

Occidental Petroleum

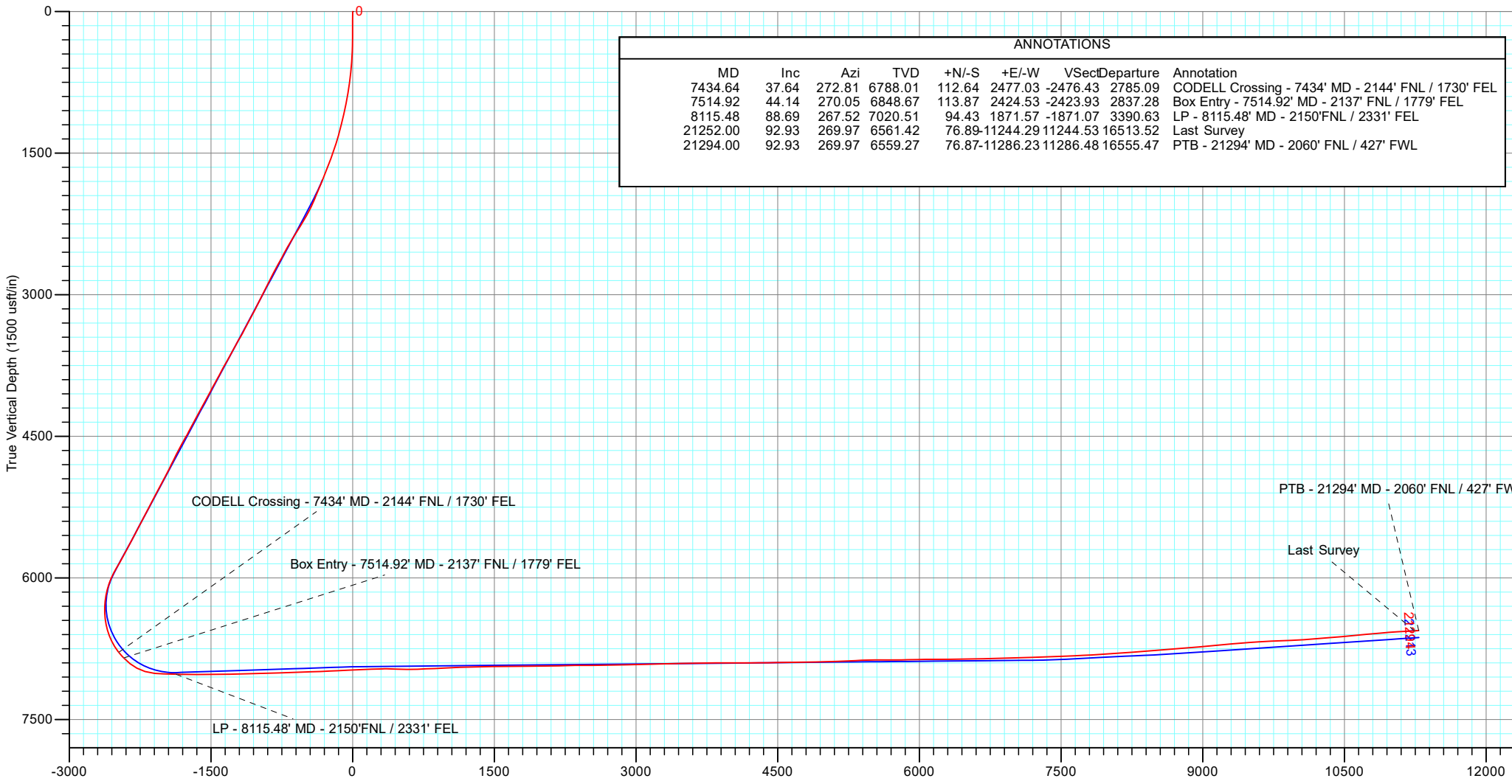
Project: Weld County, CO (UTM-NAD83)
 Site: 4N-68W-13 SBJ 22-13HZ PAD
 Well: SBJ 13-8HZ
 Wellbore: Plan C
 Design: Surveys

PROJECT DETAILS: Weld County, CO (UTM-NAD83)

Geodetic System: Universal Transverse Mercator (US Survey Feet)
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Zone 13N (108 W to 102 W)



ACTUAL LINE CALLS
SHL: 2247' FNL, 1085' FWL
LP: 2150' FNL, 2331' FEL
TOE: 2060' FNL, 427' FWL



TOTAL DIRECTIONAL SERVICES LLC

Design: Surveys (SBJ 13-8HZ/Plan C)
 4N-68W-13 SBJ 22-13HZ PAD
 Created By: RDW Date: 8:32, December 29 2021
 Approved: _____ Date: _____

Occidental Petroleum

Project: Weld County, CO (UTM-NAD83)
 Site: 4N-68W-13 SBJ 22-13HZ PAD
 Well: SBJ 13-8HZ
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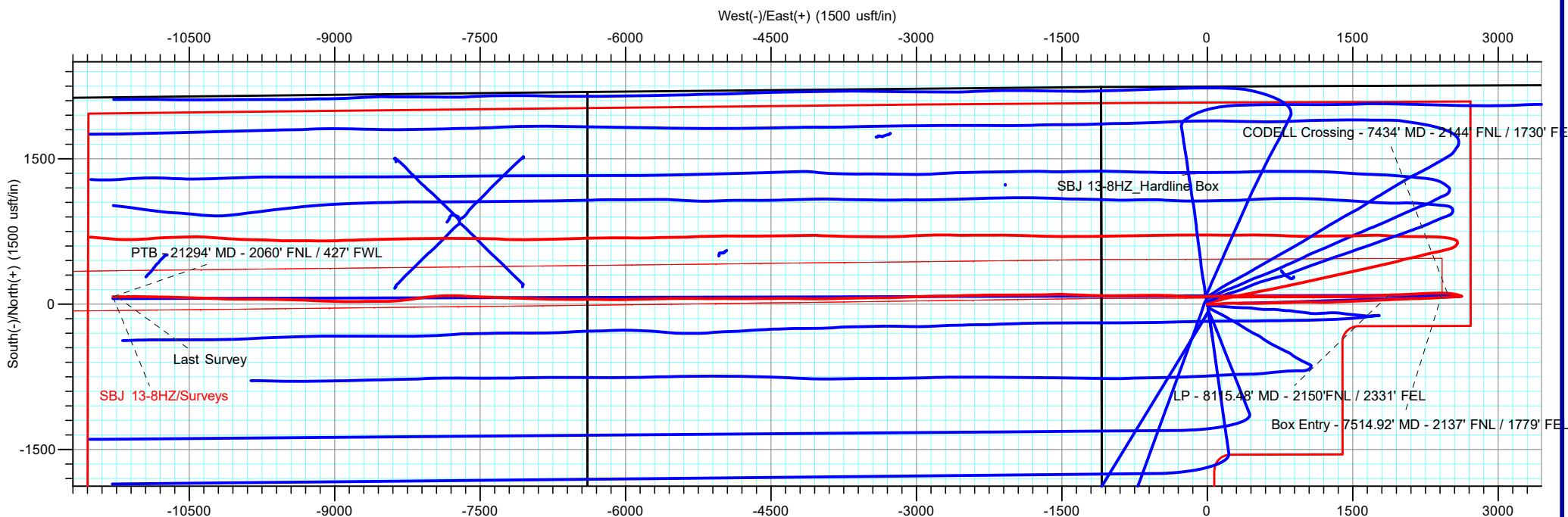
PROJECT DETAILS: Weld County, CO (UTM-NAD83)
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SHL: 2247' FNL, 1085' FWL
LP: 2150' FNL, 2331' FEL
TOE: 2060' FNL, 427' FWL

SHL: Sec 13-T4N-R68W
LP: Sec 13-T4N-R68W
BHL: Sec 15-T4N-R68W

ANNOTATIONS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Departure	Annotation	
7434.64	37.64	272.81	6788.01	112.64	2477.03	-2476.43	2785.09	CODELL Crossing - 7434' MD - 2144' FNL / 1730' FEL	
7514.92	44.14	270.05	6848.67	113.87	2424.53	-2423.93	2837.28	Box Entry - 7514.92' MD - 2137' FNL / 1779' FEL	
8115.48	88.69	267.52	7020.51	94.43	1871.57	-1871.07	3390.63	LP - 8115.48' MD - 2150' FNL / 2331' FEL	
21252.00	92.93	269.97	6561.42	76.89	-11244.29	11244.53	16513.52	Last Survey	
21294.00	92.93	269.97	6559.27	76.87	-11286.23	11286.48	16555.47	PTB - 21294' MD - 2060' FNL / 427' FWL	



TOTAL DIRECTIONAL SERVICES LLC

Design: Surveys (SBJ 13-8HZ/Plan C)
 4N-68W-13 SBJ 22-13HZ PAD
 Created By: RDW Date: 8:35, December 29 2021
 Approved: _____ Date: _____



Occidental Petroleum

Weld County, CO (UTM-NAD83)
4N-68W-13 SBJ 22-13HZ PAD
SBJ 13-8HZ

Plan C

Design: Surveys

Standard Survey Report

29 December, 2021





Survey Report



Company:	Occidental Petroleum	Local Co-ordinate Reference:	Well SBJ 13-8HZ
Project:	Weld County, CO (UTM-NAD83)	TVD Reference:	RKB = 20' @ 4879.00usft (PD 461)
Site:	4N-68W-13 SBJ 22-13HZ PAD	MD Reference:	RKB = 20' @ 4879.00usft (PD 461)
Well:	SBJ 13-8HZ	North Reference:	True
Wellbore:	Plan C	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.16 Single User Db

Project	Weld County, CO (UTM-NAD83)		
Map System:	Universal Transverse Mercator (US Survey Fee	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Zone 13N (108 W to 102 W)		

Site	4N-68W-13 SBJ 22-13HZ PAD		
Site Position:		Northing:	14,641,145.55 usft
From:	Lat/Long	Easting:	1,652,517.50 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	40.314181
		Longitude:	-104.956591

Well	SBJ 13-8HZ					
Well Position	+N/-S	0.00 usft	Northing:	14,641,401.88 usft	Latitude:	40.314885
	+E/-W	0.00 usft	Easting:	1,652,450.47 usft	Longitude:	-104.956831
Position Uncertainty		3.28 usft	Wellhead Elevation:	usft	Ground Level:	4,859.00 usft
Grid Convergence:		0.03 °				

Wellbore	Plan C				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IFR	10/6/2021	7.86	66.48	51,858.20

Design	Surveys				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	269.85	

Survey Program	Date	12/29/2021			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
99.00	1,830.00	Survey #1 (Plan C)	APC_ISCWSA REV 2 MM Fixed:v2:crustal field declination		
1,920.00	21,294.00	Survey #2 (Plan C)	APC_ISCWSA REV 2 MM Fixed:v2:Rockies, crustal dec + 3-axis correction		

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
99.00	0.34	22.45	99.00	0.27	0.11	-0.11	0.34	0.34	0.00	
185.00	0.54	4.72	185.00	0.91	0.24	-0.25	0.28	0.23	-20.62	
274.00	0.86	47.02	273.99	1.78	0.77	-0.77	0.66	0.36	47.53	
366.00	1.80	90.59	365.97	2.24	2.72	-2.72	1.43	1.02	47.36	
456.00	3.10	99.78	455.88	1.81	6.53	-6.53	1.50	1.44	10.21	
546.00	3.90	92.40	545.71	1.27	11.98	-11.99	1.02	0.89	-8.20	
636.00	5.49	94.65	635.41	0.79	19.33	-19.34	1.78	1.77	2.50	
726.00	7.18	95.94	724.86	-0.14	29.22	-29.22	1.88	1.88	1.43	



Survey Report



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Site:	4N-68W-13 SBJ 22-13HZ PAD	MD Reference:	RKB = 20' @ 4879.00usft (PD 461)
Well:	SBJ 13-8HZ	North Reference:	True
Wellbore:	Plan C	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.16 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
815.00	8.71	93.87	813.00	-1.17	41.48	-41.47	1.75	1.72	-2.33	
905.00	10.35	90.25	901.76	-1.66	56.36	-56.36	1.94	1.82	-4.02	
995.00	11.34	87.42	990.15	-1.30	73.29	-73.28	1.25	1.10	-3.14	
1,085.00	12.63	84.27	1,078.19	0.08	91.92	-91.92	1.61	1.43	-3.50	
1,175.00	13.60	82.92	1,165.84	2.37	112.21	-112.21	1.13	1.08	-1.50	
1,265.00	14.54	86.00	1,253.14	4.46	133.98	-133.99	1.33	1.04	3.42	
1,355.00	16.51	88.32	1,339.85	5.62	158.03	-158.05	2.29	2.19	2.58	
1,445.00	18.45	88.11	1,425.69	6.47	185.05	-185.07	2.16	2.16	-0.23	
1,535.00	18.95	87.16	1,510.94	7.66	213.88	-213.90	0.65	0.56	-1.06	
1,624.00	20.50	88.75	1,594.71	8.72	243.90	-243.92	1.84	1.74	1.79	
1,714.00	20.25	88.56	1,679.08	9.45	275.22	-275.25	0.29	-0.28	-0.21	
1,804.00	23.95	89.83	1,762.46	9.90	309.07	-309.10	4.15	4.11	1.41	
1,830.00	23.96	90.75	1,786.22	9.84	319.63	-319.65	1.44	0.04	3.54	
1,920.00	21.62	88.79	1,869.19	9.96	354.49	-354.51	2.73	-2.60	-2.18	
2,013.00	22.11	90.21	1,955.50	10.25	389.12	-389.14	0.78	0.53	1.53	
2,105.00	24.94	91.06	2,039.84	9.83	425.83	-425.86	3.10	3.08	0.92	
2,199.00	28.00	90.09	2,123.98	9.43	467.72	-467.74	3.29	3.26	-1.03	
2,291.00	30.15	89.99	2,204.38	9.40	512.43	-512.45	2.34	2.34	-0.11	
2,383.00	32.21	88.89	2,283.09	9.88	560.05	-560.07	2.32	2.24	-1.20	
2,475.00	31.88	89.09	2,361.07	10.74	608.86	-608.88	0.38	-0.36	0.22	
2,567.00	30.80	88.54	2,439.65	11.73	656.70	-656.72	1.21	-1.17	-0.60	
2,660.00	27.95	87.65	2,520.68	13.23	702.28	-702.32	3.10	-3.06	-0.96	
2,752.00	28.79	87.89	2,601.63	14.93	745.97	-746.00	0.92	0.91	0.26	
2,845.00	28.75	89.56	2,683.15	15.92	790.71	-790.75	0.87	-0.04	1.80	
2,937.00	27.88	86.19	2,764.15	17.52	834.30	-834.35	1.98	-0.95	-3.66	
3,029.00	26.35	85.87	2,846.03	20.42	876.13	-876.18	1.67	-1.66	-0.35	
3,121.00	27.17	90.41	2,928.19	21.74	917.51	-917.56	2.39	0.89	4.93	
3,213.00	26.97	88.92	3,010.11	21.98	959.37	-959.42	0.77	-0.22	-1.62	
3,340.00	26.58	88.71	3,123.49	23.17	1,016.57	-1,016.63	0.32	-0.31	-0.17	
3,433.00	27.35	91.13	3,206.39	23.21	1,058.73	-1,058.79	1.44	0.83	2.60	
3,525.00	28.09	91.36	3,287.83	22.28	1,101.51	-1,101.57	0.81	0.80	0.25	
3,617.00	27.97	91.30	3,369.04	21.28	1,144.74	-1,144.79	0.13	-0.13	-0.07	
3,709.00	29.52	90.87	3,449.70	20.45	1,188.97	-1,189.02	1.70	1.68	-0.47	
3,802.00	29.37	87.09	3,530.69	21.26	1,234.66	-1,234.71	2.00	-0.16	-4.06	
3,894.00	28.50	87.41	3,611.20	23.39	1,279.12	-1,279.18	0.96	-0.95	0.35	
3,987.00	29.65	88.93	3,692.48	24.83	1,324.29	-1,324.35	1.47	1.24	1.63	
4,081.00	28.61	88.95	3,774.59	25.67	1,370.04	-1,370.10	1.11	-1.11	0.02	
4,173.00	27.95	87.79	3,855.61	26.91	1,413.61	-1,413.67	0.93	-0.72	-1.26	
4,267.00	29.46	88.96	3,938.06	28.18	1,458.73	-1,458.80	1.71	1.61	1.24	
4,360.00	27.48	88.34	4,019.81	29.21	1,503.05	-1,503.12	2.15	-2.13	-0.67	
4,453.00	28.80	86.56	4,101.82	31.18	1,546.86	-1,546.94	1.68	1.42	-1.91	
4,547.00	29.19	87.43	4,184.03	33.57	1,592.36	-1,592.45	0.61	0.41	0.93	
4,639.00	27.36	87.88	4,265.05	35.35	1,635.91	-1,635.99	2.00	-1.99	0.49	



Survey Report



Company:	Occidental Petroleum	Local Co-ordinate Reference:	Well SBJ 13-8HZ
Project:	Weld County, CO (UTM-NAD83)	TVD Reference:	RKB = 20' @ 4879.00usft (PD 461)
Site:	4N-68W-13 SBJ 22-13HZ PAD	MD Reference:	RKB = 20' @ 4879.00usft (PD 461)
Well:	SBJ 13-8HZ	North Reference:	True
Wellbore:	Plan C	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.16 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,732.00	28.33	87.48	4,347.29	37.11	1,679.31	-1,679.40	1.06	1.04	-0.43
4,824.00	27.89	87.38	4,428.43	39.06	1,722.61	-1,722.71	0.48	-0.48	-0.11
4,917.00	29.91	87.05	4,509.85	41.25	1,767.50	-1,767.60	2.18	2.17	-0.35
5,009.00	28.77	87.71	4,590.04	43.31	1,812.53	-1,812.64	1.29	-1.24	0.72
5,101.00	27.42	87.46	4,671.20	45.13	1,855.82	-1,855.93	1.47	-1.47	-0.27
5,194.00	25.50	87.11	4,754.46	47.09	1,897.21	-1,897.32	2.07	-2.06	-0.38
5,287.00	27.41	87.22	4,837.71	49.14	1,938.59	-1,938.71	2.05	2.05	0.12
5,380.00	27.79	87.49	4,920.13	51.13	1,981.63	-1,981.75	0.43	0.41	0.29
5,472.00	27.45	87.40	5,001.65	53.03	2,024.24	-2,024.37	0.37	-0.37	-0.10
5,566.00	28.25	89.11	5,084.76	54.36	2,068.12	-2,068.26	1.20	0.85	1.82
5,659.00	26.64	88.54	5,167.29	55.23	2,110.98	-2,111.11	1.75	-1.73	-0.61
5,752.00	27.79	86.71	5,249.99	57.01	2,153.47	-2,153.61	1.53	1.24	-1.97
5,845.00	28.90	88.68	5,331.85	58.77	2,197.58	-2,197.73	1.56	1.19	2.12
5,939.00	26.84	88.42	5,414.94	59.88	2,241.50	-2,241.65	2.20	-2.19	-0.28
6,032.00	27.73	89.40	5,497.59	60.68	2,284.13	-2,284.28	1.07	0.96	1.05
6,125.00	27.97	86.99	5,579.82	62.05	2,327.54	-2,327.70	1.24	0.26	-2.59
6,219.00	27.72	84.77	5,662.94	65.20	2,371.33	-2,371.49	1.13	-0.27	-2.36
6,313.00	29.05	85.66	5,745.64	68.92	2,415.86	-2,416.03	1.48	1.41	0.95
6,407.00	29.59	86.76	5,827.59	71.96	2,461.79	-2,461.97	0.81	0.57	1.17
6,500.00	29.76	88.22	5,908.40	73.98	2,507.78	-2,507.97	0.80	0.18	1.57
6,593.00	24.65	86.37	5,991.08	75.92	2,550.24	-2,550.43	5.57	-5.49	-1.99
6,685.00	17.92	86.79	6,076.76	77.93	2,583.55	-2,583.75	7.32	-7.32	0.46
6,778.00	12.30	86.19	6,166.51	79.39	2,607.74	-2,607.94	6.05	-6.04	-0.65
6,871.00	5.35	84.01	6,258.35	80.51	2,621.95	-2,622.16	7.48	-7.47	-2.34
6,963.00	1.09	352.28	6,350.21	81.82	2,626.11	-2,626.31	5.97	-4.63	-99.71
7,056.00	9.08	287.27	6,442.80	84.88	2,618.97	-2,619.18	9.33	8.59	-69.90
7,148.00	14.93	289.78	6,532.75	91.05	2,600.87	-2,601.10	6.38	6.36	2.73
7,240.00	22.08	284.73	6,619.94	99.47	2,572.95	-2,573.20	7.96	7.77	-5.49
7,333.00	29.83	278.57	6,703.51	107.38	2,533.11	-2,533.38	8.81	8.33	-6.62
7,425.00	36.86	273.20	6,780.34	112.34	2,482.86	-2,483.14	8.28	7.64	-5.84
7,434.64	37.64	272.81	6,788.01	112.64	2,477.03	-2,477.32	8.41	8.05	-4.00
CODELL Crossing - 7434' MD - 2144' FNL / 1730' FEL									
7,514.92	44.14	270.05	6,848.67	113.87	2,424.53	-2,424.82	8.41	8.10	-3.44
Box Entry - 7514.92' MD - 2137' FNL / 1779' FEL									
7,517.00	44.31	269.99	6,850.16	113.87	2,423.08	-2,423.37	8.41	8.14	-3.01
7,609.00	52.75	269.81	6,911.03	113.75	2,354.21	-2,354.50	9.18	9.17	-0.20
7,693.00	60.11	268.15	6,957.45	112.46	2,284.28	-2,284.57	8.91	8.76	-1.98
7,786.00	75.20	264.94	6,992.71	107.16	2,198.69	-2,198.97	16.53	16.23	-3.45
7,890.00	83.99	268.37	7,011.48	101.24	2,096.69	-2,096.95	9.05	8.45	3.30
7,983.00	88.61	268.41	7,017.48	98.63	2,003.95	-2,004.20	4.97	4.97	0.04
8,075.00	88.75	268.23	7,019.60	95.94	1,912.01	-1,912.26	0.25	0.15	-0.20
8,115.48	88.69	267.52	7,020.51	94.43	1,871.57	-1,871.81	1.77	-0.14	-1.76
LP - 8115.48' MD - 2150'FNL / 2331' FEL									
8,168.00	88.62	266.59	7,021.74	91.74	1,819.13	-1,819.37	1.77	-0.14	-1.76



Survey Report



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Wellbore:	Plan C	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.16 Single User Db

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Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
8,261.00	89.33	267.12	7,023.40	86.63	1,726.29	-1,726.51	0.95	0.76	0.57	
8,355.00	90.59	269.64	7,023.47	83.98	1,632.34	-1,632.55	3.00	1.34	2.68	
8,447.00	90.21	269.20	7,022.82	83.05	1,540.34	-1,540.56	0.63	-0.41	-0.48	
8,540.00	90.18	269.43	7,022.51	81.93	1,447.35	-1,447.56	0.25	-0.03	0.25	
8,632.00	89.84	269.46	7,022.49	81.04	1,355.36	-1,355.56	0.37	-0.37	0.03	
8,724.00	92.14	269.99	7,020.90	80.60	1,263.38	-1,263.58	2.57	2.50	0.58	
8,817.00	91.82	270.72	7,017.69	81.18	1,170.44	-1,170.64	0.86	-0.34	0.78	
8,911.00	90.86	270.05	7,015.49	81.81	1,076.46	-1,076.68	1.25	-1.02	-0.71	
9,002.00	90.45	270.67	7,014.45	82.38	985.47	-985.69	0.82	-0.45	0.68	
9,096.00	92.46	269.48	7,012.06	82.50	891.51	-891.72	2.48	2.14	-1.27	
9,189.00	93.08	269.31	7,007.57	81.52	798.62	-798.83	0.69	0.67	-0.18	
9,280.00	92.08	270.94	7,003.47	81.72	707.72	-707.93	2.10	-1.10	1.79	
9,372.00	91.40	270.04	7,000.68	82.51	615.77	-615.98	1.23	-0.74	-0.98	
9,465.00	91.11	270.54	6,998.64	82.98	522.79	-523.01	0.62	-0.31	0.54	
9,558.00	92.89	270.91	6,995.40	84.15	429.86	-430.08	1.95	1.91	0.40	
9,651.00	91.41	268.97	6,991.91	84.06	336.93	-337.15	2.62	-1.59	-2.09	
9,744.00	93.48	270.31	6,987.94	83.47	244.03	-244.24	2.65	2.23	1.44	
9,837.00	92.47	269.90	6,983.11	83.64	151.15	-151.37	1.17	-1.09	-0.44	
9,931.00	92.63	268.15	6,978.93	82.04	57.26	-57.48	1.87	0.17	-1.86	
10,023.00	92.96	267.20	6,974.44	78.32	-34.55	34.35	1.09	0.36	-1.03	
10,117.00	92.01	270.50	6,970.37	76.43	-128.43	128.23	3.65	-1.01	3.51	
10,211.00	92.07	272.44	6,967.02	78.84	-222.33	222.13	2.06	0.06	2.06	
10,304.00	90.88	274.23	6,964.63	84.25	-315.14	314.92	2.31	-1.28	1.92	
10,397.00	88.63	271.92	6,965.03	89.24	-407.99	407.76	3.47	-2.42	-2.48	
10,489.00	88.04	271.74	6,967.70	92.18	-499.91	499.66	0.67	-0.64	-0.20	
10,582.00	89.57	268.60	6,969.64	92.45	-592.87	592.63	3.76	1.65	-3.38	
10,675.00	93.04	268.93	6,967.52	90.45	-685.81	685.57	3.75	3.73	0.35	
10,768.00	92.12	269.61	6,963.33	89.26	-778.71	778.47	1.23	-0.99	0.73	
10,861.00	91.89	268.35	6,960.08	87.61	-871.63	871.40	1.38	-0.25	-1.35	
10,954.00	93.24	269.68	6,955.92	86.01	-964.52	964.30	2.04	1.45	1.43	
11,046.00	93.10	270.33	6,950.83	86.02	-1,056.38	1,056.15	0.72	-0.15	0.71	
11,139.00	91.77	271.80	6,946.88	87.75	-1,149.28	1,149.04	2.13	-1.43	1.58	
11,233.00	90.90	272.32	6,944.69	91.13	-1,243.19	1,242.95	1.08	-0.93	0.55	
11,327.00	91.30	272.07	6,942.88	94.72	-1,337.10	1,336.85	0.50	0.43	-0.27	
11,419.00	91.56	272.50	6,940.59	98.39	-1,429.00	1,428.74	0.55	0.28	0.47	
11,511.00	90.53	269.78	6,938.91	100.22	-1,520.96	1,520.69	3.16	-1.12	-2.96	
11,603.00	90.45	268.84	6,938.12	99.11	-1,612.95	1,612.68	1.03	-0.09	-1.02	
11,696.00	90.35	267.81	6,937.47	96.40	-1,705.90	1,705.65	1.11	-0.11	-1.11	
11,790.00	90.47	269.42	6,936.80	94.12	-1,799.87	1,799.62	1.72	0.13	1.71	
11,882.00	90.07	268.99	6,936.37	92.85	-1,891.86	1,891.61	0.64	-0.43	-0.47	
11,975.00	91.38	270.60	6,935.19	92.51	-1,984.85	1,984.60	2.23	1.41	1.73	
12,067.00	91.28	270.20	6,933.06	93.16	-2,076.82	2,076.57	0.45	-0.11	-0.43	
12,161.00	90.99	269.79	6,931.19	93.15	-2,170.80	2,170.55	0.53	-0.31	-0.44	



Survey Report



Company:	Occidental Petroleum	Local Co-ordinate Reference:	Well SBJ 13-8HZ
Project:	Weld County, CO (UTM-NAD83)	TVD Reference:	RKB = 20' @ 4879.00usft (PD 461)
Site:	4N-68W-13 SBJ 22-13HZ PAD	MD Reference:	RKB = 20' @ 4879.00usft (PD 461)
Well:	SBJ 13-8HZ	North Reference:	True
Wellbore:	Plan C	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.16 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
12,253.00	90.99	269.82	6,929.60	92.83	-2,262.79	2,262.54	0.03	0.00	0.03	
12,346.00	90.40	268.92	6,928.48	91.81	-2,355.77	2,355.53	1.16	-0.63	-0.97	
12,438.00	90.21	268.76	6,927.99	89.95	-2,447.75	2,447.51	0.27	-0.21	-0.17	
12,530.00	90.53	268.71	6,927.39	87.92	-2,539.73	2,539.49	0.35	0.35	-0.05	
12,624.00	90.38	267.62	6,926.65	84.91	-2,633.68	2,633.44	1.17	-0.16	-1.16	
12,716.00	91.53	270.03	6,925.11	83.02	-2,725.64	2,725.41	2.90	1.25	2.62	
12,808.00	91.58	269.24	6,922.62	82.44	-2,817.60	2,817.37	0.86	0.05	-0.86	
12,900.00	91.38	268.26	6,920.24	80.43	-2,909.55	2,909.33	1.09	-0.22	-1.07	
12,993.00	91.72	267.78	6,917.72	77.22	-3,002.46	3,002.24	0.63	0.37	-0.52	
13,086.00	91.11	267.90	6,915.43	73.71	-3,095.36	3,095.16	0.67	-0.66	0.13	
13,178.00	91.13	266.21	6,913.63	68.99	-3,187.22	3,187.03	1.84	0.02	-1.84	
13,273.00	91.14	270.28	6,911.75	66.08	-3,282.14	3,281.95	4.28	0.01	4.28	
13,365.00	91.70	269.73	6,909.47	66.09	-3,374.11	3,373.92	0.85	0.61	-0.60	
13,461.00	91.71	268.52	6,906.61	64.62	-3,470.05	3,469.87	1.26	0.01	-1.26	
13,553.00	92.00	269.32	6,903.63	62.89	-3,561.99	3,561.81	0.92	0.32	0.87	
13,647.00	89.82	268.81	6,902.14	61.36	-3,655.95	3,655.78	2.38	-2.32	-0.54	
13,740.00	89.76	267.99	6,902.48	58.76	-3,748.92	3,748.75	0.88	-0.06	-0.88	
13,832.00	90.15	269.50	6,902.55	56.74	-3,840.89	3,840.73	1.70	0.42	1.64	
13,924.00	90.50	269.89	6,902.03	56.25	-3,932.89	3,932.73	0.57	0.38	0.42	
14,017.00	90.67	268.33	6,901.08	54.81	-4,025.87	4,025.71	1.69	0.18	-1.68	
14,110.00	90.15	271.21	6,900.42	54.44	-4,118.86	4,118.70	3.15	-0.56	3.10	
14,202.00	90.22	271.45	6,900.12	56.57	-4,210.83	4,210.67	0.27	0.08	0.26	
14,295.00	90.06	271.19	6,899.89	58.71	-4,303.81	4,303.64	0.33	-0.17	-0.28	
14,387.00	90.93	269.27	6,899.10	59.08	-4,395.80	4,395.63	2.29	0.95	-2.09	
14,480.00	91.02	269.18	6,897.51	57.83	-4,488.78	4,488.61	0.14	0.10	-0.10	
14,574.00	90.87	269.78	6,895.96	56.97	-4,582.76	4,582.59	0.66	-0.16	0.64	
14,666.00	90.23	268.47	6,895.08	55.57	-4,674.74	4,674.58	1.58	-0.70	-1.42	
14,759.00	91.37	271.01	6,893.78	55.15	-4,767.72	4,767.56	2.99	1.23	2.73	
14,852.00	90.79	269.62	6,892.03	55.66	-4,860.70	4,860.54	1.62	-0.62	-1.49	
14,944.00	91.57	270.89	6,890.13	56.07	-4,952.68	4,952.51	1.62	0.85	1.38	
15,036.00	91.86	269.77	6,887.38	56.60	-5,044.63	5,044.47	1.26	0.32	-1.22	
15,130.00	91.30	269.33	6,884.79	55.86	-5,138.59	5,138.43	0.76	-0.60	-0.47	
15,222.00	92.67	271.69	6,881.60	56.68	-5,230.53	5,230.36	2.96	1.49	2.57	
15,313.00	93.16	270.63	6,876.97	58.52	-5,321.39	5,321.22	1.28	0.54	-1.16	
15,406.00	93.39	270.19	6,871.66	59.18	-5,414.23	5,414.06	0.53	0.25	-0.47	
15,499.00	90.26	268.96	6,868.70	58.49	-5,507.17	5,507.00	3.62	-3.37	-1.32	
15,594.00	89.88	267.96	6,868.58	55.94	-5,602.14	5,601.97	1.13	-0.40	-1.05	
15,686.00	89.51	267.35	6,869.07	52.17	-5,694.06	5,693.90	0.78	-0.40	-0.66	
15,780.00	90.36	270.76	6,869.18	50.62	-5,788.03	5,787.88	3.74	0.90	3.63	
15,873.00	91.47	269.28	6,867.69	50.66	-5,881.01	5,880.86	1.99	1.19	-1.59	
15,966.00	91.22	268.84	6,865.51	49.13	-5,973.97	5,973.83	0.54	-0.27	-0.47	
16,058.00	90.99	268.89	6,863.74	47.31	-6,065.94	6,065.79	0.26	-0.25	0.05	
16,151.00	90.29	270.62	6,862.70	46.91	-6,158.93	6,158.78	2.01	-0.75	1.86	
16,243.00	90.24	271.06	6,862.27	48.26	-6,250.92	6,250.77	0.48	-0.05	0.48	



Survey Report



Company:	Occidental Petroleum	Local Co-ordinate Reference:	Well SBJ 13-8HZ
Project:	Weld County, CO (UTM-NAD83)	TVD Reference:	RKB = 20' @ 4879.00usft (PD 461)
Site:	4N-68W-13 SBJ 22-13HZ PAD	MD Reference:	RKB = 20' @ 4879.00usft (PD 461)
Well:	SBJ 13-8HZ	North Reference:	True
Wellbore:	Plan C	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.16 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
16,337.00	90.04	270.13	6,862.04	49.24	-6,344.91	6,344.76	1.01	-0.21	-0.99
16,428.00	90.79	269.06	6,861.38	48.59	-6,435.90	6,435.76	1.44	0.82	-1.18
16,521.00	91.14	271.47	6,859.82	49.02	-6,528.88	6,528.73	2.62	0.38	2.59
16,615.00	90.97	269.87	6,858.09	50.12	-6,622.86	6,622.70	1.71	-0.18	-1.70
16,708.00	90.99	269.50	6,856.50	49.61	-6,715.84	6,715.69	0.40	0.02	-0.40
16,800.00	91.79	271.42	6,854.26	50.35	-6,807.81	6,807.65	2.26	0.87	2.09
16,894.00	91.72	272.90	6,851.39	53.89	-6,901.69	6,901.53	1.58	-0.07	1.57
16,986.00	91.83	272.10	6,848.54	57.90	-6,993.56	6,993.39	0.88	0.12	-0.87
17,078.00	91.80	272.01	6,845.62	61.20	-7,085.46	7,085.27	0.10	-0.03	-0.10
17,172.00	91.75	271.36	6,842.71	63.96	-7,179.37	7,179.18	0.69	-0.05	-0.69
17,263.00	91.67	271.82	6,839.99	66.48	-7,270.29	7,270.10	0.51	-0.09	0.51
17,356.00	91.84	272.52	6,837.15	70.00	-7,363.18	7,362.98	0.77	0.18	0.75
17,448.00	91.80	271.66	6,834.22	73.36	-7,455.08	7,454.86	0.94	-0.04	-0.93
17,541.00	92.72	272.74	6,830.56	76.92	-7,547.93	7,547.70	1.52	0.99	1.16
17,633.00	92.63	273.17	6,826.26	81.66	-7,639.71	7,639.47	0.48	-0.10	0.47
17,725.00	93.31	271.78	6,821.50	85.63	-7,731.50	7,731.25	1.68	0.74	-1.51
17,817.00	93.38	268.97	6,816.13	86.23	-7,823.33	7,823.08	3.05	0.08	-3.05
17,910.00	93.48	267.49	6,810.56	83.36	-7,916.12	7,915.87	1.59	0.11	-1.59
18,003.00	93.45	264.93	6,804.94	77.23	-8,008.73	8,008.51	2.75	-0.03	-2.75
18,097.00	93.84	262.51	6,798.96	66.97	-8,101.97	8,101.77	2.60	0.41	-2.57
18,191.00	93.79	260.91	6,792.71	53.44	-8,194.78	8,194.62	1.70	-0.05	-1.70
18,283.00	94.47	262.53	6,786.08	40.23	-8,285.58	8,285.45	1.91	0.74	1.76
18,376.00	94.68	266.39	6,778.66	31.28	-8,377.84	8,377.73	4.14	0.23	4.15
18,470.00	95.48	270.32	6,770.34	28.59	-8,471.41	8,471.31	4.25	0.85	4.18
18,563.00	94.08	269.61	6,762.59	28.54	-8,564.08	8,563.98	1.69	-1.51	-0.76
18,656.00	93.81	269.89	6,756.19	28.13	-8,656.86	8,656.76	0.42	-0.29	0.30
18,750.00	94.50	269.55	6,749.38	27.67	-8,750.61	8,750.51	0.82	0.73	-0.36
18,844.00	94.78	268.62	6,741.77	26.18	-8,844.29	8,844.19	1.03	0.30	-0.99
18,936.00	95.28	270.92	6,733.71	25.81	-8,935.93	8,935.83	2.55	0.54	2.50
19,029.00	94.75	272.75	6,725.58	28.77	-9,028.52	9,028.42	2.04	-0.57	1.97
19,122.00	95.36	272.55	6,717.38	33.06	-9,121.06	9,120.94	0.69	0.66	-0.22
19,215.00	95.42	272.20	6,708.64	36.89	-9,213.57	9,213.44	0.38	0.06	-0.38
19,308.00	94.85	272.12	6,700.32	40.39	-9,306.13	9,305.99	0.62	-0.61	-0.09
19,403.00	94.69	272.06	6,692.42	43.84	-9,400.74	9,400.59	0.18	-0.17	-0.06
19,495.00	94.28	270.85	6,685.23	46.17	-9,492.43	9,492.27	1.38	-0.45	-1.32
19,590.00	94.20	271.15	6,678.20	47.82	-9,587.15	9,586.99	0.33	-0.08	0.32
19,682.00	92.15	271.73	6,673.11	50.13	-9,678.98	9,678.81	2.32	-2.23	0.63
19,774.00	92.90	270.35	6,669.05	51.80	-9,770.87	9,770.70	1.71	0.82	-1.50
19,867.00	92.24	270.13	6,664.88	52.19	-9,863.77	9,863.60	0.75	-0.71	-0.24
19,959.00	91.83	269.20	6,661.62	51.65	-9,955.71	9,955.54	1.10	-0.45	-1.01
20,053.00	93.86	270.89	6,656.95	51.72	-10,049.59	10,049.42	2.81	2.16	1.80
20,145.00	94.67	272.68	6,650.11	54.58	-10,141.28	10,141.11	2.13	0.88	1.95
20,237.00	94.49	271.43	6,642.76	57.87	-10,232.93	10,232.74	1.37	-0.20	-1.36



Survey Report



Company:	Occidental Petroleum	Local Co-ordinate Reference:	Well SBJ 13-8HZ
Project:	Weld County, CO (UTM-NAD83)	TVD Reference:	RKB = 20' @ 4879.00usft (PD 461)
Site:	4N-68W-13 SBJ 22-13HZ PAD	MD Reference:	RKB = 20' @ 4879.00usft (PD 461)
Well:	SBJ 13-8HZ	North Reference:	True
Wellbore:	Plan C	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.16 Single User Db

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
20,330.00	94.68	272.19	6,635.33	60.79	-10,325.59	10,325.39	0.84	0.20	0.82	
20,423.00	94.54	271.90	6,627.85	64.10	-10,418.23	10,418.02	0.35	-0.15	-0.31	
20,514.00	95.01	271.21	6,620.28	66.56	-10,508.88	10,508.66	0.92	0.52	-0.76	
20,607.00	95.50	271.42	6,611.76	68.69	-10,601.46	10,601.24	0.57	0.53	0.23	
20,700.00	95.53	271.43	6,602.82	70.99	-10,694.00	10,693.78	0.03	0.03	0.01	
20,792.00	95.48	271.18	6,594.00	73.08	-10,785.55	10,785.32	0.28	-0.05	-0.27	
20,886.00	95.19	271.20	6,585.26	75.02	-10,879.12	10,878.89	0.31	-0.31	0.02	
20,980.00	94.65	270.88	6,577.20	76.72	-10,972.76	10,972.52	0.67	-0.57	-0.34	
21,073.00	93.13	270.15	6,570.89	77.55	-11,065.54	11,065.30	1.81	-1.63	-0.78	
21,167.00	93.03	269.51	6,565.84	77.27	-11,159.40	11,159.16	0.69	-0.11	-0.68	
21,252.00	92.93	269.97	6,561.42	76.89	-11,244.29	11,244.05	0.55	-0.12	0.54	
Last Survey										
21,294.00	92.93	269.97	6,559.27	76.87	-11,286.23	11,285.99	0.00	0.00	0.00	
PTB - 21294' MD - 2060' FNL / 427' FWL										

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
21,294.00	6,559.27	20" Casing	20	24

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,434.64	6,788.01	112.64	2,477.03	CODELL Crossing - 7434' MD - 2144' FNL / 1730' FEL
7,514.92	6,848.67	113.87	2,424.53	Box Entry - 7514.92' MD - 2137' FNL / 1779' FEL
8,115.48	7,020.51	94.43	1,871.57	LP - 8115.48' MD - 2150'FNL / 2331' FEL
21,252.00	6,561.42	76.89	-11,244.29	Last Survey
21,294.00	6,559.27	76.87	-11,286.23	PTB - 21294' MD - 2060' FNL / 427' FWL

Checked By: _____ Approved By: _____ Date: _____