

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018**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 page 2.**

1. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other		5. Lease Serial No. NMNM077046
2. Name of Operator DEVON ENERGY PRODUCTION COMPANY		6. If Indian, Allottee or Tribe Name
3a. Address 6488 SEVEN RIVERS HIGHWAY ARTESIA, NM 88211	3b. Phone No. (include area code) Ph: 405-693-9277	7. If Unit or CA/Agreement, Name and/or No.
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 9 T23S R31E 610FSL 210FEL 32.313416 N Lat, 103.774910 W Lon		8. Well Name and No. KO LANTA 9-4 FED COM 518H
		9. API Well No. 30-015-44864-00-X1
		10. Field and Pool or Exploratory Area LOS MEDANOS
		11. County or Parish, State EDDY COUNTY, NM

12. CHECK THE 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	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	Change to Original A
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	PD

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 recompleat 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 must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must 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 respectfully requests to amend the following items on the original APD for the Ko Lanta 9-4 Fed Com 518H:

? Update direction plan

? Add contingency option to set a deeper intermediate casing string (the decision to set casing deeper will be made based on water flows experienced while drilling the intermediate of the Ko Lanta 9-4 528H ? first well on the pad)

? Add cement program for contingency casing option

? Update language in ?Other Facets of Operation? section to allow for option to batch drill / preset surface

The following supporting documents are attached to this email:

? Direction Plan (Interpolated Points)

**SEE ATTACHED FOR
CONDITIONS OF APPROVAL***BC 4-23-18*
Accepted for record - NMOCD

14. I hereby certify that the foregoing is true and correct.	
Electronic Submission #410305 verified by the BLM Well Information System For DEVON ENERGY PRODUCTION COMPANY, sent to the Carlsbad Committed to AFMSS for processing by PRISCILLA PEREZ on 04/06/2018 (18PP1444SE)	
Name (Printed/Typed) CHANCE BLAND	Title AUTHORIZED REPRESENTATIVE
Signature (Electronic Submission)	Date 04/04/2018

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By <u>ZOTA STEVENS</u>	Title <u>PETROLEUM ENGINEER</u>	Date <u>04/18/2018</u>
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 <u>Carlsbad</u>

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.

(Instructions on page 2)

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

Additional data for EC transaction #410305 that would not fit on the form

32. Additional remarks, continued

- ? Directional Plan (Plan View)
- ? APD Drilling Plan

Devon Energy, Ko Lanta 9-4 518H

1. Geologic Formations

TVD of target	8,646'	Pilot hole depth	N/A
MD at TD:	18,654'	Deepest expected fresh water:	

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Rustler	498		
Salado	797		
Top of Salt	797		
Base of Salt	3988		
Delaware	4206		
Cherry Canyon	5104		
Brushy Canyon	6472		
Madera	7611		
Lower Brushy	7802		
1st BSPG Lime	8086		
LNRD A	8186		
Leonard B	8542		
UPR LNRD B Target Base	8681		
Leonard C	8875		

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

Devon Energy, Ko Lanta 9-4 518H

2. Casing Program

Primary:

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.
	From	To				
17.5"	0	480'	13.375"	48	H-40	STC
12.25"	0	4,250'	9.625"	40	J-55	BTC
8.75"	0	18,852	5.5"	17	P-110	BTC
BLM Minimum Safety Factor				Collapse: 1.125	Burst: 1.00	Tension: 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
- Rustler top will be validated via drilling parameters (i.e. reduction in ROP) and surface casing setting depth revised accordingly if needed.
- Int casing shoe will be selected based on drilling data / gamma, setting depth with be revised accordingly if needed.

Contingency:

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.
	From	To				
17.5"	0	480'	13.375"	48	H-40	STC
12.25"	0	6,100'	9.625"	40	P-110	BTC
8.75"	0	18,852	5.5"	17	P-110	BTC
BLM Minimum Safety Factor				Collapse: 1.125	Burst: 1.00	Tension: 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
- Rustler top will be validated via drilling parameters (i.e. reduction in ROP) and surface casing setting depth revised accordingly if needed.
- Int casing shoe will be selected based on drilling data / gamma, setting depth with be revised accordingly if needed.
- Decision to set deeper intermediate on the contingency option will be made based on the water flows while drilling the first well on pad.

Devon Energy, Ko Lanta 9-4 518H

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, Ko Lanta 9-4 518H

3. Cementing Program (Primary)

Casing	# Sks	Wt. lb/gal	H ₂ O gal/sk	Yld ft ³ /sack	500# Comp. Strength (hrs)	Slurry Description
13-3/8" Surface	528	14.8	6.352	1.33	5 hr 48 mn	C + Adds
9-5/8" Inter.	948	12.5	10.654	1.94	31 hr 40 mn	35:65 Poz:C + Adds
	425	14.8	6.352	1.33	5 hr 48 mn	C + Adds
5-1/2" Prod	161	9	15.442	3.569	19 hr 3 mn	C + Adds
	1840	13.2	5.175	1.46	9 hr 6 mn	50:50 Poz:H + Adds

If a DV tool is used, 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'	50%
9-5/8" Intermediate	0'	30%
5-1/2" Production Casing	4,250	10%

Cementing Program (Alternate)

Casing	# Sks	Wt. lb/gal	H ₂ O gal/sk	Yld ft ³ /sack	500# Comp. Strength (hrs)	Slurry Description
13-3/8" Surface	528	14.8	6.352	1.33	5 hr 48 mn	C + Adds
9-5/8" Inter.	1549	12.5	10.654	1.94	31 hr 40 mn	35:65 Poz:C + Adds
	425	14.8	6.352	1.33	5 hr 48 mn	C + Adds
5-1/2" Prod	161	9	15.442	3.569	19 hr 3 mn	C + Adds
	1840	13.2	5.175	1.46	9 hr 6 mn	50:50 Poz:H + Adds

If a DV tool is used, 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'	50%
9-5/8" Intermediate	0'	30%
5-1/2" Production Casing	6,100'	10%

Devon Energy, Ko Lanta 9-4 518H

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

Devon Energy, Ko Lanta 9-4 518H

	Y	Are anchors required by manufacturer?
Y		A multibowl wellhead may be 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 3000 (3M) psi. - Wellhead will be installed by wellhead representatives. - If the welding is performed by a third party, the wellhead representative will monitor the temperature to verify that it does not exceed the maximum temperature of the seal. - Wellhead representative will install the test plug for the initial BOP test. - Wellhead company 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 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 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 3,000 psi WP. Devon's proposed wellhead manufactures will be FMC Technologies, Cactus Wellhead, or Cameron.

Devon Energy, Ko Lanta 9-4 518H

	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.
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5. Mud Program (Primary)

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	480'	FW Gel	8.5-8.8	28-34	N/C
480'	4250'	Saturated Brine / Diesel Brine Emulsion	10.0-10.2	28-34	N/C
4250'	TD	Cut Brine	8.5-8.8	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.

Mud Program (Alternate)

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	480'	FW Gel	8.5-8.8	28-34	N/C
480'	6000'	Saturated Brine / Diesel Brine Emulsion	10.0-10.2	28-34	N/C
6000'	TD	Cut Brine	8.5-8.8	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
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Devon Energy, Ko Lanta 9-4 518H

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
x	Coring? If yes, explain Coring will be conducted from approximately 8500' – 8900' TVD

Additional logs planned	Interval
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	4,227 psi
Abnormal Temperature	No

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

Hydrogen Sulfide (H ₂ S) monitors will be installed prior to drilling out the surface shoe. If H ₂ S 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

Devon Energy, Ko Lanta 9-4 518H

8. Other facets of operation

Is this a walking operation? Potentially

1. If operator elects, drilling rig will batch drill the surface holes and run/cement surface casing; walking the rig to next wells on the pad.
2. The drilling rig will then batch drill the intermediate sections and run/cement intermediate casing; the wellbore will be isolated with a blind flange and pressure gauge installed for monitoring the well before walking to the next well.
3. The drilling rig will then batch drill the production hole sections on the wells with OBM, run/cement production casing, and install TA caps or tubing heads for completions.

NOTE: During batch operations the drilling rig will be moved from well to well however, it will not be removed from the pad until all wells have production casing run/cemented.

Will be pre-setting casing? Potentially

1. Spudder rig will move in and drill surface hole.
 - a. Rig will utilize fresh water based mud to drill surface hole to TD. Solids control will be handled entirely on a closed loop basis.
2. After drilling the surface hole section, the spudder rig will run casing and cement following all of the applicable rules and regulations (OnShore Order 2, all COAs and NMOCD regulations).
3. The wellhead will be installed and tested once the 10 3/4" surface casing is cut off and the WOC time has been reached.
4. A blind flange with the same pressure rating as the wellhead will be installed to seal the wellbore. Pressure will be monitored with a pressure gauge installed on the wellhead.
5. Spudder rig operations is expected to take 4-5 days per well on a multi well pad.
6. The NMOCD will be contacted and notified 24 hours prior to commencing spudder rig operations.
7. Drilling operations will be performed with the drilling rig. At that time an approved BOP stack will be nipped up and tested on the wellhead before drilling operations commences on each well.
 - a. The NMOCD will be contacted / notified 24 hours before the drilling rig moves back on to the pad with the pre-set surface casing.

Attachments

☒ Directional Plan
☐ Other, describe

Devon Energy

Project: Eddy County, NM (NAD-83)
 Site: Ko Lanta 9-4 Fed Com
 Well: Ko Lanta 9-4 Fed Com 518H
 Wellbore: OH
 Design: Plan #1

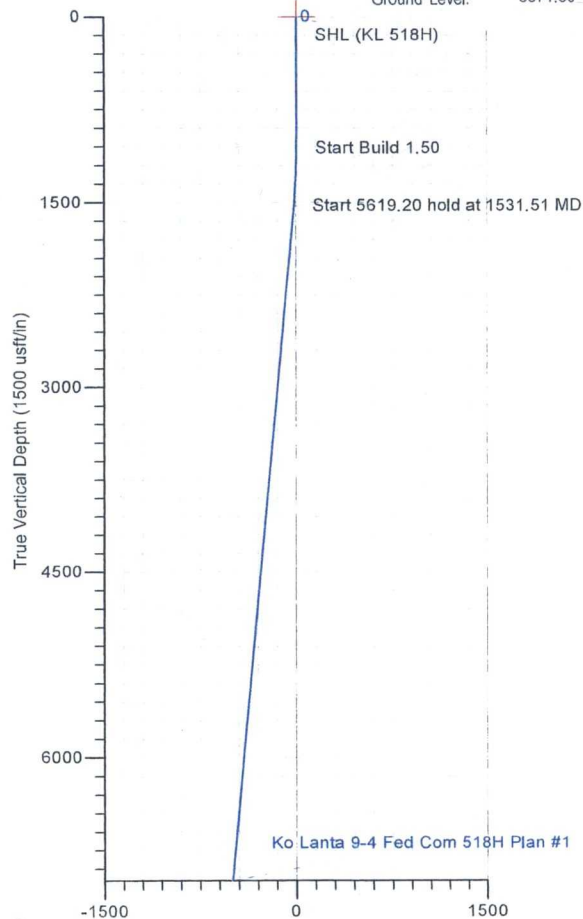
3371.8' GE + 23.2' KB @ 3395.00usft
 Ground Level: 3371.80



Azimuths to Grid North
 True North: -0.30°
 Magnetic North: 6.67°
 Magnetic Field
 Strength: 48102.7nT
 Dip Angle: 60.08°
 Date: 3/26/2018
 Model: HDGM

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

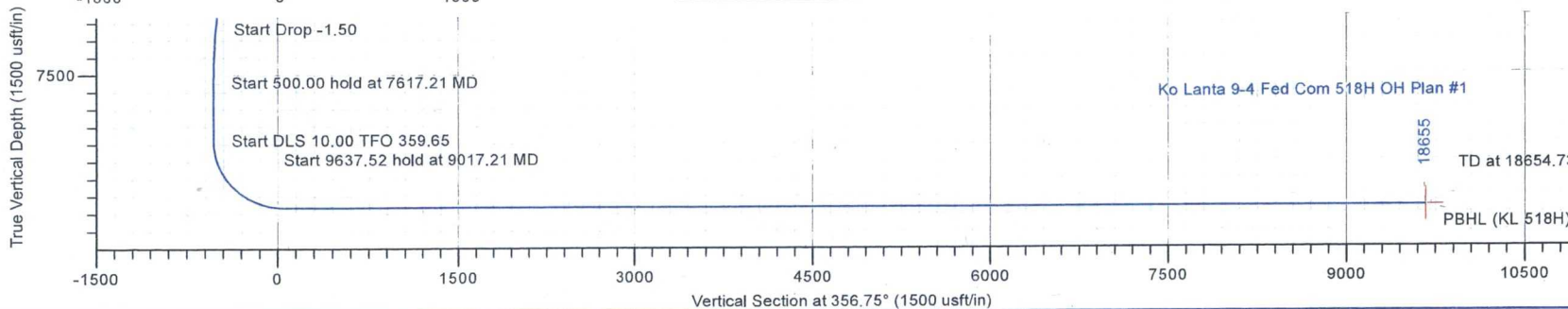
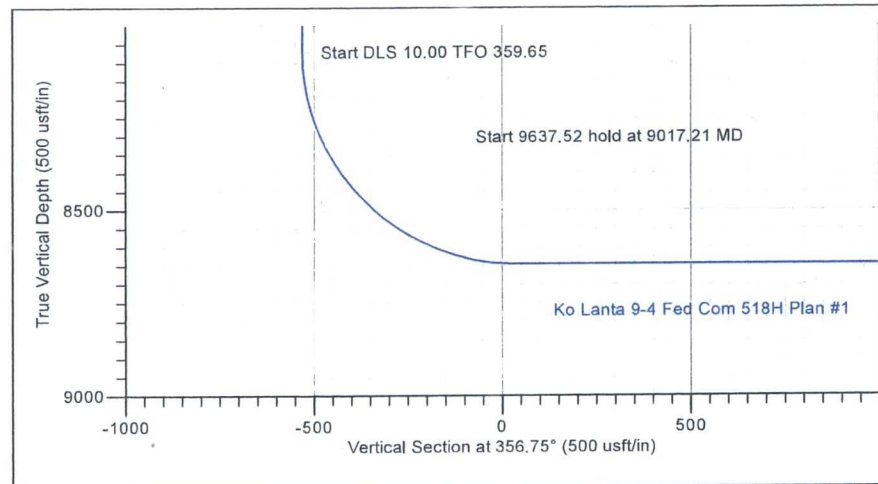


SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1065.00	0.00	0.00	1065.00	0.00	0.00	0.00	0.00	0.00	
1531.51	7.00	220.95	1530.35	-21.49	-18.65	1.50	220.95	-20.39	
7150.71	7.00	220.95	7107.69	-538.51	-467.35	0.00	0.00	-511.11	
7617.21	0.00	0.00	7573.04	-560.00	-486.00	1.50	180.00	-531.50	
8117.21	0.00	0.00	8073.04	-560.00	-486.00	0.00	0.00	-531.50	
9017.21	90.00	359.65	8646.00	12.95	-489.52	10.00	359.65	40.72	
18654.73	90.00	359.65	8646.00	9650.28	-548.80	0.00	0.00	9665.87	

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
PBHL (KL 518H)	8646.00	9650.28	-548.80	32° 20' 23.8122 N	103° 46' 35.4916 W
SHL (KL 518H)	0.00	0.00	0.00	32° 18' 48.2902 N	103° 46' 29.6811 W



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

Plan: Plan #1 (Ko Lanta 9-4 Fed Com 518H/OH)
 Ko Lanta 9-4 Fed Com
 Created By: Dustin Ault Date: 13:19, March 26 2018
 Approved: _____ Date: _____

Devon Energy

Project: Eddy County, NM (NAD-83)
Site: Ko Lanta 9-4 Fed Com
Well: Ko Lanta 9-4 Fed Com 518H
Wellbore: OH
Design: Plan #1



Azimuths to Grid North
True North: -0.30°
Magnetic North: 6.67°
Magnetic Field
Strength: 48102.7nT
Dip Angle: 60.08°
Date: 3/26/2018
Model: HDGM

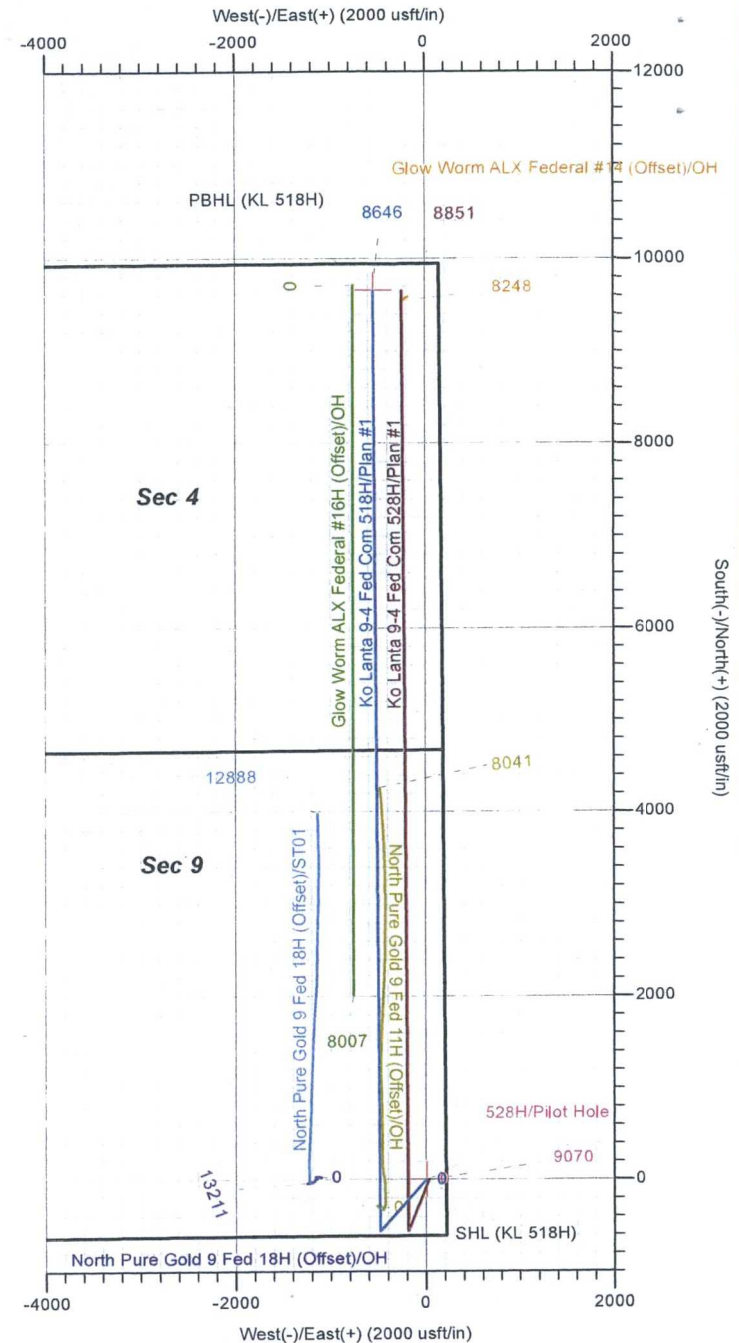
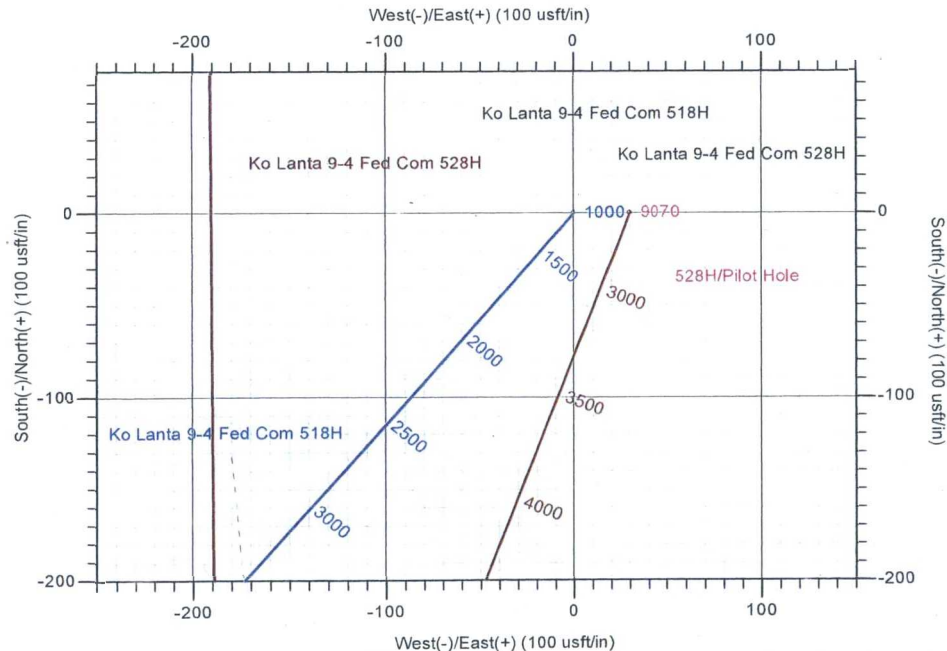


PROJECT DETAILS: Eddy County, NM (NAD-83)
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone

SECTION DETAILS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1065.00	0.00	0.00	1065.00	0.00	0.00	0.00	0.00	0.00	
1531.51	7.00	220.95	1530.35	-21.49	-18.65	1.50	220.95	-20.39	
7150.71	7.00	220.95	7107.69	-538.51	-467.35	0.00	0.00	-511.11	
7617.21	0.00	0.00	7573.04	-560.00	-486.00	1.50	180.00	-531.50	
8117.21	0.00	0.00	8073.04	-560.00	-486.00	0.00	0.00	-531.50	
9017.21	90.00	359.65	8646.00	12.95	-489.52	10.00	359.65	40.72	
18654.73	90.00	359.65	8646.00	9650.28	-548.80	0.00	0.00	9665.87	PBHL (KL 518H)

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL (KL 518H)	8646.00	9650.28	-548.80	487852.02	713302.59	32° 20' 23.8122 N	103° 46' 35.4916 W
SHL (KL 518H)	0.00	0.00	0.00	478201.74	713851.39	32° 18' 48.2902 N	103° 46' 29.6811 W



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

Plan: Plan #1 (Ko Lanta 9-4 Fed Com 518H/OH)
Created By: Dustin Ault
Date: 13:22, March 26 2018
Approved: _____ Date: _____

Devon Energy

Eddy County, NM (NAD-83)

Ko Lanta 9-4 Fed Com

Ko Lanta 9-4 Fed Com 518H

OH

Plan: Plan #1

Standard Planning Report

26 March, 2018

LEAM Drilling Services

Planning Report

Database:	EDM 5000.1 Multi User Db	Local Co-ordinate Reference:	Well Ko Lanta 9-4 Fed Com 518H
Company:	Devon Energy	TVD Reference:	3371.8' GE + 23.2' KB @ 3395.00usft
Project:	Eddy County, NM (NAD-83)	MD Reference:	3371.8' GE + 23.2' KB @ 3395.00usft
Site:	Ko Lanta 9-4 Fed Com	North Reference:	Grid
Well:	Ko Lanta 9-4 Fed Com 518H	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		

Site	Ko Lanta 9-4 Fed Com		
Site Position:		Northing:	478,201.74 usft
From:	Map	Easting:	713,851.39 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 18' 48.2902 N
		Longitude:	103° 46' 29.6811 W
		Grid Convergence:	0.30 °

Well	Ko Lanta 9-4 Fed Com 518H		
Well Position	+N/-S	0.00 usft	Northing: 478,201.74 usft
	+E/-W	0.00 usft	Easting: 713,851.39 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	32° 18' 48.2902 N
		Longitude:	103° 46' 29.6811 W
		Ground Level:	3,371.80 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination (°)
	HDGM	3/26/2018	6.97
			Dip Angle (°)
			60.08
			Field Strength (nT)
			48,103

Design	Plan #1		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.00	0.00	0.00
			Direction (°)
			356.75

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	
1,065.00	0.00	0.00	1,065.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,531.51	7.00	220.95	1,530.35	-21.49	-18.65	1.50	1.50	0.00	220.95	
7,150.71	7.00	220.95	7,107.69	-538.51	-467.35	0.00	0.00	0.00	0.00	
7,617.21	0.00	0.00	7,573.04	-560.00	-486.00	1.50	-1.50	0.00	180.00	
8,117.21	0.00	0.00	8,073.04	-560.00	-486.00	0.00	0.00	0.00	0.00	
9,017.21	90.00	359.65	8,646.00	12.95	-489.52	10.00	10.00	-0.04	359.65	
18,654.73	90.00	359.65	8,646.00	9,650.28	-548.80	0.00	0.00	0.00	0.00	PBHL (KL 518H)

LEAM Drilling Services

Planning Report

Database: EDM 5000.1 Multi User Db
 Company: Devon Energy
 Project: Eddy County, NM (NAD-83)
 Site: Ko Lanta 9-4 Fed Com
 Well: Ko Lanta 9-4 Fed Com 518H
 Wellbore: OH
 Design: Plan #1

Local Co-ordinate Reference: Well Ko Lanta 9-4 Fed Com 518H
 TVD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
 MD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
 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 (KL 518H)									
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
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
1,065.00	0.00	0.00	1,065.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.53	220.95	1,100.00	-0.12	-0.11	-0.11	1.50	1.50	0.00
1,200.00	2.03	220.95	1,199.97	-1.80	-1.56	-1.71	1.50	1.50	0.00
1,300.00	3.53	220.95	1,299.85	-5.46	-4.74	-5.18	1.50	1.50	0.00
1,400.00	5.03	220.95	1,399.57	-11.09	-9.62	-10.52	1.50	1.50	0.00
1,500.00	6.53	220.95	1,499.06	-18.69	-16.22	-17.74	1.50	1.50	0.00
1,531.51	7.00	220.95	1,530.35	-21.49	-18.65	-20.39	1.50	1.50	0.00
1,600.00	7.00	220.95	1,598.33	-27.79	-24.12	-26.38	0.00	0.00	0.00
1,700.00	7.00	220.95	1,697.59	-36.99	-32.10	-35.11	0.00	0.00	0.00
1,800.00	7.00	220.95	1,796.84	-46.19	-40.09	-43.84	0.00	0.00	0.00
1,900.00	7.00	220.95	1,896.10	-55.39	-48.07	-52.57	0.00	0.00	0.00
2,000.00	7.00	220.95	1,995.35	-64.59	-56.06	-61.31	0.00	0.00	0.00
2,100.00	7.00	220.95	2,094.61	-73.80	-64.04	-70.04	0.00	0.00	0.00
2,200.00	7.00	220.95	2,193.86	-83.00	-72.03	-78.77	0.00	0.00	0.00
2,300.00	7.00	220.95	2,293.12	-92.20	-80.01	-87.51	0.00	0.00	0.00
2,400.00	7.00	220.95	2,392.37	-101.40	-88.00	-96.24	0.00	0.00	0.00
2,500.00	7.00	220.95	2,491.63	-110.60	-95.98	-104.97	0.00	0.00	0.00
2,600.00	7.00	220.95	2,590.88	-119.80	-103.97	-113.70	0.00	0.00	0.00
2,700.00	7.00	220.95	2,690.14	-129.00	-111.95	-122.44	0.00	0.00	0.00
2,800.00	7.00	220.95	2,789.39	-138.20	-119.94	-131.17	0.00	0.00	0.00
2,900.00	7.00	220.95	2,888.65	-147.40	-127.93	-139.90	0.00	0.00	0.00
3,000.00	7.00	220.95	2,987.90	-156.60	-135.91	-148.64	0.00	0.00	0.00
3,100.00	7.00	220.95	3,087.16	-165.81	-143.90	-157.37	0.00	0.00	0.00
3,200.00	7.00	220.95	3,186.41	-175.01	-151.88	-166.10	0.00	0.00	0.00
3,300.00	7.00	220.95	3,285.67	-184.21	-159.87	-174.83	0.00	0.00	0.00
3,400.00	7.00	220.95	3,384.92	-193.41	-167.85	-183.57	0.00	0.00	0.00
3,500.00	7.00	220.95	3,484.18	-202.61	-175.84	-192.30	0.00	0.00	0.00
3,600.00	7.00	220.95	3,583.43	-211.81	-183.82	-201.03	0.00	0.00	0.00
3,700.00	7.00	220.95	3,682.69	-221.01	-191.81	-209.76	0.00	0.00	0.00
3,800.00	7.00	220.95	3,781.94	-230.21	-199.79	-218.50	0.00	0.00	0.00
3,900.00	7.00	220.95	3,881.20	-239.41	-207.78	-227.23	0.00	0.00	0.00
4,000.00	7.00	220.95	3,980.45	-248.61	-215.76	-235.96	0.00	0.00	0.00
4,100.00	7.00	220.95	4,079.71	-257.82	-223.75	-244.70	0.00	0.00	0.00
4,200.00	7.00	220.95	4,178.96	-267.02	-231.73	-253.43	0.00	0.00	0.00
4,300.00	7.00	220.95	4,278.22	-276.22	-239.72	-262.16	0.00	0.00	0.00
4,400.00	7.00	220.95	4,377.47	-285.42	-247.70	-270.89	0.00	0.00	0.00
4,500.00	7.00	220.95	4,476.73	-294.62	-255.69	-279.63	0.00	0.00	0.00
4,600.00	7.00	220.95	4,575.98	-303.82	-263.67	-288.36	0.00	0.00	0.00
4,700.00	7.00	220.95	4,675.24	-313.02	-271.66	-297.09	0.00	0.00	0.00
4,800.00	7.00	220.95	4,774.49	-322.22	-279.64	-305.83	0.00	0.00	0.00
4,900.00	7.00	220.95	4,873.75	-331.42	-287.63	-314.56	0.00	0.00	0.00
5,000.00	7.00	220.95	4,973.01	-340.62	-295.61	-323.29	0.00	0.00	0.00

LEAM Drilling Services

Planning Report

Database: EDM 5000.1 Multi User Db
Company: Devon Energy
Project: Eddy County, NM (NAD-83)
Site: Ko Lanta 9-4 Fed Com
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Wellbore: OH
Design: Plan #1

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TVD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
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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)
5,100.00	7.00	220.95	5,072.26	-349.83	-303.60	-332.02	0.00	0.00	0.00
5,200.00	7.00	220.95	5,171.52	-359.03	-311.58	-340.76	0.00	0.00	0.00
5,300.00	7.00	220.95	5,270.77	-368.23	-319.57	-349.49	0.00	0.00	0.00
5,400.00	7.00	220.95	5,370.03	-377.43	-327.55	-358.22	0.00	0.00	0.00
5,500.00	7.00	220.95	5,469.28	-386.63	-335.54	-366.96	0.00	0.00	0.00
5,600.00	7.00	220.95	5,568.54	-395.83	-343.52	-375.69	0.00	0.00	0.00
5,700.00	7.00	220.95	5,667.79	-405.03	-351.51	-384.42	0.00	0.00	0.00
5,800.00	7.00	220.95	5,767.05	-414.23	-359.50	-393.15	0.00	0.00	0.00
5,900.00	7.00	220.95	5,866.30	-423.43	-367.48	-401.89	0.00	0.00	0.00
6,000.00	7.00	220.95	5,965.56	-432.63	-375.47	-410.62	0.00	0.00	0.00
6,100.00	7.00	220.95	6,064.81	-441.84	-383.45	-419.35	0.00	0.00	0.00
6,200.00	7.00	220.95	6,164.07	-451.04	-391.44	-428.08	0.00	0.00	0.00
6,300.00	7.00	220.95	6,263.32	-460.24	-399.42	-436.82	0.00	0.00	0.00
6,400.00	7.00	220.95	6,362.58	-469.44	-407.41	-445.55	0.00	0.00	0.00
6,500.00	7.00	220.95	6,461.83	-478.64	-415.39	-454.28	0.00	0.00	0.00
6,600.00	7.00	220.95	6,561.09	-487.84	-423.38	-463.02	0.00	0.00	0.00
6,700.00	7.00	220.95	6,660.34	-497.04	-431.36	-471.75	0.00	0.00	0.00
6,800.00	7.00	220.95	6,759.60	-506.24	-439.35	-480.48	0.00	0.00	0.00
6,900.00	7.00	220.95	6,858.85	-515.44	-447.33	-489.21	0.00	0.00	0.00
7,000.00	7.00	220.95	6,958.11	-524.65	-455.32	-497.95	0.00	0.00	0.00
7,100.00	7.00	220.95	7,057.36	-533.85	-463.30	-506.68	0.00	0.00	0.00
7,150.71	7.00	220.95	7,107.69	-538.51	-467.35	-511.11	0.00	0.00	0.00
7,200.00	6.26	220.95	7,156.66	-542.81	-471.08	-515.19	1.50	-1.50	0.00
7,300.00	4.76	220.95	7,256.19	-550.06	-477.37	-522.07	1.50	-1.50	0.00
7,400.00	3.26	220.95	7,355.94	-555.34	-481.95	-527.08	1.50	-1.50	0.00
7,500.00	1.76	220.95	7,455.84	-558.64	-484.82	-530.21	1.50	-1.50	0.00
7,600.00	0.26	220.95	7,555.83	-559.97	-485.97	-531.48	1.50	-1.50	0.00
7,617.21	0.00	0.00	7,573.04	-560.00	-486.00	-531.50	1.50	-1.50	0.00
7,700.00	0.00	0.00	7,655.83	-560.00	-486.00	-531.50	0.00	0.00	0.00
7,800.00	0.00	0.00	7,755.83	-560.00	-486.00	-531.50	0.00	0.00	0.00
7,900.00	0.00	0.00	7,855.83	-560.00	-486.00	-531.50	0.00	0.00	0.00
8,000.00	0.00	0.00	7,955.83	-560.00	-486.00	-531.50	0.00	0.00	0.00
8,100.00	0.00	0.00	8,055.83	-560.00	-486.00	-531.50	0.00	0.00	0.00
8,117.21	0.00	0.00	8,073.04	-560.00	-486.00	-531.50	0.00	0.00	0.00
8,150.00	3.28	359.65	8,105.81	-559.06	-486.01	-530.57	10.00	10.00	0.00
8,200.00	8.28	359.65	8,155.54	-554.03	-486.04	-525.54	10.00	10.00	0.00
8,250.00	13.28	359.65	8,204.64	-544.68	-486.09	-516.20	10.00	10.00	0.00
8,300.00	18.28	359.65	8,252.74	-531.09	-486.18	-502.63	10.00	10.00	0.00
8,350.00	23.28	359.65	8,299.47	-513.36	-486.29	-484.92	10.00	10.00	0.00
8,400.00	28.28	359.65	8,344.48	-491.62	-486.42	-463.21	10.00	10.00	0.00
8,450.00	33.28	359.65	8,387.43	-466.04	-486.58	-437.67	10.00	10.00	0.00
8,500.00	38.28	359.65	8,427.98	-436.82	-486.76	-408.48	10.00	10.00	0.00
8,550.00	43.28	359.65	8,465.83	-404.18	-486.96	-375.88	10.00	10.00	0.00
8,600.00	48.28	359.65	8,500.69	-368.35	-487.18	-340.10	10.00	10.00	0.00
8,650.00	53.28	359.65	8,532.30	-329.63	-487.42	-301.43	10.00	10.00	0.00
8,700.00	58.28	359.65	8,560.41	-288.30	-487.67	-260.15	10.00	10.00	0.00
8,750.00	63.28	359.65	8,584.81	-244.68	-487.94	-216.58	10.00	10.00	0.00
8,800.00	68.28	359.65	8,605.31	-199.10	-488.22	-171.06	10.00	10.00	0.00
8,850.00	73.28	359.65	8,621.77	-151.90	-488.51	-123.92	10.00	10.00	0.00
8,900.00	78.28	359.65	8,634.05	-103.45	-488.81	-75.53	10.00	10.00	0.00
8,950.00	83.28	359.65	8,642.06	-54.11	-489.11	-26.25	10.00	10.00	0.00
9,000.00	88.28	359.65	8,645.74	-4.26	-489.42	23.53	10.00	10.00	0.00
9,017.21	90.00	359.65	8,646.00	12.95	-489.52	40.72	10.00	10.00	0.00
9,100.00	90.00	359.65	8,646.00	95.73	-490.03	123.40	0.00	0.00	0.00

LEAM Drilling Services

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Local Co-ordinate Reference:
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MD Reference:
North Reference:
Survey Calculation Method:

Well Ko Lanta 9-4 Fed Com 518H
3371.8' GE + 23.2' KB @ 3395.00usft
3371.8' GE + 23.2' KB @ 3395.00usft
Grid
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)
9,200.00	90.00	359.65	8,646.00	195.73	-490.65	223.27	0.00	0.00	0.00
9,300.00	90.00	359.65	8,646.00	295.73	-491.26	323.14	0.00	0.00	0.00
9,400.00	90.00	359.65	8,646.00	395.73	-491.88	423.01	0.00	0.00	0.00
9,500.00	90.00	359.65	8,646.00	495.72	-492.49	522.89	0.00	0.00	0.00
9,600.00	90.00	359.65	8,646.00	595.72	-493.11	622.76	0.00	0.00	0.00
9,700.00	90.00	359.65	8,646.00	695.72	-493.72	722.63	0.00	0.00	0.00
9,800.00	90.00	359.65	8,646.00	795.72	-494.34	822.50	0.00	0.00	0.00
9,900.00	90.00	359.65	8,646.00	895.72	-494.95	922.37	0.00	0.00	0.00
10,000.00	90.00	359.65	8,646.00	995.71	-495.57	1,022.24	0.00	0.00	0.00
10,100.00	90.00	359.65	8,646.00	1,095.71	-496.18	1,122.12	0.00	0.00	0.00
10,200.00	90.00	359.65	8,646.00	1,195.71	-496.80	1,221.99	0.00	0.00	0.00
10,300.00	90.00	359.65	8,646.00	1,295.71	-497.41	1,321.86	0.00	0.00	0.00
10,400.00	90.00	359.65	8,646.00	1,395.71	-498.03	1,421.73	0.00	0.00	0.00
10,500.00	90.00	359.65	8,646.00	1,495.70	-498.64	1,521.60	0.00	0.00	0.00
10,600.00	90.00	359.65	8,646.00	1,595.70	-499.26	1,621.48	0.00	0.00	0.00
10,700.00	90.00	359.65	8,646.00	1,695.70	-499.87	1,721.35	0.00	0.00	0.00
10,800.00	90.00	359.65	8,646.00	1,795.70	-500.49	1,821.22	0.00	0.00	0.00
10,900.00	90.00	359.65	8,646.00	1,895.70	-501.10	1,921.09	0.00	0.00	0.00
11,000.00	90.00	359.65	8,646.00	1,995.70	-501.72	2,020.96	0.00	0.00	0.00
11,100.00	90.00	359.65	8,646.00	2,095.69	-502.33	2,120.83	0.00	0.00	0.00
11,200.00	90.00	359.65	8,646.00	2,195.69	-502.95	2,220.71	0.00	0.00	0.00
11,300.00	90.00	359.65	8,646.00	2,295.69	-503.56	2,320.58	0.00	0.00	0.00
11,400.00	90.00	359.65	8,646.00	2,395.69	-504.18	2,420.45	0.00	0.00	0.00
11,500.00	90.00	359.65	8,646.00	2,495.69	-504.79	2,520.32	0.00	0.00	0.00
11,600.00	90.00	359.65	8,646.00	2,595.68	-505.41	2,620.19	0.00	0.00	0.00
11,700.00	90.00	359.65	8,646.00	2,695.68	-506.02	2,720.06	0.00	0.00	0.00
11,800.00	90.00	359.65	8,646.00	2,795.68	-506.64	2,819.94	0.00	0.00	0.00
11,900.00	90.00	359.65	8,646.00	2,895.68	-507.25	2,919.81	0.00	0.00	0.00
12,000.00	90.00	359.65	8,646.00	2,995.68	-507.87	3,019.68	0.00	0.00	0.00
12,100.00	90.00	359.65	8,646.00	3,095.67	-508.48	3,119.55	0.00	0.00	0.00
12,200.00	90.00	359.65	8,646.00	3,195.67	-509.10	3,219.42	0.00	0.00	0.00
12,300.00	90.00	359.65	8,646.00	3,295.67	-509.71	3,319.29	0.00	0.00	0.00
12,400.00	90.00	359.65	8,646.00	3,395.67	-510.33	3,419.17	0.00	0.00	0.00
12,500.00	90.00	359.65	8,646.00	3,495.67	-510.95	3,519.04	0.00	0.00	0.00
12,600.00	90.00	359.65	8,646.00	3,595.67	-511.56	3,618.91	0.00	0.00	0.00
12,700.00	90.00	359.65	8,646.00	3,695.66	-512.18	3,718.78	0.00	0.00	0.00
12,800.00	90.00	359.65	8,646.00	3,795.66	-512.79	3,818.65	0.00	0.00	0.00
12,900.00	90.00	359.65	8,646.00	3,895.66	-513.41	3,918.52	0.00	0.00	0.00
13,000.00	90.00	359.65	8,646.00	3,995.66	-514.02	4,018.40	0.00	0.00	0.00
13,100.00	90.00	359.65	8,646.00	4,095.66	-514.64	4,118.27	0.00	0.00	0.00
13,200.00	90.00	359.65	8,646.00	4,195.65	-515.25	4,218.14	0.00	0.00	0.00
13,300.00	90.00	359.65	8,646.00	4,295.65	-515.87	4,318.01	0.00	0.00	0.00
13,400.00	90.00	359.65	8,646.00	4,395.65	-516.48	4,417.88	0.00	0.00	0.00
13,500.00	90.00	359.65	8,646.00	4,495.65	-517.10	4,517.76	0.00	0.00	0.00
13,600.00	90.00	359.65	8,646.00	4,595.65	-517.71	4,617.63	0.00	0.00	0.00
13,700.00	90.00	359.65	8,646.00	4,695.64	-518.33	4,717.50	0.00	0.00	0.00
13,800.00	90.00	359.65	8,646.00	4,795.64	-518.94	4,817.37	0.00	0.00	0.00
13,900.00	90.00	359.65	8,646.00	4,895.64	-519.56	4,917.24	0.00	0.00	0.00
14,000.00	90.00	359.65	8,646.00	4,995.64	-520.17	5,017.11	0.00	0.00	0.00
14,100.00	90.00	359.65	8,646.00	5,095.64	-520.79	5,116.99	0.00	0.00	0.00
14,200.00	90.00	359.65	8,646.00	5,195.63	-521.40	5,216.86	0.00	0.00	0.00
14,300.00	90.00	359.65	8,646.00	5,295.63	-522.02	5,316.73	0.00	0.00	0.00
14,400.00	90.00	359.65	8,646.00	5,395.63	-522.63	5,416.60	0.00	0.00	0.00
14,500.00	90.00	359.65	8,646.00	5,495.63	-523.25	5,516.47	0.00	0.00	0.00

LEAM Drilling Services

Planning Report

Database: EDM 5000.1 Multi User Db
 Company: Devon Energy
 Project: Eddy County, NM (NAD-83)
 Site: Ko Lanta 9-4 Fed Com
 Well: Ko Lanta 9-4 Fed Com 518H
 Wellbore: OH
 Design: Plan #1

Local Co-ordinate Reference: Well Ko Lanta 9-4 Fed Com 518H
 TVD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
 MD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
 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)
14,600.00	90.00	359.65	8,646.00	5,595.63	-523.86	5,616.34	0.00	0.00	0.00
14,700.00	90.00	359.65	8,646.00	5,695.63	-524.48	5,716.22	0.00	0.00	0.00
14,800.00	90.00	359.65	8,646.00	5,795.62	-525.09	5,816.09	0.00	0.00	0.00
14,900.00	90.00	359.65	8,646.00	5,895.62	-525.71	5,915.96	0.00	0.00	0.00
15,000.00	90.00	359.65	8,646.00	5,995.62	-526.32	6,015.83	0.00	0.00	0.00
15,100.00	90.00	359.65	8,646.00	6,095.62	-526.94	6,115.70	0.00	0.00	0.00
15,200.00	90.00	359.65	8,646.00	6,195.62	-527.55	6,215.57	0.00	0.00	0.00
15,300.00	90.00	359.65	8,646.00	6,295.61	-528.17	6,315.45	0.00	0.00	0.00
15,400.00	90.00	359.65	8,646.00	6,395.61	-528.78	6,415.32	0.00	0.00	0.00
15,500.00	90.00	359.65	8,646.00	6,495.61	-529.40	6,515.19	0.00	0.00	0.00
15,600.00	90.00	359.65	8,646.00	6,595.61	-530.01	6,615.06	0.00	0.00	0.00
15,700.00	90.00	359.65	8,646.00	6,695.61	-530.63	6,714.93	0.00	0.00	0.00
15,800.00	90.00	359.65	8,646.00	6,795.60	-531.24	6,814.80	0.00	0.00	0.00
15,900.00	90.00	359.65	8,646.00	6,895.60	-531.86	6,914.68	0.00	0.00	0.00
16,000.00	90.00	359.65	8,646.00	6,995.60	-532.47	7,014.55	0.00	0.00	0.00
16,100.00	90.00	359.65	8,646.00	7,095.60	-533.09	7,114.42	0.00	0.00	0.00
16,200.00	90.00	359.65	8,646.00	7,195.60	-533.70	7,214.29	0.00	0.00	0.00
16,300.00	90.00	359.65	8,646.00	7,295.60	-534.32	7,314.16	0.00	0.00	0.00
16,400.00	90.00	359.65	8,646.00	7,395.59	-534.93	7,414.04	0.00	0.00	0.00
16,500.00	90.00	359.65	8,646.00	7,495.59	-535.55	7,513.91	0.00	0.00	0.00
16,600.00	90.00	359.65	8,646.00	7,595.59	-536.16	7,613.78	0.00	0.00	0.00
16,700.00	90.00	359.65	8,646.00	7,695.59	-536.78	7,713.65	0.00	0.00	0.00
16,800.00	90.00	359.65	8,646.00	7,795.59	-537.39	7,813.52	0.00	0.00	0.00
16,900.00	90.00	359.65	8,646.00	7,895.58	-538.01	7,913.39	0.00	0.00	0.00
17,000.00	90.00	359.65	8,646.00	7,995.58	-538.62	8,013.27	0.00	0.00	0.00
17,100.00	90.00	359.65	8,646.00	8,095.58	-539.24	8,113.14	0.00	0.00	0.00
17,200.00	90.00	359.65	8,646.00	8,195.58	-539.85	8,213.01	0.00	0.00	0.00
17,300.00	90.00	359.65	8,646.00	8,295.58	-540.47	8,312.88	0.00	0.00	0.00
17,400.00	90.00	359.65	8,646.00	8,395.57	-541.08	8,412.75	0.00	0.00	0.00
17,500.00	90.00	359.65	8,646.00	8,495.57	-541.70	8,512.62	0.00	0.00	0.00
17,600.00	90.00	359.65	8,646.00	8,595.57	-542.31	8,612.50	0.00	0.00	0.00
17,700.00	90.00	359.65	8,646.00	8,695.57	-542.93	8,712.37	0.00	0.00	0.00
17,800.00	90.00	359.65	8,646.00	8,795.57	-543.54	8,812.24	0.00	0.00	0.00
17,900.00	90.00	359.65	8,646.00	8,895.56	-544.16	8,912.11	0.00	0.00	0.00
18,000.00	90.00	359.65	8,646.00	8,995.56	-544.77	9,011.98	0.00	0.00	0.00
18,100.00	90.00	359.65	8,646.00	9,095.56	-545.39	9,111.85	0.00	0.00	0.00
18,200.00	90.00	359.65	8,646.00	9,195.56	-546.00	9,211.73	0.00	0.00	0.00
18,300.00	90.00	359.65	8,646.00	9,295.56	-546.62	9,311.60	0.00	0.00	0.00
18,400.00	90.00	359.65	8,646.00	9,395.56	-547.23	9,411.47	0.00	0.00	0.00
18,500.00	90.00	359.65	8,646.00	9,495.55	-547.85	9,511.34	0.00	0.00	0.00
18,600.00	90.00	359.65	8,646.00	9,595.55	-548.46	9,611.21	0.00	0.00	0.00
18,654.73	90.00	359.65	8,646.00	9,650.28	-548.80	9,665.87	0.00	0.00	0.00
PBHL (KL 518H)									

LEAM Drilling Services

Planning Report

Database: EDM 5000.1 Multi User Db
Company: Devon Energy
Project: Eddy County, NM (NAD-83)
Site: Ko Lanta 9-4 Fed Com
Well: Ko Lanta 9-4 Fed Com 518H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference: Well Ko Lanta 9-4 Fed Com 518H
TVD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
MD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SHL (KL 518H) - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	478,201.74	713,851.39	32° 18' 48.2902 N	103° 46' 29.6811 W
PBHL (KL 518H) - plan hits target center - Point	0.00	0.00	8,646.00	9,650.28	-548.80	487,852.02	713,302.59	32° 20' 23.8122 N	103° 46' 35.4916 W

Devon Energy

Eddy County, NM (NAD-83)

Ko Lanta 9-4 Fed Com

Ko Lanta 9-4 Fed Com 518H

OH

Plan #1

Anticollision Report

27 March, 2018

LEAM Drilling Services

Anticollision Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well Ko Lanta 9-4 Fed Com 518H
Project:	Eddy County, NM (NAD-83)	TVD Reference:	3371.8' GE + 23.2' KB @ 3395.00usft
Reference Site:	Ko Lanta 9-4 Fed Com	MD Reference:	3371.8' GE + 23.2' KB @ 3395.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Ko Lanta 9-4 Fed Com 518H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.1 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference	Plan #1
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method:	MD Interval 100.00usft
Depth Range:	Unlimited
Results Limited by:	Maximum center-center distance of 2,000.00 usft
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	ISCWSA
Scan Method:	Closest Approach 3D
Error Surface:	Elliptical Conic
Casing Method:	Not applied

Survey Tool Program		Date	3/27/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	8,117.21	Plan #1 (OH)	LEAM MWD+HDGM	MWD+HDGM	
8,117.21	18,654.73	Plan #1 (OH)	MWD+IFR1	OWSG MWD + IFR1	

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Ko Lanta 9-4 Fed Com						
Glow Worm ALX Federal #14 (Offset) - OH - OH	18,544.09	8,250.00	510.04	359.41	3.386	CC, ES, SF
Glow Worm ALX Federal #16H (Offset) - OH - OH	11,015.62	12,525.00	689.68	665.51	28.534	CC, ES
Glow Worm ALX Federal #16H (Offset) - OH - OH	14,044.17	9,813.78	1,142.69	1,098.35	25.768	SF
Ko Lanta 9-4 Fed Com 528H - OH - Plan #1	1,000.00	1,000.50	30.08	25.86	7.129	CC
Ko Lanta 9-4 Fed Com 528H - OH - Plan #1	1,100.00	1,100.50	30.19	25.53	6.478	ES
Ko Lanta 9-4 Fed Com 528H - OH - Plan #1	1,200.00	1,200.47	31.70	26.64	6.262	SF
Ko Lanta 9-4 Fed Com 528H - ST01 - Plan #1	1,000.00	1,000.50	30.08	25.86	7.129	CC
Ko Lanta 9-4 Fed Com 528H - ST01 - Plan #1	1,100.00	1,100.50	30.19	25.53	6.478	ES
Ko Lanta 9-4 Fed Com 528H - ST01 - Plan #1	18,654.73	18,852.34	363.02	174.17	1.922	SF
North Pure Gold 9 Fed 11H (Offset) - OH - OH	5,947.10	5,916.46	149.81	133.92	9.431	CC, ES
North Pure Gold 9 Fed 11H (Offset) - OH - OH	13,300.00	12,400.00	607.18	530.56	7.925	SF
North Pure Gold 9 Fed 18H (Offset) - OH - OH	9,000.00	8,634.97	662.86	642.13	31.972	SF
North Pure Gold 9 Fed 18H (Offset) - OH - OH	9,018.12	8,635.32	662.62	641.92	32.011	CC, ES
North Pure Gold 9 Fed 18H (Offset) - ST01 - ST01	9,000.00	8,634.97	662.86	642.13	31.972	SF
North Pure Gold 9 Fed 18H (Offset) - ST01 - ST01	9,018.12	8,635.32	662.62	641.92	32.011	CC, ES

Offset Design												Offset Site Error:	0.00 usft
Ko Lanta 9-4 Fed Com - Glow Worm ALX Federal #14 (Offset) - OH - OH												Offset Well Error:	0.00 usft
Survey Program: 511-MWD-ISCWSA, 4241-INC-ONLY													
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		Warning					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
16,700.00	8,646.00	8,250.00	8,247.84	82.32	100.35	38.68	9,541.61	-229.36	1,913.33	1,785.17	128.16	14.930	
16,800.00	8,646.00	8,250.00	8,247.84	83.26	100.35	38.68	9,541.61	-229.36	1,817.14	1,688.43	128.71	14.118	
16,900.00	8,646.00	8,250.00	8,247.84	84.20	100.35	38.68	9,541.61	-229.36	1,721.39	1,592.05	129.34	13.309	
17,000.00	8,646.00	8,250.00	8,247.84	85.14	100.35	38.68	9,541.61	-229.36	1,626.15	1,496.11	130.04	12.505	
17,100.00	8,646.00	8,250.00	8,247.84	86.08	100.35	38.68	9,541.61	-229.36	1,531.52	1,400.68	130.84	11.706	
17,200.00	8,646.00	8,250.00	8,247.84	87.03	100.35	38.68	9,541.61	-229.36	1,437.61	1,305.87	131.74	10.913	
17,300.00	8,646.00	8,250.00	8,247.84	87.97	100.35	38.68	9,541.61	-229.36	1,344.58	1,211.83	132.76	10.128	
17,400.00	8,646.00	8,250.00	8,247.84	88.92	100.35	38.68	9,541.61	-229.36	1,252.63	1,118.72	133.92	9.354	
17,500.00	8,646.00	8,250.00	8,247.84	89.86	100.35	38.68	9,541.61	-229.36	1,162.01	1,026.78	135.24	8.592	
17,600.00	8,646.00	8,250.00	8,247.84	90.81	100.35	38.68	9,541.61	-229.36	1,073.06	936.33	136.73	7.848	
17,700.00	8,646.00	8,250.00	8,247.84	91.75	100.35	38.68	9,541.61	-229.36	986.22	847.81	138.41	7.125	

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

LEAM Drilling Services

Anticollision Report

Company: Devon Energy
Project: Eddy County, NM (NAD-83)
Reference Site: Ko Lanta 9-4 Fed Com
Site Error: 0.00 usft
Reference Well: Ko Lanta 9-4 Fed Com 518H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well Ko Lanta 9-4 Fed Com 518H
TVD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
MD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Multi User Db
Offset TVD Reference: Offset Datum

Offset Design												Ko Lanta 9-4 Fed Com - Glow Worm ALX Federal #14 (Offset) - OH - OH		Offset Site Error:		0.00 usft
Survey Program:												511-MWD-ISCWSA, 4241-INC-ONLY		Offset Well Error:		0.00 usft
Reference		Offset		Semi Major Axis		Distance								Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor				
17,800.00	8,646.00	8,250.00	8,247.84	92.70	100.35	38.68	9,541.61	-229.36	902.12	761.84	140.27	6.431				
17,900.00	8,646.00	8,250.00	8,247.84	93.65	100.35	38.68	9,541.61	-229.36	821.58	679.29	142.29	5.774				
18,000.00	8,646.00	8,250.00	8,247.84	94.60	100.35	38.68	9,541.61	-229.36	745.77	601.40	144.38	5.166				
18,100.00	8,646.00	8,250.00	8,247.84	95.54	100.35	38.68	9,541.61	-229.36	676.28	529.90	146.38	4.620				
18,200.00	8,646.00	8,250.00	8,247.84	96.49	100.35	38.68	9,541.61	-229.36	615.26	467.18	148.08	4.155				
18,300.00	8,646.00	8,250.00	8,247.84	97.44	100.35	38.68	9,541.61	-229.36	565.44	416.22	149.22	3.789				
18,400.00	8,646.00	8,250.00	8,247.84	98.39	100.35	38.68	9,541.61	-229.36	530.00	380.21	149.79	3.538				
18,500.00	8,646.00	8,250.00	8,247.84	99.34	100.35	38.68	9,541.61	-229.36	511.94	361.67	150.27	3.407				
18,544.09	8,646.00	8,250.00	8,247.84	99.76	100.35	38.68	9,541.61	-229.36	510.04	359.41	150.63	3.386	CC, ES, SF			
18,600.00	8,646.00	8,250.00	8,247.84	100.29	100.35	38.68	9,541.61	-229.36	513.10	361.84	151.25	3.392				
18,654.73	8,646.00	8,250.00	8,247.84	100.81	100.35	38.68	9,541.61	-229.36	521.90	369.92	151.98	3.434				

LEAM Drilling Services

Anticollision Report

Company: Devon Energy
Project: Eddy County, NM (NAD-83)
Reference Site: Ko Lanta 9-4 Fed Com
Site Error: 0.00 usft
Reference Well: Ko Lanta 9-4 Fed Com 518H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well Ko Lanta 9-4 Fed Com 518H
TVD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
MD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Multi User Db
Offset TVD Reference: Offset Datum

Offset Design Ko Lanta 9-4 Fed Com - Glow Worm ALX Federal #16H (Offset) - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 551-NS-GYRO-MS 12525-Project												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,200.00	8,646.00	12,525.00	8,032.13	22.10	1.01	-22.13	2,009.72	-761.63	1,942.20	1,922.30	19.90	97.577	
9,300.00	8,646.00	12,525.00	8,032.13	22.35	1.01	-22.13	2,009.72	-761.63	1,849.06	1,829.19	19.87	93.069	
9,400.00	8,646.00	12,525.00	8,032.13	22.64	1.01	-22.13	2,009.72	-761.63	1,756.67	1,736.84	19.83	88.577	
9,500.00	8,646.00	12,525.00	8,032.13	22.97	1.01	-22.13	2,009.72	-761.63	1,665.16	1,645.37	19.80	84.105	
9,600.00	8,646.00	12,525.00	8,032.13	23.34	1.01	-22.13	2,009.72	-761.63	1,574.69	1,554.92	19.77	79.656	
9,700.00	8,646.00	12,525.00	8,032.13	23.76	1.01	-22.13	2,009.72	-761.63	1,485.44	1,465.69	19.74	75.234	
9,800.00	8,646.00	12,525.00	8,032.13	24.21	1.01	-22.13	2,009.72	-761.63	1,397.64	1,377.91	19.73	70.844	
9,900.00	8,646.00	12,525.00	8,032.13	24.70	1.01	-22.13	2,009.72	-761.63	1,311.59	1,291.87	19.73	66.490	
10,000.00	8,646.00	12,525.00	8,032.13	25.22	1.01	-22.13	2,009.72	-761.63	1,227.66	1,207.92	19.74	62.182	
10,100.00	8,646.00	12,525.00	8,032.13	25.77	1.01	-22.13	2,009.72	-761.63	1,146.31	1,126.52	19.79	57.927	
10,200.00	8,646.00	12,525.00	8,032.13	26.35	1.01	-22.13	2,009.72	-761.63	1,068.13	1,048.25	19.88	53.740	
10,300.00	8,646.00	12,525.00	8,032.13	26.96	1.01	-22.13	2,009.72	-761.63	993.87	973.85	20.02	49.640	
10,400.00	8,646.00	12,525.00	8,032.13	27.59	1.01	-22.13	2,009.72	-761.63	924.47	904.22	20.25	45.658	
10,500.00	8,646.00	12,525.00	8,032.13	28.24	1.01	-22.13	2,009.72	-761.63	861.12	840.54	20.58	41.841	
10,600.00	8,646.00	12,525.00	8,032.13	28.91	1.01	-22.13	2,009.72	-761.63	805.23	784.19	21.05	38.260	
10,700.00	8,646.00	12,525.00	8,032.13	29.60	1.01	-22.13	2,009.72	-761.63	758.47	736.81	21.66	35.019	
10,800.00	8,646.00	12,525.00	8,032.13	30.30	1.01	-22.13	2,009.72	-761.63	722.60	700.19	22.41	32.252	
10,900.00	8,646.00	12,525.00	8,032.13	31.03	1.01	-22.13	2,009.72	-761.63	699.30	676.07	23.23	30.102	
11,000.00	8,646.00	12,525.00	8,032.13	31.76	1.01	-22.13	2,009.72	-761.63	689.86	665.81	24.05	28.685	
11,015.62	8,646.00	12,525.00	8,032.13	31.88	1.01	-22.13	2,009.72	-761.63	689.68	665.51	24.17	28.534 CC, ES	
11,100.00	8,646.00	12,525.00	8,032.13	32.51	1.01	-22.13	2,009.72	-761.63	694.82	670.05	24.77	28.055	
11,200.00	8,646.00	12,525.00	8,032.13	33.27	1.01	-22.13	2,009.72	-761.63	713.90	688.58	25.32	28.199	
11,300.00	8,646.00	12,525.00	8,032.13	34.04	1.01	-22.13	2,009.72	-761.63	746.01	720.33	25.68	29.054	
11,400.00	8,646.00	12,525.00	8,032.13	34.83	1.01	-22.13	2,009.72	-761.63	789.56	763.69	25.87	30.525	
11,500.00	8,646.00	12,525.00	8,032.13	35.62	1.01	-22.13	2,009.72	-761.63	842.78	816.86	25.92	32.511	
11,600.00	8,646.00	12,525.00	8,032.13	36.42	1.01	-22.13	2,009.72	-761.63	903.96	878.08	25.89	34.916	
11,700.00	8,646.00	12,525.00	8,032.13	37.23	1.01	-22.13	2,009.72	-761.63	971.61	945.81	25.80	37.657	
11,800.00	8,646.00	12,525.00	8,032.13	38.05	1.01	-22.13	2,009.72	-761.63	1,044.46	1,018.78	25.69	40.664	
11,900.00	8,646.00	12,525.00	8,032.13	38.87	1.01	-22.13	2,009.72	-761.63	1,121.51	1,095.95	25.56	43.880	
12,000.00	8,646.00	12,525.00	8,032.13	39.70	1.01	-22.13	2,009.72	-761.63	1,201.94	1,176.51	25.43	47.262	
12,100.00	8,646.00	12,525.00	8,032.13	40.54	1.01	-22.13	2,009.72	-761.63	1,285.12	1,259.81	25.31	50.772	
12,200.00	8,646.00	12,525.00	8,032.13	41.39	1.01	-22.13	2,009.72	-761.63	1,370.55	1,345.35	25.20	54.383	
12,300.00	8,646.00	12,525.00	8,032.13	42.23	1.01	-22.13	2,009.72	-761.63	1,457.83	1,432.73	25.10	58.073	
12,400.00	8,646.00	12,525.00	8,032.13	43.09	1.01	-22.13	2,009.72	-761.63	1,546.66	1,521.64	25.02	61.823	
12,500.00	8,646.00	12,525.00	8,032.13	43.95	1.01	-22.13	2,009.72	-761.63	1,636.77	1,611.83	24.94	65.620	
12,600.00	8,646.00	12,525.00	8,032.13	44.81	1.01	-22.13	2,009.72	-761.63	1,727.98	1,703.10	24.88	69.451	
12,700.00	8,646.00	12,525.00	8,032.13	45.68	1.01	-22.13	2,009.72	-761.63	1,820.10	1,795.28	24.83	73.307	
12,800.00	8,646.00	12,525.00	8,032.13	46.55	1.01	-22.13	2,009.72	-761.63	1,913.02	1,888.24	24.79	77.180	
14,044.17	8,646.00	9,813.78	7,624.77	57.67	0.94	-15.06	4,674.88	-799.69	1,142.69	1,098.35	44.35	25.768 SF	
14,100.00	8,646.00	9,767.89	7,609.64	58.18	0.94	-14.86	4,718.20	-800.16	1,160.60	1,115.94	44.66	25.986	
14,200.00	8,646.00	9,686.20	7,582.04	59.09	0.94	-14.52	4,795.09	-800.98	1,193.50	1,148.27	45.22	26.390	
14,300.00	8,646.00	9,605.15	7,553.83	60.01	0.94	-14.18	4,871.06	-801.77	1,227.43	1,181.65	45.78	26.812	
14,400.00	8,646.00	9,524.76	7,525.04	60.92	0.93	-13.86	4,946.12	-802.54	1,262.39	1,216.07	46.33	27.250	
14,500.00	8,646.00	9,445.04	7,495.69	61.84	0.93	-13.54	5,020.24	-803.29	1,298.37	1,251.50	46.87	27.704	
14,600.00	8,646.00	9,365.99	7,465.82	62.76	0.93	-13.23	5,093.42	-804.01	1,335.35	1,287.95	47.40	28.173	
14,700.00	8,646.00	9,287.63	7,435.44	63.68	0.93	-12.92	5,165.64	-804.70	1,373.32	1,325.40	47.92	28.657	
14,800.00	8,646.00	9,209.97	7,404.58	64.60	0.92	-12.63	5,236.91	-805.37	1,412.28	1,363.84	48.44	29.156	
14,900.00	8,646.00	9,133.01	7,373.28	65.52	0.92	-12.34	5,307.22	-806.02	1,452.20	1,403.25	48.95	29.668	
15,000.00	8,646.00	9,056.75	7,341.55	66.44	0.92	-12.06	5,376.55	-806.64	1,493.07	1,443.62	49.45	30.193	
15,100.00	8,646.00	8,981.21	7,309.42	67.37	0.92	-11.79	5,444.92	-807.24	1,534.88	1,484.94	49.94	30.732	
15,200.00	8,646.00	8,906.40	7,276.92	68.30	0.92	-11.53	5,512.30	-807.82	1,577.63	1,527.20	50.43	31.283	
15,300.00	8,646.00	8,832.30	7,244.08	69.22	0.91	-11.28	5,578.72	-808.37	1,621.28	1,570.38	50.91	31.847	

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

LEAM Drilling Services

Anticollision Report

Company: Devon Energy
Project: Eddy County, NM (NAD-83)
Reference Site: Ko Lanta 9-4 Fed Com
Site Error: 0.00 usft
Reference Well: Ko Lanta 9-4 Fed Com 518H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well Ko Lanta 9-4 Fed Com 518H
TVD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
MD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Multi User Db
Offset TVD Reference: Offset Datum

Offset Design Ko Lanta 9-4 Fed Com - Glow Worm ALX Federal #16H (Offset) - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 551-NS-GYRO-MS 12525-Project												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (")	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
15,400.00	8,646.00	8,758.93	7,210.90	70.15	0.91	-11.03	5,644.15	-808.90	1,665.84	1,614.46	51.38	32.422	
15,500.00	8,646.00	8,686.30	7,177.43	71.08	0.91	-10.80	5,708.61	-809.41	1,711.29	1,659.45	51.84	33.009	
15,600.00	8,646.00	8,614.40	7,143.68	72.01	0.91	-10.57	5,772.10	-809.90	1,757.61	1,705.31	52.30	33.607	
15,700.00	8,646.00	8,543.23	7,109.68	72.95	0.91	-10.35	5,834.61	-810.37	1,804.80	1,752.05	52.75	34.216	
15,800.00	8,646.00	8,472.80	7,075.44	73.88	0.91	-10.13	5,896.16	-810.81	1,852.83	1,799.64	53.19	34.836	
15,900.00	8,646.00	8,403.12	7,040.99	74.81	0.90	-9.92	5,956.74	-811.24	1,901.69	1,848.07	53.62	35.466	
16,000.00	8,646.00	8,334.16	7,006.36	75.75	0.90	-9.72	6,016.36	-811.65	1,951.38	1,897.33	54.05	36.106	

LEAM Drilling Services

Anticollision Report

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Reference Site: Ko Lanta 9-4 Fed Com
Site Error: 0.00 usft
Reference Well: Ko Lanta 9-4 Fed Com 518H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well Ko Lanta 9-4 Fed Com 518H
TVD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
MD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Multi User Db
Offset TVD Reference: Offset Datum

Offset Design Ko Lanta 9-4 Fed Com - Ko Lanta 9-4 Fed Com 528H - OH - Plan #1													Offset Site Error: 0.00 usft
Survey Program: O-LEAM MWD+HDGM													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)					
0.00	0.00	0.50	0.50	0.00	0.00	89.73	0.14	30.08	30.08				
100.00	100.00	100.50	100.50	0.09	0.09	89.73	0.14	30.08	30.08	29.91	0.17	173.130	
200.00	200.00	200.50	200.50	0.31	0.31	89.73	0.14	30.08	30.08	29.46	0.62	48.262	
300.00	300.00	300.50	300.50	0.54	0.54	89.73	0.14	30.08	30.08	29.01	1.07	28.039	
400.00	400.00	400.50	400.50	0.76	0.76	89.73	0.14	30.08	30.08	28.56	1.52	19.759	
500.00	500.00	500.50	500.50	0.99	0.99	89.73	0.14	30.08	30.08	28.11	1.97	15.255	
600.00	600.00	600.50	600.50	1.21	1.21	89.73	0.14	30.08	30.08	27.66	2.42	12.423	
700.00	700.00	700.50	700.50	1.43	1.44	89.73	0.14	30.08	30.08	27.21	2.87	10.478	
800.00	800.00	800.50	800.50	1.66	1.66	89.73	0.14	30.08	30.08	26.76	3.32	9.059	
900.00	900.00	900.50	900.50	1.88	1.89	89.73	0.14	30.08	30.08	26.31	3.77	7.979	
1,000.00	1,000.00	1,000.50	1,000.50	2.11	2.11	89.73	0.14	30.08	30.08	25.86	4.22	7.129 CC	
1,003.22	1,003.22	1,003.72	1,003.72	2.12	2.12	-131.22	0.14	30.08	30.08	25.85	4.23	7.105	
1,100.00	1,100.00	1,100.50	1,100.50	2.33	2.34	-131.45	0.14	30.08	30.19	25.53	4.66	6.478 ES	
1,200.00	1,199.97	1,200.47	1,200.47	2.50	2.56	-134.45	0.14	30.08	31.70	26.64	5.06	6.262 SF	
1,300.00	1,299.85	1,300.35	1,300.35	2.69	2.78	-140.03	0.14	30.08	35.26	29.79	5.47	6.442	
1,400.00	1,399.57	1,400.07	1,400.07	2.89	3.01	-146.64	0.14	30.08	41.26	35.37	5.89	7.001	
1,500.00	1,499.06	1,499.56	1,499.56	3.10	3.23	-152.93	0.14	30.08	49.98	43.66	6.32	7.909	
1,600.00	1,598.33	1,598.83	1,598.83	3.33	3.46	-158.07	0.14	30.08	60.97	54.22	6.75	9.032	
1,700.00	1,697.59	1,698.09	1,698.09	3.57	3.68	-161.67	0.14	30.08	72.43	65.24	7.18	10.085	
1,800.00	1,796.84	1,797.34	1,797.34	3.82	3.90	-164.28	0.14	30.08	84.09	76.47	7.62	11.040	
1,900.00	1,896.10	1,896.60	1,896.60	4.07	4.12	-166.25	0.14	30.08	95.87	87.82	8.05	11.904	
2,000.00	1,995.35	1,995.85	1,995.85	4.33	4.35	-167.79	0.14	30.08	107.75	99.26	8.49	12.686	
2,100.00	2,094.61	2,095.11	2,095.11	4.60	4.57	-169.02	0.14	30.08	119.69	110.75	8.94	13.394	
2,200.00	2,193.86	2,194.36	2,194.36	4.87	4.79	-170.03	0.14	30.08	131.67	122.29	9.38	14.037	
2,300.00	2,293.12	2,293.62	2,293.62	5.15	5.02	-170.87	0.14	30.08	143.69	133.86	9.83	14.623	
2,400.00	2,392.37	2,392.87	2,392.87	5.43	5.24	-171.58	0.14	30.08	155.73	145.46	10.27	15.158	
2,500.00	2,491.63	2,492.13	2,492.13	5.71	5.46	-172.19	0.14	30.08	167.80	157.07	10.72	15.648	
2,600.00	2,590.88	2,591.38	2,591.38	5.99	5.69	-172.72	0.14	30.08	179.88	168.70	11.17	16.099	
2,700.00	2,690.14	2,690.64	2,690.64	6.27	5.91	-173.18	0.14	30.08	191.97	180.34	11.62	16.515	
2,800.00	2,789.39	2,789.89	2,789.89	6.56	6.13	-173.59	0.14	30.08	204.07	191.99	12.08	16.899	
2,900.00	2,888.65	2,889.15	2,889.15	6.85	6.36	-173.95	0.14	30.08	216.18	203.65	12.53	17.255	
3,000.00	2,987.90	2,988.40	2,988.40	7.14	6.58	-174.27	0.14	30.08	228.30	215.32	12.98	17.586	
3,100.00	3,087.16	3,087.66	3,087.66	7.43	6.80	-174.56	0.14	30.08	240.43	226.99	13.44	17.894	
3,200.00	3,186.41	3,186.91	3,186.91	7.72	7.02	-174.82	0.14	30.08	252.56	238.67	13.89	18.182	
3,300.00	3,285.67	3,286.17	3,286.17	8.01	7.25	-175.06	0.14	30.08	264.70	250.35	14.35	18.451	
3,400.00	3,384.92	3,385.42	3,385.42	8.30	7.47	-175.28	0.14	30.08	276.84	262.03	14.80	18.703	
3,500.00	3,484.18	3,484.68	3,484.68	8.60	7.69	-175.48	0.14	30.08	288.98	273.72	15.26	18.940	
3,600.00	3,583.43	3,583.93	3,583.93	8.89	7.92	-175.66	0.14	30.08	301.13	285.41	15.71	19.163	
3,700.00	3,682.69	3,683.19	3,683.19	9.19	8.14	-175.83	0.14	30.08	313.28	297.10	16.17	19.373	
3,800.00	3,781.94	3,782.44	3,782.44	9.48	8.36	-175.98	0.14	30.08	325.43	308.80	16.63	19.571	
3,900.00	3,881.20	3,881.70	3,881.70	9.78	8.59	-176.13	0.14	30.08	337.58	320.50	17.09	19.758	
4,000.00	3,980.45	3,980.95	3,980.95	10.08	8.81	-176.26	0.14	30.08	349.74	332.20	17.54	19.935	
4,100.00	4,079.71	4,080.21	4,080.21	10.37	9.03	-176.39	0.14	30.08	361.90	343.90	18.00	20.104	
4,200.00	4,178.96	4,179.46	4,179.46	10.67	9.26	-176.51	0.14	30.08	374.06	355.60	18.46	20.263	
4,300.00	4,278.22	4,278.72	4,278.72	10.97	9.48	-176.62	0.14	30.08	386.22	367.30	18.92	20.415	
4,400.00	4,377.47	4,377.97	4,377.97	11.27	9.70	-176.72	0.14	30.08	398.38	379.00	19.38	20.559	
4,500.00	4,476.73	4,477.23	4,477.23	11.57	9.92	-176.82	0.14	30.08	410.54	390.71	19.84	20.697	
4,600.00	4,575.98	4,576.48	4,576.48	11.86	10.15	-176.91	0.14	30.08	422.71	402.41	20.30	20.828	
4,700.00	4,675.24	4,675.74	4,675.74	12.16	10.37	-177.00	0.14	30.08	434.87	414.12	20.75	20.953	
4,800.00	4,774.49	4,774.99	4,774.99	12.46	10.59	-177.08	0.14	30.08	447.04	425.83	21.21	21.073	
4,900.00	4,873.75	4,874.25	4,874.25	12.76	10.82	-177.15	0.14	30.08	459.21	437.54	21.67	21.187	
5,000.00	4,973.01	4,973.51	4,973.51	13.06	11.04	-177.23	0.14	30.08	471.38	449.24	22.13	21.297	

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

LEAM Drilling Services

Anticollision Report

Company: Devon Energy
 Project: Eddy County, NM (NAD-83)
 Reference Site: Ko Lanta 9-4 Fed Com
 Site Error: 0.00 usft
 Reference Well: Ko Lanta 9-4 Fed Com 518H
 Well Error: 0.00 usft
 Reference Wellbore: OH
 Reference Design: Plan #1

Local Co-ordinate Reference: Well Ko Lanta 9-4 Fed Com 518H
 TVD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
 MD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: EDM 5000.1 Multi User Db
 Offset TVD Reference: Offset Datum

Offset Design Ko Lanta 9-4 Fed Com - Ko Lanta 9-4 Fed Com 528H - OH - Plan #1													Offset Site Error: 0.00 usft	
Survey Program: 0-LEAM MWD+HDGM													Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	Between Centres	Between Ellipses	Minimum Separation	Separation Factor			
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	+N/-S (usft)	+E/-W (usft)	(usft)	(usft)	(usft)			
5,100.00	5,072.26	5,072.76	5,072.76	13.36	11.26	-177.30	0.14	30.08	483.55	460.95	22.59	21.402		
5,200.00	5,171.52	5,172.02	5,172.02	13.66	11.49	-177.36	0.14	30.08	495.72	472.66	23.05	21.503		
5,300.00	5,270.77	5,271.27	5,271.27	13.96	11.71	-177.43	0.14	30.08	507.89	484.37	23.51	21.600		
5,400.00	5,370.03	5,370.53	5,370.53	14.26	11.93	-177.49	0.14	30.08	520.06	496.08	23.97	21.693		
5,500.00	5,469.28	5,469.78	5,469.78	14.56	12.16	-177.55	0.14	30.08	532.23	507.80	24.43	21.782		
5,600.00	5,568.54	5,569.04	5,569.04	14.86	12.38	-177.60	0.14	30.08	544.40	519.51	24.89	21.868		
5,700.00	5,667.79	5,668.29	5,668.29	15.16	12.60	-177.65	0.14	30.08	556.57	531.22	25.36	21.951		
5,800.00	5,767.05	5,767.55	5,767.55	15.46	12.83	-177.70	0.14	30.08	568.75	542.93	25.82	22.031		
5,900.00	5,866.30	5,866.80	5,866.80	15.76	13.05	-177.75	0.14	30.08	580.92	554.64	26.28	22.108		
6,000.00	5,965.56	5,966.06	5,966.06	16.06	13.27	-177.80	0.14	30.08	593.09	566.36	26.74	22.182		
6,100.00	6,064.81	6,065.31	6,065.31	16.36	13.49	-177.84	0.14	30.08	605.27	578.07	27.20	22.253		
6,200.00	6,164.07	6,164.57	6,164.57	16.67	13.72	-177.88	0.14	30.08	617.44	589.78	27.66	22.323		
6,300.00	6,263.32	6,263.82	6,263.82	16.97	13.94	-177.93	0.14	30.08	629.62	601.50	28.12	22.390		
6,400.00	6,362.58	6,363.08	6,363.08	17.27	14.16	-177.96	0.14	30.08	641.79	613.21	28.58	22.454		
6,500.00	6,461.83	6,462.33	6,462.33	17.57	14.39	-178.00	0.14	30.08	653.97	624.93	29.04	22.517		
6,600.00	6,561.09	6,561.59	6,561.59	17.87	14.61	-178.04	0.14	30.08	666.14	636.64	29.50	22.577		
6,700.00	6,660.34	6,660.84	6,660.84	18.17	14.83	-178.07	0.14	30.08	678.32	648.35	29.97	22.636		
6,800.00	6,759.60	6,760.10	6,760.10	18.47	15.06	-178.11	0.14	30.08	690.50	660.07	30.43	22.693		
6,900.00	6,858.85	6,859.35	6,859.35	18.78	15.28	-178.14	0.14	30.08	702.67	671.78	30.89	22.748		
7,000.00	6,958.11	6,958.61	6,958.61	19.08	15.50	-178.17	0.14	30.08	714.85	683.50	31.35	22.801		
7,100.00	7,057.36	7,057.86	7,057.86	19.38	15.73	-178.20	0.14	30.08	727.03	695.21	31.81	22.853		
7,200.00	7,156.66	7,157.16	7,157.16	19.66	15.95	-178.23	0.14	30.08	738.89	706.62	32.26	22.902		
7,300.00	7,256.19	7,256.69	7,256.69	19.86	16.17	-178.26	0.14	30.08	748.48	715.80	32.68	22.905		
7,400.00	7,355.94	7,356.44	7,356.44	20.05	16.40	-178.28	0.14	30.08	755.47	722.38	33.09	22.832		
7,500.00	7,455.84	7,456.34	7,456.34	20.22	16.62	-178.29	0.14	30.08	759.84	726.35	33.49	22.686		
7,600.00	7,555.83	7,556.33	7,556.33	20.37	16.85	-178.30	0.14	30.08	761.60	727.71	33.90	22.469		
7,700.00	7,655.83	7,656.33	7,656.33	20.54	17.07	42.66	0.14	30.08	761.64	727.33	34.31	22.198		
7,800.00	7,755.83	7,756.33	7,756.33	20.69	17.30	42.66	0.14	30.08	761.64	726.92	34.72	21.939		
7,900.00	7,855.83	7,856.33	7,856.33	20.84	17.52	42.66	0.14	30.08	761.64	726.52	35.12	21.685		
8,000.00	7,955.83	7,956.33	7,956.33	20.99	17.74	42.66	0.14	30.08	761.64	726.11	35.53	21.437		
8,100.00	8,055.83	8,056.33	8,056.33	21.15	17.97	42.66	0.14	30.08	761.64	725.70	35.94	21.194		
8,200.00	8,155.54	8,156.04	8,156.04	21.17	18.19	43.62	0.14	30.08	757.29	721.10	36.18	20.929		
8,300.00	8,252.74	8,253.24	8,253.24	21.18	18.41	46.02	0.14	30.08	740.76	704.33	36.43	20.335		
8,400.00	8,344.48	8,344.98	8,344.98	21.21	18.62	50.37	0.14	30.08	713.16	676.48	36.69	19.439		
8,500.00	8,427.98	8,428.48	8,428.48	21.25	18.81	56.76	0.14	30.08	676.80	639.82	36.98	18.304		
8,600.00	8,500.69	8,501.19	8,501.19	21.30	18.97	64.92	0.14	30.08	635.09	597.78	37.32	17.019		
8,700.00	8,560.41	8,560.91	8,560.91	21.38	19.10	73.90	0.14	30.08	592.68	554.92	37.76	15.697		
8,800.00	8,605.31	8,605.81	8,605.81	21.48	19.20	82.05	0.14	30.08	555.27	516.93	38.34	14.482		
8,900.00	8,634.05	8,634.55	8,634.55	21.59	19.27	87.75	0.14	30.08	529.13	490.04	39.09	13.536		
9,000.00	8,645.74	8,646.24	8,646.24	21.73	19.30	90.00	0.14	30.08	519.52	479.59	39.92	13.013		
9,001.21	8,645.78	8,646.28	8,646.28	21.73	19.30	90.00	0.14	30.08	519.52	479.58	39.93	13.010		
9,100.00	8,646.00	8,646.50	8,646.50	21.90	19.30	90.00	0.14	30.08	528.82	488.14	40.69	12.997		
9,200.00	8,646.00	8,646.50	8,646.50	22.10	19.30	90.00	0.14	30.08	556.25	514.97	41.28	13.476		
9,300.00	8,646.00	8,646.50	8,646.50	22.35	19.30	90.00	0.14	30.08	599.31	557.66	41.65	14.391		
9,400.00	8,646.00	8,646.50	8,646.50	22.64	19.30	90.00	0.14	30.08	654.93	613.10	41.83	15.658		
9,500.00	8,646.00	8,646.50	8,646.50	22.97	19.30	90.00	0.14	30.08	720.20	678.32	41.88	17.197		
9,600.00	8,646.00	8,646.50	8,646.50	23.34	19.30	90.00	0.14	30.08	792.74	750.89	41.86	18.940		
9,700.00	8,646.00	8,646.50	8,646.50	23.76	19.30	90.00	0.14	30.08	870.75	828.95	41.79	20.835		
9,800.00	8,646.00	8,646.50	8,646.50	24.21	19.30	90.00	0.14	30.08	952.87	911.15	41.71	22.843		
9,900.00	8,646.00	8,646.50	8,646.50	24.70	19.30	90.00	0.14	30.08	1,038.13	996.50	41.63	24.937		
10,000.00	8,646.00	8,646.50	8,646.50	25.22	19.30	90.00	0.14	30.08	1,125.82	1,084.27	41.55	27.095		
10,100.00	8,646.00	8,646.50	8,646.50	25.77	19.30	90.00	0.14	30.08	1,215.41	1,173.94	41.48	29.304		

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

LEAM Drilling Services

Anticollision Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well Ko Lanta 9-4 Fed Com 518H
Project:	Eddy County, NM (NAD-83)	TVD Reference:	3371.8' GE + 23.2' KB @ 3395.00usft
Reference Site:	Ko Lanta 9-4 Fed Com	MD Reference:	3371.8' GE + 23.2' KB @ 3395.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Ko Lanta 9-4 Fed Com 518H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.1 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Ko Lanta 9-4 Fed Com - Ko Lanta 9-4 Fed Com 528H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-LEAM MWD+HDGM													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	+N/-S (usft)	+E/-W (usft)	(usft)	(usft)	(usft)			
10,200.00	8,646.00	8,646.50	8,646.50	26.35	19.30	90.00	0.14	30.08	1,306.52	1,265.11	41.41	31.550		
10,300.00	8,646.00	8,646.50	8,646.50	26.96	19.30	90.00	0.14	30.08	1,398.84	1,357.48	41.35	33.827		
10,400.00	8,646.00	8,646.50	8,646.50	27.59	19.30	90.00	0.14	30.08	1,492.15	1,450.84	41.30	36.126		
10,500.00	8,646.00	8,646.50	8,646.50	28.24	19.30	90.00	0.14	30.08	1,586.27	1,545.01	41.26	38.444		
10,600.00	8,646.00	8,646.50	8,646.50	28.91	19.30	90.00	0.14	30.08	1,681.08	1,639.85	41.23	40.776		
10,700.00	8,646.00	8,646.50	8,646.50	29.60	19.30	90.00	0.14	30.08	1,776.45	1,735.25	41.20	43.118		
10,800.00	8,646.00	8,646.50	8,646.50	30.30	19.30	90.00	0.14	30.08	1,872.31	1,831.13	41.18	45.468		
10,900.00	8,646.00	8,646.50	8,646.50	31.03	19.30	90.00	0.14	30.08	1,968.58	1,927.41	41.16	47.823		

LEAM Drilling Services

Anticollision Report

Company: Devon Energy
Project: Eddy County, NM (NAD-83)
Reference Site: Ko Lanta 9-4 Fed Com
Site Error: 0.00 usft
Reference Well: Ko Lanta 9-4 Fed Com 518H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well Ko Lanta 9-4 Fed Com 518H
TVD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
MD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Multi User Db
Offset TVD Reference: Offset Datum

Offset Design Ko Lanta 9-4 Fed Com - Ko Lanta 9-4 Fed Com 528H - ST01 - Plan #1														Offset Site Error: 0.00 usft
Survey Program: 0-LEAM MWD+HDGM, 2420-LEAM MWD+HDGM, 8314-MWD+IFR1														Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (")	Distance		Minimum Separation (usft)	Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)						
0.00	0.00	0.50	0.50	0.00	0.00	89.73	0.14	30.08	30.08					
100.00	100.00	100.50	100.50	0.09	0.09	89.73	0.14	30.08	30.08	29.91	0.17	173.130		
200.00	200.00	200.50	200.50	0.31	0.31	89.73	0.14	30.08	30.08	29.46	0.62	48.262		
300.00	300.00	300.50	300.50	0.54	0.54	89.73	0.14	30.08	30.08	29.01	1.07	28.039		
400.00	400.00	400.50	400.50	0.76	0.76	89.73	0.14	30.08	30.08	28.56	1.52	19.759		
500.00	500.00	500.50	500.50	0.99	0.99	89.73	0.14	30.08	30.08	28.11	1.97	15.255		
600.00	600.00	600.50	600.50	1.21	1.21	89.73	0.14	30.08	30.08	27.66	2.42	12.423		
700.00	700.00	700.50	700.50	1.43	1.44	89.73	0.14	30.08	30.08	27.21	2.87	10.478		
800.00	800.00	800.50	800.50	1.66	1.66	89.73	0.14	30.08	30.08	26.76	3.32	9.059		
900.00	900.00	900.50	900.50	1.88	1.89	89.73	0.14	30.08	30.08	26.31	3.77	7.979		
1,000.00	1,000.00	1,000.50	1,000.50	2.11	2.11	89.73	0.14	30.08	30.08	25.86	4.22	7.129 CC		
1,003.22	1,003.22	1,003.72	1,003.72	2.12	2.12	-131.22	0.14	30.08	30.08	25.85	4.23	7.105		
1,100.00	1,100.00	1,100.50	1,100.50	2.33	2.34	-131.45	0.14	30.08	30.19	25.53	4.66	6.478 ES		
1,200.00	1,199.97	1,200.47	1,200.47	2.50	2.56	-134.45	0.14	30.08	31.70	26.64	5.06	6.262		
1,300.00	1,299.85	1,300.35	1,300.35	2.69	2.78	-140.03	0.14	30.08	35.26	29.79	5.47	6.442		
1,400.00	1,399.57	1,400.07	1,400.07	2.89	3.01	-146.64	0.14	30.08	41.26	35.37	5.89	7.001		
1,500.00	1,499.06	1,499.56	1,499.56	3.10	3.23	-152.93	0.14	30.08	49.98	43.66	6.32	7.909		
1,600.00	1,598.33	1,598.83	1,598.83	3.33	3.46	-158.07	0.14	30.08	60.97	54.22	6.75	9.032		
1,700.00	1,697.59	1,698.09	1,698.09	3.57	3.68	-161.67	0.14	30.08	72.43	65.24	7.18	10.085		
1,800.00	1,796.84	1,797.34	1,797.34	3.82	3.90	-164.28	0.14	30.08	84.09	76.47	7.62	11.040		
1,900.00	1,896.10	1,896.60	1,896.60	4.07	4.12	-166.25	0.14	30.08	95.87	87.82	8.05	11.904		
2,000.00	1,995.35	1,995.85	1,995.85	4.33	4.35	-167.79	0.14	30.08	107.75	99.26	8.49	12.686		
2,100.00	2,094.61	2,095.11	2,095.11	4.60	4.57	-169.02	0.14	30.08	119.69	110.75	8.94	13.394		
2,200.00	2,193.86	2,194.36	2,194.36	4.87	4.79	-170.03	0.14	30.08	131.67	122.29	9.38	14.037		
2,300.00	2,293.12	2,293.62	2,293.62	5.15	5.02	-170.87	0.14	30.08	143.69	133.86	9.83	14.623		
2,400.00	2,392.37	2,392.87	2,392.87	5.43	5.24	-171.58	0.14	30.08	155.73	145.46	10.27	15.158		
2,500.00	2,491.63	2,495.04	2,495.04	5.71	5.39	-172.09	-0.55	29.81	167.17	156.52	10.65	15.698		
2,600.00	2,590.88	2,598.76	2,598.69	5.99	5.40	-172.14	-3.76	28.57	176.31	165.42	10.89	16.187		
2,700.00	2,690.14	2,702.86	2,702.60	6.27	5.42	-171.77	-9.62	26.30	183.05	171.92	11.14	16.436		
2,800.00	2,789.39	2,807.20	2,806.53	6.56	5.46	-171.01	-18.14	23.00	187.41	176.01	11.39	16.449		
2,900.00	2,888.65	2,910.54	2,909.20	6.85	5.51	-169.90	-29.12	18.74	189.48	177.82	11.66	16.245		
3,000.00	2,987.90	3,010.45	3,008.37	7.14	5.58	-168.72	-40.48	14.34	190.95	178.98	11.96	15.964		
3,100.00	3,087.16	3,110.36	3,107.53	7.43	5.66	-167.55	-51.83	9.94	192.49	180.21	12.27	15.685		
3,200.00	3,186.41	3,210.27	3,206.70	7.72	5.76	-166.41	-63.19	5.54	194.11	181.51	12.60	15.408		
3,300.00	3,285.67	3,310.19	3,305.87	8.01	5.88	-165.29	-74.54	1.14	195.80	182.86	12.94	15.135		
3,400.00	3,384.92	3,410.10	3,405.04	8.30	6.00	-164.18	-85.90	-3.26	197.57	184.28	13.29	14.865		
3,500.00	3,484.18	3,510.01	3,504.20	8.60	6.14	-163.10	-97.25	-7.66	199.41	185.75	13.66	14.600		
3,600.00	3,583.43	3,609.92	3,603.37	8.89	6.29	-162.04	-108.61	-12.06	201.32	187.29	14.04	14.341		
3,700.00	3,682.69	3,709.84	3,702.54	9.19	6.45	-160.99	-119.96	-16.46	203.30	188.87	14.43	14.087		
3,800.00	3,781.94	3,809.75	3,801.71	9.48	6.62	-159.97	-131.31	-20.86	205.35	190.51	14.84	13.840		
3,900.00	3,881.20	3,909.66	3,900.87	9.78	6.80	-158.97	-142.67	-25.26	207.46	192.21	15.25	13.600		
4,000.00	3,980.45	4,009.57	4,000.04	10.08	6.99	-157.99	-154.02	-29.66	209.63	193.95	15.68	13.367		
4,100.00	4,079.71	4,109.49	4,099.21	10.37	7.18	-157.03	-165.38	-34.06	211.87	195.74	16.12	13.141		
4,200.00	4,178.96	4,209.40	4,198.38	10.67	7.39	-156.08	-176.73	-38.46	214.16	197.58	16.57	12.923		
4,300.00	4,278.22	4,309.31	4,297.54	10.97	7.60	-155.16	-188.09	-42.86	216.50	199.47	17.03	12.712		
4,400.00	4,377.47	4,409.22	4,396.71	11.27	7.81	-154.26	-199.44	-47.26	218.91	201.41	17.50	12.509		
4,500.00	4,476.73	4,509.14	4,495.88	11.57	8.03	-153.38	-210.80	-51.66	221.36	203.39	17.98	12.314		
4,600.00	4,575.98	4,609.05	4,595.05	11.86	8.26	-152.52	-222.15	-56.06	223.87	205.41	18.46	12.126		
4,700.00	4,675.24	4,708.96	4,694.21	12.16	8.49	-151.68	-233.51	-60.46	226.43	207.47	18.96	11.945		
4,800.00	4,774.49	4,808.87	4,793.38	12.46	8.73	-150.85	-244.86	-64.86	229.03	209.57	19.46	11.772		
4,900.00	4,873.75	4,908.79	4,892.55	12.76	8.97	-150.05	-256.22	-69.26	231.68	211.72	19.96	11.606		
5,000.00	4,973.01	5,008.70	4,991.72	13.06	9.21	-149.26	-267.57	-73.66	234.38	213.90	20.48	11.446		

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

LEAM Drilling Services

Anticollision Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well Ko Lanta 9-4 Fed Com 518H
Project:	Eddy County, NM (NAD-83)	TVD Reference:	3371.8' GE + 23.2' KB @ 3395.00usft
Reference Site:	Ko Lanta 9-4 Fed Com	MD Reference:	3371.8' GE + 23.2' KB @ 3395.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Ko Lanta 9-4 Fed Com 518H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.1 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Ko Lanta 9-4 Fed Com - Ko Lanta 9-4 Fed Com 528H - ST01 - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-LEAM MWD+HDGM, 2420-LEAM MWD+HDGM, 8314-MWD+HFR1													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance		Minimum Separation		Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,100.00	5,072.26	5,108.61	5,090.89	13.36	9.46	-148.49	-278.93	-78.06	237.11	216.12	21.00	11.293		
5,200.00	5,171.52	5,208.52	5,190.05	13.66	9.71	-147.74	-290.28	-82.46	239.89	218.37	21.52	11.147		
5,300.00	5,270.77	5,308.44	5,289.22	13.96	9.96	-147.01	-301.64	-86.86	242.71	220.66	22.05	11.007		
5,400.00	5,370.03	5,408.35	5,388.39	14.26	10.22	-146.29	-312.99	-91.26	245.57	222.99	22.59	10.873		
5,500.00	5,469.28	5,508.26	5,487.56	14.56	10.47	-145.59	-324.35	-95.66	248.47	225.34	23.13	10.744		
5,600.00	5,568.54	5,608.17	5,586.72	14.86	10.73	-144.91	-335.70	-100.06	251.40	227.73	23.67	10.621		
5,700.00	5,667.79	5,708.09	5,685.89	15.16	11.00	-144.24	-347.06	-104.46	254.37	230.15	24.22	10.503		
5,800.00	5,767.05	5,808.00	5,785.06	15.46	11.26	-143.59	-358.41	-108.86	257.37	232.60	24.77	10.390		
5,900.00	5,866.30	5,907.91	5,884.23	15.76	11.53	-142.95	-369.77	-113.26	260.41	235.08	25.33	10.282		
6,000.00	5,965.56	6,007.82	5,983.39	16.06	11.80	-142.33	-381.12	-117.66	263.47	237.59	25.89	10.178		
6,100.00	6,064.81	6,107.74	6,082.56	16.36	12.07	-141.72	-392.48	-122.06	266.57	240.12	26.45	10.079		
6,200.00	6,164.07	6,207.65	6,181.73	16.67	12.34	-141.13	-403.83	-126.46	269.69	242.68	27.01	9.984		
6,300.00	6,263.32	6,307.56	6,280.90	16.97	12.61	-140.54	-415.19	-130.86	272.85	245.27	27.58	9.893		
6,400.00	6,362.58	6,407.47	6,380.06	17.27	12.88	-139.98	-426.54	-135.26	276.03	247.88	28.15	9.805		
6,500.00	6,461.83	6,507.39	6,479.23	17.57	13.16	-139.42	-437.90	-139.66	279.24	250.51	28.72	9.721		
6,600.00	6,561.09	6,607.30	6,578.40	17.87	13.44	-138.88	-449.25	-144.06	282.47	253.17	29.30	9.641		
6,700.00	6,660.34	6,707.21	6,677.57	18.17	13.71	-138.35	-460.61	-148.46	285.73	255.85	29.88	9.564		
6,800.00	6,759.60	6,807.12	6,776.73	18.47	13.99	-137.83	-471.96	-152.86	289.01	258.56	30.45	9.490		
6,900.00	6,858.85	6,907.04	6,875.90	18.78	14.27	-137.33	-483.32	-157.26	292.31	261.28	31.04	9.419		
7,000.00	6,958.11	7,006.95	6,975.07	19.08	14.55	-136.83	-494.67	-161.66	295.64	264.02	31.62	9.350		
7,100.00	7,057.36	7,106.86	7,074.24	19.38	14.83	-136.35	-506.03	-166.06	298.99	266.79	32.20	9.285		
7,200.00	7,156.66	7,206.77	7,173.40	19.66	15.12	-135.85	-517.38	-170.46	302.13	269.36	32.77	9.219		
7,300.00	7,256.19	7,306.67	7,272.55	19.96	15.40	-135.06	-528.73	-174.86	303.68	270.36	33.31	9.116		
7,400.00	7,355.94	7,404.59	7,369.80	20.05	15.65	-134.01	-539.46	-179.01	303.65	269.82	33.83	8.976		
7,500.00	7,455.84	7,500.00	7,464.78	20.22	15.82	-133.02	-547.86	-182.27	302.86	268.61	34.25	8.842		
7,600.00	7,555.83	7,598.23	7,562.77	20.37	15.98	-132.05	-554.20	-184.73	301.37	266.72	34.65	8.697		
7,700.00	7,655.83	7,695.29	7,659.74	20.54	16.12	89.65	-558.15	-186.26	299.77	264.74	35.03	8.559		
7,800.00	7,755.83	7,792.50	7,756.92	20.69	16.25	89.96	-559.81	-186.90	299.10	263.77	35.33	8.465		
7,842.58	7,798.40	7,834.48	7,798.90	20.75	16.31	89.97	-559.86	-186.92	299.08	263.62	35.46	8.434		
7,900.00	7,855.83	7,891.90	7,856.33	20.84	16.39	89.97	-559.86	-186.92	299.08	263.44	35.64	8.392		
8,000.00	7,955.83	7,991.90	7,956.33	20.99	16.52	89.97	-559.86	-186.92	299.08	263.15	35.93	8.324		
8,100.00	8,055.83	8,091.90	8,056.33	21.15	16.64	89.97	-559.86	-186.92	299.08	262.86	36.22	8.257		
8,100.00	8,055.83	8,091.90	8,056.33	21.15	16.64	89.97	-559.86	-186.92	299.08	262.86	36.22	8.257		
8,200.00	8,155.54	8,191.61	8,156.04	21.17	16.77	91.45	-559.86	-186.92	299.17	262.71	36.46	8.205		
8,300.00	8,252.74	8,288.81	8,253.24	21.18	16.90	95.55	-559.86	-186.92	300.64	263.70	36.93	8.140		
8,400.00	8,344.48	8,389.44	8,353.64	21.21	16.93	101.60	-554.85	-186.95	306.19	268.78	37.41	8.185		
8,500.00	8,427.98	8,499.20	8,460.39	21.25	16.94	107.52	-530.07	-187.10	315.45	277.82	37.63	8.382		
8,600.00	8,500.69	8,618.08	8,568.38	21.30	16.98	112.88	-480.85	-187.40	327.17	289.75	37.41	8.745		
8,700.00	8,560.41	8,747.18	8,671.39	21.38	17.05	117.47	-403.50	-187.87	339.65	302.97	36.68	9.260		
8,800.00	8,605.31	8,886.68	8,760.23	21.48	17.18	121.06	-296.39	-188.52	350.90	315.28	35.61	9.853		
8,900.00	8,634.05	9,035.23	8,823.45	21.59	17.41	123.41	-162.42	-189.33	358.96	324.30	34.65	10.359		
9,000.00	8,645.74	9,189.45	8,850.49	21.73	17.74	124.35	-11.07	-190.25	362.31	327.98	34.32	10.555		
9,100.00	8,646.00	9,298.07	8,851.00	21.90	18.04	124.36	97.55	-190.91	362.35	327.54	34.82	10.408		
9,200.00	8,646.00	9,398.07	8,851.00	22.10	18.37	124.36	197.54	-191.51	362.36	326.91	35.45	10.222		
9,300.00	8,646.00	9,498.07	8,851.00	22.35	18.75	124.36	297.54	-192.12	362.37	326.20	36.16	10.021		
9,400.00	8,646.00	9,598.07	8,851.00	22.64	19.17	124.36	397.54	-192.73	362.37	325.42	36.95	9.806		
9,500.00	8,646.00	9,698.07	8,851.00	22.97	19.63	124.36	497.54	-193.33	362.38	324.56	37.82	9.583		
9,600.00	8,646.00	9,798.07	8,851.00	23.34	20.13	124.35	597.54	-193.94	362.39	323.64	38.75	9.353		
9,700.00	8,646.00	9,898.07	8,851.00	23.76	20.67	124.35	697.53	-194.55	362.39	322.66	39.74	9.119		
9,800.00	8,646.00	9,998.07	8,851.00	24.21	21.24	124.35	797.53	-195.15	362.40	321.61	40.79	8.885		
9,900.00	8,646.00	10,098.07	8,851.00	24.70	21.83	124.35	897.53	-195.76	362.41	320.52	41.89	8.651		
10,000.00	8,646.00	10,198.07	8,851.00	25.22	22.46	124.35	997.53	-196.37	362.41	319.37	43.05	8.419		

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

LEAM Drilling Services

Anticollision Report

Company: Devon Energy
Project: Eddy County, NM (NAD-83)
Reference Site: Ko Lanta 9-4 Fed Com
Site Error: 0.00 usft
Reference Well: Ko Lanta 9-4 Fed Com 518H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well Ko Lanta 9-4 Fed Com 518H
TVD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
MD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Multi User Db
Offset TVD Reference: Offset Datum

Offset Design Ko Lanta 9-4 Fed Com - Ko Lanta 9-4 Fed Com 528H - ST01 - Plan #1														Offset Site Error:	0.00 usft
Survey Program: 0-LEAM MWD+HDGM, 2420-LEAM MWD+HDGM, 8314-MWD+IFR1														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)										
10,100.00	8,646.00	10,298.07	8,851.00	25.77	23.10	124.35	1,097.53	-196.97	362.42	318.18	44.24	8.191			
10,200.00	8,646.00	10,398.07	8,851.00	26.35	23.78	124.35	1,197.53	-197.58	362.43	316.94	45.48	7.968			
10,300.00	8,646.00	10,498.07	8,851.00	26.96	24.47	124.35	1,297.52	-198.19	362.44	315.67	46.76	7.751			
10,400.00	8,646.00	10,598.07	8,851.00	27.59	25.18	124.35	1,397.52	-198.79	362.44	314.37	48.08	7.539			
10,500.00	8,646.00	10,698.07	8,851.00	28.24	25.91	124.35	1,497.52	-199.40	362.45	313.03	49.42	7.334			
10,600.00	8,646.00	10,798.07	8,851.00	28.91	26.65	124.35	1,597.52	-200.01	362.46	311.66	50.80	7.135			
10,700.00	8,646.00	10,898.07	8,851.00	29.60	27.41	124.35	1,697.52	-200.61	362.46	310.26	52.21	6.943			
10,800.00	8,646.00	10,998.07	8,851.00	30.30	28.18	124.35	1,797.51	-201.22	362.47	308.84	53.64	6.758			
10,900.00	8,646.00	11,098.07	8,851.00	31.03	28.96	124.34	1,897.51	-201.83	362.48	307.39	55.09	6.580			
11,000.00	8,646.00	11,198.07	8,851.00	31.76	29.76	124.34	1,997.51	-202.43	362.48	305.92	56.56	6.408			
11,100.00	8,646.00	11,298.07	8,851.00	32.51	30.56	124.34	2,097.51	-203.04	362.49	304.43	58.06	6.243			
11,200.00	8,646.00	11,398.07	8,851.00	33.27	31.38	124.34	2,197.51	-203.65	362.50	302.92	59.57	6.085			
11,300.00	8,646.00	11,498.07	8,851.00	34.04	32.20	124.34	2,297.51	-204.25	362.50	301.40	61.10	5.933			
11,400.00	8,646.00	11,598.07	8,851.00	34.83	33.03	124.34	2,397.50	-204.86	362.51	299.86	62.65	5.786			
11,500.00	8,646.00	11,698.07	8,851.00	35.62	33.87	124.34	2,497.50	-205.47	362.52	298.31	64.21	5.646			
11,600.00	8,646.00	11,798.07	8,851.00	36.42	34.71	124.34	2,597.50	-206.07	362.53	296.74	65.79	5.511			
11,700.00	8,646.00	11,898.07	8,851.00	37.23	35.57	124.34	2,697.50	-206.68	362.53	295.16	67.38	5.381			
11,800.00	8,646.00	11,998.07	8,851.00	38.05	36.42	124.34	2,797.50	-207.29	362.54	293.56	68.98	5.256			
11,900.00	8,646.00	12,098.07	8,851.00	38.87	37.29	124.34	2,897.49	-207.89	362.55	291.96	70.59	5.136			
12,000.00	8,646.00	12,198.07	8,851.00	39.70	38.16	124.34	2,997.49	-208.50	362.55	290.34	72.21	5.021			
12,100.00	8,646.00	12,298.07	8,851.00	40.54	39.03	124.34	3,097.49	-209.11	362.56	288.72	73.84	4.910			
12,200.00	8,646.00	12,398.07	8,851.00	41.39	39.91	124.34	3,197.49	-209.71	362.57	287.09	75.48	4.803			
12,300.00	8,646.00	12,498.07	8,851.00	42.23	40.79	124.33	3,297.49	-210.32	362.57	285.44	77.13	4.701			
12,400.00	8,646.00	12,598.07	8,851.00	43.09	41.67	124.33	3,397.49	-210.93	362.58	283.80	78.79	4.602			
12,500.00	8,646.00	12,698.07	8,851.00	43.95	42.56	124.33	3,497.48	-211.53	362.59	282.14	80.45	4.507			
12,600.00	8,646.00	12,798.07	8,851.00	44.81	43.46	124.33	3,597.48	-212.14	362.60	280.47	82.12	4.415			
12,700.00	8,646.00	12,898.07	8,851.00	45.68	44.35	124.33	3,697.48	-212.75	362.60	278.80	83.80	4.327			
12,800.00	8,646.00	12,998.07	8,851.00	46.55	45.25	124.33	3,797.48	-213.35	362.61	277.13	85.48	4.242			
12,900.00	8,646.00	13,098.07	8,851.00	47.43	46.15	124.33	3,897.48	-213.96	362.62	275.44	87.17	4.160			
13,000.00	8,646.00	13,198.07	8,851.00	48.31	47.06	124.33	3,997.47	-214.57	362.62	273.76	88.87	4.080			
13,100.00	8,646.00	13,298.07	8,851.00	49.19	47.97	124.33	4,097.47	-215.17	362.63	272.06	90.57	4.004			
13,200.00	8,646.00	13,398.07	8,851.00	50.08	48.88	124.33	4,197.47	-215.78	362.64	270.36	92.27	3.930			
13,300.00	8,646.00	13,498.07	8,851.00	50.97	49.79	124.33	4,297.47	-216.39	362.64	268.66	93.98	3.859			
13,400.00	8,646.00	13,598.07	8,851.00	51.86	50.70	124.33	4,397.47	-216.99	362.65	266.95	95.70	3.790			
13,500.00	8,646.00	13,698.07	8,851.00	52.76	51.62	124.33	4,497.46	-217.60	362.66	265.24	97.42	3.723			
13,600.00	8,646.00	13,798.07	8,851.00	53.66	52.54	124.32	4,597.46	-218.21	362.66	263.53	99.14	3.658			
13,700.00	8,646.00	13,898.07	8,851.00	54.56	53.46	124.32	4,697.46	-218.81	362.67	261.81	100.87	3.596			
13,800.00	8,646.00	13,998.07	8,851.00	55.46	54.38	124.32	4,797.46	-219.42	362.68	260.08	102.60	3.535			
13,900.00	8,646.00	14,098.07	8,851.00	56.37	55.30	124.32	4,897.46	-220.03	362.69	258.36	104.33	3.476			
14,000.00	8,646.00	14,198.07	8,851.00	57.27	56.23	124.32	4,997.46	-220.63	362.69	256.63	106.06	3.420			
14,100.00	8,646.00	14,298.07	8,851.00	58.18	57.16	124.32	5,097.45	-221.24	362.70	254.89	107.80	3.364			
14,200.00	8,646.00	14,398.07	8,851.00	59.09	58.08	124.32	5,197.45	-221.85	362.71	253.16	109.55	3.311			
14,300.00	8,646.00	14,498.07	8,851.00	60.01	59.01	124.32	5,297.45	-222.45	362.71	251.42	111.29	3.259			
14,400.00	8,646.00	14,598.07	8,851.00	60.92	59.94	124.32	5,397.45	-223.06	362.72	249.68	113.04	3.209			
14,500.00	8,646.00	14,698.07	8,851.00	61.84	60.87	124.32	5,497.45	-223.67	362.73	247.94	114.79	3.160			
14,600.00	8,646.00	14,798.07	8,851.00	62.76	61.81	124.32	5,597.44	-224.27	362.73	246.19	116.54	3.112			
14,700.00	8,646.00	14,898.07	8,851.00	63.68	62.74	124.32	5,697.44	-224.88	362.74	244.44	118.30	3.066			
14,800.00	8,646.00	14,998.07	8,851.00	64.60	63.68	124.32	5,797.44	-225.49	362.75	242.69	120.06	3.022			
14,900.00	8,646.00	15,098.07	8,851.00	65.52	64.61	124.31	5,897.44	-226.09	362.75	240.94	121.81	2.978			
15,000.00	8,646.00	15,198.07	8,851.00	66.44	65.55	124.31	5,997.44	-226.70	362.76	239.19	123.58	2.936			
15,100.00	8,646.00	15,298.07	8,851.00	67.37	66.49	124.31	6,097.44	-227.31	362.77	237.43	125.34	2.894			
15,200.00	8,646.00	15,398.07	8,851.00	68.30	67.43	124.31	6,197.43	-227.91	362.78	235.67	127.11	2.854			

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

LEAM Drilling Services

Anticollision Report

Company: Devon Energy
 Project: Eddy County, NM (NAD-83)
 Reference Site: Ko Lanta 9-4 Fed Com
 Site Error: 0.00 usft
 Reference Well: Ko Lanta 9-4 Fed Com 518H
 Well Error: 0.00 usft
 Reference Wellbore: OH
 Reference Design: Plan #1

Local Co-ordinate Reference: Well Ko Lanta 9-4 Fed Com 518H
 TVD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
 MD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at 2.00 sigma
 Database: EDM 5000.1 Multi User Db
 Offset TVD Reference: Offset Datum

Offset Design Ko Lanta 9-4 Fed Com - Ko Lanta 9-4 Fed Com 528H - ST01 - Plan #1

Survey Program: 0-LEAM MWD+HDGM, 2420-LEAM MWD+HDGM, 8314-MWD+HFR1

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference		Offset		Semi Major Axis			Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore +N/-S (usft)	Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
15,300.00	8,646.00	15,498.07	8,851.00	69.22	68.37	124.31	6,297.43	-228.52	362.78	233.91	128.87	2.815		
15,400.00	8,646.00	15,598.07	8,851.00	70.15	69.31	124.31	6,397.43	-229.13	362.79	232.15	130.64	2.777		
15,500.00	8,646.00	15,698.07	8,851.00	71.08	70.25	124.31	6,497.43	-229.73	362.80	230.38	132.41	2.740		
15,600.00	8,646.00	15,798.07	8,851.00	72.01	71.19	124.31	6,597.43	-230.34	362.80	228.62	134.18	2.704		
15,700.00	8,646.00	15,898.07	8,851.00	72.95	72.14	124.31	6,697.42	-230.95	362.81	226.85	135.96	2.669		
15,800.00	8,646.00	15,998.07	8,851.00	73.88	73.08	124.31	6,797.42	-231.55	362.82	225.08	137.73	2.634		
15,900.00	8,646.00	16,098.07	8,851.00	74.81	74.02	124.31	6,897.42	-232.16	362.82	223.32	139.51	2.601		
16,000.00	8,646.00	16,198.07	8,851.00	75.75	74.97	124.31	6,997.42	-232.77	362.83	221.54	141.29	2.568		
16,100.00	8,646.00	16,298.07	8,851.00	76.68	75.91	124.31	7,097.42	-233.37	362.84	219.77	143.07	2.536		
16,200.00	8,646.00	16,398.07	8,851.00	77.62	76.86	124.31	7,197.42	-233.98	362.84	218.00	144.85	2.505		
16,300.00	8,646.00	16,498.07	8,851.00	78.56	77.81	124.30	7,297.41	-234.59	362.85	216.22	146.63	2.475		
16,400.00	8,646.00	16,598.07	8,851.00	79.50	78.76	124.30	7,397.41	-235.19	362.86	214.45	148.41	2.445		
16,500.00	8,646.00	16,698.07	8,851.00	80.44	79.70	124.30	7,497.41	-235.80	362.87	212.67	150.19	2.416		
16,600.00	8,646.00	16,798.07	8,851.00	81.38	80.65	124.30	7,597.41	-236.41	362.87	210.89	151.98	2.388		
16,700.00	8,646.00	16,898.07	8,851.00	82.32	81.60	124.30	7,697.41	-237.01	362.88	209.11	153.76	2.360		
16,800.00	8,646.00	16,998.07	8,851.00	83.26	82.55	124.30	7,797.40	-237.62	362.89	207.33	155.55	2.333		
16,900.00	8,646.00	17,098.07	8,851.00	84.20	83.50	124.30	7,897.40	-238.23	362.89	205.55	157.34	2.306		
17,000.00	8,646.00	17,198.07	8,851.00	85.14	84.45	124.30	7,997.40	-238.83	362.90	203.77	159.13	2.281		
17,100.00	8,646.00	17,298.07	8,851.00	86.08	85.40	124.30	8,097.40	-239.44	362.91	201.99	160.92	2.255		
17,200.00	8,646.00	17,398.07	8,851.00	87.03	86.35	124.30	8,197.40	-240.05	362.91	200.20	162.71	2.230		
17,300.00	8,646.00	17,498.07	8,851.00	87.97	87.30	124.30	8,297.40	-240.65	362.92	198.42	164.50	2.206		
17,400.00	8,646.00	17,598.07	8,851.00	88.92	88.26	124.30	8,397.39	-241.26	362.93	196.63	166.29	2.182		
17,500.00	8,646.00	17,698.07	8,851.00	89.86	89.21	124.30	8,497.39	-241.87	362.93	194.85	168.09	2.159		
17,600.00	8,646.00	17,798.07	8,851.00	90.81	90.16	124.29	8,597.39	-242.47	362.94	193.06	169.88	2.136		
17,700.00	8,646.00	17,898.07	8,851.00	91.75	91.11	124.29	8,697.39	-243.08	362.95	191.27	171.68	2.114		
17,800.00	8,646.00	17,998.07	8,851.00	92.70	92.07	124.29	8,797.39	-243.69	362.96	189.48	173.47	2.092		
17,900.00	8,646.00	18,098.07	8,851.00	93.65	93.02	124.29	8,897.38	-244.29	362.96	187.70	175.27	2.071		
18,000.00	8,646.00	18,198.07	8,851.00	94.60	93.98	124.29	8,997.38	-244.90	362.97	185.91	177.06	2.050		
18,100.00	8,646.00	18,298.07	8,851.00	95.54	94.93	124.29	9,097.38	-245.51	362.98	184.11	178.86	2.029		
18,200.00	8,646.00	18,398.07	8,851.00	96.49	95.89	124.29	9,197.38	-246.11	362.98	182.32	180.66	2.009		
18,300.00	8,646.00	18,498.07	8,851.00	97.44	96.84	124.29	9,297.38	-246.72	362.99	180.53	182.46	1.989		
18,400.00	8,646.00	18,598.07	8,851.00	98.39	97.80	124.29	9,397.37	-247.33	363.00	178.74	184.26	1.970		
18,500.00	8,646.00	18,698.07	8,851.00	99.34	98.75	124.29	9,497.37	-247.93	363.00	176.95	186.06	1.951		
18,600.00	8,646.00	18,798.07	8,851.00	100.29	99.71	124.29	9,597.37	-248.54	363.01	175.15	187.86	1.932		
18,604.34	8,646.00	18,802.41	8,851.00	100.33	99.75	124.29	9,601.71	-248.57	363.01	175.07	187.94	1.932		
18,654.73	8,646.00	18,852.34	8,851.00	100.81	100.23	124.29	9,651.64	-248.87	363.02	174.17	188.84	1.922 SF		

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

LEAM Drilling Services

Anticollision Report

Company: Devon Energy
Project: Eddy County, NM (NAD-83)
Reference Site: Ko Lanta 9-4 Fed Com
Site Error: 0.00 usft
Reference Well: Ko Lanta 9-4 Fed Com 518H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well Ko Lanta 9-4 Fed Com 518H
TVD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
MD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Multi User Db
Offset TVD Reference: Offset Datum

Offset Design Ko Lanta 9-4 Fed Com - North Pure Gold 9 Fed 11H (Offset) - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 100-GYRO 7543-MWD-ISCWSA												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-124.02	-305.71	-452.87	546.39				
100.00	100.00	96.30	96.30	0.09	0.00	-123.99	-305.65	-453.30	546.73	546.64	0.09	5,982.700	
200.00	200.00	199.15	199.15	0.31	0.00	-123.96	-305.64	-453.85	547.17	546.86	0.31	1,757.440	
283.99	283.99	283.99	283.99	0.50	0.00	-123.92	-305.29	-453.89	547.01	546.51	0.50	1,093.907	
300.00	300.00	300.00	300.00	0.54	0.00	-123.92	-305.29	-453.91	547.03	546.49	0.54	1,020.500	
400.00	400.00	398.22	398.22	0.76	0.00	-123.93	-305.47	-454.14	547.32	546.56	0.76	719.289	
500.00	500.00	498.12	498.12	0.99	0.00	-123.92	-305.59	-454.47	547.66	546.67	0.99	555.622	
600.00	600.00	595.30	595.29	1.21	0.00	-123.89	-305.66	-455.12	548.25	547.04	1.21	452.818	
700.00	700.00	699.67	699.66	1.43	0.00	-123.85	-305.65	-455.74	548.75	547.31	1.44	382.372	
800.00	800.00	799.58	799.57	1.66	0.00	-123.84	-305.60	-455.86	548.81	547.16	1.66	330.636	
900.00	900.00	900.00	899.99	1.88	0.00	-123.83	-305.50	-455.90	548.80	546.92	1.88	291.196	
944.29	944.29	944.30	944.29	1.98	0.00	-123.82	-305.44	-455.92	548.78	546.79	1.98	276.573	
948.72	948.72	948.67	948.66	1.99	0.00	-123.82	-305.43	-455.93	548.78	546.78	1.99	275.194	
1,000.00	1,000.00	999.27	999.26	2.11	0.00	-123.81	-305.36	-456.02	548.81	546.70	2.11	260.174	
1,100.00	1,100.00	1,100.86	1,100.85	2.33	0.00	15.27	-305.15	-456.14	548.65	546.32	2.33	235.953	
1,200.00	1,199.97	1,200.00	1,199.99	2.50	0.00	15.36	-304.93	-456.23	546.45	543.94	2.50	218.223	
1,300.00	1,299.85	1,298.14	1,298.13	2.69	0.00	15.54	-304.84	-456.50	541.96	539.27	2.69	201.387	
1,400.00	1,399.57	1,396.95	1,396.94	2.89	0.00	15.80	-304.90	-456.94	535.19	532.30	2.89	185.485	
1,500.00	1,499.06	1,495.48	1,495.46	3.10	0.00	16.16	-305.01	-457.56	526.10	523.01	3.09	170.458	
1,600.00	1,598.33	1,593.47	1,593.45	3.33	0.00	16.60	-305.00	-458.51	515.34	512.04	3.29	156.488	
1,700.00	1,697.59	1,691.66	1,691.64	3.57	0.00	17.09	-304.85	-459.85	504.73	501.22	3.50	144.118	
1,800.00	1,796.84	1,790.38	1,790.33	3.82	0.00	17.63	-304.57	-461.47	494.33	490.62	3.72	133.014	
1,900.00	1,896.10	1,888.05	1,887.99	4.07	0.00	18.20	-304.28	-463.34	484.21	480.27	3.94	123.048	
2,000.00	1,995.35	1,984.58	1,984.49	4.33	0.00	18.79	-304.20	-465.60	474.61	470.45	4.16	114.143	
2,100.00	2,094.61	2,081.59	2,081.46	4.60	0.00	19.42	-304.39	-468.36	465.64	461.25	4.38	106.197	
2,200.00	2,193.86	2,180.36	2,180.18	4.87	0.00	20.09	-304.68	-471.53	457.09	452.47	4.61	99.052	
2,300.00	2,293.12	2,280.39	2,280.16	5.15	0.00	20.82	-304.76	-474.86	448.61	443.76	4.85	92.541	
2,400.00	2,392.37	2,380.58	2,380.29	5.43	0.00	21.63	-304.47	-478.20	440.05	434.97	5.08	86.557	
2,500.00	2,491.63	2,480.82	2,480.48	5.71	0.00	22.49	-303.93	-481.48	431.40	426.08	5.32	81.042	
2,600.00	2,590.88	2,583.08	2,582.68	5.99	0.00	23.46	-302.87	-484.63	422.47	416.91	5.57	75.916	
2,700.00	2,690.14	2,686.11	2,685.65	6.27	0.00	24.59	-300.79	-487.33	412.84	407.03	5.81	71.058	
2,800.00	2,789.39	2,785.13	2,784.60	6.56	0.00	25.82	-297.92	-489.77	402.87	396.81	6.06	66.468	
2,900.00	2,888.65	2,882.89	2,882.30	6.85	0.00	27.05	-295.49	-492.26	393.34	387.02	6.32	62.269	
3,000.00	2,987.90	2,980.15	2,979.51	7.14	0.00	28.24	-293.79	-494.90	384.40	377.83	6.58	58.458	
3,100.00	3,087.16	3,076.74	3,076.03	7.43	0.00	29.53	-291.97	-498.20	376.26	369.42	6.84	55.011	
3,200.00	3,186.41	3,173.28	3,172.46	7.72	0.00	30.93	-290.03	-502.30	369.08	361.97	7.11	51.918	
3,300.00	3,285.67	3,270.67	3,269.72	8.01	0.00	32.37	-288.39	-507.02	362.80	355.42	7.38	49.147	
3,400.00	3,384.92	3,372.94	3,371.86	8.30	0.00	33.88	-287.02	-511.90	356.79	349.13	7.66	46.594	
3,500.00	3,484.18	3,480.41	3,479.28	8.60	0.00	35.33	-286.30	-515.03	349.40	341.47	7.93	44.060	
3,600.00	3,583.43	3,581.05	3,579.92	8.89	0.00	36.51	-286.68	-515.99	340.52	332.31	8.21	41.492	
3,700.00	3,682.69	3,681.15	3,680.01	9.19	0.00	37.63	-287.63	-516.77	331.73	323.24	8.49	39.090	
3,800.00	3,781.94	3,787.40	3,786.24	9.48	0.00	38.66	-289.73	-516.25	322.03	313.28	8.76	36.783	
3,900.00	3,881.20	3,891.56	3,890.28	9.78	0.00	39.36	-293.43	-513.27	310.36	301.34	9.02	34.411	
4,000.00	3,980.45	3,992.09	3,990.65	10.08	0.00	39.94	-297.56	-509.28	297.75	288.46	9.29	32.051	
4,100.00	4,079.71	4,091.14	4,089.54	10.37	0.00	40.65	-301.20	-505.24	284.98	275.41	9.57	29.780	
4,200.00	4,178.96	4,187.45	4,185.76	10.67	0.00	41.58	-303.98	-501.89	272.76	262.90	9.87	27.648	
4,300.00	4,278.22	4,284.79	4,283.04	10.97	0.00	42.76	-306.22	-499.51	261.56	251.40	10.17	25.725	
4,400.00	4,377.47	4,383.33	4,381.54	11.27	0.00	44.16	-308.06	-497.63	250.98	240.51	10.48	23.959	
4,500.00	4,476.73	4,482.60	4,480.79	11.57	0.00	45.75	-309.73	-495.87	240.70	229.91	10.79	22.308	
4,600.00	4,575.98	4,581.68	4,579.83	11.86	0.00	47.44	-311.47	-494.11	230.60	219.49	11.11	20.754	
4,700.00	4,675.24	4,680.24	4,678.37	12.16	0.00	49.31	-313.10	-492.54	220.91	209.47	11.44	19.305	
4,800.00	4,774.49	4,779.39	4,777.50	12.46	0.00	51.46	-314.37	-491.19	211.71	199.93	11.78	17.965	

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

LEAM Drilling Services

Anticollision Report

Company: Devon Energy
Project: Eddy County, NM (NAD-83)
Reference Site: Ko Lanta 9-4 Fed Com
Site Error: 0.00 usft
Reference Well: Ko Lanta 9-4 Fed Com 518H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well Ko Lanta 9-4 Fed Com 518H
TVD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
MD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Multi User Db
Offset TVD Reference: Offset Datum

Offset Design Ko Lanta 9-4 Fed Com - North Pure Gold 9 Fed 11H (Offset) - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 100-GYRO 7543-MWD-ISCWSA													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,900.00	4,873.75	4,878.69	4,876.79	12.76	0.00	53.87	-315.41	-489.80	202.83	190.69	12.14	16.712	
5,000.00	4,973.01	4,977.71	4,975.79	13.06	0.00	56.50	-316.37	-488.42	194.35	181.85	12.50	15.548	
5,100.00	5,072.26	5,076.85	5,074.93	13.36	0.00	59.38	-317.26	-487.13	186.42	173.55	12.87	14.483	
5,200.00	5,171.52	5,176.07	5,174.13	13.66	0.00	62.52	-318.12	-485.85	179.02	165.77	13.25	13.511	
5,300.00	5,270.77	5,275.16	5,273.21	13.96	0.00	65.94	-318.91	-484.57	172.23	158.60	13.63	12.633	
5,400.00	5,370.03	5,374.27	5,372.30	14.26	0.00	69.72	-319.38	-483.27	166.20	152.18	14.02	11.855	
5,500.00	5,469.28	5,473.46	5,471.49	14.56	0.00	73.83	-319.67	-481.93	160.99	146.59	14.40	11.177	
5,600.00	5,568.54	5,572.55	5,570.57	14.86	0.00	78.20	-319.93	-480.57	156.67	141.89	14.78	10.603	
5,700.00	5,667.79	5,671.80	5,669.81	15.16	0.00	82.79	-320.19	-479.23	153.34	138.21	15.13	10.135	
5,800.00	5,767.05	5,770.78	5,768.78	15.46	0.00	87.46	-320.60	-477.98	151.03	135.57	15.46	9.770	
5,900.00	5,866.30	5,869.78	5,867.77	15.76	0.00	92.17	-321.06	-477.01	149.93	134.17	15.76	9.516	
5,947.10	5,913.05	5,916.46	5,914.45	15.90	0.00	94.40	-321.25	-476.57	149.81	133.92	15.88	9.431 CC, ES	
6,000.00	5,965.56	5,968.96	5,966.95	16.06	0.00	96.90	-321.48	-476.10	149.95	133.93	16.02	9.360	
6,100.00	6,064.81	6,068.11	6,066.09	16.36	0.00	101.55	-321.99	-475.32	151.01	134.76	16.25	9.292	
6,200.00	6,164.07	6,167.28	6,165.26	16.67	0.00	106.08	-322.49	-474.62	153.12	136.67	16.45	9.308	
6,300.00	6,263.32	6,266.57	6,264.55	16.97	0.00	110.54	-322.86	-473.74	156.20	139.58	16.62	9.399	
6,400.00	6,362.58	6,365.89	6,363.86	17.27	0.00	114.89	-323.21	-472.65	160.13	143.37	16.76	9.554	
6,500.00	6,461.83	6,465.03	6,462.99	17.57	0.00	119.04	-323.54	-471.45	164.92	148.04	16.88	9.768	
6,600.00	6,561.09	6,564.26	6,562.22	17.87	0.00	122.95	-323.84	-470.21	170.56	153.57	16.99	10.036	
6,700.00	6,660.34	6,663.63	6,661.58	18.17	0.00	126.63	-324.20	-468.89	176.88	159.78	17.10	10.345	
6,800.00	6,759.60	6,762.89	6,760.83	18.47	0.00	129.99	-324.69	-467.73	183.76	166.56	17.20	10.683	
6,900.00	6,858.85	6,862.19	6,860.12	18.78	0.00	133.07	-325.21	-466.64	191.22	173.91	17.31	11.048	
7,000.00	6,958.11	6,961.60	6,959.52	19.08	0.00	135.94	-325.80	-465.48	199.11	181.69	17.42	11.430	
7,100.00	7,057.36	7,061.14	7,059.05	19.38	0.00	138.63	-326.51	-464.18	207.34	189.81	17.54	11.824	
7,200.00	7,156.66	7,160.55	7,158.45	19.66	0.00	141.10	-327.37	-462.84	215.60	197.95	17.65	12.218	
7,300.00	7,256.19	7,260.80	7,258.68	19.86	0.00	143.06	-328.36	-461.56	222.27	204.53	17.74	12.530	
7,400.00	7,355.94	7,361.07	7,358.93	20.05	0.00	144.63	-329.79	-459.85	226.65	208.80	17.84	12.703	
7,500.00	7,455.84	7,460.75	7,458.59	20.22	0.00	145.63	-331.22	-458.56	228.95	210.99	17.97	12.744	
7,600.00	7,555.83	7,563.00	7,560.78	20.37	0.14	146.31	-330.44	-456.70	231.88	213.66	18.22	12.725	
7,700.00	7,655.83	7,667.00	7,663.98	20.54	0.54	7.95	-321.53	-452.68	246.30	227.41	18.90	13.034	
7,800.00	7,755.83	7,771.00	7,768.25	20.69	0.90	8.91	-304.53	-445.95	274.00	254.78	19.22	14.258	
7,900.00	7,855.83	7,872.10	7,871.54	20.84	1.20	9.65	-283.43	-438.95	314.11	294.80	19.32	16.262	
8,000.00	7,955.83	7,977.85	7,976.26	20.99	1.56	9.73	-257.11	-434.05	363.19	343.84	19.35	18.766	
8,100.00	8,055.83	8,079.00	8,078.02	21.15	2.06	9.03	-228.54	-433.31	420.67	401.31	19.36	21.725	
8,200.00	8,155.54	8,181.00	8,180.19	21.17	2.41	7.95	-207.39	-433.66	481.01	462.23	18.78	25.615	
8,300.00	8,252.74	8,279.00	8,278.38	21.18	2.80	6.81	-184.34	-433.92	535.24	516.92	18.31	29.230	
8,400.00	8,344.48	8,371.57	8,370.78	21.21	3.54	5.83	-142.01	-434.87	581.43	563.25	18.18	31.985	
8,500.00	8,427.98	8,454.29	8,453.74	21.25	4.40	5.05	-93.36	-437.08	617.41	599.27	18.13	34.047	
8,600.00	8,500.69	8,526.00	8,525.79	21.30	5.08	4.57	-55.37	-439.06	643.24	625.36	17.88	35.969	
8,700.00	8,560.41	8,586.85	8,586.44	21.38	6.41	3.81	21.01	-445.97	657.74	639.38	18.36	35.827	
8,800.00	8,605.31	8,631.00	8,630.62	21.48	7.52	3.00	84.33	-455.66	655.98	637.29	18.69	35.103	
8,900.00	8,634.05	8,659.86	8,659.38	21.59	8.25	2.62	125.05	-461.14	644.01	625.32	18.69	34.461	
9,000.00	8,645.74	8,671.74	8,671.44	21.73	8.91	2.49	161.94	-464.05	624.36	605.61	18.75	33.291	
9,100.00	8,646.00	8,672.00	8,671.70	21.90	9.68	2.43	205.07	-465.58	602.31	583.25	19.06	31.602	
9,200.00	8,646.00	8,672.00	8,671.70	22.10	10.25	2.45	236.73	-465.77	589.19	569.69	19.51	30.207	
9,272.77	8,646.00	8,672.00	8,671.70	22.28	10.82	2.51	268.65	-465.41	585.79	565.74	20.05	29.213	
9,300.00	8,646.00	8,672.00	8,671.70	22.35	11.09	2.56	283.69	-465.02	585.94	565.65	20.29	28.882	
9,400.00	8,646.00	8,672.00	8,671.70	22.64	12.26	2.72	349.86	-463.58	591.87	570.62	21.25	27.851	
9,500.00	8,646.00	8,672.00	8,671.70	22.97	13.95	2.77	446.26	-463.25	600.28	577.93	22.35	26.862	
9,600.00	8,646.00	8,672.00	8,671.70	23.34	15.89	2.71	567.34	-464.27	606.66	583.08	23.58	25.727	
9,700.00	8,646.00	8,672.00	8,671.70	23.76	17.83	2.54	686.52	-466.60	609.78	584.91	24.87	24.516	
9,800.00	8,646.00	8,672.00	8,671.70	24.21	19.49	2.35	784.24	-469.18	611.35	585.24	26.11	23.414	

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

LEAM Drilling Services

Anticollision Report

Company: Devon Energy
Project: Eddy County, NM (NAD-83)
Reference Site: Ko Lanta 9-4 Fed Com
Site Error: 0.00 usft
Reference Well: Ko Lanta 9-4 Fed Com 518H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well Ko Lanta 9-4 Fed Com 518H
TVD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
MD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Multi User Db
Offset TVD Reference: Offset Datum

Offset Design Ko Lanta 9-4 Fed Com - North Pure Gold 9 Fed 11H (Offset) - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 100-GYRO 7543-MWD-ISCWSA												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)					
9,900.00	8,646.00	9,021.26	8,033.17	24.70	21.21	2.15	885.95	-471.87	613.34	585.94	27.39	22.390	
10,000.00	8,646.00	9,122.43	8,031.94	25.22	22.89	2.02	987.09	-473.83	614.50	585.80	28.70	21.411	
10,100.00	8,646.00	9,223.06	8,030.40	25.77	24.63	1.96	1,087.71	-475.07	616.02	585.99	30.03	20.515	
10,200.00	8,646.00	9,329.71	8,029.54	26.35	26.45	1.80	1,194.32	-477.42	616.76	585.36	31.40	19.642	
10,300.00	8,646.00	9,430.37	8,028.73	26.96	28.16	1.83	1,294.98	-477.66	617.59	584.82	32.77	18.849	
10,400.00	8,646.00	9,531.97	8,029.09	27.59	29.90	1.89	1,396.57	-477.71	617.24	583.09	34.15	18.073	
10,411.39	8,646.00	9,542.62	8,029.10	27.66	30.08	1.90	1,407.22	-477.63	617.24	582.93	34.31	17.991	
10,500.00	8,646.00	9,626.75	8,028.82	28.24	31.53	2.07	1,491.35	-476.36	617.60	582.07	35.53	17.385	
10,600.00	8,646.00	9,738.81	8,030.00	28.91	33.43	2.47	1,603.33	-472.76	616.61	579.61	37.01	16.662	
10,700.00	8,646.00	9,836.39	8,030.75	29.60	35.09	2.92	1,700.81	-468.47	616.07	577.63	38.44	16.025	
10,800.00	8,646.00	9,943.90	8,032.48	30.30	36.90	3.56	1,808.14	-462.44	614.82	574.86	39.96	15.386	
10,900.00	8,646.00	10,049.51	8,035.70	31.03	38.70	4.12	1,913.58	-457.26	612.13	570.65	41.48	14.757	
11,000.00	8,646.00	10,149.50	8,038.83	31.76	40.41	4.66	2,013.39	-452.29	609.43	566.43	43.00	14.173	
11,100.00	8,646.00	10,238.95	8,040.87	32.51	41.95	5.14	2,102.71	-447.95	607.51	563.01	44.50	13.653	
11,158.38	8,646.00	10,290.72	8,041.58	32.95	42.83	5.39	2,154.43	-445.62	607.11	561.74	45.37	13.381	
11,200.00	8,646.00	10,323.34	8,041.50	33.27	43.40	5.56	2,187.00	-444.09	607.42	561.45	45.97	13.213	
11,300.00	8,646.00	10,422.82	8,040.10	34.04	45.11	6.00	2,286.39	-439.86	609.31	561.78	47.53	12.820	
11,400.00	8,646.00	10,520.40	8,038.90	34.83	46.78	6.33	2,383.91	-436.71	610.95	561.88	49.07	12.451	
11,500.00	8,646.00	10,622.36	8,037.18	35.62	48.53	6.63	2,485.82	-433.95	613.00	562.37	50.63	12.107	
11,600.00	8,646.00	10,733.86	8,036.75	36.42	50.44	6.93	2,597.28	-431.39	613.73	561.49	52.24	11.748	
11,700.00	8,646.00	10,835.29	8,037.45	37.23	52.20	7.09	2,698.70	-430.35	613.24	559.46	53.79	11.402	
11,760.18	8,646.00	10,892.92	8,037.68	37.72	53.20	7.17	2,756.33	-429.87	613.11	558.40	54.71	11.208	
11,800.00	8,646.00	10,932.07	8,037.71	38.05	53.87	7.22	2,795.48	-429.60	613.15	557.84	55.32	11.085	
11,900.00	8,646.00	11,036.38	8,038.00	38.87	55.69	7.32	2,899.79	-429.21	613.00	556.14	56.86	10.780	
12,000.00	8,646.00	11,143.78	8,039.33	39.70	57.54	7.38	3,007.18	-429.38	611.84	553.43	58.40	10.476	
12,100.00	8,646.00	11,238.28	8,040.74	40.54	59.18	7.32	3,101.66	-430.77	610.26	550.37	59.89	10.189	
12,200.00	8,646.00	11,336.79	8,041.17	41.39	60.88	7.10	3,200.12	-433.76	609.52	548.18	61.33	9.938	
12,300.00	8,646.00	11,434.54	8,041.43	42.23	62.56	6.88	3,297.83	-436.75	608.96	546.18	62.77	9.701	
12,316.67	8,646.00	11,449.51	8,041.40	42.38	62.82	6.85	3,312.79	-437.24	608.94	545.92	63.01	9.664	
12,400.00	8,646.00	11,526.57	8,040.69	43.09	64.15	6.65	3,389.80	-439.69	609.44	545.25	64.19	9.494	
12,500.00	8,646.00	11,626.68	8,039.38	43.95	65.88	6.47	3,489.88	-442.08	610.54	544.89	65.65	9.300	
12,600.00	8,646.00	11,735.56	8,038.23	44.81	67.77	6.19	3,598.69	-445.64	611.34	544.24	67.10	9.111	
12,700.00	8,646.00	11,832.99	8,038.17	45.68	69.44	5.95	3,696.06	-448.88	611.12	542.59	68.53	8.918	
12,754.52	8,646.00	11,887.52	8,038.04	46.16	70.38	5.82	3,750.57	-450.58	611.10	541.79	69.31	8.817	
12,800.00	8,646.00	11,932.02	8,037.87	46.55	71.14	5.68	3,795.03	-452.25	611.14	541.18	69.96	8.736	
12,900.00	8,646.00	12,038.82	8,037.79	47.43	73.02	5.27	3,901.71	-457.32	610.82	539.47	71.35	8.560	
13,000.00	8,646.00	12,141.48	8,038.49	48.31	74.82	4.70	4,004.15	-464.09	609.62	536.91	72.70	8.385	
13,100.00	8,646.00	12,241.41	8,039.40	49.19	76.58	4.02	4,103.76	-472.07	608.14	534.11	74.03	8.215	
13,200.00	8,646.00	12,341.03	8,040.10	50.08	78.34	3.28	4,203.01	-480.56	606.94	531.58	75.36	8.054	
13,265.90	8,646.00	12,400.00	8,040.51	50.67	79.37	2.81	4,261.73	-485.91	606.22	529.97	76.25	7.951	
13,300.00	8,646.00	12,400.00	8,040.51	50.97	79.37	2.81	4,261.73	-485.91	607.18	530.56	76.61	7.925 SF	
13,400.00	8,646.00	12,400.00	8,040.51	51.86	79.37	2.81	4,261.73	-485.91	620.87	544.35	76.53	8.113	
13,500.00	8,646.00	12,400.00	8,040.51	52.76	79.37	2.81	4,261.73	-485.91	649.85	574.91	74.94	8.672	
13,600.00	8,646.00	12,400.00	8,040.51	53.66	79.37	2.81	4,261.73	-485.91	692.19	619.87	72.32	9.571	
13,700.00	8,646.00	12,400.00	8,040.51	54.56	79.37	2.81	4,261.73	-485.91	745.62	676.45	69.17	10.779	
13,800.00	8,646.00	12,400.00	8,040.51	55.46	79.37	2.81	4,261.73	-485.91	807.94	742.05	65.89	12.262	
13,900.00	8,646.00	12,400.00	8,040.51	56.37	79.37	2.81	4,261.73	-485.91	877.26	814.54	62.72	13.986	
14,000.00	8,646.00	12,400.00	8,040.51	57.27	79.37	2.81	4,261.73	-485.91	952.05	892.26	59.80	15.921	
14,100.00	8,646.00	12,400.00	8,040.51	58.18	79.37	2.81	4,261.73	-485.91	1,031.13	973.97	57.16	18.038	
14,200.00	8,646.00	12,400.00	8,040.51	59.09	79.37	2.81	4,261.73	-485.91	1,113.57	1,058.75	54.82	20.313	
14,300.00	8,646.00	12,400.00	8,040.51	60.01	79.37	2.81	4,261.73	-485.91	1,198.69	1,145.94	52.75	22.722	
14,400.00	8,646.00	12,400.00	8,040.51	60.92	79.37	2.81	4,261.73	-485.91	1,285.96	1,235.02	50.94	25.246	

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

LEAM Drilling Services

Anticollision Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well Ko Lanta 9-4 Fed Com 518H
Project:	Eddy County, NM (NAD-83)	TVD Reference:	3371.8' GE + 23.2' KB @ 3395.00usft
Reference Site:	Ko Lanta 9-4 Fed Com	MD Reference:	3371.8' GE + 23.2' KB @ 3395.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Ko Lanta 9-4 Fed Com 518H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.1 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Ko Lanta 9-4 Fed Com - North Pure Gold 9 Fed 11H (Offset) - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 100-GYRO, 7543-MWD-HSCWSA													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (")	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
14,500.00	8,646.00	12,400.00	8,040.51	61.84	79.37	2.81	4,261.73	-485.91	1,374.96	1,325.62	49.34	27.866	
14,600.00	8,646.00	12,400.00	8,040.51	62.76	79.37	2.81	4,261.73	-485.91	1,465.38	1,417.44	47.94	30.568	
14,700.00	8,646.00	12,400.00	8,040.51	63.68	79.37	2.81	4,261.73	-485.91	1,556.97	1,510.27	46.70	33.339	
14,800.00	8,646.00	12,400.00	8,040.51	64.60	79.37	2.81	4,261.73	-485.91	1,649.54	1,603.93	45.61	36.166	
14,900.00	8,646.00	12,400.00	8,040.51	65.52	79.37	2.81	4,261.73	-485.91	1,742.93	1,698.28	44.64	39.040	
15,000.00	8,646.00	12,400.00	8,040.51	66.44	79.37	2.81	4,261.73	-485.91	1,837.01	1,793.22	43.79	41.952	
15,100.00	8,646.00	12,400.00	8,040.51	67.37	79.37	2.81	4,261.73	-485.91	1,931.69	1,888.66	43.03	44.893	

LEAM Drilling Services

Anticollision Report

Company: Devon Energy
Project: Eddy County, NM (NAD-83)
Reference Site: Ko Lanta 9-4 Fed Com
Site Error: 0.00 usft
Reference Well: Ko Lanta 9-4 Fed Com 518H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well Ko Lanta 9-4 Fed Com 518H
TVD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
MD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Multi User Db
Offset TVD Reference: Offset Datum

Offset Design Ko Lanta 9-4 Fed Com - North Pure Gold 9 Fed 18H (Offset) - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 100-GYRO												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)					
0.00	0.00	0.00	0.00	0.00	0.00	-88.90	21.21	-1,102.76	1,102.96				
100.00	100.00	91.54	91.54	0.09	0.00	-88.90	21.21	-1,103.11	1,103.35	1,103.25	0.09	N/A	
200.00	200.00	192.58	192.57	0.31	0.00	-88.90	21.11	-1,103.88	1,104.10	1,103.79	0.31	3,532.209	
300.00	300.00	290.64	290.63	0.54	0.00	-88.92	20.91	-1,104.61	1,104.85	1,104.31	0.54	2,056.749	
400.00	400.00	382.73	382.72	0.76	0.00	-88.92	20.85	-1,105.70	1,106.03	1,105.27	0.76	1,448.884	
500.00	500.00	475.83	475.80	0.99	0.00	-88.91	21.03	-1,107.46	1,107.92	1,106.93	0.99	1,120.055	
600.00	600.00	574.32	574.26	1.21	0.00	-88.90	21.34	-1,109.73	1,110.23	1,109.02	1.21	914.996	
700.00	700.00	676.42	676.33	1.43	0.00	-88.88	21.65	-1,112.01	1,112.47	1,111.04	1.44	774.132	
800.00	800.00	779.10	779.00	1.66	0.00	-88.86	22.14	-1,114.06	1,114.48	1,112.82	1.66	670.947	
900.00	900.00	881.04	880.92	1.88	0.00	-88.84	22.68	-1,115.88	1,116.27	1,114.38	1.89	592.065	
1,000.00	1,000.00	982.63	982.49	2.11	0.00	-88.81	23.16	-1,117.53	1,117.91	1,115.80	2.11	529.844	
1,100.00	1,100.00	1,083.84	1,083.69	2.33	0.00	50.26	23.65	-1,119.05	1,119.31	1,116.99	2.33	481.344	
1,200.00	1,199.97	1,184.24	1,184.08	2.50	0.00	50.37	24.23	-1,120.47	1,119.33	1,116.82	2.50	447.141	
1,300.00	1,299.85	1,284.97	1,284.80	2.69	0.00	50.61	24.74	-1,121.86	1,117.63	1,114.94	2.69	415.536	
1,400.00	1,399.57	1,384.77	1,384.59	2.89	0.00	50.97	25.15	-1,123.18	1,114.25	1,111.37	2.89	386.209	
1,500.00	1,499.06	1,483.41	1,483.22	3.10	0.00	51.44	25.51	-1,124.53	1,109.31	1,106.22	3.09	358.825	
1,600.00	1,598.33	1,584.56	1,584.35	3.33	0.00	51.97	25.83	-1,125.90	1,103.18	1,099.87	3.31	333.275	
1,700.00	1,697.59	1,683.73	1,683.52	3.57	0.00	52.47	25.97	-1,127.15	1,096.94	1,093.40	3.54	310.124	
1,800.00	1,796.84	1,782.98	1,782.76	3.82	0.00	52.98	26.04	-1,128.42	1,090.82	1,087.05	3.77	289.165	
1,900.00	1,896.10	1,882.02	1,881.79	4.07	0.00	53.48	26.07	-1,129.72	1,084.80	1,080.78	4.01	270.219	
2,000.00	1,995.35	1,981.63	1,981.40	4.33	0.00	54.00	26.17	-1,131.02	1,078.87	1,074.61	4.26	253.093	
2,100.00	2,094.61	2,081.10	2,080.85	4.60	0.00	54.53	26.30	-1,132.29	1,073.01	1,068.50	4.52	237.591	
2,200.00	2,193.86	2,179.95	2,179.70	4.87	0.00	55.05	26.28	-1,133.58	1,067.26	1,062.48	4.77	223.545	
2,300.00	2,293.12	2,277.45	2,277.19	5.15	0.00	55.57	26.31	-1,134.95	1,061.69	1,056.66	5.04	210.803	
2,400.00	2,392.37	2,374.66	2,374.39	5.43	0.00	56.09	26.31	-1,136.52	1,056.42	1,051.12	5.30	199.240	
2,500.00	2,491.63	2,471.07	2,470.78	5.71	0.00	56.61	26.32	-1,138.30	1,051.48	1,045.90	5.57	188.727	
2,600.00	2,590.88	2,571.58	2,571.27	5.99	0.00	57.17	26.52	-1,140.29	1,046.78	1,040.94	5.84	179.140	
2,700.00	2,690.14	2,665.80	2,665.47	6.27	0.00	57.69	26.67	-1,142.18	1,042.21	1,036.09	6.12	170.340	
2,800.00	2,789.39	2,757.07	2,756.70	6.56	0.00	58.20	26.85	-1,144.70	1,038.48	1,032.09	6.40	162.368	
2,900.00	2,888.65	2,848.51	2,848.08	6.85	0.00	58.70	26.95	-1,147.96	1,035.62	1,028.95	6.68	155.146	
3,000.00	2,987.90	2,944.24	2,943.73	7.14	0.00	59.22	26.97	-1,152.05	1,033.54	1,026.58	6.96	148.574	
3,100.00	3,087.16	3,045.69	3,045.08	7.43	0.00	59.77	27.02	-1,156.36	1,031.52	1,024.28	7.24	142.479	
3,200.00	3,186.41	3,152.39	3,151.71	7.72	0.00	60.35	27.07	-1,160.53	1,029.28	1,021.75	7.53	136.777	
3,300.00	3,285.67	3,268.24	3,267.51	8.01	0.00	61.02	27.31	-1,163.60	1,025.93	1,018.12	7.81	131.335	
3,400.00	3,384.92	3,386.55	3,385.82	8.30	0.00	61.72	27.41	-1,164.59	1,020.91	1,012.81	8.10	126.079	
3,500.00	3,484.18	3,488.41	3,487.67	8.60	0.00	62.34	27.32	-1,164.29	1,014.85	1,006.47	8.39	120.997	
3,600.00	3,583.43	3,597.82	3,597.08	8.89	0.00	63.02	27.33	-1,163.39	1,008.43	999.75	8.68	116.224	
3,700.00	3,682.69	3,706.99	3,706.23	9.19	0.00	63.72	27.17	-1,161.35	1,001.08	992.11	8.97	111.647	
3,800.00	3,781.94	3,815.58	3,814.77	9.48	0.00	64.42	26.54	-1,158.28	992.82	983.56	9.26	107.252	
3,900.00	3,881.20	3,915.68	3,914.82	9.78	0.00	65.06	25.56	-1,155.03	984.19	974.64	9.55	103.029	
4,000.00	3,980.45	4,011.89	4,010.98	10.08	0.00	65.68	24.59	-1,152.00	975.76	965.91	9.85	99.044	
4,100.00	4,079.71	4,100.00	4,099.05	10.37	0.00	66.25	23.76	-1,149.71	968.02	957.86	10.16	95.310	
4,200.00	4,178.96	4,194.30	4,193.34	10.67	0.00	66.86	23.05	-1,148.01	961.20	950.74	10.46	91.902	
4,300.00	4,278.22	4,290.75	4,289.78	10.97	0.00	67.51	22.56	-1,146.81	955.10	944.34	10.76	88.752	
4,400.00	4,377.47	4,388.38	4,387.40	11.27	0.00	68.17	22.18	-1,145.78	949.35	938.28	11.06	85.799	
4,500.00	4,476.73	4,486.29	4,485.31	11.57	0.00	68.84	21.82	-1,144.90	943.87	932.51	11.37	83.023	
4,600.00	4,575.98	4,583.28	4,582.29	11.86	0.00	69.51	21.56	-1,144.17	938.71	927.04	11.67	80.408	
4,700.00	4,675.24	4,679.38	4,678.39	12.16	0.00	70.19	21.46	-1,143.68	933.98	921.99	11.98	77.955	
4,800.00	4,774.49	4,779.76	4,778.77	12.46	0.00	70.91	21.52	-1,143.28	929.54	917.25	12.29	75.652	
4,900.00	4,873.75	4,879.17	4,878.17	12.76	0.00	71.64	21.52	-1,142.75	925.11	912.51	12.59	73.455	
5,000.00	4,973.01	4,976.47	4,975.48	13.06	0.00	72.35	21.57	-1,142.32	920.92	908.02	12.90	71.374	
5,100.00	5,072.26	5,074.98	5,073.99	13.36	0.00	73.07	21.58	-1,142.09	917.07	903.86	13.21	69.415	

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

LEAM Drilling Services

Anticollision Report

Company: Devon Energy
 Project: Eddy County, NM (NAD-83)
 Reference Site: Ko Lanta 9-4 Fed Com
 Site Error: 0.00 usft
 Reference Well: Ko Lanta 9-4 Fed Com 518H
 Well Error: 0.00 usft
 Reference Wellbore: OH
 Reference Design: Plan #1

Local Co-ordinate Reference: Well Ko Lanta 9-4 Fed Com 518H
 TVD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
 MD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: EDM 5000.1 Multi User Db
 Offset TVD Reference: Offset Datum

Offset Design Ko Lanta 9-4 Fed Com - North Pure Gold 9 Fed 18H (Offset) - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 100-GYRO												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (")	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,200.00	5,171.52	5,173.71	5,172.72	13.66	0.00	73.80	21.60	-1,141.90	913.41	899.89	13.52	67.557	
5,300.00	5,270.77	5,273.26	5,272.26	13.96	0.00	74.54	21.63	-1,141.74	909.92	896.09	13.83	65.795	
5,400.00	5,370.03	5,372.15	5,371.16	14.26	0.00	75.28	21.61	-1,141.58	906.57	892.43	14.14	64.116	
5,500.00	5,469.28	5,471.50	5,470.51	14.56	0.00	76.02	21.55	-1,141.48	903.41	888.96	14.45	62.523	
5,600.00	5,568.54	5,569.87	5,568.88	14.86	0.00	76.75	21.43	-1,141.42	900.41	885.65	14.76	61.006	
5,700.00	5,667.79	5,668.39	5,667.40	15.16	0.00	77.49	21.38	-1,141.46	897.69	882.62	15.07	59.569	
5,800.00	5,767.05	5,767.16	5,766.17	15.46	0.00	78.24	21.38	-1,141.54	895.18	879.80	15.38	58.204	
5,900.00	5,866.30	5,866.76	5,865.77	15.76	0.00	79.01	21.42	-1,141.62	892.86	877.17	15.69	56.906	
6,000.00	5,965.56	5,965.95	5,964.95	16.06	0.00	79.77	21.50	-1,141.64	890.65	874.65	16.00	55.665	
6,100.00	6,064.81	6,063.94	6,062.94	16.36	0.00	80.53	21.56	-1,141.74	888.67	872.36	16.31	54.486	
6,200.00	6,164.07	6,164.14	6,163.14	16.67	0.00	81.30	21.60	-1,141.96	886.95	870.33	16.62	53.368	
6,300.00	6,263.32	6,264.17	6,263.18	16.97	0.00	82.08	21.59	-1,142.00	885.20	868.28	16.93	52.290	
6,400.00	6,362.58	6,362.36	6,361.36	17.27	0.00	82.85	21.56	-1,142.09	883.65	866.42	17.24	51.264	
6,500.00	6,461.83	6,462.39	6,461.39	17.57	0.00	83.62	21.54	-1,142.28	882.35	864.81	17.55	50.289	
6,600.00	6,561.09	6,563.48	6,562.48	17.87	0.00	84.41	21.40	-1,142.30	881.01	863.16	17.85	49.349	
6,700.00	6,660.34	6,662.59	6,661.60	18.17	0.00	85.18	21.10	-1,142.28	879.71	861.55	18.16	48.443	
6,800.00	6,759.60	6,760.82	6,759.82	18.47	0.00	85.94	20.85	-1,142.37	878.68	860.21	18.47	47.584	
6,900.00	6,858.85	6,859.65	6,858.65	18.78	0.00	86.71	20.64	-1,142.54	877.90	859.13	18.77	46.769	
7,000.00	6,958.11	6,958.62	6,957.63	19.08	0.00	87.47	20.44	-1,142.75	877.31	858.23	19.08	45.992	
7,100.00	7,057.36	7,058.11	7,057.12	19.38	0.00	88.25	20.31	-1,142.92	876.91	857.53	19.38	45.251	
7,200.00	7,156.66	7,156.65	7,155.65	19.66	0.00	89.02	20.18	-1,142.99	876.60	856.94	19.66	44.591	
7,300.00	7,255.19	7,259.68	7,258.69	19.86	0.00	89.63	19.84	-1,143.01	876.28	856.42	19.86	44.118	
7,400.00	7,355.94	7,359.19	7,358.19	20.05	0.00	90.06	19.34	-1,143.04	875.95	855.90	20.05	43.690	
7,500.00	7,455.84	7,458.55	7,457.55	20.22	0.00	90.30	18.80	-1,143.23	875.76	855.54	20.22	43.312	
7,600.00	7,555.83	7,558.34	7,557.34	20.37	0.00	90.38	18.28	-1,143.44	875.58	855.21	20.37	42.977	
7,700.00	7,655.83	7,658.30	7,657.29	20.54	0.00	-48.71	17.63	-1,143.80	875.42	854.88	20.53	42.631	
7,800.00	7,755.83	7,757.86	7,756.85	20.69	0.00	-48.77	16.88	-1,144.25	875.26	854.57	20.69	42.311	
7,900.00	7,855.83	7,858.41	7,857.40	20.84	0.00	-48.83	16.10	-1,144.78	875.15	854.31	20.84	41.995	
8,000.00	7,955.83	7,959.08	7,958.07	20.99	0.00	-48.89	15.29	-1,145.16	874.91	853.91	20.99	41.676	
8,100.00	8,055.83	8,058.84	8,057.82	21.15	0.00	-48.94	14.50	-1,145.52	874.66	853.51	21.15	41.358	
8,200.00	8,155.54	8,156.42	8,155.40	21.17	0.00	-49.24	13.71	-1,146.01	870.58	849.41	21.17	41.131	
8,300.00	8,252.74	8,251.73	8,250.70	21.18	0.00	-51.59	13.02	-1,146.81	855.86	834.68	21.18	40.410	
8,400.00	8,344.48	8,342.59	8,341.55	21.21	0.00	-55.71	12.32	-1,147.70	831.41	810.22	21.20	39.224	
8,500.00	8,427.98	8,424.22	8,423.18	21.25	0.00	-61.48	11.65	-1,148.62	799.51	778.30	21.21	37.697	
8,600.00	8,500.69	8,493.81	8,492.76	21.30	0.00	-68.41	11.14	-1,149.61	763.48	742.28	21.20	36.008	
8,700.00	8,560.41	8,552.51	8,551.45	21.38	0.00	-75.82	10.74	-1,150.57	727.29	706.13	21.16	34.370	
8,800.00	8,605.31	8,596.45	8,595.38	21.48	0.00	-82.40	10.39	-1,151.33	695.49	674.42	21.07	33.012	
8,900.00	8,634.05	8,624.15	8,623.07	21.59	0.00	-87.00	10.16	-1,151.82	672.77	651.85	20.92	32.160	
9,000.00	8,645.74	8,634.97	8,633.89	21.73	0.00	-88.93	10.08	-1,152.02	662.86	642.13	20.73	31.972 SF	
9,018.12	8,646.23	8,635.32	8,634.24	21.76	0.00	-88.96	10.07	-1,152.03	662.62	641.92	20.70	32.011 CC, ES	
9,100.00	8,646.00	8,634.45	8,633.37	21.90	0.00	-88.91	10.08	-1,152.01	667.61	647.07	20.54	32.504	
9,200.00	8,646.00	8,633.67	8,632.59	22.10	0.00	-88.84	10.09	-1,152.00	687.04	666.67	20.37	33.724	
9,300.00	8,646.00	8,632.89	8,631.81	22.35	0.00	-88.77	10.09	-1,151.98	719.96	699.71	20.25	35.559	
9,400.00	8,646.00	8,632.11	8,631.03	22.64	0.00	-88.71	10.10	-1,151.97	764.62	744.46	20.17	37.913	
9,500.00	8,646.00	8,631.33	8,630.25	22.97	0.00	-88.64	10.10	-1,151.95	819.12	798.99	20.13	40.689	
9,600.00	8,646.00	8,630.54	8,629.46	23.34	0.00	-88.57	10.11	-1,151.94	881.63	861.50	20.13	43.803	
9,700.00	8,646.00	8,629.75	8,628.68	23.76	0.00	-88.50	10.12	-1,151.93	950.57	930.42	20.15	47.183	
9,800.00	8,646.00	8,628.96	8,627.89	24.21	0.00	-88.43	10.12	-1,151.91	1,024.64	1,004.46	20.18	50.773	
9,900.00	8,646.00	8,628.17	8,627.10	24.70	0.00	-88.37	10.13	-1,151.90	1,102.81	1,082.59	20.22	54.527	
10,000.00	8,646.00	8,627.38	8,626.30	25.22	0.00	-88.30	10.14	-1,151.88	1,184.27	1,164.00	20.27	58.412	
10,100.00	8,646.00	8,626.58	8,625.51	25.77	0.00	-88.23	10.14	-1,151.87	1,268.39	1,248.06	20.33	62.397	
10,200.00	8,646.00	8,625.78	8,624.71	26.35	0.00	-88.16	10.15	-1,151.85	1,354.66	1,334.28	20.38	66.463	

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

LEAM Drilling Services

Anticollision Report

Company: Devon Energy
Project: Eddy County, NM (NAD-83)
Reference Site: Ko Lanta 9-4 Fed Com
Site Error: 0.00 usft
Reference Well: Ko Lanta 9-4 Fed Com 518H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well Ko Lanta 9-4 Fed Com 518H
TVD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
MD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Multi User Db
Offset TVD Reference: Offset Datum

Offset Design Ko Lanta 9-4 Fed Com - North Pure Gold 9 Fed 18H (Offset) - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 100-GYRO												Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Distance								Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
10,300.00	8,646.00	8,624.98	8,623.91	26.96	0.00	-88.09	10.16	-1,151.84	1,442.71	1,422.27	20.44	70.592	
10,400.00	8,646.00	8,624.18	8,623.10	27.59	0.00	-88.02	10.16	-1,151.83	1,532.22	1,511.73	20.49	74.769	
10,500.00	8,646.00	8,623.38	8,622.30	28.24	0.00	-87.95	10.17	-1,151.81	1,622.96	1,602.41	20.55	78.984	
10,600.00	8,646.00	8,622.57	8,621.49	28.91	0.00	-87.88	10.17	-1,151.80	1,714.73	1,694.13	20.60	83.226	
10,700.00	8,646.00	8,621.76	8,620.68	29.60	0.00	-87.81	10.18	-1,151.78	1,807.37	1,786.72	20.66	87.489	
10,800.00	8,646.00	8,620.95	8,619.87	30.30	0.00	-87.74	10.19	-1,151.77	1,900.76	1,880.05	20.71	91.767	
10,900.00	8,646.00	8,620.14	8,619.06	31.03	0.00	-87.67	10.19	-1,151.75	1,994.79	1,974.02	20.77	96.052	

LEAM Drilling Services

Anticollision Report

Company: Devon Energy
Project: Eddy County, NM (NAD-83)
Reference Site: Ko Lanta 9-4 Fed Com
Site Error: 0.00 usft
Reference Well: Ko Lanta 9-4 Fed Com 518H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well Ko Lanta 9-4 Fed Com 518H
TVD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
MD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Multi User Db
Offset TVD Reference: Offset Datum

Offset Design Ko Lanta 9-4 Fed Com - North Pure Gold 9 Fed 18H (Offset) - ST01 - ST01													Offset Site Error: 0.00 usft	
Survey Program: 100-GYRO 12334-MWD-ISCWSA, 16645-Project													Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Distance								
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
0.00	0.00	0.00	0.00	0.00	0.00	-88.90	21.21	-1,102.76	1,102.96					
100.00	100.00	91.54	91.54	0.09	0.00	-88.90	21.21	-1,103.11	1,103.35	1,103.25	0.09	N/A		
200.00	200.00	192.58	192.57	0.31	0.00	-88.90	21.11	-1,103.88	1,104.10	1,103.79	0.31	3,532.209		
300.00	300.00	290.64	290.63	0.54	0.00	-88.92	20.91	-1,104.61	1,104.85	1,104.31	0.54	2,056.749		
400.00	400.00	382.73	382.72	0.76	0.00	-88.92	20.85	-1,105.70	1,106.03	1,105.27	0.76	1,448.884		
500.00	500.00	475.83	475.80	0.99	0.00	-88.91	21.03	-1,107.46	1,107.92	1,106.93	0.99	1,120.055		
600.00	600.00	574.32	574.26	1.21	0.00	-88.90	21.34	-1,109.73	1,110.23	1,109.02	1.21	914.996		
700.00	700.00	676.42	676.33	1.43	0.00	-88.88	21.65	-1,112.01	1,112.47	1,111.04	1.44	774.132		
800.00	800.00	779.10	779.00	1.66	0.00	-88.86	22.14	-1,114.06	1,114.48	1,112.82	1.66	670.947		
900.00	900.00	881.04	880.92	1.88	0.00	-88.84	22.68	-1,115.88	1,116.27	1,114.38	1.89	592.065		
1,000.00	1,000.00	982.63	982.49	2.11	0.00	-88.81	23.16	-1,117.53	1,117.91	1,115.80	2.11	529.844		
1,100.00	1,100.00	1,083.84	1,083.69	2.33	0.00	50.26	23.65	-1,119.05	1,119.31	1,116.99	2.33	481.344		
1,200.00	1,199.97	1,184.24	1,184.08	2.50	0.00	50.37	24.23	-1,120.47	1,119.33	1,116.82	2.50	447.141		
1,300.00	1,299.85	1,284.97	1,284.80	2.69	0.00	50.61	24.74	-1,121.86	1,117.63	1,114.94	2.69	415.536		
1,400.00	1,399.57	1,384.77	1,384.59	2.89	0.00	50.97	25.15	-1,123.18	1,114.25	1,111.37	2.89	386.209		
1,500.00	1,499.06	1,483.41	1,483.22	3.10	0.00	51.44	25.51	-1,124.53	1,109.31	1,106.22	3.09	358.825		
1,600.00	1,598.33	1,584.56	1,584.35	3.33	0.00	51.97	25.83	-1,125.90	1,103.18	1,099.87	3.31	333.275		
1,700.00	1,697.59	1,683.73	1,683.52	3.57	0.00	52.47	25.97	-1,127.15	1,096.94	1,093.40	3.54	310.124		
1,800.00	1,796.84	1,782.98	1,782.76	3.82	0.00	52.98	26.04	-1,128.42	1,090.82	1,087.05	3.77	289.165		
1,900.00	1,896.10	1,882.02	1,881.79	4.07	0.00	53.48	26.07	-1,129.72	1,084.80	1,080.78	4.01	270.219		
2,000.00	1,995.35	1,981.63	1,981.40	4.33	0.00	54.00	26.17	-1,131.02	1,078.87	1,074.61	4.26	253.093		
2,100.00	2,094.61	2,081.10	2,080.85	4.60	0.00	54.53	26.30	-1,132.29	1,073.01	1,068.50	4.52	237.591		
2,200.00	2,193.86	2,179.95	2,179.70	4.87	0.00	55.05	26.28	-1,133.58	1,067.26	1,062.48	4.77	223.545		
2,300.00	2,293.12	2,277.45	2,277.19	5.15	0.00	55.57	26.31	-1,134.95	1,061.69	1,056.66	5.04	210.803		
2,400.00	2,392.37	2,374.66	2,374.39	5.43	0.00	56.09	26.31	-1,136.52	1,056.42	1,051.12	5.30	199.240		
2,500.00	2,491.63	2,471.07	2,470.78	5.71	0.00	56.61	26.32	-1,138.30	1,051.48	1,045.90	5.57	188.727		
2,600.00	2,590.88	2,571.58	2,571.27	5.99	0.00	57.17	26.52	-1,140.29	1,046.78	1,040.94	5.84	179.140		
2,700.00	2,690.14	2,665.80	2,665.47	6.27	0.00	57.69	26.67	-1,142.18	1,042.21	1,036.09	6.12	170.340		
2,800.00	2,789.39	2,757.07	2,756.70	6.56	0.00	58.20	26.85	-1,144.70	1,038.48	1,032.09	6.40	162.368		
2,900.00	2,888.65	2,848.51	2,848.08	6.85	0.00	58.70	26.95	-1,147.96	1,035.62	1,028.95	6.68	155.146		
3,000.00	2,987.90	2,944.24	2,943.73	7.14	0.00	59.22	26.97	-1,152.05	1,033.54	1,026.58	6.96	148.574		
3,100.00	3,087.16	3,045.69	3,045.08	7.43	0.00	59.77	27.02	-1,156.36	1,031.52	1,024.28	7.24	142.479		
3,200.00	3,186.41	3,152.39	3,151.71	7.72	0.00	60.35	27.07	-1,160.53	1,029.28	1,021.75	7.53	136.777		
3,300.00	3,285.67	3,268.24	3,267.51	8.01	0.00	61.02	27.31	-1,163.60	1,025.93	1,018.12	7.81	131.335		
3,400.00	3,384.92	3,386.55	3,385.82	8.30	0.00	61.72	27.41	-1,164.59	1,020.91	1,012.81	8.10	126.079		
3,500.00	3,484.18	3,488.41	3,487.67	8.60	0.00	62.34	27.32	-1,164.29	1,014.85	1,006.47	8.39	120.997		
3,600.00	3,583.43	3,597.82	3,597.08	8.89	0.00	63.02	27.33	-1,163.39	1,008.43	999.75	8.68	116.224		
3,700.00	3,682.69	3,706.99	3,706.23	9.19	0.00	63.72	27.17	-1,161.35	1,001.08	992.11	8.97	111.647		
3,800.00	3,781.94	3,815.58	3,814.77	9.48	0.00	64.42	26.54	-1,158.28	992.82	983.56	9.26	107.252		
3,900.00	3,881.20	3,915.68	3,914.82	9.78	0.00	65.06	25.56	-1,155.03	984.19	974.64	9.55	103.029		
4,000.00	3,980.45	4,011.89	4,010.98	10.08	0.00	65.68	24.59	-1,152.00	975.76	965.91	9.85	99.044		
4,100.00	4,079.71	4,100.00	4,099.05	10.37	0.00	66.25	23.76	-1,149.71	968.02	957.86	10.16	95.310		
4,200.00	4,178.96	4,194.30	4,193.34	10.67	0.00	66.86	23.05	-1,148.01	961.20	950.74	10.46	91.902		
4,300.00	4,278.22	4,290.75	4,289.78	10.97	0.00	67.51	22.56	-1,146.81	955.10	944.34	10.76	88.752		
4,400.00	4,377.47	4,388.38	4,387.40	11.27	0.00	68.17	22.18	-1,145.78	949.35	938.28	11.06	85.799		
4,500.00	4,476.73	4,486.29	4,485.31	11.57	0.00	68.84	21.82	-1,144.90	943.87	932.51	11.37	83.023		
4,600.00	4,575.98	4,583.28	4,582.29	11.86	0.00	69.51	21.56	-1,144.17	938.71	927.04	11.67	80.408		
4,700.00	4,675.24	4,679.38	4,678.39	12.16	0.00	70.19	21.46	-1,143.68	933.98	921.99	11.98	77.955		
4,800.00	4,774.49	4,779.76	4,778.77	12.46	0.00	70.91	21.52	-1,143.28	929.54	917.25	12.29	75.652		
4,900.00	4,873.75	4,879.17	4,878.17	12.76	0.00	71.64	21.52	-1,142.75	925.11	912.51	12.59	73.455		
5,000.00	4,973.01	4,976.47	4,975.48	13.06	0.00	72.35	21.57	-1,142.32	920.92	908.02	12.90	71.374		
5,100.00	5,072.26	5,074.98	5,073.99	13.36	0.00	73.07	21.58	-1,142.09	917.07	903.86	13.21	69.415		

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

LEAM Drilling Services

Anticollision Report

Company: Devon Energy
Project: Eddy County, NM (NAD-83)
Reference Site: Ko Lanta 9-4 Fed Com
Site Error: 0.00 usft
Reference Well: Ko Lanta 9-4 Fed Com 518H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well Ko Lanta 9-4 Fed Com 518H
TVD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
MD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Multi User Db
Offset TVD Reference: Offset Datum

Offset Design Ko Lanta 9-4 Fed Com - North Pure Gold 9 Fed 18H (Offset) - ST01 - ST01													Offset Site Error: 0.00 usft
Survey Program: 100-GYRO 12334-MWD-ISCWSA 16645-Project													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance				Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)
5,200.00	5,171.52	5,173.71	5,172.72	13.66	0.00	73.80	21.60	-1,141.90	913.41	899.89	13.52	67.557	
5,300.00	5,270.77	5,273.26	5,272.26	13.96	0.00	74.54	21.63	-1,141.74	909.92	896.09	13.83	65.795	
5,400.00	5,370.03	5,372.15	5,371.16	14.26	0.00	75.28	21.61	-1,141.58	906.57	892.43	14.14	64.116	
5,500.00	5,469.28	5,471.50	5,470.51	14.56	0.00	76.02	21.55	-1,141.48	903.41	888.96	14.45	62.523	
5,600.00	5,568.54	5,569.87	5,568.88	14.86	0.00	76.75	21.43	-1,141.42	900.41	885.65	14.76	61.006	
5,700.00	5,667.79	5,668.39	5,667.40	15.16	0.00	77.49	21.38	-1,141.46	897.69	882.62	15.07	59.569	
5,800.00	5,767.05	5,767.16	5,766.17	15.46	0.00	78.24	21.38	-1,141.54	895.18	879.80	15.38	58.204	
5,900.00	5,866.30	5,866.76	5,865.77	15.76	0.00	79.01	21.42	-1,141.62	892.86	877.17	15.69	56.906	
6,000.00	5,965.56	5,965.95	5,964.95	16.06	0.00	79.77	21.50	-1,141.64	890.65	874.65	16.00	55.665	
6,100.00	6,064.81	6,063.94	6,062.94	16.36	0.00	80.53	21.56	-1,141.74	888.67	872.36	16.31	54.486	
6,200.00	6,164.07	6,164.14	6,163.14	16.67	0.00	81.30	21.60	-1,141.96	886.95	870.33	16.62	53.368	
6,300.00	6,263.32	6,264.17	6,263.18	16.97	0.00	82.08	21.59	-1,142.00	885.20	868.28	16.93	52.290	
6,400.00	6,362.58	6,362.36	6,361.36	17.27	0.00	82.85	21.56	-1,142.09	883.65	866.42	17.24	51.264	
6,500.00	6,461.83	6,462.39	6,461.39	17.57	0.00	83.62	21.54	-1,142.28	882.35	864.81	17.55	50.289	
6,600.00	6,561.09	6,563.48	6,562.48	17.87	0.00	84.41	21.40	-1,142.30	881.01	863.16	17.85	49.349	
6,700.00	6,660.34	6,662.59	6,661.60	18.17	0.00	85.18	21.10	-1,142.28	879.71	861.55	18.16	48.443	
6,800.00	6,759.60	6,760.82	6,759.82	18.47	0.00	85.94	20.85	-1,142.37	878.68	860.21	18.47	47.584	
6,900.00	6,858.85	6,859.65	6,858.65	18.78	0.00	86.71	20.64	-1,142.54	877.90	859.13	18.77	46.769	
7,000.00	6,958.11	6,958.62	6,957.63	19.08	0.00	87.47	20.44	-1,142.75	877.31	858.23	19.08	45.992	
7,100.00	7,057.36	7,058.11	7,057.12	19.38	0.00	88.25	20.31	-1,142.92	876.91	857.53	19.38	45.251	
7,200.00	7,156.66	7,158.65	7,157.65	19.66	0.00	89.02	20.18	-1,142.99	876.60	856.94	19.66	44.591	
7,300.00	7,256.19	7,259.68	7,258.69	19.86	0.00	89.63	19.84	-1,143.01	876.28	856.42	19.86	44.118	
7,400.00	7,355.94	7,359.19	7,358.19	20.05	0.00	90.06	19.34	-1,143.04	875.95	855.90	20.05	43.690	
7,500.00	7,455.84	7,458.55	7,457.55	20.22	0.00	90.30	18.80	-1,143.23	875.76	855.54	20.22	43.312	
7,600.00	7,555.83	7,558.34	7,557.34	20.37	0.00	90.38	18.28	-1,143.44	875.58	855.21	20.37	42.977	
7,700.00	7,655.83	7,658.30	7,657.29	20.54	0.00	-48.71	17.63	-1,143.80	875.42	854.88	20.53	42.631	
7,800.00	7,755.83	7,757.86	7,756.85	20.69	0.00	-48.77	16.88	-1,144.25	875.26	854.57	20.69	42.311	
7,900.00	7,855.83	7,858.41	7,857.40	20.84	0.00	-48.83	16.10	-1,144.78	875.15	854.31	20.84	41.995	
8,000.00	7,955.83	7,959.08	7,958.07	20.99	0.00	-48.89	15.29	-1,145.16	874.91	853.91	20.99	41.676	
8,100.00	8,055.83	8,058.84	8,057.82	21.15	0.00	-48.94	14.50	-1,145.52	874.66	853.51	21.15	41.358	
8,200.00	8,155.54	8,156.42	8,155.40	21.17	0.00	-49.24	13.71	-1,146.01	870.58	849.41	21.17	41.131	
8,300.00	8,252.74	8,251.73	8,250.70	21.18	0.00	-51.59	13.02	-1,146.81	855.86	834.68	21.18	40.410	
8,400.00	8,344.48	8,342.59	8,341.55	21.21	0.00	-55.71	12.32	-1,147.70	831.41	810.22	21.20	39.224	
8,500.00	8,427.98	8,424.22	8,423.18	21.25	0.00	-61.48	11.65	-1,148.62	799.51	778.30	21.21	37.697	
8,600.00	8,500.69	8,493.81	8,492.76	21.30	0.00	-68.41	11.14	-1,149.61	763.48	742.28	21.20	36.008	
8,700.00	8,560.41	8,552.51	8,551.45	21.38	0.00	-75.82	10.74	-1,150.57	727.29	706.13	21.16	34.370	
8,800.00	8,605.31	8,596.45	8,595.38	21.48	0.00	-82.40	10.39	-1,151.33	695.49	674.42	21.07	33.012	
8,900.00	8,634.05	8,624.15	8,623.07	21.59	0.00	-87.00	10.16	-1,151.82	672.77	651.85	20.92	32.160	
9,000.00	8,645.74	8,634.97	8,633.89	21.73	0.00	-88.93	10.08	-1,152.02	662.86	642.13	20.73	31.972 SF	
9,018.12	8,646.23	8,635.32	8,634.24	21.76	0.00	-88.96	10.07	-1,152.03	662.62	641.92	20.70	32.011 CC, ES	
9,100.00	8,646.00	8,634.45	8,633.37	21.90	0.00	-88.91	10.08	-1,152.01	667.61	647.07	20.54	32.504	
9,200.00	8,646.00	8,633.67	8,632.59	22.10	0.00	-88.84	10.09	-1,152.00	687.04	666.67	20.37	33.724	
9,300.00	8,646.00	8,632.89	8,631.81	22.35	0.00	-88.77	10.09	-1,151.98	719.96	699.71	20.25	35.559	
9,400.00	8,646.00	8,632.11	8,631.03	22.64	0.00	-88.71	10.10	-1,151.97	764.62	744.46	20.17	37.913	
9,500.00	8,646.00	8,631.33	8,630.25	22.97	0.00	-88.64	10.10	-1,151.95	819.12	798.99	20.13	40.689	
9,600.00	8,646.00	8,630.54	8,629.46	23.34	0.00	-88.57	10.11	-1,151.94	881.63	861.50	20.13	43.803	
9,700.00	8,646.00	8,629.75	8,628.68	23.76	0.00	-88.50	10.12	-1,151.93	950.57	930.42	20.15	47.183	
9,800.00	8,646.00	8,628.96	8,627.89	24.21	0.00	-88.43	10.12	-1,151.91	1,024.64	1,004.46	20.18	50.773	
9,900.00	8,646.00	8,628.17	8,627.10	24.70	0.00	-88.37	10.13	-1,151.90	1,102.81	1,082.59	20.22	54.527	
10,000.00	8,646.00	8,627.38	8,626.30	25.22	0.00	-88.30	10.14	-1,151.88	1,184.27	1,164.00	20.27	58.412	
10,100.00	8,646.00	8,626.58	8,625.51	25.77	0.00	-88.23	10.14	-1,151.87	1,268.39	1,248.06	20.33	62.397	
10,200.00	8,646.00	8,625.78	8,624.71	26.35	0.00	-88.16	10.15	-1,151.85	1,354.66	1,334.28	20.38	66.463	

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

LEAM Drilling Services

Anticollision Report

Company: Devon Energy
Project: Eddy County, NM (NAD-83)
Reference Site: Ko Lanta 9-4 Fed Com
Site Error: 0.00 usft
Reference Well: Ko Lanta 9-4 Fed Com 518H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well Ko Lanta 9-4 Fed Com 518H
TVD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
MD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Multi User Db
Offset TVD Reference: Offset Datum

Offset Design Ko Lanta 9-4 Fed Com - North Pure Gold 9 Fed 18H (Offset) - ST01 - ST01												Offset Site Error:	0.00 usft
Survey Program: 100-GYRO 12334-MWD-ISCWSA 16645-Project												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,300.00	8,646.00	8,624.98	8,623.91	26.96	0.00	-88.09	10.16	-1,151.84	1,442.71	1,422.27	20.44	70.592	
10,400.00	8,646.00	8,624.18	8,623.10	27.59	0.00	-88.02	10.16	-1,151.83	1,532.22	1,511.73	20.49	74.769	
10,500.00	8,646.00	8,623.38	8,622.30	28.24	0.00	-87.95	10.17	-1,151.81	1,622.96	1,602.41	20.55	78.984	
10,600.00	8,646.00	8,622.57	8,621.49	28.91	0.00	-87.88	10.17	-1,151.80	1,714.73	1,694.13	20.60	83.226	
10,700.00	8,646.00	8,621.76	8,620.68	29.60	0.00	-87.81	10.18	-1,151.78	1,807.37	1,786.72	20.66	87.489	
10,800.00	8,646.00	8,620.95	8,619.87	30.30	0.00	-87.74	10.19	-1,151.77	1,900.76	1,880.05	20.71	91.767	
10,900.00	8,646.00	8,620.14	8,619.06	31.03	0.00	-87.67	10.19	-1,151.75	1,994.79	1,974.02	20.77	96.052	

LEAM Drilling Services

Anticollision Report

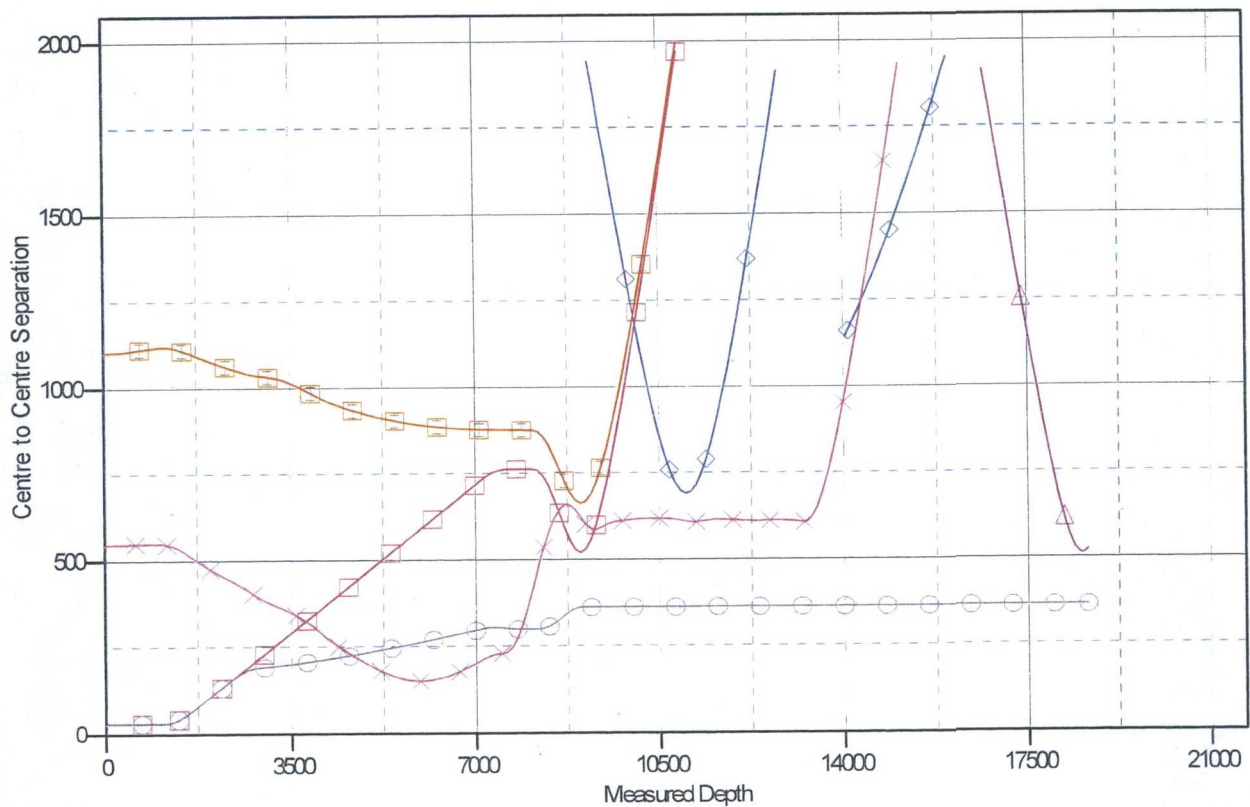
Company: Devon Energy
Project: Eddy County, NM (NAD-83)
Reference Site: Ko Lanta 9-4 Fed Com
Site Error: 0.00 usft
Reference Well: Ko Lanta 9-4 Fed Com 518H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well Ko Lanta 9-4 Fed Com 518H
TVD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
MD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Multi User Db
Offset TVD Reference: Offset Datum

Reference Depths are relative to 3371.8' GE + 23.2' KB @ 3395.00usft
 Offset Depths are relative to Offset Datum
 Central Meridian is 104° 19' 60.0000 W

Coordinates are relative to: Ko Lanta 9-4 Fed Com 518H
 Coordinate System is US State Plane 1983, New Mexico Eastern Zone
 Grid Convergence at Surface is: 0.30°

Ladder Plot



LEGEND

Ko Lanta 9-4 Fed Com 528H, OH, Plan #1 V0
 Ko Lanta 9-4 Fed Com 528H, ST01, Plan #1 V0
 Glow Worm ALX Federal #14 (Offset), OH, OH V0

Glow Worm ALX Federal #16H (Offset), OH, OH V0
 North Pure Gold 9 Fed 18H (Offset), OH, OH V0
 North Pure Gold 9 Fed 18H (Offset), ST01, ST01 V0

North Pure Gold 9 Fed 11H (Offset), OH, OH V0

LEAM Drilling Services

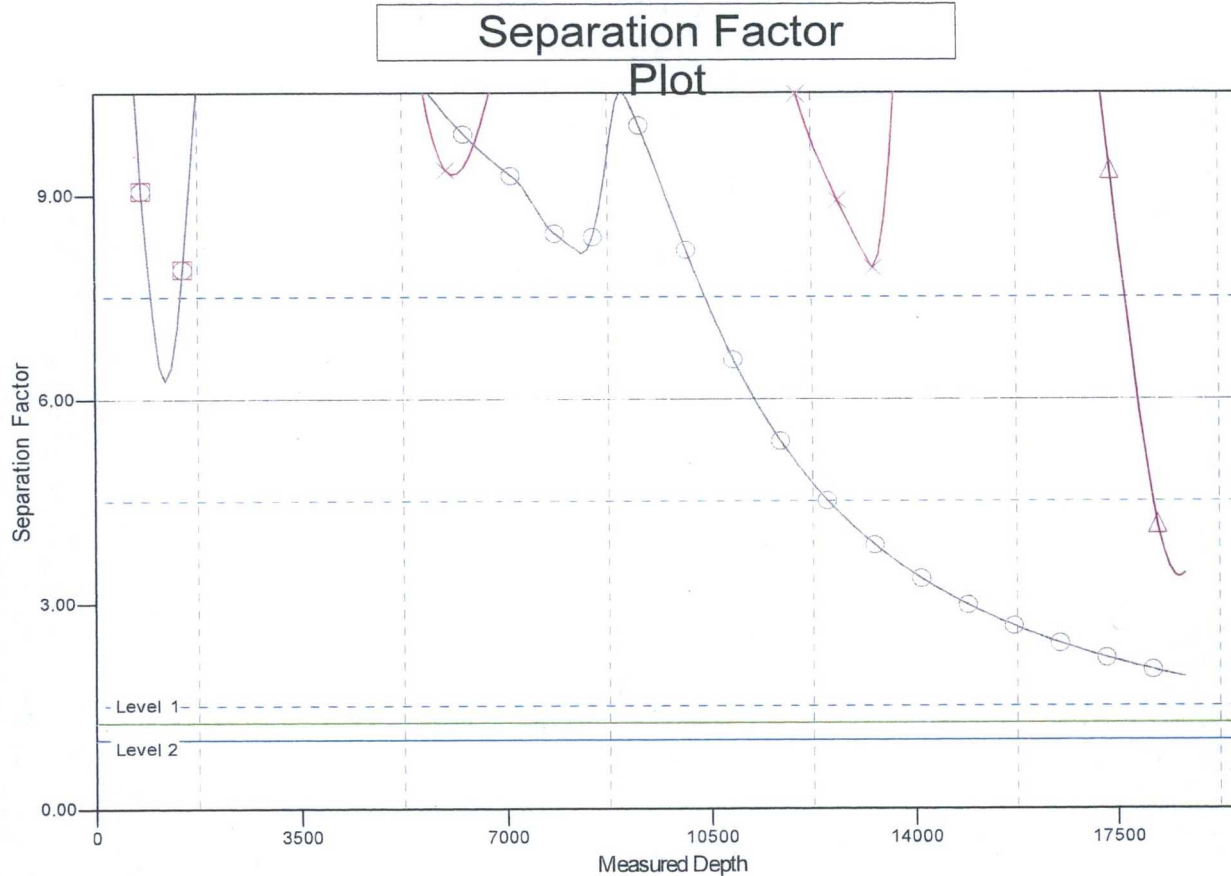
Anticollision Report

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 Central Meridian is 104° 19' 60.0000 W

Coordinates are relative to: Ko Lanta 9-4 Fed Com 518H
 Coordinate System is US State Plane 1983, New Mexico Eastern Zone
 Grid Convergence at Surface is: 0.30°



LEGEND

Ko Lanta 9-4 Fed Com 528H, OH, Plan #1 V0
 Ko Lanta 9-4 Fed Com 528H, ST01, Plan #1 V0
 Glow Worm ALX Federal#14 (Offset), OH, OH V0

Glow Worm ALX Federal#16H (Offset), OH, OH V0
 North Pure Gold 9 Fed 18H (Offset), OH, OH V0
 North Pure Gold 9 Fed 18H (Offset), ST01, ST01 V0

North Pure Gold 9 Fed 11H (Offset), OH, OH V0

PECOS DISTRICT

DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	DEVON ENEGRY PRODCUTION CO
LEASE NO.:	NMNM077046
WELL NAME & NO.:	KO LANTA 9-4 FED COM 518H
SURFACE HOLE FOOTAGE:	610' FSL & 210' FEL
BOTTOM HOLE FOOTAGE:	290' FNL & 700' FEL
LOCATION:	Section 9, T. 23 S., R 31 E., NMPM
COUNTY:	Eddy County, New Mexico

COA

All previous COA still apply except the following:

H2S	☒ Yes	☐ No	
Potash	☐ None	☒ Secretary	☐ R-111-P
Cave/Karst Potential	☒ Low	☐ Medium	☐ High
Variance	☐ None	☒ Flex Hose	☐ Other
Wellhead	☐ Conventional	☒ Multibowl	☐ Both
Other	☐ 4 String Area	☐ Capitan Reef	☐ WIPP

A. Hydrogen Sulfide

A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **Delaware** 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.

B. CASING

1. The 13-3/8 inch surface casing shall be set at approximately **480** feet (a minimum of 25 feet into the Rustler Anhydrite and 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 will be a minimum of **24 hours in the Potash Area** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement).
 - 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.
2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:
 - 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 cave/karst or potash.
3. The minimum required fill of cement behind the **5-1/2** inch production casing is: Cement should tie-back at least 500 feet into previous casing string. Operator shall provide method of verification. **Additional cement maybe required. Excess calculates to -6%.**

Operator propose a contingency plan. Operator shall notify BLM if they procede with the contingency plan.

CONTINGENCY PLAN

1. The **13-3/8** inch surface casing shall be set at approximately **480** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.
 - e. 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.
 - f. Wait on cement (WOC) time for a primary cement job will be a minimum of **24 hours in the Potash Area** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement).
 - g. 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.
 - h. If cement falls back, remedial cementing will be done prior to drilling out that string.
2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:
 - 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 cave/karst or potash.
3. The minimum required fill of cement behind the **5-1/2** inch production casing is: Cement should tie-back at least 500 feet into previous casing string. Operator shall provide method of verification. **Additional cement maybe required. Excess calculates to -3%.**

C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).
2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **3000 (3M)** psi.
3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9-5/8** intermediate casing shoe shall be **3000 (3M)** psi.

GENERAL 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)

☒ Chaves and Roosevelt Counties
Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.
During office hours call (575) 627-0272.
After office hours call (575)

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

☒ Lea County
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575)
393-3612

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
 - a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
 - b. When the operator proposes to set surface casing with Spudder Rig
 - Notify the BLM when moving in and removing the Spudder Rig.

- Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
 - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.
2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.
 3. 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.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.
2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.

4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.
5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.
7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.
8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.
3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.

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

- e. All tests are required to be recorded on a calibrated test chart. 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. This test shall be performed prior to the test at full stack pressure.
- g. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

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

D. WASTE MATERIAL AND FLUIDS

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.

Waste Minimization Plan (WMP)

In the interest of resource development, submission of additional well gas capture development plan information is deferred but may be required by the BLM Authorized Officer at a later date.

ZS 041518

R111P KFC

13 3/8	surface csg in a	17 1/2	inch hole.	Design Factors			SURFACE		
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight	
"A"	48.00	H 40	ST&C	13.98	3.51	0.54	480	23,040	
"B"							0	0	
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,002			Tail Cmt	does	circ to sfc.	Totals:	*480	23,040	
Comparison of Proposed to Minimum Required Cement Volumes									
Hole	Annular	1 Stage	1 Stage	Min	1 Stage	Drilling	Calc	Req'd	Min Dist
Size	Volume	Cmt Sx	CuFt Cmt	Cu Ft	% Excess	Mud Wt	MASP	BOPE	Hole-Cplg
17 1/2	0.6946	528	702	388	81	8.80	1890	2M	1.56

Burst Frac Gradient(s) for Segment(s) A, B = , b All > 0.70, OK.

9 5/8	casing inside the	13 3/8	Design Factors				INTERMEDIATE		
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight	
"A"	40.00	P 110	BUTT	5.19	1.34	2.27	6,100	244,000	
"B"							0	0	
w/8.4#/g mud, 30min Sfc Csg Test psig:						Totals:	6,100	244,000	
The cement volume(s) are intended to achieve a top of				0	ft from surface or a		480	overlap.	
Hole	Annular	1 Stage	1 Stage	Min	1 Stage	Drilling	Calc	Req'd	Min Dist
Size	Volume	Cmt Sx	CuFt Cmt	Cu Ft	% Excess	Mud Wt	MASP	BOPE	Hole-Cplg
12 1/4	0.3132	1974	3570	1960	82	10.20	2050	3M	1.31

5 1/2	casing inside the		9 5/8	Design Factors			PRODUCTION		
Segment	#/ft	Grade	Coupling	Body	Collapse	Burst	Length	Weight	
"A"	17.00	P 110	BUTT	3.71	2.02	2.69	8,117	137,989	
"B"	17.00	P 110	BUTT	8.04	1.69	2.69	10,735	182,495	
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,786							Totals:	18,852 320,484	
B	would be:			60.70	1.89	if it were a vertical wellbore.			
No Pilot Hole Planned			MTD	Max VTD	Csg VD	Curve KOP	Dogleg°	Severity°	MEOC
			18852	8646	8646	8117	90	10	9017
The cement volume(s) are intended to achieve a top of				5600	ft from surface or a		500	overlap.	
Hole	Annular	1 Stage	1 Stage	Min	1 Stage	Drilling	Calc	Req'd	Min Dist
Size	Volume	Cmt Sx	CuFt Cmt	Cu Ft	% Excess	Mud Wt	MASP	BOPE	Hole-Cplg
8 3/4	0.2526	2001	3260	3357	-3	8.80			1.35
Class 'H' tail cmt yld > 1.20									

R111P KFC

13 3/8	surface csg in a	17 1/2	inch hole.	Design Factors			SURFACE		
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight	
"A"	48.00	H 40	ST&C	13.98	3.51	0.77	480	23,040	
"B"							0	0	
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,002			Tail Cmt	does	circ to sfc.	Totals:	480	23,040	
Comparison of Proposed to Minimum Required Cement Volumes									
Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
17 1/2	0.6946	528	702	388	81	8.80	1317	2M	1.56
Burst Frac Gradient(s) for Segment(s) A, B = , b All > 0.70, OK.									

9 5/8 casing inside the 13 3/8			Design Factors				INTERMEDIATE		
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight	
"A"	40.00	J 55	LT&C	3.06	1.14	1	4,250	170,000	
"B"							0	0	
w/8.4#/g mud, 30min Sfc Csg Test psig:						Totals:	4,250	170,000	
The cement volume(s) are intended to achieve a top of				0	ft from surface or a		480	overlap.	
Hole	Annular	1 Stage	1 Stage	Min	1 Stage	Drilling	Calc	Req'd	Min Dist
Size	Volume	Cmt Sx	CuFt Cmt	Cu Ft	% Excess	Mud Wt	MASP	BOPE	Hole-Cplg
12 1/4	0.3132	1373	2404	1380	74	10.20	2050	3M	0.81

5 1/2 casing inside the		9 5/8		Design Factors			PRODUCTION		
Segment	#/ft	Grade	Coupling	Body	Collapse	Burst	Length	Weight	
"A"	17.00	P 110	BUTT	3.71	2.02	2.69	8,117	137,989	
"B"	17.00	P 110	BUTT	8.04	1.69	2.69	10,735	182,495	
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,786						Totals:	18,852	320,484	
The cement volume(s) are intended to achieve a top of				3750	ft from surface or a		500	overlap.	
Hole	Annular	1 Stage	1 Stage	Min	1 Stage	Drilling	Calc	Req'd	Min Dist
Size	Volume	Cmt Sx	CuFt Cmt	Cu Ft	% Excess	Mud Wt	MASP	BOPE	Hole-Cplg
8 3/4	0.2526	2734	3614	3825	-6	8.80			1.35