

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. NMMN14990
2. Name of Operator DEVON ENERGY PRODUCTION COMPANY		6. If Indian, Allottee or Tribe Name
3a. Address 333 WEST SHERIDAN AVE OKLAHOMA CITY, OK 73102		7. If Unit or CA/Agreement, Name and/or No.
3b. Phone No. (include area code) Ph: 405-228-8429		8. Well Name and No. JAYHAWK 7-6 FED FEE COM 8H
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 7 T26S R34E Mer NMP SWSE 615FSL 2120FEL		9. API Well No. 25-45539
		10. Field and Pool or Exploratory Area BOBCAT DRAW; UWC
		11. County or Parish, State LEA 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 APD
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomple 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 recompletion 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 Production Co. requests the following changes to the Jayhawk 7-6 Fed Fee Com 8H APD:

BHL change from 20 FNL & 2300 FEL to 20 FNL & 1660 FEL, both 6-26S-34E

TVD/MD Change from 12,750'/22,934.5' to 12,672'/22,951'

Alternate casing design change removing the 10.625" hole size from the intermediate section and changing the 8.625" casing thread form to a Teklock wedge

Please see attached revised C-102, drilling plan, directional & AC plan, spec sheet and plot.

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

14. I hereby certify that the foregoing is true and correct. Electronic Submission #450710 verified by the BLM Well Information System For DEVON ENERGY PRODUCTION COMPANY, sent to the Hobbs Committed to AFMSS for processing by MUSTAFA HAQUE on 01/15/2019 ()	
Name (Printed/Typed) REBECCA DEAL	Title REGULATORY COMPLIANCE PROFESSI
Signature (Electronic Submission)	Date 01/15/2019

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By <u>Mustafa Haque</u>	Title <u>Regulatory Compliance Professional</u>	Date <u>01-12-2019</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 Field Office</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)

**** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ****KD

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

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

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number	² Pool Code 98094	³ Pool Name BOBCAT DRAW; UPPER WOLFCAMP
⁴ Property Code	⁵ Property Name JAYHAWK 7-6 FED FEE COM	⁶ Well Number 8H
⁷ OGRID No. 6137	⁸ Operator Name DEVON ENERGY PRODUCTION COMPANY, L.P.	⁹ Elevation 3373.2

¹⁰ Surface Location

UL or lot no. O	Section 7	Township 26 S	Range 34 E	Lot Idn	Feet from the 615	North/South line SOUTH	Feet from the 2120	East/West line EAST	County LEA
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¹¹ Bottom Hole Location If Different From Surface

UL or lot no. B	Section 6	Township 26 S	Range 34 E	Lot Idn	Feet from the 20	North/South line NORTH	Feet from the 1660	East/West line EAST	County LEA
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¹² Dedicated Acres 320	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

NW CORNER SEC. 6 LAT. = 32.0797339°N LONG. = 103.5175316°W NWSP EAST (FT) N = 393699.75 E = 794010.96 W/4 CORNER SEC. 6 LAT. = 32.0724766°N LONG. = 103.5175341°W NWSP EAST (FT) N = 391059.61 E = 794030.14 NW CORNER SEC. 7 LAT. = 32.0652206°N LONG. = 103.5175327°W NWSP EAST (FT) N = 388419.97 E = 794050.53 W/4 CORNER SEC. 7 LAT. = 32.0579557°N LONG. = 103.5175350°W NWSP EAST (FT) N = 385777.11 E = 794069.80 SW CORNER SEC. 7 LAT. = 32.0506923°N LONG. = 103.5175349°W NWSP EAST (FT) N = 383134.75 E = 794089.79	N/4 CORNER SEC. 6 LAT. = 32.0797290°N LONG. = 103.5090031°W NWSP EAST (FT) N = 393718.07 E = 796652.54 LOT 1 LAST TAKE POINT 100' ASL, 1660' FEL LAT. = 32.0794546°N LONG. = 103.5058279°W NWSP EAST (FT) N = 393625.75 E = 797636.76 LOT 2 S/4 CORNER SEC. 6 LAT. = 32.0652211°N LONG. = 103.5089834°W NWSP EAST (FT) N = 388440.30 E = 796698.96 LOT 3 FIRST TAKE POINT 100' ASL, 1660' FEL LAT. = 32.0509733°N LONG. = 103.5058074°W NWSP EAST (FT) N = 383264.64 E = 797724.12 LOT 4 JAYHAWK 7-6 FED FEE COM 8H ELEV. = 3373.2 LAT. = 32.0523885°N (MAD83) LONG. = 103.5072872°W NWSP EAST (FT) N = 383775.97 E = 797160.13 S/4 CORNER SEC. 7 LAT. = 32.0506978°N LONG. = 103.5089724°W NWSP EAST (FT) N = 383156.93 E = 796742.73	N/4 CORNER SEC. 6 LAT. = 32.0797299°N LONG. = 103.5004697°W NWSP EAST (FT) N = 393738.67 E = 799295.61 E/4 CORNER SEC. 6 LAT. = 32.0724880°N LONG. = 103.5004620°W NWSP EAST (FT) N = 391104.19 E = 799318.34 NW CORNER SEC. 7 LAT. = 32.0652284°N LONG. = 103.5004584°W NWSP EAST (FT) N = 388463.24 E = 799339.82 E/4 CORNER SEC. 7 LAT. = 32.0579642°N LONG. = 103.5004487°W NWSP EAST (FT) N = 385820.61 E = 799363.23 SE CORNER SEC. 7 LAT. = 32.0506993°N LONG. = 103.5004452°W NWSP EAST (FT) N = 383177.75 E = 799384.71	" OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. <i>Rebecca Deal</i> 1/9/2018 Signature Date Rebecca Deal, Regulatory Analyst Printed Name rebecca.deal@dvn.com E-mail Address "SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. NOVEMBER 27, 2018 Date of Survey <i>[Signature]</i> Signature of State of Professional Surveyor Certificate Number: FILIMON F. JARAMILLO, PLS 12797 SURVEY NO. 6359B
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Intent ☒ As Drilled ☐

API #

Operator Name:	Property Name:	Well Number
DEVON ENERGY PRODUCTION CO. L.P.	JAYHAWK 7-6 FED FEE COM	8H

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
	7	26S	34E		50	FSL	1680	FEL	LEA
Latitude					Longitude				NAD
32.050821					-103.505817				83

First Take Point (FTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
O	7	26S	34E		100	SOUTH	1660	EAST	LEA
Latitude					Longitude				NAD
32.0509733					103.5058024				83

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
B	6	26S	34E		100	NORTH	1660	EAST	LEA
Latitude					Longitude				NAD
32.0794546					103.5058279				83

Is this well the defining well for the Horizontal Spacing Unit? ☐

Is this well an infill well? ☒

If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API #

Operator Name:	Property Name:	Well Number
Devon Energy Production Co.	Jayhawk 7-6 Fed Fee Com	16H

KZ 06/29/2018

1. Geologic Formations

TVD of target	12,672	Pilot hole depth	N/A
MD at TD:	22,951	Deepest expected fresh water:	890'

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
RUSTLER	891		
TOP SALT	1251		
BASE OF SALT	4961		
BELL CANYON	4961		
CHERRY CANYON	6301		
BRUSHY CANYON	7931		
BONE SPRING	9441		
BONE SPRING 1ST	10381		
BONE SPRING 2ND	10921		
BONE SPRING 3RD	12071		
WOLFCAMP	12491		
STRAWN	15011		

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

2. Casing Program

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
	From	To							
14.75"	See AFMSS	See AFMSS	See AFMSS	See AFMSS	See AFMSS	See AFMSS	See AFMSS	See AFMSS	See AFMSS
8.75"	See AFMSS	See AFMSS	See AFMSS	See AFMSS	See AFMSS	See AFMSS	See AFMSS	See AFMSS	See AFMSS
9.875"	See AFMSS	See AFMSS	See AFMSS	See AFMSS	See AFMSS	See AFMSS	See AFMSS	See AFMSS	See AFMSS
6.75"	0	22,951 MD / 12,672 TVD	5.5"	20	P110	Vam SG	1.125	1.25	1.6

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.

A variance is requested to wave the centralizer requirement for the 7-5/8" flush casing in the 8-3/4" hole and the 5-1/2" SF/Flush casing in the 6-3/4" hole.

Casing Program (Alternate Design)

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
	From	To							
17.5"	0	900' (TVD)	13.375"	48	H-40	STC	1.125	1.25	1.6
9.875"	0	12,071' (TVD)	8.625"	32	P110 HSCY	Tek-lock Wedge	1.125	1.25	1.6
7.875"	0	22,951' (MD)/ 12,672' TVD	5.5"	20	P110	Vam SG	1.125	1.25	1.6

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.

A variance is requested to wave the centralizer requirement for the 8-5/8" casing in the 9-7/8" hole and the 5-1/2" SF/Flush casing in the 7-7/8" hole.

8-5/8" Intermediate casing will be kept fluid filled.

3. Cementing Program (Primary Design)

Casing	# Sks	Wt. lb/ gal	Yld ft ³ / sack	Slurry Description
Surface	See AFMSS	See AFMSS	See AFMSS	See AFMSS
Int	See AFMSS	See AFMSS	See AFMSS	See AFMSS
	See AFMSS	See AFMSS	See AFMSS	See AFMSS
Intermediate Two-Stage (Bradenhead)	1000	14.8	1.33	Class C Cement + 0.125 lbs/sack Poly-E-Flake
	482	13.2	1.6	Class H w/ additives
Production	871	13.2	1.33	Class H w/ additives

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
10-3/4" Surface	Surface	50%
7-5/8" Intermediate	Surface	30%

5-1/2" Production Casing	200' Tie-Back to intermediate	25%
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Cementing Program (Alternate Design)

Casing	# Sks	Wt. lb/ gal	Yld ft3/ sack	Slurry Description
Surface	823	14.8	1.34	Tail: Class C Cement + 1% Calcium Chloride
Int	404	9	3.27	Lead: Tuned Light® Cement
	410	13.2	1.6	Tail: (50:50) Class H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite
Intermediate Two-Stage (Bradenhead)	750	14.8	1.33	Class C Cement + 0.125 lbs/sack Poly-E-Flake
	410	13.2	1.6	Tail: (50:50) Class H Cement w/ additives
Production	1802	13.2	1.33	Class H Cement w/ additives

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	Surface	50%
8-5/8" Intermediate	Surface	30%
5-1/2" Production Casing	200' Tie-Back to intermediate	25%

WCDSC Permian NM

WELL DETAILS: Jayhawk 7-6 FED Fee Com BH

RKB @ 3398.20ft

Northings 383775.97 Eastings 797260.13 Latitude 32.052389 Longitude -103.507287

SECTION DETAILS Permit Plan 1

MD	Inc	Azi	TVD	+N/S	+E/W	Dieg	Vsect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2200.00	0.00	0.00	2200.00	0.00	0.00	0.00	0.00	
2562.32	4.53	140.94	2561.94	-11.11	9.02	1.25	-10.76	
11475.59	4.53	140.94	11447.38	-557.64	452.49	0.00	-540.12	
5	11777.52	0.00	0.00	11749.00	-586.90	480.00	1.50	-549.09
6	12127.58	0.00	0.00	12099.04	-586.90	480.00	0.00	-549.09
7	13027.58	90.00	359.54	12672.00	6.04	455.41	10.00	23.26
8	22951.64	90.00	359.54	12672.00	9929.79	375.95	0.00	9936.90

West(-)/East(+) (350 ft/in)

-3500 -3150 -2800 -2450 -2100 -1750 -1400 -1050 -700 -350 0 350 700 1050 1400 1750 2100 2450

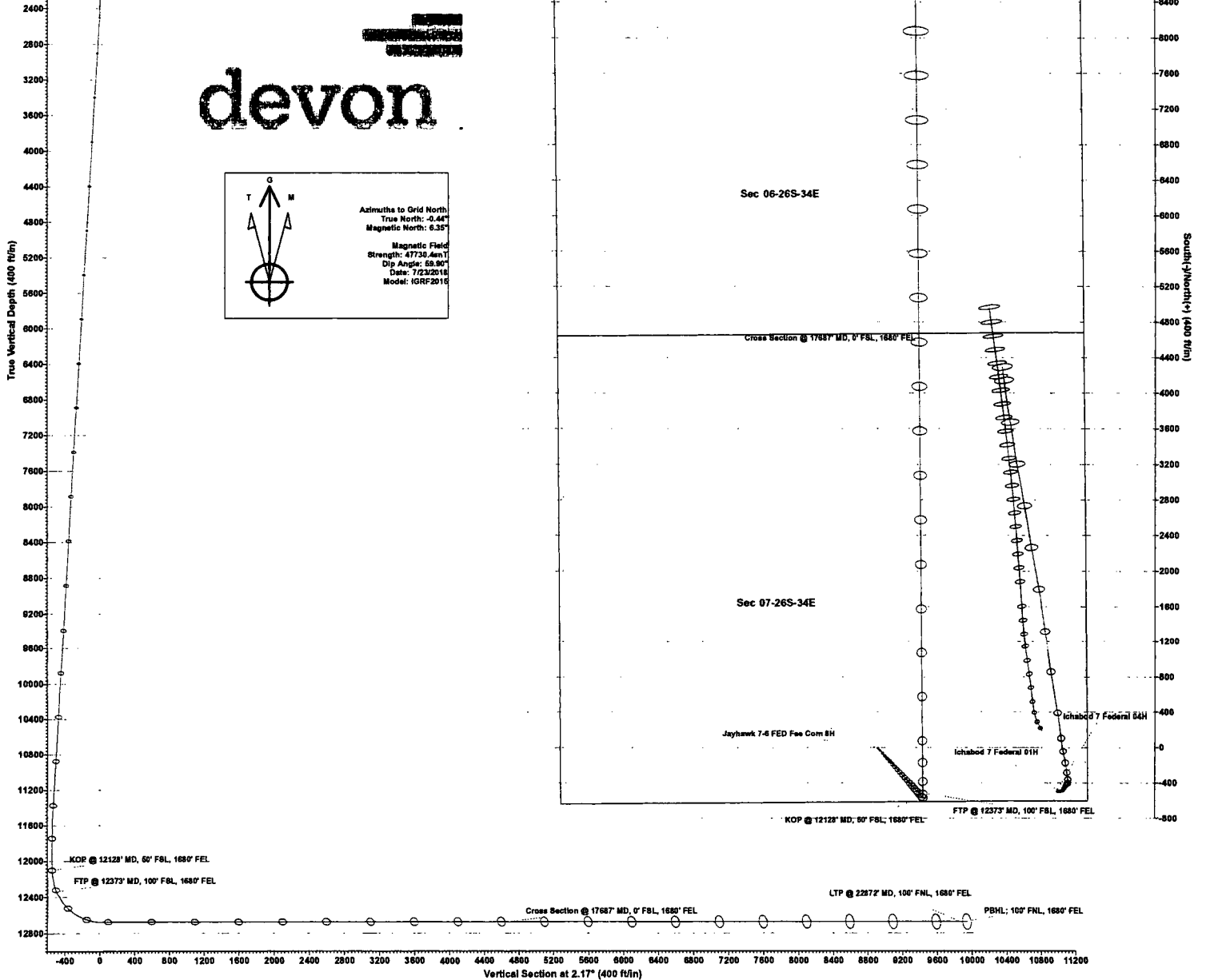
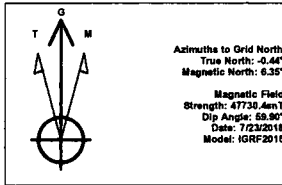
PBHL: 100' FNL, 1680' FEL

LTP @ 22872' MD, 100' FNL, 1680' FEL

KOP @ 12128' MD, 50' FSL, 1680' FEL

PBHL: 100' FNL, 1680' FEL

devon



WCDSC Permian NM

Lea County (NAD83 New Mexico East)

Sec 07-T26S-R34E

Jayhawk 7-6 FED Fee Com 8H

Wellbore #1

Plan: Permit Plan 1

Standard Planning Report - Geographic

17 December, 2018

Planning Report - Geographic

Database:	EDM r5000.141_Prod US	Local Co-ordinate Reference:	Well Jayhawk 7-6 FED Fee Com 8H
Company:	WCDSC Permian NM	TVD Reference:	RKB @ 3398.20ft
Project:	Lea County (NAD83 New Mexico East)	MD Reference:	RKB @ 3398.20ft
Site:	Sec 07-T26S-R34E	North Reference:	Grid
Well:	Jayhawk 7-6 FED Fee Com 8H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

Project	Lea County (NAD83 New Mexico East)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site:	Sec 07-T26S-R34E			
Site Position:		Northing:	383,354.91 usft	Latitude: 32.051193
From:	Lat/Long	Easting:	799,057.94 usft	Longitude: -103.501496
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence: 0.44 °

Well	Jayhawk 7-6 FED Fee Com 8H			
Well Position	+N-S	0.00 ft	Northing:	383,775.97 usft
	+E-W	0.00 ft	Easting:	797,260.13 usft
Position Uncertainty	0.50 ft	Wellhead Elevation:		Ground Level: 3,373.20 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF2015	7/23/2018	(°)	(°)	(nT)
			6.79	59.90	47,730.40971573

Design	Permit Plan 1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N-S	+E-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.00	0.00	0.00	2.17

Plan Survey Tool Program		Date	12/17/2018		
Depth From	Depth To	Survey (Wellbore)	Tool Name	Remarks	
(ft)	(ft)				
1	0.00	22,951.64 Permit Plan 1 (Wellbore #1)	MWD+HDGM	OWSG MWD + HDGM	

Plan Sections:										
Measured	Inclination	Azimuth	Vertical	+N-S	+E-W	Dogleg	Build	Turn	TFO	Target
Depth	(°)	(°)	Depth	(ft)	(ft)	Rate	Rate	Rate	(°)	
(ft)			(ft)			(°/100usft)	(°/100usft)	(°/100usft)		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,562.32	4.53	140.94	2,561.94	-11.11	9.02	1.25	1.25	0.00	140.94	
11,475.59	4.53	140.94	11,447.38	-557.64	452.49	0.00	0.00	0.00	0.00	
11,777.52	0.00	0.00	11,749.00	-566.90	460.00	1.50	-1.50	0.00	180.00	
12,127.56	0.00	0.00	12,099.04	-566.90	460.00	0.00	0.00	0.00	0.00	
13,027.56	90.00	359.54	12,672.00	6.04	455.41	10.00	10.00	0.00	359.54	PBHL - Jayhawk 7-6 f
22,951.64	90.00	359.54	12,672.00	9,929.79	375.95	0.00	0.00	0.00	0.00	PBHL - Jayhawk 7-6 f

Planning Report - Geographic

Database:	EDM r5000.141_Prod US	Local Co-ordinate Reference:	Well Jayhawk 7-6 FED Fee Com 8H
Company:	WCDSC Permian NM	TVD Reference:	RKB @ 3398.20ft
Project:	Lea County (NAD83 New Mexico East)	MD Reference:	RKB @ 3398.20ft
Site:	Sec 07-T26S-R34E	North Reference:	Grid
Well:	Jayhawk 7-6 FED Fee Com 8H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	383,775.97	797,260.13	32.052389	-103.507288
100.00	0.00	0.00	100.00	0.00	0.00	383,775.97	797,260.13	32.052389	-103.507288
200.00	0.00	0.00	200.00	0.00	0.00	383,775.97	797,260.13	32.052389	-103.507288
300.00	0.00	0.00	300.00	0.00	0.00	383,775.97	797,260.13	32.052389	-103.507288
400.00	0.00	0.00	400.00	0.00	0.00	383,775.97	797,260.13	32.052389	-103.507288
500.00	0.00	0.00	500.00	0.00	0.00	383,775.97	797,260.13	32.052389	-103.507288
600.00	0.00	0.00	600.00	0.00	0.00	383,775.97	797,260.13	32.052389	-103.507288
700.00	0.00	0.00	700.00	0.00	0.00	383,775.97	797,260.13	32.052389	-103.507288
800.00	0.00	0.00	800.00	0.00	0.00	383,775.97	797,260.13	32.052389	-103.507288
900.00	0.00	0.00	900.00	0.00	0.00	383,775.97	797,260.13	32.052389	-103.507288
1,000.00	0.00	0.00	1,000.00	0.00	0.00	383,775.97	797,260.13	32.052389	-103.507288
1,100.00	0.00	0.00	1,100.00	0.00	0.00	383,775.97	797,260.13	32.052389	-103.507288
1,200.00	0.00	0.00	1,200.00	0.00	0.00	383,775.97	797,260.13	32.052389	-103.507288
1,300.00	0.00	0.00	1,300.00	0.00	0.00	383,775.97	797,260.13	32.052389	-103.507288
1,400.00	0.00	0.00	1,400.00	0.00	0.00	383,775.97	797,260.13	32.052389	-103.507288
1,500.00	0.00	0.00	1,500.00	0.00	0.00	383,775.97	797,260.13	32.052389	-103.507288
1,600.00	0.00	0.00	1,600.00	0.00	0.00	383,775.97	797,260.13	32.052389	-103.507288
1,700.00	0.00	0.00	1,700.00	0.00	0.00	383,775.97	797,260.13	32.052389	-103.507288
1,800.00	0.00	0.00	1,800.00	0.00	0.00	383,775.97	797,260.13	32.052389	-103.507288
1,900.00	0.00	0.00	1,900.00	0.00	0.00	383,775.97	797,260.13	32.052389	-103.507288
2,000.00	0.00	0.00	2,000.00	0.00	0.00	383,775.97	797,260.13	32.052389	-103.507288
2,100.00	0.00	0.00	2,100.00	0.00	0.00	383,775.97	797,260.13	32.052389	-103.507288
2,200.00	0.00	0.00	2,200.00	0.00	0.00	383,775.97	797,260.13	32.052389	-103.507288
2,300.00	1.25	140.94	2,299.99	-0.85	0.69	383,775.12	797,260.82	32.052386	-103.507285
2,400.00	2.50	140.94	2,399.94	-3.39	2.75	383,772.58	797,262.88	32.052379	-103.507279
2,500.00	3.75	140.94	2,499.79	-7.62	6.18	383,768.35	797,266.31	32.052368	-103.507268
2,562.32	4.53	140.94	2,561.94	-11.11	9.02	383,764.85	797,269.15	32.052358	-103.507259
2,600.00	4.53	140.94	2,599.51	-13.42	10.89	383,762.54	797,271.02	32.052351	-103.507253
2,700.00	4.53	140.94	2,699.19	-19.56	15.87	383,756.41	797,276.00	32.052335	-103.507237
2,800.00	4.53	140.94	2,798.88	-25.69	20.84	383,750.28	797,280.97	32.052318	-103.507221
2,900.00	4.53	140.94	2,898.57	-31.82	25.82	383,744.15	797,285.95	32.052301	-103.507205
3,000.00	4.53	140.94	2,998.26	-37.95	30.79	383,738.02	797,290.92	32.052284	-103.507189
3,100.00	4.53	140.94	3,097.94	-44.08	35.77	383,731.89	797,295.90	32.052267	-103.507173
3,200.00	4.53	140.94	3,197.63	-50.21	40.74	383,725.75	797,300.87	32.052250	-103.507157
3,300.00	4.53	140.94	3,297.32	-56.35	45.72	383,719.62	797,305.85	32.052233	-103.507141
3,400.00	4.53	140.94	3,397.01	-62.48	50.70	383,713.49	797,310.82	32.052216	-103.507125
3,500.00	4.53	140.94	3,496.70	-68.61	55.67	383,707.36	797,315.80	32.052199	-103.507110
3,600.00	4.53	140.94	3,596.38	-74.74	60.65	383,701.23	797,320.77	32.052182	-103.507094
3,700.00	4.53	140.94	3,696.07	-80.87	65.62	383,695.10	797,325.75	32.052165	-103.507078
3,800.00	4.53	140.94	3,795.76	-87.00	70.60	383,688.96	797,330.72	32.052148	-103.507062
3,900.00	4.53	140.94	3,895.45	-93.14	75.57	383,682.83	797,335.70	32.052131	-103.507046
4,000.00	4.53	140.94	3,995.13	-99.27	80.55	383,676.70	797,340.68	32.052114	-103.507030
4,100.00	4.53	140.94	4,094.82	-105.40	85.52	383,670.57	797,345.65	32.052097	-103.507014
4,200.00	4.53	140.94	4,194.51	-111.53	90.50	383,664.44	797,350.63	32.052080	-103.506998
4,300.00	4.53	140.94	4,294.20	-117.66	95.47	383,658.31	797,355.60	32.052063	-103.506982
4,400.00	4.53	140.94	4,393.88	-123.79	100.45	383,652.18	797,360.58	32.052046	-103.506966
4,500.00	4.53	140.94	4,493.57	-129.93	105.42	383,646.04	797,365.55	32.052029	-103.506950
4,600.00	4.53	140.94	4,593.26	-136.06	110.40	383,639.91	797,370.53	32.052012	-103.506935
4,700.00	4.53	140.94	4,692.95	-142.19	115.38	383,633.78	797,375.50	32.051995	-103.506919
4,800.00	4.53	140.94	4,792.64	-148.32	120.35	383,627.65	797,380.48	32.051978	-103.506903
4,900.00	4.53	140.94	4,892.32	-154.45	125.33	383,621.52	797,385.45	32.051961	-103.506887
5,000.00	4.53	140.94	4,992.01	-160.58	130.30	383,615.39	797,390.43	32.051944	-103.506871
5,100.00	4.53	140.94	5,091.70	-166.72	135.28	383,609.25	797,395.40	32.051927	-103.506855
5,200.00	4.53	140.94	5,191.39	-172.85	140.25	383,603.12	797,400.38	32.051911	-103.506839
5,300.00	4.53	140.94	5,291.07	-178.98	145.23	383,596.99	797,405.35	32.051894	-103.506823

Planning Report - Geographic

Database:	EDM r5000.141_Prod US	Local Co-ordinate Reference:	Well Jayhawk 7-6 FED Fee Com 8H
Company:	WCDSC Permian NM	TVD Reference:	RKB @ 3398.20ft
Project:	Lea County (NAD83 New Mexico East)	MD Reference:	RKB @ 3398.20ft
Site:	Sec 07-T26S-R34E	North Reference:	Grid
Well:	Jayhawk 7-6 FED Fee Com 8H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
5,400.00	4.53	140.94	5,390.76	-185.11	150.20	383,590.86	797,410.33	32.051877	-103.506807	
5,500.00	4.53	140.94	5,490.45	-191.24	155.18	383,584.73	797,415.31	32.051860	-103.506791	
5,600.00	4.53	140.94	5,590.14	-197.37	160.15	383,578.60	797,420.28	32.051843	-103.506775	
5,700.00	4.53	140.94	5,689.83	-203.50	165.13	383,572.46	797,425.26	32.051826	-103.506760	
5,800.00	4.53	140.94	5,789.51	-209.64	170.10	383,566.33	797,430.23	32.051809	-103.506744	
5,900.00	4.53	140.94	5,889.20	-215.77	175.08	383,560.20	797,435.21	32.051792	-103.506728	
6,000.00	4.53	140.94	5,988.89	-221.90	180.05	383,554.07	797,440.18	32.051775	-103.506712	
6,100.00	4.53	140.94	6,088.58	-228.03	185.03	383,547.94	797,445.16	32.051758	-103.506696	
6,200.00	4.53	140.94	6,188.26	-234.16	190.01	383,541.81	797,450.13	32.051741	-103.506680	
6,300.00	4.53	140.94	6,287.95	-240.29	194.98	383,535.67	797,455.11	32.051724	-103.506664	
6,400.00	4.53	140.94	6,387.64	-246.43	199.96	383,529.54	797,460.08	32.051707	-103.506648	
6,500.00	4.53	140.94	6,487.33	-252.56	204.93	383,523.41	797,465.06	32.051690	-103.506632	
6,600.00	4.53	140.94	6,587.02	-258.69	209.91	383,517.28	797,470.03	32.051673	-103.506616	
6,700.00	4.53	140.94	6,686.70	-264.82	214.88	383,511.15	797,475.01	32.051656	-103.506601	
6,800.00	4.53	140.94	6,786.39	-270.95	219.86	383,505.02	797,479.99	32.051639	-103.506585	
6,900.00	4.53	140.94	6,886.08	-277.08	224.83	383,498.88	797,484.96	32.051622	-103.506569	
7,000.00	4.53	140.94	6,985.77	-283.22	229.81	383,492.75	797,489.94	32.051605	-103.506553	
7,100.00	4.53	140.94	7,085.45	-289.35	234.78	383,486.62	797,494.91	32.051588	-103.506537	
7,200.00	4.53	140.94	7,185.14	-295.48	239.76	383,480.49	797,499.89	32.051571	-103.506521	
7,300.00	4.53	140.94	7,284.83	-301.61	244.73	383,474.36	797,504.86	32.051554	-103.506505	
7,400.00	4.53	140.94	7,384.52	-307.74	249.71	383,468.23	797,509.84	32.051537	-103.506489	
7,500.00	4.53	140.94	7,484.21	-313.87	254.69	383,462.10	797,514.81	32.051520	-103.506473	
7,600.00	4.53	140.94	7,583.89	-320.01	259.66	383,455.96	797,519.79	32.051504	-103.506457	
7,700.00	4.53	140.94	7,683.58	-326.14	264.64	383,449.83	797,524.76	32.051487	-103.506441	
7,800.00	4.53	140.94	7,783.27	-332.27	269.61	383,443.70	797,529.74	32.051470	-103.506426	
7,900.00	4.53	140.94	7,882.96	-338.40	274.59	383,437.57	797,534.71	32.051453	-103.506410	
8,000.00	4.53	140.94	7,982.64	-344.53	279.56	383,431.44	797,539.69	32.051436	-103.506394	
8,100.00	4.53	140.94	8,082.33	-350.66	284.54	383,425.31	797,544.66	32.051419	-103.506378	
8,200.00	4.53	140.94	8,182.02	-356.80	289.51	383,419.17	797,549.64	32.051402	-103.506362	
8,300.00	4.53	140.94	8,281.71	-362.93	294.49	383,413.04	797,554.62	32.051385	-103.506346	
8,400.00	4.53	140.94	8,381.40	-369.06	299.46	383,406.91	797,559.59	32.051368	-103.506330	
8,500.00	4.53	140.94	8,481.08	-375.19	304.44	383,400.78	797,564.57	32.051351	-103.506314	
8,600.00	4.53	140.94	8,580.77	-381.32	309.41	383,394.65	797,569.54	32.051334	-103.506298	
8,700.00	4.53	140.94	8,680.46	-387.45	314.39	383,388.52	797,574.52	32.051317	-103.506282	
8,800.00	4.53	140.94	8,780.15	-393.59	319.36	383,382.38	797,579.49	32.051300	-103.506267	
8,900.00	4.53	140.94	8,879.83	-399.72	324.34	383,376.25	797,584.47	32.051283	-103.506251	
9,000.00	4.53	140.94	8,979.52	-405.85	329.32	383,370.12	797,589.44	32.051266	-103.506235	
9,100.00	4.53	140.94	9,079.21	-411.98	334.29	383,363.99	797,594.42	32.051249	-103.506219	
9,200.00	4.53	140.94	9,178.90	-418.11	339.27	383,357.86	797,599.39	32.051232	-103.506203	
9,300.00	4.53	140.94	9,278.59	-424.24	344.24	383,351.73	797,604.37	32.051215	-103.506187	
9,400.00	4.53	140.94	9,378.27	-430.38	349.22	383,345.59	797,609.34	32.051198	-103.506171	
9,500.00	4.53	140.94	9,477.96	-436.51	354.19	383,339.46	797,614.32	32.051181	-103.506155	
9,600.00	4.53	140.94	9,577.65	-442.64	359.17	383,333.33	797,619.29	32.051164	-103.506139	
9,700.00	4.53	140.94	9,677.34	-448.77	364.14	383,327.20	797,624.27	32.051147	-103.506123	
9,800.00	4.53	140.94	9,777.02	-454.90	369.12	383,321.07	797,629.25	32.051130	-103.506107	
9,900.00	4.53	140.94	9,876.71	-461.03	374.09	383,314.94	797,634.22	32.051113	-103.506092	
10,000.00	4.53	140.94	9,976.40	-467.16	379.07	383,308.80	797,639.20	32.051097	-103.506076	
10,100.00	4.53	140.94	10,076.09	-473.30	384.04	383,302.67	797,644.17	32.051080	-103.506060	
10,200.00	4.53	140.94	10,175.77	-479.43	389.02	383,296.54	797,649.15	32.051063	-103.506044	
10,300.00	4.53	140.94	10,275.46	-485.56	394.00	383,290.41	797,654.12	32.051046	-103.506028	
10,400.00	4.53	140.94	10,375.15	-491.69	398.97	383,284.28	797,659.10	32.051029	-103.506012	
10,500.00	4.53	140.94	10,474.84	-497.82	403.95	383,278.15	797,664.07	32.051012	-103.505996	
10,600.00	4.53	140.94	10,574.53	-503.95	408.92	383,272.02	797,669.05	32.050995	-103.505980	
10,700.00	4.53	140.94	10,674.21	-510.09	413.90	383,265.88	797,674.02	32.050978	-103.505964	
10,800.00	4.53	140.94	10,773.90	-516.22	418.87	383,259.75	797,679.00	32.050961	-103.505948	

Planning Report - Geographic

Database:	EDM r5000.141_Prod US	Local Co-ordinate Reference:	Well Jayhawk 7-6 FED Fee Com 8H
Company:	WCDSC Permian NM	TVD Reference:	RKB @ 3398.20ft
Project:	Lea County (NAD83 New Mexico East)	MD Reference:	RKB @ 3398.20ft
Site:	Sec 07-T26S-R34E	North Reference:	Grid
Well:	Jayhawk 7-6 FED Fee Com 8H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,900.00	4.53	140.94	10,873.59	-522.35	423.85	383,253.62	797,683.97	32.050944	-103.505932
11,000.00	4.53	140.94	10,973.28	-528.48	428.82	383,247.49	797,688.95	32.050927	-103.505917
11,100.00	4.53	140.94	11,072.96	-534.61	433.80	383,241.36	797,693.92	32.050910	-103.505901
11,200.00	4.53	140.94	11,172.65	-540.74	438.77	383,235.23	797,698.90	32.050893	-103.505885
11,300.00	4.53	140.94	11,272.34	-546.88	443.75	383,229.09	797,703.88	32.050876	-103.505869
11,400.00	4.53	140.94	11,372.03	-553.01	448.72	383,222.96	797,708.85	32.050859	-103.505853
11,475.59	4.53	140.94	11,447.38	-557.64	452.49	383,218.33	797,712.61	32.050846	-103.505841
11,500.00	4.16	140.94	11,471.72	-559.08	453.65	383,216.89	797,713.78	32.050842	-103.505837
11,600.00	2.66	140.94	11,571.54	-563.70	457.40	383,212.27	797,717.53	32.050830	-103.505825
11,700.00	1.16	140.94	11,671.48	-566.29	459.50	383,209.68	797,719.63	32.050822	-103.505818
11,777.52	0.00	0.00	11,749.00	-566.90	460.00	383,209.07	797,720.13	32.050821	-103.505817
11,800.00	0.00	0.00	11,771.48	-566.90	460.00	383,209.07	797,720.13	32.050821	-103.505817
11,900.00	0.00	0.00	11,871.48	-566.90	460.00	383,209.07	797,720.13	32.050821	-103.505817
12,000.00	0.00	0.00	11,971.48	-566.90	460.00	383,209.07	797,720.13	32.050821	-103.505817
12,100.00	0.00	0.00	12,071.48	-566.90	460.00	383,209.07	797,720.13	32.050821	-103.505817
12,127.56	0.00	0.00	12,099.04	-566.90	460.00	383,209.07	797,720.13	32.050821	-103.505817
KOP @ 12128' MD, 50' FSL, 1680' FEL									
12,200.00	7.24	359.54	12,171.28	-562.33	459.96	383,213.64	797,720.09	32.050833	-103.505817
12,300.00	17.24	359.54	12,268.89	-541.15	459.79	383,234.82	797,719.92	32.050891	-103.505817
12,373.33	24.58	359.54	12,337.34	-515.00	459.58	383,260.97	797,719.71	32.050963	-103.505817
FTP @ 12373' MD, 100' FSL, 1680' FEL									
12,400.00	27.24	359.54	12,361.33	-503.35	459.49	383,272.62	797,719.62	32.050995	-103.505817
12,500.00	37.24	359.54	12,445.80	-450.06	459.06	383,325.91	797,719.19	32.051142	-103.505817
12,600.00	47.24	359.54	12,519.73	-382.92	458.53	383,393.05	797,718.65	32.051326	-103.505817
12,700.00	57.24	359.54	12,580.89	-303.96	457.89	383,472.01	797,718.02	32.051543	-103.505817
12,800.00	67.24	359.54	12,627.40	-215.58	457.19	383,560.38	797,717.31	32.051786	-103.505817
12,900.00	77.24	359.54	12,657.86	-120.47	456.43	383,655.50	797,716.55	32.052048	-103.505817
13,000.00	87.24	359.54	12,671.34	-21.52	455.63	383,754.45	797,715.76	32.052320	-103.505818
13,027.56	90.00	359.54	12,672.00	6.04	455.41	383,782.01	797,715.54	32.052396	-103.505818
13,100.00	90.00	359.54	12,672.00	78.47	454.83	383,854.44	797,714.96	32.052595	-103.505818
13,200.00	90.00	359.54	12,672.00	178.47	454.03	383,954.43	797,714.16	32.052870	-103.505818
13,300.00	90.00	359.54	12,672.00	278.46	453.23	384,054.43	797,713.36	32.053144	-103.505818
13,400.00	90.00	359.54	12,672.00	378.46	452.43	384,154.43	797,712.56	32.053419	-103.505818
13,500.00	90.00	359.54	12,672.00	478.46	451.63	384,254.42	797,711.76	32.053694	-103.505818
13,600.00	90.00	359.54	12,672.00	578.45	450.83	384,354.42	797,710.96	32.053969	-103.505818
13,700.00	90.00	359.54	12,672.00	678.45	450.03	384,454.42	797,710.16	32.054244	-103.505818
13,800.00	90.00	359.54	12,672.00	778.45	449.23	384,554.41	797,709.35	32.054519	-103.505818
13,900.00	90.00	359.54	12,672.00	878.44	448.43	384,654.41	797,708.55	32.054794	-103.505819
14,000.00	90.00	359.54	12,672.00	978.44	447.63	384,754.41	797,707.75	32.055069	-103.505819
14,100.00	90.00	359.54	12,672.00	1,078.44	446.83	384,854.40	797,706.95	32.055343	-103.505819
14,200.00	90.00	359.54	12,672.00	1,178.43	446.02	384,954.40	797,706.15	32.055618	-103.505819
14,300.00	90.00	359.54	12,672.00	1,278.43	445.22	385,054.40	797,705.35	32.055893	-103.505819
14,400.00	90.00	359.54	12,672.00	1,378.43	444.42	385,154.39	797,704.55	32.056168	-103.505819
14,500.00	90.00	359.54	12,672.00	1,478.43	443.62	385,254.39	797,703.75	32.056443	-103.505819
14,600.00	90.00	359.54	12,672.00	1,578.42	442.82	385,354.39	797,702.95	32.056718	-103.505819
14,700.00	90.00	359.54	12,672.00	1,678.42	442.02	385,454.38	797,702.15	32.056993	-103.505819
14,800.00	90.00	359.54	12,672.00	1,778.42	441.22	385,554.38	797,701.35	32.057268	-103.505819
14,900.00	90.00	359.54	12,672.00	1,878.41	440.42	385,654.38	797,700.55	32.057542	-103.505820
15,000.00	90.00	359.54	12,672.00	1,978.41	439.62	385,754.37	797,699.75	32.057817	-103.505820
15,100.00	90.00	359.54	12,672.00	2,078.41	438.82	385,854.37	797,698.95	32.058092	-103.505820
15,200.00	90.00	359.54	12,672.00	2,178.40	438.02	385,954.37	797,698.14	32.058367	-103.505820
15,300.00	90.00	359.54	12,672.00	2,278.40	437.22	386,054.36	797,697.34	32.058642	-103.505820
15,400.00	90.00	359.54	12,672.00	2,378.40	436.42	386,154.36	797,696.54	32.058917	-103.505820
15,500.00	90.00	359.54	12,672.00	2,478.39	435.62	386,254.36	797,695.74	32.059192	-103.505820

Planning Report - Geographic

Database:	EDM r5000.141_Prod US	Local Co-ordinate Reference:	Well Jayhawk 7-6 FED Fee Com 8H
Company:	WCDSC Permian NM	TVD Reference:	RKB @ 3398.20ft
Project:	Lea County (NAD83 New Mexico East)	MD Reference:	RKB @ 3398.20ft
Site:	Sec 07-T26S-R34E	North Reference:	Grid
Well:	Jayhawk 7-6 FED Fee Com 8H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
15,600.00	90.00	359.54	12,672.00	2,578.39	434.81	386,354.35	797,694.94	32.059467	-103.505820
15,700.00	90.00	359.54	12,672.00	2,678.39	434.01	386,454.35	797,694.14	32.059742	-103.505820
15,800.00	90.00	359.54	12,672.00	2,778.38	433.21	386,554.35	797,693.34	32.060016	-103.505821
15,900.00	90.00	359.54	12,672.00	2,878.38	432.41	386,654.34	797,692.54	32.060291	-103.505821
16,000.00	90.00	359.54	12,672.00	2,978.38	431.61	386,754.34	797,691.74	32.060566	-103.505821
16,100.00	90.00	359.54	12,672.00	3,078.37	430.81	386,854.34	797,690.94	32.060841	-103.505821
16,200.00	90.00	359.54	12,672.00	3,178.37	430.01	386,954.33	797,690.14	32.061116	-103.505821
16,300.00	90.00	359.54	12,672.00	3,278.37	429.21	387,054.33	797,689.34	32.061391	-103.505821
16,400.00	90.00	359.54	12,672.00	3,378.36	428.41	387,154.33	797,688.54	32.061666	-103.505821
16,500.00	90.00	359.54	12,672.00	3,478.36	427.61	387,254.32	797,687.74	32.061941	-103.505821
16,600.00	90.00	359.54	12,672.00	3,578.36	426.81	387,354.32	797,686.93	32.062215	-103.505821
16,700.00	90.00	359.54	12,672.00	3,678.35	426.01	387,454.32	797,686.13	32.062490	-103.505822
16,800.00	90.00	359.54	12,672.00	3,778.35	425.21	387,554.31	797,685.33	32.062765	-103.505822
16,900.00	90.00	359.54	12,672.00	3,878.35	424.41	387,654.31	797,684.53	32.063040	-103.505822
17,000.00	90.00	359.54	12,672.00	3,978.34	423.61	387,754.31	797,683.73	32.063315	-103.505822
17,100.00	90.00	359.54	12,672.00	4,078.34	422.80	387,854.30	797,682.93	32.063590	-103.505822
17,200.00	90.00	359.54	12,672.00	4,178.34	422.00	387,954.30	797,682.13	32.063865	-103.505822
17,300.00	90.00	359.54	12,672.00	4,278.34	421.20	388,054.30	797,681.33	32.064140	-103.505822
17,400.00	90.00	359.54	12,672.00	4,378.33	420.40	388,154.29	797,680.53	32.064414	-103.505822
17,500.00	90.00	359.54	12,672.00	4,478.33	419.60	388,254.29	797,679.73	32.064689	-103.505822
17,600.00	90.00	359.54	12,672.00	4,578.33	418.80	388,354.29	797,678.93	32.064964	-103.505823
17,687.00	90.00	359.54	12,672.00	4,665.32	418.10	388,441.28	797,678.23	32.065203	-103.505823
Cross Section @ 17687' MD, 0' FSL, 1680' FEL									
17,700.00	90.00	359.54	12,672.00	4,678.32	418.00	388,454.28	797,678.13	32.065239	-103.505823
17,800.00	90.00	359.54	12,672.00	4,778.32	417.20	388,554.28	797,677.33	32.065514	-103.505823
17,900.00	90.00	359.54	12,672.00	4,878.32	416.40	388,654.27	797,676.53	32.065789	-103.505823
18,000.00	90.00	359.54	12,672.00	4,978.31	415.60	388,754.27	797,675.73	32.066064	-103.505823
18,100.00	90.00	359.54	12,672.00	5,078.31	414.80	388,854.27	797,674.92	32.066339	-103.505823
18,200.00	90.00	359.54	12,672.00	5,178.31	414.00	388,954.26	797,674.12	32.066613	-103.505823
18,300.00	90.00	359.54	12,672.00	5,278.30	413.20	389,054.26	797,673.32	32.066888	-103.505823
18,400.00	90.00	359.54	12,672.00	5,378.30	412.40	389,154.26	797,672.52	32.067163	-103.505823
18,500.00	90.00	359.54	12,672.00	5,478.30	411.59	389,254.25	797,671.72	32.067438	-103.505824
18,600.00	90.00	359.54	12,672.00	5,578.29	410.79	389,354.25	797,670.92	32.067713	-103.505824
18,700.00	90.00	359.54	12,672.00	5,678.29	409.99	389,454.25	797,670.12	32.067988	-103.505824
18,800.00	90.00	359.54	12,672.00	5,778.29	409.19	389,554.24	797,669.32	32.068263	-103.505824
18,900.00	90.00	359.54	12,672.00	5,878.28	408.39	389,654.24	797,668.52	32.068538	-103.505824
19,000.00	90.00	359.54	12,672.00	5,978.28	407.59	389,754.24	797,667.72	32.068812	-103.505824
19,100.00	90.00	359.54	12,672.00	6,078.28	406.79	389,854.23	797,666.92	32.069087	-103.505824
19,200.00	90.00	359.54	12,672.00	6,178.27	405.99	389,954.23	797,666.12	32.069362	-103.505824
19,300.00	90.00	359.54	12,672.00	6,278.27	405.19	390,054.23	797,665.32	32.069637	-103.505824
19,400.00	90.00	359.54	12,672.00	6,378.27	404.39	390,154.22	797,664.52	32.069912	-103.505825
19,500.00	90.00	359.54	12,672.00	6,478.26	403.59	390,254.22	797,663.71	32.070187	-103.505825
19,600.00	90.00	359.54	12,672.00	6,578.26	402.79	390,354.22	797,662.91	32.070462	-103.505825
19,700.00	90.00	359.54	12,672.00	6,678.26	401.99	390,454.21	797,662.11	32.070737	-103.505825
19,800.00	90.00	359.54	12,672.00	6,778.26	401.19	390,554.21	797,661.31	32.071011	-103.505825
19,900.00	90.00	359.54	12,672.00	6,878.25	400.39	390,654.21	797,660.51	32.071286	-103.505825
20,000.00	90.00	359.54	12,672.00	6,978.25	399.58	390,754.20	797,659.71	32.071561	-103.505825
20,100.00	90.00	359.54	12,672.00	7,078.25	398.78	390,854.20	797,658.91	32.071836	-103.505825
20,200.00	90.00	359.54	12,672.00	7,178.24	397.98	390,954.20	797,658.11	32.072111	-103.505825
20,300.00	90.00	359.54	12,672.00	7,278.24	397.18	391,054.19	797,657.31	32.072386	-103.505826
20,400.00	90.00	359.54	12,672.00	7,378.24	396.38	391,154.19	797,656.51	32.072661	-103.505826
20,500.00	90.00	359.54	12,672.00	7,478.23	395.58	391,254.19	797,655.71	32.072936	-103.505826
20,600.00	90.00	359.54	12,672.00	7,578.23	394.78	391,354.18	797,654.91	32.073210	-103.505826
20,700.00	90.00	359.54	12,672.00	7,678.23	393.98	391,454.18	797,654.11	32.073485	-103.505826

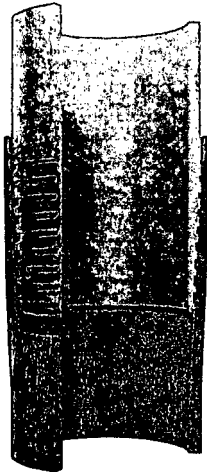
Planning Report - Geographic

Database:	EDM r5000.141_Prod US	Local Co-ordinate Reference:	Well Jayhawk 7-6 FED Fee Com 8H
Company:	WCDSC Permian NM	TVD Reference:	RKB @ 3398.20ft
Project:	Lea County (NAD83 New Mexico East)	MD Reference:	RKB @ 3398.20ft
Site:	Sec 07-T26S-R34E	North Reference:	Grid
Well:	Jayhawk 7-6 FED Fee Com 8H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
20,800.00	90.00	359.54	12,672.00	7,778.22	393.18	391,554.18	797,653.31	32.073760	-103.505826	
20,900.00	90.00	359.54	12,672.00	7,878.22	392.38	391,654.17	797,652.51	32.074035	-103.505826	
21,000.00	90.00	359.54	12,672.00	7,978.22	391.58	391,754.17	797,651.70	32.074310	-103.505826	
21,100.00	90.00	359.54	12,672.00	8,078.21	390.78	391,854.17	797,650.90	32.074585	-103.505826	
21,200.00	90.00	359.54	12,672.00	8,178.21	389.98	391,954.16	797,650.10	32.074860	-103.505826	
21,300.00	90.00	359.54	12,672.00	8,278.21	389.18	392,054.16	797,649.30	32.075135	-103.505827	
21,400.00	90.00	359.54	12,672.00	8,378.20	388.37	392,154.16	797,648.50	32.075409	-103.505827	
21,500.00	90.00	359.54	12,672.00	8,478.20	387.57	392,254.15	797,647.70	32.075684	-103.505827	
21,600.00	90.00	359.54	12,672.00	8,578.20	386.77	392,354.15	797,646.90	32.075959	-103.505827	
21,700.00	90.00	359.54	12,672.00	8,678.19	385.97	392,454.15	797,646.10	32.076234	-103.505827	
21,800.00	90.00	359.54	12,672.00	8,778.19	385.17	392,554.14	797,645.30	32.076509	-103.505827	
21,900.00	90.00	359.54	12,672.00	8,878.19	384.37	392,654.14	797,644.50	32.076784	-103.505827	
22,000.00	90.00	359.54	12,672.00	8,978.18	383.57	392,754.14	797,643.70	32.077059	-103.505827	
22,100.00	90.00	359.54	12,672.00	9,078.18	382.77	392,854.13	797,642.90	32.077334	-103.505827	
22,200.00	90.00	359.54	12,672.00	9,178.18	381.97	392,954.13	797,642.10	32.077608	-103.505828	
22,300.00	90.00	359.54	12,672.00	9,278.18	381.17	393,054.13	797,641.30	32.077883	-103.505828	
22,400.00	90.00	359.54	12,672.00	9,378.17	380.37	393,154.12	797,640.49	32.078158	-103.505828	
22,500.00	90.00	359.54	12,672.00	9,478.17	379.57	393,254.12	797,639.69	32.078433	-103.505828	
22,600.00	90.00	359.54	12,672.00	9,578.17	378.77	393,354.11	797,638.89	32.078708	-103.505828	
22,700.00	90.00	359.54	12,672.00	9,678.16	377.97	393,454.11	797,638.09	32.078983	-103.505828	
22,800.00	90.00	359.54	12,672.00	9,778.16	377.16	393,554.11	797,637.29	32.079258	-103.505828	
22,871.64	90.00	359.54	12,672.00	9,849.80	376.59	393,625.75	797,636.72	32.079455	-103.505828	
LTP @ 22872' MD, 100' FNL, 1680' FEL										
22,900.00	90.00	359.54	12,672.00	9,878.16	376.36	393,654.10	797,636.49	32.079533	-103.505828	
22,951.63	90.00	359.54	12,672.00	9,929.78	375.95	393,705.73	797,636.08	32.079675	-103.505828	
PBHL; 100' FNL, 1680' FEL										
22,951.64	90.00	359.54	12,672.00	9,929.79	375.95	393,705.74	797,636.08	32.079675	-103.505828	

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting		
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)	Latitude	Longitude
PBHL - Jayhawk 7-6 Fer	0.00	0.00	0.00	9,929.79	375.95	393,705.74	797,636.08	32.079675	-103.505828
- plan misses target center by 9936.90ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Point									
VP - Jayhawk 7-6 Fed 8l	0.00	0.00	11,800.00	-566.90	-176.19	383,209.07	797,083.93	32.050834	-103.507870
- plan misses target center by 636.19ft at 11828.52ft MD (11800.00 TVD, -566.90 N, 460.00 E)									
- Point									

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
12,127.56	12,099.04	-566.90	460.00	KOP @ 12128' MD, 50' FSL, 1680' FEL	
12,373.33	12,337.34	-515.00	459.58	FTP @ 12373' MD, 100' FSL, 1680' FEL	
17,687.00	12,672.00	4,665.32	418.10	Cross Section @ 17687' MD, 0' FSL, 1680' FEL	
22,871.64	12,672.00	9,849.80	376.59	LTP @ 22872' MD, 100' FNL, 1680' FEL	
22,951.63	12,672.00	9,929.78	375.95	PBHL; 100' FNL, 1680' FEL	



EC- LOCK WEDGE

8.625" 32.00 LB/FT (.352" Wall)
BORUSAN MANNESMANN P110 HSCY

Pipe Body Data

Nominal OD:	8.625	in
Nominal Wall:	.352	in
Nominal Weight:	32.00	lb/ft
Plain End Weight:	31.13	lb/ft
Material Grade:	P110 HSCY	
Mill/Specification:	BORUSAN MANNESMANN	
Yield Strength:	125,000	psi
Tensile Strength:	125,000	psi
Nominal ID:	7.921	in
API Drift Diameter:	7.796	in
Special Drift Diameter:	7.875	in
RBW:	87.5 %	
Body Yield:	1,144,000	lbf
Burst:	8,930	psi
Collapse:	4,230	psi

Connection Data

Standard OD:	9.000	in
Pin Bored ID:	7.921	in
Critical Section Area:	8.61433	in ²
Tensile Efficiency:	94.2 %	
Compressive Efficiency:	100.0 %	
Longitudinal Yield Strength:	1,077,000	lbf
Compressive Limit:	1,144,000	lbf
Internal Pressure Rating:	8,930	psi
External Pressure Rating:	4,230	psi
Maximum Bend:	62.6	°/100

Operational Data

Minimum Makeup Torque:	29,900	ft*lb
Optimum Makeup Torque:	37,375	ft*lb
Maximum Makeup Torque:	80,900	ft*lb
Minimum Yield:	89,900	ft*lb
Makeup Loss:	5.97	in

Notes

Operational Torque is equivalent to the Maximum Make-Up Torque.



PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	DEVON ENERGY PRODUCTION COMPANY LP
LEASE NO.:	NMNM114990
WELL NAME & NO.:	JAYHAWK 7-6 FED FEE COM 8H
SURFACE HOLE FOOTAGE:	615'/S & 2120'/E
BOTTOM HOLE FOOTAGE:	20'/N & 1660'/E
LOCATION:	SECTION 7, T26S, R34E, NMPM
COUNTY:	LEA

COA

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

All previous COAs still apply, except for the following:

A. CASING

Primary Casing Design

1. The 10-3/4 inch surface casing shall be set at approximately **900** 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 **8 hours** 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.

Intermediate casing must be kept fluid filled to meet BLM minimum collapse

requirement.

2. The minimum required fill of cement behind the 7-5/8 inch intermediate casing is:

Option 1 (Single Stage):

- Cement to surface. If cement does not circulate see B.1.a, c-d above.

Option 2:

Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.

- a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.
- b. Second stage above DV tool:
 - Cement to surface. If cement does not circulate, contact the appropriate BLM office.

Operator has proposed to pump down 10 3/4" X 7 5/8" annulus. Operator must run a CBL from TD of the 7 5/8" casing to surface. Submit results to BLM.

3. The minimum required fill of cement behind the 5-1/2 inch production casing is:
 - Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.

Alternate Casing Design:

4. The 13-3/8 inch surface casing shall be set at approximately 900 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 **8 hours** 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.

Intermediate casing must be kept fluid filled to meet BLM minimum collapse requirement.

5. The minimum required fill of cement behind the alternate 8 5/8 inch intermediate casing is:

Option 1 (Single Stage):

- Cement to surface. If cement does not circulate see B.1.a, c-d above. **Excess calculates to 7% - additional cement will be required.**

Option 2:

Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.

- a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.
- b. Second stage above DV tool:
 - Cement to surface. If cement does not circulate, contact the appropriate BLM office.

Operator has proposed to pump down 13 3/8" X 8 5/8" annulus. Operator must run a CBL from TD of the 8 5/8" casing to surface. Submit results to BLM.

6. The minimum required fill of cement behind the 5-1/2 inch production casing is:
 - Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.

MHH 01172019

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

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.

VAM[®] SG

Connection Data Sheet

O. D. (in)	WEIGHT (lb/ft)	WALL (in)	GRADE	DRIFT	CONNECTION
5.500	20.00	0.361	VST P110EC	4.653	VAM [®] SG

PIPE PROPERTIES	
Material Grade	VST P110EC
Min. Yield Strength	125 ksi
Min. Tensile Strength	135 ksi
Nominal OD	5.500 in
Nominal ID	4.778 in
Nominal Area	5.828 sq. in
Yield Strength	729 kips
Ultimate Strength	787 kips
Min Internal Yield	14,360 psi
External Pressure	12,090 psi

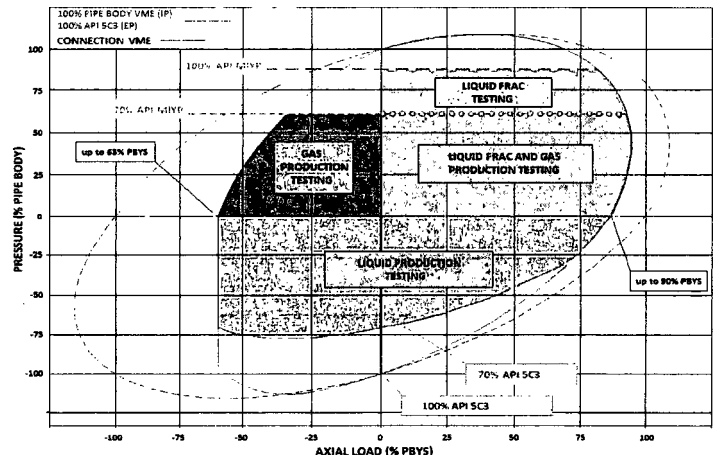
CONNECTION PROPERTIES	
Connection OD	5.697 in
Connection ID	4.711 in
Make up Loss	6.335 in
Connection Critical Area	5.071 sq. in
%PB Section Area	87.0%
Yield Strength	634 kips
Parting Load	685 kips
Min Internal Yield	14,360 psi
External Pressure	8,460 psi
Structural Collapse	12,090 psi
Working Compression	444 kips
Max. Bending w/ Sealability	40 °/100 ft

DOCUMENTATION	
Ref. Drawing	SI-PD 100954 Rev.A
Date	21-Jul-17
Time	3:19 PM
Email	tech.support@vam-usa.com

TORQUE VALUES	
Min Make Up Torque	8,100 ft-lb
Opt Make Up Torque	9,800 ft-lb
Max Make Up Torque	11,500 ft-lb
Max Torque w/ Sealability	12,500 ft-lb

The single solution for Shale Play needs

VAM[®] SG brings VAM[®] premium sealing performance to a semi-flush connection with extremely high Tension performance and increased Torque capacity, validated to the specific Shale drilling requirements, while remaining highly competitive in North American Shale play economics.



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CASING PERFORMANCE Data Sheet



O.D	PE LB/FT	T&C LB/FT	GRADE
8.625	31.13	32.00	P110EC

Grade - Material Properties

Minimum Yield Strength:	125	ksi
Maximum Yield Strength:	140	ksi
Minimum Tensile Strength:	135	ksi

Pipe Body Data (PE)

Geometry

Nominal ID:	7.921	inch
Wall:	0.352	inch
Min. Wall % (API = 87.5%):	87.5	%
API Drift:	7.796	inch
Special Drift*:	7.875	inch

Performance

Pipe Body Yield Strength:	1,144	kips
Collapse Resistance:	3,470	psi
Internal Yield Pressure (API Historical):	8,930	psi

API Connection Data

SC Internal Pressure:	8,930	psi
SC Joint Strength:	793	kips
LC Internal Pressure:	8,930	psi
LC Joint Strength:	887	kips
BC Internal Pressure:	8,930	psi
BC Joint Strength:	1,121	kips

SC Torque (ft-lbs)

minimum: 5,950	optimum: 7,933	maximum: 9,916
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LC Torque (ft-lbs)

minimum: 6,651	optimum: 8,868	maximum: 11,085
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*Special drift must be ordered or API drift will be used for actual drifting of product.

**If above API connections do not suit your needs, VAM® premium connections are available up to 100% of pipe body ratings.

This data sheet is for informational purposes only. While every effort has been made to ensure the accuracy of all data and that the information contained herein is correct, this material is presented as a reference guide only. Vallourec assumes no responsibility for the results obtained through the use of this material.