

RCVD 6/18/2020 - DISTRICT I

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

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

Form C-104
Revised August 1, 2011

Submit one copy to appropriate District Office

AMENDED REPORT

I. REQUEST FOR ALLOWABLE AND AUTHORIZATION TO TRANSPORT

¹ Operator name and Address COG Operating LLC 2208 W. Main Street Artesia, NM 88210		² OGRID Number 229137
		³ Reason for Filing Code/ Effective Date RT
⁴ API Number 30-025-45828	⁵ Pool Name JENNINGS; UPPER BONE SPRING SHALE	⁶ Pool Code 97838
⁷ Property Code 325390	⁸ Property Name Harrier Federal Com	⁹ Well Number 102H

II. ¹⁰ Surface Location

Ul or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South Line	Feet from the	East/West line	County
M	2	26S	32E		330	South	750	West	Lea

¹¹ Bottom Hole Location

Ul or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South Line	Feet from the	East/West line	County
D	35	25S	32E		51	North	607	West	Lea
¹² Lse Code F	¹³ Producing Method Code	¹⁴ Gas Connection Date	¹⁵ C-129 Permit Number		¹⁶ C-129 Effective Date		¹⁷ C-129 Expiration Date		

III. Oil and Gas Transporters

¹⁸ Transporter OGRID	¹⁹ Transporter Name and Address	²⁰ O/G/W
	ACC	O
298751	Lucid 3100 McKinnon Ste 800 Dallas, TX 75201	G
278421	Holly Refining and Marketing PO Box 159 Artesia, NM 88210	O

IV. Well Completion Data

²¹ Spud Date	²² Ready Date	²³ TD	²⁴ PBTD	²⁵ Perforations	²⁶ DHC, MC
8/4/19	5/16/20	19,312'	19,230	9,325-19,132'	
²⁷ Hole Size	²⁸ Casing & Tubing Size	²⁹ Depth Set	³⁰ Sacks Cement		
17 1/2"	13 3/8"	903'	458		
12 1/4"	9 5/8"	4,581'	960		
8 3/4"	5 1/2"	19,297'	4195		
	2 7/8"	8,228'			

V. Well Test Data

³¹ Date New Oil	³² Gas Delivery Date	³³ Test Date	³⁴ Test Length	³⁵ Tbg. Pressure	³⁶ Csg. Pressure
³⁷ Choke Size	³⁸ Oil	³⁹ Water	⁴⁰ Gas	⁴¹ Test Method	

⁴² I hereby certify that the rules of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief. Signature: <i>Amanda Avery</i>	OIL CONSERVATION DIVISION Approved by: <i>Patricia Martinez</i>
Printed name: Amanda Avery	Title: LM II
Title: Regulatory Analyst	Approval Date: 6/26/2020
E-mail Address:	RT EXPIRES 8/16/2020
Date: 6/18/2020	
Phone: 575-748-6962	

DISTRICT I
1625 N. FRENCH DR., HOBBS, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

DISTRICT II
511 S. FIRST ST., ARTESIA, NM 88210
Phone: (575) 746-1283 Fax: (575) 746-9720

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) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 SOUTH ST. FRANCIS DR.
Santa Fe, New Mexico 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

AMENDED REPORT
As Drilled

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-025-45828	Pool Code 97838	Pool Name Jennings; Upper Bone Spring Shale <i>KZ</i>
Property Code 325390	Property Name HARRIER FEDERAL COM	
OGRID No. 229137	Operator Name COG OPERATING, LLC	Well Number 102H
		Elevation 3247.3'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	2	26-S	32-E		330	SOUTH	750	WEST	LEA

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	35	25-S	32-E		51	NORTH	607	WEST	LEA

Dedicated Acres 640	Joint or Infill	Consolidation Code	Order No.
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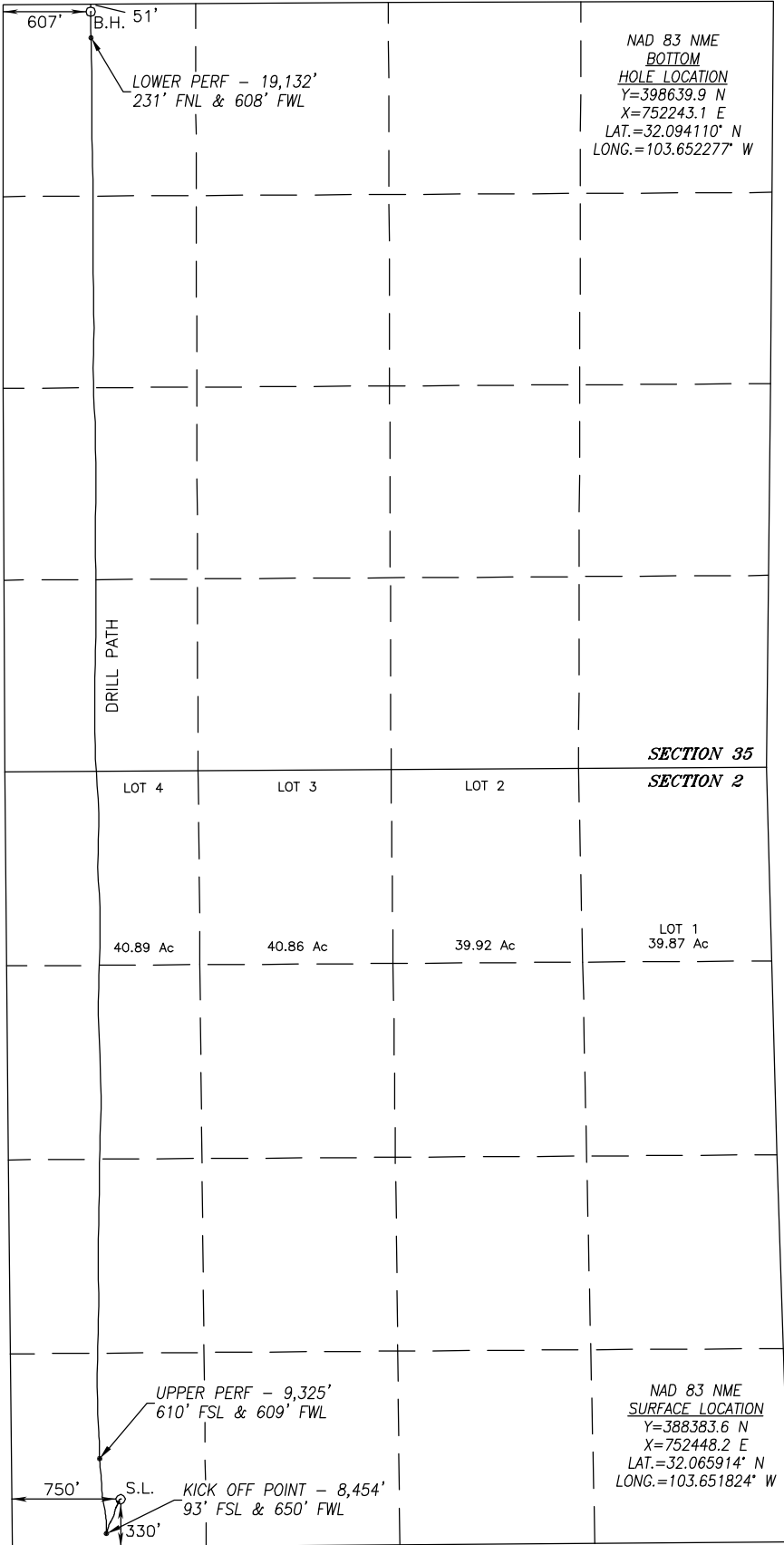
NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

SEE PAGE 2

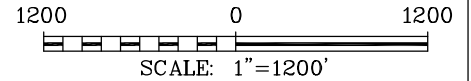
PAGE 1 OF 2

W.O. #20-576 DRAWN BY: WN

Property Code 325390	Property Name HARRIER FEDERAL COM	Well Number 102H
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 3247.3'



SURFACE INFO AND BOREPATH SHOWN HEREON IS BASED ON DIRECTIONAL SURVEY REPORT PROVIDED BY COG OPERATING, LLC FOR THE HARRIER FEDERAL COM #102H SUPPLIED TO HARCROW SURVEYING, LLC ON APRIL 14, 2020



OPERATOR CERTIFICATION

I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Amanda Avery 6/18/20

Signature Date

Amanda Avery

Printed Name

aavery@concho.com

E-mail Address

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

DEC. 12, 2018/NOV. 15, 2019

Date of Survey/Date of Geographic Survey

Signature & Seal of Professional Surveyor



Chad Harcrow 4/15/20

Certificate No. CHAD HARCROW 17777

Intent As Drilled

API #
30-025-45828

Operator Name:	Property Name:	Well Number
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Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
Latitude					Longitude				NAD

First Take Point (FTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
Latitude					Longitude				NAD

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
Latitude					Longitude				NAD

Is this well the defining well for the Horizontal Spacing Unit? No

Is this well an infill well? Yes

If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API #
30-025-45832

Operator Name: COG Operating LLC	Property Name: Harrier Federal Com	Well Number 301H
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NORTHERN DELAWARE BASIN

LEA COUNTY, NM

BULLDOG

HARRIER FED COM #102H

OWB

Design: AWP

Standard Survey Report

15 November, 2019

Survey Report

Company: NORTHERN DELAWARE BASIN	Local Co-ordinate Reference: Well HARRIER FED COM #102H
Project: LEA COUNTY, NM	TVD Reference: RKB=3247.3+31' @ 3278.3usft (P 106)
Site: BULLDOG	MD Reference: RKB=3247.3+31' @ 3278.3usft (P 106)
Well: HARRIER FED COM #102H	North Reference: Grid
Wellbore: OWB	Survey Calculation Method: Minimum Curvature
Design: AWP	Database: EDM_Users

Project LEA COUNTY, NM	
Map System: US State Plane 1927 (Exact solution)	System Datum: Mean Sea Level
Geo Datum: NAD 1927 (NADCON CONUS)	
Map Zone: New Mexico East 3001	

Site BULLDOG		
Site Position:	Northing: 398,637.10 usft	Latitude: 32° 5' 36.820 N
From: Map	Easting: 741,887.40 usft	Longitude: 103° 33' 8.116 W
Position Uncertainty: 0.0 usft	Slot Radius: 13-3/16 "	Grid Convergence: 0.42 °

Well HARRIER FED COM #102H, DB-ACTIVE		
Well Position +N/-S 0.0 usft	Northing: 388,326.20 usft	Latitude: 32° 3' 56.841 N
+E/-W 0.0 usft	Easting: 711,261.50 usft	Longitude: 103° 39' 4.869 W
Position Uncertainty 3.0 usft	Wellhead Elevation: usft	Ground Level: 3,247.3 usft

Wellbore OWB					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	WMM2015	10/18/2018	6.86	59.87	47,684.24814005

Design AWP					
Audit Notes:					
Version: 1.0	Phase: ACTUAL	Tie On Depth: 0.0			
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	358.82	

Survey Program		Date 11/15/2019
From (usft)	To (usft)	Survey (Wellbore)
100.0	8,355.0	GYRO-INTER (OWB)
8,457.0	19,312.0	MWD-CURVE/LATERAL (OWB)
		Tool Name
		Standard Keeper 104
		MWD+IFR1+FDIR
		Description
		Standard Wireline Keeper ver 1.0.4
		OWSG MWD + IFR1 + FDIR 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)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
100.0	0.81	247.37	100.0	-0.3	-0.7	-0.3	0.81	0.81	0.00	
125.0	0.76	240.97	125.0	-0.4	-1.0	-0.4	0.40	-0.20	-25.60	
150.0	0.67	238.26	150.0	-0.6	-1.2	-0.6	0.38	-0.36	-10.84	
175.0	0.65	242.66	175.0	-0.7	-1.5	-0.7	0.22	-0.08	17.60	
200.0	0.84	241.31	200.0	-0.9	-1.8	-0.8	0.76	0.76	-5.40	
225.0	0.72	246.91	225.0	-1.0	-2.1	-1.0	0.57	-0.48	22.40	
250.0	0.57	245.25	250.0	-1.1	-2.3	-1.1	0.60	-0.60	-6.64	
275.0	0.58	219.86	275.0	-1.3	-2.5	-1.2	1.01	0.04	-101.56	
300.0	0.39	230.80	300.0	-1.4	-2.7	-1.4	0.84	-0.76	43.76	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well HARRIER FED COM #102H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3247.3+31' @ 3278.3usft (P 106)
Site:	BULLDOG	MD Reference:	RKB=3247.3+31' @ 3278.3usft (P 106)
Well:	HARRIER FED COM #102H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	Database:	EDM_Users

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)
325.0	0.69	259.81	325.0	-1.5	-2.9	-1.5	1.59	1.20	116.04
350.0	0.48	277.58	350.0	-1.5	-3.1	-1.5	1.10	-0.84	71.08
375.0	0.61	253.73	375.0	-1.6	-3.4	-1.5	1.03	0.52	-95.40
400.0	0.52	243.62	400.0	-1.6	-3.6	-1.6	0.54	-0.36	-40.44
425.0	0.87	238.22	425.0	-1.8	-3.9	-1.7	1.42	1.40	-21.60
450.0	0.61	240.33	450.0	-2.0	-4.1	-1.9	1.05	-1.04	8.44
475.0	0.54	255.57	475.0	-2.1	-4.4	-2.0	0.67	-0.28	60.96
500.0	0.54	245.87	500.0	-2.1	-4.6	-2.0	0.37	0.00	-38.80
525.0	0.54	254.22	525.0	-2.2	-4.8	-2.1	0.31	0.00	33.40
550.0	0.63	261.02	550.0	-2.3	-5.1	-2.2	0.45	0.36	27.20
575.0	0.75	251.63	575.0	-2.3	-5.3	-2.2	0.66	0.48	-37.56
600.0	0.57	253.41	600.0	-2.4	-5.6	-2.3	0.72	-0.72	7.12
625.0	0.56	248.38	625.0	-2.5	-5.9	-2.4	0.20	-0.04	-20.12
650.0	0.54	253.76	650.0	-2.6	-6.1	-2.5	0.22	-0.08	21.52
675.0	0.56	258.76	675.0	-2.6	-6.3	-2.5	0.21	0.08	20.00
700.0	0.66	252.20	700.0	-2.7	-6.6	-2.6	0.49	0.40	-26.24
725.0	0.49	229.13	725.0	-2.8	-6.8	-2.7	1.14	-0.68	-92.28
750.0	0.55	234.03	750.0	-3.0	-7.0	-2.8	0.30	0.24	19.60
775.0	0.56	237.15	775.0	-3.1	-7.2	-2.9	0.13	0.04	12.48
800.0	0.12	276.46	800.0	-3.2	-7.3	-3.0	1.89	-1.76	157.24
825.0	0.64	247.19	825.0	-3.2	-7.5	-3.1	2.15	2.08	-117.08
850.0	0.72	220.26	850.0	-3.4	-7.7	-3.2	1.30	0.32	-107.72
875.0	0.48	231.03	875.0	-3.6	-7.9	-3.4	1.06	-0.96	43.08
900.0	0.66	257.31	900.0	-3.7	-8.1	-3.5	1.25	0.72	105.12
925.0	1.07	287.50	924.9	-3.6	-8.5	-3.5	2.40	1.64	120.76
950.0	1.55	291.23	949.9	-3.4	-9.0	-3.3	1.95	1.92	14.92
975.0	1.36	284.73	974.9	-3.2	-9.6	-3.0	1.01	-0.76	-26.00
1,000.0	1.37	288.99	999.9	-3.1	-10.2	-2.9	0.41	0.04	17.04
1,025.0	1.28	287.39	1,024.9	-2.9	-10.7	-2.7	0.39	-0.36	-6.40
1,050.0	1.03	270.93	1,049.9	-2.8	-11.2	-2.6	1.65	-1.00	-65.84
1,075.0	0.93	225.57	1,074.9	-2.9	-11.6	-2.7	3.05	-0.40	-181.44
1,100.0	1.28	186.76	1,099.9	-3.4	-11.7	-3.1	3.22	1.40	-155.24
1,125.0	1.48	176.86	1,124.9	-4.0	-11.8	-3.7	1.24	0.80	-39.60
1,150.0	1.79	172.25	1,149.9	-4.7	-11.7	-4.4	1.35	1.24	-18.44
1,175.0	2.01	170.42	1,174.9	-5.5	-11.6	-5.2	0.91	0.88	-7.32
1,200.0	1.69	154.48	1,199.9	-6.3	-11.3	-6.0	2.41	-1.28	-63.76
1,225.0	2.37	171.07	1,224.8	-7.1	-11.1	-6.9	3.57	2.72	66.36
1,250.0	2.32	171.06	1,249.8	-8.1	-10.9	-7.9	0.20	-0.20	-0.04
1,275.0	2.34	169.96	1,274.8	-9.1	-10.8	-8.9	0.20	0.08	-4.40
1,300.0	2.47	168.84	1,299.8	-10.1	-10.6	-9.9	0.55	0.52	-4.48
1,325.0	2.14	164.33	1,324.8	-11.1	-10.3	-10.9	1.51	-1.32	-18.04
1,350.0	2.13	165.29	1,349.7	-12.0	-10.1	-11.8	0.15	-0.04	3.84
1,375.0	2.34	172.11	1,374.7	-13.0	-9.9	-12.8	1.35	0.84	27.28

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well HARRIER FED COM #102H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3247.3+31' @ 3278.3usft (P 106)
Site:	BULLDOG	MD Reference:	RKB=3247.3+31' @ 3278.3usft (P 106)
Well:	HARRIER FED COM #102H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	Database:	EDM_Users

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)	
1,400.0	2.29	174.33	1,399.7	-14.0	-9.8	-13.8	0.41	-0.20	8.88	
1,425.0	2.20	172.49	1,424.7	-14.9	-9.7	-14.7	0.46	-0.36	-7.36	
1,450.0	1.56	184.07	1,449.7	-15.8	-9.6	-15.6	2.96	-2.56	46.32	
1,475.0	1.36	188.41	1,474.7	-16.4	-9.7	-16.2	0.91	-0.80	17.36	
1,500.0	1.24	193.16	1,499.7	-16.9	-9.8	-16.7	0.64	-0.48	19.00	
1,525.0	1.28	190.45	1,524.7	-17.5	-9.9	-17.3	0.29	0.16	-10.84	
1,550.0	1.08	186.39	1,549.6	-18.0	-10.0	-17.8	0.87	-0.80	-16.24	
1,575.0	1.67	200.91	1,574.6	-18.6	-10.2	-18.4	2.72	2.36	58.08	
1,600.0	1.15	195.16	1,599.6	-19.2	-10.4	-18.9	2.15	-2.08	-23.00	
1,625.0	1.31	200.93	1,624.6	-19.7	-10.5	-19.4	0.81	0.64	23.08	
1,650.0	1.18	196.43	1,649.6	-20.2	-10.7	-20.0	0.65	-0.52	-18.00	
1,675.0	1.22	202.79	1,674.6	-20.7	-10.9	-20.4	0.56	0.16	25.44	
1,700.0	0.82	202.05	1,699.6	-21.1	-11.0	-20.8	1.60	-1.60	-2.96	
1,725.0	0.66	230.33	1,724.6	-21.3	-11.2	-21.1	1.57	-0.64	113.12	
1,750.0	0.68	248.64	1,749.6	-21.5	-11.5	-21.2	0.86	0.08	73.24	
1,775.0	0.84	244.06	1,774.6	-21.6	-11.8	-21.4	0.68	0.64	-18.32	
1,800.0	0.40	310.98	1,799.6	-21.6	-12.0	-21.4	3.10	-1.76	267.68	
1,825.0	0.79	244.82	1,824.6	-21.7	-12.2	-21.4	2.91	1.56	-264.64	
1,850.0	0.65	255.49	1,849.6	-21.8	-12.5	-21.5	0.77	-0.56	42.68	
1,875.0	0.73	250.82	1,874.6	-21.9	-12.8	-21.6	0.39	0.32	-18.68	
1,900.0	0.71	253.55	1,899.6	-21.9	-13.1	-21.7	0.16	-0.08	10.92	
1,925.0	0.79	254.22	1,924.6	-22.0	-13.4	-21.8	0.32	0.32	2.68	
1,950.0	0.83	253.52	1,949.6	-22.1	-13.8	-21.9	0.16	0.16	-2.80	
1,975.0	0.77	256.16	1,974.6	-22.2	-14.1	-21.9	0.28	-0.24	10.56	
2,000.0	0.78	253.50	1,999.6	-22.3	-14.4	-22.0	0.15	0.04	-10.64	
2,025.0	0.80	256.27	2,024.6	-22.4	-14.8	-22.1	0.17	0.08	11.08	
2,050.0	0.76	254.12	2,049.6	-22.5	-15.1	-22.2	0.20	-0.16	-8.60	
2,075.0	0.74	257.28	2,074.6	-22.6	-15.4	-22.3	0.18	-0.08	12.64	
2,100.0	0.61	257.08	2,099.6	-22.6	-15.7	-22.3	0.52	-0.52	-0.80	
2,125.0	0.57	259.20	2,124.6	-22.7	-15.9	-22.4	0.18	-0.16	8.48	
2,150.0	0.51	274.06	2,149.6	-22.7	-16.2	-22.4	0.61	-0.24	59.44	
2,175.0	0.40	268.15	2,174.6	-22.7	-16.4	-22.4	0.48	-0.44	-23.64	
2,200.0	0.35	354.25	2,199.6	-22.6	-16.5	-22.3	2.05	-0.20	344.40	
2,225.0	0.60	267.83	2,224.6	-22.6	-16.6	-22.2	2.70	1.00	-345.68	
2,250.0	0.39	271.18	2,249.6	-22.6	-16.8	-22.2	0.85	-0.84	13.40	
2,275.0	0.47	271.85	2,274.6	-22.6	-17.0	-22.2	0.32	0.32	2.68	
2,300.0	0.54	267.55	2,299.6	-22.6	-17.2	-22.2	0.32	0.28	-17.20	
2,325.0	0.84	271.76	2,324.6	-22.6	-17.5	-22.2	1.22	1.20	16.84	
2,350.0	0.48	280.51	2,349.6	-22.5	-17.8	-22.2	1.49	-1.44	35.00	
2,375.0	0.53	276.03	2,374.6	-22.5	-18.0	-22.1	0.25	0.20	-17.92	
2,400.0	0.46	274.28	2,399.6	-22.5	-18.3	-22.1	0.29	-0.28	-7.00	
2,425.0	1.04	271.22	2,424.6	-22.5	-18.6	-22.1	2.32	2.32	-12.24	
2,450.0	0.56	281.15	2,449.6	-22.4	-18.9	-22.0	1.99	-1.92	39.72	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well HARRIER FED COM #102H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3247.3+31' @ 3278.3usft (P 106)
Site:	BULLDOG	MD Reference:	RKB=3247.3+31' @ 3278.3usft (P 106)
Well:	HARRIER FED COM #102H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	Database:	EDM_Users

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)	
2,475.0	0.52	302.36	2,474.6	-22.4	-19.1	-22.0	0.81	-0.16	84.84	
2,500.0	0.73	287.31	2,499.6	-22.3	-19.4	-21.8	1.06	0.84	-60.20	
2,525.0	0.69	284.60	2,524.6	-22.2	-19.7	-21.8	0.21	-0.16	-10.84	
2,550.0	0.87	282.73	2,549.6	-22.1	-20.0	-21.7	0.73	0.72	-7.48	
2,575.0	0.79	274.99	2,574.6	-22.0	-20.4	-21.6	0.55	-0.32	-30.96	
2,600.0	0.73	288.50	2,599.6	-22.0	-20.7	-21.5	0.75	-0.24	54.04	
2,625.0	0.85	284.08	2,624.5	-21.9	-21.0	-21.4	0.54	0.48	-17.68	
2,650.0	0.92	290.12	2,649.5	-21.8	-21.4	-21.3	0.47	0.28	24.16	
2,675.0	0.96	278.61	2,674.5	-21.7	-21.8	-21.2	0.77	0.16	-46.04	
2,700.0	0.79	284.54	2,699.5	-21.6	-22.2	-21.1	0.77	-0.68	23.72	
2,725.0	1.19	301.70	2,724.5	-21.4	-22.6	-20.9	1.97	1.60	68.64	
2,750.0	0.81	297.02	2,749.5	-21.2	-22.9	-20.7	1.55	-1.52	-18.72	
2,775.0	0.86	311.78	2,774.5	-21.0	-23.2	-20.5	0.88	0.20	59.04	
2,800.0	0.96	316.23	2,799.5	-20.7	-23.5	-20.2	0.49	0.40	17.80	
2,825.0	0.94	323.62	2,824.5	-20.4	-23.8	-19.9	0.50	-0.08	29.56	
2,850.0	1.08	317.82	2,849.5	-20.0	-24.1	-19.5	0.69	0.56	-23.20	
2,875.0	0.85	321.90	2,874.5	-19.7	-24.3	-19.2	0.96	-0.92	16.32	
2,900.0	1.03	332.52	2,899.5	-19.4	-24.6	-18.9	1.00	0.72	42.48	
2,925.0	0.74	357.32	2,924.5	-19.0	-24.7	-18.5	1.90	-1.16	99.20	
2,950.0	0.88	29.14	2,949.5	-18.7	-24.6	-18.2	1.86	0.56	127.28	
2,975.0	0.98	50.52	2,974.5	-18.4	-24.3	-17.9	1.43	0.40	85.52	
3,000.0	1.09	33.44	2,999.5	-18.1	-24.0	-17.6	1.30	0.44	-68.32	
3,025.0	0.95	39.87	3,024.5	-17.7	-23.8	-17.2	0.72	-0.56	25.72	
3,050.0	0.97	41.50	3,049.5	-17.4	-23.5	-16.9	0.14	0.08	6.52	
3,075.0	0.64	41.89	3,074.5	-17.1	-23.3	-16.6	1.32	-1.32	1.56	
3,100.0	0.82	65.81	3,099.5	-16.9	-23.0	-16.5	1.40	0.72	95.68	
3,125.0	1.09	47.05	3,124.5	-16.7	-22.7	-16.2	1.64	1.08	-75.04	
3,150.0	1.10	55.87	3,149.5	-16.4	-22.3	-15.9	0.67	0.04	35.28	
3,175.0	1.12	64.99	3,174.5	-16.2	-21.9	-15.7	0.71	0.08	36.48	
3,200.0	1.26	60.01	3,199.5	-15.9	-21.4	-15.5	0.70	0.56	-19.92	
3,225.0	1.32	71.94	3,224.5	-15.7	-20.9	-15.3	1.10	0.24	47.72	
3,250.0	1.58	65.23	3,249.5	-15.5	-20.3	-15.0	1.24	1.04	-26.84	
3,275.0	1.41	74.55	3,274.4	-15.2	-19.7	-14.8	1.18	-0.68	37.28	
3,300.0	1.56	73.57	3,299.4	-15.1	-19.1	-14.7	0.61	0.60	-3.92	
3,325.0	1.57	71.38	3,324.4	-14.9	-18.4	-14.5	0.24	0.04	-8.76	
3,350.0	1.59	81.24	3,349.4	-14.7	-17.8	-14.3	1.09	0.08	39.44	
3,375.0	1.70	73.26	3,374.4	-14.5	-17.1	-14.2	1.02	0.44	-31.92	
3,400.0	1.66	77.60	3,399.4	-14.3	-16.3	-14.0	0.53	-0.16	17.36	
3,425.0	1.69	75.36	3,424.4	-14.2	-15.6	-13.9	0.29	0.12	-8.96	
3,450.0	1.54	79.37	3,449.4	-14.0	-15.0	-13.7	0.75	-0.60	16.04	
3,475.0	1.25	86.07	3,474.4	-13.9	-14.3	-13.6	1.33	-1.16	26.80	
3,500.0	1.31	98.32	3,499.4	-14.0	-13.8	-13.7	1.12	0.24	49.00	
3,525.0	1.12	106.95	3,524.4	-14.1	-13.3	-13.8	1.05	-0.76	34.52	
3,550.0	1.16	117.49	3,549.4	-14.3	-12.8	-14.0	0.85	0.16	42.16	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well HARRIER FED COM #102H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3247.3+31' @ 3278.3usft (P 106)
Site:	BULLDOG	MD Reference:	RKB=3247.3+31' @ 3278.3usft (P 106)
Well:	HARRIER FED COM #102H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	Database:	EDM_Users

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)
3,575.0	1.34	135.36	3,574.3	-14.6	-12.4	-14.3	1.71	0.72	71.48
3,600.0	1.30	129.60	3,599.3	-15.0	-12.0	-14.7	0.55	-0.16	-23.04
3,625.0	1.21	129.21	3,624.3	-15.3	-11.5	-15.1	0.36	-0.36	-1.56
3,650.0	1.17	129.25	3,649.3	-15.7	-11.1	-15.4	0.16	-0.16	0.16
3,675.0	0.89	137.93	3,674.3	-16.0	-10.8	-15.7	1.28	-1.12	34.72
3,700.0	0.70	183.27	3,699.3	-16.3	-10.7	-16.0	2.55	-0.76	181.36
3,725.0	0.97	226.62	3,724.3	-16.6	-10.9	-16.3	2.66	1.08	173.40
3,750.0	1.32	224.46	3,749.3	-16.9	-11.2	-16.7	1.41	1.40	-8.64
3,775.0	1.19	236.80	3,774.3	-17.3	-11.6	-17.0	1.20	-0.52	49.36
3,800.0	1.35	232.64	3,799.3	-17.6	-12.1	-17.3	0.74	0.64	-16.64
3,825.0	1.56	237.69	3,824.3	-17.9	-12.6	-17.7	0.98	0.84	20.20
3,850.0	0.77	230.80	3,849.3	-18.2	-13.0	-18.0	3.20	-3.16	-27.56
3,875.0	0.52	274.29	3,874.3	-18.3	-13.3	-18.0	2.13	-1.00	173.96
3,900.0	0.42	328.95	3,899.3	-18.2	-13.4	-18.0	1.76	-0.40	218.64
3,925.0	0.49	351.84	3,924.3	-18.0	-13.5	-17.8	0.77	0.28	91.56
3,950.0	0.56	346.78	3,949.3	-17.8	-13.5	-17.5	0.34	0.28	-20.24
3,975.0	0.53	21.52	3,974.3	-17.6	-13.5	-17.3	1.31	-0.12	138.96
4,000.0	0.42	37.07	3,999.3	-17.4	-13.4	-17.1	0.67	-0.44	62.20
4,025.0	0.24	20.42	4,024.3	-17.3	-13.3	-17.0	0.81	-0.72	-66.60
4,050.0	0.40	49.34	4,049.3	-17.2	-13.3	-16.9	0.89	0.64	115.68
4,075.0	0.68	38.63	4,074.3	-17.0	-13.1	-16.7	1.19	1.12	-42.84
4,100.0	0.47	106.33	4,099.3	-16.9	-12.9	-16.7	2.66	-0.84	270.80
4,125.0	0.72	45.16	4,124.3	-16.8	-12.7	-16.6	2.57	1.00	-244.68
4,150.0	0.44	70.83	4,149.3	-16.7	-12.5	-16.4	1.50	-1.12	102.68
4,175.0	0.66	79.12	4,174.3	-16.6	-12.3	-16.4	0.93	0.88	33.16
4,200.0	1.00	87.94	4,199.3	-16.6	-11.9	-16.4	1.45	1.36	35.28
4,225.0	0.71	98.61	4,224.3	-16.6	-11.5	-16.4	1.32	-1.16	42.68
4,250.0	1.32	117.48	4,249.3	-16.8	-11.1	-16.6	2.75	2.44	75.48
4,275.0	1.24	107.36	4,274.3	-17.0	-10.6	-16.8	0.96	-0.32	-40.48
4,300.0	1.41	113.50	4,299.3	-17.2	-10.1	-17.0	0.89	0.68	24.56
4,325.0	1.48	116.94	4,324.2	-17.5	-9.5	-17.3	0.45	0.28	13.76
4,350.0	1.89	115.68	4,349.2	-17.8	-8.8	-17.6	1.65	1.64	-5.04
4,375.0	1.33	100.49	4,374.2	-18.0	-8.2	-17.9	2.80	-2.24	-60.76
4,400.0	1.78	120.10	4,399.2	-18.3	-7.6	-18.1	2.76	1.80	78.44
4,425.0	1.44	134.02	4,424.2	-18.7	-7.0	-18.5	2.06	-1.36	55.68
4,450.0	0.93	171.26	4,449.2	-19.1	-6.7	-19.0	3.59	-2.04	148.96
4,475.0	1.07	224.94	4,474.2	-19.5	-6.9	-19.3	3.65	0.56	214.72
4,500.0	1.12	212.14	4,499.2	-19.8	-7.2	-19.7	1.00	0.20	-51.20
4,525.0	1.24	223.04	4,524.2	-20.2	-7.5	-20.1	1.02	0.48	43.60
4,550.0	1.20	220.63	4,549.2	-20.6	-7.8	-20.5	0.26	-0.16	-9.64
4,575.0	1.25	216.87	4,574.2	-21.1	-8.2	-20.9	0.38	0.20	-15.04
4,600.0	1.17	217.57	4,599.2	-21.5	-8.5	-21.3	0.33	-0.32	2.80
4,625.0	1.17	209.80	4,624.2	-21.9	-8.8	-21.7	0.63	0.00	-31.08

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well HARRIER FED COM #102H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3247.3+31' @ 3278.3usft (P 106)
Site:	BULLDOG	MD Reference:	RKB=3247.3+31' @ 3278.3usft (P 106)
Well:	HARRIER FED COM #102H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	Database:	EDM_Users

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)	
4,650.0	1.39	211.83	4,649.2	-22.4	-9.1	-22.2	0.90	0.88	8.12	
4,675.0	1.31	215.75	4,674.2	-22.9	-9.4	-22.7	0.49	-0.32	15.68	
4,700.0	1.29	222.53	4,699.1	-23.3	-9.8	-23.1	0.62	-0.08	27.12	
4,725.0	1.22	224.52	4,724.1	-23.7	-10.1	-23.5	0.33	-0.28	7.96	
4,750.0	1.13	224.36	4,749.1	-24.1	-10.5	-23.9	0.36	-0.36	-0.64	
4,775.0	1.25	221.23	4,774.1	-24.5	-10.8	-24.2	0.55	0.48	-12.52	
4,800.0	1.26	227.62	4,799.1	-24.8	-11.2	-24.6	0.56	0.04	25.56	
4,825.0	1.33	226.05	4,824.1	-25.2	-11.6	-25.0	0.31	0.28	-6.28	
4,850.0	1.27	227.07	4,849.1	-25.6	-12.0	-25.4	0.26	-0.24	4.08	
4,875.0	1.78	218.57	4,874.1	-26.1	-12.5	-25.9	2.23	2.04	-34.00	
4,900.0	1.33	226.32	4,899.1	-26.6	-12.9	-26.3	1.98	-1.80	31.00	
4,925.0	1.35	225.75	4,924.1	-27.0	-13.4	-26.7	0.10	0.08	-2.28	
4,950.0	1.33	225.67	4,949.1	-27.4	-13.8	-27.1	0.08	-0.08	-0.32	
4,975.0	1.37	235.34	4,974.1	-27.8	-14.2	-27.5	0.92	0.16	38.68	
5,000.0	1.13	189.33	4,999.1	-28.2	-14.5	-27.9	4.01	-0.96	-184.04	
5,025.0	1.30	225.53	5,024.1	-28.7	-14.8	-28.4	3.09	0.68	144.80	
5,050.0	1.29	226.47	5,049.1	-29.1	-15.2	-28.7	0.09	-0.04	3.76	
5,075.0	1.28	215.30	5,074.1	-29.5	-15.5	-29.2	1.00	-0.04	-44.68	
5,100.0	1.19	228.49	5,099.0	-29.9	-15.9	-29.5	1.19	-0.36	52.76	
5,125.0	1.45	225.73	5,124.0	-30.3	-16.3	-29.9	1.07	1.04	-11.04	
5,150.0	2.11	210.20	5,149.0	-30.9	-16.8	-30.5	3.25	2.64	-62.12	
5,175.0	2.69	215.30	5,174.0	-31.8	-17.3	-31.4	2.47	2.32	20.40	
5,200.0	3.07	209.58	5,199.0	-32.8	-18.0	-32.4	1.90	1.52	-22.88	
5,225.0	2.93	214.60	5,223.9	-33.9	-18.7	-33.5	1.19	-0.56	20.08	
5,250.0	2.97	213.18	5,248.9	-35.0	-19.4	-34.6	0.33	0.16	-5.68	
5,275.0	3.09	213.51	5,273.9	-36.1	-20.1	-35.7	0.49	0.48	1.32	
5,300.0	3.11	212.15	5,298.8	-37.2	-20.9	-36.8	0.30	0.08	-5.44	
5,325.0	3.10	211.00	5,323.8	-38.4	-21.6	-37.9	0.25	-0.04	-4.60	
5,350.0	3.07	205.92	5,348.8	-39.6	-22.2	-39.1	1.10	-0.12	-20.32	
5,375.0	3.14	210.51	5,373.7	-40.8	-22.9	-40.3	1.03	0.28	18.36	
5,400.0	3.31	209.85	5,398.7	-42.0	-23.6	-41.5	0.70	0.68	-2.64	
5,425.0	3.10	211.55	5,423.6	-43.2	-24.3	-42.7	0.92	-0.84	6.80	
5,450.0	3.21	209.84	5,448.6	-44.4	-25.0	-43.8	0.58	0.44	-6.84	
5,475.0	3.05	210.45	5,473.6	-45.6	-25.7	-45.0	0.65	-0.64	2.44	
5,500.0	3.04	205.57	5,498.5	-46.7	-26.3	-46.2	1.04	-0.04	-19.52	
5,525.0	3.05	209.62	5,523.5	-47.9	-26.9	-47.3	0.86	0.04	16.20	
5,550.0	3.04	208.57	5,548.5	-49.1	-27.6	-48.5	0.23	-0.04	-4.20	
5,575.0	2.97	209.34	5,573.4	-50.2	-28.2	-49.6	0.32	-0.28	3.08	
5,600.0	2.99	202.20	5,598.4	-51.4	-28.8	-50.8	1.49	0.08	-28.56	
5,625.0	2.86	199.72	5,623.4	-52.6	-29.2	-52.0	0.73	-0.52	-9.92	
5,650.0	2.84	208.30	5,648.3	-53.7	-29.7	-53.1	1.71	-0.08	34.32	
5,675.0	2.77	205.82	5,673.3	-54.8	-30.3	-54.2	0.56	-0.28	-9.92	
5,700.0	2.77	206.22	5,698.3	-55.9	-30.8	-55.2	0.08	0.00	1.60	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well HARRIER FED COM #102H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3247.3+31' @ 3278.3usft (P 106)
Site:	BULLDOG	MD Reference:	RKB=3247.3+31' @ 3278.3usft (P 106)
Well:	HARRIER FED COM #102H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	Database:	EDM_Users

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)	
5,725.0	2.78	209.66	5,723.2	-56.9	-31.4	-56.3	0.67	0.04	13.76	
5,750.0	2.70	199.22	5,748.2	-58.0	-31.9	-57.4	2.02	-0.32	-41.76	
5,775.0	2.78	205.47	5,773.2	-59.1	-32.3	-58.4	1.24	0.32	25.00	
5,800.0	2.68	204.88	5,798.2	-60.2	-32.8	-59.5	0.42	-0.40	-2.36	
5,825.0	2.71	205.21	5,823.1	-61.3	-33.3	-60.6	0.14	0.12	1.32	
5,850.0	2.64	202.51	5,848.1	-62.3	-33.8	-61.6	0.58	-0.28	-10.80	
5,875.0	2.76	203.19	5,873.1	-63.4	-34.3	-62.7	0.50	0.48	2.72	
5,900.0	2.84	201.55	5,898.0	-64.6	-34.7	-63.8	0.45	0.32	-6.56	
5,925.0	3.69	198.46	5,923.0	-65.9	-35.2	-65.2	3.47	3.40	-12.36	
5,950.0	4.08	196.79	5,947.9	-67.5	-35.7	-66.8	1.62	1.56	-6.68	
5,975.0	4.05	192.59	5,972.9	-69.2	-36.2	-68.5	1.20	-0.12	-16.80	
6,000.0	4.29	191.24	5,997.8	-71.0	-36.5	-70.2	1.04	0.96	-5.40	
6,025.0	4.35	194.23	6,022.7	-72.8	-37.0	-72.1	0.93	0.24	11.96	
6,050.0	4.27	193.96	6,047.7	-74.7	-37.4	-73.9	0.33	-0.32	-1.08	
6,075.0	4.28	195.00	6,072.6	-76.5	-37.9	-75.7	0.31	0.04	4.16	
6,100.0	4.19	195.36	6,097.5	-78.2	-38.4	-77.4	0.38	-0.36	1.44	
6,125.0	4.37	190.63	6,122.5	-80.1	-38.8	-79.2	1.58	0.72	-18.92	
6,150.0	4.10	194.76	6,147.4	-81.9	-39.2	-81.0	1.63	-1.08	16.52	
6,175.0	4.39	194.64	6,172.3	-83.6	-39.7	-82.8	1.16	1.16	-0.48	
6,200.0	4.47	192.65	6,197.3	-85.5	-40.1	-84.7	0.69	0.32	-7.96	
6,225.0	4.28	195.61	6,222.2	-87.4	-40.6	-86.5	1.18	-0.76	11.84	
6,250.0	4.46	190.39	6,247.1	-89.2	-41.0	-88.4	1.75	0.72	-20.88	
6,275.0	4.47	192.02	6,272.0	-91.1	-41.4	-90.3	0.51	0.04	6.52	
6,300.0	4.53	191.80	6,297.0	-93.1	-41.8	-92.2	0.25	0.24	-0.88	
6,325.0	4.45	192.42	6,321.9	-95.0	-42.2	-94.1	0.37	-0.32	2.48	
6,350.0	4.30	191.05	6,346.8	-96.8	-42.6	-95.9	0.73	-0.60	-5.48	
6,375.0	4.26	191.28	6,371.7	-98.7	-42.9	-97.8	0.17	-0.16	0.92	
6,400.0	4.37	187.54	6,396.7	-100.5	-43.2	-99.6	1.21	0.44	-14.96	
6,425.0	4.50	192.36	6,421.6	-102.4	-43.6	-101.5	1.58	0.52	19.28	
6,450.0	4.22	193.61	6,446.5	-104.3	-44.0	-103.3	1.18	-1.12	5.00	
6,475.0	4.19	194.17	6,471.5	-106.1	-44.4	-105.1	0.20	-0.12	2.24	
6,500.0	4.37	190.53	6,496.4	-107.9	-44.8	-106.9	1.30	0.72	-14.56	
6,525.0	4.40	193.29	6,521.3	-109.7	-45.2	-108.8	0.85	0.12	11.04	
6,550.0	4.50	195.25	6,546.2	-111.6	-45.7	-110.7	0.73	0.40	7.84	
6,575.0	4.88	200.11	6,571.2	-113.6	-46.3	-112.6	2.20	1.52	19.44	
6,600.0	5.55	207.93	6,596.1	-115.6	-47.3	-114.6	3.90	2.68	31.28	
6,625.0	5.29	204.70	6,620.9	-117.8	-48.3	-116.7	1.60	-1.04	-12.92	
6,650.0	5.67	208.09	6,645.8	-119.9	-49.4	-118.8	2.00	1.52	13.56	
6,675.0	5.57	208.35	6,670.7	-122.0	-50.5	-121.0	0.41	-0.40	1.04	
6,700.0	5.61	207.44	6,695.6	-124.2	-51.7	-123.1	0.39	0.16	-3.64	
6,725.0	5.55	208.84	6,720.5	-126.3	-52.8	-125.2	0.60	-0.24	5.60	
6,750.0	5.65	206.66	6,745.3	-128.5	-54.0	-127.4	0.94	0.40	-8.72	
6,775.0	5.60	205.93	6,770.2	-130.7	-55.0	-129.5	0.35	-0.20	-2.92	
6,800.0	5.55	208.64	6,795.1	-132.9	-56.2	-131.7	1.07	-0.20	10.84	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well HARRIER FED COM #102H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3247.3+31' @ 3278.3usft (P 106)
Site:	BULLDOG	MD Reference:	RKB=3247.3+31' @ 3278.3usft (P 106)
Well:	HARRIER FED COM #102H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	Database:	EDM_Users

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)
6,825.0	5.40	209.39	6,820.0	-134.9	-57.3	-133.7	0.66	-0.60	3.00
6,850.0	5.42	208.73	6,844.9	-137.0	-58.5	-135.8	0.26	0.08	-2.64
6,875.0	5.29	209.49	6,869.8	-139.0	-59.6	-137.8	0.59	-0.52	3.04
6,900.0	5.19	207.40	6,894.7	-141.0	-60.7	-139.8	0.86	-0.40	-8.36
6,925.0	5.33	209.49	6,919.6	-143.1	-61.8	-141.8	0.95	0.56	8.36
6,950.0	5.49	208.39	6,944.5	-145.1	-62.9	-143.8	0.76	0.64	-4.40
6,975.0	5.37	210.12	6,969.3	-147.2	-64.1	-145.8	0.81	-0.48	6.92
7,000.0	5.35	209.55	6,994.2	-149.2	-65.2	-147.8	0.23	-0.08	-2.28
7,025.0	5.05	206.23	7,019.1	-151.2	-66.3	-149.8	1.70	-1.20	-13.28
7,050.0	5.12	210.73	7,044.0	-153.2	-67.4	-151.7	1.62	0.28	18.00
7,075.0	5.14	211.03	7,068.9	-155.1	-68.5	-153.6	0.13	0.08	1.20
7,100.0	5.13	211.28	7,093.8	-157.0	-69.7	-155.5	0.10	-0.04	1.00
7,125.0	5.13	209.65	7,118.7	-158.9	-70.8	-157.4	0.58	0.00	-6.52
7,150.0	5.22	211.05	7,143.6	-160.9	-71.9	-159.4	0.62	0.36	5.60
7,175.0	5.23	211.80	7,168.5	-162.8	-73.1	-161.3	0.28	0.04	3.00
7,200.0	5.10	213.39	7,193.4	-164.7	-74.3	-163.1	0.77	-0.52	6.36
7,225.0	5.28	209.91	7,218.3	-166.6	-75.5	-165.0	1.45	0.72	-13.92
7,250.0	5.02	210.53	7,243.2	-168.6	-76.6	-167.0	1.06	-1.04	2.48
7,275.0	5.10	211.63	7,268.1	-170.5	-77.8	-168.8	0.50	0.32	4.40
7,300.0	4.99	209.19	7,293.0	-172.4	-78.9	-170.7	0.96	-0.44	-9.76
7,325.0	5.14	199.40	7,317.9	-174.4	-79.8	-172.7	3.50	0.60	-39.16
7,350.0	5.11	192.84	7,342.8	-176.5	-80.4	-174.8	2.35	-0.12	-26.24
7,375.0	5.26	188.56	7,367.7	-178.7	-80.8	-177.0	1.66	0.60	-17.12
7,400.0	5.22	191.22	7,392.6	-181.0	-81.2	-179.3	0.98	-0.16	10.64
7,425.0	5.07	193.42	7,417.5	-183.2	-81.7	-181.4	0.99	-0.60	8.80
7,450.0	5.11	195.05	7,442.4	-185.3	-82.2	-183.6	0.60	0.16	6.52
7,475.0	5.07	195.26	7,467.3	-187.4	-82.8	-185.7	0.18	-0.16	0.84
7,500.0	4.99	194.97	7,492.2	-189.6	-83.4	-187.8	0.34	-0.32	-1.16
7,525.0	4.98	196.20	7,517.1	-191.7	-84.0	-189.9	0.43	-0.04	4.92
7,550.0	4.79	195.70	7,542.0	-193.7	-84.6	-191.9	0.78	-0.76	-2.00
7,575.0	4.64	196.35	7,567.0	-195.7	-85.1	-193.9	0.64	-0.60	2.60
7,600.0	4.64	196.96	7,591.9	-197.6	-85.7	-195.8	0.20	0.00	2.44
7,625.0	4.74	197.84	7,616.8	-199.6	-86.3	-197.7	0.49	0.40	3.52
7,650.0	4.71	194.71	7,641.7	-201.5	-86.9	-199.7	1.04	-0.12	-12.52
7,675.0	4.82	197.33	7,666.6	-203.5	-87.5	-201.7	0.98	0.44	10.48
7,700.0	4.90	198.05	7,691.5	-205.6	-88.1	-203.7	0.40	0.32	2.88
7,725.0	4.87	198.27	7,716.4	-207.6	-88.8	-205.7	0.14	-0.12	0.88
7,750.0	5.16	196.73	7,741.3	-209.7	-89.4	-207.8	1.28	1.16	-6.16
7,775.0	4.88	195.26	7,766.2	-211.8	-90.0	-209.9	1.23	-1.12	-5.88
7,800.0	4.87	196.90	7,791.2	-213.8	-90.6	-211.9	0.56	-0.04	6.56
7,825.0	4.62	199.07	7,816.1	-215.8	-91.3	-213.9	1.23	-1.00	8.68
7,850.0	4.49	195.53	7,841.0	-217.7	-91.9	-215.7	1.24	-0.52	-14.16
7,875.0	4.44	196.69	7,865.9	-219.5	-92.4	-217.6	0.41	-0.20	4.64

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well HARRIER FED COM #102H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3247.3+31' @ 3278.3usft (P 106)
Site:	BULLDOG	MD Reference:	RKB=3247.3+31' @ 3278.3usft (P 106)
Well:	HARRIER FED COM #102H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	Database:	EDM_Users

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)	
7,900.0	4.31	197.69	7,890.8	-221.4	-93.0	-219.4	0.60	-0.52	4.00	
7,925.0	4.50	197.55	7,915.8	-223.2	-93.5	-221.2	0.76	0.76	-0.56	
7,950.0	4.29	198.50	7,940.7	-225.0	-94.1	-223.0	0.89	-0.84	3.80	
7,975.0	4.27	194.91	7,965.6	-226.8	-94.7	-224.8	1.07	-0.08	-14.36	
8,000.0	4.36	194.95	7,990.6	-228.6	-95.2	-226.6	0.36	0.36	0.16	
8,025.0	4.12	193.41	8,015.5	-230.4	-95.6	-228.4	1.06	-0.96	-6.16	
8,050.0	4.10	198.04	8,040.4	-232.1	-96.1	-230.1	1.33	-0.08	18.52	
8,075.0	4.21	196.86	8,065.4	-233.9	-96.6	-231.8	0.56	0.44	-4.72	
8,100.0	4.15	197.10	8,090.3	-235.6	-97.2	-233.6	0.25	-0.24	0.96	
8,125.0	4.18	197.31	8,115.2	-237.3	-97.7	-235.3	0.13	0.12	0.84	
8,150.0	3.49	195.37	8,140.2	-238.9	-98.2	-236.9	2.81	-2.76	-7.76	
8,175.0	2.41	187.76	8,165.1	-240.2	-98.5	-238.1	4.59	-4.32	-30.44	
8,200.0	1.78	182.08	8,190.1	-241.1	-98.5	-239.0	2.65	-2.52	-22.72	
8,225.0	1.60	177.78	8,215.1	-241.8	-98.5	-239.8	0.88	-0.72	-17.20	
8,250.0	1.65	182.71	8,240.1	-242.5	-98.5	-240.5	0.59	0.20	19.72	
8,275.0	1.84	187.30	8,265.1	-243.3	-98.6	-241.2	0.94	0.76	18.36	
8,300.0	1.69	176.16	8,290.1	-244.1	-98.6	-242.0	1.49	-0.60	-44.56	
8,325.0	1.64	177.00	8,315.1	-244.8	-98.6	-242.7	0.22	-0.20	3.36	
8,350.0	1.89	178.26	8,340.1	-245.6	-98.6	-243.5	1.01	1.00	5.04	
8,355.0	1.87	178.18	8,345.1	-245.7	-98.6	-243.6	0.40	-0.40	-1.60	
8,520.0	11.25	3.29	8,509.1	-232.3	-97.5	-230.2	7.95	5.68	-105.99	
8,527.3	12.42	2.85	8,516.3	-230.8	-97.5	-228.7	16.07	16.02	-6.08	
FTP @ 8527.3'MD, 100'FSL & 649.7'FWL										
8,551.0	16.22	1.84	8,539.2	-224.9	-97.2	-222.9	16.07	16.04	-4.24	
8,583.0	21.60	1.73	8,569.5	-214.6	-96.9	-212.5	16.81	16.81	-0.34	
8,614.0	23.51	1.06	8,598.1	-202.7	-96.6	-200.7	6.22	6.16	-2.16	
8,645.0	24.35	358.58	8,626.5	-190.1	-96.7	-188.1	4.23	2.71	-8.00	
8,676.0	25.59	357.72	8,654.6	-177.0	-97.1	-175.0	4.17	4.00	-2.77	
8,708.0	27.61	357.06	8,683.2	-162.7	-97.7	-160.7	6.38	6.31	-2.06	
8,739.0	30.50	354.93	8,710.3	-147.7	-98.8	-145.7	9.90	9.32	-6.87	
8,770.0	33.14	352.82	8,736.6	-131.5	-100.6	-129.4	9.24	8.52	-6.81	
8,801.0	33.57	352.69	8,762.5	-114.6	-102.7	-112.4	1.41	1.39	-0.42	
8,832.0	32.65	351.09	8,788.5	-97.8	-105.1	-95.6	4.09	-2.97	-5.16	
8,862.0	32.46	348.19	8,813.8	-81.9	-108.0	-79.7	5.24	-0.63	-9.67	
8,894.0	35.76	348.55	8,840.3	-64.3	-111.6	-62.0	10.33	10.31	1.13	
8,925.0	36.99	350.87	8,865.2	-46.3	-114.9	-43.9	5.95	3.97	7.48	
8,956.0	38.99	350.06	8,889.6	-27.4	-118.1	-25.0	6.65	6.45	-2.61	
8,987.0	42.49	351.10	8,913.1	-7.5	-121.4	-5.0	11.50	11.29	3.35	
9,018.0	46.45	352.10	8,935.3	14.0	-124.5	16.5	12.97	12.77	3.23	
9,049.0	51.11	354.46	8,955.7	37.1	-127.2	39.8	16.08	15.03	7.61	
9,078.0	53.16	356.80	8,973.5	60.0	-129.0	62.6	9.51	7.07	8.07	
9,109.0	55.25	357.02	8,991.6	85.1	-130.3	87.7	6.77	6.74	0.71	
9,140.0	57.57	357.87	9,008.8	110.9	-131.5	113.5	7.82	7.48	2.74	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well HARRIER FED COM #102H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3247.3+31' @ 3278.3usft (P 106)
Site:	BULLDOG	MD Reference:	RKB=3247.3+31' @ 3278.3usft (P 106)
Well:	HARRIER FED COM #102H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	Database:	EDM_Users

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)	
9,171.0	61.32	356.16	9,024.5	137.5	-132.9	140.2	13.00	12.10	-5.52	
9,202.0	63.43	354.76	9,038.9	164.9	-135.1	167.6	7.90	6.81	-4.52	
9,233.0	65.28	354.11	9,052.3	192.7	-137.8	195.5	6.26	5.97	-2.10	
9,264.0	67.48	354.93	9,064.7	221.0	-140.5	223.8	7.50	7.10	2.65	
9,296.0	71.44	356.20	9,075.9	250.8	-142.8	253.7	12.92	12.38	3.97	
9,326.0	75.79	357.32	9,084.4	279.6	-144.4	282.5	14.94	14.50	3.73	
9,357.0	78.73	357.79	9,091.2	309.8	-145.7	312.7	9.60	9.48	1.52	
9,388.0	80.67	358.52	9,096.8	340.3	-146.7	343.2	6.67	6.26	2.35	
9,420.0	81.42	359.26	9,101.8	371.9	-147.3	374.8	3.27	2.34	2.31	
9,451.0	83.67	358.60	9,105.8	402.6	-147.9	405.6	7.56	7.26	-2.13	
9,481.0	85.42	357.73	9,108.6	432.4	-148.8	435.4	6.51	5.83	-2.90	
9,512.0	86.91	356.65	9,110.7	463.3	-150.3	466.3	5.93	4.81	-3.48	
9,573.0	92.56	356.18	9,111.0	524.2	-154.2	527.3	9.29	9.26	-0.77	
9,636.0	92.86	358.24	9,108.0	587.0	-157.2	590.2	3.30	0.48	3.27	
9,729.0	92.27	359.15	9,103.9	679.9	-159.3	683.1	1.17	-0.63	0.98	
9,822.0	91.24	359.42	9,101.0	772.9	-160.5	776.0	1.14	-1.11	0.29	
9,915.0	89.52	0.38	9,100.4	865.9	-160.7	869.0	2.12	-1.85	1.03	
10,010.0	90.76	0.58	9,100.2	960.9	-159.9	964.0	1.32	1.31	0.21	
10,102.0	89.19	1.82	9,100.2	1,052.8	-157.9	1,055.9	2.17	-1.71	1.35	
10,196.0	85.03	1.41	9,104.9	1,146.7	-155.3	1,149.6	4.45	-4.43	-0.44	
10,288.0	83.91	2.38	9,113.8	1,238.2	-152.3	1,241.1	1.61	-1.22	1.05	
10,381.0	88.60	0.05	9,119.9	1,330.9	-150.3	1,333.7	5.63	5.04	-2.51	
10,473.0	89.22	359.50	9,121.6	1,422.9	-150.7	1,425.7	0.90	0.67	-0.60	
10,566.0	90.73	358.70	9,121.7	1,515.9	-152.1	1,518.7	1.84	1.62	-0.86	
10,660.0	91.71	358.15	9,119.7	1,609.8	-154.7	1,612.7	1.20	1.04	-0.59	
10,753.0	92.02	0.74	9,116.6	1,702.8	-155.6	1,705.6	2.80	0.33	2.78	
10,846.0	91.32	1.83	9,113.9	1,795.7	-153.5	1,798.5	1.39	-0.75	1.17	
10,940.0	91.46	1.25	9,111.6	1,889.6	-151.0	1,892.4	0.63	0.15	-0.62	
11,032.0	90.25	1.19	9,110.3	1,981.6	-149.0	1,984.3	1.32	-1.32	-0.07	
11,060.0	90.36	0.64	9,110.1	2,009.6	-148.6	2,012.2	2.00	0.39	-1.96	
11,154.0	92.82	0.34	9,107.5	2,103.6	-147.8	2,106.2	2.64	2.62	-0.32	
11,277.0	91.26	0.85	9,103.1	2,226.5	-146.5	2,229.0	1.33	-1.27	0.41	
11,369.0	92.65	0.90	9,100.0	2,318.4	-145.1	2,320.9	1.51	1.51	0.05	
11,462.0	93.84	0.97	9,094.7	2,411.2	-143.6	2,413.7	1.28	1.28	0.08	
11,555.0	92.37	2.38	9,089.7	2,504.1	-140.9	2,506.4	2.19	-1.58	1.52	
11,649.0	89.75	2.12	9,088.0	2,598.0	-137.2	2,600.2	2.80	-2.79	-0.28	
11,741.0	88.48	0.42	9,089.4	2,689.9	-135.1	2,692.1	2.31	-1.38	-1.85	
11,834.0	89.28	359.57	9,091.2	2,782.9	-135.2	2,785.1	1.25	0.86	-0.91	
11,928.0	90.19	359.16	9,091.6	2,876.9	-136.2	2,879.1	1.06	0.97	-0.44	
12,113.0	91.70	357.70	9,088.6	3,061.8	-141.3	3,064.1	1.14	0.82	-0.79	
12,204.0	92.06	357.26	9,085.6	3,152.7	-145.3	3,155.0	0.62	0.40	-0.48	
12,296.0	93.05	357.60	9,081.5	3,244.5	-149.4	3,246.9	1.14	1.08	0.37	
12,389.0	90.87	359.03	9,078.3	3,337.4	-152.1	3,339.8	2.80	-2.34	1.54	
12,481.0	91.20	0.53	9,076.7	3,429.4	-152.5	3,431.8	1.67	0.36	1.63	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well HARRIER FED COM #102H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3247.3+31' @ 3278.3usft (P 106)
Site:	BULLDOG	MD Reference:	RKB=3247.3+31' @ 3278.3usft (P 106)
Well:	HARRIER FED COM #102H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	Database:	EDM_Users

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)	
12,574.0	93.17	0.90	9,073.1	3,522.3	-151.3	3,524.6	2.16	2.12	0.40	
12,667.0	91.42	1.92	9,069.4	3,615.2	-149.0	3,617.5	2.18	-1.88	1.10	
12,760.0	91.52	2.10	9,067.0	3,708.1	-145.8	3,710.3	0.22	0.11	0.19	
12,853.0	91.18	1.88	9,064.8	3,801.0	-142.5	3,803.1	0.44	-0.37	-0.24	
12,945.0	88.72	0.28	9,064.9	3,893.0	-140.8	3,895.0	3.19	-2.67	-1.74	
13,040.0	88.72	359.85	9,067.0	3,987.9	-140.7	3,990.0	0.45	0.00	-0.45	
13,133.0	89.40	358.08	9,068.5	4,080.9	-142.4	4,083.0	2.04	0.73	-1.90	
13,225.0	90.42	355.36	9,068.7	4,172.8	-147.6	4,174.9	3.16	1.11	-2.96	
13,317.0	92.82	357.17	9,066.1	4,264.5	-153.6	4,266.8	3.27	2.61	1.97	
13,412.0	93.32	0.05	9,061.0	4,359.3	-155.9	4,361.6	3.07	0.53	3.03	
13,506.0	91.79	0.60	9,056.8	4,453.2	-155.4	4,455.5	1.73	-1.63	0.59	
13,600.0	92.99	1.41	9,052.9	4,547.1	-153.7	4,549.3	1.54	1.28	0.86	
13,692.0	91.36	1.65	9,049.4	4,639.0	-151.3	4,641.2	1.79	-1.77	0.26	
13,785.0	87.43	358.52	9,050.4	4,732.0	-151.2	4,734.1	5.40	-4.23	-3.37	
13,879.0	87.19	356.92	9,054.8	4,825.8	-154.9	4,828.0	1.72	-0.26	-1.70	
13,972.0	89.98	356.58	9,057.1	4,918.6	-160.2	4,920.9	3.02	3.00	-0.37	
14,065.0	90.96	355.74	9,056.3	5,011.4	-166.4	5,013.8	1.39	1.05	-0.90	
14,157.0	91.88	357.19	9,054.0	5,103.2	-172.1	5,105.7	1.87	1.00	1.58	
14,251.0	93.93	358.25	9,049.3	5,197.0	-175.8	5,199.5	2.45	2.18	1.13	
14,345.0	92.28	358.71	9,044.2	5,290.8	-178.3	5,293.4	1.82	-1.76	0.49	
14,438.0	92.39	0.18	9,040.4	5,383.8	-179.2	5,386.3	1.58	0.12	1.58	
14,531.0	90.87	0.23	9,037.7	5,476.7	-178.8	5,479.2	1.64	-1.63	0.05	
14,624.0	91.21	0.88	9,036.1	5,569.7	-177.9	5,572.2	0.79	0.37	0.70	
14,717.0	92.95	1.49	9,032.7	5,662.6	-176.0	5,665.0	1.98	1.87	0.66	
14,811.0	90.39	0.82	9,029.9	5,756.5	-174.1	5,758.9	2.82	-2.72	-0.71	
14,906.0	88.10	1.63	9,031.2	5,851.5	-172.1	5,853.8	2.56	-2.41	0.85	
14,998.0	88.63	359.66	9,033.8	5,943.5	-171.1	5,945.7	2.22	0.58	-2.14	
15,091.0	90.36	0.57	9,034.6	6,036.4	-170.9	6,038.7	2.10	1.86	0.98	
15,184.0	91.25	0.25	9,033.3	6,129.4	-170.2	6,131.6	1.02	0.96	-0.34	
15,276.0	92.14	359.57	9,030.6	6,221.4	-170.4	6,223.6	1.22	0.97	-0.74	
15,370.0	91.04	359.92	9,028.0	6,315.4	-170.8	6,317.5	1.23	-1.17	0.37	
15,463.0	92.29	359.23	9,025.3	6,408.3	-171.5	6,410.5	1.54	1.34	-0.74	
15,550.0	91.71	359.90	9,022.3	6,495.3	-172.1	6,497.4	1.02	-0.67	0.77	
15,643.0	89.77	359.91	9,021.1	6,588.2	-172.3	6,590.4	2.09	-2.09	0.01	
15,736.0	90.06	359.86	9,021.2	6,681.2	-172.5	6,683.4	0.32	0.31	-0.05	
15,829.0	88.24	0.16	9,022.6	6,774.2	-172.5	6,776.3	1.98	-1.96	0.32	
15,922.0	88.18	0.72	9,025.5	6,867.2	-171.7	6,869.3	0.61	-0.06	0.60	
16,017.0	88.80	1.41	9,028.0	6,962.1	-170.0	6,964.1	0.98	0.65	0.73	
16,109.0	88.14	359.66	9,030.4	7,054.1	-169.1	7,056.1	2.03	-0.72	-1.90	
16,202.0	88.50	359.04	9,033.2	7,147.0	-170.2	7,149.0	0.77	0.39	-0.67	
16,296.0	89.25	358.99	9,035.0	7,241.0	-171.8	7,243.0	0.80	0.80	-0.05	
16,389.0	89.49	359.23	9,036.0	7,334.0	-173.2	7,336.0	0.36	0.26	0.26	
16,482.0	89.30	357.78	9,037.0	7,426.9	-175.7	7,429.0	1.57	-0.20	-1.56	

Survey Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well HARRIER FED COM #102H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3247.3+31' @ 3278.3usft (P 106)
Site:	BULLDOG	MD Reference:	RKB=3247.3+31' @ 3278.3usft (P 106)
Well:	HARRIER FED COM #102H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWP	Database:	EDM_Users

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)
16,574.0	89.55	356.81	9,037.9	7,518.8	-180.0	7,521.0	1.09	0.27	-1.05
16,667.0	90.22	358.42	9,038.1	7,611.8	-183.9	7,613.9	1.88	0.72	1.73
16,760.0	90.40	358.05	9,037.6	7,704.7	-186.7	7,706.9	0.44	0.19	-0.40
16,853.0	90.44	0.68	9,037.0	7,797.7	-187.8	7,799.9	2.83	0.04	2.83
16,945.0	90.98	0.96	9,035.8	7,889.7	-186.4	7,891.8	0.66	0.59	0.30
17,039.0	89.96	1.60	9,035.0	7,983.6	-184.3	7,985.8	1.28	-1.09	0.68
17,130.0	89.22	359.85	9,035.7	8,074.6	-183.2	8,076.7	2.09	-0.81	-1.92
17,225.0	89.83	359.47	9,036.5	8,169.6	-183.8	8,171.7	0.76	0.64	-0.40
17,318.0	90.12	358.82	9,036.5	8,262.6	-185.1	8,264.7	0.77	0.31	-0.70
17,411.0	90.91	358.65	9,035.7	8,355.6	-187.2	8,357.7	0.87	0.85	-0.18
17,505.0	92.34	0.11	9,033.0	8,449.5	-188.2	8,451.6	2.17	1.52	1.55
17,600.0	91.60	0.07	9,029.8	8,544.5	-188.1	8,546.5	0.78	-0.78	-0.04
17,694.0	91.77	359.33	9,027.0	8,638.4	-188.6	8,640.5	0.81	0.18	-0.79
17,787.0	89.81	358.76	9,025.7	8,731.4	-190.1	8,733.5	2.19	-2.11	-0.61
17,879.0	90.01	0.16	9,025.9	8,823.4	-191.0	8,825.5	1.54	0.22	1.52
17,971.0	90.75	0.46	9,025.2	8,915.4	-190.5	8,917.4	0.87	0.80	0.33
18,065.0	89.39	359.97	9,025.1	9,009.4	-190.1	9,011.4	1.54	-1.45	-0.52
18,157.0	89.72	359.34	9,025.8	9,101.4	-190.7	9,103.4	0.77	0.36	-0.68
18,249.0	89.93	358.81	9,026.1	9,193.4	-192.2	9,195.4	0.62	0.23	-0.58
18,342.0	90.67	358.52	9,025.6	9,286.4	-194.3	9,288.4	0.85	0.80	-0.31
18,435.0	91.30	359.20	9,024.0	9,379.3	-196.2	9,381.4	1.00	0.68	0.73
18,527.0	90.30	359.01	9,022.8	9,471.3	-197.6	9,473.4	1.11	-1.09	-0.21
18,620.0	91.39	359.72	9,021.4	9,564.3	-198.6	9,566.3	1.40	1.17	0.76
18,713.0	89.52	0.08	9,020.6	9,657.3	-198.8	9,659.3	2.05	-2.01	0.39
18,806.0	89.68	359.69	9,021.3	9,750.3	-199.0	9,752.3	0.45	0.17	-0.42
18,901.0	90.32	0.10	9,021.3	9,845.3	-199.2	9,847.3	0.80	0.67	0.43
18,995.0	90.42	359.06	9,020.7	9,939.3	-199.9	9,941.3	1.11	0.11	-1.11
19,088.0	90.80	358.53	9,019.7	10,032.2	-201.8	10,034.3	0.70	0.41	-0.57
19,181.0	91.61	358.67	9,017.7	10,125.2	-204.1	10,127.2	0.88	0.87	0.15
19,250.0	93.20	0.11	9,014.8	10,194.1	-204.8	10,196.2	3.11	2.30	2.09
LAST SVY									
19,263.0	93.20	0.11	9,014.1	10,207.1	-204.8	10,209.2	0.00	0.00	0.00
LTP @ 19263'MD, 100'FNL & 605.9'FWL									
19,312.0	93.20	0.11	9,011.4	10,256.0	-204.7	10,258.1	0.00	0.00	0.00
Projection to TD @ 19312'MD, 51'FNL & 606.3'FWL									

Survey Report

Company: NORTHERN DELAWARE BASIN	Local Co-ordinate Reference: Well HARRIER FED COM #102H
Project: LEA COUNTY, NM	TVD Reference: RKB=3247.3+31' @ 3278.3usft (P 106)
Site: BULLDOG	MD Reference: RKB=3247.3+31' @ 3278.3usft (P 106)
Well: HARRIER FED COM #102H	North Reference: Grid
Wellbore: OWB	Survey Calculation Method: Minimum Curvature
Design: AWP	Database: EDM_Users

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
8,527.3	8,516.3	-230.8	-97.5	FTP @ 8527.3'MD, 100'FSL & 649.7'FWL
19,250.0	9,014.8	10,194.1	-204.8	LAST SVY
19,263.0	9,014.1	10,207.1	-204.8	LTP @ 19263'MD, 100'FNL & 605.9'FWL
19,312.0	9,011.4	10,256.0	-204.7	Projection to TD @ 19312'MD, 51'FNL & 606.3'FWL

Checked By: _____	Approved By: _____	Date: _____
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