

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

Form C-101
August 1, 2011
Permit 272934

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

1. Operator Name and Address COG OPERATING LLC 600 W Illinois Ave Midland, TX 79701		2. OGRID Number 229137
4. Property Code 326152		3. API Number 30-025-46405
5. Property Name PICKELHAUBE STATE		6. Well No. 602H

7. Surface Location

UL - Lot	Section	Township	Range	Lot Idn	Feet From	N/S Line	Feet From	E/W Line	County
D	36	24S	34E	D	330	N	1286	W	Lea

8. Proposed Bottom Hole Location

UL - Lot	Section	Township	Range	Lot Idn	Feet From	N/S Line	Feet From	E/W Line	County
N	36	24S	34E	N	50	S	1485	W	Lea

9. Pool Information

RED HILLS;BONE SPRING, NORTH	96434
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Additional Well Information

11. Work Type New Well	12. Well Type OIL	13. Cable/Rotary	14. Lease Type State	15. Ground Level Elevation 3410
16. Multiple N	17. Proposed Depth 17618	18. Formation 3rd Bone Spring Sand	19. Contractor	20. Spud Date 10/25/2019
Depth to Ground water		Distance from nearest fresh water well		Distance to nearest surface water

☒ We will be using a closed-loop system in lieu of lined pits

21. Proposed Casing and Cement Program

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surf	14.75	10.75	45.5	1200	900	0
Int1	9.875	7.625	29.7	5440	1440	0
Int1	9.875	7.625	29.7	12050	950	5250
Prod	6.75	5.5	23	11550	0	0
Prod	6.75	5	18	17618	1000	8000

Casing/Cement Program: Additional Comments

Drill a 14-3/4" hole to 1200' with Fresh Water into the Rustler to cover FW water depth. Run 10-3/4", 45.5# J-55 BTC casing and cement to surface. Drill 9-7/8" hole to 12,050' MD with a 340' tangent to the northeast. Mud system will be Diesel Brine Emulsion. We will run 7-5/8", 12,050' of 29.7# N/L80 and cement to surface in two stages with DV Tool set at approximately 5440' (Top of Lamar). Drill an 6-3/4" curve and lateral with Oil Based Mud to approx. 17,618' MD. Run 5" 18# P110 BTC casing from TD up to 11,550', then 5-1/2" 23# P110 BTC casing from 11,550' to surface. Cement in one stage bringing cement up to 8000' in one stage.

22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Annular	3000	3000	Cameron
Annular	10000	10000	Cameron

23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief. I further certify I have complied with 19.15.14.9 (A) NMAC ☒ and/or 19.15.14.9 (B) NMAC ☒ if applicable. Signature:	OIL CONSERVATION DIVISION	
Printed Name: Electronically filed by Diane Kuykendall	Approved By: Paul F Kautz	
Title: Production Accounting Director	Title: Geologist	
Email Address: dkuykendall@concho.com	Approved Date: 10/3/2019	Expiration Date: 10/3/2021
Date: 10/3/2019	Phone: 432-685-4372	Conditions of Approval Attached

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State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-025-46405		² Pool Code 96434		³ Pool Name Red Hills; Bone Spring, North	
⁴ Property Code 326152		⁵ Property Name PICKELHAUBE STATE			⁶ Well Number 602H
⁷ OGRID NO. 229137		⁸ Operator Name COG OPERATING, LLC			⁹ Elevation 3410'

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
D	36	24S	34E		330	NORTH	1286	WEST	LEA

¹¹ 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
N	36	24S	34E		50	SOUTH	1485	WEST	LEA

¹² Dedicated Acres 160	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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No allowable will be assigned to this completion until all interest have been consolidated or a non-standard unit has been approved by the division.

16

330'

1286'

S.L.

FTP

36

34E

S 00°27'01" E (GRID) 5079.92' FTP-LTP

LTP

50'

B.H.

1485'

17 OPERATOR CERTIFICATION

I hereby certify that the information contained 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 a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

10/02/19

Signature *Robyn M. Russell* Date

Robyn M. Russell

Printed Name

Rrussell@concho.com

E-mail Address

18 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.

09-05-2019

Date of Survey

Signature and Seal of Professional Surveyor

19680

Certificate Number

Job No.: LS19090869

GEODETIC DATA
NAD 83 GRID - NM EAST

SURFACE LOCATION (SL)
N: 430519.5 - E: 821422.0
LAT: 32.1803361° N
LONG: 103.4280401° W

FIRST TAKE POINT (FTP)
100' FNL & 1485' FWL (Sec.36)
N: 430751.0 - E: 821619.2
LAT: 32.1809679° N
LON: 103.4273965° W

LAST TAKE POINT (LTP)
100' FSL & 1485' FWL (Sec.36)
N: 425672.2 - E: 821659.1
LAT: 32.1670073° N
LON: 103.4274057° W

BOTTOM HOLE (BH)
N: 425622.2 - E: 821659.6
LAT: 32.1668699° N
LON: 103.4274057° W

GEODETIC DATA
NAD 83 GRID - NM EAST

A: FOUND BRASS CAP "1913"
N: 425562.2 - E: 820175.3

B: FOUND BRASS CAP "1913"
N: 428201.6 - E: 820152.9

C: CALCULATED CORNER
N: 430839.4 - E: 820133.8

D: COTTON SPINDLE
N: 430860.0 - E: 822773.2

E: COTTON SPINDLE
N: 430879.3 - E: 825408.0

F: FOUND BRASS CAP "1913"
N: 428239.1 - E: 825431.6

G: FOUND STONE MOUND
N: 425596.6 - E: 825454.5

H: FOUND BRASS CAP "1913"
N: 425579.9 - E: 822814.8

CALCULATED POINTS
1: N: 430849.7 - E: 821453.5
2: N: 425571.1 - E: 821495.0

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GAS CAPTURE PLAN

Date: 10/3/2019

☒ Original

Operator & OGRID No.: [229137] COG OPERATING LLC

☐ Amended - Reason for
Amendment:

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomple to new zone, re-frac) activity.

Note: Form C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule (Subsection A of 19.15.18.12 NMAC).

Well(s)/Production Facility – Name of facility

The well(s) that will be located at the production facility are shown in the table below.

Well Name	API	Well Location (ULSTR)	Footages	Expected MCF/D	Flared or Vented	Comments
PICKELHAUBE STATE #602H	30-025-46405	D-36-24S-34E	0330N 1286W	1559	None	Length of additional line is unknown at this time.

Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. The gas produced from production facility is dedicated to VERSADO GAS PROCESSORS,LLC and will be connected to VERSADO GAS PROCESSORS,LLC Low Pressure gathering system located in Lea County, New Mexico. It will require 0' of pipeline to connect the facility to Low Pressure gathering system. COG OPERATING LLC provides (periodically) to VERSADO GAS PROCESSORS,LLC a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, COG OPERATING LLC and VERSADO GAS PROCESSORS,LLC have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at VERSADO GAS PROCESSORS,LLC Processing Plant located in Sec. 36, Twn. 22S, Rng. 37E, Lea County, New Mexico. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on VERSADO GAS PROCESSORS,LLC system at that time. Based on current information, it is COG OPERATING LLC's belief the system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease
 - Only a portion of gas is consumed operating the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
 - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
 - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

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Form APD Comments

Permit 272934

PERMIT COMMENTS

Operator Name and Address: COG OPERATING LLC [229137] 600 W Illinois Ave Midland, TX 79701		API Number: 30-025-46405
		Well: PICKELHAUBE STATE #602H

Created By	Comment	Comment Date
rodrom	H2S concentrations of wells in this area from surface to TD are low enough that a contingency plan is not required.	10/3/2019

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Form APD Conditions

Permit 272934

PERMIT CONDITIONS OF APPROVAL

Operator Name and Address: COG OPERATING LLC [229137] 600 W Illinois Ave Midland, TX 79701	API Number: 30-025-46405
	Well: PICKELHAUBE STATE #602H

OCD Reviewer	Condition
pkautz	Will require a directional survey with the C-104
pkautz	Will require a administrative order for non-standard location prior to placing the well on production.
pkautz	1) SURFACE & INTERMEDIATE CASING - Cement must circulate to surface -- 2) PRODUCTION CASING - Cement must tie back into intermediate casing --
pkautz	If cement does not circulate to surface, must run temperature survey or other log to determine top of cement
pkautz	Surface casing must be set 25' below top of Rustler Anhydrite in order to seal off protectable water
pkautz	1)- The Operator is to notify NMOCD by sundry (Form C-103) within ten (10) days of the well being spud 2)- Drilling Sundries Form C-103 (Casing and Cement test are to be submitted within 10 days 3)- Completion Reports & Logs are to be submitted within 45 days 4)- Deviation / Directional Drill Survey are to be filed with or prior to C-104
pkautz	It is the operator's responsibility to monitor cancellation dates of approved APDs. APD's are good for 2 years and may be extended for one year. Only one 1 year extension will be granted if submitted by C-103 before expiration date. After expiration date or after a 1 year extension must submit new APD. If an APD expires and if site construction has occurred, site remediation is required.
pkautz	Stage Tool 1) Must notify OCD Hobbs Office prior to running Stage Tool at 5753703186 2) If using Stage Tool on Surface casing, Stage Tool must be set greater than 350' from surface and a minimum of 200 feet above surface shoe. 3) When using a Stage Tool on Intermediate or Production Casing Stage must be a minimum of 50 feet below previous casing shoe.



CONCHO

NORTHERN DELAWARE BASIN

LEA COUNTY, NM

BULLDOG

PICKELHAUBE ST #602H

OWB

PWP1

Anticollision Report

01 October, 2019

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Reference	PWP1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0usft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum ellipse separation of 1,000.0 usft	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date	10/1/2019		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.0	17,618.8	PWP1 (OWB)	MWD+IFR1+FDIR	OWSG MWD + IFR1 + FDIR Correction	

Summary						
Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
BULLDOG						
BASEBALL CAP FED COM #26H - OWB - ACTUAL WE	10,840.6	10,840.3	119.1	68.4	2.348	CC
BASEBALL CAP FED COM #26H - OWB - ACTUAL WE	12,200.0	12,199.0	122.1	66.2	2.184	ES, SF
BASEBALL CAP FED COM #607H - OWB - AWP	7,304.5	7,300.5	594.1	562.0	18.516	CC
BASEBALL CAP FED COM #607H - OWB - AWP	7,400.0	7,394.1	594.3	561.8	18.307	ES
BASEBALL CAP FED COM #607H - OWB - AWP	12,100.0	12,070.0	744.9	692.5	14.192	SF
BASEBALL CAP FED COM #707H - OWB - AWP	5,162.5	5,162.3	615.1	591.3	25.816	CC
BASEBALL CAP FED COM #707H - OWB - AWP	5,310.7	5,311.3	615.2	590.8	25.256	ES
BASEBALL CAP FED COM #707H - OWB - AWP	12,200.0	12,186.4	895.7	841.5	16.529	SF
BLACK RAIDER "BQK" STATE 1H - OWB - AWP	9,369.5	13,675.0	891.7	782.9	8.194	CC, ES, SF
PICKELHAUBE ST #701H - OWB - PWP1	12,472.4	12,506.1	862.7	774.2	9.746	CC
PICKELHAUBE ST #701H - OWB - PWP1	17,618.8	17,897.2	869.5	747.4	7.123	ES, SF
PICKELHAUBE ST #702H - OWB - PWP1	2,500.0	2,498.0	30.0	11.5	1.625	Advise and Monitor, CC, I

Offset Design		BULLDOG - BASEBALL CAP FED COM #26H - OWB - ACTUAL WELLPATH											Offset Site Error:		0.0 usft
Survey Program:		100-Standard Keeper 104, 12045-MWD+IFR1+MS											Offset Well Error:		3.0 usft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
0.0	0.0	0.0	0.0	3.0	3.0	47.24	623.3	674.0	918.0						
100.0	100.0	90.9	90.9	3.0	3.0	47.23	623.5	674.1	918.2	912.2	6.00	152.961			
200.0	200.0	190.1	190.1	3.0	3.0	47.22	624.0	674.2	918.7	912.6	6.04	152.011			
300.0	300.0	289.0	289.0	3.1	3.0	47.20	624.5	674.5	919.2	913.1	6.13	149.957			
400.0	400.0	389.4	389.4	3.2	3.0	47.19	625.1	674.7	919.8	913.6	6.26	146.951			
500.0	500.0	490.4	490.4	3.4	3.1	47.17	625.7	675.0	920.4	914.0	6.43	143.181			
600.0	600.0	602.5	602.4	3.6	3.1	47.15	626.0	674.9	920.6	914.0	6.62	138.970			
700.0	700.0	715.3	715.3	3.8	3.1	47.15	624.6	673.5	918.8	911.9	6.82	134.666			
800.0	800.0	818.6	818.5	4.0	3.1	47.16	622.9	671.7	916.4	909.3	7.05	129.982			
900.0	900.0	922.2	922.1	4.2	3.1	47.16	621.0	669.6	913.6	906.3	7.30	125.132			
1,000.0	1,000.0	1,024.4	1,024.2	4.5	3.1	47.16	618.8	667.3	910.5	903.0	7.57	120.228			
1,100.0	1,100.0	1,127.1	1,126.9	4.8	3.1	47.17	616.4	664.9	907.2	899.3	7.86	115.356			
1,200.0	1,200.0	1,228.3	1,228.0	5.1	3.1	47.19	613.6	662.4	903.6	895.4	8.17	110.585			
1,300.0	1,300.0	1,331.6	1,331.3	5.4	3.2	47.22	610.6	659.8	899.7	891.3	8.49	105.954			
1,400.0	1,400.0	1,432.2	1,431.8	5.7	3.2	47.25	607.4	657.2	895.7	886.9	8.83	101.488			
1,500.0	1,500.0	1,535.2	1,534.6	6.0	3.2	47.28	604.1	654.3	891.5	882.3	9.17	97.207			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design BULLDOG - BASEBALL CAP FED COM #26H - OWB - ACTUAL WELLPATH												Offset Site Error:	0.0 usft
Survey Program: 100-Standard Keeper 104, 12045-MWD+IFR1+MS												Offset Well Error:	3.0 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
1,600.0	1,600.0	1,637.7	1,637.1	6.3	3.3	47.31	600.6	651.1	886.9	877.3	9.53	93.098	
1,700.0	1,700.0	1,737.6	1,736.8	6.6	3.3	47.33	597.2	647.9	882.2	872.3	9.89	89.192	
1,800.0	1,800.0	1,837.1	1,836.3	6.9	3.4	47.36	593.7	644.7	877.4	867.1	10.26	85.485	
1,900.0	1,900.0	1,935.9	1,935.0	7.2	3.4	47.38	590.3	641.6	872.7	862.1	10.64	81.995	
2,000.0	2,000.0	2,038.6	2,037.5	7.6	3.5	47.42	586.6	638.3	867.9	856.9	11.03	78.676	
2,100.0	2,100.0	2,138.7	2,137.5	7.9	3.5	47.44	583.0	634.9	863.0	851.5	11.43	75.532	
2,200.0	2,200.0	2,238.6	2,237.3	8.2	3.6	47.46	579.4	631.4	858.0	846.2	11.82	72.563	
2,300.0	2,300.0	2,339.1	2,337.6	8.6	3.7	47.48	575.8	628.0	853.1	840.8	12.23	69.753	
2,400.0	2,400.0	2,446.9	2,445.3	8.9	3.8	47.51	571.7	624.0	847.8	835.2	12.64	67.069	
2,500.0	2,500.0	2,556.4	2,554.6	9.2	3.8	47.51	566.5	618.5	840.9	827.8	13.06	64.406	
2,600.0	2,600.0	2,657.5	2,655.3	9.6	3.9	13.30	561.4	613.3	832.0	818.5	13.47	61.753	
2,700.0	2,699.8	2,755.7	2,753.3	9.9	4.0	13.47	556.4	608.4	819.7	805.8	13.89	59.008	
2,800.0	2,799.6	2,854.1	2,851.5	10.3	4.1	13.64	551.2	603.7	805.9	791.6	14.31	56.306	
2,900.0	2,899.4	2,952.1	2,949.2	10.6	4.2	13.81	545.9	599.1	792.1	777.3	14.74	53.752	
3,000.0	2,999.1	3,048.9	3,045.8	10.9	4.3	14.01	540.7	594.9	778.5	763.4	15.16	51.346	
3,100.0	3,098.9	3,149.0	3,145.7	11.3	4.4	14.25	535.2	590.9	765.1	749.5	15.59	49.074	
3,200.0	3,198.6	3,248.1	3,244.5	11.6	4.4	14.49	529.7	586.8	751.7	735.6	16.02	46.911	
3,300.0	3,298.4	3,347.3	3,343.5	12.0	4.5	14.74	524.2	582.8	738.2	721.7	16.46	44.852	
3,400.0	3,398.1	3,445.9	3,441.9	12.3	4.6	15.01	518.5	578.8	724.7	707.8	16.89	42.895	
3,500.0	3,497.9	3,545.7	3,541.4	12.7	4.7	15.30	512.8	574.8	711.2	693.8	17.33	41.030	
3,600.0	3,597.6	3,644.7	3,640.2	13.0	4.8	15.57	507.3	570.6	697.7	679.9	17.77	39.253	
3,700.0	3,697.4	3,745.0	3,740.2	13.4	4.9	15.82	502.1	566.1	684.3	666.0	18.22	37.561	
3,800.0	3,797.2	3,844.1	3,839.1	13.7	5.0	16.06	497.0	561.4	670.6	651.9	18.66	35.931	
3,900.0	3,896.9	3,948.1	3,942.8	14.1	5.1	16.23	492.0	555.4	656.4	637.3	19.11	34.355	
4,000.0	3,996.7	4,047.1	4,041.4	14.4	5.2	16.36	487.5	549.2	642.0	622.4	19.56	32.827	
4,100.0	4,096.4	4,146.5	4,140.5	14.8	5.3	16.50	483.0	542.8	627.5	607.5	20.01	31.364	
4,200.0	4,196.2	4,245.3	4,239.1	15.1	5.4	16.64	478.5	536.6	613.1	592.7	20.46	29.968	
4,300.0	4,295.9	4,343.5	4,337.0	15.5	5.5	16.80	473.8	530.5	598.7	577.8	20.91	28.626	
4,400.0	4,395.7	4,442.2	4,435.4	15.8	5.6	17.00	469.1	524.7	584.4	563.0	21.37	27.347	
4,500.0	4,495.5	4,538.8	4,531.7	16.2	5.8	17.29	463.9	519.6	570.2	548.4	21.83	26.124	
4,600.0	4,595.2	4,634.5	4,627.2	16.5	5.9	17.72	458.0	515.6	556.6	534.3	22.29	24.973	
4,700.0	4,695.0	4,730.7	4,723.1	16.9	6.0	18.32	451.4	513.0	543.6	520.9	22.74	23.906	
4,800.0	4,794.7	4,828.6	4,820.7	17.2	6.1	19.05	444.2	511.2	531.2	508.0	23.19	22.909	
4,900.0	4,894.5	4,929.4	4,921.2	17.6	6.2	19.85	436.7	509.3	518.7	495.0	23.63	21.954	
5,000.0	4,994.2	5,029.6	5,021.1	17.9	6.3	20.59	429.6	506.6	505.8	481.7	24.07	21.013	
5,100.0	5,094.0	5,130.7	5,121.9	18.3	6.4	21.25	423.3	503.1	492.9	468.4	24.52	20.104	
5,200.0	5,193.7	5,231.7	5,222.7	18.6	6.5	21.69	418.5	498.0	479.6	454.6	24.97	19.204	
5,300.0	5,293.5	5,328.9	5,319.7	19.0	6.6	22.01	414.7	492.4	466.2	440.7	25.44	18.325	
5,400.0	5,393.3	5,428.6	5,419.2	19.4	6.7	22.33	411.0	486.9	453.0	427.1	25.90	17.492	
5,500.0	5,493.0	5,530.7	5,521.0	19.7	6.8	22.58	407.6	480.3	439.4	413.1	26.35	16.674	
5,600.0	5,592.8	5,629.9	5,619.9	20.1	6.9	22.75	404.7	473.2	425.4	398.6	26.82	15.864	
5,700.0	5,692.5	5,728.7	5,718.4	20.4	7.0	22.94	401.7	466.2	411.5	384.2	27.28	15.084	
5,800.0	5,792.3	5,828.0	5,817.4	20.8	7.2	23.13	398.8	459.2	397.6	369.8	27.74	14.331	
5,900.0	5,892.0	5,926.7	5,915.8	21.1	7.3	23.34	396.0	452.3	383.7	355.5	28.21	13.602	
6,000.0	5,991.8	6,025.7	6,014.5	21.5	7.4	23.56	393.2	445.4	369.9	341.3	28.67	12.902	
6,100.0	6,091.6	6,123.5	6,112.1	21.8	7.5	23.81	390.4	438.8	356.3	327.2	29.14	12.227	
6,200.0	6,191.3	6,222.8	6,211.1	22.2	7.6	24.10	387.5	432.1	342.8	313.2	29.61	11.577	
6,300.0	6,291.1	6,322.0	6,310.1	22.6	7.7	24.44	384.5	425.5	329.2	299.1	30.07	10.946	
6,400.0	6,390.8	6,422.3	6,410.1	22.9	7.8	24.82	381.3	418.8	315.5	284.9	30.53	10.332	
6,500.0	6,490.6	6,521.6	6,509.0	23.3	7.9	25.25	377.9	411.9	301.5	270.5	31.00	9.725	
6,600.0	6,590.3	6,620.7	6,607.9	23.6	8.1	25.73	374.5	404.9	287.4	255.9	31.46	9.134	
6,700.0	6,690.1	6,720.1	6,706.9	24.0	8.2	26.26	371.0	397.8	273.2	241.3	31.92	8.558	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
BULLDOG - BASEBALL CAP FED COM #26H - OWB - ACTUAL WELLPATH												Offset Well Error:	3.0 usft
Survey Program: 100-Standard Keeper 104, 12045-MWD+IFR1+MS													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
6,800.0	6,789.9	6,819.2	6,805.7	24.3	8.3	26.84	367.4	390.7	259.0	226.6	32.39	7.996	
6,900.0	6,889.6	6,918.9	6,905.1	24.7	8.4	27.53	363.7	383.5	244.6	211.8	32.84	7.448	
7,000.0	6,989.4	7,018.5	7,004.3	25.1	8.5	28.45	359.3	376.2	230.0	196.7	33.30	6.906	
7,100.0	7,089.1	7,116.1	7,101.6	25.4	8.6	29.62	354.5	369.4	215.4	181.7	33.76	6.381	
7,200.0	7,188.9	7,214.0	7,199.2	25.8	8.8	31.10	349.5	363.3	201.7	167.4	34.22	5.893	
7,300.0	7,288.6	7,311.3	7,296.2	26.1	8.9	32.83	344.5	357.7	188.5	153.8	34.68	5.435	
7,400.0	7,388.5	7,408.4	7,393.1	26.5	9.0	34.57	340.0	353.3	177.6	142.5	35.13	5.056	
7,500.0	7,488.4	7,506.4	7,491.0	26.8	9.1	36.03	336.2	349.6	169.4	133.8	35.58	4.760	
7,600.0	7,588.3	7,605.9	7,590.3	27.2	9.2	37.19	332.8	346.2	163.1	127.1	36.02	4.529	
7,700.0	7,688.3	7,705.3	7,689.6	27.6	9.4	37.35	329.5	342.9	158.5	122.1	36.46	4.348	
7,800.0	7,788.3	7,803.1	7,787.4	27.9	9.5	37.86	327.2	340.4	155.3	118.4	36.93	4.205	
7,900.0	7,888.3	7,901.8	7,886.0	28.3	9.6	37.08	326.1	338.6	153.3	115.9	37.41	4.097	
8,000.0	7,988.3	8,001.9	7,986.1	28.6	9.7	37.26	325.1	337.0	151.5	113.6	37.88	3.999	
8,100.0	8,088.3	8,101.6	8,085.8	29.0	9.8	37.43	324.2	335.5	149.7	111.4	38.35	3.904	
8,200.0	8,188.3	8,200.7	8,184.9	29.3	10.0	37.39	324.0	334.3	148.5	109.7	38.83	3.826	
8,300.0	8,288.3	8,300.0	8,284.2	29.7	10.1	37.26	324.0	333.4	147.6	108.3	39.31	3.756	
8,400.0	8,388.3	8,400.0	8,384.1	30.0	10.1	37.05	324.4	332.8	147.2	107.4	39.76	3.702	
8,500.0	8,488.3	8,499.8	8,484.0	30.4	10.2	37.86	324.7	332.2	146.7	106.5	40.22	3.648	
8,600.0	8,588.3	8,599.9	8,584.0	30.7	10.3	37.64	325.1	331.6	146.3	105.6	40.67	3.598	
8,700.0	8,688.3	8,699.9	8,684.1	31.1	10.3	37.44	325.5	331.0	145.8	104.7	41.12	3.546	
8,800.0	8,788.3	8,800.0	8,784.1	31.5	10.4	37.24	325.8	330.4	145.3	103.8	41.58	3.496	
8,900.0	8,888.3	8,900.0	8,884.1	31.8	10.5	37.97	326.3	329.7	144.8	102.8	42.03	3.446	
9,000.0	8,988.3	9,000.1	8,984.3	32.2	10.5	37.61	327.0	328.9	144.3	101.8	42.47	3.397	
9,100.0	9,088.3	9,100.1	9,084.2	32.5	10.6	37.18	327.8	328.0	143.7	100.8	42.92	3.348	
9,200.0	9,188.3	9,200.2	9,184.4	32.9	10.7	37.07	328.8	326.9	143.0	99.6	43.36	3.298	
9,300.0	9,288.3	9,300.3	9,284.4	33.2	10.7	37.11	329.9	325.8	142.3	98.5	43.80	3.249	
9,400.0	9,388.3	9,400.4	9,384.5	33.6	10.8	37.48	331.1	324.6	141.6	97.3	44.25	3.199	
9,500.0	9,488.3	9,500.5	9,484.6	33.9	10.9	37.79	332.4	323.1	140.7	96.0	44.69	3.148	
9,600.0	9,588.3	9,600.9	9,584.9	34.3	10.9	37.02	333.8	321.5	139.7	94.5	45.13	3.095	
9,700.0	9,688.3	9,700.9	9,685.0	34.6	11.0	37.20	335.2	319.7	138.5	92.9	45.57	3.039	
9,800.0	9,788.3	9,801.9	9,785.9	35.0	11.1	36.29	336.6	317.5	137.1	91.1	46.01	2.979	
9,900.0	9,888.3	9,902.1	9,886.0	35.4	11.2	36.23	338.1	314.6	135.1	88.6	46.46	2.908	
10,000.0	9,988.3	10,002.0	9,985.9	35.7	11.3	36.10	339.6	311.7	133.1	86.2	46.90	2.839	
10,100.0	10,088.3	10,102.1	10,085.9	36.1	11.4	36.91	341.2	308.8	131.2	83.9	47.34	2.771	
10,200.0	10,188.3	10,202.0	10,185.8	36.4	11.5	36.70	342.8	305.9	129.3	81.6	47.78	2.707	
10,300.0	10,288.3	10,302.1	10,285.8	36.8	11.6	36.70	343.8	303.1	127.4	79.2	48.22	2.642	
10,400.0	10,388.3	10,402.1	10,385.8	37.1	11.7	37.72	344.8	300.4	125.5	76.8	48.66	2.579	
10,500.0	10,488.3	10,501.7	10,485.3	37.5	11.8	37.01	345.2	298.0	123.7	74.6	49.12	2.518	
10,600.0	10,588.3	10,602.1	10,585.7	37.8	11.9	37.43	345.3	295.9	121.9	72.3	49.57	2.459	
10,700.0	10,688.3	10,701.9	10,685.5	38.2	12.0	37.85	345.4	293.6	120.0	70.0	50.03	2.399	
10,800.0	10,788.3	10,800.3	10,783.9	38.6	12.1	37.65	345.3	292.7	119.2	68.7	50.52	2.360	
10,840.6	10,829.0	10,840.3	10,824.0	38.7	12.2	37.67	345.2	292.6	119.1	68.4	50.71	2.348	CC
10,900.0	10,888.3	10,898.7	10,882.3	38.9	12.2	37.96	344.8	293.2	119.4	68.4	50.95	2.343	
11,000.0	10,988.3	10,998.0	10,981.6	39.3	12.2	38.87	343.8	295.2	120.6	69.3	51.34	2.349	
11,100.0	11,088.3	11,097.7	11,081.2	39.6	12.2	39.98	342.6	297.8	122.2	70.5	51.71	2.364	
11,200.0	11,188.3	11,197.9	11,181.4	40.0	12.2	41.15	341.3	300.6	124.0	71.9	52.08	2.380	
11,300.0	11,288.3	11,298.7	11,282.1	40.3	12.2	42.43	339.5	303.1	125.3	72.9	52.44	2.390	
11,400.0	11,388.3	11,399.2	11,382.6	40.7	12.2	43.86	337.1	305.2	126.1	73.2	52.82	2.387	
11,500.0	11,488.3	11,500.3	11,483.7	41.1	12.2	45.53	333.8	306.9	126.3	73.0	53.21	2.373	
11,600.0	11,588.3	11,601.9	11,585.1	41.4	12.3	47.31	329.9	307.7	125.4	71.8	53.60	2.340	
11,700.0	11,688.3	11,702.4	11,685.5	41.8	12.4	49.04	325.8	307.6	123.9	69.9	54.01	2.293	
11,800.0	11,788.3	11,800.7	11,783.8	42.1	12.5	50.69	322.0	307.5	122.4	67.9	54.44	2.248	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design BULLDOG - BASEBALL CAP FED COM #26H - OWB - ACTUAL WELLPATH												Offset Site Error:	0.0 usft
Survey Program: 100-Standard Keeper 104, 12045-MWD+IFR1+MS												Offset Well Error:	3.0 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft) +E/-W (usft)		Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
11,825.2	11,813.5	11,825.5	11,808.5	42.2	12.5	70.99	321.4	307.7	122.3	67.8	54.55	2.243	
11,900.0	11,888.3	11,899.9	11,883.0	42.5	12.5	71.91	319.6	308.5	122.6	67.7	54.83	2.236	
12,000.0	11,988.3	12,000.4	11,983.4	42.8	12.6	73.25	316.8	309.5	122.7	67.5	55.19	2.223	
12,100.0	12,088.3	12,101.2	12,084.2	43.2	12.6	74.37	314.5	309.8	122.3	66.8	55.56	2.202	
12,167.6	12,156.0	12,168.4	12,151.4	43.4	12.6	-105.31	313.3	309.6	122.3	66.4	55.81	2.191	
12,200.0	12,188.3	12,199.0	12,182.0	43.5	12.6	-104.93	313.0	309.7	122.1	66.2	55.93	2.184 ES, SF	
12,300.0	12,286.6	12,290.6	12,273.4	43.8	12.7	-111.50	316.0	312.4	131.6	75.1	56.49	2.330	
12,400.0	12,379.2	12,372.7	12,355.2	44.1	12.8	-121.45	323.2	316.0	158.4	101.4	56.95	2.781	
12,500.0	12,462.1	12,426.3	12,407.4	44.3	12.9	-126.60	334.6	317.3	212.0	154.5	57.51	3.687	
12,600.0	12,531.5	12,458.2	12,437.7	44.5	13.0	-122.89	344.7	317.1	289.5	231.6	57.85	5.003	
12,700.0	12,584.5	12,471.3	12,450.0	44.7	13.0	-103.72	349.4	316.9	380.0	322.0	57.97	6.555	
12,800.0	12,618.7	12,469.9	12,448.6	44.8	13.0	-65.87	348.9	316.9	475.3	417.4	57.93	8.205	
12,900.0	12,632.8	12,451.0	12,430.9	44.8	13.0	-35.25	342.3	317.2	569.9	512.1	57.83	9.856	
13,000.0	12,633.8	12,451.0	12,430.9	44.9	13.0	-33.12	342.3	317.2	662.7	605.2	57.48	11.529	
13,100.0	12,634.6	12,430.0	12,411.0	44.9	12.9	-30.61	335.7	317.3	756.6	699.2	57.32	13.198	
13,200.0	12,635.4	12,420.0	12,401.4	45.0	12.9	-29.48	332.9	317.2	851.5	794.4	57.14	14.902	
13,300.0	12,636.2	12,420.0	12,401.4	45.1	12.9	-29.48	332.9	317.2	947.4	890.5	56.95	16.636	

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
BULLDOG - BASEBALL CAP FED COM #607H - OWB - AWP												Offset Well Error:	3.0 usft
Survey Program: 100-Standard Keeper 104, 12038-MWD+IFR1+MS													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	11.5	11.5	3.0	3.0	-22.92	651.2	-275.3	707.0				
100.0	100.0	112.2	112.2	3.0	3.0	-22.90	651.4	-275.1	707.1	701.1	6.00	117.787	
148.4	148.4	160.0	160.0	3.0	3.0	-22.88	651.4	-274.9	707.0	701.0	6.02	117.516	
200.0	200.0	210.7	210.7	3.0	3.0	-22.86	651.5	-274.7	707.1	701.0	6.04	117.036	
300.0	300.0	310.6	310.6	3.1	3.0	-22.82	651.8	-274.3	707.2	701.0	6.12	115.500	
400.0	400.0	410.7	410.7	3.2	3.0	-22.79	652.1	-274.0	707.3	701.1	6.24	113.279	
500.0	500.0	510.9	510.9	3.4	3.1	-22.76	652.4	-273.7	707.5	701.1	6.40	110.508	
600.0	600.0	610.0	610.0	3.6	3.1	-22.74	652.6	-273.6	707.6	701.0	6.59	107.338	
700.0	700.0	708.8	708.8	3.8	3.1	-22.72	653.0	-273.4	708.0	701.1	6.81	103.914	
800.0	800.0	808.5	808.5	4.0	3.1	-22.68	653.5	-273.2	708.3	701.3	7.06	100.356	
900.0	900.0	907.2	907.2	4.2	3.2	-22.64	654.2	-272.9	708.9	701.6	7.33	96.769	
1,000.0	1,000.0	1,007.6	1,007.6	4.5	3.2	-22.59	655.1	-272.6	709.5	701.9	7.61	93.211	
1,100.0	1,100.0	1,108.8	1,108.8	4.8	3.3	-22.55	655.7	-272.3	710.0	702.1	7.91	89.723	
1,200.0	1,200.0	1,211.0	1,210.9	5.1	3.3	-22.51	656.2	-271.9	710.3	702.1	8.22	86.363	
1,300.0	1,300.0	1,311.9	1,311.9	5.4	3.4	-22.47	656.4	-271.5	710.4	701.8	8.54	83.185	
1,336.7	1,336.7	1,348.3	1,348.3	5.5	3.4	-22.46	656.5	-271.4	710.4	701.7	8.65	82.076	
1,400.0	1,400.0	1,411.6	1,411.6	5.7	3.4	-22.45	656.5	-271.3	710.4	701.5	8.86	80.167	
1,400.7	1,400.7	1,412.4	1,412.3	5.7	3.4	-22.45	656.5	-271.3	710.4	701.5	8.86	80.145	
1,500.0	1,500.0	1,512.6	1,512.5	6.0	3.5	-22.45	656.6	-271.3	710.4	701.2	9.19	77.269	
1,549.8	1,549.8	1,561.4	1,561.4	6.1	3.5	-22.45	656.5	-271.2	710.3	701.0	9.35	75.940	
1,600.0	1,600.0	1,611.1	1,611.1	6.3	3.5	-22.45	656.6	-271.2	710.4	700.8	9.53	74.532	
1,700.0	1,700.0	1,712.1	1,712.0	6.6	3.6	-22.44	656.6	-271.2	710.4	700.5	9.87	71.949	
1,777.0	1,777.0	1,788.7	1,788.6	6.8	3.6	-22.44	656.5	-271.1	710.3	700.2	10.13	70.134	
1,800.0	1,800.0	1,811.2	1,811.2	6.9	3.6	-22.44	656.6	-271.1	710.3	700.1	10.21	69.578	
1,900.0	1,900.0	1,912.0	1,912.0	7.2	3.7	-22.44	656.6	-271.1	710.4	699.8	10.57	67.213	
1,997.3	1,997.3	2,008.9	2,008.9	7.6	3.7	-22.43	656.5	-271.1	710.3	699.4	10.90	65.156	
2,000.0	2,000.0	2,011.6	2,011.5	7.6	3.7	-22.43	656.5	-271.1	710.3	699.4	10.91	65.098	
2,100.0	2,100.0	2,112.0	2,111.9	7.9	3.7	-22.44	656.6	-271.1	710.4	699.1	11.28	62.952	
2,149.6	2,149.6	2,161.3	2,161.3	8.1	3.7	-22.44	656.6	-271.1	710.3	698.9	11.46	61.994	
2,200.0	2,200.0	2,211.5	2,211.4	8.2	3.8	-22.43	656.6	-271.1	710.3	698.7	11.64	61.006	
2,300.0	2,300.0	2,311.7	2,311.7	8.6	3.8	-22.43	656.6	-271.0	710.3	698.3	12.01	59.143	
2,364.2	2,364.2	2,375.8	2,375.8	8.8	3.8	-22.43	656.6	-271.0	710.3	698.1	12.24	58.036	
2,400.0	2,400.0	2,411.5	2,411.5	8.9	3.9	-22.43	656.6	-271.0	710.3	697.9	12.37	57.405	
2,500.0	2,500.0	2,512.0	2,511.9	9.2	3.9	-22.43	656.6	-271.0	710.3	697.5	12.74	55.759	
2,600.0	2,600.0	2,611.2	2,611.2	9.6	4.0	-56.85	656.6	-270.9	709.3	696.2	13.11	54.108	
2,700.0	2,699.8	2,711.9	2,711.9	9.9	4.0	-57.26	656.6	-271.0	706.5	693.0	13.48	52.414	
2,800.0	2,799.6	2,811.2	2,811.2	10.3	4.0	-57.73	656.5	-270.9	702.6	688.8	13.84	50.761	
2,900.0	2,899.4	2,911.0	2,911.0	10.6	4.1	-58.21	656.6	-270.9	699.0	684.7	14.23	49.128	
3,000.0	2,999.1	3,011.7	3,011.7	10.9	4.1	-58.70	656.4	-270.8	695.2	680.6	14.59	47.637	
3,100.0	3,098.9	3,111.0	3,111.0	11.3	4.2	-59.19	656.4	-270.7	691.5	676.5	14.97	46.205	
3,200.0	3,198.6	3,210.2	3,210.2	11.6	4.2	-59.68	656.4	-270.7	687.9	672.6	15.35	44.822	
3,300.0	3,298.4	3,310.6	3,310.6	12.0	4.3	-60.19	656.4	-270.6	684.4	668.7	15.73	43.511	
3,400.0	3,398.1	3,409.8	3,409.8	12.3	4.4	-60.68	656.4	-270.5	680.9	664.8	16.11	42.254	
3,500.0	3,497.9	3,509.4	3,509.4	12.7	4.4	-61.19	656.4	-270.5	677.5	661.0	16.50	41.051	
3,600.0	3,597.6	3,609.9	3,609.9	13.0	4.5	-61.71	656.3	-270.4	674.1	657.2	16.89	39.901	
3,700.0	3,697.4	3,708.9	3,708.9	13.4	4.5	-62.23	656.3	-270.4	670.7	653.4	17.29	38.801	
3,800.0	3,797.2	3,809.0	3,809.0	13.7	4.6	-62.76	656.3	-270.3	667.5	649.8	17.68	37.748	
3,900.0	3,896.9	3,908.5	3,908.5	14.1	4.7	-63.29	656.3	-270.3	664.3	646.2	18.08	36.748	
4,000.0	3,996.7	4,008.1	4,008.1	14.4	4.7	-63.82	656.5	-270.3	661.3	642.9	18.47	35.800	
4,100.0	4,096.4	4,107.4	4,107.4	14.8	4.8	-64.36	656.4	-270.3	658.3	639.4	18.87	34.880	
4,200.0	4,196.2	4,208.4	4,208.4	15.1	4.8	-64.92	656.4	-270.3	655.2	636.0	19.27	33.996	
4,300.0	4,295.9	4,307.7	4,307.7	15.5	4.8	-65.47	656.3	-270.3	652.2	632.6	19.68	33.141	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
BULLDOG - BASEBALL CAP FED COM #607H - OWB - AWP												Offset Well Error:	3.0 usft
Survey Program: 100-Standard Keeper 104, 12038-MWD+IFR1+MS													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,400.0	4,395.7	4,407.7	4,407.6	15.8	4.9	-66.03	656.3	-270.3	649.3	629.2	20.09	32.322	
4,500.0	4,495.5	4,508.0	4,508.0	16.2	4.9	-66.60	656.2	-270.2	646.4	625.9	20.50	31.531	
4,600.0	4,595.2	4,608.1	4,608.1	16.5	5.0	-67.16	656.1	-270.0	643.4	622.5	20.92	30.756	
4,700.0	4,695.0	4,707.4	4,707.4	16.9	5.1	-67.73	655.9	-269.9	640.6	619.2	21.34	30.012	
4,800.0	4,794.7	4,808.6	4,808.6	17.2	5.2	-68.31	655.8	-269.7	637.7	615.9	21.77	29.292	
4,900.0	4,894.5	4,909.1	4,909.1	17.6	5.2	-68.88	655.6	-269.3	634.8	612.6	22.20	28.591	
5,000.0	4,994.2	5,009.3	5,009.3	17.9	5.3	-69.44	655.3	-268.8	631.8	609.1	22.63	27.913	
5,100.0	5,094.0	5,108.8	5,108.7	18.3	5.4	-70.01	655.0	-268.2	628.8	605.7	23.07	27.258	
5,200.0	5,193.7	5,210.6	5,210.6	18.6	5.5	-70.58	654.7	-267.4	625.7	602.1	23.51	26.615	
5,300.0	5,293.5	5,308.2	5,308.2	19.0	5.6	-71.12	654.4	-266.5	622.6	598.7	23.94	26.003	
5,400.0	5,393.3	5,406.7	5,406.7	19.4	5.7	-71.67	654.4	-265.9	620.1	595.7	24.38	25.437	
5,500.0	5,493.0	5,504.5	5,504.5	19.7	5.8	-72.24	654.6	-265.5	617.8	593.0	24.80	24.908	
5,600.0	5,592.8	5,604.2	5,604.1	20.1	5.9	-72.84	654.7	-265.4	615.7	590.5	25.21	24.425	
5,700.0	5,692.5	5,704.1	5,704.1	20.4	6.0	-73.46	654.7	-265.4	613.7	588.1	25.61	23.967	
5,800.0	5,792.3	5,803.9	5,803.9	20.8	6.0	-74.08	654.8	-265.4	611.8	585.7	26.01	23.522	
5,900.0	5,892.0	5,903.4	5,903.4	21.1	6.1	-74.71	654.8	-265.4	609.9	583.4	26.42	23.084	
6,000.0	5,991.8	6,002.9	6,002.9	21.5	6.1	-75.34	654.8	-265.4	608.1	581.2	26.84	22.658	
6,100.0	6,091.6	6,102.3	6,102.3	21.8	6.1	-75.97	654.8	-265.4	606.4	579.1	27.24	22.262	
6,200.0	6,191.3	6,203.0	6,202.9	22.2	6.2	-76.62	654.8	-265.4	604.7	577.1	27.65	21.871	
6,300.0	6,291.1	6,302.5	6,302.5	22.6	6.2	-77.26	654.8	-265.4	603.2	575.1	28.06	21.494	
6,400.0	6,390.8	6,402.6	6,402.5	22.9	6.3	-77.90	654.9	-265.4	601.7	573.2	28.48	21.129	
6,500.0	6,490.6	6,502.7	6,502.6	23.3	6.3	-78.55	654.9	-265.4	600.2	571.4	28.89	20.775	
6,600.0	6,590.3	6,601.2	6,601.2	23.6	6.4	-79.20	654.9	-265.4	598.9	569.6	29.30	20.442	
6,700.0	6,690.1	6,701.1	6,701.1	24.0	6.4	-79.85	655.0	-265.5	597.8	568.1	29.69	20.135	
6,800.0	6,789.9	6,800.0	6,800.0	24.3	6.4	-80.50	655.2	-265.6	596.8	566.7	30.08	19.839	
6,900.0	6,889.6	6,899.5	6,899.4	24.7	6.5	-81.15	655.4	-265.8	596.0	565.5	30.47	19.557	
7,000.0	6,989.4	6,998.9	6,998.9	25.1	6.5	-81.80	655.7	-265.9	595.3	564.4	30.87	19.284	
7,100.0	7,089.1	7,098.0	7,098.0	25.4	6.5	-82.45	656.1	-266.1	594.7	563.4	31.27	19.021	
7,200.0	7,188.9	7,197.3	7,197.3	25.8	6.6	-83.09	656.5	-266.4	594.3	562.6	31.66	18.769	
7,300.0	7,288.6	7,296.2	7,296.1	26.1	6.7	-83.73	657.0	-266.6	594.1	562.0	32.06	18.527	
7,304.5	7,293.2	7,300.5	7,300.5	26.2	6.7	-83.76	657.1	-266.6	594.1	562.0	32.08	18.516 CC	
7,400.0	7,388.5	7,394.1	7,394.1	26.5	6.7	-84.27	657.7	-267.2	594.3	561.8	32.46	18.307 ES	
7,500.0	7,488.4	7,493.4	7,493.4	26.8	6.7	-84.68	658.2	-268.1	594.9	562.1	32.86	18.104	
7,600.0	7,588.3	7,593.9	7,593.9	27.2	6.7	-84.94	658.7	-269.1	595.8	562.5	33.26	17.911	
7,700.0	7,688.3	7,694.2	7,694.1	27.6	6.8	-50.75	659.1	-270.1	596.8	563.1	33.66	17.728	
7,800.0	7,788.3	7,795.2	7,795.1	27.9	6.8	-50.78	659.4	-271.1	597.7	563.6	34.06	17.546	
7,900.0	7,888.3	7,894.4	7,894.3	28.3	6.8	-50.82	659.7	-272.0	598.6	564.2	34.47	17.367	
8,000.0	7,988.3	7,993.9	7,993.9	28.6	6.9	-50.85	660.1	-273.0	599.6	564.8	34.87	17.194	
8,100.0	8,088.3	8,093.7	8,093.6	29.0	6.9	-50.87	660.6	-273.9	600.6	565.4	35.28	17.024	
8,200.0	8,188.3	8,194.0	8,193.9	29.3	7.0	-50.87	661.2	-274.7	601.6	566.0	35.69	16.856	
8,300.0	8,288.3	8,293.7	8,293.6	29.7	7.0	-50.85	661.9	-275.4	602.7	566.6	36.10	16.692	
8,400.0	8,388.3	8,392.7	8,392.6	30.0	7.1	-50.84	662.8	-276.1	603.8	567.3	36.52	16.535	
8,500.0	8,488.3	8,491.9	8,491.8	30.4	7.1	-50.84	663.6	-277.1	605.1	568.2	36.93	16.383	
8,600.0	8,588.3	8,591.2	8,591.0	30.7	7.2	-50.86	664.3	-278.4	606.6	569.2	37.35	16.239	
8,700.0	8,688.3	8,689.8	8,689.6	31.1	7.2	-50.90	665.0	-279.8	608.1	570.4	37.77	16.100	
8,800.0	8,788.3	8,790.1	8,790.0	31.5	7.3	-50.94	665.7	-281.5	609.8	571.6	38.19	15.967	
8,900.0	8,888.3	8,888.5	8,888.4	31.8	7.3	-50.98	666.5	-283.1	611.7	573.0	38.62	15.839	
9,000.0	8,988.3	8,987.9	8,987.7	32.2	7.4	-51.04	667.3	-285.1	613.7	574.6	39.04	15.718	
9,100.0	9,088.3	9,087.4	9,087.1	32.5	7.4	-51.17	667.5	-287.6	615.8	576.3	39.47	15.602	
9,200.0	9,188.3	9,186.0	9,185.7	32.9	7.5	-51.36	667.3	-290.5	618.0	578.1	39.89	15.491	
9,300.0	9,288.3	9,282.0	9,281.6	33.2	7.5	-51.54	667.2	-293.6	620.4	580.1	40.32	15.390	
9,400.0	9,388.3	9,380.6	9,380.2	33.6	7.6	-51.73	667.4	-297.2	623.4	582.7	40.74	15.301	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design BULLDOG - BASEBALL CAP FED COM #607H - OWB - AWP												Offset Site Error:	0.0 usft
Survey Program: 100-Standard Keeper 104, 12038-MWD+IFR1+MS												Offset Well Error:	3.0 usft
Reference	Offset	Semi Major Axis		Distance		Warning							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
9,500.0	9,488.3	9,473.6	9,473.1	33.9	7.6	-51.94	667.9	-301.4	627.3	586.1	41.17	15.237	
9,600.0	9,588.3	9,566.4	9,565.8	34.3	7.7	-52.16	668.6	-306.4	632.0	590.5	41.59	15.195	
9,700.0	9,688.3	9,662.3	9,661.4	34.6	7.7	-52.42	669.8	-312.5	637.8	595.8	42.02	15.177	
9,800.0	9,788.3	9,761.9	9,760.9	35.0	7.8	-52.68	671.1	-319.1	643.9	601.4	42.45	15.166	
9,900.0	9,888.3	9,859.1	9,857.8	35.4	7.9	-52.96	672.3	-325.8	650.1	607.2	42.89	15.160	
10,000.0	9,988.3	9,954.5	9,952.9	35.7	7.9	-53.24	673.6	-333.0	657.0	613.7	43.32	15.167	
10,100.0	10,088.3	10,052.4	10,050.5	36.1	8.0	-53.57	674.9	-341.0	664.3	620.6	43.75	15.184	
10,200.0	10,188.3	10,151.5	10,149.3	36.4	8.1	-53.91	676.1	-349.3	671.8	627.6	44.18	15.205	
10,300.0	10,288.3	10,251.4	10,248.8	36.8	8.1	-54.27	677.1	-358.0	679.4	634.8	44.61	15.228	
10,400.0	10,388.3	10,353.5	10,350.5	37.1	8.2	-54.64	677.9	-366.6	686.7	641.7	45.05	15.244	
10,500.0	10,488.3	10,456.1	10,452.7	37.5	8.3	-55.01	678.4	-375.1	693.8	648.4	45.48	15.255	
10,600.0	10,588.3	10,563.7	10,560.0	37.8	8.3	-55.37	678.8	-383.2	700.2	654.3	45.92	15.249	
10,700.0	10,688.3	10,671.2	10,667.3	38.2	8.4	-55.65	679.1	-389.8	705.4	659.1	46.36	15.216	
10,800.0	10,788.3	10,778.6	10,774.6	38.6	8.5	-55.83	679.7	-394.7	709.6	662.8	46.81	15.160	
10,900.0	10,888.3	10,888.3	10,884.2	38.9	8.6	-55.95	680.4	-398.2	712.5	665.3	47.26	15.076	
11,000.0	10,988.3	10,989.3	10,985.2	39.3	8.7	-56.03	680.8	-400.6	714.7	667.0	47.71	14.982	
11,100.0	11,088.3	11,093.2	11,089.0	39.6	8.7	-56.13	680.8	-402.9	716.6	668.4	48.16	14.880	
11,200.0	11,188.3	11,194.0	11,189.9	40.0	8.8	-56.23	680.5	-404.8	717.9	669.3	48.60	14.773	
11,300.0	11,288.3	11,292.9	11,288.7	40.3	8.9	-56.36	680.0	-406.9	719.4	670.4	49.03	14.672	
11,400.0	11,388.3	11,390.5	11,386.3	40.7	9.0	-56.52	679.2	-409.5	721.2	671.7	49.47	14.579	
11,500.0	11,488.3	11,484.8	11,480.6	41.1	9.0	-56.71	678.5	-412.5	723.4	673.5	49.90	14.498	
11,600.0	11,588.3	11,580.6	11,576.3	41.4	9.1	-56.91	677.9	-416.2	726.4	676.1	50.34	14.430	
11,700.0	11,688.3	11,678.2	11,673.8	41.8	9.2	-57.14	677.3	-420.6	729.8	679.0	50.78	14.372	
11,800.0	11,788.3	11,774.4	11,769.9	42.1	9.2	-57.36	676.9	-425.3	733.7	682.5	51.22	14.325	
11,900.0	11,888.3	11,875.9	11,871.2	42.5	9.3	-57.55	677.1	-430.2	737.9	686.2	51.67	14.282	
12,000.0	11,988.3	11,980.3	11,975.6	42.8	9.4	-57.69	677.7	-434.6	741.8	689.6	52.10	14.236	
12,100.0	12,088.3	12,070.0	12,065.2	43.2	9.5	-57.79	678.1	-437.6	744.9	692.5	52.49	14.192 SF	
12,200.0	12,188.3	12,123.6	12,118.6	43.5	9.5	122.54	682.2	-439.8	753.1	700.2	52.90	14.238	
12,300.0	12,286.6	12,175.3	12,169.2	43.8	9.7	121.25	692.0	-441.6	776.0	722.6	53.41	14.530	
12,400.0	12,379.2	12,210.2	12,202.5	44.1	9.8	118.18	702.6	-442.3	815.8	761.8	54.05	15.094	
12,500.0	12,462.1	12,226.0	12,217.2	44.3	9.9	111.80	708.3	-442.6	871.4	816.6	54.72	15.924	
12,600.0	12,531.5	12,246.3	12,235.8	44.5	10.0	102.73	716.5	-443.0	939.0	883.8	55.22	17.005	

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
BULLDOG - BASEBALL CAP FED COM #707H - OWB - AWP												Offset Well Error:	3.0 usft
Survey Program: 100-Standard Keeper 104, 12229-MWVD													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	12.7	12.7	3.0	3.0	-25.12	651.3	-305.3	719.3				
100.0	100.0	117.8	117.8	3.0	3.0	-25.14	650.7	-305.4	718.8	712.8	6.00	119.730	
200.0	200.0	217.6	217.6	3.0	3.0	-25.19	649.7	-305.5	718.0	711.9	6.04	118.771	
300.0	300.0	315.4	315.4	3.1	3.0	-25.21	649.0	-305.5	717.4	711.2	6.13	116.977	
400.0	400.0	414.7	414.7	3.2	3.0	-25.22	648.6	-305.5	716.9	710.7	6.26	114.468	
500.0	500.0	514.6	514.6	3.4	3.1	-25.23	648.2	-305.5	716.6	710.1	6.43	111.387	
600.0	600.0	615.1	615.1	3.6	3.1	-25.25	647.7	-305.5	716.2	709.5	6.64	107.899	
700.0	700.0	715.1	715.1	3.8	3.1	-25.27	647.2	-305.6	715.7	708.9	6.87	104.177	
800.0	800.0	815.0	815.0	4.0	3.2	-25.30	646.7	-305.7	715.3	708.2	7.13	100.350	
900.0	900.0	916.3	916.3	4.2	3.2	-25.32	646.1	-305.8	714.8	707.4	7.41	96.478	
1,000.0	1,000.0	1,019.3	1,019.3	4.5	3.2	-25.35	645.3	-305.7	714.0	706.3	7.71	92.576	
1,100.0	1,100.0	1,122.8	1,122.7	4.8	3.3	-25.37	643.9	-305.4	712.8	704.7	8.04	88.694	
1,200.0	1,200.0	1,225.3	1,225.2	5.1	3.4	-25.38	642.3	-304.7	711.1	702.7	8.37	84.936	
1,300.0	1,300.0	1,326.8	1,326.7	5.4	3.4	-25.38	640.5	-303.8	709.0	700.3	8.72	81.273	
1,400.0	1,400.0	1,425.1	1,425.0	5.7	3.5	-25.36	638.8	-302.8	707.1	698.0	9.09	77.827	
1,500.0	1,500.0	1,524.0	1,523.9	6.0	3.5	-25.35	637.3	-301.9	705.3	695.9	9.46	74.583	
1,600.0	1,600.0	1,622.4	1,622.3	6.3	3.6	-25.33	636.0	-301.1	703.8	693.9	9.84	71.540	
1,700.0	1,700.0	1,720.3	1,720.2	6.6	3.7	-25.31	634.9	-300.3	702.4	692.2	10.22	68.702	
1,800.0	1,800.0	1,817.7	1,817.6	6.9	3.7	-25.28	634.3	-299.5	701.5	690.8	10.61	66.085	
1,900.0	1,900.0	1,916.4	1,916.3	7.2	3.8	-25.24	633.8	-298.7	700.7	689.7	11.00	63.679	
2,000.0	2,000.0	2,014.1	2,014.0	7.6	3.8	-25.18	633.8	-298.0	700.3	689.0	11.38	61.517	
2,100.0	2,100.0	2,116.5	2,116.4	7.9	3.9	-25.12	633.6	-297.1	699.8	688.1	11.77	59.460	
2,200.0	2,200.0	2,214.6	2,214.4	8.2	3.9	-25.07	633.5	-296.3	699.4	687.2	12.16	57.513	
2,300.0	2,300.0	2,314.6	2,314.4	8.6	4.0	-25.02	633.4	-295.6	699.0	686.5	12.55	55.694	
2,400.0	2,400.0	2,414.5	2,414.4	8.9	4.0	-24.96	633.4	-294.9	698.7	685.7	12.94	53.975	
2,500.0	2,500.0	2,513.6	2,513.5	9.2	4.1	-24.93	633.3	-294.3	698.4	685.0	13.34	52.357	
2,600.0	2,600.0	2,611.6	2,611.5	9.6	4.1	-59.40	633.0	-294.8	697.4	683.7	13.72	50.840	
2,700.0	2,699.8	2,711.7	2,711.6	9.9	4.2	-59.94	632.5	-296.1	694.8	680.7	14.08	49.333	
2,800.0	2,799.6	2,810.3	2,810.1	10.3	4.2	-60.70	631.2	-299.1	691.5	677.1	14.45	47.847	
2,900.0	2,899.4	2,912.0	2,911.7	10.6	4.2	-61.58	629.3	-303.1	688.2	673.4	14.82	46.428	
3,000.0	2,999.1	3,014.5	3,014.1	10.9	4.3	-62.46	627.1	-306.7	684.7	669.5	15.20	45.046	
3,100.0	3,098.9	3,117.5	3,117.0	11.3	4.3	-63.31	624.8	-309.6	680.9	665.3	15.59	43.687	
3,200.0	3,198.6	3,221.6	3,221.1	11.6	4.4	-64.11	622.1	-311.6	676.5	660.5	15.98	42.324	
3,300.0	3,298.4	3,322.8	3,322.2	12.0	4.5	-64.86	619.5	-312.8	671.9	655.5	16.39	40.985	
3,400.0	3,398.1	3,425.1	3,424.5	12.3	4.6	-65.57	616.8	-313.4	667.0	650.1	16.81	39.671	
3,500.0	3,497.9	3,523.6	3,522.9	12.7	4.7	-66.22	614.3	-313.3	661.9	644.6	17.24	38.397	
3,600.0	3,597.6	3,615.7	3,615.1	13.0	4.8	-66.81	612.8	-313.5	657.8	640.1	17.66	37.253	
3,700.0	3,697.4	3,715.8	3,715.1	13.4	4.9	-67.44	611.7	-313.7	654.3	636.2	18.08	36.188	
3,800.0	3,797.2	3,820.6	3,819.9	13.7	5.0	-68.08	610.3	-313.4	650.4	631.9	18.52	35.125	
3,900.0	3,896.9	3,924.6	3,923.9	14.1	5.1	-68.70	608.4	-312.4	645.7	626.8	18.96	34.062	
4,000.0	3,996.7	4,021.4	4,020.7	14.4	5.2	-69.41	605.6	-312.5	641.0	621.6	19.38	33.071	
4,100.0	4,096.4	4,111.6	4,110.8	14.8	5.3	-70.25	602.9	-314.8	637.5	617.7	19.78	32.235	
4,200.0	4,196.2	4,210.7	4,209.8	15.1	5.3	-71.26	599.8	-318.4	634.9	614.7	20.15	31.501	
4,300.0	4,295.9	4,312.5	4,311.5	15.5	5.4	-72.27	596.8	-321.7	632.3	611.8	20.54	30.791	
4,400.0	4,395.7	4,412.3	4,411.2	15.8	5.5	-73.22	593.9	-324.3	629.6	608.7	20.92	30.098	
4,500.0	4,495.5	4,508.2	4,507.1	16.2	5.6	-74.15	591.4	-327.1	627.5	606.2	21.30	29.463	
4,600.0	4,595.2	4,613.5	4,612.3	16.5	5.7	-75.13	588.7	-329.6	625.1	603.4	21.68	28.834	
4,700.0	4,695.0	4,708.0	4,706.7	16.9	5.8	-75.92	587.0	-331.1	623.0	601.0	22.06	28.241	
4,800.0	4,794.7	4,814.7	4,813.4	17.2	5.9	-76.76	585.2	-332.0	620.8	598.3	22.46	27.642	
4,900.0	4,894.5	4,911.9	4,910.6	17.6	6.0	-77.61	582.8	-333.3	618.3	595.5	22.85	27.058	
5,000.0	4,994.2	5,009.1	5,007.7	17.9	6.0	-78.53	580.2	-335.4	616.4	593.2	23.23	26.531	
5,100.0	5,094.0	5,103.2	5,101.8	18.3	6.1	-79.43	578.1	-337.8	615.3	591.7	23.60	26.069	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
Survey Program: 100-Standard Keeper 104, 12229-MWD												Offset Well Error:	3.0 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
5,162.5	5,156.3	5,162.3	5,160.8	18.5	6.2	-80.00	577.0	-339.7	615.1	591.3	23.83	25.816	CC
5,200.0	5,193.7	5,200.0	5,198.5	18.6	6.2	-80.37	576.4	-341.0	615.2	591.2	23.96	25.675	
5,300.0	5,293.5	5,303.0	5,301.4	19.0	6.3	-81.34	574.8	-344.1	615.2	590.9	24.32	25.295	
5,310.7	5,304.2	5,311.3	5,309.8	19.0	6.3	-81.42	574.6	-344.3	615.2	590.8	24.36	25.256	ES
5,400.0	5,393.3	5,386.1	5,384.5	19.4	6.3	-82.11	574.0	-347.1	616.2	591.6	24.67	24.984	
5,500.0	5,493.0	5,482.3	5,480.6	19.7	6.4	-83.01	574.2	-351.9	619.2	594.2	25.01	24.761	
5,600.0	5,592.8	5,584.5	5,582.6	20.1	6.4	-83.94	574.5	-356.8	622.2	596.8	25.35	24.542	
5,700.0	5,692.5	5,685.4	5,683.5	20.4	6.5	-84.83	574.7	-361.2	625.0	599.3	25.70	24.315	
5,800.0	5,792.3	5,783.4	5,781.4	20.8	6.6	-85.77	574.1	-366.0	627.9	601.8	26.06	24.095	
5,900.0	5,892.0	5,883.5	5,881.2	21.1	6.6	-86.93	571.7	-372.5	631.1	604.7	26.42	23.888	
6,000.0	5,991.8	5,984.7	5,982.2	21.5	6.7	-88.09	569.2	-378.7	634.3	607.5	26.79	23.681	
6,100.0	6,091.6	6,086.9	6,084.2	21.8	6.8	-89.22	566.7	-384.6	637.4	610.2	27.16	23.469	
6,200.0	6,191.3	6,186.6	6,183.7	22.2	6.9	-90.30	564.2	-390.0	640.4	612.9	27.53	23.258	
6,300.0	6,291.1	6,282.5	6,279.4	22.6	7.0	-91.37	561.5	-395.5	643.8	615.9	27.91	23.069	
6,400.0	6,390.8	6,381.8	6,378.5	22.9	7.1	-92.55	558.1	-402.1	647.8	619.6	28.29	22.900	
6,500.0	6,490.6	6,484.6	6,480.9	23.3	7.2	-93.74	554.6	-408.5	651.8	623.1	28.68	22.726	
6,600.0	6,590.3	6,585.4	6,581.6	23.6	7.3	-94.85	551.3	-414.1	655.6	626.5	29.07	22.547	
6,700.0	6,690.1	6,682.1	6,678.0	24.0	7.4	-95.89	548.2	-419.5	659.6	630.1	29.47	22.383	
6,800.0	6,789.9	6,773.0	6,768.6	24.3	7.5	-96.94	544.8	-425.7	664.6	634.8	29.86	22.261	
6,900.0	6,889.6	6,868.2	6,863.4	24.7	7.6	-98.13	540.7	-433.5	671.0	640.8	30.25	22.180	
7,000.0	6,989.4	6,968.9	6,963.7	25.1	7.7	-99.35	536.4	-441.9	677.8	647.1	30.67	22.103	
7,100.0	7,089.1	7,070.9	7,065.4	25.4	7.8	-100.54	532.1	-449.8	684.4	653.3	31.09	22.016	
7,200.0	7,188.9	7,173.8	7,167.9	25.8	7.9	-101.68	528.0	-457.1	690.8	659.3	31.51	21.921	
7,300.0	7,288.6	7,274.0	7,267.8	26.1	8.0	-102.75	524.2	-463.7	697.0	665.0	31.94	21.821	
7,400.0	7,388.5	7,376.6	7,370.1	26.5	8.1	-103.75	520.5	-470.1	702.9	670.5	32.38	21.710	
7,500.0	7,488.4	7,477.4	7,470.7	26.8	8.2	-104.54	517.2	-475.8	708.1	675.3	32.81	21.582	
7,600.0	7,588.3	7,579.1	7,572.2	27.2	8.3	-105.16	514.1	-481.4	712.8	679.5	33.25	21.440	
7,700.0	7,688.3	7,677.9	7,670.7	27.6	8.4	-105.35	510.5	-486.7	716.9	683.3	33.68	21.290	
7,800.0	7,788.3	7,776.0	7,768.6	27.9	8.5	-105.85	506.0	-492.6	721.2	687.1	34.11	21.146	
7,900.0	7,888.3	7,877.9	7,870.2	28.3	8.7	-106.35	501.3	-498.8	725.5	691.0	34.55	21.001	
8,000.0	7,988.3	7,981.2	7,973.3	28.6	8.8	-106.85	496.8	-504.5	729.5	694.5	34.99	20.847	
8,100.0	8,088.3	8,082.9	8,074.7	29.0	8.9	-107.35	492.6	-509.5	733.1	697.6	35.43	20.688	
8,200.0	8,188.3	8,180.9	8,172.6	29.3	9.0	-107.85	489.0	-514.3	736.7	700.8	35.87	20.537	
8,300.0	8,288.3	8,279.7	8,271.2	29.7	9.1	-108.35	486.0	-519.1	740.5	704.2	36.31	20.395	
8,400.0	8,388.3	8,379.1	8,370.5	30.0	9.2	-108.85	483.2	-524.0	744.5	707.7	36.75	20.257	
8,500.0	8,488.3	8,477.7	8,468.9	30.4	9.3	-109.35	480.1	-529.1	748.6	711.4	37.20	20.126	
8,600.0	8,588.3	8,576.3	8,567.3	30.7	9.5	-109.85	476.5	-534.5	752.9	715.3	37.64	20.002	
8,700.0	8,688.3	8,675.0	8,665.7	31.1	9.6	-110.35	472.6	-540.0	757.4	719.3	38.09	19.885	
8,800.0	8,788.3	8,774.3	8,764.8	31.5	9.7	-110.85	469.2	-545.7	762.0	723.5	38.54	19.772	
8,900.0	8,888.3	8,873.4	8,863.7	31.8	9.8	-111.35	465.7	-551.4	766.7	727.7	38.99	19.664	
9,000.0	8,988.3	8,971.5	8,961.5	32.2	9.9	-111.85	461.4	-557.4	771.6	732.2	39.44	19.563	
9,100.0	9,088.3	9,077.9	9,067.5	32.5	10.0	-112.35	455.9	-563.9	776.4	736.5	39.92	19.451	
9,200.0	9,188.3	9,180.3	9,169.5	32.9	10.2	-112.85	448.6	-569.7	780.4	740.0	40.38	19.324	
9,300.0	9,288.3	9,275.7	9,264.6	33.2	10.3	-113.35	442.1	-575.1	784.6	743.8	40.84	19.213	
9,400.0	9,388.3	9,370.0	9,358.5	33.6	10.4	-113.85	436.7	-581.0	789.5	748.2	41.29	19.122	
9,500.0	9,488.3	9,463.6	9,451.8	33.9	10.5	-114.35	432.4	-587.3	795.2	753.5	41.74	19.052	
9,600.0	9,588.3	9,558.5	9,546.3	34.3	10.6	-114.85	429.0	-594.1	801.7	759.5	42.19	19.000	
9,700.0	9,688.3	9,656.7	9,644.3	34.6	10.7	-115.35	426.4	-601.5	808.6	765.9	42.66	18.955	
9,800.0	9,788.3	9,755.1	9,742.4	35.0	10.8	-115.85	424.1	-608.9	815.5	772.4	43.12	18.913	
9,900.0	9,888.3	9,854.7	9,841.7	35.4	10.9	-116.35	422.1	-616.5	822.7	779.1	43.59	18.875	
10,000.0	9,988.3	9,955.3	9,942.0	35.7	11.0	-116.85	420.3	-624.0	829.8	785.7	44.06	18.833	
10,100.0	10,088.3	10,055.8	10,042.1	36.1	11.1	-117.35	418.4	-631.5	836.8	792.3	44.53	18.792	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design BULLDOG - BASEBALL CAP FED COM #707H - OWB - AWP												Offset Site Error:	0.0 usft
Survey Program: 100-Standard Keeper 104, 12229-MWD												Offset Well Error:	3.0 usft
Reference	Offset	Semi Major Axis		Distance		Warning							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
10,200.0	10,188.3	10,158.5	10,144.6	36.4	11.3	-80.77	416.6	-638.9	843.6	798.6	45.01	18.744	
10,300.0	10,288.3	10,261.7	10,247.6	36.8	11.4	-80.96	414.7	-645.8	850.0	804.5	45.48	18.688	
10,400.0	10,388.3	10,366.5	10,352.1	37.1	11.5	-81.17	412.7	-652.5	856.0	810.0	45.97	18.621	
10,500.0	10,488.3	10,469.1	10,454.5	37.5	11.6	-81.37	410.6	-658.4	861.4	814.9	46.45	18.546	
10,600.0	10,588.3	10,577.6	10,562.8	37.8	11.7	-81.57	408.4	-664.2	866.3	819.4	46.94	18.458	
10,700.0	10,688.3	10,689.2	10,674.3	38.2	11.9	-81.78	405.8	-668.7	870.0	822.6	47.43	18.342	
10,800.0	10,788.3	10,798.8	10,783.9	38.6	12.0	-81.98	403.1	-671.7	872.4	824.5	47.91	18.208	
10,900.0	10,888.3	10,906.5	10,891.5	38.9	12.1	-82.16	400.6	-673.6	873.9	825.5	48.38	18.061	
11,000.0	10,988.3	11,006.7	10,991.7	39.3	12.3	-82.32	398.4	-675.0	874.9	826.0	48.83	17.918	
11,100.0	11,088.3	11,108.6	11,093.5	39.6	12.4	-82.48	396.1	-676.2	875.7	826.5	49.27	17.774	
11,200.0	11,188.3	11,209.1	11,194.0	40.0	12.5	-82.66	393.5	-677.3	876.5	826.8	49.71	17.632	
11,300.0	11,288.3	11,309.6	11,294.5	40.3	12.6	-82.86	390.6	-678.3	877.2	827.0	50.15	17.491	
11,400.0	11,388.3	11,404.8	11,389.6	40.7	12.7	-83.02	388.1	-679.5	878.1	827.5	50.58	17.362	
11,500.0	11,488.3	11,502.2	11,487.0	41.1	12.9	-83.18	386.0	-681.2	879.5	828.5	51.02	17.239	
11,600.0	11,588.3	11,600.8	11,585.6	41.4	13.0	-83.31	384.2	-683.0	881.1	829.6	51.47	17.119	
11,700.0	11,688.3	11,700.0	11,684.7	41.8	13.1	-83.40	382.9	-684.8	882.7	830.8	51.93	17.000	
11,800.0	11,788.3	11,796.6	11,781.3	42.1	13.2	-83.47	382.0	-686.7	884.6	832.3	52.38	16.888	
11,900.0	11,888.3	11,894.9	11,879.6	42.5	13.3	-83.53	381.4	-689.0	886.9	834.0	52.84	16.783	
12,000.0	11,988.3	11,991.1	11,975.7	42.8	13.4	-83.59	380.8	-691.5	889.4	836.1	53.30	16.686	
12,100.0	12,088.3	12,088.2	12,072.8	43.2	13.5	-83.64	380.3	-694.5	892.4	838.6	53.77	16.597	
12,200.0	12,188.3	12,186.4	12,170.9	43.5	13.6	96.73	379.8	-697.7	895.7	841.5	54.19	16.529 SF	
12,300.0	12,286.6	12,288.7	12,273.2	43.8	13.6	97.21	380.0	-700.9	901.1	846.6	54.46	16.545	
12,400.0	12,379.2	12,371.0	12,355.4	44.1	13.7	98.19	382.6	-703.0	909.8	855.2	54.57	16.671	
12,500.0	12,462.1	12,417.0	12,401.1	44.3	13.7	97.97	386.8	-704.7	926.3	871.7	54.59	16.968	
12,600.0	12,531.5	12,449.0	12,432.7	44.5	13.7	96.26	391.6	-706.4	953.0	898.4	54.61	17.453	
12,700.0	12,584.5	12,465.4	12,448.7	44.7	13.7	92.43	394.8	-707.6	990.1	935.5	54.64	18.121	

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design BULLDOG - BLACK RAIDER "BQK" STATE 1H - OWB - AWP												Offset Site Error:	0.0 usft
Survey Program: 100-GYRO-NS, 8572-MWD												Offset Well Error:	3.0 usft
Reference	Offset	Semi Major Axis		Distance									
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,000.0	8,988.3	13,675.0	9,334.9	32.2	80.5	-113.24	-70.3	-627.3	965.2	863.3	101.89	9.473	
9,100.0	9,088.3	13,675.0	9,334.9	32.5	80.5	-113.24	-70.3	-627.3	931.5	826.8	104.75	8.893	
9,200.0	9,188.3	13,675.0	9,334.9	32.9	80.5	-113.24	-70.3	-627.3	907.7	800.7	106.99	8.483	
9,300.0	9,288.3	13,675.0	9,334.9	33.2	80.5	-113.24	-70.3	-627.3	894.4	786.0	108.40	8.251	
9,369.5	9,357.9	13,675.0	9,334.9	33.5	80.5	-113.24	-70.3	-627.3	891.7	782.9	108.82	8.194	CC, ES, SF
9,400.0	9,388.3	13,675.0	9,334.9	33.6	80.5	-113.24	-70.3	-627.3	892.2	783.4	108.85	8.196	
9,500.0	9,488.3	13,675.0	9,334.9	33.9	80.5	-113.24	-70.3	-627.3	901.2	792.9	108.32	8.320	
9,600.0	9,588.3	13,675.0	9,334.9	34.3	80.5	-113.24	-70.3	-627.3	921.0	814.1	106.89	8.616	
9,700.0	9,688.3	13,675.0	9,334.9	34.6	80.5	-113.24	-70.3	-627.3	951.0	846.2	104.75	9.079	
9,800.0	9,788.3	13,675.0	9,334.9	35.0	80.5	-113.24	-70.3	-627.3	990.2	888.0	102.12	9.697	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design BULLDOG - PICKELHAUBE ST #701H - OWB - PWP1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD+IFR1+FDIR												Offset Well Error:	3.0 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
10,300.0	10,288.3	10,349.8	10,336.7	36.8	36.9	94.53	202.9	1,184.8	998.2	924.8	73.35	13.607	
10,400.0	10,388.3	10,449.5	10,436.1	37.1	37.2	94.33	206.8	1,178.5	991.5	917.5	74.06	13.387	
10,500.0	10,488.3	10,549.2	10,535.6	37.5	37.6	94.13	210.7	1,172.2	984.9	910.1	74.78	13.171	
10,600.0	10,588.3	10,649.0	10,635.0	37.8	37.9	93.93	214.6	1,165.8	978.3	902.8	75.49	12.960	
10,700.0	10,688.3	10,748.7	10,734.4	38.2	38.3	93.73	218.5	1,159.5	971.7	895.5	76.20	12.752	
10,800.0	10,788.3	10,848.4	10,833.9	38.6	38.6	93.52	222.4	1,153.2	965.1	888.2	76.91	12.548	
10,900.0	10,888.3	10,948.1	10,933.3	38.9	39.0	93.31	226.3	1,146.8	958.5	880.9	77.62	12.349	
11,000.0	10,988.3	11,047.8	11,032.8	39.3	39.4	93.09	230.2	1,140.5	951.9	873.6	78.33	12.153	
11,100.0	11,088.3	11,147.6	11,132.2	39.6	39.7	92.88	234.1	1,134.2	945.4	866.3	79.04	11.960	
11,200.0	11,188.3	11,247.3	11,231.7	40.0	40.1	92.66	238.0	1,127.8	938.9	859.1	79.76	11.772	
11,300.0	11,288.3	11,347.0	11,331.1	40.3	40.4	92.44	241.9	1,121.5	932.3	851.9	80.47	11.586	
11,400.0	11,388.3	11,446.7	11,430.5	40.7	40.8	92.21	245.8	1,115.2	925.8	844.6	81.18	11.404	
11,500.0	11,488.3	11,546.4	11,530.0	41.1	41.2	91.98	249.7	1,108.8	919.3	837.4	81.89	11.226	
11,600.0	11,588.3	11,646.2	11,629.4	41.4	41.5	91.75	253.6	1,102.5	912.8	830.2	82.61	11.051	
11,700.0	11,688.3	11,745.9	11,728.9	41.8	41.9	91.52	257.5	1,096.2	906.4	823.1	83.32	10.879	
11,800.0	11,788.3	11,845.6	11,828.3	42.1	42.2	91.28	261.5	1,089.8	899.9	815.9	84.03	10.710	
11,900.0	11,888.3	11,945.3	11,927.8	42.5	42.6	91.04	265.4	1,083.5	893.5	808.8	84.74	10.544	
12,000.0	11,988.3	12,045.1	12,027.2	42.8	42.9	90.79	269.3	1,077.2	887.1	801.6	85.46	10.381	
12,100.0	12,088.3	12,144.8	12,126.6	43.2	43.3	90.54	273.2	1,070.8	880.7	794.5	86.17	10.220	
12,200.0	12,188.3	12,244.4	12,226.0	43.5	43.7	-89.53	277.1	1,064.5	874.3	787.4	86.87	10.064	
12,300.0	12,286.6	12,341.8	12,323.1	43.8	44.0	-91.63	280.9	1,058.3	868.1	780.5	87.53	9.917	
12,400.0	12,379.2	12,432.8	12,413.9	44.1	44.3	-94.63	284.4	1,052.5	863.6	775.5	88.14	9.799	
12,472.4	12,440.4	12,506.1	12,486.9	44.3	44.6	-97.20	281.5	1,047.9	862.7	774.2	88.52	9.746 CC	
12,500.0	12,462.1	12,535.9	12,516.3	44.3	44.7	-98.17	277.1	1,046.1	862.8	774.2	88.64	9.734	
12,600.0	12,531.5	12,655.0	12,629.4	44.5	45.0	-101.67	241.5	1,039.2	865.4	776.5	88.91	9.734	
12,700.0	12,584.5	12,796.4	12,747.3	44.7	45.4	-105.04	164.7	1,032.4	870.5	781.8	88.74	9.809	
12,800.0	12,618.7	12,965.3	12,851.3	44.8	45.6	-107.89	32.9	1,026.9	875.9	787.8	88.13	9.939	
12,900.0	12,632.8	13,158.3	12,906.1	44.8	45.8	-109.40	-150.8	1,024.9	879.0	791.4	87.68	10.026	
13,000.0	12,633.8	13,278.4	12,908.4	44.9	45.9	-109.44	-270.9	1,025.7	879.0	791.2	87.78	10.014	
13,100.0	12,634.6	13,378.4	12,908.8	44.9	45.9	-109.42	-370.8	1,026.5	878.8	790.9	87.91	9.996	
13,200.0	12,635.4	13,478.4	12,909.3	45.0	46.0	-109.40	-470.8	1,027.3	878.6	790.5	88.08	9.975	
13,300.0	12,636.2	13,578.4	12,909.7	45.1	46.1	-109.38	-570.8	1,028.1	878.4	790.1	88.28	9.950	
13,400.0	12,637.1	13,678.4	12,910.1	45.2	46.2	-109.36	-670.8	1,028.9	878.2	789.6	88.51	9.922	
13,500.0	12,637.9	13,778.4	12,910.6	45.3	46.4	-109.34	-770.8	1,029.7	877.9	789.2	88.77	9.890	
13,600.0	12,638.7	13,878.4	12,911.0	45.4	46.5	-109.31	-870.8	1,030.5	877.7	788.7	89.07	9.855	
13,700.0	12,639.6	13,978.4	12,911.5	45.6	46.6	-109.29	-970.8	1,031.2	877.5	788.1	89.40	9.816	
13,800.0	12,640.4	14,078.4	12,911.9	45.8	46.8	-109.27	-1,070.8	1,032.0	877.3	787.6	89.75	9.775	
13,900.0	12,641.2	14,178.4	12,912.4	46.0	47.0	-109.25	-1,170.8	1,032.8	877.1	787.0	90.14	9.730	
14,000.0	12,642.0	14,278.4	12,912.8	46.2	47.2	-109.23	-1,270.8	1,033.6	876.9	786.3	90.57	9.683	
14,100.0	12,642.9	14,378.4	12,913.3	46.4	47.4	-109.21	-1,370.8	1,034.4	876.7	785.7	91.02	9.632	
14,200.0	12,643.7	14,478.4	12,913.7	46.6	47.6	-109.18	-1,470.8	1,035.2	876.5	785.0	91.50	9.579	
14,300.0	12,644.5	14,578.4	12,914.2	46.8	47.9	-109.16	-1,570.8	1,036.0	876.3	784.3	92.01	9.524	
14,400.0	12,645.4	14,678.4	12,914.6	47.1	48.1	-109.14	-1,670.8	1,036.7	876.1	783.5	92.55	9.466	
14,500.0	12,646.2	14,778.4	12,915.1	47.4	48.4	-109.12	-1,770.8	1,037.5	875.9	782.8	93.11	9.406	
14,600.0	12,647.0	14,878.4	12,915.5	47.7	48.7	-109.10	-1,870.8	1,038.3	875.7	781.9	93.71	9.344	
14,700.0	12,647.8	14,978.4	12,916.0	48.0	49.0	-109.08	-1,970.8	1,039.1	875.5	781.1	94.33	9.281	
14,800.0	12,648.7	15,078.4	12,916.4	48.3	49.3	-109.05	-2,070.8	1,039.9	875.2	780.3	94.98	9.215	
14,900.0	12,649.5	15,178.4	12,916.8	48.6	49.6	-109.03	-2,170.8	1,040.7	875.0	779.4	95.66	9.148	
15,000.0	12,650.3	15,278.4	12,917.3	48.9	49.9	-109.01	-2,270.8	1,041.5	874.8	778.5	96.36	9.079	
15,100.0	12,651.1	15,378.4	12,917.7	49.3	50.3	-108.99	-2,370.8	1,042.3	874.6	777.5	97.08	9.009	
15,200.0	12,652.0	15,478.4	12,918.2	49.7	50.6	-108.97	-2,470.7	1,043.0	874.4	776.6	97.83	8.938	
15,300.0	12,652.8	15,578.4	12,918.6	50.0	51.0	-108.95	-2,570.7	1,043.8	874.2	775.6	98.61	8.865	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design BULLDOG - PICKELHAUBE ST #701H - OWB - PWP1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD+IFR1+FDIR												Offset Well Error:	3.0 usft
Reference	Offset	Semi Major Axis		Distance									
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Tooface (")	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
15,400.0	12,653.6	15,678.4	12,919.1	50.4	51.4	-108.92	-2,670.7	1,044.6	874.0	774.6	99.41	8.792	
15,500.0	12,654.5	15,778.4	12,919.5	50.8	51.8	-108.90	-2,770.7	1,045.4	873.8	773.6	100.23	8.718	
15,600.0	12,655.3	15,878.4	12,920.0	51.2	52.2	-108.88	-2,870.7	1,046.2	873.6	772.5	101.07	8.643	
15,700.0	12,656.1	15,978.4	12,920.4	51.7	52.6	-108.86	-2,970.7	1,047.0	873.4	771.4	101.94	8.568	
15,800.0	12,656.9	16,078.4	12,920.9	52.1	53.0	-108.84	-3,070.7	1,047.8	873.2	770.4	102.82	8.492	
15,900.0	12,657.8	16,178.4	12,921.3	52.6	53.5	-108.81	-3,170.7	1,048.6	873.0	769.2	103.73	8.416	
16,000.0	12,658.6	16,278.4	12,921.8	53.0	53.9	-108.79	-3,270.7	1,049.3	872.8	768.1	104.66	8.339	
16,100.0	12,659.4	16,378.4	12,922.2	53.5	54.4	-108.77	-3,370.7	1,050.1	872.6	767.0	105.61	8.262	
16,200.0	12,660.3	16,478.4	12,922.7	54.0	54.9	-108.75	-3,470.7	1,050.9	872.4	765.8	106.57	8.186	
16,300.0	12,661.1	16,578.4	12,923.1	54.4	55.3	-108.73	-3,570.7	1,051.7	872.1	764.6	107.56	8.109	
16,400.0	12,661.9	16,678.4	12,923.5	54.9	55.8	-108.71	-3,670.7	1,052.5	871.9	763.4	108.56	8.032	
16,500.0	12,662.7	16,778.4	12,924.0	55.4	56.3	-108.68	-3,770.7	1,053.3	871.7	762.2	109.58	7.955	
16,600.0	12,663.6	16,878.4	12,924.4	56.0	56.8	-108.66	-3,870.7	1,054.1	871.5	760.9	110.62	7.879	
16,700.0	12,664.4	16,978.4	12,924.9	56.5	57.3	-108.64	-3,970.7	1,054.9	871.3	759.7	111.67	7.802	
16,800.0	12,665.2	17,078.4	12,925.3	57.0	57.9	-108.62	-4,070.7	1,055.6	871.1	758.4	112.74	7.727	
16,900.0	12,666.0	17,178.4	12,925.8	57.5	58.4	-108.60	-4,170.7	1,056.4	870.9	757.1	113.83	7.651	
17,000.0	12,666.9	17,278.4	12,926.2	58.1	58.9	-108.57	-4,270.7	1,057.2	870.7	755.8	114.93	7.576	
17,100.0	12,667.7	17,378.4	12,926.7	58.6	59.5	-108.55	-4,370.7	1,058.0	870.5	754.5	116.05	7.501	
17,200.0	12,668.5	17,478.4	12,927.1	59.2	60.0	-108.53	-4,470.7	1,058.8	870.3	753.1	117.18	7.427	
17,300.0	12,669.4	17,578.4	12,927.6	59.8	60.6	-108.51	-4,570.6	1,059.6	870.1	751.8	118.32	7.353	
17,400.0	12,670.2	17,678.3	12,928.0	60.3	61.2	-108.49	-4,670.6	1,060.4	869.9	750.4	119.48	7.280	
17,500.0	12,671.0	17,778.3	12,928.5	60.9	61.7	-108.46	-4,770.6	1,061.1	869.7	749.0	120.66	7.208	
17,600.0	12,671.8	17,878.3	12,928.9	61.5	62.3	-108.44	-4,870.6	1,061.9	869.5	747.6	121.84	7.136	
17,618.8	12,672.0	17,897.2	12,929.0	61.6	62.4	-108.44	-4,889.5	1,062.1	869.5	747.4	122.06	7.123 ES, SF	

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
Survey Program: 0-MWD+IFR1+FDIR												Offset Well Error:	3.0 usft
Reference	Offset	Semi Major Axis		Distance									
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	3.0	3.0	-89.81	0.1	-30.0	30.1				
100.0	100.0	98.0	98.0	3.0	3.0	-89.81	0.1	-30.0	30.0	24.0	6.01	4.995	
200.0	200.0	198.0	198.0	3.0	3.0	-89.81	0.1	-30.0	30.0	23.9	6.08	4.935	
300.0	300.0	298.0	298.0	3.1	3.1	-89.81	0.1	-30.0	30.0	23.8	6.23	4.812	
400.0	400.0	398.0	398.0	3.2	3.2	-89.81	0.1	-30.0	30.0	23.5	6.47	4.640	
500.0	500.0	498.0	498.0	3.4	3.4	-89.81	0.1	-30.0	30.0	23.2	6.77	4.434	
600.0	600.0	598.0	598.0	3.6	3.6	-89.81	0.1	-30.0	30.0	22.9	7.13	4.210	
700.0	700.0	698.0	698.0	3.8	3.8	-89.81	0.1	-30.0	30.0	22.5	7.54	3.981	
800.0	800.0	798.0	798.0	4.0	4.0	-89.81	0.1	-30.0	30.0	22.0	7.99	3.755	
900.0	900.0	898.0	898.0	4.2	4.2	-89.81	0.1	-30.0	30.0	21.5	8.48	3.537	
1,000.0	1,000.0	998.0	998.0	4.5	4.5	-89.81	0.1	-30.0	30.0	21.0	9.00	3.333	
1,100.0	1,100.0	1,098.0	1,098.0	4.8	4.8	-89.81	0.1	-30.0	30.0	20.5	9.55	3.142	
1,200.0	1,200.0	1,198.0	1,198.0	5.1	5.1	-89.81	0.1	-30.0	30.0	19.9	10.12	2.966	
1,300.0	1,300.0	1,298.0	1,298.0	5.4	5.3	-89.81	0.1	-30.0	30.0	19.3	10.70	2.803	
1,400.0	1,400.0	1,398.0	1,398.0	5.7	5.6	-89.81	0.1	-30.0	30.0	18.7	11.30	2.654	
1,500.0	1,500.0	1,498.0	1,498.0	6.0	6.0	-89.81	0.1	-30.0	30.0	18.1	11.92	2.518	
1,600.0	1,600.0	1,598.0	1,598.0	6.3	6.3	-89.81	0.1	-30.0	30.0	17.5	12.54	2.392	
1,700.0	1,700.0	1,698.0	1,698.0	6.6	6.6	-89.81	0.1	-30.0	30.0	16.8	13.17	2.277	
1,800.0	1,800.0	1,798.0	1,798.0	6.9	6.9	-89.81	0.1	-30.0	30.0	16.2	13.82	2.171	
1,900.0	1,900.0	1,898.0	1,898.0	7.2	7.2	-89.81	0.1	-30.0	30.0	15.5	14.47	2.074	
2,000.0	2,000.0	1,998.0	1,998.0	7.6	7.6	-89.81	0.1	-30.0	30.0	14.9	15.12	1.984 Advise and Monitor	
2,100.0	2,100.0	2,098.0	2,098.0	7.9	7.9	-89.81	0.1	-30.0	30.0	14.2	15.78	1.901 Advise and Monitor	
2,200.0	2,200.0	2,198.0	2,198.0	8.2	8.2	-89.81	0.1	-30.0	30.0	13.6	16.45	1.824 Advise and Monitor	
2,300.0	2,300.0	2,298.0	2,298.0	8.6	8.6	-89.81	0.1	-30.0	30.0	12.9	17.12	1.753 Advise and Monitor	
2,400.0	2,400.0	2,398.0	2,398.0	8.9	8.9	-89.81	0.1	-30.0	30.0	12.2	17.79	1.686 Advise and Monitor	
2,500.0	2,500.0	2,498.0	2,498.0	9.2	9.2	-89.81	0.1	-30.0	30.0	11.5	18.47	1.625 Advise and Monitor, CC, ES, SF	
2,600.0	2,600.0	2,597.5	2,597.5	9.6	9.6	-126.07	0.4	-30.8	31.8	12.6	19.14	1.660 Advise and Monitor	
2,700.0	2,699.8	2,696.8	2,696.7	9.9	9.9	-130.75	1.5	-33.1	37.3	17.5	19.80	1.883 Advise and Monitor	
2,800.0	2,799.6	2,796.4	2,796.3	10.3	10.2	-135.23	2.9	-36.3	45.0	24.5	20.47	2.198	
2,900.0	2,899.4	2,896.1	2,895.9	10.6	10.6	-138.39	4.3	-39.4	52.9	31.7	21.14	2.502	
3,000.0	2,999.1	2,995.7	2,995.5	10.9	10.9	-140.72	5.7	-42.6	60.9	39.1	21.81	2.792	
3,100.0	3,098.9	3,095.4	3,095.1	11.3	11.2	-142.51	7.1	-45.8	69.0	46.5	22.49	3.067	
3,200.0	3,198.6	3,195.0	3,194.7	11.6	11.6	-143.92	8.5	-49.0	77.1	54.0	23.17	3.328	
3,300.0	3,298.4	3,294.7	3,294.3	12.0	11.9	-145.06	9.9	-52.2	85.3	61.5	23.85	3.576	
3,400.0	3,398.1	3,394.3	3,393.9	12.3	12.3	-146.00	11.3	-55.3	93.5	69.0	24.54	3.811	
3,500.0	3,497.9	3,494.0	3,493.4	12.7	12.6	-146.79	12.8	-58.5	101.7	76.5	25.22	4.033	
3,600.0	3,597.6	3,593.6	3,593.0	13.0	12.9	-147.46	14.2	-61.7	110.0	84.1	25.91	4.245	
3,700.0	3,697.4	3,693.3	3,692.6	13.4	13.3	-148.04	15.6	-64.9	118.2	91.6	26.60	4.445	
3,800.0	3,797.2	3,792.9	3,792.2	13.7	13.6	-148.54	17.0	-68.1	126.5	99.2	27.29	4.635	
3,900.0	3,896.9	3,892.6	3,891.8	14.1	14.0	-148.98	18.4	-71.2	134.8	106.8	27.98	4.817	
4,000.0	3,996.7	3,992.2	3,991.4	14.4	14.3	-149.37	19.8	-74.4	143.1	114.4	28.68	4.989	
4,100.0	4,096.4	4,091.9	4,091.0	14.8	14.7	-149.72	21.2	-77.6	151.4	122.0	29.37	5.153	
4,200.0	4,196.2	4,191.5	4,190.6	15.1	15.0	-150.03	22.6	-80.8	159.7	129.6	30.07	5.310	
4,300.0	4,295.9	4,291.2	4,290.2	15.5	15.4	-150.31	24.0	-83.9	168.0	137.2	30.76	5.459	
4,400.0	4,395.7	4,390.8	4,389.8	15.8	15.7	-150.56	25.5	-87.1	176.3	144.8	31.46	5.602	
4,500.0	4,495.5	4,490.5	4,489.4	16.2	16.1	-150.80	26.9	-90.3	184.6	152.4	32.16	5.739	
4,600.0	4,595.2	4,590.1	4,588.9	16.5	16.4	-151.01	28.3	-93.5	192.9	160.0	32.86	5.869	
4,700.0	4,695.0	4,689.8	4,688.5	16.9	16.7	-151.20	29.7	-96.7	201.2	167.6	33.56	5.995	
4,800.0	4,794.7	4,789.4	4,788.1	17.2	17.1	-151.38	31.1	-99.8	209.5	175.2	34.26	6.115	
4,900.0	4,894.5	4,889.1	4,887.7	17.6	17.4	-151.54	32.5	-103.0	217.8	182.8	34.96	6.230	
5,000.0	4,994.2	4,988.7	4,987.3	17.9	17.8	-151.70	33.9	-106.2	226.1	190.5	35.66	6.340	
5,100.0	5,094.0	5,088.4	5,086.9	18.3	18.1	-151.84	35.3	-109.4	234.4	198.1	36.37	6.446	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
Survey Program: 0-MWD+IFR1+FDIR												Offset Well Error:	3.0 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
5,200.0	5,193.7	5,188.1	5,186.5	18.6	18.5	-151.97	36.8	-112.6	242.8	205.7	37.07	6.549	
5,300.0	5,293.5	5,287.7	5,286.1	19.0	18.8	-152.09	38.2	-115.7	251.1	213.3	37.77	6.647	
5,400.0	5,393.3	5,387.4	5,385.7	19.4	19.2	-152.21	39.6	-118.9	259.4	220.9	38.48	6.741	
5,500.0	5,493.0	5,487.0	5,485.3	19.7	19.6	-152.32	41.0	-122.1	267.7	228.5	39.18	6.832	
5,600.0	5,592.8	5,581.7	5,579.9	20.1	19.9	-152.22	42.8	-126.2	276.8	237.0	39.85	6.947	
5,700.0	5,692.5	5,679.0	5,676.9	20.4	20.2	-151.73	45.7	-132.7	287.5	247.0	40.53	7.094	
5,800.0	5,792.3	5,778.4	5,776.0	20.8	20.6	-151.24	48.7	-139.6	298.4	257.2	41.23	7.237	
5,900.0	5,892.0	5,877.8	5,875.1	21.1	20.9	-150.78	51.7	-146.4	309.3	267.4	41.94	7.375	
6,000.0	5,991.8	5,977.2	5,974.2	21.5	21.3	-150.35	54.7	-153.3	320.2	277.6	42.64	7.510	
6,100.0	6,091.6	6,076.5	6,073.3	21.8	21.6	-149.95	57.7	-160.2	331.1	287.8	43.35	7.640	
6,200.0	6,191.3	6,175.9	6,172.4	22.2	22.0	-149.57	60.7	-167.0	342.1	298.0	44.05	7.766	
6,300.0	6,291.1	6,275.3	6,271.5	22.6	22.3	-149.22	63.7	-173.9	353.1	308.3	44.76	7.888	
6,400.0	6,390.8	6,374.7	6,370.6	22.9	22.7	-148.89	66.7	-180.8	364.0	318.6	45.46	8.007	
6,500.0	6,490.6	6,474.0	6,469.7	23.3	23.1	-148.58	69.7	-187.7	375.0	328.8	46.17	8.123	
6,600.0	6,590.3	6,573.4	6,568.8	23.6	23.4	-148.28	72.8	-194.5	386.0	339.1	46.88	8.235	
6,700.0	6,690.1	6,672.8	6,667.8	24.0	23.8	-148.01	75.8	-201.4	397.0	349.4	47.58	8.344	
6,800.0	6,789.9	6,772.2	6,766.9	24.3	24.1	-147.74	78.8	-208.3	408.0	359.7	48.29	8.449	
6,900.0	6,889.6	6,871.5	6,866.0	24.7	24.5	-147.50	81.8	-215.1	419.0	370.0	49.00	8.552	
7,000.0	6,989.4	6,970.9	6,965.1	25.1	24.8	-147.26	84.8	-222.0	430.1	380.4	49.71	8.652	
7,100.0	7,089.1	7,070.3	7,064.2	25.4	25.2	-147.03	87.8	-228.9	441.1	390.7	50.41	8.750	
7,200.0	7,188.9	7,169.7	7,163.3	25.8	25.5	-146.82	90.8	-235.7	452.1	401.0	51.12	8.844	
7,300.0	7,288.6	7,269.0	7,262.4	26.1	25.9	-146.63	93.8	-242.6	463.2	411.3	51.83	8.936	
7,400.0	7,388.5	7,368.5	7,361.6	26.5	26.3	-146.41	96.8	-249.5	473.3	420.7	52.54	9.008	
7,500.0	7,488.4	7,468.1	7,460.9	26.8	26.6	-146.09	99.9	-256.3	481.9	428.7	53.25	9.051	
7,600.0	7,588.3	7,567.7	7,560.2	27.2	27.0	-145.65	102.9	-263.2	489.2	435.2	53.96	9.067	
7,700.0	7,688.3	7,667.4	7,659.7	27.6	27.3	-110.81	105.9	-270.1	495.1	440.4	54.66	9.057	
7,800.0	7,788.3	7,767.1	7,759.1	27.9	27.7	-110.20	108.9	-277.0	500.5	445.1	55.37	9.039	
7,900.0	7,888.3	7,866.9	7,858.5	28.3	28.0	-109.61	111.9	-283.9	506.0	449.9	56.08	9.023	
8,000.0	7,988.3	7,966.6	7,957.9	28.6	28.4	-109.03	115.0	-290.8	511.5	454.7	56.78	9.008	
8,100.0	8,088.3	8,066.3	8,057.4	29.0	28.8	-108.46	118.0	-297.7	517.1	459.6	57.49	8.994	
8,200.0	8,188.3	8,166.0	8,156.8	29.3	29.1	-107.91	121.0	-304.6	522.7	464.5	58.20	8.981	
8,300.0	8,288.3	8,265.7	8,256.2	29.7	29.5	-107.37	124.0	-311.5	528.4	469.5	58.91	8.970	
8,400.0	8,388.3	8,365.4	8,355.7	30.0	29.8	-106.84	127.1	-318.4	534.1	474.5	59.62	8.959	
8,500.0	8,488.3	8,465.2	8,455.1	30.4	30.2	-106.32	130.1	-325.3	539.9	479.5	60.32	8.949	
8,600.0	8,588.3	8,564.9	8,554.5	30.7	30.5	-105.81	133.1	-332.1	545.7	484.6	61.03	8.941	
8,700.0	8,688.3	8,664.6	8,654.0	31.1	30.9	-105.31	136.1	-339.0	551.5	489.8	61.74	8.933	
8,800.0	8,788.3	8,764.3	8,753.4	31.5	31.3	-104.82	139.1	-345.9	557.4	495.0	62.45	8.926	
8,900.0	8,888.3	8,864.0	8,852.8	31.8	31.6	-104.35	142.2	-352.8	563.4	500.2	63.16	8.919	
9,000.0	8,988.3	8,963.7	8,952.3	32.2	32.0	-103.88	145.2	-359.7	569.3	505.5	63.87	8.914	
9,100.0	9,088.3	9,063.4	9,051.7	32.5	32.3	-103.42	148.2	-366.6	575.3	510.7	64.58	8.909	
9,200.0	9,188.3	9,163.2	9,151.1	32.9	32.7	-102.97	151.2	-373.5	581.4	516.1	65.29	8.904	
9,300.0	9,288.3	9,262.9	9,250.5	33.2	33.0	-102.53	154.2	-380.4	587.5	521.4	66.00	8.900	
9,400.0	9,388.3	9,362.6	9,350.0	33.6	33.4	-102.10	157.3	-387.3	593.6	526.8	66.71	8.897	
9,500.0	9,488.3	9,462.3	9,449.4	33.9	33.8	-101.68	160.3	-394.2	599.7	532.3	67.42	8.894	
9,600.0	9,588.3	9,562.0	9,548.8	34.3	34.1	-101.27	163.3	-401.1	605.9	537.7	68.14	8.892	
9,700.0	9,688.3	9,661.7	9,648.3	34.6	34.5	-100.87	166.3	-407.9	612.1	543.2	68.85	8.890	
9,800.0	9,788.3	9,761.4	9,747.7	35.0	34.8	-100.47	169.4	-414.8	618.3	548.8	69.56	8.889	
9,900.0	9,888.3	9,861.2	9,847.1	35.4	35.2	-100.08	172.4	-421.7	624.6	554.3	70.27	8.888	
10,000.0	9,988.3	9,960.9	9,946.6	35.7	35.6	-99.70	175.4	-428.6	630.9	559.9	70.98	8.888	
10,100.0	10,088.3	10,060.6	10,046.0	36.1	35.9	-99.33	178.4	-435.5	637.2	565.5	71.70	8.888	
10,200.0	10,188.3	10,160.3	10,145.4	36.4	36.3	-98.96	181.4	-442.4	643.5	571.1	72.41	8.888	
10,300.0	10,288.3	10,260.0	10,244.8	36.8	36.6	-98.60	184.5	-449.3	649.9	576.8	73.12	8.888	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
Survey Program: 0-MWD+IFR1+FDIR												Offset Well Error:	3.0 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
10,400.0	10,388.3	10,359.7	10,344.3	37.1	37.0	-98.25	187.5	-456.2	656.3	582.5	73.83	8.889	
10,500.0	10,488.3	10,459.4	10,443.7	37.5	37.4	-97.91	190.5	-463.1	662.7	588.2	74.55	8.890	
10,600.0	10,588.3	10,559.2	10,543.1	37.8	37.7	-97.57	193.5	-470.0	669.2	593.9	75.26	8.892	
10,700.0	10,688.3	10,658.9	10,642.6	38.2	38.1	-97.24	196.5	-476.9	675.7	599.7	75.97	8.893	
10,800.0	10,788.3	10,758.6	10,742.0	38.6	38.4	-96.91	199.6	-483.8	682.1	605.5	76.69	8.895	
10,900.0	10,888.3	10,858.3	10,841.4	38.9	38.8	-96.59	202.6	-490.6	688.7	611.3	77.40	8.897	
11,000.0	10,988.3	10,958.0	10,940.9	39.3	39.2	-96.28	205.6	-497.5	695.2	617.1	78.11	8.900	
11,100.0	11,088.3	11,057.7	11,040.3	39.6	39.5	-95.97	208.6	-504.4	701.7	622.9	78.83	8.902	
11,200.0	11,188.3	11,157.5	11,139.7	40.0	39.9	-95.67	211.7	-511.3	708.3	628.8	79.54	8.905	
11,300.0	11,288.3	11,257.2	11,239.2	40.3	40.2	-95.38	214.7	-518.2	714.9	634.6	80.25	8.908	
11,400.0	11,388.3	11,356.9	11,338.6	40.7	40.6	-95.08	217.7	-525.1	721.5	640.5	80.97	8.911	
11,500.0	11,488.3	11,456.6	11,438.0	41.1	41.0	-94.80	220.7	-532.0	728.1	646.5	81.68	8.914	
11,600.0	11,588.3	11,556.3	11,537.4	41.4	41.3	-94.52	223.7	-538.9	734.8	652.4	82.40	8.918	
11,700.0	11,688.3	11,656.0	11,636.9	41.8	41.7	-94.24	226.8	-545.8	741.5	658.3	83.11	8.921	
11,800.0	11,788.3	11,755.7	11,736.3	42.1	42.0	-93.97	229.8	-552.7	748.1	664.3	83.83	8.925	
11,900.0	11,888.3	11,855.5	11,835.7	42.5	42.4	-93.71	232.8	-559.6	754.8	670.3	84.54	8.929	
12,000.0	11,988.3	11,955.2	11,935.2	42.8	42.8	-93.45	235.8	-566.4	761.5	676.3	85.26	8.932	
12,100.0	12,088.3	12,054.9	12,034.6	43.2	43.1	-93.19	238.8	-573.3	768.3	682.3	85.97	8.936	
12,200.0	12,188.3	12,154.5	12,134.0	43.5	43.5	87.39	241.9	-580.2	775.0	688.3	86.68	8.941	
12,300.0	12,286.6	12,252.1	12,231.2	43.8	43.8	88.11	244.8	-587.0	781.2	693.8	87.34	8.944	
12,400.0	12,379.2	12,343.2	12,322.1	44.1	44.2	89.96	247.6	-593.3	788.0	700.0	87.95	8.959	
12,500.0	12,462.1	12,424.1	12,402.8	44.3	44.4	92.15	250.0	-598.9	797.9	709.4	88.50	9.016	
12,600.0	12,531.5	12,522.7	12,500.7	44.5	44.8	95.08	243.3	-605.6	812.7	723.6	89.13	9.118	
12,700.0	12,584.5	12,647.4	12,619.2	44.7	45.2	98.51	206.3	-613.4	831.1	741.6	89.59	9.277	
12,800.0	12,618.7	12,819.3	12,758.8	44.8	45.6	102.79	107.9	-622.2	850.6	761.2	89.32	9.522	
12,900.0	12,632.8	13,067.4	12,880.1	44.8	45.9	107.01	-105.2	-628.6	864.6	776.5	88.15	9.809	
13,000.0	12,633.8	13,248.7	12,896.1	44.9	46.1	107.77	-285.1	-628.1	866.4	778.4	88.00	9.845	
13,100.0	12,634.6	13,348.7	12,896.4	44.9	46.2	107.73	-385.1	-627.2	866.2	778.1	88.11	9.830	
13,200.0	12,635.4	13,448.7	12,896.7	45.0	46.3	107.70	-485.1	-626.4	866.0	777.8	88.26	9.812	
13,300.0	12,636.2	13,548.7	12,897.0	45.1	46.4	107.67	-585.1	-625.5	865.9	777.4	88.44	9.791	
13,400.0	12,637.1	13,648.7	12,897.3	45.2	46.5	107.63	-685.1	-624.6	865.7	777.1	88.65	9.765	
13,500.0	12,637.9	13,748.7	12,897.6	45.3	46.6	107.60	-785.1	-623.7	865.5	776.6	88.89	9.737	
13,600.0	12,638.7	13,848.7	12,897.9	45.4	46.8	107.57	-885.1	-622.8	865.4	776.2	89.17	9.705	
13,700.0	12,639.6	13,948.7	12,898.2	45.6	46.9	107.53	-985.1	-622.0	865.2	775.7	89.48	9.670	
13,800.0	12,640.4	14,048.7	12,898.5	45.8	47.1	107.50	-1,085.1	-621.1	865.1	775.2	89.82	9.631	
13,900.0	12,641.2	14,148.7	12,898.8	46.0	47.3	107.47	-1,185.1	-620.2	864.9	774.7	90.19	9.590	
14,000.0	12,642.0	14,248.7	12,899.1	46.2	47.5	107.43	-1,285.1	-619.3	864.7	774.1	90.59	9.545	
14,100.0	12,642.9	14,348.7	12,899.4	46.4	47.7	107.40	-1,385.1	-618.5	864.6	773.5	91.03	9.498	
14,200.0	12,643.7	14,448.7	12,899.7	46.6	47.9	107.37	-1,485.1	-617.6	864.4	772.9	91.49	9.448	
14,300.0	12,644.5	14,548.7	12,900.0	46.8	48.2	107.33	-1,585.1	-616.7	864.3	772.3	91.98	9.396	
14,400.0	12,645.4	14,648.7	12,900.3	47.1	48.4	107.30	-1,685.0	-615.8	864.1	771.6	92.50	9.341	
14,500.0	12,646.2	14,748.7	12,900.6	47.4	48.7	107.27	-1,785.0	-614.9	863.9	770.9	93.06	9.284	
14,600.0	12,647.0	14,848.7	12,900.9	47.7	49.0	107.23	-1,885.0	-614.1	863.8	770.1	93.63	9.225	
14,700.0	12,647.8	14,948.7	12,901.2	48.0	49.3	107.20	-1,985.0	-613.2	863.6	769.4	94.24	9.164	
14,800.0	12,648.7	15,048.7	12,901.5	48.3	49.6	107.17	-2,085.0	-612.3	863.5	768.6	94.88	9.101	
14,900.0	12,649.5	15,148.7	12,901.8	48.6	49.9	107.13	-2,185.0	-611.4	863.3	767.8	95.54	9.036	
15,000.0	12,650.3	15,248.7	12,902.1	48.9	50.2	107.10	-2,285.0	-610.6	863.1	766.9	96.23	8.970	
15,100.0	12,651.1	15,348.7	12,902.4	49.3	50.6	107.07	-2,385.0	-609.7	863.0	766.0	96.94	8.902	
15,200.0	12,652.0	15,448.7	12,902.7	49.7	50.9	107.03	-2,485.0	-608.8	862.8	765.2	97.68	8.834	
15,300.0	12,652.8	15,548.7	12,903.0	50.0	51.3	107.00	-2,585.0	-607.9	862.7	764.2	98.44	8.764	
15,400.0	12,653.6	15,648.7	12,903.3	50.4	51.7	106.97	-2,685.0	-607.1	862.5	763.3	99.22	8.693	
15,500.0	12,654.5	15,748.7	12,903.6	50.8	52.1	106.93	-2,785.0	-606.2	862.4	762.3	100.03	8.621	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

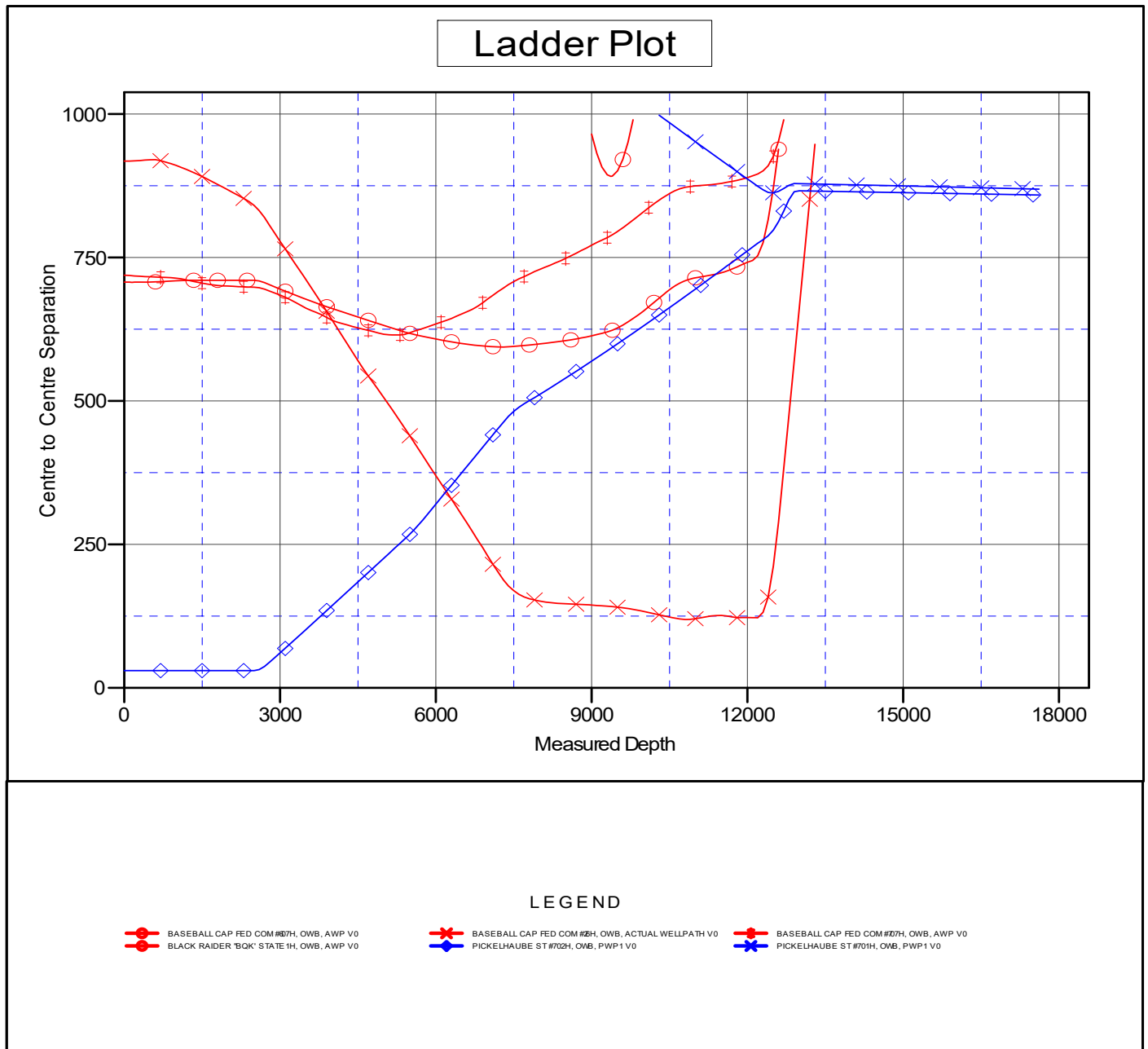
Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design BULLDOG - PICKELHAUBE ST #702H - OWB - PWP1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD+IFR1+FDIR												Offset Well Error:	3.0 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
15,600.0	12,655.3	15,848.7	12,903.9	51.2	52.5	106.90	-2,885.0	-605.3	862.2	761.3	100.87	8.548	
15,700.0	12,656.1	15,948.7	12,904.2	51.7	52.9	106.87	-2,985.0	-604.4	862.0	760.3	101.72	8.475	
15,800.0	12,656.9	16,048.7	12,904.5	52.1	53.4	106.83	-3,085.0	-603.5	861.9	759.3	102.60	8.401	
15,900.0	12,657.8	16,148.7	12,904.8	52.6	53.8	106.80	-3,185.0	-602.7	861.7	758.2	103.50	8.326	
16,000.0	12,658.6	16,248.7	12,905.1	53.0	54.2	106.77	-3,285.0	-601.8	861.6	757.2	104.41	8.252	
16,100.0	12,659.4	16,348.7	12,905.4	53.5	54.7	106.73	-3,385.0	-600.9	861.4	756.1	105.35	8.177	
16,200.0	12,660.3	16,448.7	12,905.7	54.0	55.2	106.70	-3,484.9	-600.0	861.3	755.0	106.31	8.101	
16,300.0	12,661.1	16,548.7	12,906.0	54.4	55.6	106.67	-3,584.9	-599.2	861.1	753.8	107.29	8.026	
16,400.0	12,661.9	16,648.7	12,906.3	54.9	56.1	106.63	-3,684.9	-598.3	861.0	752.7	108.28	7.951	
16,500.0	12,662.7	16,748.7	12,906.6	55.4	56.6	106.60	-3,784.9	-597.4	860.8	751.5	109.30	7.876	
16,600.0	12,663.6	16,848.7	12,906.9	56.0	57.1	106.56	-3,884.9	-596.5	860.7	750.3	110.33	7.801	
16,700.0	12,664.4	16,948.7	12,907.2	56.5	57.7	106.53	-3,984.9	-595.7	860.5	749.1	111.38	7.726	
16,800.0	12,665.2	17,048.7	12,907.5	57.0	58.2	106.50	-4,084.9	-594.8	860.4	747.9	112.44	7.652	
16,900.0	12,666.0	17,148.7	12,907.8	57.5	58.7	106.46	-4,184.9	-593.9	860.2	746.7	113.52	7.577	
17,000.0	12,666.9	17,248.7	12,908.1	58.1	59.2	106.43	-4,284.9	-593.0	860.1	745.4	114.62	7.504	
17,100.0	12,667.7	17,348.7	12,908.4	58.6	59.8	106.40	-4,384.9	-592.1	859.9	744.2	115.73	7.430	
17,200.0	12,668.5	17,448.7	12,908.7	59.2	60.3	106.36	-4,484.9	-591.3	859.8	742.9	116.86	7.357	
17,300.0	12,669.4	17,548.7	12,909.0	59.8	60.9	106.33	-4,584.9	-590.4	859.6	741.6	118.00	7.285	
17,400.0	12,670.2	17,648.7	12,909.3	60.3	61.5	106.30	-4,684.9	-589.5	859.4	740.3	119.15	7.213	
17,500.0	12,671.0	17,748.7	12,909.6	60.9	62.0	106.26	-4,784.9	-588.6	859.3	739.0	120.32	7.142	
17,600.0	12,671.8	17,848.7	12,909.9	61.5	62.7	106.23	-4,884.9	-587.8	859.1	737.6	121.51	7.071	
17,618.8	12,672.0	17,866.5	12,910.0	61.6	62.9	106.22	-4,902.7	-587.6	859.1	737.4	121.73	7.058	

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB=27' @ 3437.0usft (Nabor 893) Coordinates are relative to: PICKELHAUBE ST #602H
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Central Meridian is 104° 20' 0.000 W Grid Convergence at Surface is: 0.48°



Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB=27' @ 3437.0usft (Nabor 893)

Offset Depths are relative to Offset Datum

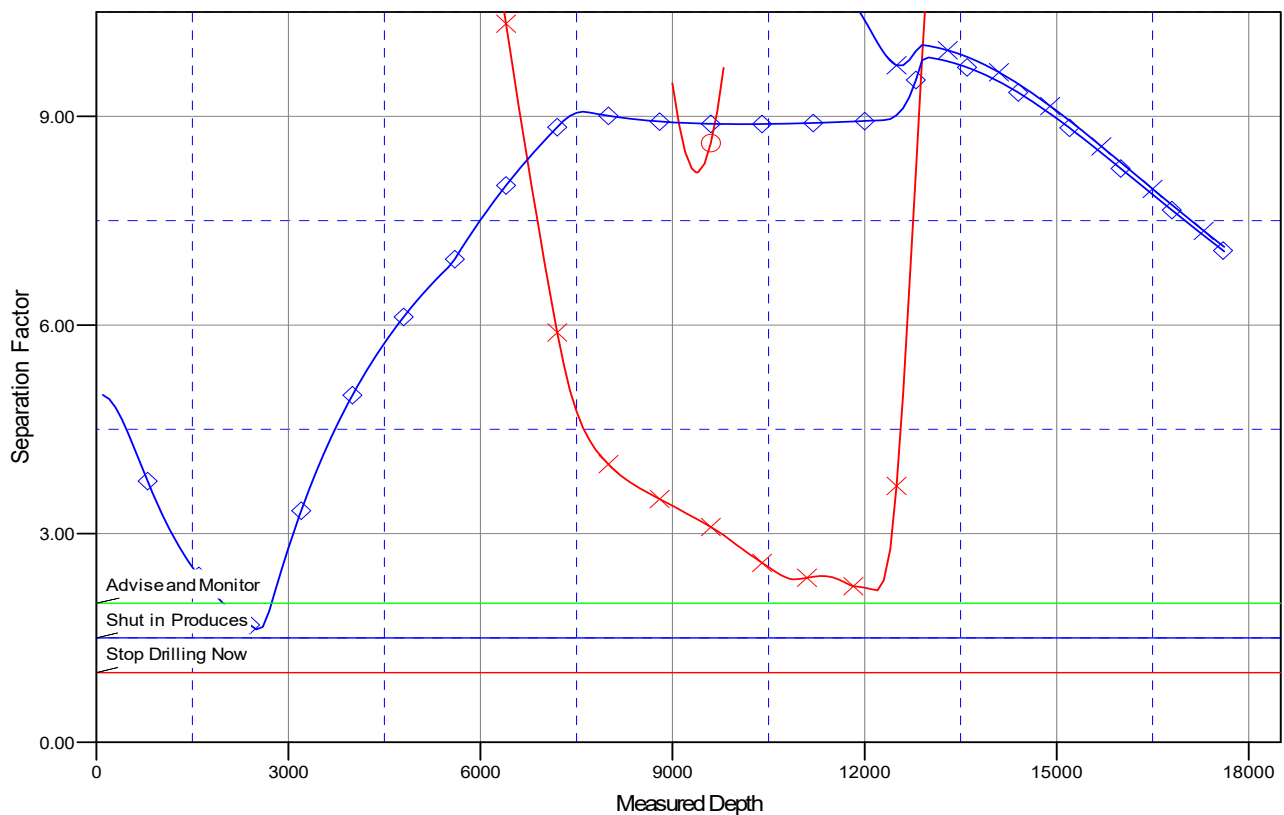
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: PICKELHAUBE ST #602H

Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30

Grid Convergence at Surface is: 0.48°

Separation Factor Plot



LEGEND

BASEBALL CAP FED COM #602H, OWB, AWP V0
BLACK RAIDER 'BQK' STATE 1H, OWB, AWP V0

BASEBALL CAP FED COM #602H, OWB, ACTUAL WELLPATH V0
PICKELHAUBE ST #602H, OWB, PWP1 V0

BASEBALL CAP FED COM #602H, OWB, AWP V0
PICKELHAUBE ST #701H, OWB, PWP1 V0



CONCHO

NORTHERN DELAWARE BASIN

LEA COUNTY, NM

BULLDOG

PICKELHAUBE ST #602H

OWB

PWP1

Anticollision Report

01 October, 2019

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Reference	PWP1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0usft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum ellipse separation of 1,000.0 usft	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date	10/1/2019		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.0	17,618.8	PWP1 (OWB)	MWD+IFR1+FDIR	OWSG MWD + IFR1 + FDIR Correction	

Summary						
Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
BULLDOG						
BASEBALL CAP FED COM #26H - OWB - ACTUAL WE	10,840.6	10,840.3	119.1	68.4	2.348	CC
BASEBALL CAP FED COM #26H - OWB - ACTUAL WE	12,200.0	12,199.0	122.1	66.2	2.184	ES, SF
BASEBALL CAP FED COM #607H - OWB - AWP	7,304.5	7,300.5	594.1	562.0	18.516	CC
BASEBALL CAP FED COM #607H - OWB - AWP	7,400.0	7,394.1	594.3	561.8	18.307	ES
BASEBALL CAP FED COM #607H - OWB - AWP	12,100.0	12,070.0	744.9	692.5	14.192	SF
BASEBALL CAP FED COM #707H - OWB - AWP	5,162.5	5,162.3	615.1	591.3	25.816	CC
BASEBALL CAP FED COM #707H - OWB - AWP	5,310.7	5,311.3	615.2	590.8	25.256	ES
BASEBALL CAP FED COM #707H - OWB - AWP	12,200.0	12,186.4	895.7	841.5	16.529	SF
BLACK RAIDER "BQK" STATE 1H - OWB - AWP	9,369.5	13,675.0	891.7	782.9	8.194	CC, ES, SF
PICKELHAUBE ST #701H - OWB - PWP1	12,472.4	12,506.1	862.7	774.2	9.746	CC
PICKELHAUBE ST #701H - OWB - PWP1	17,618.8	17,897.2	869.5	747.4	7.123	ES, SF
PICKELHAUBE ST #702H - OWB - PWP1	2,500.0	2,498.0	30.0	11.5	1.625	Advise and Monitor, CC, I

Offset Design		BULLDOG - BASEBALL CAP FED COM #26H - OWB - ACTUAL WELLPATH											Offset Site Error:		0.0 usft
Survey Program:		100-Standard Keeper 104, 12045-MWD+IFR1+MS											Offset Well Error:		3.0 usft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
0.0	0.0	0.0	0.0	3.0	3.0	47.24	623.3	674.0	918.0						
100.0	100.0	90.9	90.9	3.0	3.0	47.23	623.5	674.1	918.2	912.2	6.00	152.961			
200.0	200.0	190.1	190.1	3.0	3.0	47.22	624.0	674.2	918.7	912.6	6.04	152.011			
300.0	300.0	289.0	289.0	3.1	3.0	47.20	624.5	674.5	919.2	913.1	6.13	149.957			
400.0	400.0	389.4	389.4	3.2	3.0	47.19	625.1	674.7	919.8	913.6	6.26	146.951			
500.0	500.0	490.4	490.4	3.4	3.1	47.17	625.7	675.0	920.4	914.0	6.43	143.181			
600.0	600.0	602.5	602.4	3.6	3.1	47.15	626.0	674.9	920.6	914.0	6.62	138.970			
700.0	700.0	715.3	715.3	3.8	3.1	47.15	624.6	673.5	918.8	911.9	6.82	134.666			
800.0	800.0	818.6	818.5	4.0	3.1	47.16	622.9	671.7	916.4	909.3	7.05	129.982			
900.0	900.0	922.2	922.1	4.2	3.1	47.16	621.0	669.6	913.6	906.3	7.30	125.132			
1,000.0	1,000.0	1,024.4	1,024.2	4.5	3.1	47.16	618.8	667.3	910.5	903.0	7.57	120.228			
1,100.0	1,100.0	1,127.1	1,126.9	4.8	3.1	47.17	616.4	664.9	907.2	899.3	7.86	115.356			
1,200.0	1,200.0	1,228.3	1,228.0	5.1	3.1	47.19	613.6	662.4	903.6	895.4	8.17	110.585			
1,300.0	1,300.0	1,331.6	1,331.3	5.4	3.2	47.22	610.6	659.8	899.7	891.3	8.49	105.954			
1,400.0	1,400.0	1,432.2	1,431.8	5.7	3.2	47.25	607.4	657.2	895.7	886.9	8.83	101.488			
1,500.0	1,500.0	1,535.2	1,534.6	6.0	3.2	47.28	604.1	654.3	891.5	882.3	9.17	97.207			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

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Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
BULLDOG - BASEBALL CAP FED COM #26H - OWB - ACTUAL WELLPATH												Offset Well Error:	3.0 usft
Survey Program: 100-Standard Keeper 104, 12045-MWD+IFR1+MS													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
1,600.0	1,600.0	1,637.7	1,637.1	6.3	3.3	47.31	600.6	651.1	886.9	877.3	9.53	93.098	
1,700.0	1,700.0	1,737.6	1,736.8	6.6	3.3	47.33	597.2	647.9	882.2	872.3	9.89	89.192	
1,800.0	1,800.0	1,837.1	1,836.3	6.9	3.4	47.36	593.7	644.7	877.4	867.1	10.26	85.485	
1,900.0	1,900.0	1,935.9	1,935.0	7.2	3.4	47.38	590.3	641.6	872.7	862.1	10.64	81.995	
2,000.0	2,000.0	2,038.6	2,037.5	7.6	3.5	47.42	586.6	638.3	867.9	856.9	11.03	78.676	
2,100.0	2,100.0	2,138.7	2,137.5	7.9	3.5	47.44	583.0	634.9	863.0	851.5	11.43	75.532	
2,200.0	2,200.0	2,238.6	2,237.3	8.2	3.6	47.46	579.4	631.4	858.0	846.2	11.82	72.563	
2,300.0	2,300.0	2,339.1	2,337.6	8.6	3.7	47.48	575.8	628.0	853.1	840.8	12.23	69.753	
2,400.0	2,400.0	2,446.9	2,445.3	8.9	3.8	47.51	571.7	624.0	847.8	835.2	12.64	67.069	
2,500.0	2,500.0	2,556.4	2,554.6	9.2	3.8	47.51	566.5	618.5	840.9	827.8	13.06	64.406	
2,600.0	2,600.0	2,657.5	2,655.3	9.6	3.9	13.30	561.4	613.3	832.0	818.5	13.47	61.753	
2,700.0	2,699.8	2,755.7	2,753.3	9.9	4.0	13.47	556.4	608.4	819.7	805.8	13.89	59.008	
2,800.0	2,799.6	2,854.1	2,851.5	10.3	4.1	13.64	551.2	603.7	805.9	791.6	14.31	56.306	
2,900.0	2,899.4	2,952.1	2,949.2	10.6	4.2	13.81	545.9	599.1	792.1	777.3	14.74	53.752	
3,000.0	2,999.1	3,048.9	3,045.8	10.9	4.3	14.01	540.7	594.9	778.5	763.4	15.16	51.346	
3,100.0	3,098.9	3,149.0	3,145.7	11.3	4.4	14.25	535.2	590.9	765.1	749.5	15.59	49.074	
3,200.0	3,198.6	3,248.1	3,244.5	11.6	4.4	14.49	529.7	586.8	751.7	735.6	16.02	46.911	
3,300.0	3,298.4	3,347.3	3,343.5	12.0	4.5	14.74	524.2	582.8	738.2	721.7	16.46	44.852	
3,400.0	3,398.1	3,445.9	3,441.9	12.3	4.6	15.01	518.5	578.8	724.7	707.8	16.89	42.895	
3,500.0	3,497.9	3,545.7	3,541.4	12.7	4.7	15.30	512.8	574.8	711.2	693.8	17.33	41.030	
3,600.0	3,597.6	3,644.7	3,640.2	13.0	4.8	15.57	507.3	570.6	697.7	679.9	17.77	39.253	
3,700.0	3,697.4	3,745.0	3,740.2	13.4	4.9	15.82	502.1	566.1	684.3	666.0	18.22	37.561	
3,800.0	3,797.2	3,844.1	3,839.1	13.7	5.0	16.06	497.0	561.4	670.6	651.9	18.66	35.931	
3,900.0	3,896.9	3,948.1	3,942.8	14.1	5.1	16.23	492.0	555.4	656.4	637.3	19.11	34.355	
4,000.0	3,996.7	4,047.1	4,041.4	14.4	5.2	16.36	487.5	549.2	642.0	622.4	19.56	32.827	
4,100.0	4,096.4	4,146.5	4,140.5	14.8	5.3	16.50	483.0	542.8	627.5	607.5	20.01	31.364	
4,200.0	4,196.2	4,245.3	4,239.1	15.1	5.4	16.64	478.5	536.6	613.1	592.7	20.46	29.968	
4,300.0	4,295.9	4,343.5	4,337.0	15.5	5.5	16.80	473.8	530.5	598.7	577.8	20.91	28.626	
4,400.0	4,395.7	4,442.2	4,435.4	15.8	5.6	17.00	469.1	524.7	584.4	563.0	21.37	27.347	
4,500.0	4,495.5	4,538.8	4,531.7	16.2	5.8	17.29	463.9	519.6	570.2	548.4	21.83	26.124	
4,600.0	4,595.2	4,634.5	4,627.2	16.5	5.9	17.72	458.0	515.6	556.6	534.3	22.29	24.973	
4,700.0	4,695.0	4,730.7	4,723.1	16.9	6.0	18.32	451.4	513.0	543.6	520.9	22.74	23.906	
4,800.0	4,794.7	4,828.6	4,820.7	17.2	6.1	19.05	444.2	511.2	531.2	508.0	23.19	22.909	
4,900.0	4,894.5	4,929.4	4,921.2	17.6	6.2	19.85	436.7	509.3	518.7	495.0	23.63	21.954	
5,000.0	4,994.2	5,029.6	5,021.1	17.9	6.3	20.59	429.6	506.6	505.8	481.7	24.07	21.013	
5,100.0	5,094.0	5,130.7	5,121.9	18.3	6.4	21.25	423.3	503.1	492.9	468.4	24.52	20.104	
5,200.0	5,193.7	5,231.7	5,222.7	18.6	6.5	21.69	418.5	498.0	479.6	454.6	24.97	19.204	
5,300.0	5,293.5	5,328.9	5,319.7	19.0	6.6	22.01	414.7	492.4	466.2	440.7	25.44	18.325	
5,400.0	5,393.3	5,428.6	5,419.2	19.4	6.7	22.33	411.0	486.9	453.0	427.1	25.90	17.492	
5,500.0	5,493.0	5,530.7	5,521.0	19.7	6.8	22.58	407.6	480.3	439.4	413.1	26.35	16.674	
5,600.0	5,592.8	5,629.9	5,619.9	20.1	6.9	22.75	404.7	473.2	425.4	398.6	26.82	15.864	
5,700.0	5,692.5	5,728.7	5,718.4	20.4	7.0	22.94	401.7	466.2	411.5	384.2	27.28	15.084	
5,800.0	5,792.3	5,828.0	5,817.4	20.8	7.2	23.13	398.8	459.2	397.6	369.8	27.74	14.331	
5,900.0	5,892.0	5,926.7	5,915.8	21.1	7.3	23.34	396.0	452.3	383.7	355.5	28.21	13.602	
6,000.0	5,991.8	6,025.7	6,014.5	21.5	7.4	23.56	393.2	445.4	369.9	341.3	28.67	12.902	
6,100.0	6,091.6	6,123.5	6,112.1	21.8	7.5	23.81	390.4	438.8	356.3	327.2	29.14	12.227	
6,200.0	6,191.3	6,222.8	6,211.1	22.2	7.6	24.10	387.5	432.1	342.8	313.2	29.61	11.577	
6,300.0	6,291.1	6,322.0	6,310.1	22.6	7.7	24.44	384.5	425.5	329.2	299.1	30.07	10.946	
6,400.0	6,390.8	6,422.3	6,410.1	22.9	7.8	24.82	381.3	418.8	315.5	284.9	30.53	10.332	
6,500.0	6,490.6	6,521.6	6,509.0	23.3	7.9	25.25	377.9	411.9	301.5	270.5	31.00	9.725	
6,600.0	6,590.3	6,620.7	6,607.9	23.6	8.1	25.73	374.5	404.9	287.4	255.9	31.46	9.134	
6,700.0	6,690.1	6,720.1	6,706.9	24.0	8.2	26.26	371.0	397.8	273.2	241.3	31.92	8.558	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

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Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
BULLDOG - BASEBALL CAP FED COM #26H - OWB - ACTUAL WELLPATH												Offset Well Error:	3.0 usft
Survey Program: 100-Standard Keeper 104, 12045-MWD+IFR1+MS													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
6,800.0	6,789.9	6,819.2	6,805.7	24.3	8.3	26.84	367.4	390.7	259.0	226.6	32.39	7.996	
6,900.0	6,889.6	6,918.9	6,905.1	24.7	8.4	27.53	363.7	383.5	244.6	211.8	32.84	7.448	
7,000.0	6,989.4	7,018.5	7,004.3	25.1	8.5	28.45	359.3	376.2	230.0	196.7	33.30	6.906	
7,100.0	7,089.1	7,116.1	7,101.6	25.4	8.6	29.62	354.5	369.4	215.4	181.7	33.76	6.381	
7,200.0	7,188.9	7,214.0	7,199.2	25.8	8.8	31.10	349.5	363.3	201.7	167.4	34.22	5.893	
7,300.0	7,288.6	7,311.3	7,296.2	26.1	8.9	32.83	344.5	357.7	188.5	153.8	34.68	5.435	
7,400.0	7,388.5	7,408.4	7,393.1	26.5	9.0	34.57	340.0	353.3	177.6	142.5	35.13	5.056	
7,500.0	7,488.4	7,506.4	7,491.0	26.8	9.1	36.03	336.2	349.6	169.4	133.8	35.58	4.760	
7,600.0	7,588.3	7,605.9	7,590.3	27.2	9.2	37.19	332.8	346.2	163.1	127.1	36.02	4.529	
7,700.0	7,688.3	7,705.3	7,689.6	27.6	9.4	37.35	329.5	342.9	158.5	122.1	36.46	4.348	
7,800.0	7,788.3	7,803.1	7,787.4	27.9	9.5	37.86	327.2	340.4	155.3	118.4	36.93	4.205	
7,900.0	7,888.3	7,901.8	7,886.0	28.3	9.6	37.08	326.1	338.6	153.3	115.9	37.41	4.097	
8,000.0	7,988.3	8,001.9	7,986.1	28.6	9.7	37.26	325.1	337.0	151.5	113.6	37.88	3.999	
8,100.0	8,088.3	8,101.6	8,085.8	29.0	9.8	37.43	324.2	335.5	149.7	111.4	38.35	3.904	
8,200.0	8,188.3	8,200.7	8,184.9	29.3	10.0	37.39	324.0	334.3	148.5	109.7	38.83	3.826	
8,300.0	8,288.3	8,300.0	8,284.2	29.7	10.1	37.26	324.0	333.4	147.6	108.3	39.31	3.756	
8,400.0	8,388.3	8,400.0	8,384.1	30.0	10.1	37.05	324.4	332.8	147.2	107.4	39.76	3.702	
8,500.0	8,488.3	8,499.8	8,484.0	30.4	10.2	37.86	324.7	332.2	146.7	106.5	40.22	3.648	
8,600.0	8,588.3	8,599.9	8,584.0	30.7	10.3	37.64	325.1	331.6	146.3	105.6	40.67	3.598	
8,700.0	8,688.3	8,699.9	8,684.1	31.1	10.3	37.44	325.5	331.0	145.8	104.7	41.12	3.546	
8,800.0	8,788.3	8,800.0	8,784.1	31.5	10.4	37.24	325.8	330.4	145.3	103.8	41.58	3.496	
8,900.0	8,888.3	8,900.0	8,884.1	31.8	10.5	37.97	326.3	329.7	144.8	102.8	42.03	3.446	
9,000.0	8,988.3	9,000.1	8,984.3	32.2	10.5	37.61	327.0	328.9	144.3	101.8	42.47	3.397	
9,100.0	9,088.3	9,100.1	9,084.2	32.5	10.6	37.18	327.8	328.0	143.7	100.8	42.92	3.348	
9,200.0	9,188.3	9,200.2	9,184.4	32.9	10.7	37.07	328.8	326.9	143.0	99.6	43.36	3.298	
9,300.0	9,288.3	9,300.3	9,284.4	33.2	10.7	37.11	329.9	325.8	142.3	98.5	43.80	3.249	
9,400.0	9,388.3	9,400.4	9,384.5	33.6	10.8	37.48	331.1	324.6	141.6	97.3	44.25	3.199	
9,500.0	9,488.3	9,500.5	9,484.6	33.9	10.9	37.79	332.4	323.1	140.7	96.0	44.69	3.148	
9,600.0	9,588.3	9,600.9	9,584.9	34.3	10.9	37.02	333.8	321.5	139.7	94.5	45.13	3.095	
9,700.0	9,688.3	9,700.9	9,685.0	34.6	11.0	37.20	335.2	319.7	138.5	92.9	45.57	3.039	
9,800.0	9,788.3	9,801.9	9,785.9	35.0	11.1	36.29	336.6	317.5	137.1	91.1	46.01	2.979	
9,900.0	9,888.3	9,902.1	9,886.0	35.4	11.2	36.23	338.1	314.6	135.1	88.6	46.46	2.908	
10,000.0	9,988.3	10,002.0	9,985.9	35.7	11.3	36.10	339.6	311.7	133.1	86.2	46.90	2.839	
10,100.0	10,088.3	10,102.1	10,085.9	36.1	11.4	36.91	341.2	308.8	131.2	83.9	47.34	2.771	
10,200.0	10,188.3	10,202.0	10,185.8	36.4	11.5	36.70	342.8	305.9	129.3	81.6	47.78	2.707	
10,300.0	10,288.3	10,302.1	10,285.8	36.8	11.6	36.70	343.8	303.1	127.4	79.2	48.22	2.642	
10,400.0	10,388.3	10,402.1	10,385.8	37.1	11.7	37.72	344.8	300.4	125.5	76.8	48.66	2.579	
10,500.0	10,488.3	10,501.7	10,485.3	37.5	11.8	37.01	345.2	298.0	123.7	74.6	49.12	2.518	
10,600.0	10,588.3	10,602.1	10,585.7	37.8	11.9	37.43	345.3	295.9	121.9	72.3	49.57	2.459	
10,700.0	10,688.3	10,701.9	10,685.5	38.2	12.0	37.85	345.4	293.6	120.0	70.0	50.03	2.399	
10,800.0	10,788.3	10,800.3	10,783.9	38.6	12.1	37.65	345.3	292.7	119.2	68.7	50.52	2.360	
10,840.6	10,829.0	10,840.3	10,824.0	38.7	12.2	37.67	345.2	292.6	119.1	68.4	50.71	2.348	CC
10,900.0	10,888.3	10,898.7	10,882.3	38.9	12.2	37.96	344.8	293.2	119.4	68.4	50.95	2.343	
11,000.0	10,988.3	10,998.0	10,981.6	39.3	12.2	38.87	343.8	295.2	120.6	69.3	51.34	2.349	
11,100.0	11,088.3	11,097.7	11,081.2	39.6	12.2	39.98	342.6	297.8	122.2	70.5	51.71	2.364	
11,200.0	11,188.3	11,197.9	11,181.4	40.0	12.2	41.15	341.3	300.6	124.0	71.9	52.08	2.380	
11,300.0	11,288.3	11,298.7	11,282.1	40.3	12.2	42.43	339.5	303.1	125.3	72.9	52.44	2.390	
11,400.0	11,388.3	11,399.2	11,382.6	40.7	12.2	43.86	337.1	305.2	126.1	73.2	52.82	2.387	
11,500.0	11,488.3	11,500.3	11,483.7	41.1	12.2	45.53	333.8	306.9	126.3	73.0	53.21	2.373	
11,600.0	11,588.3	11,601.9	11,585.1	41.4	12.3	47.31	329.9	307.7	125.4	71.8	53.60	2.340	
11,700.0	11,688.3	11,702.4	11,685.5	41.8	12.4	49.04	325.8	307.6	123.9	69.9	54.01	2.293	
11,800.0	11,788.3	11,800.7	11,783.8	42.1	12.5	50.69	322.0	307.5	122.4	67.9	54.44	2.248	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design BULLDOG - BASEBALL CAP FED COM #26H - OWB - ACTUAL WELLPATH												Offset Site Error:	0.0 usft
Survey Program: 100-Standard Keeper 104, 12045-MWD+IFR1+MS												Offset Well Error:	3.0 usft
Reference	Offset	Semi Major Axis		Distance									
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
11,825.2	11,813.5	11,825.5	11,808.5	42.2	12.5	70.99	321.4	307.7	122.3	67.8	54.55	2.243	
11,900.0	11,888.3	11,899.9	11,883.0	42.5	12.5	71.91	319.6	308.5	122.6	67.7	54.83	2.236	
12,000.0	11,988.3	12,000.4	11,983.4	42.8	12.6	73.25	316.8	309.5	122.7	67.5	55.19	2.223	
12,100.0	12,088.3	12,101.2	12,084.2	43.2	12.6	74.37	314.5	309.8	122.3	66.8	55.56	2.202	
12,167.6	12,156.0	12,168.4	12,151.4	43.4	12.6	-105.31	313.3	309.6	122.3	66.4	55.81	2.191	
12,200.0	12,188.3	12,199.0	12,182.0	43.5	12.6	-104.93	313.0	309.7	122.1	66.2	55.93	2.184 ES, SF	
12,300.0	12,286.6	12,290.6	12,273.4	43.8	12.7	-111.50	316.0	312.4	131.6	75.1	56.49	2.330	
12,400.0	12,379.2	12,372.7	12,355.2	44.1	12.8	-121.45	323.2	316.0	158.4	101.4	56.95	2.781	
12,500.0	12,462.1	12,426.3	12,407.4	44.3	12.9	-126.60	334.6	317.3	212.0	154.5	57.51	3.687	
12,600.0	12,531.5	12,458.2	12,437.7	44.5	13.0	-122.89	344.7	317.1	289.5	231.6	57.85	5.003	
12,700.0	12,584.5	12,471.3	12,450.0	44.7	13.0	-103.72	349.4	316.9	380.0	322.0	57.97	6.555	
12,800.0	12,618.7	12,469.9	12,448.6	44.8	13.0	-65.87	348.9	316.9	475.3	417.4	57.93	8.205	
12,900.0	12,632.8	12,451.0	12,430.9	44.8	13.0	-35.25	342.3	317.2	569.9	512.1	57.83	9.856	
13,000.0	12,633.8	12,451.0	12,430.9	44.9	13.0	-33.12	342.3	317.2	662.7	605.2	57.48	11.529	
13,100.0	12,634.6	12,430.0	12,411.0	44.9	12.9	-30.61	335.7	317.3	756.6	699.2	57.32	13.198	
13,200.0	12,635.4	12,420.0	12,401.4	45.0	12.9	-29.48	332.9	317.2	851.5	794.4	57.14	14.902	
13,300.0	12,636.2	12,420.0	12,401.4	45.1	12.9	-29.48	332.9	317.2	947.4	890.5	56.95	16.636	

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
BULLDOG - BASEBALL CAP FED COM #607H - OWB - AWP												Offset Well Error:	3.0 usft
Survey Program: 100-Standard Keeper 104, 12038-MWD+IFR1+MS													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	11.5	11.5	3.0	3.0	-22.92	651.2	-275.3	707.0				
100.0	100.0	112.2	112.2	3.0	3.0	-22.90	651.4	-275.1	707.1	701.1	6.00	117.787	
148.4	148.4	160.0	160.0	3.0	3.0	-22.88	651.4	-274.9	707.0	701.0	6.02	117.516	
200.0	200.0	210.7	210.7	3.0	3.0	-22.86	651.5	-274.7	707.1	701.0	6.04	117.036	
300.0	300.0	310.6	310.6	3.1	3.0	-22.82	651.8	-274.3	707.2	701.0	6.12	115.500	
400.0	400.0	410.7	410.7	3.2	3.0	-22.79	652.1	-274.0	707.3	701.1	6.24	113.279	
500.0	500.0	510.9	510.9	3.4	3.1	-22.76	652.4	-273.7	707.5	701.1	6.40	110.508	
600.0	600.0	610.0	610.0	3.6	3.1	-22.74	652.6	-273.6	707.6	701.0	6.59	107.338	
700.0	700.0	708.8	708.8	3.8	3.1	-22.72	653.0	-273.4	708.0	701.1	6.81	103.914	
800.0	800.0	808.5	808.5	4.0	3.1	-22.68	653.5	-273.2	708.3	701.3	7.06	100.356	
900.0	900.0	907.2	907.2	4.2	3.2	-22.64	654.2	-272.9	708.9	701.6	7.33	96.769	
1,000.0	1,000.0	1,007.6	1,007.6	4.5	3.2	-22.59	655.1	-272.6	709.5	701.9	7.61	93.211	
1,100.0	1,100.0	1,108.8	1,108.8	4.8	3.3	-22.55	655.7	-272.3	710.0	702.1	7.91	89.723	
1,200.0	1,200.0	1,211.0	1,210.9	5.1	3.3	-22.51	656.2	-271.9	710.3	702.1	8.22	86.363	
1,300.0	1,300.0	1,311.9	1,311.9	5.4	3.4	-22.47	656.4	-271.5	710.4	701.8	8.54	83.185	
1,336.7	1,336.7	1,348.3	1,348.3	5.5	3.4	-22.46	656.5	-271.4	710.4	701.7	8.65	82.076	
1,400.0	1,400.0	1,411.6	1,411.6	5.7	3.4	-22.45	656.5	-271.3	710.4	701.5	8.86	80.167	
1,400.7	1,400.7	1,412.4	1,412.3	5.7	3.4	-22.45	656.5	-271.3	710.4	701.5	8.86	80.145	
1,500.0	1,500.0	1,512.6	1,512.5	6.0	3.5	-22.45	656.6	-271.3	710.4	701.2	9.19	77.269	
1,549.8	1,549.8	1,561.4	1,561.4	6.1	3.5	-22.45	656.5	-271.2	710.3	701.0	9.35	75.940	
1,600.0	1,600.0	1,611.1	1,611.1	6.3	3.5	-22.45	656.6	-271.2	710.4	700.8	9.53	74.532	
1,700.0	1,700.0	1,712.1	1,712.0	6.6	3.6	-22.44	656.6	-271.2	710.4	700.5	9.87	71.949	
1,777.0	1,777.0	1,788.7	1,788.6	6.8	3.6	-22.44	656.5	-271.1	710.3	700.2	10.13	70.134	
1,800.0	1,800.0	1,811.2	1,811.2	6.9	3.6	-22.44	656.6	-271.1	710.3	700.1	10.21	69.578	
1,900.0	1,900.0	1,912.0	1,912.0	7.2	3.7	-22.44	656.6	-271.1	710.4	699.8	10.57	67.213	
1,997.3	1,997.3	2,008.9	2,008.9	7.6	3.7	-22.43	656.5	-271.1	710.3	699.4	10.90	65.156	
2,000.0	2,000.0	2,011.6	2,011.5	7.6	3.7	-22.43	656.5	-271.1	710.3	699.4	10.91	65.098	
2,100.0	2,100.0	2,112.0	2,111.9	7.9	3.7	-22.44	656.6	-271.1	710.4	699.1	11.28	62.952	
2,149.6	2,149.6	2,161.3	2,161.3	8.1	3.7	-22.44	656.6	-271.1	710.3	698.9	11.46	61.994	
2,200.0	2,200.0	2,211.5	2,211.4	8.2	3.8	-22.43	656.6	-271.1	710.3	698.7	11.64	61.006	
2,300.0	2,300.0	2,311.7	2,311.7	8.6	3.8	-22.43	656.6	-271.0	710.3	698.3	12.01	59.143	
2,364.2	2,364.2	2,375.8	2,375.8	8.8	3.8	-22.43	656.6	-271.0	710.3	698.1	12.24	58.036	
2,400.0	2,400.0	2,411.5	2,411.5	8.9	3.9	-22.43	656.6	-271.0	710.3	697.9	12.37	57.405	
2,500.0	2,500.0	2,512.0	2,511.9	9.2	3.9	-22.43	656.6	-271.0	710.3	697.5	12.74	55.759	
2,600.0	2,600.0	2,611.2	2,611.2	9.6	4.0	-56.85	656.6	-270.9	709.3	696.2	13.11	54.108	
2,700.0	2,699.8	2,711.9	2,711.9	9.9	4.0	-57.26	656.6	-271.0	706.5	693.0	13.48	52.414	
2,800.0	2,799.6	2,811.2	2,811.2	10.3	4.0	-57.73	656.5	-270.9	702.6	688.8	13.84	50.761	
2,900.0	2,899.4	2,911.0	2,911.0	10.6	4.1	-58.21	656.6	-270.9	699.0	684.7	14.23	49.128	
3,000.0	2,999.1	3,011.7	3,011.7	10.9	4.1	-58.70	656.4	-270.8	695.2	680.6	14.59	47.637	
3,100.0	3,098.9	3,111.0	3,111.0	11.3	4.2	-59.19	656.4	-270.7	691.5	676.5	14.97	46.205	
3,200.0	3,198.6	3,210.2	3,210.2	11.6	4.2	-59.68	656.4	-270.7	687.9	672.6	15.35	44.822	
3,300.0	3,298.4	3,310.6	3,310.6	12.0	4.3	-60.19	656.4	-270.6	684.4	668.7	15.73	43.511	
3,400.0	3,398.1	3,409.8	3,409.8	12.3	4.4	-60.68	656.4	-270.5	680.9	664.8	16.11	42.254	
3,500.0	3,497.9	3,509.4	3,509.4	12.7	4.4	-61.19	656.4	-270.5	677.5	661.0	16.50	41.051	
3,600.0	3,597.6	3,609.9	3,609.9	13.0	4.5	-61.71	656.3	-270.4	674.1	657.2	16.89	39.901	
3,700.0	3,697.4	3,708.9	3,708.9	13.4	4.5	-62.23	656.3	-270.4	670.7	653.4	17.29	38.801	
3,800.0	3,797.2	3,809.0	3,809.0	13.7	4.6	-62.76	656.3	-270.3	667.5	649.8	17.68	37.748	
3,900.0	3,896.9	3,908.5	3,908.5	14.1	4.7	-63.29	656.3	-270.3	664.3	646.2	18.08	36.748	
4,000.0	3,996.7	4,008.1	4,008.1	14.4	4.7	-63.82	656.5	-270.3	661.3	642.9	18.47	35.800	
4,100.0	4,096.4	4,107.4	4,107.4	14.8	4.8	-64.36	656.4	-270.3	658.3	639.4	18.87	34.880	
4,200.0	4,196.2	4,208.4	4,208.4	15.1	4.8	-64.92	656.4	-270.3	655.2	636.0	19.27	33.996	
4,300.0	4,295.9	4,307.7	4,307.7	15.5	4.8	-65.47	656.3	-270.3	652.2	632.6	19.68	33.141	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
BULLDOG - BASEBALL CAP FED COM #607H - OWB - AWP												Offset Well Error:	3.0 usft
Survey Program: 100-Standard Keeper 104, 12038-MWD+IFR1+MS													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,400.0	4,395.7	4,407.7	4,407.6	15.8	4.9	-66.03	656.3	-270.3	649.3	629.2	20.09	32.322	
4,500.0	4,495.5	4,508.0	4,508.0	16.2	4.9	-66.60	656.2	-270.2	646.4	625.9	20.50	31.531	
4,600.0	4,595.2	4,608.1	4,608.1	16.5	5.0	-67.16	656.1	-270.0	643.4	622.5	20.92	30.756	
4,700.0	4,695.0	4,707.4	4,707.4	16.9	5.1	-67.73	655.9	-269.9	640.6	619.2	21.34	30.012	
4,800.0	4,794.7	4,808.6	4,808.6	17.2	5.2	-68.31	655.8	-269.7	637.7	615.9	21.77	29.292	
4,900.0	4,894.5	4,909.1	4,909.1	17.6	5.2	-68.88	655.6	-269.3	634.8	612.6	22.20	28.591	
5,000.0	4,994.2	5,009.3	5,009.3	17.9	5.3	-69.44	655.3	-268.8	631.8	609.1	22.63	27.913	
5,100.0	5,094.0	5,108.8	5,108.7	18.3	5.4	-70.01	655.0	-268.2	628.8	605.7	23.07	27.258	
5,200.0	5,193.7	5,210.6	5,210.6	18.6	5.5	-70.58	654.7	-267.4	625.7	602.1	23.51	26.615	
5,300.0	5,293.5	5,308.2	5,308.2	19.0	5.6	-71.12	654.4	-266.5	622.6	598.7	23.94	26.003	
5,400.0	5,393.3	5,406.7	5,406.7	19.4	5.7	-71.67	654.4	-265.9	620.1	595.7	24.38	25.437	
5,500.0	5,493.0	5,504.5	5,504.5	19.7	5.8	-72.24	654.6	-265.5	617.8	593.0	24.80	24.908	
5,600.0	5,592.8	5,604.2	5,604.1	20.1	5.9	-72.84	654.7	-265.4	615.7	590.5	25.21	24.425	
5,700.0	5,692.5	5,704.1	5,704.1	20.4	6.0	-73.46	654.7	-265.4	613.7	588.1	25.61	23.967	
5,800.0	5,792.3	5,803.9	5,803.9	20.8	6.0	-74.08	654.8	-265.4	611.8	585.7	26.01	23.522	
5,900.0	5,892.0	5,903.4	5,903.4	21.1	6.1	-74.71	654.8	-265.4	609.9	583.4	26.42	23.084	
6,000.0	5,991.8	6,002.9	6,002.9	21.5	6.1	-75.34	654.8	-265.4	608.1	581.2	26.84	22.658	
6,100.0	6,091.6	6,102.3	6,102.3	21.8	6.1	-75.97	654.8	-265.4	606.4	579.1	27.24	22.262	
6,200.0	6,191.3	6,203.0	6,202.9	22.2	6.2	-76.62	654.8	-265.4	604.7	577.1	27.65	21.871	
6,300.0	6,291.1	6,302.5	6,302.5	22.6	6.2	-77.26	654.8	-265.4	603.2	575.1	28.06	21.494	
6,400.0	6,390.8	6,402.6	6,402.5	22.9	6.3	-77.90	654.9	-265.4	601.7	573.2	28.48	21.129	
6,500.0	6,490.6	6,502.7	6,502.6	23.3	6.3	-78.55	654.9	-265.4	600.2	571.4	28.89	20.775	
6,600.0	6,590.3	6,601.2	6,601.2	23.6	6.4	-79.20	654.9	-265.4	598.9	569.6	29.30	20.442	
6,700.0	6,690.1	6,701.1	6,701.1	24.0	6.4	-79.85	655.0	-265.5	597.8	568.1	29.69	20.135	
6,800.0	6,789.9	6,800.0	6,800.0	24.3	6.4	-80.50	655.2	-265.6	596.8	566.7	30.08	19.839	
6,900.0	6,889.6	6,899.5	6,899.4	24.7	6.5	-81.15	655.4	-265.8	596.0	565.5	30.47	19.557	
7,000.0	6,989.4	6,998.9	6,998.9	25.1	6.5	-81.80	655.7	-265.9	595.3	564.4	30.87	19.284	
7,100.0	7,089.1	7,098.0	7,098.0	25.4	6.5	-82.45	656.1	-266.1	594.7	563.4	31.27	19.021	
7,200.0	7,188.9	7,197.3	7,197.3	25.8	6.6	-83.09	656.5	-266.4	594.3	562.6	31.66	18.769	
7,300.0	7,288.6	7,296.2	7,296.1	26.1	6.7	-83.73	657.0	-266.6	594.1	562.0	32.06	18.527	
7,304.5	7,293.2	7,300.5	7,300.5	26.2	6.7	-83.76	657.1	-266.6	594.1	562.0	32.08	18.516 CC	
7,400.0	7,388.5	7,394.1	7,394.1	26.5	6.7	-84.27	657.7	-267.2	594.3	561.8	32.46	18.307 ES	
7,500.0	7,488.4	7,493.4	7,493.4	26.8	6.7	-84.68	658.2	-268.1	594.9	562.1	32.86	18.104	
7,600.0	7,588.3	7,593.9	7,593.9	27.2	6.7	-84.94	658.7	-269.1	595.8	562.5	33.26	17.911	
7,700.0	7,688.3	7,694.2	7,694.1	27.6	6.8	-50.75	659.1	-270.1	596.8	563.1	33.66	17.728	
7,800.0	7,788.3	7,795.2	7,795.1	27.9	6.8	-50.78	659.4	-271.1	597.7	563.6	34.06	17.546	
7,900.0	7,888.3	7,894.4	7,894.3	28.3	6.8	-50.82	659.7	-272.0	598.6	564.2	34.47	17.367	
8,000.0	7,988.3	7,993.9	7,993.9	28.6	6.9	-50.85	660.1	-273.0	599.6	564.8	34.87	17.194	
8,100.0	8,088.3	8,093.7	8,093.6	29.0	6.9	-50.87	660.6	-273.9	600.6	565.4	35.28	17.024	
8,200.0	8,188.3	8,194.0	8,193.9	29.3	7.0	-50.87	661.2	-274.7	601.6	566.0	35.69	16.856	
8,300.0	8,288.3	8,293.7	8,293.6	29.7	7.0	-50.85	661.9	-275.4	602.7	566.6	36.10	16.692	
8,400.0	8,388.3	8,392.7	8,392.6	30.0	7.1	-50.84	662.8	-276.1	603.8	567.3	36.52	16.535	
8,500.0	8,488.3	8,491.9	8,491.8	30.4	7.1	-50.84	663.6	-277.1	605.1	568.2	36.93	16.383	
8,600.0	8,588.3	8,591.2	8,591.0	30.7	7.2	-50.86	664.3	-278.4	606.6	569.2	37.35	16.239	
8,700.0	8,688.3	8,689.8	8,689.6	31.1	7.2	-50.90	665.0	-279.8	608.1	570.4	37.77	16.100	
8,800.0	8,788.3	8,790.1	8,790.0	31.5	7.3	-50.94	665.7	-281.5	609.8	571.6	38.19	15.967	
8,900.0	8,888.3	8,888.5	8,888.4	31.8	7.3	-50.98	666.5	-283.1	611.7	573.0	38.62	15.839	
9,000.0	8,988.3	8,987.9	8,987.7	32.2	7.4	-51.04	667.3	-285.1	613.7	574.6	39.04	15.718	
9,100.0	9,088.3	9,087.4	9,087.1	32.5	7.4	-51.17	667.5	-287.6	615.8	576.3	39.47	15.602	
9,200.0	9,188.3	9,186.0	9,185.7	32.9	7.5	-51.36	667.3	-290.5	618.0	578.1	39.89	15.491	
9,300.0	9,288.3	9,282.0	9,281.6	33.2	7.5	-51.54	667.2	-293.6	620.4	580.1	40.32	15.390	
9,400.0	9,388.3	9,380.6	9,380.2	33.6	7.6	-51.73	667.4	-297.2	623.4	582.7	40.74	15.301	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design BULLDOG - BASEBALL CAP FED COM #607H - OWB - AWP												Offset Site Error:	0.0 usft
Survey Program: 100-Standard Keeper 104, 12038-MWD+IFR1+MS												Offset Well Error:	3.0 usft
Reference	Offset	Semi Major Axis		Distance		Warning							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
9,500.0	9,488.3	9,473.6	9,473.1	33.9	7.6	-51.94	667.9	-301.4	627.3	586.1	41.17	15.237	
9,600.0	9,588.3	9,566.4	9,565.8	34.3	7.7	-52.16	668.6	-306.4	632.0	590.5	41.59	15.195	
9,700.0	9,688.3	9,662.3	9,661.4	34.6	7.7	-52.42	669.8	-312.5	637.8	595.8	42.02	15.177	
9,800.0	9,788.3	9,761.9	9,760.9	35.0	7.8	-52.68	671.1	-319.1	643.9	601.4	42.45	15.166	
9,900.0	9,888.3	9,859.1	9,857.8	35.4	7.9	-52.96	672.3	-325.8	650.1	607.2	42.89	15.160	
10,000.0	9,988.3	9,954.5	9,952.9	35.7	7.9	-53.24	673.6	-333.0	657.0	613.7	43.32	15.167	
10,100.0	10,088.3	10,052.4	10,050.5	36.1	8.0	-53.57	674.9	-341.0	664.3	620.6	43.75	15.184	
10,200.0	10,188.3	10,151.5	10,149.3	36.4	8.1	-53.91	676.1	-349.3	671.8	627.6	44.18	15.205	
10,300.0	10,288.3	10,251.4	10,248.8	36.8	8.1	-54.27	677.1	-358.0	679.4	634.8	44.61	15.228	
10,400.0	10,388.3	10,353.5	10,350.5	37.1	8.2	-54.64	677.9	-366.6	686.7	641.7	45.05	15.244	
10,500.0	10,488.3	10,456.1	10,452.7	37.5	8.3	-55.01	678.4	-375.1	693.8	648.4	45.48	15.255	
10,600.0	10,588.3	10,563.7	10,560.0	37.8	8.3	-55.37	678.8	-383.2	700.2	654.3	45.92	15.249	
10,700.0	10,688.3	10,671.2	10,667.3	38.2	8.4	-55.65	679.1	-389.8	705.4	659.1	46.36	15.216	
10,800.0	10,788.3	10,778.6	10,774.6	38.6	8.5	-55.83	679.7	-394.7	709.6	662.8	46.81	15.160	
10,900.0	10,888.3	10,888.3	10,884.2	38.9	8.6	-55.95	680.4	-398.2	712.5	665.3	47.26	15.076	
11,000.0	10,988.3	10,989.3	10,985.2	39.3	8.7	-56.03	680.8	-400.6	714.7	667.0	47.71	14.982	
11,100.0	11,088.3	11,093.2	11,089.0	39.6	8.7	-56.13	680.8	-402.9	716.6	668.4	48.16	14.880	
11,200.0	11,188.3	11,194.0	11,189.9	40.0	8.8	-56.23	680.5	-404.8	717.9	669.3	48.60	14.773	
11,300.0	11,288.3	11,292.9	11,288.7	40.3	8.9	-56.36	680.0	-406.9	719.4	670.4	49.03	14.672	
11,400.0	11,388.3	11,390.5	11,386.3	40.7	9.0	-56.52	679.2	-409.5	721.2	671.7	49.47	14.579	
11,500.0	11,488.3	11,484.8	11,480.6	41.1	9.0	-56.71	678.5	-412.5	723.4	673.5	49.90	14.498	
11,600.0	11,588.3	11,580.6	11,576.3	41.4	9.1	-56.91	677.9	-416.2	726.4	676.1	50.34	14.430	
11,700.0	11,688.3	11,678.2	11,673.8	41.8	9.2	-57.14	677.3	-420.6	729.8	679.0	50.78	14.372	
11,800.0	11,788.3	11,774.4	11,769.9	42.1	9.2	-57.36	676.9	-425.3	733.7	682.5	51.22	14.325	
11,900.0	11,888.3	11,875.9	11,871.2	42.5	9.3	-57.55	677.1	-430.2	737.9	686.2	51.67	14.282	
12,000.0	11,988.3	11,980.3	11,975.6	42.8	9.4	-57.69	677.7	-434.6	741.8	689.6	52.10	14.236	
12,100.0	12,088.3	12,070.0	12,065.2	43.2	9.5	-57.79	678.1	-437.6	744.9	692.5	52.49	14.192 SF	
12,200.0	12,188.3	12,123.6	12,118.6	43.5	9.5	122.54	682.2	-439.8	753.1	700.2	52.90	14.238	
12,300.0	12,286.6	12,175.3	12,169.2	43.8	9.7	121.25	692.0	-441.6	776.0	722.6	53.41	14.530	
12,400.0	12,379.2	12,210.2	12,202.5	44.1	9.8	118.18	702.6	-442.3	815.8	761.8	54.05	15.094	
12,500.0	12,462.1	12,226.0	12,217.2	44.3	9.9	111.80	708.3	-442.6	871.4	816.6	54.72	15.924	
12,600.0	12,531.5	12,246.3	12,235.8	44.5	10.0	102.73	716.5	-443.0	939.0	883.8	55.22	17.005	

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
BULLDOG - BASEBALL CAP FED COM #707H - OWB - AWP												Offset Well Error:	3.0 usft
Survey Program: 100-Standard Keeper 104, 12229-MWVD													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	12.7	12.7	3.0	3.0	-25.12	651.3	-305.3	719.3				
100.0	100.0	117.8	117.8	3.0	3.0	-25.14	650.7	-305.4	718.8	712.8	6.00	119.730	
200.0	200.0	217.6	217.6	3.0	3.0	-25.19	649.7	-305.5	718.0	711.9	6.04	118.771	
300.0	300.0	315.4	315.4	3.1	3.0	-25.21	649.0	-305.5	717.4	711.2	6.13	116.977	
400.0	400.0	414.7	414.7	3.2	3.0	-25.22	648.6	-305.5	716.9	710.7	6.26	114.468	
500.0	500.0	514.6	514.6	3.4	3.1	-25.23	648.2	-305.5	716.6	710.1	6.43	111.387	
600.0	600.0	615.1	615.1	3.6	3.1	-25.25	647.7	-305.5	716.2	709.5	6.64	107.899	
700.0	700.0	715.1	715.1	3.8	3.1	-25.27	647.2	-305.6	715.7	708.9	6.87	104.177	
800.0	800.0	815.0	815.0	4.0	3.2	-25.30	646.7	-305.7	715.3	708.2	7.13	100.350	
900.0	900.0	916.3	916.3	4.2	3.2	-25.32	646.1	-305.8	714.8	707.4	7.41	96.478	
1,000.0	1,000.0	1,019.3	1,019.3	4.5	3.2	-25.35	645.3	-305.7	714.0	706.3	7.71	92.576	
1,100.0	1,100.0	1,122.8	1,122.7	4.8	3.3	-25.37	643.9	-305.4	712.8	704.7	8.04	88.694	
1,200.0	1,200.0	1,225.3	1,225.2	5.1	3.4	-25.38	642.3	-304.7	711.1	702.7	8.37	84.936	
1,300.0	1,300.0	1,326.8	1,326.7	5.4	3.4	-25.38	640.5	-303.8	709.0	700.3	8.72	81.273	
1,400.0	1,400.0	1,425.1	1,425.0	5.7	3.5	-25.36	638.8	-302.8	707.1	698.0	9.09	77.827	
1,500.0	1,500.0	1,524.0	1,523.9	6.0	3.5	-25.35	637.3	-301.9	705.3	695.9	9.46	74.583	
1,600.0	1,600.0	1,622.4	1,622.3	6.3	3.6	-25.33	636.0	-301.1	703.8	693.9	9.84	71.540	
1,700.0	1,700.0	1,720.3	1,720.2	6.6	3.7	-25.31	634.9	-300.3	702.4	692.2	10.22	68.702	
1,800.0	1,800.0	1,817.7	1,817.6	6.9	3.7	-25.28	634.3	-299.5	701.5	690.8	10.61	66.085	
1,900.0	1,900.0	1,916.4	1,916.3	7.2	3.8	-25.24	633.8	-298.7	700.7	689.7	11.00	63.679	
2,000.0	2,000.0	2,014.1	2,014.0	7.6	3.8	-25.18	633.8	-298.0	700.3	689.0	11.38	61.517	
2,100.0	2,100.0	2,116.5	2,116.4	7.9	3.9	-25.12	633.6	-297.1	699.8	688.1	11.77	59.460	
2,200.0	2,200.0	2,214.6	2,214.4	8.2	3.9	-25.07	633.5	-296.3	699.4	687.2	12.16	57.513	
2,300.0	2,300.0	2,314.6	2,314.4	8.6	4.0	-25.02	633.4	-295.6	699.0	686.5	12.55	55.694	
2,400.0	2,400.0	2,414.5	2,414.4	8.9	4.0	-24.96	633.4	-294.9	698.7	685.7	12.94	53.975	
2,500.0	2,500.0	2,513.6	2,513.5	9.2	4.1	-24.93	633.3	-294.3	698.4	685.0	13.34	52.357	
2,600.0	2,600.0	2,611.6	2,611.5	9.6	4.1	-59.40	633.0	-294.8	697.4	683.7	13.72	50.840	
2,700.0	2,699.8	2,711.7	2,711.6	9.9	4.2	-59.94	632.5	-296.1	694.8	680.7	14.08	49.333	
2,800.0	2,799.6	2,810.3	2,810.1	10.3	4.2	-60.70	631.2	-299.1	691.5	677.1	14.45	47.847	
2,900.0	2,899.4	2,912.0	2,911.7	10.6	4.2	-61.58	629.3	-303.1	688.2	673.4	14.82	46.428	
3,000.0	2,999.1	3,014.5	3,014.1	10.9	4.3	-62.46	627.1	-306.7	684.7	669.5	15.20	45.046	
3,100.0	3,098.9	3,117.5	3,117.0	11.3	4.3	-63.31	624.8	-309.6	680.9	665.3	15.59	43.687	
3,200.0	3,198.6	3,221.6	3,221.1	11.6	4.4	-64.11	622.1	-311.6	676.5	660.5	15.98	42.324	
3,300.0	3,298.4	3,322.8	3,322.2	12.0	4.5	-64.86	619.5	-312.8	671.9	655.5	16.39	40.985	
3,400.0	3,398.1	3,425.1	3,424.5	12.3	4.6	-65.57	616.8	-313.4	667.0	650.1	16.81	39.671	
3,500.0	3,497.9	3,523.6	3,522.9	12.7	4.7	-66.22	614.3	-313.3	661.9	644.6	17.24	38.397	
3,600.0	3,597.6	3,615.7	3,615.1	13.0	4.8	-66.81	612.8	-313.5	657.8	640.1	17.66	37.253	
3,700.0	3,697.4	3,715.8	3,715.1	13.4	4.9	-67.44	611.7	-313.7	654.3	636.2	18.08	36.188	
3,800.0	3,797.2	3,820.6	3,819.9	13.7	5.0	-68.08	610.3	-313.4	650.4	631.9	18.52	35.125	
3,900.0	3,896.9	3,924.6	3,923.9	14.1	5.1	-68.70	608.4	-312.4	645.7	626.8	18.96	34.062	
4,000.0	3,996.7	4,021.4	4,020.7	14.4	5.2	-69.41	605.6	-312.5	641.0	621.6	19.38	33.071	
4,100.0	4,096.4	4,111.6	4,110.8	14.8	5.3	-70.25	602.9	-314.8	637.5	617.7	19.78	32.235	
4,200.0	4,196.2	4,210.7	4,209.8	15.1	5.3	-71.26	599.8	-318.4	634.9	614.7	20.15	31.501	
4,300.0	4,295.9	4,312.5	4,311.5	15.5	5.4	-72.27	596.8	-321.7	632.3	611.8	20.54	30.791	
4,400.0	4,395.7	4,412.3	4,411.2	15.8	5.5	-73.22	593.9	-324.3	629.6	608.7	20.92	30.098	
4,500.0	4,495.5	4,508.2	4,507.1	16.2	5.6	-74.15	591.4	-327.1	627.5	606.2	21.30	29.463	
4,600.0	4,595.2	4,613.5	4,612.3	16.5	5.7	-75.13	588.7	-329.6	625.1	603.4	21.68	28.834	
4,700.0	4,695.0	4,708.0	4,706.7	16.9	5.8	-75.92	587.0	-331.1	623.0	601.0	22.06	28.241	
4,800.0	4,794.7	4,814.7	4,813.4	17.2	5.9	-76.76	585.2	-332.0	620.8	598.3	22.46	27.642	
4,900.0	4,894.5	4,911.9	4,910.6	17.6	6.0	-77.61	582.8	-333.3	618.3	595.5	22.85	27.058	
5,000.0	4,994.2	5,009.1	5,007.7	17.9	6.0	-78.53	580.2	-335.4	616.4	593.2	23.23	26.531	
5,100.0	5,094.0	5,103.2	5,101.8	18.3	6.1	-79.43	578.1	-337.8	615.3	591.7	23.60	26.069	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
BULLDOG - BASEBALL CAP FED COM #707H - OWB - AWP												Offset Well Error:	3.0 usft
Survey Program: 100-Standard Keeper 104, 12229-MWD													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,162.5	5,156.3	5,162.3	5,160.8	18.5	6.2	-80.00	577.0	-339.7	615.1	591.3	23.83	25.816	CC
5,200.0	5,193.7	5,200.0	5,198.5	18.6	6.2	-80.37	576.4	-341.0	615.2	591.2	23.96	25.675	
5,300.0	5,293.5	5,303.0	5,301.4	19.0	6.3	-81.34	574.8	-344.1	615.2	590.9	24.32	25.295	
5,310.7	5,304.2	5,311.3	5,309.8	19.0	6.3	-81.42	574.6	-344.3	615.2	590.8	24.36	25.256	ES
5,400.0	5,393.3	5,386.1	5,384.5	19.4	6.3	-82.11	574.0	-347.1	616.2	591.6	24.67	24.984	
5,500.0	5,493.0	5,482.3	5,480.6	19.7	6.4	-83.01	574.2	-351.9	619.2	594.2	25.01	24.761	
5,600.0	5,592.8	5,584.5	5,582.6	20.1	6.4	-83.94	574.5	-356.8	622.2	596.8	25.35	24.542	
5,700.0	5,692.5	5,685.4	5,683.5	20.4	6.5	-84.83	574.7	-361.2	625.0	599.3	25.70	24.315	
5,800.0	5,792.3	5,783.4	5,781.4	20.8	6.6	-85.77	574.1	-366.0	627.9	601.8	26.06	24.095	
5,900.0	5,892.0	5,883.5	5,881.2	21.1	6.6	-86.93	571.7	-372.5	631.1	604.7	26.42	23.888	
6,000.0	5,991.8	5,984.7	5,982.2	21.5	6.7	-88.09	569.2	-378.7	634.3	607.5	26.79	23.681	
6,100.0	6,091.6	6,086.9	6,084.2	21.8	6.8	-89.22	566.7	-384.6	637.4	610.2	27.16	23.469	
6,200.0	6,191.3	6,186.6	6,183.7	22.2	6.9	-90.30	564.2	-390.0	640.4	612.9	27.53	23.258	
6,300.0	6,291.1	6,282.5	6,279.4	22.6	7.0	-91.37	561.5	-395.5	643.8	615.9	27.91	23.069	
6,400.0	6,390.8	6,381.8	6,378.5	22.9	7.1	-92.55	558.1	-402.1	647.8	619.6	28.29	22.900	
6,500.0	6,490.6	6,484.6	6,480.9	23.3	7.2	-93.74	554.6	-408.5	651.8	623.1	28.68	22.726	
6,600.0	6,590.3	6,585.4	6,581.6	23.6	7.3	-94.85	551.3	-414.1	655.6	626.5	29.07	22.547	
6,700.0	6,690.1	6,682.1	6,678.0	24.0	7.4	-95.89	548.2	-419.5	659.6	630.1	29.47	22.383	
6,800.0	6,789.9	6,773.0	6,768.6	24.3	7.5	-96.94	544.8	-425.7	664.6	634.8	29.86	22.261	
6,900.0	6,889.6	6,868.2	6,863.4	24.7	7.6	-98.13	540.7	-433.5	671.0	640.8	30.25	22.180	
7,000.0	6,989.4	6,968.9	6,963.7	25.1	7.7	-99.35	536.4	-441.9	677.8	647.1	30.67	22.103	
7,100.0	7,089.1	7,070.9	7,065.4	25.4	7.8	-100.54	532.1	-449.8	684.4	653.3	31.09	22.016	
7,200.0	7,188.9	7,173.8	7,167.9	25.8	7.9	-101.68	528.0	-457.1	690.8	659.3	31.51	21.921	
7,300.0	7,288.6	7,274.0	7,267.8	26.1	8.0	-102.75	524.2	-463.7	697.0	665.0	31.94	21.821	
7,400.0	7,388.5	7,376.6	7,370.1	26.5	8.1	-103.75	520.5	-470.1	702.9	670.5	32.38	21.710	
7,500.0	7,488.4	7,477.4	7,470.7	26.8	8.2	-104.54	517.2	-475.8	708.1	675.3	32.81	21.582	
7,600.0	7,588.3	7,579.1	7,572.2	27.2	8.3	-105.16	514.1	-481.4	712.8	679.5	33.25	21.440	
7,700.0	7,688.3	7,677.9	7,670.7	27.6	8.4	-105.35	510.5	-486.7	716.9	683.3	33.68	21.290	
7,800.0	7,788.3	7,776.0	7,768.6	27.9	8.5	-105.85	506.0	-492.6	721.2	687.1	34.11	21.146	
7,900.0	7,888.3	7,877.9	7,870.2	28.3	8.7	-106.35	501.3	-498.8	725.5	691.0	34.55	21.001	
8,000.0	7,988.3	7,981.2	7,973.3	28.6	8.8	-106.85	496.8	-504.5	729.5	694.5	34.99	20.847	
8,100.0	8,088.3	8,082.9	8,074.7	29.0	8.9	-107.35	492.6	-509.5	733.1	697.6	35.43	20.688	
8,200.0	8,188.3	8,180.9	8,172.6	29.3	9.0	-107.85	489.0	-514.3	736.7	700.8	35.87	20.537	
8,300.0	8,288.3	8,279.7	8,271.2	29.7	9.1	-108.35	486.0	-519.1	740.5	704.2	36.31	20.395	
8,400.0	8,388.3	8,379.1	8,370.5	30.0	9.2	-108.85	483.2	-524.0	744.5	707.7	36.75	20.257	
8,500.0	8,488.3	8,477.7	8,468.9	30.4	9.3	-109.35	480.1	-529.1	748.6	711.4	37.20	20.126	
8,600.0	8,588.3	8,576.3	8,567.3	30.7	9.5	-109.85	476.5	-534.5	752.9	715.3	37.64	20.002	
8,700.0	8,688.3	8,675.0	8,665.7	31.1	9.6	-110.35	472.6	-540.0	757.4	719.3	38.09	19.885	
8,800.0	8,788.3	8,774.3	8,764.8	31.5	9.7	-110.85	469.2	-545.7	762.0	723.5	38.54	19.772	
8,900.0	8,888.3	8,873.4	8,863.7	31.8	9.8	-111.35	465.7	-551.4	766.7	727.7	38.99	19.664	
9,000.0	8,988.3	8,971.5	8,961.5	32.2	9.9	-111.85	461.4	-557.4	771.6	732.2	39.44	19.563	
9,100.0	9,088.3	9,077.9	9,067.5	32.5	10.0	-112.35	455.9	-563.9	776.4	736.5	39.92	19.451	
9,200.0	9,188.3	9,180.3	9,169.5	32.9	10.2	-112.85	448.6	-569.7	780.4	740.0	40.38	19.324	
9,300.0	9,288.3	9,275.7	9,264.6	33.2	10.3	-113.35	442.1	-575.1	784.6	743.8	40.84	19.213	
9,400.0	9,388.3	9,370.0	9,358.5	33.6	10.4	-113.85	436.7	-581.0	789.5	748.2	41.29	19.122	
9,500.0	9,488.3	9,463.6	9,451.8	33.9	10.5	-114.35	432.4	-587.3	795.2	753.5	41.74	19.052	
9,600.0	9,588.3	9,558.5	9,546.3	34.3	10.6	-114.85	429.0	-594.1	801.7	759.5	42.19	19.000	
9,700.0	9,688.3	9,656.7	9,644.3	34.6	10.7	-115.35	426.4	-601.5	808.6	765.9	42.66	18.955	
9,800.0	9,788.3	9,755.1	9,742.4	35.0	10.8	-115.85	424.1	-608.9	815.5	772.4	43.12	18.913	
9,900.0	9,888.3	9,854.7	9,841.7	35.4	10.9	-116.35	422.1	-616.5	822.7	779.1	43.59	18.875	
10,000.0	9,988.3	9,955.3	9,942.0	35.7	11.0	-116.85	420.3	-624.0	829.8	785.7	44.06	18.833	
10,100.0	10,088.3	10,055.8	10,042.1	36.1	11.1	-117.35	418.4	-631.5	836.8	792.3	44.53	18.792	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design BULLDOG - BASEBALL CAP FED COM #707H - OWB - AWP												Offset Site Error:	0.0 usft
Survey Program: 100-Standard Keeper 104, 12229-MWD												Offset Well Error:	3.0 usft
Reference	Offset	Semi Major Axis		Distance									
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,200.0	10,188.3	10,158.5	10,144.6	36.4	11.3	-80.77	416.6	-638.9	843.6	798.6	45.01	18.744	
10,300.0	10,288.3	10,261.7	10,247.6	36.8	11.4	-80.96	414.7	-645.8	850.0	804.5	45.48	18.688	
10,400.0	10,388.3	10,366.5	10,352.1	37.1	11.5	-81.17	412.7	-652.5	856.0	810.0	45.97	18.621	
10,500.0	10,488.3	10,469.1	10,454.5	37.5	11.6	-81.37	410.6	-658.4	861.4	814.9	46.45	18.546	
10,600.0	10,588.3	10,577.6	10,562.8	37.8	11.7	-81.57	408.4	-664.2	866.3	819.4	46.94	18.458	
10,700.0	10,688.3	10,689.2	10,674.3	38.2	11.9	-81.78	405.8	-668.7	870.0	822.6	47.43	18.342	
10,800.0	10,788.3	10,798.8	10,783.9	38.6	12.0	-81.98	403.1	-671.7	872.4	824.5	47.91	18.208	
10,900.0	10,888.3	10,906.5	10,891.5	38.9	12.1	-82.16	400.6	-673.6	873.9	825.5	48.38	18.061	
11,000.0	10,988.3	11,006.7	10,991.7	39.3	12.3	-82.32	398.4	-675.0	874.9	826.0	48.83	17.918	
11,100.0	11,088.3	11,108.6	11,093.5	39.6	12.4	-82.48	396.1	-676.2	875.7	826.5	49.27	17.774	
11,200.0	11,188.3	11,209.1	11,194.0	40.0	12.5	-82.66	393.5	-677.3	876.5	826.8	49.71	17.632	
11,300.0	11,288.3	11,309.6	11,294.5	40.3	12.6	-82.86	390.6	-678.3	877.2	827.0	50.15	17.491	
11,400.0	11,388.3	11,404.8	11,389.6	40.7	12.7	-83.02	388.1	-679.5	878.1	827.5	50.58	17.362	
11,500.0	11,488.3	11,502.2	11,487.0	41.1	12.9	-83.18	386.0	-681.2	879.5	828.5	51.02	17.239	
11,600.0	11,588.3	11,600.8	11,585.6	41.4	13.0	-83.31	384.2	-683.0	881.1	829.6	51.47	17.119	
11,700.0	11,688.3	11,700.0	11,684.7	41.8	13.1	-83.40	382.9	-684.8	882.7	830.8	51.93	17.000	
11,800.0	11,788.3	11,796.6	11,781.3	42.1	13.2	-83.47	382.0	-686.7	884.6	832.3	52.38	16.888	
11,900.0	11,888.3	11,894.9	11,879.6	42.5	13.3	-83.53	381.4	-689.0	886.9	834.0	52.84	16.783	
12,000.0	11,988.3	11,991.1	11,975.7	42.8	13.4	-83.59	380.8	-691.5	889.4	836.1	53.30	16.686	
12,100.0	12,088.3	12,088.2	12,072.8	43.2	13.5	-83.64	380.3	-694.5	892.4	838.6	53.77	16.597	
12,200.0	12,188.3	12,186.4	12,170.9	43.5	13.6	96.73	379.8	-697.7	895.7	841.5	54.19	16.529 SF	
12,300.0	12,286.6	12,288.7	12,273.2	43.8	13.6	97.21	380.0	-700.9	901.1	846.6	54.46	16.545	
12,400.0	12,379.2	12,371.0	12,355.4	44.1	13.7	98.19	382.6	-703.0	909.8	855.2	54.57	16.671	
12,500.0	12,462.1	12,417.0	12,401.1	44.3	13.7	97.97	386.8	-704.7	926.3	871.7	54.59	16.968	
12,600.0	12,531.5	12,449.0	12,432.7	44.5	13.7	96.26	391.6	-706.4	953.0	898.4	54.61	17.453	
12,700.0	12,584.5	12,465.4	12,448.7	44.7	13.7	92.43	394.8	-707.6	990.1	935.5	54.64	18.121	

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design BULLDOG - BLACK RAIDER "BQK' STATE 1H - OWB - AWP												Offset Site Error:	0.0 usft
Survey Program: 100-GYRO-NS, 8572-MWD												Offset Well Error:	3.0 usft
Reference	Offset	Semi Major Axis		Distance									
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,000.0	8,988.3	13,675.0	9,334.9	32.2	80.5	-113.24	-70.3	-627.3	965.2	863.3	101.89	9.473	
9,100.0	9,088.3	13,675.0	9,334.9	32.5	80.5	-113.24	-70.3	-627.3	931.5	826.8	104.75	8.893	
9,200.0	9,188.3	13,675.0	9,334.9	32.9	80.5	-113.24	-70.3	-627.3	907.7	800.7	106.99	8.483	
9,300.0	9,288.3	13,675.0	9,334.9	33.2	80.5	-113.24	-70.3	-627.3	894.4	786.0	108.40	8.251	
9,369.5	9,357.9	13,675.0	9,334.9	33.5	80.5	-113.24	-70.3	-627.3	891.7	782.9	108.82	8.194	CC, ES, SF
9,400.0	9,388.3	13,675.0	9,334.9	33.6	80.5	-113.24	-70.3	-627.3	892.2	783.4	108.85	8.196	
9,500.0	9,488.3	13,675.0	9,334.9	33.9	80.5	-113.24	-70.3	-627.3	901.2	792.9	108.32	8.320	
9,600.0	9,588.3	13,675.0	9,334.9	34.3	80.5	-113.24	-70.3	-627.3	921.0	814.1	106.89	8.616	
9,700.0	9,688.3	13,675.0	9,334.9	34.6	80.5	-113.24	-70.3	-627.3	951.0	846.2	104.75	9.079	
9,800.0	9,788.3	13,675.0	9,334.9	35.0	80.5	-113.24	-70.3	-627.3	990.2	888.0	102.12	9.697	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
Survey Program: 0-MWD+IFR1+FDIR												Offset Well Error:	3.0 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
10,300.0	10,288.3	10,349.8	10,336.7	36.8	36.9	94.53	202.9	1,184.8	998.2	924.8	73.35	13.607	
10,400.0	10,388.3	10,449.5	10,436.1	37.1	37.2	94.33	206.8	1,178.5	991.5	917.5	74.06	13.387	
10,500.0	10,488.3	10,549.2	10,535.6	37.5	37.6	94.13	210.7	1,172.2	984.9	910.1	74.78	13.171	
10,600.0	10,588.3	10,649.0	10,635.0	37.8	37.9	93.93	214.6	1,165.8	978.3	902.8	75.49	12.960	
10,700.0	10,688.3	10,748.7	10,734.4	38.2	38.3	93.73	218.5	1,159.5	971.7	895.5	76.20	12.752	
10,800.0	10,788.3	10,848.4	10,833.9	38.6	38.6	93.52	222.4	1,153.2	965.1	888.2	76.91	12.548	
10,900.0	10,888.3	10,948.1	10,933.3	38.9	39.0	93.31	226.3	1,146.8	958.5	880.9	77.62	12.349	
11,000.0	10,988.3	11,047.8	11,032.8	39.3	39.4	93.09	230.2	1,140.5	951.9	873.6	78.33	12.153	
11,100.0	11,088.3	11,147.6	11,132.2	39.6	39.7	92.88	234.1	1,134.2	945.4	866.3	79.04	11.960	
11,200.0	11,188.3	11,247.3	11,231.7	40.0	40.1	92.66	238.0	1,127.8	938.9	859.1	79.76	11.772	
11,300.0	11,288.3	11,347.0	11,331.1	40.3	40.4	92.44	241.9	1,121.5	932.3	851.9	80.47	11.586	
11,400.0	11,388.3	11,446.7	11,430.5	40.7	40.8	92.21	245.8	1,115.2	925.8	844.6	81.18	11.404	
11,500.0	11,488.3	11,546.4	11,530.0	41.1	41.2	91.98	249.7	1,108.8	919.3	837.4	81.89	11.226	
11,600.0	11,588.3	11,646.2	11,629.4	41.4	41.5	91.75	253.6	1,102.5	912.8	830.2	82.61	11.051	
11,700.0	11,688.3	11,745.9	11,728.9	41.8	41.9	91.52	257.5	1,096.2	906.4	823.1	83.32	10.879	
11,800.0	11,788.3	11,845.6	11,828.3	42.1	42.2	91.28	261.5	1,089.8	899.9	815.9	84.03	10.710	
11,900.0	11,888.3	11,945.3	11,927.8	42.5	42.6	91.04	265.4	1,083.5	893.5	808.8	84.74	10.544	
12,000.0	11,988.3	12,045.1	12,027.2	42.8	42.9	90.79	269.3	1,077.2	887.1	801.6	85.46	10.381	
12,100.0	12,088.3	12,144.8	12,126.6	43.2	43.3	90.54	273.2	1,070.8	880.7	794.5	86.17	10.220	
12,200.0	12,188.3	12,244.4	12,226.0	43.5	43.7	-89.53	277.1	1,064.5	874.3	787.4	86.87	10.064	
12,300.0	12,286.6	12,341.8	12,323.1	43.8	44.0	-91.63	280.9	1,058.3	868.1	780.5	87.53	9.917	
12,400.0	12,379.2	12,432.8	12,413.9	44.1	44.3	-94.63	284.4	1,052.5	863.6	775.5	88.14	9.799	
12,472.4	12,440.4	12,506.1	12,486.9	44.3	44.6	-97.20	281.5	1,047.9	862.7	774.2	88.52	9.746 CC	
12,500.0	12,462.1	12,535.9	12,516.3	44.3	44.7	-98.17	277.1	1,046.1	862.8	774.2	88.64	9.734	
12,600.0	12,531.5	12,655.0	12,629.4	44.5	45.0	-101.67	241.5	1,039.2	865.4	776.5	88.91	9.734	
12,700.0	12,584.5	12,796.4	12,747.3	44.7	45.4	-105.04	164.7	1,032.4	870.5	781.8	88.74	9.809	
12,800.0	12,618.7	12,965.3	12,851.3	44.8	45.6	-107.89	32.9	1,026.9	875.9	787.8	88.13	9.939	
12,900.0	12,632.8	13,158.3	12,906.1	44.8	45.8	-109.40	-150.8	1,024.9	879.0	791.4	87.68	10.026	
13,000.0	12,633.8	13,278.4	12,908.4	44.9	45.9	-109.44	-270.9	1,025.7	879.0	791.2	87.78	10.014	
13,100.0	12,634.6	13,378.4	12,908.8	44.9	45.9	-109.42	-370.8	1,026.5	878.8	790.9	87.91	9.996	
13,200.0	12,635.4	13,478.4	12,909.3	45.0	46.0	-109.40	-470.8	1,027.3	878.6	790.5	88.08	9.975	
13,300.0	12,636.2	13,578.4	12,909.7	45.1	46.1	-109.38	-570.8	1,028.1	878.4	790.1	88.28	9.950	
13,400.0	12,637.1	13,678.4	12,910.1	45.2	46.2	-109.36	-670.8	1,028.9	878.2	789.6	88.51	9.922	
13,500.0	12,637.9	13,778.4	12,910.6	45.3	46.4	-109.34	-770.8	1,029.7	877.9	789.2	88.77	9.890	
13,600.0	12,638.7	13,878.4	12,911.0	45.4	46.5	-109.31	-870.8	1,030.5	877.7	788.7	89.07	9.855	
13,700.0	12,639.6	13,978.4	12,911.5	45.6	46.6	-109.29	-970.8	1,031.2	877.5	788.1	89.40	9.816	
13,800.0	12,640.4	14,078.4	12,911.9	45.8	46.8	-109.27	-1,070.8	1,032.0	877.3	787.6	89.75	9.775	
13,900.0	12,641.2	14,178.4	12,912.4	46.0	47.0	-109.25	-1,170.8	1,032.8	877.1	787.0	90.14	9.730	
14,000.0	12,642.0	14,278.4	12,912.8	46.2	47.2	-109.23	-1,270.8	1,033.6	876.9	786.3	90.57	9.683	
14,100.0	12,642.9	14,378.4	12,913.3	46.4	47.4	-109.21	-1,370.8	1,034.4	876.7	785.7	91.02	9.632	
14,200.0	12,643.7	14,478.4	12,913.7	46.6	47.6	-109.18	-1,470.8	1,035.2	876.5	785.0	91.50	9.579	
14,300.0	12,644.5	14,578.4	12,914.2	46.8	47.9	-109.16	-1,570.8	1,036.0	876.3	784.3	92.01	9.524	
14,400.0	12,645.4	14,678.4	12,914.6	47.1	48.1	-109.14	-1,670.8	1,036.7	876.1	783.5	92.55	9.466	
14,500.0	12,646.2	14,778.4	12,915.1	47.4	48.4	-109.12	-1,770.8	1,037.5	875.9	782.8	93.11	9.406	
14,600.0	12,647.0	14,878.4	12,915.5	47.7	48.7	-109.10	-1,870.8	1,038.3	875.7	781.9	93.71	9.344	
14,700.0	12,647.8	14,978.4	12,916.0	48.0	49.0	-109.08	-1,970.8	1,039.1	875.5	781.1	94.33	9.281	
14,800.0	12,648.7	15,078.4	12,916.4	48.3	49.3	-109.05	-2,070.8	1,039.9	875.2	780.3	94.98	9.215	
14,900.0	12,649.5	15,178.4	12,916.8	48.6	49.6	-109.03	-2,170.8	1,040.7	875.0	779.4	95.66	9.148	
15,000.0	12,650.3	15,278.4	12,917.3	48.9	49.9	-109.01	-2,270.8	1,041.5	874.8	778.5	96.36	9.079	
15,100.0	12,651.1	15,378.4	12,917.7	49.3	50.3	-108.99	-2,370.8	1,042.3	874.6	777.5	97.08	9.009	
15,200.0	12,652.0	15,478.4	12,918.2	49.7	50.6	-108.97	-2,470.7	1,043.0	874.4	776.6	97.83	8.938	
15,300.0	12,652.8	15,578.4	12,918.6	50.0	51.0	-108.95	-2,570.7	1,043.8	874.2	775.6	98.61	8.865	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design BULLDOG - PICKELHAUBE ST #701H - OWB - PWP1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD+IFR1+FDIR												Offset Well Error:	3.0 usft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Tooface (")	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
15,400.0	12,653.6	15,678.4	12,919.1	50.4	51.4	-108.92	-2,670.7	1,044.6	874.0	774.6	99.41	8.792	
15,500.0	12,654.5	15,778.4	12,919.5	50.8	51.8	-108.90	-2,770.7	1,045.4	873.8	773.6	100.23	8.718	
15,600.0	12,655.3	15,878.4	12,920.0	51.2	52.2	-108.88	-2,870.7	1,046.2	873.6	772.5	101.07	8.643	
15,700.0	12,656.1	15,978.4	12,920.4	51.7	52.6	-108.86	-2,970.7	1,047.0	873.4	771.4	101.94	8.568	
15,800.0	12,656.9	16,078.4	12,920.9	52.1	53.0	-108.84	-3,070.7	1,047.8	873.2	770.4	102.82	8.492	
15,900.0	12,657.8	16,178.4	12,921.3	52.6	53.5	-108.81	-3,170.7	1,048.6	873.0	769.2	103.73	8.416	
16,000.0	12,658.6	16,278.4	12,921.8	53.0	53.9	-108.79	-3,270.7	1,049.3	872.8	768.1	104.66	8.339	
16,100.0	12,659.4	16,378.4	12,922.2	53.5	54.4	-108.77	-3,370.7	1,050.1	872.6	767.0	105.61	8.262	
16,200.0	12,660.3	16,478.4	12,922.7	54.0	54.9	-108.75	-3,470.7	1,050.9	872.4	765.8	106.57	8.186	
16,300.0	12,661.1	16,578.4	12,923.1	54.4	55.3	-108.73	-3,570.7	1,051.7	872.1	764.6	107.56	8.109	
16,400.0	12,661.9	16,678.4	12,923.5	54.9	55.8	-108.71	-3,670.7	1,052.5	871.9	763.4	108.56	8.032	
16,500.0	12,662.7	16,778.4	12,924.0	55.4	56.3	-108.68	-3,770.7	1,053.3	871.7	762.2	109.58	7.955	
16,600.0	12,663.6	16,878.4	12,924.4	56.0	56.8	-108.66	-3,870.7	1,054.1	871.5	760.9	110.62	7.879	
16,700.0	12,664.4	16,978.4	12,924.9	56.5	57.3	-108.64	-3,970.7	1,054.9	871.3	759.7	111.67	7.802	
16,800.0	12,665.2	17,078.4	12,925.3	57.0	57.9	-108.62	-4,070.7	1,055.6	871.1	758.4	112.74	7.727	
16,900.0	12,666.0	17,178.4	12,925.8	57.5	58.4	-108.60	-4,170.7	1,056.4	870.9	757.1	113.83	7.651	
17,000.0	12,666.9	17,278.4	12,926.2	58.1	58.9	-108.57	-4,270.7	1,057.2	870.7	755.8	114.93	7.576	
17,100.0	12,667.7	17,378.4	12,926.7	58.6	59.5	-108.55	-4,370.7	1,058.0	870.5	754.5	116.05	7.501	
17,200.0	12,668.5	17,478.4	12,927.1	59.2	60.0	-108.53	-4,470.7	1,058.8	870.3	753.1	117.18	7.427	
17,300.0	12,669.4	17,578.4	12,927.6	59.8	60.6	-108.51	-4,570.6	1,059.6	870.1	751.8	118.32	7.353	
17,400.0	12,670.2	17,678.3	12,928.0	60.3	61.2	-108.49	-4,670.6	1,060.4	869.9	750.4	119.48	7.280	
17,500.0	12,671.0	17,778.3	12,928.5	60.9	61.7	-108.46	-4,770.6	1,061.1	869.7	749.0	120.66	7.208	
17,600.0	12,671.8	17,878.3	12,928.9	61.5	62.3	-108.44	-4,870.6	1,061.9	869.5	747.6	121.84	7.136	
17,618.8	12,672.0	17,897.2	12,929.0	61.6	62.4	-108.44	-4,889.5	1,062.1	869.5	747.4	122.06	7.123 ES, SF	

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
Survey Program: 0-MWD+IFR1+FDIR												Offset Well Error:	3.0 usft
Reference	Offset	Semi Major Axis		Distance									
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	3.0	3.0	-89.81	0.1	-30.0	30.1				
100.0	100.0	98.0	98.0	3.0	3.0	-89.81	0.1	-30.0	30.0	24.0	6.01	4.995	
200.0	200.0	198.0	198.0	3.0	3.0	-89.81	0.1	-30.0	30.0	23.9	6.08	4.935	
300.0	300.0	298.0	298.0	3.1	3.1	-89.81	0.1	-30.0	30.0	23.8	6.23	4.812	
400.0	400.0	398.0	398.0	3.2	3.2	-89.81	0.1	-30.0	30.0	23.5	6.47	4.640	
500.0	500.0	498.0	498.0	3.4	3.4	-89.81	0.1	-30.0	30.0	23.2	6.77	4.434	
600.0	600.0	598.0	598.0	3.6	3.6	-89.81	0.1	-30.0	30.0	22.9	7.13	4.210	
700.0	700.0	698.0	698.0	3.8	3.8	-89.81	0.1	-30.0	30.0	22.5	7.54	3.981	
800.0	800.0	798.0	798.0	4.0	4.0	-89.81	0.1	-30.0	30.0	22.0	7.99	3.755	
900.0	900.0	898.0	898.0	4.2	4.2	-89.81	0.1	-30.0	30.0	21.5	8.48	3.537	
1,000.0	1,000.0	998.0	998.0	4.5	4.5	-89.81	0.1	-30.0	30.0	21.0	9.00	3.333	
1,100.0	1,100.0	1,098.0	1,098.0	4.8	4.8	-89.81	0.1	-30.0	30.0	20.5	9.55	3.142	
1,200.0	1,200.0	1,198.0	1,198.0	5.1	5.1	-89.81	0.1	-30.0	30.0	19.9	10.12	2.966	
1,300.0	1,300.0	1,298.0	1,298.0	5.4	5.3	-89.81	0.1	-30.0	30.0	19.3	10.70	2.803	
1,400.0	1,400.0	1,398.0	1,398.0	5.7	5.6	-89.81	0.1	-30.0	30.0	18.7	11.30	2.654	
1,500.0	1,500.0	1,498.0	1,498.0	6.0	6.0	-89.81	0.1	-30.0	30.0	18.1	11.92	2.518	
1,600.0	1,600.0	1,598.0	1,598.0	6.3	6.3	-89.81	0.1	-30.0	30.0	17.5	12.54	2.392	
1,700.0	1,700.0	1,698.0	1,698.0	6.6	6.6	-89.81	0.1	-30.0	30.0	16.8	13.17	2.277	
1,800.0	1,800.0	1,798.0	1,798.0	6.9	6.9	-89.81	0.1	-30.0	30.0	16.2	13.82	2.171	
1,900.0	1,900.0	1,898.0	1,898.0	7.2	7.2	-89.81	0.1	-30.0	30.0	15.5	14.47	2.074	
2,000.0	2,000.0	1,998.0	1,998.0	7.6	7.6	-89.81	0.1	-30.0	30.0	14.9	15.12	1.984 Advise and Monitor	
2,100.0	2,100.0	2,098.0	2,098.0	7.9	7.9	-89.81	0.1	-30.0	30.0	14.2	15.78	1.901 Advise and Monitor	
2,200.0	2,200.0	2,198.0	2,198.0	8.2	8.2	-89.81	0.1	-30.0	30.0	13.6	16.45	1.824 Advise and Monitor	
2,300.0	2,300.0	2,298.0	2,298.0	8.6	8.6	-89.81	0.1	-30.0	30.0	12.9	17.12	1.753 Advise and Monitor	
2,400.0	2,400.0	2,398.0	2,398.0	8.9	8.9	-89.81	0.1	-30.0	30.0	12.2	17.79	1.686 Advise and Monitor	
2,500.0	2,500.0	2,498.0	2,498.0	9.2	9.2	-89.81	0.1	-30.0	30.0	11.5	18.47	1.625 Advise and Monitor, CC, ES, SF	
2,600.0	2,600.0	2,597.5	2,597.5	9.6	9.6	-126.07	0.4	-30.8	31.8	12.6	19.14	1.660 Advise and Monitor	
2,700.0	2,699.8	2,696.8	2,696.7	9.9	9.9	-130.75	1.5	-33.1	37.3	17.5	19.80	1.883 Advise and Monitor	
2,800.0	2,799.6	2,796.4	2,796.3	10.3	10.2	-135.23	2.9	-36.3	45.0	24.5	20.47	2.198	
2,900.0	2,899.4	2,896.1	2,895.9	10.6	10.6	-138.39	4.3	-39.4	52.9	31.7	21.14	2.502	
3,000.0	2,999.1	2,995.7	2,995.5	10.9	10.9	-140.72	5.7	-42.6	60.9	39.1	21.81	2.792	
3,100.0	3,098.9	3,095.4	3,095.1	11.3	11.2	-142.51	7.1	-45.8	69.0	46.5	22.49	3.067	
3,200.0	3,198.6	3,195.0	3,194.7	11.6	11.6	-143.92	8.5	-49.0	77.1	54.0	23.17	3.328	
3,300.0	3,298.4	3,294.7	3,294.3	12.0	11.9	-145.06	9.9	-52.2	85.3	61.5	23.85	3.576	
3,400.0	3,398.1	3,394.3	3,393.9	12.3	12.3	-146.00	11.3	-55.3	93.5	69.0	24.54	3.811	
3,500.0	3,497.9	3,494.0	3,493.4	12.7	12.6	-146.79	12.8	-58.5	101.7	76.5	25.22	4.033	
3,600.0	3,597.6	3,593.6	3,593.0	13.0	12.9	-147.46	14.2	-61.7	110.0	84.1	25.91	4.245	
3,700.0	3,697.4	3,693.3	3,692.6	13.4	13.3	-148.04	15.6	-64.9	118.2	91.6	26.60	4.445	
3,800.0	3,797.2	3,792.9	3,792.2	13.7	13.6	-148.54	17.0	-68.1	126.5	99.2	27.29	4.635	
3,900.0	3,896.9	3,892.6	3,891.8	14.1	14.0	-148.98	18.4	-71.2	134.8	106.8	27.98	4.817	
4,000.0	3,996.7	3,992.2	3,991.4	14.4	14.3	-149.37	19.8	-74.4	143.1	114.4	28.68	4.989	
4,100.0	4,096.4	4,091.9	4,091.0	14.8	14.7	-149.72	21.2	-77.6	151.4	122.0	29.37	5.153	
4,200.0	4,196.2	4,191.5	4,190.6	15.1	15.0	-150.03	22.6	-80.8	159.7	129.6	30.07	5.310	
4,300.0	4,295.9	4,291.2	4,290.2	15.5	15.4	-150.31	24.0	-83.9	168.0	137.2	30.76	5.459	
4,400.0	4,395.7	4,390.8	4,389.8	15.8	15.7	-150.56	25.5	-87.1	176.3	144.8	31.46	5.602	
4,500.0	4,495.5	4,490.5	4,489.4	16.2	16.1	-150.80	26.9	-90.3	184.6	152.4	32.16	5.739	
4,600.0	4,595.2	4,590.1	4,588.9	16.5	16.4	-151.01	28.3	-93.5	192.9	160.0	32.86	5.869	
4,700.0	4,695.0	4,689.8	4,688.5	16.9	16.7	-151.20	29.7	-96.7	201.2	167.6	33.56	5.995	
4,800.0	4,794.7	4,789.4	4,788.1	17.2	17.1	-151.38	31.1	-99.8	209.5	175.2	34.26	6.115	
4,900.0	4,894.5	4,889.1	4,887.7	17.6	17.4	-151.54	32.5	-103.0	217.8	182.8	34.96	6.230	
5,000.0	4,994.2	4,988.7	4,987.3	17.9	17.8	-151.70	33.9	-106.2	226.1	190.5	35.66	6.340	
5,100.0	5,094.0	5,088.4	5,086.9	18.3	18.1	-151.84	35.3	-109.4	234.4	198.1	36.37	6.446	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 usft
Survey Program: 0-MWD+IFR1+FDIR												Offset Well Error:	3.0 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
5,200.0	5,193.7	5,188.1	5,186.5	18.6	18.5	-151.97	36.8	-112.6	242.8	205.7	37.07	6.549	
5,300.0	5,293.5	5,287.7	5,286.1	19.0	18.8	-152.09	38.2	-115.7	251.1	213.3	37.77	6.647	
5,400.0	5,393.3	5,387.4	5,385.7	19.4	19.2	-152.21	39.6	-118.9	259.4	220.9	38.48	6.741	
5,500.0	5,493.0	5,487.0	5,485.3	19.7	19.6	-152.32	41.0	-122.1	267.7	228.5	39.18	6.832	
5,600.0	5,592.8	5,581.7	5,579.9	20.1	19.9	-152.22	42.8	-126.2	276.8	237.0	39.85	6.947	
5,700.0	5,692.5	5,679.0	5,676.9	20.4	20.2	-151.73	45.7	-132.7	287.5	247.0	40.53	7.094	
5,800.0	5,792.3	5,778.4	5,776.0	20.8	20.6	-151.24	48.7	-139.6	298.4	257.2	41.23	7.237	
5,900.0	5,892.0	5,877.8	5,875.1	21.1	20.9	-150.78	51.7	-146.4	309.3	267.4	41.94	7.375	
6,000.0	5,991.8	5,977.2	5,974.2	21.5	21.3	-150.35	54.7	-153.3	320.2	277.6	42.64	7.510	
6,100.0	6,091.6	6,076.5	6,073.3	21.8	21.6	-149.95	57.7	-160.2	331.1	287.8	43.35	7.640	
6,200.0	6,191.3	6,175.9	6,172.4	22.2	22.0	-149.57	60.7	-167.0	342.1	298.0	44.05	7.766	
6,300.0	6,291.1	6,275.3	6,271.5	22.6	22.3	-149.22	63.7	-173.9	353.1	308.3	44.76	7.888	
6,400.0	6,390.8	6,374.7	6,370.6	22.9	22.7	-148.89	66.7	-180.8	364.0	318.6	45.46	8.007	
6,500.0	6,490.6	6,474.0	6,469.7	23.3	23.1	-148.58	69.7	-187.7	375.0	328.8	46.17	8.123	
6,600.0	6,590.3	6,573.4	6,568.8	23.6	23.4	-148.28	72.8	-194.5	386.0	339.1	46.88	8.235	
6,700.0	6,690.1	6,672.8	6,667.8	24.0	23.8	-148.01	75.8	-201.4	397.0	349.4	47.58	8.344	
6,800.0	6,789.9	6,772.2	6,766.9	24.3	24.1	-147.74	78.8	-208.3	408.0	359.7	48.29	8.449	
6,900.0	6,889.6	6,871.5	6,866.0	24.7	24.5	-147.50	81.8	-215.1	419.0	370.0	49.00	8.552	
7,000.0	6,989.4	6,970.9	6,965.1	25.1	24.8	-147.26	84.8	-222.0	430.1	380.4	49.71	8.652	
7,100.0	7,089.1	7,070.3	7,064.2	25.4	25.2	-147.03	87.8	-228.9	441.1	390.7	50.41	8.750	
7,200.0	7,188.9	7,169.7	7,163.3	25.8	25.5	-146.82	90.8	-235.7	452.1	401.0	51.12	8.844	
7,300.0	7,288.6	7,269.0	7,262.4	26.1	25.9	-146.63	93.8	-242.6	463.2	411.3	51.83	8.936	
7,400.0	7,388.5	7,368.5	7,361.6	26.5	26.3	-146.41	96.8	-249.5	473.3	420.7	52.54	9.008	
7,500.0	7,488.4	7,468.1	7,460.9	26.8	26.6	-146.09	99.9	-256.3	481.9	428.7	53.25	9.051	
7,600.0	7,588.3	7,567.7	7,560.2	27.2	27.0	-145.65	102.9	-263.2	489.2	435.2	53.96	9.067	
7,700.0	7,688.3	7,667.4	7,659.7	27.6	27.3	-110.81	105.9	-270.1	495.1	440.4	54.66	9.057	
7,800.0	7,788.3	7,767.1	7,759.1	27.9	27.7	-110.20	108.9	-277.0	500.5	445.1	55.37	9.039	
7,900.0	7,888.3	7,866.9	7,858.5	28.3	28.0	-109.61	111.9	-283.9	506.0	449.9	56.08	9.023	
8,000.0	7,988.3	7,966.6	7,957.9	28.6	28.4	-109.03	115.0	-290.8	511.5	454.7	56.78	9.008	
8,100.0	8,088.3	8,066.3	8,057.4	29.0	28.8	-108.46	118.0	-297.7	517.1	459.6	57.49	8.994	
8,200.0	8,188.3	8,166.0	8,156.8	29.3	29.1	-107.91	121.0	-304.6	522.7	464.5	58.20	8.981	
8,300.0	8,288.3	8,265.7	8,256.2	29.7	29.5	-107.37	124.0	-311.5	528.4	469.5	58.91	8.970	
8,400.0	8,388.3	8,365.4	8,355.7	30.0	29.8	-106.84	127.1	-318.4	534.1	474.5	59.62	8.959	
8,500.0	8,488.3	8,465.2	8,455.1	30.4	30.2	-106.32	130.1	-325.3	539.9	479.5	60.32	8.949	
8,600.0	8,588.3	8,564.9	8,554.5	30.7	30.5	-105.81	133.1	-332.1	545.7	484.6	61.03	8.941	
8,700.0	8,688.3	8,664.6	8,654.0	31.1	30.9	-105.31	136.1	-339.0	551.5	489.8	61.74	8.933	
8,800.0	8,788.3	8,764.3	8,753.4	31.5	31.3	-104.82	139.1	-345.9	557.4	495.0	62.45	8.926	
8,900.0	8,888.3	8,864.0	8,852.8	31.8	31.6	-104.35	142.2	-352.8	563.4	500.2	63.16	8.919	
9,000.0	8,988.3	8,963.7	8,952.3	32.2	32.0	-103.88	145.2	-359.7	569.3	505.5	63.87	8.914	
9,100.0	9,088.3	9,063.4	9,051.7	32.5	32.3	-103.42	148.2	-366.6	575.3	510.7	64.58	8.909	
9,200.0	9,188.3	9,163.2	9,151.1	32.9	32.7	-102.97	151.2	-373.5	581.4	516.1	65.29	8.904	
9,300.0	9,288.3	9,262.9	9,250.5	33.2	33.0	-102.53	154.2	-380.4	587.5	521.4	66.00	8.900	
9,400.0	9,388.3	9,362.6	9,350.0	33.6	33.4	-102.10	157.3	-387.3	593.6	526.8	66.71	8.897	
9,500.0	9,488.3	9,462.3	9,449.4	33.9	33.8	-101.68	160.3	-394.2	599.7	532.3	67.42	8.894	
9,600.0	9,588.3	9,562.0	9,548.8	34.3	34.1	-101.27	163.3	-401.1	605.9	537.7	68.14	8.892	
9,700.0	9,688.3	9,661.7	9,648.3	34.6	34.5	-100.87	166.3	-407.9	612.1	543.2	68.85	8.890	
9,800.0	9,788.3	9,761.4	9,747.7	35.0	34.8	-100.47	169.4	-414.8	618.3	548.8	69.56	8.889	
9,900.0	9,888.3	9,861.2	9,847.1	35.4	35.2	-100.08	172.4	-421.7	624.6	554.3	70.27	8.888	
10,000.0	9,988.3	9,960.9	9,946.6	35.7	35.6	-99.70	175.4	-428.6	630.9	559.9	70.98	8.888	
10,100.0	10,088.3	10,060.6	10,046.0	36.1	35.9	-99.33	178.4	-435.5	637.2	565.5	71.70	8.888	
10,200.0	10,188.3	10,160.3	10,145.4	36.4	36.3	-98.96	181.4	-442.4	643.5	571.1	72.41	8.888	
10,300.0	10,288.3	10,260.0	10,244.8	36.8	36.6	-98.60	184.5	-449.3	649.9	576.8	73.12	8.888	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design BULLDOG - PICKELHAUBE ST #702H - OWB - PWP1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD+IFR1+FDIR												Offset Well Error:	3.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,400.0	10,388.3	10,359.7	10,344.3	37.1	37.0	-98.25	187.5	-456.2	656.3	582.5	73.83	8.889	
10,500.0	10,488.3	10,459.4	10,443.7	37.5	37.4	-97.91	190.5	-463.1	662.7	588.2	74.55	8.890	
10,600.0	10,588.3	10,559.2	10,543.1	37.8	37.7	-97.57	193.5	-470.0	669.2	593.9	75.26	8.892	
10,700.0	10,688.3	10,658.9	10,642.6	38.2	38.1	-97.24	196.5	-476.9	675.7	599.7	75.97	8.893	
10,800.0	10,788.3	10,758.6	10,742.0	38.6	38.4	-96.91	199.6	-483.8	682.1	605.5	76.69	8.895	
10,900.0	10,888.3	10,858.3	10,841.4	38.9	38.8	-96.59	202.6	-490.6	688.7	611.3	77.40	8.897	
11,000.0	10,988.3	10,958.0	10,940.9	39.3	39.2	-96.28	205.6	-497.5	695.2	617.1	78.11	8.900	
11,100.0	11,088.3	11,057.7	11,040.3	39.6	39.5	-95.97	208.6	-504.4	701.7	622.9	78.83	8.902	
11,200.0	11,188.3	11,157.5	11,139.7	40.0	39.9	-95.67	211.7	-511.3	708.3	628.8	79.54	8.905	
11,300.0	11,288.3	11,257.2	11,239.2	40.3	40.2	-95.38	214.7	-518.2	714.9	634.6	80.25	8.908	
11,400.0	11,388.3	11,356.9	11,338.6	40.7	40.6	-95.08	217.7	-525.1	721.5	640.5	80.97	8.911	
11,500.0	11,488.3	11,456.6	11,438.0	41.1	41.0	-94.80	220.7	-532.0	728.1	646.5	81.68	8.914	
11,600.0	11,588.3	11,556.3	11,537.4	41.4	41.3	-94.52	223.7	-538.9	734.8	652.4	82.40	8.918	
11,700.0	11,688.3	11,656.0	11,636.9	41.8	41.7	-94.24	226.8	-545.8	741.5	658.3	83.11	8.921	
11,800.0	11,788.3	11,755.7	11,736.3	42.1	42.0	-93.97	229.8	-552.7	748.1	664.3	83.83	8.925	
11,900.0	11,888.3	11,855.5	11,835.7	42.5	42.4	-93.71	232.8	-559.6	754.8	670.3	84.54	8.929	
12,000.0	11,988.3	11,955.2	11,935.2	42.8	42.8	-93.45	235.8	-566.4	761.5	676.3	85.26	8.932	
12,100.0	12,088.3	12,054.9	12,034.6	43.2	43.1	-93.19	238.8	-573.3	768.3	682.3	85.97	8.936	
12,200.0	12,188.3	12,154.5	12,134.0	43.5	43.5	87.39	241.9	-580.2	775.0	688.3	86.68	8.941	
12,300.0	12,286.6	12,252.1	12,231.2	43.8	43.8	88.11	244.8	-587.0	781.2	693.8	87.34	8.944	
12,400.0	12,379.2	12,343.2	12,322.1	44.1	44.2	89.96	247.6	-593.3	788.0	700.0	87.95	8.959	
12,500.0	12,462.1	12,424.1	12,402.8	44.3	44.4	92.15	250.0	-598.9	797.9	709.4	88.50	9.016	
12,600.0	12,531.5	12,522.7	12,500.7	44.5	44.8	95.08	243.3	-605.6	812.7	723.6	89.13	9.118	
12,700.0	12,584.5	12,647.4	12,619.2	44.7	45.2	98.51	206.3	-613.4	831.1	741.6	89.59	9.277	
12,800.0	12,618.7	12,819.3	12,758.8	44.8	45.6	102.79	107.9	-622.2	850.6	761.2	89.32	9.522	
12,900.0	12,632.8	13,067.4	12,880.1	44.8	45.9	107.01	-105.2	-628.6	864.6	776.5	88.15	9.809	
13,000.0	12,633.8	13,248.7	12,896.1	44.9	46.1	107.77	-285.1	-628.1	866.4	778.4	88.00	9.845	
13,100.0	12,634.6	13,348.7	12,896.4	44.9	46.2	107.73	-385.1	-627.2	866.2	778.1	88.11	9.830	
13,200.0	12,635.4	13,448.7	12,896.7	45.0	46.3	107.70	-485.1	-626.4	866.0	777.8	88.26	9.812	
13,300.0	12,636.2	13,548.7	12,897.0	45.1	46.4	107.67	-585.1	-625.5	865.9	777.4	88.44	9.791	
13,400.0	12,637.1	13,648.7	12,897.3	45.2	46.5	107.63	-685.1	-624.6	865.7	777.1	88.65	9.765	
13,500.0	12,637.9	13,748.7	12,897.6	45.3	46.6	107.60	-785.1	-623.7	865.5	776.6	88.89	9.737	
13,600.0	12,638.7	13,848.7	12,897.9	45.4	46.8	107.57	-885.1	-622.8	865.4	776.2	89.17	9.705	
13,700.0	12,639.6	13,948.7	12,898.2	45.6	46.9	107.53	-985.1	-622.0	865.2	775.7	89.48	9.670	
13,800.0	12,640.4	14,048.7	12,898.5	45.8	47.1	107.50	-1,085.1	-621.1	865.1	775.2	89.82	9.631	
13,900.0	12,641.2	14,148.7	12,898.8	46.0	47.3	107.47	-1,185.1	-620.2	864.9	774.7	90.19	9.590	
14,000.0	12,642.0	14,248.7	12,899.1	46.2	47.5	107.43	-1,285.1	-619.3	864.7	774.1	90.59	9.545	
14,100.0	12,642.9	14,348.7	12,899.4	46.4	47.7	107.40	-1,385.1	-618.5	864.6	773.5	91.03	9.498	
14,200.0	12,643.7	14,448.7	12,899.7	46.6	47.9	107.37	-1,485.1	-617.6	864.4	772.9	91.49	9.448	
14,300.0	12,644.5	14,548.7	12,900.0	46.8	48.2	107.33	-1,585.1	-616.7	864.3	772.3	91.98	9.396	
14,400.0	12,645.4	14,648.7	12,900.3	47.1	48.4	107.30	-1,685.0	-615.8	864.1	771.6	92.50	9.341	
14,500.0	12,646.2	14,748.7	12,900.6	47.4	48.7	107.27	-1,785.0	-614.9	863.9	770.9	93.06	9.284	
14,600.0	12,647.0	14,848.7	12,900.9	47.7	49.0	107.23	-1,885.0	-614.1	863.8	770.1	93.63	9.225	
14,700.0	12,647.8	14,948.7	12,901.2	48.0	49.3	107.20	-1,985.0	-613.2	863.6	769.4	94.24	9.164	
14,800.0	12,648.7	15,048.7	12,901.5	48.3	49.6	107.17	-2,085.0	-612.3	863.5	768.6	94.88	9.101	
14,900.0	12,649.5	15,148.7	12,901.8	48.6	49.9	107.13	-2,185.0	-611.4	863.3	767.8	95.54	9.036	
15,000.0	12,650.3	15,248.7	12,902.1	48.9	50.2	107.10	-2,285.0	-610.6	863.1	766.9	96.23	8.970	
15,100.0	12,651.1	15,348.7	12,902.4	49.3	50.6	107.07	-2,385.0	-609.7	863.0	766.0	96.94	8.902	
15,200.0	12,652.0	15,448.7	12,902.7	49.7	50.9	107.03	-2,485.0	-608.8	862.8	765.2	97.68	8.834	
15,300.0	12,652.8	15,548.7	12,903.0	50.0	51.3	107.00	-2,585.0	-607.9	862.7	764.2	98.44	8.764	
15,400.0	12,653.6	15,648.7	12,903.3	50.4	51.7	106.97	-2,685.0	-607.1	862.5	763.3	99.22	8.693	
15,500.0	12,654.5	15,748.7	12,903.6	50.8	52.1	106.93	-2,785.0	-606.2	862.4	762.3	100.03	8.621	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Offset Design BULLDOG - PICKELHAUBE ST #702H - OWB - PWP1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD+IFR1+FDIR												Offset Well Error:	3.0 usft
Reference	Offset	Semi Major Axis		Distance									
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
15,600.0	12,655.3	15,848.7	12,903.9	51.2	52.5	106.90	-2,885.0	-605.3	862.2	761.3	100.87	8.548	
15,700.0	12,656.1	15,948.7	12,904.2	51.7	52.9	106.87	-2,985.0	-604.4	862.0	760.3	101.72	8.475	
15,800.0	12,656.9	16,048.7	12,904.5	52.1	53.4	106.83	-3,085.0	-603.5	861.9	759.3	102.60	8.401	
15,900.0	12,657.8	16,148.7	12,904.8	52.6	53.8	106.80	-3,185.0	-602.7	861.7	758.2	103.50	8.326	
16,000.0	12,658.6	16,248.7	12,905.1	53.0	54.2	106.77	-3,285.0	-601.8	861.6	757.2	104.41	8.252	
16,100.0	12,659.4	16,348.7	12,905.4	53.5	54.7	106.73	-3,385.0	-600.9	861.4	756.1	105.35	8.177	
16,200.0	12,660.3	16,448.7	12,905.7	54.0	55.2	106.70	-3,484.9	-600.0	861.3	755.0	106.31	8.101	
16,300.0	12,661.1	16,548.7	12,906.0	54.4	55.6	106.67	-3,584.9	-599.2	861.1	753.8	107.29	8.026	
16,400.0	12,661.9	16,648.7	12,906.3	54.9	56.1	106.63	-3,684.9	-598.3	861.0	752.7	108.28	7.951	
16,500.0	12,662.7	16,748.7	12,906.6	55.4	56.6	106.60	-3,784.9	-597.4	860.8	751.5	109.30	7.876	
16,600.0	12,663.6	16,848.7	12,906.9	56.0	57.1	106.56	-3,884.9	-596.5	860.7	750.3	110.33	7.801	
16,700.0	12,664.4	16,948.7	12,907.2	56.5	57.7	106.53	-3,984.9	-595.7	860.5	749.1	111.38	7.726	
16,800.0	12,665.2	17,048.7	12,907.5	57.0	58.2	106.50	-4,084.9	-594.8	860.4	747.9	112.44	7.652	
16,900.0	12,666.0	17,148.7	12,907.8	57.5	58.7	106.46	-4,184.9	-593.9	860.2	746.7	113.52	7.577	
17,000.0	12,666.9	17,248.7	12,908.1	58.1	59.2	106.43	-4,284.9	-593.0	860.1	745.4	114.62	7.504	
17,100.0	12,667.7	17,348.7	12,908.4	58.6	59.8	106.40	-4,384.9	-592.1	859.9	744.2	115.73	7.430	
17,200.0	12,668.5	17,448.7	12,908.7	59.2	60.3	106.36	-4,484.9	-591.3	859.8	742.9	116.86	7.357	
17,300.0	12,669.4	17,548.7	12,909.0	59.8	60.9	106.33	-4,584.9	-590.4	859.6	741.6	118.00	7.285	
17,400.0	12,670.2	17,648.7	12,909.3	60.3	61.5	106.30	-4,684.9	-589.5	859.4	740.3	119.15	7.213	
17,500.0	12,671.0	17,748.7	12,909.6	60.9	62.0	106.26	-4,784.9	-588.6	859.3	739.0	120.32	7.142	
17,600.0	12,671.8	17,848.7	12,909.9	61.5	62.7	106.23	-4,884.9	-587.8	859.1	737.6	121.51	7.071	
17,618.8	12,672.0	17,866.5	12,910.0	61.6	62.9	106.22	-4,902.7	-587.6	859.1	737.4	121.73	7.058	

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB=27' @ 3437.0usft (Nabor 893)

Coordinates are relative to: PICKELHAUBE ST #602H

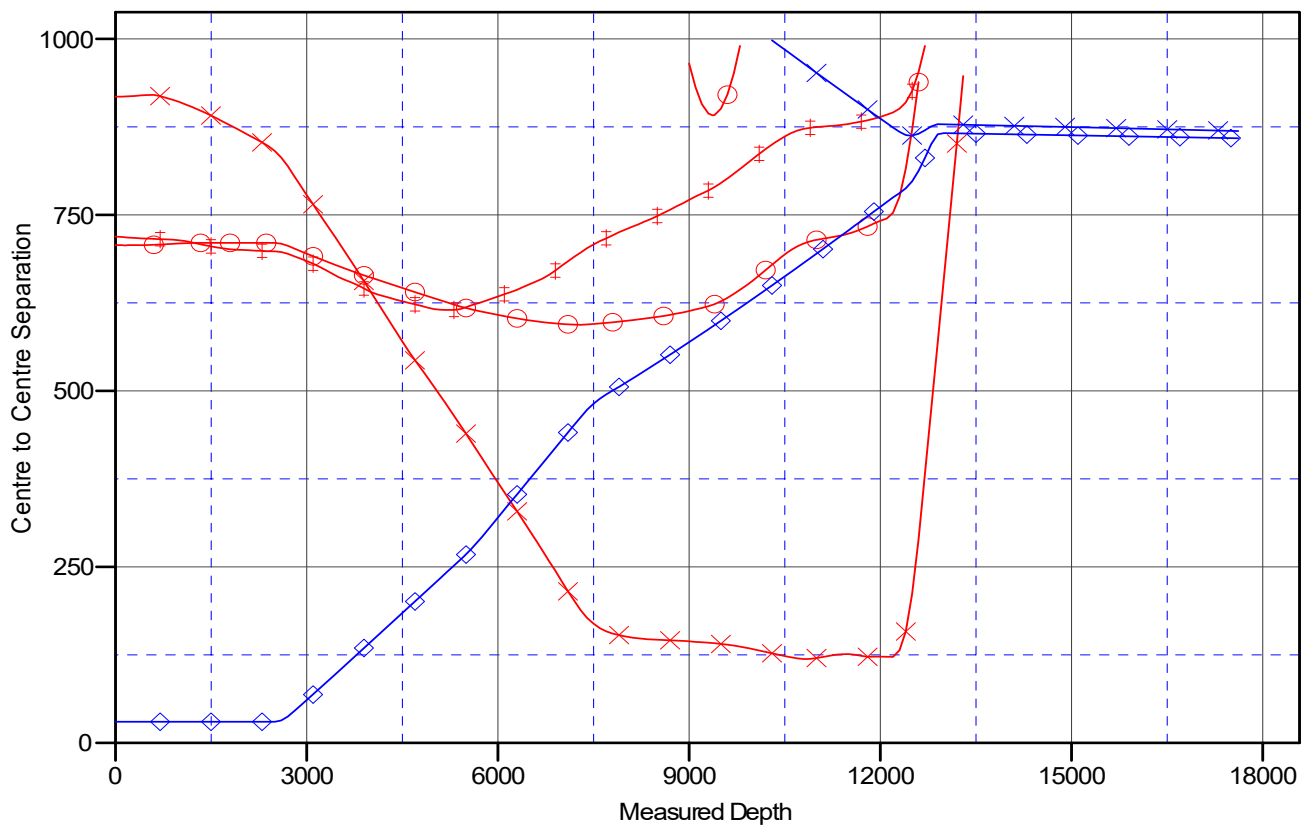
Offset Depths are relative to Offset Datum

Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30

Central Meridian is 104° 20' 0.000 W

Grid Convergence at Surface is: 0.48°

Ladder Plot



LEGEND

BASEBALL CAP FED COM #607H, OWB, AWP V0
 BLACK RAIDER 'BQK' STATE 1H, OWB, AWP V0

BASEBALL CAP FED COM #607H, OWB, ACTUAL WELLPATH V0
 PICKELHAUBE ST #702H, OWB, PWP1 V0

BASEBALL CAP FED COM #707H, OWB, AWP V0
 PICKELHAUBE ST #701H, OWB, PWP1 V0

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well PICKELHAUBE ST #602H
Project:	LEA COUNTY, NM	TVD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Reference Site:	BULLDOG	MD Reference:	KB=27' @ 3437.0usft (Nabor 893)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	PICKELHAUBE ST #602H	Survey Calculation Method:	Minimum Curvature
Well Error:	3.0 usft	Output errors are at	2.00 sigma
Reference Wellbore	OWB	Database:	EDM_Users
Reference Design:	PWP1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB=27' @ 3437.0usft (Nabor 893)

Offset Depths are relative to Offset Datum

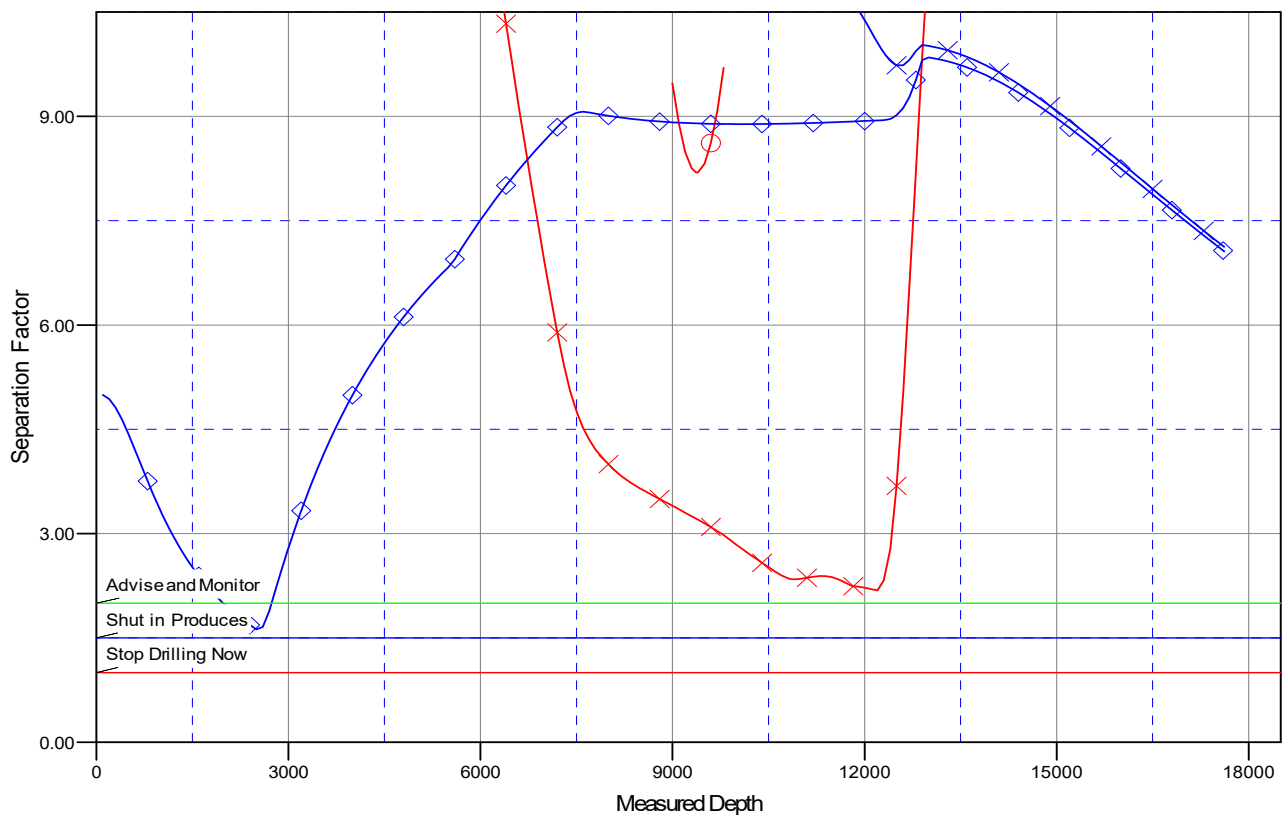
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: PICKELHAUBE ST #602H

Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30

Grid Convergence at Surface is: 0.48°

Separation Factor Plot



LEGEND

BASEBALL CAP FED COM #602H, OWB, AWP V0
BLACK RAIDER 'BQK' STATE 1H, OWB, AWP V0

BASEBALL CAP FED COM #602H, OWB, ACTUAL WELLPATH V0
PICKELHAUBE ST #602H, OWB, PWP1 V0

BASEBALL CAP FED COM #602H, OWB, AWP V0
PICKELHAUBE ST #701H, OWB, PWP1 V0