

EXPLORING WHAT'S POSSIBLE

Apache Corporation

Eddy County, NM (NAD27 NME)

Hawk Federal Com

#3H

OH

*Changed well name to
Cedar Lake Federal CA 30314
30-015-43559*

Plan: Plan #1 06-11-15

NM OIL CONSERVATION
ARTESIA DISTRICT

JAN 09 2018

Standard Planning Report

RECEIVED

11 June, 2015

Please provide signature
page for directional survey



Planning Report



Database:	Compass 5000 GCR	Local Co-ordinate Reference:	Well #3H
Company:	Apache Corporation	TVD Reference:	KB @ 3963.00usft (Capstar 114)
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	KB @ 3963.00usft (Capstar 114)
Site:	Hawk Federal Com	North Reference:	Grid
Well:	#3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 06-11-15		

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	Hawk Federal Com		
Site Position:		Northing:	678,926.80 usft
From:	Map	Easting:	643,794.70 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 51' 56.07367 N
		Longitude:	103° 51' 54.07565 W
		Grid Convergence:	0.25 °

Well	#3H		
Well Position	+N/-S	64.80 usft	Northing: 678,991.60 usft
	+E/-W	-26.80 usft	Easting: 643,767.90 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	32° 51' 56.71604 N
		Longitude:	103° 51' 54.38649 W
		Ground Level:	3,952.00 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination (°)
	HDGM	6/10/2015	7.60
		Dip Angle (°)	60.83
		Field Strength (nT)	48,585

Design	Plan #1 06-11-15		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
		Direction (°)	269.62

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,153.62	0.00	0.00	5,153.62	0.00	0.00	0.00	0.00	0.00	0.00	
5,912.40	91.05	269.62	5,631.00	-3.21	-486.24	12.00	12.00	-11.91	269.62	
10,534.05	91.05	269.62	5,546.00	-33.70	-5,107.00	0.00	0.00	0.00	0.00	BHL(Hawk Fed #3H)

Database: Compass 5000 GCR
Company: Apache Corporation
Project: Eddy County, NM (NAD27 NME)
Site: Hawk Federal Com
Well: #3H
Wellbore: OH
Design: Plan #1 06-11-15

Local Co-ordinate Reference: Well #3H
TVD Reference: KB @ 3963.00usft (Capstar 114)
MD Reference: KB @ 3963.00usft (Capstar 114)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
392.00	0.00	0.00	392.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
585.00	0.00	0.00	585.00	0.00	0.00	0.00	0.00	0.00	0.00
T/Salt									
1,546.00	0.00	0.00	1,546.00	0.00	0.00	0.00	0.00	0.00	0.00
B/Salt									
1,708.00	0.00	0.00	1,708.00	0.00	0.00	0.00	0.00	0.00	0.00
Yates									
1,990.00	0.00	0.00	1,990.00	0.00	0.00	0.00	0.00	0.00	0.00
Seven Rivers									
2,603.00	0.00	0.00	2,603.00	0.00	0.00	0.00	0.00	0.00	0.00
Queen									
3,018.00	0.00	0.00	3,018.00	0.00	0.00	0.00	0.00	0.00	0.00
Grayburg									
3,353.00	0.00	0.00	3,353.00	0.00	0.00	0.00	0.00	0.00	0.00
San Andres									
4,817.00	0.00	0.00	4,817.00	0.00	0.00	0.00	0.00	0.00	0.00
Glorieta									
4,899.00	0.00	0.00	4,899.00	0.00	0.00	0.00	0.00	0.00	0.00
(Yeso) Paddock									
5,153.62	0.00	0.00	5,153.62	0.00	0.00	0.00	0.00	0.00	0.00
KOP, Start 12°/100' Build									
5,200.00	5.57	269.62	5,199.93	-0.01	-2.25	2.25	12.00	12.00	0.00
5,300.00	17.57	269.62	5,297.72	-0.15	-22.26	22.26	12.00	12.00	0.00
5,400.00	29.57	269.62	5,389.21	-0.41	-62.17	62.17	12.00	12.00	0.00
5,491.50	40.55	269.62	5,464.00	-0.76	-114.64	114.65	12.00	12.00	0.00
(Yeso) Blinebry									
5,500.00	41.57	269.62	5,470.41	-0.79	-120.22	120.23	12.00	12.00	0.00
5,600.00	53.57	269.62	5,537.76	-1.28	-193.89	193.90	12.00	12.00	0.00
5,700.00	65.57	269.62	5,588.32	-1.85	-279.95	279.96	12.00	12.00	0.00
5,800.00	77.57	269.62	5,619.89	-2.47	-374.65	374.66	12.00	12.00	0.00
5,900.00	89.57	269.62	5,631.07	-3.13	-473.83	473.84	12.00	12.00	0.00
5,912.40	91.05	269.62	5,631.00	-3.21	-486.23	486.24	12.00	12.00	0.00
LP, Begin 91.05° Inc Hold, 269.62° Azm									
6,000.00	91.05	269.62	5,629.39	-3.79	-573.82	573.83	0.00	0.00	0.00
6,100.00	91.05	269.62	5,627.55	-4.45	-673.80	673.81	0.00	0.00	0.00
6,200.00	91.05	269.62	5,625.71	-5.11	-773.78	773.80	0.00	0.00	0.00
6,300.00	91.05	269.62	5,623.88	-5.77	-873.76	873.78	0.00	0.00	0.00
6,400.00	91.05	269.62	5,622.04	-6.43	-973.74	973.76	0.00	0.00	0.00
6,500.00	91.05	269.62	5,620.20	-7.09	-1,073.72	1,073.74	0.00	0.00	0.00
6,600.00	91.05	269.62	5,618.36	-7.75	-1,173.70	1,173.73	0.00	0.00	0.00
6,700.00	91.05	269.62	5,616.52	-8.40	-1,273.68	1,273.71	0.00	0.00	0.00
6,800.00	91.05	269.62	5,614.68	-9.06	-1,373.66	1,373.69	0.00	0.00	0.00
6,900.00	91.05	269.62	5,612.84	-9.72	-1,473.65	1,473.68	0.00	0.00	0.00
7,000.00	91.05	269.62	5,611.00	-10.38	-1,573.63	1,573.66	0.00	0.00	0.00
7,100.00	91.05	269.62	5,609.16	-11.04	-1,673.61	1,673.64	0.00	0.00	0.00
7,200.00	91.05	269.62	5,607.32	-11.70	-1,773.59	1,773.63	0.00	0.00	0.00
7,300.00	91.05	269.62	5,605.48	-12.36	-1,873.57	1,873.61	0.00	0.00	0.00
7,400.00	91.05	269.62	5,603.64	-13.02	-1,973.55	1,973.59	0.00	0.00	0.00
7,500.00	91.05	269.62	5,601.80	-13.68	-2,073.53	2,073.58	0.00	0.00	0.00
7,600.00	91.05	269.62	5,599.96	-14.34	-2,173.51	2,173.56	0.00	0.00	0.00
7,700.00	91.05	269.62	5,598.13	-15.00	-2,273.49	2,273.54	0.00	0.00	0.00

Planning Report



Database: Compass 5000 GCR
Company: Apache Corporation
Project: Eddy County, NM (NAD27 NME)
Site: Hawk Federal Com
Well: #3H
Wellbore: OH
Design: Plan #1 06-11-15

Local Co-ordinate Reference: Well #3H
TVD Reference: KB @ 3963.00usft (Capstar 114)
MD Reference: KB @ 3963.00usft (Capstar 114)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,800.00	91.05	269.62	5,596.29	-15.66	-2,373.47	2,373.53	0.00	0.00	0.00
7,900.00	91.05	269.62	5,594.45	-16.32	-2,473.45	2,473.51	0.00	0.00	0.00
8,000.00	91.05	269.62	5,592.61	-16.98	-2,573.44	2,573.49	0.00	0.00	0.00
8,100.00	91.05	269.62	5,590.77	-17.64	-2,673.42	2,673.47	0.00	0.00	0.00
8,196.15	91.05	269.62	5,589.00	-18.28	-2,769.55	2,769.61	0.00	0.00	0.00
MP(Hawk Fed #3H)									
8,200.00	91.05	269.62	5,588.93	-18.30	-2,773.40	2,773.46	0.00	0.00	0.00
8,300.00	91.05	269.62	5,587.09	-18.96	-2,873.38	2,873.44	0.00	0.00	0.00
8,400.00	91.05	269.62	5,585.25	-19.62	-2,973.36	2,973.42	0.00	0.00	0.00
8,500.00	91.05	269.62	5,583.41	-20.28	-3,073.34	3,073.41	0.00	0.00	0.00
8,600.00	91.05	269.62	5,581.57	-20.94	-3,173.32	3,173.39	0.00	0.00	0.00
8,700.00	91.05	269.62	5,579.73	-21.60	-3,273.30	3,273.37	0.00	0.00	0.00
8,800.00	91.05	269.62	5,577.89	-22.26	-3,373.28	3,373.36	0.00	0.00	0.00
8,900.00	91.05	269.62	5,576.05	-22.92	-3,473.26	3,473.34	0.00	0.00	0.00
9,000.00	91.05	269.62	5,574.22	-23.58	-3,573.24	3,573.32	0.00	0.00	0.00
9,100.00	91.05	269.62	5,572.38	-24.24	-3,673.23	3,673.31	0.00	0.00	0.00
9,200.00	91.05	269.62	5,570.54	-24.90	-3,773.21	3,773.29	0.00	0.00	0.00
9,300.00	91.05	269.62	5,568.70	-25.56	-3,873.19	3,873.27	0.00	0.00	0.00
9,400.00	91.05	269.62	5,566.86	-26.22	-3,973.17	3,973.25	0.00	0.00	0.00
9,500.00	91.05	269.62	5,565.02	-26.88	-4,073.15	4,073.24	0.00	0.00	0.00
9,600.00	91.05	269.62	5,563.18	-27.54	-4,173.13	4,173.22	0.00	0.00	0.00
9,700.00	91.05	269.62	5,561.34	-28.20	-4,273.11	4,273.20	0.00	0.00	0.00
9,800.00	91.05	269.62	5,559.50	-28.86	-4,373.09	4,373.19	0.00	0.00	0.00
9,900.00	91.05	269.62	5,557.66	-29.52	-4,473.07	4,473.17	0.00	0.00	0.00
10,000.00	91.05	269.62	5,555.82	-30.18	-4,573.05	4,573.15	0.00	0.00	0.00
10,100.00	91.05	269.62	5,553.98	-30.84	-4,673.03	4,673.14	0.00	0.00	0.00
10,200.00	91.05	269.62	5,552.14	-31.50	-4,773.02	4,773.12	0.00	0.00	0.00
10,300.00	91.05	269.62	5,550.30	-32.16	-4,873.00	4,873.10	0.00	0.00	0.00
10,400.00	91.05	269.62	5,548.47	-32.82	-4,972.98	4,973.09	0.00	0.00	0.00
10,500.00	91.05	269.62	5,546.63	-33.48	-5,072.96	5,073.07	0.00	0.00	0.00
10,534.05	91.05	269.62	5,546.00	-33.70	-5,107.00	5,107.11	0.00	0.00	0.00
TD at 10534.05' MD - BHL(Hawk Fed #3H)									

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
BHL(Hawk Fed #3H)	0.00	0.00	5,546.00	-33.70	-5,107.00	678,957.90	638,660.90	32° 51' 56.60271 N	103° 52' 54.26380 W
- plan hits target center									
- Point									
MP(Hawk Fed #3H)	0.00	0.00	5,589.00	-18.28	-2,769.55	678,973.32	640,998.36	32° 51' 56.65557 N	103° 52' 26.85821 W
- plan hits target center									
- Point									

Planning Report



Database:	Compass 5000 GCR	Local Co-ordinate Reference:	Well #3H
Company:	Apache Corporation	TVD Reference:	KB @ 3963.00usft (Capstar 114)
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	KB @ 3963.00usft (Capstar 114)
Site:	Hawk Federal Com	North Reference:	Grid
Well:	#3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 06-11-15		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
392.00	392.00	Rustler			
585.00	585.00	T/Salt			
1,546.00	1,546.00	B/Salt			
1,708.00	1,708.00	Yates			
1,990.00	1,990.00	Seven Rivers			
2,603.00	2,603.00	Queen			
3,018.00	3,018.00	Grayburg			
3,353.00	3,353.00	San Andres			
4,817.00	4,817.00	Glorieta			
4,899.00	4,899.00	(Yeso) Paddock			
5,491.50	5,484.00	(Yeso) Blinbry			

Plan Annotations

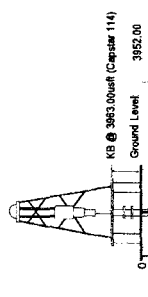
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,153.62	5,153.62	0.00	0.00	KOP, Start 12"/100' Build
5,912.40	5,631.00	-3.21	-486.23	LP, Begin 91.05° Inc Hold, 269.62° Azm
10,534.05	5,546.00	-33.70	-5,107.00	TD at 10534.05' MD

Project: Eddy County, NM (NAD27 NME)
 Site: Hawk Federal Com
 Well: #3H
 Wellbore: OH
 Design: Plan #1 06-11-15
 Rig: Capstar 114



Asimuths to Grid North
 True North: 0.25°
 Magnetic North: 7.35°
 Magnetic Field
 Strength: 48020.8 nT
 Dip Angle: 66.81°
 Date: 8/10/2015
 Model: HDGM

EXPLORING WHAT'S POSSIBLE



WELL DETAILS

	Ground Level	3952.00
East	643787.80	32° 51' 56.71604 N
North	678991.60	103° 51' 54.38649 W
East	643787.80	32° 51' 56.71604 N
North	678991.60	103° 51' 54.38649 W

SECTION DETAILS

Sec	MD	Inc	Asi	TVD	+N/S	+E/W	Dip	TFace	VSeal	Target	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	KOP Start 12/10/07 Build
2	5153.82	0.00	0.00	5153.82	0.00	0.00	0.00	0.00	0.00	0.00	LP Begin 91.05° Inc Hold 269.82° Azm
3	5912.40	51.05	269.82	5931.00	-3.31	-488.24	12.00	269.82	488.25		TD at 10534.05 MD
4	10534.05	91.05	269.82	5946.00	-3370	-5107.00	0.00	0.00	3107.11	BHL(Hawk Fed #3H)	

DESIGN TARGET DETAILS

Name	TVD	+N/S	+E/W	North	East	Latitude	Longitude	Shape
BHL(Hawk Fed #3H)	5246.00	-3370	-5107.00	678991.60	643787.80	32° 51' 56.80271 N	103° 52' 54.26350 W	Point
MP(Hawk Fed #3H)	5246.00	-3370	-5107.00	678991.60	643787.80	32° 51' 56.80271 N	103° 52' 54.26350 W	Point

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
392.00	392.00	Rustler		
595.00	595.00	TSalt		
1546.00	1546.00	Grayburg		
1708.00	1708.00	Yates		
2803.00	2803.00	Seven Rivers		
2803.00	2803.00	Quatern		
3018.00	3018.00	Grayburg		
3353.00	3353.00	San Andres		
4817.00	4817.00	Glorieta		
4899.00	4899.00	(Yeso) Padoc		
5464.00	5464.00	(Yeso) Baniery		

LEGEND

---	#1H, OH, Plan #1 06-11-15 V0
---	#6H, OH, Plan #1 06-11-15 V0
---	#5H, OH, Plan #1 06-11-15 V0
---	#2H, OH, Plan #1 06-11-15 V0
---	#4H, OH, Plan #1 06-11-15 V0
---	Plan #1 06-11-15

Map System: US State Plane 1927 (Exact edition)
 Datum: NAD 1927 (NADCON CONUS)
 Ellipsoid: Clarke 1866
 Zone Name: New Mexico East 3001
 Local Origin: Well #3H, Grid North
 Latitude: 32° 51' 56.71604 N
 Longitude: 103° 51' 54.38649 W
 Grid East: 643787.80
 Grid North: 678991.60
 Scale Factor: 1.000
 Geomagnetic Model: HDGM
 Sample Date: 10-Jun-15
 Magnetic Declination: 7.60°
 Dip Angle from Horizontal: 60.83°
 Magnetic Field Strength: 48621
 To convert a Magnetic Direction to a Grid Direction, Add 7.35°
 To convert a Magnetic Direction to a True Direction, Add 7.60° East
 To convert a True Direction to a Grid Direction, Subtract 0.25°

