

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018**SUNDRY NOTICES AND REPORTS ON WELLS**
*Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.***SUBMIT IN TRIPLICATE - Other instructions on page 2**

1. Type of Well ☒ Oil Well ☒ Gas Well ☐ Other		5. Lease Serial No. NMNM36943
2. Name of Operator DJR OPERATING LLC		6. If Indian, Allottee or Tribe Name EASTERN NAVAJO
Contact: SHAW-MARIE FORD E-Mail: sford@djrlc.com		7. If Unit or CA/Agreement, Name and/or No. NMNM135229A
3a. Address 1 ROAD 3263 AZTEC, NM 87410	3b. Phone No. (include area code) Ph: 505-632-3476	8. Well Name and No. NORTH ALAMITO UNIT 238H
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 30 T23N R7W SWSE 0429FSL 1341FEL 36.191683 N Lat, 107.611077 W Lon		9. API Well No. 30-043-21211-00-X1
		10. Field and Pool or Exploratory Area ALAMITO GALLUP BASIN MANCOS
		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	Drilling Operations
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

DJR Operating, LLC. has an approved APD for the subject well. DJR is submitting this sundry changing the BHL and Drilling Plan. Attachments include a revised C-102 package reflecting the revised BHL and new Drilling Plan.

ADHERE TO PREVIOUS NMOC
CONDITIONS OF APPROVAL**NMOC****DEC 17 2019****DISTRICT III**

14. I hereby certify that the foregoing is true and correct.	
Electronic Submission #495719 verified by the BLM Well Information System For DJR OPERATING LLC, sent to the Farmington Committed to AFMSS for processing by JOE KILLINS on 12/16/2019 (20JK0049SE)	
Name (Printed/Typed) SHAW-MARIE FORD	Title REGULATORY SPECIALIST
Signature (Electronic Submission)	Date 12/13/2019

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By JOE KILLINS	Title PETROLEUM ENGINEER	Date 12/16/2019
Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.		Office Farmington

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 ****

Submit one copy to appropriate
District Office

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

☐ AMENDED REPORT

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹API Number 30-043-21211		²Pool Code 98174	³Pool Name NORTH ALAMITO UNIT MANCOS OIL POOL
⁴Property Code 325267	⁵Property Name NORTH ALAMITO UNIT		⁶Well Number 238H
⁷OGRID No. 371838	⁸Operator Name DJR OPERATING, LLC		⁹Elevation 7028'

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
0	30	23N	7W		393'	SOUTH	1341'	EAST	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
B	25	23N	8W		352'	NORTH	2343'	EAST	SAN JUAN

R-14081 R-14081A

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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18	17	OPERATOR CERTIFICATION
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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.

sford@djrlc.com
E-mail Address

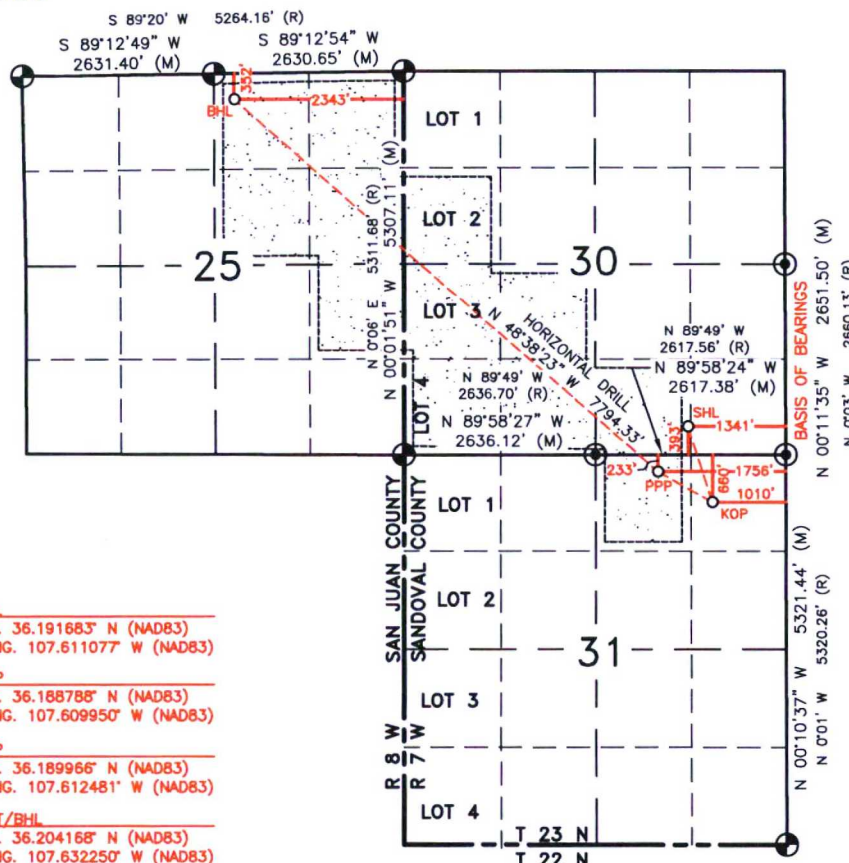
SURVEYOR CERTIFICATION

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.

FEBRUARY 14, 2017

Date of Survey
Signature and Seal of Professional Surveyor:

EXIT/BHL
LAT. 36.204168° N (NAD83)
LONG. 107.632250° W (NAD83)



Certificate Number 11393

DISTRICT I
1825 N. French Dr., Hobbs, N.M. 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

DISTRICT II
811 S. First St., Artesia, N.M. 88210
Phone: (575) 748-1883 Fax: (575) 748-9720

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

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department

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

DJR OPERATING, LLC
NORTH ALAMITO UNIT #238H

N/4 CORNER SEC 25
LAT. 36.205127° N (NAD83)
LONG. 107.633221° W (NAD83)

SE CORNER SEC 25
LAT. 36.190632° N (NAD83)
LONG. 107.624334° W (NAD83)

E/4 CORNER SEC 30
LAT. 36.197877° N (NAD83)
LONG. 107.606539° W (NAD83)

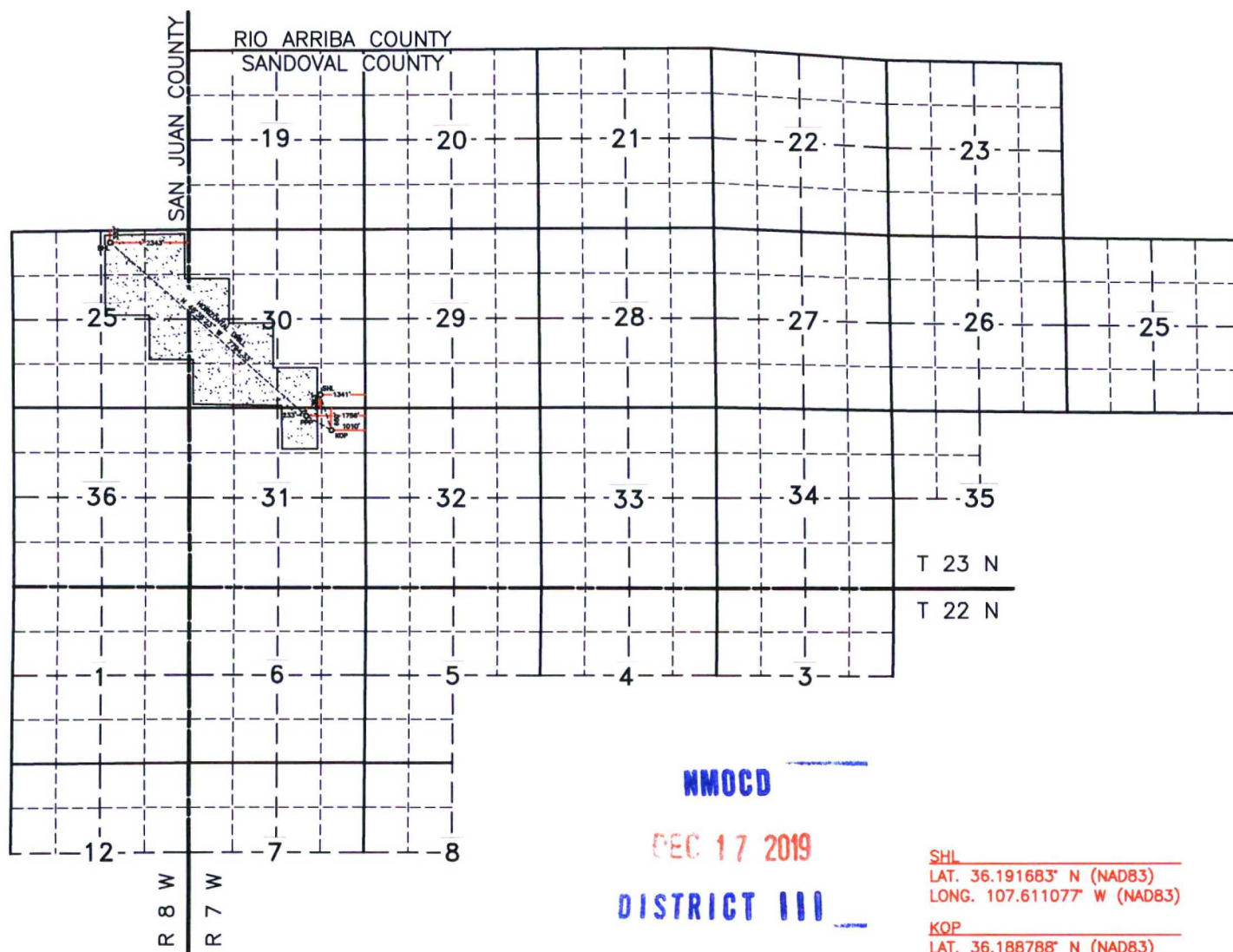
S/4 CORNER SEC 30
LAT. 36.190612° N (NAD83)
LONG. 107.615400° W (NAD83)

NE CORNER SEC 25
LAT. 36.205211° N (NAD83)
LONG. 107.624305° W (NAD83)

NW CORNER SEC 25
LAT. 36.205042° N (NAD83)
LONG. 107.642140° W (NAD83)

SE CORNER SEC 30
LAT. 36.190593° N (NAD83)
LONG. 107.606530° W (NAD83)

SW CORNER SEC 32
LAT. 36.175974° N (NAD83)
LONG. 107.606516° W (NAD83)



PENETRATED SPACING UNIT;
SEC 31: NW/NE (40 AC.); SEC 30: SW/SE, SW/4,
SW/NW (241.94 AC.); SEC 25: NE/SE, NE/4
(200 AC.) = 481.94 ACRES

TOTAL 14,262.78 ACRES: T23N R7W SEC. 19-23, 25, 28-34 (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

SHL
LAT. 36.191683° N (NAD83)
LONG. 107.611077° W (NAD83)

KOP
LAT. 36.188788° N (NAD83)
LONG. 107.609950° W (NAD83)

PPP
LAT. 36.189966° N (NAD83)
LONG. 107.612481° W (NAD83)

EXIT/BHL
LAT. 36.204168° N (NAD83)
LONG. 107.632250° W (NAD83)

DRILLING PLAN

North Alamito Unit 238H

Sandoval County, New Mexico

Surface Location

1341-ft FEL & 393-ft FSL
 Sec 30 T23N R7W
 Graded Elevation 7028' MSL
 RKB Elevation 7042' (14' KB)

SHL Geographical Coordinates (NAD-83)

Latitude 36.1916830° N
 Longitude 107.6110770° W

Kick Off Point for Horizontal Build Curve

4447-ft MD
 4276-ft TVD

Local Coordinates (from SHL)

1053-ft South
 335-ft East

Heel Location (Pay zone entry)

1756-ft FEL & 233-ft FNL
 Sec 31 T23N R7W

Heel Geographical Coordinates (NAD-83)

Latitude 36.1899656° N
 Longitude 107.6124807° W

Bottom Hole Location (TD)

2343-ft FEL & 352-ft FNL
 Sec 25 T23N R8W

BHL Geographical Coordinates (NAD-83)

Latitude 36.2041679° N
 Longitude 107.6322500° W

Well objectives

This well is planned as a 7790-ft lateral in the Gallup C R3 sand.

Bottom Hole temperature and pressure

The temperature in the Gallup C R3 horizontal objective is 141°F. Bottom hole pressure in the Gallup C R3 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	1046	1043	Sd	W	8.3	8.4 – 8.8
Kirtland	1081	1077	Sh	-	8.3	8.4 – 8.8
Fruitland	1295	1285	C	G	8.3	9.0 - 9.5
Pictured Cliffs	1588	1564	Sd	W	8.3	9.0 - 9.5
Lewis	1744	1712	Sh	-		9.0 - 9.5
Chacra	2399	2333	Sd	-	8.3	9.0 - 9.5
Menefee	3153	3048	Sd, C	G	8.3	9.0 - 9.5
Point Lookout	4091	3938	Sd	-	8.3	9.0 - 9.5
Mancos	4281	4118	Sh	-		9.0 - 9.5
Mancos Silt	4596	4418	Slt	O/G	6.6	9.0 - 9.5
Gallup A	5122	4918	Slt	O/G	6.6	9.0 - 9.5
Gallup B	5177	4962	Sd	O/G	6.6	8.8 - 9.0
Gallup C	5326	5067	Sd	O/G	6.6	8.8 - 9.0
Target	6030	5219	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	366	surf	366	surface
7"	8-3/4"	26	K-55	LTC	surf	5702	surf	5205	surface
4-1/2"	6-1/8"	11.6	P-110	BTC	5421	13825	5121	5245	5421

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
Type	BJ Services	BJ Services
Planned top	III	Poz/G
Density (ppg)	Surface	3947-ft
Yield (cf/sx)	12.30	13.50
Mix water (gal/sx)	2.34	1.50
Volume (sx)	13.26	7.20
Volume (bbls)	372	271
Volume (cu. ft.)	155	72
Excess %	870	405
	50	50

4-1/2" Production Liner

	BJ Services
Type	Poz/G
Planned top	5421-ft
Density (ppg)	13.3
Yield (cf/sx)	1.56
Mix water (gal/sx)	7.71
Volume (sx)	706
Volume (bbls)	197
Volume (cu.ft)	1104
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 geolograph 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% KCl LSND drilling fluid will be used, with KCl 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 – 366	8.4 – 8.8	32 – 44	2 – 12	NC
Intermediate	7% KCl Low solids, non-dispersed	366 – 5702	9.0 – 9.5	38 – 45	8 – 14	<20
Production	Low solids, non-dispersed	5702 – 13825	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: O30 2307
Well: NAU 238H
Wellbore: Original drilling
Design: Pre-Drill Rev B

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: 49546.8nT
Dip Angle: 62.88°
Date: 4/7/2019
Model: IGRF2015

WELL DETAILS: NAU 238H

GL 7028' & RKB 14' @ 7042.00usft (Aztec 920)
+N/-S +E/-W Northing Easting Latitude Longitude
0.00 0.00 1889145.00 2788672.88 36.1916830 -107.6110770

Plan: Pre-Drill Rev B (NAU 238H/Original drilling)

Created By: Janie Collins Date: 19:46, December 05 2019

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
238H heel rev B	5219.00	-625.17	-414.20	1888518.89	2788260.11	36.1899656	-107.6124807
238H toe rev B	5245.00	4545.45	-6246.55	1893676.13	2782415.93	36.2041679	-107.6322500

SECTION DETAILS

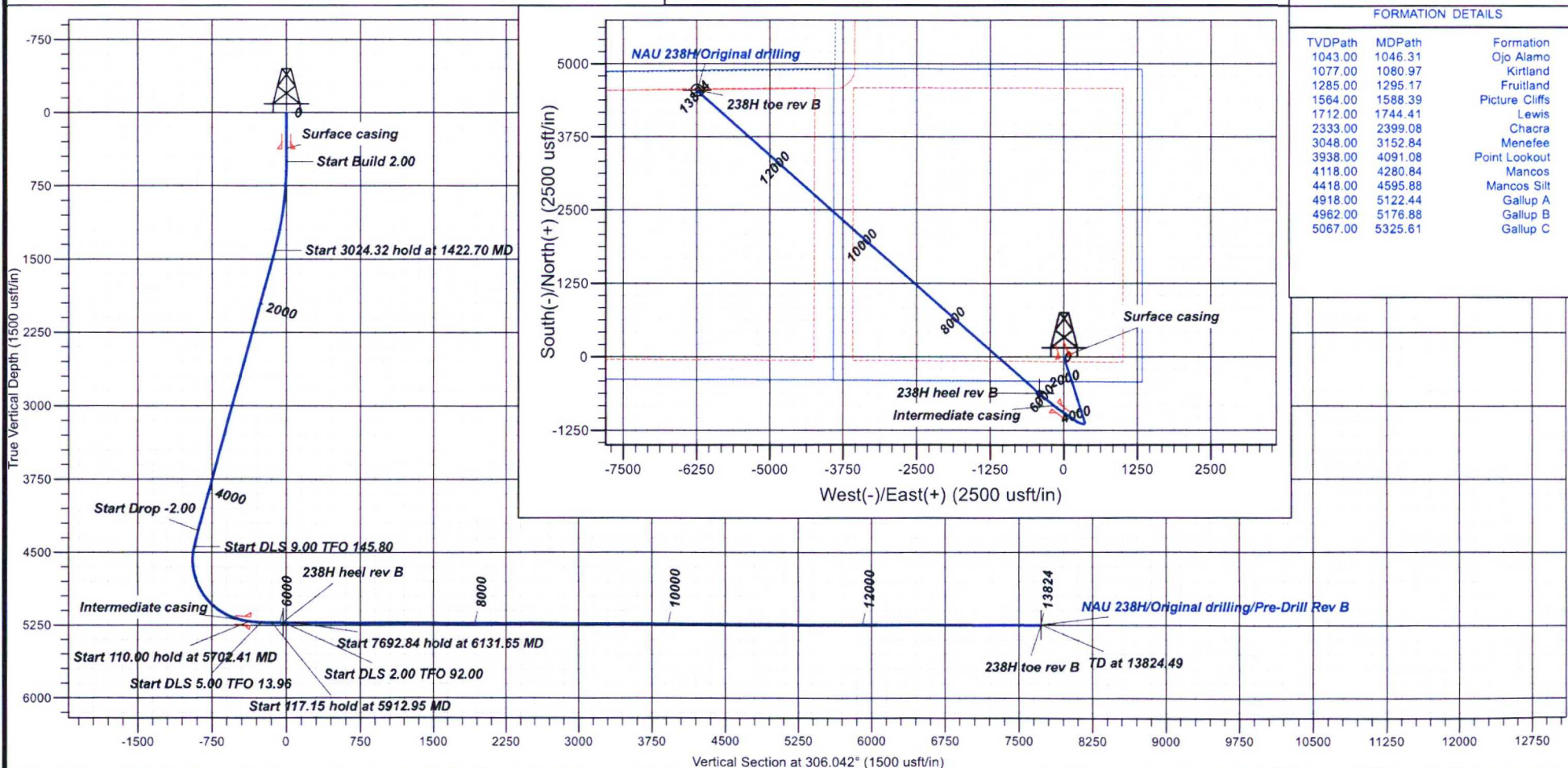
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSECT	Target
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	
500.00	0.00	0.000	500.00	0.00	0.00	0.00	0.00	0.00	
1422.70	18.45	162.350	1406.83	-140.38	44.67	2.00	162.35	-118.71	
4447.02	18.45	162.350	4275.63	-1052.64	334.93	0.00	0.00	-890.18	
4619.72	15.00	162.350	4441.00	-1100.00	350.00	2.00	180.00	-930.23	
5702.41	85.00	308.330	5204.68	-830.81	-159.80	9.00	145.80	-359.63	
5812.41	85.00	308.330	5214.26	-762.85	-245.76	0.00	0.00	-250.14	
5912.95	89.88	309.542	5218.75	-699.75	-323.86	5.00	13.96	-149.85	
6030.10	89.88	309.542	5219.00	-625.17	-414.20	0.00	0.00	-32.92	238H heel rev B
6131.65	89.81	311.572	5219.28	-559.14	-491.35	2.00	92.00	68.31	
13824.49	89.81	311.572	5245.00	4545.45	-6246.55	0.00	0.00	7725.32	238H toe rev B

CASING DETAILS

TVD	MD	Name
366.00	366.00	Surface casing
5204.68	702.41	Intermediate casing

FORMATION DETAILS

TVDPath	MDPath	Formation
1043.00	1046.31	Ojo Alamo
1077.00	1080.97	Kirtland
1285.00	1295.17	Fruitland
1564.00	1588.39	Picture Cliffs
1712.00	1744.41	Lewis
2333.00	2399.08	Chacra
3048.00	3152.84	Menefee
3938.00	4091.08	Point Lookout
4118.00	4280.84	Mancos
4418.00	4595.88	Mancos Silt
4918.00	5122.44	Gallup A
4962.00	5176.88	Gallup B
5067.00	5325.61	Gallup C



DJR Operating

North Alamito Unit

O30 2307

NAU 238H

Original drilling

Plan: Pre-Drill Rev B

Standard Planning Report

05 December, 2019



www.scientificdrilling.com



Scientific Drilling, Intl

Planning Report

Database: Grand Junction	Local Co-ordinate Reference: Well NAU 238H	
Company: DJR Operating	TVD Reference: GL 7028' & RKB 14' @ 7042.00usft (Aztec 920)	
Project: North Alamito Unit	MD Reference: GL 7028' & RKB 14' @ 7042.00usft (Aztec 920)	
Site: O30 2307	North Reference: True	
Well: NAU 238H	Survey Calculation Method: Minimum Curvature	
Wellbore: Original drilling		
Design: Pre-Drill Rev B		

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	O30 2307		
Site Position:		Northing:	1,889,181.15 usft
From:	Lat/Long	Easting:	2,788,720.89 usft
Position Uncertainty:	0.00 usft	Slot Radius:	72.00 in
		Latitude:	36.1917820
		Longitude:	-107.6109140
		Grid Convergence:	0.13 °

Well	NAU 238H		
Well Position	+N/-S	-36.04 usft	Northing: 1,889,145.01 usft
	+E/-W	-48.10 usft	Easting: 2,788,672.88 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	36.1916830
		Longitude:	-107.6110770
		Ground Level:	7,028.00 usft

Wellbore	Original drilling		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2015	4/7/2019	8.95
			Dip Angle (°)
			62.88
			Field Strength (nT)
			49,546.83435983

Design	Pre-Drill Rev B		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.00	0.00	0.00
			Direction (°)
			306.042

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	
500.00	0.00	0.000	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,422.70	18.45	162.350	1,406.83	-140.38	44.67	2.00	2.00	0.00	162.35	
4,447.02	18.45	162.350	4,275.63	-1,052.64	334.93	0.00	0.00	0.00	0.00	
4,619.72	15.00	162.350	4,441.00	-1,100.00	350.00	2.00	-2.00	0.00	180.00	
5,702.41	85.00	308.330	5,204.68	-830.81	-159.80	9.00	6.47	13.48	145.80	
5,812.41	85.00	308.330	5,214.26	-762.85	-245.76	0.00	0.00	0.00	0.00	
5,912.95	89.88	309.542	5,218.75	-699.75	-323.86	5.00	4.85	1.20	13.96	
6,030.10	89.88	309.542	5,219.00	-625.17	-414.20	0.00	0.00	0.00	0.00	238H heel rev B
6,131.65	89.81	311.572	5,219.28	-559.14	-491.35	2.00	-0.07	2.00	92.00	
13,824.50	89.81	311.572	5,245.00	4,545.45	-6,246.55	0.00	0.00	0.00	0.00	238H toe rev B

Scientific Drilling, Intl

Planning Report

Database: Grand Junction
Company: DJR Operating

Project: North Alamito Unit

Site: O30 2307

Well: NAU 238H

Wellbore: Original drilling

Design: Pre-Drill Rev B

Local Co-ordinate Reference:

TVD Reference:

MD Reference:

North Reference:

Survey Calculation Method:

Well NAU 238H

GL 7028' & RKB 14' @ 7042.00usft (Aztec 920)

GL 7028' & RKB 14' @ 7042.00usft (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)
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
500.00	0.00	0.000	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	2.00	162.350	599.98	-1.66	0.53	-1.41	2.00	2.00	0.00
700.00	4.00	162.350	699.84	-6.65	2.12	-5.62	2.00	2.00	0.00
800.00	6.00	162.350	799.45	-14.95	4.76	-12.65	2.00	2.00	0.00
900.00	8.00	162.350	898.70	-26.57	8.45	-22.47	2.00	2.00	0.00
1,000.00	10.00	162.350	997.47	-41.47	13.20	-35.07	2.00	2.00	0.00
1,100.00	12.00	162.350	1,095.62	-59.66	18.98	-50.45	2.00	2.00	0.00
1,200.00	14.00	162.350	1,193.06	-81.09	25.80	-68.58	2.00	2.00	0.00
1,300.00	16.00	162.350	1,289.64	-105.75	33.65	-89.43	2.00	2.00	0.00
1,400.00	18.00	162.350	1,385.27	-133.61	42.51	-112.99	2.00	2.00	0.00
1,422.70	18.45	162.350	1,406.83	-140.38	44.67	-118.71	2.00	2.00	0.00
1,500.00	18.45	162.350	1,480.15	-163.70	52.08	-138.43	0.00	0.00	0.00
1,600.00	18.45	162.350	1,575.01	-193.86	61.68	-163.94	0.00	0.00	0.00
1,700.00	18.45	162.350	1,669.87	-224.02	71.28	-189.45	0.00	0.00	0.00
1,800.00	18.45	162.350	1,764.73	-254.19	80.88	-214.96	0.00	0.00	0.00
1,900.00	18.45	162.350	1,859.59	-284.35	90.48	-240.47	0.00	0.00	0.00
2,000.00	18.45	162.350	1,954.44	-314.52	100.07	-265.97	0.00	0.00	0.00
2,100.00	18.45	162.350	2,049.30	-344.68	109.67	-291.48	0.00	0.00	0.00
2,200.00	18.45	162.350	2,144.16	-374.85	119.27	-316.99	0.00	0.00	0.00
2,300.00	18.45	162.350	2,239.02	-405.01	128.87	-342.50	0.00	0.00	0.00
2,400.00	18.45	162.350	2,333.87	-435.17	138.46	-368.01	0.00	0.00	0.00
2,500.00	18.45	162.350	2,428.73	-465.34	148.06	-393.52	0.00	0.00	0.00
2,600.00	18.45	162.350	2,523.59	-495.50	157.66	-419.03	0.00	0.00	0.00
2,700.00	18.45	162.350	2,618.45	-525.67	167.26	-444.53	0.00	0.00	0.00
2,800.00	18.45	162.350	2,713.31	-555.83	176.86	-470.04	0.00	0.00	0.00
2,900.00	18.45	162.350	2,808.16	-585.99	186.45	-495.55	0.00	0.00	0.00
3,000.00	18.45	162.350	2,903.02	-616.16	196.05	-521.06	0.00	0.00	0.00
3,100.00	18.45	162.350	2,997.88	-646.32	205.65	-546.57	0.00	0.00	0.00
3,200.00	18.45	162.350	3,092.74	-676.49	215.25	-572.08	0.00	0.00	0.00
3,300.00	18.45	162.350	3,187.59	-706.65	224.84	-597.59	0.00	0.00	0.00
3,400.00	18.45	162.350	3,282.45	-736.82	234.44	-623.10	0.00	0.00	0.00
3,500.00	18.45	162.350	3,377.31	-766.98	244.04	-648.60	0.00	0.00	0.00
3,600.00	18.45	162.350	3,472.17	-797.14	253.64	-674.11	0.00	0.00	0.00
3,700.00	18.45	162.350	3,567.03	-827.31	263.23	-699.62	0.00	0.00	0.00
3,800.00	18.45	162.350	3,661.88	-857.47	272.83	-725.13	0.00	0.00	0.00
3,900.00	18.45	162.350	3,756.74	-887.64	282.43	-750.64	0.00	0.00	0.00
4,000.00	18.45	162.350	3,851.60	-917.80	292.03	-776.15	0.00	0.00	0.00
4,100.00	18.45	162.350	3,946.46	-947.97	301.63	-801.66	0.00	0.00	0.00
4,200.00	18.45	162.350	4,041.32	-978.13	311.22	-827.17	0.00	0.00	0.00
4,300.00	18.45	162.350	4,136.17	-1,008.29	320.82	-852.67	0.00	0.00	0.00
4,400.00	18.45	162.350	4,231.03	-1,038.46	330.42	-878.18	0.00	0.00	0.00
4,447.02	18.45	162.350	4,275.63	-1,052.64	334.93	-890.18	0.00	0.00	0.00
4,500.00	17.39	162.350	4,326.04	-1,068.18	339.88	-903.32	2.00	-2.00	0.00
4,600.00	15.39	162.350	4,421.97	-1,095.07	348.43	-926.06	2.00	-2.00	0.00
4,619.72	15.00	162.350	4,441.00	-1,100.00	350.00	-930.23	2.00	-2.00	0.00
4,700.00	9.88	186.689	4,519.42	-1,116.76	352.35	-941.99	9.00	-6.38	30.32
4,800.00	9.15	243.203	4,618.25	-1,128.89	344.24	-942.56	9.00	-0.72	56.51

Scientific Drilling, Intl

Planning Report

Database:	Grand Junction	Local Co-ordinate Reference:	Well NAU 238H
Company:	DJR Operating	TVD Reference:	GL 7028' & RKB 14' @ 7042.00usft (Aztec 920)
Project:	North Alamito Unit	MD Reference:	GL 7028' & RKB 14' @ 7042.00usft (Aztec 920)
Site:	O30 2307	North Reference:	True
Well:	NAU 238H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original drilling		
Design:	Pre-Drill Rev B		

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	15.19	276.286	4,716.06	-1,131.04	324.07	-927.52	9.00	6.04	33.08
5,000.00	23.21	289.014	4,810.46	-1,123.17	292.35	-897.24	9.00	8.02	12.73
5,100.00	31.74	295.316	4,899.12	-1,105.47	249.85	-852.47	9.00	8.53	6.30
5,200.00	40.46	299.139	4,979.85	-1,078.37	197.63	-794.29	9.00	8.72	3.82
5,300.00	49.26	301.792	5,050.67	-1,042.54	136.96	-724.16	9.00	8.80	2.65
5,400.00	58.11	303.819	5,109.84	-998.86	69.35	-643.79	9.00	8.85	2.03
5,500.00	66.99	305.487	5,155.89	-948.41	-3.54	-555.17	9.00	8.88	1.67
5,600.00	75.88	306.948	5,187.69	-892.43	-79.93	-460.47	9.00	8.89	1.46
5,700.00	84.79	308.298	5,204.46	-832.30	-157.92	-362.02	9.00	8.90	1.35
5,702.41	85.00	308.330	5,204.68	-830.81	-159.80	-359.63	9.00	8.90	1.32
5,800.00	85.00	308.330	5,213.18	-770.52	-236.06	-262.48	0.00	0.00	0.00
5,812.41	85.00	308.330	5,214.26	-762.85	-245.76	-250.14	0.00	0.00	0.00
5,900.00	89.25	309.386	5,218.66	-707.98	-313.86	-162.78	5.00	4.85	1.21
5,912.95	89.88	309.542	5,218.75	-699.75	-323.86	-149.85	5.00	4.85	1.20
6,000.00	89.88	309.542	5,218.94	-644.33	-390.99	-62.97	0.00	0.00	0.00
6,030.10	89.88	309.542	5,219.00	-625.17	-414.20	-32.92	0.00	0.00	0.00
6,100.00	89.83	310.939	5,219.18	-580.01	-467.56	36.79	2.00	-0.07	2.00
6,131.65	89.81	311.572	5,219.28	-559.14	-491.35	68.31	2.00	-0.07	2.00
6,200.00	89.81	311.572	5,219.51	-513.79	-542.49	136.34	0.00	0.00	0.00
6,300.00	89.81	311.572	5,219.84	-447.43	-617.30	235.87	0.00	0.00	0.00
6,400.00	89.81	311.572	5,220.17	-381.08	-692.11	335.41	0.00	0.00	0.00
6,500.00	89.81	311.572	5,220.51	-314.72	-766.92	434.94	0.00	0.00	0.00
6,600.00	89.81	311.572	5,220.84	-248.37	-841.74	534.48	0.00	0.00	0.00
6,700.00	89.81	311.572	5,221.18	-182.01	-916.55	634.01	0.00	0.00	0.00
6,800.00	89.81	311.572	5,221.51	-115.66	-991.36	733.54	0.00	0.00	0.00
6,900.00	89.81	311.572	5,221.85	-49.30	-1,066.17	833.08	0.00	0.00	0.00
7,000.00	89.81	311.572	5,222.18	17.05	-1,140.98	932.61	0.00	0.00	0.00
7,100.00	89.81	311.572	5,222.51	83.41	-1,215.80	1,032.15	0.00	0.00	0.00
7,200.00	89.81	311.572	5,222.85	149.76	-1,290.61	1,131.68	0.00	0.00	0.00
7,300.00	89.81	311.572	5,223.18	216.12	-1,365.42	1,231.22	0.00	0.00	0.00
7,400.00	89.81	311.572	5,223.52	282.47	-1,440.23	1,330.75	0.00	0.00	0.00
7,500.00	89.81	311.572	5,223.85	348.83	-1,515.05	1,430.28	0.00	0.00	0.00
7,600.00	89.81	311.572	5,224.19	415.18	-1,589.86	1,529.82	0.00	0.00	0.00
7,700.00	89.81	311.572	5,224.52	481.54	-1,664.67	1,629.35	0.00	0.00	0.00
7,800.00	89.81	311.572	5,224.86	547.89	-1,739.48	1,728.89	0.00	0.00	0.00
7,900.00	89.81	311.572	5,225.19	614.25	-1,814.30	1,828.42	0.00	0.00	0.00
8,000.00	89.81	311.572	5,225.52	680.60	-1,889.11	1,927.95	0.00	0.00	0.00
8,100.00	89.81	311.572	5,225.86	746.96	-1,963.92	2,027.49	0.00	0.00	0.00
8,200.00	89.81	311.572	5,226.19	813.31	-2,038.73	2,127.02	0.00	0.00	0.00
8,300.00	89.81	311.572	5,226.53	879.67	-2,113.55	2,226.56	0.00	0.00	0.00
8,400.00	89.81	311.572	5,226.86	946.02	-2,188.36	2,326.09	0.00	0.00	0.00
8,500.00	89.81	311.572	5,227.20	1,012.38	-2,263.17	2,425.63	0.00	0.00	0.00
8,600.00	89.81	311.572	5,227.53	1,078.73	-2,337.98	2,525.16	0.00	0.00	0.00
8,700.00	89.81	311.572	5,227.86	1,145.09	-2,412.80	2,624.69	0.00	0.00	0.00
8,800.00	89.81	311.572	5,228.20	1,211.44	-2,487.61	2,724.23	0.00	0.00	0.00
8,900.00	89.81	311.572	5,228.53	1,277.80	-2,562.42	2,823.76	0.00	0.00	0.00
9,000.00	89.81	311.572	5,228.87	1,344.15	-2,637.23	2,923.30	0.00	0.00	0.00
9,100.00	89.81	311.572	5,229.20	1,410.51	-2,712.05	3,022.83	0.00	0.00	0.00
9,200.00	89.81	311.572	5,229.54	1,476.86	-2,786.86	3,122.37	0.00	0.00	0.00
9,300.00	89.81	311.572	5,229.87	1,543.22	-2,861.67	3,221.90	0.00	0.00	0.00
9,400.00	89.81	311.572	5,230.21	1,609.57	-2,936.48	3,321.43	0.00	0.00	0.00
9,500.00	89.81	311.572	5,230.54	1,675.93	-3,011.29	3,420.97	0.00	0.00	0.00

Scientific Drilling, Intl

Planning Report

Database:	Grand Junction	Local Co-ordinate Reference:	Well NAU 238H
Company:	DJR Operating	TVD Reference:	GL 7028' & RKB 14' @ 7042.00usft (Aztec 920)
Project:	North Alamito Unit	MD Reference:	GL 7028' & RKB 14' @ 7042.00usft (Aztec 920)
Site:	O30 2307	North Reference:	True
Well:	NAU 238H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original drilling		
Design:	Pre-Drill Rev B		

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)
9,600.00	89.81	311.572	5,230.87	1,742.28	-3,086.11	3,520.50	0.00	0.00	0.00
9,700.00	89.81	311.572	5,231.21	1,808.64	-3,160.92	3,620.04	0.00	0.00	0.00
9,800.00	89.81	311.572	5,231.54	1,874.99	-3,235.73	3,719.57	0.00	0.00	0.00
9,900.00	89.81	311.572	5,231.88	1,941.35	-3,310.54	3,819.10	0.00	0.00	0.00
10,000.00	89.81	311.572	5,232.21	2,007.70	-3,385.36	3,918.64	0.00	0.00	0.00
10,100.00	89.81	311.572	5,232.55	2,074.06	-3,460.17	4,018.17	0.00	0.00	0.00
10,200.00	89.81	311.572	5,232.88	2,140.41	-3,534.98	4,117.71	0.00	0.00	0.00
10,300.00	89.81	311.572	5,233.21	2,206.77	-3,609.79	4,217.24	0.00	0.00	0.00
10,400.00	89.81	311.572	5,233.55	2,273.12	-3,684.61	4,316.78	0.00	0.00	0.00
10,500.00	89.81	311.572	5,233.88	2,339.48	-3,759.42	4,416.31	0.00	0.00	0.00
10,600.00	89.81	311.572	5,234.22	2,405.83	-3,834.23	4,515.84	0.00	0.00	0.00
10,700.00	89.81	311.572	5,234.55	2,472.19	-3,909.04	4,615.38	0.00	0.00	0.00
10,800.00	89.81	311.572	5,234.89	2,538.54	-3,983.86	4,714.91	0.00	0.00	0.00
10,900.00	89.81	311.572	5,235.22	2,604.90	-4,058.67	4,814.45	0.00	0.00	0.00
11,000.00	89.81	311.572	5,235.56	2,671.25	-4,133.48	4,913.98	0.00	0.00	0.00
11,100.00	89.81	311.572	5,235.89	2,737.61	-4,208.29	5,013.51	0.00	0.00	0.00
11,200.00	89.81	311.572	5,236.22	2,803.97	-4,283.11	5,113.05	0.00	0.00	0.00
11,300.00	89.81	311.572	5,236.56	2,870.32	-4,357.92	5,212.58	0.00	0.00	0.00
11,400.00	89.81	311.572	5,236.89	2,936.68	-4,432.73	5,312.12	0.00	0.00	0.00
11,500.00	89.81	311.572	5,237.23	3,003.03	-4,507.54	5,411.65	0.00	0.00	0.00
11,600.00	89.81	311.572	5,237.56	3,069.39	-4,582.35	5,511.19	0.00	0.00	0.00
11,700.00	89.81	311.572	5,237.90	3,135.74	-4,657.17	5,610.72	0.00	0.00	0.00
11,800.00	89.81	311.572	5,238.23	3,202.10	-4,731.98	5,710.25	0.00	0.00	0.00
11,900.00	89.81	311.572	5,238.57	3,268.45	-4,806.79	5,809.79	0.00	0.00	0.00
12,000.00	89.81	311.572	5,238.90	3,334.81	-4,881.60	5,909.32	0.00	0.00	0.00
12,100.00	89.81	311.572	5,239.23	3,401.16	-4,956.42	6,008.86	0.00	0.00	0.00
12,200.00	89.81	311.572	5,239.57	3,467.52	-5,031.23	6,108.39	0.00	0.00	0.00
12,300.00	89.81	311.572	5,239.90	3,533.87	-5,106.04	6,207.92	0.00	0.00	0.00
12,400.00	89.81	311.572	5,240.24	3,600.23	-5,180.85	6,307.46	0.00	0.00	0.00
12,500.00	89.81	311.572	5,240.57	3,666.58	-5,255.67	6,406.99	0.00	0.00	0.00
12,600.00	89.81	311.572	5,240.91	3,732.94	-5,330.48	6,506.53	0.00	0.00	0.00
12,700.00	89.81	311.572	5,241.24	3,799.29	-5,405.29	6,606.06	0.00	0.00	0.00
12,800.00	89.81	311.572	5,241.57	3,865.65	-5,480.10	6,705.60	0.00	0.00	0.00
12,900.00	89.81	311.572	5,241.91	3,932.00	-5,554.92	6,805.13	0.00	0.00	0.00
13,000.00	89.81	311.572	5,242.24	3,998.36	-5,629.73	6,904.66	0.00	0.00	0.00
13,100.00	89.81	311.572	5,242.58	4,064.71	-5,704.54	7,004.20	0.00	0.00	0.00
13,200.00	89.81	311.572	5,242.91	4,131.07	-5,779.35	7,103.73	0.00	0.00	0.00
13,300.00	89.81	311.572	5,243.25	4,197.42	-5,854.17	7,203.27	0.00	0.00	0.00
13,400.00	89.81	311.572	5,243.58	4,263.78	-5,928.98	7,302.80	0.00	0.00	0.00
13,500.00	89.81	311.572	5,243.92	4,330.13	-6,003.79	7,402.33	0.00	0.00	0.00
13,600.00	89.81	311.572	5,244.25	4,396.49	-6,078.60	7,501.87	0.00	0.00	0.00
13,700.00	89.81	311.572	5,244.58	4,462.84	-6,153.41	7,601.40	0.00	0.00	0.00
13,800.00	89.81	311.572	5,244.92	4,529.20	-6,228.23	7,700.94	0.00	0.00	0.00
13,824.50	89.81	311.572	5,245.00	4,545.45	-6,246.55	7,725.32	0.00	0.00	0.00

Scientific Drilling, Intl

Planning Report

Database: Grand Junction
Company: DJR Operating

Local Co-ordinate Reference: Well NAU 238H
TVD Reference: GL 7028' & RKB 14' @ 7042.00usft (Aztec 920)

Project: North Alamo Unit

MD Reference: GL 7028' & RKB 14' @ 7042.00usft (Aztec 920)

Site: O30 2307

North Reference: True

Well: NAU 238H

Survey Calculation Method: Minimum Curvature

Wellbore: Original drilling

Design: Pre-Drill Rev B

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
238H heel rev B - plan hits target center - Circle (radius 50.00)	0.00	0.000	5,219.00	-625.17	-414.20	1,888,518.89	2,788,260.11	36.1899656	-107.6124807
238H toe rev B - plan hits target center - Circle (radius 100.00)	0.00	0.000	5,245.00	4,545.45	-6,246.55	1,893,676.14	2,782,415.93	36.2041679	-107.6322500

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
366.00	366.00	Surface casing	9.63	12.25
5,702.41	5,204.68	Intermediate casing	7.00	8.75

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,046.31	1,043.00	Ojo Alamo		0.00	0.000
1,080.97	1,077.00	Kirtland		0.00	0.000
1,295.17	1,285.00	Fruitland		0.00	0.000
1,588.39	1,564.00	Picture Cliffs		0.00	0.000
1,744.41	1,712.00	Lewis		0.00	0.000
2,399.08	2,333.00	Chacra		0.00	0.000
3,152.84	3,048.00	Menefee		0.00	0.000
4,091.08	3,938.00	Point Lookout		0.00	0.000
4,280.84	4,118.00	Mancos		0.00	0.000
4,595.88	4,418.00	Mancos Silt		0.00	0.000
5,122.44	4,918.00	Gallup A		0.00	0.000
5,176.88	4,962.00	Gallup B		0.00	0.000
5,325.61	5,067.00	Gallup C		0.00	0.000

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
500.00	500.00	0.00	0.00	Start Build 2.00
1,422.70	1,406.83	-140.38	44.67	Start 3024.32 hold at 1422.70 MD
4,447.02	4,275.63	-1,052.64	334.93	Start Drop -2.00
4,619.72	4,441.00	-1,100.00	350.00	Start DLS 9.00 TFO 145.80
5,702.41	5,204.68	-830.81	-159.80	Start 110.00 hold at 5702.41 MD
5,812.41	5,214.26	-762.85	-245.76	Start DLS 5.00 TFO 13.96
5,912.95	5,218.75	-699.75	-323.86	Start 117.15 hold at 5912.95 MD
6,030.10	5,219.00	-625.17	-414.20	Start DLS 2.00 TFO 92.00
6,131.65	5,219.28	-559.14	-491.35	Start 7692.84 hold at 6131.65 MD
13,824.50	5,245.00	4,545.45	-6,246.55	TD at 13824.49

DJR Operating

North Alamito Unit

O30 2307

NAU 238H

Original drilling

Pre-Drill Rev B

Anticollision Report

05 December, 2019



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Anticollision Report

Company:	DJR Operating	Local Co-ordinate Reference:	Well NAU 238H
Project:	North Alamito Unit	TVD Reference:	GL 7028' & RKB 14' @ 7042.00usft (Aztec 920)
Reference Site:	O30 2307	MD Reference:	GL 7028' & RKB 14' @ 7042.00usft (Aztec 920)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	NAU 238H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Original drilling	Database:	Grand Junction
Reference Design:	Pre-Drill Rev B	Offset TVD Reference:	Offset Datum

Reference	Pre-Drill Rev B		
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	12/5/2019		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	13,824.45	Pre-Drill Rev B (Original drilling)	MWD+HDGM	OWSG MWD + HDGM

Summary		Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning
Site Name							
Offset Well - Wellbore - Design							
O30 2307							
NAU 240H - Original drilling - Pre-Drill Rev B		403.62	403.62	60.10	57.62	24.184	CC
NAU 240H - Original drilling - Pre-Drill Rev B		500.00	499.42	60.34	57.17	19.044	ES
NAU 240H - Original drilling - Pre-Drill Rev B		800.00	794.91	76.93	71.71	14.729	SF

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 0-MWD+HDGM												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance		Minimum Separation		Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	53.16	36.04	48.10	60.10				
100.00	100.00	100.00	100.00	0.15	0.15	53.16	36.04	48.10	60.10	59.79	0.31	194.949	
200.00	200.00	200.00	200.00	0.51	0.51	53.16	36.04	48.10	60.10	59.07	1.03	58.621	
300.00	300.00	300.00	300.00	0.87	0.87	53.16	36.04	48.10	60.10	58.36	1.74	34.497	
400.00	400.00	400.00	400.00	1.23	1.23	53.16	36.04	48.10	60.10	57.64	2.46	24.440	
403.62	403.62	403.62	403.62	1.24	1.24	53.16	36.04	48.10	60.10	57.62	2.49	24.184	CC
500.00	500.00	499.42	499.42	1.59	1.58	53.49	35.89	48.50	60.34	57.17	3.17	19.044	ES
600.00	599.98	598.18	598.12	1.93	1.92	-107.72	34.75	51.71	62.84	58.99	3.85	16.330	
700.00	699.84	696.73	696.42	2.27	2.26	-107.06	32.47	58.10	68.38	63.85	4.53	15.105	
800.00	799.45	794.91	794.08	2.61	2.62	-106.86	29.06	67.63	76.93	71.71	5.22	14.729	SF
900.00	898.70	892.61	890.85	2.97	2.99	-106.97	24.56	80.23	88.48	82.54	5.94	14.896	
1,000.00	997.47	989.69	986.51	3.35	3.37	-107.26	18.99	95.83	102.98	96.30	6.68	15.416	
1,100.00	1,095.62	1,086.04	1,080.83	3.74	3.77	-107.62	12.39	114.32	120.41	112.96	7.45	16.161	
1,200.00	1,193.06	1,181.53	1,173.61	4.16	4.20	-107.98	4.79	135.58	140.73	132.47	8.26	17.044	
1,300.00	1,289.64	1,276.07	1,264.67	4.61	4.65	-108.30	-3.74	159.48	163.90	154.80	9.11	18.001	
1,400.00	1,385.27	1,369.55	1,353.84	5.10	5.13	-108.55	-13.17	185.89	189.87	179.87	10.00	18.987	
1,422.70	1,406.83	1,391.92	1,375.04	5.21	5.25	-108.60	-15.57	192.61	196.15	185.93	10.22	19.187	
1,500.00	1,480.15	1,464.76	1,443.98	5.61	5.65	-109.13	-23.49	214.76	217.79	206.82	10.97	19.862	
1,600.00	1,575.01	1,560.73	1,534.81	6.13	6.20	-109.67	-33.91	243.95	245.81	233.84	11.97	20.543	
1,700.00	1,669.87	1,656.70	1,625.64	6.67	6.76	-110.11	-44.33	273.13	273.84	260.86	12.99	21.087	
1,800.00	1,764.73	1,752.67	1,716.47	7.21	7.33	-110.46	-54.75	302.31	301.89	287.87	14.02	21.528	
1,900.00	1,859.59	1,848.64	1,807.30	7.76	7.90	-110.76	-65.18	331.50	329.95	314.87	15.07	21.890	

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

Scientific Drilling, Intl

Anticollision Report

Company: DJR Operating
 Project: North Alamito Unit
 Reference Site: O30 2307
 Site Error: 0.00 usft
 Reference Well: NAU 238H
 Well Error: 0.00 usft
 Reference Wellbore: Original drilling
 Reference Design: Pre-Drill Rev B

Local Co-ordinate Reference: Well NAU 238H
 TVD Reference: GL 7028' & RKB 14' @ 7042.00usft (Aztec 920)
 MD Reference: GL 7028' & RKB 14' @ 7042.00usft (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

Offset Design O30 2307 - NAU 240H - Original drilling - Pre-Drill Rev B													Offset Site Error: 0.00 usft
Survey Program: 0-MWD+HDGM													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)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)					
2,000.00	1,954.44	1,944.61	1,898.13	8.32	8.48	-111.01	-75.60	360.68	358.01	341.87	16.13	22.191	
2,100.00	2,049.30	2,040.58	1,988.96	8.88	9.07	-111.22	-86.02	389.87	386.08	368.87	17.20	22.443	
2,200.00	2,144.16	2,136.55	2,079.79	9.44	9.66	-111.40	-96.44	419.05	414.15	395.87	18.28	22.658	
2,300.00	2,239.02	2,232.52	2,170.62	10.01	10.25	-111.56	-106.87	448.23	442.22	422.86	19.36	22.842	
2,400.00	2,333.87	2,328.50	2,261.45	10.58	10.84	-111.70	-117.29	477.42	470.30	449.86	20.45	23.002	
2,500.00	2,428.73	2,424.47	2,352.28	11.15	11.44	-111.83	-127.71	506.60	498.38	476.85	21.54	23.141	
2,600.00	2,523.59	2,520.44	2,443.11	11.73	12.04	-111.94	-138.13	535.78	526.47	503.83	22.63	23.262	
2,700.00	2,618.45	2,616.41	2,533.94	12.30	12.64	-112.04	-148.56	564.97	554.55	530.82	23.73	23.370	
2,800.00	2,713.31	2,712.38	2,624.77	12.88	13.24	-112.13	-158.98	594.15	582.64	557.81	24.83	23.466	
2,900.00	2,808.16	2,808.35	2,715.60	13.46	13.85	-112.22	-169.40	623.33	610.72	584.79	25.93	23.551	
3,000.00	2,903.02	2,904.32	2,806.43	14.03	14.45	-112.29	-179.83	652.52	638.81	611.77	27.04	23.628	
3,100.00	2,997.88	3,000.29	2,897.26	14.61	15.06	-112.36	-190.25	681.70	666.90	638.76	28.14	23.697	
3,200.00	3,092.74	3,096.26	2,988.09	15.19	15.66	-112.42	-200.67	710.89	694.99	665.74	29.25	23.759	
3,300.00	3,187.59	3,192.23	3,078.92	15.77	16.27	-112.48	-211.09	740.07	723.08	692.72	30.36	23.816	
3,400.00	3,282.45	3,288.21	3,169.75	16.36	16.88	-112.54	-221.52	769.25	751.17	719.70	31.47	23.868	
3,500.00	3,377.31	3,384.18	3,260.58	16.94	17.49	-112.59	-231.94	798.44	779.26	746.68	32.58	23.916	
3,600.00	3,472.17	3,480.15	3,351.41	17.52	18.10	-112.63	-242.36	827.62	807.36	773.66	33.70	23.959	
3,700.00	3,567.03	3,576.12	3,442.24	18.10	18.71	-112.68	-252.78	856.80	835.45	800.64	34.81	24.000	
3,800.00	3,661.88	3,672.09	3,533.07	18.69	19.32	-112.72	-263.21	885.99	863.54	827.62	35.93	24.037	
3,900.00	3,756.74	3,768.06	3,623.90	19.27	19.93	-112.75	-273.63	915.17	891.64	854.59	37.04	24.071	
4,000.00	3,851.60	3,864.03	3,714.73	19.86	20.54	-112.79	-284.05	944.35	919.73	881.57	38.16	24.103	
4,100.00	3,946.46	3,960.00	3,805.56	20.44	21.15	-112.82	-294.47	973.54	947.82	908.55	39.28	24.133	
4,200.00	4,041.32	4,055.97	3,896.39	21.03	21.76	-112.86	-304.90	1,002.72	975.92	935.52	40.39	24.160	

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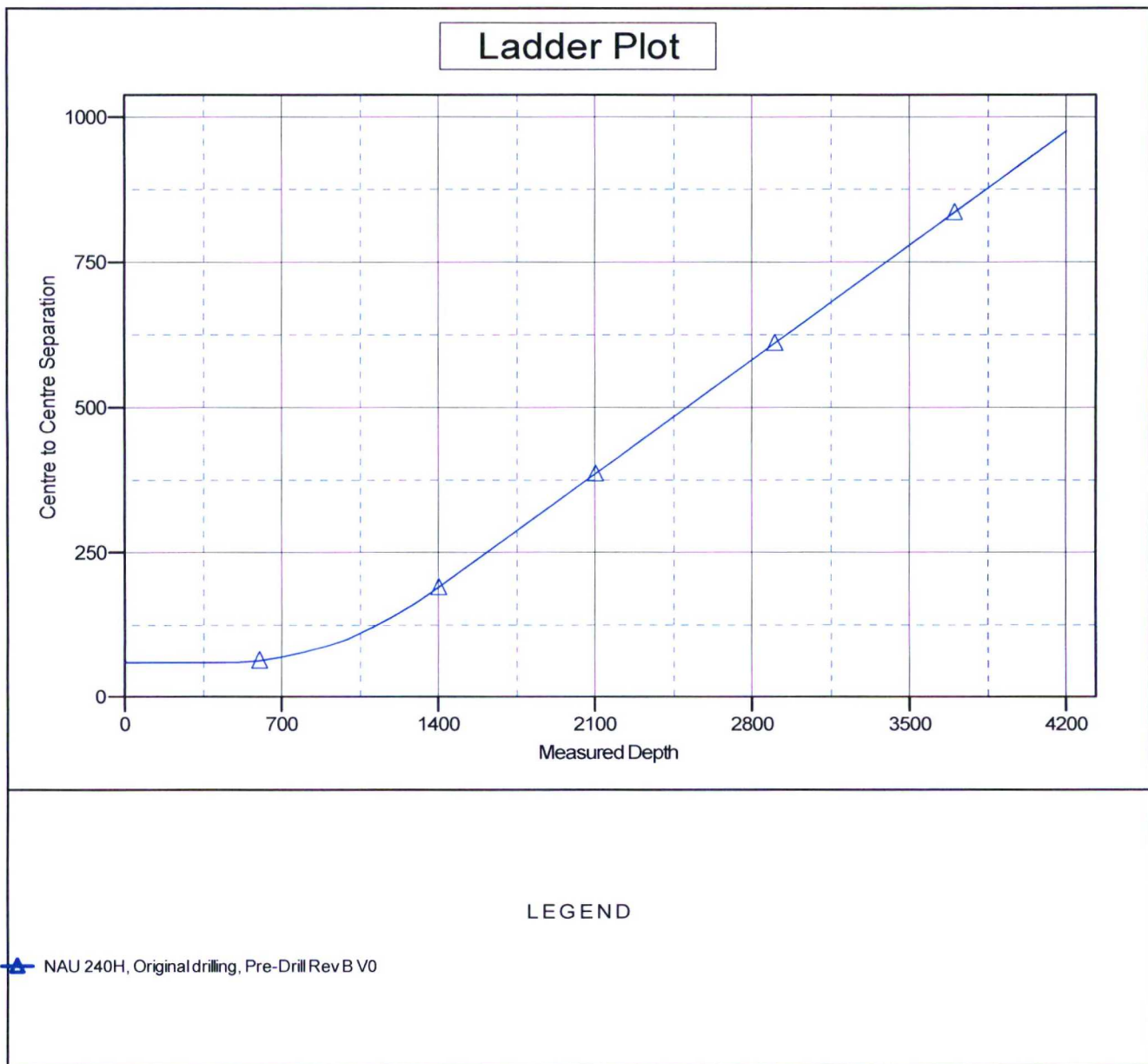
Anticollision Report

Company: DJR Operating
Project: North Alamito Unit
Reference Site: O30 2307
Site Error: 0.00 usft
Reference Well: NAU 238H
Well Error: 0.00 usft
Reference Wellbore: Original drilling
Reference Design: Pre-Drill Rev B

Local Co-ordinate Reference: Well NAU 238H
TVD Reference: GL 7028' & RKB 14' @ 7042.00usft (Aztec 920)
MD Reference: GL 7028' & RKB 14' @ 7042.00usft (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 Depths are relative to GL 7028' & RKB 14' @ 7042.00usft (A)
 Offset Depths are relative to Offset Datum
 Central Meridian is -107.8333334

Coordinates are relative to: NAU 238H
 Coordinate System is US State Plane 1983, New Mexico Western Zone
 Grid Convergence at Surface is: 0.13°



Scientific Drilling, Intl

Anticollision Report

Company: DJR Operating
Project: North Alamito Unit

Reference Site: O30 2307

Site Error: 0.00 usft
Reference Well: NAU 238H
Well Error: 0.00 usft
Reference Wellbore: Original drilling
Reference Design: Pre-Drill Rev B

Local Co-ordinate Reference:
TVD Reference:

MD Reference:

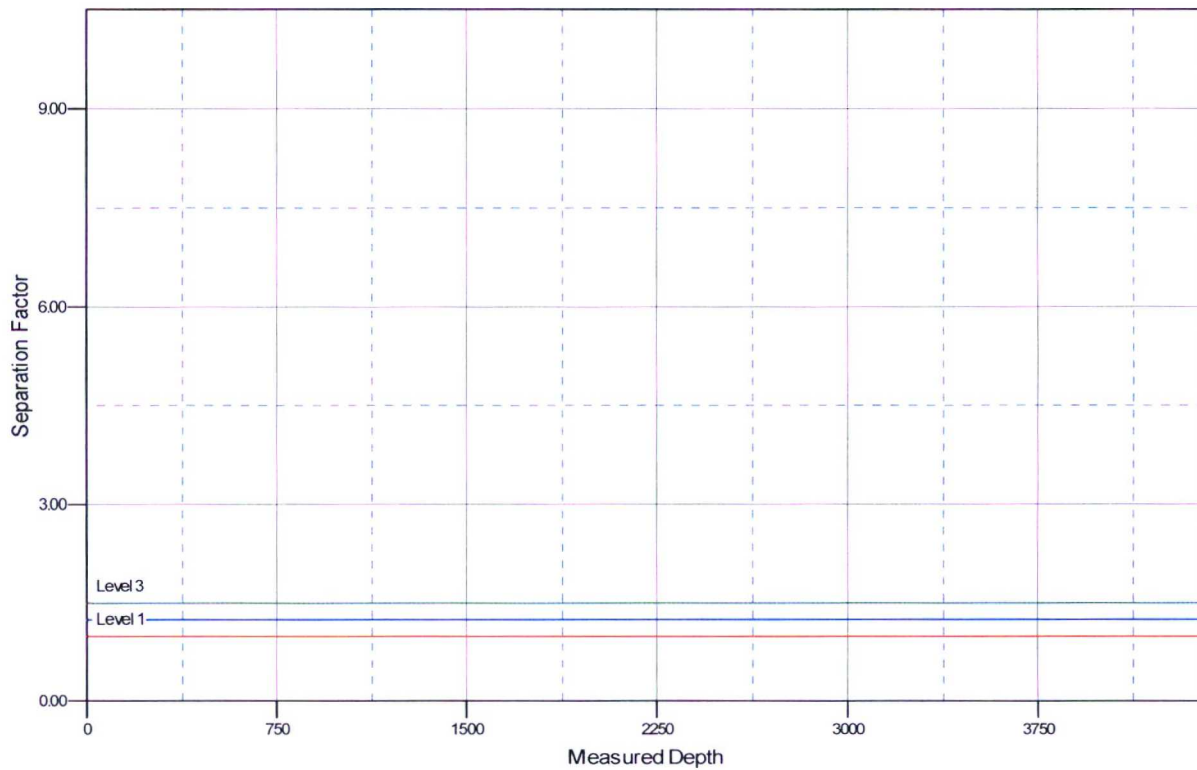
North Reference:
Survey Calculation Method:
Output errors are at
Database:
Offset TVD Reference:

Well NAU 238H
GL 7028' & RKB 14' @ 7042.00usft (Aztec 920)
GL 7028' & RKB 14' @ 7042.00usft (Aztec 920)
True
Minimum Curvature
2.00 sigma
Grand Junction
Offset Datum

Reference Depths are relative to GL 7028' & RKB 14' @ 7042.00usft (A)
Offset Depths are relative to Offset Datum
Central Meridian is -107.8333334

Coordinates are relative to: NAU 238H
Coordinate System is US State Plane 1983, New Mexico Western Zone
Grid Convergence at Surface is: 0.13°

Separation Factor Plot



LEGEND

▲ NAU 240H, Original drilling, Pre-Drill Rev B V0

DJR OPERATING, LLC
NORTH ALAMITO UNIT #238H

393' FSL & 1341' FEL
LOCATED IN THE SW/4 SE/4 OF SECTION 30,
T23N, R7W, N.M.P.M.,
SANDOVAL COUNTY, NEW MEXICO
(NAU 030-2307)

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 5.4 MILES TO A DIRT ROAD ON LEFT.
- 3) TURN LEFT AND GO 2.8 MILES TO A DIRT ROAD ON THE LEFT ON LEFT.
- 4) TURN LEFT AND GO 2.0 MILES TO THE ACCESS ROAD STAKE ON THE LEFT.

WELL FLAG LOCATED AT LAT. 36.191683° N, LONG. 107.611077° W (NAD 83).

CCI

CHENAULT CONSULTING INC.

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SUITE 201
FARMINGTON, NM 87402
(505) 325-7707