

CONFIDENTIAL

15-795

Form 3160-3
(March 2012)

OCD Hobbs

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

HOBBS OCD

DEC 03 2015

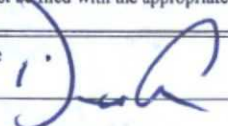
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

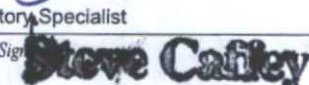
1a. Type of work: ☒ DRILL ☐ REENTER		7. If Unit or CA Agreement, Name and No.	
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone		8. Lease Name and Well No. FIGHTING OKRA 18-19 FED 71H (31589)	
2. Name of Operator Devon Energy Production Company, L.P. (6137)		9. API Well No. 30-025-42973	
3a. Address 333 W. Sheridan Ave. Oklahoma City, OK 73102		3b. Phone No. (include area code) 405-552-7848	
4. Location of Well (Report location clearly and in accordance with any State requirements*) At surface 200 FNL & 330 FWL, Lot 1 (D.) 18-26S-34E At proposed prod. zone 330 FSL & 330 FWL, Lot 4, 19-26S-34E (Mx)		10. Field and Pool, or Exploratory UPPER WC-025G-09S253336D; WOLFCAMP (98094)	
11. Sec., T. R. M. or Blk. and Survey or Area 18-26S-34E		12. County or Parish LEA	
13. State NM		14. Distance in miles and direction from nearest town or post office* Approximately 20 miles SW of Jal, NM	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 200'		16. No. of acres in lease NMNM114992; 1283.96 ac	
17. Spacing Unit dedicated to this well 323.96 ac		18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. See attached map	
19. Proposed Depth TVD: 12,810' MD: 22,640'		20. BLM/BIA Bond No. on file CO-1104 & NMB-000801	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3,354.2' GL		22. Approximate date work will start* 02/03/2016	
23. Estimated duration 45 days		24. Attachments	

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

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

25. Signature 	Name (Printed/Typed) David H. Cook	Date 10/21/2015
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Title
Regulatory Specialist

Approved by (Signature) 

Name (Printed/Typed)

DEC 1 2015

Title
FIELD MANAGER

Office
CARLSBAD FIELD OFFICE

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

APPROVAL FOR TWO YEARS

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.

(Continued on page 2)

*(Instructions on page 2)

Carlsbad Controlled Water Basin

K2
12/03/15

Approval Subject to General Requirements
& Special Stipulations Attached

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

DEC 03 2015

Devon Energy, Fighting Okra 18-19 Fed 71H

1. Geologic Formations

TVD of target	12,810'	Pilot hole depth	N/A
MD at TD:	22,640'	Deepest expected fresh water:	

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Rustler	830	Barren	
Salado	1190	Barren	
Base of Salt	5000	Barren	
Delaware	5240	Oil	
Bone Spring	9545	Oil	
3BSSS	12050	Oil	
Lwr 3BSSSS	12410	Oil	
Wolfcamp	12535	Oil	
Wolfcamp A	12750	Oil	

*H2S, water flows, loss of circulation, abnormal pressures, etc.

2. Casing Program

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn	SF Collapse	SF Burst	SF Tension
	From	To							
17.5"	0	900' 875'	13.375"	54.5	J-55	BTC	1.86	3.59	2.36
8.75"	0	13,111'	7"	29	P110EC	BTC	1.57	1.33	2.30
6.125"	12,293'	22,640'	4.5"	13.5	P-110	BTC	1.23	1.43	2.55
BLM Minimum Safety Factor							1.125	1.00	1.6 Dry 1.8 Wet

Contingency Casing Strings:

12.25"	0	4,300'	9.625"	40	J-55	BTC	1.24	1.57	2.30
12.25"	4,300'	5,150'	9.625"	40	HCK-55	BTC	1.44	3.35	4.58
6.125"	0'	13,111'	4.5"	13.5	P-110	BTC	1.23	1.43	2.55
		12 293							

Note that the contingency 9-5/8" string will only be used if H2S, flows, or losses is encountered while drilling thru the salt interval.

Note that the contingency 4-1/2" tie back string will only be run if the CBL (run by the completions department after the drilling rig leaves) is found to have top of cement that does not meet BLM requirements. If it is found that the 7" cement job did return cement to surface, and provide sufficient cement integrity across the shallower zones (such as the Delaware and salt zones), then the 4-1/2" tie back string will be run to tie into the liner hanger. That string will then be cemented, depending on CBL results, to thus become a full 4-1/2" long string.

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

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

Devon Energy, Fighting Okra 18-19 Fed 71H

Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2 nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

3. Cementing Program

Casing	# Sks	Wt. lb/ gal	H ₂ O gal/sk	Yld ft ³ / sack	500# Comp. Strength (hours)	Slurry Description
13-3/8" Surface	970	14.8	6.32	1.33	6	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
7" Inter Single Stage	900	11	14.81	2.55	22	Lead: Tuned Light® Cement + 0.125 lb/sk Pol-E-Flake
	370	14.5	5.31	1.2	25	Tail: (50:50) Class H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite
7" Inter Two Stage	450	11.9	12.89	2.31	n/a	1 st Stage Lead: (50:50) Class H Cement: Poz (Fly Ash) + 10% BWOC Bentonite + 1 lb/sk of Kol-Seal + 0.3% BWOC HR-601 + 0.5lb/sk D-Air 5000
	400	14.5	5.31	1.2	25	1 st Stage Tail: (50:50) Class H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite
	DV Tool = 5200ft					
	450	11.9	12.89	2.31	n/a	2 nd Stage Lead: (50:50) Class H Cement: Poz (Fly Ash) + 10% BWOC Bentonite + 1 lb/sk of Kol-Seal + 0.3% BWOC HR-601 + 0.5lb/sk D-Air 5000
	110	14.8	6.32	1.33	6	2 nd Stage Tail: Class C Cement
4-1/2" Prod Liner	1010	14.5	5.31	1.2	25	Tail: (50:50) Class H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite

Contingency 9-5/8"

9-5/8" Inter.	1130	12.9	9.81	1.85	14	Lead: (65:35) Class C Cement: Poz (Fly Ash): 6% BWOC Bentonite + 5% BWOW Sodium Chloride + 0.125
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Devon Energy, Fighting Okra 18-19 Fed 71H

						lbs/sack Poly-E-Flake
	430	14.8	6.32	1.33	6	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake

DV tool depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

Casing String	TOC	% Excess
13-3/8" Surface	0'	100%
7" Intermediate Single Stage	0'	25%
7" Intermediate Two Stage	1 st Stage = DV Tool depth / 2 nd Stage = 0'	25%
4-1/2" Production Liner	12,293'	25%

See
COA

4. Pressure Control Equipment

N	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.
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BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
12-1/4"	13-5/8"	5M	Annular	x	50% of working pressure 5M
			Blind Ram		
			Pipe Ram		
			Double Ram	x	
			Other*		
8-3/4"	13-5/8"	5M	Annular	x	50% testing pressure 5M
			Blind Ram		
			Pipe Ram		
			Double Ram	x	
			Other*		
6-1/8"	13-5/8"	5M	Annular	x	5M
			Blind Ram		
			Pipe Ram		
			Double Ram	x	
			Other*		

*Specify if additional ram is utilized.

Devon Energy, Fighting Okra 18-19 Fed 71H

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

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

Y	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
Y	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.
Y	Are anchors required by manufacturer?
Y	A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. Devon proposes using a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 5000 (5M) psi. - Wellhead will be installed by vendor representatives. - If the welding is performed by a third party, the vendor representative will monitor the temperature to verify that it does not exceed the maximum temperature of the seal. - Vendor representative will install the test plug for the initial BOP test. - Vendor will install a solid steel body pack-off to completely isolate the lower head after cementing intermediate casing. After installation of the pack-off, the pack-off and the lower flange will be tested to 5M, as shown on the attached schematic. Everything above the pack-off will not have been altered whatsoever from the initial nipple up. Therefore the BOP components will not be retested at that time. - If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head will be cut and top out operations will be conducted. - Devon will pressure test all seals above and below the mandrel (but still above the casing) to full working pressure rating. - Devon will test the casing to 0.22 psi/ft or 1500 psi, whichever is greater, as per Onshore Order #2. After running the 13-3/8" surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 5M will be installed on the wellhead system and will undergo a 250 psi low

pressure test followed by a 5,000 psi high pressure test. The 5,000 psi high and 250 psi low test will cover testing requirements a maximum of 30 days, as per Onshore Order #2. If the well is not complete within 30 days of this BOP test, another full BOP test will be conducted, as per Onshore Order #2. After running the 9-5/8" intermediate casing with a mandrel hanger, the 13-5/8" BOP/BOPE system with a minimum rating of 5M will already be installed on the wellhead. The pipe rams will be operated and checked each 24 hour period and each time the drill pipe is out of the hole. These tests will be logged in the daily driller's log. A 2" kill line and 3" choke line will be incorporated into the drilling spool below the ram BOP. In addition to the rams and annular preventer, additional BOP accessories include a kelly cock, floor safety valve, choke lines, and choke manifold rated at 5,000 psi WP. Devon requests a variance to use a flexible line with flanged ends between the BOP and the choke manifold (choke line). The line will be kept as straight as possible with minimal turns. See attached schematic.
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5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	900' 875'	FW Gel	8.6-8.8	28-34	N/C
900' 875'	13,111'	Oil Base Mud	8.7-9.0	40-50	N/C
13,111'	22,640'	Oil Base Mud	9.0-11.0	60-70	N/C

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

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring
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6. Logging and Testing Procedures

Logging, Coring and Testing.	
x	Will run GR/CNL from TD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
	No Logs are planned based on well control or offset log information.
	Drill stem test? If yes, explain
	Coring? If yes, explain

Additional logs planned	Interval
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Devon Energy, Fighting Okra 18-19 Fed 71H

	Resistivity	Int. shoe to KOP
	Density	Int. shoe to KOP
X	CBL	Production casing
X	Mud log	Intermediate shoe to TD
	PEX	

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	6505 psi
Abnormal Temperature	No

Mitigation measure for abnormal conditions: Lost circulation material/sweeps/mud scavengers.

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

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

8. Other facets of operation

Is this a walking operation? No.

Will be pre-setting casing? No.

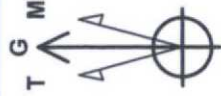
Attachments

☒ Directional Plan

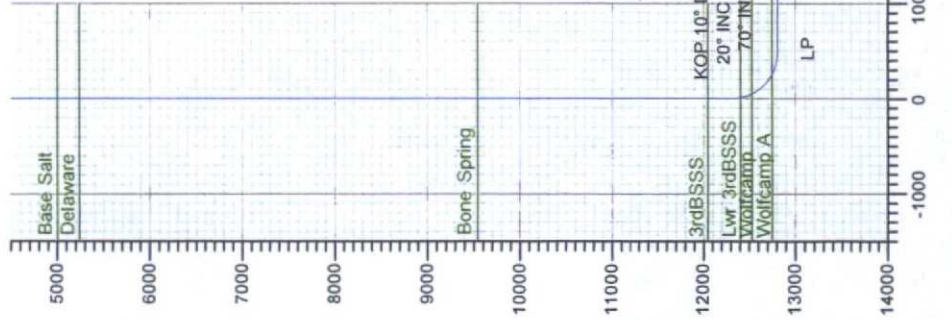
☐ Other, describe



Project: Lea County, NM (NAD-83)
 Site: Fighting Okra 18-19 Fed
 Well: 71H
 Wellbore: OH
 Design: Plan #1



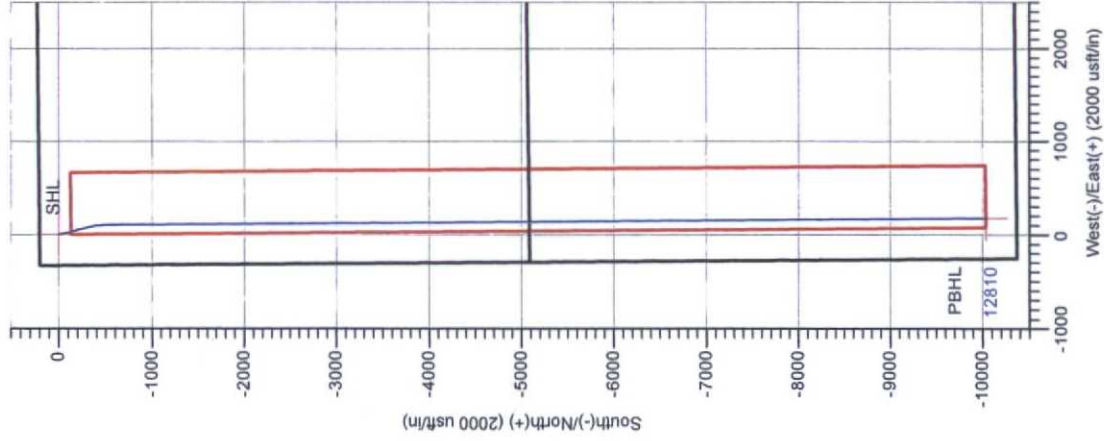
Azimuths to Grid North
 True North: -0.43°
 Magnetic North: 6.76°
 Magnetic Field
 Strength: 48090.6snT
 Dip Angle: 59.99°
 Date: 10/12/2015
 Model: BGGM2015



DESIGN TARGET DETAILS									
Name	TVD	+N/-S	+E/-W	Northing	Easting				
SHL (FO1819F 71H)	0.00	0.00	0.00	382937.52	794421.25				
PBHL (FO1819F 71H)	2810.00	-10033.19	173.75	372904.33	794595.00				

SECTION DETAILS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSeal	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
12293.73	0.00	0.00	12293.73	0.00	0.00	0.00	0.00	0.00	
12493.73	20.00	165.75	12489.69	-33.49	8.51	10.00	165.75	33.55	
12910.40	70.00	165.75	12775.06	-310.08	78.75	12.00	0.00	310.65	
13111.66	90.00	179.58	12810.00	-505.26	103.13	12.00	35.74	506.00	
22639.86	90.00	179.58	12810.00	-10033.19	173.75	0.00	0.00	10034.20	

PROJECT DETAILS: Lea County, NM									
Geodetic System: US State Plane 1983									
Datum: North American Datum 1983									
Ellipsoid: GRS 1980									
Zone: New Mexico Eastern Zone									
System Datum: Mean Sea Level									





DEVON ENERGY

Lea County, NM (NAD-83)
Fighting Okra 18-19 Fed
71H

OH

Plan: Plan #1

Standard Planning Report

12 October, 2015



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 71H
Company:	DEVON ENERGY	TVD Reference:	3354.2' GL + 30' RKB @ 3384.20usft
Project:	Lea County, NM (NAD-83)	MD Reference:	3354.2' GL + 30' RKB @ 3384.20usft
Site:	Fighting Okra 18-19 Fed	North Reference:	Grid
Well:	71H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Project	Lea County, NM (NAD-83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Fighting Okra 18-19 Fed		
Site Position:		Northing:	382,937.52 usft
From:	Map	Easting:	794,421.25 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 3' 0.516 N
		Longitude:	103° 30' 59.292 W
		Grid Convergence:	0.43 °

Well	71H		
Well Position	+N/-S	0.00 usft	Northing: 382,937.52 usft
	+E/-W	0.00 usft	Easting: 794,421.25 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	3,384.20 usft
		Latitude:	32° 3' 0.516 N
		Longitude:	103° 30' 59.292 W
		Ground Level:	3,354.20 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination (°)
	BGGM2015	10/12/2015	7.20
			Dip Angle (°)
			59.99
			Field Strength (nT)
			48,091

Design	Plan #1		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			Direction (°)
			179.58

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
12,293.73	0.00	0.00	12,293.73	0.00	0.00	0.00	0.00	0.00	0.00	
12,493.73	20.00	165.75	12,489.69	-33.49	8.51	10.00	10.00	0.00	165.75	
12,910.40	70.00	165.75	12,775.06	-310.08	78.75	12.00	12.00	0.00	0.00	
13,111.66	90.00	179.58	12,810.00	-505.26	103.13	12.00	9.94	6.87	35.74	
22,639.86	90.00	179.58	12,810.00	-10,033.19	173.75	0.00	0.00	0.00	0.00	PBHL (FO1819F 71H)



LEAM Drilling Systems LLC
Planning Report



Database: EDM 5000.1 Single User Db
Company: DEVON ENERGY
Project: Lea County, NM (NAD-83)
Site: Fighting Okra 18-19 Fed
Well: 71H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference:
TVD Reference: 3354.2' GL + 30' RKB @ 3384.20usft
MD Reference: 3354.2' GL + 30' RKB @ 3384.20usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SHL (FO1819F 71H)									
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
829.20	0.00	0.00	829.20	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,189.20	0.00	0.00	1,189.20	0.00	0.00	0.00	0.00	0.00	0.00
Salado									
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00



LEAM Drilling Systems LLC
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 71H
Company:	DEVON ENERGY	TVD Reference:	3354.2' GL + 30' RKB @ 3384.20usft
Project:	Lea County, NM (NAD-83)	MD Reference:	3354.2' GL + 30' RKB @ 3384.20usft
Site:	Fighting Okra 18-19 Fed	North Reference:	Grid
Well:	71H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,999.20	0.00	0.00	4,999.20	0.00	0.00	0.00	0.00	0.00	0.00
Base Salt									
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00
5,239.20	0.00	0.00	5,239.20	0.00	0.00	0.00	0.00	0.00	0.00
Delaware									
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00
5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,600.00	0.00	0.00	0.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,700.00	0.00	0.00	0.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,800.00	0.00	0.00	0.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,900.00	0.00	0.00	0.00	0.00	0.00	0.00
6,000.00	0.00	0.00	6,000.00	0.00	0.00	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,100.00	0.00	0.00	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,200.00	0.00	0.00	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,300.00	0.00	0.00	0.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,400.00	0.00	0.00	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,500.00	0.00	0.00	0.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,600.00	0.00	0.00	0.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,700.00	0.00	0.00	0.00	0.00	0.00	0.00
6,800.00	0.00	0.00	6,800.00	0.00	0.00	0.00	0.00	0.00	0.00
6,900.00	0.00	0.00	6,900.00	0.00	0.00	0.00	0.00	0.00	0.00
7,000.00	0.00	0.00	7,000.00	0.00	0.00	0.00	0.00	0.00	0.00
7,100.00	0.00	0.00	7,100.00	0.00	0.00	0.00	0.00	0.00	0.00
7,200.00	0.00	0.00	7,200.00	0.00	0.00	0.00	0.00	0.00	0.00
7,300.00	0.00	0.00	7,300.00	0.00	0.00	0.00	0.00	0.00	0.00
7,400.00	0.00	0.00	7,400.00	0.00	0.00	0.00	0.00	0.00	0.00
7,500.00	0.00	0.00	7,500.00	0.00	0.00	0.00	0.00	0.00	0.00
7,600.00	0.00	0.00	7,600.00	0.00	0.00	0.00	0.00	0.00	0.00
7,700.00	0.00	0.00	7,700.00	0.00	0.00	0.00	0.00	0.00	0.00
7,800.00	0.00	0.00	7,800.00	0.00	0.00	0.00	0.00	0.00	0.00
7,900.00	0.00	0.00	7,900.00	0.00	0.00	0.00	0.00	0.00	0.00
8,000.00	0.00	0.00	8,000.00	0.00	0.00	0.00	0.00	0.00	0.00
8,100.00	0.00	0.00	8,100.00	0.00	0.00	0.00	0.00	0.00	0.00
8,200.00	0.00	0.00	8,200.00	0.00	0.00	0.00	0.00	0.00	0.00
8,300.00	0.00	0.00	8,300.00	0.00	0.00	0.00	0.00	0.00	0.00
8,400.00	0.00	0.00	8,400.00	0.00	0.00	0.00	0.00	0.00	0.00
8,500.00	0.00	0.00	8,500.00	0.00	0.00	0.00	0.00	0.00	0.00
8,600.00	0.00	0.00	8,600.00	0.00	0.00	0.00	0.00	0.00	0.00
8,700.00	0.00	0.00	8,700.00	0.00	0.00	0.00	0.00	0.00	0.00
8,800.00	0.00	0.00	8,800.00	0.00	0.00	0.00	0.00	0.00	0.00
8,900.00	0.00	0.00	8,900.00	0.00	0.00	0.00	0.00	0.00	0.00
9,000.00	0.00	0.00	9,000.00	0.00	0.00	0.00	0.00	0.00	0.00
9,100.00	0.00	0.00	9,100.00	0.00	0.00	0.00	0.00	0.00	0.00
9,200.00	0.00	0.00	9,200.00	0.00	0.00	0.00	0.00	0.00	0.00
9,300.00	0.00	0.00	9,300.00	0.00	0.00	0.00	0.00	0.00	0.00
9,400.00	0.00	0.00	9,400.00	0.00	0.00	0.00	0.00	0.00	0.00
9,500.00	0.00	0.00	9,500.00	0.00	0.00	0.00	0.00	0.00	0.00
9,544.20	0.00	0.00	9,544.20	0.00	0.00	0.00	0.00	0.00	0.00



LEAM Drilling Systems LLC

Planning Report



Database: EDM 5000.1 Single User Db
Company: DEVON ENERGY
Project: Lea County, NM (NAD-83)
Site: Fighting Okra 18-19 Fed
Well: 71H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference: Well 71H
TVD Reference: 3354.2' GL + 30' RKB @ 3384.20usft
MD Reference: 3354.2' GL + 30' RKB @ 3384.20usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
Bone Spring									
9,600.00	0.00	0.00	9,600.00	0.00	0.00	0.00	0.00	0.00	0.00
9,700.00	0.00	0.00	9,700.00	0.00	0.00	0.00	0.00	0.00	0.00
9,800.00	0.00	0.00	9,800.00	0.00	0.00	0.00	0.00	0.00	0.00
9,900.00	0.00	0.00	9,900.00	0.00	0.00	0.00	0.00	0.00	0.00
10,000.00	0.00	0.00	10,000.00	0.00	0.00	0.00	0.00	0.00	0.00
10,100.00	0.00	0.00	10,100.00	0.00	0.00	0.00	0.00	0.00	0.00
10,200.00	0.00	0.00	10,200.00	0.00	0.00	0.00	0.00	0.00	0.00
10,300.00	0.00	0.00	10,300.00	0.00	0.00	0.00	0.00	0.00	0.00
10,400.00	0.00	0.00	10,400.00	0.00	0.00	0.00	0.00	0.00	0.00
10,500.00	0.00	0.00	10,500.00	0.00	0.00	0.00	0.00	0.00	0.00
10,600.00	0.00	0.00	10,600.00	0.00	0.00	0.00	0.00	0.00	0.00
10,700.00	0.00	0.00	10,700.00	0.00	0.00	0.00	0.00	0.00	0.00
10,800.00	0.00	0.00	10,800.00	0.00	0.00	0.00	0.00	0.00	0.00
10,900.00	0.00	0.00	10,900.00	0.00	0.00	0.00	0.00	0.00	0.00
11,000.00	0.00	0.00	11,000.00	0.00	0.00	0.00	0.00	0.00	0.00
11,100.00	0.00	0.00	11,100.00	0.00	0.00	0.00	0.00	0.00	0.00
11,200.00	0.00	0.00	11,200.00	0.00	0.00	0.00	0.00	0.00	0.00
11,300.00	0.00	0.00	11,300.00	0.00	0.00	0.00	0.00	0.00	0.00
11,400.00	0.00	0.00	11,400.00	0.00	0.00	0.00	0.00	0.00	0.00
11,500.00	0.00	0.00	11,500.00	0.00	0.00	0.00	0.00	0.00	0.00
11,600.00	0.00	0.00	11,600.00	0.00	0.00	0.00	0.00	0.00	0.00
11,700.00	0.00	0.00	11,700.00	0.00	0.00	0.00	0.00	0.00	0.00
11,800.00	0.00	0.00	11,800.00	0.00	0.00	0.00	0.00	0.00	0.00
11,900.00	0.00	0.00	11,900.00	0.00	0.00	0.00	0.00	0.00	0.00
12,000.00	0.00	0.00	12,000.00	0.00	0.00	0.00	0.00	0.00	0.00
12,049.20	0.00	0.00	12,049.20	0.00	0.00	0.00	0.00	0.00	0.00
3rdBSSS									
12,100.00	0.00	0.00	12,100.00	0.00	0.00	0.00	0.00	0.00	0.00
12,200.00	0.00	0.00	12,200.00	0.00	0.00	0.00	0.00	0.00	0.00
12,293.73	0.00	0.00	12,293.73	0.00	0.00	0.00	0.00	0.00	0.00
KOP 10° DLS @ 165.75° AZI									
12,300.00	0.63	165.75	12,300.00	-0.03	0.01	0.03	10.00	10.00	0.00
12,350.00	5.63	165.75	12,349.91	-2.68	0.68	2.68	10.00	10.00	0.00
12,400.00	10.63	165.75	12,399.39	-9.52	2.42	9.54	10.00	10.00	0.00
12,410.00	11.63	165.75	12,409.20	-11.39	2.89	11.42	10.00	10.00	0.00
Lwr 3rdBSSS									
12,450.00	15.63	165.75	12,448.07	-20.53	5.21	20.57	10.00	10.00	0.00
12,493.73	20.00	165.75	12,489.69	-33.49	8.51	33.55	10.00	10.00	0.00
20° INC - 12° DLS									
12,500.00	20.75	165.75	12,495.57	-35.61	9.04	35.67	12.00	12.00	0.00
12,525.00	23.75	165.75	12,518.71	-44.78	11.37	44.86	12.00	12.00	0.00
12,542.07	25.80	165.75	12,534.20	-51.71	13.13	51.81	12.00	12.00	0.00
Wolfcamp									
12,550.00	26.75	165.75	12,541.31	-55.12	14.00	55.22	12.00	12.00	0.00
12,575.00	29.75	165.75	12,563.33	-66.59	16.91	66.71	12.00	12.00	0.00
12,600.00	32.75	165.75	12,584.70	-79.16	20.10	79.30	12.00	12.00	0.00
12,625.00	35.75	165.75	12,605.37	-92.79	23.57	92.96	12.00	12.00	0.00
12,650.00	38.75	165.75	12,625.26	-107.46	27.29	107.66	12.00	12.00	0.00
12,675.00	41.75	165.75	12,644.34	-123.11	31.27	123.34	12.00	12.00	0.00
12,700.00	44.75	165.75	12,662.55	-139.71	35.48	139.97	12.00	12.00	0.00
12,725.00	47.75	165.75	12,679.83	-157.22	39.93	157.51	12.00	12.00	0.00
12,750.00	50.75	165.75	12,696.15	-175.57	44.59	175.89	12.00	12.00	0.00



LEAM Drilling Systems LLC
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 71H
Company:	DEVON ENERGY	TVD Reference:	3354.2' GL + 30' RKB @ 3384.20usft
Project:	Lea County, NM (NAD-83)	MD Reference:	3354.2' GL + 30' RKB @ 3384.20usft
Site:	Fighting Okra 18-19 Fed	North Reference:	Grid
Well:	71H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,775.00	53.75	165.75	12,711.45	-194.73	49.45	195.09	12.00	12.00	0.00
12,800.00	56.75	165.75	12,725.70	-214.64	54.51	215.03	12.00	12.00	0.00
12,825.00	59.75	165.75	12,738.85	-235.24	59.74	235.67	12.00	12.00	0.00
12,846.37	62.32	165.75	12,749.20	-253.36	64.35	253.83	12.00	12.00	0.00
Wolfcamp A									
12,850.00	62.75	165.75	12,750.87	-256.48	65.14	256.95	12.00	12.00	0.00
12,875.00	65.75	165.75	12,761.73	-278.30	70.68	278.82	12.00	12.00	0.00
12,900.00	68.75	165.75	12,771.40	-300.65	76.35	301.20	12.00	12.00	0.00
12,910.40	70.00	165.75	12,775.06	-310.08	78.75	310.65	12.00	12.00	0.00
70° INC - Turn to 179.58° AZI									
12,925.00	71.43	166.83	12,779.88	-323.47	82.02	324.06	12.00	9.76	7.39
12,950.00	73.88	168.64	12,787.34	-346.78	87.08	347.41	12.00	9.82	7.23
12,975.00	76.35	170.40	12,793.76	-370.54	91.48	371.20	12.00	9.88	7.05
13,000.00	78.83	172.13	12,799.13	-394.67	95.18	395.36	12.00	9.93	6.91
13,025.00	81.32	173.82	12,803.44	-419.11	98.19	419.82	12.00	9.96	6.79
13,050.00	83.82	175.50	12,806.67	-443.79	100.50	444.51	12.00	9.99	6.70
13,075.00	86.32	177.16	12,808.82	-468.64	102.09	469.38	12.00	10.01	6.64
13,100.00	88.83	178.81	12,809.88	-493.60	102.97	494.34	12.00	10.03	6.60
13,111.66	90.00	179.58	12,810.00	-505.26	103.13	506.00	12.00	10.03	6.59
LP									
13,200.00	90.00	179.58	12,810.00	-593.60	103.79	594.34	0.00	0.00	0.00
13,300.00	90.00	179.58	12,810.00	-693.59	104.53	694.34	0.00	0.00	0.00
13,400.00	90.00	179.58	12,810.00	-793.59	105.27	794.34	0.00	0.00	0.00
13,500.00	90.00	179.58	12,810.00	-893.59	106.01	894.34	0.00	0.00	0.00
13,600.00	90.00	179.58	12,810.00	-993.58	106.75	994.34	0.00	0.00	0.00
13,700.00	90.00	179.58	12,810.00	-1,093.58	107.49	1,094.34	0.00	0.00	0.00
13,800.00	90.00	179.58	12,810.00	-1,193.58	108.24	1,194.34	0.00	0.00	0.00
13,900.00	90.00	179.58	12,810.00	-1,293.58	108.98	1,294.34	0.00	0.00	0.00
14,000.00	90.00	179.58	12,810.00	-1,393.57	109.72	1,394.34	0.00	0.00	0.00
14,100.00	90.00	179.58	12,810.00	-1,493.57	110.46	1,494.34	0.00	0.00	0.00
14,200.00	90.00	179.58	12,810.00	-1,593.57	111.20	1,594.34	0.00	0.00	0.00
14,300.00	90.00	179.58	12,810.00	-1,693.57	111.94	1,694.34	0.00	0.00	0.00
14,400.00	90.00	179.58	12,810.00	-1,793.56	112.68	1,794.34	0.00	0.00	0.00
14,500.00	90.00	179.58	12,810.00	-1,893.56	113.42	1,894.34	0.00	0.00	0.00
14,600.00	90.00	179.58	12,810.00	-1,993.56	114.16	1,994.34	0.00	0.00	0.00
14,700.00	90.00	179.58	12,810.00	-2,093.55	114.91	2,094.34	0.00	0.00	0.00
14,800.00	90.00	179.58	12,810.00	-2,193.55	115.65	2,194.34	0.00	0.00	0.00
14,900.00	90.00	179.58	12,810.00	-2,293.55	116.39	2,294.34	0.00	0.00	0.00
15,000.00	90.00	179.58	12,810.00	-2,393.55	117.13	2,394.34	0.00	0.00	0.00
15,100.00	90.00	179.58	12,810.00	-2,493.54	117.87	2,494.34	0.00	0.00	0.00
15,200.00	90.00	179.58	12,810.00	-2,593.54	118.61	2,594.34	0.00	0.00	0.00
15,300.00	90.00	179.58	12,810.00	-2,693.54	119.35	2,694.34	0.00	0.00	0.00
15,400.00	90.00	179.58	12,810.00	-2,793.54	120.09	2,794.34	0.00	0.00	0.00
15,500.00	90.00	179.58	12,810.00	-2,893.53	120.83	2,894.34	0.00	0.00	0.00
15,600.00	90.00	179.58	12,810.00	-2,993.53	121.57	2,994.34	0.00	0.00	0.00
15,700.00	90.00	179.58	12,810.00	-3,093.53	122.32	3,094.34	0.00	0.00	0.00
15,800.00	90.00	179.58	12,810.00	-3,193.52	123.06	3,194.34	0.00	0.00	0.00
15,900.00	90.00	179.58	12,810.00	-3,293.52	123.80	3,294.34	0.00	0.00	0.00
16,000.00	90.00	179.58	12,810.00	-3,393.52	124.54	3,394.34	0.00	0.00	0.00
16,100.00	90.00	179.58	12,810.00	-3,493.52	125.28	3,494.34	0.00	0.00	0.00
16,200.00	90.00	179.58	12,810.00	-3,593.51	126.02	3,594.34	0.00	0.00	0.00
16,300.00	90.00	179.58	12,810.00	-3,693.51	126.76	3,694.34	0.00	0.00	0.00
16,400.00	90.00	179.58	12,810.00	-3,793.51	127.50	3,794.34	0.00	0.00	0.00



LEAM Drilling Systems LLC
Planning Report



Database: EDM 5000.1 Single User Db
Company: DEVON ENERGY
Project: Lea County, NM (NAD-83)
Site: Fighting Okra 18-19 Fed
Well: 71H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference:
TVD Reference: 3354.2' GL + 30' RKB @ 3384.20usft
MD Reference: 3354.2' GL + 30' RKB @ 3384.20usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
16,500.00	90.00	179.58	12,810.00	-3,893.51	128.24	3,894.34	0.00	0.00	0.00
16,600.00	90.00	179.58	12,810.00	-3,993.50	128.99	3,994.34	0.00	0.00	0.00
16,700.00	90.00	179.58	12,810.00	-4,093.50	129.73	4,094.34	0.00	0.00	0.00
16,800.00	90.00	179.58	12,810.00	-4,193.50	130.47	4,194.34	0.00	0.00	0.00
16,900.00	90.00	179.58	12,810.00	-4,293.49	131.21	4,294.34	0.00	0.00	0.00
17,000.00	90.00	179.58	12,810.00	-4,393.49	131.95	4,394.34	0.00	0.00	0.00
17,100.00	90.00	179.58	12,810.00	-4,493.49	132.69	4,494.34	0.00	0.00	0.00
17,200.00	90.00	179.58	12,810.00	-4,593.49	133.43	4,594.34	0.00	0.00	0.00
17,300.00	90.00	179.58	12,810.00	-4,693.48	134.17	4,694.34	0.00	0.00	0.00
17,400.00	90.00	179.58	12,810.00	-4,793.48	134.91	4,794.34	0.00	0.00	0.00
17,500.00	90.00	179.58	12,810.00	-4,893.48	135.66	4,894.34	0.00	0.00	0.00
17,600.00	90.00	179.58	12,810.00	-4,993.48	136.40	4,994.34	0.00	0.00	0.00
17,700.00	90.00	179.58	12,810.00	-5,093.47	137.14	5,094.34	0.00	0.00	0.00
17,800.00	90.00	179.58	12,810.00	-5,193.47	137.88	5,194.34	0.00	0.00	0.00
17,900.00	90.00	179.58	12,810.00	-5,293.47	138.62	5,294.34	0.00	0.00	0.00
18,000.00	90.00	179.58	12,810.00	-5,393.46	139.36	5,394.34	0.00	0.00	0.00
18,100.00	90.00	179.58	12,810.00	-5,493.46	140.10	5,494.34	0.00	0.00	0.00
18,200.00	90.00	179.58	12,810.00	-5,593.46	140.84	5,594.34	0.00	0.00	0.00
18,300.00	90.00	179.58	12,810.00	-5,693.46	141.58	5,694.34	0.00	0.00	0.00
18,400.00	90.00	179.58	12,810.00	-5,793.45	142.33	5,794.34	0.00	0.00	0.00
18,500.00	90.00	179.58	12,810.00	-5,893.45	143.07	5,894.34	0.00	0.00	0.00
18,600.00	90.00	179.58	12,810.00	-5,993.45	143.81	5,994.34	0.00	0.00	0.00
18,700.00	90.00	179.58	12,810.00	-6,093.44	144.55	6,094.34	0.00	0.00	0.00
18,800.00	90.00	179.58	12,810.00	-6,193.44	145.29	6,194.34	0.00	0.00	0.00
18,900.00	90.00	179.58	12,810.00	-6,293.44	146.03	6,294.34	0.00	0.00	0.00
19,000.00	90.00	179.58	12,810.00	-6,393.44	146.77	6,394.34	0.00	0.00	0.00
19,100.00	90.00	179.58	12,810.00	-6,493.43	147.51	6,494.34	0.00	0.00	0.00
19,200.00	90.00	179.58	12,810.00	-6,593.43	148.25	6,594.34	0.00	0.00	0.00
19,300.00	90.00	179.58	12,810.00	-6,693.43	149.00	6,694.34	0.00	0.00	0.00
19,400.00	90.00	179.58	12,810.00	-6,793.43	149.74	6,794.34	0.00	0.00	0.00
19,500.00	90.00	179.58	12,810.00	-6,893.42	150.48	6,894.34	0.00	0.00	0.00
19,600.00	90.00	179.58	12,810.00	-6,993.42	151.22	6,994.34	0.00	0.00	0.00
19,700.00	90.00	179.58	12,810.00	-7,093.42	151.96	7,094.34	0.00	0.00	0.00
19,800.00	90.00	179.58	12,810.00	-7,193.41	152.70	7,194.34	0.00	0.00	0.00
19,900.00	90.00	179.58	12,810.00	-7,293.41	153.44	7,294.34	0.00	0.00	0.00
20,000.00	90.00	179.58	12,810.00	-7,393.41	154.18	7,394.34	0.00	0.00	0.00
20,100.00	90.00	179.58	12,810.00	-7,493.41	154.92	7,494.34	0.00	0.00	0.00
20,200.00	90.00	179.58	12,810.00	-7,593.40	155.66	7,594.34	0.00	0.00	0.00
20,300.00	90.00	179.58	12,810.00	-7,693.40	156.41	7,694.34	0.00	0.00	0.00
20,400.00	90.00	179.58	12,810.00	-7,793.40	157.15	7,794.34	0.00	0.00	0.00
20,500.00	90.00	179.58	12,810.00	-7,893.40	157.89	7,894.34	0.00	0.00	0.00
20,600.00	90.00	179.58	12,810.00	-7,993.39	158.63	7,994.34	0.00	0.00	0.00
20,700.00	90.00	179.58	12,810.00	-8,093.39	159.37	8,094.34	0.00	0.00	0.00
20,800.00	90.00	179.58	12,810.00	-8,193.39	160.11	8,194.34	0.00	0.00	0.00
20,900.00	90.00	179.58	12,810.00	-8,293.38	160.85	8,294.34	0.00	0.00	0.00
21,000.00	90.00	179.58	12,810.00	-8,393.38	161.59	8,394.34	0.00	0.00	0.00
21,100.00	90.00	179.58	12,810.00	-8,493.38	162.33	8,494.34	0.00	0.00	0.00
21,200.00	90.00	179.58	12,810.00	-8,593.38	163.08	8,594.34	0.00	0.00	0.00
21,300.00	90.00	179.58	12,810.00	-8,693.37	163.82	8,694.34	0.00	0.00	0.00
21,400.00	90.00	179.58	12,810.00	-8,793.37	164.56	8,794.34	0.00	0.00	0.00
21,500.00	90.00	179.58	12,810.00	-8,893.37	165.30	8,894.34	0.00	0.00	0.00
21,600.00	90.00	179.58	12,810.00	-8,993.37	166.04	8,994.34	0.00	0.00	0.00
21,700.00	90.00	179.58	12,810.00	-9,093.36	166.78	9,094.34	0.00	0.00	0.00
21,800.00	90.00	179.58	12,810.00	-9,193.36	167.52	9,194.34	0.00	0.00	0.00



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North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
21,900.00	90.00	179.58	12,810.00	-9,293.36	168.26	9,294.34	0.00	0.00	0.00
22,000.00	90.00	179.58	12,810.00	-9,393.35	169.00	9,394.34	0.00	0.00	0.00
22,100.00	90.00	179.58	12,810.00	-9,493.35	169.75	9,494.34	0.00	0.00	0.00
22,200.00	90.00	179.58	12,810.00	-9,593.35	170.49	9,594.34	0.00	0.00	0.00
22,300.00	90.00	179.58	12,810.00	-9,693.35	171.23	9,694.34	0.00	0.00	0.00
22,400.00	90.00	179.58	12,810.00	-9,793.34	171.97	9,794.34	0.00	0.00	0.00
22,500.00	90.00	179.58	12,810.00	-9,893.34	172.71	9,894.34	0.00	0.00	0.00
22,600.00	90.00	179.58	12,810.00	-9,993.34	173.45	9,994.34	0.00	0.00	0.00
22,639.86	90.00	179.58	12,810.00	-10,033.19	173.75	10,034.20	0.00	0.00	0.00
TD - PBHL (FO1819F 71H)									

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
SHL (FO1819F 71H)	0.00	0.00	0.00	0.00	0.00	382,937.52	794,421.25	32° 3' 0.516 N	103° 30' 59.292 W
- plan hits target center									
- Point									
PBHL (FO1819F 71H)	0.00	0.00	12,810.00	-10,033.19	173.75	372,904.33	794,594.99	32° 1' 21.221 N	103° 30' 58.155 W
- plan hits target center									
- Point									

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
829.20	829.20	Rustler		0.00	
1,189.20	1,189.20	Salado		0.00	
4,999.20	4,999.20	Base Salt		0.00	
5,239.20	5,239.20	Delaware		0.00	
9,544.20	9,544.20	Bone Spring		0.00	
12,049.20	12,049.20	3rdBSSS		0.00	
12,410.00	12,409.20	Lwr 3rdBSSS		0.00	
12,542.07	12,534.20	Wolfcamp		0.00	
12,846.37	12,749.20	Wolfcamp A		0.00	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
12,293.73	12,293.73	0.00	0.00	KOP 10° DLS @ 165.75° AZI
12,493.73	12,489.69	-33.49	8.51	20° INC - 12° DLS
12,910.40	12,775.06	-310.08	78.75	70° INC - Turn to 179.58° AZI
13,111.66	12,810.00	-505.26	103.13	LP
22,639.86	12,810.00	-10,033.19	173.75	TD