

ATS-13-384

Form 3160-3
(April 2004)

OCD HOBBS

FORM APPROVED
OMB No. 1004-0137
Expires March 31, 2007

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

JUL 23 2013

APPLICATION FOR PERMIT TO DRILL OR REENTER RECEIVED

1a. Type of work: ☒ DRILL ☐ REENTER		5. Lease Serial No. NMNM-2512	
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone		6. If Indian, Allottee or Tribe Name	
2. Name of Operator APACHE CORPORATION		7. If Unit or CA Agreement, Name and No. NE DRINKARD <NMNM072602X>	
3a. Address 303 VETERANS AIRPARK LN #3000 MIDLAND, TX 79705		8. Lease Name and Well No. (22503) NORTHEAST DRINKARD UNIT #355	
3b. Phone No. (include area code) 432-818-1167		9. API Well No. 30-025- 41286	
4. Location of Well (Report location clearly and in accordance with any State requirements.)* At surface 1310' FSL & 620' FEL At proposed prod. zone 1180' FSL + 540' FEL		10. Field and Pool, or Exploratory EUNICE; BLI-TU-DR, N. (22900)	
14. Distance in miles and direction from nearest town or post office* APPROX 5 MILES NORTH OF EUNICE, NM		11. Sec., T. R. M. or Blk. and Survey or Area UL: P SEC: 3 T21S R37E	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 610'	16. No. of acres in lease 708.67	17. Spacing Unit dedicated to this well 40 ACRES	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. ~400'	19. Proposed Depth TVD ~ 7050' MD ~ 7051	20. BLM/BIA Bond No. on file BLM - CO - 1463 NATIONWIDE / NMB000736	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3463'	22. Approximate date work will start* AS SOON AS APPROVED	23. Estimated duration ~ 10 DAYS	

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, shall 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 shall be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be required by the authorized officer. |

25. Signature Sorina L Flores	Name (Printed/Typed) SORINA L. FLORES	Date 1/29/13
Title SUPV OF DRILLING SERVICES		
Approved by (Signature) /s/George MacDonell	Name (Printed/Typed)	Date JUL 16 2013
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.

*(Instructions on page 2)

Capitan Controlled Water Basin

K2
07/26/13
Approval Subject to General Requirements
& Special Stipulations Attached

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

JUL 31 2013

DRILLING PLAN: BLM COMPLIANCE
(Supplement to BLM 3160-3)

APACHE CORPORATION (OGRID: 873) NORTHEAST DRINKARD UNIT #355

Lease #: NM-2512 Projected TVD: 7050' MD:7051 GL: 3463'
SHL: 1310' FSL & 620' FEL BHL: 1180' FSL & 560' FEL UL: P SEC: 3 T21S R37E LEA COUNTY, NM

- GEOLOGIC NAME OF SURFACE FORMATION:** Quaternary Aeolian Deposits
- ESTIMATED TOPS OF GEOLOGICAL MARKERS & DEPTHS OF ANTICIPATED FRESH WATER, OIL OR GAS:**

Quaternary Aeolian	Surf	San Andres	4076'
Rustler	1318'	Glorieta	5230'
Salt Top	1365'	Paddock	5294'
Salt Bottom	2469'	Blinbry	5624' (Oil)
Yates	2608'	Tubb	6087' (Oil)
Seven Rivers	2864'	Drinkard	6541' (Oil)
Queen	3434'	ABO	6840' (Oil)
Grayburg	3771'	TD	TVD: 7050' MD: 7051'

Depth to Ground Water: ~ 75'

All fresh water & prospectively valuable minerals, as described by BLM, encountered during drilling, will be recorded by depth and adequately protected. All oil & gas shows within zones of correlative rights will be tested to determine commercial potential.

- CASING PROGRAM:** All casing is new & API approved

See
CON

HOLE SIZE	DEPTH	OD CSG	WEIGHT	COLLAR	GRADE	COLLAPSE	BURST	TENSION
11"	0' - 1343'	8-5/8"	24#	STC	J-55	1.125	1.21	1.8
7-7/8"	0'-7051'	5-1/2"	17#	LTC	L-80	1.125	1.21	1.8

- CEMENT PROGRAM:**

A. 8-5/8" Surface cmt with (100% excess cmt; Cmt to Surface):

Lead: 270 sx Class C w/ 2% CaCl₂, 0.13# CF, 3# LCM1, 0.005 gps FP-6L, 4% Bentonite
(13.5 ppg, 1.75 yld) Comp Strengths: **12 hr** – 500 psi **24 hr** – 782 psi

Tail: 200 sx Class C w/ 1% CaCl₂, 0.13 # CF, 0.005 gps FP-6L
(14.8 ppg, 1.34 yld) Comp Strengths: **12 hr** – 755 psi **24 hr** – 1347 psi

B. 5-1/2" Production cmt with (30% excess cmt; cmt to surf):

Lead: 590 sx (35:65) Poz Cl C w/ 5% CaCl₂, 0.125 # CF, 3# LCM1, 0.5% FL52, 0.005gps FP6L, 6% Bentonite, 0.3% Sodium Metasilicate
(11.9ppg, 2240 yld) Comp Strengths: **12 hr** – 603 psi **24 hr** – 850 psi

Tail: 340 sx (50:50) Poz Cl C w/ 5% CaCl₂ + 0.13% CF, 3# LCM1 + 0.005gps FP6L + 2% Bentonite + 1% FL25 + 1% BA58 + 0.1% Sodium Metasilicate (14.8 ppg, 1.34 yld) Comp Strengths: **12 hr** – 850 psi **24 psi** – 1979 psi

**** The above cmt volumes could be revised pending caliper measurement from open hole logs. TOC is designed to reach surface on Surface and Production. The above slurry design may change, but will meet BLM specifications. All slurries will be tested prior to loading to confirm thickening times & a lab report furnished to Apache. Fluid loss will be tested & reported on slurries with fluid loss additives. Lab test report will be furnished prior to pumping cement.**

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5. PROPOSED CONTROL EQUIPMENT

"EXHIBIT 3A" shows a 900 series 11" 3M psi WP BOP consisting of an annular bag type preventer, middle blind rams, bottom pipe rams. The BOP will be nipped up on the 8-5/8" csg and utilized continuously until TD is reached. The BOP will be tested at 2000 psi, maximum surface pressure is not expected to exceed 2M psi, BHP is calculated to be approximately 3102 psi. *All BOP's and associated equipment will be tested as per BLM *Drilling Operations Order #2*. The BOP will be operated and checked each 24 hr period & the blind rams will be operated & checked when the drill pipe is out of the hole. Functional tests will be documented on the daily driller's log. "EXHIBIT 3A" also shows a 3M psi choke manifold with a 4" panic line. Full opening stabbing valve & Kelly cock will be on derrick floor in case of need. No abnormal pressures or temperatures are expected in this well. No nearby wells have encountered any problems.

6. AUXILIARY WELL CONTROL EQUIPMENT / MONITORING EQUIPMENT:

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11" x 3000 psi Double BOP/Blind & pipe ram (3M BOP/BOPE to be used as 2M system)
4-1/2" x 3000 psi Kelly valve
9" x 3000 psi mud cross – H2S detector on production hole
Gate-type safety valve 3" choke line from BOP to manifold
2" adjustable chokes – 4" blow down line
Fill up line as per Onshore Order #2

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7. PROPOSED MUD CIRCULATION SYSTEM: (Closed Loop System)

See
COA

INTERVAL	MW (ppg)	VISC (sec/qt)	FLUID LOSS (cc)	MUD TYPE
0' – 1343'	8.3 – 8.8	28 – 32	NC	Fresh Water
1343 – 7051'	9.8 – 10.2	28 – 32	NC	Brine

**** Visual mud monitoring equipment shall be in place to detect volume changes. A mud test shall be performed every 24 hrs after mudding up to determine, as applicable: density, visc, gel strength, filtration, and pH. The necessary mud products for weight addition & fluid loss control will be on location at all times. In order to run open hole logs & casing, the above mud properties may have to be altered to meet these needs.**

8. LOGGING, CORING & TESTING PROGRAM:

- OH logs: Dual Laterolog, MSFL, CNL, Litho-Density, Spectral Gamma Ray, Caliper & Sonic from TD back to last csg shoe.
- Run CNL, Gamma Ray from last csg shoe back to surface.
- No cores or DST's are planned at this time. Mud log will be included on this well.
- Additional testing will be initiated subsequent to setting the 5-1/2" production casing. Specific intervals will be targeted based on log evaluation, geological sample shows & drill stem tests.

9. POTENTIAL HAZARDS:

See
COA

No abnormal pressures or temperatures are anticipated. In the event abnormal pressures are encountered, however, the proposed mud program will be modified to increase the mud-weight. There is known presence of H₂S in this area. If H₂S is encountered the operator will comply with the provisions of *Onshore Oil & Gas Order No. 6 (SEE EXHIBIT 6)*. No lost circulation is expected to occur. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. Estimated BHP: 3102 psi and estimated BHT: 115°.

10. ANTICIPATED STARTING DATE AND DURATION OF OPERATIONS:

Road and location construction will begin after BLM has approved APD. Anticipated spud date will be as soon after BLM approval and as soon as rig will be available. Move in operations and drilling is expected to take ~ 10 days. If production casing is run then an additional 90 days will be needed to complete well and construct surface facilities and/or lay flow lines in order to place well on production.

11. OTHER FACETS OF OPERATION:

After running csg, cased hole Gamma Ray, Neutron Collar logs will be run from TD back to all possible productive zones. The Eunice, BLI-TU-DRI, North formations will be perforated and stimulated in order to establish production. The well will be swab tested & potentialized as an oil well.



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Apache Corporation

Lea County, NM (NAD 83 NME)

Northeast Drinkard Unit

#355

Wellbore #1 / Job# 1310141

Plan: Plan #1 01-29-13

Standard Planning Report

29 January, 2013





Phoenix Technology Services
Planning Report



Database:	GCR DB	Local Co-ordinate Reference:	Well #355
Company:	Apache Corporation	TVD Reference:	KB @ 3473.00usft
Project:	Lea County, NM (NAD 83 NME)	MD Reference:	KB @ 3473.00usft
Site:	Northeast Drinkard Unit	North Reference:	Grid
Well:	#355	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1 / Job# 1310141		
Design:	Plan #1 01-29-13		

Project	Lea County, NM (NAD 83 NME)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Northeast Drinkard Unit		
Site Position:	Northings:	549,246.17 usft	Latitude: 32° 30' 15.5523 N
From: Map	Easting:	907,874.81 usft	Longitude: 103° 8' 39.8102 W
Position Uncertainty:	0.00 usft	Slot Radius: 13-3/16"	Grid Convergence: 0.64 °

Well	#355		
Well Position	+N/-S	0.00 usft	Northings: 549,246.17 usft
	+E/-W	0.00 usft	Easting: 907,874.81 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	Ground Level: 3,462.00 usft

Wellbore	Wellbore #1 / Job# 1310141		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2010_14	01/29/13	7.20
			Dip Angle (°)
			60.48
			Field Strength (nT)
			48,668

Design	Plan #1 01-29-13		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			Direction (°)
			154.53

Plan Sections										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Dogleg	Build	Turn	TFO	Target
Depth (usft)	(°)	(°)	Depth (usft)	(usft)	(usft)	Rate (°/100usft)	Rate (°/100usft)	Rate (°/100usft)	(°)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,442.00	0.00	0.00	1,442.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,515.59	1.47	154.53	1,515.58	-0.85	0.41	2.00	2.00	209.99	154.53	
7,051.83	1.47	154.53	7,050.00	-129.23	61.55	0.00	0.00	0.00	0.00	0.00 PBHL-NEDU #355

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Phoenix Technology Services

Planning Report

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Database:	GCR DB	Local Co-ordinate Reference:	Well #355 RECEIVED
Company:	Apache Corporation	TVD Reference:	KB @ 3473.00usft
Project:	Lea County, NM (NAD 83 NME)	MD Reference:	KB @ 3473.00usft
Site:	Northeast Drinkard Unit	North Reference:	Grid
Well:	#355	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1 / Job# 1310141		
Design:	Plan #1 01-29-13		

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
1,318.00	0.00	0.00	1,318.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
1,342.00	0.00	0.00	1,342.00	0.00	0.00	0.00	0.00	0.00	0.00
8 5/8"									
1,365.00	0.00	0.00	1,365.00	0.00	0.00	0.00	0.00	0.00	0.00
T. Salt									
1,442.00	0.00	0.00	1,442.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP Start DLS 2.00 TFO 154.53									
1,500.00	1.16	154.53	1,500.00	-0.53	0.25	0.59	2.00	2.00	0.00
1,515.59	1.47	154.53	1,515.58	-0.85	0.41	0.95	2.00	2.00	0.00
Start 5536.24 hold at 1515.59 MD									
1,600.00	1.47	154.53	1,599.96	-2.81	1.34	3.11	0.00	0.00	0.00
1,700.00	1.47	154.53	1,699.93	-5.13	2.44	5.68	0.00	0.00	0.00
1,800.00	1.47	154.53	1,799.90	-7.45	3.55	8.25	0.00	0.00	0.00
1,900.00	1.47	154.53	1,899.87	-9.77	4.65	10.82	0.00	0.00	0.00
2,000.00	1.47	154.53	1,999.83	-12.09	5.76	13.39	0.00	0.00	0.00
2,100.00	1.47	154.53	2,099.80	-14.41	6.86	15.96	0.00	0.00	0.00
2,200.00	1.47	154.53	2,199.77	-16.72	7.97	18.52	0.00	0.00	0.00
2,300.00	1.47	154.53	2,299.73	-19.04	9.07	21.09	0.00	0.00	0.00
2,400.00	1.47	154.53	2,399.70	-21.36	10.17	23.66	0.00	0.00	0.00
2,469.32	1.47	154.53	2,469.00	-22.97	10.94	25.44	0.00	0.00	0.00
Tansil									
2,500.00	1.47	154.53	2,499.67	-23.68	11.28	26.23	0.00	0.00	0.00
2,600.00	1.47	154.53	2,599.63	-26.00	12.38	28.80	0.00	0.00	0.00
2,608.37	1.47	154.53	2,608.00	-26.19	12.48	29.01	0.00	0.00	0.00
Yates									
2,700.00	1.47	154.53	2,699.60	-28.32	13.49	31.37	0.00	0.00	0.00
2,800.00	1.47	154.53	2,799.57	-30.64	14.59	33.93	0.00	0.00	0.00
2,864.45	1.47	154.53	2,864.00	-32.13	15.30	35.59	0.00	0.00	0.00
Seven Rivers									
2,900.00	1.47	154.53	2,899.54	-32.96	15.70	36.50	0.00	0.00	0.00
3,000.00	1.47	154.53	2,999.50	-35.27	16.80	39.07	0.00	0.00	0.00
3,100.00	1.47	154.53	3,099.47	-37.59	17.91	41.64	0.00	0.00	0.00
3,200.00	1.47	154.53	3,199.44	-39.91	19.01	44.21	0.00	0.00	0.00
3,300.00	1.47	154.53	3,299.40	-42.23	20.12	46.78	0.00	0.00	0.00
3,400.00	1.47	154.53	3,399.37	-44.55	21.22	49.35	0.00	0.00	0.00
3,434.64	1.47	154.53	3,434.00	-45.35	21.60	50.24	0.00	0.00	0.00
Queen									
3,500.00	1.47	154.53	3,499.34	-46.87	22.32	51.91	0.00	0.00	0.00
3,600.00	1.47	154.53	3,599.30	-49.19	23.43	54.48	0.00	0.00	0.00
3,700.00	1.47	154.53	3,699.27	-51.51	24.53	57.05	0.00	0.00	0.00
3,771.75	1.47	154.53	3,771.00	-53.17	25.33	58.89	0.00	0.00	0.00
Grayburg									
3,800.00	1.47	154.53	3,799.24	-53.83	25.64	59.62	0.00	0.00	0.00
3,900.00	1.47	154.53	3,899.21	-56.14	26.74	62.19	0.00	0.00	0.00
4,000.00	1.47	154.53	3,999.17	-58.46	27.85	64.76	0.00	0.00	0.00
4,076.85	1.47	154.53	4,076.00	-60.25	28.70	66.73	0.00	0.00	0.00
San Andres									
4,100.00	1.47	154.53	4,099.14	-60.78	28.95	67.33	0.00	0.00	0.00
4,200.00	1.47	154.53	4,199.11	-63.10	30.06	69.89	0.00	0.00	0.00
4,300.00	1.47	154.53	4,299.07	-65.42	31.16	72.46	0.00	0.00	0.00
4,400.00	1.47	154.53	4,399.04	-67.74	32.26	75.03	0.00	0.00	0.00



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Planning Report

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Site:	Northeast Drinkard Unit	North Reference:	Grid
Well:	#355	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1 / Job# 1310141		
Design:	Plan #1 01-29-13		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,500.00	1.47	154.53	4,499.01	-70.06	33.37	77.60	0.00	0.00	0.00
4,600.00	1.47	154.53	4,598.97	-72.38	34.47	80.17	0.00	0.00	0.00
4,700.00	1.47	154.53	4,698.94	-74.70	35.58	82.74	0.00	0.00	0.00
4,800.00	1.47	154.53	4,798.91	-77.01	36.68	85.30	0.00	0.00	0.00
4,900.00	1.47	154.53	4,898.88	-79.33	37.79	87.87	0.00	0.00	0.00
5,000.00	1.47	154.53	4,998.84	-81.65	38.89	90.44	0.00	0.00	0.00
5,100.00	1.47	154.53	5,098.81	-83.97	40.00	93.01	0.00	0.00	0.00
5,200.00	1.47	154.53	5,198.78	-86.29	41.10	95.58	0.00	0.00	0.00
5,231.23	1.47	154.53	5,230.00	-87.01	41.45	96.38	0.00	0.00	0.00
Glorieta									
5,295.26	1.47	154.53	5,294.00	-88.50	42.15	98.03	0.00	0.00	0.00
Paddock									
5,300.00	1.47	154.53	5,298.74	-88.61	42.21	98.15	0.00	0.00	0.00
5,400.00	1.47	154.53	5,398.71	-90.93	43.31	100.72	0.00	0.00	0.00
5,500.00	1.47	154.53	5,498.68	-93.25	44.41	103.28	0.00	0.00	0.00
5,600.00	1.47	154.53	5,598.64	-95.57	45.52	105.85	0.00	0.00	0.00
5,625.36	1.47	154.53	5,624.00	-96.15	45.80	106.50	0.00	0.00	0.00
Blinebry									
5,700.00	1.47	154.53	5,698.61	-97.88	46.62	108.42	0.00	0.00	0.00
5,800.00	1.47	154.53	5,798.58	-100.20	47.73	110.99	0.00	0.00	0.00
5,900.00	1.47	154.53	5,898.55	-102.52	48.83	113.56	0.00	0.00	0.00
6,000.00	1.47	154.53	5,998.51	-104.84	49.94	116.13	0.00	0.00	0.00
6,088.52	1.47	154.53	6,087.00	-106.89	50.91	118.40	0.00	0.00	0.00
Tubb									
6,100.00	1.47	154.53	6,098.48	-107.16	51.04	118.69	0.00	0.00	0.00
6,200.00	1.47	154.53	6,198.45	-109.48	52.15	121.26	0.00	0.00	0.00
6,300.00	1.47	154.53	6,298.41	-111.80	53.25	123.83	0.00	0.00	0.00
6,400.00	1.47	154.53	6,398.38	-114.12	54.35	126.40	0.00	0.00	0.00
6,500.00	1.47	154.53	6,498.35	-116.44	55.46	128.97	0.00	0.00	0.00
6,542.67	1.47	154.53	6,541.00	-117.43	55.93	130.06	0.00	0.00	0.00
Drinkard									
6,600.00	1.47	154.53	6,598.31	-118.75	56.56	131.54	0.00	0.00	0.00
6,700.00	1.47	154.53	6,698.28	-121.07	57.67	134.11	0.00	0.00	0.00
6,800.00	1.47	154.53	6,798.25	-123.39	58.77	136.67	0.00	0.00	0.00
6,841.77	1.47	154.53	6,840.00	-124.36	59.23	137.75	0.00	0.00	0.00
Abo									
6,900.00	1.47	154.53	6,898.22	-125.71	59.88	139.24	0.00	0.00	0.00
7,000.00	1.47	154.53	6,998.18	-128.03	60.98	141.81	0.00	0.00	0.00
7,051.83	1.47	154.53	7,050.00	-129.23	61.55	143.14	0.00	0.00	0.00
TD at 7051.83 - PBHL-NEDU #355									

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL-NEDU #355	0.00	0.00	7,050.00	-129.23	61.55	549,116.94	907,936.36	32° 30' 14.2670 N	103° 8' 39.1084 W
- plan hits target center									
- Circle (radius 25.00)									



Phoenix Technology Services
Planning Report



Database:	GCR DB	Local Co-ordinate Reference:	Well #355
Company:	Apache Corporation	TVD Reference:	KB @ 3473.00usft
Project:	Lea County, NM (NAD 83 NME)	MD Reference:	KB @ 3473.00usft
Site:	Northeast Drinkard Unit	North Reference:	Grid
Well:	#355	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1 / Job# 1310141		
Design:	Plan #1 01-29-13		

Casing Points				
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,342.00	1,342.00	8 5/8"	8-5/8	12-1/4

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,318.00	1,318.00	Rustler			
1,365.00	1,365.00	T. Salt			
2,469.32	2,469.00	Tansil			
2,608.37	2,608.00	Yates			
2,864.45	2,864.00	Seven Rivers			
3,434.64	3,434.00	Queen			
3,771.75	3,771.00	Grayburg			
4,076.85	4,076.00	San Andres			
5,231.23	5,230.00	Glorieta			
5,295.26	5,294.00	Paddock			
5,625.36	5,624.00	Blaine			
6,088.52	6,087.00	Tubb			
6,542.67	6,541.00	Drinkard			
6,841.77	6,840.00	Abo			

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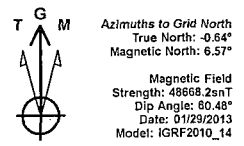
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Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,442.00	1,442.00	0.00	0.00	KOP Start DLS 2.00 TFO 154.53
1,515.59	1,515.58	-0.85	0.41	Start 5536.24 hold at 1515.59 MD
7,051.83	7,050.00	-129.23	61.55	TD at 7051.83



Project: Lea County, NM (NAD 83 NME)
Site: Northeast Drinkard Unit
Well: #355
Wellbore: Wellbore #1 / Job# 1310141
Design: Plan #1 01-29-13



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WELL DETAILS									
				Ground Level:	3462.00	Latitude	Longitude		
+N-S	+E-W	Northing		Easting		32° 30' 15.5523 N	103° 8' 39.8102 W		
0.00	0.00	549246.17		907874.81					

SECTION DETAILS									
Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	VSec
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1442.00	0.00	0.00	1442.00	0.00	0.00	0.00	0.00	0.00
3	1515.59	1.47	154.53	1515.59	-0.85	0.41	2.09	154.53	0.85
4	7051.83	1.47	154.53	7050.00	-129.23	61.55	0.00	0.00	143.14

DESIGN TARGET DETAILS									
Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude	Shape	
PBHL-NEDU #355	7050.00	-129.23	61.55	549116.94	907936.38	32° 30' 14.2670 N	103° 8' 39.1084 W	Circle (Radius: 25.00)	

SITE DETAILS: Northeast Drinkard Unit
Site Centre Northing: 549246.17
Easting: 907874.81
Positional Uncertainty: 0.00
Convergence: 0.64
Local North: Grid

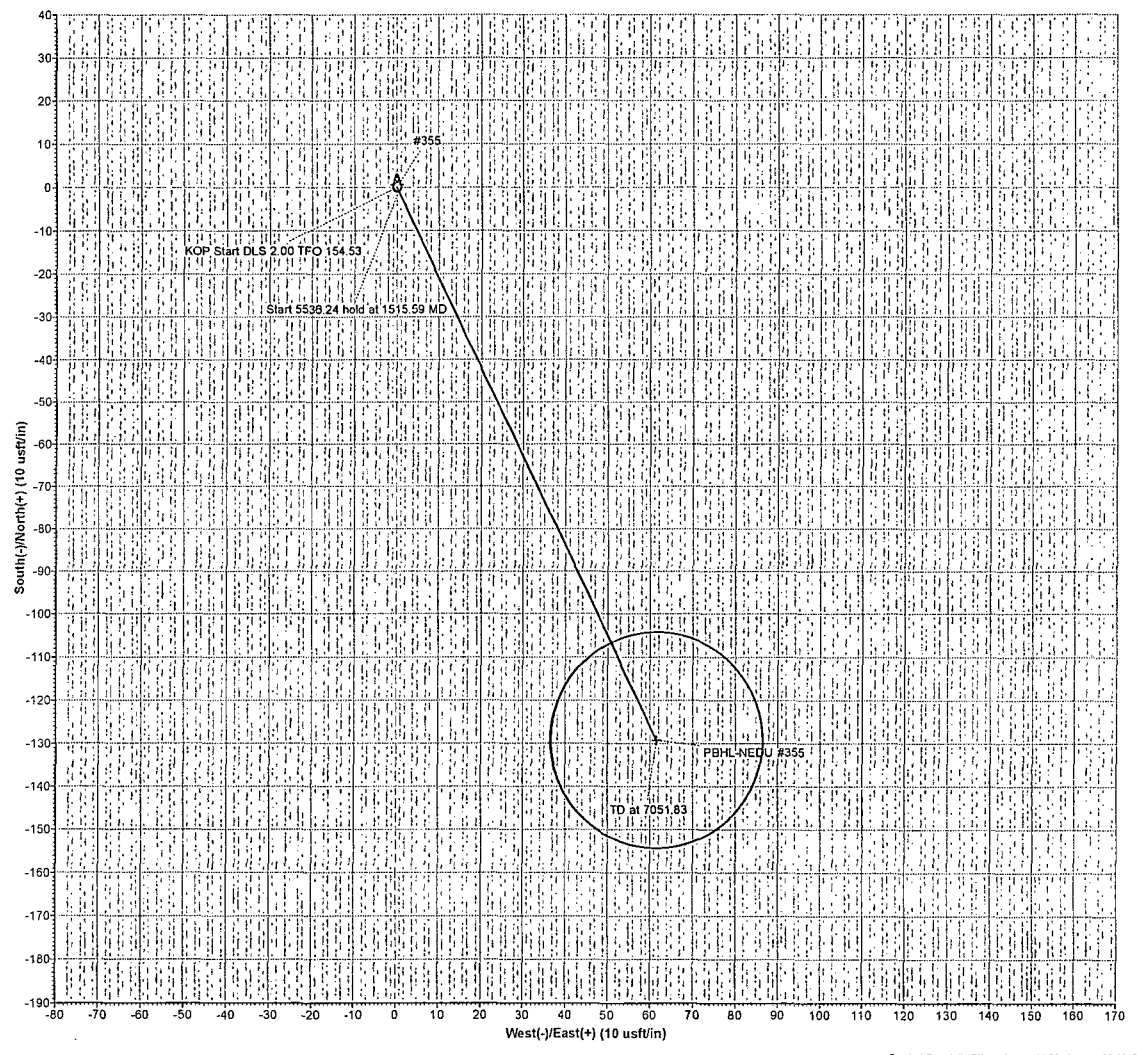
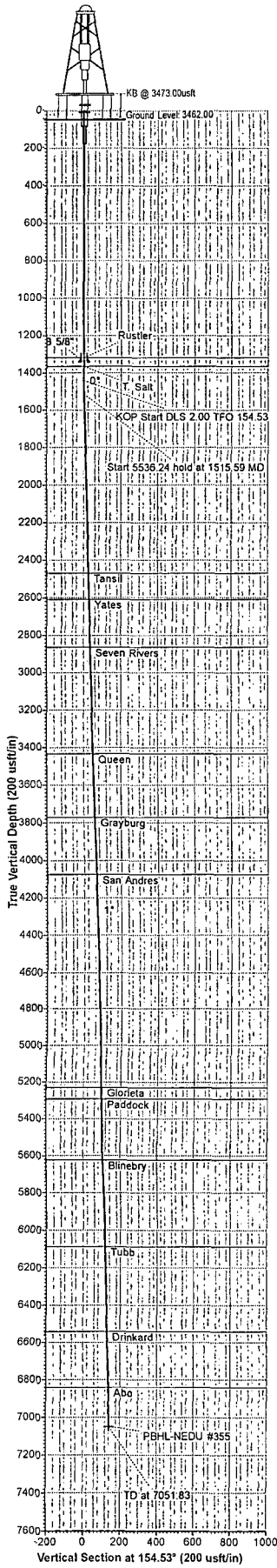
PROJECT DETAILS: Lea County, NM (NAD 83 NME)
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level

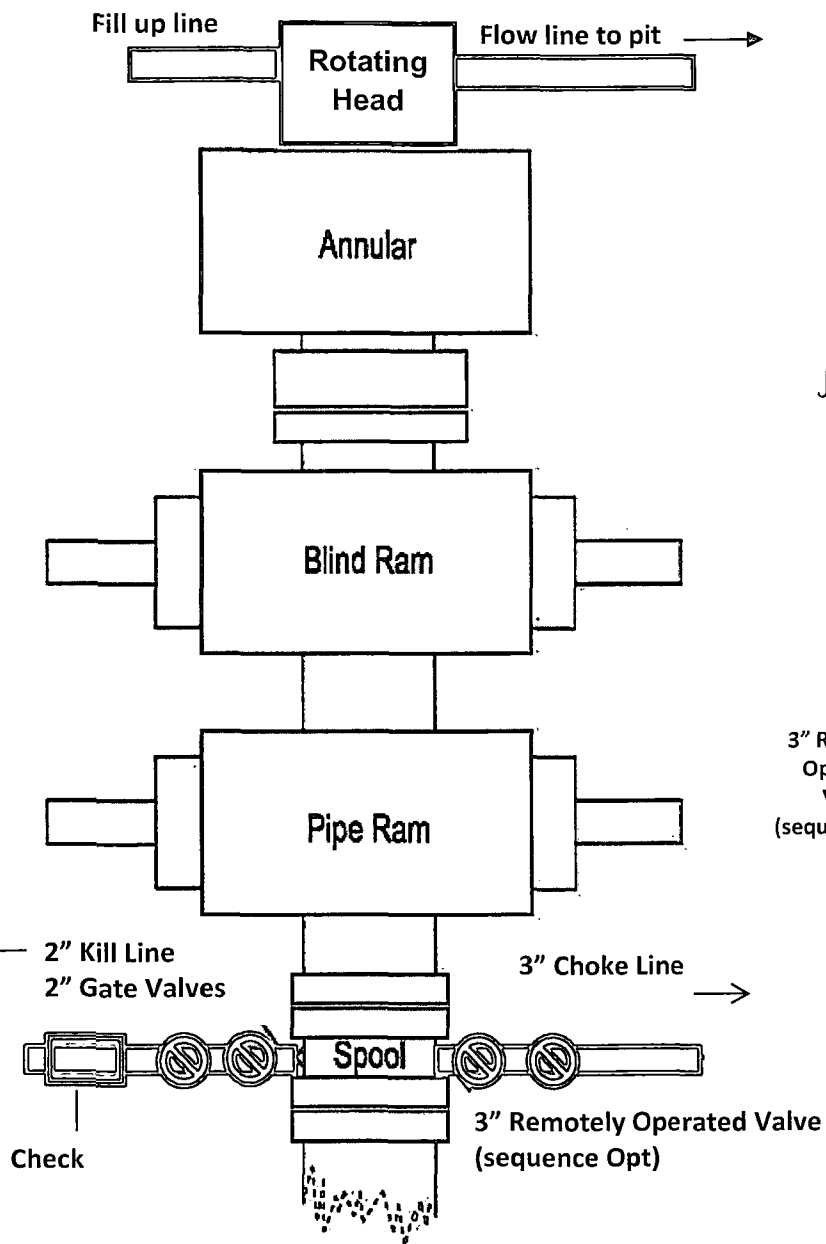
CASING DETAILS			
TVD	MD	Name	Size
1342.00	1342.00	8 5/8"	8 5/8"

Map System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone Name: New Mexico Eastern Zone
Local Origin: Well #355, Grid North
Latitude: 32° 30' 15.5523 N
Longitude: 103° 8' 39.8102 W
Grid East: 907874.81
Grid North: 549246.17
Scale Factor: 1.000
Geomagnetic Model: IGRF2010_14
Sample Date: 29-Jan-13
Magnetic Declination: 7.20°
Dip Angle from Horizontal: 60.48°
Magnetic Field Strength: 48668
To convert a Magnetic Direction to a Grid Direction, Add 6.57°
To convert a Magnetic Direction to a True Direction, Add 7.20° East
To convert a True Direction to a Grid Direction, Subtract 0.64°

FORMATION TOP DETAILS				
TVDPath	MDPath	Formation	DipAngle	DipDir
1318.00	1318.00	Rustler		
1365.00	1365.00	T. Salt		
2469.00	2469.32	Tansil		
2608.00	2608.37	Yates		
2884.00	2884.45	Seven Rivers		
3434.00	3434.64	Queen		
3771.00	3771.75	Grayburg		
4076.00	4076.85	San Andres		
5230.00	5231.23	Glorieta		
5294.00	5295.26	Paddock		
5624.00	5625.36	Blinberry		
6087.00	6088.52	Tubb		
6541.00	6542.87	Drinkard		
6840.00	6841.77	Abo		

LEGEND
— Plan #1 01-29-13





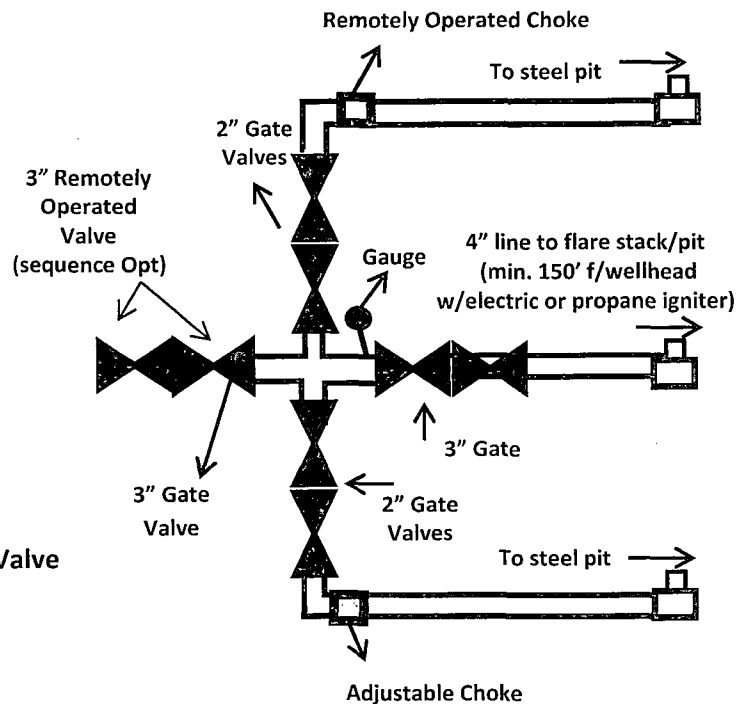
**11" 3M psi
BOPE & Choke Manifold
EXHIBIT 3A**

All valve & lines on choke manifold are 2" unless noted.
Exact manifold configuration may vary

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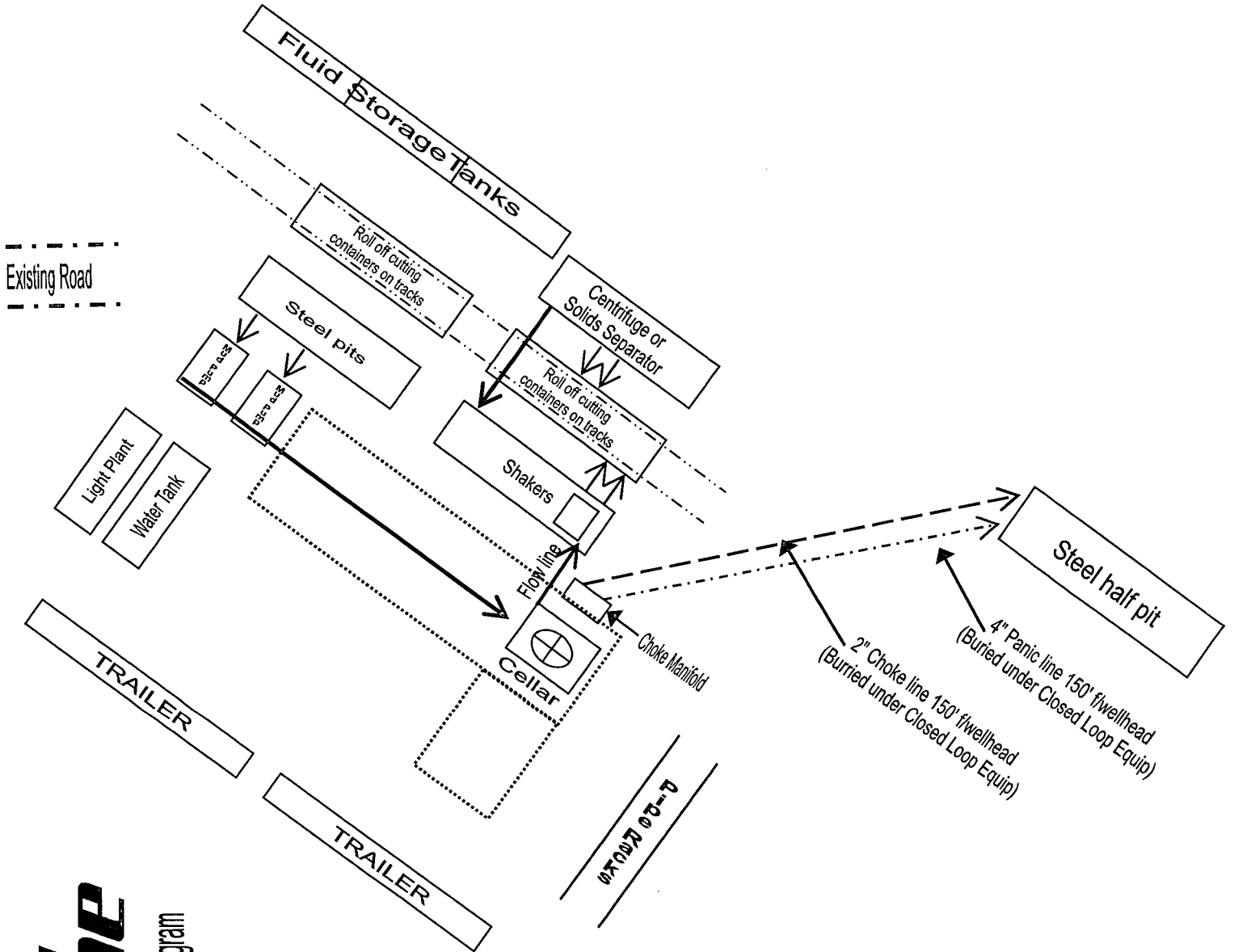


All bleed lines to pit
minimum 2"

10233000

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Closed Loop Equipment Diagram

Exhibit 4

Northeast Drinkard Unit #355