

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM 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.

SUBMIT IN TRIPLICATE - Other instructions on page 2

1. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other	5. Lease Serial No. NMNM6681
2. Name of Operator DJR OPERATING LLC Contact: SHAW-MARIE FORD E-Mail: sford@djrlc.com	6. If Indian, Allottee or Tribe Name EASTERN NAVAJO
3a. Address 1 ROAD 3263 AZTEC, NM 87410	7. If Unit or CA/Agreement, Name and/or No. NMNM135229A
3b. Phone No. (include area code) Ph: 505-632-3476	8. Well Name and No. NORTH ALAMITO UNIT 334H
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 31 T23N R7W NWSW 1989FSL 675FWL 36.181496 N Lat, 107.622065 W Lon	9. API Well No. 30-043-21338-00-X1
	10. Field and Pool or Exploratory Area WILDCAT
	11. County or Parish, State SANDOVAL COUNTY, NM

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

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

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat 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.

DJR Operating, LLC has an approved APD for the subject well. DJR is submitting this sundry to change the BHL from

NESW / 1362 FSL / 2287 FWL / LAT 36.165147 / LONG -107.598994
to
NESW / 2117 FSL / 2243 FWL / LAT 36.167208 / LONG -107.599076

Attached please find revised C-102 package, Drilling Plan, ACR, & SPR

**ADHERE TO PREVIOUS NMOCD
CONDITIONS OF APPROVAL**

NMOCD

MAR 03 2020

DISTRICT III

14. I hereby certify that the foregoing is true and correct. Electronic Submission #503542 verified by the BLM Well Information System For DJR OPERATING LLC, sent to the Farmington Committed to AFMSS for processing by JOE KILLINS on 02/18/2020 (20JK0119SE)	
Name (Printed/Typed) SHAW-MARIE FORD	Title REGULATORY SPECIALIST
Signature (Electronic Submission)	Date 02/18/2020

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By <u>JOE KILLINS</u>	Title <u>PETROLEUM ENGINEER</u>	Date <u>03/03/2020</u>
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 <u>Farmington</u>

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 ****

AV

14

NMOCD

MAR 03 2020

DISTRICT III

DISTRICT I
1625 N. French Dr., Hobbs, N.M. 88240
Phone: (505) 393-6181 Fax: (505) 393-0720

DISTRICT II
811 E. First St., Artesia, N.M. 88210
Phone: (505) 748-1283 Fax: (505) 748-9720

DISTRICT III
1000 Rio Bravos Rd., Antec, N.M. 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 478-3460 Fax: (505) 478-3462

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102
Revised August 1, 2011

Submit one copy to appropriate
District Office

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30.043-21338	² Pool Code 98174	³ Pool Name NORTH ALAMITO UNIT MANCOS OIL POOL
⁴ Property Code 325267	⁵ Property Name NORTH ALAMITO UNIT	⁶ Well Number 334H
⁷ OGRD No. 371838	⁸ Operator Name DJR OPERATING, LLC	⁹ Elevation 6964'

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	31	23N	7W	3	1989'	SOUTH	675'	WEST	SANDOVAL

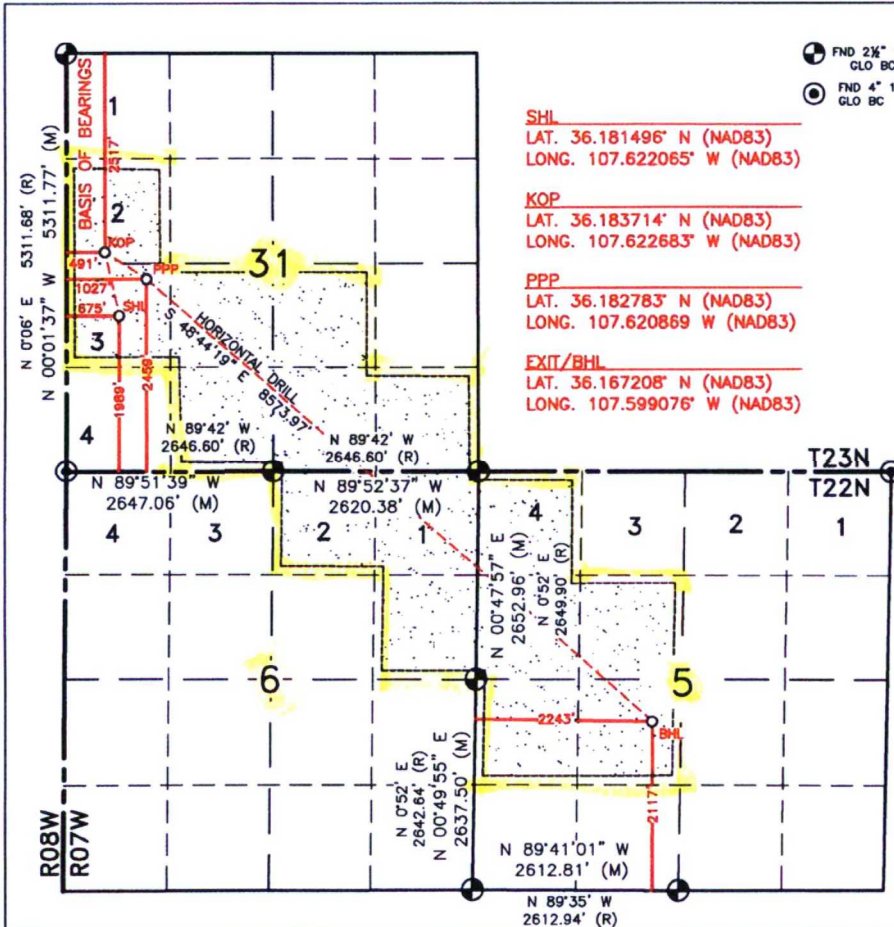
¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
K	5	22N	7W		2117'	SOUTH	2243'	WEST	SANDOVAL

¹² Dedicated Acres PENETRATED SPACING UNIT: SEC. 31: SW/NW, NW/SW, NE/SW, SE/SW, NW/SE, SW/SE & SE/SE (281.28 AC.); SEC. 6: NW/NE, NE/NE & SE/NE (120.38 AC.); SEC. 5: NW/NW, SW/NW, SE/NW, NW/SW, NE/SW (200.29 AC.) = 601.95 ACRES TOTAL	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No. R-14081, R-14081A
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

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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.

Shaw-Marie Ford 2/14/20
Signature Date

Shaw-Marie Ford
Printed Name

sford@djrlc.com
E-mail Address

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.

MARCH 15, 2019

Date of Survey

Signature and Seal of Professional Surveyor:



Certificate Number 11393

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State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

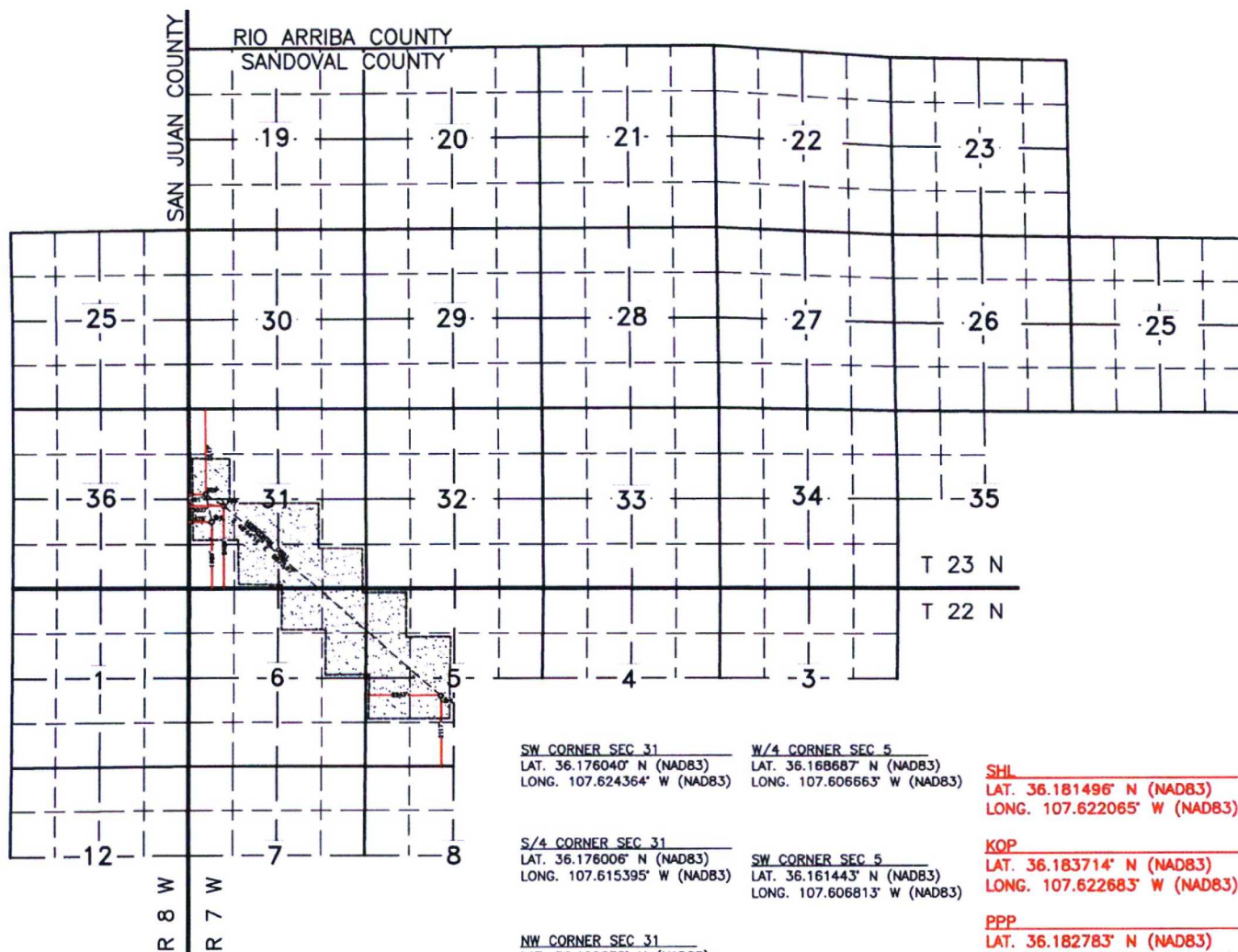
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011

Submit one copy to appropriate
District Office

☐ AMENDED REPORT

DJR OPERATING, LLC
NORTH ALAMITO UNIT #334H



SW CORNER SEC 31
LAT. 36.176040° N (NAD83)
LONG. 107.624364° W (NAD83)

W/4 CORNER SEC 5
LAT. 36.168687° N (NAD83)
LONG. 107.606663° W (NAD83)

SHL
LAT. 36.181496° N (NAD83)
LONG. 107.622065° W (NAD83)

S/4 CORNER SEC 31
LAT. 36.176006° N (NAD83)
LONG. 107.615395° W (NAD83)

SW CORNER SEC 5
LAT. 36.161443° N (NAD83)
LONG. 107.606813° W (NAD83)

KOP
LAT. 36.183714° N (NAD83)
LONG. 107.622683° W (NAD83)

NW CORNER SEC 31
LAT. 36.190632° N (NAD83)
LONG. 107.624334° W (NAD83)

S/4 CORNER SEC 5
LAT. 36.161386° N (NAD83)
LONG. 107.597962° W (NAD83)

PPP
LAT. 36.182783° N (NAD83)
LONG. 107.620869° W (NAD83)

SE CORNER SEC 31
LAT. 36.175944° N (NAD83)
LONG. 107.606516° W (NAD83)

EXIT/BHL
LAT. 36.167208° N (NAD83)
LONG. 107.599076° W (NAD83)

PENETRATED SPACING UNIT; SEC. 31: SW/NW, NW/SW, NE/SW, SE/SW, NW/SE, SW/SE & SE/SE (281.28 AC.); SEC. 6: NW/NE, NE/NE & SE/NE (120.36 AC.); SEC. 5: NW/NW, SW/NW, SE/NW, NW/SW, NE/SW (200.29 AC.) = 601.93 ACRES TOTAL
TOTAL 14,282.78 ACRES: T23N R7W SEC. 19-23, 25, 26-34 (ALL); 35 (NW/4); T22N R7W SEC. 3 & 4 (N/2); 5 (N/2, SW/4); 6 (ALL); 7 (N/2); 8 (NW/4); T23N R8W SEC. 25, 36 (ALL); T22N R8W SEC. 1 (ALL); SEC. 12 (N/2) - UNDIVIDED UNIT

DRILLING PLAN

North Alamito Unit #334H

Sandoval County, New Mexico

Surface Location

675-ft FWL & 1989-ft FSL
 Sec 31 T23N R7W
 Graded Elevation 6964' MSL
 RKB Elevation 6978' (14' KB)

SHL Geographical Coordinates (NAD-83)

Latitude 36.1814960° N
 Longitude 107.6220650° W

Kick Off Point for Horizontal Build Curve

4426-ft MD
 4335-ft TVD

Local Coordinates (from SHL)

807-ft North
 184-ft West

Heel Location (Pay zone entry)

1027-ft FWL & 2459-ft FSL
 Sec 31 T23N R7W

Heel Geographical Coordinates (NAD-83)

Latitude 36.1827826° N
 Longitude 107.62086930° W

Bottom Hole Location (TD)

2243-ft FWL & 2117-ft FSL
 Sec 5 T22N R7W

BHL Geographical Coordinates (NAD-83)

Latitude 36.1672084° N
 Longitude 107.5990755° W

Well objectives

This well is planned as a 8570-ft lateral in the Gallup C sand.

Bottom Hole temperature and pressure

The temperature in the Gallup C horizontal objective is 138°F. Bottom hole pressure in the Gallup C is forecast to be 1985 psi.

Formation Tops (Sd = Sand; Sh = Shale; Siltstone = Slt, Coal = C; W = water; O = oil; G = gas; NP = no penetration)

Name	MD (ft)	TVD (ft)	Lithology	Pore fluid	Expected Pore Pressure (ppg)	Planned Mud Weight (ppg)
Ojo Alamo	852	850	Sd	W	8.3	8.4 – 8.8
Kirtland	910	908	Sh	-	8.3	8.4 – 8.8
Fruitland	1169	1161	C	G	8.3	9.0 - 9.5
Pictured Cliffs	1431	1416	Sd	W	8.3	9.0 - 9.5
Lewis	1607	1588	Sh	-		9.0 - 9.5
Chacra	2206	2171	Sd	-	8.3	9.0 - 9.5
Menefee	2950	2896	Sd, C	G	8.3	9.0 - 9.5
Point Lookout	3884	3806	Sd	-	8.3	9.0 - 9.5
Mancos	4054	3972	Sh	-		9.0 - 9.5
Mancos Silt	4391	4300	Slt	O/G	6.6	9.0 - 9.5
Gallup A	4899	4784	Slt	O/G	6.6	9.0 - 9.5
Gallup B	4940	4818	Sd	O/G	6.6	8.8 -9.0
Gallup C	5065	4911	Sd	O/G	6.6	8.8 -9.0
Target	5545	5081	Sd	O/G	6.6	8.8 -9.0

Casing Program

Casing OD	Hole Size	Weight (#/ft)	Grade	Coupling	MD Top	MD Bottom	TVD Top	TVD Bottom	Top of Cement
9-5/8"	12-1/4"	36	K-55	STC	surf	350	surf	350	surface
7"	8-3/4"	26	K-55	LTC	surf	5487	surf	5079	surface
4-1/2"	6-1/8"	11.6	P-110	BTC	5207	14119	4995	5063	5207

Note: all casing will be new

Casing Design Load Cases

	Description	Casing String		
		9-5/8" Surface	7" Intermediate	4-1/2" Production Liner
Collapse	Full internal evacuation ¹	✓	✓	✓
	Cementing	✓	✓	✓
Burst	Pressure test	✓ ²	✓ ²	✓
	Gas kick		✓ ³	
	Fracture at shoe, 1/3 BHP at surface		✓ ⁴	
	Injection down casing			✓ ⁵
Axial	Dynamic load on casing coupling ⁶	✓	✓	✓
Axial	Overpull ⁷	✓	✓	✓

Note

- 1 Fluid level at shoe, air column to surface, pore pressure outside
- 2 Tested to 80% of minimum internal yield with freshwater inside, pore pressure outside
- 3 50 bbl kick at TD, 0.50 ppg intensity, 4" drill pipe, 9.0 ppg mud, fracture gradient at shoe
- 4 2060 psi BHP, 687 psi surface pressure, 12.5 ppg EMW shoe integrity
- 5 Surface stimulation pressure of 8000 psi on 8.3 ppg fluid column. Stimulation will be down frac string, so load does not apply to 7" intermediate casing.
- 6 Shock load from abrupt pipe deceleration, evaluated against coupling rating
- 7 Overpull values as follows: Surface casing 20,000 lbs, Intermediate & Production 100,000 lbs

Casing Design Factors

Casing string	Casing OD	Design Factors			
		Burst	Collapse	Axial	Triaxial
Surface	9-5/8"	1.25	13.38	8.16	1.56
Intermediate	7"	1.25	1.50	1.68	1.34
Production liner	4-1/2"	1.37	3.68	1.88	1.69

Cement Design

9-5/8" Surface Casing

	Lead
Name	Redi-Mix
Type	I-II
Planned top	Surface
Density (ppg)	14.50
Yield (cf/sx)	1.61
Mix water (gal/sx)	7.41
Volume (sx)	114
Volume (bbls)	33
Volume (cu. ft.)	185
Excess %	50

7" Intermediate Casing

	Lead	Tail
	BJ Services	BJ Services
Type	III	Poz/G
Planned top	Surface	3926-ft
Density (ppg)	12.30	13.50
Yield (cf/sx)	2.34	1.50
Mix water (gal/sx)	13.26	7.20
Volume (sx)	393	257
Volume (bbls)	164	68
Volume (cu.ft.)	919	385
Excess %	50	50

4-1/2" Production Liner

	BJ Services
Type	Poz/G
Planned top	5207-ft
Density (ppg)	13.3
Yield (cf/sx)	1.56
Mix water (gal/sx)	7.71
Volume (sx)	749
Volume (bbls)	209
Volume (cu.ft)	1171
Excess %	40

Wellhead & Pressure Control

The well head will be an 11" 5M multi-bowl system. A 3M BOPE conforming to Onshore Order #2 will be installed on the surface casing. The BOP and accumulator will meet API 16D and 16E respectively.

A PVT mud monitoring system and a trip tank will be rigged up and operational for all hole intervals. An electronic geograph will be employed to monitor and record drilling data (ROP, WOB, SPM, Pressure, RPM and torque).

Mud Program

Surface hole will be drilled with a fresh water, native mud system. In intermediate hole, a low weight 7% KCI LSND drilling fluid will be used, with KCI providing chemical stability for the young shales and clays present in the interval. In production hole a LSND system with polymer and lubricant additives is programmed. Sufficient drill water and mud additives will be on hand to maintain adequate pit volumes and maintain well control.

Hole Section	Fluid type	Interval (MD)	Density (ppg)	Funnel Viscosity	Yield Point	Fluid Loss (cc/30 min)
Surface	Fresh water spud mud	0 – 350	8.4 – 8.8	32 – 44	2 – 12	NC
Intermediate	7% KCI Low solids, non-dispersed	350 – 5487	9.0 – 9.5	38 – 45	8 – 14	<20
Production	Low solids, non-dispersed	5487 – 14119	8.8 – 9.2	34 – 38	6 – 8	6 – 8

Cores, tests and logs

Wellbore surveying: Drift (inclination only) surveys will be obtained in surface hole. MWD directional surveys will be taken in intermediate and production hole.

Logging while drilling: None in surface hole. MWD GR in intermediate and production hole.

Mud logging: a two-person mud logging unit with C1 – C4 gas analysis will be operational in intermediate and production hole.

Electric logging: No open hole electric logs are programmed. A cased hole GR/CCL will be run during completions for perforating depth control.

Cuttings and drilling fluids management

A closed loop, steel tank-based circulating system will be used. In addition to the rig solids control equipment, a dewatering centrifuge and chemical flocculation system will be operational to strip solids from the whole mud. All solids will be collected in 3-sided bins and will then be put into transports with a bucket loader. Drying agents will be used if necessary. The solids will be taken to a licensed commercial disposal facility. Whole mud will be dewatered back to drill water and used as make up for subsequent wells or hauled off for disposal. A diagram of the closed loop system is included.

Completion

It is envisioned that this well will be completed with a multi-stage sand frac, using the plug and perf technique. After drilling out the plugs, the current plan is to install a 2-7/8" plunger-assisted gas lift tubing string. The stimulation and completion plan will be sundried at a later date.



Company: DJR Operating
Project: North Alamo Unit
Site: L31 2307
Well: NAU 334H
Wellbore: Original drilling
Design: APD Rev 2

PROJECT DETAILS: North Alamo Unit

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Western Zone
System Datum: Mean Sea Level
Local North: True



Azimuths to True North
Magnetic North: 8.95°

Magnetic Field
Strength: 49531.4nT
Dip Angle: 62.86°
Date: 5/7/2019
Model: IGRF2015

WELL DETAILS: NAU 334H

GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
+N/-S +E/-W Northing Easting Latitude Longitude
0.00 0.00 1885429.49 2785438.71 36.1814960 -107.6220650

Plan: APD Rev 2 (NAU 334H/Original drilling)

Created By: Janie Collins Date: 10:14, December 16 2019

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
334H heel rev 2	5080.98	468.35	352.86	1885898.61	2785790.55	36.1827826	-107.6208693
334H toe rev 2	5062.98	-5200.17	6785.65	1880244.10	2792235.67	36.1672084	-107.5990755

SECTION DETAILS

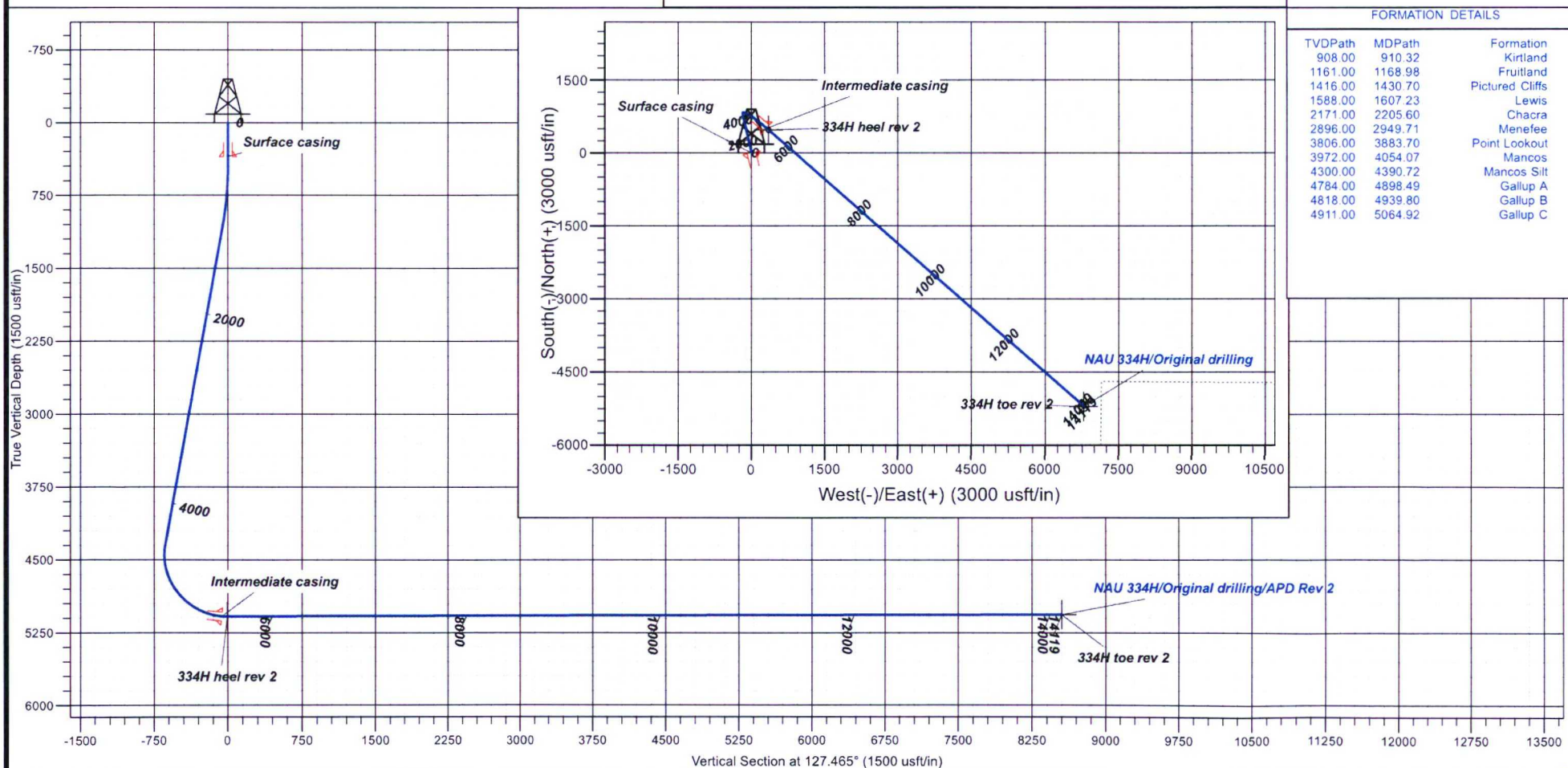
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	
425.00	0.00	0.000	425.00	0.00	0.00	0.00	0.00	0.00	
1075.66	13.01	347.128	1070.08	71.72	-16.39	2.00	347.13	-56.64	
4426.45	13.01	347.128	4334.81	807.28	-184.47	0.00	0.00	-637.47	
5544.78	90.12	131.386	5080.98	468.35	352.86	9.00	143.53	-4.81	334H heel rev 2
14118.77	90.12	131.386	5062.98	-5200.17	6785.65	0.00	0.00	8549.09	334H toe rev 2

CASING DETAILS

TVD	MD	Name
350.00	350.00	Surface casing
5078.55	486.98	Intermediate casing

FORMATION DETAILS

TVDPath	MDPath	Formation
908.00	910.32	Kirtland
1161.00	1168.98	Fruitland
1416.00	1430.70	Pictured Cliffs
1588.00	1607.23	Lewis
2171.00	2205.60	Chacra
2896.00	2949.71	Menefee
3806.00	3883.70	Point Lookout
3972.00	4054.07	Mancos
4300.00	4390.72	Mancos Silt
4784.00	4898.49	Gallup A
4818.00	4939.80	Gallup B
4911.00	5064.92	Gallup C





DJR Operating

North Alamito Unit

L31 2307

NAU 334H

Original drilling

Plan: APD Rev 2

Standard Planning Report

16 December, 2019



Scientific Drilling

www.scientificdrilling.com



Scientific Drilling, Intl
Planning Report



Database: Grand Junction
Company: DJR Operating

Project: North Alamito Unit

Site: L31 2307
Well: NAU 334H
Wellbore: Original drilling
Design: APD Rev 2

Local Co-ordinate Reference: Well NAU 334H
TVD Reference: GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
MD Reference: GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
North Reference: True
Survey Calculation Method: Minimum Curvature

Project	North Alamito Unit		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site	L31 2307		
Site Position:		Northing:	1,885,429.49 usft
From:	Lat/Long	Easting:	2,785,438.72 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in
		Latitude:	36.1814960
		Longitude:	-107.6220650
		Grid Convergence:	0.12 °

Well	NAU 334H		
Well Position	+N/-S	0.00 usft	Northing:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	
		Latitude:	36.1814960
		Longitude:	-107.6220650
		Ground Level:	6,964.00 usft

Wellbore	Original drilling				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/7/2019	8.95	62.86	49,531.44722555

Design	APD Rev 2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	127.465

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	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
425.00	0.00	0.000	425.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,075.66	13.01	347.128	1,070.08	71.72	-16.39	2.00	2.00	0.00	347.13	
4,426.45	13.01	347.128	4,334.81	807.28	-184.47	0.00	0.00	0.00	0.00	
5,544.78	90.12	131.386	5,080.98	468.35	352.86	9.00	6.89	12.90	143.53	334H heel rev 2
14,118.77	90.12	131.386	5,062.98	-5,200.17	6,785.65	0.00	0.00	0.00	0.00	334H toe rev 2



Scientific Drilling, Intl
Planning Report



Database: Grand Junction
Company: DJR Operating

Local Co-ordinate Reference: Well NAU 334H
TVD Reference: GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)

Project: North Alamito Unit

MD Reference: GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)

Site: L31 2307

North Reference: True

Well: NAU 334H

Survey Calculation Method: Minimum Curvature

Wellbore: Original drilling
Design: APD Rev 2

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	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.000	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.000	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.000	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.000	400.00	0.00	0.00	0.00	0.00	0.00	0.00
425.00	0.00	0.000	425.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	1.50	347.128	499.99	0.96	-0.22	-0.76	2.00	2.00	0.00
600.00	3.50	347.128	599.89	5.21	-1.19	-4.11	2.00	2.00	0.00
700.00	5.50	347.128	699.58	12.86	-2.94	-10.15	2.00	2.00	0.00
800.00	7.50	347.128	798.93	23.89	-5.46	-18.87	2.00	2.00	0.00
900.00	9.50	347.128	897.83	38.30	-8.75	-30.24	2.00	2.00	0.00
1,000.00	11.50	347.128	996.15	56.07	-12.81	-44.27	2.00	2.00	0.00
1,075.66	13.01	347.128	1,070.08	71.72	-16.39	-56.64	2.00	2.00	0.00
1,100.00	13.01	347.128	1,093.80	77.07	-17.61	-60.86	0.00	0.00	0.00
1,200.00	13.01	347.128	1,191.23	99.02	-22.63	-78.19	0.00	0.00	0.00
1,300.00	13.01	347.128	1,288.66	120.97	-27.64	-95.52	0.00	0.00	0.00
1,400.00	13.01	347.128	1,386.09	142.92	-32.66	-112.86	0.00	0.00	0.00
1,500.00	13.01	347.128	1,483.52	164.88	-37.68	-130.19	0.00	0.00	0.00
1,600.00	13.01	347.128	1,580.95	186.83	-42.69	-147.53	0.00	0.00	0.00
1,700.00	13.01	347.128	1,678.39	208.78	-47.71	-164.86	0.00	0.00	0.00
1,800.00	13.01	347.128	1,775.82	230.73	-52.72	-182.20	0.00	0.00	0.00
1,900.00	13.01	347.128	1,873.25	252.68	-57.74	-199.53	0.00	0.00	0.00
2,000.00	13.01	347.128	1,970.68	274.63	-62.76	-216.86	0.00	0.00	0.00
2,100.00	13.01	347.128	2,068.11	296.59	-67.77	-234.20	0.00	0.00	0.00
2,200.00	13.01	347.128	2,165.54	318.54	-72.79	-251.53	0.00	0.00	0.00
2,300.00	13.01	347.128	2,262.98	340.49	-77.80	-268.87	0.00	0.00	0.00
2,400.00	13.01	347.128	2,360.41	362.44	-82.82	-286.20	0.00	0.00	0.00
2,500.00	13.01	347.128	2,457.84	384.39	-87.84	-303.53	0.00	0.00	0.00
2,600.00	13.01	347.128	2,555.27	406.35	-92.85	-320.87	0.00	0.00	0.00
2,700.00	13.01	347.128	2,652.70	428.30	-97.87	-338.20	0.00	0.00	0.00
2,800.00	13.01	347.128	2,750.14	450.25	-102.89	-355.54	0.00	0.00	0.00
2,900.00	13.01	347.128	2,847.57	472.20	-107.90	-372.87	0.00	0.00	0.00
3,000.00	13.01	347.128	2,945.00	494.15	-112.92	-390.21	0.00	0.00	0.00
3,100.00	13.01	347.128	3,042.43	516.11	-117.93	-407.54	0.00	0.00	0.00
3,200.00	13.01	347.128	3,139.86	538.06	-122.95	-424.87	0.00	0.00	0.00
3,300.00	13.01	347.128	3,237.29	560.01	-127.97	-442.21	0.00	0.00	0.00
3,400.00	13.01	347.128	3,334.73	581.96	-132.98	-459.54	0.00	0.00	0.00
3,500.00	13.01	347.128	3,432.16	603.91	-138.00	-476.88	0.00	0.00	0.00
3,600.00	13.01	347.128	3,529.59	625.86	-143.01	-494.21	0.00	0.00	0.00
3,700.00	13.01	347.128	3,627.02	647.82	-148.03	-511.54	0.00	0.00	0.00
3,800.00	13.01	347.128	3,724.45	669.77	-153.05	-528.88	0.00	0.00	0.00
3,900.00	13.01	347.128	3,821.89	691.72	-158.06	-546.21	0.00	0.00	0.00
4,000.00	13.01	347.128	3,919.32	713.67	-163.08	-563.55	0.00	0.00	0.00
4,100.00	13.01	347.128	4,016.75	735.62	-168.10	-580.88	0.00	0.00	0.00
4,200.00	13.01	347.128	4,114.18	757.58	-173.11	-598.22	0.00	0.00	0.00
4,300.00	13.01	347.128	4,211.61	779.53	-178.13	-615.55	0.00	0.00	0.00
4,400.00	13.01	347.128	4,309.04	801.48	-183.14	-632.88	0.00	0.00	0.00
4,426.45	13.01	347.128	4,334.81	807.28	-184.47	-637.47	0.00	0.00	0.00
4,500.00	8.62	14.325	4,407.09	820.72	-184.95	-646.02	9.00	-5.97	36.97
4,600.00	9.22	75.021	4,506.08	830.07	-175.34	-644.08	9.00	0.59	60.70
4,700.00	16.02	103.304	4,603.69	828.96	-154.14	-626.58	9.00	6.80	28.28
4,800.00	24.27	113.942	4,697.53	817.42	-121.86	-593.94	9.00	8.26	10.64



Scientific Drilling, Intl
Planning Report



Database: Grand Junction
Company: DJR Operating

Local Co-ordinate Reference: Well NAU 334H
TVD Reference: GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)

Project: North Alamito Unit

MD Reference: GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)

Site: L31 2307

North Reference: True

Well: NAU 334H

Survey Calculation Method: Minimum Curvature

Wellbore: Original drilling
Design: APD Rev 2

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)
4,900.00	32.90	119.322	4,785.27	795.73	-79.31	-546.97	9.00	8.63	5.38
5,000.00	41.68	122.645	4,864.75	764.43	-27.52	-486.83	9.00	8.77	3.32
5,100.00	50.52	124.983	4,934.03	724.29	32.22	-414.99	9.00	8.84	2.34
5,200.00	59.40	126.789	4,991.39	676.29	98.44	-333.23	9.00	8.88	1.81
5,300.00	68.30	128.289	5,035.42	621.62	169.51	-243.57	9.00	8.90	1.50
5,400.00	77.21	129.613	5,065.04	561.62	243.69	-148.19	9.00	8.91	1.32
5,500.00	86.13	130.846	5,079.52	497.77	319.15	-49.47	9.00	8.92	1.23
5,544.78	90.12	131.386	5,080.98	468.35	352.86	-4.81	9.00	8.92	1.21
5,600.00	90.12	131.386	5,080.87	431.84	394.29	50.28	0.00	0.00	0.00
5,700.00	90.12	131.386	5,080.66	365.73	469.32	150.05	0.00	0.00	0.00
5,800.00	90.12	131.386	5,080.45	299.62	544.34	249.81	0.00	0.00	0.00
5,900.00	90.12	131.386	5,080.24	233.50	619.37	349.58	0.00	0.00	0.00
6,000.00	90.12	131.386	5,080.03	167.39	694.40	449.34	0.00	0.00	0.00
6,100.00	90.12	131.386	5,079.82	101.28	769.42	549.11	0.00	0.00	0.00
6,200.00	90.12	131.386	5,079.61	35.16	844.45	648.87	0.00	0.00	0.00
6,300.00	90.12	131.386	5,079.40	-30.95	919.48	748.64	0.00	0.00	0.00
6,400.00	90.12	131.386	5,079.19	-97.06	994.50	848.41	0.00	0.00	0.00
6,500.00	90.12	131.386	5,078.98	-163.18	1,069.53	948.17	0.00	0.00	0.00
6,600.00	90.12	131.386	5,078.77	-229.29	1,144.56	1,047.94	0.00	0.00	0.00
6,700.00	90.12	131.386	5,078.56	-295.40	1,219.58	1,147.70	0.00	0.00	0.00
6,800.00	90.12	131.386	5,078.35	-361.51	1,294.61	1,247.47	0.00	0.00	0.00
6,900.00	90.12	131.386	5,078.14	-427.63	1,369.64	1,347.23	0.00	0.00	0.00
7,000.00	90.12	131.386	5,077.93	-493.74	1,444.66	1,447.00	0.00	0.00	0.00
7,100.00	90.12	131.386	5,077.72	-559.85	1,519.69	1,546.77	0.00	0.00	0.00
7,200.00	90.12	131.386	5,077.51	-625.97	1,594.72	1,646.53	0.00	0.00	0.00
7,300.00	90.12	131.386	5,077.30	-692.08	1,669.74	1,746.30	0.00	0.00	0.00
7,400.00	90.12	131.386	5,077.09	-758.19	1,744.77	1,846.06	0.00	0.00	0.00
7,500.00	90.12	131.386	5,076.88	-824.31	1,819.80	1,945.83	0.00	0.00	0.00
7,600.00	90.12	131.386	5,076.67	-890.42	1,894.83	2,045.59	0.00	0.00	0.00
7,700.00	90.12	131.386	5,076.46	-956.53	1,969.85	2,145.36	0.00	0.00	0.00
7,800.00	90.12	131.386	5,076.25	-1,022.65	2,044.88	2,245.13	0.00	0.00	0.00
7,900.00	90.12	131.386	5,076.04	-1,088.76	2,119.91	2,344.89	0.00	0.00	0.00
8,000.00	90.12	131.386	5,075.83	-1,154.87	2,194.93	2,444.66	0.00	0.00	0.00
8,100.00	90.12	131.386	5,075.62	-1,220.98	2,269.96	2,544.42	0.00	0.00	0.00
8,200.00	90.12	131.386	5,075.41	-1,287.10	2,344.99	2,644.19	0.00	0.00	0.00
8,300.00	90.12	131.386	5,075.20	-1,353.21	2,420.01	2,743.95	0.00	0.00	0.00
8,400.00	90.12	131.386	5,074.99	-1,419.32	2,495.04	2,843.72	0.00	0.00	0.00
8,500.00	90.12	131.386	5,074.78	-1,485.44	2,570.07	2,943.48	0.00	0.00	0.00
8,600.00	90.12	131.386	5,074.57	-1,551.55	2,645.09	3,043.25	0.00	0.00	0.00
8,700.00	90.12	131.386	5,074.36	-1,617.66	2,720.12	3,143.02	0.00	0.00	0.00
8,800.00	90.12	131.386	5,074.15	-1,683.78	2,795.15	3,242.78	0.00	0.00	0.00
8,900.00	90.12	131.386	5,073.94	-1,749.89	2,870.17	3,342.55	0.00	0.00	0.00
9,000.00	90.12	131.386	5,073.73	-1,816.00	2,945.20	3,442.31	0.00	0.00	0.00
9,100.00	90.12	131.386	5,073.52	-1,882.11	3,020.23	3,542.08	0.00	0.00	0.00
9,200.00	90.12	131.386	5,073.31	-1,948.23	3,095.25	3,641.84	0.00	0.00	0.00
9,300.00	90.12	131.386	5,073.10	-2,014.34	3,170.28	3,741.61	0.00	0.00	0.00
9,400.00	90.12	131.386	5,072.89	-2,080.45	3,245.31	3,841.38	0.00	0.00	0.00
9,500.00	90.12	131.386	5,072.68	-2,146.57	3,320.34	3,941.14	0.00	0.00	0.00
9,600.00	90.12	131.386	5,072.47	-2,212.68	3,395.36	4,040.91	0.00	0.00	0.00
9,700.00	90.12	131.386	5,072.26	-2,278.79	3,470.39	4,140.67	0.00	0.00	0.00
9,800.00	90.12	131.386	5,072.05	-2,344.91	3,545.42	4,240.44	0.00	0.00	0.00
9,900.00	90.12	131.386	5,071.84	-2,411.02	3,620.44	4,340.20	0.00	0.00	0.00



Scientific Drilling, Intl
Planning Report



Database: Grand Junction
Company: DJR Operating

Project: North Alamito Unit

Site: L31 2307

Well: NAU 334H

Wellbore: Original drilling

Design: APD Rev 2

Local Co-ordinate Reference:

TVD Reference:

MD Reference:

North Reference:

Survey Calculation Method:

Well NAU 334H

GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)

GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)

True

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)
10,000.00	90.12	131.386	5,071.63	-2,477.13	3,695.47	4,439.97	0.00	0.00	0.00
10,100.00	90.12	131.386	5,071.42	-2,543.24	3,770.50	4,539.74	0.00	0.00	0.00
10,200.00	90.12	131.386	5,071.21	-2,609.36	3,845.52	4,639.50	0.00	0.00	0.00
10,300.00	90.12	131.386	5,071.00	-2,675.47	3,920.55	4,739.27	0.00	0.00	0.00
10,400.00	90.12	131.386	5,070.79	-2,741.58	3,995.58	4,839.03	0.00	0.00	0.00
10,500.00	90.12	131.386	5,070.58	-2,807.70	4,070.60	4,938.80	0.00	0.00	0.00
10,600.00	90.12	131.386	5,070.37	-2,873.81	4,145.63	5,038.56	0.00	0.00	0.00
10,700.00	90.12	131.386	5,070.16	-2,939.92	4,220.66	5,138.33	0.00	0.00	0.00
10,800.00	90.12	131.386	5,069.95	-3,006.04	4,295.68	5,238.09	0.00	0.00	0.00
10,900.00	90.12	131.386	5,069.74	-3,072.15	4,370.71	5,337.86	0.00	0.00	0.00
11,000.00	90.12	131.386	5,069.53	-3,138.26	4,445.74	5,437.63	0.00	0.00	0.00
11,100.00	90.12	131.386	5,069.32	-3,204.37	4,520.76	5,537.39	0.00	0.00	0.00
11,200.00	90.12	131.386	5,069.11	-3,270.49	4,595.79	5,637.16	0.00	0.00	0.00
11,300.00	90.12	131.386	5,068.90	-3,336.60	4,670.82	5,736.92	0.00	0.00	0.00
11,400.00	90.12	131.386	5,068.69	-3,402.71	4,745.85	5,836.69	0.00	0.00	0.00
11,500.00	90.12	131.386	5,068.48	-3,468.83	4,820.87	5,936.45	0.00	0.00	0.00
11,600.00	90.12	131.386	5,068.27	-3,534.94	4,895.90	6,036.22	0.00	0.00	0.00
11,700.00	90.12	131.386	5,068.06	-3,601.05	4,970.93	6,135.99	0.00	0.00	0.00
11,800.00	90.12	131.386	5,067.85	-3,667.17	5,045.95	6,235.75	0.00	0.00	0.00
11,900.00	90.12	131.386	5,067.64	-3,733.28	5,120.98	6,335.52	0.00	0.00	0.00
12,000.00	90.12	131.386	5,067.43	-3,799.39	5,196.01	6,435.28	0.00	0.00	0.00
12,100.00	90.12	131.386	5,067.22	-3,865.50	5,271.03	6,535.05	0.00	0.00	0.00
12,200.00	90.12	131.386	5,067.01	-3,931.62	5,346.06	6,634.81	0.00	0.00	0.00
12,300.00	90.12	131.386	5,066.80	-3,997.73	5,421.09	6,734.58	0.00	0.00	0.00
12,400.00	90.12	131.386	5,066.59	-4,063.84	5,496.11	6,834.34	0.00	0.00	0.00
12,500.00	90.12	131.386	5,066.38	-4,129.96	5,571.14	6,934.11	0.00	0.00	0.00
12,600.00	90.12	131.386	5,066.17	-4,196.07	5,646.17	7,033.88	0.00	0.00	0.00
12,700.00	90.12	131.386	5,065.96	-4,262.18	5,721.19	7,133.64	0.00	0.00	0.00
12,800.00	90.12	131.386	5,065.75	-4,328.30	5,796.22	7,233.41	0.00	0.00	0.00
12,900.00	90.12	131.386	5,065.54	-4,394.41	5,871.25	7,333.17	0.00	0.00	0.00
13,000.00	90.12	131.386	5,065.33	-4,460.52	5,946.27	7,432.94	0.00	0.00	0.00
13,100.00	90.12	131.386	5,065.12	-4,526.63	6,021.30	7,532.70	0.00	0.00	0.00
13,200.00	90.12	131.386	5,064.91	-4,592.75	6,096.33	7,632.47	0.00	0.00	0.00
13,300.00	90.12	131.386	5,064.70	-4,658.86	6,171.36	7,732.24	0.00	0.00	0.00
13,400.00	90.12	131.386	5,064.49	-4,724.97	6,246.38	7,832.00	0.00	0.00	0.00
13,500.00	90.12	131.386	5,064.28	-4,791.09	6,321.41	7,931.77	0.00	0.00	0.00
13,600.00	90.12	131.386	5,064.07	-4,857.20	6,396.44	8,031.53	0.00	0.00	0.00
13,700.00	90.12	131.386	5,063.86	-4,923.31	6,471.46	8,131.30	0.00	0.00	0.00
13,800.00	90.12	131.386	5,063.65	-4,989.43	6,546.49	8,231.06	0.00	0.00	0.00
13,900.00	90.12	131.386	5,063.44	-5,055.54	6,621.52	8,330.83	0.00	0.00	0.00
14,000.00	90.12	131.386	5,063.23	-5,121.65	6,696.54	8,430.60	0.00	0.00	0.00
14,100.00	90.12	131.386	5,063.02	-5,187.76	6,771.57	8,530.36	0.00	0.00	0.00
14,118.77	90.12	131.386	5,062.98	-5,200.17	6,785.65	8,549.09	0.00	0.00	0.00



Scientific Drilling, Intl
Planning Report



Database: Grand Junction
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Project: North Alamito Unit

Site: L31 2307
Well: NAU 334H
Wellbore: Original drilling
Design: APD Rev 2

Local Co-ordinate Reference: Well NAU 334H
TVD Reference: GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
MD Reference: GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
North Reference: True
Survey Calculation Method: Minimum Curvature

Design Targets

Target Name

- hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
334H toe rev 2 - plan hits target center - Circle (radius 100.00)	0.00	0.000	5,062.98	-5,200.17	6,785.65	1,880,244.10	2,792,235.67	36.1672084	-107.5990755
334H heel rev 2 - plan hits target center - Circle (radius 50.00)	0.00	0.000	5,080.98	468.35	352.86	1,885,898.61	2,785,790.55	36.1827826	-107.6208693

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
350.00	350.00	Surface casing	9.63	12.25
5,486.98	5,078.50	Intermediate casing	7.00	8.75

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
910.32	908.00	Kirtland		0.00	0.000
1,168.98	1,161.00	Fruitland		0.00	0.000
1,430.70	1,416.00	Pictured Cliffs		0.00	0.000
1,607.23	1,588.00	Lewis		0.00	0.000
2,205.60	2,171.00	Chacra		0.00	0.000
2,949.71	2,896.00	Menefee		0.00	0.000
3,883.70	3,806.00	Point Lookout		0.00	0.000
4,054.07	3,972.00	Mancos		0.00	0.000
4,390.72	4,300.00	Mancos Silt		0.00	0.000
4,898.49	4,784.00	Gallup A		0.00	0.000
4,939.80	4,818.00	Gallup B		0.00	0.000
5,064.92	4,911.00	Gallup C		0.00	0.000

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
425.00	425.00	0.00	0.00	Start Build 2.00
963.81	960.64	49.25	-11.25	Start 3444.07 hold at 963.81 MD
4,407.87	4,316.72	803.21	-183.54	Start DLS 9.00 TFO 150.10
5,513.30	5,080.28	489.08	329.18	Start 8683.58 hold at 5513.30 MD
14,196.88				TD at 14196.88



DJR Operating

North Alamito Unit

L31 2307

NAU 334H

Original drilling

APD Rev 2

Anticollision Report

16 December, 2019



www.scientificdrilling.com



Scientific Drilling, Intl
Anticollision Report



Company: DJR Operating
Project: North Alamito Unit

Reference Site: L31 2307

Site Error: 0.00 usft
Reference Well: NAU 334H
Well Error: 0.00 usft
Reference Wellbore: Original drilling
Reference Design: APD Rev 2

Local Co-ordinate Reference: Well NAU 334H
TVD Reference: GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
MD Reference: GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: Grand Junction
Offset TVD Reference: Offset Datum

Reference	APD Rev 2		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum ellipse separation of 1,000.00 usft	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date	12/16/2019		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	14,118.77	APD Rev 2 (Original drilling)	MWD+HDGM	OWSG MWD + HDGM	

Summary		Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Site Name							
Offset Well - Wellbore - Design							
Epic Energy Federal C #3							
Federal C #3 - Original drilling - Original drilling		7,810.83	4,930.28	750.55	527.35	3.363	CC, ES, SF
L31 2307							
NAU 335H - Original drilling - APD Rev 2		576.51	576.44	39.66	35.94	10.652	CC
NAU 335H - Original drilling - APD Rev 2		600.00	599.89	39.69	35.79	10.198	ES
NAU 335H - Original drilling - APD Rev 2		5,050.00	4,999.98	108.55	69.34	2.768	SF
NAU 523H - Original drilling - APD Rev 1		594.02	594.50	16.63	12.81	4.358	CC
NAU 523H - Original drilling - APD Rev 1		600.00	600.45	16.64	12.79	4.315	ES, SF
NAU 524H - Original drilling - APD Rev 1		594.30	594.52	59.02	55.20	15.469	CC
NAU 524H - Original drilling - APD Rev 1		600.00	600.19	59.02	55.16	15.312	ES
NAU 524H - Original drilling - APD Rev 1		800.00	795.48	70.55	65.28	13.389	SF

Offset Design		Epic Energy Federal C #3 - Federal C #3 - Original drilling - Original drilling										Offset Site Error:	20.00 usft
Survey Program:		222-INCLINOMETER										Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Between Centres (usft)	Between Ellipses (usft)					
7,200.00	5,077.51	4,931.56	4,929.48	60.02	147.74	90.10	-1,592.91	1,556.79	967.69	770.45	197.24	4.906	
7,300.00	5,077.30	4,931.35	4,929.27	62.54	147.73	90.08	-1,592.91	1,556.79	907.88	706.06	201.82	4.498	
7,400.00	5,077.09	4,931.14	4,929.06	65.06	147.73	90.07	-1,592.91	1,556.79	855.62	648.97	206.65	4.140	
7,500.00	5,076.88	4,930.93	4,928.85	67.60	147.72	90.05	-1,592.91	1,556.79	812.36	600.86	211.50	3.841	
7,600.00	5,076.67	4,930.72	4,928.64	70.15	147.71	90.03	-1,592.91	1,556.79	779.59	563.51	216.08	3.608	
7,700.00	5,076.46	4,930.51	4,928.43	72.70	147.71	90.02	-1,592.91	1,556.79	758.68	538.67	220.01	3.448	
7,800.00	5,076.25	4,930.30	4,928.22	75.27	147.70	90.00	-1,592.91	1,556.79	750.62	527.67	222.95	3.367	
7,810.83	5,076.22	4,930.28	4,928.20	75.55	147.70	90.00	-1,592.91	1,556.79	750.55	527.35	223.20	3.363	CC, ES, SF
7,900.00	5,076.04	4,930.09	4,928.01	77.84	147.70	89.99	-1,592.91	1,556.79	755.82	531.15	224.67	3.364	
8,000.00	5,075.83	4,929.88	4,927.80	80.42	147.69	89.97	-1,592.91	1,556.79	774.02	548.89	225.13	3.438	
8,100.00	5,075.62	4,929.67	4,927.59	83.00	147.68	89.95	-1,592.91	1,556.79	804.33	579.87	224.45	3.583	
8,200.00	5,075.41	4,929.46	4,927.38	85.59	147.68	89.94	-1,592.91	1,556.79	845.45	622.53	222.92	3.793	
8,300.00	5,075.20	4,929.25	4,927.17	88.18	147.67	89.92	-1,592.91	1,556.79	895.89	675.08	220.81	4.057	
8,400.00	5,074.99	4,929.04	4,926.96	90.78	147.66	89.91	-1,592.91	1,556.79	954.17	735.79	218.39	4.369	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

DJR OPERATING, LLC
NORTH ALAMITO UNIT #334H

1989' FSL & 675' FWL
LOCATED IN THE NW/4 SW/4 OF SECTION 31,
T23N, R7W, N.M.P.M.,
SANDOVAL COUNTY, NEW MEXICO

DIRECTIONS

- 1) FROM THE INTERSECTION OF HWY 64 & HWY 550 IN BLOOMFIELD, GO SOUTH ON HWY 550, 39.0 MILES TO INDIAN ROUTE 7061; AKA COUNTY ROAD 7900 (M.P. 112.7).
- 2) TURN RIGHT ONTO 7061 AND GO 4.5 MILES TO A DIRT ROAD ON LEFT.
- 3) TURN LEFT AND GO 2.8 MILES TO A DIRT ROAD ON THE LEFT.
- 4) FOLLOW ROAD FOR 0.5 MILES WHERE ACCESS IS STAKED ON LEFT SIDE OF ROAD.

WELL FLAG LOCATED AT LAT. 36.181496° N, LONG.107.622065° W (NAD 83).