

Well Name: HAWK 9 FEDERAL COM	Well Location: T18S / R27E / SEC 8 / NENE / 32.7684682 / -104.2931893	County or Parish/State: EDDY / NM
Well Number: 2H	Type of Well: OIL WELL	Allottee or Tribe Name:
Lease Number: NMNM0031186, NMNM031186	Unit or CA Name:	Unit or CA Number:
US Well Number: 3001546977	Well Status: Drilling Well	Operator: REDWOOD OPERATING LLC

Notice of Intent

Type of Submission: Notice of Intent	Type of Action Other
Date Sundry Submitted: 03/09/2021	Time Sundry Submitted: 09:19
Date proposed operation will begin: 03/24/2021	

Procedure Description: Redwood Operating LLC as new operator would like to make the following changes to the Hawk 9 Federal Com 2H. 1. Surface Casing 17 1/2 hole 13 3/8" 48#, H-40/J-55 hybrid, ST&C Set at 375'. See attachment for Cement. 2. Intermediate Casing 12 1/4" hole 9 5/8" 36#, J-55, ST&C Set at 1230'. See attachment for Cement. 3. Production Casing 8 3/4" hole 0-2650' 7" 26#, L-80 BT&C, 2650-3725' 7" 26#, BT&C, 3725-8856' 5 1/2" 17#, L-80, BT&C. See attachment for Cement.

Surface Disturbance

Is any additional surface disturbance proposed?: No

NOI Attachments

Procedure Description

03282021173018001_20210309091817.pdf

Well Name: HAWK 9 FEDERAL COM	Well Location: T18S / R27E / SEC 8 / NENE / 32.7684682 / -104.2931893	County or Parish/State: EDDY / NM
Well Number: 2H	Type of Well: OIL WELL	Allottee or Tribe Name:
Lease Number: NMNM0031186, NMNM031186	Unit or CA Name:	Unit or CA Number:
US Well Number: 3001546977	Well Status: Drilling Well	Operator: REDWOOD OPERATING LLC

Conditions of Approval

Specialist Review
Hawk_9_Fed_Com_2H_COA_20210309093336.pdf

Operator Certification

I certify that the foregoing is true and correct. Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction. Electronic submission of Sundry Notices through this system satisfies regulations requiring a submission of Form 3160-5 or a Sundry Notice.

Operator Electronic Signature: JERRY SHERRELL	Signed on: MAR 09, 2021 09:18 AM
Name: REDWOOD OPERATING LLC	
Title: Production Clerk	
Street Address: 11344 Lovington HWY	
City: Artesia	State: NM
Phone: (575) 748-1288	
Email address: jerrys@mec.com	

Field Representative

Representative Name:		
Street Address:		
City:	State:	Zip:
Phone:		
Email address:		

BLM Point of Contact

BLM POC Name: ZOTA M STEVENS	BLM POC Title: Petroleum Engineer
BLM POC Phone: 5752345998	BLM POC Email Address: ZSTEVENS@BLM.GOV
Disposition: Approved	Disposition Date: 03/09/2021
Signature: Zota Stevens	

Redwood Operating LLC

Eddy County, NM

Sec 8-T18S-R27E

Hawk 9 Federal Com #2H

Wellbore #1

Plan: Plan #1

Standard Planning Report

27 January, 2021

Microsoft Planning Report

Database:	EDM 5000.15 Single User Db	Local Co-ordinate Reference:	Well Hawk 9 Federal Com #2H
Company:	Redwood Operating LLC	TVD Reference:	3477.1+18 @ 3495.1usft
Project:	Eddy County, NM	MD Reference:	3477.1+18 @ 3495.1usft
Site:	Sec 8-T18S-R27E	North Reference:	Grid
Well:	Hawk 9 Federal Com #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Project	Eddy County, NM		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Sec 8-T18S-R27E				
Site Position:		Northing:	643,343.04 usft	Latitude:	32° 46' 6.881 N
From:	Map	Easting:	553,677.02 usft	Longitude:	104° 17' 35.478 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.02 °

Well	Hawk 9 Federal Com #2H					
Well Position	+N/-S	-40.0 usft	Northing:	643,303.07 usft	Latitude:	32° 46' 6.485 N
	+E/-W	-0.2 usft	Easting:	553,676.77 usft	Longitude:	104° 17' 35.481 W
Position Uncertainty	0.0 usft		Wellhead Elevation:		Ground Level:	3,477.1 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	01/26/21	6.94	60.40	47,810.23264970

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	94.24

Plan Survey Tool Program	Date	01/27/21		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.0	8,856.0 Plan #1 (Wellbore #1)	MWD	
			OWSG MWD - Standard	

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
550.0	7.00	185.00	549.1	-21.3	-1.9	2.00	2.00	0.00	185.00	
2,738.7	7.00	185.00	2,721.5	-287.0	-25.1	0.00	0.00	0.00	0.00	
3,423.5	55.00	99.20	3,302.8	-380.7	271.1	8.00	7.01	-12.53	-90.73	
3,673.5	55.00	99.20	3,446.2	-413.4	473.2	0.00	0.00	0.00	0.00	
3,946.7	86.61	89.84	3,535.0	-431.4	727.0	12.00	11.57	-3.43	-17.45	
8,856.0	86.61	89.84	3,825.0	-417.7	5,627.7	0.00	0.00	0.00	0.00	BHL Hawk 9 Federal

Microsoft Planning Report

Database:	EDM 5000.15 Single User Db	Local Co-ordinate Reference:	Well Hawk 9 Federal Com #2H
Company:	Redwood Operating LLC	TVD Reference:	3477.1+18 @ 3495.1usft
Project:	Eddy County, NM	MD Reference:	3477.1+18 @ 3495.1usft
Site:	Sec 8-T18S-R27E	North Reference:	Grid
Well:	Hawk 9 Federal Com #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned 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)
	0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
	100.0	0.00	0.00	100.0	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
Nudge 2°/100'										
	300.0	2.00	185.00	300.0	-1.7	-0.2	0.0	2.00	2.00	0.00
	400.0	4.00	185.00	399.8	-7.0	-0.6	-0.1	2.00	2.00	0.00
	500.0	6.00	185.00	499.5	-15.6	-1.4	-0.2	2.00	2.00	0.00
	550.0	7.00	185.00	549.1	-21.3	-1.9	-0.3	2.00	2.00	0.00
EON HLD 7° Inc.										
	600.0	7.00	185.00	598.8	-27.3	-2.4	-0.4	0.00	0.00	0.00
	700.0	7.00	185.00	698.0	-39.5	-3.5	-0.5	0.00	0.00	0.00
	800.0	7.00	185.00	797.3	-51.6	-4.5	-0.7	0.00	0.00	0.00
	900.0	7.00	185.00	896.5	-63.8	-5.6	-0.8	0.00	0.00	0.00
	1,000.0	7.00	185.00	995.8	-75.9	-6.6	-1.0	0.00	0.00	0.00
	1,100.0	7.00	185.00	1,095.0	-88.0	-7.7	-1.2	0.00	0.00	0.00
	1,200.0	7.00	185.00	1,194.3	-100.2	-8.8	-1.3	0.00	0.00	0.00
	1,300.0	7.00	185.00	1,293.5	-112.3	-9.8	-1.5	0.00	0.00	0.00
	1,400.0	7.00	185.00	1,392.8	-124.5	-10.9	-1.6	0.00	0.00	0.00
	1,500.0	7.00	185.00	1,492.0	-136.6	-12.0	-1.8	0.00	0.00	0.00
	1,600.0	7.00	185.00	1,591.3	-148.7	-13.0	-2.0	0.00	0.00	0.00
	1,700.0	7.00	185.00	1,690.6	-160.9	-14.1	-2.1	0.00	0.00	0.00
	1,800.0	7.00	185.00	1,789.8	-173.0	-15.1	-2.3	0.00	0.00	0.00
	1,900.0	7.00	185.00	1,889.1	-185.2	-16.2	-2.4	0.00	0.00	0.00
	2,000.0	7.00	185.00	1,988.3	-197.3	-17.3	-2.6	0.00	0.00	0.00
	2,100.0	7.00	185.00	2,087.6	-209.5	-18.3	-2.8	0.00	0.00	0.00
	2,200.0	7.00	185.00	2,186.8	-221.6	-19.4	-2.9	0.00	0.00	0.00
	2,300.0	7.00	185.00	2,286.1	-233.7	-20.4	-3.1	0.00	0.00	0.00
	2,400.0	7.00	185.00	2,385.3	-245.9	-21.5	-3.3	0.00	0.00	0.00
	2,500.0	7.00	185.00	2,484.6	-258.0	-22.6	-3.4	0.00	0.00	0.00
	2,600.0	7.00	185.00	2,583.8	-270.2	-23.6	-3.6	0.00	0.00	0.00
	2,700.0	7.00	185.00	2,683.1	-282.3	-24.7	-3.7	0.00	0.00	0.00
	2,738.7	7.00	185.00	2,721.5	-287.0	-25.1	-3.8	0.00	0.00	0.00
KOP BLD 12°/100'										
	2,750.0	7.05	177.61	2,732.7	-288.4	-25.1	-3.7	8.00	0.41	-65.39
	2,800.0	8.49	149.61	2,782.3	-294.6	-23.1	-1.3	8.00	2.88	-55.99
	2,850.0	11.24	132.43	2,831.6	-301.1	-17.7	4.7	8.00	5.50	-34.37
	2,900.0	14.57	122.45	2,880.3	-307.8	-8.8	84.9	8.00	6.67	-19.96
	2,950.0	18.17	116.23	2,928.3	-314.6	3.5	26.8	8.00	7.20	-12.44
	3,000.0	21.91	112.04	2,975.2	-321.5	19.2	42.9	8.00	7.47	-8.38
	3,050.0	25.72	109.03	3,021.0	-328.6	38.1	62.3	8.00	7.62	-6.02
	3,100.0	29.58	106.76	3,065.2	-335.7	60.2	84.9	8.00	7.72	-4.55
	3,150.0	33.47	104.97	3,107.9	-342.8	85.3	110.5	8.00	7.78	-3.58
	3,200.0	37.36	103.52	3,148.6	-349.9	113.4	139.0	8.00	7.82	-2.91
	3,250.0	41.31	102.30	3,187.3	-357.0	144.3	170.3	8.00	7.85	-2.43
	3,300.0	45.24	101.26	3,223.6	-364.0	177.9	204.3	8.00	7.87	-2.08
	3,350.0	49.19	100.35	3,257.6	-370.8	213.9	240.8	8.00	7.89	-1.81
	3,400.0	53.14	99.55	3,289.0	-377.6	252.3	279.5	8.00	7.90	-1.61
	3,423.5	55.00	99.20	3,302.8	-380.7	271.1	298.5	8.00	7.91	-1.49
EOB HLD 55° Inc. 250'										
	3,500.0	55.00	99.20	3,346.6	-390.7	332.9	360.9	0.00	0.00	0.00
	3,600.0	55.00	99.20	3,404.0	-403.8	413.7	442.5	0.00	0.00	0.00
	3,673.5	55.00	99.20	3,446.2	-413.4	473.2	502.5	0.00	0.00	0.00
CONT BLD 12°/100'										

Microsoft Planning Report

Database:	EDM 5000.15 Single User Db	Local Co-ordinate Reference:	Well Hawk 9 Federal Com #2H
Company:	Redwood Operating LLC	TVD Reference:	3477.1+18 @ 3495.1usft
Project:	Eddy County, NM	MD Reference:	3477.1+18 @ 3495.1usft
Site:	Sec 8-T18S-R27E	North Reference:	Grid
Well:	Hawk 9 Federal Com #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned 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)
3,675.0	55.17	99.14	3,447.0	-413.6	474.4	503.7	12.00	11.45	-4.38
3,700.0	58.03	98.08	3,460.8	-416.7	495.0	524.5	12.00	11.47	-4.23
3,725.0	60.91	97.08	3,473.5	-419.5	516.4	546.0	12.00	11.50	-3.97
3,750.0	63.79	96.15	3,485.1	-422.1	538.4	568.1	12.00	11.53	-3.76
3,775.0	66.68	95.25	3,495.5	-424.3	561.0	590.8	12.00	11.55	-3.58
3,800.0	69.57	94.40	3,504.8	-426.3	584.1	614.0	12.00	11.57	-3.42
3,825.0	72.47	93.57	3,513.0	-427.9	607.6	637.7	12.00	11.59	-3.30
3,850.0	75.37	92.77	3,519.9	-429.3	631.6	661.7	12.00	11.60	-3.19
3,875.0	78.27	92.00	3,525.6	-430.3	655.9	686.0	12.00	11.61	-3.11
3,900.0	81.18	91.23	3,530.1	-431.0	680.5	710.6	12.00	11.62	-3.04
3,925.0	84.08	90.49	3,533.3	-431.3	705.3	735.3	12.00	11.63	-3.00
3,946.7	86.61	89.84	3,535.0	-431.4	727.0	756.9	12.00	11.63	-2.97
EOB HLD 86.61° Inc.									
4,000.0	86.61	89.84	3,538.2	-431.3	780.2	809.9	0.00	0.00	0.00
4,100.0	86.61	89.84	3,544.1	-431.0	880.0	909.5	0.00	0.00	0.00
4,200.0	86.61	89.84	3,550.0	-430.7	979.8	1,009.0	0.00	0.00	0.00
4,300.0	86.61	89.84	3,555.9	-430.4	1,079.6	1,108.5	0.00	0.00	0.00
4,400.0	86.61	89.84	3,561.8	-430.1	1,179.5	1,208.1	0.00	0.00	0.00
4,500.0	86.61	89.84	3,567.7	-429.9	1,279.3	1,307.6	0.00	0.00	0.00
4,600.0	86.61	89.84	3,573.6	-429.6	1,379.1	1,407.1	0.00	0.00	0.00
4,700.0	86.61	89.84	3,579.5	-429.3	1,478.9	1,506.7	0.00	0.00	0.00
4,800.0	86.61	89.84	3,585.4	-429.0	1,578.8	1,606.2	0.00	0.00	0.00
4,900.0	86.61	89.84	3,591.3	-428.7	1,678.6	1,705.7	0.00	0.00	0.00
5,000.0	86.61	89.84	3,597.2	-428.5	1,778.4	1,805.2	0.00	0.00	0.00
5,100.0	86.61	89.84	3,603.1	-428.2	1,878.2	1,904.8	0.00	0.00	0.00
5,200.0	86.61	89.84	3,609.0	-427.9	1,978.1	2,004.3	0.00	0.00	0.00
5,300.0	86.61	89.84	3,615.0	-427.6	2,077.9	2,103.8	0.00	0.00	0.00
5,400.0	86.61	89.84	3,620.9	-427.3	2,177.7	2,203.4	0.00	0.00	0.00
5,500.0	86.61	89.84	3,626.8	-427.1	2,277.5	2,302.9	0.00	0.00	0.00
5,600.0	86.61	89.84	3,632.7	-426.8	2,377.4	2,402.4	0.00	0.00	0.00
5,700.0	86.61	89.84	3,638.6	-426.5	2,477.2	2,502.0	0.00	0.00	0.00
5,800.0	86.61	89.84	3,644.5	-426.2	2,577.0	2,601.5	0.00	0.00	0.00
5,900.0	86.61	89.84	3,650.4	-426.0	2,676.8	2,701.0	0.00	0.00	0.00
6,000.0	86.61	89.84	3,656.3	-425.7	2,776.7	2,800.5	0.00	0.00	0.00
6,100.0	86.61	89.84	3,662.2	-425.4	2,876.5	2,900.1	0.00	0.00	0.00
6,200.0	86.61	89.84	3,668.1	-425.1	2,976.3	2,999.6	0.00	0.00	0.00
6,300.0	86.61	89.84	3,674.0	-424.8	3,076.1	3,099.1	0.00	0.00	0.00
6,400.0	86.61	89.84	3,679.9	-424.6	3,176.0	3,198.7	0.00	0.00	0.00
6,500.0	86.61	89.84	3,685.8	-424.3	3,275.8	3,298.2	0.00	0.00	0.00
6,600.0	86.61	89.84	3,691.7	-424.0	3,375.6	3,397.7	0.00	0.00	0.00
6,700.0	86.61	89.84	3,697.6	-423.7	3,475.4	3,497.3	0.00	0.00	0.00
6,800.0	86.61	89.84	3,703.6	-423.4	3,575.3	3,596.8	0.00	0.00	0.00
6,900.0	86.61	89.84	3,709.5	-423.2	3,675.1	3,696.3	0.00	0.00	0.00
7,000.0	86.61	89.84	3,715.4	-422.9	3,774.9	3,795.9	0.00	0.00	0.00
7,100.0	86.61	89.84	3,721.3	-422.6	3,874.7	3,895.4	0.00	0.00	0.00
7,200.0	86.61	89.84	3,727.2	-422.3	3,974.6	3,994.9	0.00	0.00	0.00
7,300.0	86.61	89.84	3,733.1	-422.0	4,074.4	4,094.4	0.00	0.00	0.00
7,400.0	86.61	89.84	3,739.0	-421.8	4,174.2	4,194.0	0.00	0.00	0.00
7,500.0	86.61	89.84	3,744.9	-421.5	4,274.0	4,293.5	0.00	0.00	0.00
7,600.0	86.61	89.84	3,750.8	-421.2	4,373.9	4,393.0	0.00	0.00	0.00
7,700.0	86.61	89.84	3,756.7	-420.9	4,473.7	4,492.6	0.00	0.00	0.00
7,800.0	86.61	89.84	3,762.6	-420.6	4,573.5	4,592.1	0.00	0.00	0.00
7,900.0	86.61	89.84	3,768.5	-420.4	4,673.3	4,691.6	0.00	0.00	0.00

Microsoft

Planning Report

Database:	EDM 5000.15 Single User Db	Local Co-ordinate Reference:	Well Hawk 9 Federal Com #2H
Company:	Redwood Operating LLC	TVD Reference:	3477.1+18 @ 3495.1usft
Project:	Eddy County, NM	MD Reference:	3477.1+18 @ 3495.1usft
Site:	Sec 8-T18S-R27E	North Reference:	Grid
Well:	Hawk 9 Federal Com #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned 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)
8,000.0	86.61	89.84	3,774.4	-420.1	4,773.2	4,791.2	0.00	0.00	0.00
8,100.0	86.61	89.84	3,780.3	-419.8	4,873.0	4,890.7	0.00	0.00	0.00
8,200.0	86.61	89.84	3,786.2	-419.5	4,972.8	4,990.2	0.00	0.00	0.00
8,300.0	86.61	89.84	3,792.2	-419.3	5,072.6	5,089.8	0.00	0.00	0.00
8,400.0	86.61	89.84	3,798.1	-419.0	5,172.5	5,189.3	0.00	0.00	0.00
8,500.0	86.61	89.84	3,804.0	-418.7	5,272.3	5,288.8	0.00	0.00	0.00
8,600.0	86.61	89.84	3,809.9	-418.4	5,372.1	5,388.3	0.00	0.00	0.00
8,700.0	86.61	89.84	3,815.8	-418.1	5,471.9	5,487.9	0.00	0.00	0.00
8,800.0	86.61	89.84	3,821.7	-417.9	5,571.8	5,587.4	0.00	0.00	0.00
8,856.0	86.61	89.84	3,825.0	-417.7	5,627.7	5,643.2	0.00	0.00	0.00
TD at 8856.0									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SHL Hawk 9A Fed - plan misses target center by 3763.8usft at 7646.7usft MD (3753.6 TVD, -421.1 N, 4420.4 E) - Point	0.00	0.00	0.0	-585.5	4,643.0	642,717.57	558,319.77	32° 46' 0.671 N	104° 16' 41.106 W
FTP Hawk 9 Federal Co - plan misses target center by 19.8usft at 3673.3usft MD (3446.0 TVD, -413.4 N, 473.0 E) - Point	0.00	0.00	3,444.5	-433.0	470.9	642,870.04	554,147.69	32° 46' 2.199 N	104° 17' 29.968 W
BHL Hawk 9 Federal Co - plan hits target center - Point	0.00	0.00	3,825.0	-417.7	5,627.7	642,885.37	559,304.47	32° 46' 2.326 N	104° 16' 29.572 W

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
200.0	200.0	0.0	0.0	Nudge 2°/100'
550.0	549.1	-21.3	-1.9	EON HLD 7° Inc.
2,738.7	2,721.5	-287.0	-25.1	KOP BLD 12°/100'
3,423.5	3,302.8	-380.7	271.1	EOB HLD 55° Inc. 250'
3,673.5	3,446.2	-413.4	473.2	CONT BLD 12°/100'
3,946.7	3,535.0	-431.4	727.0	EOB HLD 86.61° Inc.
8,856.0	3,825.0	-417.7	5,627.7	TD at 8856.0

Hawk 9 Federal Com #2H

Surface- 17 1/2" hole 375'

13 3/8" 48# J-55

nStage 1	Slurry	Density	Yield	Mix H2O Gals./sk	# of Sacks	% Excess	Slurry Top
Lead							
Tail	Class C+1%PF1	14.8	1.34	6.307	420	100	Surface

Comments	20bbls Gel Spacer. 50 sacks of 11# Scavenger cement.	Cu/Ft per Lin /Ft 261
----------	---	-----------------------------

Intermediate- 12 1/4" hole 1,230'

9 5/8"-36#-J-55

Stage 1	Slurry	Density	Yield	Mix H2O Gals./sk	# of Sacks	% Excess	Slurry Top
Lead	Class C +4%PF20+1% PF1+0.125#/skPF29+.4%PF 45	13.5	1.72	9.102	250	100	Surface
Tail	Class C+.1%PF1	14.8	1.34	6.307	200	100	1,800'

Comments	20bbls Gel Spacer. 50 sacks of 11# Scavenger cement.	Cu/Ft per lin/Ft 385.23
----------	---	----------------------------------

Production-8,856' 7"-26#-L-80

LT&C and BTC (3,725') XO 5 1/2"

17# L-80 BTC (5,131')

Stage 1	Slurry	Density	Yield	Mix H2O Gals./sk	# of Sacks	% Excess	Slurry Top
Lead	35/65 Perlite/C 5% PF44+6%PF20+.2%PF13+3ppsPF 42+.4ppsPF45+.125ppsPF29	12.9	1.82	9.21	200	35	Surface
Tail	PVL+1.3%PF44(BWOW)+5%PF1 74+.5%PF506+0.1%PF153+.4%PF 45	13	1.48	7.57	1470	35	2,500'

Hawk9 Federal Com #2H

Comments	Cu/Ft per lin/Ft
20bbls Gel Spacer; 50 sacks of 11# Scavenger cement.	2237.02

Prior to any cement job it is Mack Energy policy to circulate bottoms up 1 time before commencing with cement operations. On wells where hole conditions have been an issue during the drilling and reaming process the number of circulations needs to increase to a minimum of 2 times around.

All production cement figured with an additional 10% for washout unless otherwise noted. Flush is figured with a 40' shoe joint. Do not displace more than 2bbls over calculated flush without prior approval.

Redwood Operating LLC Call List, Eddy County

Artesia (575)	Cellular	Office
Jim Krogman.....	703-7385.....	748-1288
Emilio Martinez.....	703-5231.....	748-1288

Agency Call List (575)**Artesia**

State Police.....	746-2703
City Police.....	746-2703
Sheriff's Office.....	746-9888
Ambulance.....	911
Fire Department.....	746-2701
LEPC (Local Emergency Planning Committee).....	746-2122
NMOCD.....	748-1283

Carlshad

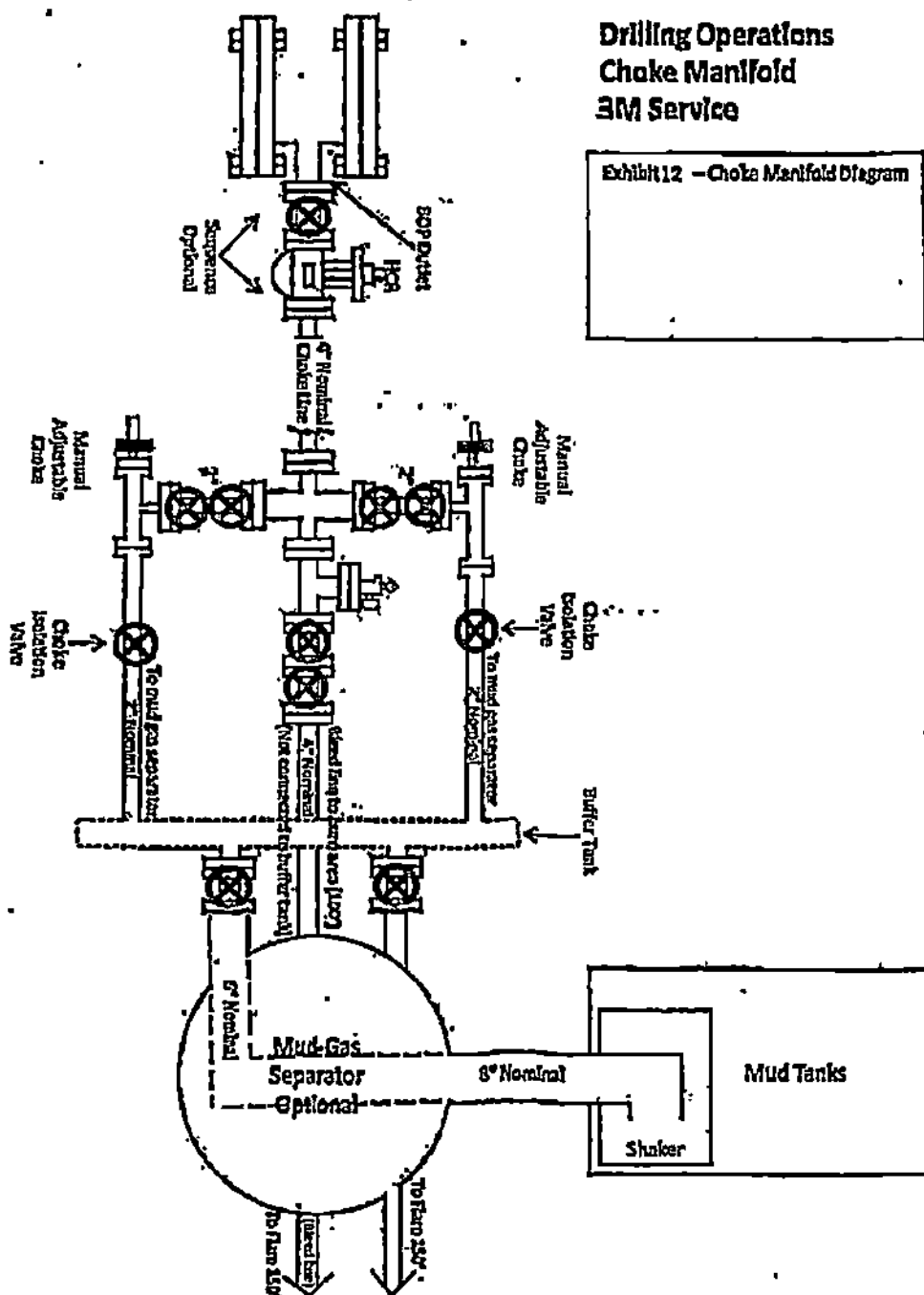
State Police.....	885-3137
City Police.....	885-2111
Sheriff's Office.....	887-7551
Ambulance.....	911
Fire Department.....	885-2111
LEPC (Local Emergency Planning Committee).....	887-3798
Bureau of Land Management.....	887-6544
New Mexico Emergency Response Commission.....	(505)476-9690
24 Hour.....	(505)827-9126
National Emergency Response Center (Washington).....	(800)424-8802

Emergency Services

Boots & Coots IWC.....	1-800-256-9688 or (281)931-8884
Cudd pressure Control.....	(915)699-0139 or (915)563-3356
Halliburton.....	746-2757
Par Five.....	748-9539
Flight For Life-Lubbock, TX.....	(806)743-9911
Aerocare-Lubbock, TX.....	(806)747-8923
Med Flight Air Amb-Albuquerque, NM.....	(505)842-4433
Lifeguard Air Med Svc. Albuquerque, NM.....	(505)272-3115

Drilling Operations Choke Manifold 3M Service

Exhibit 12 - Choke Manifold Diagram



Casing Design Well: Hawk 3 Federal Corn #2

String Size & Function: 13 3/8 in surface 5 intermediate intermediate

Total Depth: 375 ft

Pressure Gradient for Calculations (While drilling)

Mud weight, collapse: 8.6 #/gal Safety Factor Collapse: 1.125

Mud weight, burst: 8.6 #/gal Safety Factor Burst: 1.25

Mud weight for joint strength: 8.6 #/gal Safety Factor Joint Strength: 1.8

BHP @ TD for: collapse: 187.2 psi Burst: 187.2 psi Joint strength: 187.2 psi

Partially evacuated hole? Pressure gradient remaining: 10 #/gal

Max. Shut in surface pressure: 500 psi

1st segment	375 ft to 0 ft	Make up Torque ft-lbs	Total ft =
O.D.	Weight	Grade	Threads opt. min. mx.
13.375 inches	48 #/ft	H-40/J-55 ST&C	3,220 2,420 4,030
Collapse Resistance	Internal Yield	Joint Strength	Body Yield Drift
740 psi	2,370 psi	433,000 #	744,000 # 12,559

2nd segment	0 ft to 0 ft	Make up Torque ft-lbs	Total ft =
O.D.	Weight	Grade	Threads opt. min. mx.
inches	#/ft		
Collapse Resistance	Internal Yield	Joint Strength	Body Yield Drift
psi	psi	,000 #	,000 #

3rd segment	0 ft to 0 ft	Make up Torque ft-lbs	Total ft =
O.D.	Weight	Grade	Threads opt. min. mx.
inches	#/ft		
Collapse Resistance	Internal Yield	Joint Strength	Body Yield Drift
psi	psi	,000 #	,000 #

4th segment	0 ft to 0 ft	Make up Torque ft-lbs	Total ft =
O.D.	Weight	Grade	Threads opt. min. mx.
inches	#/ft		
Collapse Resistance	Internal Yield	Joint Strength	Body Yield Drift
psi	psi	,000 #	,000 #

5th segment	0 ft to 0 ft	Make up Torque ft-lbs	Total ft =
O.D.	Weight	Grade	Threads opt. min. mx.
inches	#/ft		
Collapse Resistance	Internal Yield	Joint Strength	Body Yield Drift
psi	psi	,000 #	,000 #

6th segment	0 ft to 0 ft	Make up Torque ft-lbs	Total ft =
O.D.	Weight	Grade	Threads opt. min. mx.
inches	#/ft		
Collapse Resistance	Internal Yield	Joint Strength	Body Yield Drift
psi	psi	,000 #	,000 #

Select	1st segment bottom	375	S.F.	Actual	Desire
			collapse	3.952991	>= 1.125
			burst-b	4.667192	>= 1.25
			burst-l	4.74	
	375 ft to 0 ft				
	13.375 36 H-40/J-55 ST&C				
	Top of segment 1 (ft)	0	S.F.	Actual	Desire
Select	2nd segment from bottom		collapse	#DIV/0!	>= 1.125
			burst-b	0	>= 1.25
			burst-l	0	
	0 ft to 0 ft		Joint strength	28.18715	>= 1.8
	0 0 0 0				

Casing Design Well: Bayview Federal Com #2H

String Size & Function: 95/8 in surface Intermediate X

Total Depth: 1230 ft TVD: 1230 ft

Pressure Gradient for Calculations (While drilling)

Mud weight, collapse: 10 #/gal Safety Factor Collapse: 1.125

Mud weight, burst: 10 #/gal Safety Factor Burst: 1.125

Mud weight for joint strength: 10 #/gal Safety Factor Joint Strength: 1.8

BHP @ TD for: collapse: 639.6 psi Burst: 639.6 psi Joint strength: 639.6 psi

Partially evacuated hole? Pressure gradient remaining: 10 #/gal

Max. Shut In surface pressure: 500 psi

1st segment	1230 ft to	0 ft	Make up Torque ft-lbs			Total ft =
O.D.	Weight	Grade	Threads	opt.	min.	mx.
9.625 inches	86 #/ft	J-55	ST&C		3,940	2,960
Collapse Resistance	Internal Yield	Joint Strength	Body Yield	Drift		
2,020 psi	3,520 psi	394,000 #	564,000 #	5,785		

2nd segment	ft to	ft	Make up Torque ft-lbs			Total ft =
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength	Body Yield	Drift		
psi	psi	,000 #	,000 #			

3rd segment	0 ft to	0 ft	Make up Torque ft-lbs			Total ft =
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength	Body Yield	Drift		
psi	psi	,000 #	,000 #			

4th segment	0 ft to	0 ft	Make up Torque ft-lbs			Total ft =
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength	Body Yield	Drift		
psi	psi	,000 #	,000 #			

5th segment	0 ft to	0 ft	Make up Torque ft-lbs			Total ft =
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength	Body Yield	Drift		
psi	psi	,000 #	,000 #			

6th segment	0 ft to	0 ft	Make up Torque ft-lbs			Total ft =
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength	Body Yield	Drift		
psi	psi	,000 #	,000 #			

Select	1st segment bottom				1230	S.F.	Actual	Desire
						collapse	3.158224	>= 1.125
	1230 ft	to	0 ft			burst-b	7.04	>= 1.25
	9.625	0	J-65	ST&C		burst-l	7.04	
	Top of segment 1 (ft)				0	S.F.	Actual	Desire
Select	2nd segment from bottom					collapse	#DIV/0!	>= 1.125
						burst-b	0	>= 1.25
	0 ft	to	0 ft			burst-l	0	
	0	0	0	0		joint strength	10.50522	>= 1.8

Casing Design Well: Bayk 9 Federal Com #21String Size & Function: 5 1/2" x 2" In Production XTotal Depth: 8858 ft TVD: 3825 ft

Pressure Gradient for Calculations (While drilling)

Mud weight, collapse: 10.5 #/gal Safety Factor Collapse: 1.125Mud weight, burst: 10.5 #/gal Safety Factor Burst: 1.125Mud weight for joint strength: 10.5 #/gal Safety Factor Joint Strength: 1.6BHP @ TD for: collapse: 2048.67 psi Burst: 2048.67 psi joint strength: 2048.67 psiPartially evacuated hole? Pressure gradient remaining: 10 #/galMax. Shut In surface pressure: 1000 psi

1st segment	8858 ft. to		3725 ft.		Make up Torque ft-lbs			Total ft =
O.D.	Weight	Grade	Threads	opt.	min.	mx.		
5.5 inches	12 #/ft	L-80	BTC	3410	2560	4260	6131	
Collapse Resistance	Internal Yield	Joint Strength	Body Yield	Drift				
6,290	7,740 psi	534,000 #	557,000 #	4767				

2nd segment	3725 ft to 2650 ft		Make up Torque ft-lbs			Total ft = 1075
O.D.	Weight	Grade	Threads	opt.	min.	mx.
7 inches	26 #/ft	L-80	BTC	5110	3830	6390
Collapse Resistance	Internal Yield	Joint Strength	Body Yield	Drift		
6,410 psi	7,240 psi	511,000 #	604,000 #	6187		

3rd segment	2650 ft	to	0 ft	Make up Torque ft-lbs			Total ft =
O.D.	Weight		Grade	Threads	opt.	min.	mx.
7 inches	26 #/ft		L-80	LT&C	5110	3830	6390
Collapse Resistance	Internal Yield		Joint Strength	Body Yield		Drift	
6,410 psi	7,240 psi		511,000 #	604,000 #		6151	

4th segment	0 ft to 0 ft		Make up Torque ft-lbs			Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength	Body Yield	Drift		
psi	psi	,000 #	,000 #			

5th segment	0 ft to 0 ft		Make up Torque ft-lbs			Total ft = 0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
Inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength	Body Yield		Drift	
psi	psi	,000 #	,000 #			

6th segment	0 ft to 0 ft		Make up Torque ft-lbs			Total ft =
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength		Body Yield	Drift	
(psi)	(psi)	,000 #		,000 #		

Select	1st segment bottom		8858	S.F.	Actual	Desire	
				collapse	3.070285	>= 1.125	
8858 ft to 3725 ft				burst-b	2.704548	>= 1.25	
5.5 28 L-80 BTC				burst-t	2.630662		
	Top of segment 1 (ft)			3725	S.F.	Actual	Desire
Select	2nd segment from bottom			collapse	2.607084	>= 1.125	
				burst-b	2.461003	>= 1.25	
3725 ft to 2650 ft				burst-t	2.447054		
7 28 L-80 BTC				Int strength	4.598035	>= 1.6	

Top of segment 2 (ft)				2650	S.F.	Actual	Desire
Select	3rd segment from bottom				collapse	3.608280	>= 1.125
					burst-b	2.447064	>= 1.25
					burst-t	2.413333	
					jnt strength	5.266818	>= 1.8
2650 ft to 0 ft							
7 26 L-80 LT&C							
Top of segment 3 (ft)				0	S.F.	Actual	Desire
Select	4th segment from bottom				collapse	#DIV/0!	>= 1.125
					burst-b	0	>= 1.25
					burst-t	0	
					jnt strength	5.26662	>= 1.8
0 ft to 0 ft							
0 0 0 0							
Top of segment 4 (ft)					S.F.	Actual	Desire
Select	5th segment from bottom				collapse	#DIV/0!	>= 1.125
					burst-b	0	>= 1.25
					burst-t	0	
					jnt strength	0	>= 1.8
0 ft to 0 ft							
0 0 0 0							
Top of segment 5 (ft)					S.F.	Actual	Desire
Select	6th segment from bottom				collapse	#DIV/0!	>= 1.125
					burst-b	0	>= 1.25
					burst-t	0	
					jnt strength	0	>= 1.8
0 ft to 0 ft							
0 0 0 0							
Top of segment 6 (ft)					jnt strength		>= 1.8

use in collapse calculations across different pressured formations

Three gradient pressure function				
Depth of evaluation:	1,200 ft	518	psi @	1,200 ft
Top of salt:	2,400 ft	fx #1	518	
Base of salt:	3,200 ft	fx #2	900	
TD of intermediate:	4,800 ft	fx #3	540	
Pressure gradient to be used above each top to be used as a function of depth. ex. psi/ft				
fx #1	fx #2	fx #3		
0.43	0.75	0.45		

- 1) Calculate neutral point for buckling with temperature affects computed also
- 2) Surface burst calculations & kick tolerance in surface pressure for burst
- 3) Do a comparison test to determine which value is lower joint strength or body yield to use in tensile strength calculations
- 4) Raise joint strength safety factor up to next level on page #2
- 5) Sour service what pipe can be used with proper degrading of strength factors and as function of temp

Adjust for best combination of safety factors

S.F. Collapse bottom of segment:	Secondary
S.F. Collapse top of segment:	2.95023
S.F. Burst bottom of segment:	
S.F. Burst top of segment:	
S.F. Joint strength bottom of segment:	473.389
S.F. Joint strength top of segment:	
S.F. Body yield strength bottom of segment:	556.022
S.F. Body yield strength top of segment:	5.40276

Collapse calculations for 1st segment - casing evacuated

Buoyancy factor collapse:	0.84241	
calculations for bottom of segment @	3825 ft	
hydrostatic pressure collapse - backside:	2048.67 psi	
Axial load @ bottom of section	0 lbs	previous segments
Axial load factor:	0	load/(pipe body yield strength)
Collapse strength reduction factor:	1	Messrs, Westcott, Dunlop, Kemler, 1940
Adjusted collapse rating of segment:	6290 psi	
Actual safety factor	3.07028	adjusted casing rating / actual pressure

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

COMMENTS

Action 36651

COMMENTS

Operator: Redwood Operating LLC PO Box 1370 Artesia, NM 88211370	OGRID: 330211
	Action Number: 36651
	Action Type: [C-103] NOI Change of Plans (C-103A)

COMMENTS

Created By	Comment	Comment Date
jagarcia	Accepted for record	7/22/2021

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720

District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720

District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170

District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 36651

CONDITIONS

Operator: Redwood Operating LLC PO Box 1370 Artesia, NM 882111370	OGRID: 330211
	Action Number: 36651
	Action Type: [C-103] NOI Change of Plans (C-103A)

CONDITIONS

Created By	Condition	Condition Date
jagarcia	None	7/22/2021