ENSIGN Directional

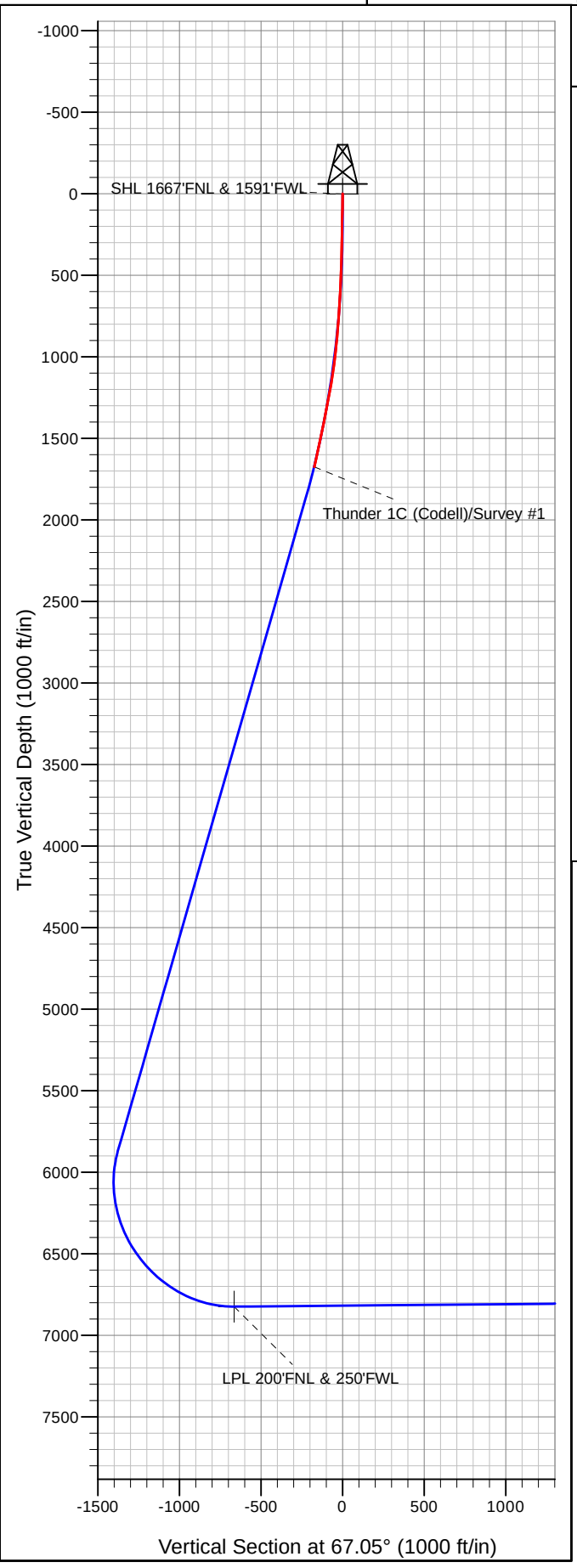
Well Name: Thunder 1C (Codell)

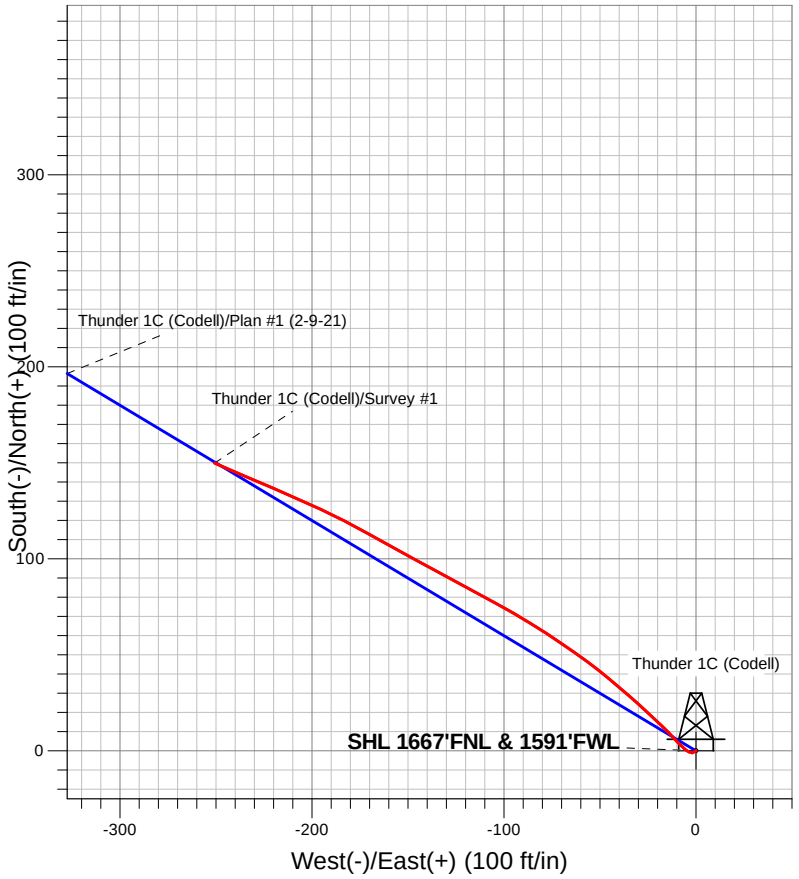
Surface Location: Thunder 5N64W02 1-10 Pad Sec.3-T5N-R64W
North American Datum 1983 US State Plane 1983 Colorado Northern Zone
Ground Elevation: 4621.0

+N/-S	+E/-W	Northing	Easting	Latittude	Longitude	Slot
0.0	0.0	1401281.15	3267229.64	40.430948	-104.540047	

Ensign 122 RKB - 13' WELL @ 4634.0ft (Ensign 122 RKB - 13')

PDC Energy Inc. DJ Basin





LEGEND

- Thunder 1C (Codell), Thunder 1C Wellbore #1, Plan #1 (2-9-21) V0
- Thunder 1C Wellbore #1
- Survey #1

Final Survey Plot

Project: SEC.3-T5N-R64W
Site: Thunder 5N64W02 1-10 Pad Sec.3-T5N-R64W
Well: Thunder 1C (Codell)
Plan: Thunder 1C Wellbore #1

ENSIGN Directional

PDC Energy Inc. DJ Basin

SEC.3-T5N-R64W
Thunder 5N64W02 1-10 Pad Sec.3-T5N-R64W
Thunder 1C (Codell)

Thunder 1C Wellbore #1

Survey: Survey #1

Standard Survey Report

02 March, 2021

PDC ENERGY
Growing E&P Value

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well Thunder 1C (Codell)
Project:	SEC.3-T5N-R64W	**TVD Reference:**	WELL @ 4634.0ft (Ensign 122 RKB - 13')
Site:	Thunder 5N64W02 1-10 Pad Sec.3-T5N-R64W	**MD Reference:**	WELL @ 4634.0ft (Ensign 122 RKB - 13')
Well:	Thunder 1C (Codell)	**North Reference:**	True
Wellbore:	Thunder 1C Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Thunder 1C Wellbore #1	**Database:**	US_EDM

Project SEC.3-T5N-R64W, Weld County, Colorado

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 Thunder 5N64W02 1-10 Pad Sec.3-T5N-R64W

Site Position:		**Northing:**	1,401,281.16 usft	**Latitude:**	40.430948
From:	Lat/Long	**Easting:**	3,267,229.64 usft	**Longitude:**	-104.540047
Position Uncertainty:	0.0 ft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.62 °

Well Thunder 1C (Codell)

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,401,281.15 usft	**Latitude:**	40.430948
	+E/-W	0.0 ft	**Easting:**	3,267,229.64 usft	**Longitude:**	-104.540047
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	0.0 ft	**Ground Level:**	4,621.0 ft

Wellbore Thunder 1C Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	02/09/2021	7.70	66.82	51,972

Design Thunder 1C Wellbore #1

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	67.05

Survey Program **Date** 03/02/2021

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
86.0	1,711.0	Survey #1 (Thunder 1C Wellbore #1)	MWD	MWD - Standard

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
86.0	0.88	237.62	86.0	-0.4	-0.6	-0.7	1.02	1.02	0.00
177.0	0.97	244.48	177.0	-1.1	-1.8	-2.1	0.16	0.10	7.54
266.0	1.93	302.66	266.0	-0.6	-3.8	-3.7	1.84	1.08	65.37
361.0	3.43	312.33	360.9	2.2	-7.2	-5.8	1.64	1.58	10.18
450.0	4.75	318.48	449.6	6.8	-11.6	-8.1	1.56	1.48	6.91
540.0	6.24	313.03	539.2	12.9	-17.7	-11.3	1.75	1.66	-6.06
626.0	8.00	313.56	624.5	20.2	-25.4	-15.6	2.05	2.05	0.62
712.0	8.88	310.22	709.6	28.6	-34.8	-20.9	1.17	1.02	-3.88
798.0	8.88	310.75	794.6	37.2	-44.9	-26.9	0.10	0.00	0.62

Company:	PDC Energy Inc. DJ Basin	**Local Co-ordinate Reference:**	Well Thunder 1C (Codell)
Project:	SEC.3-T5N-R64W	**TVD Reference:**	WELL @ 4634.0ft (Ensign 122 RKB - 13')
Site:	Thunder 5N64W02 1-10 Pad Sec.3-T5N-R64W	**MD Reference:**	WELL @ 4634.0ft (Ensign 122 RKB - 13')
Well:	Thunder 1C (Codell)	**North Reference:**	True
Wellbore:	Thunder 1C Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Thunder 1C Wellbore #1	**Database:**	US_EDM

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
888.0	9.94	306.36	883.4	46.4	-56.5	-33.9	1.42	1.18	-4.88
977.0	11.70	304.24	970.8	56.0	-70.1	-42.7	2.03	1.98	-2.38
1,066.0	13.10	301.61	1,057.7	66.4	-86.2	-53.5	1.70	1.57	-2.96
1,156.0	14.60	298.62	1,145.1	77.1	-104.8	-66.4	1.85	1.67	-3.32
1,241.0	16.36	298.44	1,227.0	88.0	-124.7	-80.6	2.07	2.07	-0.21
1,330.0	18.11	298.62	1,312.0	100.6	-147.9	-97.0	1.97	1.97	0.20
1,415.0	18.03	298.97	1,392.8	113.3	-171.0	-113.3	0.16	-0.09	0.41
1,505.0	17.41	295.10	1,478.5	125.7	-195.4	-130.9	1.48	-0.69	-4.30
1,594.0	17.23	293.17	1,563.5	136.6	-219.6	-148.9	0.68	-0.20	-2.17
1,651.0	16.71	292.99	1,618.0	143.1	-234.9	-160.5	0.92	-0.91	-0.32
1,711.0	16.71	292.99	1,675.5	149.8	-250.8	-172.5	0.00	0.00	0.00

Checked By: _____ Approved By: _____ Date: _____