

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

SEP 29 2015

RECEIVED

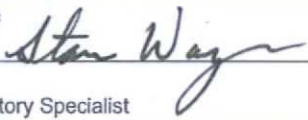

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NMNM02965A	
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6. If Indian, Allottee or Tribe Name	
2. Name of Operator EOG Resources, Inc. (7377)		7. If Unit or CA Agreement, Name and No.	
3a. Address P.O. Box 2267 Midland, TX 79702		8. Lease Name and Well No. (315282) Thor 21 Fed Com 704H	
3b. Phone No. (include area code) 432-686-3689		9. API Well No. 30-025- 42816	
4. Location of Well (Report location clearly and in accordance with any State requirements.)* At surface 170' FSL & 1670' FEL, SWSE (O), Sec 21, 26S, 33E At proposed prod. zone 230' FNL & 2310' FEL, NWNE (B), Sec 21		10. Field and Pool, or Exploratory (98097) WC-025 G-09 S263327G; Upper WC	
14. Distance in miles and direction from nearest town or post office* Approximately +/- 23 miles Southwest from Jal, New Mexico		11. Sec., T. R. M. or Blk. and Survey or Area Section 21, T26S, R33E	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 170' SL, 330' PP	16. No. of acres in lease 2174.12	17. Spacing Unit dedicated to this well 160 ac.	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 631' frm 703H	19. Proposed Depth 17201' MD, 12420' TVD	20. BLM/BIA Bond No. on file NM 2308	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3257' GL	22. Approximate date work will start* 01/01/2016	23. Estimated duration 25 days	

24. Attachments

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

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

25. Signature 	Name (Printed/Typed) Stan Wagner	Date 5/22/15
Title Regulatory Specialist		
Approved by (Signature) 	Name (Printed/Typed) Steve Caffey	Date SEP 24 2015
Title FIELD MANAGER	Office CARLSBAD FIELD OFFICE	

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Conditions of approval, if any, are attached.

APPROVAL FOR TWO YEARS

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

(Continued on page 2)

\*(Instructions on page 2)

Carlsbad Controlled Water Basin

Ka  
08/29/15

Approval Subject to General Requirements  
& Special Stipulations Attached

SEE ATTACHED FOR  
CONDITIONS OF APPROVAL

EOG RESOURCES, INC.  
THOR 21 FED COM NO. 704H

HOBBS OCD

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**1. GEOLOGIC NAME OF SURFACE FORMATION:**

Permian

**2. ESTIMATED TOPS OF IMPORTANT GEOLOGICAL MARKERS:**

Rustler	830'
Top of Salt	1,180'
Base of Salt / Top Anhydrite	4,770'
Base Anhydrite	4,950'
Lamar	4,950'
Bell Canyon	4,980'
Cherry Canyon	5,990'
Brushy Canyon	7,750'
Bone Spring Lime	9,135'
1 <sup>st</sup> Bone Spring Sand	10,070'
2 <sup>nd</sup> Bone Spring Lime	10,500'
2 <sup>nd</sup> Bone Spring Sand	10,664'
3 <sup>rd</sup> Bone Spring Carb	11,520'
3 <sup>rd</sup> Bone Spring Sand	11,775'
Wolfcamp	12,163'
TD	12,420'

**3. ESTIMATED DEPTHS OF ANTICIPATED FRESH WATER, OIL OR GAS:**

Upper Permian Sands	0- 400'	Fresh Water
Cherry Canyon	5,990'	Oil
Brushy Canyon	7,750'	Oil
1 <sup>st</sup> Bone Spring Sand	10,070'	Oil
2 <sup>nd</sup> Bone Spring Lime	10,500'	Oil
2 <sup>nd</sup> Bone Spring Sand	11,664'	Oil
3 <sup>rd</sup> Bone Spring Carb	11,520'	Oil
3 <sup>rd</sup> Bone Spring Sand	11,775'	Oil
Wolfcamp	12,163'	Oil

No other Formations are expected to give up oil, gas or fresh water in measurable quantities. Surface fresh water sands will be protected by setting 13.375" casing at 855' and circulating cement back to surface.



**EOG RESOURCES, INC.**  
**THOR 21 FED COM NO. 704H**

**4. CASING PROGRAM - NEW**

*See COA*

Hole Size	Interval	Csg OD	Weight	Grade	Conn	DF <sub>min</sub> Collapse	DF <sub>min</sub> Burst	DF <sub>min</sub> Tension
17.5"	0 - <del>855'</del> <i>900'</i>	13.375"	54.5#	J55	STC	1.125	1.25	1.60
12.25"	0-4,000' <i>4950'</i>	9.625"	40#	J55	LTC	1.125	1.25	1.60
12.25"	4,000' - <del>5,000'</del>	9.625"	40#	HCK55	LTC	1.125	1.25	1.60
8.75"	0'-17,201'	5.5"	17#	HCP-110	BTC	1.125	1.25	1.60

**Cementing Program:**

Depth	No. Sacks	Wt. ppg	Yld Ft <sup>3</sup> /ft	Mix Water Gal/sk	Slurry Description
13-3/8" 855	400	13.5	1.73	9.13	Class C + 4.0% Bentonite + 0.6% CD-32 + 0.5% CaCl <sub>2</sub> + 0.25 lb/sk Cello-Flake (TOC @ Surface)
	300	14.8	1.34	6.34	Class C + 0.6% FL-62 + 0.25 lb/sk Cello-Flake + 0.2% Sodium Metasilicate
9-5/8" <del>5,000'</del> <i>4950'</i>	1000	12.7	2.22	2.38	Lead: Class 'C' + 1.50% R-3 + 0.25 lb/sk Cello-Flake + 2.0% Sodium Metasilicate + 10% Salt + 0.005 lb/sk Static Free (TOC @ surface)
	200	14.8	1.32	6.33	Tail: Class 'C' + 0.25 lb/sk Cello Flake + 0.005 lb/sk Static Free
5-1/2" 17,201'	775	9.0	2.79	10.12	Lead: LiteCRETE + 0.10% D-065 + 0.20% D-046 + 0.40% D-167 + 0.20% D-198 + 0.04% D-208 + 2.0% D-174 (TOC @ <del>4,500'</del> <i>4450'</i> )
	2100	14.4	1.28	5.69	Tail: Class H + 47.01 pps D-909 + 37.01 pps + 5.0% D-020 + 0.30% D-013 + 0.20% D-046 + 0.10% D-065 + 0.50% D-167 + 2.0% D-174

Note: Cement volumes based on bit size plus at least 25% excess in the open hole plus 10% excess in the cased-hole overlap section.

**5. MINIMUM SPECIFICATIONS FOR PRESSURE CONTROL:**

*See COA*

Variance is requested to use a co-flex line between the BOP and choke manifold (instead of using a 4" OD steel line).

The minimum blowout preventer equipment (BOPE) shown in Exhibit #1 will consist of a single ram, mud cross and double ram-type (10,000 psi WP) preventer and an annular preventer (5000-psi WP). Both units will be hydraulically operated and the ram-type will be equipped with blind rams on bottom and drill pipe rams on top. All BOPE will be tested in accordance with Onshore Oil & Gas order No. 2.

**EOG RESOURCES, INC.**  
**THOR 21 FED COM NO. 704H**

Before drilling out of the surface casing, the ram-type BOP and accessory equipment will be tested to 5000/ 250 psig and the annular preventer to 5000/ 250 psig. The surface casing will be tested to 1500 psi for 30 minutes.

Before drilling out of the intermediate casing, the ram-type BOP and accessory equipment will be tested to 5000/ 250 psig and the annular preventer to 5000/ 250 psig. The intermediate casing will be tested to 2000 psi for 30 minutes.

Pipe rams will be operationally checked each 24-hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets.

A hydraulically operated choke will be installed prior to drilling out of the intermediate casing shoe.

**6. TYPES AND CHARACTERISTICS OF THE PROPOSED MUD SYSTEM:**

During this procedure we plan to use a Closed-Loop System and haul contents to the required disposal.

The applicable depths and properties of the drilling fluid systems are as follows.

Depth	Type	Weight (ppg)	Viscosity	Water Loss
0 - <del>855'</del> <sup>900'</sup>	Fresh - Gel	8.6-8.8	28-34	N/c
<del>855' - 5,000'</del> <sup>4950'</sup>	Oil Base	8.7-9.4	58-68	N/c - 6
<del>5,000' - 11,864'</del>	Oil Base	8.7-9.4	58-68	N/c - 6
11,864' - 17,201' Lateral	Oil Base	10.0-10.5	58-68	N/c - 6

An electronic pit volume totalizer (PVT) will be utilized on the circulating system, to monitor pit volume, flow rate, pump pressure and stroke rate.

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

**7. AUXILIARY WELL CONTROL AND MONITORING EQUIPMENT:**

- (A) A kelly cock will be kept in the drill string at all times.
- (B) A full opening drill pipe-stabbing valve (inside BOP) with proper drill pipe connections will be on the rig floor at all times.
- (C) H<sub>2</sub>S monitoring and detection equipment will be utilized from surface casing point to TD.



**EOG RESOURCES, INC.  
THOR 21 FED COM NO. 704H**

**8. LOGGING, TESTING AND CORING PROGRAM:**

See  
COA

Open-hole logs are not planned for this well.

GR-CCL Will be run in cased hole during completions phase of operations.

**9. ABNORMAL CONDITIONS, PRESSURES, TEMPERATURES AND  
POTENTIAL HAZARDS:**

See  
COA

The estimated bottom-hole temperature (BHT) at TD is 180 degrees F with an estimated maximum bottom-hole pressure (BHP) at TD of 5377 psig. No hydrogen sulfide or other hazardous gases or fluids have been encountered, reported or are known to exist at this depth in this area. No major loss circulation zones have been reported in offsetting wells.

**10. ANTICIPATED STARTING DATE AND DURATION OF OPERATIONS:**

The drilling operation should be finished in approximately one month. If the well is productive, an additional 60-90 days will be required for completion and testing before a decision is made to install permanent facilities.

See  
COA

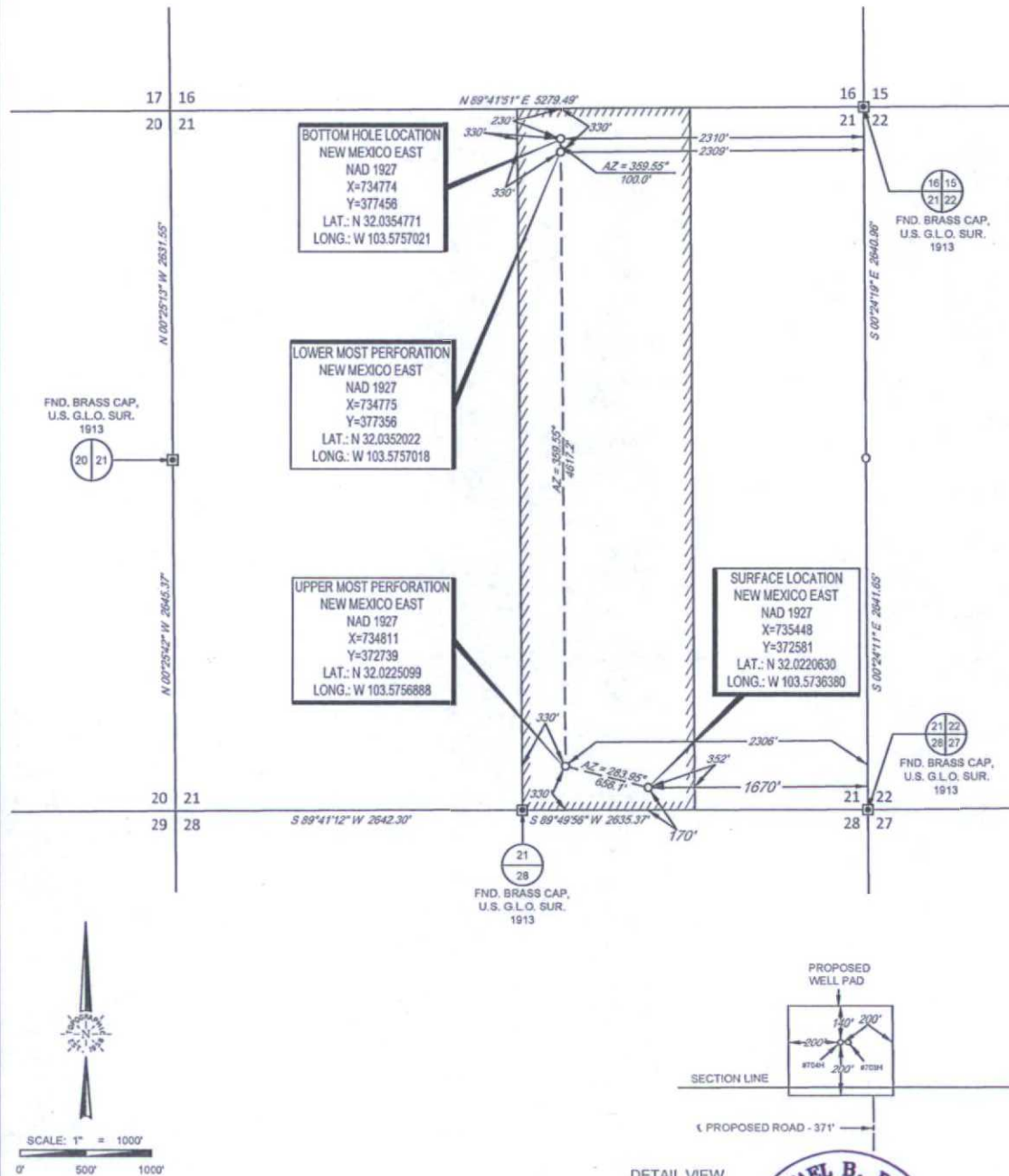
- (A) EOG Resources requests the option to contract a Surface Rig to drill, set surface casing, and cement on the subject well. If the timing between rigs is such that EOG Resources would not be able to preset the surface, the Primary Rig will MIRU and drill the well in its entirety per the APD.

[illegible]



## EXHIBIT 2A

SECTION 21, TOWNSHIP 26-S, RANGE 33-E, N.M.P.M.  
LEA COUNTY, NEW MEXICO



LEASE NAME & WELL NO.: THOR 21 FED COM #704H

SECTION 21 TWP 26-S RGE 33-E SURVEY N.M.P.M.  
COUNTY LEA STATE NM  
DESCRIPTION 170' FSL & 1670' FEL

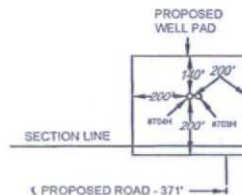
### DISTANCE & DIRECTION

FROM INT. OF NM-18 N. & NM-128, GO WEST ON NM-128 FOR  
±14.0 MILES, THENCE TURN SOUTH (LEFT) ON TO BATTLE AXE  
RD. FOR ±17.1 MILES, THENCE TURN EAST (LEFT) ON TO A  
LEASE RD. FOR ±0.5 MILES, THENCE NORTH (LEFT) ON TO A  
PROPOSED RD. FOR ±371 FEET TO A POINT ±236 FEET  
SOUTHEAST OF THIS LOCATION.

ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREON ARE GRID  
BASED UPON THE NEW MEXICO STATE PLANE COORDINATE SYSTEM, EAST ZONE OF THE  
NORTH AMERICAN DATUM 1927, U.S. SURVEY FEET

THIS EASEMENT/SERVITUDE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND  
UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF  
SURVEY, AND DATA PROVIDED BY EOG RESOURCES, INC. THIS CERTIFICATION IS MADE AND LIMITED  
TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE.  
THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.

DETAIL VIEW  
SCALE: 1" = 500'



Michael Blake Brown, P.S. No. 18329  
MAY 20, 2015

**TOPOGRAPHIC**  
LOYALTY INNOVATION LEGACY  
1403 EVERMAN PARKWAY, Ste. 197, FT. WORTH, TEXAS 76140  
TELEPHONE: (817) 744-7512 • FAX: (817) 744-7548  
2503 NORTH BIG SPRING • MIDLAND, TEXAS 79705  
TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX: (432) 682-1743  
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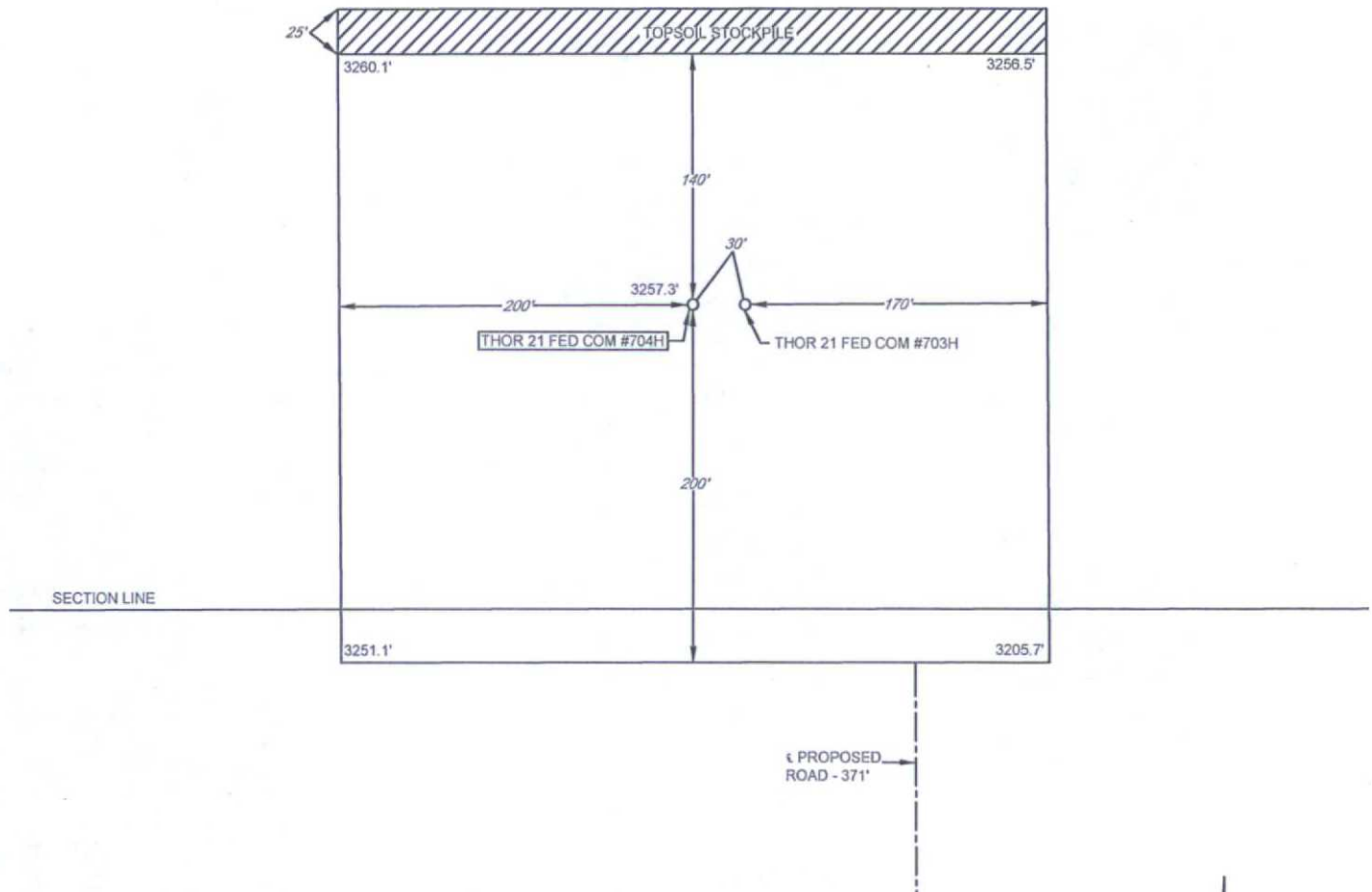




## EXHIBIT 2B

SECTION 21, TOWNSHIP 26-S, RANGE 33-E, N.M.P.M.  
LEA COUNTY, NEW MEXICO

DETAIL VIEW  
SCALE: 1" = 100'



LEASE NAME & WELL NO.: THOR 21 FED COM #704H  
#704H LATITUDE N 32.0220630 #704H LONGITUDE W 103.5736380

### LEGEND

— SECTION LINE  
- - - PROPOSED ROAD



SCALE: 1" = 100'  
0' 50' 100'

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NORTH AMERICAN DATUM 1927, U.S. SURVEY FEET

THIS PROPOSED PAD SITE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER  
MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY,  
AND DATA PROVIDED BY EOG RESOURCES, INC. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE  
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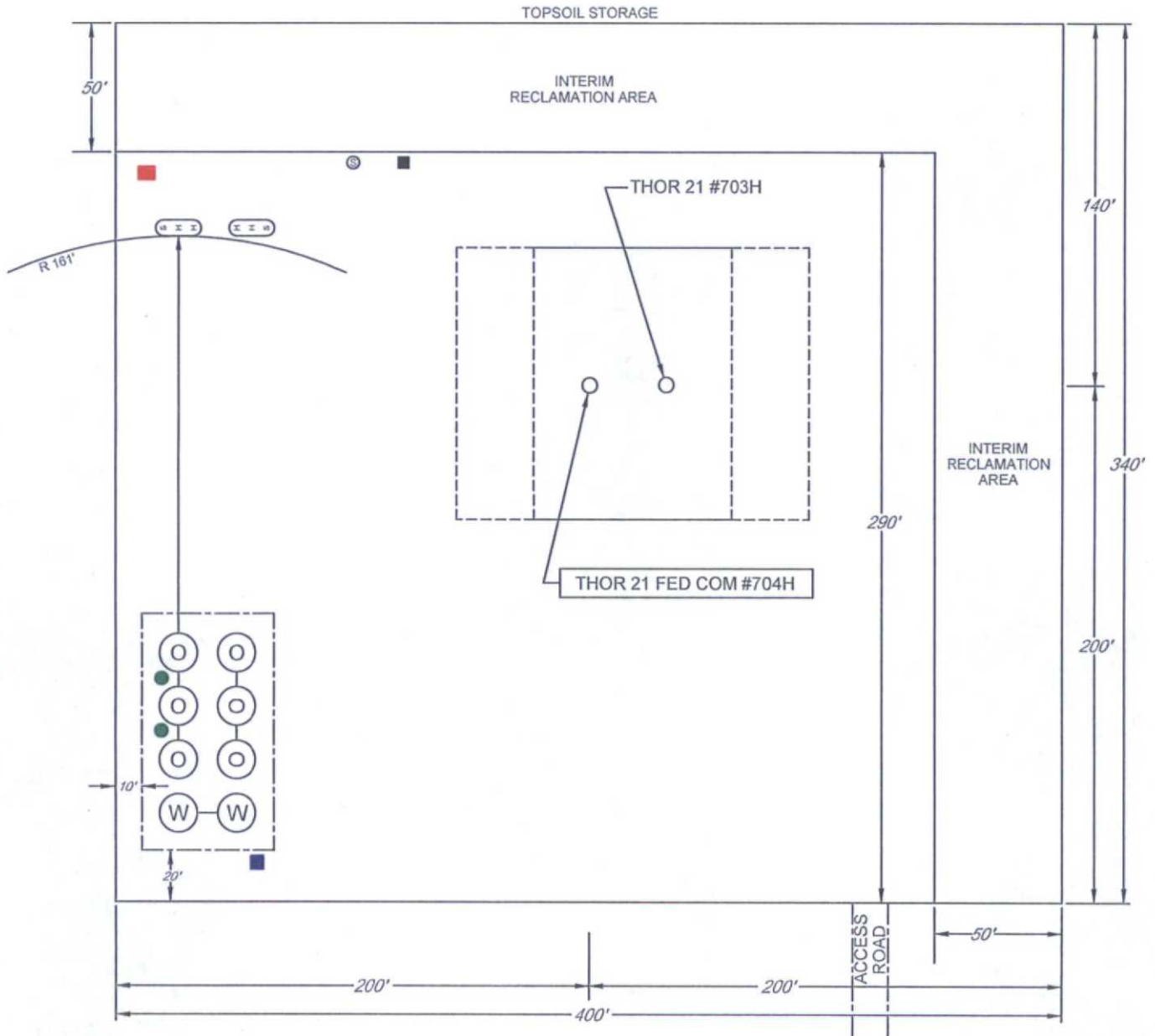


# EXHIBIT 2C

## RECLAMATION AND FACILITY DIAGRAM - PRODUCTION FACILITIES DIAGRAM

SECTION 21, TOWNSHIP 26-S, RANGE 33-E, N.M.P.M.  
LEA COUNTY, NEW MEXICO

DETAIL VIEW  
SCALE: 1" = 60'



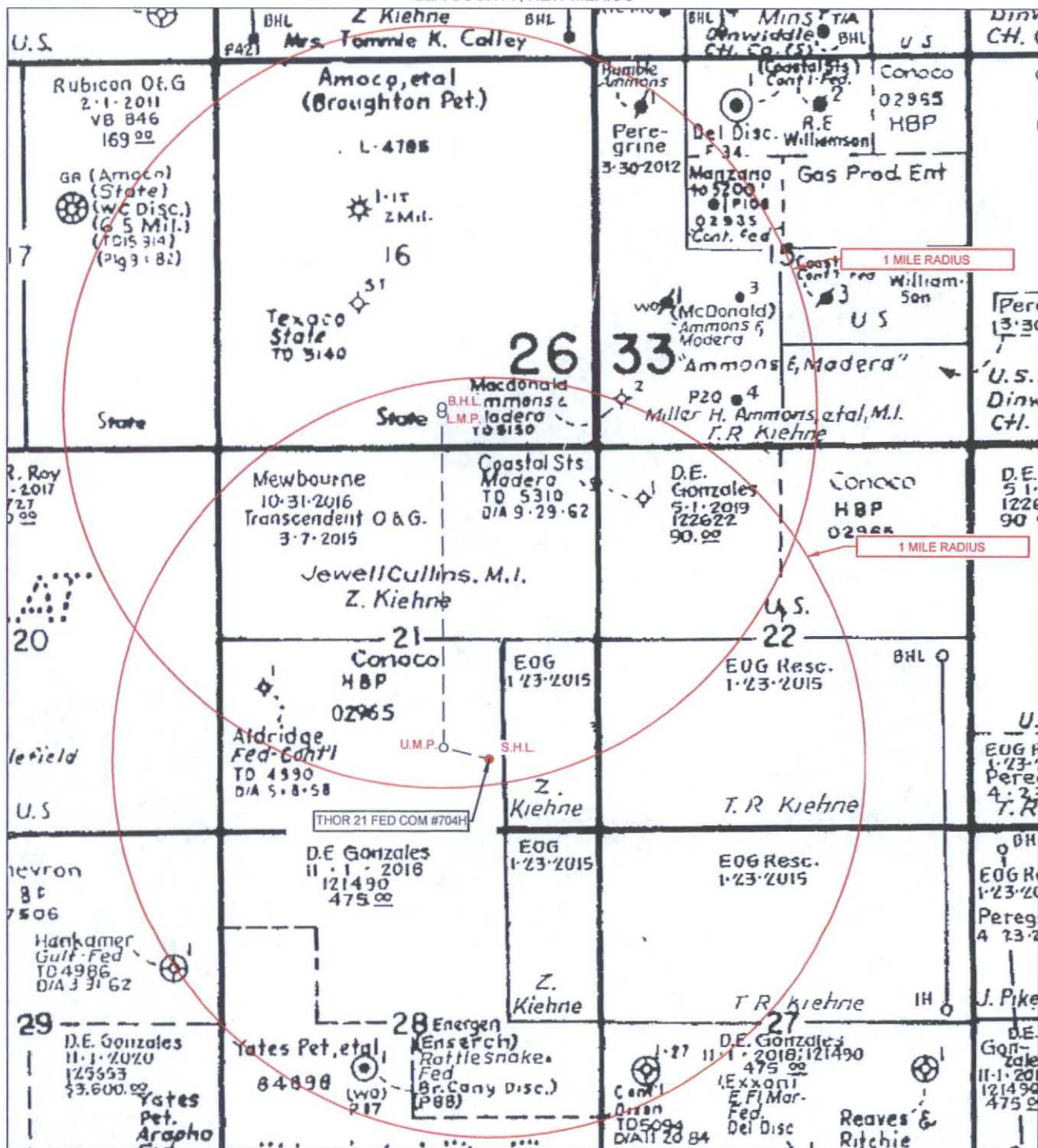
LEASE NAME & WELL NO.: THOR 21 FED COM #704H  
#704H LATITUDE N 32.0220630 #704H LONGITUDE W 103.5736380

### LEGEND

	500 BBL OIL TANK		FLARE SEPARATOR
	500 BBL WATER TANK		VRU
	36 x 15 HEATER/SEPARATOR		48 X 25 VRT
			FP FLARE
			OP FLARE

# EXHIBIT 3

SECTION 21, TOWNSHIP 26-S, RANGE 33-E, N.M.P.M.  
LEA COUNTY, NEW MEXICO



LEASE NAME & WELL NO.: THOR 21 FED COM #704H

SCALE: NTS

#704H LATITUDE N 32.0220630

#704H LONGITUDE W 103.5736380

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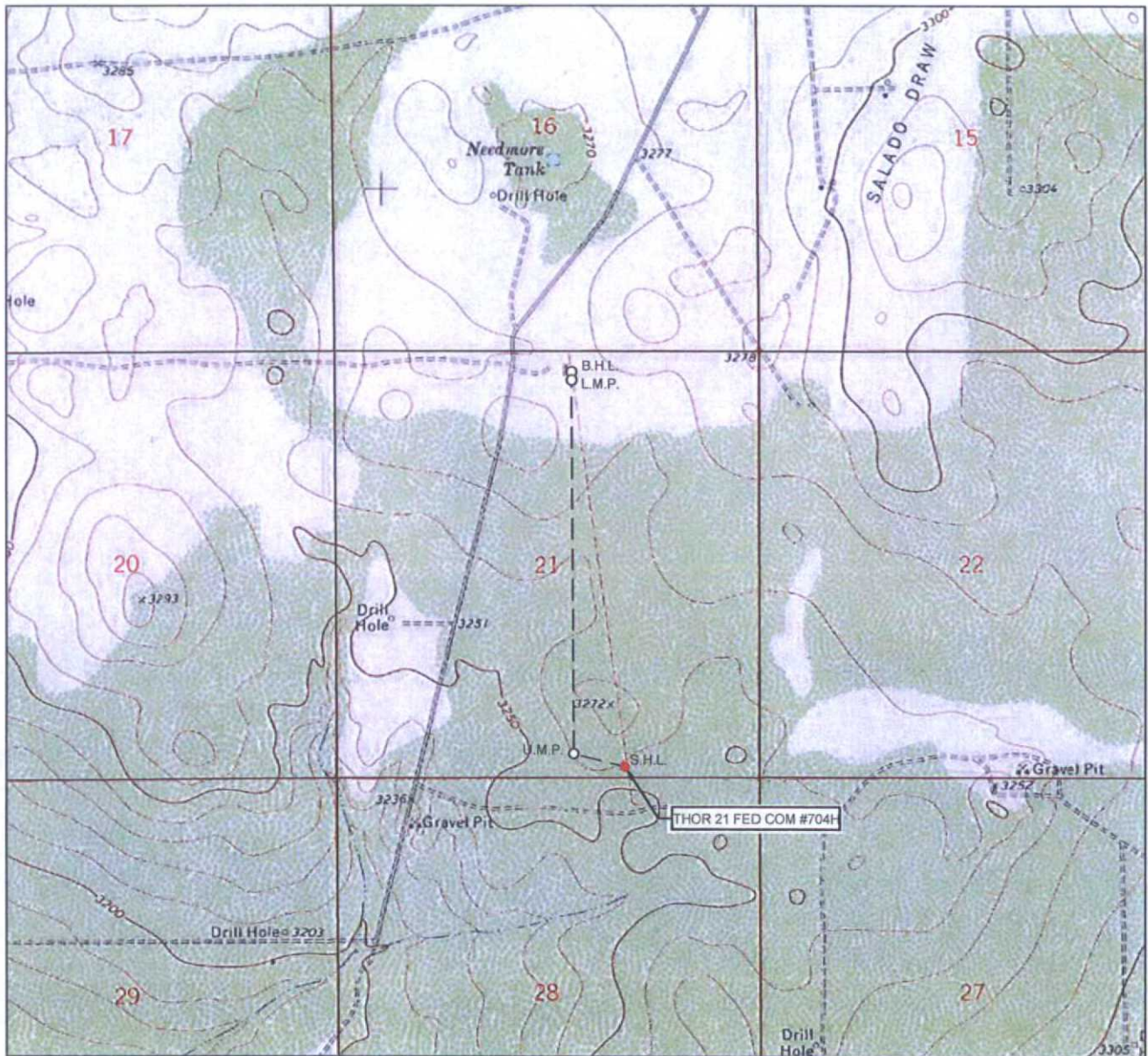
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# LOCATION & ELEVATION VERIFICATION MAP



LEASE NAME & WELL NO.: THOR 21 FED COM #704H

SECTION 21 TWP 26-S RGE 33-E SURVEY N.M.P.M.  
 COUNTY LEA STATE NM ELEVATION 3257'  
 DESCRIPTION 170' FSL & 1670' FEL

LATITUDE N 32.0220630 LONGITUDE W 103.5736380



SCALE: 1" = 2000'  
 0' 1000' 2000'

THIS EASEMENT/SERVITUDE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF SURVEY, AND DATA PROVIDED BY EOG RESOURCES, INC. THIS CERTIFICATION IS MADE AND LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.

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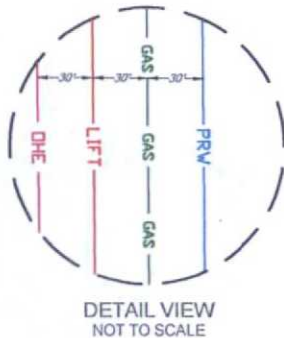
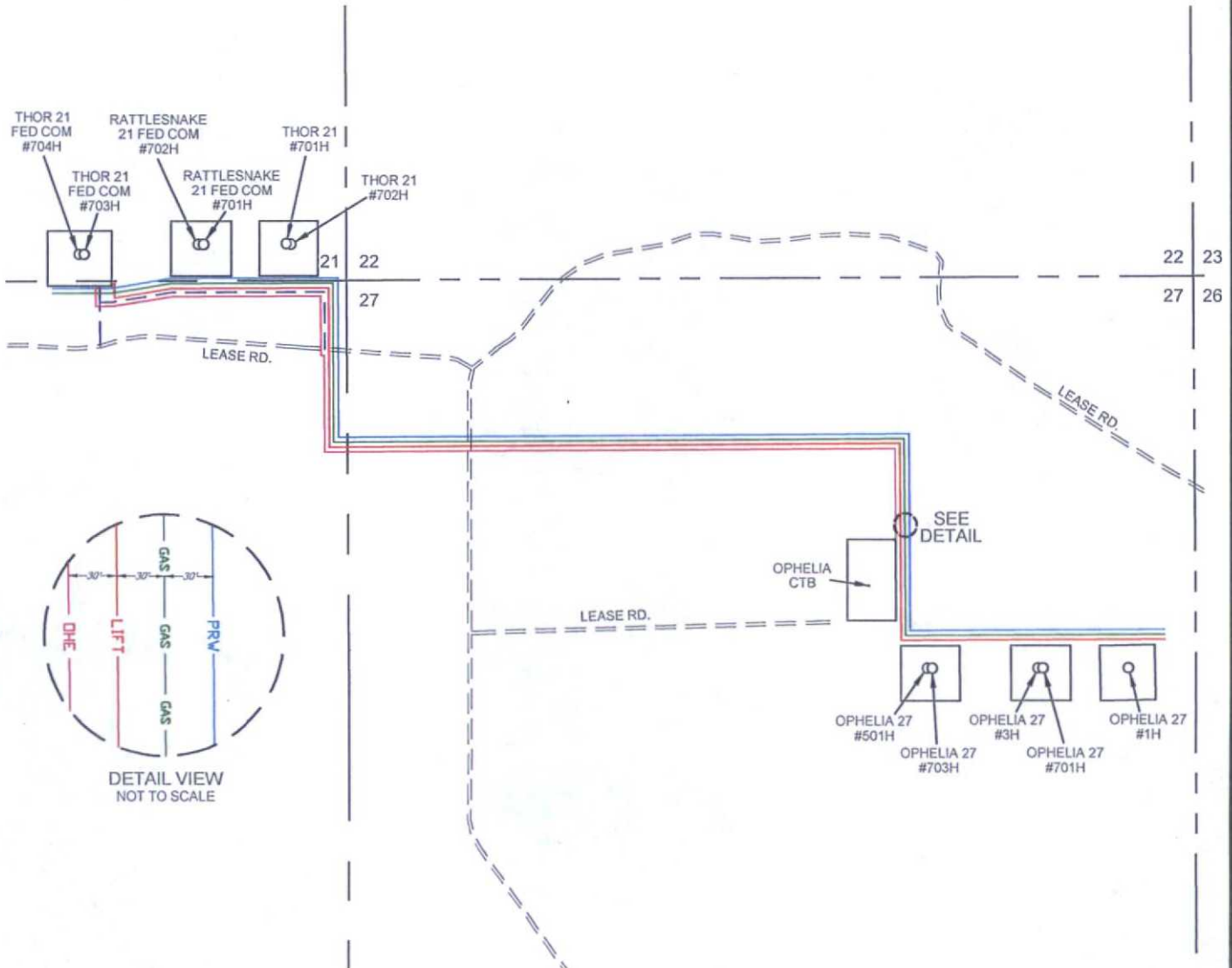


SCALE 1" = 1000'  
0' 500' 1000'

## EXHIBIT 5

SECTION 21, 27, & 28, TOWNSHIP 26-S, RANGE 33-E, N.M.P.M.  
LEA COUNTY, NEW MEXICO

# THOR 21 FED COM 703H AND 704H INFRASTRUCTURE MAP



THOR 21 FED COM 703H AND 704H INFRASTRUCTURE MAP	REVISION:	
	MML	05/20/15
DATE: 03/25/14		
FILE: SKETCHES\THOR21_FED_COM_FINAL_PRODUCTS\SKETCHES\THOR21_703H_704H_THOR21_FED_COM_703H_INFRASTRUCTURE_MAP_REV1.DWG		
DRAWN BY: MML		
SHEET: 1 OF 1		

<b>PRW</b>	12" PRODUCED WATER LINE -TOTAL FOOTAGE 9,154 FT -(WORKING PRESSURE 75-125 PSI) FROM THOR 21 FED COM #704H & THOR 21 FED COM #703H TO OPHELIA 27 #1H..... 9,154 FT	<b>LIFT</b>	8" GAS LIFT LINE -TOTAL FOOTAGE 8,872 FT -(WORKING PRESSURE 75-125 PSI) FROM THOR 21 FED COM #704H & THOR 21 FED COM #703H TO OPHELIA 27 #1H..... 8,872 FT
<b>CHE</b>	ELECTRIC LINE -TOTAL FOOTAGE 6,651 FT -(WORKING PRESSURE 75-125 PSI) FROM THOR 21 FED COM #704H & THOR 21 FED COM #703H TO OPHELIA CTB..... 6,651 FT	<b>GAS</b>	12" GAS SALES LINE -TOTAL FOOTAGE 9,154 FT -(WORKING PRESSURE 75-125 PSI) FROM THOR 21 FED COM #704H & THOR 21 FED COM #703H TO OPHELIA 27 #1H..... 9,154 FT
<b>LEASE RD.</b>	LEASE RD. DISTANCE -TOTAL FOOTAGE 2,137 FT FROM LEASE RD. TO THOR 21 FED COM #704H & THOR 21 FED COM #703H..... 371 FT FROM LEASE RD. TO THOR 21 FED COM #704H & THOR 21 FED COM #703H..... 1,805 FT		