Form 3160-5
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

NM OIL CONSERVATION
ARTESIA DISTRICT
DEC 12 2016
RECEIVED

Carlsbad Field Office
OCD

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

SUNDRY NOTICES AND REPORTS ON WELLS

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

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

Copy

1. Type of Well ☐ Oil Well ☒ Gas Well ☐ Other	5. Lease Serial No. NMNM22634
	6. If Indian, Allottee or Tribe Name
	7. If Unit or CA/Agreement, Name and/or No.
	8. Well Name and No. EAST PECOS FEDERAL 22 9H
2. Name of Operator ~~WPX ENERGY~~ RKI Contact: JOSH WALKER E-Mail: josh.walker@wpxenergy.com	9. API Well No. 30-015-43349
3a. Address 3500 ONE WILLIAMS CENTER MD-35 TULSA, OK 71472 3b. Phone No. (include area code) Ph: 539-573-0108	10. Field and Pool, or Exploratory UNDESIGNATED WOLFCAMP
4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)* Sec 22 T26S R29E SESW 250FSL 1355FWL	11. County or Parish, and State EDDY COUNTY, NM

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

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

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

RKI is requesting the following changes:

-Change BHL from 230'FSL, 660'FWL to 230FNL, 330'FWL.
-Change SHL from 150'FSL, 1330'FWL to 250'FSL, 1355'FWL, essentially shifting the SHL 100' North and 25' East on the pad. There would be no need for expansion to the approved pad or any additional disturbance. This change is necessary for the drilling rig to fit on location safely with 2 different visits.

Please see attached plats, geoprog, drilling plan, BOP diagram, choke manifold diagram, and co-flex hose variance request form.

NM OIL CONSERVATION
ARTESIA DISTRICT
DEC 12 2016
RECEIVED

SEE ATTACHED FOR CONDITIONS OF APPROVAL

Surface good as is BL Bob Ballard 11-16-2016

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

Electronic Submission #353713 verified by the BLM Well Information System
For WPX ENERGY, sent to the Carlsbad

Name *(Printed/Typed)* JOSH WALKER — Title REGULATORY SPECIALIST

Signature (Electronic Submission) — Date 10/06/2016

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

APPROVED

Approved By — Title PETROLEUM ENGINEER — Date 12/02/16

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

Office

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

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

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 Rd., 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, New Mexico 87505

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
		UNDESIGNATED WOLFCAMP

Property Code	Property Name	Well Number
	EAST PECOS FEDERAL 22	9H

OGRID No.	Operator Name	Elevation
246289	RKI EXPLORATION & PRODUCTION	2879'

Surface Location

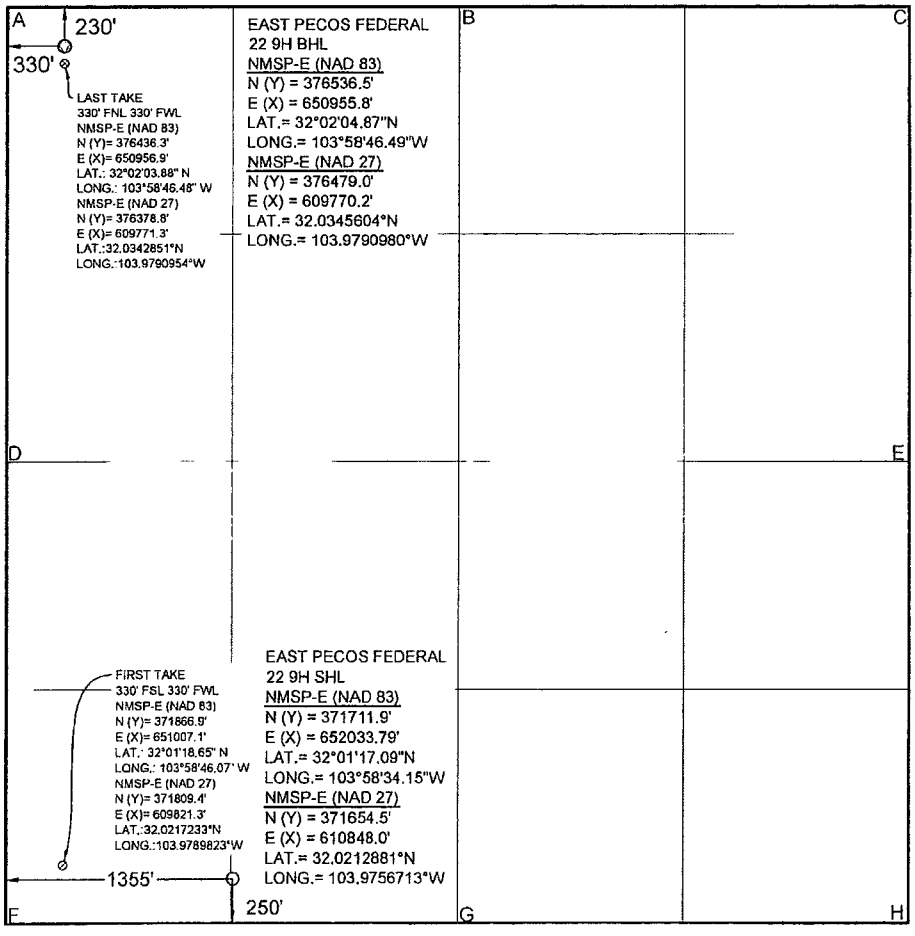
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	22	26S	29E		250	S	1355	W	EDDY

Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	22	26S	29E		230	N	330	W	EDDY

Dedicated Acres	Joint or Infill	Consolidated Code	Order No.
320.0			

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.



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 voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature — Date: 9/27/16

Josh Walker
Print Name

josh.walker@wpxenergy.com
E-mail Address

SURVEYORS 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.

MARCH 30, 2016
Date of Survey

Signature and Seal of Professional Surveyor:

JAMES E. TOMPKINS
NEW MEXICO
14729
REGISTERED PROFESSIONAL LAND SURVEYOR

Job No.: WTC51102
JAMES E. TOMPKINS 14729
Certificate Number

WPX Energy

Well	East Pecos Fed 22-9H					
Location	Surface:	250 FSL		1,355	FWL	Sec 22-26S-29E
	Bottom Hole:	230 FNL	330'		FWL	Sec 22-26S-29E

County Eddy
State New Mexico

1) The elevation of the unprepared ground is 2,879 feet above sea level.

2) The geologic name of the surface formation is Quaternary - Alluvium.

3) A rotary rig will be utilized to drill the well to 15,723 feet and run casing and cement. This equipment will then be rigged down and the well will be completed with a workover rig.

4) Proposed depth is 15,723 feet MD

5) Estimated tops:

	MD	TVD		
Bell Canyon Sand (Base Salt)	2,807	2,807		BHP = .44 psi/ft x depth
Cherry Canyon Sand	3,870	3,861		1,235 psi
Brushy Canyon Sand	4,949	4,923		1,699 psi
Bone Spring Lime	6,621	6,570	Oil	2,166 psi
1st Bone Spring Sand	7,570	7,504	Oil	2,891 psi
2nd Bone Spring Sand	8,398	8,320	Oil	3,302 psi
3rd Bone Spring Sand	9,459	9,371		3,661 psi
Wolfcamp	9,817	9,729	Oil	4,123 psi
Wolfcamp A	9,946	9,858	Oil	4,281 psi
Wolfcamp B	10,338	10,250	Oil	4,338
KOP	10,500	10,411	Oil	4,510
Wolfcamp C	10,552	10,464	Oil	4,581 psi
Wolfcamp D	10,865	10,646	Oil	4,604
Landing Point (Wolfcamp)	10,250	10,889	Oil	4,684 psi
TD	15,723	10,889		4,791 psi

6) Casing program:

Hole Size	Top	Bottom	OD Csg	Wt/Grade	Connection	Collapse Design Factor	Burst Design Factor	Tension Design Factor
17 1/2"	0	~~680~~ 350	13 3/8"	54.5#/J-55	ST&C	3.78	18.25	13.87
12 1/4"	0	2,807	9 5/8"	40#/J-55	LT&C	1.64	6.40	4.63
8 3/4"	0	~~10,250~~ 11,250	7"	29#/HCP-110	BT&C	1.38	1.99	2.99
6 1/8"	10,500	15,723	4 1/2"	13.5#/HCP-110	CDC-HTC	2.23	1.24	6.28

Collapse	1.125
Burst	1.0
Tension	2.0

7) Cement program:

Surface		17 1/2" hole			
Pipe OD		13 3/8"			
Setting Depth		350' ~~680~~ ft	See COA		
Annular Volume		0.69462 cf/ft			
Excess		1	100 %		
Lead	540 sx	1.75 cf/sk	9.13 gal/sk		13.5 ppg
Tail	200 sx	1.33 cf/sk	6.32 gal/sk		14.8 ppg

Lead: "C" + 4% PF20 (gel) + 2% PF1 (CC) + .125 pps PF29 (CelloFlake) + .4 pps PF46 (antifoam)
Tail: "C" + 1% PF1 (CC)
Top of cement: Surface

Intermediate		12 1/4" hole			
Pipe OD		9 5/8"			
Setting Depth		2,807 ft			
Annular Volume		0.31318 cf/ft	0.3627 cf/ft		
Excess		0.5	50 %		
Lead	465 sx	2.37 cf/sk	9.95 gal/sk		12.6 ppg
Tail	200 sx	1.33 cf/sk	6.32 gal/sk		14.8 ppg

Lead: 35/65 Poz "C" + 5% PF44 + 6% PF20 + 1% PF1 _ .125 pps PF29 + .4 pps PF46 + 3 pps PF42
Tail: "C" + .2% PF13 (retarder)
Top of cement: Surface

Intermediate		8 3/4" hole			
Pipe OD		7"			
Setting Depth		10,250 ft			
Annular Volume		0.15033 cf/ft	0.1585 cf/ft	500 ft	
Excess		0.35	35 %		
Lead:	733 sx	1.89 cf/sk	10.06 gal/sk		12.9 ppg
Tail:	175 sx	1.33 cf/sk	6.32 gal/sk		14.8 ppg

Lead: 35/65 Poz "C" + 5% PF44 + 6% PF20 + .2% PF13 + .125 ps PF29 + .4 pps PF46
Tail: "C" + .2% PF13
Top of cement: 2,307 ft

Production		6 1/8" hole			
Pipe OD (in OH)		4 1/2"			
Setting Depth		15,723 ft			
Annular Volume		0.0942			
Excess		0.50			
Lead:	395 sx	1.87 cf/sk	9.52 gal/sk		13.0 ppg

Lead: AcidSolid PVL + 5% PF174 + .7% PF606 + .2% PF153 + .5% PF13 + 30% PF151 + .4 pps PF46
Top of cement: 10,500 ft

8) Pressure control equipment:

The blowout preventer equipment (BOP) shown in Exhibit #1 will consist of a triple ram type (10,000 psi WP) preventer, a bag-type annular preventer (5,000 psi WP), and rotating head. Both units will be hydraulically operated and the ram type preventer will be equipped with variable rams on top, blind rams, and pipe rams (sized to accommodate the drill pipe size being utilized) on bottom. A 13 3/8" SOW x 13 5/8" 5M casing head will be installed on the 13 3/8" casing and utilized until total depth is reached. All BOP and associated equipment will be tested to 5,000 psi and the annular will be tested to 1,500 psi after setting 13-3/8" casing string. The 13 3/8" and 9 5/8" casing will be tested to .22 psi per ft of casing string length or 1500 psi whichever is greater, but not to exceed 70% of the minimum yield.
The 9 5/8" & 7" casing will be hung in the casing head and the stack will not be nippled down at these points.
The stack will not be isolated and tested after running the 9 5/8" or 7" casing, but will be tested along with the 9 5/8" &7" casing strings. Pipe rams will be operated and checked each 24 hour period and each time the drill string is out of the hole. These function test will be documented on the daily driller's log.
A drilling spool or blowout preventer with 2 side outlets (choke side shall be 3" minimum diameter, kill side shall be at least 2" diameter).
2 kill line valves, one of which will be a check valve.
2 chokes on the manifold along with a pressure gauge.
Upper kelly cock valve with handle available.
Safety valve and subs to fit all drill string connections in use.
All BOP equipment connections subjected to pressure will be flanged, welded, or clamped.
Fill up line above the upper most preventer.

9) Mud program:

Top	Bottom	Mud Wt.	Vis	PV	YP	Fluid Loss	Type System
0	680	8.5 to 8.9	32 to 36	1 - 6	1 - 6	NC	Fresh Water
680	2,807	9.8 to 10.0	28 to 30	1 - 3	1 - 3	NC	Brine
2,807	10,250	8.9 to 9.1	28 to 36	1 - 3	1 - 3	NC	Cut Brine
10,250	15,723	10.5 to 12.5	50 to 55	20-22	8 - 10	8 - 10	OBM

10) Logging, coring, and testing program:

No drill stem test are planned
KOP to intermediate: No logs planned
Intermediate to surface: No logs planned
No coring is planned

11) Potential hazards:

No abnormal pressure or temperature is expected. No H2S is known to exist in the area.
Lost circulation can occur in, lost circulation material will be on location and readily available if needed.

12) Anticipated start date ASAP
Duration 30 days

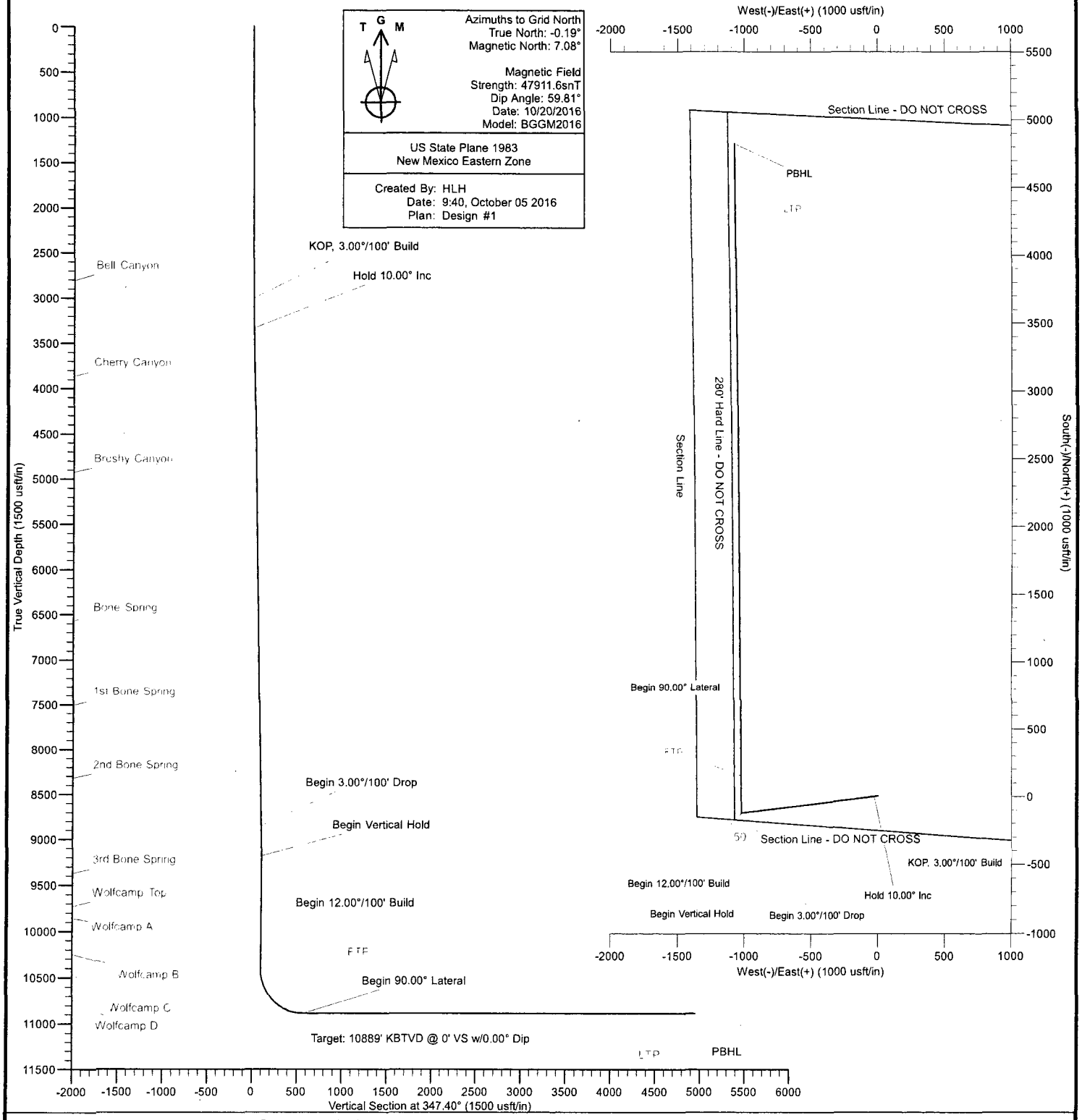
WPXENERGY

Company: WPX Energy
Site: East Pecos Federal
Well: 22-9H
Project: Eddy County, New Mexico (NAD 83)
Rig Name: Orion Phoenix

MS Energy Services.
WWW.MSENERGYSERVICES.COM

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSect	Departure	Annotation
3000.00	0.00	0.00	3000.00	0.00	0.00	0.00	0.00	KOP, 3.00°/100' Build
3333.22	10.00	262.98	3331.54	-3.54	-28.78	2.82	29.00	Hold 10.00° Inc
8940.28	10.00	262.98	8853.46	-122.47	-994.83	97.41	1002.34	Begin 3.00°/100' Drop
9273.50	0.00	0.00	9185.00	-126.02	-1023.60	100.23	1031.33	Begin Vertical Hold
10500.04	0.00	0.00	10411.54	-126.02	-1023.60	100.23	1031.33	Begin 12.00°/100' Build
11250.04	90.00	359.37	10889.00	351.42	-1028.85	567.32	1508.80	Begin 90.00° Lateral
15723.45	90.00	359.37	10889.00	4824.56	-1077.99	4943.52	5982.20	PBHL



WPXENERGY

WPX Energy

Eddy County, New Mexico (NAD 83)
East Pecos Federal
22-9H

Wellbore #1

Plan: Design #1

Standard Planning Report

05 October, 2016

MS Energy Services
WWW.MSENERGYSERVICES.COM

Database:	EDM Conroe	**Local Co-ordinate Reference:**	Well 22-9H
Company:	WPX Energy	**TVD Reference:**	WELL @ 2904.00usft (Orion Phoenix)
Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	WELL @ 2904.00usft (Orion Phoenix)
Site:	East Pecos Federal	**North Reference:**	Grid
Well:	22-9H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project	Eddy County, New Mexico (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		

Well	22-9H				
Well Position	**+N/-S**	371,711.94 usft	**Northing:**	371,711.94 usft	**Latitude:**	32° 1' 17.088 N
	+E/-W	652,033.80 usft	**Easting:**	652,033.80 usft	**Longitude:**	103° 58' 34.150 W
Position Uncertainty		0.00 usft	**Wellhead Elevation:**		**Ground Level:**	2,879.00 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2016	10/20/2016	7.26	59.81	47,912

Design Design #1

Audit Notes:

Version:	**Phase:**	PROTOTYPE	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	347.40

Plan Survey Tool Program **Date** 10/5/2016

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	15,723.45	Design #1 (Wellbore #1)	MWD	
				OWSG MWD - Standard	

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	
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,333.22	10.00	262.98	3,331.54	-3.54	-28.78	3.00	3.00	0.00	262.98	
8,940.28	10.00	262.98	8,853.46	-122.47	-994.83	0.00	0.00	0.00	0.00	
9,273.50	0.00	0.00	9,185.00	-126.02	-1,023.60	3.00	-3.00	0.00	180.00	
10,500.04	0.00	0.00	10,411.54	-126.02	-1,023.60	0.00	0.00	0.00	0.00	
11,250.04	90.00	359.37	10,889.00	351.42	-1,028.85	12.00	12.00	0.00	359.37	
15,723.45	90.00	359.37	10,889.00	4,824.56	-1,077.99	0.00	0.00	0.00	0.00	PBHL - East Pecos

Database:	EDM Conroe	**Local Co-ordinate Reference:**	Well 22-9H
Company:	WPX Energy	**TVD Reference:**	WELL @ 2904.00usft (Orion Phoenix)
Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	WELL @ 2904.00usft (Orion Phoenix)
Site:	East Pecos Federal	**North Reference:**	Grid
Well:	22-9H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP, 3.00°/100' Build									
3,100.00	3.00	262.98	3,099.95	-0.32	-2.60	0.25	3.00	3.00	0.00
3,200.00	6.00	262.98	3,199.63	-1.28	-10.38	1.02	3.00	3.00	0.00
3,300.00	9.00	262.98	3,298.77	-2.87	-23.34	2.29	3.00	3.00	0.00
3,333.22	10.00	262.98	3,331.54	-3.54	-28.78	2.82	3.00	3.00	0.00
Hold 10.00° Inc									
3,400.00	10.00	262.98	3,397.30	-4.96	-40.28	3.94	0.00	0.00	0.00
3,500.00	10.00	262.98	3,495.78	-7.08	-57.51	5.63	0.00	0.00	0.00
3,600.00	10.00	262.98	3,594.26	-9.20	-74.74	7.32	0.00	0.00	0.00
3,700.00	10.00	262.98	3,692.74	-11.32	-91.97	9.01	0.00	0.00	0.00
3,800.00	10.00	262.98	3,791.23	-13.44	-109.20	10.69	0.00	0.00	0.00
3,900.00	10.00	262.98	3,889.71	-15.56	-126.43	12.38	0.00	0.00	0.00
4,000.00	10.00	262.98	3,988.19	-17.69	-143.66	14.07	0.00	0.00	0.00
4,100.00	10.00	262.98	4,086.67	-19.81	-160.89	15.75	0.00	0.00	0.00
4,200.00	10.00	262.98	4,185.15	-21.93	-178.12	17.44	0.00	0.00	0.00
4,300.00	10.00	262.98	4,283.63	-24.05	-195.35	19.13	0.00	0.00	0.00
4,400.00	10.00	262.98	4,382.12	-26.17	-212.58	20.81	0.00	0.00	0.00
4,500.00	10.00	262.98	4,480.60	-28.29	-229.80	22.50	0.00	0.00	0.00
4,600.00	10.00	262.98	4,579.08	-30.41	-247.03	24.19	0.00	0.00	0.00
4,700.00	10.00	262.98	4,677.56	-32.53	-264.26	25.88	0.00	0.00	0.00
4,800.00	10.00	262.98	4,776.04	-34.65	-281.49	27.56	0.00	0.00	0.00
4,900.00	10.00	262.98	4,874.52	-36.78	-298.72	29.25	0.00	0.00	0.00
5,000.00	10.00	262.98	4,973.01	-38.90	-315.95	30.94	0.00	0.00	0.00

Database:	EDM Conroe	**Local Co-ordinate Reference:**	Well 22-9H
Company:	WPX Energy	**TVD Reference:**	WELL @ 2904.00usft (Orion Phoenix)
Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	WELL @ 2904.00usft (Orion Phoenix)
Site:	East Pecos Federal	**North Reference:**	Grid
Well:	22-9H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,100.00	10.00	262.98	5,071.49	-41.02	-333.18	32.62	0.00	0.00	0.00
5,200.00	10.00	262.98	5,169.97	-43.14	-350.41	34.31	0.00	0.00	0.00
5,300.00	10.00	262.98	5,268.45	-45.26	-367.64	36.00	0.00	0.00	0.00
5,400.00	10.00	262.98	5,366.93	-47.38	-384.87	37.68	0.00	0.00	0.00
5,500.00	10.00	262.98	5,465.42	-49.50	-402.10	39.37	0.00	0.00	0.00
5,600.00	10.00	262.98	5,563.90	-51.62	-419.32	41.06	0.00	0.00	0.00
5,700.00	10.00	262.98	5,662.38	-53.74	-436.55	42.75	0.00	0.00	0.00
5,800.00	10.00	262.98	5,760.86	-55.86	-453.78	44.43	0.00	0.00	0.00
5,900.00	10.00	262.98	5,859.34	-57.99	-471.01	46.12	0.00	0.00	0.00
6,000.00	10.00	262.98	5,957.82	-60.11	-488.24	47.81	0.00	0.00	0.00
6,100.00	10.00	262.98	6,056.31	-62.23	-505.47	49.49	0.00	0.00	0.00
6,200.00	10.00	262.98	6,154.79	-64.35	-522.70	51.18	0.00	0.00	0.00
6,300.00	10.00	262.98	6,253.27	-66.47	-539.93	52.87	0.00	0.00	0.00
6,400.00	10.00	262.98	6,351.75	-68.59	-557.16	54.55	0.00	0.00	0.00
6,500.00	10.00	262.98	6,450.23	-70.71	-574.39	56.24	0.00	0.00	0.00
6,600.00	10.00	262.98	6,548.71	-72.83	-591.62	57.93	0.00	0.00	0.00
6,700.00	10.00	262.98	6,647.20	-74.95	-608.85	59.61	0.00	0.00	0.00
6,800.00	10.00	262.98	6,745.68	-77.08	-626.07	61.30	0.00	0.00	0.00
6,900.00	10.00	262.98	6,844.16	-79.20	-643.30	62.99	0.00	0.00	0.00
7,000.00	10.00	262.98	6,942.64	-81.32	-660.53	64.68	0.00	0.00	0.00
7,100.00	10.00	262.98	7,041.12	-83.44	-677.76	66.36	0.00	0.00	0.00
7,200.00	10.00	262.98	7,139.61	-85.56	-694.99	68.05	0.00	0.00	0.00
7,300.00	10.00	262.98	7,238.09	-87.68	-712.22	69.74	0.00	0.00	0.00
7,400.00	10.00	262.98	7,336.57	-89.80	-729.45	71.42	0.00	0.00	0.00
7,500.00	10.00	262.98	7,435.05	-91.92	-746.68	73.11	0.00	0.00	0.00
7,600.00	10.00	262.98	7,533.53	-94.04	-763.91	74.80	0.00	0.00	0.00
7,700.00	10.00	262.98	7,632.01	-96.17	-781.14	76.48	0.00	0.00	0.00
7,800.00	10.00	262.98	7,730.50	-98.29	-798.37	78.17	0.00	0.00	0.00
7,900.00	10.00	262.98	7,828.98	-100.41	-815.59	79.86	0.00	0.00	0.00
8,000.00	10.00	262.98	7,927.46	-102.53	-832.82	81.55	0.00	0.00	0.00
8,100.00	10.00	262.98	8,025.94	-104.65	-850.05	83.23	0.00	0.00	0.00
8,200.00	10.00	262.98	8,124.42	-106.77	-867.28	84.92	0.00	0.00	0.00
8,300.00	10.00	262.98	8,222.90	-108.89	-884.51	86.61	0.00	0.00	0.00
8,400.00	10.00	262.98	8,321.39	-111.01	-901.74	88.29	0.00	0.00	0.00
8,500.00	10.00	262.98	8,419.87	-113.13	-918.97	89.98	0.00	0.00	0.00
8,600.00	10.00	262.98	8,518.35	-115.25	-936.20	91.67	0.00	0.00	0.00
8,700.00	10.00	262.98	8,616.83	-117.38	-953.43	93.35	0.00	0.00	0.00
8,800.00	10.00	262.98	8,715.31	-119.50	-970.66	95.04	0.00	0.00	0.00
8,900.00	10.00	262.98	8,813.80	-121.62	-987.89	96.73	0.00	0.00	0.00
8,940.28	10.00	262.98	8,853.46	-122.47	-994.83	97.41	0.00	0.00	0.00
Begin 3.00°/100' Drop									
9,000.00	8.21	262.98	8,912.43	-123.63	-1,004.20	98.33	3.00	-3.00	0.00
9,100.00	5.21	262.98	9,011.73	-125.05	-1,015.79	99.46	3.00	-3.00	0.00
9,200.00	2.21	262.98	9,111.51	-125.84	-1,022.20	100.09	3.00	-3.00	0.00
9,273.50	0.00	0.00	9,185.00	-126.02	-1,023.60	100.23	3.00	-3.00	0.00
Begin Vertical Hold									
9,300.00	0.00	0.00	9,211.50	-126.02	-1,023.60	100.23	0.00	0.00	0.00
9,400.00	0.00	0.00	9,311.50	-126.02	-1,023.60	100.23	0.00	0.00	0.00
9,500.00	0.00	0.00	9,411.50	-126.02	-1,023.60	100.23	0.00	0.00	0.00
9,600.00	0.00	0.00	9,511.50	-126.02	-1,023.60	100.23	0.00	0.00	0.00
9,700.00	0.00	0.00	9,611.50	-126.02	-1,023.60	100.23	0.00	0.00	0.00
9,800.00	0.00	0.00	9,711.50	-126.02	-1,023.60	100.23	0.00	0.00	0.00
9,900.00	0.00	0.00	9,811.50	-126.02	-1,023.60	100.23	0.00	0.00	0.00
10,000.00	0.00	0.00	9,911.50	-126.02	-1,023.60	100.23	0.00	0.00	0.00

Database:	EDM Conroe	**Local Co-ordinate Reference:**	Well 22-9H
Company:	WPX Energy	**TVD Reference:**	WELL @ 2904.00usft (Orion Phoenix)
Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	WELL @ 2904.00usft (Orion Phoenix)
Site:	East Pecos Federal	**North Reference:**	Grid
Well:	22-9H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,100.00	0.00	0.00	10,011.50	-126.02	-1,023.60	100.23	0.00	0.00	0.00
10,200.00	0.00	0.00	10,111.50	-126.02	-1,023.60	100.23	0.00	0.00	0.00
10,300.00	0.00	0.00	10,211.50	-126.02	-1,023.60	100.23	0.00	0.00	0.00
10,400.00	0.00	0.00	10,311.50	-126.02	-1,023.60	100.23	0.00	0.00	0.00
10,500.04	0.00	0.00	10,411.54	-126.02	-1,023.60	100.23	0.00	0.00	0.00
Begin 12.00°/100' Build									
10,525.00	3.00	359.37	10,436.48	-125.36	-1,023.61	100.86	12.00	12.00	0.00
10,550.00	6.00	359.37	10,461.40	-123.40	-1,023.63	102.78	12.00	12.00	0.00
10,575.00	9.00	359.37	10,486.19	-120.14	-1,023.67	105.97	12.00	12.00	0.00
10,600.00	12.00	359.37	10,510.77	-115.59	-1,023.72	110.42	12.00	12.00	0.00
10,625.00	15.00	359.37	10,535.07	-109.76	-1,023.78	116.13	12.00	12.00	0.00
10,650.00	18.00	359.37	10,559.04	-102.66	-1,023.86	123.08	12.00	12.00	0.00
10,675.00	21.00	359.37	10,582.61	-94.32	-1,023.95	131.24	12.00	12.00	0.00
10,700.00	24.00	359.37	10,605.70	-84.75	-1,024.06	140.59	12.00	12.00	0.00
10,725.00	27.00	359.37	10,628.26	-74.00	-1,024.18	151.12	12.00	12.00	0.00
10,750.00	30.00	359.37	10,650.23	-62.07	-1,024.31	162.78	12.00	12.00	0.00
10,775.00	33.00	359.37	10,671.55	-49.01	-1,024.45	175.56	12.00	12.00	0.00
10,800.00	36.00	359.37	10,692.15	-34.86	-1,024.61	189.41	12.00	12.00	0.00
10,825.00	39.00	359.37	10,711.98	-19.64	-1,024.77	204.29	12.00	12.00	0.00
10,850.00	42.00	359.37	10,730.99	-3.41	-1,024.95	220.17	12.00	12.00	0.00
10,875.00	45.00	359.37	10,749.13	13.79	-1,025.14	237.01	12.00	12.00	0.00
10,900.00	48.00	359.37	10,766.33	31.92	-1,025.34	254.74	12.00	12.00	0.00
10,925.00	51.00	359.37	10,782.57	50.93	-1,025.55	273.34	12.00	12.00	0.00
10,950.00	54.00	359.37	10,797.79	70.76	-1,025.77	292.74	12.00	12.00	0.00
10,975.00	57.00	359.37	10,811.95	91.36	-1,025.99	312.89	12.00	12.00	0.00
11,000.00	60.00	359.37	10,825.01	112.67	-1,026.23	333.74	12.00	12.00	0.00
11,025.00	63.00	359.37	10,836.94	134.63	-1,026.47	355.23	12.00	12.00	0.00
11,050.00	66.00	359.37	10,847.71	157.19	-1,026.72	377.30	12.00	12.00	0.00
11,075.00	69.00	359.37	10,857.27	180.29	-1,026.97	399.89	12.00	12.00	0.00
11,100.00	72.00	359.37	10,865.62	203.85	-1,027.23	422.94	12.00	12.00	0.00
11,125.00	75.00	359.37	10,872.72	227.81	-1,027.49	446.39	12.00	12.00	0.00
11,150.00	78.00	359.37	10,878.56	252.12	-1,027.76	470.16	12.00	12.00	0.00
11,175.00	81.00	359.37	10,883.12	276.69	-1,028.03	494.21	12.00	12.00	0.00
11,200.00	84.00	359.37	10,886.38	301.48	-1,028.30	518.45	12.00	12.00	0.00
11,225.00	87.00	359.37	10,888.34	326.39	-1,028.58	542.83	12.00	12.00	0.00
11,250.04	90.00	359.37	10,889.00	351.42	-1,028.85	567.32	12.00	12.00	0.00
Begin 90.00° Lateral									
11,300.00	90.00	359.37	10,889.00	401.38	-1,029.40	616.19	0.00	0.00	0.00
11,400.00	90.00	359.37	10,889.00	501.37	-1,030.50	714.02	0.00	0.00	0.00
11,500.00	90.00	359.37	10,889.00	601.37	-1,031.60	811.85	0.00	0.00	0.00
11,600.00	90.00	359.37	10,889.00	701.36	-1,032.69	909.67	0.00	0.00	0.00
11,700.00	90.00	359.37	10,889.00	801.35	-1,033.79	1,007.50	0.00	0.00	0.00
11,800.00	90.00	359.37	10,889.00	901.35	-1,034.89	1,105.33	0.00	0.00	0.00
11,900.00	90.00	359.37	10,889.00	1,001.34	-1,035.99	1,203.15	0.00	0.00	0.00
12,000.00	90.00	359.37	10,889.00	1,101.34	-1,037.09	1,300.98	0.00	0.00	0.00
12,100.00	90.00	359.37	10,889.00	1,201.33	-1,038.19	1,398.81	0.00	0.00	0.00
12,200.00	90.00	359.37	10,889.00	1,301.32	-1,039.29	1,496.64	0.00	0.00	0.00
12,300.00	90.00	359.37	10,889.00	1,401.32	-1,040.38	1,594.46	0.00	0.00	0.00
12,400.00	90.00	359.37	10,889.00	1,501.31	-1,041.48	1,692.29	0.00	0.00	0.00
12,500.00	90.00	359.37	10,889.00	1,601.31	-1,042.58	1,790.12	0.00	0.00	0.00
12,600.00	90.00	359.37	10,889.00	1,701.30	-1,043.68	1,887.94	0.00	0.00	0.00
12,700.00	90.00	359.37	10,889.00	1,801.29	-1,044.78	1,985.77	0.00	0.00	0.00
12,800.00	90.00	359.37	10,889.00	1,901.29	-1,045.88	2,083.60	0.00	0.00	0.00

Database:	EDM Conroe	**Local Co-ordinate Reference:**	Well 22-9H
Company:	WPX Energy	**TVD Reference:**	WELL @ 2904.00usft (Orion Phoenix)
Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	WELL @ 2904.00usft (Orion Phoenix)
Site:	East Pecos Federal	**North Reference:**	Grid
Well:	22-9H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,900.00	90.00	359.37	10,889.00	2,001.28	-1,046.98	2,181.43	0.00	0.00	0.00
13,000.00	90.00	359.37	10,889.00	2,101.28	-1,048.07	2,279.25	0.00	0.00	0.00
13,100.00	90.00	359.37	10,889.00	2,201.27	-1,049.17	2,377.08	0.00	0.00	0.00
13,200.00	90.00	359.37	10,889.00	2,301.26	-1,050.27	2,474.91	0.00	0.00	0.00
13,300.00	90.00	359.37	10,889.00	2,401.26	-1,051.37	2,572.73	0.00	0.00	0.00
13,400.00	90.00	359.37	10,889.00	2,501.25	-1,052.47	2,670.56	0.00	0.00	0.00
13,500.00	90.00	359.37	10,889.00	2,601.25	-1,053.57	2,768.39	0.00	0.00	0.00
13,600.00	90.00	359.37	10,889.00	2,701.24	-1,054.67	2,866.22	0.00	0.00	0.00
13,700.00	90.00	359.37	10,889.00	2,801.23	-1,055.76	2,964.04	0.00	0.00	0.00
13,800.00	90.00	359.37	10,889.00	2,901.23	-1,056.86	3,061.87	0.00	0.00	0.00
13,900.00	90.00	359.37	10,889.00	3,001.22	-1,057.96	3,159.70	0.00	0.00	0.00
14,000.00	90.00	359.37	10,889.00	3,101.22	-1,059.06	3,257.52	0.00	0.00	0.00
14,100.00	90.00	359.37	10,889.00	3,201.21	-1,060.16	3,355.35	0.00	0.00	0.00
14,200.00	90.00	359.37	10,889.00	3,301.20	-1,061.26	3,453.18	0.00	0.00	0.00
14,300.00	90.00	359.37	10,889.00	3,401.20	-1,062.35	3,551.01	0.00	0.00	0.00
14,400.00	90.00	359.37	10,889.00	3,501.19	-1,063.45	3,648.83	0.00	0.00	0.00
14,500.00	90.00	359.37	10,889.00	3,601.19	-1,064.55	3,746.66	0.00	0.00	0.00
14,600.00	90.00	359.37	10,889.00	3,701.18	-1,065.65	3,844.49	0.00	0.00	0.00
14,700.00	90.00	359.37	10,889.00	3,801.17	-1,066.75	3,942.31	0.00	0.00	0.00
14,800.00	90.00	359.37	10,889.00	3,901.17	-1,067.85	4,040.14	0.00	0.00	0.00
14,900.00	90.00	359.37	10,889.00	4,001.16	-1,068.95	4,137.97	0.00	0.00	0.00
15,000.00	90.00	359.37	10,889.00	4,101.15	-1,070.04	4,235.80	0.00	0.00	0.00
15,100.00	90.00	359.37	10,889.00	4,201.15	-1,071.14	4,333.62	0.00	0.00	0.00
15,200.00	90.00	359.37	10,889.00	4,301.14	-1,072.24	4,431.45	0.00	0.00	0.00
15,300.00	90.00	359.37	10,889.00	4,401.14	-1,073.34	4,529.28	0.00	0.00	0.00
15,400.00	90.00	359.37	10,889.00	4,501.13	-1,074.44	4,627.10	0.00	0.00	0.00
15,500.00	90.00	359.37	10,889.00	4,601.12	-1,075.54	4,724.93	0.00	0.00	0.00
15,600.00	90.00	359.37	10,889.00	4,701.12	-1,076.64	4,822.76	0.00	0.00	0.00
15,700.00	90.00	359.37	10,889.00	4,801.11	-1,077.73	4,920.59	0.00	0.00	0.00
15,723.45	90.00	359.37	10,889.00	4,824.56	-1,077.99	4,943.52	0.00	0.00	0.00
PBHL									

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
VP - East Pecos Fede - plan hits target center - Point	0.00	0.00	9,185.00	-126.02	-1,023.60	371,585.93	651,010.19	32° 1' 15.874 N	103° 58' 46.045 W
FTP - East Pecos Fec - plan hits target center - Point	0.00	0.00	10,846.70	154.96	-1,026.69	371,866.90	651,007.10	32° 1' 18.654 N	103° 58' 46.070 W
LTP - East Pecos Fed - plan hits target center - Point	0.00	0.00	10,889.00	4,724.36	-1,076.89	376,436.30	650,956.90	32° 2' 3.876 N	103° 58' 46.479 W
PBHL - East Pecos Fe - plan hits target center - Point	0.00	0.00	10,889.00	4,824.56	-1,077.99	376,536.50	650,955.80	32° 2' 4.867 N	103° 58' 46.488 W

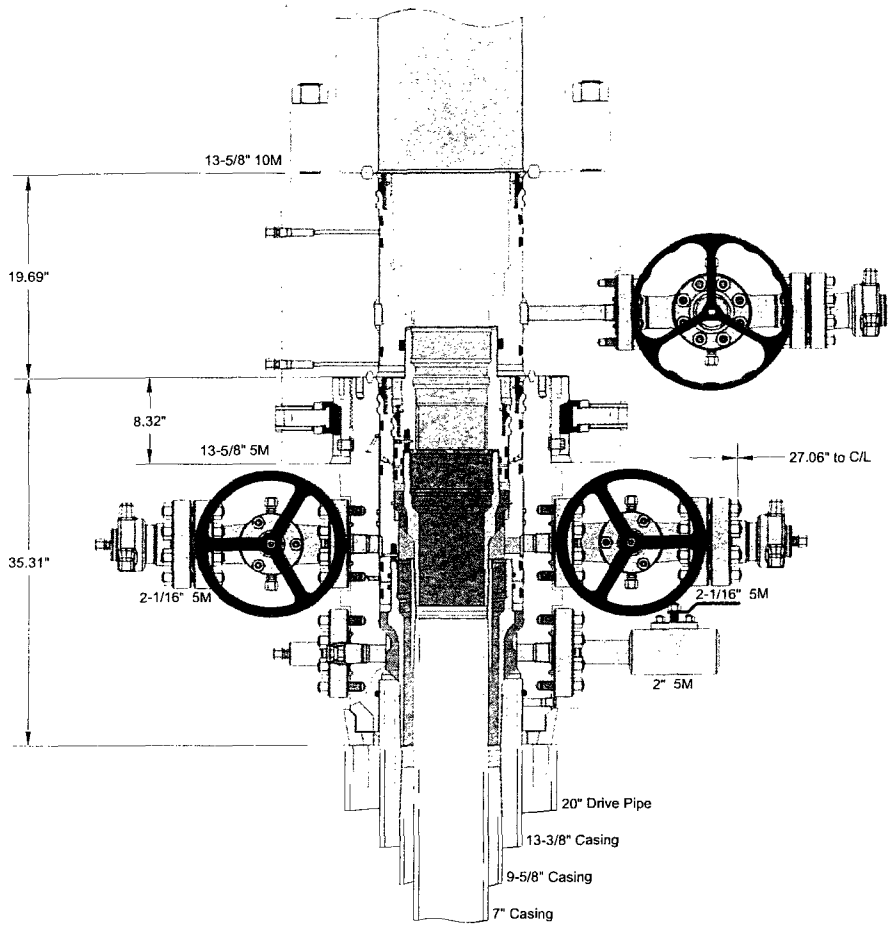
Database:	EDM Conroe	**Local Co-ordinate Reference:**	Well 22-9H
Company:	WPX Energy	**TVD Reference:**	WELL @ 2904.00usft (Orion Phoenix)
Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	WELL @ 2904.00usft (Orion Phoenix)
Site:	East Pecos Federal	**North Reference:**	Grid
Well:	22-9H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Formations

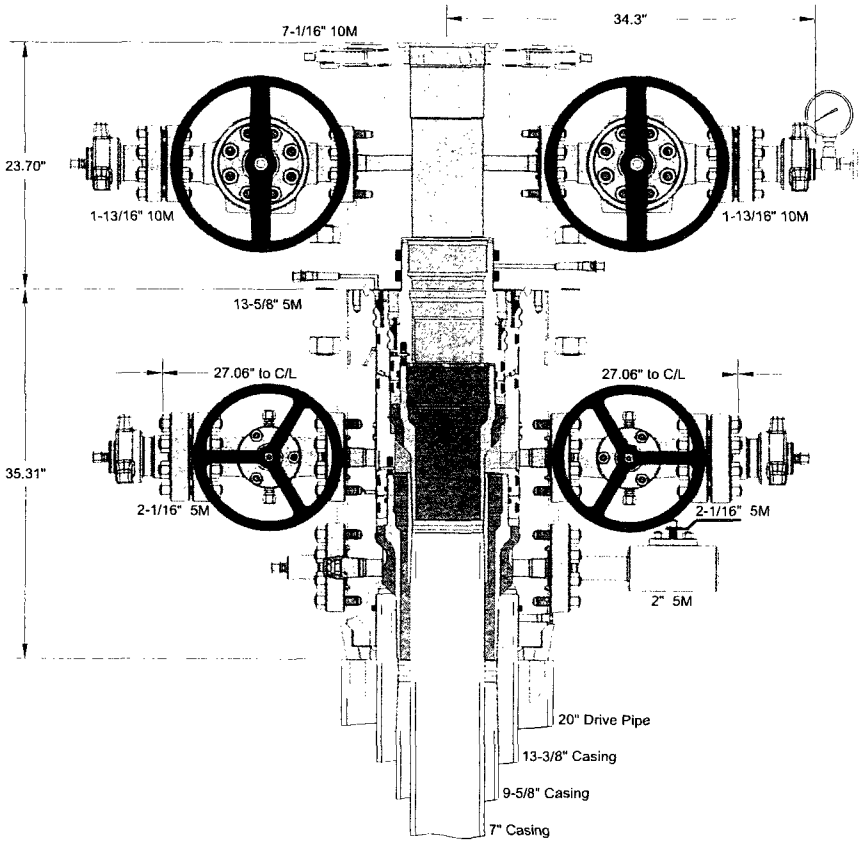
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,807.00	2,807.00	Bell Canyon		0.00	347.40
3,870.85	3,861.00	Cherry Canyon		0.00	347.40
4,949.22	4,923.00	Brushy Canyon		0.00	347.40
6,621.61	6,570.00	Bone Spring		0.00	347.40
7,570.01	7,504.00	1st Bone Spring		0.00	347.40
8,398.59	8,320.00	2nd Bone Spring		0.00	347.40
9,459.50	9,371.00	3rd Bone Spring		0.00	347.40
9,817.50	9,729.00	Wolfcamp Top		0.00	347.40
9,946.50	9,858.00	Wolfcamp A		0.00	347.40
10,338.50	10,250.00	Wolfcamp B		0.00	347.40
10,552.61	10,464.00	Wolfcamp C		0.00	347.40
10,865.03	10,742.00	Wolfcamp D		0.00	347.40

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
3,000.00	3,000.00	0.00	0.00	KOP, 3.00°/100' Build
3,333.22	3,331.54	-3.54	-28.78	Hold 10.00° Inc
8,940.28	8,853.46	-122.47	-994.83	Begin 3.00°/100' Drop
9,273.50	9,185.00	-126.02	-1,023.60	Begin Vertical Hold
10,500.04	10,411.54	-126.02	-1,023.60	Begin 12.00°/100' Build
11,250.04	10,889.00	351.42	-1,028.85	Begin 90.00° Lateral
15,723.45	10,889.00	4,824.56	-1,077.99	PBHL



DRILLING PHASE



COMPLETION WITH TUBING HEAD

CACTUS WELLHEAD LLC

20" x 13-3/8" x 9-5/8" x 7" 5M MBU-3T Wellhead System
With 7" Nested Mandrel Casing Hanger With QC Top
& 13-5/8" 5M x 7-1/16" 10M CTH-LR-DBLHPS Tubing Head

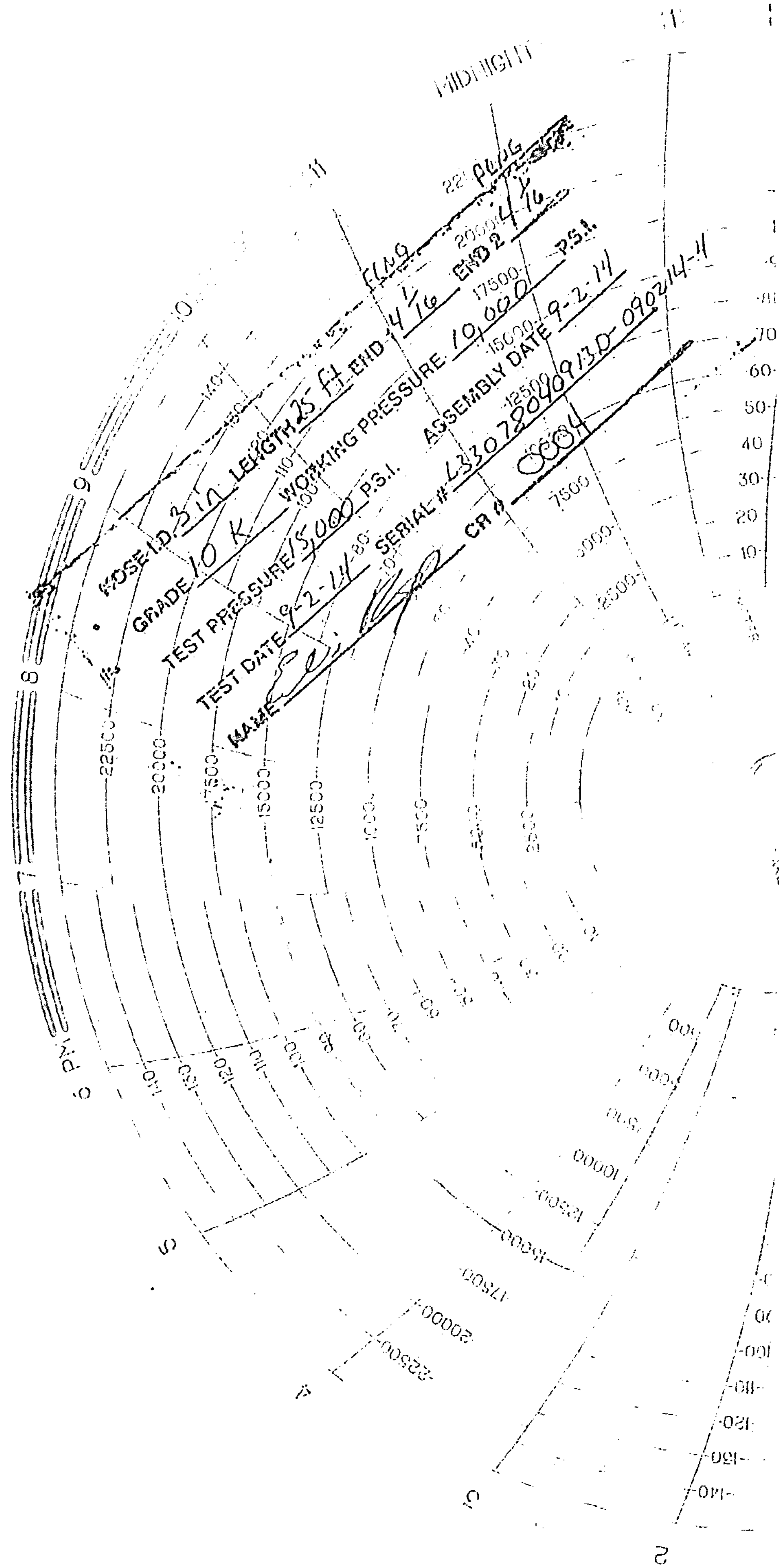
WPX ENERGY

DRAWN	ADS	23SEP16
APPRV		
DRAWING NO	ODE0001271	

Flex Hose Variance Request

Flex Hose Variance Statement

WPX Energy (operator) requests a variance if Orion Pheonix (rig name) is used to drill this well to use a co-flex line between the BOP and choke manifold.
Manufacturer: Gates
Serial Number:
Length: 44' Size: 4 1/16 10K x 4 1/16 10K Ends - flanges/clamps
WP rating: 10,000 PSI Anchors required by manufacturer – (Yes)/No


MIDNIGHT
HOSE I.D. 3 in LENGTH 25 ft END 1 4 1/16 FLNG END 2 4 1/16 PLUG
GRADE 10 K WORKING PRESSURE 10,000 P.S.I.
TEST PRESSURE 15,000 P.S.I. ASSEMBLY DATE 9-2-14
TEST DATE 9-2-14 SERIAL # L33072040913D-090214-1
NAME CR # 0004

GATES E & S NORTH AMERICA, INC
DU-TEX
134 44TH STREET
CORPUS CHRISTI, TEXAS 78405

PHONE: 361-887-9807
FAX: 361-887-0812
EMAIL:
WEB: www.gates.com

10K CHOKE & KILL ASSEMBLY PRESSURE TEST CERTIFICATE

Customer :	ORION DRILLING COMPANY	Test Date:	9/2/2014
Customer Ref. :	PENDING	Hose Serial No.:	D-090214-4
Invoice No. :	203508	Created By:	JUSTIN CROPPER

Product Description:	10K3.025.0CK4.1/1610KFLGE/E

End Fitting 1 :	4 1/16 10K FLG	End Fitting 2 :	4 1/16 10K FLG
Gates Part No. :	4773-4291	Assembly Code :	L33078040913D-090214-4
Working Pressure :	10,000 PSI	Test Pressure :	15,000 PSI

Gates E & S North America, Inc. certifies that the following hose assembly has been tested to the Gates Oilfield Roughneck Agreement/Specification requirements and passed the 15 minute hydrostatic test per API Spec 7K/Q1, Fifth Edition, June 2010, Test pressure 9.6.7 and per Table 9 to 15,000 psi in accordance with this product number. Hose burst pressure 9.6.7.2 exceeds the minimum of 2.5 times the working pressure per Table 9.

Quality Manager :	QUALITY	Technical Supervisor :	PRODUCTION
Date :	9/2/2014	Date :	9/2/2014
Signature :		Signature :	

POWERING PROGRESS™

Gates E&S North America
134 - 44th St.
CORPUS CHRISTI, TEXAS 78405
PHONE : (361) 887-9807
FAX: (361) 887-0812

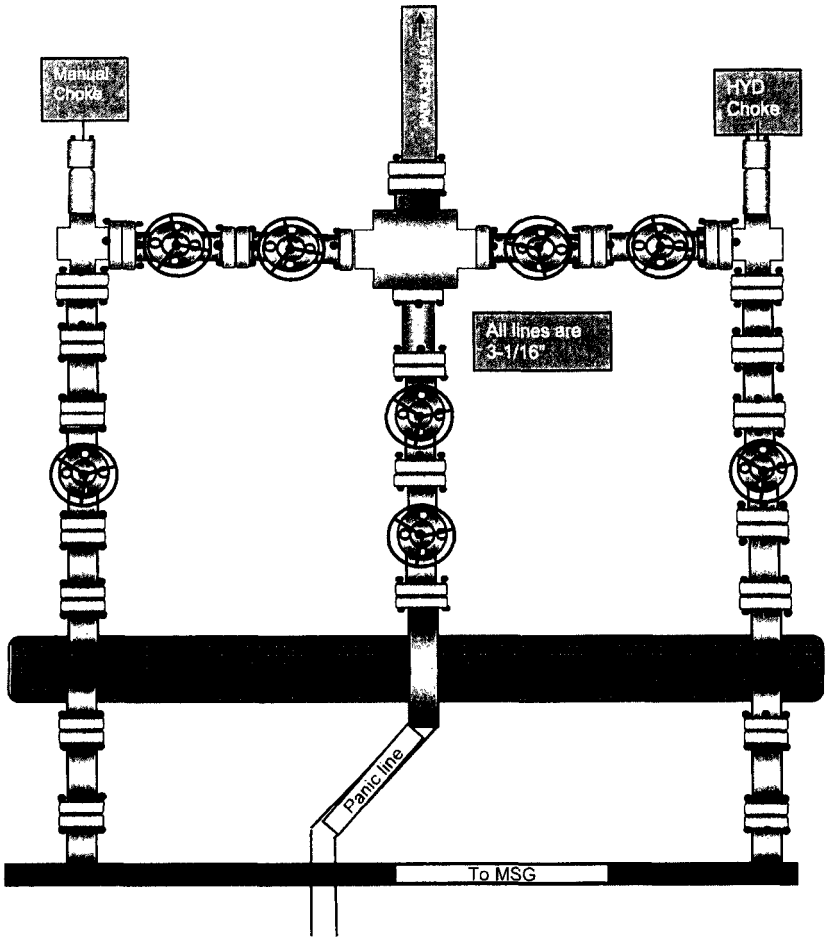
CERTIFICATE OF CONFORMANCE

This is to verify that all Parts and/or Materials included in this shipment have been manufactured and/or processed in Conformance with applicable drawings and specifications, and that Records of Required Tests are on file and subject to examination. The following items were assembled at Gates E & S, Inc. (formerly Dutex, Inc.), facilities in Corpus Christi, TX, USA. This hose assembly was designed and manufactured to meet all the requirements of API Spec 7K.

CUSTOMER: ORION DRILLING COMPANY
CUSTOMERS P.O.#: PENDING
PART DESCRIPTION: 10K3.025.0CK4.1/1610KFLGE/E
SALES ORDER #: 203508
QUANTITY: 1
SERIAL #: D-090214-4

SIGNATURE: _____
TITLE: QUALITY
DATE: 9/2/2014

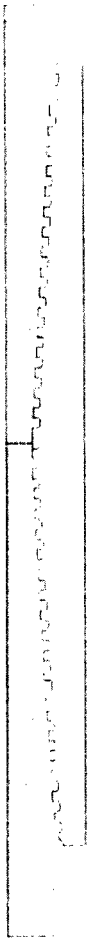
5M Choke Manifold



U. S. Steel Tubular Products

4 1/2 13.50 lb (0.29) P110 HC

USS-CDC HTQ™



	PIPE	CONNECTION	
MECHANICAL PROPERTIES			
Minimum Yield Strength	**110,000**		*psi*
Maximum Yield Strength	**140,000**		*psi*
Minimum Tensile Strength	**125,000**		*psi*
DIMENSIONS			
Outside Diameter	**4.500**	5.250	*in.*
Wall Thickness	0.290		*in.*
Inside Diameter	3.920	3.920	*in.*
Drift API	3.795	3.795	*in.*
Nominal Linear Weight, T&C	**13.50**		*lbs/ft*
Plain End Weight	13.05		*lbs/ft*
SECTION AREA			
Cross Sectional Area | Critical Area	3.836	3.836	*sq. in.*
Joint Efficiency		100.0	%
PERFORMANCE			
Minimum Collapse Pressure	11,810	11,810	*psi*
External Pressure Leak Resistance		9,450	*psi*
Minimum Internal Yield Pressure	12,420	12,420	*psi*
Minimum Pipe Body Yield Strength	422,000		*lbs*
Joint Strength		443,000	*lbs*
Compression Rating		266,000	*lbs*
Reference Length		21,877	*ft*
Maximum Uniaxial Bend Rating		70.6	*deg/100 ft*
Make-Up Loss		4.44	*in.*
Minimum Make-Up Torque		7,000	*ft-lbs*
Maximum Make-Up Torque		10,000	*ft-lbs*
Connection Yield Torque		12,400	*ft-lbs*
* Verification of connection shoulder required Typical shoulder range		4,500 6,500	*ft lbs*

Notes

1) Other than proprietary collapse and connection values, performance properties have been calculated using standard equations defined by API 5C3 and do not incorporate any additional design or safety factors. Calculations assume nominal pipe OD, nominal wall thickness, and Specified Minimum Yield Strength (SMYS).
2) Uniaxial bending rating shown is structural only, and equal to compression efficiency
3) Torques have been calculated assuming a thread compound friction factor of 1.0 and are recommended only. Field make-up torques may require adjustment based on actual field conditions (e.g. make-up speed, temperature, thread compound, etc.)
4) Reference length is calculated by joint strength divided by nominal T&C weight with 1.5 safety factor
5) Connection external pressure resistance has been verified to 80% API pipe body collapse pressure (API 5C5 CAL IV testing protocol)

USS Product Data Sheet 2015 rev22 (Sept)

U. S. Steel Tubular Products
10343 Sam Houston Park Dr., #120
Houston, TX 77064
1-877-893-9461
connections@uss.com
www.usstubular.com

COORDINATES

A.
NW COR SEC 22
NMSP-E (NAD 83)
N (Y) = 376782.0'
E (X) = 650623.0'
LAT.: 32°02'07.31"N
LONG.: 103°58'50.35"W
NMSP-E (NAD 27)
N (Y) = 376724.4'
E (X) = 609437.3'
LAT.=32.0352382°N
LONG.=103.9801694°W

B.
N 1/4 COR SEC 22
NMSP-E (NAD 83)
N (Y) = 376657.5'
E (X) = 653340.8'
LAT.: 32°02'05.99"
LONG.: 103°58'18.78"W
NMSP-E (NAD 27)
N (Y) = 376600.0'
E (X) = 612155.1'
LAT.=32.0348713°N
LONG.=103.9714005°W

C.
NE COR SEC 22
NMSP-E (NAD 83)
N (Y) = 376539.6'
E (X) = 656059.9'
LAT.: 32°02'04.73" N
LONG.: 103°57'47.19"W
NMSP-E (NAD 27)
N (Y) =376482.0'
E (X) = 614874.2'
LAT.=32.0345218°N
LONG.=103.9626274°W

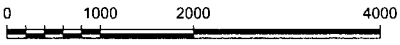
D.
W 1/4 COR SEC 22
NMSP-E (NAD 83)
N (Y) = 374169.5'
E (X) = 650652.8'
LAT.: 32°01'41.45" N
LONG.: 103°58'50.10" W
NMSP-E (NAD 27)
N (Y) = 374112.0'
E (X) = 609467.1'
LAT.=32.0280564°N
LONG.=103.9801009°W

E.
E 1/4 COR SEC 22
NMSP-E (NAD 83)
N (Y) = 373857.0'
E (X) = 656068.2'
LAT.: 32°01'38.18" N
LONG.: 103°57'47.20"W
NMSP-E (NAD 27)
N (Y) =373799.5'
E (X) = 614882.4'
LAT.=32.0271474°N
LONG.=103.9626305°W

F.
SW COR SEC 22
NMSP-E (NAD 83)
N (Y) = 371559.8'
E (X) = 650680.3'
LAT.: 32°01'15.63" N
LONG.: 103°58'49.88" W
NMSP-E (NAD 27)
N (Y) =371502.4'
E (X) = 609494.6'
LAT.=32.0208821°N
LONG.=103.9800399°W

G.
S 1/4 COR SEC 22
NMSP-E (NAD 83)
N (Y) = 371363.2'
E (X) = 653380.8'
LAT.: 32°01'13.59" N
LONG.: 103°58'18.52" W
NMSP-E (NAD 27)
N (Y) =371305.8'
E (X) = 612195.0'
LAT.=32.0203171°N
LONG.=103.9713289°W

H.
SE COR SEC 22
NMSP-E (NAD 83)
N (Y) = 371166.9'
E (X) = 656080.2'
LAT.: 32°01'11.56" N
LONG.: 103°57'47.17" W
NMSP-E (NAD 27)
N (Y) =371109.5'
E (X) = 614894.3'
LAT.=32.0197524°N
LONG.=103.9626219°W



GRAPHIC SCALE 1" = 2000'

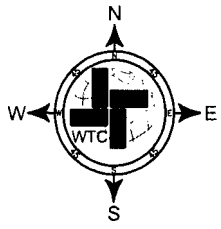
SECTION 22, T 26S, R 29E, N.M.P.M.

COUNTY: EDDY STATE: NM

DESCRIPTION: 250' FSL & 1355' FWL

OPERATOR: RKI EXPLORATION & PRODUCTION

WELL NAME: EAST PECOS FEDERAL 22-9H



DRIVING DIRECTIONS:

FROM THE INTERSECTION OF STATE HIGHWAY 285 AND LONGHORN COUNTY ROAD 725. GO EAST/ NORTHEAST ON LONGHORN COUNTY ROAD 725 FOR 6.7 MILES TO A "Y", STAY RIGHT. GO 0.3 MILE IN SOUTHWESTERLY DIRECTON. LOCATION FLAG IS 241 FEET EAST.

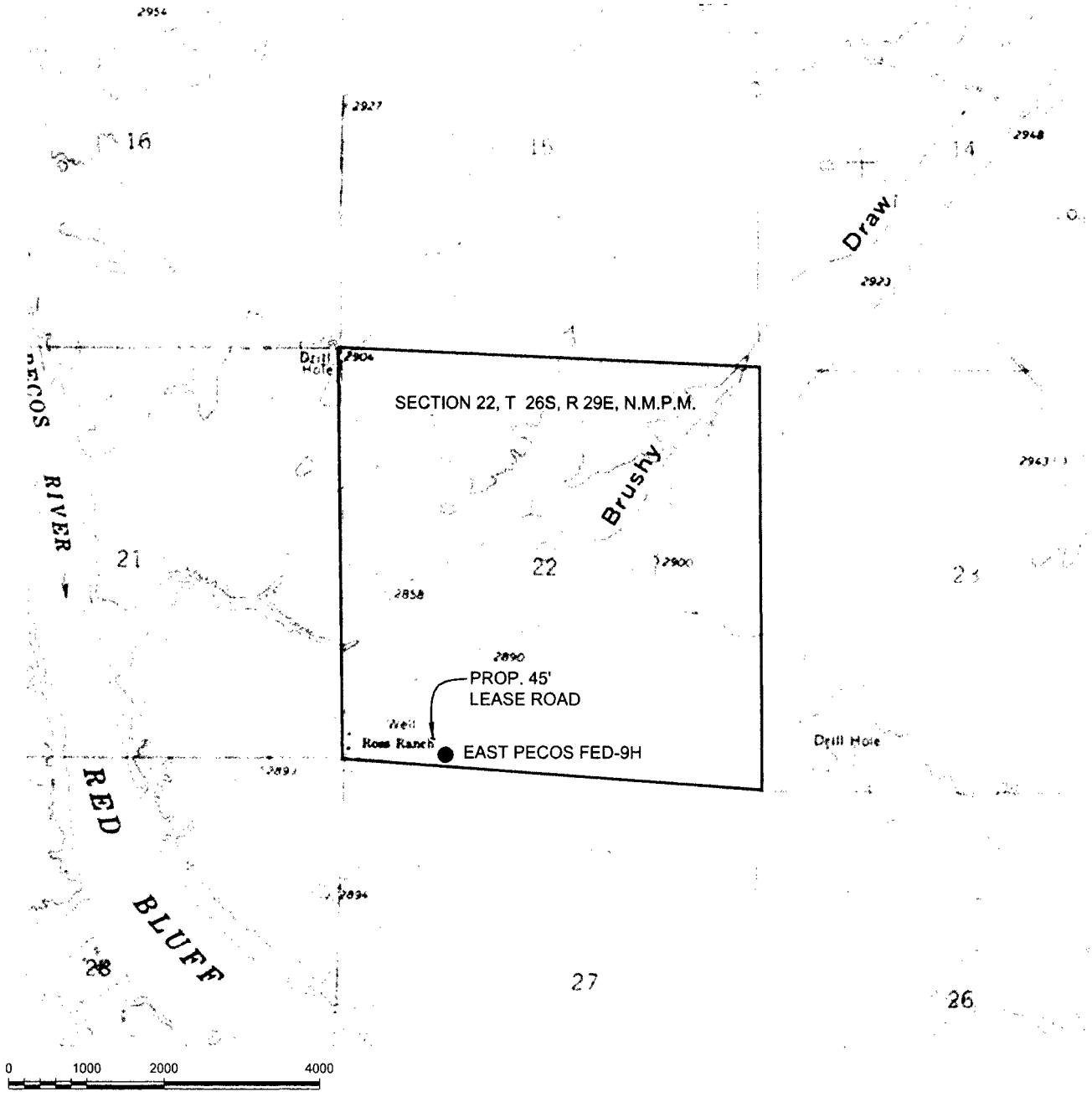
WTC

W T C, INC.
405 S.W. 1st Street
Andrews, TX 79714
(432) 523-2181

RKI Exploration & Production

JOB No.: 51102

LOCATION VERIFICATION MAP



GRAPHIC SCALE 1" = 2000'

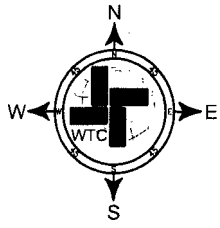
SECTION 22, T 26S, R 29E, N.M.P.M.

COUNTY: EDDY STATE: NM

DESCRIPTION: 250' FSL & 1355' FWL

OPERATOR: RKI EXPLORATION & PRODUCTION

WELL NAME: EAST PECOS FEDERAL 22-9H



DRIVING DIRECTIONS:

FROM THE INTERSECTION OF STATE HIGHWAY 285 AND LONGHORN COUNTY ROAD 725. GO EAST/ NORTHEAST ON LONGHORN COUNTY ROAD 725 FOR 6.7 MILES TO A "Y", STAY RIGHT. GO 0.3 MILE IN SOUTHWESTERLY DIRECTON. LOCATION FLAG IS 241 FEET EAST.

WTC

W T C, INC.
405 S.W. 1st Street
Andrews, TX 79714
(432) 523-2181

RKI Exploration & Production

JOB No.: WTC51102

AERIAL MAP

0 1000 2000 4000

GRAPHIC SCALE 1" = 2000'

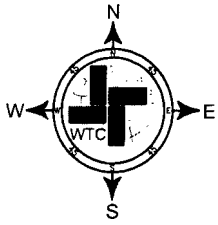
SECTION 22, T 26S, R 29E, N.M.P.M.

COUNTY: EDDY STATE: NM

DESCRIPTION: 250' FSL & 1355' FWL

OPERATOR: RKI EXPLORATION & PRODUCTION

WELL NAME: EAST PECOS FEDERAL 22-9H



DRIVING DIRECTIONS:

FROM THE INTERSECTION OF STATE HIGHWAY 285 AND LONGHORN COUNTY ROAD 725. GO EAST/ NORTHEAST ON LONGHORN COUNTY ROAD 725 FOR 6.7 MILES TO A "Y", STAY RIGHT. GO 0.3 MILE IN SOUTHWESTERLY DIRECTON. LOCATION FLAG IS 241 FEET EAST.

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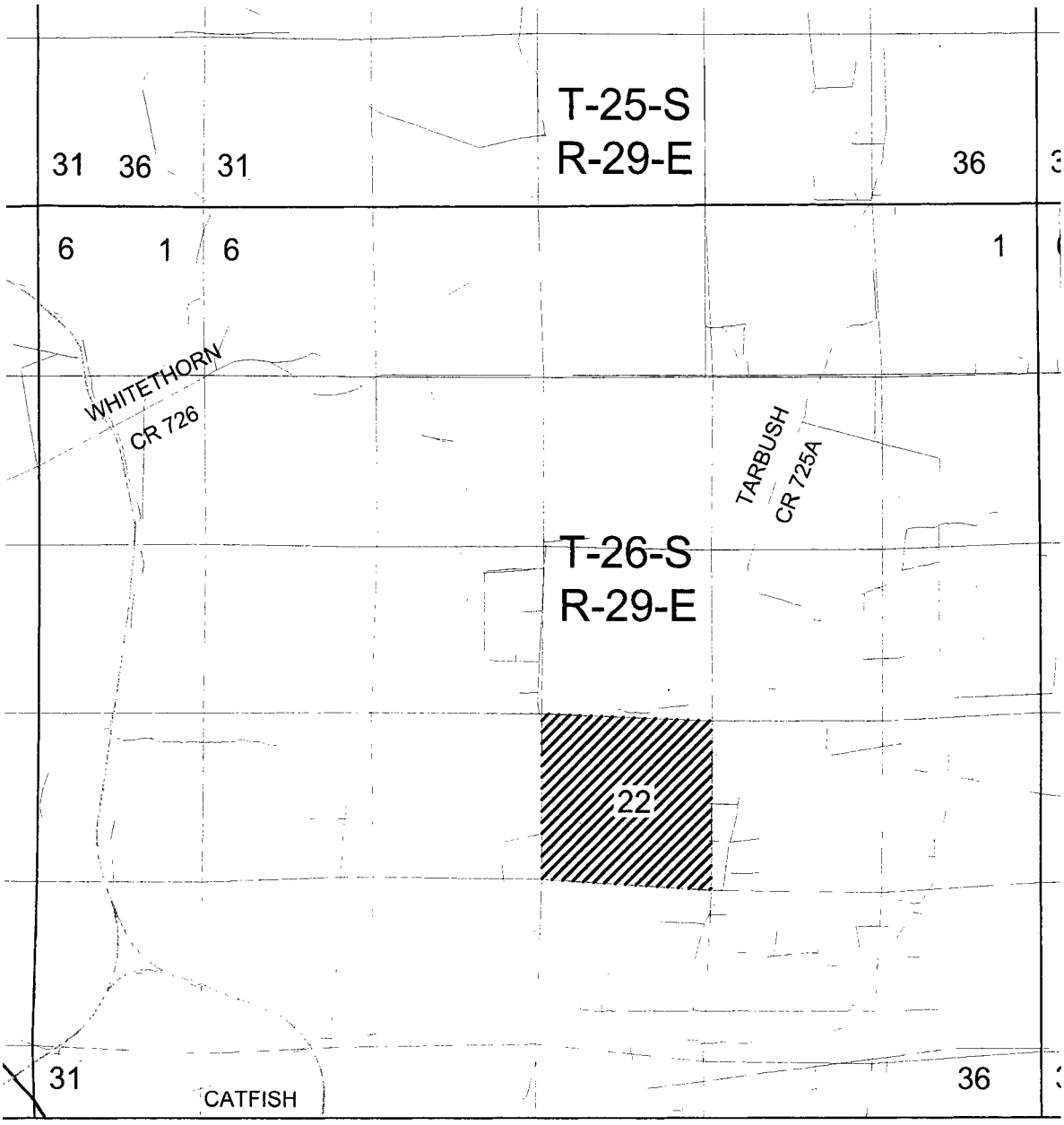
405 S.W. 1st Street
Andrews, TX 79714
(432) 523-2181

RKI Exploration & Production

JOB No. WTC51102

VICINITY MAP



GRAPHIC SCALE 1" = 1 MILE

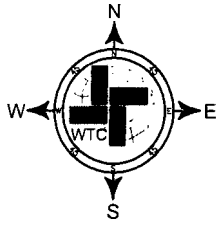
SECTION 22, T 26S, R 29E, N.M.P.M.

COUNTY: EDDY STATE: NM

DESCRIPTION: 250' FSL & 1355' FWL

OPERATOR: RKI EXPLORATION & PRODUCTION

WELL NAME: EAST PECOS FEDERAL 22-9H



DRIVING DIRECTIONS:

FROM THE INTERSECTION OF STATE HIGHWAY 285 AND LONGHORN COUNTY ROAD 725. GO EAST/ NORTHEAST ON LONGHORN COUNTY ROAD 725 FOR 6.7 MILES TO A "Y", STAY RIGHT. GO 0.3 MILE IN SOUTHWESTERLY DIRECTON. LOCATION FLAG IS 241 FEET EAST.

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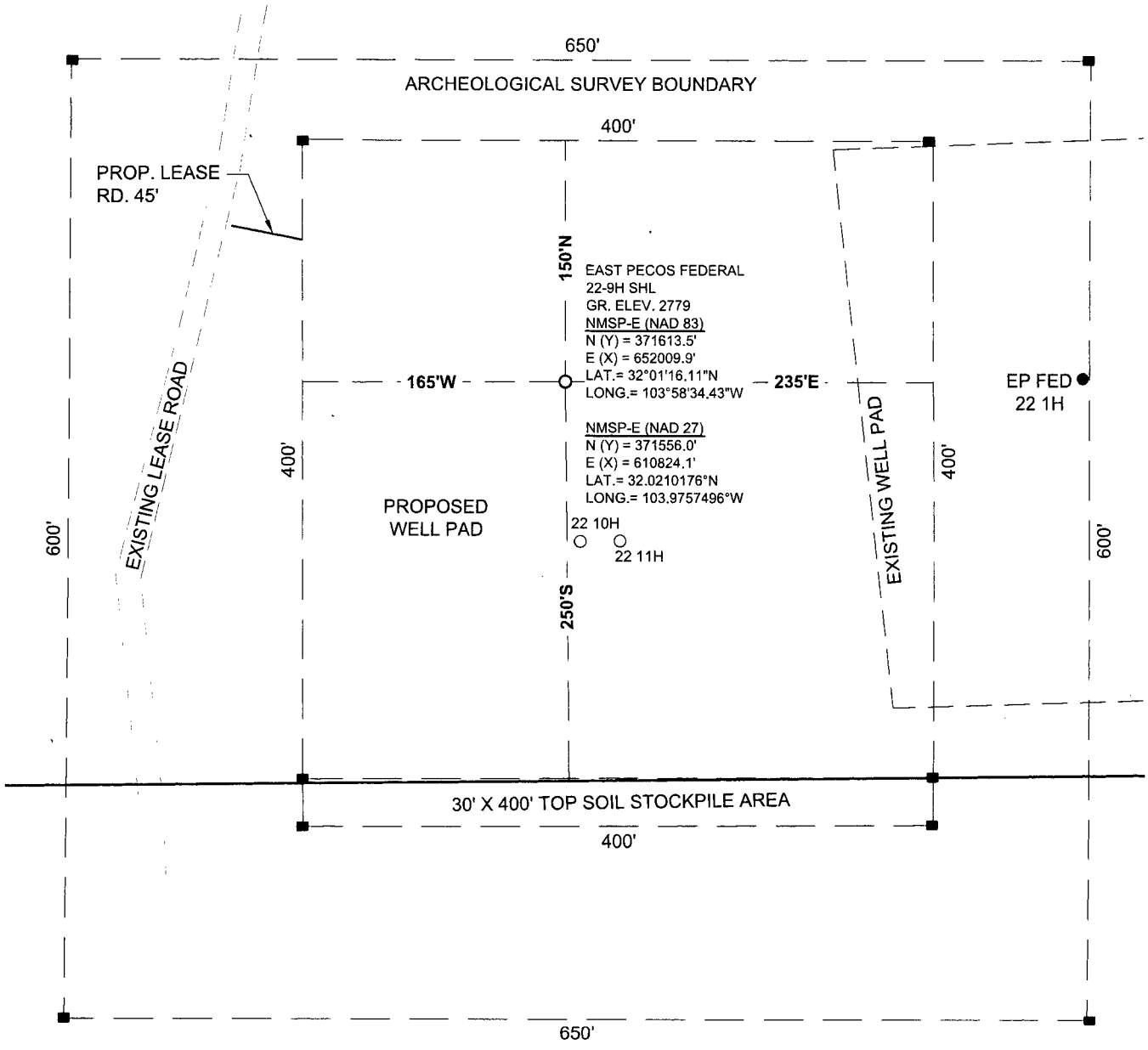
405 S.W. 1st Street
Andrews, TX 79714
(432) 523-2181

RKI Exploration & Production

JOB No.: WTC51102

SITE LOCATION



0 50 100 200

GRAPHIC SCALE 1" = 100'

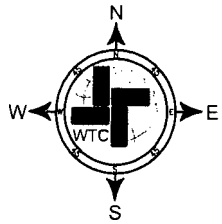
SECTION 22, T 26S, R 29E, N.M.P.M.

COUNTY: EDDY STATE: NM

DESCRIPTION: 250' FSL & 1355' FWL

OPERATOR: RKI EXPLORATION & PRODUCTION

WELL NAME: EAST PECOS FEDERAL 22-9H



DRIVING DIRECTIONS:

FROM THE INTERSECTION OF STATE HIGHWAY 285 AND LONGHORN COUNTY ROAD 725. GO EAST/ NORTHEAST ON LONGHORN COUNTY ROAD 725 FOR 6.7 MILES TO A "Y", STAY RIGHT. GO 0.3 MILE IN SOUTHWESTERLY DIRECTON. LOCATION FLAG IS 241 FEET EAST.

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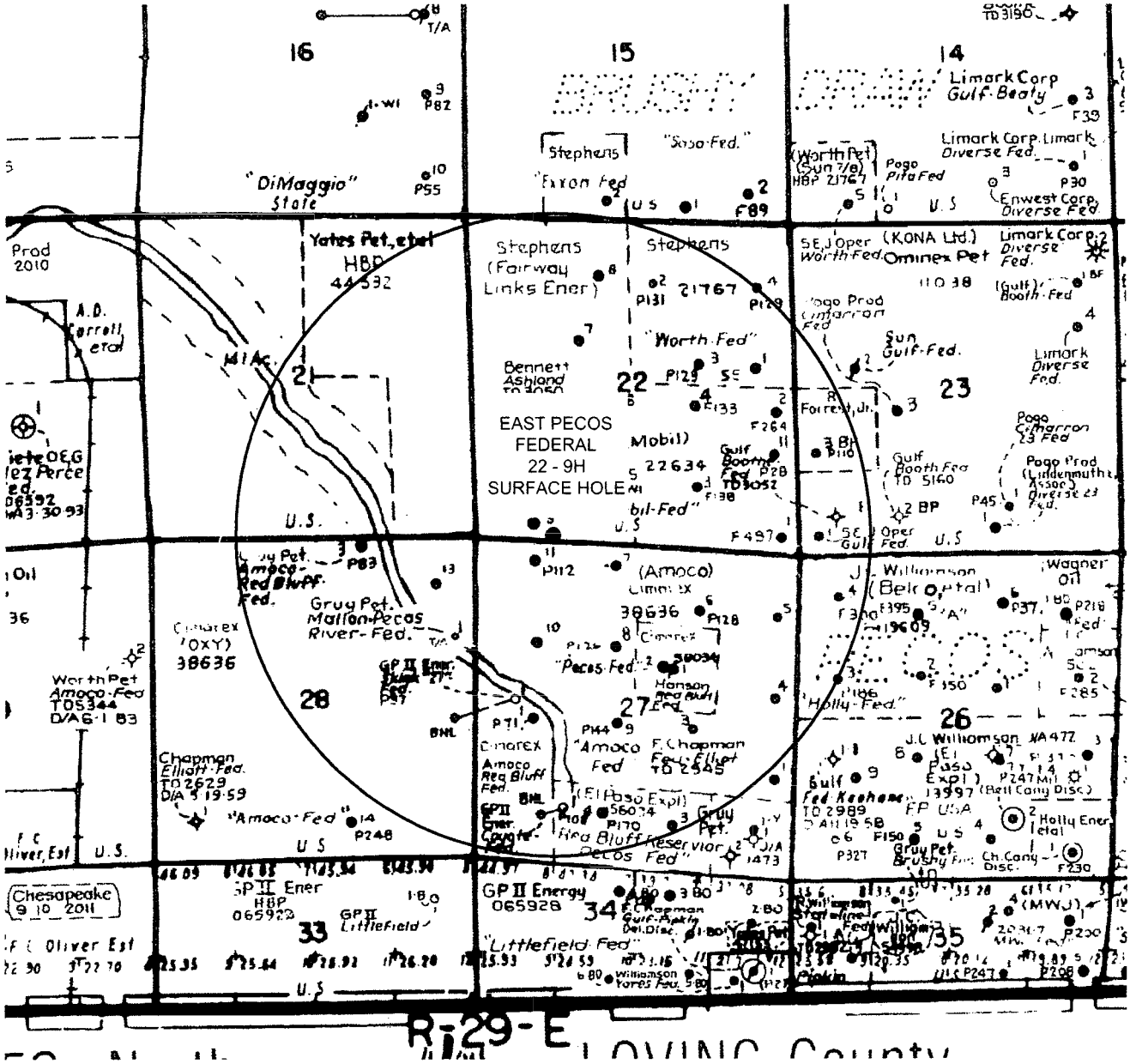
(432) 523-2181

RKI Exploration & Production

JOB No.: WTC51102

SURFACE HOLE LOCATION



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GRAPHIC SCALE 1" = 1/2 MILE

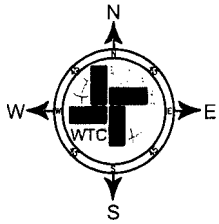
SECTION 22, T 26S, R 29E, N.M.P.M.

COUNTY: EDDY STATE: NM

DESCRIPTION: 250' FSL & 1355' FWL

OPERATOR: RKI EXPLORATION & PRODUCTION

WELL NAME: EAST PECOS FEDERAL 22-9H SHL



DRIVING DIRECTIONS:

FROM THE INTERSECTION OF STATE HIGHWAY 285 AND LONGHORN COUNTY ROAD 725. GO EAST/ NORTHEAST ON LONGHORN COUNTY ROAD 725 FOR 6.7 MILES TO A "Y", STAY RIGHT. GO 0.3 MILE IN SOUTHWESTERLY DIRECTON. LOCATION FLAG IS 241 FEET EAST.

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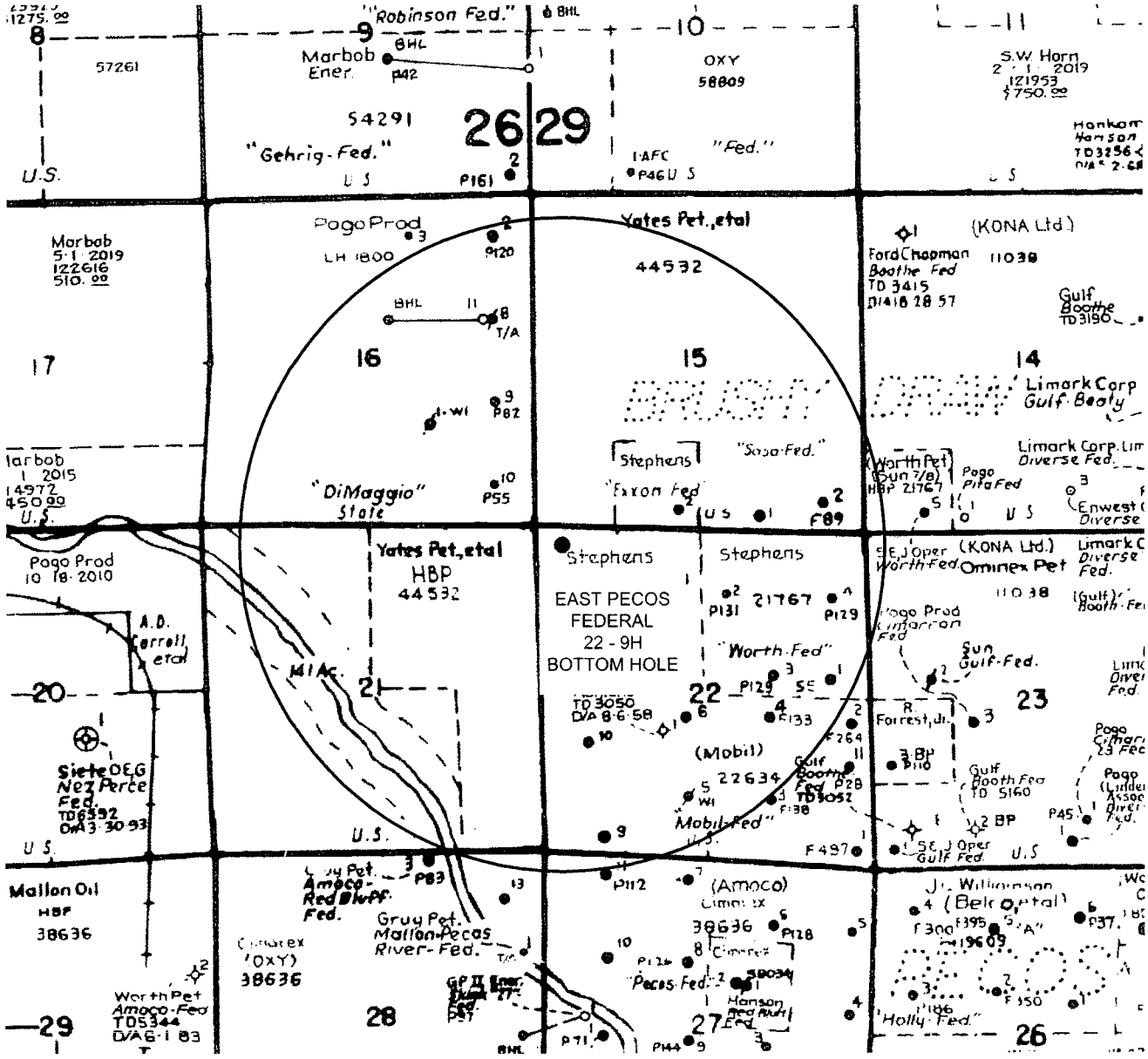
405 S.W. 1st Street
Andrews, TX 79714
(432) 523-2181

RKI Exploration & Production

JOB No.: WTC51102

BOTTOM HOLE LOCATION



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GRAPHIC SCALE 1" = 1/2 MILE

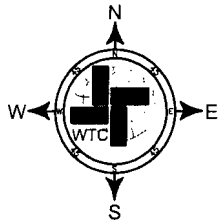
SECTION 22, T 26S, R 29E, N.M.P.M.

COUNTY: EDDY STATE: NM

DESCRIPTION: 230' FNL & 330' FWL

OPERATOR: RKI EXPLORATION & PRODUCTION

WELL NAME: EAST PECOS FEDERAL 22-9H BHL



DRIVING DIRECTIONS:

FROM THE INTERSECTION OF STATE HIGHWAY 285 AND LONGHORN COUNTY ROAD 725. GO EAST/ NORTHEAST ON LONGHORN COUNTY ROAD 725 FOR 6.7 MILES TO A "Y", STAY RIGHT. GO 0.3 MILE IN SOUTHWESTERLY DIRECTON. LOCATION FLAG IS 241 FEET EAST.

WTC

W T C, INC.
405 S.W. 1st Street
Andrews, TX 79714
(432) 523-2181

RKI Exploration & Production

JOB No.: WTC51102

I. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

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

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

2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.

4. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

B. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size. 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 pounds to 40 pounds). 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.).

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

Wait on cement (WOC) for Water Basin:
After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.

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

Medium Cave/Karst
Possible water flows in the Castile and in the Salado.
Possible lost circulation in the Rustler and in the Delaware.

1. The **13-3/8** inch surface casing shall be set at approximately **350** feet (in a competent bed 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 is to include the lead cement slurry.

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

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

Formation below the 13-3/8 inch shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe and the mud weight for the bottom of the hole. Report results to BLM office.

If cement does not circulate to surface on the intermediate casing, the cement on the production casing must come to surface.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:

   ☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office.

Formation below the 9-5/8 inch shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.

3. The minimum required fill of cement behind the **7** inch production casing is:

   ☒ Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.

4. The minimum required fill of cement behind the **4-1/2** inch production liner is:

   ☒ Cement should tie-back to the top of the liner. Operator shall provide method of verification.

5. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. Variance approved to use flex line from BOP to choke manifold. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. **Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.** If the BLM inspector questions the straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).

3. **Operator has proposed a multi-bowl wellhead assembly that has a weld on head with no o-ring seals. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 5000 (5M) psi.**

    a. **Wellhead manufacturer is supplying the test plug/retrieval tool for the operator's third party tester to use during the BOP/BOPE test. Operator shall use the supplied test plug/retrieval tool.**
    b. **Operator shall install the wear bushing required by the wellhead manufacturer. This wear bushing shall be installed by using the test plug/retrieval tool.**
    c. **Wellhead manufacturer representative shall be on location when the intermediate casing mandrel is landed. Operator shall submit copy of manufacturer's wellsite report with subsequent report.**
    d. **Operator shall perform the intermediate casing integrity test to 70% of the casing burst. This will test the multi-bowl seals.**
    e. **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.**

5M 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. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

    b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.

    c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

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

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

f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

D. DRILL STEM TEST

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

E. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

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

TMAK 12012016

United States Department of the Interior
Bureau of Land Management
Carlsbad Field Office

Refer to: 3160-3

To: AFM, Lands & Minerals, CFO
From: Geologist, CFO
Subject: Geologic Review of Application for Permit to Drill

Operator: RKI EXPLORATION & PRODUCTION LLC
Well Name and Number: East Pecos Federal 22-9H
Potash: No
Location: SHL:150'/S.& 1330'/W. SEC022 T026S, R029E.(SESW)
County Eddy **Lease Number:** NMNM22634 **APD Received:** 2-12-2015
Ground Level Elevation: 2879 **Surface Geology:** Qa-Alluvium
TVD: 10039 **MD:** 14510 **BH Mud Weight:** 10.2
BHP: 5325 **MASP:** 3116

1. Geologic Marker Tops (from reports on surrounding wells):

Geologic Marker	MOBIL 22 FEDERAL #005 3001525321 T26E R29E Sec 22 990FSL 2310FWL Elevation Depth	AMOCO FEDERAL #011 3001525666 T26E R29E Sec 27 330FNL 990FWL Elevation Depth	MOBIL 22 FEDERAL #010 3001525936 T26E R29E Sec 22 1775FSL 790FWL Elevation Depth	ROSS DRAW 25 FEDERAL COM #001 3001531575 T26E R29E Sec 25 909FNL 1186FWL Elevation Depth	**Proposed Well** East Pecos Federal 22-9H T026S, R029E.(SESWSEC022 150'/S.& 1330'/W Unit Elevation Estimated Depth
Top of Salt	290	-	350	790	295
Lamar	2863	2824	2838	3081	2850
Bell Canyon	2905	2865	2880	3128	2895
Cherry Canyon	3782	3744	3753	3990	3765
Brushy Canyon	5087	5035	5055	5264	5060
Bone Spring Lime	-	-	-	6840	6615
1st BS Sand	-	-	-	7807	7555
2nd BS Sand	-	-	-	8596	8320
3rd BS Sand	-	-	-	9687	9455
Wolfcamp	-	-	-	10032	9790

2. Fresh Water Information

a. Fresh Water: 350

b. Fresh Water Remarks:

According to well data from the New Mexico Office of the State Engineer's Water Rights Reporting System, there are 24 water wells within a six-mile radius of the proposed project. Depth to water ranges from 0' to 320', with the deepest well drilled to 800'. Usable water may also be found in shallow karst aquifers down to a depth of approximately 350', however cave/karst zones are not expected to exist within the salt.

c. Water Basin: Carlsbad Water Basin

3. Recommended Casing Setting Depth

a. Surface Casing Depth: 350

b. Intermediate Casing Depth: 6717

c. 2nd Interm. Casing Depth

d. Casing Depth Remarks:

The operator proposes to set surface casing at 1000', which will be well within the salt. Instead, set casing at 350, which will protect all usable water and cave/karst zones. The surficial geology is rather complex and the top of the salt difficult to identify on a number petrophysical logs, so if salt is encountered set casing at least 25' above the salt. The operator proposes to set intermediate casing at 6717', which will be in the Bone Spring Limestone. This is an acceptable set point.

4. Geologic Hazards

a. Cave/Karst Occurance: Medium

b. Potential Cave/Karst Depth: 350

c. Possible Water Flows: Castile, Salado,

d. Possible Lost Circulation: Rustler, Delaware,

e. Possible Abnormal Pressure: YES

f. H2S within 1 mile: NO

g. H2S Remarks:

No H2S has been reported within one mile of the proposed project.

5. Additional Remarks

Data density of formations below the Delaware Group are extremely low in this area. Ensure GR and CNL logs are run to surface. Abnormal pressures may be encountered when penetrating the 3rd Bone Spring Sandstone and all subsequent formations.

Geologist: Andrea Bowen **Sign Off Date:** 6-4-2015

Capitan Reef: Csg Design not restricted for Reef, production cement to cover casing 50 feet above Capitan Reef top.
High Cave Karst: two casing strings, both to circulate cement to surface. Carlsbad Controlled Water Basin.

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"	54.50	J 55	ST&C	26.95	6.98	1.87	350	19,075
"B"							**0**	**0**
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,500			Tail Cmt	does	circ to sfc.	Totals:	350	19,075

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	**740**	1211	**297**	307	**8.90**	841	**2M**	1.56

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	4.63	1.76	0.77	2,807	112,280
"B"							**0**	**0**
w/8.4#/g mud, 30min Sfc Csg Test psig:						Totals:	2,807	112,280
The cement volume(s) are intended to achieve a top of				0	ft from surface or a		350	overlap.

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
12 1/4	0.3132	**665**	1368	**915**	49	**10.00**	2752	**3M**	0.81

Burst Frac Gradient(s) for Segment(s): A, B, C, D = 1.41, b, c, d All > *0.70, OK.*

7	casing inside the	9 5/8			Design Factors		INTERMEDIATE	
Segment	#/ft	Grade	Coupling	Body	Collapse	Burst	Length	Weight
"A"	29.00	hcp 110	BUTT	2.94	1.85	2.18	10,500	304,500
"B"	**29.00**	**hcp 110**	**BUTT**	5.64	**1.60**	**2.18**	**750**	**21,750**
w/8.4#/g mud, 30min Sfc Csg Test psig: 2,310						Totals:	11,250	326,250
B would be:				82.39	1.79	if it were a vertical wellbore.		

No Pilot Hole Planned	MTD	Max VTD	Csg VD	Curve KOP	Dogleg°	Severity°	MEOC
	11250	10889	10889	10500	90	12	11250

The cement volume(s) are intended to achieve a top of 2307 ft from surface or a 500 overlap.

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
8 3/4	0.1503	**908**	1618	**1358**	19	**9.10**	4675	**5M**	0.55

Class 'H' tail cmt yld > 1.20 MASP is within 10% of 5000psig, need exrta equip?

Tail cmt

4 1/2	casing inside the	7			Design Factors		PRODUCTION	
Segment	#/ft	Grade	Coupling	Body	Collapse	Burst	Length	Weight
"A"	13.50	hcp 110	CDC-HTC	2.87	1.73	1.76	10,500	141,750
"B"	**13.50**	**hcp 110**	CDC-HTC	8.23	**1.67**	**1.76**	**5,223**	**70,511**
w/8.4#/g mud, 30min Sfc Csg Test psig: 2,310						Totals:	15,723	212,261
B Segment Design Factors would be:				80.36	1.67	if it were a vertical wellbore.		

No Pilot Hole Planned	MTD	Max VTD	Csg VD	Curve KOP	Dogleg°	Severity°	MEOC
	15723	10889	10889	10500	90	12	11250

The cement volume(s) are intended to achieve a top of 10500 ft from surface or a 750 overlap.

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
6 1/8	0.0942	**395**	739	**499**	48	**12.50**			0.81

Class 'H' tail cmt yld > 1.20 Capitan Reef est top XXXX. MASP is within 10% of 5000psig, need exrta equip?