

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

1a. Type of work: ☒ DRILL ☐ REENTER		5. Lease Serial No. NMNM120903
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other		6. If Indian, Allottee or Tribe Name
1c. Type of Completion: ☐ Hydraulic Fracturing ☒ Single Zone ☐ Multiple Zone		7. If Unit or CA Agreement, Name and No.
2. Name of Operator COG OPERATING LLC (229137)		8. Lease Name and Well No. STOVE PIPE FEDERAL COM 703H (815644)
3a. Address 600 West Illinois Ave Midland TX 79701	3b. Phone No. (include area code) (432)683-7443	9. API-Well No. 30-025-46558
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface SESW / 270 FSL / 1515 FWL / LAT 32.167464 / LONG -103.410198 At proposed prod. zone SESW / 50 FSL / 1680 FWL / LAT 32.137822 / LONG -103.409708		10. Field and Pool, or Exploratory RATTLESNAKE FLAT / BONE SPRING (97098)
11. Sec., T. R. M. or Blk. and Survey or Area SEC 31 / T24S / R35E / NMP		12. County or Parish LEA
13. State NM		14. Distance in miles and direction from nearest town or post office* 9 miles
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 50 feet	16. No of acres in lease 40	17. Spacing Unit dedicated to this well 640.54
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 30 feet	19. Proposed Depth 12773 feet / 23407 feet	20. BLM/BIA Bond No. in file FED: NMB000215
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3328 feet	22. Approximate date work will start* 10/01/2019	23. Estimated duration 30 days
24. Attachments		

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

- | | |
|--|---|
| 1. Well plat certified by a registered surveyor. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan. | 5. Operator certification. |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be requested by the BLM. |

25. Signature (Electronic Submission)	Name (Printed/Typed) Mayte Reyes / Ph: (575)748-6940	Date 06/19/2019
Title Regulatory Analyst		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) Christopher Walls / Ph: (575)234-2234	Date 12/03/2019
Title Petroleum Engineer		

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

GCP Rec 12/04/19

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12/04/19

APPROVED WITH CONDITIONS
Approval Date: 12/03/2019

INSTRUCTIONS

GENERAL: This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

ITEM 1: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

ITEM 4: Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the well, and any other required information, should be furnished when required by Federal agency offices.

ITEMS 15 AND 18: If well is to be, or has been directionally drilled, give distances for subsurface location of hole in any present or objective productive zone.

ITEM 22: Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

ITEM 24: If the proposal will involve hydraulic fracturing operations, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160

PRINCIPAL PURPOSES: The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service well or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.

ROUTINE USE: Information from the record and/or the record will be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.

EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:

The BLM collects this information to allow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT: Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Connection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

Additional Operator Remarks

Location of Well

1. SHL: SESW / 270 FSL / 1515 FWL / TWSP: 24S / RANGE: 35E / SECTION: 31 / LAT: 32.167464 / LONG: -103.410198 (TVD: 0 feet, MD: 0 feet)
PPP: NENW / 1 FNL / 1680 FWL / TWSP: 25S / RANGE: 35E / SECTION: 7 / LAT: 32.152196 / LONG: -103.409684 (TVD: 12752 feet, MD: 17800 feet)
PPP: LOT 3 / 100 FNL / 1680 FWL / TWSP: 25S / RANGE: 35E / SECTION: 6 / LAT: 32.166446 / LONG: -103.409661 (TVD: 12637 feet, MD: 12700 feet)
PPP: SESW / 1321 FSL / 1680 FWL / TWSP: 25S / RANGE: 35E / SECTION: 6 / LAT: 32.155824 / LONG: -103.409678 (TVD: 12757 feet, MD: 16500 feet)
BHL: SESW / 50 FSL / 1680 FWL / TWSP: 25S / RANGE: 35E / SECTION: 7 / LAT: 32.137822 / LONG: -103.409708 (TVD: 12773 feet, MD: 23407 feet)

BLM Point of Contact

Name: Deborah Ham

Title: Legal Landlaw Examiner

Phone: 5752345965

Email: dham@blm.gov

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Review and Appeal Rights

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

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PECOS DISTRICT DRILLING OPERATIONS CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG Operating LLC
LEASE NO.:	NMNM120903
WELL NAME & NO.:	Stove Pipe Federal Com 703H
SURFACE HOLE FOOTAGE:	270' FSL & 1515' FWL
BOTTOM HOLE FOOTAGE:	50' FSL & 1680' FWL
LOCATION:	Section 31, T 24S, R 35E, NMPM
COUNTY:	Lea County, New Mexico

H2S	☒ Yes	☒ No	
Potash	☒ None	☐ Secretary	☐ R-111-P
Cave/Karst Potential	☒ Low	☐ Medium	☐ High
Variance	☐ None	☒ Flex Hose	☐ Other
Wellhead	☒ Conventional	☐ Multibowl	☐ Both
Other	☐ 4 String Area	☐ Capitan Reef	☐ WIPP
Other	☐ Fluid Filled	☐ Cement Squeeze	☐ Pilot Hole
Special Requirements	☐ Water Disposal	☒ COM	☐ Unit

A. HYDROGEN SULFIDE

1. Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

B. CASING

1. The 13-3/8" surface casing shall be set at approximately 1200' (a minimum of 25' into the Rustler Anhydrite and above the salt) and cemented to surface.
 - a. **If cement does not circulate to surface**, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of **6 hours** after pumping cement, ideally between 8-10 hours after completing the cement job.
 - b. WOC time for a primary cement job will be a minimum of **8 hours** or **500 psi** compressive strength, whichever is greater. This is to include the lead cement.
 - c. If cement falls back, remedial cementing will be done prior to drilling out that string.
 - d. WOC time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 psi compressive strength, whichever is greater.

2. The 9-5/8" intermediate casing shall be cemented to surface.
 - a. **If cement does not circulate to surface, see B.1.a, c & d.**
 - b. Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.
 - i. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with the second stage.
 - ii. Second stage via DV tool: Cement to surface. If cement does not circulate, contact the appropriate BLM office.
3. The 5-1/2" production casing shall be cemented with at least 200' tie-back into the previous casing.

C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).
2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **3000 (3M) psi**.
3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the intermediate casing shoe shall be **10,000 (10M) psi. Variance approved to use a 5M annular. The annular must be tested to full working pressure (5000 psi).**

D. SPECIAL REQUIREMENTS

1. The operator will submit a Communitization Agreement to the Carlsbad Field Office, 620 E Greene St. Carlsbad, New Mexico 88220, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
2. The well sign on location shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

DR 11/25/2019

GENERAL REQUIREMENTS

1. The BLM is to be notified in advance for a representative to witness:
 - a. Spudding well (minimum of 24 hours)
 - b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
 - c. BOP/BOPE tests (minimum of 4 hours)
 - ☒ Eddy County
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,
(575) 361-2822
 - ☒ Lea County
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240,
(575) 393-3612
2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
 - a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
 - b. When the operator proposes to set surface casing with Spudder Rig:
 - i. Notify the BLM when moving in and removing the Spudder Rig.
 - ii. Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
 - iii. BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.
3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.
4. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be available upon request. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or

if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.

2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.
5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.
7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.
8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification

matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.

3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.
4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
 - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
 - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
 - c. Manufacturer representative shall install the test plug for the initial BOP test.
 - d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
 - e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
 - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
 - b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).
 - c. The tests shall be done by an independent service company utilizing a test plug. The results of the test shall be reported to the appropriate BLM office.
 - d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a

maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

- e. All tests are required to be recorded on a calibrated test chart and shall be made available upon request.
- f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes. This test shall be performed prior to the test at full stack pressure.
- g. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

- 1. Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

D. WASTE MATERIAL AND FLUIDS

- 1. All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.
- 2. Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.



U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

APD Print Report

12/04/2019

APD ID: 10400042904

Submission Date: 06/19/2019

Operator Name: COG OPERATING LLC

Federal/Indian APD: FED

Well Name: STOVE PIPE FEDERAL COM

Well Number: 703H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

Application

Section 1 - General

APD ID: 10400042904

Tie to previous NOS?

Submission Date: 06/19/2019

BLM Office: CARLSBAD

User: Mayte Reyes

Title: Regulatory Analyst

Federal/Indian APD: FED

Is the first lease penetrated for production Federal or Indian? FED

Lease number: NMNM120903

Lease Acres: 40

Surface access agreement in place?

Allotted?

Reservation:

Agreement in place? NO

Federal or Indian agreement:

Agreement number:

Agreement name:

Keep application confidential? YES

Permitting Agent? NO

APD Operator: COG OPERATING LLC

Operator letter of designation:

Operator Info

Operator Organization Name: COG OPERATING LLC

Operator Address: 600 West Illinois Ave

Zip: 79701

Operator PO Box:

Operator City: Midland

State: TX

Operator Phone: (432)683-7443

Operator Internet Address: RODOM@CONCHO.COM

Section 2 - Well Information

Well in Master Development Plan? NO

Master Development Plan name:

Well in Master SUPO? NO

Master SUPO name:

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM

Well Number: 703H

Well in Master Drilling Plan? NO

Master Drilling Plan name:

Well Name: STOVE PIPE FEDERAL COM

Well Number: 703H

Well API Number:

Field/Pool or Exploratory? Field and Pool

Field Name: RATTLESNAKE
FLAT

Pool Name: BONE SPRING

Is the proposed well in an area containing other mineral resources? USEABLE WATER,OIL

Is the proposed well in a Helium production area? N

Use Existing Well Pad? NO

New surface disturbance?

Type of Well Pad: MULTIPLE WELL

Multiple Well Pad Name:
STOVE PIPE FEDERAL COM

Number: 602H, 703H, 704H,
705H

Well Class: HORIZONTAL

Number of Legs:

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: EXPLORATORY (WILDCAT)

Describe sub-type:

Distance to town: 9 Miles

Distance to nearest well: 30 FT

Distance to lease line: 50 FT

Reservoir well spacing assigned acres Measurement: 640.54 Acres

Well plat: COG_Stove_Pipe_703H_C102_20190619064717.pdf

Well work start Date: 10/01/2019

Duration: 30 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83

Vertical Datum: NAVD88

Survey number:

Reference Datum:

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce
SHL Leg #1	276 5	100 5	151 5	1 W	24N	24E	36	Aliquot SESW	36° 56' 30" N	102° 21' 00" W	FLA	MI	W	MI	FEE	2000	50		
KOP Leg #1	276 5	100 5	151 5	1 W	24N	24E	36	Aliquot SESW	36° 56' 30" N	102° 21' 00" W	FLA	MI	W	MI	FEE	2000	50		

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM

Well Number: 703H

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce
PPP Leg #1-1								Aliquot SESW			A				NMNM 120913				
PPP Leg #1-2								Lot 3			A				FEE				
PPP Leg #1-3								Aliquot NENW			A				NMNM 119760				
EXIT Leg #1								Aliquot SESW			A				NMNM 132950				
BHL Leg #1								Aliquot SESW			A				NMNM 132950				

Drilling Plan

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	UNKNOWN	3328	0	0		NONE	N
2	RUSTLER	2446	882	882		NONE	N
3	TOP SALT	1945	1383	1383	SALT	NONE	N
4	BOTTOM SALT	-1890	5218	5218	ANHYDRITE	NONE	N
5	LAMAR	-2184	5512	5512	LIMESTONE	NATURAL GAS,OIL	N
6	BELL CANYON	-2225	5553	5553		NONE	N
7	CHERRY CANYON	-3146	6474	6474		NATURAL GAS,OIL	N
8	BRUSHY CANYON	-4790	8118	8118		NATURAL GAS,OIL	N

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM

Well Number: 703H

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
9	BONE SPRING LIME	-6060	9388	9388	SANDSTONE	NATURAL GAS,OIL	N
10	BONE SPRING 1ST	-7250	10578	10578	HALITE	NATURAL GAS,OIL	N
11	BONE SPRING 2ND	-7781	11109	11109		NATURAL GAS,OIL	N
12	BONE SPRING 3RD	-8880	12208	12208		NATURAL GAS,OIL	N
13	WOLFCAMP	-9320	12648	12648	SHALE	NATURAL GAS,OIL	N
14	WOLFCAMP	-9455	12783	12783		NATURAL GAS,OIL	Y
15	WOLFCAMP	-9670	12998	12998		NATURAL GAS,OIL	N

Section 2 - Blowout Prevention

Pressure Rating (PSI): 10M

Rating Depth: 12773

Equipment: Accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold.

Requesting Variance? YES

Variance request: Request a 5M annular variance on a 10M system. (5M variance attached in section 8). A variance is requested for the use of a flexible choke line from the BOP to the choke manifold. See attached for specs and hydrostatic test chart.

Testing Procedure: BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested. Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets.

Choke Diagram Attachment:

COG_Stove_Pipe_703H_10M_Choke_20190618155822.pdf

BOP Diagram Attachment:

COG_Stove_Pipe_703H_10M_BOP_20190618155829.pdf

COG_Stove_Pipe_703H_Flex_Hose_20190618155846.pdf

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM

Well Number: 703H

Pressure Rating (PSI): 5M

Rating Depth: 12040

Equipment: Annular, Blind Ram, Pipe Ram. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold

Requesting Variance? YES

Variance request: A variance is requested for the use of a flexible choke line from the BOP to the choke manifold. See attached for specs and hydrostatic test chart.

Testing Procedure: BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested. Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets.

Choke Diagram Attachment:

COG_Stove_Pipe_703H_5M_Choke_20190618155915.pdf

BOP Diagram Attachment:

COG_Stove_Pipe_703H_5M_BOP_20190618155932.pdf

COG_Stove_Pipe_703H_Flex_Hose_20190618155950.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	1200	0	1200	-9411	-10581	1200	J-55	54.5	ST&C	2.11	6.29	DRY	7.86	DRY	7.86
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	12040	0	12040	-9411	-21491	12040	HCL-80	47	OTHER - BTC	1.55	1.04	DRY	1.98	DRY	1.98
3	PRODUCTION	8.75	5.5	NEW	API	N	0	23407	0	12773	-9411	-29318	23407	P-110	23	OTHER - BTC	1.75	2.07	DRY	2.46	DRY	2.46

Casing Attachments

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM

Well Number: 703H

Casing Attachments

Casing ID: 1 **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

COG_Stove_Pipe_703H_Casing_Prog_20190618160056.pdf

Casing ID: 2 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

COG_Stove_Pipe_703H_Casing_Prog_20190618160104.pdf

Casing ID: 3 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

COG_Stove_Pipe_703H_Casing_Prog_20190618160217.pdf

Section 4 - Cement

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM

Well Number: 703H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead					1.75					
SURFACE	Tail										
INTERMEDIATE	Lead					2.8					
INTERMEDIATE	Tail										
PRODUCTION	Lead					2					
PRODUCTION	Tail										

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

Describe the mud monitoring system utilized: PVT/Pason/Visual Monitoring

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
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Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM

Well Number: 703H

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
1204 0	2340 7	OIL-BASED MUD	10.5	12.5							OBM
0	1200	OTHER : FW Gel	8.4	8.6							FW Gel
1200	1204 0	OTHER : Diesel Brine Emulsion	8.6	8.9							Diesel Brine Emulsion

Section 6 - Test, Logging, Coring

List of production tests including testing procedures, equipment and safety measures:

None planned

List of open and cased hole logs run in the well:

CNL,GR

Coring operation description for the well:

None planned

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 8305

Anticipated Surface Pressure: 5494.94

Anticipated Bottom Hole Temperature(F): 180

Anticipated abnormal pressures, temperatures, or potential geologic hazards? NO

Describe:

Contingency Plans geohazards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

COG_Stove_Pipe_703H_H2S_Schematic_20190618160546.pdf

COG_Stove_Pipe_703H_H2S_SUP_20190618160554.pdf

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM

Well Number: 703H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

COG_Stove_Pipe_703H_AC_RPT_20190618160613.pdf

COG_STOVE_PIPE_703H_Directional_Plan_20190618160620.pdf

Other proposed operations facets description:

Drilling Program attached.

Cementing Plan attached.

Gas Capture Plan attached.

Other proposed operations facets attachment:

COG_STOVE_PIPE_703H_Directional_Plan_20190618160635.pdf

COG_Stove_Pipe_703H_Cementing_Prog_20190618160641.pdf

COG_Stove_Pipe_703H_GCP_20190618160649.pdf

Other Variance attachment:

COG_5M_Variance_Well_Plan_20190211080830.pdf

SUPO

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

COG_Stove_Pipe_703H_Existing_Road_20190618154953.pdf

Existing Road Purpose: ACCESS

Row(s) Exist? NO

ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM

Well Number: 703H

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

COG_Stove_Pipe_703H_Road_Map_Plats_20190618155209.pdf

New road type: TWO-TRACK

Length: 34.9 Feet **Width (ft.):** 30

Max slope (%): 33 **Max grade (%):** 1

Army Corp of Engineers (ACOE) permit required? NO

ACOE Permit Number(s):

New road travel width: 14

New road access erosion control: Water will be diverted where necessary to avoid ponding, prevent erosion, maintain good drainage, and to be consistent with local drainage patterns.

New road access plan or profile prepared? NO

New road access plan attachment:

Access road engineering design? NO

Access road engineering design attachment:

Turnout? N

Access surfacing type: OTHER

Access topsoil source: ONSITE

Access surfacing type description: Caliche

Access onsite topsoil source depth: 6

Offsite topsoil source description:

Onsite topsoil removal process: Blading

Access other construction information: No turnouts are planned. Re-routing access road around proposed well location.

Access miscellaneous information:

Number of access turnouts:

Access turnout map:

Drainage Control

New road drainage crossing: OTHER

Drainage Control comments: None necessary.

Road Drainage Control Structures (DCS) description: None needed.

Road Drainage Control Structures (DCS) attachment:

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM

Well Number: 703H

Access Additional Attachments

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

COG_Stove_Pipe_703H_1Mile_Map_Data_20190618155221.pdf

Section 4 - Location of Existing and/or Proposed Production Facilities

Submit or defer a Proposed Production Facilities plan? SUBMIT

Production Facilities description: The Stove Pipe 6 Central Tank Battery (CTB) is proposed in Section 6, Township 25S, Range 35E. Production from each of the 10 producing wells will be sent to the proposed CTB. We plan to install (1) buried 4" FP 601HT production flowline from each wellhead, parallel to the proposed road, to the inlet manifold of the proposed CTB; the route for these flowlines will follow the "Flowlines" route as shown in the attached layout. We will also install (1) buried 4" gas line for gas lift supply from the CTB to the well pad; the route for this gas lift line will follow the "Gas Line" route as shown in the attached layout.

Production Facilities map:

COG_Stove_Pipe_6_CTB_Prod_Facility_Layout_20190613142526.pdf

COG_Stove_Pipe_703H_CTB_Flowlines_20190618155246.pdf

Section 5 - Location and Types of Water Supply

Water Source Table

Water source type: OTHER

Describe type: Brine water

Water source use type: INTERMEDIATE/PRODUCTION
CASING

Source latitude:

Source longitude:

Source datum:

Water source permit type: PRIVATE CONTRACT

Water source transport method: TRUCKING

Source land ownership: COMMERCIAL

Source transportation land ownership: COMMERCIAL

Water source volume (barrels): 30000

Source volume (acre-feet): 3.866793

Source volume (gal): 1260000

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM

Well Number: 703H

Water source type: OTHER

Describe type: Fresh Water

Water source use type: SURFACE CASING
STIMULATION

Source latitude:

Source longitude:

Source datum:

Water source permit type: PRIVATE CONTRACT

Water source transport method: PIPELINE

Source land ownership: PRIVATE

Source transportation land ownership: PRIVATE

Water source volume (barrels): 450000

Source volume (acre-feet): 58.001892

Source volume (gal): 18900000

Water source and transportation map:

COG_Stove_Pipe_703H_Fresh_H2O_20190618155305.pdf

COG_Stove_Pipe_703H_Brine_H2O_20190618155313.pdf

Water source comments: Fresh water will be obtained from the Fez Frac Pond located in Section 8. T25S, R35E. Brine water will be obtained from the Malaga II Brine station in Section 12. T23S. R28E.

New water well? NO

New Water Well Info

Well latitude:

Well Longitude:

Well datum:

Well target aquifer:

Est. depth to top of aquifer(ft):

Est thickness of aquifer:

Aquifer comments:

Aquifer documentation:

Well depth (ft):

Well casing type:

Well casing outside diameter (in.):

Well casing inside diameter (in.):

New water well casing?

Used casing source:

Drilling method:

Drill material:

Grout material:

Grout depth:

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM

Well Number: 703H

Casing length (ft.):

Casing top depth (ft.):

Well Production type:

Completion Method:

Water well additional information:

State appropriation permit:

Additional information attachment:

Section 6 - Construction Materials

Using any construction materials: YES

Construction Materials description: Caliche will be obtained from the actual well site if available. If not available onsite, caliche will be obtained from Quail Ranch LLC (CONCHO) caliche pit located in Section 6, T24S, R35 Phone # (432) 221-0342.

Construction Materials source location attachment:

Section 7 - Methods for Handling Waste

Waste type: GARBAGE

Waste content description: Garbage and trash produced during drilling and completion operations

Amount of waste: 125 pounds

Waste disposal frequency : Weekly

Safe containment description: Garbage and trash produced during drilling and completion operations will be collected in a trash container and disposed of properly at a state approved disposal facility

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL

Disposal type description:

Disposal location description: Trucked to an approved disposal facility

Waste type: SEWAGE

Waste content description: Human waste and gray water

Amount of waste: 250 gallons

Waste disposal frequency : Weekly

Safe containment description: Waste will be properly contained and disposed of properly at a state approved disposal facility

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL

Disposal type description:

Disposal location description: Trucked to an approved disposal facility

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM

Well Number: 703H

Waste type: DRILLING

Waste content description: Drilling fluids and produced oil and water during drilling and completion operations

Amount of waste: 6000 barrels

Waste disposal frequency : One Time Only

Safe containment description: All drilling waste will be stored safely and disposed of properly

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL

Disposal type description:

Disposal location description: Trucked to an approved disposal facility

Reserve Pit

Reserve Pit being used? NO

Temporary disposal of produced water into reserve pit?

Reserve pit length (ft.) **Reserve pit width (ft.)**

Reserve pit depth (ft.) **Reserve pit volume (cu. yd.)**

Is at least 50% of the reserve pit in cut?

Reserve pit liner

Reserve pit liner specifications and installation description

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? YES

Description of cuttings location Roll off cuttings containers on tracks

Cuttings area length (ft.) **Cuttings area width (ft.)**

Cuttings area depth (ft.) **Cuttings area volume (cu. yd.)**

Is at least 50% of the cuttings area in cut?

WCuttings area liner

Cuttings area liner specifications and installation description

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM

Well Number: 703H

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: NO

Ancillary Facilities attachment:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

COG_Stove_Pipe_703H_Layout_20190618155330.pdf

Comments:

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance

Multiple Well Pad Name: STOVE PIPE FEDERAL COM

Multiple Well Pad Number: 602H, 703H, 704H, 705H

Recontouring attachment:

COG_Stove_Pipe_703H_Reclamation_20190618155344.pdf

Drainage/Erosion control construction: Immediately following construction, straw waddles will be placed as necessary at the well site to reduce sediment impacts to fragile/sensitive soils.

Drainage/Erosion control reclamation: West 50' and South 50'

Well pad proposed disturbance (acres): 3.67	Well pad interim reclamation (acres): 0.06	Well pad long term disturbance (acres): 2.81
Road proposed disturbance (acres): 0.8	Road interim reclamation (acres): 0.8	Road long term disturbance (acres): 0.8
Powerline proposed disturbance (acres): 0	Powerline interim reclamation (acres): 0	Powerline long term disturbance (acres): 0
Pipeline proposed disturbance (acres): 0.77	Pipeline interim reclamation (acres): 0.77	Pipeline long term disturbance (acres): 0.77
Other proposed disturbance (acres): 5.17	Other interim reclamation (acres): 5.17	Other long term disturbance (acres): 5.17
Total proposed disturbance: 10.41	Total interim reclamation: 6.8	Total long term disturbance: 9.55

Disturbance Comments:

Reconstruction method: New construction of pad.

Topsoil redistribution: North 40' and West 40'

Soil treatment: None

Existing Vegetation at the well pad: Shinnery Oak/Mesquite grassland

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM

Well Number: 703H

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road: Shinnery Oak/Mesquite grassland

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline: Shinnery Oak/Mesquite grassland

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances: N/A

Existing Vegetation Community at other disturbances attachment:

Non native seed used? NO

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? NO

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? NO

Seed harvest description:

Seed harvest description attachment:

Seed Management

Seed Table

Seed type:

Seed source:

Seed name:

Source name:

Source address:

Source phone:

Seed cultivar:

Seed use location:

PLS pounds per acre:

Proposed seeding season:

Seed Summary

Total pounds/Acre:

Seed Type	Pounds/Acre
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Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM

Well Number: 703H

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

First Name: Gerald

Last Name: Herrera

Phone: (432)260-7399

Email: gherrera@concho.com

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? NO

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Weed treatment plan description: N/A

Weed treatment plan attachment:

Monitoring plan description: N/A

Monitoring plan attachment:

Success standards: N/A

Pit closure description: N/A

Pit closure attachment:

COG_Stove_Pipe_703H_Closed_Loop_20190618155354.pdf

Section 11 - Surface Ownership

Disturbance type: WELL PAD

Describe:

Surface Owner: PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM

Well Number: 703H

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland:

USFS Ranger District:

Fee Owner: Quail Ranch (CONCHO)

Fee Owner Address:

Phone: (432)221-0342

Email:

Surface use plan certification: NO

Surface use plan certification document:

Surface access agreement or bond: Agreement

Surface Access Agreement Need description: Agreement signed on June 27th, 2016.

Surface Access Bond BLM or Forest Service:

BLM Surface Access Bond number:

USFS Surface access bond number:

Section 12 - Other Information

Right of Way needed? NO

Use APD as ROW?

ROW Type(s):

ROW Applications

SUPO Additional Information:

Use a previously conducted onsite? YES

Previous Onsite information: Onsite completed on 03/26/19 by Gerald Herrera (COG) and Jeff Robertson (BLM).

Other SUPO Attachment

COG_Stove_Pipe_6_CTB_Prod_Facility_Layout_20190613151257.pdf

COG_Stove_Pipe_703H_1Mile_Map_Data_20190618155443.pdf

COG_Stove_Pipe_703H_Brine_H2O_20190618155453.pdf

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM

Well Number: 703H

COG_Stove_Pipe_703H_Fresh_H2O_20190618155502.pdf

COG_Stove_Pipe_703H_C102_20190618155512.pdf

COG_Stove_Pipe_703H_Closed_Loop_20190618155520.pdf

COG_Stove_Pipe_703H_CTB_Flowlines_20190618155538.pdf

COG_Stove_Pipe_703H_Existing_Road_20190618155547.pdf

COG_Stove_Pipe_703H_Layout_20190618155558.pdf

COG_Stove_Pipe_703H_Reclamation_20190618155610.pdf

COG_Stove_Pipe_703H_Road_Map_Plats_20190618155623.pdf

COG_Stove_Pipe_703H_SUP_20190618155633.pdf

PWD

Section 1 - General

Would you like to address long-term produced water disposal? NO

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM

Well Number: 703H

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

Lined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD disturbance (acres):

PWD surface owner:

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

Do you propose to put the produced water to beneficial use?

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM

Well Number: 703H

Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

Unlined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number:

Injection well name:

Assigned injection well API number?

Injection well API number:

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM

Well Number: 703H

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Other PWD discharge volume (bbl/day):

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

Bond Info

Bond Information

Federal/Indian APD: FED

BLM Bond number: NMB000215

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment:

Operator Certification

Operator Name: COG OPERATING LLC

Well Name: STOVE PIPE FEDERAL COM

Well Number: 703H

Operator Certification

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

NAME: Mayte Reyes

Signed on: 06/18/2019

Title: Regulatory Analyst

Street Address: 2208 West Main Street

City: Artesia

State: NM

Zip: 88210

Phone: (575)748-6940

Email address: gherrera@concho.com

Field Representative

Representative Name: Gerald Herrera

Street Address: 2208 West Main Street

City: Artesia

State: NM

Zip: 88210

Phone: (575)748-6940

Email address: gherrera@concho.com

Payment Info

Payment

APD Fee Payment Method: PAY.GOV

pay.gov Tracking ID: 26I8EFNM

COG Operating, LLC - Stove Pipe Federal Com #703H

1. Geologic Formations

TVD of target	12,773'	Pilot hole depth	NA
MD at TD:	23,407'	Deepest expected fresh water:	300'

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary Fill	Surface	Water	
Rustler	882	Water	
Top of Salt	1383	Salt	
Base of Salt	5218	Salt	
Lamar	5512	Salt Water	
Bell Canyon	5553	Salt Water	
Cherry Canyon	6474	Oil/Gas	
Brushy Canyon	8118	Oil/Gas	
Bone Spring Lime	9388	Oil/Gas	
1st Bone Spring Sand	10578	Oil/Gas	
2nd Bone Spring Sand	11109	Oil/Gas	
3rd Bone Spring Sand	12208	Oil/Gas	
Wolfcamp	12648	Oil/Gas	
Wolfcamp A Shale	12783	Target Oil/Gas	
Wolfcamp B	12998	Not Penetrated	

2. Casing Program

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
	From	To							
17.5"	0	1200	13.375"	54.5	J55	STC	2.11	6.29	7.86
12.25"	0	12040	9.625"	47	HCL80	BTC	1.55	1.04	1.98
8.75"	0	23,407	5.5"	23	P110	BTC	1.75	2.07	2.46
BLM Minimum Safety Factor							1.125	1	1.6 Dry 1.8 Wet

Intermediate casing will be kept at least 1/3 full while running casing to mitigate collapse. Intermediate burst based on 0.7 frac gradient at the shoe with Gas Gradient 0.1 psi/ft to surface.

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

COG Operating, LLC - Stove Pipe Federal Com #703H

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary?	
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2 nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

COG Operating, LLC - Stove Pipe Federal Com #703H

3. Cementing Program

Casing	# Sks	Wt. lb/ gal	Yld ft3/ sack	H ₂ O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surf.	530	13.5	1.75	9	12	Lead: Class C + 4% Gel
	250	14.8	1.34	6.34	8	Tail: Class C + 2% CaCl ₂
Inter. Stage1	980	11	2.8	19	48	Lead: NeoCem
	300	16.4	1.1	5	8	Tail: Class H
DV Tool @ 5530'						
Inter. Stage2	770	11	2.8	19	48	Lead: NeoCem
	100	14.8	1.35	6.34	8	Tail: Class C + 2% Cacl
5.5 Prod	400	12.7	2	10.6	16	Lead: 35:65:6 H Blend
	3130	14.4	1.24	5.7	19	Tail: 50:50:2 Class H Blend

Volumes Subject to Observed Hole Conditions and/or Fluid Caliper Results

Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

Casing String	TOC	% Excess
Surface	0'	50%
1 st Intermediate	0'	50%
Production	11,040'	35%

COG Operating, LLC - Stove Pipe Federal Com #703H

4. Pressure Control Equipment

Y	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.
---	---

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	x	Tested to:
12-1/4"	13-5/8"	5M	Annular	x	2500 psi
			Blind Ram	x	5M
			Pipe Ram	x	
			Double Ram		
			Other*		
8-3/4"	13-5/8"	10M	5M Annular	x	5000 psi
			Blind Ram	x	10M
			Pipe Ram	x	
			Double Ram		
			Other*		

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

Y	Formation integrity test will be performed per Onshore Order #2.
Y	On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
Y	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.
N	Are anchors required by manufacturer?
N	A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested.

COG Operating, LLC - Stove Pipe Federal Com #703H

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	Surf. Shoe	FW Gel	8.4 - 8.6	28-29	N/C
Surf csg	Int shoe	Diesel Brine Emul	8.6 - 8.9	30-40	N/C
Int shoe	Lateral TD	OBM	10.5 - 12.5	30-40	20

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring
---	-----------------------------

6. Logging and Testing Procedures

Logging, Coring and Testing.

Y	Will run GR/CNL from TD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
N	Are Logs are planned based on well control or offset log information.
N	Drill stem test? If yes, explain.
N	Coring? If yes, explain.

Additional logs planned		Interval
N	Resistivity	Pilot Hole TD to ICP
N	Density	Pilot Hole TD to ICP
Y	CBL	Production casing (If cement not circulated to surface)
Y	Mud log	Intermediate shoe to TD
N	PEX	

COG Operating, LLC - Stove Pipe Federal Com #703H

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	8305 psi at 12773' TVD
Abnormal Temperature	NO 180 Deg. F.

No abnormal pressure or temperature conditions are anticipated. Sufficient mud materials to maintain mud properties and weight increase requirements will be kept on location at all times.

Sufficient supplies of Paper/LCM for periodic sweeps to control seepage and losses will be maintained on location.

Hydrogen Sulfide (H₂S) monitors will be installed prior to drilling out the surface shoe. If H₂S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.

N	H ₂ S is present
Y	H ₂ S Plan attached

8. Other Facets of Operation

Y	Is it a walking operation?
N	Is casing pre-set?

x	H ₂ S Plan.
x	BOP & Choke Schematics.
x	Directional Plan
x	5M Annular Variance

NORTHERN DELAWARE BASIN

LEA COUNTY, NM

BULLDOG

STOVE PIPE FEDERAL COM #703H

OWB

PWP1

Anticollision Report

12 June, 2019

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well STOVE PIPE FEDERAL COM #703H
Project:	LEA COUNTY, NM	TVD Reference:	RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
Reference Site:	BULLDOG	MD Reference:	RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	STOVE PIPE FEDERAL COM #703H	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:	Stations
Depth Range:	Unlimited
Results Limited by:	Maximum center-center distance of 10,000.0 us
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	ISCWSA
Scan Method:	Closest Approach 3D
Error Surface:	Pedal Curve
Casing Method:	Not applied

Survey Tool Program Date 6/12/2019

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	12,195.0	PWP1 (OWB)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4
12,195.0	23,407.4	PWP1 (OWB)	MWD+IFR1+MS	OWSG MWD + IFR1 + Multi-Station Correction

Summary

Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
BULLDOG						
FASCINATOR FED COM #601H - OWB - ACTUAL WEL	12,650.0	22,385.7	261.5	169.7	2.848 SF	
FASCINATOR FED COM #601H - OWB - ACTUAL WEL	12,666.1	22,385.0	261.0	169.4	2.848 CC, ES	
FASCINATOR FED COM #702H - OWB - ACTUAL WEL	12,750.0	22,620.0	326.8	225.1	3.215 SF	
FASCINATOR FED COM #702H - OWB - ACTUAL WEL	12,797.5	22,620.0	322.0	224.3	3.297 CC, ES	
FASCINATOR FED COM #703H - OWB - ACTUAL WEL	12,700.0	22,436.0	203.3	100.7	1.981 Advise and Monitor, ES, SF	
FASCINATOR FED COM #703H - OWB - ACTUAL WEL	12,728.4	22,436.0	200.9	101.7	2.024 CC	
FASCINATOR FED COM #704H - OWB - ACTUAL WEL	12,700.0	22,679.0	603.0	507.7	6.329 SF	
FASCINATOR FED COM #704H - OWB - ACTUAL WEL	12,791.0	22,679.0	593.5	501.5	6.452 CC, ES	
STOVE PIPE FEDERAL COM #601H - OWB - PWP1	23,407.4	22,619.6	480.9	315.4	2.906 CC, ES, SF	
STOVE PIPE FEDERAL COM #602H - OWB - PWP1	5,500.0	5,500.9	60.1	50.4	6.212 CC, ES	
STOVE PIPE FEDERAL COM #602H - OWB - PWP1	23,407.4	23,207.7	477.6	307.3	2.805 SF	
STOVE PIPE FEDERAL COM #702H - OWB - PWP1	12,643.6	12,603.0	433.0	409.3	18.255 CC	
STOVE PIPE FEDERAL COM #702H - OWB - PWP1	23,407.4	23,459.6	475.0	305.1	2.796 ES, SF	
STOVE PIPE FEDERAL COM #704H - OWB - PWP1	5,500.0	5,500.2	30.1	20.4	3.111 CC, ES	
STOVE PIPE FEDERAL COM #704H - OWB - PWP1	23,407.4	23,537.3	479.2	309.3	2.821 SF	

Offset Design BULLDOG - FASCINATOR FED COM #601H - OWB - ACTUAL WELLPATH											Offset Site Error:	0.0 usft
Survey Program: 100-Standard Keeper 104, 11758-MWD+IFR1+MS											Offset Well Error:	3.0 usft
Reference	Offset	Semi Major Axis		Highside	Offset Wellbore Centre		Distance		Minimum	Separation	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation (usft)	Factor	
2,700.0	2,700.0	22,105.0	12,636.8	4.6	77.7	62.65	216.7	419.0	9,930.2	9,844.6	85.61	115.989
2,800.0	2,800.0	22,105.0	12,636.8	4.7	77.7	62.65	216.7	419.0	9,830.3	9,744.5	85.75	114.644
2,900.0	2,900.0	22,105.0	12,636.8	4.8	77.7	62.65	216.7	419.0	9,730.4	9,644.5	85.88	113.301
3,000.0	3,000.0	22,105.0	12,636.8	4.9	77.7	62.65	216.7	419.0	9,630.5	9,544.5	86.02	111.960
3,100.0	3,100.0	22,105.0	12,636.8	5.0	77.7	62.65	216.7	419.0	9,530.6	9,444.5	86.16	110.621
3,200.0	3,200.0	22,105.0	12,636.8	5.1	77.7	62.65	216.7	419.0	9,430.8	9,344.5	86.30	109.284
3,300.0	3,300.0	22,105.0	12,636.8	5.2	77.7	62.65	216.7	419.0	9,330.9	9,244.5	86.44	107.950
3,400.0	3,400.0	22,105.0	12,636.8	5.3	77.7	62.65	216.7	419.0	9,231.0	9,144.4	86.58	106.618
3,500.0	3,500.0	22,106.6	12,636.8	5.4	77.7	62.82	215.2	418.9	9,131.2	9,044.4	86.74	105.273
3,600.0	3,600.0	22,108.9	12,636.9	5.5	77.7	63.06	212.9	418.9	9,031.3	8,944.4	86.90	103.924
3,700.0	3,700.0	22,111.2	12,636.9	5.7	77.7	63.31	210.6	418.9	8,931.4	8,844.4	87.07	102.577

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

Anticollision Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Reference Site: BULLDOG
Site Error: 0.0 usft
Reference Well: STOVE PIPE FEDERAL COM #703H
Well Error: 3.0 usft
Reference Wellbore: OWB
Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM_Users
Offset TVD Reference: Offset Datum

Offset Design BULLDOG - FASCINATOR FED COM #601H - OWB - ACTUAL WELLPATH													Offset Site Error:	0.0 usft
Survey Program: 100-Standard Keeper 104, 11758-MWD+IFR1+MS													Offset Well Error:	3.0 usft
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	
3,800.0	3,800.0	22,113.5	12,637.0	5.8	77.7	63.56	208.3	418.9	8,831.6	8,744.3	87.24	101.234		
3,900.0	3,900.0	22,115.8	12,637.0	5.9	77.7	63.82	206.0	418.9	8,731.7	8,644.3	87.41	99.893		
4,000.0	4,000.0	22,118.0	12,637.1	6.0	77.8	64.07	203.7	418.9	8,631.9	8,544.3	87.58	98.556		
4,100.0	4,100.0	22,120.3	12,637.1	6.1	77.8	64.32	201.4	418.9	8,532.0	8,444.2	87.76	97.221		
4,200.0	4,200.0	22,122.6	12,637.2	6.2	77.8	64.57	199.1	418.9	8,432.2	8,344.2	87.94	95.890		
4,300.0	4,300.0	22,124.9	12,637.2	6.3	77.8	64.83	196.8	418.9	8,332.3	8,244.2	88.11	94.562		
4,400.0	4,400.0	22,127.2	12,637.3	6.5	77.8	65.08	194.6	418.8	8,232.5	8,144.2	88.30	93.237		
4,500.0	4,500.0	22,129.5	12,637.4	6.6	77.8	65.34	192.3	418.8	8,132.6	8,044.1	88.48	91.915		
4,600.0	4,600.0	22,131.7	12,637.4	6.7	77.9	65.60	190.0	418.8	8,032.8	7,944.1	88.66	90.597		
4,700.0	4,700.0	22,134.0	12,637.5	6.8	77.9	65.86	187.7	418.8	7,932.9	7,844.1	88.85	89.282		
4,800.0	4,800.0	22,136.3	12,637.5	6.9	77.9	66.12	185.5	418.8	7,833.1	7,744.1	89.04	87.971		
4,900.0	4,900.0	22,138.5	12,637.6	7.0	77.9	66.38	183.2	418.8	7,733.3	7,644.1	89.23	86.663		
5,000.0	5,000.0	22,140.8	12,637.6	7.2	77.9	66.64	180.9	418.8	7,633.5	7,544.0	89.43	85.358		
5,100.0	5,100.0	22,143.1	12,637.7	7.3	77.9	66.90	178.7	418.8	7,533.6	7,444.0	89.63	84.057		
5,200.0	5,200.0	22,145.3	12,637.7	7.4	78.0	67.16	176.4	418.8	7,433.8	7,344.0	89.82	82.760		
5,300.0	5,300.0	22,147.6	12,637.8	7.5	78.0	67.42	174.2	418.8	7,334.0	7,244.0	90.03	81.466		
5,400.0	5,400.0	22,149.8	12,637.8	7.6	78.0	67.69	171.9	418.8	7,234.2	7,144.0	90.23	80.177		
5,500.0	5,500.0	22,152.1	12,637.9	7.8	78.0	67.95	169.6	418.9	7,134.4	7,044.0	90.43	78.891		
5,577.1	5,577.1	22,153.3	12,637.9	7.8	78.0	17.61	168.4	418.9	7,057.4	6,966.8	90.59	77.904		
5,600.0	5,600.0	22,153.5	12,637.9	7.9	78.0	17.65	168.2	418.9	7,034.5	6,943.9	90.64	77.613		
5,700.0	5,699.9	22,154.4	12,637.9	7.9	78.0	17.84	167.3	418.9	6,934.6	6,843.8	90.84	76.341		
5,800.0	5,799.9	22,155.3	12,638.0	8.0	78.0	18.03	166.4	418.9	6,834.7	6,743.6	91.04	75.073		
5,900.0	5,899.9	22,156.2	12,638.0	8.1	78.0	18.21	165.6	418.9	6,734.8	6,643.5	91.25	73.809		
6,000.0	5,999.8	22,157.1	12,638.0	8.2	78.0	18.40	164.7	418.9	6,634.8	6,543.4	91.45	72.549		
6,100.0	6,099.8	22,158.0	12,638.0	8.3	78.1	18.59	163.8	418.9	6,534.9	6,443.3	91.66	71.292		
6,200.0	6,199.8	22,158.9	12,638.0	8.4	78.1	18.78	162.9	418.9	6,435.0	6,343.1	91.88	70.040		
6,300.0	6,299.7	22,159.8	12,638.1	8.5	78.1	18.96	162.0	418.9	6,335.1	6,243.0	92.09	68.791		
6,400.0	6,399.7	22,160.7	12,638.1	8.6	78.1	19.15	161.1	418.9	6,235.2	6,142.9	92.31	67.546		
6,500.0	6,499.7	22,161.5	12,638.1	8.6	78.1	19.34	160.2	418.9	6,135.3	6,042.7	92.53	66.305		
6,600.0	6,599.6	22,162.4	12,638.1	8.7	78.1	19.53	159.3	418.9	6,035.4	5,942.6	92.75	65.069		
6,700.0	6,699.6	22,163.3	12,638.2	8.8	78.1	19.72	158.4	418.9	5,935.5	5,842.5	92.98	63.836		
6,800.0	6,799.5	22,164.2	12,638.2	8.9	78.1	19.91	157.5	418.9	5,835.6	5,742.3	93.21	62.608		
6,900.0	6,899.5	22,165.1	12,638.2	9.0	78.1	20.10	156.6	418.9	5,735.7	5,642.2	93.44	61.384		
7,000.0	6,999.5	22,166.0	12,638.2	9.1	78.1	20.29	155.7	418.9	5,635.8	5,542.1	93.67	60.165		
7,100.0	7,099.4	22,166.9	12,638.2	9.2	78.1	20.48	154.9	418.9	5,535.9	5,442.0	93.91	58.950		
7,200.0	7,199.4	22,167.8	12,638.3	9.3	78.1	20.67	154.0	418.9	5,436.0	5,341.8	94.15	57.739		
7,300.0	7,299.4	22,168.7	12,638.3	9.4	78.1	20.86	153.1	418.9	5,336.1	5,241.7	94.39	56.534		
7,400.0	7,399.3	22,169.6	12,638.3	9.5	78.1	21.05	152.2	418.9	5,236.2	5,141.6	94.63	55.332		
7,500.0	7,499.3	22,170.5	12,638.3	9.6	78.1	21.24	151.3	418.9	5,136.4	5,041.5	94.88	54.136		
7,600.0	7,599.3	22,171.3	12,638.3	9.7	78.2	21.43	150.4	419.0	5,036.5	4,941.4	95.13	52.944		
7,700.0	7,699.2	22,172.2	12,638.4	9.8	78.2	21.63	149.5	419.0	4,936.6	4,841.3	95.38	51.757		
7,800.0	7,799.2	22,173.1	12,638.4	9.9	78.2	21.82	148.6	419.0	4,836.8	4,741.1	95.64	50.575		
7,900.0	7,899.1	22,174.0	12,638.4	10.0	78.2	22.01	147.7	419.0	4,736.9	4,641.0	95.89	49.398		
8,000.0	7,999.1	22,174.9	12,638.4	10.1	78.2	22.20	146.8	419.0	4,637.1	4,540.9	96.15	48.226		
8,100.0	8,099.1	22,175.8	12,638.4	10.2	78.2	22.39	146.0	419.0	4,537.2	4,440.8	96.42	47.059		
8,200.0	8,199.0	22,176.7	12,638.5	10.3	78.2	22.59	145.1	419.0	4,437.4	4,340.7	96.68	45.897		
8,300.0	8,299.0	22,177.6	12,638.5	10.4	78.2	22.78	144.2	419.0	4,337.6	4,240.6	96.95	44.740		
8,400.0	8,399.0	22,178.5	12,638.5	10.5	78.2	22.97	143.3	419.0	4,237.8	4,140.6	97.22	43.589		
8,500.0	8,498.9	22,179.4	12,638.5	10.6	78.2	23.17	142.4	419.0	4,138.0	4,040.5	97.49	42.443		
8,600.0	8,598.9	22,180.2	12,638.6	10.7	78.2	23.36	141.5	419.0	4,038.2	3,940.4	97.77	41.302		
8,700.0	8,698.9	22,181.1	12,638.6	10.8	78.2	23.55	140.6	419.0	3,938.4	3,840.3	98.05	40.167		
8,800.0	8,798.8	22,182.0	12,638.6	11.0	78.2	23.75	139.7	419.0	3,838.6	3,740.3	98.33	39.037		

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

Anticollision Report

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Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM_Users
Offset TVD Reference: Offset Datum

Offset Design BULLDOG - FASCINATOR FED COM #601H - OWB - ACTUAL WELLPATH													Offset Site Error: 0.0 usft
Survey Program: 100-Standard Keeper 104, 11758-MWD+IFR1+MS													Offset Well Error: 3.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
8,900.0	8,898.8	22,182.9	12,638.6	11.1	78.2	23.94	138.8	419.0	3,738.8	3,640.2	98.62	37.913	
9,000.0	8,998.8	22,183.8	12,638.6	11.2	78.3	24.14	137.9	419.1	3,639.1	3,540.2	98.90	36.795	
9,100.0	9,098.7	22,184.7	12,638.7	11.3	78.3	24.33	137.1	419.1	3,539.4	3,440.2	99.19	35.682	
9,200.0	9,198.7	22,185.6	12,638.7	11.4	78.3	24.52	136.2	419.1	3,439.6	3,340.2	99.48	34.575	
9,300.0	9,298.6	22,186.5	12,638.7	11.5	78.3	24.72	135.3	419.1	3,339.9	3,240.2	99.78	33.473	
9,400.0	9,398.6	22,187.4	12,638.7	11.6	78.3	24.91	134.4	419.1	3,240.2	3,140.2	100.08	32.378	
9,500.0	9,498.6	22,188.2	12,638.7	11.7	78.3	25.11	133.5	419.1	3,140.6	3,040.2	100.38	31.288	
9,600.0	9,598.5	22,189.1	12,638.8	11.8	78.3	25.30	132.6	419.1	3,040.9	2,940.3	100.68	30.204	
9,700.0	9,698.5	22,190.0	12,638.8	11.9	78.3	25.50	131.7	419.1	2,941.3	2,840.3	100.98	29.127	
9,800.0	9,798.5	22,190.9	12,638.8	12.1	78.3	25.69	130.8	419.1	2,841.7	2,740.4	101.29	28.055	
9,900.0	9,898.4	22,191.8	12,638.8	12.2	78.3	25.89	130.0	419.1	2,742.1	2,640.5	101.60	26.990	
10,000.0	9,998.4	22,192.7	12,638.8	12.3	78.3	26.08	129.1	419.1	2,642.6	2,540.7	101.91	25.931	
10,100.0	10,098.4	22,193.6	12,638.9	12.4	78.3	26.28	128.2	419.2	2,543.1	2,440.9	102.22	24.878	
10,200.0	10,198.3	22,194.5	12,638.9	12.5	78.3	26.48	127.3	419.2	2,443.6	2,341.1	102.54	23.832	
10,300.0	10,298.3	22,195.4	12,638.9	12.6	78.3	26.67	126.4	419.2	2,344.2	2,241.4	102.85	22.792	
10,400.0	10,398.2	22,196.2	12,638.9	12.7	78.3	26.87	125.5	419.2	2,244.9	2,141.7	103.17	21.759	
10,500.0	10,498.2	22,197.1	12,638.9	12.8	78.4	27.06	124.6	419.2	2,145.6	2,042.1	103.49	20.732	
10,600.0	10,598.2	22,198.0	12,639.0	13.0	78.4	27.26	123.7	419.2	2,046.3	1,942.5	103.81	19.712	
10,700.0	10,698.1	22,198.9	12,639.0	13.1	78.4	27.45	122.9	419.2	1,947.2	1,843.0	104.13	18.700	
10,800.0	10,798.1	22,199.8	12,639.0	13.2	78.4	27.65	122.0	419.2	1,848.1	1,743.7	104.45	17.694	
10,900.0	10,898.1	22,200.7	12,639.0	13.3	78.4	27.85	121.1	419.2	1,749.1	1,644.4	104.76	16.696	
11,000.0	10,998.0	22,201.6	12,639.1	13.4	78.4	28.04	120.2	419.3	1,650.3	1,545.2	105.08	15.705	
11,100.0	11,098.0	22,202.4	12,639.1	13.5	78.4	28.24	119.3	419.3	1,551.6	1,446.2	105.39	14.723	
11,200.0	11,198.0	22,203.3	12,639.1	13.7	78.4	28.44	118.4	419.3	1,453.1	1,347.4	105.69	13.748	
11,300.0	11,297.9	22,204.2	12,639.1	13.8	78.4	28.63	117.5	419.3	1,354.8	1,248.8	105.99	12.783	
11,400.0	11,397.9	22,205.1	12,639.1	13.9	78.4	28.83	116.7	419.3	1,256.8	1,150.5	106.27	11.827	
11,500.0	11,497.8	22,206.0	12,639.2	14.0	78.4	29.02	115.8	419.3	1,159.1	1,052.6	106.53	10.880	
11,600.0	11,597.8	22,206.8	12,639.2	14.1	78.4	29.20	115.0	419.3	1,061.9	955.1	106.76	9.946	
11,700.0	11,697.8	22,207.7	12,639.2	14.2	78.4	29.41	114.0	419.3	965.2	858.2	106.96	9.024	
11,800.0	11,797.7	22,208.6	12,639.2	14.4	78.4	29.61	113.1	419.4	869.2	762.1	107.09	8.117	
11,900.0	11,897.7	22,209.6	12,639.2	14.5	78.4	29.82	112.2	419.4	774.3	667.2	107.12	7.228	
12,000.0	11,997.7	22,210.5	12,639.3	14.6	78.5	30.03	111.3	419.4	680.8	573.8	107.00	6.363	
12,100.0	12,097.6	22,211.5	12,639.3	14.7	78.5	30.24	110.3	419.4	589.5	482.9	106.61	5.529	
12,194.5	12,192.1	22,212.4	12,639.3	14.8	78.5	30.44	109.4	419.4	506.2	400.4	105.84	4.783	
12,200.0	12,197.6	22,212.4	12,639.3	14.8	78.5	9.03	109.3	419.4	501.5	395.6	105.94	4.734	
12,250.0	12,247.5	22,215.5	12,639.4	15.0	78.5	-83.79	106.3	419.4	459.5	354.2	105.29	4.364	
12,300.0	12,297.1	22,222.8	12,639.6	15.5	78.5	-96.56	99.0	419.6	419.5	315.1	104.45	4.016	
12,350.0	12,345.9	22,234.2	12,639.8	15.7	78.6	-102.17	87.6	419.7	382.4	279.2	103.27	3.703	
12,400.0	12,393.7	22,249.8	12,640.2	15.9	78.7	-104.74	72.0	420.0	349.1	247.3	101.73	3.431	
12,450.0	12,439.9	22,269.4	12,640.8	16.1	78.9	-105.26	52.4	420.3	320.2	220.4	99.81	3.208	
12,500.0	12,484.3	22,293.0	12,641.4	16.2	79.1	-104.14	28.8	420.7	296.7	199.1	97.57	3.040	
12,550.0	12,526.6	22,319.8	12,642.2	16.4	79.3	-101.70	2.0	421.3	279.0	183.8	95.22	2.930	
12,600.0	12,566.4	22,350.9	12,643.1	16.6	79.5	-98.00	-29.1	422.0	267.4	174.3	93.15	2.871	
12,650.0	12,603.4	22,385.7	12,644.2	16.7	79.8	-93.35	-63.8	422.8	261.5	169.7	91.83	2.848 SF	
12,666.1	12,614.6	22,385.0	12,644.1	16.8	79.8	-93.55	-63.1	422.7	261.0	169.4	91.65	2.848 CC, ES	
12,700.0	12,637.3	22,385.0	12,644.1	16.9	79.8	-93.42	-63.1	422.7	263.3	172.1	91.26	2.886	
12,750.0	12,667.9	22,385.0	12,644.1	17.0	79.8	-92.36	-63.1	422.7	274.7	184.4	90.34	3.041	
12,800.0	12,695.0	22,385.0	12,644.1	17.1	79.8	-90.28	-63.1	422.7	294.5	205.8	88.70	3.321	
12,850.0	12,718.2	22,385.0	12,644.1	17.2	79.8	-87.20	-63.1	422.7	321.1	234.8	86.34	3.719	
12,900.0	12,737.6	22,385.0	12,644.1	17.3	79.8	-83.18	-63.1	422.7	352.7	269.2	83.51	4.224	
12,950.0	12,752.8	22,385.0	12,644.1	17.3	79.8	-78.29	-63.1	422.7	387.9	307.5	80.42	4.824	
13,000.0	12,763.8	22,385.0	12,644.1	17.4	79.8	-72.73	-63.1	422.7	425.6	348.4	77.23	5.511	

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

Anticollision Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Reference Site: BULLDOG
Site Error: 0.0 usft
Reference Well: STOVE PIPE FEDERAL COM #703H
Well Error: 3.0 usft
Reference Wellbore: OWB
Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM_Users
Offset TVD Reference: Offset Datum

Offset Design BULLDOG - FASCINATOR FED COM #601H - OWB - ACTUAL WELLPATH													Offset Site Error:	0.0 usft
Survey Program: 100-Standard Keeper 104, 11758-MWD+IFR1+MS													Offset Well Error:	3.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Ellipses (usft)				
13,050.0	12,770.6	22,385.0	12,644.1	17.4	79.8	-66.73	-63.1	422.7	464.9	390.9	74.04	6.279		
13,100.0	12,773.0	22,385.0	12,644.1	17.4	79.8	-60.57	-63.1	422.7	505.2	434.3	70.91	7.125		
13,105.2	12,773.0	22,385.0	12,644.1	17.4	79.8	-59.93	-63.1	422.7	509.5	438.9	70.59	7.218		
13,200.0	12,772.6	22,385.0	12,644.1	17.5	79.8	-59.93	-63.1	422.7	589.1	523.7	65.45	9.001		
13,300.0	12,772.1	22,385.0	12,644.1	17.6	79.8	-59.93	-63.1	422.7	677.4	616.1	61.33	11.046		
13,400.0	12,771.7	22,385.0	12,644.1	17.6	79.8	-59.93	-63.1	422.7	768.6	710.4	58.21	13.205		
13,500.0	12,771.2	22,385.0	12,644.1	17.8	79.8	-59.93	-63.1	422.7	861.7	805.9	55.82	15.438		
13,600.0	12,770.7	22,385.0	12,644.1	17.9	79.8	-59.93	-63.1	422.7	956.2	902.3	53.97	17.718		
13,700.0	12,770.3	22,385.0	12,644.1	18.0	79.8	-59.93	-63.1	422.7	1,051.8	999.3	52.52	20.027		
13,800.0	12,769.8	22,385.0	12,644.1	18.2	79.8	-59.93	-63.1	422.7	1,148.1	1,096.7	51.36	22.351		
13,900.0	12,769.4	22,385.0	12,644.1	18.4	79.8	-59.93	-63.1	422.7	1,244.9	1,194.5	50.44	24.682		
14,000.0	12,768.9	22,385.0	12,644.1	18.6	79.8	-59.93	-63.1	422.7	1,342.3	1,292.6	49.69	27.014		
14,100.0	12,768.5	22,385.0	12,644.1	18.9	79.8	-59.93	-63.1	422.7	1,440.0	1,390.9	49.07	29.343		
14,200.0	12,768.0	22,385.0	12,644.1	19.2	79.8	-59.93	-63.1	422.7	1,538.0	1,489.4	48.57	31.666		
14,300.0	12,767.5	22,385.0	12,644.1	19.5	79.8	-59.93	-63.1	422.7	1,636.2	1,588.1	48.15	33.981		
14,400.0	12,767.1	22,385.0	12,644.1	19.9	79.8	-59.93	-63.1	422.7	1,734.6	1,686.8	47.80	36.287		
14,500.0	12,766.6	22,385.0	12,644.1	20.3	79.8	-59.93	-63.1	422.7	1,833.3	1,785.7	47.52	38.582		
14,600.0	12,766.2	22,385.0	12,644.1	20.8	79.8	-59.93	-63.1	422.7	1,932.0	1,884.7	47.28	40.867		
14,700.0	12,765.7	22,385.0	12,644.1	21.3	79.8	-59.93	-63.1	422.7	2,030.9	1,983.8	47.08	43.140		
14,800.0	12,765.3	22,385.0	12,644.1	21.9	79.8	-59.93	-63.1	422.7	2,129.9	2,082.9	46.91	45.401		
14,900.0	12,764.8	22,385.0	12,644.1	22.4	79.8	-59.93	-63.1	422.7	2,228.9	2,182.1	46.78	47.651		
15,000.0	12,764.4	22,385.0	12,644.1	23.0	79.8	-59.93	-63.1	422.7	2,328.1	2,281.4	46.67	49.888		
15,100.0	12,763.9	22,385.0	12,644.1	23.6	79.8	-59.93	-63.1	422.7	2,427.3	2,380.7	46.58	52.113		
15,200.0	12,763.4	22,385.0	12,644.1	24.2	79.8	-59.93	-63.1	422.7	2,526.6	2,480.1	46.51	54.325		
15,300.0	12,763.0	22,385.0	12,644.1	24.9	79.8	-59.93	-63.1	422.7	2,625.9	2,579.5	46.46	56.524		
15,400.0	12,762.5	22,385.0	12,644.1	25.5	79.8	-59.93	-63.1	422.7	2,725.3	2,678.9	46.42	58.711		
15,500.0	12,762.1	22,385.0	12,644.1	26.1	79.8	-59.93	-63.1	422.7	2,824.7	2,778.3	46.40	60.884		
15,600.0	12,761.6	22,385.0	12,644.1	26.8	79.8	-59.93	-63.1	422.7	2,924.2	2,877.8	46.38	63.044		
15,700.0	12,761.2	22,385.0	12,644.1	27.5	79.8	-59.93	-63.1	422.7	3,023.7	2,977.3	46.38	65.191		
15,800.0	12,760.7	22,385.0	12,644.1	28.2	79.8	-59.93	-63.1	422.7	3,123.2	3,076.8	46.39	67.325		
15,900.0	12,760.2	22,385.0	12,644.1	28.8	79.8	-59.93	-63.1	422.7	3,222.8	3,176.4	46.41	69.446		
16,000.0	12,759.8	22,385.0	12,644.1	29.5	79.8	-59.93	-63.1	422.7	3,322.4	3,275.9	46.43	71.552		
16,100.0	12,759.3	22,385.0	12,644.1	30.2	79.8	-59.93	-63.1	422.7	3,422.0	3,375.5	46.47	73.646		
16,200.0	12,758.9	22,385.0	12,644.1	30.9	79.8	-59.93	-63.1	422.7	3,521.6	3,475.1	46.51	75.725		
16,300.0	12,758.4	22,385.0	12,644.1	31.6	79.8	-59.93	-63.1	422.7	3,621.3	3,574.7	46.55	77.791		
16,400.0	12,758.0	22,385.0	12,644.1	32.3	79.8	-59.93	-63.1	422.7	3,721.0	3,674.3	46.60	79.843		
16,500.0	12,757.5	22,385.0	12,644.1	33.0	79.8	-59.93	-63.1	422.7	3,820.6	3,774.0	46.66	81.881		
16,600.0	12,757.1	22,385.0	12,644.1	33.8	79.8	-59.93	-63.1	422.7	3,920.3	3,873.6	46.72	83.905		
16,700.0	12,756.6	22,385.0	12,644.1	34.5	79.8	-59.93	-63.1	422.7	4,020.1	3,973.3	46.79	85.915		
16,800.0	12,756.1	22,385.0	12,644.1	35.2	79.8	-59.93	-63.1	422.7	4,119.8	4,072.9	46.86	87.911		
16,900.0	12,755.7	22,385.0	12,644.1	35.9	79.8	-59.93	-63.1	422.7	4,219.5	4,172.6	46.94	89.893		
17,000.0	12,755.2	22,385.0	12,644.1	36.6	79.8	-59.93	-63.1	422.7	4,319.3	4,272.3	47.02	91.861		
17,100.0	12,754.8	22,385.0	12,644.1	37.4	79.8	-59.93	-63.1	422.7	4,419.1	4,372.0	47.10	93.815		
17,200.0	12,754.3	22,385.0	12,644.1	38.1	79.8	-59.93	-63.1	422.7	4,518.9	4,471.7	47.19	95.755		
17,300.0	12,753.9	22,385.0	12,644.1	38.8	79.8	-59.93	-63.1	422.7	4,618.6	4,571.4	47.28	97.680		
17,400.0	12,753.4	22,385.0	12,644.1	39.5	79.8	-59.93	-63.1	422.7	4,718.4	4,671.1	47.38	99.591		
17,500.0	12,753.0	22,385.0	12,644.1	40.3	79.8	-59.93	-63.1	422.7	4,818.3	4,770.8	47.48	101.488		
17,600.0	12,752.5	22,385.0	12,644.1	41.0	79.8	-59.93	-63.1	422.7	4,918.1	4,870.5	47.58	103.371		
17,700.0	12,752.0	22,385.0	12,644.1	41.7	79.8	-59.93	-63.1	422.7	5,017.9	4,970.2	47.68	105.239		
17,800.0	12,751.6	22,385.0	12,644.1	42.5	79.8	-59.93	-63.1	422.7	5,117.7	5,069.9	47.79	107.094		
17,900.0	12,751.1	22,385.0	12,644.1	43.2	79.8	-59.93	-63.1	422.7	5,217.6	5,169.7	47.90	108.934		
18,000.0	12,750.7	22,385.0	12,644.1	43.9	79.8	-59.93	-63.1	422.7	5,317.4	5,269.4	48.01	110.760		

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

Anticollision Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Reference Site: BULLDOG
Site Error: 0.0 usft
Reference Well: STOVE PIPE FEDERAL COM #703H
Well Error: 3.0 usft
Reference Wellbore: OWB
Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM_Users
Offset TVD Reference: Offset Datum

Offset Design BULLDOG - FASCINATOR FED COM #601H - OWB - ACTUAL WELLPATH												Offset Site Error:	0.0 usft
Survey Program: 100-Standard Keeper 104, 11758-MWD+IFR1+MS												Offset Well Error:	3.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)					
18,100.0	12,750.2	22,385.0	12,644.1	44.7	79.8	-59.93	-63.1	422.7	5,417.2	5,369.1	48.12	112.571	
18,200.0	12,749.8	22,385.0	12,644.1	45.4	79.8	-59.93	-63.1	422.7	5,517.1	5,468.9	48.24	114.369	
18,300.0	12,749.3	22,385.0	12,644.1	46.2	79.8	-59.93	-63.1	422.7	5,617.0	5,568.6	48.36	116.153	
18,400.0	12,748.8	22,385.0	12,644.1	46.9	79.8	-59.93	-63.1	422.7	5,716.8	5,668.3	48.48	117.922	
18,500.0	12,748.1	22,385.0	12,644.1	47.6	79.8	-59.93	-63.1	422.7	5,816.7	5,768.1	48.60	119.678	
18,600.0	12,747.9	22,385.0	12,644.1	48.4	79.8	-59.93	-63.1	422.7	5,916.6	5,867.8	48.73	121.419	
18,700.0	12,747.5	22,385.0	12,644.1	49.1	79.8	-59.93	-63.1	422.7	6,016.4	5,967.6	48.86	123.147	
18,800.0	12,747.0	22,385.0	12,644.1	49.9	79.8	-59.93	-63.1	422.7	6,116.3	6,067.3	48.98	124.861	
18,900.0	12,746.6	22,385.0	12,644.1	50.6	79.8	-59.93	-63.1	422.7	6,216.2	6,167.1	49.12	126.561	
19,000.0	12,746.1	22,385.0	12,644.1	51.4	79.8	-59.93	-63.1	422.7	6,316.1	6,266.8	49.25	128.247	
19,100.0	12,745.7	22,385.0	12,644.1	52.1	79.8	-59.93	-63.1	422.7	6,416.0	6,366.6	49.38	129.920	
19,200.0	12,745.2	22,385.0	12,644.1	52.9	79.8	-59.93	-63.1	422.7	6,515.9	6,466.3	49.52	131.579	
19,300.0	12,744.7	22,385.0	12,644.1	53.6	79.8	-59.93	-63.1	422.7	6,615.8	6,566.1	49.66	133.225	
19,400.0	12,744.3	22,385.0	12,644.1	54.3	79.8	-59.93	-63.1	422.7	6,715.7	6,665.9	49.80	134.857	
19,500.0	12,743.8	22,385.0	12,644.1	55.1	79.8	-59.93	-63.1	422.7	6,815.6	6,765.6	49.94	136.476	
19,600.0	12,743.4	22,385.0	12,644.1	55.8	79.8	-59.93	-63.1	422.7	6,915.5	6,865.4	50.08	138.081	
19,700.0	12,742.9	22,385.0	12,644.1	56.6	79.8	-59.93	-63.1	422.7	7,015.4	6,965.2	50.23	139.674	
19,800.0	12,742.5	22,385.0	12,644.1	57.3	79.8	-59.93	-63.1	422.7	7,115.3	7,064.9	50.37	141.253	
19,900.0	12,742.0	22,385.0	12,644.1	58.1	79.8	-59.93	-63.1	422.7	7,215.2	7,164.7	50.52	142.819	
20,000.0	12,741.5	22,385.0	12,644.1	58.8	79.8	-59.93	-63.1	422.7	7,315.1	7,264.5	50.67	144.372	
20,100.0	12,741.1	22,385.0	12,644.1	59.6	79.8	-59.93	-63.1	422.7	7,415.1	7,364.2	50.82	145.913	
20,200.0	12,740.6	22,385.0	12,644.1	60.3	79.8	-59.93	-63.1	422.7	7,515.0	7,464.0	50.97	147.440	
20,300.0	12,740.2	22,385.0	12,644.1	61.1	79.8	-59.93	-63.1	422.7	7,614.9	7,563.8	51.12	148.955	
20,400.0	12,739.7	22,385.0	12,644.1	61.9	79.8	-59.93	-63.1	422.7	7,714.8	7,663.5	51.28	150.458	
20,500.0	12,739.3	22,385.0	12,644.1	62.6	79.8	-59.93	-63.1	422.7	7,814.7	7,763.3	51.43	151.948	
20,600.0	12,738.8	22,385.0	12,644.1	63.4	79.8	-59.93	-63.1	422.7	7,914.7	7,863.1	51.59	153.425	
20,700.0	12,738.4	22,385.0	12,644.1	64.1	79.8	-59.93	-63.1	422.7	8,014.6	7,962.9	51.74	154.890	
20,800.0	12,737.9	22,385.0	12,644.1	64.9	79.8	-59.93	-63.1	422.7	8,114.5	8,062.6	51.90	156.343	
20,900.0	12,737.4	22,385.0	12,644.1	65.6	79.8	-59.93	-63.1	422.7	8,214.5	8,162.4	52.06	157.784	
21,000.0	12,737.0	22,385.0	12,644.1	66.4	79.8	-59.93	-63.1	422.7	8,314.4	8,262.2	52.22	159.213	
21,100.0	12,736.5	22,385.0	12,644.1	67.1	79.8	-59.93	-63.1	422.7	8,414.3	8,362.0	52.38	160.630	
21,200.0	12,736.1	22,385.0	12,644.1	67.9	79.8	-59.93	-63.1	422.7	8,514.3	8,461.7	52.55	162.036	
21,300.0	12,735.6	22,385.0	12,644.1	68.6	79.8	-59.93	-63.1	422.7	8,614.2	8,561.5	52.71	163.429	
21,400.0	12,735.2	22,385.0	12,644.1	69.4	79.8	-59.93	-63.1	422.7	8,714.2	8,661.3	52.87	164.811	
21,500.0	12,734.7	22,385.0	12,644.1	70.1	79.8	-59.93	-63.1	422.7	8,814.1	8,761.1	53.04	166.182	
21,600.0	12,734.2	22,385.0	12,644.1	70.9	79.8	-59.93	-63.1	422.7	8,914.1	8,860.8	53.21	167.541	
21,700.0	12,733.8	22,385.0	12,644.1	71.7	79.8	-59.93	-63.1	422.7	9,014.0	8,960.6	53.37	168.889	
21,800.0	12,733.3	22,385.0	12,644.1	72.4	79.8	-59.93	-63.1	422.7	9,113.9	9,060.4	53.54	170.226	
21,900.0	12,732.9	22,385.0	12,644.1	73.2	79.8	-59.93	-63.1	422.7	9,213.9	9,160.2	53.71	171.551	
22,000.0	12,732.4	22,385.0	12,644.1	73.9	79.8	-59.93	-63.1	422.7	9,313.8	9,260.0	53.88	172.866	
22,100.0	12,732.0	22,385.0	12,644.1	74.7	79.8	-59.93	-63.1	422.7	9,413.8	9,359.7	54.05	174.170	
22,200.0	12,731.5	22,385.0	12,644.1	75.4	79.8	-59.93	-63.1	422.7	9,513.7	9,459.5	54.22	175.463	
22,300.0	12,731.1	22,385.0	12,644.1	76.2	79.8	-59.93	-63.1	422.7	9,613.7	9,559.3	54.39	176.745	
22,400.0	12,730.6	22,385.0	12,644.1	77.0	79.8	-59.93	-63.1	422.7	9,713.6	9,659.1	54.57	178.017	
22,500.0	12,730.1	22,385.0	12,644.1	77.7	79.8	-59.93	-63.1	422.7	9,813.6	9,758.9	54.74	179.278	
22,600.0	12,729.7	22,385.0	12,644.1	78.5	79.8	-59.93	-63.1	422.7	9,913.6	9,858.6	54.91	180.529	

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

Anticollision Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Reference Site: BULLDOG
Site Error: 0.0 usft
Reference Well: STOVE PIPE FEDERAL COM #703H
Well Error: 3.0 usft
Reference Wellbore: OWB
Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM_Users
Offset TVD Reference: Offset Datum

Offset Design BULLDOG - FASCINATOR FED COM #702H - OWB - ACTUAL WELLPATH												Offset Site Error:	0.0 usft
Survey Program: 100-Standard Keeper 104, 11755-MWD+IFR1+MS												Offset Well Error:	3.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
2,900.0	2,900.0	22,540.1	12,885.1	4.8	79.3	89.86	1.0	414.6	9,975.9	9,887.8	88.17	113.144	
3,000.0	3,000.0	22,540.2	12,885.1	4.9	79.3	89.86	1.0	414.6	9,876.0	9,787.7	88.31	111.836	
3,100.0	3,100.0	22,540.2	12,885.1	5.0	79.3	89.86	1.0	414.6	9,776.1	9,687.7	88.45	110.530	
3,200.0	3,200.0	22,540.2	12,885.1	5.1	79.3	89.87	1.0	414.6	9,676.2	9,587.6	88.59	109.225	
3,300.0	3,300.0	22,540.2	12,885.1	5.2	79.3	89.87	0.9	414.6	9,576.3	9,487.6	88.73	107.923	
3,400.0	3,400.0	22,540.2	12,885.1	5.3	79.3	89.87	0.9	414.6	9,476.4	9,387.5	88.88	106.623	
3,500.0	3,500.0	22,540.3	12,885.1	5.4	79.3	89.88	0.9	414.6	9,376.5	9,287.5	89.02	105.326	
3,600.0	3,600.0	22,540.3	12,885.1	5.5	79.3	89.88	0.9	414.6	9,276.6	9,187.4	89.17	104.030	
3,700.0	3,700.0	22,540.3	12,885.1	5.7	79.3	89.88	0.9	414.6	9,176.7	9,087.4	89.32	102.736	
3,800.0	3,800.0	22,540.3	12,885.1	5.8	79.3	89.88	0.8	414.6	9,076.8	8,987.3	89.48	101.445	
3,900.0	3,900.0	22,540.3	12,885.1	5.9	79.3	89.89	0.8	414.6	8,976.9	8,887.3	89.63	100.156	
4,000.0	4,000.0	22,540.4	12,885.1	6.0	79.3	89.89	0.8	414.6	8,877.0	8,787.2	89.79	98.869	
4,100.0	4,100.0	22,540.4	12,885.1	6.1	79.3	89.89	0.8	414.6	8,777.1	8,687.2	89.94	97.584	
4,200.0	4,200.0	22,540.4	12,885.1	6.2	79.3	89.90	0.7	414.6	8,677.2	8,587.1	90.10	96.302	
4,300.0	4,300.0	22,540.4	12,885.1	6.3	79.3	89.90	0.7	414.6	8,577.3	8,487.1	90.27	95.022	
4,400.0	4,400.0	22,540.4	12,885.1	6.5	79.3	89.90	0.7	414.6	8,477.5	8,387.0	90.43	93.745	
4,500.0	4,500.0	22,540.5	12,885.1	6.6	79.3	89.91	0.7	414.6	8,377.6	8,287.0	90.60	92.470	
4,600.0	4,600.0	22,540.5	12,885.1	6.7	79.3	89.91	0.7	414.6	8,277.7	8,186.9	90.77	91.197	
4,700.0	4,700.0	22,540.5	12,885.1	6.8	79.3	89.91	0.6	414.6	8,177.8	8,086.9	90.94	89.928	
4,800.0	4,800.0	22,540.5	12,885.1	6.9	79.3	89.92	0.6	414.6	8,078.0	7,986.8	91.11	88.660	
4,900.0	4,900.0	22,540.6	12,885.1	7.0	79.3	89.92	0.6	414.6	7,978.1	7,886.8	91.29	87.396	
5,000.0	5,000.0	22,540.6	12,885.1	7.2	79.3	89.92	0.6	414.6	7,878.2	7,786.8	91.46	86.134	
5,100.0	5,100.0	22,540.6	12,885.1	7.3	79.3	89.93	0.5	414.6	7,778.4	7,686.7	91.64	84.875	
5,200.0	5,200.0	22,540.6	12,885.1	7.4	79.3	89.93	0.5	414.6	7,678.5	7,586.7	91.83	83.619	
5,300.0	5,300.0	22,540.7	12,885.1	7.5	79.3	89.93	0.5	414.6	7,578.7	7,486.6	92.01	82.366	
5,400.0	5,400.0	22,540.7	12,885.1	7.6	79.3	89.94	0.5	414.6	7,478.8	7,386.6	92.20	81.116	
5,500.0	5,500.0	22,540.7	12,885.1	7.8	79.3	89.94	0.4	414.6	7,379.0	7,286.6	92.39	79.869	
5,577.1	5,577.1	22,540.5	12,885.1	7.8	79.3	55.06	0.6	414.6	7,301.9	7,209.4	92.53	78.910	
5,600.0	5,600.0	22,540.4	12,885.1	7.9	79.3	55.03	0.8	414.6	7,279.1	7,186.5	92.58	78.626	
5,700.0	5,699.9	22,539.8	12,885.1	7.9	79.3	54.92	1.3	414.6	7,179.1	7,086.4	92.77	77.388	
5,800.0	5,799.9	22,539.3	12,885.1	8.0	79.3	54.81	1.9	414.6	7,079.2	6,986.2	92.96	76.152	
5,900.0	5,899.9	22,538.7	12,885.1	8.1	79.3	54.70	2.5	414.6	6,979.3	6,886.1	93.16	74.920	
6,000.0	5,999.8	22,538.1	12,885.1	8.2	79.3	54.58	3.0	414.6	6,879.4	6,786.0	93.35	73.691	
6,100.0	6,099.8	22,537.5	12,885.1	8.3	79.3	54.46	3.6	414.6	6,779.4	6,685.9	93.55	72.465	
6,200.0	6,199.8	22,536.9	12,885.1	8.4	79.2	54.34	4.3	414.7	6,679.5	6,585.8	93.76	71.243	
6,300.0	6,299.7	22,536.3	12,885.1	8.5	79.2	54.21	4.9	414.7	6,579.6	6,485.6	93.96	70.024	
6,400.0	6,399.7	22,535.6	12,885.1	8.6	79.2	54.09	5.5	414.7	6,479.7	6,385.5	94.17	68.809	
6,500.0	6,499.7	22,535.0	12,885.1	8.6	79.2	53.96	6.1	414.7	6,379.8	6,285.4	94.38	67.597	
6,600.0	6,599.6	22,534.4	12,885.1	8.7	79.2	53.83	6.8	414.7	6,279.8	6,185.3	94.59	66.389	
6,700.0	6,699.6	22,533.7	12,885.1	8.8	79.2	53.70	7.5	414.7	6,179.9	6,085.1	94.81	65.184	
6,800.0	6,799.5	22,533.0	12,885.1	8.9	79.2	53.56	8.1	414.7	6,080.0	5,985.0	95.02	63.984	
6,900.0	6,899.5	22,532.3	12,885.1	9.0	79.2	53.42	8.8	414.7	5,980.1	5,884.9	95.24	62.787	
7,000.0	6,999.5	22,531.6	12,885.1	9.1	79.2	53.28	9.5	414.7	5,880.2	5,784.8	95.47	61.594	
7,100.0	7,099.4	22,530.9	12,885.1	9.2	79.2	53.14	10.2	414.7	5,780.3	5,684.6	95.69	60.405	
7,200.0	7,199.4	22,530.2	12,885.1	9.3	79.2	52.99	11.0	414.7	5,680.4	5,584.5	95.92	59.220	
7,300.0	7,299.4	22,529.4	12,885.1	9.4	79.2	52.84	11.7	414.7	5,580.6	5,484.4	96.15	58.040	
7,400.0	7,399.3	22,528.7	12,885.1	9.5	79.2	52.68	12.5	414.8	5,480.7	5,384.3	96.38	56.863	
7,500.0	7,499.3	22,527.9	12,885.1	9.6	79.2	52.53	13.2	414.8	5,380.8	5,284.2	96.62	55.691	
7,600.0	7,599.3	22,527.1	12,885.1	9.7	79.2	52.37	14.0	414.8	5,280.9	5,184.1	96.86	54.523	
7,700.0	7,699.2	22,526.3	12,885.1	9.8	79.2	52.20	14.8	414.8	5,181.0	5,083.9	97.10	53.359	
7,800.0	7,799.2	22,525.5	12,885.1	9.9	79.2	52.04	15.6	414.8	5,081.2	4,983.8	97.34	52.200	
7,900.0	7,899.1	22,524.7	12,885.1	10.0	79.2	51.86	16.5	414.8	4,981.3	4,883.7	97.59	51.045	

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

Anticollision Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Reference Site: BULLDOG
Site Error: 0.0 usft
Reference Well: STOVE PIPE FEDERAL COM #703H
Well Error: 3.0 usft
Reference Wellbore: OWB
Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM_Users
Offset TVD Reference: Offset Datum

Offset Design BULLDOG - FASCINATOR FED COM #702H - OWB - ACTUAL WELLPATH													Offset Site Error:	0.0 usft
Survey Program: 100-Standard Keeper 104, 11755-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		
8,000.0	7,999.1	22,523.8	12,885.1	10.1	79.2	51.69	17.3	414.8	4,881.4	4,783.6	97.84	49.894		
8,100.0	8,099.1	22,523.0	12,885.1	10.2	79.1	51.51	18.2	414.8	4,781.6	4,683.5	98.09	48.749		
8,200.0	8,199.0	22,522.1	12,885.1	10.3	79.1	51.33	19.1	414.8	4,681.7	4,583.4	98.34	47.608		
8,300.0	8,299.0	22,521.2	12,885.1	10.4	79.1	51.14	20.0	414.9	4,581.9	4,483.3	98.60	46.471		
8,400.0	8,399.0	22,520.3	12,885.1	10.5	79.1	50.95	20.9	414.9	4,482.1	4,383.2	98.86	45.340		
8,500.0	8,498.9	22,519.3	12,885.1	10.6	79.1	50.75	21.8	414.9	4,382.3	4,283.1	99.12	44.213		
8,600.0	8,598.9	22,518.4	12,885.1	10.7	79.1	50.55	22.8	414.9	4,282.4	4,183.1	99.38	43.091		
8,700.0	8,698.9	22,517.4	12,885.1	10.8	79.1	50.35	23.8	414.9	4,182.6	4,083.0	99.65	41.974		
8,800.0	8,798.8	22,516.4	12,885.2	11.0	79.1	50.14	24.8	414.9	4,082.8	3,982.9	99.92	40.862		
8,900.0	8,898.8	22,515.4	12,885.2	11.1	79.1	49.92	25.8	414.9	3,983.0	3,882.8	100.19	39.755		
9,000.0	8,998.8	22,514.3	12,885.2	11.2	79.1	49.70	26.8	414.9	3,883.2	3,782.8	100.46	38.653		
9,100.0	9,098.7	22,513.2	12,885.2	11.3	79.1	49.47	27.9	415.0	3,783.5	3,682.7	100.74	37.557		
9,200.0	9,198.7	22,512.1	12,885.2	11.4	79.1	49.24	29.0	415.0	3,683.7	3,582.7	101.02	36.465		
9,300.0	9,298.6	22,511.0	12,885.2	11.5	79.1	49.00	30.1	415.0	3,584.0	3,482.7	101.30	35.379		
9,400.0	9,398.6	22,509.9	12,885.2	11.6	79.0	48.76	31.3	415.0	3,484.2	3,382.7	101.59	34.298		
9,500.0	9,498.6	22,508.7	12,885.2	11.7	79.0	48.50	32.5	415.0	3,384.5	3,282.7	101.87	33.223		
9,600.0	9,598.5	22,507.5	12,885.2	11.8	79.0	48.25	33.7	415.0	3,284.8	3,182.7	102.16	32.153		
9,700.0	9,698.5	22,506.2	12,885.2	11.9	79.0	47.98	34.9	415.1	3,185.1	3,082.7	102.46	31.088		
9,800.0	9,798.5	22,505.0	12,885.2	12.1	79.0	47.71	36.2	415.1	3,085.5	2,982.7	102.75	30.029		
9,900.0	9,898.4	22,503.7	12,885.2	12.2	79.0	47.43	37.5	415.1	2,985.8	2,882.8	103.05	28.976		
10,000.0	9,998.4	22,502.3	12,885.2	12.3	79.0	47.14	38.8	415.1	2,886.2	2,782.9	103.34	27.928		
10,100.0	10,098.4	22,501.0	12,885.2	12.4	79.0	46.85	40.2	415.1	2,786.6	2,683.0	103.64	26.886		
10,200.0	10,198.3	22,499.6	12,885.3	12.5	79.0	46.54	41.6	415.2	2,687.1	2,583.1	103.95	25.850		
10,300.0	10,298.3	22,498.1	12,885.3	12.6	79.0	46.23	43.0	415.2	2,587.5	2,483.3	104.25	24.820		
10,400.0	10,398.2	22,489.0	12,885.3	12.7	78.9	44.22	52.1	415.3	2,488.1	2,383.6	104.49	23.811		
10,500.0	10,498.2	22,489.0	12,885.3	12.8	78.9	44.22	52.1	415.3	2,388.6	2,283.8	104.81	22.789		
10,600.0	10,598.2	22,489.0	12,885.3	13.0	78.9	44.22	52.1	415.3	2,289.2	2,184.1	105.14	21.774		
10,700.0	10,698.1	22,489.0	12,885.3	13.1	78.9	44.22	52.1	415.3	2,189.9	2,084.4	105.46	20.765		
10,800.0	10,798.1	22,489.0	12,885.3	13.2	78.9	44.22	52.1	415.3	2,090.6	1,984.8	105.78	19.763		
10,900.0	10,898.1	22,488.6	12,885.3	13.3	78.9	44.13	52.5	415.3	1,991.3	1,885.2	106.11	18.767		
11,000.0	10,998.0	22,486.7	12,885.4	13.4	78.9	43.71	54.4	415.4	1,892.2	1,785.8	106.41	17.781		
11,100.0	11,098.0	22,484.7	12,885.4	13.5	78.9	43.27	56.4	415.4	1,793.1	1,686.4	106.72	16.802		
11,200.0	11,198.0	22,482.7	12,885.4	13.7	78.8	42.82	58.4	415.4	1,694.2	1,587.2	107.03	15.830		
11,300.0	11,297.9	22,480.7	12,885.4	13.8	78.8	42.36	60.5	415.5	1,595.4	1,488.1	107.33	14.864		
11,400.0	11,397.9	22,478.6	12,885.5	13.9	78.8	41.89	62.6	415.5	1,496.7	1,389.1	107.63	13.907		
11,500.0	11,497.8	22,476.4	12,885.5	14.0	78.8	41.41	64.7	415.6	1,398.3	1,290.3	107.92	12.957		
11,600.0	11,597.8	22,474.3	12,885.5	14.1	78.8	40.92	66.9	415.6	1,300.0	1,191.8	108.20	12.015		
11,700.0	11,697.8	22,472.0	12,885.5	14.2	78.8	40.42	69.1	415.6	1,202.1	1,093.6	108.46	11.083		
11,800.0	11,797.7	22,469.7	12,885.6	14.4	78.7	39.90	71.4	415.7	1,104.5	995.8	108.70	10.161		
11,900.0	11,897.7	22,467.4	12,885.6	14.5	78.7	39.37	73.7	415.7	1,007.3	898.4	108.90	9.250		
12,000.0	11,997.7	22,465.0	12,885.6	14.6	78.7	38.82	76.1	415.8	910.8	801.7	109.05	8.352		
12,100.0	12,097.6	22,462.6	12,885.6	14.7	78.7	38.27	78.6	415.8	815.1	706.0	109.13	7.469		
12,194.5	12,192.1	22,460.2	12,885.7	14.8	78.7	37.73	80.9	415.9	725.8	616.7	109.08	6.653		
12,200.0	12,197.6	22,460.1	12,885.7	14.8	78.7	15.71	81.0	415.9	720.6	611.4	109.23	6.597		
12,250.0	12,247.5	22,461.2	12,885.7	15.0	78.7	-82.81	79.9	415.9	673.9	564.7	109.16	6.174		
12,300.0	12,297.1	22,466.3	12,885.6	15.5	78.7	-100.86	74.8	415.8	627.9	518.9	109.06	5.757		
12,350.0	12,345.9	22,475.4	12,885.5	15.7	78.8	-111.02	65.8	415.6	583.2	474.3	108.91	5.355		
12,400.0	12,393.7	22,488.4	12,885.4	15.9	78.9	-117.59	52.8	415.4	540.0	431.4	108.68	4.969		
12,450.0	12,439.9	22,504.9	12,885.2	16.1	79.0	-121.91	36.2	415.1	499.0	390.7	108.36	4.605		
12,500.0	12,484.3	22,525.4	12,885.1	16.2	79.2	-124.56	15.8	414.8	460.6	352.7	107.94	4.267		
12,550.0	12,526.6	22,549.6	12,885.1	16.4	79.3	-125.95	-8.4	414.5	425.2	317.9	107.39	3.960		
12,600.0	12,566.4	22,578.6	12,885.3	16.6	79.6	-126.23	-37.5	414.2	393.3	286.6	106.71	3.686		

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

Anticollision Report

Company: NORTHERN DELAWARE BASIN
 Project: LEA COUNTY, NM
 Reference Site: BULLDOG
 Site Error: 0.0 usft
 Reference Well: STOVE PIPE FEDERAL COM #703H
 Well Error: 3.0 usft
 Reference Wellbore: OWB
 Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
 TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
 MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: EDM_Users
 Offset TVD Reference: Offset Datum

Offset Design BULLDOG - FASCINATOR FED COM #702H - OWB - ACTUAL WELLPATH													Offset Site Error: 0.0 usft
Survey Program: 100-Standard Keeper 104, 11755-MWD+IFR1+MS													Offset Well Error: 3.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)					
12,650.0	12,603.4	22,612.4	12,885.4	16.7	79.8	-125.80	-71.3	413.9	364.9	259.0	105.89	3.446	
12,700.0	12,637.3	22,620.0	12,885.5	16.9	79.9	-127.07	-78.8	413.9	341.5	237.1	104.42	3.271	
12,750.0	12,667.9	22,620.0	12,885.5	17.0	79.9	-128.38	-78.8	413.9	328.8	225.1	101.65	3.215 SF	
12,797.5	12,693.7	22,620.0	12,885.5	17.1	79.9	-128.83	-78.8	413.9	322.0	224.3	97.67	3.297 CC, ES	
12,800.0	12,695.0	22,620.0	12,885.5	17.1	79.9	-128.84	-78.8	413.9	322.0	224.6	97.43	3.305	
12,850.0	12,718.2	22,620.0	12,885.5	17.2	79.9	-128.46	-78.8	413.9	327.8	235.8	92.03	3.562	
12,900.0	12,737.6	22,620.0	12,885.5	17.3	79.9	-127.23	-78.8	413.9	343.5	257.4	86.09	3.990	
12,950.0	12,752.8	22,620.0	12,885.5	17.3	79.9	-125.05	-78.8	413.9	367.7	287.4	80.27	4.581	
13,000.0	12,763.8	22,620.0	12,885.5	17.4	79.9	-121.81	-78.8	413.9	398.8	323.7	75.06	5.313	
13,050.0	12,770.6	22,620.0	12,885.5	17.4	79.9	-117.30	-78.8	413.9	435.0	364.4	70.63	6.159	
13,100.0	12,773.0	22,620.0	12,885.5	17.4	79.9	-111.28	-78.8	413.9	475.0	408.0	66.99	7.091	
13,105.2	12,773.0	22,620.0	12,885.5	17.4	79.9	-110.56	-78.8	413.9	479.3	412.7	66.65	7.191	
13,200.0	12,772.6	22,620.0	12,885.5	17.5	79.9	-110.56	-78.8	413.9	560.8	499.4	61.41	9.133	
13,300.0	12,772.1	22,620.0	12,885.5	17.6	79.9	-110.56	-78.8	413.9	650.7	593.4	57.37	11.343	
13,400.0	12,771.7	22,620.0	12,885.5	17.6	79.9	-110.56	-78.8	413.9	743.2	688.8	54.41	13.658	
13,500.0	12,771.2	22,620.0	12,885.5	17.8	79.9	-110.56	-78.8	413.9	837.4	785.2	52.23	16.033	
13,600.0	12,770.7	22,620.0	12,885.5	17.9	79.9	-110.56	-78.8	413.9	932.8	882.3	50.59	18.440	
13,700.0	12,770.3	22,620.0	12,885.5	18.0	79.9	-110.56	-78.8	413.9	1,029.1	979.8	49.33	20.861	
13,800.0	12,769.8	22,620.0	12,885.5	18.2	79.9	-110.56	-78.8	413.9	1,126.1	1,077.7	48.36	23.284	
13,900.0	12,769.4	22,620.0	12,885.5	18.4	79.9	-110.56	-78.8	413.9	1,223.5	1,175.9	47.60	25.702	
14,000.0	12,768.9	22,620.0	12,885.5	18.6	79.9	-110.56	-78.8	413.9	1,321.3	1,274.3	47.00	28.111	
14,100.0	12,768.5	22,620.0	12,885.5	18.9	79.9	-110.56	-78.8	413.9	1,419.4	1,372.9	46.52	30.509	
14,200.0	12,768.0	22,620.0	12,885.5	19.2	79.9	-110.56	-78.8	413.9	1,517.8	1,471.6	46.14	32.894	
14,300.0	12,767.5	22,620.0	12,885.5	19.5	79.9	-110.56	-78.8	413.9	1,616.4	1,570.5	45.83	35.265	
14,400.0	12,767.1	22,620.0	12,885.5	19.9	79.9	-110.56	-78.8	413.9	1,715.1	1,669.5	45.59	37.622	
14,500.0	12,766.6	22,620.0	12,885.5	20.3	79.9	-110.56	-78.8	413.9	1,814.0	1,768.6	45.39	39.965	
14,600.0	12,766.2	22,620.0	12,885.5	20.8	79.9	-110.56	-78.8	413.9	1,912.9	1,867.7	45.23	42.293	
14,700.0	12,765.7	22,620.0	12,885.5	21.3	79.9	-110.56	-78.8	413.9	2,012.0	1,966.9	45.11	44.607	
14,800.0	12,765.3	22,620.0	12,885.5	21.9	79.9	-110.56	-78.8	413.9	2,111.2	2,066.2	45.01	46.906	
14,900.0	12,764.8	22,620.0	12,885.5	22.4	79.9	-110.56	-78.8	413.9	2,210.5	2,165.5	44.94	49.191	
15,000.0	12,764.4	22,620.0	12,885.5	23.0	79.9	-110.56	-78.8	413.9	2,309.8	2,264.9	44.88	51.462	
15,100.0	12,763.9	22,620.0	12,885.5	23.6	79.9	-110.56	-78.8	413.9	2,409.1	2,364.3	44.85	53.718	
15,200.0	12,763.4	22,620.0	12,885.5	24.2	79.9	-110.56	-78.8	413.9	2,508.6	2,463.7	44.83	55.960	
15,300.0	12,763.0	22,620.0	12,885.5	24.9	79.9	-110.56	-78.8	413.9	2,608.0	2,563.2	44.82	58.188	
15,400.0	12,762.5	22,620.0	12,885.5	25.5	79.9	-110.56	-78.8	413.9	2,707.5	2,662.7	44.83	60.402	
15,500.0	12,762.1	22,620.0	12,885.5	26.1	79.9	-110.56	-78.8	413.9	2,807.1	2,762.2	44.84	62.601	
15,600.0	12,761.6	22,620.0	12,885.5	26.8	79.9	-110.56	-78.8	413.9	2,906.6	2,861.8	44.87	64.786	
15,700.0	12,761.2	22,620.0	12,885.5	27.5	79.9	-110.56	-78.8	413.9	3,006.2	2,961.3	44.90	66.957	
15,800.0	12,760.7	22,620.0	12,885.5	28.2	79.9	-110.56	-78.8	413.9	3,105.9	3,060.9	44.94	69.113	
15,900.0	12,760.2	22,620.0	12,885.5	28.8	79.9	-110.56	-78.8	413.9	3,205.5	3,160.5	44.99	71.254	
16,000.0	12,759.8	22,620.0	12,885.5	29.5	79.9	-110.56	-78.8	413.9	3,305.2	3,260.1	45.04	73.382	
16,100.0	12,759.3	22,620.0	12,885.5	30.2	79.9	-110.56	-78.8	413.9	3,404.9	3,359.8	45.10	75.494	
16,200.0	12,758.9	22,620.0	12,885.5	30.9	79.9	-110.56	-78.8	413.9	3,504.6	3,459.4	45.17	77.592	
16,300.0	12,758.4	22,620.0	12,885.5	31.6	79.9	-110.56	-78.8	413.9	3,604.3	3,559.1	45.24	79.676	
16,400.0	12,758.0	22,620.0	12,885.5	32.3	79.9	-110.56	-78.8	413.9	3,704.0	3,658.7	45.31	81.745	
16,500.0	12,757.5	22,620.0	12,885.5	33.0	79.9	-110.56	-78.8	413.9	3,803.8	3,758.4	45.39	83.799	
16,600.0	12,757.1	22,620.0	12,885.5	33.8	79.9	-110.56	-78.8	413.9	3,903.5	3,858.1	45.48	85.838	
16,700.0	12,756.6	22,620.0	12,885.5	34.5	79.9	-110.56	-78.8	413.9	4,003.3	3,957.8	45.56	87.882	
16,800.0	12,756.1	22,620.0	12,885.5	35.2	79.9	-110.56	-78.8	413.9	4,103.1	4,057.5	45.65	89.872	
16,900.0	12,755.7	22,620.0	12,885.5	35.9	79.9	-110.56	-78.8	413.9	4,202.9	4,157.2	45.75	91.867	
17,000.0	12,755.2	22,620.0	12,885.5	36.6	79.9	-110.56	-78.8	413.9	4,302.7	4,256.9	45.85	93.847	
17,100.0	12,754.8	22,620.0	12,885.5	37.4	79.9	-110.56	-78.8	413.9	4,402.5	4,356.6	45.95	95.812	

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

Anticollision Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Reference Site: BULLDOG
Site Error: 0.0 usft
Reference Well: STOVE PIPE FEDERAL COM #703H
Well Error: 3.0 usft
Reference Wellbore: OWB
Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM_Users
Offset TVD Reference: Offset Datum

Offset Design BULLDOG - FASCINATOR FED COM #702H - OWB - ACTUAL WELLPATH													Offset Site Error:	0.0 usft
Survey Program: 100-Standard Keeper 104, 11755-MWD+IFR1+MS													Offset Well Error:	3.0 usft
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	
17,200.0	12,754.3	22,620.0	12,885.5	38.1	79.9	-110.56	-78.8	413.9	4,502.4	4,456.3	46.05	97.762		
17,300.0	12,753.9	22,620.0	12,885.5	38.8	79.9	-110.56	-78.8	413.9	4,602.2	4,556.0	46.16	99.697		
17,400.0	12,753.4	22,620.0	12,885.5	39.5	79.9	-110.56	-78.8	413.9	4,702.0	4,655.7	46.27	101.618		
17,500.0	12,753.0	22,620.0	12,885.5	40.3	79.9	-110.56	-78.8	413.9	4,801.9	4,755.5	46.38	103.523		
17,600.0	12,752.5	22,620.0	12,885.5	41.0	79.9	-110.56	-78.8	413.9	4,901.7	4,855.2	46.50	105.414		
17,700.0	12,752.0	22,620.0	12,885.5	41.7	79.9	-110.56	-78.8	413.9	5,001.6	4,955.0	46.62	107.290		
17,800.0	12,751.6	22,620.0	12,885.5	42.5	79.9	-110.56	-78.8	413.9	5,101.4	5,054.7	46.74	109.151		
17,900.0	12,751.1	22,620.0	12,885.5	43.2	79.9	-110.56	-78.8	413.9	5,201.3	5,154.4	46.86	110.997		
18,000.0	12,750.7	22,620.0	12,885.5	43.9	79.9	-110.56	-78.8	413.9	5,301.2	5,254.2	46.98	112.829		
18,100.0	12,750.2	22,620.0	12,885.5	44.7	79.9	-110.56	-78.8	413.9	5,401.1	5,353.9	47.11	114.646		
18,200.0	12,749.8	22,620.0	12,885.5	45.4	79.9	-110.56	-78.8	413.9	5,500.9	5,453.7	47.24	116.448		
18,300.0	12,749.3	22,620.0	12,885.5	46.2	79.9	-110.56	-78.8	413.9	5,600.8	5,553.5	47.37	118.235		
18,400.0	12,748.8	22,620.0	12,885.5	46.9	79.9	-110.56	-78.8	413.9	5,700.7	5,653.2	47.50	120.008		
18,500.0	12,748.4	22,620.0	12,885.5	47.6	79.9	-110.56	-78.8	413.9	5,800.6	5,753.0	47.64	121.767		
18,600.0	12,747.9	22,620.0	12,885.5	48.4	79.9	-110.56	-78.8	413.9	5,900.5	5,852.7	47.77	123.511		
18,700.0	12,747.5	22,620.0	12,885.5	49.1	79.9	-110.56	-78.8	413.9	6,000.4	5,952.5	47.91	125.241		
18,800.0	12,747.0	22,620.0	12,885.5	49.9	79.9	-110.56	-78.8	413.9	6,100.3	6,052.3	48.05	126.956		
18,900.0	12,746.6	22,620.0	12,885.5	50.6	79.9	-110.56	-78.8	413.9	6,200.2	6,152.0	48.19	128.657		
19,000.0	12,746.1	22,620.0	12,885.5	51.4	79.9	-110.56	-78.8	413.9	6,300.1	6,251.8	48.33	130.344		
19,100.0	12,745.7	22,620.0	12,885.5	52.1	79.9	-110.56	-78.8	413.9	6,400.0	6,351.6	48.48	132.017		
19,200.0	12,745.2	22,620.0	12,885.5	52.9	79.9	-110.56	-78.8	413.9	6,500.0	6,451.3	48.62	133.676		
19,300.0	12,744.7	22,620.0	12,885.5	53.6	79.9	-110.56	-78.8	413.9	6,599.9	6,551.1	48.77	135.321		
19,400.0	12,744.3	22,620.0	12,885.5	54.3	79.9	-110.56	-78.8	413.9	6,699.8	6,650.9	48.92	136.953		
19,500.0	12,743.8	22,620.0	12,885.5	55.1	79.9	-110.56	-78.8	413.9	6,799.7	6,750.7	49.07	138.570		
19,600.0	12,743.4	22,620.0	12,885.5	55.8	79.9	-110.56	-78.8	413.9	6,899.6	6,850.4	49.22	140.174		
19,700.0	12,742.9	22,620.0	12,885.5	56.6	79.9	-110.56	-78.8	413.9	6,999.6	6,950.2	49.37	141.764		
19,800.0	12,742.5	22,620.0	12,885.5	57.3	79.9	-110.56	-78.8	413.9	7,099.5	7,050.0	49.53	143.341		
19,900.0	12,742.0	22,620.0	12,885.5	58.1	79.9	-110.56	-78.8	413.9	7,199.4	7,149.8	49.68	144.905		
20,000.0	12,741.5	22,620.0	12,885.5	58.8	79.9	-110.56	-78.8	413.9	7,299.4	7,249.5	49.84	146.455		
20,100.0	12,741.1	22,620.0	12,885.5	59.6	79.9	-110.56	-78.8	413.9	7,399.3	7,349.3	50.00	147.992		
20,200.0	12,740.6	22,620.0	12,885.5	60.3	79.9	-110.56	-78.8	413.9	7,499.2	7,449.1	50.16	149.516		
20,300.0	12,740.2	22,620.0	12,885.5	61.1	79.9	-110.56	-78.8	413.9	7,599.2	7,548.9	50.32	151.027		
20,400.0	12,739.7	22,620.0	12,885.5	61.9	79.9	-110.56	-78.8	413.9	7,699.1	7,648.6	50.48	152.526		
20,500.0	12,739.3	22,620.0	12,885.5	62.6	79.9	-110.56	-78.8	413.9	7,799.1	7,748.4	50.64	154.011		
20,600.0	12,738.8	22,620.0	12,885.5	63.4	79.9	-110.56	-78.8	413.9	7,899.0	7,848.2	50.80	155.484		
20,700.0	12,738.4	22,620.0	12,885.5	64.1	79.9	-110.56	-78.8	413.9	7,999.0	7,948.0	50.97	156.945		
20,800.0	12,737.9	22,620.0	12,885.5	64.9	79.9	-110.56	-78.8	413.9	8,098.9	8,047.8	51.13	158.393		
20,900.0	12,737.4	22,620.0	12,885.5	65.6	79.9	-110.56	-78.8	413.9	8,198.8	8,147.5	51.30	159.828		
21,000.0	12,737.0	22,620.0	12,885.5	66.4	79.9	-110.56	-78.8	413.9	8,298.8	8,247.3	51.46	161.252		
21,100.0	12,736.5	22,620.0	12,885.5	67.1	79.9	-110.56	-78.8	413.9	8,398.7	8,347.1	51.63	162.663		
21,200.0	12,736.1	22,620.0	12,885.5	67.9	79.9	-110.56	-78.8	413.9	8,498.7	8,446.9	51.80	164.063		
21,300.0	12,735.6	22,620.0	12,885.5	68.6	79.9	-110.56	-78.8	413.9	8,598.6	8,546.7	51.97	165.451		
21,400.0	12,735.2	22,620.0	12,885.5	69.4	79.9	-110.56	-78.8	413.9	8,698.6	8,646.5	52.14	166.826		
21,500.0	12,734.7	22,620.0	12,885.5	70.1	79.9	-110.56	-78.8	413.9	8,798.6	8,746.2	52.31	168.191		
21,600.0	12,734.2	22,620.0	12,885.5	70.9	79.9	-110.56	-78.8	413.9	8,898.5	8,846.0	52.49	169.543		
21,700.0	12,733.8	22,620.0	12,885.5	71.7	79.9	-110.56	-78.8	413.9	8,998.5	8,945.8	52.66	170.885		
21,800.0	12,733.3	22,620.0	12,885.5	72.4	79.9	-110.56	-78.8	413.9	9,098.4	9,045.6	52.83	172.214		
21,900.0	12,732.9	22,620.0	12,885.5	73.2	79.9	-110.56	-78.8	413.9	9,198.4	9,145.4	53.01	173.533		
22,000.0	12,732.4	22,620.0	12,885.5	73.9	79.9	-110.56	-78.8	413.9	9,298.3	9,245.2	53.18	174.841		
22,100.0	12,732.0	22,620.0	12,885.5	74.7	79.9	-110.56	-78.8	413.9	9,398.3	9,344.9	53.36	176.137		
22,200.0	12,731.5	22,620.0	12,885.5	75.4	79.9	-110.56	-78.8	413.9	9,498.3	9,444.7	53.53	177.423		
22,300.0	12,731.1	22,620.0	12,885.5	76.2	79.9	-110.56	-78.8	413.9	9,598.2	9,544.5	53.71	178.698		

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 STOVE PIPE FEDERAL COM #703H
Project:	LEA COUNTY, NM	TVD Reference:	RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
Reference Site:	BULLDOG	MD Reference:	RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	STOVE PIPE FEDERAL COM #703H	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 - FASCINATOR FED COM #702H - OWB - ACTUAL WELLPATH													Offset Site Error:	0.0 usft
Survey Program: 100-Standard Keeper 104, 11755-MWD+IFR1+MS													Offset Well Error:	3.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
22,400.0	12,730.6	22,620.0	12,885.5	77.0	79.9	-110.56	-78.8	413.9	9,698.2	9,644.3	53.89	179.962		
22,500.0	12,730.1	22,620.0	12,885.5	77.7	79.9	-110.56	-78.8	413.9	9,798.1	9,744.1	54.07	181.216		
22,600.0	12,729.7	22,620.0	12,885.5	78.5	79.9	-110.56	-78.8	413.9	9,898.1	9,843.9	54.25	182.459		
22,700.0	12,729.2	22,620.0	12,885.5	79.2	79.9	-110.56	-78.8	413.9	9,998.1	9,943.6	54.43	183.692		

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

Anticollision Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Reference Site: BULLDOG
Site Error: 0.0 usft
Reference Well: STOVE PIPE FEDERAL COM #703H
Well Error: 3.0 usft
Reference Wellbore: OWB
Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM_Users
Offset TVD Reference: Offset Datum

Offset Design BULLDOG - FASCINATOR FED COM #703H - OWB - ACTUAL WELLPLAN													Offset Site Error: 0.0 usft
Survey Program: 172-MWD, 11924-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	
2,800.0	2,800.0	22,436.0	12,770.3	4.7	90.0	-175.64	-65.9	-5.0	9,943.7	9,855.6	88.15	112.801	
2,900.0	2,900.0	22,436.0	12,770.3	4.8	90.0	-175.64	-65.9	-5.0	9,843.7	9,755.4	88.29	111.494	
3,000.0	3,000.0	22,436.0	12,770.3	4.9	90.0	-175.64	-65.9	-5.0	9,743.7	9,655.3	88.43	110.190	
3,100.0	3,100.0	22,436.0	12,770.3	5.0	90.0	-175.64	-65.9	-5.0	9,643.7	9,555.2	88.57	108.887	
3,200.0	3,200.0	22,436.0	12,770.3	5.1	90.0	-175.64	-65.9	-5.0	9,543.7	9,455.0	88.71	107.587	
3,300.0	3,300.0	22,436.0	12,770.3	5.2	90.0	-175.64	-65.9	-5.0	9,443.7	9,354.9	88.85	106.289	
3,400.0	3,400.0	22,436.0	12,770.3	5.3	90.0	-175.64	-65.9	-5.0	9,343.7	9,254.7	88.99	104.993	
3,500.0	3,500.0	22,436.0	12,770.3	5.4	90.0	-175.64	-65.9	-5.0	9,243.7	9,154.6	89.14	103.698	
3,600.0	3,600.0	22,436.0	12,770.3	5.5	90.0	-175.64	-65.9	-5.0	9,143.7	9,054.4	89.29	102.406	
3,700.0	3,700.0	22,436.0	12,770.3	5.7	90.0	-175.64	-65.9	-5.0	9,043.7	8,954.3	89.44	101.117	
3,800.0	3,800.0	22,436.0	12,770.3	5.8	90.0	-175.64	-65.9	-5.0	8,943.7	8,854.1	89.59	99.829	
3,900.0	3,900.0	22,436.0	12,770.3	5.9	90.0	-175.64	-65.9	-5.0	8,843.7	8,754.0	89.74	98.543	
4,000.0	4,000.0	22,436.0	12,770.3	6.0	90.0	-175.64	-65.9	-5.0	8,743.7	8,653.8	89.90	97.260	
4,100.0	4,100.0	22,436.0	12,770.3	6.1	90.0	-175.64	-65.9	-5.0	8,643.7	8,553.7	90.06	95.979	
4,200.0	4,200.0	22,436.0	12,770.3	6.2	90.0	-175.64	-65.9	-5.0	8,543.7	8,453.5	90.22	94.701	
4,300.0	4,300.0	22,436.0	12,770.3	6.3	90.0	-175.64	-65.9	-5.0	8,443.8	8,353.4	90.38	93.424	
4,400.0	4,400.0	22,436.0	12,770.3	6.5	90.0	-175.64	-65.9	-5.0	8,343.8	8,253.2	90.54	92.151	
4,500.0	4,500.0	22,436.0	12,770.3	6.6	90.0	-175.64	-65.9	-5.0	8,243.8	8,153.0	90.71	90.879	
4,600.0	4,600.0	22,436.0	12,770.3	6.7	90.0	-175.64	-65.9	-5.0	8,143.8	8,052.9	90.88	89.610	
4,700.0	4,700.0	22,436.0	12,770.3	6.8	90.0	-175.64	-65.9	-5.0	8,043.8	7,952.7	91.05	88.344	
4,800.0	4,800.0	22,436.0	12,770.3	6.9	90.0	-175.64	-65.9	-5.0	7,943.8	7,852.5	91.22	87.080	
4,900.0	4,900.0	22,436.0	12,770.3	7.0	90.0	-175.64	-65.9	-5.0	7,843.8	7,752.4	91.40	85.819	
5,000.0	5,000.0	22,436.0	12,770.3	7.2	90.0	-175.64	-65.9	-5.0	7,743.8	7,652.2	91.58	84.561	
5,100.0	5,100.0	22,436.0	12,770.3	7.3	90.0	-175.64	-65.9	-5.0	7,643.8	7,552.0	91.76	83.305	
5,200.0	5,200.0	22,436.0	12,770.3	7.4	90.0	-175.64	-65.9	-5.0	7,543.8	7,451.8	91.94	82.053	
5,300.0	5,300.0	22,436.0	12,770.3	7.5	90.0	-175.64	-65.9	-5.0	7,443.8	7,351.7	92.12	80.803	
5,400.0	5,400.0	22,436.0	12,770.3	7.6	90.0	-175.64	-65.9	-5.0	7,343.8	7,251.5	92.31	79.556	
5,500.0	5,500.0	22,436.0	12,770.3	7.8	90.0	-175.64	-65.9	-5.0	7,243.8	7,151.3	92.50	78.312	
5,577.1	5,577.1	22,436.0	12,770.3	7.8	90.0	167.18	-65.9	-5.0	7,166.7	7,074.0	92.65	77.355	
5,600.0	5,600.0	22,436.0	12,770.3	7.9	90.0	167.18	-65.9	-5.0	7,143.8	7,051.1	92.69	77.072	
5,700.0	5,699.9	22,436.0	12,770.3	7.9	90.0	167.18	-65.9	-5.0	7,043.9	6,951.0	92.88	75.835	
5,800.0	5,799.9	22,436.0	12,770.3	8.0	90.0	167.18	-65.9	-5.0	6,943.9	6,850.9	93.08	74.601	
5,900.0	5,899.9	22,436.0	12,770.3	8.1	90.0	167.18	-65.9	-5.0	6,844.0	6,750.7	93.28	73.371	
6,000.0	5,999.8	22,436.0	12,770.3	8.2	90.0	167.18	-65.9	-5.0	6,744.1	6,650.6	93.48	72.143	
6,100.0	6,099.8	22,436.0	12,770.3	8.3	90.0	167.18	-65.9	-5.0	6,644.1	6,550.4	93.69	70.920	
6,200.0	6,199.8	22,436.0	12,770.3	8.4	90.0	167.18	-65.9	-5.0	6,544.2	6,450.3	93.89	69.699	
6,300.0	6,299.7	22,436.0	12,770.3	8.5	90.0	167.18	-65.9	-5.0	6,444.3	6,350.2	94.10	68.483	
6,400.0	6,399.7	22,436.0	12,770.3	8.6	90.0	167.18	-65.9	-5.0	6,344.3	6,250.0	94.31	67.270	
6,500.0	6,499.7	22,436.0	12,770.3	8.6	90.0	167.18	-65.9	-5.0	6,244.4	6,149.9	94.53	66.060	
6,600.0	6,599.6	22,438.4	12,770.3	8.7	90.1	166.78	-68.3	-5.0	6,144.5	6,049.7	94.76	64.842	
6,700.0	6,699.6	22,435.6	12,770.3	8.8	90.0	167.25	-65.5	-5.0	6,044.6	5,949.6	94.96	63.655	
6,800.0	6,799.5	22,432.8	12,770.3	8.9	90.0	167.72	-82.7	-5.0	5,944.6	5,849.5	95.16	62.471	
6,900.0	6,899.5	22,430.0	12,770.4	9.0	90.0	168.21	-59.9	-5.0	5,844.7	5,749.4	95.36	61.290	
7,000.0	6,999.5	22,427.2	12,770.4	9.1	90.0	168.70	-57.1	-5.0	5,744.8	5,649.2	95.57	60.113	
7,100.0	7,099.4	22,424.4	12,770.5	9.2	90.0	169.21	-54.3	-5.0	5,644.9	5,549.1	95.77	58.939	
7,200.0	7,199.4	7,200.0	12,770.8	9.3	32.1	176.21	-19.5	-5.0	5,545.0	5,507.8	37.12	149.395	
7,300.0	7,299.4	7,300.0	12,770.8	9.4	32.2	176.70	-17.3	-5.0	5,445.0	5,408.4	36.63	148.653	
7,400.0	7,399.3	7,400.0	12,770.9	9.5	32.3	177.20	-15.1	-5.0	5,345.1	5,309.0	36.15	147.878	
7,500.0	7,499.3	7,500.0	12,770.9	9.6	32.5	177.70	-12.9	-5.0	5,245.2	5,209.5	35.66	147.070	
7,600.0	7,599.3	7,600.0	12,770.9	9.7	32.6	178.21	-10.7	-5.0	5,145.3	5,110.1	35.19	146.227	
7,700.0	7,699.2	22,410.1	12,770.6	9.8	89.9	171.89	-40.0	-4.9	5,045.4	4,948.3	97.10	51.963	
7,800.0	7,799.2	22,395.1	12,770.8	9.9	89.8	174.98	-25.0	-4.8	4,945.5	4,848.3	97.23	50.866	

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

Anticollision Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Reference Site: BULLDOG
Site Error: 0.0 usft
Reference Well: STOVE PIPE FEDERAL COM #703H
Well Error: 3.0 usft
Reference Wellbore: OWB
Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM_Users
Offset TVD Reference: Offset Datum

Offset Design BULLDOG - FASCINATOR FED COM #703H - OWB - ACTUAL WELLPLAN													Offset Site Error: 0.0 usft
Survey Program: 172-MWD, 11924-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	
7,900.0	7,899.1	22,382.5	12,771.0	10.0	89.7	177.78	-12.4	-4.8	4,845.6	4,748.2	97.38	49.761	
8,000.0	7,999.1	22,371.9	12,771.1	10.1	89.6	-179.69	-1.8	-4.9	4,745.7	4,648.1	97.55	48.650	
8,100.0	8,099.1	22,362.8	12,771.1	10.2	89.6	-177.41	7.3	-4.9	4,645.8	4,548.0	97.73	47.536	
8,200.0	8,199.0	22,354.9	12,771.2	10.3	89.5	-175.34	15.2	-5.0	4,545.9	4,447.9	97.93	46.421	
8,300.0	8,299.0	22,348.1	12,771.2	10.4	89.5	-173.47	22.0	-5.1	4,446.0	4,347.8	98.13	45.306	
8,400.0	8,399.0	22,342.0	12,771.2	10.5	89.4	-171.76	28.1	-5.2	4,346.0	4,247.7	98.35	44.191	
8,500.0	8,498.9	22,337.0	12,771.2	10.6	89.4	-170.33	33.1	-5.2	4,246.1	4,147.6	98.57	43.076	
8,600.0	8,598.9	22,337.0	12,771.2	10.7	89.4	-170.33	33.1	-5.2	4,146.2	4,047.4	98.84	41.948	
8,700.0	8,698.9	22,337.0	12,771.2	10.8	89.4	-170.33	33.1	-5.2	4,046.3	3,947.2	99.12	40.824	
8,800.0	8,798.8	22,337.0	12,771.2	11.0	89.4	-170.33	33.1	-5.2	3,946.4	3,847.0	99.39	39.706	
8,900.0	8,898.8	22,337.0	12,771.2	11.1	89.4	-170.33	33.1	-5.2	3,846.5	3,746.9	99.67	38.594	
9,000.0	8,998.8	22,337.0	12,771.2	11.2	89.4	-170.33	33.1	-5.2	3,746.7	3,646.7	99.95	37.486	
9,100.0	9,098.7	22,337.0	12,771.2	11.3	89.4	-170.33	33.1	-5.2	3,646.8	3,546.6	100.23	36.384	
9,200.0	9,198.7	22,329.1	12,771.3	11.4	89.3	-168.01	41.0	-5.3	3,546.9	3,446.5	100.45	35.309	
9,300.0	9,298.6	22,327.9	12,771.3	11.5	89.3	-167.65	42.2	-5.4	3,447.0	3,346.3	100.73	34.220	
9,400.0	9,398.6	22,326.7	12,771.3	11.6	89.3	-167.28	43.4	-5.4	3,347.2	3,246.2	101.01	33.137	
9,500.0	9,498.6	22,325.5	12,771.3	11.7	89.3	-166.91	44.6	-5.4	3,247.3	3,146.0	101.29	32.058	
9,600.0	9,598.5	22,324.2	12,771.3	11.8	89.3	-166.53	45.9	-5.4	3,147.5	3,045.9	101.58	30.985	
9,700.0	9,698.5	22,322.9	12,771.3	11.9	89.3	-166.14	47.2	-5.4	3,047.6	2,945.8	101.87	29.918	
9,800.0	9,798.5	22,321.6	12,771.3	12.1	89.3	-165.74	48.5	-5.4	2,947.8	2,845.7	102.16	28.855	
9,900.0	9,898.4	22,320.3	12,771.3	12.2	89.3	-165.33	49.8	-5.5	2,848.0	2,745.6	102.45	27.799	
10,000.0	9,998.4	22,318.9	12,771.3	12.3	89.3	-164.91	51.2	-5.5	2,748.2	2,645.5	102.75	26.748	
10,100.0	10,098.4	22,317.6	12,771.3	12.4	89.3	-164.48	52.5	-5.5	2,648.4	2,545.4	103.04	25.702	
10,200.0	10,198.3	22,316.2	12,771.3	12.5	89.2	-164.04	53.9	-5.5	2,548.7	2,445.3	103.34	24.662	
10,300.0	10,298.3	22,314.7	12,771.3	12.6	89.2	-163.59	55.4	-5.5	2,448.9	2,345.3	103.64	23.628	
10,400.0	10,398.2	22,313.3	12,771.3	12.7	89.2	-163.13	56.8	-5.5	2,349.2	2,245.2	103.95	22.600	
10,500.0	10,498.2	22,311.8	12,771.3	12.8	89.2	-162.66	58.3	-5.6	2,249.5	2,145.2	104.25	21.578	
10,600.0	10,598.2	22,310.3	12,771.3	13.0	89.2	-162.18	59.8	-5.6	2,149.8	2,045.2	104.56	20.561	
10,700.0	10,698.1	22,308.7	12,771.3	13.1	89.2	-161.69	61.4	-5.6	2,050.1	1,945.3	104.87	19.550	
10,800.0	10,798.1	22,307.1	12,771.3	13.2	89.2	-161.18	63.0	-5.6	1,950.5	1,845.4	105.17	18.546	
10,900.0	10,898.1	22,305.5	12,771.4	13.3	89.2	-160.67	64.6	-5.6	1,851.0	1,745.5	105.48	17.547	
11,000.0	10,998.0	22,303.9	12,771.4	13.4	89.2	-160.13	66.2	-5.7	1,751.4	1,645.6	105.80	16.555	
11,100.0	11,098.0	22,302.2	12,771.4	13.5	89.2	-159.59	67.9	-5.7	1,651.9	1,545.8	106.11	15.569	
11,200.0	11,198.0	22,300.5	12,771.4	13.7	89.1	-159.03	69.6	-5.7	1,552.5	1,446.1	106.42	14.589	
11,300.0	11,297.9	22,298.7	12,771.4	13.8	89.1	-158.46	71.4	-5.7	1,453.2	1,346.5	106.73	13.616	
11,400.0	11,397.9	22,296.9	12,771.4	13.9	89.1	-157.88	73.2	-5.7	1,354.0	1,246.9	107.03	12.650	
11,500.0	11,497.8	22,295.1	12,771.4	14.0	89.1	-157.28	75.0	-5.8	1,254.8	1,147.5	107.34	11.691	
11,600.0	11,597.8	22,293.2	12,771.4	14.1	89.1	-156.66	76.9	-5.8	1,155.9	1,048.2	107.64	10.739	
11,700.0	11,697.8	22,291.3	12,771.4	14.2	89.1	-156.03	78.8	-5.8	1,057.1	949.2	107.93	9.794	
11,800.0	11,797.7	22,289.3	12,771.5	14.4	89.1	-155.38	80.8	-5.8	958.5	850.3	108.21	8.859	
11,900.0	11,897.7	22,287.3	12,771.5	14.5	89.1	-154.72	82.8	-5.9	860.3	751.9	108.47	7.932	
12,000.0	11,997.7	22,285.3	12,771.5	14.6	89.0	-154.03	84.8	-5.9	762.6	653.9	108.70	7.016	
12,100.0	12,097.6	22,283.2	12,771.5	14.7	89.0	-153.33	86.9	-5.9	665.5	556.6	108.89	6.112	
12,194.5	12,192.1	22,281.2	12,771.5	14.8	89.0	-152.66	88.9	-5.9	574.7	465.7	109.00	5.273	
12,200.0	12,197.6	22,281.1	12,771.5	14.8	89.0	-171.36	89.0	-5.9	569.5	460.4	109.05	5.222	
12,250.0	12,247.5	22,282.5	12,771.5	15.0	89.0	117.44	87.6	-5.9	522.0	412.9	109.08	4.786	
12,300.0	12,297.1	22,288.2	12,771.5	15.5	89.1	120.36	81.9	-5.8	475.3	366.3	109.08	4.358	
12,350.0	12,345.9	22,298.0	12,771.4	15.7	89.1	124.88	72.1	-5.7	430.0	320.9	109.06	3.943	
12,400.0	12,393.7	22,312.1	12,771.3	15.9	89.2	127.88	58.0	-5.6	386.5	277.5	108.99	3.546	
12,450.0	12,439.9	22,330.3	12,771.2	16.1	89.3	129.26	39.8	-5.3	345.5	236.6	108.84	3.174	
12,500.0	12,484.3	22,352.9	12,771.2	16.2	89.5	129.13	17.2	-5.0	307.4	198.8	108.59	2.831	
12,550.0	12,526.6	22,379.1	12,771.0	16.4	89.7	127.72	-9.0	-4.9	273.1	164.9	108.16	2.524	

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

Anticollision Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Reference Site: BULLDOG
Site Error: 0.0 usft
Reference Well: STOVE PIPE FEDERAL COM #703H
Well Error: 3.0 usft
Reference Wellbore: OWB
Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM_Users
Offset TVD Reference: Offset Datum

Offset Design BULLDOG - FASCINATOR FED COM #703H - OWB - ACTUAL WELLPLAN													Offset Site Error: 0.0 usft
Survey Program: 172-MWD, 11924-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	
12,600.0	12,566.4	22,408.6	12,770.7	16.6	89.9	125.10	-38.5	-4.9	243.1	135.6	107.50	2.261	
12,650.0	12,603.4	22,436.0	12,770.3	16.7	90.0	122.26	-65.9	-5.0	218.3	111.9	106.38	2.052	
12,700.0	12,637.3	22,436.0	12,770.3	16.9	90.0	123.48	-65.9	-5.0	203.3	100.7	102.61	1.981	Advise and Monitor, ES, SF
12,728.4	12,655.1	22,436.0	12,770.3	16.9	90.0	123.61	-65.9	-5.0	200.9	101.7	99.25	2.024	CC
12,750.0	12,667.9	22,436.0	12,770.3	17.0	90.0	123.45	-65.9	-5.0	202.3	106.0	96.28	2.101	
12,800.0	12,695.0	22,436.0	12,770.3	17.1	90.0	122.18	-65.9	-5.0	215.5	126.3	89.20	2.416	
12,850.0	12,718.2	22,436.0	12,770.3	17.2	90.0	119.58	-65.9	-5.0	240.5	157.0	83.42	2.883	
12,900.0	12,737.6	22,436.0	12,770.3	17.3	90.0	115.47	-65.9	-5.0	273.9	194.5	79.35	3.452	
12,950.0	12,752.8	22,436.0	12,770.3	17.3	90.0	109.61	-65.9	-5.0	312.8	236.3	76.47	4.090	
13,000.0	12,763.8	22,436.0	12,770.3	17.4	90.0	101.79	-65.9	-5.0	355.2	280.9	74.32	4.779	
13,050.0	12,770.6	22,436.0	12,770.3	17.4	90.0	92.04	-65.9	-5.0	399.7	327.1	72.62	5.505	
13,100.0	12,773.0	22,436.0	12,770.3	17.4	90.0	80.83	-65.9	-5.0	445.4	374.2	71.20	6.256	
13,105.2	12,773.0	22,436.0	12,770.3	17.4	90.0	79.61	-65.9	-5.0	450.2	379.2	71.06	6.336	
13,200.0	12,772.6	22,436.0	12,770.3	17.5	90.0	79.61	-65.9	-5.0	538.9	469.7	69.16	7.792	
13,300.0	12,772.1	22,436.0	12,770.3	17.6	90.0	79.61	-65.9	-5.0	634.4	566.4	67.92	9.339	
13,400.0	12,771.7	22,436.0	12,770.3	17.6	90.0	79.61	-65.9	-5.0	731.0	663.9	67.14	10.888	
13,500.0	12,771.2	22,436.0	12,770.3	17.8	90.0	79.61	-65.9	-5.0	828.5	761.9	66.63	12.434	
13,600.0	12,770.7	22,436.0	12,770.3	17.9	90.0	79.61	-65.9	-5.0	926.5	860.2	66.29	13.977	
13,700.0	12,770.3	22,436.0	12,770.3	18.0	90.0	79.61	-65.9	-5.0	1,024.9	958.8	66.05	15.516	
13,800.0	12,769.8	22,436.0	12,770.3	18.2	90.0	79.61	-65.9	-5.0	1,123.6	1,057.7	65.90	17.051	
13,900.0	12,769.4	22,436.0	12,770.3	18.4	90.0	79.61	-65.9	-5.0	1,222.5	1,156.7	65.79	18.582	
14,000.0	12,768.9	22,436.0	12,770.3	18.6	90.0	79.61	-65.9	-5.0	1,321.5	1,255.8	65.72	20.109	
14,100.0	12,768.5	22,436.0	12,770.3	18.9	90.0	79.61	-65.9	-5.0	1,420.7	1,355.0	65.68	21.632	
14,200.0	12,768.0	22,436.0	12,770.3	19.2	90.0	79.61	-65.9	-5.0	1,520.0	1,454.3	65.66	23.151	
14,300.0	12,767.5	22,436.0	12,770.3	19.5	90.0	79.61	-65.9	-5.0	1,619.4	1,553.7	65.65	24.666	
14,400.0	12,767.1	22,436.0	12,770.3	19.9	90.0	79.61	-65.9	-5.0	1,718.8	1,653.2	65.66	26.176	
14,500.0	12,766.6	22,436.0	12,770.3	20.3	90.0	79.61	-65.9	-5.0	1,818.4	1,752.7	65.69	27.683	
14,600.0	12,766.2	22,436.0	12,770.3	20.8	90.0	79.61	-65.9	-5.0	1,917.9	1,852.2	65.72	29.185	
14,700.0	12,765.7	22,436.0	12,770.3	21.3	90.0	79.61	-65.9	-5.0	2,017.5	1,951.8	65.76	30.682	
14,800.0	12,765.3	22,436.0	12,770.3	21.9	90.0	79.61	-65.9	-5.0	2,117.2	2,051.4	65.80	32.175	
14,900.0	12,764.8	22,436.0	12,770.3	22.4	90.0	79.61	-65.9	-5.0	2,216.8	2,151.0	65.85	33.663	
15,000.0	12,764.4	22,436.0	12,770.3	23.0	90.0	79.61	-65.9	-5.0	2,316.5	2,250.6	65.91	35.147	
15,100.0	12,763.9	22,436.0	12,770.3	23.6	90.0	79.61	-65.9	-5.0	2,416.3	2,350.3	65.97	36.626	
15,200.0	12,763.4	22,436.0	12,770.3	24.2	90.0	79.61	-65.9	-5.0	2,516.0	2,450.0	66.04	38.099	
15,300.0	12,763.0	22,436.0	12,770.3	24.9	90.0	79.61	-65.9	-5.0	2,615.8	2,549.7	66.11	39.568	
15,400.0	12,762.5	22,436.0	12,770.3	25.5	90.0	79.61	-65.9	-5.0	2,715.6	2,649.4	66.18	41.031	
15,500.0	12,762.1	22,436.0	12,770.3	26.1	90.0	79.61	-65.9	-5.0	2,815.4	2,749.1	66.26	42.489	
15,600.0	12,761.6	22,436.0	12,770.3	26.8	90.0	79.61	-65.9	-5.0	2,915.2	2,848.9	66.34	43.942	
15,700.0	12,761.2	22,436.0	12,770.3	27.5	90.0	79.61	-65.9	-5.0	3,015.0	2,948.6	66.43	45.389	
15,800.0	12,760.7	22,436.0	12,770.3	28.2	90.0	79.61	-65.9	-5.0	3,114.9	3,048.4	66.51	46.830	
15,900.0	12,760.2	22,436.0	12,770.3	28.8	90.0	79.61	-65.9	-5.0	3,214.7	3,148.1	66.60	48.266	
16,000.0	12,759.8	22,436.0	12,770.3	29.5	90.0	79.61	-65.9	-5.0	3,314.6	3,247.9	66.70	49.696	
16,100.0	12,759.3	22,436.0	12,770.3	30.2	90.0	79.61	-65.9	-5.0	3,414.4	3,347.6	66.79	51.120	
16,200.0	12,758.9	22,436.0	12,770.3	30.9	90.0	79.61	-65.9	-5.0	3,514.3	3,447.4	66.89	52.538	
16,300.0	12,758.4	22,436.0	12,770.3	31.6	90.0	79.61	-65.9	-5.0	3,614.2	3,547.2	66.99	53.951	
16,400.0	12,758.0	22,436.0	12,770.3	32.3	90.0	79.61	-65.9	-5.0	3,714.1	3,647.0	67.09	55.357	
16,500.0	12,757.5	22,436.0	12,770.3	33.0	90.0	79.61	-65.9	-5.0	3,814.0	3,746.8	67.20	56.757	
16,600.0	12,757.1	22,436.0	12,770.3	33.8	90.0	79.61	-65.9	-5.0	3,913.9	3,846.6	67.31	58.150	
16,700.0	12,756.6	22,436.0	12,770.3	34.5	90.0	79.61	-65.9	-5.0	4,013.8	3,946.4	67.42	59.538	
16,800.0	12,756.1	22,436.0	12,770.3	35.2	90.0	79.61	-65.9	-5.0	4,113.7	4,046.2	67.53	60.919	
16,900.0	12,755.7	22,436.0	12,770.3	35.9	90.0	79.61	-65.9	-5.0	4,213.6	4,146.0	67.64	62.293	
17,000.0	12,755.2	22,436.0	12,770.3	36.6	90.0	79.61	-65.9	-5.0	4,313.5	4,245.8	67.76	63.661	

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

Anticollision Report

Company: NORTHERN DELAWARE BASIN
 Project: LEA COUNTY, NM
 Reference Site: BULLDOG
 Site Error: 0.0 usft
 Reference Well: STOVE PIPE FEDERAL COM #703H
 Well Error: 3.0 usft
 Reference Wellbore: OWB
 Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
 TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
 MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: EDM_Users
 Offset TVD Reference: Offset Datum

Offset Design BULLDOG - FASCINATOR FED COM #703H - OWB - ACTUAL WELLPLAN													Offset Site Error: 0.0 usft
Survey Program: 172-MWD, 11924-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	
17,100.0	12,754.8	22,436.0	12,770.3	37.4	90.0	79.61	-65.9	-5.0	4,413.4	4,345.6	67.87	65.023	
17,200.0	12,754.3	22,436.0	12,770.3	38.1	90.0	79.61	-65.9	-5.0	4,513.4	4,445.4	67.99	66.378	
17,300.0	12,753.9	22,436.0	12,770.3	38.8	90.0	79.61	-65.9	-5.0	4,613.3	4,545.2	68.12	67.727	
17,400.0	12,753.4	22,436.0	12,770.3	39.5	90.0	79.61	-65.9	-5.0	4,713.2	4,645.0	68.24	69.069	
17,500.0	12,753.0	22,436.0	12,770.3	40.3	90.0	79.61	-65.9	-5.0	4,813.1	4,744.8	68.36	70.404	
17,600.0	12,752.5	22,436.0	12,770.3	41.0	90.0	79.61	-65.9	-5.0	4,913.1	4,844.6	68.49	71.733	
17,700.0	12,752.0	22,436.0	12,770.3	41.7	90.0	79.61	-65.9	-5.0	5,013.0	4,944.4	68.62	73.055	
17,800.0	12,751.6	22,436.0	12,770.3	42.5	90.0	79.61	-65.9	-5.0	5,113.0	5,044.2	68.75	74.370	
17,900.0	12,751.1	22,436.0	12,770.3	43.2	90.0	79.61	-65.9	-5.0	5,212.9	5,144.0	68.88	75.678	
18,000.0	12,750.7	22,436.0	12,770.3	43.9	90.0	79.61	-65.9	-5.0	5,312.9	5,243.8	69.02	76.980	
18,100.0	12,750.2	22,436.0	12,770.3	44.7	90.0	79.61	-65.9	-5.0	5,412.8	5,343.6	69.15	78.275	
18,200.0	12,749.8	22,436.0	12,770.3	45.4	90.0	79.61	-65.9	-5.0	5,512.7	5,443.5	69.29	79.563	
18,300.0	12,749.3	22,436.0	12,770.3	46.2	90.0	79.61	-65.9	-5.0	5,612.7	5,543.3	69.43	80.845	
18,400.0	12,748.8	22,436.0	12,770.3	46.9	90.0	79.61	-65.9	-5.0	5,712.7	5,643.1	69.57	82.119	
18,500.0	12,748.4	22,436.0	12,770.3	47.6	90.0	79.61	-65.9	-5.0	5,812.6	5,742.9	69.71	83.387	
18,600.0	12,747.9	22,436.0	12,770.3	48.4	90.0	79.61	-65.9	-5.0	5,912.6	5,842.7	69.85	84.648	
18,700.0	12,747.5	22,436.0	12,770.3	49.1	90.0	79.61	-65.9	-5.0	6,012.5	5,942.5	69.99	85.902	
18,800.0	12,747.0	22,436.0	12,770.3	49.9	90.0	79.61	-65.9	-5.0	6,112.5	6,042.3	70.14	87.150	
18,900.0	12,746.6	22,436.0	12,770.3	50.6	90.0	79.61	-65.9	-5.0	6,212.4	6,142.2	70.28	88.390	
19,000.0	12,746.1	22,436.0	12,770.3	51.4	90.0	79.61	-65.9	-5.0	6,312.4	6,242.0	70.43	89.624	
19,100.0	12,745.7	22,436.0	12,770.3	52.1	90.0	79.61	-65.9	-5.0	6,412.4	6,341.8	70.58	90.851	
19,200.0	12,745.2	22,436.0	12,770.3	52.9	90.0	79.61	-65.9	-5.0	6,512.3	6,441.6	70.73	92.071	
19,300.0	12,744.7	22,436.0	12,770.3	53.6	90.0	79.61	-65.9	-5.0	6,612.3	6,541.4	70.88	93.285	
19,400.0	12,744.3	22,436.0	12,770.3	54.3	90.0	79.61	-65.9	-5.0	6,712.3	6,641.2	71.04	94.492	
19,500.0	12,743.8	22,436.0	12,770.3	55.1	90.0	79.61	-65.9	-5.0	6,812.2	6,741.0	71.19	95.692	
19,600.0	12,743.4	22,436.0	12,770.3	55.8	90.0	79.61	-65.9	-5.0	6,912.2	6,840.8	71.34	96.885	
19,700.0	12,742.9	22,436.0	12,770.3	56.6	90.0	79.61	-65.9	-5.0	7,012.2	6,940.7	71.50	98.072	
19,800.0	12,742.5	22,436.0	12,770.3	57.3	90.0	79.61	-65.9	-5.0	7,112.1	7,040.5	71.66	99.252	
19,900.0	12,742.0	22,436.0	12,770.3	58.1	90.0	79.61	-65.9	-5.0	7,212.1	7,140.3	71.82	100.426	
20,000.0	12,741.5	22,436.0	12,770.3	58.8	90.0	79.61	-65.9	-5.0	7,312.1	7,240.1	71.97	101.592	
20,100.0	12,741.1	22,436.0	12,770.3	59.6	90.0	79.61	-65.9	-5.0	7,412.0	7,339.9	72.13	102.753	
20,200.0	12,740.6	22,436.0	12,770.3	60.3	90.0	79.61	-65.9	-5.0	7,512.0	7,439.7	72.30	103.906	
20,300.0	12,740.2	22,436.0	12,770.3	61.1	90.0	79.61	-65.9	-5.0	7,612.0	7,539.5	72.46	105.053	
20,400.0	12,739.7	22,436.0	12,770.3	61.9	90.0	79.61	-65.9	-5.0	7,712.0	7,639.3	72.62	106.194	
20,500.0	12,739.3	22,436.0	12,770.3	62.6	90.0	79.61	-65.9	-5.0	7,811.9	7,739.2	72.79	107.328	
20,600.0	12,738.8	22,436.0	12,770.3	63.4	90.0	79.61	-65.9	-5.0	7,911.9	7,839.0	72.95	108.456	
20,700.0	12,738.4	22,436.0	12,770.3	64.1	90.0	79.61	-65.9	-5.0	8,011.9	7,938.8	73.12	109.577	
20,800.0	12,737.9	22,436.0	12,770.3	64.9	90.0	79.61	-65.9	-5.0	8,111.9	8,038.6	73.28	110.692	
20,900.0	12,737.4	22,436.0	12,770.3	65.6	90.0	79.61	-65.9	-5.0	8,211.8	8,138.4	73.45	111.800	
21,000.0	12,737.0	22,436.0	12,770.3	66.4	90.0	79.61	-65.9	-5.0	8,311.8	8,238.2	73.62	112.902	
21,100.0	12,736.5	22,436.0	12,770.3	67.1	90.0	79.61	-65.9	-5.0	8,411.8	8,338.0	73.79	113.998	
21,200.0	12,736.1	22,436.0	12,770.3	67.9	90.0	79.61	-65.9	-5.0	8,511.8	8,437.8	73.96	115.088	
21,300.0	12,735.6	22,436.0	12,770.3	68.6	90.0	79.61	-65.9	-5.0	8,611.8	8,537.6	74.13	116.171	
21,400.0	12,735.2	22,436.0	12,770.3	69.4	90.0	79.61	-65.9	-5.0	8,711.7	8,637.4	74.30	117.248	
21,500.0	12,734.7	22,436.0	12,770.3	70.1	90.0	79.61	-65.9	-5.0	8,811.7	8,737.2	74.47	118.319	
21,600.0	12,734.2	22,436.0	12,770.3	70.9	90.0	79.61	-65.9	-5.0	8,911.7	8,837.1	74.65	119.384	
21,700.0	12,733.8	22,436.0	12,770.3	71.7	90.0	79.61	-65.9	-5.0	9,011.7	8,936.9	74.82	120.442	
21,800.0	12,733.3	22,436.0	12,770.3	72.4	90.0	79.61	-65.9	-5.0	9,111.7	9,036.7	75.00	121.495	
21,900.0	12,732.9	22,436.0	12,770.3	73.2	90.0	79.61	-65.9	-5.0	9,211.6	9,136.5	75.17	122.541	
22,000.0	12,732.4	22,436.0	12,770.3	73.9	90.0	79.61	-65.9	-5.0	9,311.6	9,236.3	75.35	123.582	
22,100.0	12,732.0	22,436.0	12,770.3	74.7	90.0	79.61	-65.9	-5.0	9,411.6	9,336.1	75.52	124.617	
22,200.0	12,731.5	22,436.0	12,770.3	75.4	90.0	79.61	-65.9	-5.0	9,511.6	9,435.9	75.70	125.645	

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 STOVE PIPE FEDERAL COM #703H
Project:	LEA COUNTY, NM	TVD Reference:	RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
Reference Site:	BULLDOG	MD Reference:	RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	STOVE PIPE FEDERAL COM #703H	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 - FASCINATOR FED COM #703H - OWB - ACTUAL WELLPLAN													Offset Site Error:	0.0 usft
Survey Program: 172-MWD, 11924-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		
22,300.0	12,731.1	22,436.0	12,770.3	76.2	90.0	79.61	-65.9	-5.0	9,611.6	9,535.7	75.88	126.668		
22,400.0	12,730.6	22,436.0	12,770.3	77.0	90.0	79.61	-65.9	-5.0	9,711.6	9,635.5	76.06	127.685		
22,500.0	12,730.1	22,436.0	12,770.3	77.7	90.0	79.61	-65.9	-5.0	9,811.5	9,735.3	76.24	128.696		
22,600.0	12,729.7	22,436.0	12,770.3	78.5	90.0	79.61	-65.9	-5.0	9,911.5	9,835.1	76.42	129.701		

Anticollision Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Reference Site: BULLDOG
Site Error: 0.0 usft
Reference Well: STOVE PIPE FEDERAL COM #703H
Well Error: 3.0 usft
Reference Wellbore: OWB
Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM_Users
Offset TVD Reference: Offset Datum

Offset Design BULLDOG - FASCINATOR FED COM #704H - OWB - ACTUAL WELLPATH														Offset Site Error:	0.0 usft
Survey Program: 100-Standard Keeper 104, 11922-MWD+IFR1+MS														Offset Well Error:	3.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)							
2,900.0	2,900.0	22,450.0	12,926.0	4.8	78.2	-67.90	155.5	-383.1	9,993.8	9,907.0	86.81	115.128			
3,000.0	3,000.0	22,450.0	12,926.0	4.9	78.2	-67.90	155.5	-383.1	9,893.9	9,806.9	86.94	113.799			
3,100.0	3,100.0	22,450.0	12,926.0	5.0	78.2	-67.90	155.5	-383.1	9,793.9	9,706.9	87.08	112.472			
3,200.0	3,200.0	22,450.0	12,926.0	5.1	78.2	-67.90	155.5	-383.1	9,694.0	9,606.8	87.22	111.147			
3,300.0	3,300.0	22,450.0	12,926.0	5.2	78.2	-67.90	155.5	-383.1	9,594.1	9,506.8	87.36	109.824			
3,400.0	3,400.0	22,450.0	12,926.0	5.3	78.2	-67.90	155.5	-383.1	9,494.2	9,406.7	87.50	108.504			
3,500.0	3,500.0	22,450.0	12,926.0	5.4	78.2	-67.90	155.5	-383.1	9,394.3	9,306.7	87.65	107.185			
3,600.0	3,600.0	22,450.0	12,926.0	5.5	78.2	-67.90	155.5	-383.1	9,294.4	9,206.6	87.79	105.869			
3,700.0	3,700.0	22,450.0	12,926.0	5.7	78.2	-67.90	155.5	-383.1	9,194.5	9,106.6	87.94	104.555			
3,800.0	3,800.0	22,450.0	12,926.0	5.8	78.2	-67.90	155.5	-383.1	9,094.6	9,006.5	88.09	103.243			
3,900.0	3,900.0	22,450.0	12,926.0	5.9	78.2	-67.90	155.5	-383.1	8,994.7	8,906.5	88.24	101.933			
4,000.0	4,000.0	22,450.0	12,926.0	6.0	78.2	-67.90	155.5	-383.1	8,894.8	8,806.4	88.39	100.626			
4,100.0	4,100.0	22,450.0	12,926.0	6.1	78.2	-67.90	155.5	-383.1	8,794.9	8,706.4	88.55	99.321			
4,200.0	4,200.0	22,450.0	12,926.0	6.2	78.2	-67.90	155.5	-383.1	8,695.0	8,606.3	88.71	98.019			
4,300.0	4,300.0	22,450.0	12,926.0	6.3	78.2	-67.90	155.5	-383.1	8,595.2	8,506.3	88.87	96.719			
4,400.0	4,400.0	22,450.0	12,926.0	6.5	78.2	-67.90	155.5	-383.1	8,495.3	8,406.2	89.03	95.421			
4,500.0	4,500.0	22,450.0	12,926.0	6.6	78.2	-67.90	155.5	-383.1	8,395.4	8,306.2	89.19	94.126			
4,600.0	4,600.0	22,470.4	12,926.3	6.7	78.4	-70.56	135.2	-383.1	8,295.5	8,205.9	89.52	92.665			
4,700.0	4,700.0	22,471.1	12,926.3	6.8	78.4	-70.67	134.4	-383.1	8,195.6	8,105.9	89.70	91.371			
4,800.0	4,800.0	22,471.9	12,926.3	6.9	78.4	-70.77	133.6	-383.1	8,095.7	8,005.8	89.87	90.081			
4,900.0	4,900.0	22,472.7	12,926.4	7.0	78.4	-70.88	132.8	-383.1	7,995.8	7,905.8	90.05	88.793			
5,000.0	5,000.0	22,473.5	12,926.4	7.2	78.4	-70.99	132.0	-383.1	7,896.0	7,805.7	90.23	87.507			
5,100.0	5,100.0	22,474.4	12,926.4	7.3	78.4	-71.10	131.2	-383.1	7,796.1	7,705.7	90.42	86.225			
5,200.0	5,200.0	22,475.2	12,926.4	7.4	78.4	-71.21	130.3	-383.1	7,696.2	7,605.6	90.60	84.946			
5,300.0	5,300.0	22,476.0	12,926.4	7.5	78.4	-71.32	129.5	-383.1	7,596.4	7,505.6	90.79	83.670			
5,400.0	5,400.0	22,476.9	12,926.4	7.6	78.4	-71.44	128.6	-383.1	7,496.5	7,405.5	90.98	82.397			
5,500.0	5,500.0	22,477.8	12,926.4	7.8	78.4	-71.55	127.8	-383.1	7,396.7	7,305.5	91.17	81.128			
5,577.1	5,577.1	22,478.2	12,926.4	7.8	78.4	-145.53	127.4	-383.1	7,319.7	7,228.4	91.32	80.153			
5,600.0	5,600.0	22,478.2	12,926.4	7.9	78.4	-145.53	127.3	-383.1	7,296.9	7,205.5	91.37	79.865			
5,700.0	5,699.9	22,478.4	12,926.4	7.9	78.4	-145.55	127.2	-383.1	7,197.2	7,105.6	91.56	78.608			
5,800.0	5,799.9	22,478.5	12,926.5	8.0	78.4	-145.56	127.0	-383.1	7,097.5	7,005.7	91.75	77.355			
5,900.0	5,899.9	22,478.7	12,926.5	8.1	78.4	-145.58	126.9	-383.1	6,997.8	6,905.8	91.95	76.105			
6,000.0	5,999.8	22,478.8	12,926.5	8.2	78.4	-145.60	126.7	-383.1	6,898.1	6,806.0	92.15	74.859			
6,100.0	6,099.8	22,479.0	12,926.5	8.3	78.4	-145.62	126.5	-383.1	6,798.4	6,706.1	92.35	73.616			
6,200.0	6,199.8	22,479.2	12,926.5	8.4	78.4	-145.63	126.4	-383.1	6,698.8	6,606.2	92.55	72.377			
6,300.0	6,299.7	22,479.4	12,926.5	8.5	78.4	-145.65	126.2	-383.1	6,599.1	6,506.3	92.76	71.141			
6,400.0	6,399.7	22,479.5	12,926.5	8.6	78.4	-145.67	126.0	-383.1	6,499.5	6,406.5	92.97	69.909			
6,500.0	6,499.7	22,479.7	12,926.5	8.6	78.4	-145.69	125.8	-383.1	6,399.8	6,306.6	93.18	68.682			
6,600.0	6,599.6	22,479.9	12,926.5	8.7	78.4	-145.71	125.6	-383.1	6,300.2	6,206.8	93.39	67.458			
6,700.0	6,699.6	22,480.1	12,926.5	8.8	78.4	-145.73	125.5	-383.1	6,200.6	6,107.0	93.61	66.238			
6,800.0	6,799.5	22,480.3	12,926.5	8.9	78.4	-145.75	125.3	-383.1	6,101.0	6,007.2	93.83	65.022			
6,900.0	6,899.5	22,480.5	12,926.5	9.0	78.4	-145.77	125.1	-383.1	6,001.4	5,907.4	94.05	63.810			
7,000.0	6,999.5	22,480.6	12,926.5	9.1	78.4	-145.79	124.9	-383.1	5,901.8	5,807.6	94.27	62.603			
7,100.0	7,099.4	22,480.8	12,926.5	9.2	78.4	-145.81	124.7	-383.1	5,802.3	5,707.8	94.50	61.399			
7,200.0	7,199.4	22,481.0	12,926.5	9.3	78.4	-145.83	124.5	-383.1	5,702.7	5,608.0	94.73	60.201			
7,300.0	7,299.4	22,481.2	12,926.5	9.4	78.4	-145.85	124.3	-383.1	5,603.2	5,508.3	94.96	59.006			
7,400.0	7,399.3	22,481.4	12,926.5	9.5	78.4	-145.87	124.1	-383.1	5,503.7	5,408.5	95.19	57.816			
7,500.0	7,499.3	22,481.7	12,926.5	9.6	78.4	-145.89	123.9	-383.1	5,404.2	5,308.8	95.43	56.631			
7,600.0	7,599.3	22,481.9	12,926.5	9.7	78.4	-145.91	123.7	-383.1	5,304.8	5,209.1	95.67	55.450			
7,700.0	7,699.2	22,482.1	12,926.5	9.8	78.4	-145.94	123.5	-383.1	5,205.3	5,109.4	95.91	54.274			
7,800.0	7,799.2	22,482.3	12,926.5	9.9	78.4	-145.96	123.2	-383.1	5,105.9	5,009.7	96.15	53.103			
7,900.0	7,899.1	22,482.5	12,926.5	10.0	78.4	-145.98	123.0	-383.1	5,006.5	4,910.1	96.40	51.937			

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

Anticollision Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Reference Site: BULLDOG
Site Error: 0.0 usft
Reference Well: STOVE PIPE FEDERAL COM #703H
Well Error: 3.0 usft
Reference Wellbore: OWB
Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM_Users
Offset TVD Reference: Offset Datum

Offset Design BULLDOG - FASCINATOR FED COM #704H - OWB - ACTUAL WELLPATH														Offset Site Error:	0.0 usft
Survey Program: 100-Standard Keeper 104, 11922-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			
8,000.0	7,999.1	22,482.7	12,926.5	10.1	78.5	-146.00	122.8	-383.1	4,907.1	4,810.4	96.64	50.776			
8,100.0	8,099.1	22,483.0	12,926.5	10.2	78.5	-146.03	122.6	-383.1	4,807.7	4,710.8	96.89	49.619			
8,200.0	8,199.0	22,483.2	12,926.5	10.3	78.5	-146.05	122.3	-383.1	4,708.4	4,611.3	97.14	48.468			
8,300.0	8,299.0	22,483.4	12,926.5	10.4	78.5	-146.08	122.1	-383.1	4,609.1	4,511.7	97.40	47.322			
8,400.0	8,399.0	22,483.7	12,926.5	10.5	78.5	-146.10	121.9	-383.1	4,509.8	4,412.2	97.65	46.181			
8,500.0	8,498.9	22,483.9	12,926.5	10.6	78.5	-146.13	121.6	-383.1	4,410.6	4,312.7	97.91	45.046			
8,600.0	8,598.9	22,484.2	12,926.6	10.7	78.5	-146.15	121.4	-383.1	4,311.4	4,213.2	98.17	43.916			
8,700.0	8,698.9	22,484.4	12,926.6	10.8	78.5	-146.18	121.1	-383.1	4,212.2	4,113.8	98.44	42.792			
8,800.0	8,798.8	22,484.7	12,926.6	11.0	78.5	-146.21	120.9	-383.1	4,113.1	4,014.4	98.70	41.673			
8,900.0	8,898.8	22,485.0	12,926.6	11.1	78.5	-146.23	120.6	-383.1	4,014.0	3,915.1	98.97	40.560			
9,000.0	8,998.8	22,485.2	12,926.6	11.2	78.5	-146.26	120.3	-383.1	3,915.0	3,815.8	99.23	39.452			
9,100.0	9,098.7	22,485.5	12,926.6	11.3	78.5	-146.29	120.0	-383.1	3,816.0	3,716.5	99.50	38.351			
9,200.0	9,198.7	22,485.8	12,926.6	11.4	78.5	-146.32	119.8	-383.1	3,717.1	3,617.3	99.77	37.255			
9,300.0	9,298.6	22,486.1	12,926.6	11.5	78.5	-146.35	119.5	-383.1	3,618.2	3,518.2	100.05	36.165			
9,400.0	9,398.6	22,486.3	12,926.6	11.6	78.5	-146.38	119.2	-383.1	3,519.4	3,419.1	100.32	35.082			
9,500.0	9,498.6	22,486.6	12,926.6	11.7	78.5	-146.41	118.9	-383.1	3,420.7	3,320.1	100.59	34.005			
9,600.0	9,598.5	22,486.9	12,926.6	11.8	78.5	-146.44	118.6	-383.1	3,322.0	3,221.2	100.87	32.934			
9,700.0	9,698.5	22,487.2	12,926.6	11.9	78.5	-146.47	118.3	-383.1	3,223.5	3,122.3	101.15	31.870			
9,800.0	9,798.5	22,487.5	12,926.6	12.1	78.5	-146.50	118.0	-383.1	3,125.0	3,023.6	101.42	30.812			
9,900.0	9,898.4	22,487.9	12,926.6	12.2	78.5	-146.54	117.7	-383.1	3,026.6	2,924.9	101.70	29.761			
10,000.0	9,998.4	22,488.2	12,926.6	12.3	78.5	-146.57	117.4	-383.1	2,928.3	2,826.4	101.97	28.717			
10,100.0	10,098.4	22,488.5	12,926.6	12.4	78.5	-146.61	117.0	-383.1	2,830.2	2,727.9	102.25	27.680			
10,200.0	10,198.3	22,488.9	12,926.6	12.5	78.5	-146.64	116.7	-383.1	2,732.2	2,629.6	102.52	26.650			
10,300.0	10,298.3	22,489.2	12,926.6	12.6	78.5	-146.68	116.3	-383.0	2,634.3	2,531.5	102.79	25.628			
10,400.0	10,398.2	22,489.5	12,926.7	12.7	78.5	-146.71	116.0	-383.0	2,536.6	2,433.5	103.05	24.614			
10,500.0	10,498.2	22,489.9	12,926.7	12.8	78.5	-146.75	115.6	-383.0	2,439.1	2,335.7	103.32	23.607			
10,600.0	10,598.2	22,490.3	12,926.7	13.0	78.5	-146.79	115.3	-383.0	2,341.7	2,238.2	103.57	22.609			
10,700.0	10,698.1	22,490.6	12,926.7	13.1	78.5	-146.83	114.9	-383.0	2,244.7	2,140.8	103.83	21.620			
10,800.0	10,798.1	22,491.0	12,926.7	13.2	78.5	-146.87	114.5	-383.0	2,147.9	2,043.8	104.07	20.639			
10,900.0	10,898.1	22,491.4	12,926.7	13.3	78.5	-146.91	114.1	-383.0	2,051.4	1,947.1	104.30	19.668			
11,000.0	10,998.0	22,491.8	12,926.7	13.4	78.5	-146.95	113.7	-383.0	1,955.2	1,850.7	104.52	18.707			
11,100.0	11,098.0	22,492.2	12,926.7	13.5	78.5	-146.99	113.3	-383.0	1,859.5	1,754.8	104.72	17.757			
11,200.0	11,198.0	22,492.6	12,926.7	13.7	78.5	-147.03	112.9	-383.0	1,764.2	1,659.3	104.90	16.818			
11,300.0	11,297.9	22,493.0	12,926.7	13.8	78.5	-147.08	112.5	-383.0	1,669.5	1,564.4	105.05	15.892			
11,400.0	11,397.9	22,493.5	12,926.7	13.9	78.5	-147.12	112.1	-383.0	1,575.4	1,470.2	105.17	14.979			
11,500.0	11,497.8	22,493.9	12,926.7	14.0	78.5	-147.17	111.6	-383.0	1,482.1	1,376.9	105.25	14.082			
11,600.0	11,597.8	22,494.4	12,926.7	14.1	78.5	-147.22	111.2	-383.0	1,389.8	1,284.5	105.28	13.201			
11,700.0	11,697.8	22,494.8	12,926.8	14.2	78.5	-147.26	110.7	-383.0	1,298.6	1,193.3	105.24	12.340			
11,800.0	11,797.7	22,495.3	12,926.8	14.4	78.5	-147.31	110.2	-383.0	1,208.7	1,103.6	105.10	11.501			
11,900.0	11,897.7	22,495.8	12,926.8	14.5	78.5	-147.36	109.7	-383.0	1,120.6	1,015.8	104.85	10.688			
12,000.0	11,997.7	22,496.3	12,926.8	14.6	78.6	-147.42	109.2	-383.0	1,034.7	930.2	104.45	9.906			
12,100.0	12,097.6	22,496.8	12,926.8	14.7	78.6	-147.47	108.7	-383.0	951.5	847.7	103.85	9.163			
12,194.5	12,192.1	22,497.3	12,926.8	14.8	78.6	-147.52	108.2	-383.0	876.1	773.1	103.03	8.503			
12,200.0	12,197.6	22,497.4	12,926.8	14.8	78.6	-167.34	108.2	-383.0	871.8	768.9	102.95	8.468			
12,250.0	12,247.5	22,500.1	12,926.9	15.0	78.6	112.49	105.4	-383.0	833.8	731.3	102.42	8.141			
12,300.0	12,297.1	22,507.0	12,927.0	15.5	78.6	109.27	98.6	-383.0	797.3	695.5	101.83	7.830			
12,350.0	12,345.9	22,518.0	12,927.2	15.7	78.7	110.27	87.6	-383.0	762.9	661.8	101.15	7.543			
12,400.0	12,393.7	22,533.1	12,927.6	15.9	78.8	111.62	72.5	-382.9	731.0	630.6	100.42	7.279			
12,450.0	12,439.9	22,553.2	12,928.1	16.1	79.0	112.56	52.4	-382.9	701.8	602.1	99.67	7.041			
12,500.0	12,484.3	22,578.1	12,928.5	16.2	79.2	112.94	27.4	-382.9	675.6	576.7	98.90	6.831			
12,550.0	12,526.6	22,605.9	12,928.7	16.4	79.4	112.90	-0.3	-383.2	652.4	554.3	98.10	6.651			
12,600.0	12,566.4	22,636.2	12,928.5	16.6	79.6	112.45	-30.6	-383.6	632.6	535.3	97.30	6.501			

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

Anticollision Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Reference Site: BULLDOG
Site Error: 0.0 usft
Reference Well: STOVE PIPE FEDERAL COM #703H
Well Error: 3.0 usft
Reference Wellbore: OWB
Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM_Users
Offset TVD Reference: Offset Datum

Offset Design BULLDOG - FASCINATOR FED COM #704H - OWB - ACTUAL WELLPATH														Offset Site Error: 0.0 usft
Survey Program: 100-Standard Keeper 104, 11922-MWD+IFR1+MS														Offset Well Error: 3.0 usft
Reference	Offset	Semi Major Axis		Distance		Minimum		Separation		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		
12,650.0	12,603.4	22,669.5	12,928.3	16.7	79.9	111.62	-63.9	-384.1	615.9	519.4	96.54	6.380		
12,700.0	12,637.3	22,679.0	12,928.2	16.9	79.9	112.12	-73.4	-384.3	603.0	507.7	95.27	6.329 SF		
12,750.0	12,667.9	22,679.0	12,928.2	17.0	79.9	112.72	-73.4	-384.3	595.4	501.9	93.57	6.363		
12,791.0	12,690.4	22,679.0	12,928.2	17.1	79.9	112.83	-73.4	-384.3	593.5	501.5	91.99	6.452 CC, ES		
12,800.0	12,695.0	22,679.0	12,928.2	17.1	79.9	112.81	-73.4	-384.3	593.6	502.0	91.62	6.479		
12,850.0	12,718.2	22,679.0	12,928.2	17.2	79.9	112.37	-73.4	-384.3	597.5	508.1	89.45	6.680		
12,900.0	12,737.6	22,679.0	12,928.2	17.3	79.9	111.40	-73.4	-384.3	607.1	519.9	87.12	6.968		
12,950.0	12,752.8	22,679.0	12,928.2	17.3	79.9	109.89	-73.4	-384.3	621.9	537.2	84.72	7.341		
13,000.0	12,763.8	22,679.0	12,928.2	17.4	79.9	107.82	-73.4	-384.3	641.6	559.3	82.29	7.797		
13,050.0	12,770.6	22,679.0	12,928.2	17.4	79.9	105.17	-73.4	-384.3	665.6	585.7	79.91	8.329		
13,100.0	12,773.0	22,679.0	12,928.2	17.4	79.9	101.93	-73.4	-384.3	693.2	615.6	77.61	8.931		
13,105.2	12,773.0	22,679.0	12,928.2	17.4	79.9	101.55	-73.4	-384.3	696.2	618.9	77.38	8.998		
13,200.0	12,772.6	22,679.0	12,928.2	17.5	79.9	101.55	-73.4	-384.3	756.1	682.8	73.29	10.316		
13,300.0	12,772.1	22,679.0	12,928.2	17.6	79.9	101.55	-73.4	-384.3	826.3	756.9	69.40	11.908		
13,400.0	12,771.7	22,679.0	12,928.2	17.6	79.9	101.55	-73.4	-384.3	902.2	836.2	65.98	13.675		
13,500.0	12,771.2	22,679.0	12,928.2	17.8	79.9	101.55	-73.4	-384.3	982.4	919.4	63.03	15.587		
13,600.0	12,770.7	22,679.0	12,928.2	17.9	79.9	101.55	-73.4	-384.3	1,066.0	1,005.5	60.51	17.617		
13,700.0	12,770.3	22,679.0	12,928.2	18.0	79.9	101.55	-73.4	-384.3	1,152.2	1,093.8	58.37	19.740		
13,800.0	12,769.8	22,679.0	12,928.2	18.2	79.9	101.55	-73.4	-384.3	1,240.4	1,183.9	56.55	21.936		
13,900.0	12,769.4	22,679.0	12,928.2	18.4	79.9	101.55	-73.4	-384.3	1,330.4	1,275.4	55.00	24.188		
14,000.0	12,768.9	22,679.0	12,928.2	18.6	79.9	101.55	-73.4	-384.3	1,421.6	1,367.9	53.68	26.481		
14,100.0	12,768.5	22,679.0	12,928.2	18.9	79.9	101.55	-73.4	-384.3	1,514.0	1,461.4	52.56	28.804		
14,200.0	12,768.0	22,679.0	12,928.2	19.2	79.9	101.55	-73.4	-384.3	1,607.3	1,555.7	51.60	31.147		
14,300.0	12,767.5	22,679.0	12,928.2	19.5	79.9	101.55	-73.4	-384.3	1,701.3	1,650.6	50.78	33.502		
14,400.0	12,767.1	22,679.0	12,928.2	19.9	79.9	101.55	-73.4	-384.3	1,796.0	1,746.0	50.08	35.863		
14,500.0	12,766.6	22,679.0	12,928.2	20.3	79.9	101.55	-73.4	-384.3	1,891.3	1,841.8	49.48	38.225		
14,600.0	12,766.2	22,679.0	12,928.2	20.8	79.9	101.55	-73.4	-384.3	1,987.0	1,938.0	48.96	40.585		
14,700.0	12,765.7	22,679.0	12,928.2	21.3	79.9	101.55	-73.4	-384.3	2,083.1	2,034.6	48.51	42.939		
14,800.0	12,765.3	22,679.0	12,928.2	21.9	79.9	101.55	-73.4	-384.3	2,179.5	2,131.4	48.13	45.285		
14,900.0	12,764.8	22,679.0	12,928.2	22.4	79.9	101.55	-73.4	-384.3	2,276.3	2,228.5	47.80	47.620		
15,000.0	12,764.4	22,679.0	12,928.2	23.0	79.9	101.55	-73.4	-384.3	2,373.3	2,325.8	47.52	49.944		
15,100.0	12,763.9	22,679.0	12,928.2	23.6	79.9	101.55	-73.4	-384.3	2,470.6	2,423.3	47.28	52.255		
15,200.0	12,763.4	22,679.0	12,928.2	24.2	79.9	101.55	-73.4	-384.3	2,568.1	2,521.0	47.08	54.553		
15,300.0	12,763.0	22,679.0	12,928.2	24.9	79.9	101.55	-73.4	-384.3	2,665.8	2,618.9	46.90	56.835		
15,400.0	12,762.5	22,679.0	12,928.2	25.5	79.9	101.55	-73.4	-384.3	2,763.6	2,716.8	46.76	59.103		
15,500.0	12,762.1	22,679.0	12,928.2	26.1	79.9	101.55	-73.4	-384.3	2,861.6	2,814.9	46.64	61.355		
15,600.0	12,761.6	22,679.0	12,928.2	26.8	79.9	101.55	-73.4	-384.3	2,959.7	2,913.2	46.54	63.592		
15,700.0	12,761.2	22,679.0	12,928.2	27.5	79.9	101.55	-73.4	-384.3	3,057.9	3,011.5	46.46	65.812		
15,800.0	12,760.7	22,679.0	12,928.2	28.2	79.9	101.55	-73.4	-384.3	3,156.3	3,109.9	46.40	68.017		
15,900.0	12,760.2	22,679.0	12,928.2	28.8	79.9	101.55	-73.4	-384.3	3,254.7	3,208.4	46.36	70.204		
16,000.0	12,759.8	22,679.0	12,928.2	29.5	79.9	101.55	-73.4	-384.3	3,353.3	3,307.0	46.33	72.376		
16,100.0	12,759.3	22,679.0	12,928.2	30.2	79.9	101.55	-73.4	-384.3	3,451.9	3,405.6	46.32	74.531		
16,200.0	12,758.9	22,679.0	12,928.2	30.9	79.9	101.55	-73.4	-384.3	3,550.6	3,504.3	46.31	76.669		
16,300.0	12,758.4	22,679.0	12,928.2	31.6	79.9	101.55	-73.4	-384.3	3,649.4	3,603.1	46.32	78.790		
16,400.0	12,758.0	22,679.0	12,928.2	32.3	79.9	101.55	-73.4	-384.3	3,748.2	3,701.9	46.33	80.895		
16,500.0	12,757.5	22,679.0	12,928.2	33.0	79.9	101.55	-73.4	-384.3	3,847.1	3,800.8	46.36	82.984		
16,600.0	12,757.1	22,679.0	12,928.2	33.8	79.9	101.55	-73.4	-384.3	3,946.1	3,899.7	46.39	85.056		
16,700.0	12,756.6	22,679.0	12,928.2	34.5	79.9	101.55	-73.4	-384.3	4,045.1	3,998.7	46.44	87.111		
16,800.0	12,756.1	22,679.0	12,928.2	35.2	79.9	101.55	-73.4	-384.3	4,144.1	4,097.7	46.48	89.150		
16,900.0	12,755.7	22,679.0	12,928.2	35.9	79.9	101.55	-73.4	-384.3	4,243.2	4,196.7	46.54	91.173		
17,000.0	12,755.2	22,679.0	12,928.2	36.6	79.9	101.55	-73.4	-384.3	4,342.4	4,295.8	46.60	93.179		
17,100.0	12,754.8	22,679.0	12,928.2	37.4	79.9	101.55	-73.4	-384.3	4,441.6	4,394.9	46.67	95.169		

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 STOVE PIPE FEDERAL COM #703H
Project:	LEA COUNTY, NM	TVD Reference:	RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
Reference Site:	BULLDOG	MD Reference:	RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	STOVE PIPE FEDERAL COM #703H	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 - FASCINATOR FED COM #704H - OWB - ACTUAL WELLPATH												Offset Site Error:	0.0 usft
Survey Program: 100-Standard Keeper 104, 11922-MWD+IFR1+MS												Offset Well Error:	3.0 usft
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
17,200.0	12,754.3	22,679.0	12,928.2	38.1	79.9	101.55	-73.4	-384.3	4,540.8	4,494.0	46.74	97.142	
17,300.0	12,753.9	22,679.0	12,928.2	38.8	79.9	101.55	-73.4	-384.3	4,640.0	4,593.2	46.82	99.100	
17,400.0	12,753.4	22,679.0	12,928.2	39.5	79.9	101.55	-73.4	-384.3	4,739.3	4,692.4	46.90	101.041	
17,500.0	12,753.0	22,679.0	12,928.2	40.3	79.9	101.55	-73.4	-384.3	4,838.6	4,791.6	46.99	102.966	
17,600.0	12,752.5	22,679.0	12,928.2	41.0	79.9	101.55	-73.4	-384.3	4,937.9	4,890.9	47.08	104.876	
17,700.0	12,752.0	22,679.0	12,928.2	41.7	79.9	101.55	-73.4	-384.3	5,037.3	4,990.1	47.18	106.769	
17,800.0	12,751.6	22,679.0	12,928.2	42.5	79.9	101.55	-73.4	-384.3	5,136.7	5,089.4	47.28	108.647	
17,900.0	12,751.1	22,679.0	12,928.2	43.2	79.9	101.55	-73.4	-384.3	5,236.1	5,188.7	47.38	110.508	
18,000.0	12,750.7	22,679.0	12,928.2	43.9	79.9	101.55	-73.4	-384.3	5,335.5	5,288.1	47.49	112.355	
18,100.0	12,750.2	22,679.0	12,928.2	44.7	79.9	101.55	-73.4	-384.3	5,435.0	5,387.4	47.60	114.185	
18,200.0	12,749.8	22,679.0	12,928.2	45.4	79.9	101.55	-73.4	-384.3	5,534.5	5,486.8	47.71	116.001	
18,300.0	12,749.3	22,679.0	12,928.2	46.2	79.9	101.55	-73.4	-384.3	5,634.0	5,586.1	47.83	117.801	
18,400.0	12,748.8	22,679.0	12,928.2	46.9	79.9	101.55	-73.4	-384.3	5,733.5	5,685.5	47.94	119.585	
18,500.0	12,748.4	22,679.0	12,928.2	47.6	79.9	101.55	-73.4	-384.3	5,833.0	5,784.9	48.07	121.355	
18,600.0	12,747.9	22,679.0	12,928.2	48.4	79.9	101.55	-73.4	-384.3	5,932.5	5,884.4	48.19	123.109	
18,700.0	12,747.5	22,679.0	12,928.2	49.1	79.9	101.55	-73.4	-384.3	6,032.1	5,983.8	48.32	124.849	
18,800.0	12,747.0	22,679.0	12,928.2	49.9	79.9	101.55	-73.4	-384.3	6,131.7	6,083.2	48.44	126.573	
18,900.0	12,746.6	22,679.0	12,928.2	50.6	79.9	101.55	-73.4	-384.3	6,231.3	6,182.7	48.57	128.283	
19,000.0	12,746.1	22,679.0	12,928.2	51.4	79.9	101.55	-73.4	-384.3	6,330.9	6,282.1	48.71	129.979	
19,100.0	12,745.7	22,679.0	12,928.2	52.1	79.9	101.55	-73.4	-384.3	6,430.5	6,381.6	48.84	131.659	
19,200.0	12,745.2	22,679.0	12,928.2	52.9	79.9	101.55	-73.4	-384.3	6,530.1	6,481.1	48.98	133.326	
19,300.0	12,744.7	22,679.0	12,928.2	53.6	79.9	101.55	-73.4	-384.3	6,629.7	6,580.6	49.12	134.978	
19,400.0	12,744.3	22,679.0	12,928.2	54.3	79.9	101.55	-73.4	-384.3	6,729.4	6,680.1	49.26	136.615	
19,500.0	12,743.8	22,679.0	12,928.2	55.1	79.9	101.55	-73.4	-384.3	6,829.0	6,779.6	49.40	138.239	
19,600.0	12,743.4	22,679.0	12,928.2	55.8	79.9	101.55	-73.4	-384.3	6,928.7	6,879.1	49.54	139.849	
19,700.0	12,742.9	22,679.0	12,928.2	56.6	79.9	101.55	-73.4	-384.3	7,028.4	6,978.7	49.69	141.445	
19,800.0	12,742.5	22,679.0	12,928.2	57.3	79.9	101.55	-73.4	-384.3	7,128.1	7,078.2	49.84	143.027	
19,900.0	12,742.0	22,679.0	12,928.2	58.1	79.9	101.55	-73.4	-384.3	7,227.7	7,177.8	49.99	144.596	
20,000.0	12,741.5	22,679.0	12,928.2	58.8	79.9	101.55	-73.4	-384.3	7,327.4	7,277.3	50.14	146.151	
20,100.0	12,741.1	22,679.0	12,928.2	59.6	79.9	101.55	-73.4	-384.3	7,427.2	7,376.9	50.29	147.692	
20,200.0	12,740.6	22,679.0	12,928.2	60.3	79.9	101.55	-73.4	-384.3	7,526.9	7,476.4	50.44	149.221	
20,300.0	12,740.2	22,679.0	12,928.2	61.1	79.9	101.55	-73.4	-384.3	7,626.6	7,576.0	50.60	150.736	
20,400.0	12,739.7	22,679.0	12,928.2	61.9	79.9	101.55	-73.4	-384.3	7,726.3	7,675.6	50.75	152.238	
20,500.0	12,739.3	22,679.0	12,928.2	62.6	79.9	101.55	-73.4	-384.3	7,826.1	7,775.2	50.91	153.727	
20,600.0	12,738.8	22,679.0	12,928.2	63.4	79.9	101.55	-73.4	-384.3	7,925.8	7,874.7	51.07	155.204	
20,700.0	12,738.4	22,679.0	12,928.2	64.1	79.9	101.55	-73.4	-384.3	8,025.6	7,974.3	51.23	156.667	
20,800.0	12,737.9	22,679.0	12,928.2	64.9	79.9	101.55	-73.4	-384.3	8,125.3	8,073.9	51.39	158.119	
20,900.0	12,737.4	22,679.0	12,928.2	65.6	79.9	101.55	-73.4	-384.3	8,225.1	8,173.5	51.55	159.557	
21,000.0	12,737.0	22,679.0	12,928.2	66.4	79.9	101.55	-73.4	-384.3	8,324.9	8,273.1	51.71	160.984	
21,100.0	12,736.5	22,679.0	12,928.2	67.1	79.9	101.55	-73.4	-384.3	8,424.6	8,372.8	51.88	162.398	
21,200.0	12,736.1	22,679.0	12,928.2	67.9	79.9	101.55	-73.4	-384.3	8,524.4	8,472.4	52.04	163.800	
21,300.0	12,735.6	22,679.0	12,928.2	68.6	79.9	101.55	-73.4	-384.3	8,624.2	8,572.0	52.21	165.190	
21,400.0	12,735.2	22,679.0	12,928.2	69.4	79.9	101.55	-73.4	-384.3	8,724.0	8,671.6	52.37	166.568	
21,500.0	12,734.7	22,679.0	12,928.2	70.1	79.9	101.55	-73.4	-384.3	8,823.8	8,771.2	52.54	167.935	
21,600.0	12,734.2	22,679.0	12,928.2	70.9	79.9	101.55	-73.4	-384.3	8,923.6	8,870.9	52.71	169.290	
21,700.0	12,733.8	22,679.0	12,928.2	71.7	79.9	101.55	-73.4	-384.3	9,023.4	8,970.5	52.88	170.633	
21,800.0	12,733.3	22,679.0	12,928.2	72.4	79.9	101.55	-73.4	-384.3	9,123.2	9,070.1	53.05	171.965	
21,900.0	12,732.9	22,679.0	12,928.2	73.2	79.9	101.55	-73.4	-384.3	9,223.0	9,169.8	53.22	173.286	
22,000.0	12,732.4	22,679.0	12,928.2	73.9	79.9	101.55	-73.4	-384.3	9,322.8	9,269.4	53.40	174.595	
22,100.0	12,732.0	22,679.0	12,928.2	74.7	79.9	101.55	-73.4	-384.3	9,422.6	9,369.1	53.57	175.894	
22,200.0	12,731.5	22,679.0	12,928.2	75.4	79.9	101.55	-73.4	-384.3	9,522.5	9,468.7	53.74	177.181	
22,300.0	12,731.1	22,679.0	12,928.2	76.2	79.9	101.55	-73.4	-384.3	9,622.3	9,568.4	53.92	178.458	

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 STOVE PIPE FEDERAL COM #703H
Project:	LEA COUNTY, NM	TVD Reference:	RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
Reference Site:	BULLDOG	MD Reference:	RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	STOVE PIPE FEDERAL COM #703H	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 - FASCINATOR FED COM #704H - OWB - ACTUAL WELLPATH												Offset Site Error:	0.0 usft
Survey Program: 100-Standard Keeper 104, 11922-MWD+IFR1+MS												Offset Well Error:	3.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)					
22,400.0	12,730.6	22,679.0	12,928.2	77.0	79.9	101.55	-73.4	-384.3	9,722.1	9,668.0	54.09	179.724	
22,500.0	12,730.1	22,679.0	12,928.2	77.7	79.9	101.55	-73.4	-384.3	9,822.0	9,767.7	54.27	180.979	
22,600.0	12,729.7	22,679.0	12,928.2	78.5	79.9	101.55	-73.4	-384.3	9,921.8	9,867.3	54.45	182.224	

Anticollision Report

Company: NORTHERN DELAWARE BASIN
 Project: LEA COUNTY, NM
 Reference Site: BULLDOG
 Site Error: 0.0 usft
 Reference Well: STOVE PIPE FEDERAL COM #703H
 Well Error: 3.0 usft
 Reference Wellbore: OWB
 Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
 TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
 MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: EDM_Users
 Offset TVD Reference: Offset Datum

Offset Design BULLDOG - STOVE PIPE FEDERAL COM #601H - OWB - PWP1												Offset Site Error:	0.0 usft
Survey Program: 0-Standard Keeper 104, 12052-MWD+IFR1+MS												Offset Well Error:	3.0 usft
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		Separation Factor		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	5.5	-5.5	3.0	3.0	89.58	4.7	644.9	644.9				
100.0	100.0	105.5	94.5	3.0	3.0	89.58	4.7	644.9	644.9	638.9	6.00	107.482	
200.0	200.0	205.5	194.5	3.0	3.0	89.58	4.7	644.9	644.9	638.9	6.00	107.431	
300.0	300.0	305.5	294.5	3.0	3.0	89.58	4.7	644.9	644.9	638.9	6.01	107.322	
400.0	400.0	405.5	394.5	3.0	3.0	89.58	4.7	644.9	644.9	638.9	6.02	107.156	
500.0	500.0	505.5	494.5	3.1	3.1	89.58	4.7	644.9	644.9	638.9	6.03	106.933	
600.0	600.0	605.5	594.5	3.1	3.1	89.58	4.7	644.9	644.9	638.9	6.05	106.655	
700.0	700.0	705.5	694.5	3.1	3.1	89.58	4.7	644.9	644.9	638.9	6.07	106.322	
800.0	800.0	805.5	794.5	3.2	3.2	89.58	4.7	644.9	644.9	638.8	6.09	105.937	
900.0	900.0	905.5	894.5	3.2	3.2	89.58	4.7	644.9	644.9	638.8	6.11	105.501	
1,000.0	1,000.0	1,005.5	994.5	3.2	3.2	89.58	4.7	644.9	644.9	638.8	6.14	105.016	
1,100.0	1,100.0	1,105.5	1,094.5	3.3	3.3	89.58	4.7	644.9	644.9	638.7	6.17	104.484	
1,200.0	1,200.0	1,205.5	1,194.5	3.4	3.4	89.58	4.7	644.9	644.9	638.7	6.21	103.907	
1,300.0	1,300.0	1,305.5	1,294.5	3.4	3.4	89.58	4.7	644.9	644.9	638.7	6.24	103.288	
1,400.0	1,400.0	1,405.5	1,394.5	3.5	3.5	89.58	4.7	644.9	644.9	638.6	6.28	102.629	
1,500.0	1,500.0	1,505.5	1,494.5	3.5	3.6	89.58	4.7	644.9	644.9	638.6	6.33	101.933	
1,600.0	1,600.0	1,605.5	1,594.5	3.6	3.6	89.58	4.7	644.9	644.9	638.5	6.37	101.203	
1,700.0	1,700.0	1,705.5	1,694.5	3.7	3.7	89.58	4.7	644.9	644.9	638.5	6.42	100.440	
1,800.0	1,800.0	1,805.5	1,794.5	3.8	3.8	89.58	4.7	644.9	644.9	638.4	6.47	99.648	
1,900.0	1,900.0	1,905.5	1,894.5	3.9	3.9	89.58	4.7	644.9	644.9	638.4	6.53	98.829	
2,000.0	2,000.0	2,005.5	1,994.5	3.9	3.9	89.58	4.7	644.9	644.9	638.3	6.58	97.986	
2,100.0	2,100.0	2,105.5	2,094.5	4.0	4.0	89.58	4.7	644.9	644.9	638.3	6.64	97.121	
2,200.0	2,200.0	2,205.5	2,194.5	4.1	4.1	89.58	4.7	644.9	644.9	638.2	6.70	96.236	
2,300.0	2,300.0	2,305.5	2,294.5	4.2	4.2	89.58	4.7	644.9	644.9	638.2	6.76	95.335	
2,400.0	2,400.0	2,405.5	2,394.5	4.3	4.3	89.58	4.7	644.9	644.9	638.1	6.83	94.419	
2,500.0	2,500.0	2,505.5	2,494.5	4.4	4.4	89.58	4.7	644.9	644.9	638.0	6.90	93.491	
2,600.0	2,600.0	2,605.5	2,594.5	4.5	4.5	89.58	4.7	644.9	644.9	637.9	6.97	92.553	
2,700.0	2,700.0	2,705.5	2,694.5	4.6	4.6	89.58	4.7	644.9	644.9	637.9	7.04	91.606	
2,800.0	2,800.0	2,805.5	2,794.5	4.7	4.7	89.58	4.7	644.9	644.9	637.8	7.11	90.652	
2,900.0	2,900.0	2,905.5	2,894.5	4.8	4.8	89.58	4.7	644.9	644.9	637.7	7.19	89.694	
3,000.0	3,000.0	3,005.5	2,994.5	4.9	4.9	89.58	4.7	644.9	644.9	637.6	7.27	88.733	
3,100.0	3,100.0	3,105.5	3,094.5	5.0	5.0	89.58	4.7	644.9	644.9	637.6	7.35	87.770	
3,200.0	3,200.0	3,205.5	3,194.5	5.1	5.1	89.58	4.7	644.9	644.9	637.5	7.43	86.808	
3,300.0	3,300.0	3,305.5	3,294.5	5.2	5.2	89.58	4.7	644.9	644.9	637.4	7.51	85.846	
3,400.0	3,400.0	3,405.5	3,394.5	5.3	5.3	89.58	4.7	644.9	644.9	637.3	7.60	84.888	
3,500.0	3,500.0	3,505.5	3,494.5	5.4	5.4	89.58	4.7	644.9	644.9	637.2	7.68	83.933	
3,600.0	3,600.0	3,605.5	3,594.5	5.5	5.5	89.58	4.7	644.9	644.9	637.1	7.77	82.982	
3,700.0	3,700.0	3,705.5	3,694.5	5.7	5.7	89.58	4.7	644.9	644.9	637.1	7.86	82.038	
3,800.0	3,800.0	3,805.5	3,794.5	5.8	5.8	89.58	4.7	644.9	644.9	637.0	7.95	81.100	
3,900.0	3,900.0	3,905.5	3,894.5	5.9	5.9	89.58	4.7	644.9	644.9	636.9	8.04	80.169	
4,000.0	4,000.0	4,005.5	3,994.5	6.0	6.0	89.58	4.7	644.9	644.9	636.8	8.14	79.246	
4,100.0	4,100.0	4,105.5	4,094.5	6.1	6.1	89.58	4.7	644.9	644.9	636.7	8.23	78.332	
4,200.0	4,200.0	4,205.5	4,194.5	6.2	6.2	89.58	4.7	644.9	644.9	636.6	8.33	77.427	
4,300.0	4,300.0	4,305.5	4,294.5	6.3	6.3	89.58	4.7	644.9	644.9	636.5	8.43	76.531	
4,400.0	4,400.0	4,405.5	4,394.5	6.5	6.5	89.58	4.7	644.9	644.9	636.4	8.53	75.646	
4,500.0	4,500.0	4,505.5	4,494.5	6.6	6.6	89.58	4.7	644.9	644.9	636.3	8.63	74.771	
4,600.0	4,600.0	4,605.5	4,594.5	6.7	6.7	89.58	4.7	644.9	644.9	636.2	8.73	73.907	
4,700.0	4,700.0	4,705.5	4,694.5	6.8	6.8	89.58	4.7	644.9	644.9	636.1	8.83	73.054	
4,800.0	4,800.0	4,805.5	4,794.5	6.9	6.9	89.58	4.7	644.9	644.9	636.0	8.93	72.212	
4,900.0	4,900.0	4,905.5	4,894.5	7.0	7.1	89.58	4.7	644.9	644.9	635.9	9.03	71.381	
5,000.0	5,000.0	5,005.5	4,994.5	7.2	7.2	89.58	4.7	644.9	644.9	635.8	9.14	70.562	
5,100.0	5,100.0	5,105.5	5,094.5	7.3	7.3	89.58	4.7	644.9	644.9	635.7	9.25	69.755	

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

Anticollision Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Reference Site: BULLDOG
Site Error: 0.0 usft
Reference Well: STOVE PIPE FEDERAL COM #703H
Well Error: 3.0 usft
Reference Wellbore: OWB
Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM_Users
Offset TVD Reference: Offset Datum

Offset Design BULLDOG - STOVE PIPE FEDERAL COM #601H - OWB - PWP1													Offset Site Error: 0.0 usft
Survey Program: 0-Standard Keeper 104, 12052-MVD+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 Tooface (")	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
5,200.0	5,200.0	5,205.5	5,194.5	7.4	7.4	89.58	4.7	644.9	644.9	635.6	9.35	68.959	
5,300.0	5,300.0	5,305.5	5,294.5	7.5	7.5	89.58	4.7	644.9	644.9	635.5	9.46	68.175	
5,400.0	5,400.0	5,405.5	5,394.5	7.6	7.7	89.58	4.7	644.9	644.9	635.3	9.57	67.403	
5,500.0	5,500.0	5,494.5	5,494.5	7.8	7.8	89.58	4.7	644.9	644.9	635.2	9.67	66.684	
5,577.1	5,577.1	5,572.0	5,572.0	7.8	7.8	31.89	3.8	644.9	644.0	634.3	9.76	66.010	
5,600.0	5,600.0	5,595.0	5,595.0	7.9	7.8	31.98	3.1	644.9	643.5	633.7	9.78	65.784	
5,700.0	5,699.9	5,695.2	5,695.0	7.9	7.8	32.56	-1.9	644.8	641.1	631.2	9.89	64.803	
5,800.0	5,799.9	5,805.2	5,794.4	8.0	7.7	33.37	-9.5	644.6	638.8	628.8	10.01	63.806	
5,900.0	5,899.9	5,905.6	5,893.6	8.1	7.7	34.20	-17.3	644.5	636.6	626.5	10.13	62.864	
6,000.0	5,999.8	6,006.1	5,992.9	8.2	7.6	35.03	-25.0	644.3	634.6	624.3	10.24	61.944	
6,100.0	6,099.8	6,093.5	6,092.1	8.3	7.6	35.87	-32.7	644.2	632.7	622.3	10.36	61.092	
6,200.0	6,199.8	6,207.0	6,191.4	8.4	7.5	36.72	-40.5	644.0	630.9	620.4	10.48	60.175	
6,300.0	6,299.7	6,307.5	6,290.6	8.5	7.5	37.56	-48.2	643.8	629.3	618.7	10.61	59.327	
6,400.0	6,399.7	6,407.9	6,389.8	8.6	7.5	38.42	-55.9	643.7	627.8	617.1	10.73	58.503	
6,500.0	6,499.7	6,508.4	6,489.1	8.6	7.4	39.27	-63.6	643.5	626.4	615.6	10.86	57.705	
6,600.0	6,599.6	6,608.8	6,588.3	8.7	7.4	40.13	-71.4	643.4	625.2	614.3	10.98	56.931	
6,700.0	6,699.6	6,709.3	6,687.6	8.8	7.4	40.99	-79.1	643.2	624.2	613.1	11.11	56.183	
6,800.0	6,799.5	6,809.7	6,786.8	8.9	7.4	41.86	-86.8	643.1	623.3	612.0	11.24	55.460	
6,900.0	6,899.5	6,889.8	6,886.1	9.0	7.3	42.73	-94.6	642.9	622.5	611.1	11.36	54.820	
7,000.0	6,999.5	6,989.4	6,985.3	9.1	7.3	43.60	-102.3	642.8	621.9	610.4	11.48	54.147	
7,100.0	7,099.4	7,088.9	7,084.6	9.2	7.3	44.47	-110.0	642.6	621.4	609.8	11.61	53.499	
7,200.0	7,199.4	7,188.5	7,183.8	9.3	7.3	45.34	-117.7	642.5	621.0	609.3	11.75	52.875	
7,300.0	7,299.4	7,288.0	7,283.1	9.4	7.3	46.21	-125.5	642.3	620.8	609.0	11.88	52.273	
7,384.9	7,384.2	7,372.5	7,367.3	9.5	7.3	46.95	-132.0	642.2	620.8	608.8	11.99	51.781	
7,400.0	7,399.3	7,387.6	7,382.3	9.5	7.3	47.09	-133.2	642.1	620.8	608.8	12.01	51.695	
7,500.0	7,499.3	7,487.1	7,481.6	9.6	7.3	47.96	-140.9	642.0	620.9	608.7	12.14	51.139	
7,600.0	7,599.3	7,586.7	7,580.8	9.7	7.2	48.83	-148.7	641.8	621.1	608.8	12.27	50.605	
7,700.0	7,699.2	7,686.2	7,680.1	9.8	7.2	49.70	-156.4	641.7	621.5	609.1	12.41	50.092	
7,800.0	7,799.2	7,785.8	7,779.3	9.9	7.2	50.58	-164.1	641.5	622.0	609.5	12.54	49.600	
7,900.0	7,899.1	7,885.3	7,878.5	10.0	7.2	51.44	-171.8	641.4	622.7	610.0	12.68	49.128	
8,000.0	7,999.1	7,984.8	7,977.8	10.1	7.2	52.31	-179.6	641.2	623.5	610.7	12.81	48.674	
8,100.0	8,099.1	8,084.4	8,077.0	10.2	7.2	53.18	-187.3	641.1	624.5	611.5	12.95	48.240	
8,200.0	8,199.0	8,183.9	8,176.3	10.3	7.2	54.04	-195.0	640.9	625.6	612.5	13.08	47.824	
8,300.0	8,299.0	8,283.5	8,275.5	10.4	7.3	54.90	-202.7	640.8	626.8	613.6	13.22	47.425	
8,400.0	8,399.0	8,383.0	8,374.8	10.5	7.3	55.75	-210.5	640.6	628.2	614.9	13.35	47.043	
8,500.0	8,498.9	8,482.6	8,474.0	10.6	7.3	56.60	-218.2	640.4	629.8	616.3	13.49	46.677	
8,600.0	8,598.9	8,582.1	8,573.3	10.7	7.3	57.45	-225.9	640.3	631.4	617.8	13.63	46.326	
8,700.0	8,698.9	8,681.7	8,672.5	10.8	7.3	58.29	-233.7	640.1	633.2	619.5	13.77	45.990	
8,800.0	8,798.8	8,781.2	8,771.8	11.0	7.3	59.13	-241.4	640.0	635.2	621.3	13.91	45.669	
8,900.0	8,898.8	8,880.8	8,871.0	11.1	7.4	59.96	-249.1	639.8	637.3	623.2	14.05	45.361	
9,000.0	8,998.8	8,980.3	8,970.3	11.2	7.4	60.79	-256.8	639.7	639.5	625.3	14.19	45.067	
9,100.0	9,098.7	9,079.9	9,069.5	11.3	7.4	61.61	-264.6	639.5	641.8	627.5	14.33	44.785	
9,200.0	9,198.7	9,179.4	9,168.8	11.4	7.4	62.42	-272.3	639.4	644.3	629.8	14.47	44.515	
9,300.0	9,298.6	9,279.0	9,268.0	11.5	7.5	63.23	-280.0	639.2	646.9	632.3	14.62	44.257	
9,400.0	9,398.6	9,378.5	9,367.2	11.6	7.5	64.03	-287.8	639.1	649.7	634.9	14.76	44.009	
9,500.0	9,498.6	9,478.1	9,466.5	11.7	7.5	64.83	-295.5	638.9	652.5	637.6	14.91	43.772	
9,600.0	9,598.5	9,577.6	9,565.7	11.8	7.6	65.61	-303.2	638.7	655.5	640.5	15.05	43.545	
9,700.0	9,698.5	9,677.1	9,665.0	11.9	7.6	66.39	-310.9	638.6	658.6	643.4	15.20	43.327	
9,800.0	9,798.5	9,776.7	9,764.2	12.1	7.7	67.17	-318.7	638.4	661.9	646.5	15.35	43.119	
9,900.0	9,898.4	9,876.2	9,863.5	12.2	7.8	67.93	-326.4	638.3	665.2	649.7	15.50	42.919	
10,000.0	9,998.4	9,975.8	9,962.7	12.3	7.9	68.69	-334.1	638.1	668.7	653.1	15.65	42.728	
10,100.0	10,098.4	10,075.3	10,062.0	12.4	8.0	69.44	-341.9	638.0	672.3	656.5	15.80	42.544	

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

Anticollision Report

Company: NORTHERN DELAWARE BASIN
 Project: LEA COUNTY, NM
 Reference Site: BULLDOG
 Site Error: 0.0 usft
 Reference Well: STOVE PIPE FEDERAL COM #703H
 Well Error: 3.0 usft
 Reference Wellbore: OWB
 Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
 TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
 MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: EDM_Users
 Offset TVD Reference: Offset Datum

Offset Design BULLDOG - STOVE PIPE FEDERAL COM #601H - OWB - PWP1													Offset Site Error: 0.0 usft
Survey Program: 0-Standard Keeper 104, 12052-MWD+IFR1+MS													Offset Well Error: 3.0 usft
Reference	Offset	Semi Major Axis		Distance		Minimum		Separation		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	10,198.3	10,174.9	10,161.2	12.5	8.0	70.18	-349.6	637.8	676.0	660.0	15.96	42.368	
10,300.0	10,298.3	10,274.4	10,260.5	12.6	8.1	70.91	-357.3	637.7	679.8	663.7	16.11	42.199	
10,400.0	10,398.2	10,374.0	10,359.7	12.7	8.2	71.64	-365.0	637.5	683.7	667.5	16.27	42.036	
10,500.0	10,498.2	10,473.5	10,459.0	12.8	8.3	72.36	-372.8	637.4	687.8	671.4	16.42	41.880	
10,600.0	10,598.2	10,573.1	10,558.2	13.0	8.4	73.06	-380.5	637.2	691.9	675.4	16.58	41.730	
10,700.0	10,698.1	10,672.6	10,657.5	13.1	8.5	73.76	-388.2	637.0	696.2	679.4	16.74	41.586	
10,800.0	10,798.1	10,772.2	10,756.7	13.2	8.5	74.46	-395.9	636.9	700.5	683.6	16.90	41.448	
10,900.0	10,898.1	10,871.7	10,855.9	13.3	8.6	75.14	-403.7	636.7	705.0	687.9	17.06	41.315	
11,000.0	10,998.0	10,971.3	10,955.2	13.4	8.7	75.81	-411.4	636.6	709.5	692.3	17.23	41.186	
11,100.0	11,098.0	11,070.8	11,054.4	13.5	8.8	76.48	-419.1	636.4	714.2	696.8	17.39	41.063	
11,200.0	11,198.0	11,170.4	11,153.7	13.7	8.9	77.14	-426.9	636.3	719.0	701.4	17.56	40.944	
11,300.0	11,297.9	11,269.9	11,252.9	13.8	9.0	77.78	-434.6	636.1	723.8	706.1	17.73	40.830	
11,400.0	11,397.9	11,369.5	11,352.2	13.9	9.1	78.42	-442.3	636.0	728.7	710.8	17.90	40.719	
11,500.0	11,497.8	11,469.0	11,451.4	14.0	9.2	79.05	-450.0	635.8	733.7	715.7	18.07	40.613	
11,600.0	11,597.8	11,568.5	11,550.7	14.1	9.3	79.68	-457.8	635.7	738.9	720.6	18.24	40.510	
11,700.0	11,697.8	11,668.1	11,649.9	14.2	9.4	80.29	-465.5	635.5	744.1	725.6	18.41	40.411	
11,800.0	11,797.7	11,767.6	11,749.2	14.4	9.4	80.90	-473.2	635.3	749.3	730.8	18.59	40.315	
11,900.0	11,897.7	11,867.2	11,848.4	14.5	9.5	81.49	-481.0	635.2	754.7	735.9	18.76	40.222	
12,000.0	11,997.7	11,966.7	11,947.7	14.6	9.6	82.08	-488.7	635.0	760.2	741.2	18.94	40.133	
12,100.0	12,097.6	12,051.9	12,032.6	14.7	9.7	82.58	-495.3	634.9	765.8	746.6	19.20	39.876	
12,194.5	12,192.1	12,100.0	12,080.3	14.8	9.8	82.95	-501.0	634.8	774.9	755.1	19.81	39.125	
12,200.0	12,197.6	12,100.0	12,080.3	14.8	9.8	82.50	-501.0	634.8	775.6	755.8	19.84	39.086	
12,250.0	12,247.5	12,131.8	12,111.5	15.0	10.0	-22.63	-507.0	634.7	780.8	760.5	20.30	38.463	
12,300.0	12,297.1	12,150.0	12,129.2	15.5	10.2	-30.07	-511.2	634.6	784.4	763.4	21.08	37.216	
12,350.0	12,345.9	12,179.9	12,158.1	15.7	10.4	-32.38	-519.3	634.5	786.1	764.2	21.91	35.881	
12,400.0	12,393.7	12,200.0	12,177.1	15.9	10.6	-33.59	-525.6	634.3	786.1	763.1	23.01	34.170	
12,450.0	12,439.9	12,228.1	12,203.4	16.1	10.8	-34.43	-535.5	634.2	784.2	760.2	23.98	32.709	
12,500.0	12,484.3	12,250.0	12,223.5	16.2	11.0	-35.17	-544.2	634.0	780.5	755.4	25.11	31.079	
12,550.0	12,526.6	12,276.2	12,247.2	16.4	11.2	-35.94	-555.5	633.8	775.1	748.9	26.14	29.646	
12,600.0	12,566.4	12,300.0	12,268.2	16.6	11.3	-36.78	-566.7	633.6	767.8	740.6	27.23	28.196	
12,650.0	12,603.4	12,324.3	12,289.1	16.7	11.5	-37.73	-579.0	633.4	758.9	730.6	28.28	26.836	
12,700.0	12,637.3	12,350.0	12,310.7	16.9	11.7	-38.85	-593.0	633.1	748.2	719.0	29.24	25.591	
12,750.0	12,667.9	12,372.3	12,328.9	17.0	11.8	-40.09	-605.9	632.9	736.0	705.8	30.25	24.327	
12,800.0	12,695.0	12,400.0	12,350.7	17.1	12.0	-41.60	-622.9	632.6	722.3	691.3	31.01	23.289	
12,850.0	12,718.2	12,420.2	12,366.1	17.2	12.1	-43.18	-636.0	632.4	707.1	675.1	31.94	22.135	
12,900.0	12,737.6	12,450.0	12,388.0	17.3	12.2	-45.20	-656.2	632.0	690.6	658.2	32.42	21.300	
12,950.0	12,752.8	12,468.0	12,400.7	17.3	12.3	-47.16	-668.9	631.8	672.9	639.7	33.21	20.263	
13,000.0	12,763.8	12,500.0	12,422.2	17.4	12.5	-49.81	-692.6	631.4	654.3	621.0	33.32	19.639	
13,050.0	12,770.6	12,515.5	12,432.2	17.4	12.6	-52.13	-704.5	631.2	634.7	600.8	33.88	18.736	
13,100.0	12,773.0	12,539.2	12,446.8	17.4	12.7	-55.01	-723.1	630.8	614.6	580.6	33.93	18.115	
13,105.2	12,773.0	12,541.6	12,448.2	17.4	12.7	-55.32	-725.1	630.8	612.4	578.5	33.91	18.058	
13,200.0	12,772.6	12,589.1	12,474.9	17.5	12.8	-57.59	-764.3	630.1	577.1	543.6	33.58	17.188	
13,300.0	12,772.1	12,650.0	12,504.2	17.6	13.0	-60.23	-817.6	629.2	547.3	514.4	32.95	16.609	
13,400.0	12,771.7	12,707.1	12,526.4	17.6	13.2	-62.32	-870.2	628.3	524.8	492.0	32.71	16.043	
13,500.0	12,771.2	12,774.5	12,545.7	17.8	13.3	-64.21	-934.7	627.1	509.0	476.5	32.53	15.649	
13,600.0	12,770.7	12,845.9	12,557.8	17.9	13.4	-65.40	-1,005.0	625.9	499.3	466.5	32.75	15.243	
13,700.0	12,770.3	12,921.3	12,561.1	18.0	13.5	-65.70	-1,080.3	624.6	495.0	461.5	33.48	14.784	
13,800.0	12,769.8	13,012.3	12,561.0	18.2	13.6	-65.70	-1,171.3	624.7	494.3	460.0	34.21	14.446	
13,900.0	12,769.4	13,112.3	12,560.9	18.4	13.7	-65.74	-1,271.3	625.4	494.1	459.2	34.89	14.161	
14,000.0	12,768.9	13,212.3	12,560.8	18.6	13.7	-65.78	-1,371.3	626.1	494.0	458.3	35.63	13.865	
14,100.0	12,768.5	13,312.3	12,560.6	18.9	13.8	-65.81	-1,471.3	626.9	493.8	457.4	36.41	13.562	
14,200.0	12,768.0	13,412.3	12,560.5	19.2	13.9	-65.85	-1,571.3	627.6	493.7	456.4	37.24	13.255	

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

Anticollision Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Reference Site: BULLDOG
Site Error: 0.0 usft
Reference Well: STOVE PIPE FEDERAL COM #703H
Well Error: 3.0 usft
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Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM_Users
Offset TVD Reference: Offset Datum

Offset Design BULLDOG - STOVE PIPE FEDERAL COM #601H - OWB - PWP1													Offset Site Error: 0.0 usft
Survey Program: 0-Standard Keeper 104, 12052-MWD+IFR1+MS													Offset Well Error: 3.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
14,300.0	12,767.5	13,512.3	12,560.4	19.5	14.1	-65.89	-1,671.3	628.3	493.5	455.4	38.12	12.947	
14,400.0	12,767.1	13,612.3	12,560.3	19.9	14.3	-65.93	-1,771.3	629.0	493.4	454.3	39.04	12.638	
14,500.0	12,766.6	13,712.3	12,560.2	20.3	14.8	-65.96	-1,871.3	629.7	493.2	453.2	39.99	12.332	
14,600.0	12,766.2	13,812.3	12,560.1	20.8	15.3	-66.00	-1,971.3	630.4	493.1	452.1	40.99	12.030	
14,700.0	12,765.7	13,912.3	12,560.0	21.3	15.9	-66.04	-2,071.3	631.2	492.9	450.9	42.01	11.732	
14,800.0	12,765.3	14,012.3	12,559.9	21.9	16.5	-66.07	-2,171.3	631.9	492.8	449.7	43.07	11.441	
14,900.0	12,764.8	14,112.3	12,559.8	22.4	17.1	-66.11	-2,271.3	632.6	492.6	448.5	44.16	11.156	
15,000.0	12,764.4	14,212.3	12,559.7	23.0	17.8	-66.15	-2,371.3	633.3	492.5	447.2	45.27	10.879	
15,100.0	12,763.9	14,312.3	12,559.6	23.6	18.4	-66.19	-2,471.3	634.0	492.3	445.9	46.41	10.609	
15,200.0	12,763.4	14,412.3	12,559.5	24.2	19.1	-66.22	-2,571.3	634.8	492.2	444.6	47.57	10.347	
15,300.0	12,763.0	14,512.3	12,559.4	24.9	19.7	-66.26	-2,671.3	635.5	492.0	443.3	48.75	10.093	
15,400.0	12,762.5	14,612.3	12,559.3	25.5	20.4	-66.30	-2,771.2	636.2	491.9	441.9	49.95	9.847	
15,500.0	12,762.1	14,712.3	12,559.2	26.1	21.1	-66.34	-2,871.2	636.9	491.7	440.6	51.17	9.609	
15,600.0	12,761.6	14,812.3	12,559.1	26.8	21.8	-66.37	-2,971.2	637.6	491.6	439.2	52.41	9.380	
15,700.0	12,761.2	14,912.3	12,559.0	27.5	22.4	-66.41	-3,071.2	638.4	491.5	437.8	53.66	9.158	
15,800.0	12,760.7	15,012.3	12,558.9	28.2	23.1	-66.45	-3,171.2	639.1	491.3	436.4	54.93	8.944	
15,900.0	12,760.2	15,112.3	12,558.8	28.8	23.8	-66.49	-3,271.2	639.8	491.2	434.9	56.21	8.737	
16,000.0	12,759.8	15,212.3	12,558.7	29.5	24.5	-66.52	-3,371.2	640.5	491.0	433.5	57.51	8.538	
16,100.0	12,759.3	15,312.3	12,558.6	30.2	25.2	-66.56	-3,471.2	641.2	490.9	432.1	58.82	8.346	
16,200.0	12,758.9	15,412.2	12,558.5	30.9	25.9	-66.60	-3,571.2	642.0	490.7	430.6	60.13	8.161	
16,300.0	12,758.4	15,512.2	12,558.4	31.6	26.7	-66.64	-3,671.2	642.7	490.6	429.1	61.46	7.982	
16,400.0	12,758.0	15,612.2	12,558.3	32.3	27.4	-66.67	-3,771.2	643.4	490.4	427.6	62.80	7.810	
16,500.0	12,757.5	15,712.2	12,558.2	33.0	28.1	-66.71	-3,871.2	644.1	490.3	426.1	64.15	7.643	
16,600.0	12,757.1	15,812.2	12,558.1	33.8	28.8	-66.75	-3,971.2	644.8	490.2	424.7	65.50	7.483	
16,700.0	12,756.6	15,912.2	12,558.0	34.5	29.5	-66.79	-4,071.2	645.6	490.0	423.1	66.86	7.328	
16,800.0	12,756.1	16,012.2	12,557.9	35.2	30.2	-66.82	-4,171.2	646.3	489.9	421.6	68.24	7.179	
16,900.0	12,755.7	16,112.2	12,557.7	35.9	31.0	-66.86	-4,271.2	647.0	489.7	420.1	69.61	7.035	
17,000.0	12,755.2	16,212.2	12,557.6	36.6	31.7	-66.90	-4,371.2	647.7	489.6	418.6	71.00	6.896	
17,100.0	12,754.8	16,312.2	12,557.5	37.4	32.4	-66.94	-4,471.2	648.4	489.4	417.0	72.39	6.761	
17,200.0	12,754.3	16,412.2	12,557.4	38.1	33.2	-66.97	-4,571.2	649.1	489.3	415.5	73.79	6.631	
17,300.0	12,753.9	16,512.2	12,557.3	38.8	33.9	-67.01	-4,671.2	649.9	489.2	414.0	75.19	6.506	
17,400.0	12,753.4	16,612.2	12,557.2	39.5	34.6	-67.05	-4,771.2	650.6	489.0	412.4	76.60	6.384	
17,500.0	12,753.0	16,712.2	12,557.1	40.3	35.4	-67.09	-4,871.2	651.3	488.9	410.9	78.01	6.267	
17,600.0	12,752.5	16,812.2	12,557.0	41.0	36.1	-67.13	-4,971.2	652.0	488.7	409.3	79.43	6.153	
17,700.0	12,752.0	16,912.2	12,556.9	41.7	36.8	-67.16	-5,071.2	652.7	488.6	407.7	80.85	6.043	
17,800.0	12,751.6	17,012.2	12,556.8	42.5	37.6	-67.20	-5,171.2	653.5	488.4	406.2	82.28	5.937	
17,900.0	12,751.1	17,112.2	12,556.7	43.2	38.3	-67.24	-5,271.2	654.2	488.3	404.6	83.71	5.833	
18,000.0	12,750.7	17,212.2	12,556.6	43.9	39.1	-67.28	-5,371.2	654.9	488.2	403.0	85.14	5.734	
18,100.0	12,750.2	17,312.2	12,556.5	44.7	39.8	-67.32	-5,471.2	655.6	488.0	401.4	86.58	5.637	
18,200.0	12,749.8	17,412.2	12,556.4	45.4	40.5	-67.35	-5,571.2	656.3	487.9	399.9	88.02	5.543	
18,300.0	12,749.3	17,512.2	12,556.3	46.2	41.3	-67.39	-5,671.2	657.1	487.7	398.3	89.46	5.452	
18,400.0	12,748.8	17,612.2	12,556.2	46.9	42.0	-67.43	-5,771.2	657.8	487.6	396.7	90.91	5.363	
18,500.0	12,748.4	17,712.2	12,556.1	47.6	42.8	-67.47	-5,871.1	658.5	487.5	395.1	92.36	5.278	
18,600.0	12,747.9	17,812.2	12,556.0	48.4	43.5	-67.51	-5,971.1	659.2	487.3	393.5	93.82	5.194	
18,700.0	12,747.5	17,912.2	12,555.9	49.1	44.3	-67.54	-6,071.1	659.9	487.2	391.9	95.27	5.114	
18,800.0	12,747.0	18,012.2	12,555.8	49.9	45.0	-67.58	-6,171.1	660.7	487.0	390.3	96.73	5.035	
18,900.0	12,746.6	18,112.2	12,555.7	50.6	45.8	-67.62	-6,271.1	661.4	486.9	388.7	98.19	4.959	
19,000.0	12,746.1	18,212.2	12,555.6	51.4	46.5	-67.66	-6,371.1	662.1	486.8	387.1	99.65	4.885	
19,100.0	12,745.7	18,312.2	12,555.5	52.1	47.3	-67.70	-6,471.1	662.8	486.6	385.5	101.12	4.812	
19,200.0	12,745.2	18,412.2	12,555.4	52.9	48.0	-67.73	-6,571.1	663.5	486.5	383.9	102.59	4.742	
19,300.0	12,744.7	18,512.2	12,555.3	53.6	48.8	-67.77	-6,671.1	664.3	486.4	382.3	104.06	4.674	
19,400.0	12,744.3	18,612.2	12,555.2	54.3	49.5	-67.81	-6,771.1	665.0	486.2	380.7	105.53	4.607	

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

Anticollision Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Reference Site: BULLDOG
Site Error: 0.0 usft
Reference Well: STOVE PIPE FEDERAL COM #703H
Well Error: 3.0 usft
Reference Wellbore: OWB
Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM_Users
Offset TVD Reference: Offset Datum

Offset Design BULLDOG - STOVE PIPE FEDERAL COM #601H - OWB - PWP1													Offset Site Error:	0.0 usft
Survey Program: 0-Standard Keeper 104, 12052-MWD+IFR1+MS													Offset Well Error:	3.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)						
19,500.0	12,743.8	18,712.2	12,555.1	55.1	50.3	-67.85	-6,871.1	665.7	486.1	379.1	107.00	4.543		
19,600.0	12,743.4	18,812.2	12,554.9	55.8	51.0	-67.89	-6,971.1	666.4	485.9	377.5	108.48	4.480		
19,700.0	12,742.9	18,912.2	12,554.8	56.6	51.8	-67.93	-7,071.1	667.1	485.8	375.8	109.95	4.418		
19,800.0	12,742.5	19,012.2	12,554.7	57.3	52.5	-67.96	-7,171.1	667.8	485.7	374.2	111.43	4.358		
19,900.0	12,742.0	19,112.2	12,554.6	58.1	53.3	-68.00	-7,271.1	668.6	485.5	372.6	112.91	4.300		
20,000.0	12,741.5	19,212.2	12,554.5	58.8	54.0	-68.04	-7,371.1	669.3	485.4	371.0	114.39	4.243		
20,100.0	12,741.1	19,312.2	12,554.4	59.6	54.8	-68.08	-7,471.1	670.0	485.3	369.4	115.88	4.188		
20,200.0	12,740.6	19,412.2	12,554.3	60.3	55.5	-68.12	-7,571.1	670.7	485.1	367.8	117.36	4.134		
20,300.0	12,740.2	19,512.2	12,554.2	61.1	56.3	-68.16	-7,671.1	671.4	485.0	366.1	118.85	4.081		
20,400.0	12,739.7	19,612.2	12,554.1	61.9	57.0	-68.19	-7,771.1	672.2	484.8	364.5	120.33	4.029		
20,500.0	12,739.3	19,712.2	12,554.0	62.6	57.8	-68.23	-7,871.1	672.9	484.7	362.9	121.82	3.979		
20,600.0	12,738.8	19,812.2	12,553.9	63.4	58.6	-68.27	-7,971.1	673.6	484.6	361.3	123.31	3.930		
20,700.0	12,738.4	19,912.2	12,553.8	64.1	59.3	-68.31	-8,071.1	674.3	484.4	359.6	124.80	3.882		
20,800.0	12,737.9	20,012.2	12,553.7	64.9	60.1	-68.35	-8,171.1	675.0	484.3	358.0	126.29	3.835		
20,900.0	12,737.4	20,112.2	12,553.6	65.6	60.8	-68.39	-8,271.1	675.8	484.2	356.4	127.79	3.789		
21,000.0	12,737.0	20,212.2	12,553.5	66.4	61.6	-68.43	-8,371.1	676.5	484.0	354.8	129.28	3.744		
21,100.0	12,736.5	20,312.2	12,553.4	67.1	62.3	-68.46	-8,471.1	677.2	483.9	353.1	130.78	3.700		
21,200.0	12,736.1	20,412.2	12,553.3	67.9	63.1	-68.50	-8,571.1	677.9	483.8	351.5	132.27	3.657		
21,300.0	12,735.6	20,512.2	12,553.2	68.6	63.8	-68.54	-8,671.1	678.6	483.6	349.9	133.77	3.615		
21,400.0	12,735.2	20,612.2	12,553.1	69.4	64.6	-68.58	-8,771.1	679.4	483.5	348.2	135.27	3.574		
21,500.0	12,734.7	20,712.2	12,553.0	70.1	65.4	-68.62	-8,871.0	680.1	483.4	346.6	136.76	3.534		
21,600.0	12,734.2	20,812.2	12,552.9	70.9	66.1	-68.66	-8,971.0	680.8	483.2	345.0	138.26	3.495		
21,700.0	12,733.8	20,912.2	12,552.8	71.7	66.9	-68.70	-9,071.0	681.5	483.1	343.3	139.76	3.457		
21,800.0	12,733.3	21,012.2	12,552.7	72.4	67.6	-68.73	-9,171.0	682.2	483.0	341.7	141.27	3.419		
21,900.0	12,732.9	21,112.2	12,552.6	73.2	68.4	-68.77	-9,271.0	683.0	482.8	340.1	142.77	3.382		
22,000.0	12,732.4	21,212.2	12,552.5	73.9	69.1	-68.81	-9,371.0	683.7	482.7	338.4	144.27	3.346		
22,100.0	12,732.0	21,312.2	12,552.4	74.7	69.9	-68.85	-9,471.0	684.4	482.6	336.8	145.77	3.310		
22,200.0	12,731.5	21,412.2	12,552.3	75.4	70.7	-68.89	-9,571.0	685.1	482.4	335.2	147.28	3.276		
22,300.0	12,731.1	21,512.2	12,552.1	76.2	71.4	-68.93	-9,671.0	685.8	482.3	333.5	148.78	3.242		
22,400.0	12,730.6	21,612.2	12,552.0	77.0	72.2	-68.97	-9,771.0	686.5	482.2	331.9	150.29	3.208		
22,500.0	12,730.1	21,712.2	12,551.9	77.7	72.9	-69.01	-9,871.0	687.3	482.0	330.3	151.79	3.176		
22,600.0	12,729.7	21,812.2	12,551.8	78.5	73.7	-69.05	-9,971.0	688.0	481.9	328.6	153.30	3.144		
22,700.0	12,729.2	21,912.2	12,551.7	79.2	74.5	-69.08	-10,071.0	688.7	481.8	327.0	154.80	3.112		
22,800.0	12,728.8	22,012.2	12,551.6	80.0	75.2	-69.12	-10,171.0	689.4	481.7	325.3	156.31	3.081		
22,900.0	12,728.3	22,112.2	12,551.5	80.7	76.0	-69.16	-10,271.0	690.1	481.5	323.7	157.82	3.051		
23,000.0	12,727.9	22,212.2	12,551.4	81.5	76.7	-69.20	-10,371.0	690.9	481.4	322.1	159.33	3.021		
23,100.0	12,727.4	22,312.2	12,551.3	82.3	77.5	-69.24	-10,471.0	691.6	481.3	320.4	160.84	2.992		
23,200.0	12,726.9	22,412.2	12,551.2	83.0	78.3	-69.28	-10,571.0	692.3	481.1	318.8	162.35	2.964		
23,300.0	12,726.5	22,512.2	12,551.1	83.8	79.0	-69.32	-10,671.0	693.0	481.0	317.2	163.86	2.936		
23,407.4	12,726.0	22,619.6	12,551.0	84.6	79.8	-69.36	-10,778.4	693.8	480.9	315.4	165.48	2.906 CC, ES, SF		

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

Anticollision Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Reference Site: BULLDOG
Site Error: 0.0 usft
Reference Well: STOVE PIPE FEDERAL COM #703H
Well Error: 3.0 usft
Reference Wellbore: OWB
Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM_Users
Offset TVD Reference: Offset Datum

Offset Design BULLDOG - STOVE PIPE FEDERAL COM #602H - OWB - PWP1													Offset Site Error: 0.0 usft
Survey Program: 0-Standard Keeper 104, 12041-MWD+IFR1+MS													Offset Well Error: 3.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	0.9	0.9	3.0	3.0	-90.48	-0.5	-60.1	60.1				
100.0	100.0	100.9	100.9	3.0	3.0	-90.48	-0.5	-60.1	60.1	54.1	6.00	10.017	
200.0	200.0	200.9	200.9	3.0	3.0	-90.48	-0.5	-60.1	60.1	54.1	6.00	10.012	
300.0	300.0	300.9	300.9	3.0	3.0	-90.48	-0.5	-60.1	60.1	54.1	6.01	10.002	
400.0	400.0	400.9	400.9	3.0	3.0	-90.48	-0.5	-60.1	60.1	54.1	6.02	9.987	
500.0	500.0	500.9	500.9	3.1	3.1	-90.48	-0.5	-60.1	60.1	54.1	6.03	9.966	
600.0	600.0	600.9	600.9	3.1	3.1	-90.48	-0.5	-60.1	60.1	54.1	6.05	9.940	
700.0	700.0	700.9	700.9	3.1	3.1	-90.48	-0.5	-60.1	60.1	54.0	6.07	9.909	
800.0	800.0	800.9	800.9	3.2	3.2	-90.48	-0.5	-60.1	60.1	54.0	6.09	9.873	
900.0	900.0	900.9	900.9	3.2	3.2	-90.48	-0.5	-60.1	60.1	54.0	6.11	9.833	
1,000.0	1,000.0	1,000.9	1,000.9	3.2	3.2	-90.48	-0.5	-60.1	60.1	54.0	6.14	9.788	
1,100.0	1,100.0	1,100.9	1,100.9	3.3	3.3	-90.48	-0.5	-60.1	60.1	53.9	6.17	9.738	
1,200.0	1,200.0	1,200.9	1,200.9	3.4	3.4	-90.48	-0.5	-60.1	60.1	53.9	6.21	9.685	
1,300.0	1,300.0	1,300.9	1,300.9	3.4	3.4	-90.48	-0.5	-60.1	60.1	53.9	6.24	9.627	
1,400.0	1,400.0	1,400.9	1,400.9	3.5	3.5	-90.48	-0.5	-60.1	60.1	53.8	6.28	9.566	
1,500.0	1,500.0	1,500.9	1,500.9	3.5	3.5	-90.48	-0.5	-60.1	60.1	53.8	6.33	9.501	
1,600.0	1,600.0	1,600.9	1,600.9	3.6	3.6	-90.48	-0.5	-60.1	60.1	53.7	6.37	9.433	
1,700.0	1,700.0	1,700.9	1,700.9	3.7	3.7	-90.48	-0.5	-60.1	60.1	53.7	6.42	9.362	
1,800.0	1,800.0	1,800.9	1,800.9	3.8	3.8	-90.48	-0.5	-60.1	60.1	53.6	6.47	9.288	
1,900.0	1,900.0	1,900.9	1,900.9	3.9	3.9	-90.48	-0.5	-60.1	60.1	53.6	6.52	9.212	
2,000.0	2,000.0	2,000.9	2,000.9	3.9	3.9	-90.48	-0.5	-60.1	60.1	53.5	6.58	9.133	
2,100.0	2,100.0	2,100.9	2,100.9	4.0	4.0	-90.48	-0.5	-60.1	60.1	53.5	6.64	9.053	
2,200.0	2,200.0	2,200.9	2,200.9	4.1	4.1	-90.48	-0.5	-60.1	60.1	53.4	6.70	8.970	
2,300.0	2,300.0	2,300.9	2,300.9	4.2	4.2	-90.48	-0.5	-60.1	60.1	53.3	6.76	8.886	
2,400.0	2,400.0	2,400.9	2,400.9	4.3	4.3	-90.48	-0.5	-60.1	60.1	53.3	6.83	8.801	
2,500.0	2,500.0	2,500.9	2,500.9	4.4	4.4	-90.48	-0.5	-60.1	60.1	53.2	6.90	8.715	
2,600.0	2,600.0	2,600.9	2,600.9	4.5	4.5	-90.48	-0.5	-60.1	60.1	53.1	6.97	8.627	
2,700.0	2,700.0	2,700.9	2,700.9	4.6	4.6	-90.48	-0.5	-60.1	60.1	53.1	7.04	8.539	
2,800.0	2,800.0	2,800.9	2,800.9	4.7	4.7	-90.48	-0.5	-60.1	60.1	53.0	7.11	8.450	
2,900.0	2,900.0	2,900.9	2,900.9	4.8	4.8	-90.48	-0.5	-60.1	60.1	52.9	7.19	8.361	
3,000.0	3,000.0	3,000.9	3,000.9	4.9	4.9	-90.48	-0.5	-60.1	60.1	52.8	7.27	8.271	
3,100.0	3,100.0	3,100.9	3,100.9	5.0	5.0	-90.48	-0.5	-60.1	60.1	52.8	7.35	8.181	
3,200.0	3,200.0	3,200.9	3,200.9	5.1	5.1	-90.48	-0.5	-60.1	60.1	52.7	7.43	8.092	
3,300.0	3,300.0	3,300.9	3,300.9	5.2	5.2	-90.48	-0.5	-60.1	60.1	52.6	7.51	8.002	
3,400.0	3,400.0	3,400.9	3,400.9	5.3	5.3	-90.48	-0.5	-60.1	60.1	52.5	7.60	7.913	
3,500.0	3,500.0	3,500.9	3,500.9	5.4	5.4	-90.48	-0.5	-60.1	60.1	52.4	7.68	7.824	
3,600.0	3,600.0	3,600.9	3,600.9	5.5	5.5	-90.48	-0.5	-60.1	60.1	52.3	7.77	7.735	
3,700.0	3,700.0	3,700.9	3,700.9	5.7	5.7	-90.48	-0.5	-60.1	60.1	52.2	7.86	7.647	
3,800.0	3,800.0	3,800.9	3,800.9	5.8	5.8	-90.48	-0.5	-60.1	60.1	52.2	7.95	7.560	
3,900.0	3,900.0	3,900.9	3,900.9	5.9	5.9	-90.48	-0.5	-60.1	60.1	52.1	8.04	7.473	
4,000.0	4,000.0	4,000.9	4,000.9	6.0	6.0	-90.48	-0.5	-60.1	60.1	52.0	8.14	7.387	
4,100.0	4,100.0	4,100.9	4,100.9	6.1	6.1	-90.48	-0.5	-60.1	60.1	51.9	8.23	7.302	
4,200.0	4,200.0	4,200.9	4,200.9	6.2	6.2	-90.48	-0.5	-60.1	60.1	51.8	8.33	7.217	
4,300.0	4,300.0	4,300.9	4,300.9	6.3	6.3	-90.48	-0.5	-60.1	60.1	51.7	8.42	7.134	
4,400.0	4,400.0	4,400.9	4,400.9	6.5	6.5	-90.48	-0.5	-60.1	60.1	51.6	8.52	7.051	
4,500.0	4,500.0	4,500.9	4,500.9	6.6	6.6	-90.48	-0.5	-60.1	60.1	51.5	8.62	6.970	
4,600.0	4,600.0	4,600.9	4,600.9	6.7	6.7	-90.48	-0.5	-60.1	60.1	51.4	8.72	6.889	
4,700.0	4,700.0	4,700.9	4,700.9	6.8	6.8	-90.48	-0.5	-60.1	60.1	51.3	8.83	6.810	
4,800.0	4,800.0	4,800.9	4,800.9	6.9	6.9	-90.48	-0.5	-60.1	60.1	51.2	8.93	6.731	
4,900.0	4,900.0	4,900.9	4,900.9	7.0	7.0	-90.48	-0.5	-60.1	60.1	51.1	9.03	6.654	
5,000.0	5,000.0	5,000.9	5,000.9	7.2	7.2	-90.48	-0.5	-60.1	60.1	51.0	9.14	6.577	
5,100.0	5,100.0	5,100.9	5,100.9	7.3	7.3	-90.48	-0.5	-60.1	60.1	50.9	9.24	6.502	

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

Anticollision Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Reference Site: BULLDOG
Site Error: 0.0 usft
Reference Well: STOVE PIPE FEDERAL COM #703H
Well Error: 3.0 usft
Reference Wellbore: OWB
Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM_Users
Offset TVD Reference: Offset Datum

Offset Design BULLDOG - STOVE PIPE FEDERAL COM #602H - OWB - PWP1														Offset Site Error: 0.0 usft
Survey Program: 0-Standard Keeper 104, 12041-MWD+IFR1+MS														Offset Well Error: 3.0 usft
Reference	Vertical	Offset	Vertical	Semi Major Axis		Highside	Offset Wellbore Centre		Distance		Minimum	Separation	Warning	
Measured Depth (usft)	Depth (usft)	Measured Depth (usft)	Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation (usft)	Factor		
5,200.0	5,200.0	5,200.9	5,200.9	7.4	7.4	-90.48	-0.5	-60.1	60.1	50.8	9.35	6.428	CC, ES	
5,300.0	5,300.0	5,300.9	5,300.9	7.5	7.5	-90.48	-0.5	-60.1	60.1	50.6	9.46	6.355		
5,400.0	5,400.0	5,400.9	5,400.9	7.6	7.6	-90.48	-0.5	-60.1	60.1	50.5	9.57	6.283		
5,500.0	5,500.0	5,500.9	5,500.9	7.8	7.8	-90.48	-0.5	-60.1	60.1	50.4	9.68	6.212		
5,577.1	5,577.1	5,576.4	5,576.4	7.8	7.8	-148.55	-0.3	-61.1	62.0	52.2	9.77	6.349		
5,600.0	5,600.0	5,598.9	5,598.9	7.9	7.9	-148.68	-0.1	-61.8	63.2	53.4	9.79	6.452		
5,700.0	5,699.9	5,701.2	5,698.7	7.9	7.9	-149.15	0.7	-64.9	68.7	58.7	9.91	6.927		
5,800.0	5,799.9	5,801.4	5,798.5	8.0	8.0	-149.56	1.5	-68.1	74.1	64.1	10.03	7.387		
5,900.0	5,899.9	5,901.6	5,898.3	8.1	8.0	-149.91	2.2	-71.3	79.6	69.4	10.16	7.834		
6,000.0	5,999.8	6,001.7	5,998.1	8.2	8.1	-150.21	3.0	-74.4	85.1	74.8	10.29	8.266		
6,100.0	6,099.8	6,101.9	6,097.9	8.3	8.2	-150.48	3.8	-77.6	90.6	80.1	10.43	8.684		
6,200.0	6,199.8	6,202.0	6,197.7	8.4	8.2	-150.72	4.6	-80.8	96.0	85.5	10.57	9.088		
6,300.0	6,299.7	6,302.2	6,297.4	8.5	8.3	-150.93	5.4	-84.0	101.5	90.8	10.71	9.478		
6,400.0	6,399.7	6,402.3	6,397.2	8.6	8.4	-151.12	6.1	-87.1	107.0	96.1	10.86	9.856		
6,500.0	6,499.7	6,502.5	6,497.0	8.6	8.4	-151.29	6.9	-90.3	112.5	101.5	11.01	10.219		
6,600.0	6,599.6	6,597.4	6,596.8	8.7	8.5	-151.45	7.7	-93.5	118.0	106.8	11.16	10.574		
6,700.0	6,699.6	6,702.8	6,696.6	8.8	8.6	-151.59	8.5	-96.7	123.5	112.1	11.32	10.909		
6,800.0	6,799.5	6,797.1	6,796.4	8.9	8.6	-151.72	9.3	-99.8	128.9	117.5	11.47	11.240		
6,900.0	6,899.5	6,903.1	6,896.2	9.0	8.7	-151.84	10.0	-103.0	134.4	122.8	11.64	11.550		
7,000.0	6,999.5	7,003.2	6,996.0	9.1	8.8	-151.95	10.8	-106.2	139.9	128.1	11.80	11.853		
7,100.0	7,099.4	7,103.4	7,095.8	9.2	8.9	-152.05	11.6	-109.4	145.4	133.4	11.97	12.146		
7,200.0	7,199.4	7,203.5	7,195.6	9.3	8.9	-152.14	12.4	-112.5	150.9	138.8	12.14	12.427		
7,300.0	7,299.4	7,303.7	7,295.4	9.4	9.0	-152.23	13.2	-115.7	156.4	144.1	12.32	12.698		
7,400.0	7,399.3	7,403.8	7,395.2	9.5	9.1	-152.31	13.9	-118.9	161.9	149.4	12.49	12.959		
7,500.0	7,499.3	7,504.0	7,495.0	9.6	9.2	-152.39	14.7	-122.1	167.4	154.7	12.67	13.210		
7,600.0	7,599.3	7,604.1	7,594.8	9.7	9.3	-152.46	15.5	-125.2	172.9	160.0	12.85	13.453		
7,700.0	7,699.2	7,704.3	7,694.6	9.8	9.4	-152.53	16.3	-128.4	178.3	165.3	13.03	13.686		
7,800.0	7,799.2	7,804.4	7,794.4	9.9	9.4	-152.59	17.1	-131.6	183.8	170.6	13.22	13.911		
7,900.0	7,899.1	7,904.6	7,894.2	10.0	9.5	-152.65	17.8	-134.7	189.3	175.9	13.40	14.127		
8,000.0	7,999.1	8,004.7	7,994.0	10.1	9.6	-152.71	18.6	-137.9	194.8	181.2	13.59	14.335		
8,100.0	8,099.1	8,104.9	8,093.8	10.2	9.7	-152.76	19.4	-141.1	200.3	186.5	13.78	14.536		
8,200.0	8,199.0	8,205.0	8,193.6	10.3	9.8	-152.81	20.2	-144.3	205.8	191.8	13.97	14.730		
8,300.0	8,299.0	8,305.2	8,293.4	10.4	9.9	-152.86	21.0	-147.4	211.3	197.1	14.16	14.917		
8,400.0	8,399.0	8,405.3	8,393.2	10.5	10.0	-152.90	21.7	-150.6	216.8	202.4	14.36	15.096		
8,500.0	8,498.9	8,505.5	8,493.0	10.6	10.1	-152.94	22.5	-153.8	222.3	207.7	14.56	15.270		
8,600.0	8,598.9	8,605.6	8,592.7	10.7	10.2	-152.98	23.3	-157.0	227.8	213.0	14.75	15.437		
8,700.0	8,698.9	8,705.8	8,692.5	10.8	10.3	-153.02	24.1	-160.1	233.3	218.3	14.95	15.598		
8,800.0	8,798.8	8,794.1	8,792.3	11.0	10.3	-153.06	24.9	-163.3	238.7	223.6	15.14	15.766		
8,900.0	8,898.8	8,906.1	8,892.1	11.1	10.4	-153.10	25.6	-166.5	244.2	228.9	15.36	15.904		
9,000.0	8,998.8	9,006.2	8,991.9	11.2	10.5	-153.13	26.4	-169.7	249.7	234.2	15.56	16.049		
9,100.0	9,098.7	9,106.4	9,091.7	11.3	10.6	-153.16	27.2	-172.8	255.2	239.5	15.77	16.189		
9,200.0	9,198.7	9,206.5	9,191.5	11.4	10.7	-153.19	28.0	-176.0	260.7	244.7	15.97	16.324		
9,300.0	9,298.6	9,306.7	9,291.3	11.5	10.8	-153.22	28.8	-179.2	266.2	250.0	16.18	16.455		
9,400.0	9,398.6	9,406.8	9,391.1	11.6	10.9	-153.25	29.5	-182.4	271.7	255.3	16.39	16.581		
9,500.0	9,498.6	9,507.0	9,490.9	11.7	11.0	-153.28	30.3	-185.5	277.2	260.6	16.60	16.703		
9,600.0	9,598.5	9,607.1	9,590.7	11.8	11.1	-153.30	31.1	-188.7	282.7	265.9	16.81	16.820		
9,700.0	9,698.5	9,707.3	9,690.5	11.9	11.2	-153.33	31.9	-191.9	288.2	271.2	17.02	16.934		
9,800.0	9,798.5	9,807.4	9,790.3	12.1	11.3	-153.35	32.7	-195.0	293.7	276.4	17.23	17.044		
9,900.0	9,898.4	9,907.6	9,890.1	12.2	11.4	-153.38	33.4	-198.2	299.2	281.7	17.44	17.151		
10,000.0	9,998.4	10,007.7	9,989.9	12.3	11.5	-153.40	34.2	-201.4	304.7	287.0	17.66	17.254		
10,100.0	10,098.4	10,107.9	10,089.7	12.4	11.6	-153.42	35.0	-204.6	310.1	292.3	17.87	17.354		
10,200.0	10,198.3	10,208.0	10,189.5	12.5	11.7	-153.44	35.8	-207.7	315.6	297.6	18.09	17.451		

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 STOVE PIPE FEDERAL COM #703H
Project:	LEA COUNTY, NM	TVD Reference:	RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
Reference Site:	BULLDOG	MD Reference:	RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	STOVE PIPE FEDERAL COM #703H	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 - STOVE PIPE FEDERAL COM #602H - OWB - PWP1													Offset Site Error:	0.0 usft
Survey Program: 0-Standard Keeper 104, 12041-MWD+IFR1+MS													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)	Distance Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
10,300.0	10,298.3	10,308.2	10,289.3	12.8	11.8	-153.46	36.6	-210.9	321.1	302.8	18.30	17.544		
10,400.0	10,398.2	10,408.3	10,389.1	12.7	12.0	-153.48	37.3	-214.1	326.6	308.1	18.52	17.635		
10,500.0	10,498.2	10,508.5	10,488.9	12.8	12.1	-153.50	38.1	-217.3	332.1	313.4	18.74	17.723		
10,600.0	10,598.2	10,608.7	10,588.7	13.0	12.2	-153.52	38.9	-220.4	337.6	318.7	18.96	17.808		
10,700.0	10,698.1	10,708.8	10,688.5	13.1	12.3	-153.54	39.7	-223.6	343.1	323.9	19.18	17.890		
10,800.0	10,798.1	10,809.0	10,788.2	13.2	12.4	-153.56	40.5	-226.8	348.6	329.2	19.40	17.970		
10,900.0	10,898.1	10,909.1	10,888.0	13.3	12.5	-153.57	41.3	-230.0	354.1	334.5	19.62	18.048		
11,000.0	10,998.0	11,009.3	10,987.8	13.4	12.6	-153.59	42.0	-233.1	359.6	339.7	19.84	18.123		
11,100.0	11,098.0	11,109.4	11,087.6	13.5	12.7	-153.60	42.8	-236.3	365.1	345.0	20.06	18.197		
11,200.0	11,198.0	11,209.6	11,187.4	13.7	12.8	-153.62	43.6	-239.5	370.6	350.3	20.29	18.267		
11,300.0	11,297.9	11,309.7	11,287.2	13.8	12.9	-153.63	44.4	-242.7	376.1	355.6	20.51	18.336		
11,400.0	11,397.9	11,409.9	11,387.0	13.9	13.0	-153.65	45.2	-245.8	381.6	360.8	20.73	18.403		
11,500.0	11,497.8	11,490.0	11,486.8	14.0	13.1	-153.66	45.9	-249.0	387.0	366.1	20.94	18.488		
11,600.0	11,597.8	11,589.8	11,586.6	14.1	13.2	-153.68	46.7	-252.2	392.5	371.4	21.16	18.551		
11,700.0	11,697.8	11,689.7	11,686.4	14.2	13.3	-153.69	47.5	-255.3	398.0	376.7	21.38	18.613		
11,800.0	11,797.7	11,789.5	11,786.2	14.4	13.4	-153.70	48.3	-258.5	403.5	381.9	21.61	18.673		
11,900.0	11,897.7	11,889.4	11,886.0	14.5	13.6	-153.72	49.1	-261.7	409.0	387.2	21.84	18.731		
12,000.0	11,997.7	11,989.2	11,985.8	14.6	13.7	-153.73	49.8	-264.9	414.5	392.5	22.06	18.788		
12,100.0	12,097.6	12,085.8	12,082.3	14.7	13.7	-153.98	48.8	-267.9	420.2	397.8	22.38	18.775		
12,194.5	12,192.1	12,171.6	12,167.1	14.8	13.8	-155.73	36.5	-270.5	427.1	404.0	23.11	18.484		
12,200.0	12,197.6	12,176.5	12,171.8	14.8	13.8	-176.42	35.4	-270.7	427.5	404.4	23.17	18.456		
12,250.0	12,247.5	12,220.2	12,214.0	15.0	13.9	96.14	23.9	-271.9	431.9	408.4	23.57	18.329		
12,300.0	12,297.1	12,263.3	12,254.6	15.5	14.0	86.75	9.4	-273.1	436.4	412.3	24.09	18.114		
12,350.0	12,345.9	12,305.9	12,293.4	15.7	14.1	82.69	-7.8	-274.2	441.0	416.6	24.46	18.032		
12,400.0	12,393.7	12,347.9	12,330.5	15.9	14.2	80.03	-27.6	-275.3	445.6	420.7	24.87	17.918		
12,450.0	12,439.9	12,389.5	12,365.6	16.1	14.4	78.01	-49.9	-276.2	450.1	424.7	25.33	17.765		
12,500.0	12,484.3	12,430.7	12,398.8	16.2	14.5	76.35	-74.3	-277.1	454.4	428.6	25.85	17.576		
12,550.0	12,528.6	12,471.6	12,429.8	16.4	14.6	74.96	-100.9	-277.9	458.5	432.1	26.41	17.360		
12,600.0	12,566.4	12,512.1	12,458.6	16.6	14.7	73.78	-129.4	-278.6	462.4	435.4	27.00	17.126		
12,650.0	12,603.4	12,552.4	12,485.2	16.7	14.8	72.79	-159.6	-279.2	465.9	438.3	27.59	16.886		
12,700.0	12,637.3	12,592.5	12,509.5	16.9	14.9	71.96	-191.5	-279.8	469.1	440.9	28.18	16.646		
12,750.0	12,667.9	12,632.4	12,531.5	17.0	15.0	71.28	-224.8	-280.2	471.8	443.1	28.74	16.415		
12,800.0	12,695.0	12,672.2	12,550.9	17.1	15.1	70.75	-259.5	-280.6	474.2	444.9	29.27	16.199		
12,850.0	12,718.2	12,711.9	12,567.9	17.2	15.1	70.36	-295.3	-280.9	476.0	446.3	29.75	16.001		
12,900.0	12,737.6	12,751.5	12,582.4	17.3	15.2	70.11	-332.2	-281.1	477.4	447.2	30.17	15.826		
12,950.0	12,752.8	12,791.1	12,594.2	17.3	15.2	69.99	-370.0	-281.2	478.3	447.7	30.51	15.674		
13,000.0	12,763.8	12,830.7	12,603.5	17.4	15.3	70.01	-408.5	-281.2	478.6	447.9	30.79	15.547		
13,050.0	12,770.6	12,870.3	12,610.0	17.4	15.3	70.15	-447.5	-281.1	478.5	447.5	30.98	15.445		
13,100.0	12,773.0	12,910.1	12,613.9	17.4	15.4	70.43	-487.1	-281.0	477.9	446.8	31.09	15.369		
13,105.2	12,773.0	12,914.2	12,614.1	17.4	15.4	70.47	-491.2	-281.0	477.8	446.7	31.10	15.365		
13,143.3	12,772.8	12,953.4	12,615.0	17.5	15.4	70.58	-520.6	-280.8	477.4	446.2	31.19	15.305		
13,200.0	12,772.6	13,000.3	12,614.8	17.5	15.4	70.58	-577.3	-280.4	477.4	446.0	31.45	15.178		
13,300.0	12,772.1	13,100.3	12,614.3	17.6	15.5	70.58	-677.3	-279.6	477.4	445.4	32.02	14.912		
13,400.0	12,771.7	13,200.3	12,613.8	17.6	15.6	70.58	-777.3	-278.9	477.4	444.8	32.65	14.623		
13,500.0	12,771.2	13,300.3	12,613.4	17.8	15.7	70.58	-877.3	-278.2	477.4	444.1	33.34	14.320		
13,600.0	12,770.7	13,400.3	12,612.9	17.9	15.9	70.58	-977.3	-277.5	477.4	443.3	34.09	14.006		
13,700.0	12,770.3	13,500.3	12,612.4	18.0	16.1	70.58	-1,077.3	-276.7	477.4	442.5	34.88	13.686		
13,800.0	12,769.8	13,600.3	12,612.0	18.2	16.4	70.57	-1,177.3	-276.0	477.4	441.7	35.73	13.362		
13,900.0	12,769.4	13,700.3	12,611.5	18.4	16.7	70.57	-1,277.3	-275.3	477.4	440.8	36.62	13.037		
14,000.0	12,768.9	13,800.3	12,611.0	18.6	17.1	70.57	-1,377.3	-274.6	477.4	439.9	37.55	12.713		
14,100.0	12,768.5	13,900.3	12,610.5	18.9	17.5	70.57	-1,477.3	-273.8	477.4	438.9	38.53	12.392		
14,200.0	12,768.0	14,000.3	12,610.1	19.2	18.0	70.57	-1,577.3	-273.1	477.4	437.9	39.53	12.077		

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

Anticollision Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Reference Site: BULLDOG
Site Error: 0.0 usft
Reference Well: STOVE PIPE FEDERAL COM #703H
Well Error: 3.0 usft
Reference Wellbore: OWB
Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM_Users
Offset TVD Reference: Offset Datum

Offset Design BULLDOG - STOVE PIPE FEDERAL COM #602H - OWB - PWP1													Offset Site Error: 0.0 usft
Survey Program: 0-Standard Keeper 104, 12041-MWD+IFR1+MS													Offset Well Error: 3.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)					
14,300.0	12,767.5	14,100.3	12,609.6	19.5	18.5	70.57	-1,677.3	-272.4	477.4	436.9	40.57	11.767	
14,400.0	12,767.1	14,200.3	12,609.1	19.9	19.0	70.57	-1,777.3	-271.7	477.4	435.8	41.64	11.465	
14,500.0	12,766.6	14,300.3	12,608.7	20.3	19.6	70.56	-1,877.3	-270.9	477.4	434.7	42.74	11.170	
14,600.0	12,766.2	14,400.3	12,608.2	20.8	20.1	70.56	-1,977.3	-270.2	477.4	433.6	43.87	10.883	
14,700.0	12,765.7	14,500.3	12,607.7	21.3	20.7	70.56	-2,077.2	-269.5	477.4	432.4	45.02	10.606	
14,800.0	12,765.3	14,600.3	12,607.3	21.9	21.3	70.56	-2,177.2	-268.7	477.4	431.3	46.19	10.337	
14,900.0	12,764.8	14,700.3	12,606.8	22.4	22.0	70.56	-2,277.2	-268.0	477.4	430.1	47.38	10.076	
15,000.0	12,764.4	14,800.3	12,606.3	23.0	22.6	70.56	-2,377.2	-267.3	477.4	428.8	48.59	9.825	
15,100.0	12,763.9	14,900.3	12,605.9	23.6	23.2	70.56	-2,477.2	-266.6	477.4	427.6	49.82	9.583	
15,200.0	12,763.4	15,000.3	12,605.4	24.2	23.9	70.55	-2,577.2	-265.8	477.4	426.4	51.07	9.349	
15,300.0	12,763.0	15,100.3	12,604.9	24.9	24.5	70.55	-2,677.2	-265.1	477.4	425.1	52.33	9.124	
15,400.0	12,762.5	15,200.3	12,604.5	25.5	25.2	70.55	-2,777.2	-264.4	477.4	423.8	53.61	8.907	
15,500.0	12,762.1	15,300.3	12,604.0	26.1	25.9	70.55	-2,877.2	-263.7	477.5	422.6	54.90	8.698	
15,600.0	12,761.6	15,400.3	12,603.5	26.8	26.5	70.55	-2,977.2	-262.9	477.5	421.3	56.20	8.496	
15,700.0	12,761.2	15,500.3	12,603.1	27.5	27.2	70.55	-3,077.2	-262.2	477.5	419.9	57.51	8.302	
15,800.0	12,760.7	15,600.3	12,602.6	28.2	27.9	70.55	-3,177.2	-261.5	477.5	418.6	58.83	8.115	
15,900.0	12,760.2	15,700.3	12,602.1	28.8	28.6	70.54	-3,277.2	-260.8	477.5	417.3	60.17	7.936	
16,000.0	12,759.8	15,800.3	12,601.7	29.5	29.3	70.54	-3,377.2	-260.0	477.5	415.9	61.51	7.762	
16,100.0	12,759.3	15,900.3	12,601.2	30.2	30.0	70.54	-3,477.2	-259.3	477.5	414.6	62.86	7.596	
16,200.0	12,758.9	16,000.3	12,600.7	30.9	30.7	70.54	-3,577.2	-258.6	477.5	413.2	64.22	7.435	
16,300.0	12,758.4	16,100.3	12,600.3	31.6	31.4	70.54	-3,677.2	-257.8	477.5	411.9	65.59	7.280	
16,400.0	12,758.0	16,200.3	12,599.8	32.3	32.1	70.54	-3,777.2	-257.1	477.5	410.5	66.96	7.130	
16,500.0	12,757.5	16,300.3	12,599.3	33.0	32.8	70.54	-3,877.2	-256.4	477.5	409.1	68.34	6.986	
16,600.0	12,757.1	16,400.3	12,598.9	33.8	33.5	70.53	-3,977.2	-255.7	477.5	407.7	69.73	6.847	
16,700.0	12,756.6	16,500.3	12,598.4	34.5	34.3	70.53	-4,077.2	-254.9	477.5	406.3	71.13	6.713	
16,800.0	12,756.1	16,600.3	12,597.9	35.2	35.0	70.53	-4,177.2	-254.2	477.5	404.9	72.53	6.583	
16,900.0	12,755.7	16,700.3	12,597.4	35.9	35.7	70.53	-4,277.2	-253.5	477.5	403.5	73.93	6.458	
17,000.0	12,755.2	16,800.3	12,597.0	36.6	36.4	70.53	-4,377.2	-252.8	477.5	402.1	75.34	6.337	
17,100.0	12,754.8	16,900.3	12,596.5	37.4	37.1	70.53	-4,477.2	-252.0	477.5	400.7	76.76	6.221	
17,200.0	12,754.3	17,000.3	12,596.0	38.1	37.9	70.53	-4,577.2	-251.3	477.5	399.3	78.18	6.108	
17,300.0	12,753.9	17,100.3	12,595.6	38.8	38.6	70.53	-4,677.1	-250.6	477.5	397.9	79.60	5.998	
17,400.0	12,753.4	17,200.3	12,595.1	39.5	39.3	70.52	-4,777.1	-249.9	477.5	396.5	81.03	5.893	
17,500.0	12,753.0	17,300.3	12,594.6	40.3	40.0	70.52	-4,877.1	-249.1	477.5	395.0	82.46	5.790	
17,600.0	12,752.5	17,400.3	12,594.2	41.0	40.8	70.52	-4,977.1	-248.4	477.5	393.6	83.90	5.691	
17,700.0	12,752.0	17,500.3	12,593.7	41.7	41.5	70.52	-5,077.1	-247.7	477.5	392.2	85.33	5.595	
17,800.0	12,751.6	17,600.3	12,593.2	42.5	42.2	70.52	-5,177.1	-246.9	477.5	390.7	86.78	5.503	
17,900.0	12,751.1	17,700.3	12,592.8	43.2	43.0	70.52	-5,277.1	-246.2	477.5	389.3	88.22	5.412	
18,000.0	12,750.7	17,800.3	12,592.3	43.9	43.7	70.52	-5,377.1	-245.5	477.5	387.8	89.67	5.325	
18,100.0	12,750.2	17,900.3	12,591.8	44.7	44.5	70.51	-5,477.1	-244.8	477.5	386.4	91.12	5.240	
18,200.0	12,749.8	18,000.3	12,591.4	45.4	45.2	70.51	-5,577.1	-244.0	477.5	384.9	92.57	5.158	
18,300.0	12,749.3	18,100.3	12,590.9	46.2	45.9	70.51	-5,677.1	-243.3	477.5	383.5	94.03	5.078	
18,400.0	12,748.8	18,200.3	12,590.4	46.9	46.7	70.51	-5,777.1	-242.6	477.5	382.0	95.49	5.001	
18,500.0	12,748.4	18,300.3	12,590.0	47.6	47.4	70.51	-5,877.1	-241.9	477.5	380.5	96.95	4.925	
18,600.0	12,747.9	18,400.3	12,589.5	48.4	48.2	70.51	-5,977.1	-241.1	477.5	379.1	98.41	4.852	
18,700.0	12,747.5	18,500.3	12,589.0	49.1	48.9	70.51	-6,077.1	-240.4	477.5	377.6	99.88	4.781	
18,800.0	12,747.0	18,600.3	12,588.6	49.9	49.6	70.50	-6,177.1	-239.7	477.5	376.2	101.35	4.712	
18,900.0	12,746.6	18,700.3	12,588.1	50.6	50.4	70.50	-6,277.1	-239.0	477.5	374.7	102.82	4.644	
19,000.0	12,746.1	18,800.3	12,587.6	51.4	51.1	70.50	-6,377.1	-238.2	477.5	373.2	104.29	4.579	
19,100.0	12,745.7	18,900.3	12,587.2	52.1	51.9	70.50	-6,477.1	-237.5	477.5	371.7	105.76	4.515	
19,200.0	12,745.2	19,000.3	12,586.7	52.9	52.6	70.50	-6,577.1	-236.8	477.5	370.3	107.24	4.453	
19,300.0	12,744.7	19,100.3	12,586.2	53.6	53.4	70.50	-6,677.1	-236.0	477.5	368.8	108.71	4.392	
19,400.0	12,744.3	19,200.3	12,585.8	54.3	54.1	70.50	-6,777.1	-235.3	477.5	367.3	110.19	4.334	

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

Anticollision Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Reference Site: BULLDOG
Site Error: 0.0 usft
Reference Well: STOVE PIPE FEDERAL COM #703H
Well Error: 3.0 usft
Reference Wellbore: OWB
Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM_Users
Offset TVD Reference: Offset Datum

Offset Design BULLDOG - STOVE PIPE FEDERAL COM #602H - OWB - PWP1													Offset Site Error:	0.0 usft
Survey Program: 0-Standard Keeper 104, 12041-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		
19,500.0	12,743.8	19,300.3	12,585.3	55.1	54.9	70.49	-6,877.1	-234.6	477.5	365.8	111.67	4.276		
19,600.0	12,743.4	19,400.3	12,584.8	55.8	55.6	70.49	-6,977.1	-233.9	477.5	364.4	113.15	4.220		
19,700.0	12,742.9	19,500.3	12,584.3	56.6	56.4	70.49	-7,077.1	-233.1	477.5	362.9	114.63	4.166		
19,800.0	12,742.5	19,600.3	12,583.9	57.3	57.1	70.49	-7,177.1	-232.4	477.5	361.4	116.12	4.112		
19,900.0	12,742.0	19,700.3	12,583.4	58.1	57.8	70.49	-7,277.1	-231.7	477.5	359.9	117.60	4.060		
20,000.0	12,741.5	19,800.3	12,582.9	58.8	58.6	70.49	-7,377.0	-231.0	477.5	358.4	119.09	4.010		
20,100.0	12,741.1	19,900.3	12,582.5	59.6	59.3	70.49	-7,477.0	-230.2	477.5	356.9	120.58	3.960		
20,200.0	12,740.6	20,000.3	12,582.0	60.3	60.1	70.48	-7,577.0	-229.5	477.5	355.5	122.07	3.912		
20,300.0	12,740.2	20,100.3	12,581.5	61.1	60.8	70.48	-7,677.0	-228.8	477.5	354.0	123.56	3.865		
20,400.0	12,739.7	20,200.3	12,581.1	61.9	61.6	70.48	-7,777.0	-228.1	477.5	352.5	125.05	3.819		
20,500.0	12,739.3	20,300.3	12,580.6	62.6	62.4	70.48	-7,877.0	-227.3	477.5	351.0	126.54	3.774		
20,600.0	12,738.8	20,400.3	12,580.1	63.4	63.1	70.48	-7,977.0	-226.6	477.5	349.5	128.03	3.730		
20,700.0	12,738.4	20,500.3	12,579.7	64.1	63.9	70.48	-8,077.0	-225.9	477.5	348.0	129.53	3.687		
20,800.0	12,737.9	20,600.3	12,579.2	64.9	64.6	70.48	-8,177.0	-225.1	477.5	346.5	131.02	3.645		
20,900.0	12,737.4	20,700.3	12,578.7	65.6	65.4	70.47	-8,277.0	-224.4	477.5	345.0	132.52	3.604		
21,000.0	12,737.0	20,800.3	12,578.3	66.4	66.1	70.47	-8,377.0	-223.7	477.5	343.5	134.01	3.563		
21,100.0	12,736.5	20,900.3	12,577.8	67.1	66.9	70.47	-8,477.0	-223.0	477.5	342.0	135.51	3.524		
21,200.0	12,736.1	21,000.3	12,577.3	67.9	67.6	70.47	-8,577.0	-222.2	477.5	340.5	137.01	3.485		
21,300.0	12,735.6	21,100.3	12,576.9	68.6	68.4	70.47	-8,677.0	-221.5	477.5	339.0	138.51	3.448		
21,400.0	12,735.2	21,200.3	12,576.4	69.4	69.1	70.47	-8,777.0	-220.8	477.5	337.5	140.01	3.411		
21,500.0	12,734.7	21,300.3	12,575.9	70.1	69.9	70.47	-8,877.0	-220.1	477.5	336.0	141.51	3.375		
21,600.0	12,734.2	21,400.3	12,575.5	70.9	70.6	70.46	-8,977.0	-219.3	477.5	334.5	143.01	3.339		
21,700.0	12,733.8	21,500.3	12,575.0	71.7	71.4	70.46	-9,077.0	-218.6	477.5	333.0	144.51	3.305		
21,800.0	12,733.3	21,600.3	12,574.5	72.4	72.1	70.46	-9,177.0	-217.9	477.5	331.5	146.02	3.271		
21,900.0	12,732.9	21,700.3	12,574.1	73.2	72.9	70.46	-9,277.0	-217.2	477.5	330.0	147.52	3.237		
22,000.0	12,732.4	21,800.3	12,573.6	73.9	73.7	70.46	-9,377.0	-216.4	477.6	328.5	149.02	3.205		
22,100.0	12,732.0	21,900.3	12,573.1	74.7	74.4	70.46	-9,477.0	-215.7	477.6	327.0	150.53	3.172		
22,200.0	12,731.5	22,000.3	12,572.7	75.4	75.2	70.46	-9,577.0	-215.0	477.6	325.5	152.03	3.141		
22,300.0	12,731.1	22,100.3	12,572.2	76.2	75.9	70.45	-9,677.0	-214.2	477.6	324.0	153.54	3.110		
22,400.0	12,730.6	22,200.3	12,571.7	77.0	76.7	70.45	-9,777.0	-213.5	477.6	322.5	155.05	3.080		
22,500.0	12,730.1	22,300.3	12,571.2	77.7	77.4	70.45	-9,877.0	-212.8	477.6	321.0	156.55	3.050		
22,600.0	12,729.7	22,400.3	12,570.8	78.5	78.2	70.45	-9,977.0	-212.1	477.6	319.5	158.06	3.021		
22,700.0	12,729.2	22,500.3	12,570.3	79.2	79.0	70.45	-10,076.9	-211.3	477.6	318.0	159.57	2.993		
22,800.0	12,728.8	22,600.3	12,569.8	80.0	79.7	70.45	-10,176.9	-210.6	477.6	316.5	161.08	2.965		
22,900.0	12,728.3	22,700.3	12,569.4	80.7	80.5	70.45	-10,276.9	-209.9	477.6	315.0	162.59	2.937		
23,000.0	12,727.9	22,800.3	12,568.9	81.5	81.2	70.44	-10,376.9	-209.2	477.6	313.5	164.10	2.910		
23,100.0	12,727.4	22,900.3	12,568.4	82.3	82.0	70.44	-10,476.9	-208.4	477.6	312.0	165.61	2.884		
23,200.0	12,726.9	23,000.3	12,568.0	83.0	82.7	70.44	-10,576.9	-207.7	477.6	310.5	167.12	2.858		
23,300.0	12,726.5	23,100.3	12,567.5	83.8	83.5	70.44	-10,676.9	-207.0	477.6	308.9	168.63	2.832		
23,407.4	12,726.0	23,207.7	12,567.0	84.6	84.3	70.44	-10,784.3	-206.2	477.6	307.3	170.25	2.805 SF		

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

Anticollision Report

Company: NORTHERN DELAWARE BASIN
 Project: LEA COUNTY, NM
 Reference Site: BULLDOG
 Site Error: 0.0 usft
 Reference Well: STOVE PIPE FEDERAL COM #703H
 Well Error: 3.0 usft
 Reference Wellbore: OWB
 Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
 TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
 MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: EDM_Users
 Offset TVD Reference: Offset Datum

Offset Design BULLDOG - STOVE PIPE FEDERAL COM #702H - OWB - PWP1											Offset Site Error:	0.0 usft
Survey Program: 0-Standard Keeper 104, 12347-MWD+IFR1+MS											Offset Well Error:	3.0 usft
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		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)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation (usft)	Factor
0.0	0.0	5.9	-5.9	3.0	3.0	89.58	4.9	674.9	674.9			
100.0	100.0	105.9	94.1	3.0	3.0	89.58	4.9	674.9	674.9	668.9	6.00	112.482
200.0	200.0	205.9	194.1	3.0	3.0	89.58	4.9	674.9	674.9	668.9	6.00	112.429
300.0	300.0	305.9	294.1	3.0	3.0	89.58	4.9	674.9	674.9	668.9	6.01	112.315
400.0	400.0	405.9	394.1	3.0	3.0	89.58	4.9	674.9	674.9	668.9	6.02	112.140
500.0	500.0	505.9	494.1	3.1	3.1	89.58	4.9	674.9	674.9	668.9	6.03	111.907
600.0	600.0	605.9	594.1	3.1	3.1	89.58	4.9	674.9	674.9	668.9	6.05	111.616
700.0	700.0	705.9	694.1	3.1	3.1	89.58	4.9	674.9	674.9	668.9	6.07	111.268
800.0	800.0	805.9	794.1	3.2	3.2	89.58	4.9	674.9	674.9	668.8	6.09	110.864
900.0	900.0	905.9	894.1	3.2	3.2	89.58	4.9	674.9	674.9	668.8	6.11	110.408
1,000.0	1,000.0	1,005.9	994.1	3.2	3.2	89.58	4.9	674.9	674.9	668.8	6.14	109.900
1,100.0	1,100.0	1,105.9	1,094.1	3.3	3.3	89.58	4.9	674.9	674.9	668.7	6.17	109.343
1,200.0	1,200.0	1,205.9	1,194.1	3.4	3.4	89.58	4.9	674.9	674.9	668.7	6.21	108.739
1,300.0	1,300.0	1,305.9	1,294.1	3.4	3.4	89.58	4.9	674.9	674.9	668.7	6.24	108.091
1,400.0	1,400.0	1,405.9	1,394.1	3.5	3.5	89.58	4.9	674.9	674.9	668.6	6.28	107.402
1,500.0	1,500.0	1,505.9	1,494.1	3.5	3.6	89.58	4.9	674.9	674.9	668.6	6.33	106.674
1,600.0	1,600.0	1,605.9	1,594.1	3.6	3.6	89.58	4.9	674.9	674.9	668.5	6.37	105.909
1,700.0	1,700.0	1,705.9	1,694.1	3.7	3.7	89.58	4.9	674.9	674.9	668.5	6.42	105.111
1,800.0	1,800.0	1,805.9	1,794.1	3.8	3.8	89.58	4.9	674.9	674.9	668.4	6.47	104.282
1,900.0	1,900.0	1,905.9	1,894.1	3.9	3.9	89.58	4.9	674.9	674.9	668.4	6.53	103.425
2,000.0	2,000.0	2,005.9	1,994.1	3.9	3.9	89.58	4.9	674.9	674.9	668.3	6.58	102.542
2,100.0	2,100.0	2,105.9	2,094.1	4.0	4.0	89.58	4.9	674.9	674.9	668.3	6.64	101.637
2,200.0	2,200.0	2,205.9	2,194.1	4.1	4.1	89.58	4.9	674.9	674.9	668.2	6.70	100.711
2,300.0	2,300.0	2,305.9	2,294.1	4.2	4.2	89.58	4.9	674.9	674.9	668.2	6.76	99.768
2,400.0	2,400.0	2,405.9	2,394.1	4.3	4.3	89.58	4.9	674.9	674.9	668.1	6.83	98.810
2,500.0	2,500.0	2,505.9	2,494.1	4.4	4.4	89.58	4.9	674.9	674.9	668.0	6.90	97.838
2,600.0	2,600.0	2,605.9	2,594.1	4.5	4.5	89.58	4.9	674.9	674.9	667.9	6.97	96.856
2,700.0	2,700.0	2,705.9	2,694.1	4.6	4.6	89.58	4.9	674.9	674.9	667.9	7.04	95.865
2,800.0	2,800.0	2,805.9	2,794.1	4.7	4.7	89.58	4.9	674.9	674.9	667.8	7.11	94.867
2,900.0	2,900.0	2,905.9	2,894.1	4.8	4.8	89.58	4.9	674.9	674.9	667.7	7.19	93.865
3,000.0	3,000.0	3,005.9	2,994.1	4.9	4.9	89.58	4.9	674.9	674.9	667.6	7.27	92.859
3,100.0	3,100.0	3,105.9	3,094.1	5.0	5.0	89.58	4.9	674.9	674.9	667.6	7.35	91.851
3,200.0	3,200.0	3,205.9	3,194.1	5.1	5.1	89.58	4.9	674.9	674.9	667.5	7.43	90.844
3,300.0	3,300.0	3,305.9	3,294.1	5.2	5.2	89.58	4.9	674.9	674.9	667.4	7.51	89.838
3,400.0	3,400.0	3,405.9	3,394.1	5.3	5.3	89.58	4.9	674.9	674.9	667.3	7.60	88.835
3,500.0	3,500.0	3,505.9	3,494.1	5.4	5.4	89.58	4.9	674.9	674.9	667.2	7.68	87.835
3,600.0	3,600.0	3,605.9	3,594.1	5.5	5.5	89.58	4.9	674.9	674.9	667.1	7.77	86.841
3,700.0	3,700.0	3,705.9	3,694.1	5.7	5.7	89.58	4.9	674.9	674.9	667.1	7.86	85.852
3,800.0	3,800.0	3,805.9	3,794.1	5.8	5.8	89.58	4.9	674.9	674.9	667.0	7.95	84.870
3,900.0	3,900.0	3,905.9	3,894.1	5.9	5.9	89.58	4.9	674.9	674.9	666.9	8.04	83.896
4,000.0	4,000.0	4,005.9	3,994.1	6.0	6.0	89.58	4.9	674.9	674.9	666.8	8.14	82.930
4,100.0	4,100.0	4,105.9	4,094.1	6.1	6.1	89.58	4.9	674.9	674.9	666.7	8.23	81.974
4,200.0	4,200.0	4,205.9	4,194.1	6.2	6.2	89.58	4.9	674.9	674.9	666.6	8.33	81.027
4,300.0	4,300.0	4,305.9	4,294.1	6.3	6.3	89.58	4.9	674.9	674.9	666.5	8.43	80.090
4,400.0	4,400.0	4,405.9	4,394.1	6.5	6.5	89.58	4.9	674.9	674.9	666.4	8.53	79.163
4,500.0	4,500.0	4,505.9	4,494.1	6.6	6.6	89.58	4.9	674.9	674.9	666.3	8.63	78.247
4,600.0	4,600.0	4,605.9	4,594.1	6.7	6.7	89.58	4.9	674.9	674.9	666.2	8.73	77.343
4,700.0	4,700.0	4,705.9	4,694.1	6.8	6.8	89.58	4.9	674.9	674.9	666.1	8.83	76.450
4,800.0	4,800.0	4,805.9	4,794.1	6.9	6.9	89.58	4.9	674.9	674.9	666.0	8.93	75.569
4,900.0	4,900.0	4,905.9	4,894.1	7.0	7.1	89.58	4.9	674.9	674.9	665.9	9.04	74.700
5,000.0	5,000.0	5,005.9	4,994.1	7.2	7.2	89.58	4.9	674.9	674.9	665.8	9.14	73.843
5,100.0	5,100.0	5,105.9	5,094.1	7.3	7.3	89.58	4.9	674.9	674.9	665.7	9.25	72.998

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

Anticollision Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Reference Site: BULLDOG
Site Error: 0.0 usft
Reference Well: STOVE PIPE FEDERAL COM #703H
Well Error: 3.0 usft
Reference Wellbore: OWB
Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM_Users
Offset TVD Reference: Offset Datum

Offset Design BULLDOG - STOVE PIPE FEDERAL COM #702H - OWB - PWP1													Offset Site Error: 0.0 usft
Survey Program: 0-Standard Keeper 104, 12347-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	
5,200.0	5,200.0	5,205.9	5,194.1	7.4	7.4	89.58	4.9	674.9	674.9	665.6	9.35	72.165	
5,300.0	5,300.0	5,305.9	5,294.1	7.5	7.5	89.58	4.9	674.9	674.9	665.5	9.46	71.345	
5,400.0	5,400.0	5,405.9	5,394.1	7.6	7.7	89.58	4.9	674.9	674.9	665.3	9.57	70.537	
5,500.0	5,500.0	5,494.1	5,494.1	7.8	7.8	89.58	4.9	674.9	674.9	665.2	9.67	69.788	
5,577.1	5,577.1	5,579.1	5,579.1	7.8	7.8	31.82	4.9	674.2	673.4	663.6	9.76	68.980	
5,600.0	5,600.0	5,602.0	5,602.0	7.9	7.8	31.85	4.9	673.9	672.6	662.8	9.79	68.719	
5,700.0	5,699.9	5,701.9	5,701.9	7.9	7.9	31.97	4.9	672.7	669.1	659.2	9.90	67.566	
5,800.0	5,799.9	5,801.8	5,801.8	8.0	7.9	32.09	4.9	671.6	665.7	655.6	10.02	66.407	
5,900.0	5,899.9	5,901.8	5,901.7	8.1	7.9	32.21	4.9	670.4	662.2	652.1	10.15	65.245	
6,000.0	5,999.8	6,001.7	6,001.7	8.2	8.0	32.34	4.9	669.2	658.8	648.5	10.28	64.083	
6,100.0	6,099.8	6,101.6	6,101.6	8.3	8.0	32.46	4.9	668.1	655.3	644.9	10.41	62.925	
6,200.0	6,199.8	6,201.5	6,201.5	8.4	8.1	32.59	4.9	666.9	651.9	641.3	10.55	61.771	
6,300.0	6,299.7	6,301.5	6,301.4	8.5	8.1	32.72	4.9	665.7	648.4	637.7	10.70	60.625	
6,400.0	6,399.7	6,401.4	6,401.3	8.6	8.2	32.85	4.9	664.5	645.0	634.2	10.84	59.487	
6,500.0	6,499.7	6,501.3	6,501.3	8.6	8.2	32.98	4.9	663.4	641.6	630.6	10.99	58.361	
6,600.0	6,599.6	6,601.3	6,601.2	8.7	8.3	33.12	4.9	662.2	638.1	627.0	11.15	57.248	
6,700.0	6,699.6	6,701.2	6,701.1	8.8	8.3	33.25	4.9	661.0	634.7	623.4	11.30	56.148	
6,800.0	6,799.5	6,801.1	6,801.0	8.9	8.4	33.39	4.9	659.9	631.3	619.8	11.46	55.064	
6,900.0	6,899.5	6,901.1	6,901.0	9.0	8.4	33.52	4.9	658.7	627.9	616.2	11.63	53.995	
7,000.0	6,999.5	7,001.0	7,000.9	9.1	8.5	33.66	4.9	657.5	624.5	612.7	11.79	52.943	
7,100.0	7,099.4	7,100.9	7,100.8	9.2	8.6	33.80	4.9	656.3	621.1	609.1	11.96	51.909	
7,200.0	7,199.4	7,200.8	7,200.7	9.3	8.6	33.94	4.9	655.2	617.6	605.5	12.14	50.893	
7,300.0	7,299.4	7,300.8	7,300.7	9.4	8.7	34.09	4.9	654.0	614.2	601.9	12.31	49.895	
7,400.0	7,399.3	7,400.7	7,400.6	9.5	8.8	34.23	4.9	652.8	610.8	598.4	12.49	48.916	
7,500.0	7,499.3	7,500.6	7,500.5	9.6	8.8	34.38	4.9	651.7	607.5	594.8	12.67	47.956	
7,600.0	7,599.3	7,600.6	7,600.4	9.7	8.9	34.53	4.9	650.5	604.1	591.2	12.85	47.015	
7,700.0	7,699.2	7,700.5	7,700.3	9.8	9.0	34.68	4.9	649.3	600.7	587.6	13.03	46.094	
7,800.0	7,799.2	7,800.4	7,800.3	9.9	9.0	34.83	4.9	648.2	597.3	584.1	13.22	45.191	
7,900.0	7,899.1	7,900.4	7,900.2	10.0	9.1	34.98	4.9	647.0	593.9	580.5	13.40	44.308	
8,000.0	7,999.1	8,000.3	8,000.1	10.1	9.2	35.14	4.9	645.8	590.5	577.0	13.59	43.444	
8,100.0	8,099.1	8,100.2	8,100.0	10.2	9.3	35.30	4.9	644.6	587.2	573.4	13.78	42.599	
8,200.0	8,199.0	8,200.2	8,200.0	10.3	9.3	35.46	4.9	643.5	583.8	569.8	13.98	41.772	
8,300.0	8,299.0	8,300.1	8,299.9	10.4	9.4	35.62	4.9	642.3	580.5	566.3	14.17	40.964	
8,400.0	8,399.0	8,400.0	8,399.8	10.5	9.5	35.78	4.9	641.1	577.1	562.7	14.37	40.174	
8,500.0	8,498.9	8,500.1	8,499.7	10.6	9.6	35.94	4.9	640.0	573.7	559.2	14.56	39.401	
8,600.0	8,598.9	8,600.1	8,599.7	10.7	9.7	36.11	4.9	638.8	570.4	555.6	14.76	38.646	
8,700.0	8,698.9	8,700.2	8,699.6	10.8	9.7	36.28	4.9	637.6	567.1	552.1	14.96	37.909	
8,800.0	8,798.8	8,800.3	8,799.5	11.0	9.8	36.45	4.9	636.4	563.7	548.6	15.16	37.188	
8,900.0	8,898.8	8,900.3	8,899.4	11.1	9.9	36.62	4.9	635.3	560.4	545.0	15.36	36.484	
9,000.0	8,998.8	9,000.4	8,999.4	11.2	10.0	36.80	4.9	634.1	557.1	541.5	15.56	35.796	
9,100.0	9,098.7	9,100.5	9,099.3	11.3	10.1	36.97	4.9	632.9	553.7	538.0	15.77	35.124	
9,200.0	9,198.7	9,200.5	9,199.2	11.4	10.2	37.15	4.9	631.8	550.4	534.5	15.97	34.468	
9,300.0	9,298.6	9,300.6	9,299.1	11.5	10.3	37.33	4.9	630.6	547.1	530.9	16.17	33.827	
9,400.0	9,398.6	9,400.7	9,399.0	11.6	10.4	37.51	4.9	629.4	543.8	527.4	16.38	33.200	
9,500.0	9,498.6	9,500.8	9,499.0	11.7	10.4	37.70	4.9	628.3	540.5	523.9	16.59	32.589	
9,600.0	9,598.5	9,600.8	9,598.9	11.8	10.5	37.89	4.9	627.1	537.2	520.4	16.79	31.991	
9,700.0	9,698.5	9,700.9	9,698.8	11.9	10.6	38.08	4.9	625.9	533.9	516.9	17.00	31.407	
9,800.0	9,798.5	9,801.0	9,798.7	12.1	10.7	38.27	4.9	624.7	530.7	513.4	17.21	30.836	
9,900.0	9,898.4	9,901.0	9,898.7	12.2	10.8	38.46	4.9	623.6	527.4	510.0	17.42	30.279	
10,000.0	9,998.4	10,001.1	9,998.6	12.3	10.9	38.66	4.9	622.4	524.1	506.5	17.63	29.734	
10,100.0	10,098.4	10,098.8	10,098.5	12.4	11.0	38.86	4.9	621.2	520.9	503.0	17.83	29.207	
10,200.0	10,198.3	10,201.2	10,198.4	12.5	11.1	39.06	4.9	620.1	517.6	499.5	18.05	28.682	

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

Anticollision Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Reference Site: BULLDOG
Site Error: 0.0 usft
Reference Well: STOVE PIPE FEDERAL COM #703H
Well Error: 3.0 usft
Reference Wellbore: OWB
Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM_Users
Offset TVD Reference: Offset Datum

Offset Design BULLDOG - STOVE PIPE FEDERAL COM #702H - OWB - PWP1														Offset Site Error:	0.0 usft
Survey Program: 0-Standard Keeper 104, 12347-MWD+IFR1+MS														Offset Well Error:	3.0 usft
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		Separation Factor		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	10,298.3	10,301.3	10,298.4	12.6	11.2	39.27	4.9	618.9	514.3	496.1	18.26	28.174			
10,400.0	10,398.2	10,398.6	10,398.3	12.7	11.3	39.47	4.9	617.7	511.1	492.6	18.46	27.682			
10,500.0	10,498.2	10,501.5	10,498.2	12.8	11.4	39.68	4.9	616.6	507.9	489.2	18.68	27.191			
10,600.0	10,598.2	10,601.5	10,598.1	13.0	11.5	39.90	4.9	615.4	504.6	485.7	18.89	26.717			
10,700.0	10,698.1	10,701.6	10,698.1	13.1	11.6	40.11	4.9	614.2	501.4	482.3	19.10	26.253			
10,800.0	10,798.1	10,801.7	10,798.0	13.2	11.7	40.33	4.9	613.0	498.2	478.9	19.31	25.799			
10,900.0	10,898.1	10,901.7	10,897.9	13.3	11.8	40.55	4.9	611.9	495.0	475.5	19.52	25.355			
11,000.0	10,998.0	10,998.2	10,997.8	13.4	11.9	40.77	4.9	610.7	491.8	472.1	19.73	24.927			
11,100.0	11,098.0	11,101.9	11,097.7	13.5	12.0	41.00	4.9	609.5	488.6	468.6	19.95	24.497			
11,200.0	11,198.0	11,201.9	11,197.7	13.7	12.1	41.23	4.9	608.4	485.4	465.3	20.16	24.082			
11,300.0	11,297.9	11,302.0	11,297.6	13.8	12.2	41.46	4.9	607.2	482.2	461.9	20.37	23.676			
11,400.0	11,397.9	11,402.1	11,397.5	13.9	12.3	41.70	4.9	606.0	479.1	458.5	20.58	23.279			
11,500.0	11,497.8	11,502.2	11,497.4	14.0	12.4	41.94	4.9	604.8	475.9	455.1	20.79	22.890			
11,600.0	11,597.8	11,602.2	11,597.4	14.1	12.5	42.18	4.9	603.7	472.7	451.7	21.00	22.510			
11,700.0	11,697.8	11,702.3	11,697.3	14.2	12.6	42.42	4.9	602.5	469.6	448.4	21.21	22.138			
11,800.0	11,797.7	11,802.4	11,797.2	14.4	12.7	42.67	4.9	601.3	466.5	445.0	21.42	21.774			
11,900.0	11,897.7	11,902.4	11,897.1	14.5	12.8	42.93	4.9	600.2	463.3	441.7	21.63	21.418			
12,000.0	11,997.7	11,997.5	11,997.1	14.6	12.9	43.18	4.9	599.0	460.2	438.4	21.84	21.075			
12,100.0	12,097.6	12,102.6	12,097.0	14.7	13.0	43.44	4.9	597.8	457.1	435.1	22.05	20.727			
12,194.5	12,192.1	12,208.1	12,191.4	14.8	13.2	43.69	4.9	596.7	454.2	431.9	22.27	20.399			
12,200.0	12,197.6	12,202.6	12,196.9	14.8	13.2	23.18	4.9	596.7	454.0	431.7	22.28	20.382			
12,250.0	12,247.5	12,247.3	12,246.8	15.0	13.2	-62.97	4.9	596.1	451.9	429.5	22.43	20.152			
12,300.0	12,297.1	12,303.2	12,296.4	15.5	13.3	-71.78	4.9	595.5	449.0	426.4	22.62	19.852			
12,350.0	12,345.9	12,345.6	12,345.2	15.7	13.3	-75.97	4.9	594.9	445.4	422.7	22.73	19.595			
12,400.0	12,393.7	12,387.6	12,387.1	15.9	13.3	-78.98	3.5	594.5	441.8	419.0	22.89	19.307			
12,450.0	12,439.9	12,430.1	12,429.4	16.1	13.3	-81.55	-1.1	594.2	438.8	415.7	23.08	19.007			
12,500.0	12,484.3	12,473.4	12,472.0	16.2	13.4	-83.91	-8.9	594.2	436.3	413.0	23.26	18.755			
12,550.0	12,526.6	12,517.6	12,514.7	16.4	13.5	-86.17	-20.2	594.2	434.4	411.0	23.40	18.563			
12,600.0	12,566.4	12,562.8	12,557.3	16.6	13.6	-88.37	-35.1	594.5	433.3	409.8	23.56	18.392			
12,643.6	12,598.8	12,603.0	12,594.2	16.7	13.7	-90.24	-51.2	594.9	433.0	409.3	23.72	18.255 CC			
12,650.0	12,603.4	12,609.1	12,599.6	16.7	13.7	-90.52	-53.8	595.0	433.0	409.3	23.75	18.235			
12,700.0	12,637.3	12,656.5	12,641.3	16.9	13.9	-92.62	-76.5	595.7	433.6	409.6	23.98	18.076			
12,750.0	12,667.9	12,705.3	12,682.0	17.0	14.0	-94.68	-103.3	596.6	434.9	410.6	24.30	17.895			
12,800.0	12,695.0	12,755.5	12,721.4	17.1	14.2	-96.68	-134.4	597.8	437.1	412.4	24.74	17.670			
12,850.0	12,718.2	12,807.4	12,759.1	17.2	14.3	-98.61	-169.9	599.2	440.1	414.8	25.32	17.385			
12,900.0	12,737.6	12,860.9	12,794.4	17.3	14.5	-100.46	-210.1	600.9	443.9	417.8	26.05	17.037			
12,950.0	12,752.8	12,916.3	12,826.9	17.3	14.6	-102.22	-254.9	602.9	448.3	421.4	26.95	16.636			
13,000.0	12,763.8	12,973.6	12,855.8	17.4	14.7	-103.86	-304.4	605.1	453.3	425.3	27.98	16.203			
13,050.0	12,770.6	13,033.1	12,880.3	17.4	14.8	-105.37	-358.4	607.7	458.7	429.6	29.09	15.769			
13,100.0	12,773.0	13,094.7	12,899.7	17.4	14.9	-106.74	-416.8	610.5	464.5	434.2	30.23	15.366			
13,105.2	12,773.0	13,101.3	12,901.4	17.4	14.9	-106.87	-423.1	610.8	465.1	434.7	30.34	15.329			
13,200.0	12,772.6	13,225.6	12,919.5	17.5	15.0	-108.85	-545.7	617.0	473.4	441.7	31.74	14.914			
13,300.0	12,772.1	13,347.1	12,919.5	17.6	15.2	-108.76	-667.1	621.7	476.5	444.3	32.22	14.788			
13,400.0	12,771.7	13,452.2	12,919.0	17.6	15.3	-108.76	-772.3	622.7	476.7	443.8	32.82	14.523			
13,500.0	12,771.2	13,552.2	12,918.5	17.8	15.5	-108.75	-872.3	623.4	476.6	443.2	33.48	14.235			
13,600.0	12,770.7	13,652.2	12,918.1	17.9	15.6	-108.75	-972.3	624.1	476.6	442.4	34.21	13.933			
13,700.0	12,770.3	13,752.2	12,917.6	18.0	15.9	-108.75	-1,072.3	624.8	476.6	441.6	34.98	13.623			
13,800.0	12,769.8	13,852.2	12,917.1	18.2	16.2	-108.75	-1,172.3	625.5	476.6	440.8	35.81	13.310			
13,900.0	12,769.4	13,952.2	12,916.7	18.4	16.5	-108.75	-1,272.3	626.2	476.6	439.9	36.68	12.993			
14,000.0	12,768.9	14,052.2	12,916.2	18.6	16.9	-108.75	-1,372.3	626.9	476.5	439.0	37.59	12.677			
14,100.0	12,768.5	14,152.2	12,915.7	18.9	17.4	-108.75	-1,472.3	627.6	476.5	438.0	38.54	12.363			
14,200.0	12,768.0	14,252.2	12,915.3	19.2	17.8	-108.75	-1,572.2	628.4	476.5	437.0	39.53	12.053			

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

Anticollision Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Reference Site: BULLDOG
Site Error: 0.0 usft
Reference Well: STOVE PIPE FEDERAL COM #703H
Well Error: 3.0 usft
Reference Wellbore: OWB
Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM_Users
Offset TVD Reference: Offset Datum

Offset Design BULLDOG - STOVE PIPE FEDERAL COM #702H - OWB - PWP1														Offset Site Error: 0.0 usft
Survey Program: 0-Standard Keeper 104, 12347-MWD+IFR1+MS														Offset Well Error: 3.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)				Between Centres (usft)	Between Ellipses (usft)	
14,300.0	12,767.5	14,352.2	12,914.8	19.5	18.4	-108.75	-1,672.2	629.1	476.5	435.9	40.56	11.749		
14,400.0	12,767.1	14,452.2	12,914.3	19.9	18.9	-108.75	-1,772.2	629.8	476.5	434.9	41.61	11.451		
14,500.0	12,766.6	14,552.2	12,913.8	20.3	19.4	-108.74	-1,872.2	630.5	476.5	433.8	42.70	11.160		
14,600.0	12,766.2	14,652.2	12,913.4	20.8	20.0	-108.74	-1,972.2	631.2	476.4	432.6	43.81	10.876		
14,700.0	12,765.7	14,752.2	12,912.9	21.3	20.6	-108.74	-2,072.2	631.9	476.4	431.5	44.94	10.601		
14,800.0	12,765.3	14,852.2	12,912.4	21.9	21.2	-108.74	-2,172.2	632.6	476.4	430.3	46.10	10.334		
14,900.0	12,764.8	14,952.2	12,912.0	22.4	21.8	-108.74	-2,272.2	633.3	476.4	429.1	47.28	10.076		
15,000.0	12,764.4	15,052.2	12,911.5	23.0	22.4	-108.74	-2,372.2	634.0	476.4	427.9	48.48	9.826		
15,100.0	12,763.9	15,152.2	12,911.0	23.6	23.1	-108.74	-2,472.2	634.8	476.4	426.7	49.70	9.585		
15,200.0	12,763.4	15,252.2	12,910.6	24.2	23.7	-108.74	-2,572.2	635.5	476.3	425.4	50.94	9.352		
15,300.0	12,763.0	15,352.2	12,910.1	24.9	24.4	-108.74	-2,672.2	636.2	476.3	424.1	52.19	9.127		
15,400.0	12,762.5	15,452.2	12,909.6	25.5	25.0	-108.74	-2,772.2	636.9	476.3	422.9	53.45	8.911		
15,500.0	12,762.1	15,552.2	12,909.1	26.1	25.7	-108.73	-2,872.2	637.6	476.3	421.6	54.73	8.702		
15,600.0	12,761.6	15,652.2	12,908.7	26.8	26.4	-108.73	-2,972.2	638.3	476.3	420.3	56.03	8.501		
15,700.0	12,761.2	15,752.2	12,908.2	27.5	27.0	-108.73	-3,072.2	639.0	476.3	418.9	57.33	8.307		
15,800.0	12,760.7	15,852.2	12,907.7	28.2	27.7	-108.73	-3,172.2	639.7	476.2	417.6	58.65	8.121		
15,900.0	12,760.2	15,952.2	12,907.3	28.8	28.4	-108.73	-3,272.2	640.4	476.2	416.3	59.97	7.941		
16,000.0	12,759.8	16,052.2	12,906.8	29.5	29.1	-108.73	-3,372.2	641.1	476.2	414.9	61.31	7.768		
16,100.0	12,759.3	16,152.2	12,906.3	30.2	29.8	-108.73	-3,472.2	641.9	476.2	413.5	62.65	7.601		
16,200.0	12,758.9	16,252.2	12,905.9	30.9	30.5	-108.73	-3,572.2	642.6	476.2	412.2	64.01	7.440		
16,300.0	12,758.4	16,352.2	12,905.4	31.6	31.2	-108.73	-3,672.2	643.3	476.2	410.8	65.37	7.284		
16,400.0	12,758.0	16,452.2	12,904.9	32.3	31.9	-108.72	-3,772.2	644.0	476.1	409.4	66.74	7.135		
16,500.0	12,757.5	16,552.2	12,904.4	33.0	32.6	-108.72	-3,872.2	644.7	476.1	408.0	68.11	6.990		
16,600.0	12,757.1	16,652.2	12,904.0	33.8	33.3	-108.72	-3,972.2	645.4	476.1	406.6	69.50	6.851		
16,700.0	12,756.6	16,752.2	12,903.5	34.5	34.0	-108.72	-4,072.2	646.1	476.1	405.2	70.88	6.716		
16,800.0	12,756.1	16,852.2	12,903.0	35.2	34.7	-108.72	-4,172.2	646.8	476.1	403.8	72.28	6.587		
16,900.0	12,755.7	16,952.2	12,902.6	35.9	35.5	-108.72	-4,272.2	647.5	476.1	402.4	73.68	6.461		
17,000.0	12,755.2	17,052.2	12,902.1	36.6	36.2	-108.72	-4,372.1	648.3	476.0	401.0	75.08	6.340		
17,100.0	12,754.8	17,152.2	12,901.6	37.4	36.9	-108.72	-4,472.1	649.0	476.0	399.5	76.50	6.223		
17,200.0	12,754.3	17,252.2	12,901.2	38.1	37.6	-108.72	-4,572.1	649.7	476.0	398.1	77.91	6.110		
17,300.0	12,753.9	17,352.2	12,900.7	38.8	38.4	-108.72	-4,672.1	650.4	476.0	396.7	79.33	6.000		
17,400.0	12,753.4	17,452.2	12,900.2	39.5	39.1	-108.71	-4,772.1	651.1	476.0	395.2	80.75	5.894		
17,500.0	12,753.0	17,552.2	12,899.8	40.3	39.8	-108.71	-4,872.1	651.8	476.0	393.8	82.18	5.791		
17,600.0	12,752.5	17,652.2	12,899.3	41.0	40.5	-108.71	-4,972.1	652.5	475.9	392.3	83.61	5.692		
17,700.0	12,752.0	17,752.2	12,898.8	41.7	41.3	-108.71	-5,072.1	653.2	475.9	390.9	85.05	5.596		
17,800.0	12,751.6	17,852.2	12,898.3	42.5	42.0	-108.71	-5,172.1	653.9	475.9	389.4	86.49	5.503		
17,900.0	12,751.1	17,952.2	12,897.9	43.2	42.7	-108.71	-5,272.1	654.7	475.9	388.0	87.93	5.412		
18,000.0	12,750.7	18,052.2	12,897.4	43.9	43.5	-108.71	-5,372.1	655.4	475.9	386.5	89.37	5.324		
18,100.0	12,750.2	18,152.2	12,896.9	44.7	44.2	-108.71	-5,472.1	656.1	475.9	385.0	90.82	5.239		
18,200.0	12,749.8	18,252.2	12,896.5	45.4	44.9	-108.71	-5,572.1	656.8	475.8	383.6	92.27	5.157		
18,300.0	12,749.3	18,352.2	12,896.0	46.2	45.7	-108.71	-5,672.1	657.5	475.8	382.1	93.73	5.077		
18,400.0	12,748.8	18,452.2	12,895.5	46.9	46.4	-108.70	-5,772.1	658.2	475.8	380.6	95.18	4.999		
18,500.0	12,748.4	18,552.2	12,895.1	47.6	47.1	-108.70	-5,872.1	658.9	475.8	379.1	96.64	4.923		
18,600.0	12,747.9	18,652.2	12,894.6	48.4	47.9	-108.70	-5,972.1	659.6	475.8	377.7	98.10	4.850		
18,700.0	12,747.5	18,752.2	12,894.1	49.1	48.6	-108.70	-6,072.1	660.3	475.8	376.2	99.56	4.778		
18,800.0	12,747.0	18,852.2	12,893.6	49.9	49.4	-108.70	-6,172.1	661.1	475.7	374.7	101.03	4.709		
18,900.0	12,746.6	18,952.2	12,893.2	50.6	50.1	-108.70	-6,272.1	661.8	475.7	373.2	102.50	4.641		
19,000.0	12,746.1	19,052.2	12,892.7	51.4	50.9	-108.70	-6,372.1	662.5	475.7	371.7	103.96	4.576		
19,100.0	12,745.7	19,152.2	12,892.2	52.1	51.6	-108.70	-6,472.1	663.2	475.7	370.2	105.44	4.512		
19,200.0	12,745.2	19,252.2	12,891.8	52.9	52.3	-108.70	-6,572.1	663.9	475.7	368.8	106.91	4.449		
19,300.0	12,744.7	19,352.2	12,891.3	53.6	53.1	-108.69	-6,672.1	664.6	475.6	367.3	108.38	4.389		
19,400.0	12,744.3	19,452.2	12,890.8	54.3	53.8	-108.69	-6,772.1	665.3	475.6	365.8	109.86	4.330		

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

Anticollision Report

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 Well Error: 3.0 usft
 Reference Wellbore: OWB
 Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
 TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
 MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at 2.00 sigma
 Database: EDM_Users
 Offset TVD Reference: Offset Datum

Offset Design BULLDOG - STOVE PIPE FEDERAL COM #702H - OWB - PWP1													Offset Site Error: 0.0 usft
Survey Program: 0-Standard Keeper 104, 12347-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	
19,500.0	12,743.8	19,552.2	12,890.4	55.1	54.6	-108.69	-6,872.1	666.0	475.6	364.3	111.34	4.272	
19,600.0	12,743.4	19,652.2	12,889.9	55.8	55.3	-108.69	-6,972.1	666.7	475.6	362.8	112.82	4.216	
19,700.0	12,742.9	19,752.2	12,889.4	56.6	56.1	-108.69	-7,072.0	667.4	475.6	361.3	114.30	4.161	
19,800.0	12,742.5	19,852.2	12,888.9	57.3	56.8	-108.69	-7,172.0	668.2	475.6	359.8	115.78	4.108	
19,900.0	12,742.0	19,952.2	12,888.5	58.1	57.6	-108.69	-7,272.0	668.9	475.5	358.3	117.26	4.055	
20,000.0	12,741.5	20,052.2	12,888.0	58.8	58.3	-108.69	-7,372.0	669.6	475.5	356.8	118.75	4.005	
20,100.0	12,741.1	20,152.2	12,887.5	59.6	59.1	-108.69	-7,472.0	670.3	475.5	355.3	120.23	3.955	
20,200.0	12,740.6	20,252.2	12,887.1	60.3	59.8	-108.69	-7,572.0	671.0	475.5	353.8	121.72	3.907	
20,300.0	12,740.2	20,352.2	12,886.6	61.1	60.6	-108.68	-7,672.0	671.7	475.5	352.3	123.21	3.859	
20,400.0	12,739.7	20,452.2	12,886.1	61.9	61.3	-108.68	-7,772.0	672.4	475.5	350.8	124.70	3.813	
20,500.0	12,739.3	20,552.2	12,885.7	62.6	62.1	-108.68	-7,872.0	673.1	475.4	349.3	126.19	3.768	
20,600.0	12,738.8	20,652.2	12,885.2	63.4	62.8	-108.68	-7,972.0	673.8	475.4	347.8	127.68	3.724	
20,700.0	12,738.4	20,752.2	12,884.7	64.1	63.6	-108.68	-8,072.0	674.6	475.4	346.2	129.17	3.681	
20,800.0	12,737.9	20,852.2	12,884.2	64.9	64.3	-108.68	-8,172.0	675.3	475.4	344.7	130.66	3.638	
20,900.0	12,737.4	20,952.2	12,883.8	65.6	65.1	-108.68	-8,272.0	676.0	475.4	343.2	132.16	3.597	
21,000.0	12,737.0	21,052.2	12,883.3	66.4	65.8	-108.68	-8,372.0	676.7	475.4	341.7	133.65	3.557	
21,100.0	12,736.5	21,152.2	12,882.8	67.1	66.6	-108.68	-8,472.0	677.4	475.3	340.2	135.15	3.517	
21,200.0	12,736.1	21,252.2	12,882.4	67.9	67.3	-108.68	-8,572.0	678.1	475.3	338.7	136.65	3.479	
21,300.0	12,735.6	21,352.2	12,881.9	68.6	68.1	-108.67	-8,672.0	678.8	475.3	337.2	138.14	3.441	
21,400.0	12,735.2	21,452.2	12,881.4	69.4	68.8	-108.67	-8,772.0	679.5	475.3	335.7	139.64	3.404	
21,500.0	12,734.7	21,552.2	12,881.0	70.1	69.6	-108.67	-8,872.0	680.2	475.3	334.1	141.14	3.367	
21,600.0	12,734.2	21,652.2	12,880.5	70.9	70.3	-108.67	-8,972.0	681.0	475.3	332.6	142.64	3.332	
21,700.0	12,733.8	21,752.2	12,880.0	71.7	71.1	-108.67	-9,072.0	681.7	475.2	331.1	144.14	3.297	
21,800.0	12,733.3	21,852.2	12,879.6	72.4	71.9	-108.67	-9,172.0	682.4	475.2	329.6	145.64	3.263	
21,900.0	12,732.9	21,952.2	12,879.1	73.2	72.6	-108.67	-9,272.0	683.1	475.2	328.1	147.15	3.229	
22,000.0	12,732.4	22,052.2	12,878.6	73.9	73.4	-108.67	-9,372.0	683.8	475.2	326.5	148.65	3.197	
22,100.0	12,732.0	22,152.2	12,878.1	74.7	74.1	-108.67	-9,472.0	684.5	475.2	325.0	150.15	3.165	
22,200.0	12,731.5	22,252.2	12,877.7	75.4	74.9	-108.66	-9,572.0	685.2	475.2	323.5	151.66	3.133	
22,300.0	12,731.1	22,352.2	12,877.2	76.2	75.6	-108.66	-9,672.0	685.9	475.1	322.0	153.16	3.102	
22,400.0	12,730.6	22,452.2	12,876.7	77.0	76.4	-108.66	-9,772.0	686.6	475.1	320.5	154.67	3.072	
22,500.0	12,730.1	22,552.2	12,876.3	77.7	77.1	-108.66	-9,871.9	687.4	475.1	318.9	156.17	3.042	
22,600.0	12,729.7	22,652.2	12,875.8	78.5	77.9	-108.66	-9,971.9	688.1	475.1	317.4	157.68	3.013	
22,700.0	12,729.2	22,752.2	12,875.3	79.2	78.7	-108.66	-10,071.9	688.8	475.1	315.9	159.19	2.984	
22,800.0	12,728.8	22,852.2	12,874.9	80.0	79.4	-108.66	-10,171.9	689.5	475.1	314.4	160.69	2.956	
22,900.0	12,728.3	22,952.2	12,874.4	80.7	80.2	-108.66	-10,271.9	690.2	475.0	312.8	162.20	2.929	
23,000.0	12,727.9	23,052.2	12,873.9	81.5	80.9	-108.66	-10,371.9	690.9	475.0	311.3	163.71	2.902	
23,100.0	12,727.4	23,152.2	12,873.4	82.3	81.7	-108.66	-10,471.9	691.6	475.0	309.8	165.22	2.875	
23,200.0	12,726.9	23,252.2	12,873.0	83.0	82.4	-108.65	-10,571.9	692.3	475.0	308.3	166.73	2.849	
23,300.0	12,726.5	23,352.2	12,872.5	83.8	83.2	-108.65	-10,671.9	693.0	475.0	306.7	168.24	2.823	
23,407.4	12,726.0	23,459.6	12,872.0	84.6	84.0	-108.65	-10,779.3	693.8	475.0	305.1	169.86	2.796 ES, SF	

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

Anticollision Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Reference Site: BULLDOG
Site Error: 0.0 usft
Reference Well: STOVE PIPE FEDERAL COM #703H
Well Error: 3.0 usft
Reference Wellbore: OWB
Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM_Users
Offset TVD Reference: Offset Datum

Offset Design BULLDOG - STOVE PIPE FEDERAL COM #704H - OWB - PWP1														Offset Site Error: 0.0 usft
Survey Program: 0-Standard Keeper 104, 12365-MWD+IFR1+MS														Offset Well Error: 3.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)				Between Centres (usft)	Between Ellipses (usft)	
0.0	0.0	0.2	0.2	3.0	3.0	-90.38	-0.2	-30.1	30.1					
100.0	100.0	100.2	100.2	3.0	3.0	-90.38	-0.2	-30.1	30.1	24.1	6.00	5.017		
200.0	200.0	200.2	200.2	3.0	3.0	-90.38	-0.2	-30.1	30.1	24.1	6.00	5.014		
300.0	300.0	300.2	300.2	3.0	3.0	-90.38	-0.2	-30.1	30.1	24.1	6.01	5.009		
400.0	400.0	400.2	400.2	3.0	3.0	-90.38	-0.2	-30.1	30.1	24.1	6.02	5.002		
500.0	500.0	500.2	500.2	3.1	3.1	-90.38	-0.2	-30.1	30.1	24.1	6.03	4.991		
600.0	600.0	600.2	600.2	3.1	3.1	-90.38	-0.2	-30.1	30.1	24.1	6.05	4.978		
700.0	700.0	700.2	700.2	3.1	3.1	-90.38	-0.2	-30.1	30.1	24.0	6.07	4.963		
800.0	800.0	800.2	800.2	3.2	3.2	-90.38	-0.2	-30.1	30.1	24.0	6.09	4.945		
900.0	900.0	900.2	900.2	3.2	3.2	-90.38	-0.2	-30.1	30.1	24.0	6.11	4.925		
1,000.0	1,000.0	1,000.2	1,000.2	3.2	3.2	-90.38	-0.2	-30.1	30.1	24.0	6.14	4.902		
1,100.0	1,100.0	1,100.2	1,100.2	3.3	3.3	-90.38	-0.2	-30.1	30.1	23.9	6.17	4.877		
1,200.0	1,200.0	1,200.2	1,200.2	3.4	3.4	-90.38	-0.2	-30.1	30.1	23.9	6.21	4.850		
1,300.0	1,300.0	1,300.2	1,300.2	3.4	3.4	-90.38	-0.2	-30.1	30.1	23.9	6.24	4.822		
1,400.0	1,400.0	1,400.2	1,400.2	3.5	3.5	-90.38	-0.2	-30.1	30.1	23.8	6.28	4.791		
1,500.0	1,500.0	1,500.2	1,500.2	3.5	3.5	-90.38	-0.2	-30.1	30.1	23.8	6.33	4.758		
1,600.0	1,600.0	1,600.2	1,600.2	3.6	3.6	-90.38	-0.2	-30.1	30.1	23.7	6.37	4.724		
1,700.0	1,700.0	1,700.2	1,700.2	3.7	3.7	-90.38	-0.2	-30.1	30.1	23.7	6.42	4.689		
1,800.0	1,800.0	1,800.2	1,800.2	3.8	3.8	-90.38	-0.2	-30.1	30.1	23.6	6.47	4.652		
1,900.0	1,900.0	1,900.2	1,900.2	3.9	3.9	-90.38	-0.2	-30.1	30.1	23.6	6.52	4.614		
2,000.0	2,000.0	2,000.2	2,000.2	3.9	3.9	-90.38	-0.2	-30.1	30.1	23.5	6.58	4.574		
2,100.0	2,100.0	2,100.2	2,100.2	4.0	4.0	-90.38	-0.2	-30.1	30.1	23.5	6.64	4.534		
2,200.0	2,200.0	2,200.2	2,200.2	4.1	4.1	-90.38	-0.2	-30.1	30.1	23.4	6.70	4.493		
2,300.0	2,300.0	2,300.2	2,300.2	4.2	4.2	-90.38	-0.2	-30.1	30.1	23.3	6.76	4.451		
2,400.0	2,400.0	2,400.2	2,400.2	4.3	4.3	-90.38	-0.2	-30.1	30.1	23.3	6.83	4.408		
2,500.0	2,500.0	2,500.2	2,500.2	4.4	4.4	-90.38	-0.2	-30.1	30.1	23.2	6.90	4.365		
2,600.0	2,600.0	2,600.2	2,600.2	4.5	4.5	-90.38	-0.2	-30.1	30.1	23.1	6.97	4.321		
2,700.0	2,700.0	2,700.2	2,700.2	4.6	4.6	-90.38	-0.2	-30.1	30.1	23.1	7.04	4.277		
2,800.0	2,800.0	2,800.2	2,800.2	4.7	4.7	-90.38	-0.2	-30.1	30.1	23.0	7.11	4.232		
2,900.0	2,900.0	2,900.2	2,900.2	4.8	4.8	-90.38	-0.2	-30.1	30.1	22.9	7.19	4.187		
3,000.0	3,000.0	3,000.2	3,000.2	4.9	4.9	-90.38	-0.2	-30.1	30.1	22.8	7.27	4.143		
3,100.0	3,100.0	3,100.2	3,100.2	5.0	5.0	-90.38	-0.2	-30.1	30.1	22.8	7.35	4.098		
3,200.0	3,200.0	3,200.2	3,200.2	5.1	5.1	-90.38	-0.2	-30.1	30.1	22.7	7.43	4.053		
3,300.0	3,300.0	3,300.2	3,300.2	5.2	5.2	-90.38	-0.2	-30.1	30.1	22.6	7.51	4.008		
3,400.0	3,400.0	3,400.2	3,400.2	5.3	5.3	-90.38	-0.2	-30.1	30.1	22.5	7.60	3.963		
3,500.0	3,500.0	3,500.2	3,500.2	5.4	5.4	-90.38	-0.2	-30.1	30.1	22.4	7.68	3.919		
3,600.0	3,600.0	3,600.2	3,600.2	5.5	5.5	-90.38	-0.2	-30.1	30.1	22.3	7.77	3.874		
3,700.0	3,700.0	3,700.2	3,700.2	5.7	5.7	-90.38	-0.2	-30.1	30.1	22.2	7.86	3.830		
3,800.0	3,800.0	3,800.2	3,800.2	5.8	5.8	-90.38	-0.2	-30.1	30.1	22.2	7.95	3.786		
3,900.0	3,900.0	3,900.2	3,900.2	5.9	5.9	-90.38	-0.2	-30.1	30.1	22.1	8.04	3.743		
4,000.0	4,000.0	4,000.2	4,000.2	6.0	6.0	-90.38	-0.2	-30.1	30.1	22.0	8.14	3.700		
4,100.0	4,100.0	4,100.2	4,100.2	6.1	6.1	-90.38	-0.2	-30.1	30.1	21.9	8.23	3.657		
4,200.0	4,200.0	4,200.2	4,200.2	6.2	6.2	-90.38	-0.2	-30.1	30.1	21.8	8.33	3.615		
4,300.0	4,300.0	4,300.2	4,300.2	6.3	6.3	-90.38	-0.2	-30.1	30.1	21.7	8.42	3.573		
4,400.0	4,400.0	4,400.2	4,400.2	6.5	6.5	-90.38	-0.2	-30.1	30.1	21.6	8.52	3.532		
4,500.0	4,500.0	4,500.2	4,500.2	6.6	6.6	-90.38	-0.2	-30.1	30.1	21.5	8.62	3.491		
4,600.0	4,600.0	4,600.2	4,600.2	6.7	6.7	-90.38	-0.2	-30.1	30.1	21.4	8.72	3.450		
4,700.0	4,700.0	4,700.2	4,700.2	6.8	6.8	-90.38	-0.2	-30.1	30.1	21.3	8.83	3.411		
4,800.0	4,800.0	4,800.2	4,800.2	6.9	6.9	-90.38	-0.2	-30.1	30.1	21.2	8.93	3.371		
4,900.0	4,900.0	4,900.2	4,900.2	7.0	7.0	-90.38	-0.2	-30.1	30.1	21.1	9.03	3.333		
5,000.0	5,000.0	5,000.2	5,000.2	7.2	7.2	-90.38	-0.2	-30.1	30.1	21.0	9.14	3.294		
5,100.0	5,100.0	5,100.2	5,100.2	7.3	7.3	-90.38	-0.2	-30.1	30.1	20.9	9.24	3.257		

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

Anticollision Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Reference Site: BULLDOG
Site Error: 0.0 usft
Reference Well: STOVE PIPE FEDERAL COM #703H
Well Error: 3.0 usft
Reference Wellbore: OWB
Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM_Users
Offset TVD Reference: Offset Datum

Offset Design BULLDOG - STOVE PIPE FEDERAL COM #704H - OWB - PWP1													Offset Site Error: 0.0 usft
Survey Program: 0-Standard Keeper 104, 12365-MWD+IFR1+MS													Offset Well Error: 3.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
5,200.0	5,200.0	5,200.2	5,200.2	7.4	7.4	-90.38	-0.2	-30.1	30.1	20.8	9.35	3.219	
5,300.0	5,300.0	5,300.2	5,300.2	7.5	7.5	-90.38	-0.2	-30.1	30.1	20.6	9.46	3.183	
5,400.0	5,400.0	5,400.2	5,400.2	7.6	7.6	-90.38	-0.2	-30.1	30.1	20.5	9.57	3.147	
5,500.0	5,500.0	5,500.2	5,500.2	7.8	7.8	-90.38	-0.2	-30.1	30.1	20.4	9.67	3.111 CC, ES	
5,577.1	5,577.1	5,576.6	5,576.6	7.8	7.8	-148.59	0.1	-31.1	32.0	22.2	9.76	3.272	
5,600.0	5,600.0	5,600.5	5,599.4	7.9	7.9	-148.84	0.3	-31.6	33.0	23.2	9.79	3.369	
5,700.0	5,699.9	5,700.6	5,699.3	7.9	7.9	-149.77	1.0	-33.8	37.5	27.6	9.91	3.788	
5,800.0	5,799.9	5,800.8	5,799.2	8.0	8.0	-150.50	1.8	-36.1	42.1	32.1	10.04	4.194	
5,900.0	5,899.9	5,900.9	5,899.0	8.1	8.0	-151.08	2.5	-38.4	46.7	36.5	10.17	4.589	
6,000.0	5,999.8	6,001.0	5,998.9	8.2	8.1	-151.56	3.3	-40.6	51.2	40.9	10.31	4.973	
6,100.0	6,099.8	6,101.1	6,098.8	8.3	8.2	-151.97	4.0	-42.9	55.8	45.4	10.45	5.345	
6,200.0	6,199.8	6,201.2	6,198.6	8.4	8.3	-152.31	4.7	-45.1	60.4	49.8	10.59	5.705	
6,300.0	6,299.7	6,301.3	6,298.5	8.5	8.3	-152.60	5.5	-47.4	65.0	54.2	10.73	6.054	
6,400.0	6,399.7	6,401.4	6,398.4	8.6	8.4	-152.86	6.2	-49.6	69.6	58.7	10.88	6.393	
6,500.0	6,499.7	6,501.5	6,498.2	8.6	8.5	-153.08	7.0	-51.9	74.1	63.1	11.03	6.720	
6,600.0	6,599.6	6,601.6	6,598.1	8.7	8.6	-153.28	7.7	-54.2	78.7	67.5	11.19	7.037	
6,700.0	6,699.6	6,701.7	6,698.0	8.8	8.6	-153.45	8.5	-56.4	83.3	72.0	11.34	7.344	
6,800.0	6,799.5	6,801.8	6,797.8	8.9	8.7	-153.61	9.2	-58.7	87.9	76.4	11.50	7.640	
6,900.0	6,899.5	6,901.9	6,897.7	9.0	8.8	-153.75	9.9	-60.9	92.5	80.8	11.67	7.927	
7,000.0	6,999.5	7,002.0	6,997.6	9.1	8.9	-153.88	10.7	-63.2	97.1	85.2	11.83	8.204	
7,100.0	7,099.4	7,102.1	7,097.4	9.2	9.0	-154.00	11.4	-65.5	101.7	89.7	12.00	8.472	
7,200.0	7,199.4	7,202.2	7,197.3	9.3	9.0	-154.10	12.2	-67.7	106.2	94.1	12.17	8.730	
7,300.0	7,299.4	7,302.3	7,297.2	9.4	9.1	-154.20	12.9	-70.0	110.8	98.5	12.34	8.980	
7,400.0	7,399.3	7,402.4	7,397.0	9.5	9.2	-154.29	13.6	-72.2	115.4	102.9	12.52	9.221	
7,500.0	7,499.3	7,502.5	7,496.9	9.6	9.3	-154.37	14.4	-74.5	120.0	107.3	12.69	9.454	
7,600.0	7,599.3	7,602.7	7,596.8	9.7	9.4	-154.45	15.1	-76.7	124.6	111.7	12.87	9.679	
7,700.0	7,699.2	7,702.8	7,696.6	9.8	9.5	-154.52	15.9	-79.0	129.2	116.1	13.05	9.897	
7,800.0	7,799.2	7,802.9	7,796.5	9.9	9.6	-154.59	16.6	-81.3	133.8	120.5	13.23	10.107	
7,900.0	7,899.1	7,903.0	7,896.4	10.0	9.7	-154.65	17.4	-83.5	138.4	124.9	13.42	10.310	
8,000.0	7,999.1	8,003.1	7,996.2	10.1	9.7	-154.71	18.1	-85.8	142.9	129.3	13.61	10.506	
8,100.0	8,099.1	8,103.2	8,096.1	10.2	9.8	-154.77	18.8	-88.0	147.5	133.7	13.79	10.695	
8,200.0	8,199.0	8,203.3	8,196.0	10.3	9.9	-154.82	19.6	-90.3	152.1	138.1	13.98	10.878	
8,300.0	8,299.0	8,303.4	8,295.8	10.4	10.0	-154.87	20.3	-92.6	156.7	142.5	14.18	11.055	
8,400.0	8,399.0	8,403.5	8,395.7	10.5	10.1	-154.91	21.1	-94.8	161.3	146.9	14.37	11.226	
8,500.0	8,498.9	8,498.4	8,495.6	10.6	10.2	-154.95	21.8	-97.1	165.9	151.3	14.56	11.396	
8,600.0	8,598.9	8,603.7	8,595.4	10.7	10.3	-154.99	22.6	-99.3	170.5	155.7	14.76	11.551	
8,700.0	8,698.9	8,703.8	8,695.3	10.8	10.4	-155.03	23.3	-101.6	175.1	160.1	14.96	11.705	
8,800.0	8,798.8	8,803.9	8,795.2	11.0	10.5	-155.07	24.0	-103.9	179.7	164.5	15.15	11.855	
8,900.0	8,898.8	8,904.0	8,895.0	11.1	10.6	-155.10	24.8	-106.1	184.2	168.9	15.35	11.999	
9,000.0	8,998.8	9,004.1	8,994.9	11.2	10.7	-155.14	25.5	-108.4	188.8	173.3	15.56	12.139	
9,100.0	9,098.7	9,104.2	9,094.8	11.3	10.8	-155.17	26.3	-110.6	193.4	177.7	15.76	12.275	
9,200.0	9,198.7	9,204.3	9,194.6	11.4	10.9	-155.20	27.0	-112.9	198.0	182.0	15.96	12.406	
9,300.0	9,298.6	9,304.4	9,294.5	11.5	11.0	-155.23	27.8	-115.1	202.6	186.4	16.17	12.532	
9,400.0	9,398.6	9,404.5	9,394.4	11.6	11.1	-155.26	28.5	-117.4	207.2	190.8	16.37	12.655	
9,500.0	9,498.6	9,504.7	9,494.2	11.7	11.2	-155.28	29.2	-119.7	211.8	195.2	16.58	12.774	
9,600.0	9,598.5	9,604.8	9,594.1	11.8	11.3	-155.31	30.0	-121.9	216.4	199.6	16.79	12.890	
9,700.0	9,698.5	9,704.9	9,694.0	11.9	11.4	-155.33	30.7	-124.2	221.0	204.0	16.99	13.001	
9,800.0	9,798.5	9,805.0	9,793.8	12.1	11.5	-155.35	31.5	-126.4	225.5	208.3	17.20	13.110	
9,900.0	9,898.4	9,905.1	9,893.7	12.2	11.6	-155.38	32.2	-128.7	230.1	212.7	17.42	13.215	
10,000.0	9,998.4	10,005.2	9,993.6	12.3	11.7	-155.40	33.0	-131.0	234.7	217.1	17.63	13.317	
10,100.0	10,098.4	10,094.7	10,093.4	12.4	11.8	-155.42	33.7	-133.2	239.3	221.5	17.83	13.424	
10,200.0	10,198.3	10,205.4	10,193.3	12.5	11.9	-155.44	34.4	-135.5	243.9	225.9	18.05	13.511	

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

Anticollision Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Reference Site: BULLDOG
Site Error: 0.0 usft
Reference Well: STOVE PIPE FEDERAL COM #703H
Well Error: 3.0 usft
Reference Wellbore: OWB
Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM_Users
Offset TVD Reference: Offset Datum

Offset Design BULLDOG - STOVE PIPE FEDERAL COM #704H - OWB - PWP1														Offset Site Error: 0.0 usft
Survey Program: 0-Standard Keeper 104, 12365-MWD+IFR1+MS														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 (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,300.0	10,298.3	10,305.5	10,293.2	12.6	12.1	-155.46		35.2	-137.7	248.5	230.2	18.27	13.605	
10,400.0	10,398.2	10,405.6	10,393.0	12.7	12.2	-155.48		35.9	-140.0	253.1	234.6	18.48	13.695	
10,500.0	10,498.2	10,505.7	10,492.9	12.8	12.3	-155.49		36.7	-142.2	257.7	239.0	18.70	13.783	
10,600.0	10,598.2	10,605.8	10,592.8	13.0	12.4	-155.51		37.4	-144.5	262.3	243.4	18.91	13.868	
10,700.0	10,698.1	10,705.9	10,692.6	13.1	12.5	-155.53		38.1	-146.8	266.9	247.7	19.13	13.951	
10,800.0	10,798.1	10,806.0	10,792.5	13.2	12.6	-155.54		38.9	-149.0	271.4	252.1	19.35	14.031	
10,900.0	10,898.1	10,893.9	10,892.4	13.3	12.7	-155.56		39.6	-151.3	276.0	256.5	19.55	14.119	
11,000.0	10,998.0	11,006.2	10,992.2	13.4	12.8	-155.57		40.4	-153.5	280.6	260.8	19.78	14.185	
11,100.0	11,098.0	11,106.3	11,092.1	13.5	12.9	-155.59		41.1	-155.8	285.2	265.2	20.00	14.259	
11,200.0	11,198.0	11,206.4	11,192.0	13.7	13.0	-155.60		41.9	-158.1	289.8	269.6	20.22	14.331	
11,300.0	11,297.9	11,306.6	11,291.8	13.8	13.2	-155.61		42.6	-160.3	294.4	274.0	20.44	14.401	
11,400.0	11,397.9	11,406.7	11,391.7	13.9	13.3	-155.63		43.3	-162.6	299.0	278.3	20.66	14.469	
11,500.0	11,497.8	11,506.8	11,491.6	14.0	13.4	-155.64		44.1	-164.8	303.6	282.7	20.89	14.536	
11,600.0	11,597.8	11,606.9	11,591.4	14.1	13.5	-155.65		44.8	-167.1	308.2	287.1	21.11	14.600	
11,700.0	11,697.8	11,707.0	11,691.3	14.2	13.6	-155.66		45.6	-169.3	312.8	291.4	21.33	14.663	
11,800.0	11,797.7	11,807.1	11,791.2	14.4	13.7	-155.68		46.3	-171.6	317.3	295.8	21.55	14.724	
11,900.0	11,897.7	11,907.2	11,891.0	14.5	13.8	-155.69		47.1	-173.9	321.9	300.2	21.78	14.784	
12,000.0	11,997.7	12,007.3	11,990.9	14.6	13.9	-155.70		47.8	-176.1	326.5	304.5	22.00	14.842	
12,100.0	12,097.6	12,092.6	12,090.7	14.7	14.0	-155.71		48.5	-178.4	331.1	308.9	22.21	14.909	
12,194.5	12,192.1	12,187.0	12,185.1	14.8	14.1	-155.72		49.2	-180.5	335.5	313.0	22.42	14.962	
12,200.0	12,197.6	12,207.5	12,190.6	14.8	14.2	-176.24		49.3	-180.6	335.7	313.2	22.46	14.945	
12,250.0	12,247.5	12,242.4	12,240.5	15.0	14.2	98.26		49.7	-181.8	337.7	315.0	22.65	14.907	
12,300.0	12,297.1	12,291.9	12,290.0	15.5	14.3	91.48		50.0	-182.9	339.1	316.2	22.91	14.801	
12,350.0	12,345.9	12,340.6	12,338.7	15.7	14.3	90.62		50.4	-184.0	340.4	317.5	22.93	14.849	
12,400.0	12,393.7	12,386.4	12,384.4	15.9	14.3	91.49		50.3	-185.1	341.9	319.0	22.95	14.901	
12,450.0	12,439.9	12,430.6	12,428.5	16.1	14.4	92.83		47.4	-186.4	344.4	321.3	23.11	14.904	
12,500.0	12,484.3	12,475.8	12,473.2	16.2	14.4	94.41		40.8	-188.2	347.9	324.7	23.21	14.992	
12,550.0	12,526.6	12,522.2	12,518.3	16.4	14.5	96.10		30.5	-190.4	352.5	329.3	23.20	15.194	
12,600.0	12,566.4	12,569.7	12,563.6	16.6	14.6	97.81		16.2	-193.0	358.2	335.0	23.19	15.447	
12,650.0	12,603.4	12,618.5	12,608.7	16.7	14.7	99.51		-2.3	-196.0	364.8	341.6	23.24	15.700	
12,700.0	12,637.3	12,668.9	12,653.3	16.9	14.8	101.15		-25.4	-199.6	372.4	349.0	23.41	15.910	
12,750.0	12,667.9	12,720.9	12,697.0	17.0	14.9	102.71		-53.2	-203.6	380.8	357.0	23.75	16.034	
12,800.0	12,695.0	12,774.6	12,739.3	17.1	15.1	104.18		-85.9	-208.2	389.9	365.6	24.30	16.044	
12,850.0	12,718.2	12,830.3	12,779.7	17.2	15.2	105.53		-123.8	-213.3	399.5	374.4	25.07	15.934	
12,900.0	12,737.6	12,888.0	12,817.5	17.3	15.3	106.76		-167.1	-218.9	409.5	383.5	26.05	15.720	
12,950.0	12,752.8	12,948.0	12,851.9	17.3	15.5	107.85		-215.8	-225.0	419.7	392.5	27.19	15.439	
13,000.0	12,763.8	13,010.3	12,882.0	17.4	15.6	108.79		-269.9	-231.6	429.9	401.5	28.41	15.130	
13,050.0	12,770.6	13,075.0	12,906.8	17.4	15.7	109.57		-329.2	-238.6	439.9	410.3	29.65	14.835	
13,100.0	12,773.0	13,142.0	12,925.2	17.4	15.7	110.18		-393.2	-246.0	449.5	418.7	30.82	14.588	
13,105.2	12,773.0	13,149.1	12,926.7	17.4	15.8	110.24		-400.2	-246.8	450.5	419.6	30.93	14.567	
13,200.0	12,772.6	13,280.9	12,939.0	17.5	15.9	111.07		-530.3	-261.2	464.1	432.1	32.03	14.491	
13,300.0	12,772.1	13,398.5	12,938.4	17.6	16.0	110.60		-647.4	-271.1	472.7	440.2	32.44	14.572	
13,400.0	12,771.7	13,516.7	12,937.9	17.6	16.2	110.35		-765.5	-276.1	477.4	444.2	33.14	14.405	
13,500.0	12,771.2	13,629.9	12,937.3	17.8	16.5	110.30		-878.7	-276.6	478.4	444.4	33.96	14.087	
13,600.0	12,770.7	13,729.9	12,936.9	17.9	16.7	110.29		-978.7	-275.9	478.4	443.7	34.68	13.793	
13,700.0	12,770.3	13,829.9	12,936.4	18.0	16.9	110.29		-1,078.7	-275.2	478.4	442.9	35.43	13.500	
13,800.0	12,769.8	13,929.9	12,935.9	18.2	17.2	110.29		-1,178.7	-274.4	478.4	442.1	36.24	13.201	
13,900.0	12,769.4	14,029.9	12,935.5	18.4	17.5	110.29		-1,278.7	-273.7	478.4	441.3	37.09	12.899	
14,000.0	12,768.9	14,129.9	12,935.0	18.6	17.9	110.29		-1,378.7	-273.0	478.4	440.4	37.98	12.597	
14,100.0	12,768.5	14,229.9	12,934.5	18.9	18.3	110.29		-1,478.7	-272.3	478.4	439.5	38.91	12.295	
14,200.0	12,768.0	14,329.9	12,934.1	19.2	18.7	110.28		-1,578.7	-271.6	478.4	438.5	39.88	11.997	
14,300.0	12,767.5	14,429.9	12,933.6	19.5	19.2	110.28		-1,678.7	-270.9	478.4	437.5	40.89	11.702	

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

Anticollision Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Reference Site: BULLDOG
Site Error: 0.0 usft
Reference Well: STOVE PIPE FEDERAL COM #703H
Well Error: 3.0 usft
Reference Wellbore: OWB
Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM_Users
Offset TVD Reference: Offset Datum

Offset Design BULLDOG - STOVE PIPE FEDERAL COM #704H - OWB - PWP1											Offset Site Error:	0.0 usft
Survey Program: 0-Standard Keeper 104, 12365-MWD+IFR1+MS											Offset Well Error:	3.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)				
14,400.0	12,767.1	14,529.9	12,933.1	19.9	19.7	110.28	-1,778.7	-270.2	478.4	436.5	41.92	11.413
14,500.0	12,766.6	14,629.9	12,932.7	20.3	20.2	110.28	-1,878.7	-269.5	478.4	435.5	42.99	11.130
14,600.0	12,766.2	14,729.9	12,932.2	20.8	20.7	110.28	-1,978.7	-268.8	478.5	434.4	44.08	10.854
14,700.0	12,765.7	14,829.9	12,931.7	21.3	21.3	110.27	-2,078.7	-268.1	478.5	433.3	45.20	10.585
14,800.0	12,765.3	14,929.9	12,931.2	21.9	21.9	110.27	-2,178.7	-267.3	478.5	432.1	46.35	10.324
14,900.0	12,764.8	15,029.9	12,930.8	22.4	22.5	110.27	-2,278.7	-266.6	478.5	431.0	47.51	10.071
15,000.0	12,764.4	15,129.9	12,930.3	23.0	23.1	110.27	-2,378.7	-265.9	478.5	429.8	48.70	9.825
15,100.0	12,763.9	15,229.9	12,929.8	23.6	23.7	110.27	-2,478.7	-265.2	478.5	428.6	49.91	9.588
15,200.0	12,763.4	15,329.9	12,929.4	24.2	24.3	110.27	-2,578.7	-264.5	478.5	427.4	51.13	9.359
15,300.0	12,763.0	15,429.9	12,928.9	24.9	25.0	110.26	-2,678.7	-263.8	478.5	426.1	52.37	9.137
15,400.0	12,762.5	15,529.9	12,928.4	25.5	25.6	110.26	-2,778.7	-263.1	478.5	424.9	53.62	8.924
15,500.0	12,762.1	15,629.9	12,928.0	26.1	26.3	110.26	-2,878.7	-262.4	478.5	423.6	54.89	8.717
15,600.0	12,761.6	15,729.9	12,927.5	26.8	26.9	110.26	-2,978.7	-261.7	478.5	422.4	56.18	8.518
15,700.0	12,761.2	15,829.9	12,927.0	27.5	27.6	110.26	-3,078.6	-260.9	478.6	421.1	57.47	8.327
15,800.0	12,760.7	15,929.9	12,926.6	28.2	28.3	110.25	-3,178.6	-260.2	478.6	419.8	58.78	8.142
15,900.0	12,760.2	16,029.9	12,926.1	28.8	29.0	110.25	-3,278.6	-259.5	478.6	418.5	60.10	7.963
16,000.0	12,759.8	16,129.9	12,925.6	29.5	29.6	110.25	-3,378.6	-258.8	478.6	417.2	61.43	7.791
16,100.0	12,759.3	16,229.9	12,925.2	30.2	30.3	110.25	-3,478.6	-258.1	478.6	415.8	62.76	7.625
16,200.0	12,758.9	16,329.9	12,924.7	30.9	31.0	110.25	-3,578.6	-257.4	478.6	414.5	64.11	7.465
16,300.0	12,758.4	16,429.9	12,924.2	31.6	31.7	110.24	-3,678.6	-256.7	478.6	413.1	65.47	7.311
16,400.0	12,758.0	16,529.9	12,923.8	32.3	32.4	110.24	-3,778.6	-256.0	478.6	411.8	66.83	7.162
16,500.0	12,757.5	16,629.9	12,923.3	33.0	33.1	110.24	-3,878.6	-255.3	478.6	410.4	68.20	7.018
16,600.0	12,757.1	16,729.9	12,922.8	33.8	33.8	110.24	-3,978.6	-254.6	478.6	409.1	69.58	6.879
16,700.0	12,756.6	16,829.9	12,922.4	34.5	34.5	110.24	-4,078.6	-253.8	478.6	407.7	70.96	6.745
16,800.0	12,756.1	16,929.9	12,921.9	35.2	35.2	110.24	-4,178.6	-253.1	478.6	406.3	72.35	6.616
16,900.0	12,755.7	17,029.9	12,921.4	35.9	35.9	110.23	-4,278.6	-252.4	478.7	404.9	73.75	6.491
17,000.0	12,755.2	17,129.9	12,921.0	36.6	36.7	110.23	-4,378.6	-251.7	478.7	403.5	75.15	6.370
17,100.0	12,754.8	17,229.9	12,920.5	37.4	37.4	110.23	-4,478.6	-251.0	478.7	402.1	76.55	6.253
17,200.0	12,754.3	17,329.9	12,920.0	38.1	38.1	110.23	-4,578.6	-250.3	478.7	400.7	77.97	6.140
17,300.0	12,753.9	17,429.9	12,919.6	38.8	38.8	110.23	-4,678.6	-249.6	478.7	399.3	79.38	6.030
17,400.0	12,753.4	17,529.9	12,919.1	39.5	39.5	110.22	-4,778.6	-248.9	478.7	397.9	80.80	5.924
17,500.0	12,753.0	17,629.9	12,918.6	40.3	40.3	110.22	-4,878.6	-248.2	478.7	396.5	82.23	5.822
17,600.0	12,752.5	17,729.9	12,918.2	41.0	41.0	110.22	-4,978.6	-247.5	478.7	395.1	83.66	5.722
17,700.0	12,752.0	17,829.9	12,917.7	41.7	41.7	110.22	-5,078.6	-246.7	478.7	393.6	85.09	5.626
17,800.0	12,751.6	17,929.9	12,917.2	42.5	42.4	110.22	-5,178.6	-246.0	478.7	392.2	86.53	5.533
17,900.0	12,751.1	18,029.9	12,916.8	43.2	43.2	110.22	-5,278.6	-245.3	478.7	390.8	87.97	5.442
18,000.0	12,750.7	18,129.9	12,916.3	43.9	43.9	110.21	-5,378.6	-244.6	478.8	389.3	89.41	5.355
18,100.0	12,750.2	18,229.9	12,915.8	44.7	44.6	110.21	-5,478.6	-243.9	478.8	387.9	90.85	5.270
18,200.0	12,749.8	18,329.9	12,915.3	45.4	45.4	110.21	-5,578.6	-243.2	478.8	386.5	92.30	5.187
18,300.0	12,749.3	18,429.9	12,914.9	46.2	46.1	110.21	-5,678.6	-242.5	478.8	385.0	93.75	5.107
18,400.0	12,748.8	18,529.9	12,914.4	46.9	46.8	110.21	-5,778.5	-241.8	478.8	383.6	95.21	5.029
18,500.0	12,748.4	18,629.9	12,913.9	47.6	47.6	110.20	-5,878.5	-241.1	478.8	382.1	96.67	4.953
18,600.0	12,747.9	18,729.9	12,913.5	48.4	48.3	110.20	-5,978.5	-240.3	478.8	380.7	98.13	4.880
18,700.0	12,747.5	18,829.9	12,913.0	49.1	49.0	110.20	-6,078.5	-239.6	478.8	379.2	99.59	4.808
18,800.0	12,747.0	18,929.9	12,912.5	49.9	49.8	110.20	-6,178.5	-238.9	478.8	377.8	101.05	4.738
18,900.0	12,746.6	19,029.9	12,912.1	50.6	50.5	110.20	-6,278.5	-238.2	478.8	376.3	102.52	4.671
19,000.0	12,746.1	19,129.9	12,911.6	51.4	51.3	110.19	-6,378.5	-237.5	478.8	374.9	103.99	4.605
19,100.0	12,745.7	19,229.9	12,911.1	52.1	52.0	110.19	-6,478.5	-236.8	478.9	373.4	105.46	4.541
19,200.0	12,745.2	19,329.9	12,910.7	52.9	52.8	110.19	-6,578.5	-236.1	478.9	371.9	106.93	4.478
19,300.0	12,744.7	19,429.9	12,910.2	53.6	53.5	110.19	-6,678.5	-235.4	478.9	370.5	108.40	4.418
19,400.0	12,744.3	19,529.9	12,909.7	54.3	54.2	110.19	-6,778.5	-234.7	478.9	369.0	109.88	4.358
19,500.0	12,743.8	19,629.9	12,909.3	55.1	55.0	110.19	-6,878.5	-234.0	478.9	367.5	111.35	4.301

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

Anticollision Report

Company: NORTHERN DELAWARE BASIN
Project: LEA COUNTY, NM
Reference Site: BULLDOG
Site Error: 0.0 usft
Reference Well: STOVE PIPE FEDERAL COM #703H
Well Error: 3.0 usft
Reference Wellbore: OWB
Reference Design: PWP1

Local Co-ordinate Reference: Well STOVE PIPE FEDERAL COM #703H
TVD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
MD Reference: RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM_Users
Offset TVD Reference: Offset Datum

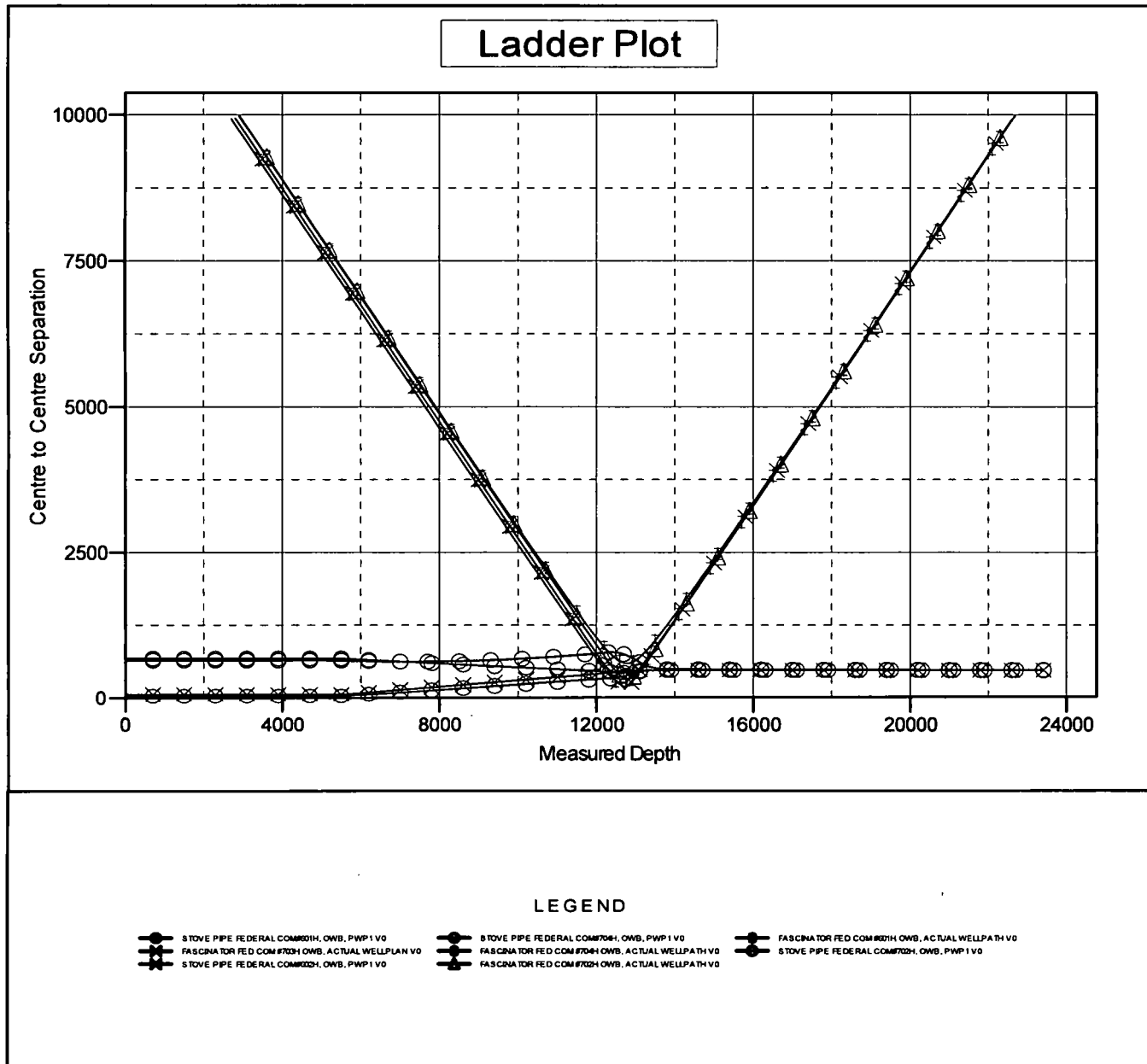
Offset Design BULLDOG - STOVE PIPE FEDERAL COM #704H - OWB - PWP1													Offset Site Error:	0.0 usft
Survey Program: 0-Standard Keeper 104, 12365-MWD+IFR1+MS													Offset Well Error:	3.0 usft
Reference	Offset	Semi Major Axis		Distance		Warning								
Measured Depth (usft)	Vertical Depth (usft)	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		
19,600.0	12,743.4	19,729.9	12,908.8	55.8	55.7	110.18	-6,978.5	-233.2	478.9	366.1	112.83	4.244		
19,700.0	12,742.9	19,829.9	12,908.3	56.6	56.5	110.18	-7,078.5	-232.5	478.9	364.6	114.31	4.189		
19,800.0	12,742.5	19,929.9	12,907.9	57.3	57.2	110.18	-7,178.5	-231.8	478.9	363.1	115.80	4.136		
19,900.0	12,742.0	20,029.9	12,907.4	58.1	58.0	110.18	-7,278.5	-231.1	478.9	361.6	117.28	4.084		
20,000.0	12,741.5	20,129.9	12,906.9	58.8	58.7	110.18	-7,378.5	-230.4	478.9	360.2	118.76	4.033		
20,100.0	12,741.1	20,229.9	12,906.5	59.6	59.5	110.17	-7,478.5	-229.7	478.9	358.7	120.25	3.983		
20,200.0	12,740.6	20,329.9	12,906.0	60.3	60.2	110.17	-7,578.5	-229.0	478.9	357.2	121.74	3.934		
20,300.0	12,740.2	20,429.9	12,905.5	61.1	61.0	110.17	-7,678.5	-228.3	479.0	355.7	123.23	3.887		
20,400.0	12,739.7	20,529.9	12,905.1	61.9	61.7	110.17	-7,778.5	-227.6	479.0	354.3	124.71	3.840		
20,500.0	12,739.3	20,629.9	12,904.6	62.6	62.5	110.17	-7,878.5	-226.8	479.0	352.8	126.21	3.795		
20,600.0	12,738.8	20,729.9	12,904.1	63.4	63.2	110.17	-7,978.5	-226.1	479.0	351.3	127.70	3.751		
20,700.0	12,738.4	20,829.9	12,903.7	64.1	64.0	110.16	-8,078.5	-225.4	479.0	349.8	129.19	3.708		
20,800.0	12,737.9	20,929.9	12,903.2	64.9	64.7	110.16	-8,178.5	-224.7	479.0	348.3	130.68	3.665		
20,900.0	12,737.4	21,029.9	12,902.7	65.6	65.5	110.16	-8,278.5	-224.0	479.0	346.8	132.18	3.624		
21,000.0	12,737.0	21,129.9	12,902.3	66.4	66.2	110.16	-8,378.5	-223.3	479.0	345.3	133.68	3.583		
21,100.0	12,736.5	21,229.9	12,901.8	67.1	67.0	110.16	-8,478.5	-222.6	479.0	343.9	135.17	3.544		
21,200.0	12,736.1	21,329.9	12,901.3	67.9	67.7	110.15	-8,578.4	-221.9	479.0	342.4	136.67	3.505		
21,300.0	12,735.6	21,429.9	12,900.9	68.6	68.5	110.15	-8,678.4	-221.2	479.0	340.9	138.17	3.467		
21,400.0	12,735.2	21,529.9	12,900.4	69.4	69.2	110.15	-8,778.4	-220.5	479.1	339.4	139.67	3.430		
21,500.0	12,734.7	21,629.9	12,899.9	70.1	70.0	110.15	-8,878.4	-219.7	479.1	337.9	141.17	3.394		
21,600.0	12,734.2	21,729.9	12,899.4	70.9	70.7	110.15	-8,978.4	-219.0	479.1	336.4	142.67	3.358		
21,700.0	12,733.8	21,829.9	12,899.0	71.7	71.5	110.14	-9,078.4	-218.3	479.1	334.9	144.17	3.323		
21,800.0	12,733.3	21,929.9	12,898.5	72.4	72.2	110.14	-9,178.4	-217.6	479.1	333.4	145.67	3.289		
21,900.0	12,732.9	22,029.9	12,898.0	73.2	73.0	110.14	-9,278.4	-216.9	479.1	331.9	147.18	3.255		
22,000.0	12,732.4	22,129.9	12,897.6	73.9	73.7	110.14	-9,378.4	-216.2	479.1	330.4	148.68	3.222		
22,100.0	12,732.0	22,229.9	12,897.1	74.7	74.5	110.14	-9,478.4	-215.5	479.1	328.9	150.19	3.190		
22,200.0	12,731.5	22,329.9	12,896.6	75.4	75.2	110.14	-9,578.4	-214.8	479.1	327.4	151.69	3.159		
22,300.0	12,731.1	22,429.9	12,896.2	76.2	76.0	110.13	-9,678.4	-214.1	479.1	325.9	153.20	3.128		
22,400.0	12,730.6	22,529.9	12,895.7	77.0	76.8	110.13	-9,778.4	-213.3	479.1	324.4	154.70	3.097		
22,500.0	12,730.1	22,629.9	12,895.2	77.7	77.5	110.13	-9,878.4	-212.6	479.2	322.9	156.21	3.067		
22,600.0	12,729.7	22,729.9	12,894.8	78.5	78.3	110.13	-9,978.4	-211.9	479.2	321.4	157.72	3.038		
22,700.0	12,729.2	22,829.9	12,894.3	79.2	79.0	110.13	-10,078.4	-211.2	479.2	319.9	159.23	3.009		
22,800.0	12,728.8	22,929.9	12,893.8	80.0	79.8	110.12	-10,178.4	-210.5	479.2	318.4	160.74	2.981		
22,900.0	12,728.3	23,029.9	12,893.4	80.7	80.5	110.12	-10,278.4	-209.8	479.2	316.9	162.24	2.954		
23,000.0	12,727.9	23,129.9	12,892.9	81.5	81.3	110.12	-10,378.4	-209.1	479.2	315.4	163.75	2.926		
23,100.0	12,727.4	23,229.9	12,892.4	82.3	82.0	110.12	-10,478.4	-208.4	479.2	313.9	165.26	2.900		
23,200.0	12,726.9	23,329.9	12,892.0	83.0	82.8	110.12	-10,578.4	-207.7	479.2	312.4	166.78	2.873		
23,300.0	12,726.5	23,429.9	12,891.5	83.8	83.6	110.12	-10,678.4	-207.0	479.2	310.9	168.29	2.848		
23,407.4	12,726.0	23,537.3	12,891.0	84.6	84.4	110.11	-10,785.8	-206.2	479.2	309.3	169.91	2.821 SF		

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 STOVE PIPE FEDERAL COM #703H
Project:	LEA COUNTY, NM	TVD Reference:	RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
Reference Site:	BULLDOG	MD Reference:	RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	STOVE PIPE FEDERAL COM #703H	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 RKB = 3330' + 30' @ 3358.2usft (NabCoordinates are relative to: STOVE PIPE FEDERAL COM #703H
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.49°



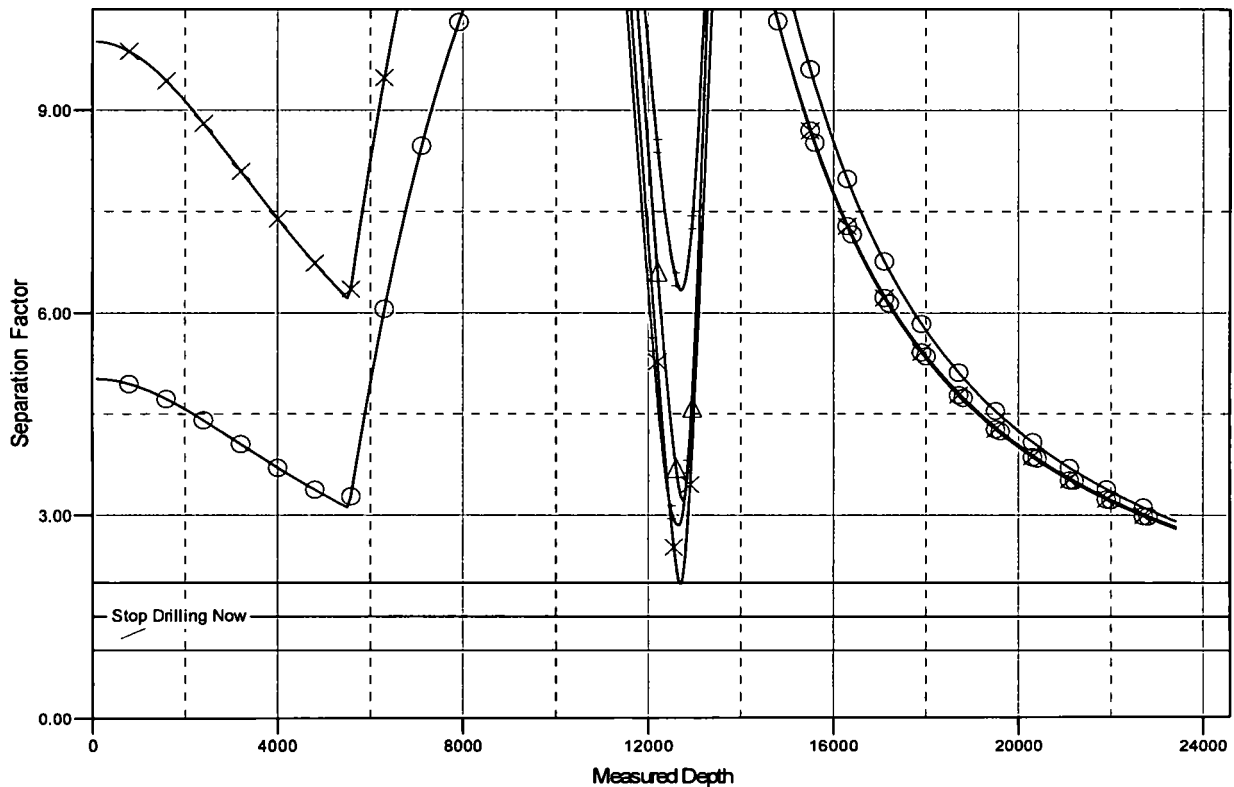
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well STOVE PIPE FEDERAL COM #703H
Project:	LEA COUNTY, NM	TVD Reference:	RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
Reference Site:	BULLDOG	MD Reference:	RKB = 3330' + 30' @ 3358.2usft (Nabors 894)
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	STOVE PIPE FEDERAL COM #703H	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 RKB = 3330' + 30' @ 3358.2usft (NabCoordinates are relative to: STOVE PIPE FEDERAL COM #703H
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.49°

Separation Factor Plot



LEGEND

	STOVE PIPE FEDERAL COM#703H, OWB, PWP1 V0		STOVE PIPE FEDERAL COM#704H, OWB, PWP1 V0		STOVE PIPE FEDERAL COM#702H, OWB, PWP1 V0
	STOVE PIPE FEDERAL COM#703H, OWB, PWP1 V0		STOVE PIPE FEDERAL COM#704H, OWB, PWP1 V0		STOVE PIPE FEDERAL COM#702H, OWB, PWP1 V0

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