

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0137
Expires: July 31, 2010

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

5. Lease Serial No.
NMNM0557371

1a. Type of Well ☐ Oil Well ☐ Gas Well ☐ Dry ☒ Other: **SWD**
b. Type of Completion ☒ New Well ☐ Work Over ☐ Deepen ☐ Plug Back ☐ Diff. Resvr.
Other _____

6. If Indian, Allottee or Tribe Name

7. Unit or CA Agreement Name and No.

2. Name of Operator
APACHE CORPORATION
Contact: EMILY FOLLIS
E-Mail: emily.follis@apachecorp.com

8. Lease Name and Well No.
AAO FEDERAL SWD 1

3. Address 303 VETERANS AIRPARK LANE SUITE 1000
MIDLAND, TX 79705

3a. Phone No. (include area code)
Ph: 432-818-1801

9. API Well No.
30-015-42549

4. Location of Well (Report location clearly and in accordance with Federal requirements)*

At surface SWNE 2470FNL 2380FEL

At top prod interval reported below SWNE 2470FNL 2380FEL

At total depth SWNE 2470FNL 2380FEL

10. Field and Pool, or Exploratory
[98079]SWD;WC-CISCO-CANYO

11. Sec., T., R., M., or Block and Survey
or Area Sec 1 T18S R27E Mer

12. County or Parish
EDDY COUNTY

13. State
NM

14. Date Spudded
10/24/2014

15. Date T.D. Reached
12/21/2014

16. Date Completed
☐ D & A ☐ Ready to Prod.
9-24-15

17. Elevations (DF, KB, RT, GL)*
3629 GL

18. Total Depth: MD 8656
TVD 8432

19. Plug Back T.D.: MD 8656
TVD 8432

20. Depth Bridge Plug Set: MD
TVD

21. Type Electric & Other Mechanical Logs Run (Submit copy of each)
GR-CBL-CNL

22. Was well cored? ☒ No ☐ Yes (Submit analysis)
Was DST run? ☒ No ☐ Yes (Submit analysis)
Directional Survey? ☐ No ☒ Yes (Submit analysis)

23. Casing and Liner Record (Report all strings set in well)

Hole Size	Size/Grade	Wt. (#/ft.)	Top (MD)	Bottom (MD)	Stage Cementer Depth	No. of Sk. & Type of Cement	Slurry Vol. (BBL)	Cement Top*	Amount Pulled
17.500	13.375 H-40	48.0	0	408		1053			
12.250	9.625 J-55	40.0	0	4486		1300			
8.750	7.000 J-55	26.0	0	7435		1150			

24. Tubing Record

Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)
4.500	7308	7360						

25. Producing Intervals

26. Perforation Record

Formation	Top	Bottom	Perforated Interval	Size	No. Holes	Perf. Status
A) WOLFCAMP	6863	7257	7434 TO 8656			OPEN HOLE, SHUT-IN
B) CISCO	7257					
C)						
D)						

27. Acid, Fracture, Treatment, Cement Squeeze, Etc.

Depth Interval	Amount and Type of Material

28. Production - Interval A

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						SI
Choke Size	Tbg. Press. Flwg.	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status	
SI			→						

28a. Production - Interval B

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API
			→				
Choke Size	Tbg. Press. Flwg.	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio
SI			→				

Pending BLM approvals will
subsequently be reviewed
and scanned

(See Instructions and spaces for additional data on reverse side)

ELECTRONIC SUBMISSION #306422 VERIFIED BY THE BLM WELL INFORMATION SYSTEM

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

28b. Production - Interval C

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status	
			→						

28c. Production - Interval D

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status	
			→						

29. Disposition of Gas(Sold, used for fuel, vented, etc.)
UNKNOWN

30. Summary of Porous Zones (Include Aquifers):

Show all important zones of porosity and contents thereof: Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries.

31. Formation (Log) Markers

Formation	Top	Bottom	Descriptions, Contents, etc.	Name	Top Meas. Depth
RUSTER			ANHYDRITE, DOLOMITE - W	YATES	247
SALADO			ANHYDRITE, DOLOMITE - W	SEVEN RIVERS	516
TANSIL			ANHYDRITE, SALT, DOLO, SS O/G/W	QUEEN	1092
YATES	247	516	SANDSTONE O/G/W	GRAYBURG	1560
SEVEN RIVERS	516	1092	SS, DOLOMITE, LIMESTONE O/G/W	SAN ANDRES	1899
QUEEN	1092	1560	SS, DOLOMITE, LIMESTONE O/G/W		
GRAYBURG	1560	1899	DOLOMITE, LIMESTONE, SS O/G/W		
SAN ANDRES	1899	3406	DOLOMITE, LIMESTONE, SS O/G/W		

32. Additional remarks (include plugging procedure):

GLORIETA - 3406 - 3453 SANDSTONE O/G/W
 PADDOCK 3453 - 4117 DOLOMITE O/G/W
 BLINEBRY 4117 - 5486 DOLOMITE O/G/W
 ABO 5486 - 6863 LIMESTONE, DOLOMITE O/G/W
 WOLFCAMP 6863 - 7257 SHALE, SANDSTONE O/G/W
 CISCO 7257 - TD LIMESTONE, SAND, SHALE O/G/W

O/G/W/ - OIL GAS WATER

33. Circle enclosed attachments:

1. Electrical/Mechanical Logs (1 full set req'd.)
2. Geologic Report
3. DST Report
4. Directional Survey
5. Sundry Notice for plugging and cement verification
6. Core Analysis
- 7 Other:

34. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records (see attached instructions):

Electronic Submission #306422 Verified by the BLM Well Information System.
 For APACHE CORPORATION, sent to the Carlsbad

Name (please print) EMILY FOLLIS

Title REGULATORY ANALYST I

Signature (Electronic Submission)

Date 06/24/2015

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.

** ORIGINAL ** ORIGINAL ** ORIGINAL ** ORIGINAL ** ORIGINAL ** ORIGINAL ** ORIGINAL **

Additional data for transaction #306422 that would not fit on the form

32. Additional remarks, continued

SS - SANDSTONE

DOLO DOLOMITE

"CORRECTED" - PBTD WAS INCORRECT ON FIRST SUBMISSION

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM 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.**

1. Type of Well ☐ Oil Well ☐ Gas Well ☒ Other: INJECTION		5. Lease Serial No. NMNM0557371
2. Name of Operator APACHE CORPORATION Contact: EMILY FOLLIS E-Mail: emily.follis@apachecorp.com		6. If Indian, Allottee or Tribe Name
3a. Address 303 VETERANS AIRPARK LANE, SUITE 1000 MIDLAND, TX 79705	3b. Phone No. (include area code) Ph: 432-818-1801	7. If Unit or CA/Agreement, Name and/or No.
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 1 T18S R27E SWNE 2470FNL 2380FEL		8. Well Name and No. AAO FEDERAL SWD 1
		9. API Well No. 30-015-42549
		10. Field and Pool, or Exploratory SWD;WC-CISCO-CANYON-STRAW
		11. County or Parish, and State EDDY COUNTY 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 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 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 shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat 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.)

APACHE HAS COMPLETED THIS WELL AS FOLLOWS: 3160-5 SUNDRY

03/23/15 RIH W/GAUGE RING & JUNK BASKET COULD NOT GET PAST 6248' FOUND TRACES OF WET CEMENT TOC@50' W/CBL LOG

04/15/15 DRILL OUT SOFT CEMENT TO CIBP @ 6985' CIRC HOLE

04/16/15 PUSH CIBP 107' BELOW CSG SHOE TO 7540'

04/17/15 DRILL OUT CIBP. POOH & LAY DOWN WORK STRING

04/21/15 RIH W/4-1/2"L-80 DUO LINE 12.75# INJ TBG, PKR @ 7360' ETD @ 7308' OPEN HOLE 7434'- TD @ 8656'

04/30/15 PSI TEST W/ CHART @ 555#, 30 MIN TEST PASSED, WITNESSED BY RICHARD INGE WITH OCD. LATER ATTEMPTED TO PUMP OUT PLUG, PRESSURE UP TBG BUT PLUG WOULD NOT PUMP OUT HAD COMMUNICATION W/CSG @ 5300'

14. I hereby certify that the foregoing is true and correct. Electronic Submission #306414 verified by the BLM Well Information System For APACHE CORPORATION, sent to the Carlsbad	
Name (Printed/Typed) EMILY FOLLIS	Title REGULATORY ANALYST I
Signature (Electronic Submission)	Date 06/24/2015

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.

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

Additional data for EC transaction #306414 that would not fit on the form

32. Additional remarks, continued

05/20/15 PULL WELL FOR POSSIBLE TBG LEAK FOUND PKR PLUGGED W/ KILL MUD RIH W/PUMP OUT PLUG HYDOTEST
TBG IN WELL ALL TBG GOOD. TEST PKR TO 500# FOR 30 MIN. PUMP OUT PLUG @2500#
05/28/15 RAN MIT TEST PASSED & APPROVED BY RICHARD INGE WITH OCD. PREFORM STEP RATE TEST SI WELL
WILL PLACE ON INJECTION AT LATER DATE

Apache Corporation
303 Veterans Airpark Lane, #3000
Midland, TX 79705

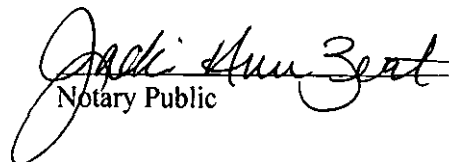
AAO Federal SWD #001
Eddy County, New Mexico

0	0.00	0.00	0.00	0.00	0.00
60	0.60	0.60	1.05	0.63	0.63
260	2.00	0.52	0.91	1.82	2.45
460	2.00	0.49	0.86	1.72	4.17
645	1.85	0.54	0.95	1.75	5.91
815	1.70	0.58	1.02	1.73	7.64
1070	2.55	0.56	0.98	2.50	10.14
1239	1.69	1.10	1.93	3.25	13.39
1410	1.71	1.04	1.82	3.11	16.50
1666	2.56	0.88	1.54	3.94	20.45
1836	1.70	0.99	1.73	2.95	23.39
2092	2.56	1.85	3.24	8.29	31.68
2262	1.70	3.47	6.07	10.32	42.00
2432	1.70	3.84	6.72	11.42	53.43
2688	2.56	2.92	5.11	13.08	66.51
2859	1.71	2.10	3.68	6.28	72.79
3029	1.70	1.92	3.36	5.71	78.50
3284	2.55	1.12	1.96	5.00	83.50
3454	1.70	0.52	0.91	1.55	85.05
3624	1.70	0.75	1.31	2.23	87.28
3880	2.56	0.53	0.93	2.37	89.65
4050	1.70	0.15	0.26	0.45	90.10
4220	1.70	0.11	0.19	0.33	90.43
4433	2.13	0.30	0.53	1.12	91.55
4646	2.13	1.12	1.96	4.17	95.72
4731	0.85	1.89	3.31	2.81	98.53
4960	2.29	3.70	6.48	14.83	113.36

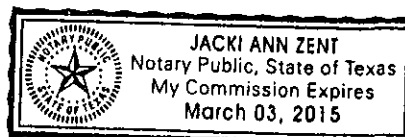


Archie Brown - General Manager

The attached instrument was acknowledged before me on the 31st day of December, 2014 by
Archie Brown - General Manager, CapStar Drilling, Inc.



Notary Public





Apache Corporation

Eddy County, NM (NAD27 NME)

AAO Federal SWD

#1

WB2 / Job #1412259

Survey: Phoenix MWD Survey

Standard Survey Report

15 December, 2014



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #1
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3644.00usft (Capstar 133)
Site:	AAO Federal SWD	MD Reference:	KB @ 3644.00usft (Capstar 133)
Well:	#1	North Reference:	Grid
Wellbore:	WB2 / Job #1412259	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 133)	Database:	Compass 5000 GCR

Project:	Eddy County, NM (NAD27 NME)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site:		AAO Federal SWD			
Site Position:		Northing:	646,192.50 usft	Latitude:	32° 46' 35.15814 N
From:	Map	Easting:	531,531.10 usft	Longitude:	104° 13' 50.68027 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.06 °

Well	#1					
Well Position	+N/-S	0.00 usft	Northing:	646,192.50 usft	Latitude:	32° 46' 35.15814 N
	+E/-W	0.00 usft	Easting:	531,531.10 usft	Longitude:	104° 13' 50.68027 W
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,629.00 usft	

Wellbore		WB2 / Job #1412259			
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	11/27/2014	7.68	60.49	48,477

Design:	Surveys (Capstar 133)				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	4,475.65
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	92.74	

Survey Program		Date 12/15/2014		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
60.70	4,475.65	Gyrodata Surveys (WB1 / Job #1412259)	NS-GYRO-MS	North sensing gyrocompassing m/s
4,475.65	7,434.00	Phoenix MWD Survey (WB2 / Job #14122	PHX+MWD+BGGM	PHX+MWD+BGGM v3: standard declination

Survey	Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Vertical	Dogleg	Build	Turn
	Depth	(°)	(°)	Depth	(usft)	(usft)	Section	Rate	Rate	Rate
	(usft)			(usft)			(usft)	(°/100usft)	(°/100usft)	(°/100usft)
	4,475.65	0.25	330.96	4,473.98	-56.30	66.73	69.34	0.00	0.00	0.00
Tie-on to Gyrodata Gyro Survey										
	4,566.00	1.30	317.50	4,564.32	-55.38	65.94	68.51	1.17	1.16	-14.90
First Phoenix MWD Survey										
	4,609.00	1.40	352.10	4,607.31	-54.50	65.54	68.07	1.88	0.23	80.47
	4,651.00	2.00	17.00	4,649.29	-53.29	65.68	68.15	2.23	1.43	59.29
	4,694.00	2.50	28.40	4,692.26	-51.74	66.35	68.74	1.56	1.16	26.51
	4,737.00	3.20	37.00	4,735.20	-49.96	67.52	69.83	1.90	1.63	20.00
	4,822.00	4.70	37.30	4,820.00	-45.30	71.05	73.14	1.76	1.76	0.35

Company:	Apache Corporation	Local Co-ordinate Reference:	Well #1
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3644.00usft (Capstar 133)
Site:	AAO Federal SWD	MD Reference:	KB @ 3644.00usft (Capstar 133)
Well:	#1	North Reference:	Grid
Wellbore:	WB2 / Job #1412259	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 133)	Database:	Compass 5000 GCR

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Bulld Rate (°/100usft)	Turn Rate (°/100usft)	
4,907.00	5.10	30.50	4,904.69	-39.27	75.08	76.87	0.83	0.47	-8.00	
4,993.00	4.30	17.10	4,990.40	-32.89	77.97	79.45	1.57	-0.93	-15.58	
5,035.00	3.80	10.50	5,032.30	-30.02	78.69	80.03	1.63	-1.19	-15.71	
5,121.00	2.70	345.60	5,118.16	-25.26	78.70	79.82	2.05	-1.28	-28.95	
5,206.00	2.60	5.90	5,203.07	-21.40	78.40	79.34	1.10	-0.12	23.88	
5,292.00	3.70	32.60	5,288.95	-17.12	80.10	80.83	2.10	1.28	31.05	
5,377.00	4.00	59.70	5,373.78	-13.31	84.14	84.68	2.15	0.35	31.88	
5,463.00	4.00	75.90	5,459.56	-11.07	89.64	90.06	1.31	0.00	18.84	
5,548.00	3.60	89.40	5,544.37	-10.32	95.18	95.56	1.15	-0.47	15.88	
5,633.00	3.00	120.60	5,629.24	-11.42	99.76	100.20	2.19	-0.71	36.71	
5,719.00	2.00	114.70	5,715.15	-13.20	103.06	103.58	1.20	-1.16	-6.86	
5,804.00	1.40	155.10	5,800.12	-14.76	104.85	105.43	1.53	-0.71	47.53	
5,890.00	2.30	155.60	5,886.07	-17.28	106.00	106.71	1.05	1.05	0.58	
5,975.00	1.90	145.40	5,971.01	-20.00	107.51	108.34	0.64	-0.47	-12.00	
6,061.00	2.20	94.10	6,056.97	-21.29	109.96	110.86	2.09	0.35	-59.65	
6,143.00	1.20	322.60	6,138.95	-20.72	111.01	111.88	3.81	-1.22	-180.37	
6,231.00	2.50	292.80	6,226.90	-19.24	108.68	109.48	1.79	1.48	-33.86	
6,317.00	1.30	299.20	6,312.85	-18.04	106.10	106.84	1.41	-1.40	7.44	
6,403.00	1.30	298.30	6,398.83	-17.10	104.39	105.09	0.02	0.00	-1.05	
6,486.00	1.40	296.30	6,483.81	-16.18	102.61	103.27	0.13	0.12	-2.35	
6,574.00	1.50	293.90	6,569.78	-15.26	100.64	101.26	0.14	0.12	-2.79	
6,659.00	1.50	334.70	6,654.75	-13.81	99.15	99.70	1.23	0.00	48.00	
6,744.00	1.70	8.40	6,739.72	-11.55	98.86	99.30	1.11	0.24	39.65	
6,826.00	1.80	25.40	6,821.68	-9.19	99.59	99.91	0.64	0.12	20.73	
6,914.00	2.10	34.30	6,909.63	-6.61	101.09	101.29	0.48	0.34	10.11	
6,999.00	2.10	41.60	6,994.58	-4.16	103.00	103.08	0.31	0.00	8.59	
7,085.00	1.80	62.60	7,080.53	-2.36	105.25	105.24	0.89	-0.35	24.42	
7,170.00	1.40	81.60	7,165.49	-1.59	107.46	107.41	0.78	-0.47	22.35	
7,255.00	0.80	122.10	7,250.48	-1.75	108.99	108.95	1.11	-0.71	47.65	
7,340.00	1.30	157.50	7,335.47	-2.96	109.86	109.88	0.94	0.59	41.65	
7,383.00	1.50	170.00	7,378.45	-3.96	110.15	110.21	0.85	0.47	29.07	
Last Phoenix MWD Survey										
7,434.00	1.50	170.00	7,429.44	-5.28	110.38	110.50	0.00	0.00	0.00	
Projection to Bit										

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
4,475.65	4,473.98	-56.30	66.73	Tie-on to Gyrodata Gyro Survey
4,566.00	4,564.32	-55.38	65.94	First Phoenix MWD Survey
7,383.00	7,378.45	-3.96	110.15	Last Phoenix MWD Survey
7,434.00	7,429.44	-5.28	110.38	Projection to Bit

Company:	Apache Corporation	Local Co-ordinate Reference:	Well #1
Project:	Eddy County, NM (NAD27-NME)	TVD Reference:	KB @ 3644.00usft (Capstar 133)
Site:	AAO Federal SWD	MD Reference:	KB @ 3644.00usft (Capstar 133)
Well:	#1	North Reference:	Grid
Wellbore:	WB2 / Job #1412259	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 133)	Database:	Compass 5000 GCR

Checked By: _____ Approved By: _____ Date: _____

Phoenix Technology Services SURVEY DATA CERTIFICATION



PHOENIX JOB NUMBER

1412259

OPERATOR

Apache

WELL NAME

AAO Federal SWD #1 WB2

COUNTY & STATE

Eddy County, New Mexico

API WELL NUMBER

30-015-42549

PROPOSED DIRECTION

92.74°

TIE-IN DATA						
MEASURED DEPTH	VERTICAL DEPTH	INCLIN	AZIMUTH	N-S COORD	E-W COORD	DATA SOURCE
4,475.65 ft	4,473.98 ft	0.25	330.96	-56.30 ft	66.73 ft	Gyro

FIRST SURVEY DATE	FIRST SURVEY DEPTH	INCLIN	AZIMUTH
6-Dec-14	4,566.00 ft	1.30	317.50

SURVEY INSTRUMENT TYPE
Phoenix MWD

LAST SURVEY DATE	LAST SURVEY DEPTH	INCLIN	AZIMUTH
12-Dec-14	7,383.00 ft	1.50	170.00

TO THE BEST OF MY KNOWLEDGE I
CERTIFY THIS SURVEY DATA TO BE
TRUE AND CORRECT.

PROJECTED TD SURVEY DATE	PROJECTED TD SURVEY DEPTH	INCLIN	AZIMUTH
12-Dec-14	7,434.00 ft	1.50	170.00

Joe Bass

PRINT YOUR NAME ABOVE

Joe Bass

SIGN YOUR NAME ABOVE

MAGNETIC DECLINATION OR TOTAL GRID

TOTAL CORRECTION USED	7.63
DECLINATION OR GRID	GRID

12-Dec

TODAY'S DATE

MWD SUPERVISOR 1

Joe Bass

DIRECTIONAL DRILLER 1

Brandon Coatney

MWD SUPERVISOR 2

N/A

DIRECTIONAL DRILLER 2

Steven Lewis



Apache Corporation

Eddy County, NM (NAD27 NME)

AAO Federal SWD

#1

WB2 / Job #1412259 / 1412552

Survey: Phoenix MWD Survey Job#1412552

Standard Survey Report

02 March, 2015





Survey Report



Company: Apache Corporation
Project: Eddy County, NM (NAD27 NME)
Site: AAO Federal SWD
Well: #1
Wellbore: WB2 / Job #1412259 / 1412552
Design: Surveys (Capstar 133)

Local Co-ordinate Reference: Well #1
TVD Reference: KB @ 3644.00usft (Capstar 133)
MD Reference: KB @ 3644.00usft (Capstar 133)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass 5000 GCR

Project: Eddy County, NM (NAD27 NME)

Map System: US State Plane 1927 (Exact solution)
Geo Datum: NAD 1927 (NADCON CONUS)
Map Zone: New Mexico East 3001

System Datum: Mean Sea Level

Site: AAO Federal SWD

Site Position: Northing: 646,192.50 usft Latitude: 32° 46' 35.15814 N
From: Map Easting: 531,531.10 usft Longitude: 104° 13' 50.68027 W
Position Uncertainty: 0.00 usft Slot Radius: 13-3/16 " Grid Convergence: 0.06 °

Well: #1

Well Position: +N/-S 0.00 usft Northing: 646,192.50 usft Latitude: 32° 46' 35.15814 N
+E/-W 0.00 usft Easting: 531,531.10 usft Longitude: 104° 13' 50.68027 W
Position Uncertainty: 0.00 usft Wellhead Elevation: 0.00 usft Ground Level: 3,629.00 usft

Wellbore: WB2 / Job #1412259 / 1412552

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	11/27/2014	7.68	60.49	48,477

Design: Surveys (Capstar 133)

Audit Notes:

Version: 1.0 Phase: ACTUAL Tie On Depth: 4,475.65

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	92.74

Survey Program: Date 3/2/2015

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
60.70	4,475.65	Gyrodata Surveys (WB1 / Job #1412259)	NS-GYRO-MS	North sensing gyrocompassing m/s
4,475.65	7,383.00	Phoenix MWD Survey Job#1412259 (WB2)	PHX+MWD+BGGM	PHX+MWD+BGGM v3:standard declination
7,482.00	8,656.00	Phoenix MWD Survey Job#1412552 (WB2)	PHX+MWD+BGGM	PHX+MWD+BGGM v3:standard declination

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)
7,383.00	1.50	170.00	7,378.45	-3.96	110.15	110.21	0.00	0.00	0.00
Tie-on to 7383' MD Survey									
7,482.00	2.40	196.20	7,477.40	-7.23	109.79	110.01	1.26	0.91	26.46
First Phoenix MWD Survey									
7,577.00	2.50	196.90	7,572.31	-11.12	108.63	109.04	0.11	0.11	0.74
7,652.00	3.10	192.20	7,647.22	-14.67	107.73	108.31	0.86	0.80	-6.27
7,770.00	2.30	190.90	7,765.09	-20.11	106.61	107.45	0.68	-0.68	-1.10
7,865.00	1.10	193.00	7,860.04	-22.87	106.04	107.01	1.26	-1.26	2.21



Survey Report



Company: Apache Corporation
Project: Eddy County, NM (NAD27 NME)
Site: AAO Federal SWD
Well: #1
Wellbore: WB2 / Job #1412259 / 1412552
Design: Surveys (Capstar 133)

Local Co-ordinate Reference: Well #1
TVD Reference: KB @ 3644.00usft (Capstar 133)
MD Reference: KB @ 3644.00usft (Capstar 133)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass 5000 GCR

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)
7,981.00	1.10	143.90	7,956.03	-24.52	108.38	107.43	0.95	0.00	-51.15
8,056.00	1.50	95.80	8,051.01	-25.38	108.15	109.24	1.18	0.42	-50.63
8,151.00	2.50	124.60	8,145.95	-28.68	111.10	112.24	1.46	1.05	30.32
8,247.00	1.50	134.40	8,241.89	-28.75	113.72	114.96	1.10	-1.04	10.21
8,342.00	1.60	157.00	8,336.86	-30.84	115.12	116.47	0.65	0.11	23.79
8,437.00	1.60	162.30	8,431.82	-33.33	116.04	117.50	0.16	0.00	5.58
8,532.00	0.20	215.10	8,526.81	-34.72	116.35	117.88	1.57	-1.47	55.58
8,607.00	0.10	32.90	8,601.81	-34.78	116.31	117.84	0.40	-0.13	237.07
Last Phoenix MWD Survey									
8,656.00	0.10	32.90	8,650.81	-34.70	116.36	117.88	0.00	0.00	0.00
Projection to TD									

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,383.00	7,378.45	-3.96	110.15	Tie-on to 7383' MD Survey
7,482.00	7,477.40	-7.23	109.79	First Phoenix MWD Survey
8,607.00	8,601.81	-34.78	116.31	Last Phoenix MWD Survey
8,656.00	8,650.81	-34.70	116.36	Projection to TD

Checked By: _____

Approved By: _____

Date: _____