Form 3160-5
(August 2007)

NM OIL CONSERVATION
ARTESIA DISTRICT

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

MAR 12 2015

RECEIVED

FORM APPROVED
OMB NO. 1004-0135
Expires: July 31, 2010

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

5. Lease Serial No.
NMNM23002

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
MIZAR 11 FED COM 2H

2. Name of Operator
DEVON ENERGY PRODUCTION CO LP
Contact: LINDA GOOD
Mail: linda.good@dvn.com

9. API Well No.
30-015-42345-00-X1

3a. Address
333 WEST SHERIDAN AVE
OKLAHOMA CITY, OK 73102

3b. Phone No. (include area code)
Ph: 405.552.6558

10. Field and Pool, or Exploratory
LUSK

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 11 T19S R31E SWNW 1980FNL 50FWL
32.676794 N Lat, 103.848474 W Lon

11. County or Parish, and State
EDDY COUNTY, NM

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other Change to Original APD
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

Devon Energy Production Company, L.P. respectfully requests permission to run a tapered production string of 7" x 5.5" casing to a total depth of 13,825 ft measured depth as long as hole conditions permits. If lost circulation is encountered we will stay as originally planned to run a 5-1/2" production longstring. Casing design requirements are attached as well as the cement design for both the 7" x 5-1/2" tapered production string and the 5-1/2" production longstring.

Devon Energy Production Company, L.P. respectfully requests moving the lateral and bottom hole location 305'ft south of the target in the approved APD to avoid an offset well along the lateral. Please find attached the casing changes, design factors, cement table, and the updated directional well plan.

SEE ATTACHED FOR CONDITIONS OF APPROVAL

Accepted for record
NMOCD
3/13/15

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #294106 verified by the BLM Well Information System
For DEVON ENERGY PRODUCTION CO LP, sent to the Carlsbad
Committed to AFMSS for processing by JENNIFER MASON on 03/06/2015 (15JAM0230SE)

Name *(Printed/Typed)* LINDA GOOD — Title REGULATORY SPECIALIST

Signature (Electronic Submission) — Date 03/06/2015

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

APPROVED
MAR 6 2015
BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

Approved By — Title — Date

Conditions of approval, if any, are attached. Approval of this notice 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.

Office

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.

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

Mizar 11 Fed Com 2H– Sundry Request
AAA 3-5-2015: add option for a 7" x 5.5" Combination Production String and move the bottom-hole location from approved APD

Casing Program Changes: 7" x 5.5" Tapered Production String

Hole Size	Hole Interval	OD Csg	Casing Interval	Weight	Collar	Grade
8-3/4"	4300 - 8510	7"	0 - 8510	29#	BTC	P-110
8-3/4"	8510- 13826	5-1/2"	8510- 13826	17#	BTC	P-110

Casing Contingency Option: 5.5 Production Longstring

Hole Size	Hole Interval	OD Csg	Casing Interval	Weight	Collar	Grade
8-3/4"	0 - 13826	5-1/2"	0 - 13826	17#	BTC	P-110

Note: only new casing will be utilized

MAXIMUM LATERAL TVD **9,064 ft**

Design Factors: 7" x 5.5" Tapered Production String

Casing Size	Collapse Design Factor	Burst Design Factor	Tension Design Factor
7" 29# P-110 BTC	2.13	2.8	3.87
5-1/2" 17# P-110 BTC	1.76	2.51	6.29

CEMENTING TABLE:

String	Number of sx	Weight lbs/gal	Water Volume g/sx	Yield cf/sx	Stage; Lead/Tail	Slurry Description
7" x 5-1/2" Production Casing Single Stage	120	11.8	13.16	2.3	1st Lead	(50:50) Poz (Fly Ash):Premium Plus H + 0.005 lbs/sack Static Free + 0.5% bwoc FL-52 + 0.3% bwoc ASA-301 + 0.005 gps FP-6L + 10% bwoc Bentonite + 130.6% Fresh Water
	295	12.5	11.01	2.01	2nd Lead	(35:65) Poz (Fly Ash):Premium Plus H + 0.005 lbs/sack Static Free + 3% bwow Sodium Chloride + 0.05% bwoc R-3 + 0.125 lbs/sack Cello Flake + 0.7% bwoc FL-52 + 0.3% bwoc ASA-301 + 0.005 gps FP-6L + 6% bwoc Bentonite + 105.5% Fresh Water
	1385	14.2	5.76	1.28	Tail	(50:50) Poz (Fly Ash):Premium Plus H + 0.005 lbs/sack Static Free + 5% bwow Sodium Chloride + 0.3% bwoc CD-32 + 0.5% bwoc FL-25 + 0.4% bwoc FL-52 + 0.005 gps FP-6L + 0.5% bwoc Sodium Metasilicate + 0.05% bwoc R-21 + 57.2% Fresh Water

TOC for all Strings:

Production @ 3128' (Cement top will tie-back 50' above Capitan Reef at 3178')

Notes:

- Cement volumes Production based on at least 25% excess
- Actual cement volumes will be adjusted based on fluid caliper and caliper log data
- If lost circulation is encountered while drilling the production wellbore, the 5.5" original production longstring will be used with a DV tool installed a minimum of 50' below the previous casing shoe and of 200' above the current shoe. If the DV tool has to be moved, the cement volumes will be adjusted proportionately.

devon

Mizar 11 Fed Com 2H
Eddy Co, NM

Weatherford

Plan Data for Mizar 11 Fed Com 2H Lat

Plan Point Information:

DogLeg Severity Unit: °/100.00ft Position offsets from Slot centre

MD (USft)	Inc (°)	Az (°)	TVD (USft)	+N/-S (USft)	+E/-W (USft)	Northing (USft)	Easting (USft)	VSec (USft)	DLS (DLSU)
4200.00	0.00	0.00	4200.00	0.00	0.00	610289.67	690524.20	0.00	0.00
4550.00	7.00	180.00	4549.13	-21.35	0.00	610268.32	690524.20	-0.19	2.00
6550.00	7.00	180.00	6633.48	-277.28	0.00	610012.39	690524.20	-2.42	0.00
7116.67	0.00	0.00	7098.98	-305.75	0.00	609983.92	690524.20	-2.67	1.50
8560.81	0.00	0.00	8543.13	-305.75	0.00	609983.92	690524.20	-2.67	0.00
9380.17	90.13	89.50	9064.00	-301.20	522.02	609988.47	691046.22	519.37	11.00
13825.85	90.13	89.50	9054.00	-262.41	4967.53	610027.26	695491.73	4965.05	0.00

Plan Data for Mizar 11 Fed Com 2H Lat

Slot: Mizar 11 Fed Com 2H
Position:
Offset is from Site centre
+N/-S: -49.98USft Northing: 610289.67USft Latitude: 32°40'36.5"
+E/-W: 0.39USft Easting: 690524.20USft Longitude: -103°50'54.5"
Elevation Above VRD: 3578.00USft

Plan Data for Mizar 11 Fed Com 2H Lat

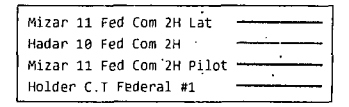
Well: Mizar 11 Fed Com 2H Lat
Type: Side-Track
File Number:
Plan Folder: P1 Plan: P1:V2
Vertical Section: Position offset of origin from Slot centre:
+N/-S: 0.00USft Azimuth: 89.50°
+E/-W: 0.00USft
Magnetic Parameters:

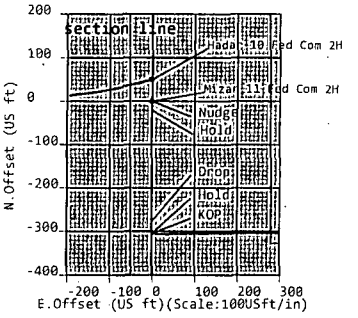
Model:	Field Strength:	Declination:	Dip:	Date:
BGGM	48457(nT)	7.47°	60.46°	2015-03-10

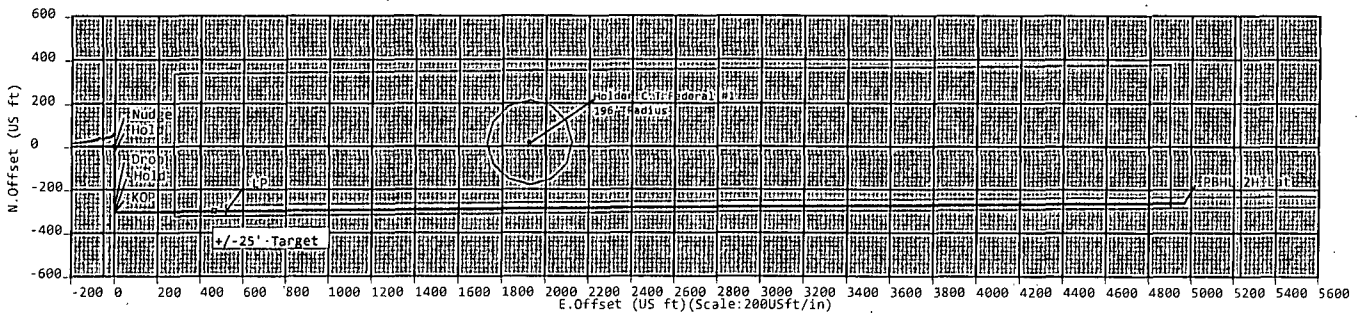
Plan Data for Mizar 11 Fed Com 2H Lat

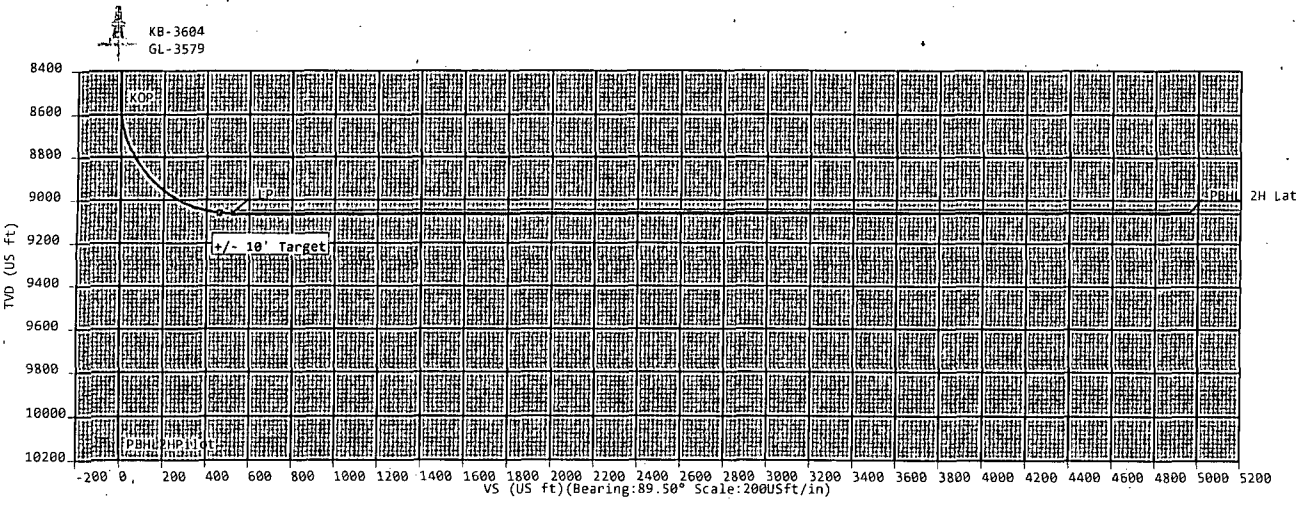
Target Set Information:
Name: Mizar 11 Fed Com 2H
Position offsets from Slot centre

Name	TVD (USft)	+N/-S (USft)	+E/-W (USft)	Northing (USft)	Easting (USft)	Shape	Comment
LP Tgt	9064.00	-301.90	467.38	609987.77	690991.58	Cuboid	
PBHL 2H	9054.00	-262.41	4967.53	610027.26	695491.73	Cuboid	









Sign Off: Russell Joyner

5D Plan Report

Devon Energy

Field Name: *Eddy Co, NM (Nad 83 NME)*
Site Name: *Hadar 10 Fed Com 2H,Mizar 11 Fed Com 2H Pad*
Well Name: *Mizar 11 Fed Com 2H Lat*
Plan: *P1:V2*

02 March 2015

Mizar 11 Fed Com 2H Lat

Field Name
Eddy Co, NM (Nad 83 NME)

Map Units : US ft **Company Name :** Devon Energy
Vertical Reference Datum (VRD) : Mean Sea Level
Projected Coordinate System : NAD83 / New Mexico East (ftUS)
Comment :

Site Name
Hadar 10 Fed Com 2H Mizar 11 Fed Com 2H Pad

Units : US ft **North Reference** : Grid **Convergence Angle :** 0.26
Position **Northing :** 610339.65 US ft **Latitude :** 32°40'36.95"
Easting : 690523.81 US ft **Longitude :** -103°50'54.51"
Elevation above Mean Sea Level: 3579.00 US ft
Comment :

Slot Name
Mizar 11 Fed Com 2H

Position (Offsets relative to Site Centre)
+N / -S : -49.98 US ft **Northing :** 610289.67 US ft **Latitude :** 32°40'36.46"
+E / -W : 0.39 US ft **Easting :** 690524.20 US ft **Longitude :** -103°50'54.51"
Slot TVD Reference : Ground Elevation
Elevation above Mean Sea Level : 3578.00 US ft
Comment :

Well Name
Mizar 11 Fed Com 2H Lat

Type : Sidetrack **UWI :** **Plan :** P1:V2
Parent : Mizar 11 Fed Com 2H Pilot **Tie Point Method :** TVD **Tie Point :** 4200.00 US ft
Rig Height *Kelly Bushing* : 25.00 US ft **Comment :**
Relative to Mean Sea Level: 3603.00 US ft
Closure Distance : 4974.46 US ft **Closure Azimuth :** 93.0238°
Vertical Section (Position of Origin Relative to Slot)
+N / -S : 0.00 US ft **+E / -W :** 0.00 US ft **Az :** 89.50°
Magnetic Parameters
Model : BGGM **Field Strength :** 48457.1nT **Dec :** 7.47° **Dip :** 60.46° **Date :** 10/Mar/2015

Target Set

Name : Mizar 11 Fed Com 2H **Number of Targets :** 2

Comment :

Target Name:
LP Tgt

Position (Relative to Slot centre)
+N / -S : 301.90 US ft **Northing :** 609987.77 US ft **Latitude :** 32°40'33.45"
+E / -W : 467.38 US ft **Easting :** 690991.58 US ft **Longitude :** -103°50'49.06"

Shape:
Cuboid

TVD (Kelly Bushing) : 9064.00 US ft

Orientation **Azimuth :** 0.00° **Inclination :** 0.00°
Dimensions **Length :** 20.00 US ft **Breadth :** 20.00 US ft **Height :** 20.00 US ft

5D Plan Report

Target Name:	Position (Relative to Slot centre)		
PBHL 2H	+N / -S : 262.41 US ft	Northing : 610027.26 US ft	Latitude : 32°40'33.63"
	+E / -W : 4967.53 US ft	Easting : 695491.73 US ft	Longitude : 103°49'56.40"
Shape:	TVD (Kelly Bushing) : 9054.00 US ft		
Cuboid	Orientation Azimuth : 89.50°	Inclination : 0.13°	
	Dimensions Length : 8890.00 US ft	Breadth : 50.00 US ft	Height : 20.00 US ft

Well path created using minimum curvature

Salient Points (Relative to Slot centre, TVD relative to Kelly Bushing)

MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N Offset (US ft)	E Offset (US ft)	VS (US ft)	DLS (°/100 US ft)	B Rate (°/100 US ft)	T Rate (°/100 US ft)	T Face (°)	Comment
4200.00	0.00	0.00	4200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Nudge
4550.00	7.00	180.00	4549.13	-21.35	0.00	-0.19	2.00	2.00	0.00	180.00	Hold
6650.00	7.00	180.00	6633.48	-277.28	0.00	-2.42	0.00	0.00	0.00	0.00	Drop
7116.67	0.00	0.00	7098.98	-305.75	0.00	-2.67	1.50	-1.50	0.00	180.00	Hold
8560.81	0.00	0.00	8543.13	-305.75	0.00	-2.67	0.00	0.00	0.00	0.00	KOP
9380.17	90.13	89.50	9064.00	-301.20	522.02	519.37	11.00	11.00	0.00	89.50	LP
13825.85	90.13	89.50	9054.00	-262.41	4967.53	4965.05	0.00	0.00	0.00	0.00	PBHL 2H Lat

Interpolated Points (Relative to Slot centre, TVD relative to Kelly Bushing)

MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N Offset (US ft)	E Offset (US ft)	VS (US ft)	DLS (°/100 US ft)	Northing (US ft)	Easting (US ft)	Comment
4200.00	0.00	0.00	4200.00	0.00	0.00	0.00	0.00	610289.67	690524.20	Nudge
4300.00	2.00	180.00	4299.98	-1.75	0.00	-0.02	2.00	610287.92	690524.20	
4400.00	4.00	180.00	4399.84	-6.98	0.00	-0.06	2.00	610282.69	690524.20	
4500.00	6.00	180.00	4499.45	-15.69	0.00	-0.14	2.00	610273.98	690524.20	
4550.00	7.00	180.00	4549.13	-21.35	0.00	-0.19	2.00	610268.32	690524.20	Hold
4600.00	7.00	180.00	4598.76	-27.45	0.00	-0.24	0.00	610262.22	690524.20	
4700.00	7.00	180.00	4698.01	-39.63	0.00	-0.35	0.00	610250.04	690524.20	
4800.00	7.00	180.00	4797.27	-51.82	0.00	-0.45	0.00	610237.85	690524.20	
4900.00	7.00	180.00	4896.52	-64.01	0.00	-0.56	0.00	610225.66	690524.20	
5000.00	7.00	180.00	4995.78	-76.19	0.00	-0.66	0.00	610213.48	690524.20	
5100.00	7.00	180.00	5095.03	-88.38	0.00	-0.77	0.00	610201.29	690524.20	
5200.00	7.00	180.00	5194.28	-100.57	0.00	-0.88	0.00	610189.10	690524.20	
5300.00	7.00	180.00	5293.54	-112.76	0.00	-0.98	0.00	610176.91	690524.20	
5400.00	7.00	180.00	5392.79	-124.94	0.00	-1.09	0.00	610164.73	690524.20	
5500.00	7.00	180.00	5492.05	-137.13	0.00	-1.20	0.00	610152.54	690524.20	
5600.00	7.00	180.00	5591.30	-149.32	0.00	-1.30	0.00	610140.35	690524.20	
5700.00	7.00	180.00	5690.56	-161.50	0.00	-1.41	0.00	610128.17	690524.20	
5800.00	7.00	180.00	5789.81	-173.69	0.00	-1.52	0.00	610115.98	690524.20	
5900.00	7.00	180.00	5889.07	-185.88	0.00	-1.62	0.00	610103.79	690524.20	
6000.00	7.00	180.00	5988.32	-198.06	0.00	-1.73	0.00	610091.61	690524.20	
6100.00	7.00	180.00	6087.58	-210.25	0.00	-1.83	0.00	610079.42	690524.20	
6200.00	7.00	180.00	6186.83	-222.44	0.00	-1.94	0.00	610067.23	690524.20	
6300.00	7.00	180.00	6286.09	-234.63	0.00	-2.05	0.00	610055.04	690524.20	
6400.00	7.00	180.00	6385.34	-246.81	0.00	-2.15	0.00	610042.86	690524.20	
6500.00	7.00	180.00	6484.59	-259.00	0.00	-2.26	0.00	610030.67	690524.20	
6600.00	7.00	180.00	6583.85	-271.19	0.00	-2.37	0.00	610018.48	690524.20	
6650.00	7.00	180.00	6633.48	-277.28	0.00	-2.42	0.00	610012.39	690524.20	Drop
6700.00	6.25	180.00	6683.14	-283.05	0.00	-2.47	1.50	610006.62	690524.20	
6800.00	4.75	180.00	6782.68	-292.63	0.00	-2.55	1.50	609997.04	690524.20	
6900.00	3.25	180.00	6882.43	-299.61	0.00	-2.61	1.50	609990.06	690524.20	
7000.00	1.75	180.00	6982.33	-303.97	0.00	-2.65	1.50	609985.70	690524.20	
7100.00	0.25	180.00	7082.32	-305.71	0.00	-2.67	1.50	609983.96	690524.20	
7116.67	0.00	0.00	7098.98	-305.75	0.00	-2.67	1.50	609983.92	690524.20	Hold

Interpolated Points (Relative to Slot centre, TVD relative to Kelly Bushing.)

MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N Offset (US ft)	E Offset (US ft)	VS (US ft)	DLS (°/100 US ft)	Northing (US ft)	Easting (US ft)	Comment
7200.00	0.00	0.00	7182.32	-305.75	0.00	-2.67	0.00	609983.92	690524.20	
7300.00	0.00	0.00	7282.32	-305.75	0.00	-2.67	0.00	609983.92	690524.20	
7400.00	0.00	0.00	7382.32	-305.75	0.00	-2.67	0.00	609983.92	690524.20	
7500.00	0.00	0.00	7482.32	-305.75	0.00	-2.67	0.00	609983.92	690524.20	
7600.00	0.00	0.00	7582.32	-305.75	0.00	-2.67	0.00	609983.92	690524.20	
7700.00	0.00	0.00	7682.32	-305.75	0.00	-2.67	0.00	609983.92	690524.20	
7800.00	0.00	0.00	7782.32	-305.75	0.00	-2.67	0.00	609983.92	690524.20	
7900.00	0.00	0.00	7882.32	-305.75	0.00	-2.67	0.00	609983.92	690524.20	
8000.00	0.00	0.00	7982.32	-305.75	0.00	-2.67	0.00	609983.92	690524.20	
8100.00	0.00	0.00	8082.32	-305.75	0.00	-2.67	0.00	609983.92	690524.20	
8200.00	0.00	0.00	8182.32	-305.75	0.00	-2.67	0.00	609983.92	690524.20	
8300.00	0.00	0.00	8282.32	-305.75	0.00	-2.67	0.00	609983.92	690524.20	
8400.00	0.00	0.00	8382.32	-305.75	0.00	-2.67	0.00	609983.92	690524.20	
8500.00	0.00	0.00	8482.32	-305.75	0.00	-2.67	0.00	609983.92	690524.20	
8560.81	0.00	0.00	8543.13	-305.75	0.00	-2.67	0.00	609983.92	690524.20	KOP
8600.00	4.31	89.50	8582.28	-305.74	1.47	-1.19	11.00	609983.93	690525.67	
8700.00	15.31	89.50	8680.67	-305.59	18.49	15.82	11.00	609984.08	690542.69	
8800.00	26.31	89.50	8774.00	-305.28	53.96	51.29	11.00	609984.39	690578.16	
8900.00	37.31	89.50	8858.85	-304.82	106.59	103.92	11.00	609984.85	690630.79	
9000.00	48.31	89.50	8932.10	-304.23	174.44	171.78	11.00	609985.44	690698.64	
9100.00	59.31	89.50	8991.05	-303.53	255.02	252.36	11.00	609986.14	690779.22	
9200.00	70.31	89.50	9033.55	-302.74	345.36	342.71	11.00	609986.93	690869.56	
9300.00	81.31	89.50	9058.02	-301.89	442.16	439.51	11.00	609987.78	690966.36	
9380.17	90.13	89.50	9064.00	-301.20	522.02	519.37	11.00	609988.47	691046.22	LP
9400.00	90.13	89.50	9063.95	-301.02	541.86	539.21	0.00	609988.65	691066.06	
9500.00	90.13	89.50	9063.73	-300.15	641.85	639.21	0.00	609989.52	691166.05	
9600.00	90.13	89.50	9063.50	-299.28	741.85	739.21	0.00	609990.39	691266.05	
9700.00	90.13	89.50	9063.28	-298.41	841.84	839.21	0.00	609991.26	691366.04	
9800.00	90.13	89.50	9063.06	-297.53	941.84	939.21	0.00	609992.14	691466.04	
9900.00	90.13	89.50	9062.83	-296.66	1041.83	1039.21	0.00	609993.01	691566.03	
10000.00	90.13	89.50	9062.61	-295.79	1141.83	1139.21	0.00	609993.88	691666.03	
10100.00	90.13	89.50	9062.38	-294.92	1241.83	1239.21	0.00	609994.75	691766.03	
10200.00	90.13	89.50	9062.16	-294.04	1341.82	1339.21	0.00	609995.63	691866.02	
10300.00	90.13	89.50	9061.93	-293.17	1441.82	1439.21	0.00	609996.50	691966.02	
10400.00	90.13	89.50	9061.71	-292.30	1541.81	1539.20	0.00	609997.37	692066.01	
10500.00	90.13	89.50	9061.48	-291.43	1641.81	1639.20	0.00	609998.24	692166.01	
10600.00	90.13	89.50	9061.26	-290.55	1741.81	1739.20	0.00	609999.12	692266.01	
10700.00	90.13	89.50	9061.03	-289.68	1841.80	1839.20	0.00	609999.99	692366.00	
10800.00	90.13	89.50	9060.81	-288.81	1941.80	1939.20	0.00	610000.86	692466.00	
10900.00	90.13	89.50	9060.58	-287.94	2041.79	2039.20	0.00	610001.73	692565.99	
11000.00	90.13	89.50	9060.36	-287.06	2141.79	2139.20	0.00	610002.61	692665.99	
11100.00	90.13	89.50	9060.13	-286.19	2241.79	2239.20	0.00	610003.48	692765.99	
11200.00	90.13	89.50	9059.91	-285.32	2341.78	2339.20	0.00	610004.35	692865.98	
11300.00	90.13	89.50	9059.68	-284.45	2441.78	2439.20	0.00	610005.22	692965.98	
11400.00	90.13	89.50	9059.46	-283.57	2541.77	2539.20	0.00	610006.10	693065.97	
11500.00	90.13	89.50	9059.23	-282.70	2641.77	2639.20	0.00	610006.97	693165.97	
11600.00	90.13	89.50	9059.01	-281.83	2741.77	2739.20	0.00	610007.84	693265.97	
11700.00	90.13	89.50	9058.78	-280.96	2841.76	2839.20	0.00	610008.71	693365.96	
11800.00	90.13	89.50	9058.56	-280.08	2941.76	2939.20	0.00	610009.59	693465.96	
11900.00	90.13	89.50	9058.33	-279.21	3041.75	3039.20	0.00	610010.46	693565.95	
12000.00	90.13	89.50	9058.11	-278.34	3141.75	3139.20	0.00	610011.33	693665.95	
12100.00	90.13	89.50	9057.88	-277.47	3241.75	3239.20	0.00	610012.20	693765.95	
12200.00	90.13	89.50	9057.66	-276.59	3341.74	3339.20	0.00	610013.08	693865.94	
12300.00	90.13	89.50	9057.43	-275.72	3441.74	3439.20	0.00	610013.95	693965.94	
12400.00	90.13	89.50	9057.21	-274.85	3541.73	3539.20	0.00	610014.82	694065.93	
12500.00	90.13	89.50	9056.98	-273.98	3641.73	3639.20	0.00	610015.69	694165.93	
12600.00	90.13	89.50	9056.76	-273.10	3741.73	3739.20	0.00	610016.57	694265.93	
12700.00	90.13	89.50	9056.53	-272.23	3841.72	3839.20	0.00	610017.44	694365.92	
12800.00	90.13	89.50	9056.31	-271.36	3941.72	3939.20	0.00	610018.31	694465.92	

5D Plan Report

Interpolated Point's (Relative to Slot centre, TVD relative to Kelly Bushing)

MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N Offset (US ft)	E Offset (US ft)	VS (US ft)	DLS (°/100 US ft)	Northing (US ft)	Easting (US ft)	Comment
12900.00	90.13	89.50	9056.08	-270.49	4041.71	4039.20	0.00	610019.18	694565.91	
13000.00	90.13	89.50	9055.86	-269.62	4141.71	4139.20	0.00	610020.05	694665.91	
13100.00	90.13	89.50	9055.63	-268.74	4241.70	4239.20	0.00	610020.93	694765.90	
13200.00	90.13	89.50	9055.41	-267.87	4341.70	4339.20	0.00	610021.80	694865.90	
13300.00	90.13	89.50	9055.18	-267.00	4441.70	4439.20	0.00	610022.67	694965.90	
13400.00	90.13	89.50	9054.96	-266.13	4541.69	4539.20	0.00	610023.54	695065.89	
13500.00	90.13	89.50	9054.73	-265.25	4641.69	4639.20	0.00	610024.42	695165.89	
13600.00	90.13	89.50	9054.51	-264.38	4741.68	4739.20	0.00	610025.29	695265.88	
13700.00	90.13	89.50	9054.28	-263.51	4841.68	4839.20	0.00	610026.16	695365.88	
13800.00	90.13	89.50	9054.06	-262.64	4941.68	4939.20	0.00	610027.03	695465.88	
13825.85	90.13	89.50	9054.00	-262.41	4967.53	4965.05	0.00	610027.26	695491.73	PBHL 2H Lat

5D Anti-Collision Report

Devon Energy

Field Name: *Eddy Co, NM (Nad 83 NME)*
Site Name: *Hadar 10 Fed Com 2H,Mizar 11 Fed Com 2H Pad*
Well Name: *Mizar 11 Fed Com 2H Lat*

02 March 2015

Weatherford

Mizar 11 Fed Com 2H Lat

Field Name
Eddy Co, NM (Nad 83 NME)

Map Units : US ft
Company Name : Devon Energy
Vertical Reference Datum (VRD) : Mean Sea Level
Projected Coordinate System : NAD83 / New Mexico East (ftUS)
Comment :

Site Name
Hadar 10 Fed Com 2H Mizar 11 Fed Com 2H Pad

Units : US ft **North Reference** : Grid **Convergence Angle :** 0.26
Position **Northing :** 610339.65 US ft **Latitude :** 32°40'36.95"
Easting : 690523.81 US ft **Longitude :** -103°50'54.51"
Elevation above Mean Sea Level: 3579.00 US ft
Comment :

Slot Name
Mizar 11 Fed Com 2H

Position (Offsets relative to Site Centre)
+N / -S : -49.98 US ft **Northing :** 610289.67 US ft **Latitude :** 32°40'36.46"
+E / -W : 0.39 US ft **Easting :** 690524.20 US ft **Longitude :** -103°50'54.51"
Slot TVD Reference : Ground Elevation
Elevation above Mean Sea Level : 3578.00 US ft
Comment :

Well Name
Mizar 11 Fed Com 2H Lat

Type : Sidetrack **UWI :** **Plan :** Working Plan
Parent : Mizar 11 Fed Com 2H Pilot **Tie Point Method :** TVD **Tie Point :** 4200.00 US ft
Rig Height *Kelly Bushing* : 25.00 US ft **Comment :**
Relative to Mean Sea Level: 3603.00 US ft
Closure Distance : 4974.46 US ft **Closure Azimuth :** 93.0238°
Vertical Section (Position of Origin Relative to Slot)
+N / -S : 0.00 US ft **+E / -W :** 0.00 US ft **Az :** 89.50°
Magnetic Parameters
Model : BGGM **Field Strength :** 48457.1nT **Dec :** 7.47° **Dip :** 60.46° **Date :** 10/Mar/2015

Collision / Uncertainty Analysis

Primary Well	Start MD (US ft)	End MD (US ft)	Collision Risk Interval	No. of Std Deviations in Error Computation
Mizar 11 Fed Com 2H Lat (p)	0.00	13825.85	100.00	2

Secondary Well Names

Holder C.T Federal #1 (s)
Hadar 10 Fed Com 2H (p)

Anti Collision Report Terminology
S.Minor, S.Major : Radii of the ellipse of uncertainty at the current location as seen in the along hole direction.
PHI : Angle between high-side vector and semi-minor axis
TVD Spread : Total TVD range of the ellipsoid of uncertainty at the current location
ES : Distance between the extremities of the primary and secondary uncertainty ellipsoids in the direction Cr-Cr
T.Face to Sec : Angle between the Hi-Side vector of the primary well at the current location and line of closest approach between the two wells

Separation factors calculated using Pedal Curve (Independent Uncertainty). Well path created using minimum curvature.

Anti Collision Proximity Summary (TVD relative to Kelly Bushing)

SF

Secondary Well Name	Pri MD (US ft)	Sec MD (US ft)	TVD (US ft)	CC (US ft)	ES (US ft)	SF	Risk
Holder C.T Federal #1 (s)	10791.41	9052.83	9060.83	303.17	-22.47	0.93	SF (Hi)
Hadar 10 Fed Com 2H (p)	4231.45	4232.44	4231.44	50.15	30.82	2.59	

Primary Well : Mizar 11 Fed Com 2H Lat (p) (TVD Relative to Kelly Bushing ; All Azimuth Relative to GRID NORTH.)

MD (US ft)	TVD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	Nearest Well	CC (US ft)	ES (US ft)	SF	Risk
4200.00	4200.00	359.55	9.33	9.33	Hadar 10 Fed Com 2H (p)	49.98	30.76	2.60	
4300.00	4299.98	179.57	9.52	9.52	Hadar 10 Fed Com 2H (p)	51.73	32.11	2.64	
4400.00	4399.84	179.61	9.69	9.67	Hadar 10 Fed Com 2H (p)	56.96	36.95	2.85	
4500.00	4499.45	179.66	9.86	9.81	Hadar 10 Fed Com 2H (p)	65.67	45.28	3.22	
4600.00	4598.76	179.71	10.03	9.96	Hadar 10 Fed Com 2H (p)	77.43	56.60	3.72	
4700.00	4698.01	179.75	10.21	10.13	Hadar 10 Fed Com 2H (p)	89.61	68.40	4.22	
4800.00	4797.27	179.78	10.40	10.31	Hadar 10 Fed Com 2H (p)	101.80	80.21	4.72	
4900.00	4896.52	179.80	10.60	10.49	Hadar 10 Fed Com 2H (p)	113.99	91.97	5.18	
5000.00	4995.78	179.82	10.80	10.67	Hadar 10 Fed Com 2H (p)	126.18	103.75	5.63	
5100.00	5095.03	179.84	11.00	10.86	Hadar 10 Fed Com 2H (p)	138.36	115.53	6.06	
5200.00	5194.28	179.85	11.21	11.05	Hadar 10 Fed Com 2H (p)	150.55	127.31	6.48	
5300.00	5293.54	179.86	11.43	11.23	Hadar 10 Fed Com 2H (p)	162.74	139.08	6.88	
5400.00	5392.79	179.87	11.65	11.43	Hadar 10 Fed Com 2H (p)	174.92	150.85	7.27	
5500.00	5492.05	179.88	11.87	11.62	Hadar 10 Fed Com 2H (p)	187.11	162.63	7.64	
5600.00	5591.30	179.89	12.10	11.81	Hadar 10 Fed Com 2H (p)	199.30	174.40	8.00	
5700.00	5690.56	179.89	12.34	12.01	Hadar 10 Fed Com 2H (p)	211.48	186.17	8.35	
5800.00	5789.81	179.90	12.57	12.21	Hadar 10 Fed Com 2H (p)	223.67	197.93	8.69	
5900.00	5889.07	179.90	12.81	12.41	Hadar 10 Fed Com 2H (p)	235.86	209.70	9.02	
6000.00	5988.32	179.91	13.06	12.61	Hadar 10 Fed Com 2H (p)	248.04	221.46	9.33	
6100.00	6087.58	179.91	13.30	12.81	Hadar 10 Fed Com 2H (p)	260.23	233.23	9.64	
6200.00	6186.83	263.06	13.55	13.02	Holder C.T Federal #1 (s)	1944.41	1747.62	9.88	
6300.00	6286.09	262.71	13.81	13.22	Holder C.T Federal #1 (s)	1945.93	1745.81	9.72	
6400.00	6385.34	262.35	14.06	13.43	Holder C.T Federal #1 (s)	1947.53	1744.07	9.57	
6500.00	6484.59	262.00	14.32	13.63	Holder C.T Federal #1 (s)	1949.20	1742.38	9.42	
6600.00	6583.85	261.65	14.58	13.84	Holder C.T Federal #1 (s)	1950.95	1740.82	9.28	
6700.00	6683.14	261.29	14.84	14.07	Holder C.T Federal #1 (s)	1952.72	1739.34	9.15	
6800.00	6782.68	260.99	15.09	14.32	Holder C.T Federal #1 (s)	1954.20	1737.46	9.02	
6900.00	6882.43	260.78	15.33	14.55	Holder C.T Federal #1 (s)	1955.31	1735.21	8.88	
7000.00	6982.33	260.64	15.55	14.78	Holder C.T Federal #1 (s)	1956.01	1732.63	8.76	
7100.00	7082.32	260.59	15.77	14.98	Holder C.T Federal #1 (s)	1956.30	1729.68	8.63	

Primary Well : Mizar 11 Fed Com 2H Lat (p), (TVD Relative to Kelly Bushing : All Azimuth Relative to GRID NORTH)

MD (US ft)	TVD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	Nearest Well	CC (US ft)	ES (US ft)	SF	Risk
7200.00	7182.32	80.58	15.97	15.20	Holder C.T Federal #1 (s)	1956.30	1726.50	8.51	
7300.00	7282.32	80.58	16.17	15.41	Holder C.T Federal #1 (s)	1956.30	1723.36	8.40	
7400.00	7382.32	80.58	16.38	15.63	Holder C.T Federal #1 (s)	1956.30	1720.11	8.28	
7500.00	7482.32	80.58	16.58	15.85	Holder C.T Federal #1 (s)	1956.30	1716.88	8.17	
7600.00	7582.32	80.58	16.79	16.06	Holder C.T Federal #1 (s)	1956.30	1713.60	8.06	
7700.00	7682.32	80.58	16.99	16.28	Holder C.T Federal #1 (s)	1956.30	1710.30	7.95	
7800.00	7782.32	80.58	17.20	16.50	Holder C.T Federal #1 (s)	1956.30	1707.04	7.85	
7900.00	7882.32	80.58	17.41	16.71	Holder C.T Federal #1 (s)	1956.30	1703.82	7.75	
8000.00	7982.32	80.58	17.62	16.93	Holder C.T Federal #1 (s)	1956.30	1700.63	7.65	
8100.00	8082.32	80.58	17.82	17.15	Holder C.T Federal #1 (s)	1956.30	1697.40	7.56	
8200.00	8182.32	80.58	18.03	17.36	Holder C.T Federal #1 (s)	1956.30	1694.12	7.46	
8300.00	8282.32	80.58	18.24	17.58	Holder C.T Federal #1 (s)	1956.30	1690.88	7.37	
8400.00	8382.32	80.58	18.45	17.80	Holder C.T Federal #1 (s)	1956.30	1687.67	7.28	
8500.00	8482.32	80.58	18.66	18.02	Holder C.T Federal #1 (s)	1956.30	1684.39	7.19	
8600.00	8582.28	351.05	18.81	18.23	Holder C.T Federal #1 (s)	1954.85	1679.62	7.10	
8700.00	8680.67	350.67	18.65	18.43	Holder C.T Federal #1 (s)	1938.04	1659.62	6.96	
8800.00	8774.00	349.79	18.66	18.06	Holder C.T Federal #1 (s)	1903.01	1621.48	6.76	
8900.00	8858.85	348.21	18.94	17.12	Holder C.T Federal #1 (s)	1851.07	1566.77	6.51	
9000.00	8932.10	345.47	19.30	15.97	Holder C.T Federal #1 (s)	1784.17	1497.53	6.22	
9100.00	8991.05	340.50	19.91	14.81	Holder C.T Federal #1 (s)	1704.82	1416.20	5.91	
9200.00	9033.55	330.45	20.72	13.81	Holder C.T Federal #1 (s)	1615.98	1325.97	5.57	
9300.00	9058.02	306.60	21.93	13.09	Holder C.T Federal #1 (s)	1521.01	1230.23	5.23	
9400.00	9063.95	269.41	23.35	13.04	Holder C.T Federal #1 (s)	1423.45	1132.39	4.89	
9500.00	9063.73	269.45	25.01	13.25	Holder C.T Federal #1 (s)	1325.92	1034.84	4.56	
9600.00	9063.50	269.49	26.81	13.50	Holder C.T Federal #1 (s)	1228.78	937.75	4.22	
9700.00	9063.28	269.54	28.74	13.78	Holder C.T Federal #1 (s)	1132.14	840.41	3.88	
9800.00	9063.06	269.58	30.79	14.10	Holder C.T Federal #1 (s)	1036.14	743.40	3.54	
9900.00	9062.83	269.62	32.98	14.44	Holder C.T Federal #1 (s)	940.97	647.19	3.20	
10000.00	9062.61	269.66	35.27	14.82	Holder C.T Federal #1 (s)	846.92	552.21	2.87	
10100.00	9062.38	269.71	37.61	15.22	Holder C.T Federal #1 (s)	754.39	458.88	2.55	
10200.00	9062.16	269.75	40.01	15.64	Holder C.T Federal #1 (s)	664.04	366.09	2.23	
10300.00	9061.93	269.79	42.45	16.09	Holder C.T Federal #1 (s)	576.88	276.16	1.92	SF (Lo)
10400.00	9061.71	269.83	44.93	16.55	Holder C.T Federal #1 (s)	494.60	190.15	1.62	SF (Lo)
10500.00	9061.48	269.88	47.43	17.04	Holder C.T Federal #1 (s)	420.09	110.78	1.36	SF (Med)
10600.00	9061.26	269.92	49.96	17.54	Holder C.T Federal #1 (s)	358.21	42.27	1.13	SF (Med)
10700.00	9061.03	269.96	52.51	18.06	Holder C.T Federal #1 (s)	316.48	-5.12	0.98	SF (Hi)

Primary Well : Mizar 11 Fed Com 2H Lat (p) (TVD Relative to Kelly Bushing; All Azimuth Relative to GRID NORTH)

MD (US ft)	TVD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	Nearest Well	CC (US ft)	ES (US ft)	SF	Risk
10800.00	9060.81	270.00	55.09	18.59	Holder C.T Federal #1 (s)	303.31	-22.22	0.93	SF (Hi)
10900.00	9060.58	270.05	57.67	19.13	Holder C.T Federal #1 (s)	322.24	-2.08	0.99	SF (Hi)
11000.00	9060.36	270.09	60.28	19.69	Holder C.T Federal #1 (s)	368.35	49.71	1.16	SF (Med)
11100.00	9060.13	270.13	62.89	20.27	Holder C.T Federal #1 (s)	433.03	118.94	1.38	SF (Med)
11200.00	9059.91	270.17	65.52	20.85	Holder C.T Federal #1 (s)	509.27	199.67	1.64	SF (Lo)
11300.00	9059.68	270.22	68.16	21.44	Holder C.T Federal #1 (s)	592.62	285.66	1.93	SF (Lo)
11400.00	9059.46	270.26	70.80	22.04	Holder C.T Federal #1 (s)	680.47	376.86	2.24	
11500.00	9059.23	270.30	73.46	22.64	Holder C.T Federal #1 (s)	771.28	469.33	2.55	
11600.00	9059.01	270.34	76.12	23.26	Holder C.T Federal #1 (s)	864.13	563.41	2.87	
11700.00	9058.78	270.39	78.79	23.88	Holder C.T Federal #1 (s)	958.42	659.13	3.20	
11800.00	9058.56	270.43	81.46	24.50	Holder C.T Federal #1 (s)	1053.75	755.95	3.54	
11900.00	9058.33	270.47	84.14	25.13	Holder C.T Federal #1 (s)	1149.89	853.21	3.88	
12000.00	9058.11	270.51	86.82	25.77	Holder C.T Federal #1 (s)	1246.63	950.15	4.20	
12100.00	9057.88	270.56	89.51	26.41	Holder C.T Federal #1 (s)	1343.84	1047.65	4.54	
12200.00	9057.66	270.60	92.20	27.06	Holder C.T Federal #1 (s)	1441.44	1145.56	4.87	
12300.00	9057.43	270.64	94.90	27.71	Holder C.T Federal #1 (s)	1539.35	1243.80	5.21	
12400.00	9057.21	270.68	97.60	28.37	Holder C.T Federal #1 (s)	1637.51	1342.29	5.55	
12500.00	9056.98	270.73	100.30	29.03	Holder C.T Federal #1 (s)	1735.88	1440.95	5.89	
12600.00	9056.76	270.77	103.01	29.69	Holder C.T Federal #1 (s)	1834.42	1539.74	6.22	
12700.00	9056.53	270.81	105.71	30.35	Holder C.T Federal #1 (s)	1933.12	1638.67	6.57	
12800.00	9056.31	270.85	108.42	31.02	Holder C.T Federal #1 (s)	2031.94	1737.72	6.91	
12900.00	9056.08	270.90	111.14	31.69	Holder C.T Federal #1 (s)	2130.88	1836.87	7.25	
13000.00	9055.86	270.94	113.85	32.37	Holder C.T Federal #1 (s)	2229.90	1936.11	7.59	
13100.00	9055.63	270.98	116.57	33.05	Holder C.T Federal #1 (s)	2329.01	2035.42	7.93	
13200.00	9055.41	271.02	119.28	33.72	Holder C.T Federal #1 (s)	2428.20	2134.79	8.28	
13300.00	9055.18	271.07	122.00	34.41	Holder C.T Federal #1 (s)	2527.45	2234.22	8.62	
13400.00	9054.96	271.11	124.73	35.09	Holder C.T Federal #1 (s)	2626.75	2333.70	8.96	
13500.00	9054.73	271.15	127.45	35.77	Holder C.T Federal #1 (s)	2726.11	2433.21	9.31	
13600.00	9054.51	271.19	130.17	36.46	Holder C.T Federal #1 (s)	2825.51	2532.76	9.65	
13700.00	9054.28	271.24	132.90	37.15	Holder C.T Federal #1 (s)	2924.95	2632.35	10.00	
13800.00	9054.06	271.28	135.62	37.84	Holder C.T Federal #1 (s)	3024.43	2731.96	10.34	
13825.85	9054.00	271.29	136.33	38.02	Holder C.T Federal #1 (s)	3050.15	2757.71	10.43	

Secondary Well : Holder C.T Federal #1 (s) (TVD Relative to Kelly Bushing (Primary); All Azimuth Relative to GRID NORTH)

Pri MD (US ft)	Pri TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	CC (US ft)	ES (US ft)	SF	Risk
4200.00	4200.00	4192.00	89.58	122.76	122.76	1930.00	1797.36	14.55	
4300.00	4299.98	4291.98	269.52	125.75	125.75	1930.02	1794.20	14.21	
4400.00	4399.84	4391.84	269.37	128.69	128.69	1930.07	1791.16	13.89	

Secondary Well : Holder C T Federal # 1 (s) (TVD Relative to Kelly Bushing (Primary)) : All Azimuth Relative to GRID NORTH)

Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T Face to Sec (°)	S Major (US ft)	S Minor (US ft)	CC (US ft)	ES (US ft)	SF	Risk
4500.00	4499.45	4491.45	269.12	131.85	131.85	1930.18	1787.96	13.57	
4600.00	4598.76	4590.76	268.77	134.92	134.92	1930.40	1784.92	13.27	
4700.00	4698.01	4690.01	268.41	137.93	137.93	1930.70	1782.07	12.99	
4800.00	4797.27	4789.27	268.05	140.87	140.87	1931.08	1779.34	12.73	
4900.00	4896.52	4888.52	267.69	143.77	143.77	1931.54	1776.72	12.48	
5000.00	4995.78	4987.78	267.34	146.85	146.85	1932.07	1774.03	12.22	
5100.00	5095.03	5087.03	266.98	149.86	149.86	1932.68	1771.47	11.99	
5200.00	5194.28	5186.28	266.62	152.81	152.81	1933.36	1769.06	11.77	
5300.00	5293.54	5285.54	266.26	155.94	155.94	1934.13	1766.54	11.54	
5400.00	5392.79	5384.79	265.90	159.02	159.02	1934.96	1764.17	11.33	
5500.00	5492.05	5484.05	265.55	162.03	162.03	1935.88	1761.94	11.13	
5600.00	5591.30	5583.30	265.19	164.99	164.99	1936.87	1759.84	10.94	
5700.00	5690.56	5682.56	264.83	167.90	167.90	1937.94	1757.78	10.76	
5800.00	5789.81	5781.81	264.48	170.98	170.98	1939.08	1755.52	10.56	
5900.00	5889.07	5881.07	264.12	174.05	174.05	1940.30	1753.36	10.38	
6000.00	5988.32	5980.32	263.77	177.06	177.06	1941.60	1751.32	10.20	
6100.00	6087.58	6079.58	263.41	180.02	180.02	1942.97	1749.42	10.04	
6200.00	6186.83	6178.83	263.06	182.96	182.96	1944.41	1747.62	9.88	
6300.00	6286.09	6278.09	262.71	185.98	185.98	1945.93	1745.81	9.72	
6400.00	6385.34	6377.34	262.35	189.02	189.02	1947.53	1744.07	9.57	
6500.00	6484.59	6476.59	262.00	192.07	192.07	1949.20	1742.38	9.42	
6600.00	6583.85	6575.85	261.65	195.08	195.08	1950.95	1740.82	9.28	
6700.00	6683.14	6675.14	261.29	198.04	198.04	1952.72	1739.34	9.15	
6800.00	6782.68	6774.68	260.99	201.14	201.14	1954.20	1737.46	9.02	
6900.00	6882.43	6874.43	260.78	204.24	204.24	1955.31	1735.21	8.88	
7000.00	6982.33	6974.33	260.64	207.31	207.31	1956.01	1732.63	8.76	
7100.00	7082.32	7074.32	260.59	210.33	210.33	1956.30	1729.68	8.63	
7200.00	7182.32	7174.32	80.58	213.30	213.30	1956.30	1726.50	8.51	
7300.00	7282.32	7274.32	80.58	216.24	216.24	1956.30	1723.36	8.40	
7400.00	7382.32	7374.32	80.58	219.28	219.28	1956.30	1720.11	8.28	
7500.00	7482.32	7474.32	80.58	222.31	222.31	1956.30	1716.88	8.17	
7600.00	7582.32	7574.32	80.58	225.38	225.38	1956.30	1713.60	8.06	
7700.00	7682.32	7674.32	80.58	228.48	228.48	1956.30	1710.30	7.95	
7800.00	7782.32	7774.32	80.58	231.53	231.53	1956.30	1707.04	7.85	
7900.00	7882.32	7874.32	80.58	234.55	234.55	1956.30	1703.82	7.75	
8000.00	7982.32	7974.32	80.58	237.53	237.53	1956.30	1700.63	7.65	
8100.00	8082.32	8074.32	80.58	240.55	240.55	1956.30	1697.40	7.56	
8200.00	8182.32	8174.32	80.58	243.62	243.62	1956.30	1694.12	7.46	
8300.00	8282.32	8274.32	80.58	246.66	246.66	1956.30	1690.88	7.37	
8400.00	8382.32	8374.32	80.58	249.65	249.65	1956.30	1687.67	7.28	
8500.00	8482.32	8474.32	80.58	252.72	252.72	1956.30	1684.39	7.19	
8600.00	8582.28	8574.28	351.05	255.83	255.83	1954.85	1679.62	7.10	
8700.00	8680.67	8672.67	350.67	258.86	258.86	1938.04	1659.62	6.96	
8800.00	8774.00	8766.00	349.79	261.70	261.70	1903.01	1621.48	6.76	
8900.00	8858.85	8850.85	348.21	264.25	264.25	1851.07	1566.77	6.51	
9000.00	8932.10	8924.10	345.47	266.43	266.43	1784.17	1497.53	6.22	
9100.00	8991.05	8983.05	340.50	268.18	268.18	1704.82	1416.20	5.91	
9200.00	9033.55	9025.55	330.45	269.43	269.43	1615.98	1325.97	5.57	
9300.00	9058.02	9050.02	306.60	270.15	270.15	1521.01	1230.23	5.23	
9400.00	9063.95	9055.95	269.41	270.33	270.33	1423.45	1132.39	4.89	
9500.00	9063.73	9055.73	269.45	270.32	270.32	1325.92	1034.84	4.56	
9600.00	9063.50	9055.50	269.49	270.31	270.31	1228.78	937.75	4.22	
9700.00	9063.28	9055.28	269.54	270.31	270.31	1132.14	840.41	3.88	
9800.00	9063.06	9055.06	269.58	270.30	270.30	1036.14	743.40	3.54	
9900.00	9062.83	9054.83	269.62	270.29	270.29	940.97	647.19	3.20	
10000.00	9062.61	9054.61	269.66	270.29	270.29	846.92	552.21	2.87	
10100.00	9062.38	9054.38	269.71	270.28	270.28	754.39	458.88	2.55	
10200.00	9062.16	9054.16	269.75	270.27	270.27	664.04	366.09	2.23	

Secondary Well : Holder C-T Federal #1 (s) (TVD Relative to Kelly Bushing (Primary) ; All Azimuth Relative to GRID NORTH)									
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T Face to Sec (°)	S Major (US ft)	S Minor (US ft)	CC (US ft)	ES (US ft)	SF	Risk
10300.00	9061.93	9053.93	269.79	270.26	270.26	576.88	276.16	1.92	SF (Lo)
10400.00	9061.71	9053.71	269.83	270.26	270.26	494.60	190.15	1.62	SF (Lo)
10500.00	9061.48	9053.48	269.88	270.25	270.25	420.09	110.78	1.36	SF (Med)
10600.00	9061.26	9053.26	269.92	270.24	270.24	358.21	42.27	1.13	SF (Med)
10700.00	9061.03	9053.03	269.96	270.24	270.24	316.48	-5.12	0.98	SF (Hi)
10800.00	9060.81	9052.81	270.00	270.23	270.23	303.31	-22.22	0.93	SF (Hi)
10900.00	9060.58	9052.58	270.05	270.22	270.22	322.24	-2.08	0.99	SF (Hi)
11000.00	9060.36	9052.36	270.09	270.22	270.22	368.35	49.71	1.16	SF (Med)
11100.00	9060.13	9052.13	270.13	270.21	270.21	433.03	118.94	1.38	SF (Med)
11200.00	9059.91	9051.91	270.17	270.21	270.21	509.27	199.67	1.64	SF (Lo)
11300.00	9059.68	9051.68	270.22	270.20	270.20	592.62	285.66	1.93	SF (Lo)
11400.00	9059.46	9051.46	270.26	270.19	270.19	680.47	376.86	2.24	
11500.00	9059.23	9051.23	270.30	270.19	270.19	771.28	469.33	2.55	
11600.00	9059.01	9051.01	270.34	270.18	270.18	864.13	563.41	2.87	
11700.00	9058.78	9050.78	270.39	270.17	270.17	958.42	659.13	3.20	
11800.00	9058.56	9050.56	270.43	270.17	270.17	1053.75	755.95	3.54	
11900.00	9058.33	9050.33	270.47	270.16	270.16	1149.89	853.21	3.88	
12000.00	9058.11	9050.11	270.51	270.15	270.15	1246.63	950.15	4.20	
12100.00	9057.88	9049.88	270.56	270.15	270.15	1343.84	1047.65	4.54	
12200.00	9057.66	9049.66	270.60	270.14	270.14	1441.44	1145.56	4.87	
12300.00	9057.43	9049.43	270.64	270.13	270.13	1539.35	1243.80	5.21	
12400.00	9057.21	9049.21	270.68	270.13	270.13	1637.51	1342.29	5.55	
12500.00	9056.98	9048.98	270.73	270.12	270.12	1735.88	1440.95	5.89	
12600.00	9056.76	9048.76	270.77	270.11	270.11	1834.42	1539.74	6.22	
12700.00	9056.53	9048.53	270.81	270.11	270.11	1933.12	1638.67	6.57	
12800.00	9056.31	9048.31	270.85	270.10	270.10	2031.94	1737.72	6.91	
12900.00	9056.08	9048.08	270.90	270.09	270.09	2130.88	1836.87	7.25	
13000.00	9055.86	9047.86	270.94	270.09	270.09	2229.90	1936.11	7.59	
13100.00	9055.63	9047.63	270.98	270.08	270.08	2329.01	2035.42	7.93	
13200.00	9055.41	9047.41	271.02	270.07	270.07	2428.20	2134.79	8.28	
13300.00	9055.18	9047.18	271.07	270.07	270.07	2527.45	2234.22	8.62	
13400.00	9054.96	9046.96	271.11	270.06	270.06	2626.75	2333.70	8.96	
13500.00	9054.73	9046.73	271.15	270.05	270.05	2726.11	2433.21	9.31	
13600.00	9054.51	9046.51	271.19	270.05	270.05	2825.51	2532.76	9.65	
13700.00	9054.28	9046.28	271.24	270.04	270.04	2924.95	2632.35	10.00	
13800.00	9054.06	9046.06	271.28	270.03	270.03	3024.43	2731.96	10.34	
13825.85	9054.00	9046.00	271.29	270.03	270.03	3050.15	2757.71	10.43	

Secondary Well : Hadar 10 Fed Com 2H (p) (TVD Relative to Kelly Bushing (Primary) ; All Azimuth Relative to GRID NORTH)									
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T Face to Sec (°)	S Major (US ft)	S Minor (US ft)	CC (US ft)	ES (US ft)	SF	Risk
4200.00	4200.00	4201.00	359.55	9.33	9.33	49.98	30.76	2.60	
4300.00	4299.98	4300.98	179.57	9.56	9.56	51.73	32.11	2.64	
4400.00	4399.84	4400.84	179.61	9.78	9.78	56.96	36.95	2.85	
4500.00	4499.45	4500.45	179.66	10.00	10.00	65.67	45.28	3.22	
4600.00	4598.76	4599.76	179.71	10.23	10.23	77.43	56.60	3.72	
4700.00	4698.01	4699.01	179.75	10.45	10.45	89.61	68.40	4.22	
4800.00	4797.27	4798.27	179.78	10.67	10.67	101.80	80.21	4.72	
4900.00	4896.52	4897.52	179.80	10.90	10.90	113.99	91.97	5.18	
5000.00	4995.78	4996.78	179.82	11.12	11.12	126.18	103.75	5.63	
5100.00	5095.03	5096.03	179.84	11.34	11.34	138.36	115.53	6.06	
5200.00	5194.28	5195.28	179.85	11.57	11.57	150.55	127.31	6.48	
5300.00	5293.54	5294.54	179.86	11.79	11.79	162.74	139.08	6.88	
5400.00	5392.79	5393.79	179.87	12.01	12.01	174.92	150.85	7.27	
5500.00	5492.05	5493.05	179.88	12.24	12.24	187.11	162.63	7.64	
5600.00	5591.30	5592.30	179.89	12.46	12.46	199.30	174.40	8.00	
5700.00	5690.56	5691.56	179.89	12.68	12.68	211.48	186.17	8.35	
5800.00	5789.81	5790.81	179.90	12.90	12.90	223.67	197.93	8.69	
5900.00	5889.07	5890.07	179.90	13.13	13.13	235.86	209.70	9.02	

Secondary Well : Hadar 10 Fed Com 2H (p) (TVD Relative to Kelly Bushing (Primary) / All Azimuth Relative to GRID NORTH)								
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T. Face to Sec (°)	S. Major (US ft)	S. Minor (US ft)	CC (US ft)	ES (US ft)	SF	Risk
6000.00	5988.32	5989.32	179.91	13.35	13.35	248.04	221.46	9.33	
6100.00	6087.58	6088.58	179.91	13.57	13.57	260.23	233.23	9.64	
6200.00	6186.83	6187.83	179.92	13.80	13.80	272.42	244.99	9.93	
6300.00	6286.09	6287.09	179.92	14.02	14.02	284.61	256.75	10.22	
6400.00	6385.34	6386.34	179.92	14.24	14.24	296.79	268.51	10.49	
6500.00	6484.59	6485.59	179.93	14.47	14.47	308.98	280.27	10.76	
6600.00	6583.85	6584.85	179.93	14.69	14.69	321.17	292.02	11.02	
6700.00	6683.14	6684.14	179.93	14.91	14.91	333.03	303.45	11.26	
6800.00	6782.68	6783.68	179.93	15.14	15.14	342.61	312.59	11.41	
6900.00	6882.43	6883.43	179.94	15.36	15.36	349.59	319.12	11.47	
7000.00	6982.33	6983.33	179.94	15.59	15.59	353.95	323.04	11.45	
7100.00	7082.32	7083.32	179.94	15.81	15.81	355.69	324.34	11.34	
7200.00	7182.32	7183.32	359.94	16.03	16.03	355.73	323.94	11.19	
7300.00	7282.32	7283.32	359.94	16.26	16.26	355.73	323.50	11.04	
7400.00	7382.32	7383.32	359.94	16.48	16.48	355.73	323.06	10.89	
7500.00	7482.32	7483.32	359.94	16.71	16.71	355.73	322.61	10.74	
7600.00	7582.32	7583.32	359.94	16.93	16.93	355.73	322.17	10.60	
7700.00	7682.32	7683.32	359.94	17.16	17.16	355.73	321.73	10.46	
7800.00	7782.32	7783.32	359.94	17.38	17.38	355.73	321.29	10.33	
7900.00	7882.32	7883.32	359.94	17.61	17.61	355.73	320.85	10.20	
8000.00	7982.32	7983.32	359.94	17.83	17.83	355.73	320.41	10.07	
8100.00	8082.32	8083.32	359.94	18.06	18.06	355.73	319.96	9.95	
8200.00	8182.32	8183.32	359.94	18.28	18.28	355.73	319.52	9.82	
8300.00	8282.32	8283.32	359.94	18.51	18.51	355.73	319.08	9.71	
8400.00	8382.32	8383.32	359.94	18.73	18.73	355.73	318.64	9.59	
8500.00	8482.32	8483.32	359.94	18.96	18.96	355.73	318.19	9.48	
8600.00	8585.80	8586.80	270.08	19.19	19.17	355.63	317.66	9.37	
8700.00	8692.95	8695.34	264.49	19.40	19.01	353.69	315.31	9.22	
8800.00	8768.55	8775.30	256.92	19.57	18.51	358.44	319.80	9.28	
8900.00	8812.35	8824.02	253.11	19.68	18.18	382.48	343.78	9.88	
9000.00	8831.96	8846.62	255.46	19.74	17.98	429.90	391.25	11.12	
9100.00	8836.83	8852.33	264.12	19.75	17.92	495.95	457.64	12.95	
9200.00	8832.31	8847.03	278.29	19.74	17.97	572.96	534.90	15.06	
9300.00	8820.67	8833.53	294.92	19.70	18.10	654.39	616.38	17.22	
9400.00	8802.63	8813.00	307.47	19.65	18.27	735.54	697.31	19.24	
9500.00	8784.74	8793.05	309.15	19.60	18.41	818.06	779.64	21.30	
9600.00	8769.08	8775.88	310.55	19.57	18.50	903.25	864.65	23.39	
9700.00	8755.31	8760.97	311.73	19.53	18.62	990.59	951.74	25.49	
9800.00	8743.13	8747.93	312.74	19.51	18.73	1079.66	1040.62	27.65	
9900.00	8732.31	8736.44	313.62	19.48	18.81	1170.14	1130.96	29.86	
10000.00	8722.64	8726.25	314.38	19.46	18.87	1261.79	1222.49	32.11	
10100.00	8713.96	8717.16	315.04	19.44	18.92	1354.40	1314.93	34.31	
10200.00	8706.13	8708.99	315.63	19.43	18.96	1447.83	1408.22	36.56	
10300.00	8699.04	8701.63	316.16	19.41	18.99	1541.94	1502.25	38.85	
10400.00	8692.59	8694.96	316.62	19.40	19.01	1636.64	1596.88	41.16	
10500.00	8686.70	8688.89	317.05	19.39	19.03	1731.85	1692.02	43.48	
10600.00	8681.30	8683.34	317.43	19.38	19.05	1827.50	1787.61	45.82	
10700.00	8676.34	8678.25	317.77	19.37	19.06	1923.52	1883.56	48.14	
10800.00	8671.77	8673.57	318.09	19.36	19.07	2019.89	1979.85	50.45	
10900.00	8667.54	8669.25	318.38	19.35	19.08	2116.54	2076.44	52.79	
11000.00	8663.61	8665.25	318.64	19.34	19.08	2213.45	2173.28	55.09	
11100.00	8659.96	8661.53	318.88	19.33	19.09	2310.60	2270.34	57.39	
11200.00	8656.56	8658.07	319.11	19.33	19.09	2407.95	2367.63	59.72	
11300.00	8653.39	8654.85	319.32	19.32	19.09	2505.49	2465.12	62.07	
11400.00	8650.42	8651.83	319.51	19.31	19.09	2603.19	2562.78	64.41	
11500.00	8647.63	8649.00	319.70	19.31	19.10	2701.05	2660.58	66.75	
11600.00	8645.01	8646.35	319.86	19.30	19.10	2799.04	2758.53	69.10	
11700.00	8642.54	8643.85	320.02	19.30	19.10	2897.15	2856.60	71.45	

Secondary Well : Hadar 10 Fed Com 2H (p) (TVD Relative to Kelly Bushing (Primary) ; All Azimuth Relative to GRID NORTH)								
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	CC (US ft)	ES (US ft)	SF	Risk
11800.00	8640.21	8641.50	320.17	19.29	19.09	2995.38	2954.79	73.80	
11900.00	8638.01	8639.28	320.31	19.29	19.09	3093.70	3053.07	76.13	
12000.00	8635.93	8637.18	320.44	19.29	19.09	3192.13	3151.44	78.46	
12100.00	8633.96	8635.19	320.57	19.28	19.10	3290.64	3249.91	80.79	
12200.00	8632.10	8633.30	320.68	19.28	19.10	3389.23	3348.45	83.12	
12300.00	8630.32	8631.51	320.79	19.27	19.11	3487.89	3447.07	85.45	
12400.00	8628.63	8629.81	320.90	19.27	19.11	3586.62	3545.76	87.77	
12500.00	8627.02	8628.19	321.00	19.27	19.12	3685.41	3644.51	90.10	
12600.00	8625.49	8626.64	321.09	19.27	19.12	3784.26	3743.31	92.42	
12700.00	8624.03	8625.17	321.18	19.26	19.12	3883.17	3842.18	94.73	
12800.00	8622.63	8623.76	321.27	19.26	19.13	3982.12	3941.09	97.05	
12900.00	8621.29	8622.42	321.35	19.26	19.13	4081.13	4040.05	99.36	
13000.00	8620.01	8621.13	321.43	19.25	19.13	4180.17	4139.05	101.66	
13100.00	8618.79	8619.89	321.50	19.25	19.14	4279.26	4238.10	103.96	
13200.00	8617.61	8618.71	321.57	19.25	19.14	4378.39	4337.18	106.26	
13300.00	8616.48	8617.58	321.64	19.25	19.14	4477.55	4436.30	108.56	
13400.00	8615.40	8616.49	321.71	19.25	19.14	4576.75	4535.46	110.85	
13500.00	8614.36	8615.44	321.77	19.24	19.15	4675.98	4634.64	113.13	
13600.00	8613.35	8614.43	321.83	19.24	19.15	4775.23	4733.86	115.42	
13700.00	8612.39	8613.46	321.89	19.24	19.15	4874.52	4833.10	117.69	
13800.00	8611.46	8612.53	321.94	19.24	19.15	4973.84	4932.38	119.97	
13825.85	8611.22	8612.29	321.96	19.24	19.15	4999.52	4958.05	120.55	

Weatherford

Weatherford Drilling Services

GeoDec4 v2.1.0.0

Report Date:	March 02, 2015
Job Number:	Mizar 11 Fed Com 2H
Customer:	Devon Energy
Well Name:	Hadar 10 Fed Com 2H
API Number:	
Rig Name:	
Location:	Eddy Co, NM Nad83 NME
Block:	
Engineer:	RWJ

NAD83 / New Mexico East (ftUS)	NAD83 (1986)
Projected Coordinate System	Geodetic Coordinate System
Datum: North American Datum 1983 (1986)	Datum: North American Datum 1983 (1986)
Ellipsoid: GRS 1980	Ellipsoid: GRS 1980
EPSG: 2257	EPSG: 4269
North: 610289.67 US Survey Foot	Latitude: 32.676794 Degree
East: 690524.20 US Survey Foot	Longitude: -103.848474 Degree
Convergence: 0.26°	
Declination: 7.47°	
Total Correction: 7.21°	
Datum Transformation: none	

Geodetic Location WGS84

MSL Elevation	=	0 m
Latitude	=	32° 40' 36.46" N
Longitude	=	103° 50' 54.51" W

			[True North Offset]		
Magnetic Declination	=	7.47 deg			
Local Gravity	=	.9988 g	CheckSum	=	6604
Local Field Strength	=	48457 nT	Magnetic Vector X	=	23689 nT
Magnetic Dip	=	60.46 deg	Magnetic Vector Y	=	3107 nT
Magnetic Model	=	bggm2014.dat	Magnetic Vector Z	=	42158 nT
Run Date	=	March 10, 2015	Magnetic Vector H	=	23892 nT

Signed:_____ Date:_____

5D Plan Report

Devon Energy

Field Name: *Eddy Co, NM (Nad 83 NME)*
Site Name: *Hadar 10 Fed Com 2H,Mizar 11 Fed Com 2H Pad*
Well Name: *Mizar 11 Fed Com 2H Pilot*
Plan: *P1:V2*

02 March 2015

Mizar 11 Fed Com 2H Pilot

Field Name
Eddy Co, NM (Nad 83 NME)

Map Units : US ft **Company Name :** Devon Energy
Vertical Reference Datum (VRD) : Mean Sea Level
Projected Coordinate System : NAD83 / New Mexico East (ftUS)
Comment :

Site Name
Hadar 10 Fed Com 2H, Mizar 11 Fed Com 2H Pad

Units : US ft **North Reference** : Grid **Convergence Angle :** 0.26
Position **Northing :** 610339.65 US ft **Latitude :** 32° 40' 36.95"
Easting : 690523.81 US ft **Longitude :** -103° 50' 54.51"
Elevation above Mean Sea Level: 3579.00 US ft
Comment :

Slot Name
Mizar 11 Fed Com 2H

Position (Offsets relative to Site Centre)
+N / -S : -49.98 US ft **Northing :** 610289.67 US ft **Latitude :** 32° 40' 36.46"
+E / -W : 0.39 US ft **Easting :** 690524.20 US ft **Longitude :** -103° 50' 54.51"
Slot TVD Reference : Ground Elevation
Elevation above Mean Sea Level : 3578.00 US ft
Comment :

Well Name
Mizar 11 Fed Com 2H Pilot

Type : Main well **UWI :** **Plan :** P1:V2
Rig Height ***Kelly Bushing*** **:** 25.00 US ft **Comment :**
Relative to Mean Sea Level: 3603.00 US ft
Closure Distance : 0 US ft **Closure Azimuth :** 0°
Vertical Section (Position of Origin Relative to Slot)
+N / -S : 0.00 US ft **+E / -W :** 0.00 US ft **Az :**89.50°
Magnetic Parameters
Model : BGGM **Field Strength :** 48457.1nT **Dec :** 7.47° **Dip :** 60.46° **Date :** 10/Mar/2015

Well path created using minimum curvature

Salient Points (Relative to Slot centre, TVD relative to Kelly Bushing)

MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N Offset (US ft)	E Offset (US ft)	VS (US ft)	DLS (°/100US ft)	B Rate (°/100US ft)	T Rate (°/100US ft)	T Face (°)	Comment
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
10150.00	0.00	0.00	10150.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	PBHL 2h Pilot

Interpolated Points (Relative to Slot centre, TVD relative to Kelly Bushing)

MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N Offset (US ft)	E Offset (US ft)	VS (US ft)	DLS (°/100US ft)	Northing (US ft)	Easting (US ft)	Comment
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	610289.67	690524.20	

5D Plan Report

Interpolated Points (Relative to Slot centre, TVD relative to Kelly Bushing)

MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N Offset (US ft)	E Offset (US ft)	VS (US ft)	DLS (°/100 US ft)	Northing (US ft)	Easting (US ft)	Comment
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
1100.00	0.00	0.00	1100.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
1200.00	0.00	0.00	1200.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
1300.00	0.00	0.00	1300.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
1400.00	0.00	0.00	1400.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
1500.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
1600.00	0.00	0.00	1600.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
1700.00	0.00	0.00	1700.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
1800.00	0.00	0.00	1800.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
1900.00	0.00	0.00	1900.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
2000.00	0.00	0.00	2000.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
2100.00	0.00	0.00	2100.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
2200.00	0.00	0.00	2200.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
2300.00	0.00	0.00	2300.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
2400.00	0.00	0.00	2400.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
2500.00	0.00	0.00	2500.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
2600.00	0.00	0.00	2600.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
2700.00	0.00	0.00	2700.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
2800.00	0.00	0.00	2800.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
2900.00	0.00	0.00	2900.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
3000.00	0.00	0.00	3000.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
3100.00	0.00	0.00	3100.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
3200.00	0.00	0.00	3200.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
3300.00	0.00	0.00	3300.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
3400.00	0.00	0.00	3400.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
3500.00	0.00	0.00	3500.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
3600.00	0.00	0.00	3600.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
3700.00	0.00	0.00	3700.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
3800.00	0.00	0.00	3800.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
3900.00	0.00	0.00	3900.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
4000.00	0.00	0.00	4000.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
4100.00	0.00	0.00	4100.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
4200.00	0.00	0.00	4200.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
4300.00	0.00	0.00	4300.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
4400.00	0.00	0.00	4400.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
4500.00	0.00	0.00	4500.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
4600.00	0.00	0.00	4600.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
4700.00	0.00	0.00	4700.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
4800.00	0.00	0.00	4800.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
4900.00	0.00	0.00	4900.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
5000.00	0.00	0.00	5000.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
5100.00	0.00	0.00	5100.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
5200.00	0.00	0.00	5200.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
5300.00	0.00	0.00	5300.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
5400.00	0.00	0.00	5400.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
5500.00	0.00	0.00	5500.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
5600.00	0.00	0.00	5600.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
5700.00	0.00	0.00	5700.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
5800.00	0.00	0.00	5800.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
5900.00	0.00	0.00	5900.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
6000.00	0.00	0.00	6000.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
6100.00	0.00	0.00	6100.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
6200.00	0.00	0.00	6200.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
6300.00	0.00	0.00	6300.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
6400.00	0.00	0.00	6400.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
6500.00	0.00	0.00	6500.00	0.00	0.00	0.00	0.00	610289.67	690524.20	

5D Plan Report

Interpolated Points (Relative to Slot centre, TVD relative to Kelly Bushing)

MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N Offset (US ft)	E Offset (US ft)	VS (US ft)	DLS (°/100 US ft)	Northing (US ft)	Easting (US ft)	Comment
6600.00	0.00	0.00	6600.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
6700.00	0.00	0.00	6700.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
6800.00	0.00	0.00	6800.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
6900.00	0.00	0.00	6900.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
7000.00	0.00	0.00	7000.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
7100.00	0.00	0.00	7100.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
7200.00	0.00	0.00	7200.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
7300.00	0.00	0.00	7300.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
7400.00	0.00	0.00	7400.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
7500.00	0.00	0.00	7500.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
7600.00	0.00	0.00	7600.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
7700.00	0.00	0.00	7700.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
7800.00	0.00	0.00	7800.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
7900.00	0.00	0.00	7900.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
8000.00	0.00	0.00	8000.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
8100.00	0.00	0.00	8100.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
8200.00	0.00	0.00	8200.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
8300.00	0.00	0.00	8300.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
8400.00	0.00	0.00	8400.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
8500.00	0.00	0.00	8500.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
8600.00	0.00	0.00	8600.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
8700.00	0.00	0.00	8700.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
8800.00	0.00	0.00	8800.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
8900.00	0.00	0.00	8900.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
9000.00	0.00	0.00	9000.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
9100.00	0.00	0.00	9100.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
9200.00	0.00	0.00	9200.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
9300.00	0.00	0.00	9300.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
9400.00	0.00	0.00	9400.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
9500.00	0.00	0.00	9500.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
9600.00	0.00	0.00	9600.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
9700.00	0.00	0.00	9700.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
9800.00	0.00	0.00	9800.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
9900.00	0.00	0.00	9900.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
10000.00	0.00	0.00	10000.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
10100.00	0.00	0.00	10100.00	0.00	0.00	0.00	0.00	610289.67	690524.20	
10150.00	0.00	0.00	10150.00	0.00	0.00	0.00	0.00	610289.67	690524.20	PBHL 2H Pilot

5D Anti-Collision Report

Devon Energy

Field Name: *Eddy Co, NM (Nad 83 NME)*
Site Name: *Hardar 10 Fed Com 2H,Mizar 11 Fed Com 2H Pad*
Well Name: *Mizar 11 Fed Com 2H Pilot*

02 March 2015

Weatherford®

Mizar 11 Fed Com 2H Pilot

Field Name
Eddy Co, NM (Nad 83 NME)

Map Units : US ft
Company Name : Devon Energy
Vertical Reference Datum (VRD) : Mean Sea Level
Projected Coordinate System : NAD83 / New Mexico East (ftUS)
Comment :

Site Name
Hardar 10 Fed Com 2H,Mizar 11 Fed Com 2H Pad

Units : US ft **North Reference** : Grid **Convergence Angle :** 0.26

Position **Northing :** 610339.65 US ft **Latitude :** 32°40'36.95"
Easting : 690523.81 US ft **Longitude :** 103°50'54.51"

Elevation above Mean Sea Level: 3579.00 US ft
Comment :

Slot Name
Mizar 11 Fed Com 2H

Position (Offsets relative to Site Centre)
+N / -S : 49.98 US ft **Northing :** 610289.67 US ft **Latitude :** 32°40'36.46"
+E / -W : 0.39 US ft **Easting :** 690524.20 US ft **Longitude :** 103°50'54.51"
Slot TVD Reference : Ground Elevation
Elevation above Mean Sea Level : 3578.00 US ft
Comment :

Well Name
Mizar 11 Fed Com 2H Pilot

Type : Main well **UWI :** **Plan :** Working Plan
Rig Height *Kelly Bushing* : 25.00 US ft **Comment :**
Relative to Mean Sea Level: 3603.00 US ft
Closure Distance : 0 US ft **Closure Azimuth :** 0°
Vertical Section (Position of Origin Relative to Slot)
+N / -S : 0.00 US ft **+E / -W :** 0.00 US ft **Az :** 89.50°
Magnetic Parameters
Model : BGGM **Field Strength :** 48457.1nT **Dec :** 7.47° **Dip :** 60.46° **Date :** 10/Mar/2015

Collision / Uncertainty Analysis

Primary Well	Start MD (US ft)	End MD (US ft)	Collision Risk Interval	No. of Std. Deviations in Error Computation
Mizar 11 Fed Com 2H Pilot (p)	0.00	10150.00	100.00	2

Secondary Well Names

Hardar 10 Fed Com 2H (p)

Anti-Collision Report Terminology

S.Minor, S.Major :Radii of the ellipse of uncertainty at the current location as seen in the along hole direction.
PHI :Angle between high-side vector and semi-minor axis
TVD Spread :Total TVD range of the ellipsoid of uncertainty at the current location
ES :Distance between the extremities of the primary and secondary uncertainty ellipsoids in the direction Cr-Cr
T.Face to Sec :Angle between the Hi-Side vector of the primary well at the current location and line of closest approach between the two wells

Separation factors calculated using Pedal curve (Independent Uncertainty) Well path created using minimum curvature

Anti Collision Proximity Summary (TVD relative to Kelly Bushing)

SF

Secondary Well Name	Pri MD (US ft)	Sec MD (US ft)	TVD (US ft)	CC (US ft)	ES (US ft)	SF	Risk
Hardar 10 Fed Com 2H (p)	8670.90	8672.67	8670.90	48.71	9.45	1.24	SF (Med)

Primary Well : Mizar 11 Fed Com 2H Pilot (p) (TVD Relative to Kelly Bushing ; All Azimuth Relative to GRID NORTH)

MD (US ft)	TVD (US ft)	T. Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	Nearest Well	CC (US ft)	ES (US ft)	SF	Risk
0.00	0.00	359.55	0.00	0.00	Hardar 10 Fed Com 2H (p)	49.98	49.41	86.77	
100.00	100.00	359.55	0.11	0.11	Hardar 10 Fed Com 2H (p)	49.98	49.19	63.13	
200.00	200.00	359.55	0.34	0.34	Hardar 10 Fed Com 2H (p)	49.98	48.74	40.31	
300.00	300.00	359.55	0.56	0.56	Hardar 10 Fed Com 2H (p)	49.98	48.29	29.59	
400.00	400.00	359.55	0.79	0.79	Hardar 10 Fed Com 2H (p)	49.98	47.84	23.37	
500.00	500.00	359.55	1.01	1.01	Hardar 10 Fed Com 2H (p)	49.98	47.39	19.31	
600.00	600.00	359.55	1.24	1.24	Hardar 10 Fed Com 2H (p)	49.98	46.94	16.45	
700.00	700.00	359.55	1.46	1.46	Hardar 10 Fed Com 2H (p)	49.98	46.49	14.33	
800.00	800.00	359.55	1.69	1.69	Hardar 10 Fed Com 2H (p)	49.98	46.04	12.70	
900.00	900.00	359.55	1.91	1.91	Hardar 10 Fed Com 2H (p)	49.98	45.60	11.40	
1000.00	1000.00	359.55	2.14	2.14	Hardar 10 Fed Com 2H (p)	49.98	45.15	10.34	
1100.00	1100.00	359.55	2.36	2.36	Hardar 10 Fed Com 2H (p)	49.98	44.70	9.46	
1200.00	1200.00	359.55	2.59	2.59	Hardar 10 Fed Com 2H (p)	49.98	44.25	8.72	
1300.00	1300.00	359.55	2.81	2.81	Hardar 10 Fed Com 2H (p)	49.98	43.80	8.08	
1400.00	1400.00	359.55	3.03	3.03	Hardar 10 Fed Com 2H (p)	49.98	43.35	7.53	
1500.00	1500.00	359.55	3.26	3.26	Hardar 10 Fed Com 2H (p)	49.98	42.90	7.06	
1600.00	1600.00	359.55	3.48	3.48	Hardar 10 Fed Com 2H (p)	49.98	42.45	6.64	
1700.00	1700.00	359.55	3.71	3.71	Hardar 10 Fed Com 2H (p)	49.98	42.00	6.26	
1800.00	1800.00	359.55	3.93	3.93	Hardar 10 Fed Com 2H (p)	49.98	41.55	5.93	
1900.00	1900.00	359.55	4.16	4.16	Hardar 10 Fed Com 2H (p)	49.98	41.10	5.63	
2000.00	2000.00	359.55	4.38	4.38	Hardar 10 Fed Com 2H (p)	49.98	40.65	5.36	
2100.00	2100.00	359.55	4.61	4.61	Hardar 10 Fed Com 2H (p)	49.98	40.20	5.11	
2200.00	2200.00	359.55	4.83	4.83	Hardar 10 Fed Com 2H (p)	49.98	39.75	4.89	
2300.00	2300.00	359.55	5.06	5.06	Hardar 10 Fed Com 2H (p)	49.98	39.30	4.68	
2400.00	2400.00	359.55	5.28	5.28	Hardar 10 Fed Com 2H (p)	49.98	38.85	4.49	
2500.00	2500.00	359.55	5.51	5.51	Hardar 10 Fed Com 2H (p)	49.98	38.40	4.32	
2600.00	2600.00	359.55	5.73	5.73	Hardar 10 Fed Com 2H (p)	49.98	37.95	4.16	
2700.00	2700.00	359.55	5.96	5.96	Hardar 10 Fed Com 2H (p)	49.98	37.50	4.01	
2800.00	2800.00	359.55	6.18	6.18	Hardar 10 Fed Com 2H (p)	49.98	37.05	3.87	
2900.00	2900.00	359.55	6.41	6.41	Hardar 10 Fed Com 2H (p)	49.98	36.60	3.74	
3000.00	3000.00	359.55	6.63	6.63	Hardar 10 Fed Com 2H (p)	49.98	36.15	3.61	

Primary Well: Mizar 11 Fed Com 2H Pilot (p) (TVD Relative to Kelly Bushing; All Azimuth Relative to GRID NORTH)

MD (US ft)	TVD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	Nearest Well	CC (US ft)	ES (US ft)	SF	Risk
3100.00	3100.00	359.55	6.86	6.86	Hardar 10 Fed Com 2H (p)	49.98	35.71	3.50	
3200.00	3200.00	359.55	7.08	7.08	Hardar 10 Fed Com 2H (p)	49.98	35.26	3.39	
3300.00	3300.00	359.55	7.31	7.31	Hardar 10 Fed Com 2H (p)	49.98	34.81	3.29	
3400.00	3400.00	359.55	7.53	7.53	Hardar 10 Fed Com 2H (p)	49.98	34.36	3.20	
3500.00	3500.00	359.55	7.76	7.76	Hardar 10 Fed Com 2H (p)	49.98	33.91	3.11	
3600.00	3600.00	359.55	7.98	7.98	Hardar 10 Fed Com 2H (p)	49.98	33.46	3.02	
3700.00	3700.00	359.55	8.20	8.20	Hardar 10 Fed Com 2H (p)	49.98	33.01	2.94	
3800.00	3800.00	359.55	8.43	8.43	Hardar 10 Fed Com 2H (p)	49.98	32.56	2.87	
3900.00	3900.00	359.55	8.65	8.65	Hardar 10 Fed Com 2H (p)	49.98	32.11	2.80	
4000.00	4000.00	359.55	8.88	8.88	Hardar 10 Fed Com 2H (p)	49.98	31.66	2.73	
4100.00	4100.00	359.55	9.10	9.10	Hardar 10 Fed Com 2H (p)	49.98	31.21	2.66	
4200.00	4200.00	359.55	9.33	9.33	Hardar 10 Fed Com 2H (p)	49.98	30.76	2.60	
4300.00	4300.00	359.55	9.55	9.55	Hardar 10 Fed Com 2H (p)	49.98	30.31	2.54	
4400.00	4400.00	359.55	9.78	9.78	Hardar 10 Fed Com 2H (p)	49.98	29.86	2.48	
4500.00	4500.00	359.55	10.00	10.00	Hardar 10 Fed Com 2H (p)	49.98	29.41	2.43	
4600.00	4600.00	359.55	10.23	10.23	Hardar 10 Fed Com 2H (p)	49.98	28.96	2.38	
4700.00	4700.00	359.55	10.45	10.45	Hardar 10 Fed Com 2H (p)	49.98	28.51	2.33	
4800.00	4800.00	359.55	10.68	10.68	Hardar 10 Fed Com 2H (p)	49.98	28.06	2.28	
4900.00	4900.00	359.55	10.90	10.90	Hardar 10 Fed Com 2H (p)	49.98	27.61	2.23	
5000.00	5000.00	359.55	11.13	11.13	Hardar 10 Fed Com 2H (p)	49.98	27.16	2.19	
5100.00	5100.00	359.55	11.35	11.35	Hardar 10 Fed Com 2H (p)	49.98	26.71	2.15	
5200.00	5200.00	359.55	11.58	11.58	Hardar 10 Fed Com 2H (p)	49.98	26.26	2.11	
5300.00	5300.00	359.55	11.80	11.80	Hardar 10 Fed Com 2H (p)	49.98	25.81	2.07	
5400.00	5400.00	359.55	12.03	12.03	Hardar 10 Fed Com 2H (p)	49.98	25.37	2.03	
5500.00	5500.00	359.55	12.25	12.25	Hardar 10 Fed Com 2H (p)	49.98	24.92	1.99	SF (Lo)
5600.00	5600.00	359.55	12.48	12.48	Hardar 10 Fed Com 2H (p)	49.98	24.47	1.96	SF (Lo)
5700.00	5700.00	359.55	12.70	12.70	Hardar 10 Fed Com 2H (p)	49.98	24.02	1.92	SF (Lo)
5800.00	5800.00	359.55	12.93	12.93	Hardar 10 Fed Com 2H (p)	49.98	23.57	1.89	SF (Lo)
5900.00	5900.00	359.55	13.15	13.15	Hardar 10 Fed Com 2H (p)	49.98	23.12	1.86	SF (Lo)
6000.00	6000.00	359.55	13.37	13.37	Hardar 10 Fed Com 2H (p)	49.98	22.67	1.83	SF (Lo)
6100.00	6100.00	359.55	13.60	13.60	Hardar 10 Fed Com 2H (p)	49.98	22.22	1.80	SF (Lo)
6200.00	6200.00	359.55	13.82	13.82	Hardar 10 Fed Com 2H (p)	49.98	21.77	1.77	SF (Lo)
6300.00	6300.00	359.55	14.05	14.05	Hardar 10 Fed Com 2H (p)	49.98	21.32	1.74	SF (Lo)
6400.00	6400.00	359.55	14.27	14.27	Hardar 10 Fed Com 2H (p)	49.98	20.87	1.72	SF (Lo)
6500.00	6500.00	359.55	14.50	14.50	Hardar 10 Fed Com 2H (p)	49.98	20.42	1.69	SF (Lo)
6600.00	6600.00	359.55	14.72	14.72	Hardar 10 Fed Com 2H (p)	49.98	19.97	1.67	SF (Lo)

Primary Well is Mizar 11 Fed Com 2H Pilot (p) (TVD Relative to Kelly Bushing; All Azimuth Relative to GRID NORTH)

MD (US ft)	TVD (US ft)	T Face to See (°)	S Major (US ft)	S Minor (US ft)	Nearest Well	CC (US ft)	ES (US ft)	SF	Risk
6700.00	6700.00	359.55	14.95	14.95	Hardar 10 Fed Com 2H (p)	49.98	19.52	1.64	SF (Lo)
6800.00	6800.00	359.55	15.17	15.17	Hardar 10 Fed Com 2H (p)	49.98	19.07	1.62	SF (Lo)
6900.00	6900.00	359.55	15.40	15.40	Hardar 10 Fed Com 2H (p)	49.98	18.62	1.59	SF (Lo)
7000.00	7000.00	359.55	15.62	15.62	Hardar 10 Fed Com 2H (p)	49.98	18.17	1.57	SF (Lo)
7100.00	7100.00	359.55	15.85	15.85	Hardar 10 Fed Com 2H (p)	49.98	17.72	1.55	SF (Lo)
7200.00	7200.00	359.55	16.07	16.07	Hardar 10 Fed Com 2H (p)	49.98	17.27	1.53	SF (Lo)
7300.00	7300.00	359.55	16.30	16.30	Hardar 10 Fed Com 2H (p)	49.98	16.82	1.51	SF (Lo)
7400.00	7400.00	359.55	16.52	16.52	Hardar 10 Fed Com 2H (p)	49.98	16.37	1.49	SF (Med)
7500.00	7500.00	359.55	16.75	16.75	Hardar 10 Fed Com 2H (p)	49.98	15.92	1.47	SF (Med)
7600.00	7600.00	359.55	16.97	16.97	Hardar 10 Fed Com 2H (p)	49.98	15.48	1.45	SF (Med)
7700.00	7700.00	359.55	17.20	17.20	Hardar 10 Fed Com 2H (p)	49.98	15.03	1.43	SF (Med)
7800.00	7800.00	359.55	17.42	17.42	Hardar 10 Fed Com 2H (p)	49.98	14.58	1.41	SF (Med)
7900.00	7900.00	359.55	17.65	17.65	Hardar 10 Fed Com 2H (p)	49.98	14.13	1.39	SF (Med)
8000.00	8000.00	359.55	17.87	17.87	Hardar 10 Fed Com 2H (p)	49.98	13.68	1.38	SF (Med)
8100.00	8100.00	359.55	18.10	18.10	Hardar 10 Fed Com 2H (p)	49.98	13.23	1.36	SF (Med)
8200.00	8200.00	359.55	18.32	18.32	Hardar 10 Fed Com 2H (p)	49.98	12.78	1.34	SF (Med)
8300.00	8300.00	359.55	18.54	18.54	Hardar 10 Fed Com 2H (p)	49.98	12.33	1.33	SF (Med)
8400.00	8400.00	359.55	18.77	18.77	Hardar 10 Fed Com 2H (p)	49.98	11.88	1.31	SF (Med)
8500.00	8500.00	359.55	18.99	18.99	Hardar 10 Fed Com 2H (p)	49.98	11.43	1.30	SF (Med)
8600.00	8600.00	358.02	19.22	19.22	Hardar 10 Fed Com 2H (p)	49.70	10.74	1.28	SF (Med)
8700.00	8700.00	338.82	19.44	19.44	Hardar 10 Fed Com 2H (p)	49.19	9.84	1.25	SF (Med)
8800.00	8800.00	309.10	19.67	19.67	Hardar 10 Fed Com 2H (p)	63.79	24.88	1.64	SF (Lo)
8900.00	8900.00	289.75	19.89	19.89	Hardar 10 Fed Com 2H (p)	102.53	65.41	2.76	
9000.00	9000.00	280.80	20.12	20.12	Hardar 10 Fed Com 2H (p)	158.60	123.16	4.47	
9100.00	9100.00	276.49	20.34	20.34	Hardar 10 Fed Com 2H (p)	225.40	191.31	6.61	
9200.00	9200.00	274.18	20.57	20.57	Hardar 10 Fed Com 2H (p)	299.44	266.37	9.05	
9300.00	9300.00	272.83	20.79	20.79	Hardar 10 Fed Com 2H (p)	378.70	346.39	11.72	
9400.00	9400.00	271.98	21.02	21.02	Hardar 10 Fed Com 2H (p)	461.81	430.18	14.60	
9500.00	9500.00	271.42	21.24	21.24	Hardar 10 Fed Com 2H (p)	547.84	516.59	17.53	
9600.00	9600.00	271.03	21.47	21.47	Hardar 10 Fed Com 2H (p)	636.14	605.21	20.57	
9700.00	9700.00	270.75	21.69	21.69	Hardar 10 Fed Com 2H (p)	726.21	695.57	23.70	
9800.00	9800.00	270.55	21.92	21.92	Hardar 10 Fed Com 2H (p)	817.69	787.17	26.79	
9900.00	9900.00	270.39	22.14	22.14	Hardar 10 Fed Com 2H (p)	910.31	879.82	29.85	
10000.00	10000.00	270.27	22.37	22.37	Hardar 10 Fed Com 2H (p)	1003.87	973.39	32.93	
10100.00	10100.00	270.17	22.59	22.59	Hardar 10 Fed Com 2H (p)	1098.19	1067.71	36.03	
10150.00	10150.00	270.13	22.70	22.70	Hardar 10 Fed Com 2H (p)	1145.60	1115.11	37.57	

Secondary Well: Hardar 10 Fed Com 2H (p) (TVD Relative to Kelly Bushing (Primary)) (All Azimuth Relative to GRID NORTH)									
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T Face to Sec (°)	S Major (US ft)	S Minor (US ft)	CC (US ft)	ES (US ft)	SF	Risk
0.00	0.00	1.00	359.55	0.01	0.01	49.98	49.41	86.77	
100.00	100.00	101.00	359.55	0.12	0.12	49.98	49.19	63.13	
200.00	200.00	201.00	359.55	0.34	0.34	49.98	48.74	40.31	
300.00	300.00	301.00	359.55	0.56	0.56	49.98	48.29	29.59	
400.00	400.00	401.00	359.55	0.79	0.79	49.98	47.84	23.37	
500.00	500.00	501.00	359.55	1.01	1.01	49.98	47.39	19.31	
600.00	600.00	601.00	359.55	1.24	1.24	49.98	46.94	16.45	
700.00	700.00	701.00	359.55	1.46	1.46	49.98	46.49	14.33	
800.00	800.00	801.00	359.55	1.69	1.69	49.98	46.04	12.70	
900.00	900.00	901.00	359.55	1.91	1.91	49.98	45.60	11.40	
1000.00	1000.00	1001.00	359.55	2.14	2.14	49.98	45.15	10.34	
1100.00	1100.00	1101.00	359.55	2.36	2.36	49.98	44.70	9.46	
1200.00	1200.00	1201.00	359.55	2.59	2.59	49.98	44.25	8.72	
1300.00	1300.00	1301.00	359.55	2.81	2.81	49.98	43.80	8.08	
1400.00	1400.00	1401.00	359.55	3.04	3.04	49.98	43.35	7.53	
1500.00	1500.00	1501.00	359.55	3.26	3.26	49.98	42.90	7.06	
1600.00	1600.00	1601.00	359.55	3.49	3.49	49.98	42.45	6.64	
1700.00	1700.00	1701.00	359.55	3.71	3.71	49.98	42.00	6.26	
1800.00	1800.00	1801.00	359.55	3.94	3.94	49.98	41.55	5.93	
1900.00	1900.00	1901.00	359.55	4.16	4.16	49.98	41.10	5.63	
2000.00	2000.00	2001.00	359.55	4.39	4.39	49.98	40.65	5.36	
2100.00	2100.00	2101.00	359.55	4.61	4.61	49.98	40.20	5.11	
2200.00	2200.00	2201.00	359.55	4.84	4.84	49.98	39.75	4.89	
2300.00	2300.00	2301.00	359.55	5.06	5.06	49.98	39.30	4.68	
2400.00	2400.00	2401.00	359.55	5.28	5.28	49.98	38.85	4.49	
2500.00	2500.00	2501.00	359.55	5.51	5.51	49.98	38.40	4.32	
2600.00	2600.00	2601.00	359.55	5.73	5.73	49.98	37.95	4.16	
2700.00	2700.00	2701.00	359.55	5.96	5.96	49.98	37.50	4.01	
2800.00	2800.00	2801.00	359.55	6.18	6.18	49.98	37.05	3.87	
2900.00	2900.00	2901.00	359.55	6.41	6.41	49.98	36.60	3.74	
3000.00	3000.00	3001.00	359.55	6.63	6.63	49.98	36.15	3.61	
3100.00	3100.00	3101.00	359.55	6.86	6.86	49.98	35.71	3.50	
3200.00	3200.00	3201.00	359.55	7.08	7.08	49.98	35.26	3.39	
3300.00	3300.00	3301.00	359.55	7.31	7.31	49.98	34.81	3.29	
3400.00	3400.00	3401.00	359.55	7.53	7.53	49.98	34.36	3.20	
3500.00	3500.00	3501.00	359.55	7.76	7.76	49.98	33.91	3.11	
3600.00	3600.00	3601.00	359.55	7.98	7.98	49.98	33.46	3.02	
3700.00	3700.00	3701.00	359.55	8.21	8.21	49.98	33.01	2.94	
3800.00	3800.00	3801.00	359.55	8.43	8.43	49.98	32.56	2.87	
3900.00	3900.00	3901.00	359.55	8.66	8.66	49.98	32.11	2.80	
4000.00	4000.00	4001.00	359.55	8.88	8.88	49.98	31.66	2.73	
4100.00	4100.00	4101.00	359.55	9.11	9.11	49.98	31.21	2.66	
4200.00	4200.00	4201.00	359.55	9.33	9.33	49.98	30.76	2.60	
4300.00	4300.00	4301.00	359.55	9.56	9.56	49.98	30.31	2.54	
4400.00	4400.00	4401.00	359.55	9.78	9.78	49.98	29.86	2.48	
4500.00	4500.00	4501.00	359.55	10.01	10.01	49.98	29.41	2.43	
4600.00	4600.00	4601.00	359.55	10.23	10.23	49.98	28.96	2.38	
4700.00	4700.00	4701.00	359.55	10.45	10.45	49.98	28.51	2.33	
4800.00	4800.00	4801.00	359.55	10.68	10.68	49.98	28.06	2.28	
4900.00	4900.00	4901.00	359.55	10.90	10.90	49.98	27.61	2.23	
5000.00	5000.00	5001.00	359.55	11.13	11.13	49.98	27.16	2.19	
5100.00	5100.00	5101.00	359.55	11.35	11.35	49.98	26.71	2.15	
5200.00	5200.00	5201.00	359.55	11.58	11.58	49.98	26.26	2.11	
5300.00	5300.00	5301.00	359.55	11.80	11.80	49.98	25.81	2.07	
5400.00	5400.00	5401.00	359.55	12.03	12.03	49.98	25.37	2.03	
5500.00	5500.00	5501.00	359.55	12.25	12.25	49.98	24.92	1.99	SF (Lo)
5600.00	5600.00	5601.00	359.55	12.48	12.48	49.98	24.47	1.96	SF (Lo)
5700.00	5700.00	5701.00	359.55	12.70	12.70	49.98	24.02	1.92	SF (Lo)

Secondary Well : Hardar 10 Fed Com 2H (p) (TVD Relative to Kelly Bushing (Primary)) ; All Azimuth Relative to GRID NORTH)

Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	CC (US ft)	ES (US ft)	SF	Risk
5800.00	5800.00	5801.00	359.55	12.93	12.93	49.98	23.57	1.89	SF (Lo)
5900.00	5900.00	5901.00	359.55	13.15	13.15	49.98	23.12	1.86	SF (Lo)
6000.00	6000.00	6001.00	359.55	13.38	13.38	49.98	22.67	1.83	SF (Lo)
6100.00	6100.00	6101.00	359.55	13.60	13.60	49.98	22.22	1.80	SF (Lo)
6200.00	6200.00	6201.00	359.55	13.83	13.83	49.98	21.77	1.77	SF (Lo)
6300.00	6300.00	6301.00	359.55	14.05	14.05	49.98	21.32	1.74	SF (Lo)
6400.00	6400.00	6401.00	359.55	14.28	14.28	49.98	20.87	1.72	SF (Lo)
6500.00	6500.00	6501.00	359.55	14.50	14.50	49.98	20.42	1.69	SF (Lo)
6600.00	6600.00	6601.00	359.55	14.73	14.73	49.98	19.97	1.67	SF (Lo)
6700.00	6700.00	6701.00	359.55	14.95	14.95	49.98	19.52	1.64	SF (Lo)
6800.00	6800.00	6801.00	359.55	15.18	15.18	49.98	19.07	1.62	SF (Lo)
6900.00	6900.00	6901.00	359.55	15.40	15.40	49.98	18.62	1.59	SF (Lo)
7000.00	7000.00	7001.00	359.55	15.62	15.62	49.98	18.17	1.57	SF (Lo)
7100.00	7100.00	7101.00	359.55	15.85	15.85	49.98	17.72	1.55	SF (Lo)
7200.00	7200.00	7201.00	359.55	16.07	16.07	49.98	17.27	1.53	SF (Lo)
7300.00	7300.00	7301.00	359.55	16.30	16.30	49.98	16.82	1.51	SF (Lo)
7400.00	7400.00	7401.00	359.55	16.52	16.52	49.98	16.37	1.49	SF (Med)
7500.00	7500.00	7501.00	359.55	16.75	16.75	49.98	15.92	1.47	SF (Med)
7600.00	7600.00	7601.00	359.55	16.97	16.97	49.98	15.48	1.45	SF (Med)
7700.00	7700.00	7701.00	359.55	17.20	17.20	49.98	15.03	1.43	SF (Med)
7800.00	7800.00	7801.00	359.55	17.42	17.42	49.98	14.58	1.41	SF (Med)
7900.00	7900.00	7901.00	359.55	17.65	17.65	49.98	14.13	1.39	SF (Med)
8000.00	8000.00	8001.00	359.55	17.87	17.87	49.98	13.68	1.38	SF (Med)
8100.00	8100.00	8101.00	359.55	18.10	18.10	49.98	13.23	1.36	SF (Med)
8200.00	8200.00	8201.00	359.55	18.32	18.32	49.98	12.78	1.34	SF (Med)
8300.00	8300.00	8301.00	359.55	18.55	18.55	49.98	12.33	1.33	SF (Med)
8400.00	8400.00	8401.00	359.55	18.77	18.77	49.98	11.88	1.31	SF (Med)
8500.00	8500.00	8501.00	359.55	19.00	19.00	49.98	11.43	1.30	SF (Med)
8600.00	8600.72	8601.75	358.02	19.22	19.16	49.70	10.74	1.28	SF (Med)
8700.00	8698.22	8700.78	338.82	19.41	18.99	49.19	9.84	1.25	SF (Med)
8800.00	8782.63	8790.72	309.10	19.60	18.42	63.79	24.88	1.64	SF (Lo)
8900.00	8849.90	8867.82	289.75	19.79	17.76	102.53	65.41	2.76	
9000.00	8901.35	8932.08	280.80	20.01	17.09	158.60	123.16	4.47	
9100.00	8940.32	8985.48	276.49	20.22	16.44	225.40	191.31	6.61	
9200.00	8969.67	9029.67	274.18	20.44	15.90	299.44	266.37	9.05	
9300.00	8991.87	9066.36	272.83	20.65	15.45	378.70	346.39	11.72	
9400.00	9008.83	9097.03	271.98	20.81	15.03	461.81	430.18	14.60	
9500.00	9021.95	9122.87	271.42	21.02	14.76	547.84	516.59	17.53	
9600.00	9032.23	9144.84	271.03	21.19	14.51	636.14	605.21	20.57	
9700.00	9040.40	9163.69	270.75	21.34	14.28	726.21	695.57	23.70	
9800.00	9046.97	9179.99	270.55	21.47	14.09	817.69	787.17	26.79	
9900.00	9052.33	9194.21	270.39	21.58	13.97	910.31	879.82	29.85	
10000.00	9056.73	9206.70	270.27	21.70	13.86	1003.87	973.39	32.93	
10100.00	9060.40	9217.74	270.17	21.82	13.76	1098.19	1067.71	36.03	
10150.00	9062.00	9222.80	270.13	21.88	13.71	1145.60	1115.11	37.57	

Weatherford

Weatherford Drilling Services

GeoDec4 v2.1.0.0

Report Date:	March 02, 2015
Job Number:	Mizar 11 Fed Com 2H
Customer:	Devon Energy
Well Name:	Hadar 10 Fed Com 2H
API Number:	
Rig Name:	
Location:	Eddy Co, NM Nad83 NME
Block:	
Engineer:	RWJ

NAD83 / New Mexico East (ftUS)	NAD83 (1986)
Projected Coordinate System	Geodetic Coordinate System
Datum: North American Datum 1983 (1986)	Datum: North American Datum 1983 (1986)
Ellipsoid: GRS 1980	Ellipsoid: GRS 1980
EPSG: 2257	EPSG: 4269
North: 610289.67 US Survey Foot	Latitude: 32.676794 Degree
East: 690524.20 US Survey Foot	Longitude: -103.848474 Degree
Convergence: 0.26°	
Declination: 7.47°	
Total Correction: 7.21°	
Datum Transformation: none	

Geodetic Location WGS84

MSL Elevation	=	0 m
Latitude	=	32° 40' 36.46" N
Longitude	=	103° 50' 54.51" W

Magnetic Declination	=	7.47 deg	[True North Offset]		
Local Gravity	=	.9988 g	CheckSum	=	6604
Local Field Strength	=	48457 nT	Magnetic Vector X	=	23689 nT
Magnetic Dip	=	60.46 deg	Magnetic Vector Y	=	3107 nT
Magnetic Model	=	bggm2014.dat	Magnetic Vector Z	=	42158 nT
Run Date	=	March 10, 2015	Magnetic Vector H	=	23892 nT

Signed:_____ Date:_____

Mizar 11 Fed Com 2H Lat

Field: Eddy Co, NM (Nad 83 NME)						
Map Units:	US ft					
Vertical Reference Datum (VRD):	Mean Sea Level					
Projected Coordinate System:	NAD83 / New Mexico East (ftUS)					
Site: Hadar 10 Fed Com 2H,Mizar 11 Fed Com 2H Pad						
Company Name:	Devon Energy					
Units:	US ft					
TVD Reference:						
Position:						
	Northing:	610339.65US ft	Latitude:	32° 40' 36.95"		
	Easting:	690523.81US ft	Longitude:	-103° 50' 54.51"		
North Reference:	Grid	Convergence Angle: 0.26				
Elevation above Mean Sea Level :	3579.00US ft					
Comment :						
Slot: Mizar 11 Fed Com 2H						
Position (Relative to Site centre)						
+N/-S: -49.98US ft	Northing:	610289.67US ft	Latitude:	32°40'36.46"		
+E/-W: 0.39US ft	Easting:	690524.20US ft	Longitude:	-103°50'54.51"		
Elevation above Mean Sea Level :	3578.00US ft					
Comment :						
Well: Mizar 11 Fed Com 2H Lat						
Type:	Sidetrack		Rig Height (Kelly Bushing):	25.00US ft	Relative To Mean Sea Level:	3603.00US ft
File Number:						
Parent: Mizar 11 Fed Com 2H Pilot	Tie Point Method: TVD	Tie Point: 4200.00 US ft				
Plan Folder:	P1	Plan:	P1:V2			
Comment: New Prog.						
Closure Distance:	4974.46US ft	Closure Azimuth:	93.0238°			
Comment:						
Vertical Section:						
Position of Origin (Relative to Slot centre)	+N/-S: 0.00US ft	+E/-W: 0.00US ft				
Vertical Section Azimuth:	89.50°					
Magnetic Parameters:						
Model: BGGM	Field Strength: 48457.1 nT	Declination: 7.47°	Dip: 60.46°	Date: 10/Mar/2015 (dd/mmm/yyyy)		
Target Set: Mizar 11 Fed Com 2H						
Number of Targets: 2						
Target: LP Tgt						
Position: (Relative to Slot centre)						
+N/-S: -301.90	Northing: 609987.77	Latitude: 32°40'33.45"				
+E/-W: 467.38	Easting: 690991.58	Longitude: -103°50'49.06"				
TVD (Kelly Bushing) :	9064.00 US ft					
Shape: Cuboid						
Orientation	Inclination: 0.00°	Azimuth: 0.00°				
Dimensions	Length: 20.00	Breadth: 20.00	Height: 20.00			
Target: PBHL 2H						
Position: (Relative to Slot centre)						
+N/-S: -262.41	Northing: 610027.26	Latitude: 32°40'33.63"				
+E/-W: 4967.53	Easting: 695491.73	Longitude: -103°49'56.40"				
TVD (Kelly Bushing) :	9054.00 US ft					
Shape: Cuboid						
Orientation	Inclination: 0.13°	Azimuth: 89.50°				
Dimensions	Length: 8890.00	Breadth: 50.00	Height: 20.00			

Casing Points: (Relative to Slot Centre, TVD Relative to Kelly Bushing)

MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	Northing (US ft)	Easting (US ft)	Name

Wellpath created using minimum curvature

Salient Points: (Relative to Slot Centre, TVD Relative to Kelly Bushing)

MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	VS (US ft)	DLS (°/100 US ft)	B.Rate (°/100 US ft)	T.Rate (°/100 US ft)	T.Face (°)	Comment
4200	0	0	4200	0	0	0	0	0	0	0	Nudge
4550	7	180	4549.13	-21.35	0	-0.19	2	2	0	180	Hold
6650	7	180	6633.48	-277.28	0	-2.42	0	0	0	0	Drop
7116.67	0	0	7098.98	-305.75	0	-2.67	1.5	-1.5	0	180	Hold
8560.81	0	0	8543.13	-305.75	0	-2.67	0	0	0	0	KOP
9380.17	90.13	89.5	9064	-301.2	522.02	519.37	11	11	0	89.5	LP
13825.85	90.13	89.5	9054	-262.41	4967.53	4965.05	0	0	0	0	PBHL 2H Lat

Interpolated Points: (Relative to Slot Centre, TVD Relative to Kelly Bushing)

MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	VS (US ft)	DLS (°/100 US ft)	Northing (US ft)	Easting (US ft)	Comment
4200	0	0	4200	0	0	0	0	610289.67	690524.2	Nudge
4300	2	180	4299.98	-1.75	0	-0.02	2	610287.92	690524.2	
4400	4	180	4399.84	-6.98	0	-0.06	2	610282.69	690524.2	
4500	6	180	4499.45	-15.69	0	-0.14	2	610273.98	690524.2	
4550	7	180	4549.13	-21.35	0	-0.19	2	610268.32	690524.2	Hold
4600	7	180	4598.76	-27.45	0	-0.24	0	610262.22	690524.2	
4700	7	180	4698.01	-39.63	0	-0.35	0	610250.04	690524.2	
4800	7	180	4797.27	-51.82	0	-0.45	0	610237.85	690524.2	
4900	7	180	4896.52	-64.01	0	-0.56	0	610225.66	690524.2	
5000	7	180	4995.78	-76.19	0	-0.66	0	610213.48	690524.2	
5100	7	180	5095.03	-88.38	0	-0.77	0	610201.29	690524.2	
5200	7	180	5194.28	-100.57	0	-0.88	0	610189.1	690524.2	
5300	7	180	5293.54	-112.76	0	-0.98	0	610176.91	690524.2	
5400	7	180	5392.79	-124.94	0	-1.09	0	610164.73	690524.2	
5500	7	180	5492.05	-137.13	0	-1.2	0	610152.54	690524.2	
5600	7	180	5591.3	-149.32	0	-1.3	0	610140.35	690524.2	
5700	7	180	5690.56	-161.5	0	-1.41	0	610128.17	690524.2	
5800	7	180	5789.81	-173.69	0	-1.52	0	610115.98	690524.2	
5900	7	180	5889.07	-185.88	0	-1.62	0	610103.79	690524.2	
6000	7	180	5988.32	-198.06	0	-1.73	0	610091.61	690524.2	
6100	7	180	6087.58	-210.25	0	-1.83	0	610079.42	690524.2	
6200	7	180	6186.83	-222.44	0	-1.94	0	610067.23	690524.2	
6300	7	180	6286.09	-234.63	0	-2.05	0	610055.04	690524.2	
6400	7	180	6385.34	-246.81	0	-2.15	0	610042.86	690524.2	
6500	7	180	6484.59	-259	0	-2.26	0	610030.67	690524.2	
6600	7	180	6583.85	-271.19	0	-2.37	0	610018.48	690524.2	
6650	7	180	6633.48	-277.28	0	-2.42	0	610012.39	690524.2	Drop
6700	6.25	180	6683.14	-283.05	0	-2.47	1.5	610006.62	690524.2	
6800	4.75	180	6782.68	-292.63	0	-2.55	1.5	609997.04	690524.2	
6900	3.25	180	6882.43	-299.61	0	-2.61	1.5	609990.06	690524.2	
7000	1.75	180	6982.33	-303.97	0	-2.65	1.5	609985.7	690524.2	
7100	0.25	180	7082.32	-305.71	0	-2.67	1.5	609983.96	690524.2	
7116.67	0	0	7098.98	-305.75	0	-2.67	1.5	609983.92	690524.2	Hold
7200	0	0	7182.32	-305.75	0	-2.67	0	609983.92	690524.2	
7300	0	0	7282.32	-305.75	0	-2.67	0	609983.92	690524.2	
7400	0	0	7382.32	-305.75	0	-2.67	0	609983.92	690524.2	
7500	0	0	7482.32	-305.75	0	-2.67	0	609983.92	690524.2	
7600	0	0	7582.32	-305.75	0	-2.67	0	609983.92	690524.2	
7700	0	0	7682.32	-305.75	0	-2.67	0	609983.92	690524.2	
7800	0	0	7782.32	-305.75	0	-2.67	0	609983.92	690524.2	
7900	0	0	7882.32	-305.75	0	-2.67	0	609983.92	690524.2	
8000	0	0	7982.32	-305.75	0	-2.67	0	609983.92	690524.2	
8100	0	0	8082.32	-305.75	0	-2.67	0	609983.92	690524.2	
8200	0	0	8182.32	-305.75	0	-2.67	0	609983.92	690524.2	
8300	0	0	8282.32	-305.75	0	-2.67	0	609983.92	690524.2	
8400	0	0	8382.32	-305.75	0	-2.67	0	609983.92	690524.2	
8500	0	0	8482.32	-305.75	0	-2.67	0	609983.92	690524.2	
8560.81	0	0	8543.13	-305.75	0	-2.67	0	609983.92	690524.2	KOP
8600	4.31	89.5	8582.28	-305.74	1.47	-1.19	11	609983.93	690525.67	
8700	15.31	89.5	8680.67	-305.59	18.49	15.82	11	609984.08	690542.69	
8800	26.31	89.5	8774	-305.28	53.96	51.29	11	609984.39	690578.16	
8900	37.31	89.5	8858.85	-304.82	106.59	103.92	11	609984.85	690630.79	
9000	48.31	89.5	8932.1	-304.23	174.44	171.78	11	609985.44	690698.64	
9100	59.31	89.5	8991.05	-303.53	255.02	252.36	11	609986.14	690779.22	
9200	70.31	89.5	9033.55	-302.74	345.36	342.71	11	609986.93	690869.56	
9300	81.31	89.5	9058.02	-301.89	442.16	439.51	11	609987.78	690966.36	
9380.17	90.13	89.5	9064	-301.2	522.02	519.37	11	609988.47	691046.22	LP
9400	90.13	89.5	9063.95	-301.02	541.86	539.21	0	609988.65	691066.06	
9500	90.13	89.5	9063.73	-300.15	641.85	639.21	0	609989.52	691166.05	
9600	90.13	89.5	9063.5	-299.28	741.85	739.21	0	609990.39	691266.05	
9700	90.13	89.5	9063.28	-298.41	841.84	839.21	0	609991.26	691366.04	
9800	90.13	89.5	9063.06	-297.53	941.84	939.21	0	609992.14	691466.04	
9900	90.13	89.5	9062.83	-296.66	1041.83	1039.21	0	609993.01	691566.03	
10000	90.13	89.5	9062.61	-295.79	1141.83	1139.21	0	609993.88	691666.03	
10100	90.13	89.5	9062.38	-294.92	1241.83	1239.21	0	609994.75	691766.03	
10200	90.13	89.5	9062.16	-294.04	1341.82	1339.21	0	609995.63	691866.02	
10300	90.13	89.5	9061.93	-293.17	1441.82	1439.21	0	609996.5	691966.02	
10400	90.13	89.5	9061.71	-292.3	1541.81	1539.2	0	609997.37	692066.01	
10500	90.13	89.5	9061.48	-291.43	1641.81	1639.2	0	609998.24	692166.01	
10600	90.13	89.5	9061.26	-290.55	1741.81	1739.2	0	609999.12	692266.01	
10700	90.13	89.5	9061.03	-289.68	1841.8	1839.2	0	609999.99	692366	
10800	90.13	89.5	9060.81	-288.81	1941.8	1939.2	0	610000.86	692466	
10900	90.13	89.5	9060.58	-287.94	2041.79	2039.2	0	610001.73	692565.99	
11000	90.13	89.5	9060.36	-287.06	2141.79	2139.2	0	610002.61	692665.99	

11100	90.13	89.5	9060.13	-286.19	2241.79	2239.2	0	610003.48	692765.99	
11200	90.13	89.5	9059.91	-285.32	2341.78	2339.2	0	610004.35	692865.98	
11300	90.13	89.5	9059.68	-284.45	2441.78	2439.2	0	610005.22	692965.98	
11400	90.13	89.5	9059.46	-283.57	2541.77	2539.2	0	610006.1	693065.97	
11500	90.13	89.5	9059.23	-282.7	2641.77	2639.2	0	610006.97	693165.97	
11600	90.13	89.5	9059.01	-281.83	2741.77	2739.2	0	610007.84	693265.97	
11700	90.13	89.5	9058.78	-280.96	2841.76	2839.2	0	610008.71	693365.96	
11800	90.13	89.5	9058.56	-280.08	2941.76	2939.2	0	610009.59	693465.96	
11900	90.13	89.5	9058.33	-279.21	3041.75	3039.2	0	610010.46	693565.95	
12000	90.13	89.5	9058.11	-278.34	3141.75	3139.2	0	610011.33	693665.95	
12100	90.13	89.5	9057.88	-277.47	3241.75	3239.2	0	610012.2	693765.95	
12200	90.13	89.5	9057.66	-276.59	3341.74	3339.2	0	610013.08	693865.94	
12300	90.13	89.5	9057.43	-275.72	3441.74	3439.2	0	610013.95	693965.94	
12400	90.13	89.5	9057.21	-274.85	3541.73	3539.2	0	610014.82	694065.93	
12500	90.13	89.5	9056.98	-273.98	3641.73	3639.2	0	610015.69	694165.93	
12600	90.13	89.5	9056.76	-273.1	3741.73	3739.2	0	610016.57	694265.93	
12700	90.13	89.5	9056.53	-272.23	3841.72	3839.2	0	610017.44	694365.92	
12800	90.13	89.5	9056.31	-271.36	3941.72	3939.2	0	610018.31	694465.92	
12900	90.13	89.5	9056.08	-270.49	4041.71	4039.2	0	610019.18	694565.91	
13000	90.13	89.5	9055.86	-269.62	4141.71	4139.2	0	610020.05	694665.91	
13100	90.13	89.5	9055.63	-268.74	4241.7	4239.2	0	610020.93	694765.9	
13200	90.13	89.5	9055.41	-267.87	4341.7	4339.2	0	610021.8	694865.9	
13300	90.13	89.5	9055.18	-267	4441.7	4439.2	0	610022.67	694965.9	
13400	90.13	89.5	9054.96	-266.13	4541.69	4539.2	0	610023.54	695065.89	
13500	90.13	89.5	9054.73	-265.25	4641.69	4639.2	0	610024.42	695165.89	
13600	90.13	89.5	9054.51	-264.38	4741.68	4739.2	0	610025.29	695265.88	
13700	90.13	89.5	9054.28	-263.51	4841.68	4839.2	0	610026.16	695365.88	
13800	90.13	89.5	9054.06	-262.64	4941.68	4939.2	0	610027.03	695465.88	
13825.85	90.13	89.5	9054	-262.41	4967.53	4965.05	0	610027.26	695491.73	PBHL 2H Lat

Formation Points: (Relative to Slot Centre, TVD Relative to Kelly Bushing)

MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	Northing (US ft)	Easting (US ft)	Name	Comment

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Devon Energy Production Company, L.P.
LEASE NO.:	NMNM-023002
WELL NAME & NO.:	Mizar 11 Fed Com 2H
SURFACE HOLE FOOTAGE:	1980' FNL & 0050' FWL
BOTTOM HOLE FOOTAGE	1980' FNL & 0340' FEL
LOCATION:	Section 11, T. 19 S., R 31 E., NMPM
COUNTY:	Eddy County, New Mexico
API:	30-015-42345

The original COAs still stand with the following drilling modifications:

I. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

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. BOPE tests (minimum of 4 hours)

☒ **Eddy County**
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

1. A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **Yates** formation. **As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM. Operator has stated that they will have monitoring equipment in place prior to drilling out of the surface shoe.**

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. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

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 is 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 submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

B. CASING

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.

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

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.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

Capitan Reef
Possibility of water flows in the Artesia Group and Capitan Reef.
Possibility of lost circulation in the Artesia Group Red Beds, Rustler, Captain Reef, and Delaware.

1. The **13-3/8** inch surface casing shall be set at approximately **745** feet (**in a competent bed below the Magenta Dolomite, which is a Member of the Rustler, and if salt is encountered, set casing at least 25 feet above the salt**) and cemented to the surface.

    a. If cement does not circulate to the 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 six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

    b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.

    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

    d. If cement falls back, remedial cementing will be done prior to drilling out that string.

Special Capitan Reef requirements:

If any lost circulation occurs below the Base of the Salt, the operator shall do the following:

- **Switch to fresh water mud to protect the Capitan Reef and use fresh water mud until setting the intermediate casing. The appropriate BLM office is to be notified for a PET to witness the switch to fresh water.**

- **Daily drilling reports from the Base of the Salt to the setting of the intermediate casing are to be submitted to the BLM CFO engineering staff via e-mail by 0800 hours each morning. Any lost circulation encountered is to be recorded on these drilling reports. The daily drilling report should show mud volume per shift/tour. Failure to submit these reports will result in an Incidence of Non-Compliance being issued for failure to comply with the Conditions of Approval. If not already planned, the operator shall run a caliper survey for the intermediate well bore and submit to the appropriate BLM office.**

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing, which shall be set at approximately **4300** feet, is:

Operator has proposed DV tool at depth of 2600'. Operator is to submit sundry if DV tool depth varies by more than 100' from approved depth.

a. First stage to DV tool:

☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

b. Second stage above DV tool:

☒ Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to Capitan Reef.**

Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.

3. The minimum required fill of cement behind the **7 X 5-1/2** inch production casing is:

Option #1 (Single Stage):

☒ Cement should tie-back at least **50 feet above the Capitan Reef** (Top of Capitan Reef estimated at 3178'). Operator shall provide method of verification. **Excess calculates to 21% - Additional cement may be required.**

Option #2:

Operator has proposed DV tool at depth of 5500', but will adjust cement proportionately if moved. DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range.

a. First stage to DV tool:

☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve approved top of cement on the next stage.

b. Second stage above DV tool:

☒ Cement should tie-back at least **50 feet above the Capitan Reef** (Top of Capitan Reef estimated at 3178'). Operator shall provide method of verification. **Excess calculates to negative 18% - Additional cement will be required.**

4. 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.

C. 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. Variance approved to use flex line from BOP to choke manifold. 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.** If the BLM inspector questions the straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).

3. 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.

   a. **For surface casing only:** If the BOP/BOPE is to be tested against casing, the wait on cement (WOC) time for that casing is to be met (see WOC statement at start of casing section). Independent service company required.

4. 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. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (18 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

   c. 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.

   d. The results of the test shall be reported to the appropriate BLM office.

   e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**

   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 if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

D. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

E. WASTE MATERIAL AND FLUIDS

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.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

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