

NM OIL CONSERVATION

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
311 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

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

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

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-015-43028	² Pool Code 39350	³ Pool Name Livingston Ridge; Bone Spring
⁴ Property Code 40396	⁵ Property Name ARK 36 STATE	⁶ Well Number 3H
⁷ OGRID No. 6137	⁸ Operator Name DEVON ENERGY PRODUCTION COMPANY, L.P.	⁹ Elevation 3454.3

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	36	22 S	31 E		176	SOUTH	1403	WEST	EDDY

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	36	22 S	31 E		330	NORTH	710	WEST	EDDY

¹² Dedicated Acres	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
160.00			

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

Project Area

Lease Line

Completion Interval

Ark "36" STATE 3H
ELEV. = 3454.3'
LAT. = 32.3412047°N (NAD83)
LONG. = 103.7355140°W
NMSP EAST (FT)
N = 488377.55
E = 725966.25

Surface Location

SW CORNER SEC. 36
LAT. = 32.3407285°N
LONG. = 103.7400556°W
NMSP EAST (FT)
N = 488195.03
E = 724564.59

SE CORNER SEC. 36
LAT. = 32.3407105°N
LONG. = 103.7229557°W
NMSP EAST (FT)
N = 488219.63
E = 729845.81

NE CORNER SEC. 36
LAT. = 32.3551764°N
LONG. = 103.7229288°W
NMSP EAST (FT)
N = 493482.33
E = 729824.11

W O CORNER SEC. 36
LAT. = 32.3479770°N
LONG. = 103.7400589°W
NMSP EAST (FT)
N = 490833.46
E = 724548.94

Bottom of Hole
LAT. = 32.3543245°N
LONG. = 103.7377626°W
NMSP EAST (FT)
N = 493146.60
E = 725245.23

Bottom of Hole
LAT. = 32.3552397°N
LONG. = 103.7400617°W
NMSP EAST (FT)
N = 493475.63
E = 724533.44

" OPERATOR CERTIFICATION

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

Linda Good 4/8/2015
Signature Date

Linda Good
Printed Name

linda.good@dmv.com
E-mail Address

"SURVEYOR CERTIFICATION

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

MARCH 16, 2015
Date of Survey

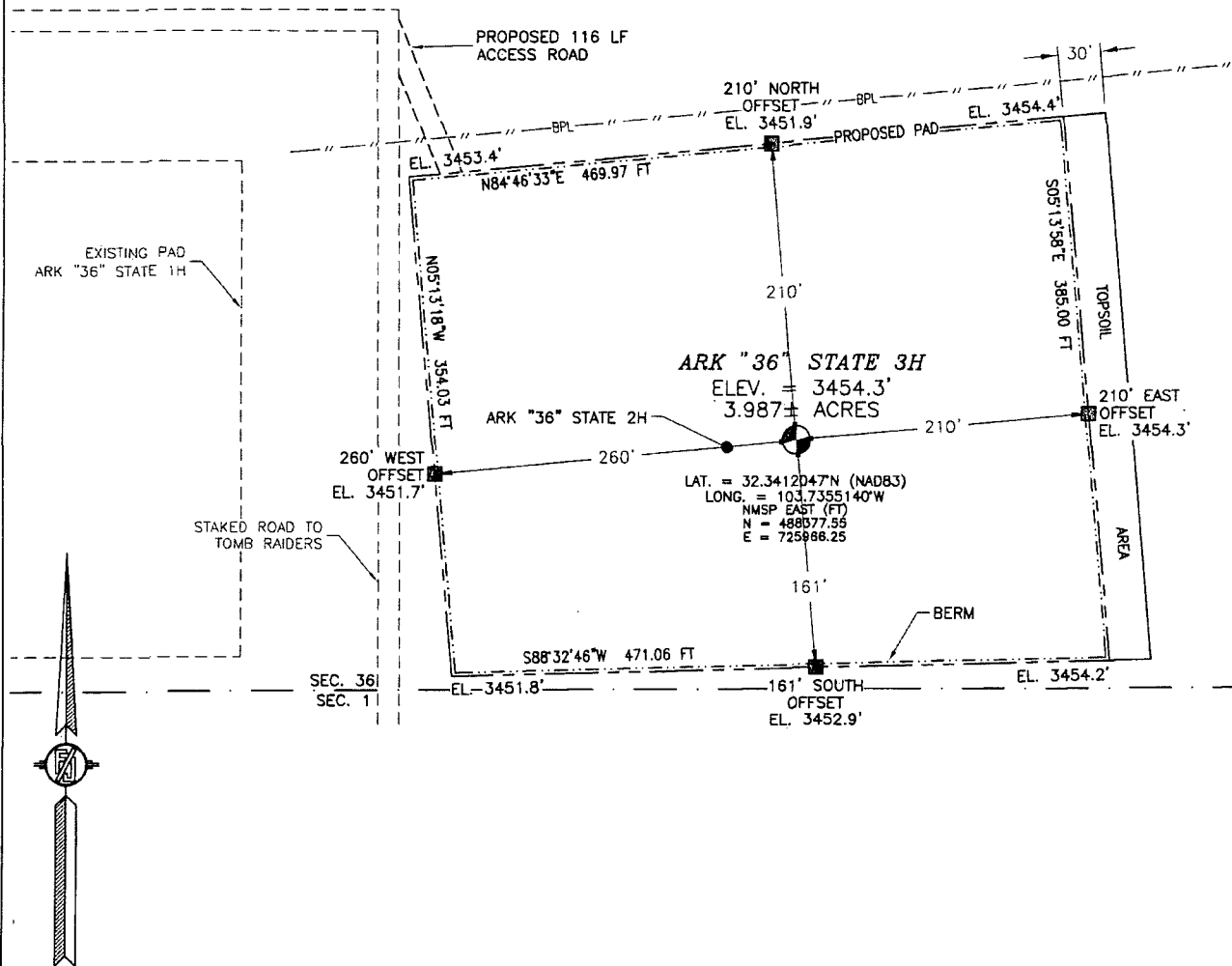
Filimon F. Jaramillo
Signature and Seal of Registered Surveyor

Certificate Number: **FILIMON F. JARAMILLO, PLS 12797**
SURVEY NO. 3652

SECTION 36, TOWNSHIP 22 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

SITE MAP

NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1983 (NAD83). LISTED NEW MEXICO STATE PLANE EAST COORDINATES ARE GRID (NAD83). BASIS OF BEARING AND DISTANCES USED ARE NEW MEXICO STATE PLANE EAST COORDINATES MODIFIED TO THE SURFACE



DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF STATE HIGHWAY 128 AND RED ROAD, GO NORTH ON RED ROAD APPROX. 8.2 MILES TO A LEASE ROAD ON RIGHT (EAST), TURN EAST ON LEASE ROAD GO APPROX. 0.1 MILE BEFORE TURNING RIGHT (SOUTH) TO EXISTING PAD IS A ROAD LATH WITH RED & WHITE FLAGGING, GO EAST APPROX. 510' FOLLOW ROAD LATH, THEN GO SOUTHEAST APPROX. 116' TO THE NORTHWEST PAD CORNER FOR THIS LOCATION.

DEVON ENERGY PRODUCTION COMPANY, L.P.

ARK "36" STATE 3H

LOCATED 176 FT. FROM THE SOUTH LINE
AND 1403 FT. FROM THE WEST LINE OF
SECTION 36, TOWNSHIP 22 SOUTH,

RANGE 31 EAST, N.M.P.M.

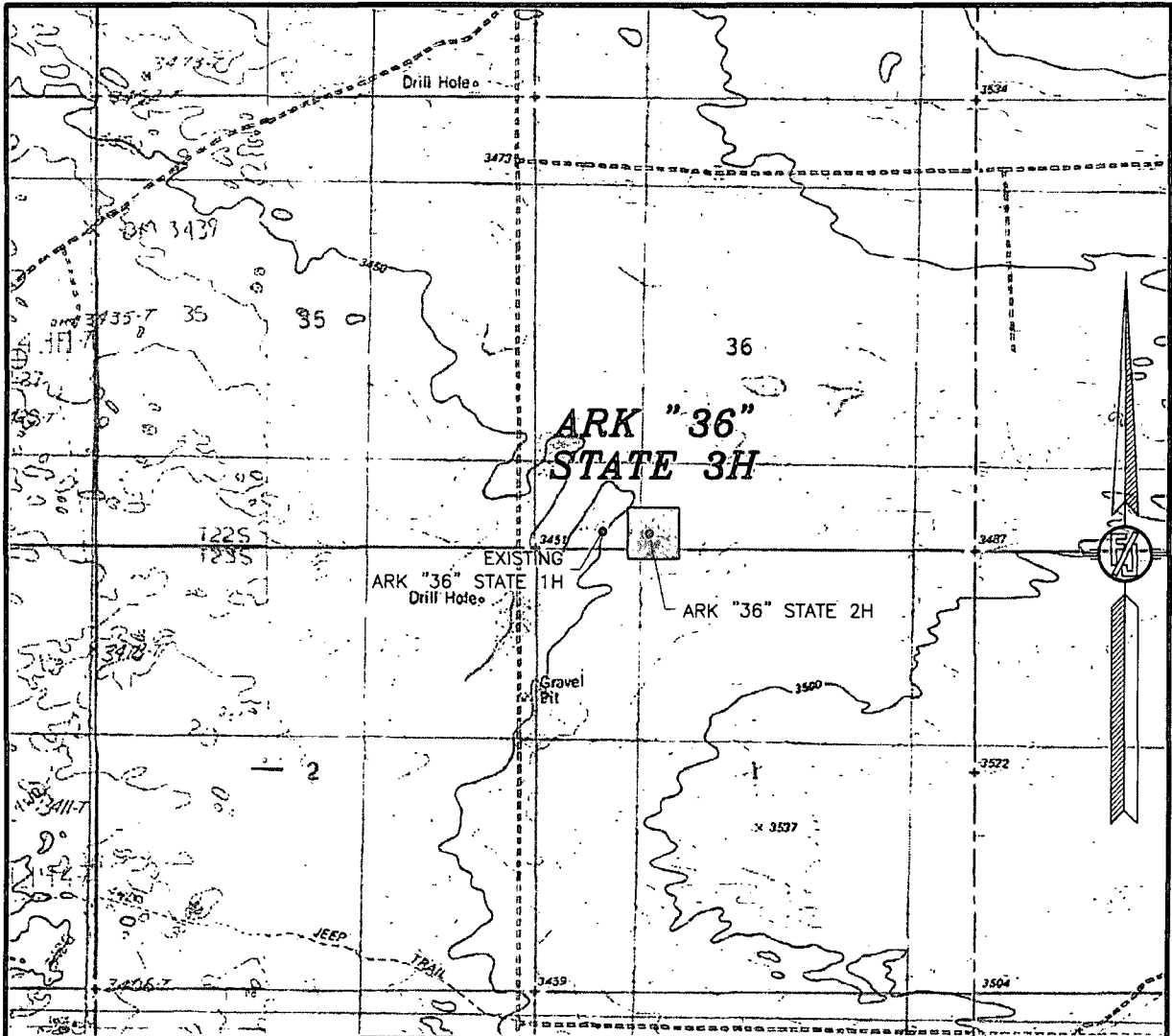
EDDY COUNTY, STATE OF NEW MEXICO

MARCH 16, 2015

SURVEY NO. 3652

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

SECTION 36, TOWNSHIP 22 SOUTH, RANGE 31 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO
 LOCATION VERIFICATION MAP



USGS QUAD MAP:
 BOOTLEG RIDGE

NOT TO SCALE

DEVON ENERGY PRODUCTION COMPANY, L.P.

ARK "36" STATE 3H

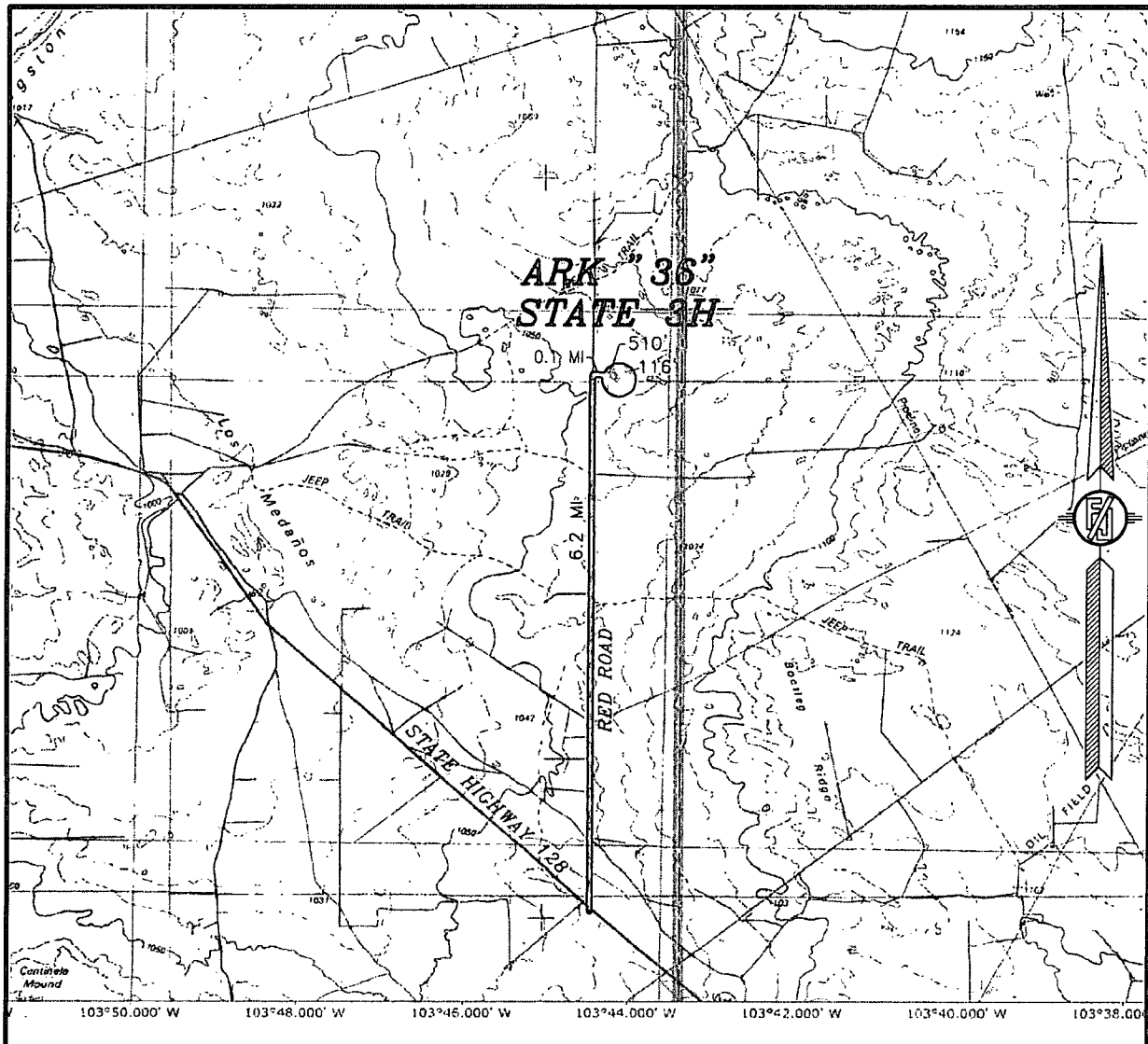
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 AND 1403 FT. FROM THE WEST LINE OF
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 RANGE 31 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO

MARCH 16, 2015

SURVEY NO. 3652

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

SECTION 36, TOWNSHIP 22 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
VICINITY MAP



DISTANCES IN MILES

NOT TO SCALE

DEVON ENERGY PRODUCTION COMPANY, L.P.

ARK "36" STATE 3H

LOCATED 176 FT. FROM THE SOUTH LINE
AND 1403 FT. FROM THE WEST LINE OF
SECTION 36, TOWNSHIP 22 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

DIRECTIONS TO LOCATION

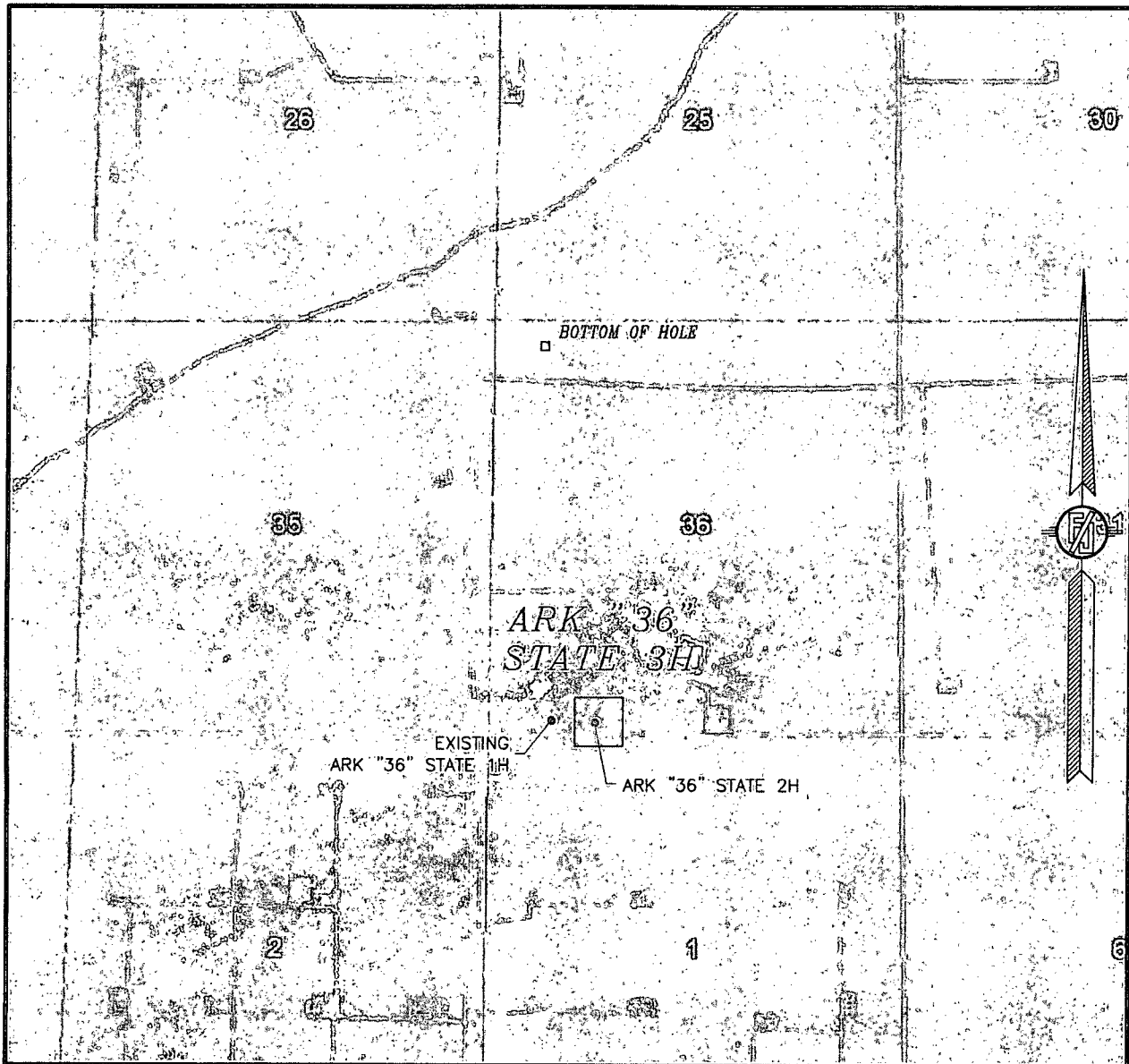
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MARCH 16, 2015

SURVEY NO. 3652

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

SECTION 36, TOWNSHIP 22 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AERIAL PHOTO



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
FEBRUARY 2014

DEVON ENERGY PRODUCTION COMPANY, L.P.

ARK "36" STATE 3H

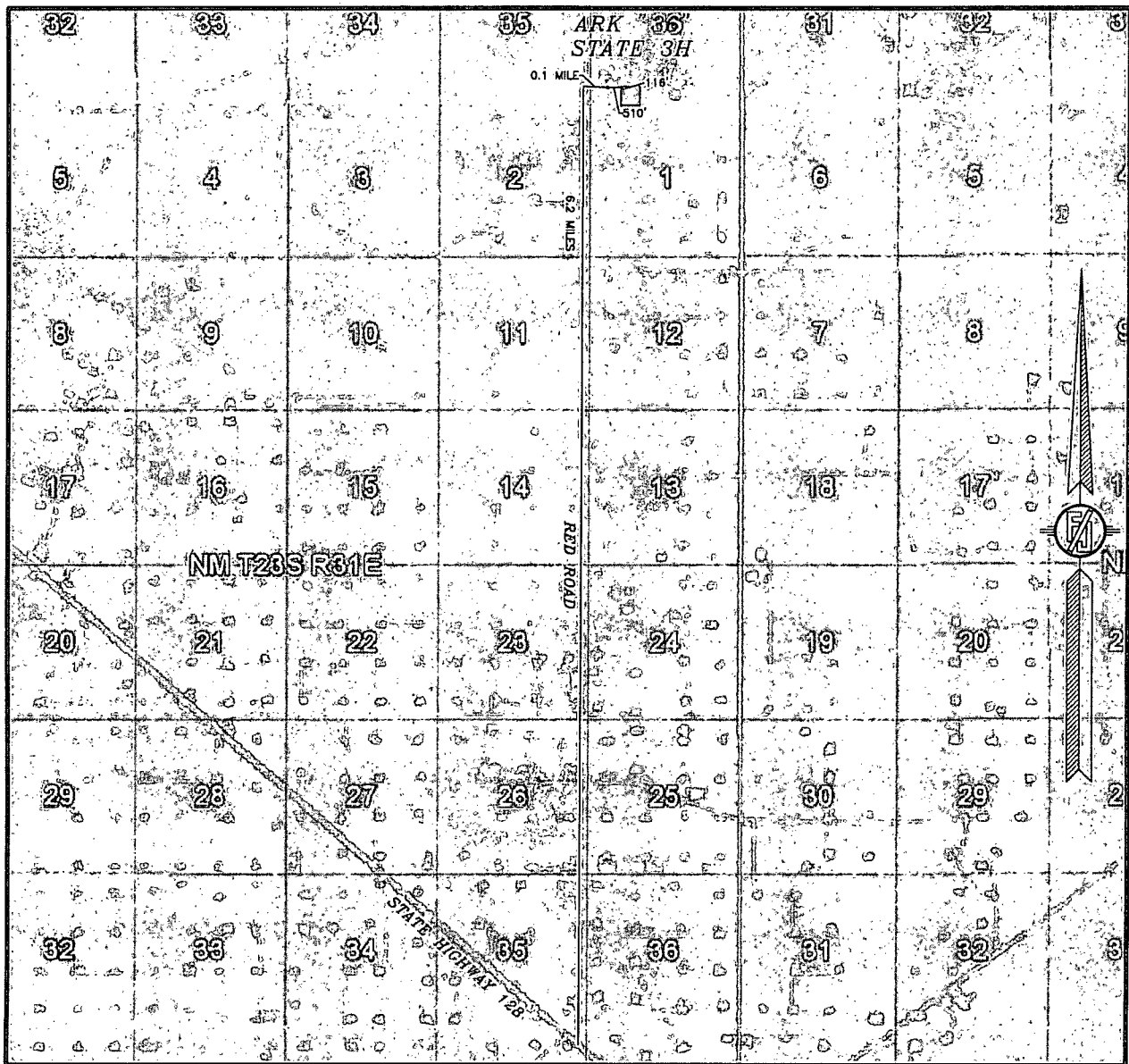
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EDDY COUNTY, STATE OF NEW MEXICO

MARCH 16, 2015

SURVEY NO. 3652

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

SECTION 36, TOWNSHIP 22 SOUTH, RANGE 31 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO
 ACCESS AERIAL ROUTE MAP



NOT TO SCALE
 AERIAL PHOTO:
 GOOGLE EARTH
 FEBRUARY 2014

DEVON ENERGY PRODUCTION COMPANY, L.P.

ARK "36" STATE 3H

LOCATED 176 FT. FROM THE SOUTH LINE
 AND 1403 FT. FROM THE WEST LINE OF
 SECTION 36, TOWNSHIP 22 SOUTH,
 RANGE 31 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO

MARCH 16, 2015

SURVEY NO. 3652

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

Devon Energy, Ark 36 State 3H

1. Geologic Formations

TVD of target	10,183'	Pilot hole depth	N/A
MD at TD:	14,703'	Deepest expected fresh water:	

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Rustler	675	Barren	
Top of Salt	951	Barren	
Base of Salt	4,218	Barren	
Lamar	4,461	Oil	
Bell Canyon	4,509	Oil	
Cherry Canyon	5,406	Oil	
Brushy Canyon	6,646	Oil	
Bone Spring	8,335	Oil	
1 st Bone Spring Sand	9,398	Oil	
2 nd Bone Spring Lime	9,655	Oil	
2 nd Bone Spring Sand	10,046	Oil	
Target Zone Base	10,220	Oil	

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

Devon Energy, Ark 36 State 3H

2. Casing Program

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn	SF Collapse	SF Burst	SF Tension
	From	To							
17.5"	0	800'	13.375"	48	H-40	STC	2.07	4.84	14.09
12.25"	0	4,350'	9.625"	40	J-55	BTC	1.136	1.75	2.99
8.75"	0	14,703'	5.5"	17	P-110	BTC	1.54	2.18	3.15
BLM Minimum Safety Factor							1.125	1.00	1.6 Dry 1.8 Wet

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

Must have table for contingency casing

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

Devon Energy, Ark 36 State 3H

3. Cementing Program

Casing	# Sks	Wt. lb/gal	H ₂ O gal/sk	Yld ft ³ /sack	500# Comp. Strength (hours)	Slurry Description
Surf.	870	14.8	6.32	1.33	8	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
Inter.	920	12.9	9.81	1.85	17	Lead: (65:35) Class C Cement: Poz (Fly Ash): 6% BWOC Bentonite + 5% BWOW Sodium Chloride + 0.125 lbs/sack Poly-E-Flake
	430	14.8	6.32	1.33	6	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
5.5" Prod. Two Stage	590	12.5	10.86	1.96	30	1 st Stage Lead: (65:35) Class H Cement: Poz (Fly Ash) + 6% BWOC Bentonite + 0.25% BWOC HR-601 + 0.125 lbs/sack Poly-E-Flake
	1340	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 = 6000'					
	200	11	14.81	2.55	22	2 nd Stage Lead: Tuned Light® Cement + 0.125 lb/sk Pol-E-Flake
	120	14.8	6.32	1.33	6	2 nd Stage 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
Surface	0'	100%
Intermediate	0'	75%
5.5" Production Two Stage	1 st Stage = 6000' / 2 nd Stage = 3850'	25%

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"	3M	Annular	x	50% of working pressure
			Blind Ram		3M
			Pipe Ram		
			Double Ram	x	
			Other*		
8-3/4"	13-5/8"	3M	Annular	x	50% testing pressure
			Blind Ram		3M
			Pipe Ram		
			Double Ram	x	
			Other*		
			Annular		50% testing pressure
			Blind Ram		
			Pipe Ram		
			Double Ram		
			Other*		

*Specify if additional ram is utilized.

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.
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Devon Energy, Ark 36 State 3H

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 (FMC Uni-head). 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 3000 (3M) psi. - Wellhead will be installed by FMC's representatives. - If the welding is performed by a third party, the FMC's representative will monitor the temperature to verify that it does not exceed the maximum temperature of the seal. - FMC representative will install the test plug for the initial BOP test. - FMC 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 3M, 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 3M will be installed on the FMC Uni-head wellhead system and will undergo a 250 psi low pressure test followed by a 3,000 psi high pressure test. The 3,000 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 3M will already be installed on the FMC Uni-head. 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 3,000 psi WP.

Devon Energy, Ark 36 State 3H

	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.

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	800'	FW Gel	8.6-8.8	28-34	N/C
800'	4,350'	Saturated Brine	10.0-10.2	28-34	N/C
4,350'	14,703'	Cut Brine	8.5-9.2	28-34	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
---	-----------------------------

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
	Resistivity
	Density
X	CBL
X	Mud log
	PEX

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	2631 psi
Abnormal Temperature	No

Mitigation measure for abnormal conditions. Describe. 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? Yes.

Will be pre-setting casing? No.

Attachments

☒ Directional Plan

☐ Other, describe

DEVON ENERGY

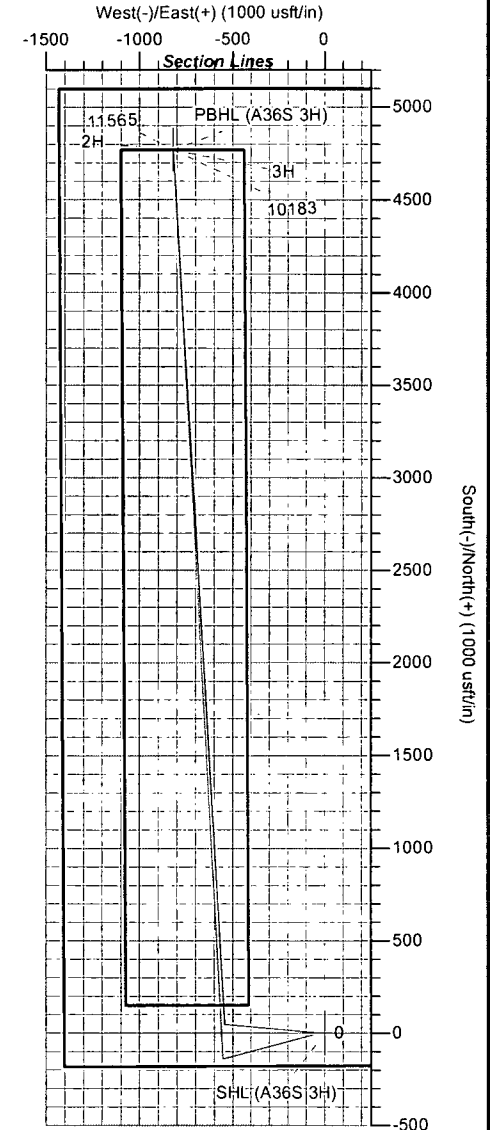
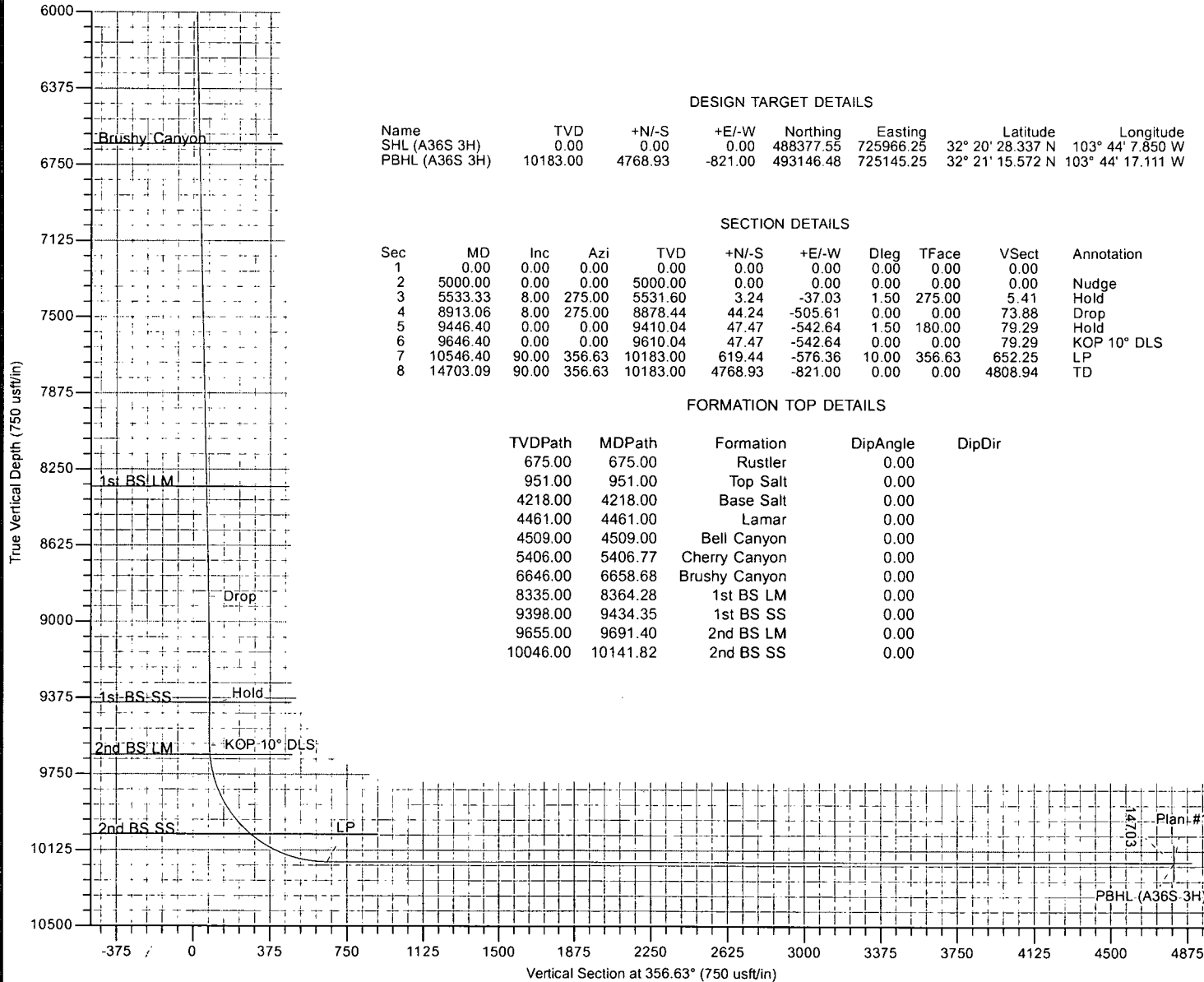
Project: Eddy County, NM (NAD-83)
Site: Ark 36 State
Well: 3H
Wellbore: OH
Design: Plan #1



Azimuths to Grid North
True North: -0.32°
Magnetic North: 7.06°

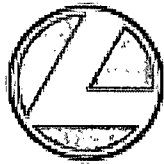
Magnetic Field
Strength: 48236.4snT
Dip Angle: 60.16°
Date: 3/30/2015
Model: BGGM2014

PROJECT DETAILS: Eddy County, NM (NAD-83)
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone



LEAM DRILLING SYSTEMS LLC
2010 East Davis, Conroe, Texas 77301
Phone: 936/756-7577, Fax 936/756-7595

Plan: Plan #1 (3H/OH)
Ark 36 State
Created By: Brady Deaver
Date: 9/30, April 07 2015
Approved: _____
Date: _____



LEAM

Drilling Systems, Inc.

DEVON ENERGY

Eddy County, NM (NAD-83)

Ark 36 State

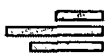
3H

OH

Plan: Plan #1

Standard Planning Report

07 April, 2015


devon

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 3H
Company:	DEVON ENERGY	TVD Reference:	3454.3' GL + 25' RKB @ 3479.30usft
Project:	Eddy County, NM (NAD-83)	MD Reference:	3454.3' GL + 25' RKB @ 3479.30usft
Site:	Ark 36 State	North Reference:	Grid
Well:	3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Project				Eddy 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					

SiteArk 36 State					
Site Position:		Northing:	488,372.36 usft	Latitude:	32° 20' 28.288 N
From:	Map	Easting:	725,916.26 usft	Longitude:	103° 44' 8.433 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.32 °

Well	3H					
Well Position	+N/-S	5.19 usft	Northing:	488,377.55 usft	Latitude:	32° 20' 28.337 N
	+E/-W	49.99 usft	Easting:	725,966.25 usft	Longitude:	103° 44' 7.850 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	3,479.10 usft	Ground Level:	3,454.10 usft

Wellbore		OH			
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	3/30/2015	7.38	60.16	48,236

Design					Plan #1					
Audit Notes:										
Version:		Phase:		PLAN			Tie On Depth:		0.00	
Vertical Section:		Depth From (TVD)		+N/-S		+E/-W		Direction		
		(usft)		(usft)		(usft)		(°)		
		0.00		0.00		0.00		356.63		

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	
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,533.33	8.00	275.00	5,531.60	3.24	-37.03	1.50	1.50	0.00	275.00	
8,913.06	8.00	275.00	8,878.44	44.24	-505.61	0.00	0.00	0.00	0.00	
9,446.40	0.00	0.00	9,410.04	47.47	-542.64	1.50	-1.50	15.94	180.00	
9,646.40	0.00	0.00	9,610.04	47.47	-542.64	0.00	0.00	0.00	0.00	
10,546.40	90.00	356.63	10,183.00	619.44	-576.36	10.00	10.00	-0.37	356.63	
14,703.09	90.00	356.63	10,183.00	4,768.93	-821.00	0.00	0.00	0.00	0.00	PBHL (A36S 3H)



LEAM Drilling Systems LLC

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 3H
Company:	DEVON ENERGY	TVD Reference:	3454.3' GL + 25' RKB @ 3479.30usft
Project:	Eddy County, NM (NAD-83)	MD Reference:	3454.3' GL + 25' RKB @ 3479.30usft
Site:	Ark 36 State	North Reference:	Grid
Well:	3H	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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SHL (A36S 3H)									
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
675.00	0.00	0.00	675.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
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
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
951.00	0.00	0.00	951.00	0.00	0.00	0.00	0.00	0.00	0.00
Top Salt									
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
1,200.00	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
4,218.00	0.00	0.00	4,218.00	0.00	0.00	0.00	0.00	0.00	0.00
Base Salt									
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
4,461.00	0.00	0.00	4,461.00	0.00	0.00	0.00	0.00	0.00	0.00
Lamar									

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 3H
Company:	DEVON ENERGY	TVD Reference:	3454.3' GL + 25' RKB @ 3479.30usft
Project:	Eddy County, NM (NAD-83)	MD Reference:	3454.3' GL + 25' RKB @ 3479.30usft
Site:	Ark 36 State	North Reference:	Grid
Well:	3H	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)
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,509.00	0.00	0.00	4,509.00	0.00	0.00	0.00	0.00	0.00	0.00
Bell Canyon									
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
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
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
Nudge									
5,100.00	1.50	275.00	5,099.99	0.11	-1.30	0.19	1.50	1.50	0.00
5,200.00	3.00	275.00	5,199.91	0.46	-5.21	0.76	1.50	1.50	0.00
5,300.00	4.50	275.00	5,299.69	1.03	-11.73	1.71	1.50	1.50	0.00
5,400.00	6.00	275.00	5,399.27	1.82	-20.85	3.05	1.50	1.50	0.00
5,406.77	6.10	275.00	5,406.00	1.89	-21.56	3.15	1.50	1.50	0.00
Cherry Canyon									
5,500.00	7.50	275.00	5,498.57	2.85	-32.55	4.76	1.50	1.50	0.00
5,533.33	8.00	275.00	5,531.60	3.24	-37.03	5.41	1.50	1.50	0.00
Hold									
5,600.00	8.00	275.00	5,597.62	4.05	-46.27	6.76	0.00	0.00	0.00
5,700.00	8.00	275.00	5,696.65	5.26	-60.14	8.79	0.00	0.00	0.00
5,800.00	8.00	275.00	5,795.67	6.47	-74.00	10.81	0.00	0.00	0.00
5,900.00	8.00	275.00	5,894.70	7.69	-87.87	12.84	0.00	0.00	0.00
6,000.00	8.00	275.00	5,993.73	8.90	-101.73	14.87	0.00	0.00	0.00
6,100.00	8.00	275.00	6,092.75	10.11	-115.60	16.89	0.00	0.00	0.00
6,200.00	8.00	275.00	6,191.78	11.33	-129.46	18.92	0.00	0.00	0.00
6,300.00	8.00	275.00	6,290.81	12.54	-143.33	20.94	0.00	0.00	0.00
6,400.00	8.00	275.00	6,389.83	13.75	-157.19	22.97	0.00	0.00	0.00
6,500.00	8.00	275.00	6,488.86	14.97	-171.05	24.99	0.00	0.00	0.00
6,600.00	8.00	275.00	6,587.89	16.18	-184.92	27.02	0.00	0.00	0.00
6,658.68	8.00	275.00	6,646.00	16.89	-193.05	28.21	0.00	0.00	0.00
Brushy Canyon									
6,700.00	8.00	275.00	6,686.91	17.39	-198.78	29.05	0.00	0.00	0.00
6,800.00	8.00	275.00	6,785.94	18.60	-212.65	31.07	0.00	0.00	0.00
6,900.00	8.00	275.00	6,884.97	19.82	-226.51	33.10	0.00	0.00	0.00
7,000.00	8.00	275.00	6,984.00	21.03	-240.38	35.12	0.00	0.00	0.00
7,100.00	8.00	275.00	7,083.02	22.24	-254.24	37.15	0.00	0.00	0.00
7,200.00	8.00	275.00	7,182.05	23.46	-268.10	39.18	0.00	0.00	0.00
7,300.00	8.00	275.00	7,281.08	24.67	-281.97	41.20	0.00	0.00	0.00
7,400.00	8.00	275.00	7,380.10	25.88	-295.83	43.23	0.00	0.00	0.00
7,500.00	8.00	275.00	7,479.13	27.10	-309.70	45.25	0.00	0.00	0.00
7,600.00	8.00	275.00	7,578.16	28.31	-323.56	47.28	0.00	0.00	0.00
7,700.00	8.00	275.00	7,677.18	29.52	-337.43	49.31	0.00	0.00	0.00
7,800.00	8.00	275.00	7,776.21	30.73	-351.29	51.33	0.00	0.00	0.00
7,900.00	8.00	275.00	7,875.24	31.95	-365.15	53.36	0.00	0.00	0.00
8,000.00	8.00	275.00	7,974.26	33.16	-379.02	55.38	0.00	0.00	0.00
8,100.00	8.00	275.00	8,073.29	34.37	-392.88	57.41	0.00	0.00	0.00
8,200.00	8.00	275.00	8,172.32	35.59	-406.75	59.43	0.00	0.00	0.00
8,300.00	8.00	275.00	8,271.34	36.80	-420.61	61.46	0.00	0.00	0.00
8,364.28	8.00	275.00	8,335.00	37.58	-429.52	62.76	0.00	0.00	0.00
1st BS LM									
8,400.00	8.00	275.00	8,370.37	38.01	-434.48	63.49	0.00	0.00	0.00
8,500.00	8.00	275.00	8,469.40	39.22	-448.34	65.51	0.00	0.00	0.00
8,600.00	8.00	275.00	8,568.42	40.44	-462.21	67.54	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 3H
Company:	DEVON ENERGY	TVD Reference:	3454.3' GL + 25' RKB @ 3479.30usft
Project:	Eddy County, NM (NAD-83)	MD Reference:	3454.3' GL + 25' RKB @ 3479.30usft
Site:	Ark 36 State	North Reference:	Grid
Well:	3H	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)
8,700.00	8.00	275.00	8,667.45	41.65	-476.07	69.56	0.00	0.00	0.00
8,800.00	8.00	275.00	8,766.48	42.86	-489.93	71.59	0.00	0.00	0.00
8,900.00	8.00	275.00	8,865.50	44.08	-503.80	73.62	0.00	0.00	0.00
8,913.06	8.00	275.00	8,878.44	44.24	-505.61	73.88	0.00	0.00	0.00
Drop									
9,000.00	6.70	275.00	8,964.66	45.20	-516.69	75.50	1.50	-1.50	0.00
9,100.00	5.20	275.00	9,064.12	46.11	-527.00	77.01	1.50	-1.50	0.00
9,200.00	3.70	275.00	9,163.82	46.78	-534.73	78.13	1.50	-1.50	0.00
9,300.00	2.20	275.00	9,263.68	47.23	-539.85	78.88	1.50	-1.50	0.00
9,400.00	0.70	275.00	9,363.65	47.45	-542.36	79.25	1.50	-1.50	0.00
9,434.35	0.18	275.00	9,398.00	47.47	-542.62	79.29	1.50	-1.50	0.00
1st BS SS									
9,446.40	0.00	0.00	9,410.05	47.47	-542.64	79.29	1.50	-1.50	705.61
Hold									
9,500.00	0.00	0.00	9,463.65	47.47	-542.64	79.29	0.00	0.00	0.00
9,600.00	0.00	0.00	9,563.65	47.47	-542.64	79.29	0.00	0.00	0.00
9,646.40	0.00	0.00	9,610.05	47.47	-542.64	79.29	0.00	0.00	0.00
KOP 10° DLS									
9,650.00	0.36	356.63	9,613.65	47.49	-542.64	79.30	10.01	10.01	-93.72
9,691.40	4.50	356.63	9,655.00	49.24	-542.75	81.06	10.00	10.00	0.00
2nd BS LM									
9,700.00	5.36	356.63	9,663.57	49.98	-542.79	81.80	10.00	10.00	0.00
9,750.00	10.36	356.63	9,713.08	56.80	-543.19	88.63	10.00	10.00	0.00
9,800.00	15.36	356.63	9,761.81	67.91	-543.85	99.76	10.00	10.00	0.00
9,850.00	20.36	356.63	9,809.39	83.21	-544.75	115.09	10.00	10.00	0.00
9,900.00	25.36	356.63	9,855.45	102.59	-545.89	134.51	10.00	10.00	0.00
9,950.00	30.36	356.63	9,899.64	125.91	-547.27	157.86	10.00	10.00	0.00
10,000.00	35.36	356.63	9,941.62	152.99	-548.86	184.99	10.00	10.00	0.00
10,050.00	40.36	356.63	9,981.09	183.61	-550.67	215.66	10.00	10.00	0.00
10,100.00	45.36	356.63	10,017.73	217.55	-552.67	249.66	10.00	10.00	0.00
10,141.82	49.54	356.63	10,046.00	248.30	-554.48	280.47	10.00	10.00	0.00
2nd BS SS									
10,150.00	50.36	356.63	10,051.26	254.55	-554.85	286.73	10.00	10.00	0.00
10,200.00	55.36	356.63	10,081.44	294.33	-557.19	326.57	10.00	10.00	0.00
10,250.00	60.36	356.63	10,108.03	336.58	-559.69	368.90	10.00	10.00	0.00
10,300.00	65.36	356.63	10,130.83	380.98	-562.30	413.38	10.00	10.00	0.00
10,350.00	70.36	356.63	10,149.67	427.20	-565.03	459.68	10.00	10.00	0.00
10,400.00	75.36	356.63	10,164.40	474.88	-567.84	507.44	10.00	10.00	0.00
10,450.00	80.36	356.63	10,174.91	523.66	-570.72	556.31	10.00	10.00	0.00
10,500.00	85.36	356.63	10,181.12	573.17	-573.63	605.90	10.00	10.00	0.00
10,546.40	90.00	356.63	10,183.00	619.44	-576.36	652.25	10.00	10.00	0.00
LP									
10,600.00	90.00	356.63	10,183.00	672.95	-579.52	705.85	0.00	0.00	0.00
10,700.00	90.00	356.63	10,183.00	772.78	-585.40	805.85	0.00	0.00	0.00
10,800.00	90.00	356.63	10,183.00	872.60	-591.29	905.85	0.00	0.00	0.00
10,900.00	90.00	356.63	10,183.00	972.43	-597.17	1,005.85	0.00	0.00	0.00
11,000.00	90.00	356.63	10,183.00	1,072.26	-603.06	1,105.85	0.00	0.00	0.00
11,100.00	90.00	356.63	10,183.00	1,172.08	-608.94	1,205.85	0.00	0.00	0.00
11,200.00	90.00	356.63	10,183.00	1,271.91	-614.83	1,305.85	0.00	0.00	0.00
11,300.00	90.00	356.63	10,183.00	1,371.74	-620.71	1,405.85	0.00	0.00	0.00
11,400.00	90.00	356.63	10,183.00	1,471.56	-626.60	1,505.85	0.00	0.00	0.00
11,500.00	90.00	356.63	10,183.00	1,571.39	-632.49	1,605.85	0.00	0.00	0.00
11,600.00	90.00	356.63	10,183.00	1,671.22	-638.37	1,705.85	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 3H
Company:	DEVON ENERGY	TVD Reference:	3454.3' GL + 25' RKB @ 3479.30usft
Project:	Eddy County, NM (NAD-83)	MD Reference:	3454.3' GL + 25' RKB @ 3479.30usft
Site:	Ark 36 State	North Reference:	Grid
Well:	3H	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)
11,700.00	90.00	356.63	10,183.00	1,771.04	-644.26	1,805.85	0.00	0.00	0.00
11,800.00	90.00	356.63	10,183.00	1,870.87	-650.14	1,905.85	0.00	0.00	0.00
11,900.00	90.00	356.63	10,183.00	1,970.70	-656.03	2,005.85	0.00	0.00	0.00
12,000.00	90.00	356.63	10,183.00	2,070.52	-661.91	2,105.85	0.00	0.00	0.00
12,100.00	90.00	356.63	10,183.00	2,170.35	-667.80	2,205.85	0.00	0.00	0.00
12,200.00	90.00	356.63	10,183.00	2,270.18	-673.68	2,305.85	0.00	0.00	0.00
12,300.00	90.00	356.63	10,183.00	2,370.00	-679.57	2,405.85	0.00	0.00	0.00
12,400.00	90.00	356.63	10,183.00	2,469.83	-685.45	2,505.85	0.00	0.00	0.00
12,500.00	90.00	356.63	10,183.00	2,569.66	-691.34	2,605.85	0.00	0.00	0.00
12,600.00	90.00	356.63	10,183.00	2,669.48	-697.22	2,705.85	0.00	0.00	0.00
12,700.00	90.00	356.63	10,183.00	2,769.31	-703.11	2,805.85	0.00	0.00	0.00
12,800.00	90.00	356.63	10,183.00	2,869.14	-709.00	2,905.85	0.00	0.00	0.00
12,900.00	90.00	356.63	10,183.00	2,968.96	-714.88	3,005.85	0.00	0.00	0.00
13,000.00	90.00	356.63	10,183.00	3,068.79	-720.77	3,105.85	0.00	0.00	0.00
13,100.00	90.00	356.63	10,183.00	3,168.62	-726.65	3,205.85	0.00	0.00	0.00
13,200.00	90.00	356.63	10,183.00	3,268.44	-732.54	3,305.85	0.00	0.00	0.00
13,300.00	90.00	356.63	10,183.00	3,368.27	-738.42	3,405.85	0.00	0.00	0.00
13,400.00	90.00	356.63	10,183.00	3,468.10	-744.31	3,505.85	0.00	0.00	0.00
13,500.00	90.00	356.63	10,183.00	3,567.92	-750.19	3,605.85	0.00	0.00	0.00
13,600.00	90.00	356.63	10,183.00	3,667.75	-756.08	3,705.85	0.00	0.00	0.00
13,700.00	90.00	356.63	10,183.00	3,767.58	-761.96	3,805.85	0.00	0.00	0.00
13,800.00	90.00	356.63	10,183.00	3,867.40	-767.85	3,905.85	0.00	0.00	0.00
13,900.00	90.00	356.63	10,183.00	3,967.23	-773.73	4,005.85	0.00	0.00	0.00
14,000.00	90.00	356.63	10,183.00	4,067.06	-779.62	4,105.85	0.00	0.00	0.00
14,100.00	90.00	356.63	10,183.00	4,166.88	-785.51	4,205.85	0.00	0.00	0.00
14,200.00	90.00	356.63	10,183.00	4,266.71	-791.39	4,305.85	0.00	0.00	0.00
14,300.00	90.00	356.63	10,183.00	4,366.54	-797.28	4,405.85	0.00	0.00	0.00
14,400.00	90.00	356.63	10,183.00	4,466.36	-803.16	4,505.85	0.00	0.00	0.00
14,500.00	90.00	356.63	10,183.00	4,566.19	-809.05	4,605.85	0.00	0.00	0.00
14,600.00	90.00	356.63	10,183.00	4,666.02	-814.93	4,705.85	0.00	0.00	0.00
14,703.09	90.00	356.63	10,183.00	4,768.93	-821.00	4,808.94	0.00	0.00	0.00
TD - PBHL (A36S 3H)									

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SHL (A36S 3H)	0.00	0.00	0.00	0.00	0.00	488,377.55	725,966.25	32° 20' 28.337 N	103° 44' 7.850 W
- hit/miss target									
- plan hits target center									
- Point									
PBHL (A36S 3H)	0.00	0.00	10,183.00	4,768.93	-821.00	493,146.48	725,145.25	32° 21' 15.572 N	103° 44' 17.111 W
- hit/miss target									
- plan hits target center									
- Point									

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 3H
Company:	DEVON ENERGY	TVD Reference:	3454.3' GL + 25' RKB @ 3479.30usft
Project:	Eddy County, NM (NAD-83)	MD Reference:	3454.3' GL + 25' RKB @ 3479.30usft
Site:	Ark 36 State	North Reference:	Grid
Well:	3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
675.00	675.00	Rustler		0.00		
951.00	951.00	Top Salt		0.00		
4,218.00	4,218.00	Base Salt		0.00		
4,461.00	4,461.00	Lamar		0.00		
4,509.00	4,509.00	Bell Canyon		0.00		
5,406.77	5,406.00	Cherry Canyon		0.00		
6,658.68	6,646.00	Brushy Canyon		0.00		
8,364.28	8,335.00	1st BS LM		0.00		
9,434.35	9,398.00	1st BS SS		0.00		
9,691.40	9,655.00	2nd BS LM		0.00		
10,141.82	10,046.00	2nd BS SS		0.00		

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
5,000.00	5,000.00	0.00	0.00	Nudge	
5,533.33	5,531.60	3.24	-37.03	Hold	
8,913.06	8,878.44	44.24	-505.61	Drop	
9,446.40	9,410.05	47.47	-542.64	Hold	
9,646.40	9,610.05	47.47	-542.64	KOP 10° DLS	
10,546.40	10,183.00	619.44	-576.36	LP	
14,703.09	10,183.00	4,768.93	-821.00	TD	