OCD-ARTESIA

Form 3160-3 (April 2004)			FORM APPROVED OMB No. 1004-0137 Expires March 31, 2007				
UNITED STATES DEPARTMENT OF THE I BUREAU OF LAND MAN.		5	i. Lease Serial No. NMLC - 0294	·			
APPLICATION FOR PERMIT TO I		(6. If Indian, Allote	e or Tribe N	lame		
la. Type of work: 🗸 DRILL REENTE	R	7	7 If Unit or CA Agreement, Name and No.				
lb. Type of Well: Oil Well Gas Well Other	Single Zone Muli	iple Zone	8. Lease Name and Well No. CROW FEDERAL #15H <308711>				
2. Name of Operator APACHE CORPORATION	۷۶	73> S	o. API Well No. 30-015-	40	579		
3a. Address 303 VETERANS AIRPARK LN #3000 MIDLAND, TX 79705	3b. Phone No. (include area code) 432-818-1167	10). Field and Pool, or CEDAR LAK		7 140		
4. Location of Well (Report location clearly and in accordance with any At surface 988' FSL & 250' FWL SEC: 10 UI At proposed prod. zone 988' FSL & 330' FWL SEC: 9 U	L: M	11	. Sec., T. R. M. or l		-		
At proposed prod. Zone 900 FSL & 350 FWL 3EC. 9 C Distance in miles and direction from nearest town or post office* APPROX 4 MILES NORTHEAST OF LOCO HILLS, N		1	2. County or Parish EDDY	13. State NM			
15. Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig, unit line, if any)	16. No. of acres in lease 1919.88 ACRES		7. Spacing Unit dedicated to this well 160 ACRES				
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. ~ 25'	19. Proposed Depth TVD ~ 6050' MD ~ 11149'		Bond No. on file CO - 1463 NA	rionwid	E		
21 Elevations (Show whether DF, KDB, RT, GL, etc.) 3884'	22 Approximate date work will st AS Soon As Ap	1	3. Estimated duration ~ 25 DAYS	on			
	24. Attachments						
The following, completed in accordance with the requirements of Onshore							
 Well plat certified by a registered surveyor. A Drilling Plan A Surface Use Plan (if the location is on National Forest System I SUPO shall be filed with the appropriate Forest Service Office) 		ication e specific inform	inless covered by an	Č			
25. Signature Sorman Flory	Name (Printed/Typed) SORINA L. FLOF			Date 5	Taali		
Title SUPV OF DRILLING SERVICES					•		
Approved by (Signature) /s/ Don Peterson		Don Pete	rson	Date JUL	3 1 201		
Title (FIELD MANAGER	Office .CARLSBAD F	TELD OFFIC	E				
Application approval does not warrant or certify that the applicant holds conduct operations thereon Conditions of approval, if any, are attached.	s legal or equitable title to those rig	hts in the subject APPR	lease which would OVAL FOR	entitle the ap	plicant to YEARS		
Fitle 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a cristates any false, fictitious or fraudulent statements or representations as to	ime for any person knowingly and any matter within its jurisdiction.	willfully to make	to any department	or agency o	f the United		
*(Instructions on page 2)		Roewe	eli Controll	ed Wa	ter Basin		
	RECEIVE			ou mu	ior Buom		
ATTACHED FOR	AUG 02 2012						
DITIONS OF APPROVAL	NMOCD ARTE						

Approval Subject to General Requirements & Special Stipulations Attached

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT CARLSBAD FIELD OFFICE 620 E. GREENE STREET CARLSBAD, NM 88220

OPERATOR CERTIFICATION

I HEARBY CERTIFY THAT I, OR SOMEONE UNDER MY DIRECT SUPERVISION, HAVE INSPECTED THE DRILL SITE AND ACCESS ROUTE PROPOSED HEREIN; THAT I AM FAMILIAR WITH THE CONDITIONS WHICH CURRENTLY EXIST; THAT I HAVE FULL KNOWLEDGE OF STATE AND FEDERAL laws applicable to this operation; that the statements made in the APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

Well: <u>CROW FEDERAL</u>	#15H		
Operator Name:	APACHE CORP	ORATI	ON
Signature:	West		Printed Name: <u>TERRY WEST</u>
Title: <u>Drilling Engineer</u>			_Date:
Email (optional):	terry.west@a	apachec	orp.com
Street or Box:	303 Veterans	<u> Airpar</u>	k Ln., Ste. 3000
City, State, Zip Code:	Midland, TX	79705	· · · · · · · · · · · · · · · · · · ·
Telephone:	432-	818-1	114
Field Representative (if r	not above signa	atory <u>):</u>	
Address (if different fror	n above):		
Telephone (if different fi	om above <u>):</u>		
Email (optional):			

Executed this 2 day of May, 2012

Agents not directly employed by the operator must submit a letter from the operator authorizing that the agent to act or file this application on their behalf.

DISTRICT 1
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., Sania Fe, NM 87505
Phone. (505) 476-3460 Fax: (505) 476-3462

Property Code

API Number

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

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

□AMENDED REPORT

Well Number

1511

WELL LOCATION AND ACREAGE DEDICATION PLAT

CDOW EEDED AT

Property Name

Cedar Lakej Glorieta - Yeso

Pool Code

96831

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DRILLING PLAN: BLM COMPLIANCE

(Supplement to BLM 3160-3)

APACHE CORPORATION (OGRID: 873) CROW FEDERAL #15H

Lease #: NMLC-029426B Projected TVD: ~ 6050' MD: ~ 11149' GL: 3885' SHL: 988' FSL & 250' FWL UL: M SEC: 10 BHL: 988' FSL & 330' FWL UL: M SEC: 9

T17S R31E EDDY COUNTY, NM

1. GEOLOGIC NAME OF SURFACE FORMATION: Eolian/Piedmond Alluvial Deposits

2. ESTIMATED TOPS OF GEOLOGICAL MARKERS & DEPTHS OF ANTICIPATED FRESH WATER, OIL OR GAS:

Quaternary Aeolian	Surf	Queen	2781'
Rustler	530'	Grayburg	3206'
Salt Top	701'	San Andres	3541' (Oil)
Salt Bottom	1705′	Glorieta	5021'
Yates	1872'	Yeso (Paddock)	5075' (Oil)
· Seven Rivers	2154'	TD	TVD: 6050' MD: 11149'

Avg Depth to Ground Water: ~91'

Fresh water & prospectively valuable minerals, as described by BLM, encountered during drilling, will be recorded by depth & adequately protected. All oil & gas shows within zones of correlative rights will be tested to determine commercial potential. Surface fresh water sands will be protected by setting 13-3/8" csg @ 555' & circ cmt back to surface. Hydrocarbon zones will be protected by setting 9-5/8" csg @ \sim 3500', if water flow is encountered, then 7" @ \sim 5700'; and a 4-1/2" liner from the 7" csg though the KOP @ \sim 5778'; the curve & on to TD @ \sim 11149' MD.

3. CASING PROGRAM: All casing is new & API approved

STRING	HOLE SIZE	DEPTH	OD CSG	WEIGHT	COLLAR	GRADE	COLLAPSE	BURST	TENSION
Surface	17-1/2"	0'-555'574	13-3/8"	48#	STC	H-40	1.0	1.21	1.8
Intermediate *	12-1/4"	0' - 3500'	9-5/8"	36#	STC	J-55	1.0	1.21	1.8
Production	8-3/4"	0' 5700'	7"	26#	LTC	J-55	1.0	1.21	1.8
Production Liner	6-1/8"	5600' – 11149'	4.5"	11.6#	LTC	L-80	1.125	1.21	1.8

^{*}Contingency: 9-5/8" sting will only be ran if water flows are encountered.

4. CEMENT PROGRAM:

A. Surface (TOC - Surface) **100% excess cmt to surf** Cmt with:

<u>Lead</u>: 170 sx Class H 50/50 w/10% Gel + 0.5# Star Seal + 0.25% De-foamer + 3% Salt (11.9 wt, 2.31 yld)

Compressive Strengths: 12 hr - 589 psi 24 hr - 947 psi

<u>Tail:</u> 360 sx Class C w/ 0.25% De-foamer (14.8 wt, 1.33 yld)

Compressive Strengths: 12 hr - 813 psi 24 hr - 1205 psi

B. <u>Intermediate (TOC – Surface) **50% excess cmt to surf**</u>. Cmt with:

<u>Lead</u>: 550 sx Class H 50/50 w/10% Gel + 2# Star Seal + 0.25% De-foamer (11.9 wt, 2.24 yld)

Compressive Strengths: 12 hr – 540 psi 24 hr – 866 psi

Tail: 380 sx Class C w/1% CaCL + 0.25% De-foamer (14.8 wt, 1.34 yld)

Compressive Strengths: 12 hr - 813 psi 24 hr - 1205 psi

C. Production (TOC: ~2500' from surface) **35% excess cmt** Cmt with:

Lead: 270 sx Class H 50/50 w/10% Gel + 2# Star Seal + 0.25% Defoamer (11.9 wt, 2.24 yld)

Compressive Strengths: 12 hr - 540 psi 24 hr - 866 psi

Tail: 500 sx Class C w/1% CaCL + 0.25% De-foamer (14.8 wt, 1.34 yld)

Compressive Strengths: 12 hr - 813 psi 24 psi - 1205 psi

*Contingency: If 9-5/8" string is not ran, the following cmt program will be used for the Production string & will bring cmt to surface using 35% excess:

Lead: 1269 sx Class H 50/50 w/10% Gel + 2# Star Seal + 0.25% Defoamer (11.9 wt, 2.24 yld) Compressive Strengths: 12 hr - 540 psi 24 hr - 866 psi

<u>Tail:</u> 200 sx Class C w/1% CaCL + 0.25% De-foamer (14.8 wt, 1.34 yld) Compressive Strengths: 12 hr - 813 psi 24 psi - 1205 psi

Apache proposes to run a multiple packer system on the 4-1/2" production liner which will tie back into the 7" string (No cmt will be used).

** The above cmt volumes could be revised pending caliper measurement from open hole logs. For Surface csg: If cmt does not circ to surface, the appropriate BLM office shall be notified. The top of cement shall be determined by either a temperature survey or by tagging, as directed by the BLM for the specific set of circumstances. Cement will then be brought to surface via either 1" or ready mix operations, as specified by the BLM at that time.

5. PROPOSED CONTROL EQUIPMENT

"EXHIBIT 3" shows a 13-5/8" 3M psi WP BOP consisting of at least annular bag type preventer. This BOP will be nippled up on the 13-3/8" surface csg head & tested to 70% of casing burst. After the 9-5/8" intermediate csg is set & cemented (or after the 7" string, if the 9-5/8" casing isn't ran), either a (13-5/8") or an 11" 3M BOP consisting of an annular bag type preventer, middle blind rams and bottom pipe rams will be installed in place of the original BOP & utilized continuously until TD is reached. The BOP will be tested at 2000 psi, maximum surface pressure is not expected to exceed 2M psi, BHP is calculated to be approximately 2662 psi. *All BOP's & associated equipment will be tested as per BLM Drilling Operations Order #2. The BOP will be operated & checked each 24 hr period & blind rams will be operated & checked when the drill pipe is out of the hole. Functional tests will be documented on the daily driller's log. "EXHIBIT 3" also shows a 3M psi choke manifold with a 3" blow down line. Full opening stabbing valve & Kelly cock will be on derrick floor in case of need. No abnormal pressures of temperatures are expected in this well. No nearby wells have encountered any problems.

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

INTERVAL	MW (ppg)	VISC (sec/qt)	FLUID LOSS (cc)	MUD TYPE
0'-555'575	8.6 – 8.8	28 – 30	NC	FW
5,50′ – 3500′ *	9.8 – 10.0	28 – 34	NC	Brine
3500' – 5700'	8.6 – 9.1	28 – 36	NC	FW/Brine
5700′ – 11149′	8.6 - 9.1	28 – 40	· 15 - NC	FW/Brine

^{*} Contingency: If 9-5/8" string is not ran, these mud properties will be continued to the next casing seat instead of those indicated on the next line.

7. AUXILIARY WELL CONTROL EQUIPMENT / MONITORING EQUIPMENT:

√11" x 3000 psi Double BOP/Blind & pipe ram (3M BOP/BOPE to be used as 2M system).

4-1/2" x 3000 psi Kelly valve

11" x 3000 psi mud cross – H2S detector on production hole

Gate-type safety valve 3" choke line from BOP to manifold

2" adjustable chokes - 3" blow down line

Fill up line as per Onshore Order 2

- 8. LOGGING, CORING & TESTING PROGRAM: See COA A. OH logs: Dual Laterolog, MSFL, CNL, Litho-Density, Gamma Ray, Caliper & Sonic from TD back to last csg shoe.
 - B. Run CNL, Gamma Ray from 8-5/8" csg shoe back to surface.
 - **C.** No cores, DST's or mud logger are planned at this time.
 - D. Additional testing will be initiated subsequent to setting the 5-1/2" production casing. Specific intervals will be targeted based on log evaluation, geological sample shows & drill stem tests.

^{**} The necessary mud products for weight addition and fluid loss control will be on location at all times. In order to run open hole logs & casing, the above mud properties may have to be altered to meet these needs.

9. POTENTIAL HAZARDS:

No abnormal pressures or temperatures are anticipated. In the event abnormal pressures are encountered, however, the proposed mud program will be modified to increase the mud-weight. There is known presence of H₂S in this area. If H₂S is encountered the operator will comply with the provisions of *Onshore Oil & Gas Order No. 6.* No lost circulation is expected to occur. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. Estimated BHP: 2662 psi and estimated BHT: 115°.

10. ANTICIPATED STARTING DATE AND DURATION OF OPERATIONS:

Road and location construction will begin after BLM has approved APD. Anticipated spud date will be as soon after BLM approval and as soon as rig will be available. Move in operations and drilling is expected to take ~ 25 days. If production casing is run then an additional 90 days will be needed to complete well and construct surface facilities and/or lay flow lines in order to place well on production.

11. OTHER FACETS OF OPERATION:

After running csg, cased hole Gamma Ray, Neutron Collar logs will be run from TD back to all possible productive zones. The Cedar Lake; Glorieta-Yeso formation will be perforated and stimulated in order to establish production. The well will be swab tested & potentialed as an oil well.

Apache Corporation

Eddy County, NM Crow Federal 15H Job # 1210353 Wellbore #1

Plan: Plan 1 4-25-2012

Apache Corp. Planning Report

25 April, 2012

Project: Site: Well: Well: Wellbore: Design: Project Map System: Geo Datum:	US State Pla NAD 1927 (N	y County, NM ne 1927 (Exact solution) ADCON CONUS)				TVD Referen MD Referen North Refere	ce: ence: :ulation Method:	Site Crow Federal 15 WELL @ 3915.00usf WELL @ 3915.00usf Grid Minimum Curvature Compass5000 Mean Sea Level	t (Original Well Elev)
Map Zone:	New Mexico	East 3001		<u></u>					
Site	Cro	v Federal 15H							
Site Position: From: Position Uncertai	Map nty:	0.00 usft	Northin Easting Slot Ra	:		371,235.90 usft 343,906.10 usft 13-3/16 "	Longitud		32° 50' 39.9670 N 103° 51' 53.1696 W 0.25 °
Well	Job	# 1210353							
Well Position	+N/-S +E/-W	0.00 usft 0.00 usft	Northing: Easting:			5.90 usft 6.10 usft		Latitude: Longitude:	32° 50' 39.9670 N 103° 51' 53.1696 W
Position Uncertai	nty	0.00 usft	Wellhead E	levation:		usft		Ground Level:	3,915.00 usft
Wellbore	Well	bore #1							
Magnetics	. Model	·	Declination (°)	,	Dip Angle (°)		rield Strength (nT)		•
	IGRI	F2010_14 04/25	5/12	7.66	6	0.69	48,868		
Design	Plan	1 4-25-2012							
Audit Notes: Version:		Phase:	PLAN	Tie On De	epth:	0.00			
Vertical Section:	,	Depth From (TVD) (usft) 0.00	+N/-S (usft) 0.00	+E/-W (usft) 0.00		Direction (°) 269.63			
Survey Tool Prog	ram Date	04/25/12							
From '(usft)	To (usft)	Survey (Wellbore)	Tool Nam	ie -:	Descriptio	n .			
0.	00 11,149.1	0 Plan 1 4-25-2012 (Wellbore	#1) MWD		MWD - Sta	indard		***************************************	

Company: Project: Site:

Apache Corporation Eddy County, NM Crow Federal 15H Job # 1210353

Well: Wellbore: Design:

Wellbore #1 Plan 1 4-25-2012 Local Co-ordinate Reference:

TVD Reference: MD Reference: North Reference:

Survey Calculation Method:

Database:

Site Crow Federal 15H

WELL @ 3915.00usft (Original Well.Elev) WELL @ 3915.00usft (Original Well Elev)

Grid

Minimum Curvature Compass5000

ed Survey	L				<u> </u>					 }
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
0.00	0.00	0.00	3,915.00	0.00	0.00	0.00	0.00	0.00	671,235.90	643,90
200.00	0.00	0.00	3,715.00	200.00	0.00	0.00	0.00	0.00	671,235.90	643,90
	uild @ 2.00°/100'									
270.00	1.40	269.63	3,645.01	269.99	-0.01	-0.85	0.85	2.00	671,235.89	643,90
360.00	3.20	269 63	3,555.08	359.92	-0.03	-4.46	4.46	2.00	671,235.87	643,90
400.16	4.00	269.63	3,515.00	400.00	-0.05	-6.98	6.98	2.00	671,235.85	643,89
Hold 4° Inc for	500.00'									
450.00	4.00	269.63	3,465.28	449.72	-0.07	-10.46	10.46	0.00	671,235.83	643,89
540.00	4.00	269 63	3,375.50	539.50	-0.11	-16.74	16.74	0.00	671,235.79	643,88
630.00	4.00	269.63	3,285.72	629.28	-0.15	-23.02	23.02	0.00	671,235.75	643,88
720.00	4.00	269.63	3,195.94	719.06	-0.19	-29.29	29.29	0.00	671,235.71	643,87
810.00	4.00	269.63	3,106.16	808.84	-0.23	-35.57	35.57	0.00	671,235.67	643,87
900 00	4.00	269.63	3,016.38	898.62	-0.27	-41 85	41.85	0.00	671,235.63	643,86
900.16	4.00	269.63	3,016.22	898.78	-0.27	-41.86	41.86	0.00	671,235.63	643,86
Begin Drop @										
990.00	2.65	269.63	2,926.53	988.47	-0.30	-47.07	47.07	1.50	671,235.60	643,85
1,080.00	1.30	269.63	2,836.59	1,078.41	-0.32	-50.18	50.18	1.50	671,235.58	643,85
1,166.60	0.00	0 00	2,750.00	1,165.00	-0.33	-51.16	51.16	1.50	671,235.57	643,85
Verttical										
5,779.80	0.00	0.00	-1,863.20	5,778.20	-0.33	-51.16	51.16	0.00	671,235.57	643,85
KOP Build 15.0	0°/100'									
5,850.00	10.53	269.63	-1,933.01	5,848.01	-0.37	-57.59	57.59	15.00	671,235.53	643,84
5,940.00	24.03	269.63	-2,018.75	5,933.75	-0.54	-84.27	84.27	15.00	671,235.36	643,82
6,030 00	37.54	269.63	-2,095.88	6,010 88	-0.84	-130.23	130.23	15.00	671,235.06	643,77
6,120 00	51.04	269.63	-2,160.16	6,075 16	-1.25	-192.92	192.93	15.00	671,234.65	643,7
6,210.00	64.54	269.63	-2,208.02	6,123.02	-1.74	-268.90	268.90	15.00	671,234.16	643,6
6,300.00	78.04	269.63	-2,236.82	6,151.82	-2.29	-353.94	353.95	15.00	671,233 61	643,5

Company: Project:

Wellbore:

Design:

Site:

Well:

Apache Corporation Eddy County, NM Crow Federal 15H Job # 1210353 Wellbore #1

Plan 1 4-25-2012

Local Co-ordinate Reference:

Survey Calculation Method:

TVD Reference:
MD Reference:
North Reference:

Database:

Site Crow Federal 15H

WELL @ 3915.00usft (Original Well Elev) WELL @ 3915.00usft (Original Well Elev)

Grid

Minimum Curvature Compass5000

Planned Survey

ned Survey	<u> </u>									
MD . (usft)	inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (úsft)	Easting (usft)
6,388.48	91.32	269 63	-2,245.00	6,160.00	-2.85	-441.85	441.86	15.00	671,233.05	643,464
LP @ 6160' TVD 6,390.00	91.32	269.63	-2,244.97	6,159.97	-2 86	-4 43.36	443.37	0.00	671,233.04	643,462
6,428.76	91.32	269.63	-2,244 07	6,159.07	-3.11	-482.11	482.12	0.01	671,232.79	643,423
6,480.00	91.32	269.63	-2,242.89	6,157.89	-3.44	-533.34	533 35	0.00	671,232.46	643,372
6,570 00	91.32	269.63	-2,240.81	6,155.81	-4.03	-623.31	623 32	0.00	671,231.87	643,282
6,660.00	91.32	269.63	-2,238.73	6,153.73	-4.61	-713.29	713.30	0.00	671,231.29	643,192
6,750.00	91.32	269.63	-2,236.65	6,151.65	-5.19	-803.26	803.28	0.00	671,230.71	643,10
6,840.00	91.32	269.63	-2,234.57	6,149.57	-5.77	-893.23	893.25	0.00	671,230.13	643,012
6,930.00	91.32	269.63	-2,232.49	6,147.49	-6.35	-983.21	983.23	0.00	671,229.55	642,92
7,020.00	91.32	269.63	-2,230.41	6,145.41	-6.93	-1,073.18	1,073.20	0.00	671,228.97	642,83
7,110.00	91.32	269.63	-2,228 33	6,143.33	-7.51	-1,163.16	1,163.18	0.00	671,228.39	642,74
7,200.00	91.32	269.63	-2,226.25	6,141.25	-8.09	-1,253.13	1,253.16	0.00	671,227.81	642,65
7,290.00	91.32	269.63	-2,224.17	6,139.17	-8.68	-1,343.10	1,343.13	0.00	671,227.22	642,56
7,380.00	91.32	269.63	-2,222.09	6,137.09	-9.26	-1,433.08	1,433.11	0.00	671,226 64	642,47
7,470.00	91.32	269.63	-2,220.01	6,135.01	-9.84	-1,523.05	1,523 08	0.00	671,226.06	642,38
7,560.00	91.32	269.63	-2,217.93	6,132.93	-10.42	-1,613.03	1,613 06	0.00	671,225.48	642,29
7,650.00	91.32	269.63	-2,215 85	6,130.85	-11.00	-1,703.00	1,703.04	0.00	671,224.90	642,20
7,740.00	91.32	269.63	-2,213.77	6,128.77	-11.58	-1,792.98	1,793.01	0.00	671,224.32	642,11
7,830.00	91.32	269.63	-2,211.69	6,126.69	-12.16	-1,882.95	1,882.99	0.00	671,223.74	642,02
7,920.00	91.32	269.63	-2,209.61	6,124.61	-12.74	-1,972.92	1,972.96	0.00	671,223.16	641,93
8,010.00	91.32	269.63	-2,207.53	6,122.53	-13.33	-2,062.90	2,062.94	0.00	671,222.57	641,84
8,100.00	91.32	269.63	-2,205.45	6,120.45	-13.91	-2,152.87	2,152.92	0.00	671,221.99	641,75
8,190.00	91.32	269.63	-2,203.37	6,118.37	-14.49	-2,242.85	2,242.89	0.00	671,221.41	641,66
8,280.00	91.32	269.63	-2,201.30	6,116.30	-15.07	-2,332.82	2,332.87	0.00	671,220.83	641,57
8,370.00	91.32	269.63	-2,199.22	6,114.22	-15.65	-2,422.79	2,422.84	0.00	671,220.25	641,48
8,460.00	91.32	269.63	-2,197.14	6,112.14	-16.23	-2,512.77	2,512.82	0.00	671,219.67	641,393

Company: Project: Site:

Well:

Wellbore:

Design:

Apache Corporation Eddy County, NM Crow Federal 15H Job # 1210353 Weilbore #1

Plan 1 4-25-2012

Local Co-ordinate Reference:

TVD Reference: MD Reference:

North Reference: Survey Calculation Method: Database: Site Crow Federal 15H

WELL @ 3915.00usft (Original Well Elev)
WELL @ 3915 00usft (Original Well Elev)

Grid

Minimum Curvature
Compass5000

Planned Survey

MD (usft)	Inc A	zi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg. (°/100usft)	Northing (usft)	Easting (usft)
8,550.00	91.32	269.63	-2,195.06	6,110.06	-16.81	-2,602.74	2,602.80	0.00	671,219.09	641,303.36
8,640.00	91.32	269.63	-2,192.98	6,107.98	-17.39	-2,692.72	2,692 77	0.00	671,218.51	641,213 38
8,730.00	91.32	269.63	-2,190.90	6,105.90	-17.98	-2,782.69	2,782.75	0.00	671,217.92	641,123.41
8,820.00	91.32	269.63	-2,188.82	6,103.82	-18.56	-2,872.66	2,872.72	0.00	671,217.34	641,033.44
8,910.00	91.32	269.63	-2,186.74	6,101.74	-19.14	-2,962.64	2,962.70	0.00	671,216.76	640,943.46
9,000.00	91.32	269.63	-2,184.66	6,099.66	-19.72	-3,052.61	3,052.68	0.00	671,216.18	640,853.49
9,090.00	91.32	269.63	-2,182.58	6,097.58	-20.30	-3,142.59	3,142.65	0.00	671,215.60	640,763.51
9,180.00	91.32	269.63	-2,180.50	6,095.50	-20.88	-3,232.56	3,232.63	0.00	671,215.02	640,673.54
9,270.00	91.32	269.63	-2,178.42	6,093.42	-21.46	-3,322.53	3,322.60	0.00	671,214 44	640,583.57
9,360.00	91.32	269.63	-2,176.34	6,091.34	-22.04	-3,412.51	3,412.58	0.00	671,213.86	640,493.59
9,450.00	91.32	269.63	-2,174.26	6,089.26	-22 63	-3,502 48	3,502.56	0.00	671,213.27	640,403.62
9,540.00	91.32	269.63	-2,172.18	6,087.18	-23.21	-3,592.46	3,592.53	0.00	671,212.69	640,313.64
9,630.00	91.32	269.63	-2,170.10	6,085.10	-23.79	-3,682.43	3,682.51	0.00	671,212.11	640,223.67
9,720.00	91.32	269.63	-2,168.02	6,083.02	-24.37	-3,772.41	3,772.48	0.00	671,211.53	640,133.69
9,810.00	91.32	269.63	-2,165.94	6,080.94	-24.95	-3,862.38	3,862.46	0.00	671,210.95	640,043.72
9,900.00	91.32	269.63	-2,163.86	6,078.86	-25.53	-3,952.35	3,952.44	0.00	671,210.37	639,953.75
9,990.00	91.32	269.63	-2,161.78	6,076.78	-26.11	-4,042.33	4,042.41	0.00	671,209 79	639,863.77
10,080.00	91.32	269.63	-2,159 70	6,074.70	-26.70	-4,132.30	4,132.39	0.00	671,209.20	639,773.80
10,170.00	91.32	269.63	-2,157.62	6,072 62	-27.28	-4,222.28	4,222.36	0.00	671,208.62	639,683.82
10,260.00 -	91.32	269.63	-2,155 54	6,070.54	-27.86	-4,312.25	4,312.34	0.00	671,208.04	639,593.85
10,350.00	91.32	269 63	-2,153.46	6,068.46	-28.44	-4,402.22	4,402.32	0.00	671,207.46	639,503.88
10,440.00	91.32	269.63	-2,151.38	6,066.38	-29.02	-4,492.20	4,492.29	0.00	671,206.88	639,413.90
10,530.00	91.32	269.63	-2,149.31	6,064.31	-29.60	-4,582.17	4,582.27	0.00	671,206.30	639,323.93
10,620.00	91.32	269.63	-2,147.23	6,062.23	-30.18	-4,672.15	4,672.24	0.00	671,205.72	639,233.95
10,710.00	91.32	269 63	-2,145.15	6,060.15	-30.76	-4,762.12	4,762 22	0.00	671,205.14	639,143.98
10,800.00	91.32	269.63	-2,143.07	6,058.07	-31.35	-4,852.09	4,852.20	0.00	671,204.55	639,054.01
10,890.00	91.32	269.63	-2,140.99	6,055 99	-31.93	-4,942 07	4,942.17	0.00	671,203.97	638,964.03

Company: Project: Site:

Wellbore:

Design:

Well:

Apache Corporation Eddy County, NM Crow Federal 15H Job # 1210353 Wellbore #1

Plan 1 4-25-2012

Local Co-ordinate Reference:

TVD Reference: MD Reference: North Reference:

Site Crow Federal 15H WELL @ 3915.00usft (Original Well Elev) WELL @ 3915.00usft (Original Well Elev)

Grid

Minimum Curvature Compass5000

Survey Calculation Method: Database:

Planned	Survey
riaiiiieu	Survey

MD ∛(usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W· , · (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting . (usft)
10,980.00	91.32	269.63	-2,138.91	6,053.91	-32.51	-5,032.04	5,032.15	0.00	671,203.39	638,874.06
11,070.00	91.32	269.63	-2,136.83	6,051.83	-33.09	-5,122.02	5,122.12	0.00	671,202.81	638,784.08
11,149.00	91.32	269.63	-2,135.00	6,050.00	-33 60	-5,200.99	5,201.10	0.00	671,202.30	638,705.11
TD @ 11149.11' MI 11,149.11	D 91.32	269.63	-2,135.00	6,050.00	-33.60	-5,201.10	5,201.21	0.00	671,202.30	638,705.00

Formations									 	
-	Measured Depth (usft)	Vertical Depth (usft)	· N	lame	Lithology	Dip (°)	Dip Direction (°)	·	` .	
	2,782.60	2,781.00	Queen			0.00			 	
	5,076.60	5,075.00	Yeso paddock			0.00				
	530.48	530.00	Rustler			0.00				
	5,634.60	5,633.00	Blinebry			0.00				
	1,873.60	1,872.00	Yates			0.00				
	3,542.60	3,541.00	San Andres			0.00				
	701.90	701.00	T/Salt			0.00				
	5,022.60	5,021.00	Glorieta			0.00				

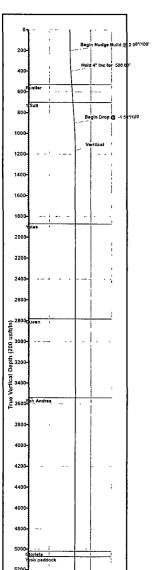
an Annotatio	ons					 	
í	Measured	Vertical	Local Coor			, · ·	
	Depth (usft)	Depth (usft) -	+N/-S	+E/-W	Comment		
	200.00	200.00	(usft) 0.00	(usft) 0 00	Begin Nudge Build @ 2.00°/100'	 	
	400.16	400.00					
			-0.05	-6.98	Hold 4° Inc for 500.00'		
	900.16	898.78	-0.27	-41.86	Begin Drop @ -1.50°/100'		
	1,166.60	1,165.00	-0.33	-51.16	Verttical		
	5,779.80	5,778.20	-0.33	- 51.16	KOP Build 15.00°/100'		
	6,388.48	6,160.00	-2.85	-441.85	LP @ 6160' TVD		
	11,149.00	6,050.00	-33.60	-5,200.99	TD @ 11149.11' MD		

	Company: Project: Site: Well: Wellbore: Design:	Apache Corporation Eddy County, NM Crow Federal 15H Job # 1210353 Wellbore #1 Plan 1 4-25-2012		Local Co-ordinate Reference: TVD Reference: MD Reference: North Reference: Survey Calculation Method: Database:	Site Crow Federal 15H WELL @ 3915.00usft (Original Well Elev) WELL @ 3915.00usft (Original Well Elev) Grid Minimum Curvature Compass5000
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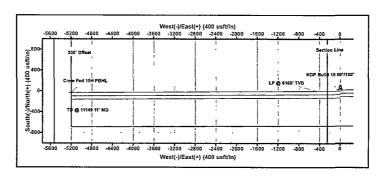
Apache Corporation

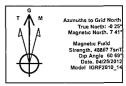
Project: Eddy County, NM Site: Crow Federal 15H Well: Job # 1210353 Wellbore: Wellbore #1 Plan: Plan 1 4-25-2012



-400 -200 0 200 400 Vertical Section at 269 63° (200 usft/in

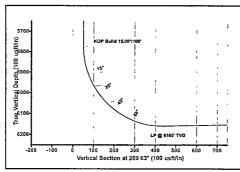
				SEC	CTION DE	TAILS			
MD	Inc	Azı	TVD	+N/-S	+E/-W	Dlea	TFace	VSect	
0 00	0 00	0.00	0.00	0.00	0 00	0 0 0	0.00	0.00	
200 00	0 00	0.00	200 00	0.00	0.00	0.00	0 00	0.00	
400 16	4 00	269 63	400.00	-0 05	-6 98	2 00	269 63	6 98	
900 16	4 00	269 63	898 78	-0.27	-41 86	0.00	0.00	41 86	
1166.60	0.00	0 00	1165 00	-0.33	-51 16	1.50	180 00	51 16	
5779.80	0.00	0.00	5778.20	-0.33	-51.16	0.00	0.00	51 16	
6388.48	91 32	269 63	6160 00	-2 85	-441 85	15 00	269 63	441 86	
6428 76	91.32	269.63	6159.07	-3.11	-482 11	0 01		482.12	
11149 11					-5201 10	0 00		5201 21	Crow Fed 15H PBHL

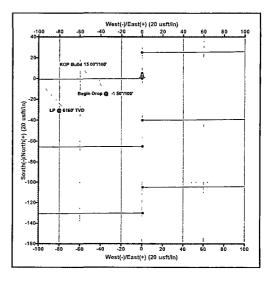


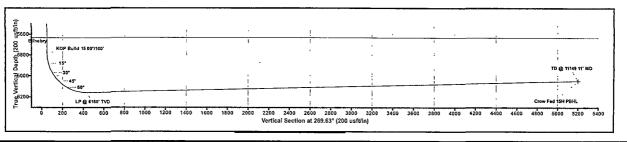


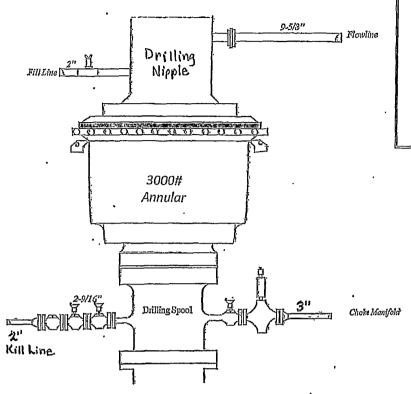
		FORMATION TO	P DETAILS	
TVDPath	MDPath	Formation	DipAngle	DipDir
530 00	530 48	Rustler	0.00	
701 00	701 90	T/Salt	0.00	
1872 00	1873 60	Yates	0.00	
2781 00	2782 60	Queen	0.00	
3541 00	3542 60	San Andres	0.00	
5021 00	5022.60	Glorieta	0.00	
5075 00	5076 60	Yeso paddock	0.00	
5633 00		Blinebry	0 00	

	ANN	IOTATIONS
TVD	MD	Annotation
200 00	200 00	Begin Nudge Build @ 2 00°/100
400.00	400.16	Hold 4° Inc for 500.00'
898.78	900.16	Begin Drop @ -1,50°/100'
1165.00	1166 60	Verttical
5778 20	5779.80	KOP Build 15 00°/100'
6160 00	6388 48	LP @ 6160' TVD
6050 00	11149 00	TD @ 11149.11' MD



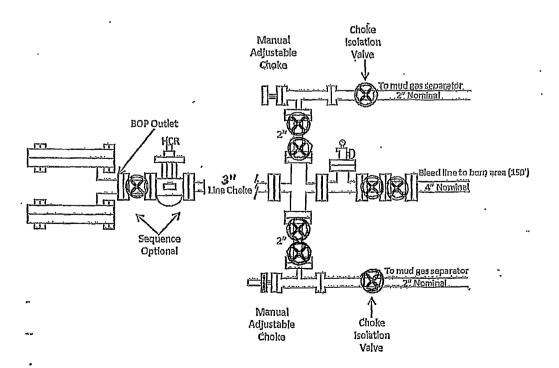


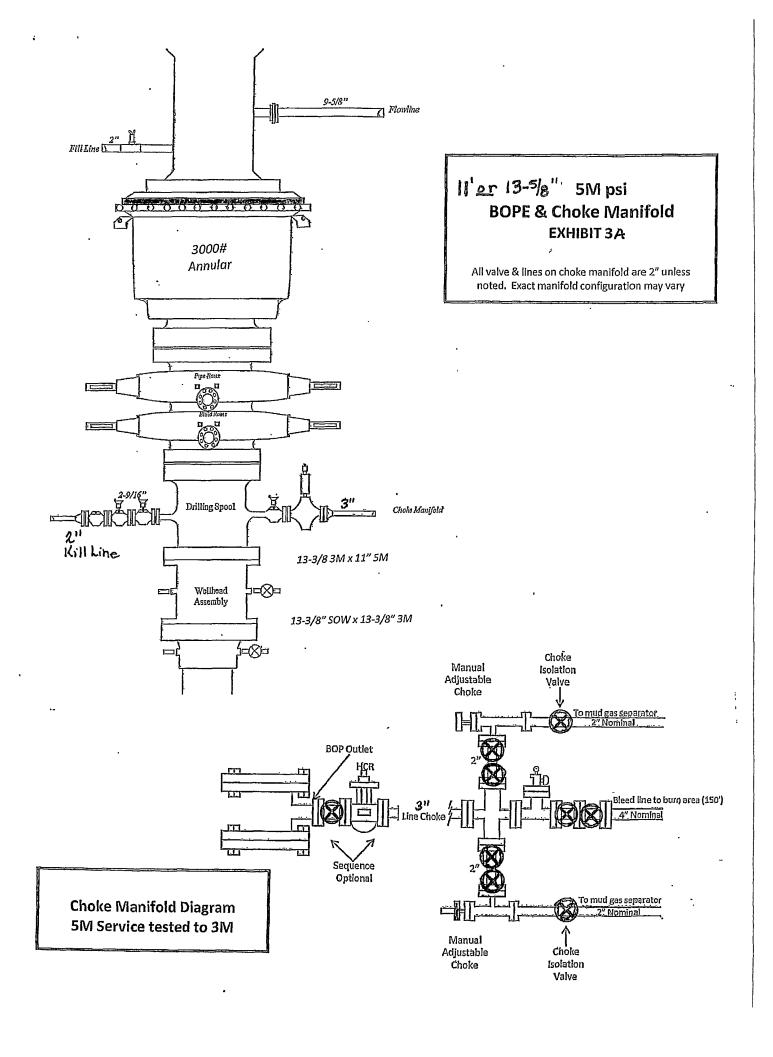


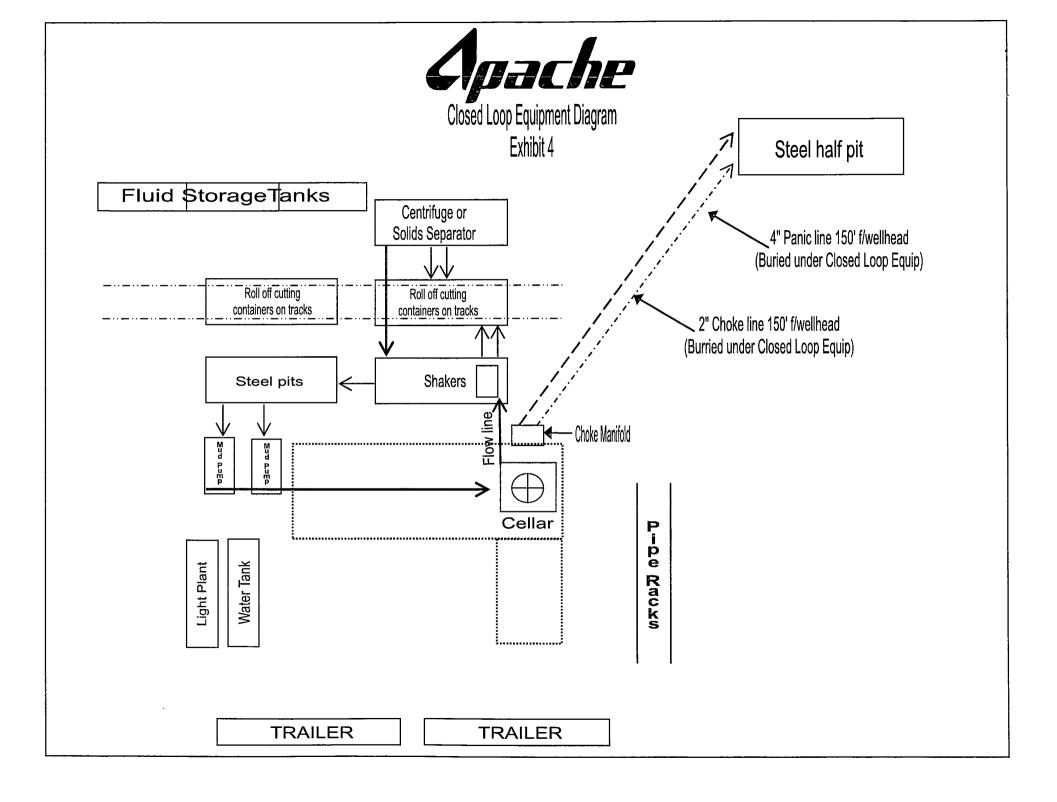


13-5/8" 3M psi BOPE & Choke Manifold Exhibit 3

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









DESIGN PLAN, OPERATING & MAINTENANCE PLAN, & CLOSURE PLAN FOR OCD FOR C-144

CROW FEDERAL #15H

DESIGN PLAN

Fluid & cuttings coming from drilling operations will pass over the Shale Shaker with the cuttings going to the Sundance Inc / CRI haul off bin and the cleaned fluid returning to the working steel pits.

Equipment includes:

- 2 500 bbl steel frac tanks (fresh water for drilling)
- 2 180 bbl steel working pits
- 3 75 bbl steel haul off bins
- 2 Pumps (6-1/2" x 10" PZ 10 or equivalent)
- 1 Shale shaker
- 1 Mud cleaner QMAX MudStripper

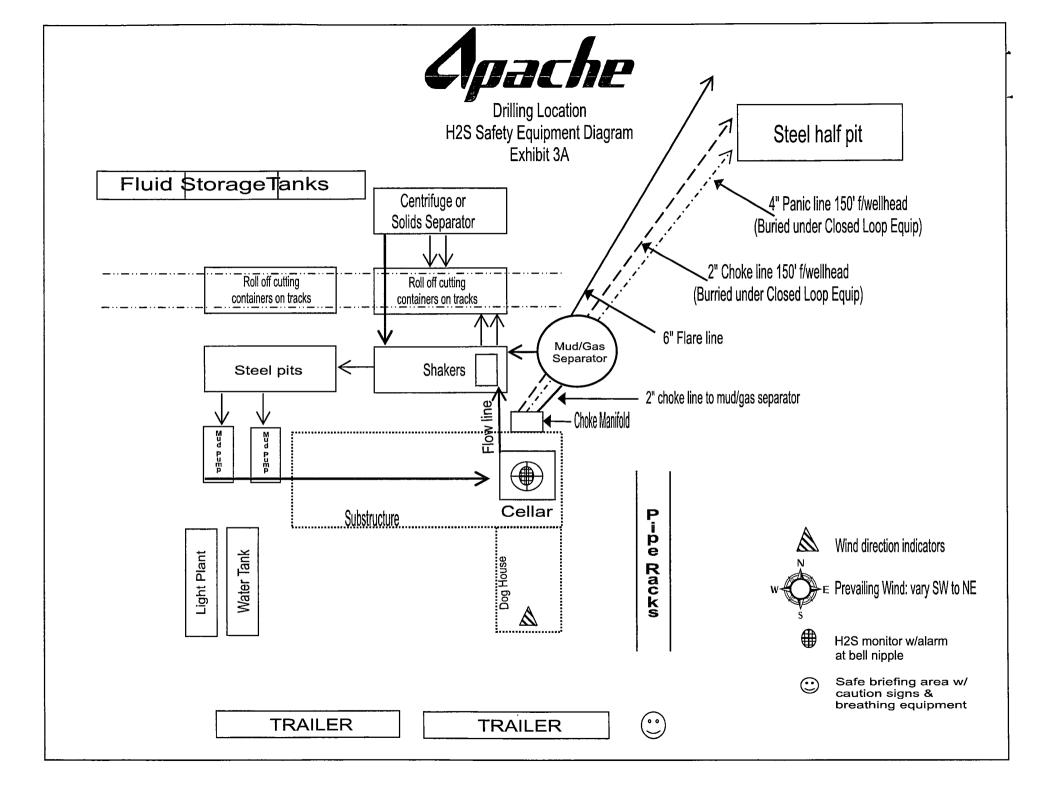
OPERATING AND MAINTENANCE PLAN

Inspection to occur every tour for proper operation of system and individual components. If any problems are found they will be repaired and/or corrected immediately.

CLOSURE PLAN

All haul bins containing cuttings will be removed from location and hauled to Sundance Incorporated (NM-01-0003) disposal site located 3 miles East of Eunice, NM on the Texas border / Controlled Recovery, Inc's (NM-01-0006) disposal site located near mile marker 66 on Highway 62/180.

Sorina L. Flores Supv. of Drilling Services



HYDROGEN SULFIDE (H2S) DRILLING OPERATIONS PLAN

Hydrogen Sulfide Training:

<u>All regularly assigned personnel, contracted or employed by Apache Corporation</u> will receive training from qualified instructor(s) in the following areas prior to commencing drilling possible hydrogen sulfide bearing formations in this well:

- The hazards and characteristics of hydrogen sulfide (H₂S)
- The proper use and maintenance of personal protective equipment and life support systems.
- The proper use of H₂S detectors, alarms, warning systems, briefing area, evacuation procedures & prevailing winds.
- The proper techniques for first aid and rescue procedures.

Supervisory personnel will be trained in the following areas:

- The effects of H₂S on metal components. If high tensile tubulars are to be utilized, personnel will be trained in their special maintenance requirements.
- Corrective action & shut-in procedures when drilling or reworking a well & blowout prevention / well control procedures.
- The contents and requirements of the H₂S Drilling Operations Plan

There will be an initial training session just prior to encountering a known or probable H_2S zone (within 3 days or 500') and weekly H_2S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H_2S Drilling Operations Plan and the Public Protection Plan. This plan shall be available at the well site. All personnel will be required to carry documentation that they have received proper training.

H₂S SAFETY EQUIPMENT AND SYSTEMS:

Well Control Equipment that will be available & installed if H₂S is encountered:

- Flare Line with electronic igniter or continuous pilot.
- Choke manifold with a minimum of one remote choke.
- Blind rams & pipe rams to accommodate all pipe sizes with properly sized closing unit.
- · Auxiliary equipment to include: annular preventer, mud-gas separator, rotating head & flare gun with flares

Protective Equipment for Essential Personnel:

• Mark II Survive-air 30 minute units located in dog house & at briefing areas, as indicated on wellsite diagram.

H2S Dection and Monitoring Equipment:

- Two portable H₂S monitors positioned on location for best coverage & response. These units have warning lights & audible sirens when H₂S levels of 20 ppm are reached.
- One portable H₂S monitor positioned near flare line.

H2S Visual Warning Systems:

- Wind direction indicators are shown on wellsite diagram.
- Caution / Danger signs shall be posted on roads providing direct access to location. Signs will be painted a high visibility yellow with black lettering of sufficient size to be readable at a reasonable distance from the immediate location. Bilingual signs will be used when appropriate.

Mud Program:

- The Mud Program has been designed to minimize the volume of H₂S circulated to the surface. Proper mud weights, safe drilling practices & the use of H₂S scavengers will minimize hazards when penetrating H₂S bearing zones.
- A mud-gas separator and H₂S gas buster will be utilized as needed.

Metallurgy:

- All drill strings, casing, tubing, wellhead, blowout preventers, drilling spool, kill lines, choke manifold & lines, & valves will be suitable for H₂S service.
- All elastomers used for packing & seals shall be H₂S trim.

Communication:

• Cellular telephone and 2-way radio communications in company vehicles, rig floor and mud logging trailer.

HYDROGEN SULFIDE (H2S) CONTINGENCY PLAN

Assumed 100 ppm ROE = 3000'

100 ppm H₂S concentration shall trigger activation of this plan.

Emergency Procedures

In the event of a release of gas containing H₂S, the first responder(s) must

- Isolate the area and prevent entry by other persons into the 100 ppm ROE.
- Evacuate any public places encompassed by the 100 ppm ROE.
- Be equipped with H₂S monitors and air packs in order to control the release.
- Use the "buddy system" to ensure no injuries occur during the response
- Take precautions to avoid personal injury during this operation.
- Contact operators and/or local officials to aid in operation. See list of phone numbers attached.
- Have received training in the:
 - o Detection of H₂S, and
 - o Measures for protection against the gas,
 - o Equipment used for protection and emergency response.

Ignition of Gas source

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (SO₂). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever this is an ignition of the gas.

Characteristics of H₂S and SO₂

Ollaraotei		o una ooz			
Common Name	Chemical Formula	Specific Gravity	Threshold Limit	Hazardous Limit	Lethal Concentration
Hydrogen Sulfide	H ₂ S	1.189 Air = I	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO ₂	2.21 Air = I	2 ppm	N/A	1000 ppm

Contacting Authorities

Apache Corporation personnel must liaison with local and state agencies to ensure a proper response to a major release. Additionally, the OCD must be notified of the release as soon as possible but no later than 4 hours. Agencies will ask for information such as type and volume of release, wind direction, location of release, etc. Be prepared with all information available including directions to site. The following call list of essential and potential responders has been prepared for use during a release. Apache's response must be in coordination with the State of New Mexico's "Hazardous Materials Emergency Response Plan" (HMER).

WELL CONTROL EMERGENCY RESPONSE PLAN

I. GENERAL PHILOSOPHY

Our objective is to ensure that during an emergency, a predetermined procedure is followed so that prompt decisions can be made based on accurate information.

The best way to handle and emergency is with an experienced organization set up for the sole purpose of solving the problem. The *Well Control Emergency Response Team* was organized to handle dangerous & expensive well control problems. The *Team* is structured such that each individual can contribute the most from his area of expertise. Key decision-makers are determined prior to an emergency to avoid confusion about who is in charge.

If the well is flowing uncontrolled at the surface or subsurface, *The Emergency Response Team* will be mobilized. The *Team* is customized for the people currently on the Apache staff. Staff changes may require a change in the plan.

II. <u>EMERGENCY PROCEDURE ON DRILLING OR COMPLETION OPERATIONS</u>

A. In the event of an emergency the *Drilling Foreman or Tool-Pusher* will immediately contact only one of the following starting with the first name listed:

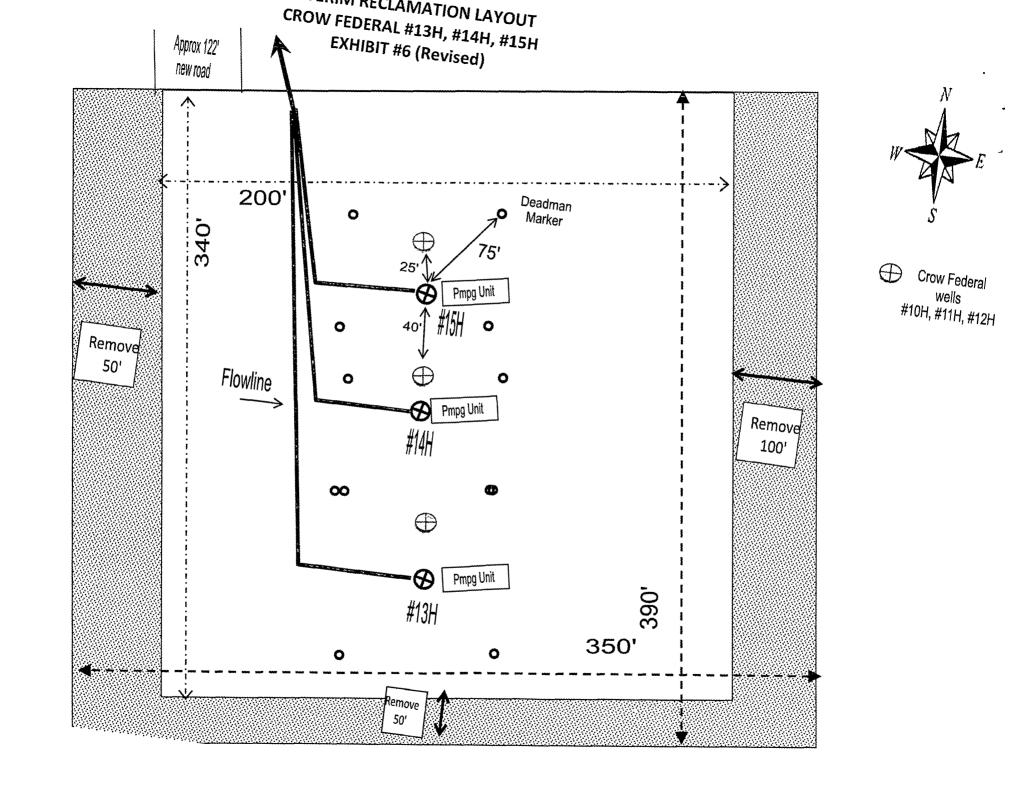
Name	Office	Mobile	Home
Danny Laman – Drlg Superintendent	432-818-1022	432-634-0288	432-520-3528
Terry West – Drilling Engineer	432-818-1114	432-664-7254	
Bobby Smith – Drilling Manager	432-818-1020	432-556-7701	
Jeff Burt – EH&S Coordinator		432-631-9081	

^{**}This one phone call will free the Drilling Foreman to devote his full time to securing the safety of personnel & equipment. This call will initiate the process to mobilize the Well Control Emergency Response Team. Apache maintains an Emergency Telephone Conference Room in the Houston office. This room is available for us by the Permian Region. The room has 50 separate telephone lines.

- B. The Apache employee contacted by the Drilling Foreman will begin contacting the rest of the *Team*. If **Danny Laman** is out of contact, **Bob Lange** will be notified.
- **C.** If a member of the *Emergency Response Team* is away from the job, he must be available for call back. Telephone numbers should be left with secretaries or a key decision-maker.
- **D.** Apache's reporting procedure for spills or releases of oil or hazardous materials will be implemented when spills or releases have occurred or are probable.

EMERGENCY RESPONSE NUMBERS:

SHERIFF DEPARTMENT	
Eddy County	575-887-7551
Lea County	575-396-3611
FIRE DEPARTMENT	911
Artesia	575-746-5050
Carlsbad	575-885-2111
Eunice	575-394-2111
Hobbs	575-397-9308
Jal	575-395-2221
Lovington	575-396-2359
HOSPITALS	911
Artesia Medical Emergency	575-746-5050
Carlsbad Medical Emergency	575-885-2111
Eunice Medical Emergency	575-394-2112
Hobbs Medical Emergency	575-397-9308
Hobbs Medical Emergency	575-397-9308
Hobbs Medical Emergency Jal Medical Emergency	575-397-9308 575-395-2221
Hobbs Medical Emergency Jal Medical Emergency Lovington Medical Emergency	575-397-9308 575-395-2221



PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME: LEASE NO.: LC029426B

WELL NAME & NO.: 15H Crow Federal

SURFACE HOLE FOOTAGE: 988' FSL & 250' FWL Sec 10

BOTTOM HOLE FOOTAGE 988' FSL & 330' FWL, Sec 9

LOCATION: Section 10, T.17 S., R.31 E., NMPM

COUNTY: Eddy County, New Mexico

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Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

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