

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTNMOCD
HobbsFORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018**SUNDRY NOTICES AND REPORTS ON WELLS**
*Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.*5. Lease Serial No.
NMNM0897

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

8. Well Name and No.
BLACK & TAN 27 FEDERAL COM 308H9. API Well No.
30-025-4404510. Field and Pool or Exploratory Area
LEA, BONESPRING, S11. County or Parish, State
LEA COUNTY, NM**SUBMIT IN TRIPLICATE - Other instructions on page 2**

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other2. Name of Operator
APACHE CORPORATIONContact: SORINA FLORES
E-Mail: sorina.flores@apachecorp.com3a. Address
303 VETERANS AIRPARK LN #1000
MIDLAND, TX 797053b. Phone No. (include area code)
Ph: 432-818-1167

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

Sec 27 T20S R34E Mer NMP SESE 215FSL 742FEL
32.537436 N Lat, 103.541906 W Lon**12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA**

TYPE OF SUBMISSION

TYPE OF ACTION

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

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

BLM-CO-1463 NMB-000736 NATIONWIDE

1/30/18: Spud 17-1/2" surf hole, drlg f/106-227'.

1/31-2/2/18: Drlg f/227-1735' TD, notify BLM (Pat) of csg/cmt job, RU Byrd csg, run 13-3/8" 54.5# J-55 BTC to TD, FC @ 1690', RU Par 5, cmt w/LEAD: 800sx Cl C w/4% bentonite, 0.4#/sx defoamer, 0.3% retarder (1.72yld, 13.5ppg) TAIL: 300sx Cl C (1.32yld, 14.8ppg), Circ 235sx to surf (Pat w/BLM witnessed cmt to surf), WOC 24hrs (notify Pat w/BLM prior to test), test BOP, test csg 1500psi/30min-OK, TIH, drlg 12-1/4" Interm hole f/1735-2956'.

2/3-2/5/18: Drlg f/2956-3002', TOH, PU BHA #2, TIH, drlg f/3002-4535', TOH due to low ROP, PU new 12-1/4" bit, TIH, drlg f/4535-5691' TD.

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

Electronic Submission #407555 verified by the BLM Well Information System
For APACHE CORPORATION, sent to the Hobbs
Committed to AFMSS for processing by JENNIFER SANCHEZ on 03/14/2018 ()

Name (Printed/Typed) SORINA FLORES

Title SUBMITTING CONTACT

Signature (Electronic Submission)

Date 03/13/2018

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By

Title

Date

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.

(Instructions on page 2)

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

HOBBS OCD

MAR 22 2018

RECEIVED

ACCEPTED FOR RECORD

BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

Additional data for EC transaction #407555 that would not fit on the form

32. Additional remarks, continued

2/6-2/8/18: TOH, RU Byrd csg, run 9-5/8" csg 40# J55 LTC to TD, FC @ 5644', ECP @ 3440', DVT @ 3437', XO @ 987', RD csg, RU Par 5, cmt 1st stage LEAD: 500sx CI C PozBlend w/6% gel, 5% CaCl₂, 0.6% retarder (1.89yld, 12.9ppg) TAIL: 300sx CI C w/0.3% retarder (1.33yld, 14.8ppg), full returns after 1st stage, drop DV bomb, open DV, circ 92bbls off of DVT, cmt 2nd Stage LEAD: 1650sx CI C PozBlend w/6% gel, 5% CaCl₂, 0.5% retarder (1.89yld, 12.9ppg) TAIL: 200sx CI C w/0.15% low temp retarder (1.33yld, 14.8ppg) circ 1185sx to surf (Paul w/BLM notified of 2nd stage to witness cmt to surf, ok to proceed w/out him), WOC 24hrs. Notify Paul w/ BLM of BOP test, ok to proceed w/o him, test csg above DVT 1500psi/10 min-OK, TIH w/8-3/4" drill out assembly to 3425', tag cmt @ 3425', drill out cmt & DVT, test cst 1500psi/30min-OK, TIH w/drill out assembly to 5625', no issues, drill out cmt & FC, FC f/5625-5691'.

2/9-2/12/18: Drlg 8-3/4" prod hole f/5691-8692', trouble shoot MWD, drlg f/8692-9733', TOH due to low ROP, LD MWD, PU new MWD, TIH, drlg f/9733-10012'.

2/13-2/15/18: Drlg f/10012-10583', downlink MWD, drop gyro, TOH to PU curve BHA, PU 8-3/4" curve assembly, TIH, drlg f/10583-10965', work stuck pipe @ 10965', free point & back off @ 10806', TOH, LD shot jt.

2/16-2/17/18: MU fishing assembly, TIH to TOF, latch, jar 5 times to free, TOH w/fish, MU new curve assembly, TIH, trouble shoot MWD, TOH for MWD failure, chg out velocity tool, TIH, drlg f/10965-11002'.

2/18-2/19/18: Drlg f/11002-11388', circ, TOH for lateral assembly, TIH w/8-1/2" lateral assembly, drlg 8-1/2" lateral f/11388-11595'.

2/20-2/23/18: Drlg f/11595-15698' TD, circ, TOH f/logging tools, LD BHA, MU logging tools, TIH to 15668 w/logging tools (notify Steve @ BLM of upcoming csg/cmt on 2/23/18)

2/24/18: LDDP, LD logging BHA, RU CRT/Byrd csg, run 5-1/2" 17# CYP-110 GBDC csg to 15698', FC @ 15646', MJ @ 14598', MJ @ 10530', XO @ 10553' (notify Steve @ BLM of upcoming cmt job)

BLACK & TAN 27 FED COM 308H – PART 2 END OF WELL SUMMARY

2/25-2/26/18: RU Par 5, cmt LEAD w/1300sx PozH w/5% salt, 10% gel, 0.2% anti-settling, 0.35% high temp retarder, 0.4#/sk defoamer (2.45yld, 11.9ppg) TAIL: 1200sx PVL w/1.3% salt, 5% expanding agent, 0.5% fluid loss, 0.35% high temp retarder, 0.1% anti-settling, 0.2% dispersant, 0.4#/sk defoamer (1.42yld, 13.2ppg), Circ 190sx cmt to pit, ✓ WOC, ND BOP, continue WOC 12 hrs per BLM, RR 2/26/18.



PHOENIX
TECHNOLOGY SERVICES

Apache Corporation

**Lea County, NM (NAD83 NME)
Black & Tan 27 Federal Com
308H**

OH / Job# 62300

Design: Surveys (H&P 482)

Standard Survey Report

23 February, 2018

Apache
EXPLORING WHAT'S POSSIBLE

Company:	Apache Corporation	Local Co-ordinate Reference:	Well 308H
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	GL + KB @ 3742.00usft (H&P 482)
Site:	Black & Tan 27 Federal Com	MD Reference:	GL + KB @ 3742.00usft (H&P 482)
Well:	308H	North Reference:	Grid
Wellbore:	OH / Job# 62300	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (H&P 482)	Database:	USA Compass

Project	Lea County, NM (NAD83 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	Black & Tan 27 Federal Com				
Site Position:		Northing:	560,131.70 usft	Latitude:	32° 32' 14.81280 N
From:	Map	Easting:	781,352.90 usft	Longitude:	103° 33' 16.17520 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.42 °

Well	308H					
Well Position	+N/-S	0.00 usft	Northing:	560,156.20 usft	Latitude:	32° 32' 14.77232 N
	+E/-W	0.00 usft	Easting:	785,232.00 usft	Longitude:	103° 32' 30.86169 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,716.00 usft

Wellbore	OH / Job# 62300				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	2/12/2018	6.77	60.50	48,274.70000000

Design	Surveys (H&P 482)				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	3.88	

Survey Program	Date 2/23/2018				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
64.50	10,465.00	VES Gyro Surveys (OH / Job# 62300)	NS-GYRO-MS	North sensing gyrocompassing m/s	
10,465.00	15,698.00	Phoenix MWD Surveys (OH / Job# 62300)	MWD+HDGM	OWSG Rev.2 MWD + HDGM	

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	
64.50	0.28	353.70	64.50	0.16	-0.02	0.16	0.43	0.43	0.00	
159.05	0.41	12.32	159.05	0.72	0.03	0.72	0.18	0.14	19.69	
253.60	0.39	355.42	253.60	1.37	0.08	1.37	0.13	-0.02	-17.87	
348.15	0.24	337.81	348.14	1.87	-0.02	1.87	0.19	-0.16	-18.63	
442.70	0.20	140.17	442.69	1.93	0.01	1.92	0.46	-0.04	171.72	
537.25	0.25	141.19	537.24	1.64	0.24	1.65	0.05	0.05	1.08	
631.80	0.30	146.41	631.79	1.27	0.51	1.31	0.06	0.05	5.52	
726.35	0.31	150.16	726.34	0.85	0.77	0.90	0.02	0.01	3.97	
820.90	0.27	149.09	820.89	0.43	1.01	0.50	0.04	-0.04	-1.13	

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Site:	Black & Tan 27 Federal Com	MD Reference:	GL + KB @ 3742.00usft (H&P 482)
Well:	308H	North Reference:	Grid
Wellbore:	OH / Job# 62300	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (H&P 482)	Database:	USA Compass

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)
915.45	0.25	161.39	915.44	0.05	1.19	0.13	0.06	-0.02	13.01
1,010.00	0.23	179.38	1,009.99	-0.34	1.26	-0.25	0.08	-0.02	19.03
1,104.55	0.23	175.23	1,104.54	-0.72	1.28	-0.63	0.02	0.00	-4.39
1,199.10	0.26	177.14	1,199.09	-1.12	1.31	-1.03	0.03	0.03	2.02
1,293.65	0.31	221.99	1,293.64	-1.53	1.15	-1.44	0.24	0.05	47.44
1,388.20	0.29	191.45	1,388.18	-1.95	0.93	-1.88	0.17	-0.02	-32.30
1,482.75	0.32	174.19	1,482.73	-2.45	0.91	-2.38	0.10	0.03	-18.25
1,577.30	0.21	178.43	1,577.28	-2.88	0.94	-2.81	0.12	-0.12	4.48
1,671.85	0.04	28.66	1,671.83	-3.03	0.96	-2.96	0.26	-0.18	-158.40
1,766.40	0.43	85.06	1,766.38	-2.97	1.33	-2.87	0.43	0.41	59.65
1,860.95	0.37	66.18	1,860.93	-2.81	1.96	-2.67	0.15	-0.06	-19.97
1,955.50	0.42	76.38	1,955.48	-2.61	2.58	-2.43	0.09	0.05	10.79
2,050.05	0.39	67.83	2,050.02	-2.41	3.21	-2.18	0.07	-0.03	-9.04
2,144.60	0.33	50.67	2,144.57	-2.11	3.72	-1.86	0.13	-0.06	-18.15
2,239.15	0.34	32.74	2,239.12	-1.70	4.08	-1.42	0.11	0.01	-18.96
2,333.70	0.39	49.38	2,333.67	-1.26	4.48	-0.95	0.12	0.05	17.60
2,428.25	0.40	27.12	2,428.22	-0.75	4.87	-0.42	0.16	0.01	-23.54
2,522.80	0.47	8.53	2,522.76	-0.08	5.08	0.27	0.17	0.07	-19.66
2,617.35	0.71	52.43	2,617.31	0.66	5.60	1.04	0.52	0.25	46.43
2,711.90	0.95	54.85	2,711.85	1.47	6.71	1.92	0.26	0.25	2.56
2,806.45	1.92	59.64	2,806.37	2.72	8.72	3.31	1.03	1.03	5.07
2,901.00	3.03	61.74	2,900.83	4.71	12.28	5.53	1.18	1.17	2.22
2,995.55	4.17	54.87	2,995.19	7.87	17.30	9.02	1.29	1.21	-7.27
3,090.10	2.71	58.12	3,089.57	11.03	22.01	12.49	1.56	-1.54	3.44
3,184.65	2.34	99.52	3,184.03	11.89	25.81	13.61	1.92	-0.39	43.79
3,279.20	2.27	126.55	3,278.51	10.45	29.22	12.41	1.14	-0.07	28.59
3,373.75	1.71	164.36	3,373.01	7.98	31.10	10.07	1.47	-0.59	39.99
3,468.30	1.82	174.22	3,467.51	5.13	31.63	7.26	0.34	0.12	10.43
3,562.85	1.83	166.25	3,562.01	2.17	32.14	4.34	0.27	0.01	-8.43
3,657.40	2.10	167.10	3,656.51	-0.99	32.89	1.24	0.29	0.29	0.90
3,751.95	2.17	170.50	3,750.99	-4.44	33.57	-2.16	0.15	0.07	3.60
3,846.50	2.07	166.27	3,845.48	-7.87	34.27	-5.53	0.20	-0.11	-4.47
3,941.05	0.93	166.78	3,939.99	-10.27	34.85	-7.89	1.21	-1.21	0.54
4,035.60	1.13	159.31	4,034.53	-11.89	35.36	-9.47	0.25	0.21	-7.90
4,130.15	1.19	146.57	4,129.06	-13.58	36.23	-11.10	0.28	0.06	-13.47
4,224.70	1.19	161.43	4,223.59	-15.33	37.08	-12.79	0.33	0.00	15.72
4,319.25	1.22	144.32	4,318.12	-17.08	37.98	-14.47	0.38	0.03	-18.10
4,413.80	1.20	133.98	4,412.65	-18.59	39.28	-15.88	0.23	-0.02	-10.94
4,508.35	1.22	133.37	4,507.18	-19.96	40.72	-17.16	0.03	0.02	-0.65
4,602.90	0.51	170.10	4,601.72	-21.07	41.53	-18.21	0.92	-0.75	38.85
4,697.45	0.08	80.20	4,696.26	-21.47	41.66	-18.60	0.55	-0.45	-95.08
4,792.00	0.26	111.40	4,790.81	-21.54	41.93	-18.65	0.21	0.19	33.00
4,886.55	0.34	78.02	4,885.36	-21.56	42.40	-18.64	0.20	0.08	-35.30

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Well:	308H	North Reference:	Grid
Wellbore:	OH / Job# 62300	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (H&P 482)	Database:	USA Compass

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)	
4,981.10	0.35	93.64	4,979.91	-21.52	42.97	-18.56	0.10	0.01	16.52	
5,075.65	0.44	125.75	5,074.46	-21.75	43.55	-18.75	0.25	0.10	33.96	
5,170.20	0.61	141.94	5,169.01	-22.36	44.15	-19.32	0.24	0.18	17.12	
5,264.75	0.76	144.28	5,263.55	-23.26	44.83	-20.18	0.16	0.16	2.47	
5,359.30	0.75	131.89	5,358.09	-24.19	45.66	-21.04	0.17	-0.01	-13.10	
5,453.85	0.78	131.44	5,452.63	-25.03	46.60	-21.82	0.03	0.03	-0.48	
5,548.40	0.81	133.76	5,547.17	-25.91	47.57	-22.64	0.05	0.03	2.45	
5,642.95	0.74	135.10	5,641.71	-26.81	48.48	-23.47	0.08	-0.07	1.42	
5,737.50	0.75	133.76	5,736.26	-27.67	49.36	-24.27	0.02	0.01	-1.42	
5,832.05	0.66	129.55	5,830.80	-28.44	50.22	-24.98	0.11	-0.10	-4.45	
5,926.60	1.54	111.07	5,925.33	-29.25	51.83	-25.67	0.99	0.93	-19.55	
6,021.15	1.39	104.51	6,019.85	-29.99	54.13	-26.26	0.24	-0.16	-6.94	
6,115.70	1.32	100.26	6,114.37	-30.47	56.31	-26.59	0.13	-0.07	-4.49	
6,210.25	1.27	104.87	6,208.90	-30.94	58.39	-26.91	0.12	-0.05	4.88	
6,304.80	1.31	102.25	6,303.43	-31.43	60.46	-27.27	0.08	0.04	-2.77	
6,399.35	2.56	79.65	6,397.92	-31.28	63.59	-26.91	1.52	1.32	-23.90	
6,493.90	3.81	89.00	6,492.32	-30.85	68.81	-26.12	1.43	1.32	9.89	
6,588.45	3.39	82.34	6,586.69	-30.42	74.72	-25.30	0.63	-0.44	-7.04	
6,683.00	3.27	96.53	6,681.08	-30.36	80.17	-24.86	0.88	-0.13	15.01	
6,777.55	4.10	90.66	6,775.43	-30.70	86.23	-24.80	0.96	0.88	-6.21	
6,872.10	3.77	90.23	6,869.76	-30.75	92.72	-24.41	0.35	-0.35	-0.45	
6,966.65	3.84	80.03	6,964.10	-30.22	98.95	-23.45	0.72	0.07	-10.79	
7,061.20	4.80	92.31	7,058.39	-29.83	106.02	-22.59	1.40	1.02	12.99	
7,155.75	4.29	83.92	7,152.64	-29.61	113.49	-21.87	0.88	-0.54	-8.87	
7,250.30	3.86	89.00	7,246.95	-29.18	120.19	-20.98	0.59	-0.45	5.37	
7,344.85	3.56	88.00	7,341.30	-29.03	126.30	-20.41	0.32	-0.32	-1.06	
7,439.40	3.54	80.02	7,435.67	-28.42	132.11	-19.41	0.52	-0.02	-8.44	
7,533.95	4.41	84.20	7,529.99	-27.54	138.60	-18.10	0.97	0.92	4.42	
7,628.50	4.06	82.39	7,624.28	-26.73	145.54	-16.82	0.40	-0.37	-1.91	
7,723.05	4.02	92.44	7,718.60	-26.43	152.17	-16.07	0.75	-0.04	10.63	
7,817.60	3.68	84.94	7,812.94	-26.30	158.50	-15.52	0.64	-0.36	-7.93	
7,912.15	3.52	87.99	7,907.30	-25.94	164.42	-14.75	0.26	-0.17	3.23	
8,006.70	3.82	97.66	8,001.66	-26.25	170.44	-14.66	0.73	0.32	10.23	
8,101.25	3.85	95.21	8,096.00	-26.96	176.73	-14.94	0.18	0.03	-2.59	
8,195.80	3.80	98.23	8,190.34	-27.70	182.99	-15.25	0.22	-0.05	3.19	
8,290.35	3.72	94.39	8,284.68	-28.38	189.15	-15.52	0.28	-0.08	-4.06	
8,384.90	3.82	99.81	8,379.03	-29.15	195.31	-15.87	0.39	0.11	5.73	
8,479.45	3.69	99.71	8,473.38	-30.20	201.41	-16.50	0.14	-0.14	-0.11	
8,574.00	3.61	96.38	8,567.73	-31.05	207.37	-16.94	0.24	-0.08	-3.52	
8,668.55	3.56	94.26	8,662.10	-31.60	213.26	-17.09	0.15	-0.05	-2.24	
8,763.10	3.45	90.78	8,756.47	-31.85	219.03	-16.96	0.25	-0.12	-3.68	
8,857.65	4.07	84.98	8,850.82	-31.60	225.21	-16.29	0.77	0.66	-6.13	
8,952.20	3.56	83.93	8,945.16	-30.99	231.48	-15.26	0.54	-0.54	-1.11	

Company:	Apache Corporation	Local Co-ordinate Reference:	Well 308H
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	GL + KB @ 3742.00usft (H&P 482)
Site:	Black & Tan 27 Federal Com	MD Reference:	GL + KB @ 3742.00usft (H&P 482)
Well:	308H	North Reference:	Grid
Wellbore:	OH / Job# 62300	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (H&P 482)	Database:	USA Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,046.75	3.52	86.97	9,039.53	-30.53	237.29	-14.40	0.20	-0.04	3.22
9,141.30	3.26	96.65	9,133.91	-30.69	242.86	-14.18	0.66	-0.27	10.24
9,235.85	3.63	83.53	9,228.29	-30.66	248.51	-13.78	0.92	0.39	-13.88
9,330.40	4.19	93.71	9,322.62	-30.55	254.93	-13.23	0.94	0.59	10.77
9,424.95	3.55	92.95	9,416.96	-30.92	261.30	-13.17	0.68	-0.68	-0.80
9,519.50	3.37	95.42	9,511.34	-31.33	266.99	-13.20	0.25	-0.19	2.61
9,614.05	3.73	81.44	9,605.71	-31.14	272.80	-12.61	0.99	0.38	-14.79
9,708.60	3.64	75.89	9,700.06	-29.95	278.75	-11.02	0.39	-0.10	-5.87
9,803.15	4.09	87.86	9,794.40	-29.09	285.03	-9.74	0.97	0.48	12.66
9,897.70	4.22	86.09	9,888.70	-28.73	291.87	-8.91	0.19	0.14	-1.87
9,992.25	3.03	88.37	9,983.06	-28.42	297.84	-8.20	1.27	-1.26	2.41
10,086.80	3.03	92.53	10,077.48	-28.46	302.83	-7.90	0.23	0.00	4.40
10,181.35	2.62	55.08	10,171.92	-27.33	307.10	-6.49	1.96	-0.43	-39.61
10,275.90	2.75	28.32	10,266.37	-24.10	309.95	-3.07	1.32	0.14	-28.30
10,370.45	3.17	17.62	10,360.79	-19.61	311.82	1.53	0.73	0.44	-11.32
10,465.00	3.29	13.19	10,455.19	-14.48	313.23	6.75	0.29	0.13	-4.69
Tie In									
10,580.00	3.08	6.46	10,570.02	-8.20	314.33	13.09	0.37	-0.18	-5.85
First Phoenix MWD Survey									
10,627.00	4.08	1.49	10,616.92	-5.27	314.51	16.03	2.23	2.13	-10.57
10,674.00	8.38	3.80	10,663.63	-0.18	314.78	21.12	9.16	9.15	4.91
10,721.00	13.48	351.92	10,709.77	8.67	314.24	29.91	11.81	10.85	-25.28
10,768.00	18.53	353.71	10,754.94	21.53	312.65	42.63	10.79	10.74	3.81
10,816.00	23.42	350.93	10,799.74	38.54	310.31	59.45	10.39	10.19	-5.79
10,863.00	28.02	348.85	10,842.08	58.60	306.70	79.22	9.97	9.79	-4.43
10,911.00	31.00	347.48	10,883.84	81.74	301.84	101.98	6.37	6.21	-2.85
10,958.00	35.00	349.20	10,923.26	106.80	296.69	126.64	8.74	8.51	3.66
10,968.50	36.27	349.79	10,931.79	112.82	295.57	132.56	12.54	12.10	5.63
HL: 10968' MD, Inc 36.27°, Azm 349.79°									
11,006.00	40.83	351.64	10,961.11	135.88	291.82	155.31	12.54	12.16	4.93
11,052.00	46.79	356.45	10,994.30	167.52	288.59	186.67	14.83	12.96	10.46
11,100.00	51.60	2.74	11,025.68	203.81	288.41	222.86	14.09	10.02	13.10
11,147.00	58.44	5.05	11,052.61	242.20	291.06	261.34	15.10	14.55	4.91
11,195.00	65.34	6.55	11,075.21	284.30	295.35	303.63	14.64	14.38	3.13
11,242.00	72.05	6.70	11,092.28	327.77	300.40	347.34	14.28	14.28	0.32
11,289.00	77.42	6.67	11,104.65	372.78	305.68	392.61	11.43	11.43	-0.06
11,336.00	82.93	6.75	11,112.66	418.76	311.09	438.85	11.72	11.72	0.17
11,364.00	85.70	6.21	11,115.44	446.44	314.23	466.68	10.08	9.89	-1.93
11,411.00	88.52	5.86	11,117.81	493.12	319.16	513.58	6.05	6.00	-0.74
11,506.00	88.59	6.01	11,120.20	587.58	328.98	608.49	0.17	0.07	0.16
11,601.00	88.10	5.99	11,122.95	682.02	338.91	703.39	0.52	-0.52	-0.02
11,695.00	87.13	4.15	11,126.86	775.56	347.21	797.28	2.21	-1.03	-1.96
11,790.00	85.57	1.61	11,132.91	870.24	351.97	892.06	3.13	-1.64	-2.67
11,885.00	84.87	1.11	11,140.82	964.88	354.22	986.64	0.90	-0.74	-0.53

Company:	Apache Corporation	Local Co-ordinate Reference:	Well 308H
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	GL + KB @ 3742.00usft (H&P 482)
Site:	Black & Tan 27 Federal Com	MD Reference:	GL + KB @ 3742.00usft (H&P 482)
Well:	308H	North Reference:	Grid
Wellbore:	OH / Job# 62300	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (H&P 482)	Database:	USA Compass

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)
11,979.00	85.02	359.23	11,149.11	1,058.51	354.50	1,080.07	2.00	0.16	-2.00
12,074.00	86.36	358.03	11,156.25	1,153.21	352.23	1,174.40	1.89	1.41	-1.26
12,168.00	88.16	358.15	11,160.74	1,247.05	349.10	1,267.81	1.92	1.91	0.13
12,263.00	90.84	359.22	11,161.57	1,342.01	346.92	1,362.41	3.04	2.82	1.13
12,358.00	91.39	359.09	11,159.72	1,436.98	345.52	1,457.07	0.59	0.58	-0.14
12,452.00	91.44	358.63	11,157.40	1,530.93	343.65	1,550.68	0.49	0.05	-0.49
12,547.00	90.53	359.76	11,155.76	1,625.91	342.32	1,645.34	1.53	-0.96	1.19
12,642.00	89.36	359.92	11,155.86	1,720.91	342.05	1,740.11	1.24	-1.23	0.17
12,736.00	90.56	359.44	11,155.92	1,814.90	341.53	1,833.85	1.37	1.28	-0.51
12,831.00	89.88	359.00	11,155.56	1,909.89	340.24	1,928.54	0.85	-0.72	-0.46
12,925.00	91.30	359.09	11,154.59	2,003.87	338.67	2,022.20	1.51	1.51	0.10
13,020.00	91.72	358.95	11,152.09	2,098.82	337.05	2,116.82	0.47	0.44	-0.15
13,115.00	90.02	0.13	11,150.64	2,193.81	336.28	2,211.53	2.18	-1.79	1.24
13,209.00	87.32	1.53	11,152.82	2,287.76	337.64	2,305.36	3.24	-2.87	1.49
13,304.00	86.70	0.96	11,157.78	2,382.61	339.70	2,400.13	0.89	-0.65	-0.60
13,398.00	87.61	0.61	11,162.45	2,476.48	340.99	2,493.88	1.04	0.97	-0.37
13,493.00	87.61	0.18	11,166.41	2,571.40	341.65	2,588.62	0.45	0.00	-0.45
13,588.00	86.93	359.70	11,170.93	2,666.29	341.55	2,683.29	0.88	-0.72	-0.51
13,682.00	88.22	359.63	11,174.91	2,760.20	341.00	2,776.95	1.37	1.37	-0.07
13,777.00	88.21	358.96	11,177.87	2,855.15	339.83	2,871.60	0.70	-0.01	-0.71
13,871.00	87.72	358.33	11,181.21	2,949.06	337.61	2,965.14	0.85	-0.52	-0.67
13,966.00	87.44	357.94	11,185.22	3,043.92	334.52	3,059.58	0.51	-0.29	-0.41
14,060.00	88.12	358.38	11,188.86	3,137.80	331.50	3,153.04	0.86	0.72	0.47
14,155.00	89.36	359.31	11,190.95	3,232.76	329.59	3,247.65	1.63	1.31	0.98
14,250.00	90.76	0.41	11,190.85	3,327.75	329.36	3,342.41	1.87	1.47	1.16
14,344.00	92.81	0.06	11,187.92	3,421.70	329.74	3,436.17	2.21	2.18	-0.37
14,439.00	92.80	359.70	11,183.27	3,516.59	329.54	3,530.83	0.38	-0.01	-0.38
14,534.00	92.51	359.57	11,178.87	3,611.48	328.94	3,625.47	0.33	-0.31	-0.14
14,628.00	92.37	359.57	11,174.87	3,705.40	328.23	3,719.11	0.15	-0.15	0.00
14,723.00	92.13	359.40	11,171.14	3,800.32	327.38	3,813.76	0.31	-0.25	-0.18
14,818.00	92.03	359.48	11,167.69	3,895.25	326.45	3,908.41	0.13	-0.11	0.08
14,912.00	91.45	357.99	11,164.84	3,989.18	324.38	4,001.99	1.70	-0.62	-1.59
15,007.00	91.33	356.79	11,162.53	4,084.06	320.05	4,096.35	1.27	-0.13	-1.26
15,101.00	91.41	358.43	11,160.29	4,177.94	316.13	4,189.76	1.75	0.09	1.74
15,196.00	93.18	0.74	11,156.48	4,272.85	315.45	4,284.41	3.06	1.86	2.43
15,291.00	93.79	1.32	11,150.71	4,367.66	317.15	4,379.11	0.89	0.64	0.61
15,385.00	93.84	1.49	11,144.45	4,461.43	319.45	4,472.82	0.19	0.05	0.18
15,480.00	93.67	1.69	11,138.23	4,556.19	322.08	4,567.54	0.28	-0.18	0.21
15,575.00	93.36	1.88	11,132.41	4,650.96	325.03	4,662.29	0.38	-0.33	0.20
15,634.00	93.42	1.98	11,128.92	4,709.82	327.02	4,721.16	0.20	0.10	0.17
Final Phoenix MWD Survey									
15,666.00	93.42	1.98	11,127.01	4,741.75	328.12	4,753.08	0.00	0.00	0.00
HL: 15666' MD, Inc 93.42°, Azm 1.98°									
15,698.00	93.42	1.98	11,125.09	4,773.67	329.22	4,785.01	0.00	0.00	0.00

Company:	Apache Corporation	Local Co-ordinate Reference:	Well 308H
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	GL + KB @ 3742.00usft (H&P 482)
Site:	Black & Tan 27 Federal Com	MD Reference:	GL + KB @ 3742.00usft (H&P 482)
Well:	308H	North Reference:	Grid
Wellbore:	OH / Job# 62300	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (H&P 482)	Database:	USA Compass

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)
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PTD, 15698' MD, Inc 93.42°, Azm 1.98°

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
10,465.00	10,455.19	-14.48	313.23	Tie In
10,580.00	10,570.02	-8.20	314.33	First Phoenix MWD Survey
10,968.50	10,931.79	112.82	295.57	HL: 10968' MD, Inc 36.27°, Azm 349.79°
15,634.00	11,128.92	4,709.82	327.02	Final Phoenix MWD Survey
15,666.00	11,127.01	4,741.75	328.12	HL: 15666' MD, Inc 93.42°, Azm 1.98°
15,698.00	11,125.10	4,773.67	329.22	PTD, 15698' MD, Inc 93.42°, Azm 1.98°



Project: Lea County, NM (NAD83 NME)
 Site: Black & Tan 27 Federal Com
 Well: 308H
 Wellbore: OH / Job# 62300
 Design: Plan 5 02-14-18
 Rig: H&P 482

Map System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone Name: New Mexico Eastern Zone

Local Origin: Well 308H, Grid North

Latitude: 32° 32' 14.77232 N
 Longitude: 103° 32' 30.86169 W

Grid East: 785232.00
 Grid North: 560156.20
 Scale Factor: 1.000

Geomagnetic Model: HDGM
 Sample Date: 12-Feb-18
 Magnetic Declination: 6.77°
 Dip Angle from Horizontal: 60.50°
 Magnetic Field Strength: 48274.7000000nT

To convert a Magnetic Direction to a Grid Direction, Add 6.34°
 To convert a Magnetic Direction to a True Direction, Add 6.77° East
 To convert a True Direction to a Grid Direction, Subtract 0.43°

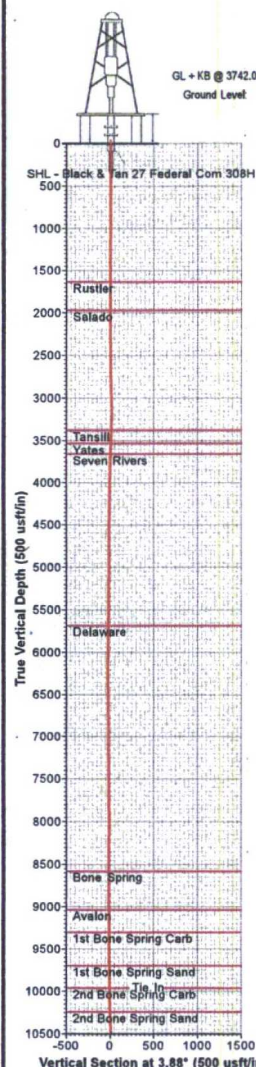
LEGEND

- 306H, OH, Plan 1 06-02-17 V0
- #2, OH, OH V0
- 203H, OH, Plan 1 09-05-17 V0
- 406H, OH, Plan 1 09-08-17 V0
- 308H, OH / Job# 62300, Surveys (H&P 482) V0
- 204H, OH, Plan 1 09-08-17 V0
- 503H, OH, Plan 1 09-05-17 V0
- 504H, OH, Plan 1 09-08-17 V0
- 307H, OH / Job #62211, Surveys (H&P 482) V0
- 405H, OH, Plan 1 09-05-17 V0
- 104H, OH, Plan 1 09-08-17 V0
- Plan 5 02-14-18

PHOENIX
 TECHNOLOGY SERVICES



Azimuths to Grid North
 True North: -0.43°
 Magnetic North: 6.34°
 Magnetic Field
 Strength: 48274.7000000nT
 Dip Angle: 60.50°
 Date: 2/12/2018
 Model: HDGM



WELL DETAILS									
	Ground Level		3716.00		Latitude		Longitude		
	+N-S	+E-W	North	East	32° 32'	103° 32'	14.77232 N	30.86169 W	
	0.00	0.00	560156.20	785232.00					

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Deg	TFace	VSet	Target	Annotation
1	10485.00	3.29	13.19	10485.19	-14.43	313.17	0.00	0.00	8.78		Tie In
2	10675.50	3.29	13.19	10685.35	-2.87	315.83	0.00	0.00	18.72		KOP, Begin 12.00°/100' Build & Turn
3	11380.62	87.86	3.77	11115.43	454.84	350.17	12.00	-4.46	477.59		LP, Hold 87.86 248 Inc, Begin 2.00°/100' Turn
4	11590.80	87.86	359.56	11123.28	684.84	356.28	2.00	-90.00	687.42		Hold 359.56° Azm
5	11904.51	87.86	359.56	11135.00	978.32	353.89	0.00	0.00	1000.02		Begin 2.00°/100' Build
6	11928.38	88.30	359.56	11135.73	1000.16	353.72	2.00	-4.45	1021.80		Hold 88.30° Inc
7	12406.16	88.30	359.56	11150.00	1476.73	350.04	0.00	0.00	1500.02		T3 v2 - Black & Tan 27 Federal Com 308H
8	12500.17	90.18	359.56	11151.25	1573.72	349.32	2.00	0.00	1593.76		Hold 90.18° Inc
9	12907.59	90.18	359.56	11150.00	1981.13	346.19	0.00	0.00	2000.01		T4 v2 - Black & Tan 27 Federal Com 308H
10	12916.48	90.00	359.56	11149.99	1990.02	346.12	2.00	-178.63	2008.88		Hold 90.00° Inc
11	13409.01	90.00	359.56	11150.00	2482.54	342.33	0.00	0.00	2500.01		T5 v2 - Black & Tan 27 Federal Com 308H
12	13438.08	90.58	359.56	11149.85	2511.60	342.11	2.00	0.11	2528.00		Hold 90.58° Inc
13	14411.90	90.58	359.56	11140.00	3485.35	334.83	0.00	0.00	3500.00		T7 v2 - Black & Tan 27 Federal Com 308H
14	14505.93	92.46	359.56	11137.51	3579.34	333.91	2.00	0.00	3593.73		Hold 92.46° Inc
15	14913.74	92.46	359.56	11120.00	3988.76	330.78	0.00	0.00	4000.01		T8 v2 - Black & Tan 27 Federal Com 308H
16	14984.49	93.48	359.56	11117.37	4037.43	330.39	2.00	0.00	4050.54		Hold 93.48° Inc
17	15416.07	93.48	359.56	11090.00	4468.17	326.83	0.00	0.00	4500.01		T9 v2 - Black & Tan 27 Federal Com 308H
18	15510.08	91.59	359.56	11085.84	4582.09	326.21	2.00	178.99	4593.86		Hold 91.59° Inc
19	15719.98	91.59	359.56	11080.00	4791.90	324.00	0.00	0.00	4802.88		BHL v3 - Black & Tan 27 Federal Com 308H

TVDPath	MDPath	Formation	DipAngle	DipDr
10777.00	10789.17	3rd Bone Spring Carb		
10997.00	11054.28	3rd Bone Spring Sand		

