

RECEIVED

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM 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.
NMNM113962
6. If Indian, Allottee or Tribe Name**SUBMIT IN TRIPLICATE - Other instructions on page 2**

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

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other8. Well Name and No.
SALT FORK 3 4 FEDERAL COM 302H2. Name of Operator
APACHE CORPORATIONContact: SORINA L FLORES
E-Mail: sorina.flores@apachecorp.com9. API Well No.
30 019 462043a. Address
303 VETERANS AIRPARK LANE SUITE 3000
MIDLAND, TX 797053b. Phone No. (include area code)
Ph: 432-818-116710. Field and Pool or Exploratory Area
LEO-BONE SPRING, SOUTH

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

Sec 3 T19S R30E SWNE 2438 FNL 1517 FEL
32.689968 N Lat, 103.956161 W Lon11. County or Parish, State
EDDY COUNTY, NM

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

TYPE OF SUBMISSION

- ☒
- 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 APD

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports 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.

NMB000736

Apache request to make the following changes to approved APD:

1. Batch drill the Salt Fork 3 4 Federal Com 302H. Procedure attached.
-
2. Request to change from conventional wellhead to multi-bowl wellhead, please see attached.
-
3. Request to change change TVD to shallow depth. New directional survey and C-102 attached. Due to change in TVD, new csg/cmt as listed below:

KOP: Old - 2438' FSL & 1592' FEL TVD: 9081' MD: 9000'
New - 2457' FSL & 1588' FEL TVD: 8879' MD: 8897'**Carlsbad Field Office**
OCD Artesia

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

Electronic Submission #492524 verified by the BLM Well Information System
For APACHE CORPORATION, sent to the Carlsbad
Committed to AFMSS for processing by PRISCILLA PEREZ on 11/15/2019 (20PP0428SE)

Name (Printed/Typed) SORINA L FLORES

Title SUPV OF DRILLING SERVICES

Signature (Electronic Submission)

Date 11/14/2019

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By LONG VO

Title PETROLEUM ENGINEER

Date 12/02/2019

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 Carlsbad

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)

** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED **

1/28/20 KS

Additional data for EC transaction #492524 that would not fit on the form

32. Additional remarks, continued

PPP1: Old - 1989' FSL & 1745' FEL TVD: 9475' MD: 9770'
New - 1916' FSL & 1768' FEL TVD: 9318' MD: 9700'

FTP: Old - 893' FSL & 2540' FWL TVD: 9461' MD: 11289'
New - 891' FSL & 2540' FWL TVD: 9354' MD: 11146'

LTP: Old - 710' FSL & 100' FWL TVD: 9394' MD: 19033'
New - 710' FSL & 100' FWL TVD: 9282' MD: 18894'

BHL: Old - 710' FSL & 50' FWL TVD: 9393' MD: 19083'
New - 710' FSL & 50' FWL TVD: 9280' MD: 18944'

Prod Csg 8.75" hole, 5-1/2" string:
OLD - TopMD:9056.5' TopTVD:9038.7'; BtmMD:9769.5' BtmTVD:9475'
NEW - TopMD:9056.5' TopTVD:9038.7'; BtmMD:9595' BtmTVD:9316'

Prod Csg 8.5" hole, 5-1/2" string:
OLD - TopMD:9769.5' TopTVD:9475'; BtmMD:19083.5' BtmTVD:9393.7'
NEW - TopMD:9595' TopTVD:9316'; BtmMD:18944' BtmTVD:9280'

Prod Cmt
OLD - LEAD: TopMD: 3450' BtmMD: 9056.5' Qty sx: 434 Volume: 1006.88
TAIL: TopMD: 9056.5' BtmMD: 19083.5' Qty sx: 1907 Colume: 2784.22

NEW - LEAD: TopMD: 3450' BtmMD: 8897' Qty sx: 421 Volume: 976.72
TAIL: TopMD: 8897' BtmMD: 18944' Qty sx: 1910 Volume: 2788.6

PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Apache Corporation
LEASE NO.:	NMNM113962
WELL NAME & NO.:	Salt Fork 3 4 Federal Com 302H
SURFACE HOLE FOOTAGE:	2438'/N & 1517'/E
BOTTOM HOLE FOOTAGE:	710'/S & 50'/W
LOCATION:	Section 3, T.19 S., R.30 E., NMPM
COUNTY:	Eddy County, New Mexico

COA

H2S	☒ Yes	☐ No	
Potash	☐ None	☒ Secretary	☐ R-111-P
Cave/Karst Potential	☐ Low	☐ Medium	☒ High
Variance	☐ None	☒ Flex Hose	☐ Other
Wellhead	☐ Conventional	☒ Multibowl	☐ Both
Other	☐ 4 String Area	☐ Capitan Reef	☐ WIPP
Other	☒ Fluid Filled	☐ Cement Squeeze	☐ Pilot Hole
Special Requirements	☐ Water Disposal	☒ COM	☐ Unit

All Previous COAs Still Apply

A. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).'
2. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **3000 (3M) psi**.
 - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
 - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
 - c. Manufacturer representative shall install the test plug for the initial BOP test.
 - d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.

- e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

GENERAL REQUIREMENTS

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

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

☒ Chaves and Roosevelt Counties

Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.

During office hours call (575) 627-0272.

After office hours call (575)

☒ Eddy County

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

☒ Lea County

Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575)
393-3612

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
 - a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
 - b. When the operator proposes to set surface casing with Spudder Rig
 - Notify the BLM when moving in and removing the Spudder Rig.
 - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
 - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.
2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

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

A. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.
3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.
4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
 - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
 - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
 - c. Manufacturer representative shall install the test plug for the initial BOP test.
 - d. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
 - e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

- a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
- b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time.
- c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
- d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
- e. The results of the test shall be reported to the appropriate BLM office.
- f. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.
- g. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.
- h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test

does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

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

☒ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

1 API Number 30-015-46204		2 Pool Code 316024		3 Pool Name LEO; BONESPRING, S.				
4 Property Code 316024		5 Property Name SALT FORK 3 4 FEDERAL COM			6 Well Number 302H			
7 OGRID NO. 873		8 Operator Name APACHE CORPORATION			9 Elevation 3441'			
10 Surface Location								
UL or lot no. G	Section 3	Township 19S	Range 30E	Lot Idn 2438	Feet from the NORTH	Feet From the 1517	East/West line EAST	County EDDY
11 Bottom Hole Location If Different From Surface								
UL or lot no. M	Section 4	Township 19S	Range 30E	Lot Idn 710	Feet from the SOUTH	Feet from the 50	East/West line WEST	County EDDY
12 Dedicated Acres 240		13 Joint or Infill		14 Consolidation Code		15 Order No.		

No allowable will be assigned to this completion until all interest have been consolidated or a non-standard unit has been approved by the division.

16 GEODETIC DATA NAD 83 GRID - NM EAST SURFACE LOCATION (SL) N 6144947.3 - E 657372.5 LAT: 32.689966° N LONG: 103.956162° W KICK OFF POINT (KOP) 2457' FSL - 1588' FEL (SEC. 3) N 614552.7 - E 657302.9 LAT: 32.688882° N LONG: 103.956392° W MD: 8897.0 - TVD: 8879.8 PROPOSED PENETRATION POINT (PPP) 1916' FSL - 1768' FEL (SEC. 3) N 614011.4 - E 657124.8 LAT: 32.687396° N LONG: 103.956977° W MD: 9700.0 - TVD: 9318.2 FIRST TAKE POINT (FTP) 891' FSL - 2540' FWL (SEC. 3) N 612984.6 - E 656155.8 LAT: 32.684583° N LONG: 103.960139° W MD: 11146.9 - TVD: 9354.0		LAST TAKE POINT (LTP) 710' FSL - 100' FWL (SEC. 4) N 612781.5 - E 648438.3 LAT: 32.684097° N LONG: 103.985225° W MD: 18894.2 - TVD: 9282.7 BOTTOM HOLE (BH) N 612781.3 - E 648388.3 LAT: 32.684097° N LONG: 103.985387° W MD: 18944.2 - TVD: 9280.2 CORNER DATA NAD 83 GRID - NM EAST A: FOUND BRASS CAP (BROKEN) N 612071.1 - E 648340.5 B: FOUND BRASS CAP (BROKEN) N 614709.7 - E 648332.3 C: FOUND BRASS CAP "1916" N 617367.7 - E 648325.2 D: FOUND BRASS CAP "1916" N 617372.6 - E 650962.1		E: FOUND BRASS CAP "1916" N 617377.4 - E 653602.9 F: FOUND BRASS CAP "1916" N 617382.6 - E 656242.3 G: FOUND BRASS CAP "1916" N 617388.5 - E 658861.0 H: FOUND BRASS CAP "1916" N 614738.2 - E 658890.3 I: FOUND BRASS CAP "1916" N 612099.6 - E 658899.1 J: FOUND BRASS CAP "1916" N 612093.6 - E 656258.5 K: FOUND BRASS CAP "1916" N 612087.5 - E 653618.7 L: FOUND BRASS CAP (BROKEN) N 612081.5 - E 650977.6 M: FOUND BRASS CAP "1916" N 614727.4 - E 653610.7 CALCULATED POINTS 1: N 613390.4 - E 648336.4 2: N 613407.4 - E 653614.7 3: N 613413.2 - E 656254.5		17 OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. Sorina L. Flores 11/14/19 Signature Date SORINA L. FLORES Printed Name sorina.flores@apachecorp.com E-mail Address	
18 SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. 10-22-2018 Date of Survey Signature and Seal of Professional Surveyor JEFFREY L. FANSLER 10034 Certificate Number REV: 11/13/19							

Job No.: LS18101201DPR1



5D Plan Report

Apache Corporation

Field Name: *Apache NM (Nad 83 NMEZ)*
Site Name: *Salt Fork 3-4 FC Pad (101,102,301,302)*
Well Name: *Salt Fork 3-4 Federal COM 302H*
Plan: *P1:V2 (Current plan)*

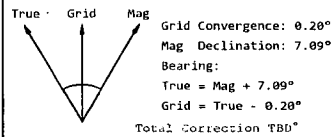
6 November 2019



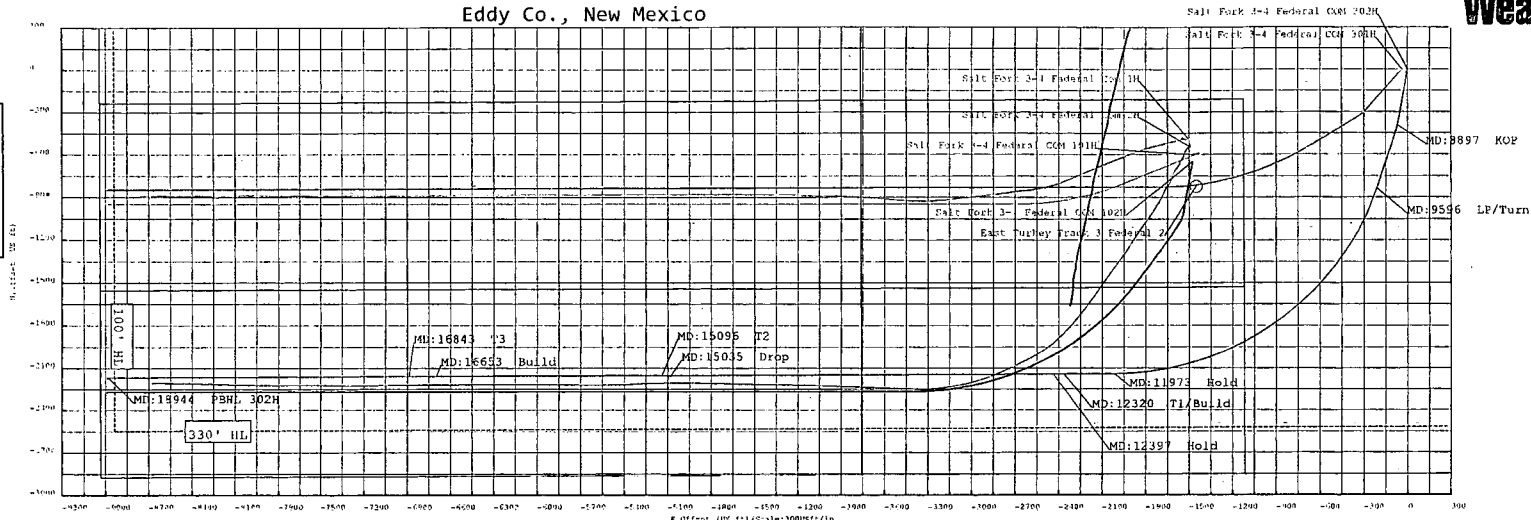
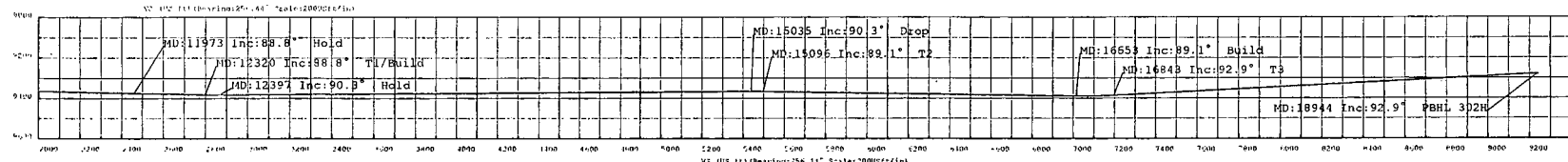
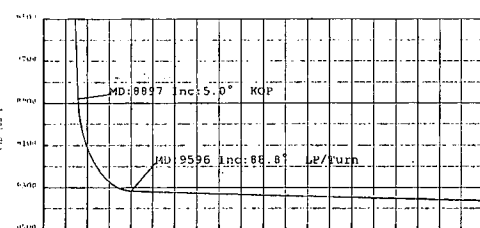
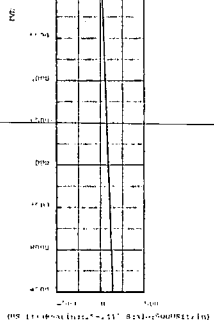
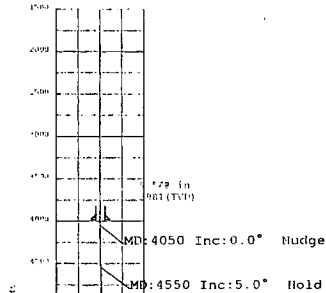
Weatherford®



Apache Corporation
Salt Fork 3-4 Federal COM 302H
Eddy Co., New Mexico



KB: 3467.00
GL: 3441.00



Plan Data for Salt Fork 3-4 Federal COM 302H
Field: Apache NM (Nad 83 NMEZ)
Map Unit: USFt
Projected Coordinate System: NAD83 / New Mexico East (ftUS)
Site: Salt Fork 3-4 FC Pad (101,102,301,302)
Unit: USFeet
TVD Reference:
Company Name: Apache Corporation
Position: Northing: 614346.60USft Latitude: 32.688330°
Easting: 655888.70USft Longitude: -103.960992°
North Reference: Grid
Grid Convergence: 0.20°
Elevation Above VRD: 3410.00USft
Comment: Eddy Co., New Mexico
Slot: Salt Fork 3-4 Federal COM 302H
Position:
Offset is from Site centre
+N/-S: 600.70USft Northing: 614947.30USft Latitude: 32.689966°
+E/-W: 1483.80USft Easting: 657372.50USft Longitude: -103.956162°
Elevation Above VRD: 3441.00USft
Well: Salt Fork 3-4 Federal COM 302H
Type: Main-Well
File Number:
Plan Folder: P1
Plan: P1/V2
Vertical Section: Position offset of origin from Slot centre:
+N/-S: 0.00USft
+E/-W: 0.00USft
Magnetic Parameters:
Model: Field Strength: Declination: Dip: Date:
bggm2017 48113(nT) 7.69° 60.39° 2018-12-01

Plan Data for Salt Fork 3-4 Federal COM 302H
Casing Point Information:
Position offsets from Slot centre
Name MD TVD +N/-S +E/-W Northing Easting
(USft) (USft) (USft) (USft) (USft) (USft)
9 5/8 in 3981.00 3981.00 0.00 0.00 614947.30 657372.50

Plan Data for Salt Fork 3-4 Federal COM 302H

Plan Point Information:
DogLeg Severity Unit: °/100.00ft
Position offsets from Slot centre

MD	Inc	Az	TVD	+N/-S	+E/-W	Northing	Easting	VSec	DLS	Comments
(USft)	(°)	(°)	(USft)	(USft)	(USft)	(USft)	(USft)	(USft)	(USft)	
0.00	0.00	0.00	0.00	0.00	0.00	614947.30	657372.50	0.00	0.00	
4050.00	0.00	0.00	4050.00	0.00	0.00	614947.30	657372.50	0.00	0.00	Nudge
4550.00	5.00	190.00	4549.37	-21.47	-3.79	614925.83	657368.71	8.71	1.00	Hold
8897.00	5.00	190.00	8879.82	-394.58	-69.58	614552.72	657302.92	160.15	0.00	KOP
9595.79	88.80	198.48	9315.99	-838.00	-211.96	614109.30	657160.54	402.53	12.00	LP/Turn
11972.86	88.80	269.81	9373.37	-2141.76	-2016.01	612805.54	655356.49	2461.98	3.00	Hold
12320.38	88.80	269.81	9380.65	-2142.91	-2363.45	612804.39	655009.05	2800.00	0.00	T1/Build
12396.80	90.33	269.80	9381.23	-2143.17	-2439.86	612804.13	654932.64	2874.35	2.00	Hold
15034.68	90.33	269.80	9366.10	-2152.38	-5077.68	612794.92	652294.82	5448.80	0.00	Drop
15095.52	89.11	269.80	9366.40	-2152.59	-5138.53	612794.71	652233.97	5500.00	2.00	T2
16652.70	89.11	269.80	9390.54	-2158.02	-6695.51	612789.28	650676.99	7014.84	0.00	Build
16843.07	92.92	269.80	9387.17	-2158.68	-6885.81	612788.62	650486.69	7200.00	2.00	T3
18944.20	92.92	269.80	9280.17	-2166.00	-8984.20	612781.30	648388.30	9241.61	0.00	PBHL 302H

Plan Data for Salt Fork 3-4 Federal COM 302H

Formation Point Information:

Name	TVD	Elevation	MD
(USft)	(USft)	(USft)	
WOLFCAIP	9667.00	-6280.00	-1.00
RUSTLER	437.00	3030.00	437.00
SALADO	577.00	2890.00	577.00
TANSILL	1462.00	2005.00	1462.00
YATES	1827.00	1640.00	1827.00
SEVEN RIVERS	2102.00	1365.00	2102.00
QUEEN	2737.00	730.00	2737.00
GRAYBURG	3252.00	215.00	3252.00
SAN ANDRES	3657.00	-190.00	3657.00
DELAWARE SANDS	3917.00	-450.00	3917.00
1ST BS CARB	5917.00	-2450.00	5922.86
1ST BS SAND	7572.00	-4105.00	7584.18
2ND BS CARB	7827.00	-4360.00	7840.15
2ND BS SAND	8387.00	-4920.00	8402.29
3RD BS CARB	8647.00	-5180.00	8663.29
3RD BS SAND	9212.00	-5745.00	9284.46

Plan Data for Salt Fork 3-4 Federal COM 302H

Target Set Information:
Name: SF 3-4 FC 302H

Position offsets from Slot centre

Name	TVD	Elevation	+N/-S	+E/-W	Northing	Easting
(USft)	(USft)	(USft)	(USft)	(USft)	(USft)	(USft)
FTP 302H	0.00	3467.00	-1960.90	-1216.70	612986.40	656155.80
T1 9380.65	-5913.65	-2142.91	-2363.45	612804.39	655009.05	
T2 9366.40	-5899.40	-2152.59	-5138.53	612794.71	652233.97	
T3 9387.17	-5920.17	-2158.68	-6885.81	612788.62	650486.69	
LTP 302H 9282.72	-5815.72	-2166.00	-8984.20	612781.30	648388.30	
PBHL 302H 9280.17	-5813.17	-2166.00	-8984.20	612781.30	648388.30	


Weatherford

Salt Fork 3-4 Federal COM 302H

Field Name: Apache NM (Nad 83 NMEZ)	Map Units: US ft		Company Name: Apache Corporation	
	Vertical Reference Datum (VRD): Mean Sea Level			
	Projected Coordinate System: NAD83 / New Mexico East (ftUS)			
	Comment:			
Site: Salt Fork 3-4 FC Pad (101,102,301,302)	Units: US ft	North Reference: Grid	Convergence Angle: 0.20	
	Position:		Northing: 614346.60 US ft	Latitude: 32.688329777
			Easting: 655888.70 US ft	Longitude: -103.960991713
	Elevation above MSL: 3410.00 US ft			
	Comment: Eddy Co., New Mexico			
Slot: Salt Fork 3-4 Federal COM 302H	Position (Relative to Site Centre)			
	+N/-S: 600.70 US ft	Northing: 614947.30 US ft	Latitude: 32.689966480	
	+E/-W: 1483.80 US ft	Easting: 657372.50 US ft	Longitude: -103.956161860	
	Slot TVD Reference: Ground Elevation			
	Elevation above MSL: 3441.00 US ft			
	Comment:			
Well: Salt Fork 3-4 Federal COM 302H	Type: Main well	UWI:	Plan: P1:V2 (Current plan)	
	File Number:	Comment:		
	Closure Distance: 9241.61 US ft		Closure Azimuth: 256.45°	
	Vertical Section: Position of Origin (Relative to Slot centre)			
	+N/-S: 0.00 US ft	+E/-W: 0.00 US ft	Az: 256.44°	
	Magnetic Parameters:			
	Model: bggm2017	Field Strength: 48113.2nT	Declination: 7.09°	Dip: 60.39°
			Date: 01/Dec/2018	
Drill floor: Plan: P1:V2 (Current plan)				
Rig Height (Well TVD Reference): Elevation above MSL: 3467.00 US ft				
Inclination: 0.00°				
Azimuth: 0.00°				
26.00 US ft				

Targetset: SF3-4 FC 302H Comment:								
Target Name	Shape	TVD (US ft)	N-Offset (US ft)	E-Offset (US ft)	Northing (US ft)	Easting (US ft)	C.P. Distance (US ft)	Comment
FTP 302H	Cuboid	0.00	-1960.90	-1216.70	612986.40	656155.80	2307.70	
T1	Point	9380.65	-2142.91	-2363.45	612804.39	655009.05	0.00	
T2	Point	9366.40	-2152.59	-5138.53	612794.71	652233.97	0.00	
T3	Point	9387.17	-2158.68	-6885.81	612788.62	650486.69	0.00	
LTP 302H	Point	9282.72	-2166.00	-8934.20	612781.30	648438.30	0.17	
PBHL 302H	Cuboid	9280.17	-2166.00	-8984.20	612781.30	648388.30	0.00	

SD Plan Report

Well Point					
MD: 0.00USFt	Inclination: 0.00°	Azimuth: 0.00°	TVD: 0.00USFt	North Offset: 0.00USFt	East Offset: 0.00USFt

Casing Points: (Relative to Slot centre) (TVD relative to Well TVD Reference)								
Name	MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	Northing (US ft)	Easting (US ft)
9 5/8 in	3981.00	0.00	0.00	3981.00	0.00	0.00	614947.30	657372.50

Wellpath created using minimum curvature

Salient Points: (Relative to Slot centre) (TVD relative to Well TVD Reference)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	N.Offset (US ft)	E.Offset (US ft)	Northing (US ft)	Easting (US ft)	DLS (°/100US ft)	Comment
0.00	0.00	0.00	0.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
4050.00	0.00	0.00	4050.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	Nudge
4550.00	5.00	190.00	4549.37	8.71	-21.47	-3.79	614925.83	657368.71	1.00	Hold
8897.00	5.00	190.00	8879.82	160.15	-394.58	-69.58	614552.72	657302.92	0.00	KOP
9595.79	88.80	198.48	9315.99	402.53	-838.00	-211.96	614109.30	657160.54	12.00	LP/Turn
11972.86	88.80	269.81	9373.37	2461.98	-2141.76	-2016.01	612805.54	655356.49	3.00	Hold
12320.38	88.80	269.81	9380.65	2800.00	-2142.91	-2363.45	612804.39	655009.05	0.00	T1/Build
12396.80	90.33	269.80	9381.23	2874.35	-2143.17	-2439.86	612804.13	654932.64	2.00	Hold
15034.68	90.33	269.80	9366.10	5440.80	-2152.38	-5077.68	612794.92	652294.82	0.00	Drop
15095.52	89.11	269.80	9366.40	5500.00	-2152.59	-5138.53	612794.71	652233.97	2.00	T2
16652.70	89.11	269.80	9390.54	7014.84	-2158.02	-6695.51	612789.28	650676.99	0.00	Build
16843.07	92.92	269.80	9387.17	7200.00	-2158.68	-6885.81	612788.62	650486.69	2.00	T3
18944.20	92.92	269.80	9280.17	9241.61	-2166.00	-8984.20	612781.30	648388.30	0.00	PBHL 302H

Interpolated Points: (Relative to Slot centre) (TVD relative to Well TVD Reference)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	N.Offset (US ft)	E.Offset (US ft)	Northing (US ft)	Easting (US ft)	DLS (°/100US ft)	Comment
0.00	0.00	0.00	0.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
100.00	0.00	0.00	100.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
200.00	0.00	0.00	200.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
300.00	0.00	0.00	300.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
400.00	0.00	0.00	400.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
500.00	0.00	0.00	500.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
600.00	0.00	0.00	600.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
700.00	0.00	0.00	700.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
800.00	0.00	0.00	800.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
900.00	0.00	0.00	900.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
1000.00	0.00	0.00	1000.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
1100.00	0.00	0.00	1100.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
1200.00	0.00	0.00	1200.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
1300.00	0.00	0.00	1300.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
1400.00	0.00	0.00	1400.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
1500.00	0.00	0.00	1500.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
1600.00	0.00	0.00	1600.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
1700.00	0.00	0.00	1700.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
1800.00	0.00	0.00	1800.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
1900.00	0.00	0.00	1900.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
2000.00	0.00	0.00	2000.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
2100.00	0.00	0.00	2100.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
2200.00	0.00	0.00	2200.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
2300.00	0.00	0.00	2300.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
2400.00	0.00	0.00	2400.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
2500.00	0.00	0.00	2500.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
2600.00	0.00	0.00	2600.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
2700.00	0.00	0.00	2700.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
2800.00	0.00	0.00	2800.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
2900.00	0.00	0.00	2900.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
3000.00	0.00	0.00	3000.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
3100.00	0.00	0.00	3100.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	

5D Plan Report

Interpolated Points: (Relative to Slot centre)(TVD relative to Well TVD Reference)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	N.Offset (US ft)	E.Offset (US ft)	Northing (US ft)	Easting (US ft)	DLS (°/100US ft)	Comment
3200.00	0.00	0.00	3200.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
3300.00	0.00	0.00	3300.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
3400.00	0.00	0.00	3400.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
3500.00	0.00	0.00	3500.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
3600.00	0.00	0.00	3600.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
3700.00	0.00	0.00	3700.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
3800.00	0.00	0.00	3800.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
3900.00	0.00	0.00	3900.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
3981.00	0.00	0.00	3981.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	9 5/8 in
4000.00	0.00	0.00	4000.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	
4050.00	0.00	0.00	4050.00	-0.00	0.00	0.00	614947.30	657372.50	0.00	Nudge
4100.00	0.50	190.00	4100.00	0.09	-0.21	-0.04	614947.09	657372.46	1.00	
4200.00	1.50	190.00	4199.98	0.78	-1.93	-0.34	614945.37	657372.16	1.00	
4300.00	2.50	190.00	4299.92	2.18	-5.37	-0.95	614941.93	657371.55	1.00	
4400.00	3.50	190.00	4399.78	4.27	-10.52	-1.86	614936.78	657370.64	1.00	
4500.00	4.50	190.00	4499.54	7.06	-17.39	-3.07	614929.91	657369.43	1.00	
4550.00	5.00	190.00	4549.37	8.71	-21.47	-3.79	614925.83	657368.71	1.00	Hold
4600.00	5.00	190.00	4599.18	10.46	-25.76	-4.54	614921.54	657367.96	0.00	
4700.00	5.00	190.00	4698.79	13.94	-34.35	-6.06	614912.95	657366.44	0.00	
4800.00	5.00	190.00	4798.41	17.42	-42.93	-7.57	614904.37	657364.93	0.00	
4900.00	5.00	190.00	4898.03	20.91	-51.51	-9.08	614895.79	657363.42	0.00	
5000.00	5.00	190.00	4997.65	24.39	-60.10	-10.60	614887.20	657361.90	0.00	
5100.00	5.00	190.00	5097.27	27.88	-68.68	-12.11	614878.62	657360.39	0.00	
5200.00	5.00	190.00	5196.89	31.36	-77.26	-13.62	614870.04	657358.88	0.00	
5300.00	5.00	190.00	5296.51	34.84	-85.85	-15.14	614861.45	657357.36	0.00	
5400.00	5.00	190.00	5396.13	38.33	-94.43	-16.65	614852.87	657355.85	0.00	
5500.00	5.00	190.00	5495.75	41.81	-103.01	-18.16	614844.29	657354.34	0.00	
5600.00	5.00	190.00	5595.37	45.29	-111.59	-19.68	614835.71	657352.82	0.00	
5700.00	5.00	190.00	5694.99	48.78	-120.18	-21.19	614827.12	657351.31	0.00	
5800.00	5.00	190.00	5794.61	52.26	-128.76	-22.70	614818.54	657349.80	0.00	
5900.00	5.00	190.00	5894.23	55.74	-137.34	-24.22	614809.96	657348.28	0.00	
6000.00	5.00	190.00	5993.85	59.23	-145.93	-25.73	614801.37	657346.77	0.00	
6100.00	5.00	190.00	6093.47	62.71	-154.51	-27.24	614792.79	657345.26	0.00	
6200.00	5.00	190.00	6193.09	66.20	-163.09	-28.76	614784.21	657343.74	0.00	
6300.00	5.00	190.00	6292.71	69.68	-171.68	-30.27	614775.62	657342.23	0.00	
6400.00	5.00	190.00	6392.33	73.16	-180.26	-31.78	614767.04	657340.72	0.00	
6500.00	5.00	190.00	6491.95	76.65	-188.84	-33.30	614758.46	657339.20	0.00	
6600.00	5.00	190.00	6591.56	80.13	-197.43	-34.81	614749.87	657337.69	0.00	
6700.00	5.00	190.00	6691.18	83.61	-206.01	-36.33	614741.29	657336.17	0.00	
6800.00	5.00	190.00	6790.80	87.10	-214.59	-37.84	614732.71	657334.66	0.00	
6900.00	5.00	190.00	6890.42	90.58	-223.18	-39.35	614724.12	657333.15	0.00	
7000.00	5.00	190.00	6990.04	94.07	-231.76	-40.87	614715.54	657331.63	0.00	
7100.00	5.00	190.00	7089.66	97.55	-240.34	-42.38	614706.96	657330.12	0.00	
7200.00	5.00	190.00	7189.28	101.03	-248.93	-43.89	614698.37	657328.61	0.00	
7300.00	5.00	190.00	7288.90	104.52	-257.51	-45.41	614689.79	657327.09	0.00	
7400.00	5.00	190.00	7388.52	108.00	-266.09	-46.92	614681.21	657325.58	0.00	
7500.00	5.00	190.00	7488.14	111.48	-274.67	-48.43	614672.63	657324.07	0.00	
7600.00	5.00	190.00	7587.76	114.97	-283.26	-49.95	614664.04	657322.55	0.00	
7700.00	5.00	190.00	7687.38	118.45	-291.84	-51.46	614655.46	657321.04	0.00	
7800.00	5.00	190.00	7787.00	121.93	-300.42	-52.97	614646.88	657319.53	0.00	
7900.00	5.00	190.00	7886.62	125.42	-309.01	-54.49	614638.29	657318.01	0.00	
8000.00	5.00	190.00	7986.24	128.90	-317.59	-56.00	614629.71	657316.50	0.00	
8100.00	5.00	190.00	8085.86	132.39	-326.17	-57.51	614621.13	657314.99	0.00	
8200.00	5.00	190.00	8185.48	135.87	-334.76	-59.03	614612.54	657313.47	0.00	
8300.00	5.00	190.00	8285.10	139.35	-343.34	-60.54	614603.96	657311.96	0.00	
8400.00	5.00	190.00	8384.72	142.84	-351.92	-62.05	614595.38	657310.45	0.00	
8500.00	5.00	190.00	8484.33	146.32	-360.51	-63.57	614586.79	657308.93	0.00	
8600.00	5.00	190.00	8583.95	149.80	-369.09	-65.08	614578.21	657307.42	0.00	
8700.00	5.00	190.00	8683.57	153.29	-377.67	-66.59	614569.63	657305.91	0.00	

5D Plan Report

Interpolated Points: (Relative to Slot centre) (TVD relative to Well TVD Reference)										Comment
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	N. Offset (US ft)	E. Offset (US ft)	Northing (US ft)	Easting (US ft)	DLS (°/100US ft)	
8800.00	5.00	190.00	8783.19	156.77	-386.26	-68.11	614561.04	657304.39	0.00	
8897.00	5.00	190.00	8879.82	160.15	-394.58	-69.58	614552.72	657302.92	0.00	KOP
8900.00	5.36	190.57	8882.81	160.26	-394.85	-69.62	614552.45	657302.88	12.00	
9000.00	17.32	196.12	8980.68	169.57	-413.81	-74.63	614533.49	657297.87	12.00	
9100.00	29.31	197.18	9072.35	189.53	-451.63	-86.04	614495.67	657286.46	12.00	
9200.00	41.31	197.65	9153.80	219.25	-506.67	-103.34	614440.63	657269.16	12.00	
9300.00	53.31	197.94	9221.48	257.45	-576.53	-125.78	614370.77	657246.72	12.00	
9400.00	65.31	198.16	9272.43	302.45	-658.13	-152.38	614289.17	657220.12	12.00	
9500.00	77.31	198.33	9304.42	352.28	-747.93	-181.99	614199.37	657190.51	12.00	
9595.79	88.80	198.48	9315.99	402.53	-838.00	-211.96	614109.30	657160.54	12.00	LP/Turn
9600.00	88.80	198.61	9316.08	404.77	-841.99	-213.30	614105.31	657159.20	3.00	
9700.00	88.75	201.61	9318.21	460.19	-935.87	-247.66	614011.43	657124.84	3.00	
9800.00	88.71	204.61	9320.42	519.88	-1027.81	-286.89	613919.49	657085.61	3.00	
9900.00	88.68	207.61	9322.70	583.69	-1117.58	-330.88	613829.72	657041.62	3.00	
10000.00	88.65	210.61	9325.03	651.44	-1204.91	-379.51	613742.39	656992.99	3.00	
10100.00	88.62	213.61	9327.42	722.94	-1289.58	-432.64	613657.72	656939.86	3.00	
10200.00	88.59	216.61	9329.86	798.00	-1371.35	-490.13	613575.95	656882.37	3.00	
10300.00	88.57	219.61	9332.33	876.41	-1450.00	-551.82	613497.30	656820.68	3.00	
10400.00	88.55	222.61	9334.85	957.96	-1525.31	-617.55	613421.99	656754.95	3.00	
10500.00	88.54	225.61	9337.38	1042.43	-1597.08	-687.12	613350.22	656685.38	3.00	
10600.00	88.53	228.61	9339.94	1129.57	-1665.11	-760.36	613282.19	656612.14	3.00	
10700.00	88.52	231.61	9342.51	1219.16	-1729.20	-837.06	613218.10	656535.44	3.00	
10800.00	88.52	234.62	9345.09	1310.95	-1789.20	-917.01	613158.10	656455.49	3.00	
10900.00	88.53	237.62	9347.66	1404.68	-1844.93	-999.99	613102.37	656372.51	3.00	
11000.00	88.53	240.62	9350.23	1500.10	-1896.23	-1085.77	613051.07	656286.73	3.00	
11100.00	88.54	243.62	9352.78	1596.95	-1942.98	-1174.12	613004.32	656198.38	3.00	
11200.00	88.56	246.62	9355.31	1694.96	-1985.03	-1264.80	612962.27	656107.70	3.00	
11300.00	88.58	249.62	9357.81	1793.87	-2022.28	-1357.56	612925.02	656014.94	3.00	
11400.00	88.60	252.62	9360.28	1893.39	-2054.63	-1452.14	612892.67	655920.36	3.00	
11500.00	88.63	255.62	9362.70	1993.27	-2081.98	-1548.28	612865.32	655824.22	3.00	
11600.00	88.66	258.62	9365.07	2093.23	-2104.25	-1645.73	612843.05	655726.77	3.00	
11700.00	88.69	261.62	9367.39	2192.98	-2121.40	-1744.21	612825.90	655628.29	3.00	
11800.00	88.73	264.62	9369.64	2292.26	-2133.37	-1843.45	612813.93	655529.05	3.00	
11900.00	88.77	267.62	9371.83	2390.81	-2140.13	-1943.19	612807.17	655429.31	3.00	
11972.86	88.80	269.81	9373.37	2461.98	-2141.76	-2016.01	612805.54	655356.49	3.00	Hold
12000.00	88.80	269.81	9373.94	2488.38	-2141.85	-2043.14	612805.45	655329.36	0.00	
12100.00	88.80	269.81	9376.04	2585.65	-2142.18	-2143.12	612805.12	655229.38	0.00	
12200.00	88.80	269.81	9378.13	2682.91	-2142.51	-2243.10	612804.79	655129.40	0.00	
12300.00	88.80	269.81	9380.22	2780.18	-2142.84	-2343.08	612804.46	655029.42	0.00	
12320.38	88.80	269.81	9380.65	2800.00	-2142.91	-2363.45	612804.39	655009.05	0.00	T1/Build
12396.80	90.33	269.80	9381.23	2874.35	-2143.17	-2439.86	612804.13	654932.64	2.00	Hold
12400.00	90.33	269.80	9381.21	2877.46	-2143.18	-2443.07	612804.12	654929.43	0.00	
12500.00	90.33	269.80	9380.64	2974.76	-2143.53	-2543.07	612803.77	654829.43	0.00	
12600.00	90.33	269.80	9380.07	3072.05	-2143.88	-2643.06	612803.42	654729.44	0.00	
12700.00	90.33	269.80	9379.49	3169.34	-2144.23	-2743.06	612803.07	654629.44	0.00	
12800.00	90.33	269.80	9378.92	3266.63	-2144.58	-2843.06	612802.72	654529.44	0.00	
12900.00	90.33	269.80	9378.35	3363.93	-2144.93	-2943.06	612802.37	654429.44	0.00	
13000.00	90.33	269.80	9377.77	3461.22	-2145.28	-3043.05	612802.02	654329.45	0.00	
13100.00	90.33	269.80	9377.20	3558.51	-2145.62	-3143.05	612801.68	654229.45	0.00	
13200.00	90.33	269.80	9376.62	3655.80	-2145.97	-3243.05	612801.33	654129.45	0.00	
13300.00	90.33	269.80	9376.05	3753.09	-2146.32	-3343.05	612800.98	654029.45	0.00	
13400.00	90.33	269.80	9375.48	3850.39	-2146.67	-3443.05	612800.63	653929.45	0.00	
13500.00	90.33	269.80	9374.90	3947.68	-2147.02	-3543.04	612800.28	653829.46	0.00	
13600.00	90.33	269.80	9374.33	4044.97	-2147.37	-3643.04	612799.93	653729.46	0.00	
13700.00	90.33	269.80	9373.76	4142.26	-2147.72	-3743.04	612799.58	653629.46	0.00	
13800.00	90.33	269.80	9373.18	4239.55	-2148.07	-3843.04	612799.23	653529.46	0.00	
13900.00	90.33	269.80	9372.61	4336.85	-2148.42	-3943.03	612798.88	653429.47	0.00	
14000.00	90.33	269.80	9372.04	4434.14	-2148.77	-4043.03	612798.53	653329.47	0.00	
14100.00	90.33	269.80	9371.46	4531.43	-2149.12	-4143.03	612798.18	653229.47	0.00	

5D Plan Report

Interpolated Points: (Relative to Slot centre) (TVD relative to Well TVD Reference)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	N-Offset (US ft)	E-Offset (US ft)	Northing (US ft)	Easting (US ft)	DLS (%/100US-ft)	Comment
14200.00	90.33	269.80	9370.89	4628.72	-2149.46	-4243.03	612797.84	653129.47	0.00	
14300.00	90.33	269.80	9370.32	4726.02	-2149.81	-4343.02	612797.49	653029.48	0.00	
14400.00	90.33	269.80	9369.74	4823.31	-2150.16	-4443.02	612797.14	652929.48	0.00	
14500.00	90.33	269.80	9369.17	4920.60	-2150.51	-4543.02	612796.79	652829.48	0.00	
14600.00	90.33	269.80	9368.60	5017.89	-2150.86	-4643.02	612796.44	652729.48	0.00	
14700.00	90.33	269.80	9368.02	5115.18	-2151.21	-4743.02	612796.09	652629.48	0.00	
14800.00	90.33	269.80	9367.45	5212.48	-2151.56	-4843.01	612795.74	652529.49	0.00	
14900.00	90.33	269.80	9366.88	5309.77	-2151.91	-4943.01	612795.39	652429.49	0.00	
15000.00	90.33	269.80	9366.30	5407.06	-2152.26	-5043.01	612795.04	652329.49	0.00	
15034.68	90.33	269.80	9366.10	5440.80	-2152.38	-5077.68	612794.92	652294.82	0.00	Drop
15095.52	89.11	269.80	9366.40	5500.00	-2152.59	-5138.53	612794.71	652233.97	2.00	T2
15100.00	89.11	269.80	9366.47	5504.35	-2152.61	-5143.01	612794.69	652229.49	0.00	
15200.00	89.11	269.80	9368.02	5601.63	-2152.95	-5242.99	612794.35	652129.51	0.00	
15300.00	89.11	269.80	9369.57	5698.92	-2153.30	-5342.98	612794.00	652029.52	0.00	
15400.00	89.11	269.80	9371.12	5796.20	-2153.65	-5442.97	612793.65	651929.53	0.00	
15500.00	89.11	269.80	9372.67	5893.48	-2154.00	-5542.95	612793.30	651829.55	0.00	
15600.00	89.11	269.80	9374.22	5990.76	-2154.35	-5642.94	612792.95	651729.56	0.00	
15700.00	89.11	269.80	9375.77	6088.04	-2154.70	-5742.93	612792.60	651629.57	0.00	
15800.00	89.11	269.80	9377.32	6185.32	-2155.04	-5842.92	612792.26	651529.58	0.00	
15900.00	89.11	269.80	9378.87	6282.61	-2155.39	-5942.90	612791.91	651429.60	0.00	
16000.00	89.11	269.80	9380.42	6379.89	-2155.74	-6042.89	612791.56	651329.61	0.00	
16100.00	89.11	269.80	9381.97	6477.17	-2156.09	-6142.88	612791.21	651229.62	0.00	
16200.00	89.11	269.80	9383.52	6574.45	-2156.44	-6242.87	612790.86	651129.63	0.00	
16300.00	89.11	269.80	9385.07	6671.73	-2156.79	-6342.85	612790.51	651029.65	0.00	
16400.00	89.11	269.80	9386.62	6769.02	-2157.14	-6442.84	612790.16	650929.66	0.00	
16500.00	89.11	269.80	9388.18	6866.30	-2157.48	-6542.83	612789.82	650829.67	0.00	
16600.00	89.11	269.80	9389.73	6963.58	-2157.83	-6642.82	612789.47	650729.68	0.00	
16652.70	89.11	269.80	9390.54	7014.84	-2158.02	-6695.51	612789.28	650676.99	0.00	Build
16700.00	90.06	269.80	9390.89	7060.87	-2158.18	-6742.81	612789.12	650629.69	2.00	
16800.00	92.06	269.80	9389.04	7158.14	-2158.53	-6842.78	612788.77	650529.72	2.00	
16843.07	92.92	269.80	9387.17	7200.00	-2158.68	-6885.81	612788.62	650486.69	2.00	T3
16900.00	92.92	269.80	9384.27	7255.32	-2158.88	-6942.67	612788.42	650429.83	0.00	
17000.00	92.92	269.80	9379.18	7352.49	-2159.23	-7042.54	612788.07	650329.96	0.00	
17100.00	92.92	269.80	9374.09	7449.65	-2159.58	-7142.41	612787.72	650230.09	0.00	
17200.00	92.92	269.80	9368.99	7546.82	-2159.92	-7242.28	612787.38	650130.22	0.00	
17300.00	92.92	269.80	9363.90	7643.99	-2160.27	-7342.15	612787.03	650030.35	0.00	
17400.00	92.92	269.80	9358.81	7741.16	-2160.62	-7442.02	612786.68	649930.48	0.00	
17500.00	92.92	269.80	9353.72	7838.32	-2160.97	-7541.89	612786.33	649830.61	0.00	
17600.00	92.92	269.80	9348.62	7935.49	-2161.32	-7641.76	612785.98	649730.74	0.00	
17700.00	92.92	269.80	9343.53	8032.66	-2161.67	-7741.63	612785.63	649630.87	0.00	
17800.00	92.92	269.80	9338.44	8129.83	-2162.01	-7841.50	612785.29	649531.00	0.00	
17900.00	92.92	269.80	9333.35	8226.99	-2162.36	-7941.37	612784.94	649431.13	0.00	
18000.00	92.92	269.80	9328.25	8324.16	-2162.71	-8041.24	612784.59	649331.26	0.00	
18100.00	92.92	269.80	9323.16	8421.33	-2163.06	-8141.10	612784.24	649231.40	0.00	
18200.00	92.92	269.80	9318.07	8518.50	-2163.41	-8240.97	612783.89	649131.53	0.00	
18300.00	92.92	269.80	9312.98	8615.66	-2163.76	-8340.84	612783.54	649031.66	0.00	
18400.00	92.92	269.80	9307.88	8712.83	-2164.10	-8440.71	612783.20	648931.79	0.00	
18500.00	92.92	269.80	9302.79	8810.00	-2164.45	-8540.58	612782.85	648831.92	0.00	
18600.00	92.92	269.80	9297.70	8907.17	-2164.80	-8640.45	612782.50	648732.05	0.00	
18700.00	92.92	269.80	9292.61	9004.33	-2165.15	-8740.32	612782.15	648632.18	0.00	
18800.00	92.92	269.80	9287.51	9101.50	-2165.50	-8840.19	612781.80	648532.31	0.00	
18900.00	92.92	269.80	9282.42	9198.67	-2165.85	-8940.06	612781.45	648432.44	0.00	
18944.20	92.92	269.80	9280.17	9241.61	-2166.00	-8984.20	612781.30	648388.30	0.00	PBHL 302H

Formation Points: (Relative to Slot centre) (TVD relative to Well TVD Reference)										
Name	MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	TVD (MSL) (US ft)	N-Offset (US ft)	E-Offset (US ft)	Northing (US ft)	Easting (US ft)	Comment
WOLFCAMP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
RUSTLER	437.00	0.00	0.00	437.00	-3030.00	0.00	0.00	614947.30	657372.50	

5D Plan Report

Formation Points: (Relative to Slot centre)(TVD relative to Well TVD Reference)										
Name	MD (US ft)	Incl. (°)	Az (°)	TVD (US ft)	TVD (MSL) (US ft)	N. Offset (US ft)	E. Offset (US ft)	Northing (US ft)	Easting (US ft)	Comment
SALADO	577.00	0.00	0.00	577.00	-2890.00	0.00	0.00	614947.30	657372.50	
TANSILL	1462.00	0.00	0.00	1462.00	-2005.00	0.00	0.00	614947.30	657372.50	
YATES	1827.00	0.00	0.00	1827.00	-1640.00	0.00	0.00	614947.30	657372.50	
SEVEN RIVERS	2102.00	0.00	0.00	2102.00	-1365.00	0.00	0.00	614947.30	657372.50	
QUEEN	2737.00	0.00	0.00	2737.00	-730.00	0.00	0.00	614947.30	657372.50	
GRAYEURG	3252.00	0.00	0.00	3252.00	-215.00	0.00	0.00	614947.30	657372.50	
SAN ANDRES	3657.00	0.00	0.00	3657.00	190.00	0.00	0.00	614947.30	657372.50	
DELAWARE SANDS	3917.00	0.00	0.00	3917.00	450.00	0.00	0.00	614947.30	657372.50	
1ST BS CARB	5922.86	5.00	190.00	5917.00	2450.00	-139.31	-24.56	614807.99	657347.94	
1ST BS SAND	7584.18	5.00	190.00	7572.00	4105.00	-281.90	-49.71	614665.40	657322.79	
2ND BS CARB	7840.15	5.00	190.00	7827.00	4360.00	-303.87	-53.58	614643.43	657318.92	
2ND BS SAND	8402.29	5.00	190.00	8387.00	4920.00	-352.12	-62.09	614595.18	657310.41	
3RD BS CARB	8663.29	5.00	190.00	8647.00	5180.00	-374.52	-66.04	614572.78	657306.46	
3RD BS SAND	9284.46	51.44	197.91	9212.00	5745.00	-564.82	-121.99	614382.48	657250.51	

**5D Anti-Collision Report****Apache Corporation****Field Name:** *Apache NM (Nad 83 NMEZ)***Site Name:** *Salt Fork 3-4 FC Pad (101,102,301,302)***Well Name:** *Salt Fork 3-4 Federal COM 302H*

6 November 2019

**Weatherford®**



Salt Fork 3-4 Federal COM 302H

Field Name: Apache NM (Nad 83 NMEZ)	Map Units: US ft Vertical Reference Datum (VRD): Mean Sea Level Projected Coordinate System: NAD83 / New Mexico East (ftUS) Comment:	Company Name: Apache Corporation
Site: Salt Fork 3-4 FC Pad (101,102,301,302)	Units: US ft North Reference: Grid Position: Northing: 614346.60 US ft Easting: 655888.70 US ft Elevation above MSL: 3410.00 US ft Comment: Eddy Co., New Mexico	Convergence Angle: 0.20 Latitude: 32.688329777 Longitude: -103.960991713
Slot: Salt Fork 3-4 Federal COM 302H	Position (Relative to Site Centre): +N/-S: 600.70 US ft Northing: 614947.30 US ft Latitude: 32.689966480 +E/-W: 1483.80 US ft Easting: 657372.50 US ft Longitude: -103.956161860 Slot TVD Reference: Ground Elevation Elevation above MSL: 3441.00 US ft Comment:	
Well: Salt Fork 3-4 Federal COM 302H	Type: Main well UWI: Plan: P1:V2 File Number: Comment: Closure Distance: 9241.61 US ft Closure Azimuth: 256.45° Vertical Section: Position of Origin (Relative to Slot centre) +N/-S: 0.00 US ft +E/-W: 0.00 US ft Az: 256.44° Magnetic Parameters: Model: bggm2017 Field Strength: 48113.2nT Declination: 7.09° Dip: 60.39° Date: 01/Dec/2018	
Drill floor: Plan: P1:V2 Rig Height (Well TVD Reference): Elevation above MSL: 3467.00 US ft Inclination: 0.00° Azimuth: 0.00° 26.00 US ft		

5D Anti-Collision Report

Anti-Collision Analysis Criteria			
Primary Well:		Salt Fork 3-4 Federal COM 302H (p)	
Depth Range:	0.00 - 18944.20 US ft	Analysis Interval:	100.00US ft
Orientation of Ellipsoid dimensions:	Wellbore (High Side, Lateral, Along Hole)	AC Filter Info:	Separation Factor: 5
Separation Factor Method:	STANDARD	Uncertainties computed at:	2σ
Analysis Method:	Vector Separation	Ellipsoid Combination Method:	Independent
Surface uncertainty:	Not Applied		
Secondary Well Names:		Salt Fork 3-4 Federal COM 101H (p), Salt Fork 3-4 Federal COM 102H (p), Salt Fork 3-4 Federal Com 1H (s), Salt Fork 3-4 Federal Com 2H (s), East Turkey Track 3 Federal 1 (s), East Turkey Track 3 Fed 2 (s), Salt Fork 3-4 Federal COM 301H (p)	

Report Terminology	
Ellipsoid Parameters	
TVD Spread:	Dimension in the TVD Direction.
Ellipse Parameters	
S.Minor, S.Major:	Dimensions of the bounding ellipse in the High Side, Lateral plane.
PHI:	Angle between HS and S.Minor axes.
AC Parameters	
ES:	Distance between the extremities of the primary and secondary uncertainty ellipsoids in the direction Cr-Cr.
CC:	3D closest approach distance from a point on the primary well to the secondary well.
T.Face to Sec:	Angle between the Hi-Side vector of the primary well at the current location and line of closest approach between the two wells.

Survey Tool Ranges:			
Name	Start MD(USFt)	End MD(USFt)	Source Survey
MWD:	0.00	18944.20	Default Tool

Wellpath created using minimum curvature.

5D Anti-Collision Report

Anti-Collision Summary (TVD relative to Well TVD Reference)								
SF								
Secondary Well Name	Pri MD (US ft)	Pri TVD (US ft)	Sec MD (US ft)	Sec TVD (US ft)	ES (US ft)	CC (US ft)	SF	Risk
Salt Fork 3-4 Federal COM 301H (p)	4137.30	4137.30	4135.91	4136.91	21.27	40.31	2.12	SF(Lo)
Salt Fork 3-4 Federal Com 2H (s)	18668.36	9294.22	15893.00	8398.23	769.46	897.41	7.01	
Salt Fork 3-4 Federal Com 1H (s)	18710.74	9292.06	15484.85	8418.17	1349.08	1540.25	8.06	
East Turkey Track 3 Federal 1 (s)	11749.22	9368.51	9824.72	9534.15	856.08	935.69	11.75	
Salt Fork 3-4 Federal COM 102H (p)	18944.20	9280.17	15327.81	7603.98	1547.36	1679.23	12.73	
Salt Fork 3-4 Federal COM 101H (p)	18944.20	9280.17	14992.80	7601.55	1922.35	2075.01	13.59	
East Turkey Track 3 Fed 2 (s)	2566.21	2566.21	2500.00	2561.00	1620.06	1668.43	34.49	
GC								
Secondary Well Name	Pri MD (US ft)	Pri TVD (US ft)	Sec MD (US ft)	Sec TVD (US ft)	ES (US ft)	CC (US ft)	SF	Risk
Salt Fork 3-4 Federal COM 301H (p)	50.00	50.00	49.00	50.00	39.08	40.00	43.69	
East Turkey Track 3 Federal 1 (s)	12237.50	9378.91	9855.50	9564.07	751.79	811.88	13.51	
Salt Fork 3-4 Federal Com 2H (s)	13780.66	9373.29	11036.01	8502.45	814.97	875.00	14.58	
Salt Fork 3-4 Federal COM 101H (p)	7171.09	7160.49	7080.50	7110.06	1392.87	1424.35	45.24	
Salt Fork 3-4 Federal Com 1H (s)	13289.45	9376.11	10055.91	8501.39	1431.50	1498.78	22.27	
Salt Fork 3-4 Federal COM 102H (p)	50.00	50.00	19.00	50.00	1612.81	1613.69	1828.85	
East Turkey Track 3 Fed 2 (s)	75.00	75.00	14.00	75.00	1667.45	1668.42	1712.02	

Range Summary

Secondary Well Name: Salt Fork 3-4 Federal COM 301H (p)

SF		
Start MD (US ft)	End MD (US ft)	Risk
3500.00	4500.00	SF (Lo)

Primary Well: Salt Fork 3-4 Federal COM 302H (p) (TVD relative to Well TVD Reference) (All Azimuth Relative to GRID NORTH)

Pri MD (US ft)	Inc (°)	Az (°)	Pri TVD (US ft)	S.Major (US ft)	S.Minor (US ft)	T.Face to Sec (°)	ES (US ft)	CC (US ft)	SF	Nearest Well	Risk
1700.00	0.00	0.00	1700.00	3.71	3.71	270.00	31.78	40.00	4.87	Salt Fork 3-4 Federal COM 301H (p)	
1800.00	0.00	0.00	1800.00	3.93	3.93	270.00	31.33	40.00	4.62	Salt Fork 3-4 Federal COM 301H (p)	
1900.00	0.00	0.00	1900.00	4.16	4.16	270.00	30.88	40.00	4.39	Salt Fork 3-4 Federal COM 301H (p)	
2000.00	0.00	0.00	2000.00	4.38	4.38	270.00	30.43	40.00	4.18	Salt Fork 3-4 Federal COM 301H (p)	
2100.00	0.00	0.00	2100.00	4.61	4.61	270.00	29.98	40.00	3.99	Salt Fork 3-4 Federal	

5D Anti-Collision Report

Primary Well: Salt Fork 3-4 Federal COM 301H (p) (TVD relative to Well TVD Reference) (All Azimuth Relative to GRID NORTH)											
Pri MD (US ft)	Inc (°)	Az (°)	Pri TVD (US ft)	S. Major (US ft)	S. Minor (US ft)	T. Face to Sec (°)	ES (US ft)	CC (US ft)	SF	Nearest Well	Risk
2200.00	0.00	0.00	2200.00	4.83	4.83	270.00	29.53	40.00	3.82	COM 301H (p) Salt Fork 3- 4 Federal COM 301H (p)	
2300.00	0.00	0.00	2300.00	5.06	5.06	270.00	29.08	40.00	3.66	Salt Fork 3- 4 Federal COM 301H (p)	
2400.00	0.00	0.00	2400.00	5.28	5.28	270.00	28.64	40.00	3.52	Salt Fork 3- 4 Federal COM 301H (p)	
2500.00	0.00	0.00	2500.00	5.51	5.51	270.00	28.19	40.00	3.39	Salt Fork 3- 4 Federal COM 301H (p)	
2600.00	0.00	0.00	2600.00	5.73	5.73	270.00	27.74	40.00	3.26	Salt Fork 3- 4 Federal COM 301H (p)	
2700.00	0.00	0.00	2700.00	5.96	5.96	270.00	27.29	40.00	3.15	Salt Fork 3- 4 Federal COM 301H (p)	
2800.00	0.00	0.00	2800.00	6.18	6.18	270.00	26.84	40.00	3.04	Salt Fork 3- 4 Federal COM 301H (p)	
2900.00	0.00	0.00	2900.00	6.41	6.41	270.00	26.39	40.00	2.94	Salt Fork 3- 4 Federal COM 301H (p)	
3000.00	0.00	0.00	3000.00	6.63	6.63	270.00	25.94	40.00	2.84	Salt Fork 3- 4 Federal COM 301H (p)	
3100.00	0.00	0.00	3100.00	6.86	6.86	270.00	25.49	40.00	2.76	Salt Fork 3- 4 Federal COM 301H (p)	
3200.00	0.00	0.00	3200.00	7.08	7.08	270.00	25.04	40.00	2.67	Salt Fork 3- 4 Federal COM 301H (p)	
3300.00	0.00	0.00	3300.00	7.31	7.31	270.00	24.59	40.00	2.60	Salt Fork 3- 4 Federal COM 301H (p)	
3400.00	0.00	0.00	3400.00	7.53	7.53	270.00	24.14	40.00	2.52	Salt Fork 3- 4 Federal COM 301H (p)	
3500.00	0.00	0.00	3500.00	7.76	7.76	270.00	23.69	40.00	2.45	Salt Fork 3- 4 Federal COM 301H (p)	SF(Lo)
3600.00	0.00	0.00	3600.00	7.98	7.98	270.00	23.24	40.00	2.39	Salt Fork 3- 4 Federal COM 301H (p)	SF(Lo)
3700.00	0.00	0.00	3700.00	8.20	8.20	270.00	22.79	40.00	2.32	Salt Fork 3- 4 Federal COM 301H (p)	SF(Lo)
3800.00	0.00	0.00	3800.00	8.43	8.43	270.00	22.34	40.00	2.27	Salt Fork 3- 4 Federal COM 301H (p)	SF(Lo)
3900.00	0.00	0.00	3900.00	8.65	8.65	270.00	21.89	40.00	2.21	Salt Fork 3- 4 Federal COM 301H (p)	SF(Lo)
4000.00	0.00	0.00	4000.00	8.88	8.88	270.00	21.51	40.00	2.16	Salt Fork 3- 4 Federal COM 301H (p)	SF(Lo)

5D Anti-Collision Report

Primary Well: Salt Fork 3-4 Federal COM 302H (p)(TVD relative to Well TVD Reference) (All Azimuth Relative to GRID NORTH)											
Pri MD (US ft)	Inc. (°)	Az (°)	Pri TVD (US ft)	S.Major (US ft)	S.Minor (US ft)	T.Face to Sec (°)	ES (US ft)	CC (US ft)	SF	Nearest Well	Risk
4100.00	0.50	190.00	4100.00	9.09	9.09	80.08	21.19	40.10	2.12	Salt Fork 3-4 Federal COM 301H (p)	SF(Lo)
4137.30	0.87	190.00	4137.30	9.15	9.15	80.23	21.27	40.31	2.12	Salt Fork 3-4 Federal COM 301H (p)	SF(Lo)
4200.00	1.50	190.00	4199.98	9.26	9.25	80.64	21.67	40.91	2.13	Salt Fork 3-4 Federal COM 301H (p)	SF(Lo)
4300.00	2.50	190.00	4299.92	9.43	9.42	81.68	22.99	42.57	2.17	Salt Fork 3-4 Federal COM 301H (p)	SF(Lo)
4400.00	3.50	190.00	4399.78	9.60	9.59	83.09	25.17	45.08	2.26	Salt Fork 3-4 Federal COM 301H (p)	SF(Lo)
4500.00	4.50	190.00	4499.54	9.77	9.75	84.73	28.22	48.47	2.39	Salt Fork 3-4 Federal COM 301H (p)	SF(Lo)
4600.00	5.00	190.00	4599.18	9.95	9.93	86.44	32.06	52.66	2.56	Salt Fork 3-4 Federal COM 301H (p)	
4700.00	5.00	190.00	4698.79	10.13	10.10	87.92	36.04	57.02	2.72	Salt Fork 3-4 Federal COM 301H (p)	
4800.00	5.00	190.00	4798.41	10.32	10.29	89.19	40.05	61.42	2.87	Salt Fork 3-4 Federal COM 301H (p)	
4900.00	5.00	190.00	4898.03	10.51	10.47	90.29	44.08	65.83	3.03	Salt Fork 3-4 Federal COM 301H (p)	
5000.00	5.00	190.00	4997.65	10.71	10.65	91.25	48.12	70.27	3.17	Salt Fork 3-4 Federal COM 301H (p)	
5100.00	5.00	190.00	5097.27	10.91	10.84	92.10	52.18	74.73	3.31	Salt Fork 3-4 Federal COM 301H (p)	
5200.00	5.00	190.00	5196.89	11.11	11.03	92.85	56.24	79.20	3.45	Salt Fork 3-4 Federal COM 301H (p)	
5300.00	5.00	190.00	5296.51	11.32	11.22	93.52	60.31	83.69	3.58	Salt Fork 3-4 Federal COM 301H (p)	
5400.00	5.00	190.00	5396.13	11.52	11.41	94.12	64.38	88.18	3.71	Salt Fork 3-4 Federal COM 301H (p)	
5500.00	5.00	190.00	5495.75	11.74	11.61	94.67	68.46	92.68	3.83	Salt Fork 3-4 Federal COM 301H (p)	
5600.00	5.00	190.00	5595.37	11.95	11.80	95.16	72.54	97.19	3.94	Salt Fork 3-4 Federal COM 301H (p)	
5700.00	5.00	190.00	5694.99	12.17	12.00	95.61	76.62	101.71	4.05	Salt Fork 3-4 Federal COM 301H (p)	
5800.00	5.00	190.00	5794.61	12.39	12.20	96.02	80.70	106.23	4.16	Salt Fork 3-4 Federal COM 301H (p)	
5900.00	5.00	190.00	5894.23	12.61	12.39	96.40	84.78	110.76	4.26	Salt Fork 3-4 Federal COM 301H (p)	

5D Anti-Collision Report

Primary Well: Salt Fork 3-4 Federal COM 302H (p)(TVD relative to Well TVD Reference)(All Azimuth Relative to GRID NORTH)											
Pri MD (US ft)	Inc (°)	Az (°)	Pri TVD (US ft)	S.Major (US ft)	S.Minor (US ft)	T.Face to Sec (°)	ES (US ft)	CC (US ft)	SF	Nearest Well	Risk
6000.00	5.00	190.00	5993.85	12.83	12.59	96.75	88.87	115.29	4.36	Salt Fork 3-4 Federal COM 301H (p)	
6100.00	5.00	190.00	6093.47	13.06	12.80	97.07	92.95	119.83	4.46	Salt Fork 3-4 Federal COM 301H (p)	
6200.00	5.00	190.00	6193.09	13.28	13.00	97.37	97.03	124.37	4.55	Salt Fork 3-4 Federal COM 301H (p)	
6300.00	5.00	190.00	6292.71	13.51	13.20	97.65	101.12	128.91	4.64	Salt Fork 3-4 Federal COM 301H (p)	
6400.00	5.00	190.00	6392.33	13.75	13.41	97.90	105.20	133.46	4.72	Salt Fork 3-4 Federal COM 301H (p)	
6500.00	5.00	190.00	6491.95	13.98	13.61	98.15	109.28	138.00	4.80	Salt Fork 3-4 Federal COM 301H (p)	
6600.00	5.00	190.00	6591.56	14.21	13.82	98.37	113.36	142.55	4.88	Salt Fork 3-4 Federal COM 301H (p)	
6700.00	5.00	190.00	6691.18	14.45	14.02	98.58	117.44	147.11	4.96	Salt Fork 3-4 Federal COM 301H (p)	
16900.00	92.92	269.80	9384.27	182.52	57.98	90.15	1053.19	1317.70	4.98	Salt Fork 3-4 Federal COM 301H (p)	
17000.00	92.92	269.80	9379.18	185.25	58.70	90.17	1049.06	1317.79	4.90	Salt Fork 3-4 Federal COM 301H (p)	
17100.00	92.92	269.80	9374.09	187.98	59.41	90.18	1044.92	1317.88	4.83	Salt Fork 3-4 Federal COM 301H (p)	
17200.00	92.92	269.80	9368.99	190.72	60.12	90.20	1040.77	1317.97	4.75	Salt Fork 3-4 Federal COM 301H (p)	
17300.00	92.92	269.80	9363.90	193.45	60.84	90.21	1036.61	1318.06	4.68	Salt Fork 3-4 Federal COM 301H (p)	
17400.00	92.92	269.80	9358.81	196.19	61.55	90.23	1032.44	1318.15	4.61	Salt Fork 3-4 Federal COM 301H (p)	
17500.00	92.92	269.80	9353.72	198.92	62.26	90.24	1028.26	1318.24	4.55	Salt Fork 3-4 Federal COM 301H (p)	
17600.00	92.92	269.80	9348.62	201.66	62.98	90.26	1024.07	1318.33	4.48	Salt Fork 3-4 Federal COM 301H (p)	
17700.00	92.92	269.80	9343.53	204.40	63.69	90.27	1019.87	1318.42	4.42	Salt Fork 3-4 Federal COM 301H (p)	
17800.00	92.92	269.80	9338.44	207.13	64.41	90.29	1015.67	1318.51	4.35	Salt Fork 3-4 Federal COM 301H (p)	
17900.00	92.92	269.80	9333.35	209.87	65.12	90.30	1011.45	1318.60	4.29	Salt Fork 3-4 Federal COM 301H (p)	
18000.00	92.92	269.80	9328.25	212.61	65.84	90.32	1007.22	1318.69	4.23	Salt Fork 3-4 Federal COM 301H (p)	

5D Anti-Collision Report

Primary Well: Salt Fork 3-4 Federal COM 302H (p) (TVD relative to Well TVD Reference) (All Azimuth Relative to GRID NORTH)												
Pri MD (US ft)	Inc (°)	Az (°)	Pri TVD (US ft)	S.Major (US ft)	S.Minor (US ft)	T.Face to Sec (°)	ES (US ft)	CC (US ft)	SF	Nearest Well	Risk	
18100.00	92.92	269.80	9323.16	215.35	66.56	90.33	1002.98	1318.78	4.18	Salt Fork 3-4 Federal COM 301H (p)		
18200.00	92.92	269.80	9318.07	218.08	67.27	90.34	998.73	1318.87	4.12	Salt Fork 3-4 Federal COM 301H (p)		
18300.00	92.92	269.80	9312.98	220.82	67.99	90.36	994.48	1318.96	4.06	Salt Fork 3-4 Federal COM 301H (p)		
18400.00	92.92	269.80	9307.88	223.56	68.71	90.37	990.21	1319.05	4.01	Salt Fork 3-4 Federal COM 301H (p)		
18500.00	92.92	269.80	9302.79	226.30	69.43	90.39	985.94	1319.14	3.96	Salt Fork 3-4 Federal COM 301H (p)		
18600.00	92.92	269.80	9297.70	229.04	70.15	90.40	981.65	1319.23	3.91	Salt Fork 3-4 Federal COM 301H (p)		
18700.00	92.92	269.80	9292.61	231.78	70.86	90.42	977.36	1319.33	3.86	Salt Fork 3-4 Federal COM 301H (p)		
18800.00	92.92	269.80	9287.51	234.52	71.58	90.43	973.05	1319.42	3.81	Salt Fork 3-4 Federal COM 301H (p)		
18900.00	92.92	269.80	9282.42	237.27	72.30	90.45	968.74	1319.51	3.76	Salt Fork 3-4 Federal COM 301H (p)		
18944.20	92.92	269.80	9280.17	238.48	72.62	90.46	966.64	1319.55	3.74	Salt Fork 3-4 Federal COM 301H (p)		

Secondary Well: Salt Fork 3-4 Federal COM 301H (p) (TVD relative to Well TVD Reference) (All Azimuth Relative to GRID NORTH)												
Pri MD (US ft)	Sec MD (US ft)	Sec TVD (US ft)	Pri TVD (US ft)	Inc (°)	Az (°)	S.Major (US ft)	S.Minor (US ft)	T.Face to Sec (°)	ES (US ft)	CC (US ft)	SF	Risk
1700.00	1699.00	1700.00	1700.00	0.00	0.00	3.71	3.71	270.00	31.78	40.00	4.87	
1800.00	1799.00	1800.00	1800.00	0.00	0.00	3.93	3.93	270.00	31.33	40.00	4.62	
1900.00	1899.00	1900.00	1900.00	0.00	0.00	4.16	4.16	270.00	30.88	40.00	4.39	
2000.00	1999.00	2000.00	2000.00	0.00	0.00	4.38	4.38	270.00	30.43	40.00	4.18	
2100.00	2099.00	2100.00	2100.00	0.00	0.00	4.61	4.61	270.00	29.98	40.00	3.99	
2200.00	2199.00	2200.00	2200.00	0.00	0.00	4.83	4.83	270.00	29.53	40.00	3.82	
2300.00	2299.00	2300.00	2300.00	0.00	0.00	5.06	5.06	270.00	29.08	40.00	3.66	
2400.00	2399.00	2400.00	2400.00	0.00	0.00	5.28	5.28	270.00	28.64	40.00	3.52	
2500.00	2499.00	2500.00	2500.00	0.00	0.00	5.51	5.51	270.00	28.19	40.00	3.39	
2600.00	2599.00	2600.00	2600.00	0.00	0.00	5.73	5.73	270.00	27.74	40.00	3.26	
2700.00	2699.00	2700.00	2700.00	0.00	0.00	5.95	5.95	270.00	27.29	40.00	3.15	
2800.00	2799.00	2800.00	2800.00	0.00	0.00	6.18	6.18	270.00	26.84	40.00	3.04	
2900.00	2899.00	2900.00	2900.00	0.00	0.00	6.40	6.40	270.00	26.39	40.00	2.94	
3000.00	2999.00	3000.00	3000.00	0.00	0.00	6.63	6.63	270.00	25.94	40.00	2.84	
3100.00	3099.00	3100.00	3100.00	0.00	0.00	6.85	6.85	270.00	25.49	40.00	2.76	
3200.00	3199.00	3200.00	3200.00	0.00	0.00	7.08	7.08	270.00	25.04	40.00	2.67	
3300.00	3299.00	3300.00	3300.00	0.00	0.00	7.30	7.30	270.00	24.59	40.00	2.60	
3400.00	3399.00	3400.00	3400.00	0.00	0.00	7.53	7.53	270.00	24.14	40.00	2.52	
3500.00	3499.00	3500.00	3500.00	0.00	0.00	7.75	7.75	270.00	23.69	40.00	2.45	SF(Lo)
3600.00	3599.00	3600.00	3600.00	0.00	0.00	7.98	7.98	270.00	23.24	40.00	2.39	SF(Lo)
3700.00	3699.00	3700.00	3700.00	0.00	0.00	8.20	8.20	270.00	22.79	40.00	2.32	SF(Lo)
3800.00	3799.00	3800.00	3800.00	0.00	0.00	8.43	8.43	270.00	22.34	40.00	2.27	SF(Lo)
3900.00	3899.00	3900.00	3900.00	0.00	0.00	8.65	8.65	270.00	21.89	40.00	2.21	SF(Lo)
4000.00	3999.00	4000.00	4000.00	0.00	0.00	8.88	8.88	270.00	21.51	40.00	2.16	SF(Lo)
4100.00	4098.78	4099.78	4100.00	0.49	220.50	9.09	9.09	80.08	21.19	40.10	2.12	SF(Lo)

5D Anti-Collision Report

Secondary Well: Salt Fork 3-4 Federal COM 301H (p)(TVD relative to Well TVD Reference)(All Azimuth Relative to GRID NORTH)												
Pri MD (US ft)	Sec MD (US ft)	Sec TVD (US ft)	Pri TVD (US ft)	Inc (°)	Az (°)	S.Major (US ft)	S.Minor (US ft)	T.Face to Sec (°)	ES (US ft)	CC (US ft)	SF	Risk
4137.30	4135.91	4136.91	4137.30	0.86	220.50	9.15	9.15	80.23	21.27	40.31	2.12	SF(Lo)
4200.00	4198.32	4199.30	4199.98	1.48	220.50	9.26	9.26	80.64	21.67	40.91	2.13	SF(Lo)
4300.00	4297.84	4298.77	4299.92	2.48	220.50	9.44	9.43	81.68	22.99	42.57	2.17	SF(Lo)
4400.00	4397.34	4398.13	4399.78	3.47	220.50	9.62	9.60	83.09	25.17	45.08	2.26	SF(Lo)
4500.00	4496.79	4497.34	4499.54	4.47	220.50	9.80	9.77	84.73	28.22	48.47	2.39	SF(Lo)
4600.00	4596.42	4596.61	4599.18	5.00	220.50	9.98	9.95	86.44	32.06	52.66	2.56	
4700.00	4696.32	4696.13	4698.79	5.00	220.50	10.18	10.13	87.92	36.04	57.02	2.72	
4800.00	4796.21	4795.64	4798.41	5.00	220.50	10.37	10.32	89.19	40.05	61.42	2.87	
4900.00	4896.11	4895.16	4898.03	5.00	220.50	10.57	10.51	90.29	44.08	65.83	3.03	
5000.00	4996.00	4994.67	4997.65	5.00	220.50	10.77	10.70	91.25	48.12	70.27	3.17	
5100.00	5095.90	5094.19	5097.27	5.00	220.50	10.98	10.89	92.10	52.18	74.73	3.31	
5200.00	5195.79	5193.70	5196.89	5.00	220.50	11.19	11.08	92.85	56.24	79.20	3.45	
5300.00	5295.69	5293.22	5296.51	5.00	220.50	11.40	11.28	93.52	60.31	83.69	3.58	
5400.00	5395.58	5392.73	5396.13	5.00	220.50	11.61	11.47	94.12	64.38	88.18	3.71	
5500.00	5495.48	5492.25	5495.75	5.00	220.50	11.83	11.67	94.67	68.46	92.68	3.83	
5600.00	5595.37	5591.76	5595.37	5.00	220.50	12.05	11.87	95.16	72.54	97.19	3.94	
5700.00	5695.27	5691.28	5694.99	5.00	220.50	12.27	12.07	95.61	76.62	101.71	4.05	
5800.00	5795.16	5790.79	5794.61	5.00	220.50	12.50	12.27	96.02	80.70	106.23	4.16	
5900.00	5895.06	5890.31	5894.23	5.00	220.50	12.72	12.47	96.40	84.78	110.76	4.26	
6000.00	5994.95	5989.82	5993.85	5.00	220.50	12.95	12.68	96.75	88.87	115.29	4.36	
6100.00	6094.85	6089.33	6093.47	5.00	220.50	13.18	12.88	97.07	92.95	119.83	4.46	
6200.00	6194.74	6188.85	6193.09	5.00	220.50	13.41	13.08	97.37	97.03	124.37	4.55	
6300.00	6294.64	6288.36	6292.71	5.00	220.50	13.64	13.29	97.65	101.12	128.91	4.64	
6400.00	6394.53	6387.88	6392.33	5.00	220.50	13.88	13.50	97.90	105.20	133.46	4.72	
6500.00	6494.43	6487.39	6491.95	5.00	220.50	14.12	13.71	98.15	109.28	138.00	4.80	
6600.00	6594.32	6586.91	6591.56	5.00	220.50	14.36	13.91	98.37	113.36	142.55	4.88	
6700.00	6694.22	6686.42	6691.18	5.00	220.50	14.59	14.12	98.58	117.44	147.11	4.96	
16900.00	15892.93	9387.79	9384.27	92.72	269.85	183.85	50.81	90.15	1053.19	1317.70	4.98	
17000.00	15992.93	9383.04	9379.18	92.72	269.85	186.59	51.52	90.17	1049.06	1317.79	4.90	
17100.00	16092.93	9378.29	9374.09	92.72	269.85	189.32	52.23	90.18	1044.92	1317.88	4.83	
17200.00	16192.93	9373.54	9368.99	92.72	269.85	192.06	52.93	90.20	1040.77	1317.97	4.75	
17300.00	16292.93	9368.80	9363.90	92.72	269.85	194.80	53.64	90.21	1036.61	1318.06	4.68	
17400.00	16392.93	9364.05	9358.81	92.72	269.85	197.53	54.35	90.23	1032.44	1318.15	4.61	
17500.00	16492.93	9359.30	9353.72	92.72	269.85	200.27	55.06	90.24	1028.26	1318.24	4.55	
17600.00	16592.93	9354.55	9348.62	92.72	269.85	203.01	55.77	90.26	1024.07	1318.33	4.48	
17700.00	16692.93	9349.80	9343.53	92.72	269.85	205.75	56.48	90.27	1019.87	1318.42	4.42	
17800.00	16792.93	9345.05	9338.44	92.72	269.85	208.49	57.19	90.29	1015.67	1318.51	4.35	
17900.00	16892.93	9340.30	9333.35	92.72	269.85	211.23	57.90	90.30	1011.45	1318.60	4.29	
18000.00	16992.93	9335.55	9328.25	92.72	269.85	213.97	58.61	90.32	1007.22	1318.69	4.23	
18100.00	17092.92	9330.81	9323.16	92.72	269.85	216.71	59.32	90.33	1002.98	1318.78	4.18	
18200.00	17192.92	9326.06	9318.07	92.72	269.85	219.45	60.04	90.34	998.73	1318.87	4.12	
18300.00	17292.92	9321.31	9312.98	92.72	269.85	222.19	60.75	90.36	994.48	1318.96	4.06	
18400.00	17392.92	9316.56	9307.88	92.72	269.85	224.94	61.46	90.37	990.21	1319.05	4.01	
18500.00	17492.92	9311.81	9302.79	92.72	269.85	227.68	62.18	90.39	985.94	1319.14	3.96	
18600.00	17592.92	9307.06	9297.70	92.72	269.85	230.42	62.89	90.40	981.65	1319.23	3.91	
18700.00	17692.92	9302.31	9292.61	92.72	269.85	233.16	63.61	90.42	977.36	1319.33	3.86	
18800.00	17792.92	9297.57	9287.51	92.72	269.85	235.91	64.32	90.43	973.05	1319.42	3.81	
18900.00	17892.92	9292.82	9282.42	92.72	269.85	238.65	65.04	90.45	968.74	1319.51	3.76	
18944.20	17937.12	9290.71	9280.17	92.72	269.85	239.87	65.35	90.46	966.64	1319.55	3.74	

Apache Corp respectfully requests approval for the following changes and additions to the drilling plan:

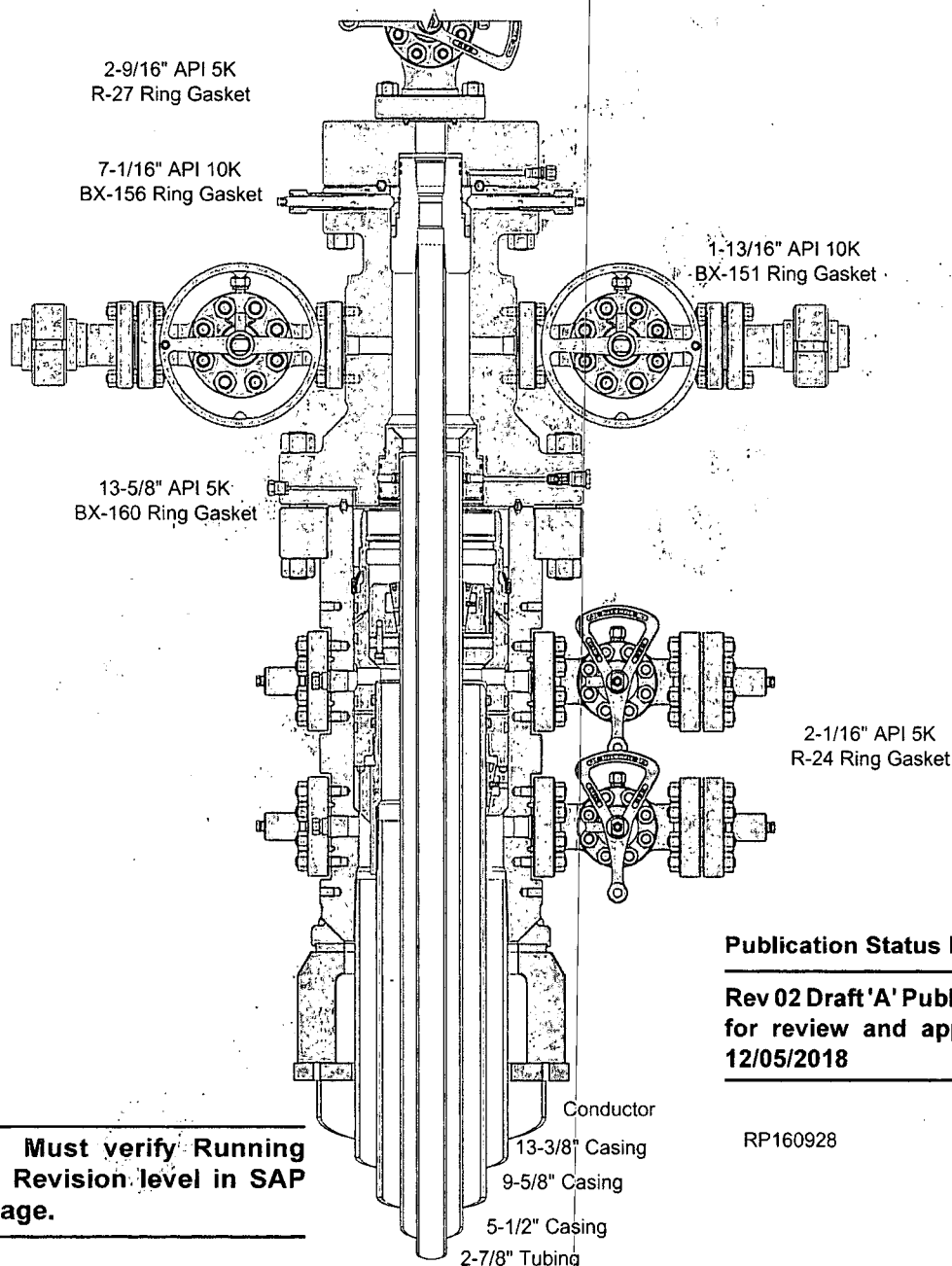
1. Utilize batch drilling operations
2. Description of Operations:
 1. Big rig will move in and N/U the BOP on the first well and do a full BOP test and test the surface casing according to BLM Onshore Order 2 rules. The BLM will be contacted and notified 24 hours prior to commencing spudder rig operations.
 2. After drilling the intermediate hole section, the rig will run casing and cement 9-5/8" intermediate casing following all the applicable rules and regulations (BLM Onshore Order 2).
 3. The landing joint will be backed off, the pack off installed and tested. The BOP will be N/D and a blind flange with the same pressure rating as the wellhead will be installed to seal the wellbore. Pressure will be monitored with a pressure gauge installed on the wellhead.
 - a. A means for intervention will be maintained while the drilling rig is not over the well.
 4. The rig will skid over to the second well and N/U the BOP. A full BOP test will be performed and test the surface casing according to BLM Onshore Order 2 rules. The BLM will be contacted and notified 24 hours prior to commencing spudder rig operations.
 5. Steps 2-3 will be performed on the second well
 6. The rig will then skid back to the first well and N/U the BOP. A full BOP test will be performed and test the surface casing according to BLM Onshore Order 2 rules.
 7. After drilling the production hole section, the rig will run casing and cement 7" x 5-1/2" tapered production casing following all the applicable rules and regulations (BLM Onshore Order 2).
 8. The BOP will be N/D and production casing will be cut off 12 hours after bumping the plug according to BLM potash COAs. a blind flange with the same pressure rating as the wellhead will be installed to seal the wellbore. Pressure will be monitored with a pressure gauge installed on the wellhead.
 - a. A means for intervention will be maintained while the drilling rig is not over the well.
 9. The rig will skid over to the second well and N/U the BOP. A full BOP test will be performed and test the surface casing according to BLM Onshore Order 2 rules.
 10. Steps 7-8 will be performed on the second well

Once the rig is removed, Apache Corp will secure the wellhead area by placing a guard rail around the cellar area.

NOTE: DRAFT Publication is for Review ONLY. NOT approved for System Installation. NOT approved for field usage. NOT approved for distribution. If you obtain a DRAFT copy - it is your responsibility to verify SAP revision level or contact Houston Engineering to ensure document has been approved and released.

RUNNING PROCEDURE

Apache Corp. 5-1/2" or 7" Producer



Publication Status Note:

Rev 02 Draft 'A' Publication sent
for review and approval; EA
12/05/2018

RP160928

▲ CAUTION Must verify Running
Procedure Revision level in SAP
prior to usage.

Surface Systems Publication



CAMERON
A Schlumberger Company

13-5/8" 5K MN-DS System
13-3/8" x 9-5/8" x 5-1/2"(or 7") x 2-7/8" Casing Program

RP-003612
Rev 02 Draft A

SALT FORK 3 4 FEDERAL COM 302H - REVISED 11.14.19 CSG DETAIL

String: <u>SURFACE</u>							
Hole Size: <u>17.5</u>							
Top Setting Depth (MD):	<u>0</u>	Top Setting Depth (TVD):	<u>0</u>	Btm setting depth (MD):	<u>488 415</u>	Btm setting depth (TVD):	<u>488 415</u>
Size:	<u>13-3/8"</u>	Grade:	<u>H-40</u>	Weight (lbs/ft):	<u>48</u>	Joint (Butt,FJ, LTC,STC, SLH, N/A, Other):	<u>STC</u>
Condition (New/Used):		<u>New</u>		Standard (API/Non-API):		<u>API</u>	
Tapered String (Y/N)?: <u>N</u> If yes, need spec attachment							
<u>Safety Factors</u>							
Collapse Design Safety Factor:		<u>3.83</u>		Burst Design Safety Factor:		<u>1.43</u>	
Body Tensile Design Safety Factor type?: Dry/Buoyant				<u>Buoyant</u>			
Body Tensile Design Safety Factor:		<u>3.48</u>					
Joint Tensile Design Safety Factor type?: Dry/Buoyant				<u>Buoyant</u>			
Joint Tensile Design Safety Factor:		<u>2.07</u>					

String: <u>INTERMEDIATE</u>							
Hole Size: <u>12.25</u>							
Top Setting Depth (MD):	<u>0</u>	Top Setting Depth (TVD):	<u>0</u>	Btm setting depth (MD):	<u>3950</u>	Btm setting depth (TVD):	<u>3950</u>
Size:	<u>9-5/8"</u>	Grade:	<u>J-55</u>	Weight (lbs/ft):	<u>36</u>	Joint (Butt,FJ, LTC,STC, SLH, N/A, Other):	<u>LTC</u>

Condition (New/Used): <u>New</u>	Standard (API/Non-API): <u>API</u>
Tapered String (Y/N)?: <u>N</u> If yes, need spec attachment	
<u>Safety Factors</u>	
Collapse Design Safety Factor: <u>1.77</u>	Burst Design Safety Factor: <u>1.4</u>
Body Tensile Design Safety Factor type?: Dry/Buoyant	<u>Buoyant</u>
Body Tensile Design Safety Factor: <u>2.32</u>	
Joint Tensile Design Safety Factor type?: Dry/Buoyant	<u>Buoyant</u>
Joint Tensile Design Safety Factor: <u>1.88</u>	

<u>String:</u> <u>PRODUCTION</u>						
Hole Size: <u>8.75</u>						
Top Setting Depth (MD): <u>0</u>	Top Setting Depth (TVD): <u>0</u>	Btm setting depth (MD): <u>9056.5</u>	Btm setting depth (TVD): <u>9038.7</u>			
Size: <u>7"</u>	Grade: <u>P-110</u>	Weight (lbs/ft): <u>26</u>	Joint (Butt,FJ, LTC,STC, SLH, N/A, Other): <u>Buttress</u>			
Condition (New/Used): <u>New</u>		Standard (API/Non-API): <u>API</u>				
<u>Safety Factors</u>						
Collapse Design Safety Factor: <u>1.54</u>		Burst Design Safety Factor: <u>1.21</u>				
Body Tensile Design Safety Factor type?: Dry/Buoyant		<u>Buoyant</u>				
Body Tensile Design Safety Factor: <u>2.56</u>						
Joint Tensile Design Safety Factor type?: Dry/Buoyant		<u>Buoyant</u>				
Joint Tensile Design Safety Factor: <u>2.66</u>						
Tapered String (Y/N)?: <u>Y</u> If yes, need spec attachment						

Hole Size:	<u>8.75</u>						
Top Setting Depth (MD):	<u>9056.5</u>	Top Setting Depth (TVD):	<u>9038.7</u>	Btm setting depth (MD):	<u>9595</u>	Btm setting depth (TVD):	<u>9316</u>
Size:	<u>5-1/2"</u>	Grade:	<u>P-110</u>	Weight (lbs/ft):	<u>17</u>	Joint (Butt,FJ, LTC,STC, SLH, N/A, Other):	<u>Buttress</u>
Condition (New/Used):	<u>New</u>	Standard (API/Non-API):			<u>API</u>		

Safety Factors

Collapse Design Safety Factor: 1.76 Burst Design Safety Factor: 1.3

Body Tensile Design Safety Factor type?: Dry/Buoyant Buoyant

Body Tensile Design Safety Factor: 2.24

Joint Tensile Design Safety Factor type?: Dry/Buoyant Buoyant

Joint Tensile Design Safety Factor: 2.37

Hole Size: 8.5

Top Setting Depth (MD):	<u>9595</u>	Top Setting Depth (TVD):	<u>9316</u>	Btm setting depth (MD):	<u>18944</u>	Btm setting depth (TVD):	<u>9280</u>
Size:	<u>5-1/2"</u>	Grade:	<u>P-110</u>	Weight (lbs/ft):	<u>17</u>	Joint (Butt,FJ, LTC,STC, SLH, N/A, Other):	<u>Buttress</u>
Condition (New/Used):	<u>New</u>	Standard (API/Non-API):			<u>API</u>		

Safety Factors

Collapse Design Safety Factor: 1.76 Burst Design Safety Factor: 1.3

Body Tensile Design Safety Factor type?: Dry/Buoyant Buoyant

Body Tensile Design Safety Factor: 2.24

Joint Tensile Design Safety Factor type?: Dry/Buoyant Buoyant

Joint Tensile Design Safety Factor:

2.37

SALT FORK 3 4 FEDERAL COM 302H - REVISED 11.14.19 CMT DETAIL

CEMENT: SURFACE

Stage Tool Depth: N/A

Tail:

Top MD of
Segment: 0

Btm MD of
Segment: 415

Cmt Type: C

Cmt Additives: 1% CaCl2

Quantity (sks): 305

Yield (cu/ft/sk): 1.33 Volume (cu/ft): 405.65

Density (lbs/gal): 14.8 Percent OH Excess: 25%

CEMENT: INTERMEDIATE

Single Stage

Lead:

Top MD of
Segment: 0

Btm MD of
Segment: 3160

Cmt Type: C

Cmt Additives: 5% NaCl + 6% Bentonite

Quantity (sks): 655

Yield (cu/ft/sk): 1.89 Volume (cu/ft): 1237.95

Density (lbs/gal): 12.9 Percent OH Excess: 25%

Tail:

Top MD of
Segment: 3160

Btm MD of
Segment: 3950

Cmt Type: C

Cmt Additives: 0.2% Retarder

Quantity (sks): 250

Yield (cu/ft/sk): 1.33 Volume (cu/ft): 332.5

Density (lbs/gal): 14.8 Percent OH Excess: 25%

2 Stage Cement Job

* DV tool depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

*If lost circulation is encountered, Apache may 2-stage Interm csg. A DVT may be used in the 9-5/8" csg & ECP may be placed below DVT.

1st Stage

Tail:

Top MD of
Segment: 3500

Btm MD of
Segment: 3950

Cmt Type: C

Cmt Additives: 0.2% Retarder

Quantity (sks): 150

Yield (cu/ft/sk): 1.33 Volume (cu/ft): 199.5

Density (lbs/gal): 14.8 Percent OH Excess: 25%

Stage Tool / ECP Depth: ± 3500'

2nd Stage

Lead:

Top MD of
Segment: 0

Btm MD of
Segment: 2820.55

Cmt Type: C

Cmt Additives: 5% NaCl + 6% Bentonite

Quantity (sks): 585

Yield (cu/ft/sk): 1.89 Volume (cu/ft): 1105.65

Density (lbs/gal): 12.9 Percent OH Excess: 25%

Tail:

Top MD of
Segment: 2820.55

Btm MD of
Segment: 3500

Cmt Type: C

Cmt Additives: 0.3% Retarder

Quantity (sks): 200

Yield (cu/ft/sk): 1.33 Volume (cu/ft): 266

Density (lbs/gal): 14.8 Percent OH Excess: 25%

CEMENT: PRODUCTION

Single Stage

Lead:

Top MD of
Segment: 3450

Btm MD of
Segment: 8897

Cmt Type: H

Cmt Additives: 10% gel + 5% Salt

Quantity (sks): 421

Yield (cu/ft/sk): 2.32 Volume (cu/ft): 976.72

Density (lbs/gal): 11.9 Percent OH Excess: 20%

Tail:

Top MD of
Segment: 8897

Btm MD of
Segment: 18944

Cmt Type: TXI Lite

Cmt Additives: 0.3% Fluid Loss + 0.2% Retarder

Quantity (sks): 1910

Yield (cu/ft/sk): 1.46 Volume (cu/ft): 2788.6

Density (lbs/gal): 13.2 Percent OH Excess: 20%