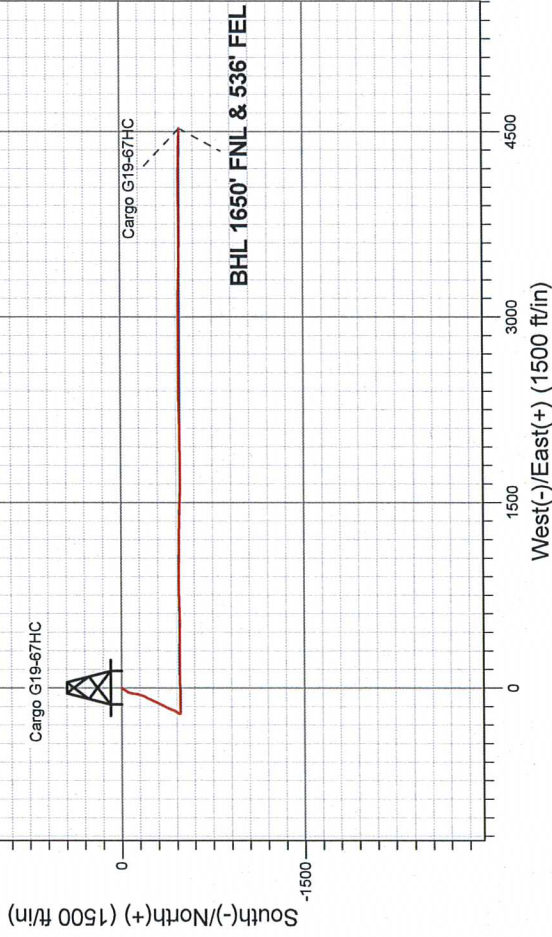
# Noble Energy Inc.- Weld County, CO (Grid North)

Well Name: **Cargo G19-67HC**

Surface Location: Cargo G19-67HC Pad Sec.19-T4N-R65W  
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone  
Ground Elevation: 4728.0  
+N/-S +E/-W Northing Easting Latitude Longitude Slot  
0.0 0.0 1353851.81 3219077.49 40.302060 -104.714520  
Precision #828 KB - 16' WELL @ 4744.0ft (Precision #828 KB - 16')

## FINAL SURVEY

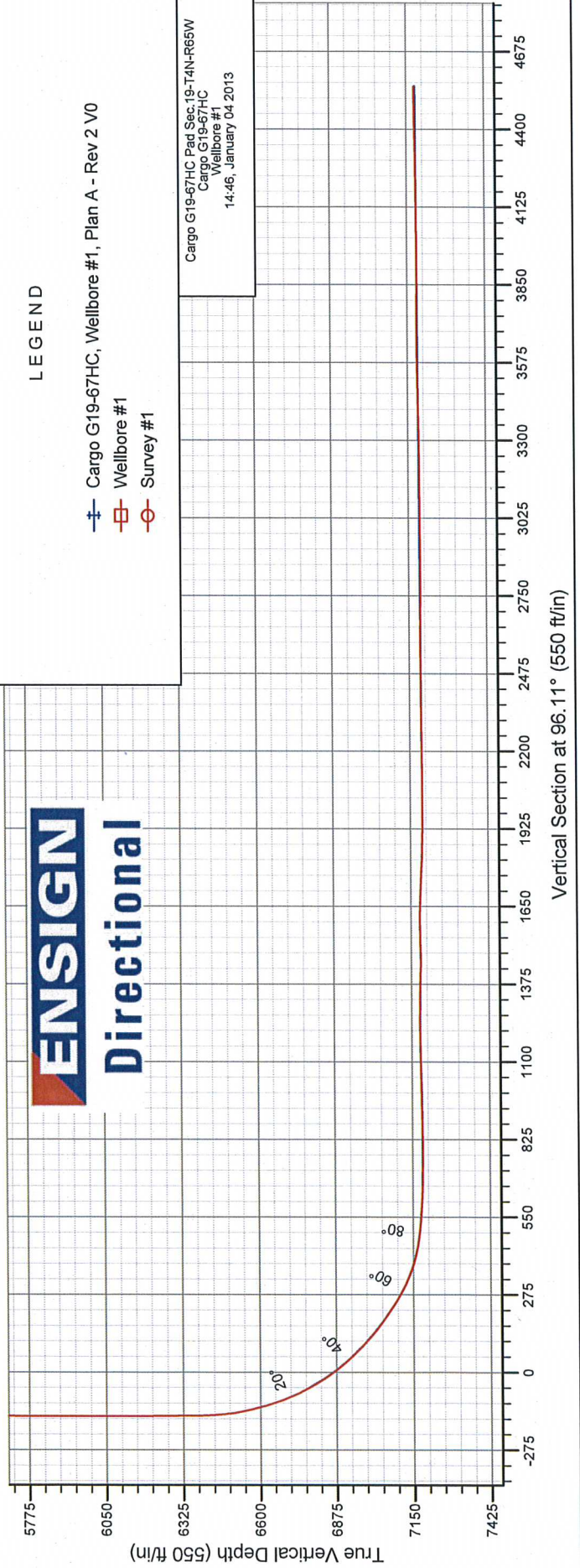
Projected Bottom Hole Location  
11629' MD 7175.4' TVD 484' S & 4525' E of  
SHL  
91.0 degree Incl @ 91.4 degree AZM



## ENSIGN Directional

- LEGEND
- Cargo G19-67HC, Wellbore #1, Plan A - Rev 2 V0
  - Wellbore #1
  - Survey #1

Cargo G19-67HC Pad Sec.19-T4N-R65W  
Cargo G19-67HC  
Wellbore #1  
14:46, January 04 2013





## **Directional**

### **Noble Energy Inc.- Weld County, CO (Grid North)**

**Sec.19-T4N-R65W**

**Cargo G19-67HC Pad Sec.19-T4N-R65W**

**Cargo G19-67HC**

**Wellbore #1**

**Survey: Survey #1**

### **Standard Survey Report**

**04 January, 2013**



Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Cargo G19-67HC
Project:	Sec.19-T4N-R65W	TVD Reference:	WELL @ 4744.0ft (Precision #828 KB - 16')
Site:	Cargo G19-67HC Pad Sec.19-T4N-R65W	MD Reference:	WELL @ 4744.0ft (Precision #828 KB - 16')
Well:	Cargo G19-67HC	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	Sec.19-T4N-R65W, Weld County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	Cargo G19-67HC Pad Sec.19-T4N-R65W		
Site Position:		Northing:	1,353,851.82 ft
From:	Lat/Long	Easting:	3,219,077.49 ft
Position Uncertainty:	0.0 ft	Slot Radius:	"
		Latitude:	40.302060
		Longitude:	-104.714520
		Grid Convergence:	0.51 °

Well	Cargo G19-67HC		
Well Position	+N/-S	0.0 ft	Northing:
	+E/-W	0.0 ft	Easting:
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft
		Latitude:	40.302060
		Longitude:	-104.714520
		Ground Level:	4,728.0 ft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2010	12/19/2012	8.63
			Dip Angle (°)
			66.93
			Field Strength (nT)
			52,927

Design	Wellbore #1		
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Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth:
				0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.0	0.0	0.0	96.11

Survey Program	Date 1/4/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name
613.0	11,629.0	Survey #1 (Wellbore #1)	MWD
			Description
			MWD - Standard

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
613.0	1.20	210.10	613.0	-5.6	-3.2	-2.6	0.20	0.20	0.00
658.0	1.40	205.50	657.9	-6.5	-3.7	-3.0	0.50	0.44	-10.22
703.0	1.50	208.50	702.9	-7.5	-4.2	-3.4	0.28	0.22	6.67
747.0	1.30	204.10	746.9	-8.4	-4.7	-3.8	0.52	-0.45	-10.00
792.0	1.40	210.60	791.9	-9.4	-5.2	-4.2	0.41	0.22	14.44
837.0	1.30	216.80	836.9	-10.3	-5.8	-4.6	0.39	-0.22	13.78
882.0	1.10	215.00	881.9	-11.0	-6.3	-5.1	0.45	-0.44	-4.00
927.0	0.90	212.70	926.9	-11.7	-6.8	-5.5	0.45	-0.44	-5.11
972.0	1.00	204.60	971.9	-12.3	-7.1	-5.8	0.37	0.22	-18.00
1,017.0	1.10	212.20	1,016.9	-13.0	-7.5	-6.1	0.38	0.22	16.89
1,062.0	1.10	223.50	1,061.9	-13.7	-8.0	-6.5	0.48	0.00	25.11



Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Cargo G19-67HC
Project:	Sec.19-T4N-R65W	TVD Reference:	WELL @ 4744.0ft (Precision #828 KB - 16')
Site:	Cargo G19-67HC Pad Sec.19-T4N-R65W	MD Reference:	WELL @ 4744.0ft (Precision #828 KB - 16')
Well:	Cargo G19-67HC	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

### 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)
1,093.0	1.10	232.90	1,092.8	-14.1	-8.5	-6.9	0.58	0.00	30.32
1,125.0	1.10	246.50	1,124.8	-14.4	-9.0	-7.4	0.81	0.00	42.50
1,157.0	1.10	262.80	1,156.8	-14.6	-9.6	-8.0	0.97	0.00	50.94
1,188.0	1.00	258.10	1,187.8	-14.7	-10.1	-8.5	0.43	-0.32	-15.16
1,220.0	0.90	248.20	1,219.8	-14.8	-10.7	-9.0	0.60	-0.31	-30.94
1,252.0	0.90	234.40	1,251.8	-15.1	-11.1	-9.4	0.68	0.00	-43.13
1,283.0	1.10	230.50	1,282.8	-15.4	-11.5	-9.8	0.68	0.65	-12.58
1,315.0	1.10	237.00	1,314.8	-15.8	-12.0	-10.3	0.39	0.00	20.31
1,347.0	1.10	227.00	1,346.8	-16.1	-12.5	-10.7	0.60	0.00	-31.25
1,378.0	1.10	220.80	1,377.8	-16.6	-12.9	-11.1	0.38	0.00	-20.00
1,410.0	1.30	185.70	1,409.8	-17.2	-13.1	-11.2	2.34	0.63	-109.69
1,442.0	1.20	175.30	1,441.8	-17.9	-13.2	-11.2	0.77	-0.31	-32.50
1,473.0	1.00	146.50	1,472.8	-18.4	-13.0	-10.9	1.87	-0.65	-92.90
1,505.0	0.70	121.90	1,504.8	-18.7	-12.7	-10.6	1.46	-0.94	-76.88
1,536.0	0.70	109.00	1,535.8	-18.9	-12.3	-10.2	0.51	0.00	-41.61
1,568.0	0.40	111.50	1,567.8	-19.0	-12.0	-9.9	0.94	-0.94	7.81
1,600.0	0.40	61.20	1,599.8	-19.0	-11.8	-9.7	1.06	0.00	-157.19
1,631.0	0.50	56.50	1,630.8	-18.9	-11.6	-9.5	0.34	0.32	-15.16
1,663.0	0.60	47.80	1,662.8	-18.7	-11.4	-9.3	0.41	0.31	-27.19
1,695.0	0.40	16.00	1,694.8	-18.5	-11.2	-9.2	1.05	-0.63	-99.38
1,726.0	0.60	3.50	1,725.8	-18.2	-11.2	-9.2	0.73	0.65	-40.32
1,758.0	0.50	350.50	1,757.8	-17.9	-11.2	-9.2	0.50	-0.31	-40.63
1,790.0	0.70	318.40	1,789.8	-17.6	-11.3	-9.4	1.20	0.63	-100.31
1,821.0	0.30	308.40	1,820.8	-17.4	-11.5	-9.6	1.32	-1.29	-32.26
1,853.0	0.50	223.30	1,852.8	-17.5	-11.7	-9.8	1.75	0.63	-265.94
1,885.0	1.70	217.30	1,884.8	-17.9	-12.1	-10.1	3.76	3.75	-18.75
1,916.0	2.90	205.50	1,915.7	-19.0	-12.7	-10.6	4.14	3.87	-38.06
1,948.0	3.20	205.20	1,947.7	-20.6	-13.4	-11.2	0.94	0.94	-0.94
2,000.0	3.30	207.10	1,999.6	-23.2	-14.7	-12.2	0.28	0.19	3.65
2,045.0	3.50	209.60	2,044.5	-25.5	-16.0	-13.2	0.55	0.44	5.56
2,089.0	4.40	209.40	2,088.4	-28.2	-17.5	-14.4	2.05	2.05	-0.45
2,134.0	5.20	208.50	2,133.3	-31.5	-19.3	-15.8	1.79	1.78	-2.00
2,179.0	5.90	204.50	2,178.0	-35.4	-21.2	-17.4	1.78	1.56	-8.89
2,224.0	6.60	206.00	2,222.8	-39.8	-23.3	-19.0	1.60	1.56	3.33
2,269.0	6.90	220.10	2,267.5	-44.2	-26.2	-21.4	3.73	0.67	31.33
2,314.0	7.70	216.20	2,312.1	-48.7	-29.7	-24.4	2.09	1.78	-8.67
2,359.0	8.90	209.00	2,356.6	-54.2	-33.2	-27.2	3.52	2.67	-16.00
2,404.0	9.60	202.90	2,401.1	-60.7	-36.3	-29.7	2.68	1.56	-13.56
2,449.0	10.00	197.30	2,445.4	-67.9	-39.0	-31.5	2.30	0.89	-12.44
2,494.0	10.90	189.90	2,489.7	-75.8	-40.9	-32.6	3.59	2.00	-16.44
2,538.0	12.50	186.90	2,532.7	-84.6	-42.1	-32.9	3.89	3.64	-6.82
2,583.0	13.80	186.20	2,576.6	-94.8	-43.3	-33.0	2.91	2.89	-1.56
2,628.0	14.40	188.60	2,620.2	-105.7	-44.7	-33.2	1.86	1.33	5.33
2,673.0	14.80	188.30	2,663.7	-116.9	-46.4	-33.7	0.90	0.89	-0.67
2,718.0	14.90	192.30	2,707.2	-128.2	-48.5	-34.5	2.29	0.22	8.89
2,763.0	14.80	195.30	2,750.7	-139.4	-51.2	-36.1	1.72	-0.22	6.67
2,808.0	14.70	197.10	2,794.3	-150.4	-54.4	-38.1	1.04	-0.22	4.00
2,853.0	13.30	201.80	2,837.9	-160.7	-58.0	-40.6	4.01	-3.11	10.44
2,898.0	12.90	200.10	2,881.8	-170.2	-61.7	-43.2	1.23	-0.89	-3.78
2,943.0	14.00	204.60	2,925.5	-179.9	-65.6	-46.1	3.37	2.44	10.00
2,988.0	14.20	207.50	2,969.2	-189.7	-70.5	-49.9	1.63	0.44	6.44
3,033.0	13.90	205.30	3,012.8	-199.5	-75.3	-53.7	1.36	-0.67	-4.89
3,077.0	13.80	205.30	3,055.5	-209.0	-79.8	-57.1	0.23	-0.23	0.00



Company:	Noble Energy Inc.- Weld County, CO (Grid North)	Local Co-ordinate Reference:	Well Cargo G19-67HC
Project:	Sec.19-T4N-R65W	TVD Reference:	WELL @ 4744.0ft (Precision #828 KB - 16')
Site:	Cargo G19-67HC Pad Sec.19-T4N-R65W	MD Reference:	WELL @ 4744.0ft (Precision #828 KB - 16')
Well:	Cargo G19-67HC	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

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)
3,122.0	13.50	204.10	3,099.3	-218.7	-84.3	-60.5	0.92	-0.67	-2.67
3,167.0	13.40	203.20	3,143.0	-228.3	-88.5	-63.7	0.52	-0.22	-2.00
3,212.0	12.80	201.30	3,186.9	-237.7	-92.3	-66.5	1.64	-1.33	-4.22
3,257.0	12.30	202.00	3,230.8	-246.8	-95.9	-69.1	1.16	-1.11	1.56
3,302.0	11.90	203.40	3,274.8	-255.5	-99.6	-71.8	1.10	-0.89	3.11
3,347.0	12.40	206.80	3,318.8	-264.0	-103.6	-74.9	1.94	1.11	7.56
3,392.0	12.40	208.30	3,362.7	-272.6	-108.1	-78.4	0.72	0.00	3.33
3,437.0	11.90	204.50	3,406.7	-281.1	-112.3	-81.7	2.10	-1.11	-8.44
3,482.0	12.50	206.20	3,450.7	-289.7	-116.3	-84.9	1.55	1.33	3.78
3,527.0	12.90	210.40	3,494.6	-298.4	-121.0	-88.6	2.24	0.89	9.33
3,571.0	13.00	210.60	3,537.5	-306.9	-126.0	-92.7	0.25	0.23	0.45
3,616.0	12.80	208.30	3,581.4	-315.6	-131.0	-96.7	1.22	-0.44	-5.11
3,661.0	12.10	207.60	3,625.3	-324.2	-135.5	-100.3	1.59	-1.56	-1.56
3,706.0	12.80	207.10	3,669.2	-332.8	-140.0	-103.8	1.57	1.56	-1.11
3,751.0	13.10	206.90	3,713.1	-341.8	-144.6	-107.4	0.67	0.67	-0.44
3,796.0	13.40	206.20	3,756.9	-351.0	-149.2	-111.0	0.76	0.67	-1.56
3,841.0	13.30	206.20	3,800.7	-360.3	-153.8	-114.6	0.22	-0.22	0.00
3,886.0	13.30	205.00	3,844.5	-369.7	-158.2	-118.0	0.61	0.00	-2.67
3,931.0	13.40	203.40	3,888.3	-379.2	-162.5	-121.2	0.85	0.22	-3.56
3,975.0	12.70	202.40	3,931.1	-388.3	-166.4	-124.1	1.67	-1.59	-2.27
4,020.0	11.70	200.20	3,975.1	-397.2	-169.8	-126.6	2.45	-2.22	-4.89
4,065.0	11.30	199.50	4,019.2	-405.6	-172.9	-128.7	0.94	-0.89	-1.56
4,110.0	9.60	199.70	4,063.4	-413.3	-175.6	-130.7	3.78	-3.78	0.44
4,155.0	8.10	201.10	4,107.9	-419.8	-178.0	-132.4	3.37	-3.33	3.11
4,200.0	7.10	198.00	4,152.5	-425.4	-180.0	-133.7	2.40	-2.22	-6.89
4,245.0	6.70	207.10	4,197.2	-430.4	-182.1	-135.3	2.58	-0.89	20.22
4,290.0	6.50	215.40	4,241.9	-434.8	-184.7	-137.4	2.16	-0.44	18.44
4,335.0	5.80	215.00	4,286.6	-438.7	-187.5	-139.8	1.56	-1.56	-0.89
4,380.0	5.50	209.20	4,331.4	-442.5	-189.9	-141.7	1.43	-0.67	-12.89
4,424.0	5.20	208.50	4,375.2	-446.1	-191.9	-143.3	0.70	-0.68	-1.59
4,469.0	4.90	218.00	4,420.0	-449.4	-194.0	-145.1	1.97	-0.67	21.11
4,514.0	4.60	227.80	4,464.9	-452.1	-196.5	-147.3	1.92	-0.67	21.78
4,559.0	4.60	218.50	4,509.8	-454.7	-199.0	-149.5	1.66	0.00	-20.67
4,604.0	4.90	207.50	4,554.6	-457.8	-201.0	-151.2	2.13	0.67	-24.44
4,649.0	4.70	201.00	4,599.4	-461.3	-202.6	-152.3	1.29	-0.44	-14.44
4,694.0	4.30	202.70	4,644.3	-464.5	-203.9	-153.3	0.94	-0.89	3.78
4,739.0	3.50	207.80	4,689.2	-467.3	-205.2	-154.3	1.94	-1.78	11.33
4,784.0	2.30	199.00	4,734.1	-469.4	-206.1	-155.0	2.84	-2.67	-19.56
4,828.0	1.80	186.70	4,778.1	-470.9	-206.5	-155.2	1.51	-1.14	-27.95
4,873.0	1.20	177.70	4,823.1	-472.1	-206.5	-155.1	1.43	-1.33	-20.00
4,918.0	0.90	140.50	4,868.1	-472.8	-206.3	-154.8	1.62	-0.67	-82.67
4,963.0	1.10	141.20	4,913.1	-473.4	-205.8	-154.3	0.45	0.44	1.56
5,008.0	0.80	107.60	4,958.1	-473.9	-205.2	-153.6	1.38	-0.67	-74.67
5,053.0	1.10	77.20	5,003.1	-473.9	-204.5	-152.9	1.28	0.67	-67.56
5,098.0	0.80	52.40	5,048.1	-473.6	-203.8	-152.3	1.12	-0.67	-55.11
5,143.0	0.40	342.10	5,093.1	-473.2	-203.6	-152.1	1.70	-0.89	-156.22
5,188.0	0.20	336.30	5,138.1	-473.0	-203.7	-152.2	0.45	-0.44	-12.89
5,233.0	0.20	359.30	5,183.1	-472.9	-203.7	-152.3	0.18	0.00	51.11
5,278.0	0.20	349.30	5,228.1	-472.7	-203.7	-152.3	0.08	0.00	-22.22
5,323.0	0.20	317.10	5,273.1	-472.6	-203.8	-152.4	0.25	0.00	-71.56
5,367.0	0.30	324.70	5,317.1	-472.4	-203.9	-152.5	0.24	0.23	17.27
5,412.0	0.40	301.30	5,362.1	-472.2	-204.1	-152.8	0.38	0.22	-52.00
5,457.0	0.30	313.60	5,407.1	-472.1	-204.4	-153.0	0.28	-0.22	27.33
5,502.0	0.30	303.10	5,452.1	-471.9	-204.5	-153.2	0.12	0.00	-23.33



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Site:	Cargo G19-67HC Pad Sec.19-T4N-R65W	MD Reference:	WELL @ 4744.0ft (Precision #828 KB - 16')
Well:	Cargo G19-67HC	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

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)
5,547.0	0.40	272.80	5,497.1	-471.9	-204.8	-153.4	0.46	0.22	-67.33
5,592.0	0.40	259.70	5,542.1	-471.9	-205.1	-153.8	0.20	0.00	-29.11
5,637.0	0.40	260.40	5,587.1	-471.9	-205.4	-154.1	0.01	0.00	1.56
5,682.0	0.40	272.00	5,632.1	-472.0	-205.7	-154.4	0.18	0.00	25.78
5,727.0	0.60	257.00	5,677.1	-472.0	-206.1	-154.7	0.53	0.44	-33.33
5,772.0	0.60	244.40	5,722.0	-472.2	-206.6	-155.2	0.29	0.00	-28.00
5,817.0	0.50	203.60	5,767.0	-472.4	-206.8	-155.4	0.88	-0.22	-90.67
5,862.0	0.60	203.90	5,812.0	-472.8	-207.0	-155.6	0.22	0.22	0.67
5,906.0	0.70	199.00	5,856.0	-473.3	-207.2	-155.7	0.26	0.23	-11.14
5,951.0	0.40	183.70	5,901.0	-473.7	-207.3	-155.7	0.74	-0.67	-34.00
5,996.0	0.70	181.10	5,946.0	-474.1	-207.3	-155.7	0.67	0.67	-5.78
6,041.0	0.50	176.50	5,991.0	-474.6	-207.3	-155.7	0.46	-0.44	-10.22
6,086.0	0.60	150.00	6,036.0	-475.0	-207.2	-155.5	0.60	0.22	-58.89
6,131.0	0.50	167.00	6,081.0	-475.4	-207.0	-155.3	0.42	-0.22	37.78
6,176.0	0.70	155.60	6,126.0	-475.9	-206.9	-155.1	0.52	0.44	-25.33
6,221.0	0.70	148.60	6,171.0	-476.3	-206.6	-154.8	0.19	0.00	-15.56
6,266.0	0.40	151.60	6,216.0	-476.7	-206.4	-154.5	0.67	-0.67	6.67
6,311.0	0.70	149.60	6,261.0	-477.1	-206.2	-154.3	0.67	0.67	-4.44
6,356.0	0.60	151.00	6,306.0	-477.5	-205.9	-154.0	0.22	-0.22	3.11
6,401.0	0.70	151.90	6,351.0	-478.0	-205.7	-153.7	0.22	0.22	2.00
6,445.0	1.00	113.20	6,395.0	-478.4	-205.2	-153.2	1.43	0.68	-87.95
6,490.0	3.80	86.90	6,440.0	-478.4	-203.3	-151.3	6.53	6.22	-58.44
6,535.0	7.40	87.60	6,484.7	-478.2	-199.0	-147.0	8.00	8.00	1.56
6,580.0	10.50	90.90	6,529.2	-478.2	-192.0	-140.0	6.98	6.89	7.33
6,625.0	13.10	91.40	6,573.2	-478.4	-182.8	-130.8	5.78	5.78	1.11
6,670.0	15.80	91.10	6,616.8	-478.6	-171.5	-119.7	6.00	6.00	-0.67
6,715.0	18.80	91.60	6,659.8	-478.9	-158.2	-106.3	6.67	6.67	1.11
6,760.0	22.20	89.90	6,701.9	-479.1	-142.4	-90.6	7.67	7.56	-3.78
6,805.0	26.10	87.90	6,743.0	-478.7	-124.0	-72.4	8.85	8.67	-4.44
6,850.0	29.40	88.30	6,782.8	-478.1	-103.1	-51.6	7.34	7.33	0.89
6,895.0	32.10	90.20	6,821.5	-477.8	-80.1	-28.8	6.38	6.00	4.22
6,940.0	35.40	90.20	6,858.9	-477.9	-55.1	-3.9	7.33	7.33	0.00
6,985.0	39.40	90.40	6,894.6	-478.0	-27.7	23.3	8.89	8.89	0.44
7,030.0	42.60	89.20	6,928.6	-477.9	1.8	52.6	7.32	7.11	-2.67
7,074.0	45.80	87.40	6,960.1	-477.0	32.4	83.0	7.81	7.27	-4.09
7,119.0	49.60	87.70	6,990.4	-475.5	65.7	115.9	8.46	8.44	0.67
7,164.0	52.20	87.60	7,018.8	-474.1	100.6	150.4	5.78	5.78	-0.22
7,209.0	54.50	87.90	7,045.6	-472.7	136.6	186.1	5.14	5.11	0.67
7,254.0	56.30	89.50	7,071.2	-471.9	173.7	222.9	4.96	4.00	3.56
7,299.0	58.70	90.40	7,095.4	-471.8	211.6	260.6	5.59	5.33	2.00
7,344.0	63.00	90.20	7,117.3	-472.0	250.9	299.7	9.56	9.56	-0.44
7,389.0	68.40	90.40	7,135.8	-472.3	291.9	340.5	12.01	12.00	0.44
7,434.0	73.30	90.90	7,150.5	-472.7	334.4	382.8	10.94	10.89	1.11
7,479.0	77.00	92.00	7,162.1	-473.8	377.9	426.1	8.55	8.22	2.44
7,524.0	81.60	92.80	7,170.4	-475.7	422.0	470.2	10.37	10.22	1.78
7,567.0	84.30	92.00	7,175.7	-477.5	464.7	512.8	6.54	6.28	-1.86
7,615.0	86.00	91.00	7,179.8	-478.7	512.5	560.5	4.11	3.54	-2.08
7,625.0	86.30	88.50	7,180.4	-478.7	522.5	570.4	25.12	3.00	-25.00
7,670.0	86.80	88.50	7,183.1	-477.5	567.4	614.9	1.11	1.11	0.00
7,691.6	87.61	88.12	7,184.2	-476.9	588.9	636.3	4.17	3.78	-1.78
Landing Pt. Cargo G19-67HN									
7,715.0	88.50	87.70	7,185.0	-476.0	612.3	659.5	4.17	3.78	-1.78
7,760.0	89.40	87.60	7,185.8	-474.2	657.3	704.0	2.01	2.00	-0.22



<b>Company:</b>	Noble Energy Inc.- Weld County, CO (Grid North)	<b>Local Co-ordinate Reference:</b>	Well Cargo G19-67HC
<b>Project:</b>	Sec.19-T4N-R65W	<b>TVD Reference:</b>	WELL @ 4744.0ft (Precision #828 KB - 16')
<b>Site:</b>	Cargo G19-67HC Pad Sec.19-T4N-R65W	<b>MD Reference:</b>	WELL @ 4744.0ft (Precision #828 KB - 16')
<b>Well:</b>	Cargo G19-67HC	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	Landmark

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)
7,805.0	89.40	88.60	7,186.3	-472.7	702.2	748.5	2.22	0.00	2.22
7,850.0	90.40	88.50	7,186.4	-471.5	747.2	793.1	2.23	2.22	-0.22
7,895.0	90.40	87.90	7,186.0	-470.1	792.2	837.7	1.33	0.00	-1.33
7,940.0	90.50	89.70	7,185.7	-469.2	837.2	882.3	4.01	0.22	4.00
7,984.0	91.20	90.70	7,185.0	-469.3	881.2	926.1	2.77	1.59	2.27
8,029.0	90.50	91.30	7,184.4	-470.1	926.2	970.9	2.05	-1.56	1.33
8,074.0	91.50	92.00	7,183.6	-471.4	971.1	1,015.8	2.71	2.22	1.56
8,119.0	91.50	91.60	7,182.4	-472.8	1,016.1	1,060.6	0.89	0.00	-0.89
8,164.0	92.10	90.60	7,181.0	-473.7	1,061.1	1,105.4	2.59	1.33	-2.22
8,209.0	91.60	90.00	7,179.5	-473.9	1,106.0	1,150.2	1.74	-1.11	-1.33
8,254.0	89.90	89.20	7,179.0	-473.6	1,151.0	1,194.9	4.18	-3.78	-1.78
8,299.0	89.20	89.70	7,179.3	-473.2	1,196.0	1,239.6	1.91	-1.56	1.11
8,344.0	88.70	90.20	7,180.1	-473.1	1,241.0	1,284.3	1.57	-1.11	1.11
8,389.0	89.50	90.70	7,180.8	-473.5	1,286.0	1,329.1	2.10	1.78	1.11
8,434.0	88.70	91.10	7,181.5	-474.2	1,331.0	1,373.9	1.99	-1.78	0.89
8,479.0	88.30	91.30	7,182.7	-475.2	1,376.0	1,418.7	0.99	-0.89	0.44
8,524.0	90.30	91.80	7,183.3	-476.4	1,420.9	1,463.6	4.58	4.44	1.11
8,569.0	91.50	92.30	7,182.6	-478.0	1,465.9	1,508.4	2.89	2.67	1.11
8,613.0	91.10	92.70	7,181.6	-479.9	1,509.9	1,552.3	1.29	-0.91	0.91
8,658.0	90.40	92.10	7,181.0	-481.8	1,554.8	1,597.2	2.05	-1.56	-1.33
8,703.0	88.60	91.10	7,181.4	-483.0	1,599.8	1,642.1	4.58	-4.00	-2.22
8,748.0	87.30	90.40	7,183.0	-483.6	1,644.8	1,686.9	3.28	-2.89	-1.56
8,793.0	87.60	90.20	7,185.0	-483.9	1,689.7	1,731.6	0.80	0.67	-0.44
8,838.0	86.80	89.70	7,187.2	-483.8	1,734.7	1,776.3	2.10	-1.78	-1.11
8,883.0	87.50	89.50	7,189.4	-483.5	1,779.6	1,820.9	1.62	1.56	-0.44
8,928.0	88.50	89.30	7,191.0	-483.0	1,824.6	1,865.6	2.27	2.22	-0.44
8,973.0	89.30	89.50	7,191.9	-482.6	1,869.6	1,910.3	1.83	1.78	0.44
9,018.0	89.50	89.70	7,192.3	-482.3	1,914.6	1,955.0	0.63	0.44	0.44
9,063.0	89.90	89.30	7,192.6	-481.9	1,959.6	1,999.7	1.26	0.89	-0.89
9,153.0	90.40	88.80	7,192.3	-480.4	2,049.5	2,089.0	0.79	0.56	-0.56
9,243.0	90.70	88.60	7,191.5	-478.3	2,139.5	2,178.3	0.40	0.33	-0.22
9,333.0	90.30	88.80	7,190.7	-476.3	2,229.5	2,267.5	0.50	-0.44	0.22
9,423.0	90.80	88.10	7,189.8	-473.8	2,319.4	2,356.7	0.96	0.56	-0.78
9,512.0	90.00	89.20	7,189.2	-471.8	2,408.4	2,444.9	1.53	-0.90	1.24
9,602.0	90.40	90.20	7,188.9	-471.3	2,498.4	2,534.4	1.20	0.44	1.11
9,692.0	89.30	90.60	7,189.1	-471.9	2,588.4	2,623.9	1.30	-1.22	0.44
9,782.0	89.20	91.30	7,190.3	-473.4	2,678.4	2,713.6	0.79	-0.11	0.78
9,872.0	90.00	90.70	7,190.9	-475.0	2,768.4	2,803.2	1.11	0.89	-0.67
9,962.0	90.40	90.40	7,190.6	-475.8	2,858.4	2,892.8	0.56	0.44	-0.33
10,052.0	90.70	89.70	7,189.7	-475.9	2,948.4	2,982.3	0.85	0.33	-0.78
10,141.0	90.50	89.00	7,188.8	-474.9	3,037.4	3,070.6	0.82	-0.22	-0.79
10,232.0	90.00	90.20	7,188.4	-474.3	3,128.3	3,161.0	1.43	-0.55	1.32
10,322.0	90.40	91.40	7,188.1	-475.5	3,218.3	3,250.7	1.41	0.44	1.33
10,411.0	91.00	90.90	7,187.0	-477.3	3,307.3	3,339.3	0.88	0.67	-0.56
10,501.0	91.50	90.60	7,185.0	-478.5	3,397.3	3,428.9	0.65	0.56	-0.33
10,591.0	91.30	90.90	7,182.8	-479.7	3,487.2	3,518.5	0.40	-0.22	0.33
10,681.0	90.70	91.10	7,181.3	-481.2	3,577.2	3,608.1	0.70	-0.67	0.22
10,771.0	89.30	89.70	7,181.3	-481.9	3,667.2	3,697.7	2.20	-1.56	-1.56
10,861.0	89.30	89.20	7,182.4	-481.0	3,757.2	3,787.1	0.56	0.00	-0.56
10,950.0	89.70	88.30	7,183.2	-479.1	3,846.2	3,875.3	1.11	0.45	-1.01
11,040.0	90.60	89.20	7,182.9	-477.1	3,936.2	3,964.6	1.41	1.00	1.00
11,130.0	90.30	90.60	7,182.2	-476.9	4,026.1	4,054.0	1.59	-0.33	1.56
11,220.0	90.70	90.20	7,181.4	-477.6	4,116.1	4,143.6	0.63	0.44	-0.44
11,310.0	90.20	91.40	7,180.7	-478.8	4,206.1	4,233.2	1.44	-0.56	1.33

<b>Company:</b>	Noble Energy Inc.- Weld County, CO (Grid North)	<b>Local Co-ordinate Reference:</b>	Well Cargo G19-67HC
<b>Project:</b>	Sec.19-T4N-R65W	<b>TVD Reference:</b>	WELL @ 4744.0ft (Precision #828 KB - 16')
<b>Site:</b>	Cargo G19-67HC Pad Sec.19-T4N-R65W	<b>MD Reference:</b>	WELL @ 4744.0ft (Precision #828 KB - 16')
<b>Well:</b>	Cargo G19-67HC	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	Landmark

### 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)
11,400.0	90.70	90.60	7,180.0	-480.4	4,296.1	4,322.8	1.05	0.56	-0.89
11,490.0	91.60	91.40	7,178.2	-482.0	4,386.1	4,412.5	1.34	1.00	0.89
11,570.0	91.00	91.40	7,176.4	-483.9	4,466.0	4,492.2	0.75	-0.75	0.00
11,629.0	91.00	91.40	7,175.4	-485.4	4,525.0	4,551.0	0.00	0.00	0.00

Cargo G19-67HC BHL 1650'FNL, 535'FEL

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_