

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: STEVEN MERRELL E-Mail: smerrell@djrlc.com		6. If Indian, Allottee or Tribe Name EASTERN NAVAJO
3a. Address 1 ROAD 3263 AZTEC, NM 87410	3b. Phone No. (include area code) Ph: 505-632-3476	7. If Unit or CA/Agreement, Name and/or No. NMNM135229A
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 31 T23N R7W NWSE 2229FSL 2517FEL 36.182129 N Lat, 107.615051 W Lon		8. Well Name and No. NORTH ALAMITO UNIT 528H
		9. API Well No. 4 30-043-21335-00-X1
		10. Field and Pool or Exploratory Area 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	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 proposed well, North Alamito Unit 528H (API # 30-043-21335) which is part of the North Alamito Unit. DJR Operating is submitting this sundry to change the BHL and the Drilling Plan.

Please find attached an updated C-102 package reflecting the BHL change and the new drilling plan.

ATTENTION: Joe Killins

NMOCD

JAN 06 2020

DISTRICT III Change

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

**Electronic Submission #497181 verified by the BLM Well Information System
For DJR OPERATING LLC, sent to the Farmington
Committed to AFMSS for processing by JOE KILLINS on 12/31/2019 (20JK0073SE)**

Name (Printed/Typed) STEVEN MERRELL

Title REGULATORY SPECIALIST

Signature (Electronic Submission)

Date 12/31/2019

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By <u>JOE KILLINS</u>	Title <u>PETROLEUM ENGINEER</u>	Date <u>01/03/2020</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

191

DISTRICT I
1685 N. French Dr., Hobbs, N.M. 88240
Phone: (876) 393-6161 Fax: (876) 393-0720

DISTRICT II
811 S. First St., Artesia, N.M. 88210
Phone: (876) 748-1283 Fax: (876) 748-9720

DISTRICT III
1000 Rio Branson Rd., Aztec, N.M. 87410
Phone: (806) 334-6176 Fax: (806) 334-6170

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 478-9480 Fax: (505) 478-9482

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 30-043-21335	² Pool Code 98174	³ Pool Name Alamito N; Mancos
⁴ Property Code 325267	⁵ Property Name NORTH ALAMITO UNIT	⁶ Well Number 528H
⁷ GRID No. 371838	⁸ Operator Name DJR OPERATING, LLC	⁹ Elevation 6981'

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
J	31	23N	7W		2244'	SOUTH	2504'	EAST	SANDOVAL

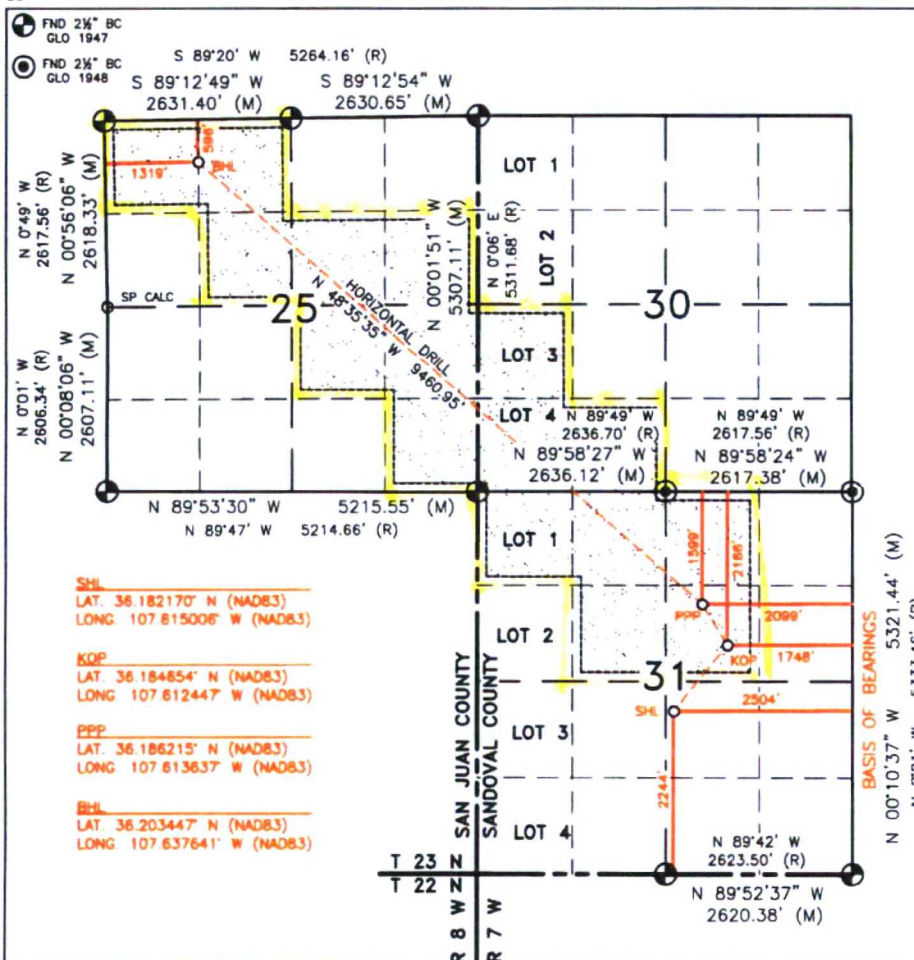
¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
C	25	23N	8W		596'	NORTH	1319'	WEST	SAN JUAN

¹² Dedicated Acres SEC 31: NW/NE, SW/NE, NW/NW, NE/NW, SE/NW (200.61 AC.); SEC 30: NW/SW, SW/SW, SE/SW (121.26 AC.); SEC 25: NW/SE, NE/SE, SE/SE, SW/NE, SE/NE, NW/NW, NE/NW, SE/NW (320.00 AC.) = 641.87 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.

Steven Merrell 12/30/19
Signature Date

Steven Merrell
Printed Name
Smerrell@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

Surface = Indian

DISTRICT I

1625 N. French Dr., Hobbs, N.M. 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

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DISTRICT III

1000 Rio Blanco Rd., Aztec, N.M. 87410
Phone: (505) 834-6178 Fax: (505) 834-6170

DISTRICT IV

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

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

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

Form C-102
Revised August 1, 2011

Submit one copy to appropriate
District Office

☐ AMENDED REPORT

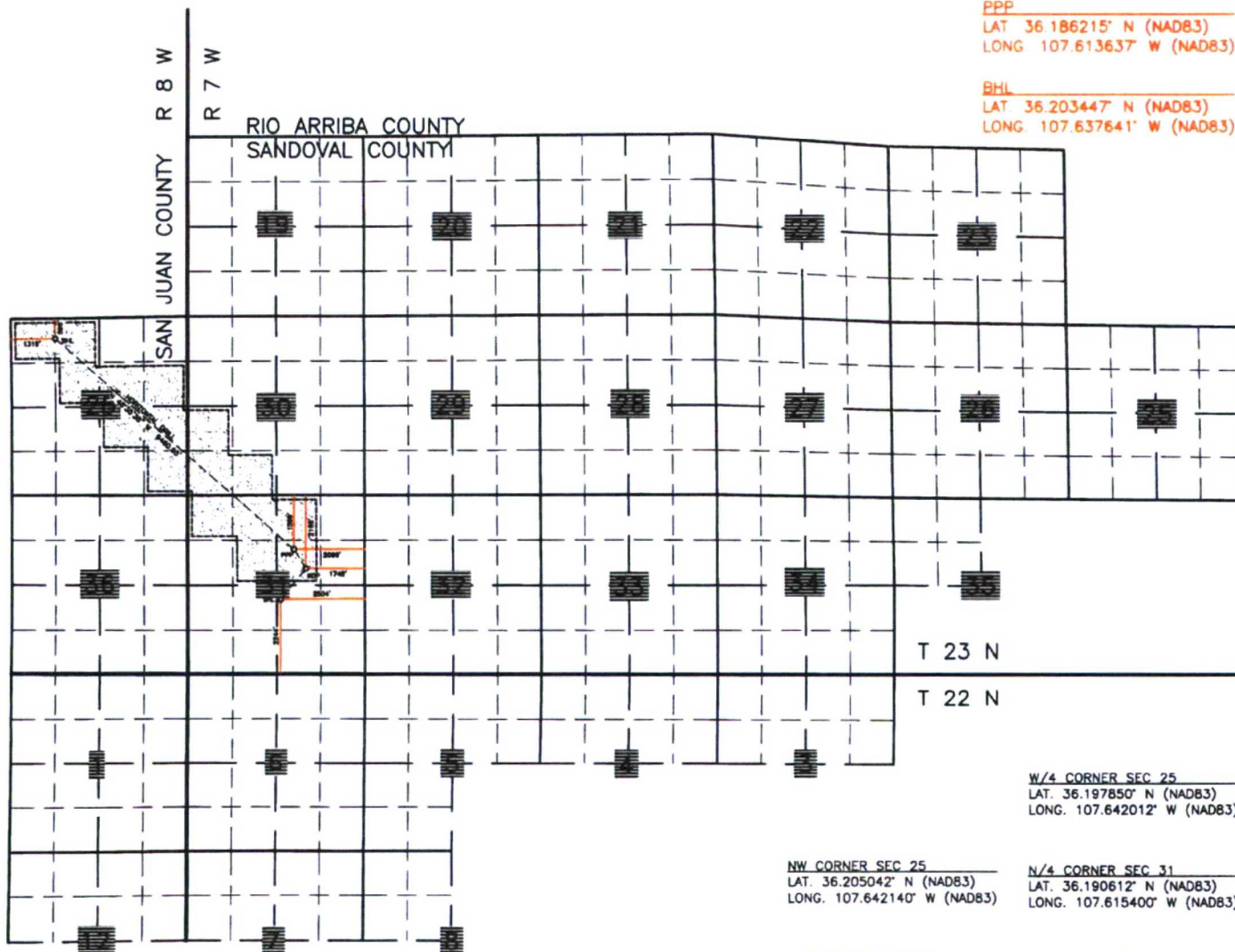
DJR OPERATING, LLC
NORTH ALAMITO UNIT #528H

SHL
LAT. 36.182170° N (NAD83)
LONG. 107.615006° W (NAD83)

KOP
LAT. 36.184654° N (NAD83)
LONG. 107.612447° W (NAD83)

PPP
LAT. 36.186215° N (NAD83)
LONG. 107.613637° W (NAD83)

BHL
LAT. 36.203447° N (NAD83)
LONG. 107.637641° W (NAD83)



W/4 CORNER SEC. 25
LAT. 36.197850° N (NAD83)
LONG. 107.642012° W (NAD83)

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

N/4 CORNER SEC. 31
LAT. 36.190612° N (NAD83)
LONG. 107.615400° W (NAD83)

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

NE CORNER SEC. 31
LAT. 36.190593° N (NAD83)
LONG. 107.606530° W (NAD83)

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

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

NW CORNER SEC. 30
LAT. 36.205211° N (NAD83)
LONG. 107.624304° W (NAD83)

SE CORNER SEC. 31
LAT. 36.175974° N (NAD83)
LONG. 107.606516° W (NAD83)

PENETRATED SPACING UNIT;
SEC. 31: NW/NE, SW/NE, NW/NW, NE/NW, SE/NW (200.61 AC.); SEC. 30: NW/SW, SW/SW, SE/SW (121.26 AC.); SEC. 25: NW/SE, NE/SE, SE/SE, SW/NE, SE/NE, NW/NW, NE/NW, SE/NW (320.00 AC.) = 641.87 ACRES TOTAL
TOTAL 14,262.78 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 528H

Sandoval County, New Mexico

Surface Location

2504-ft FEL & 2244-ft FSL
 Sec 31 T23N R7W
 Graded Elevation 6979' MSL
 RKB Elevation 6993' (14' KB)

SHL Geographical Coordinates (NAD-83)

Latitude 36.1821700° N
 Longitude 107.6150060° W

Kick Off Point for Horizontal Build Curve

4717-ft MD
 4540-ft TVD

Local Coordinates (from SHL)

906-ft North
 753-ft East

Heel Location (Pay zone entry)

2099-ft FEL & 1599-ft FNL
 Sec 31 T23N R7W

Heel Geographical Coordinates (NAD-83)

Latitude 36.186215° N
 Longitude 107.61363730° W

Bottom Hole Location (TD)

1319-ft FWL & 596-ft FNL
 Sec 25 T23N R8W

BHL Geographical Coordinates (NAD-83)

Latitude 36.2034466° N
 Longitude 107.6376413° W

Well objectives

This well is planned as a 9460-ft lateral in the Gallup C sand.

Bottom Hole temperature and pressure

The temperature in the Gallup C horizontal objective is 140°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	890	889	Sd	W	8.3	8.4 – 8.8
Kirtland	932	929	Sh	-	8.3	8.4 – 8.8
Fruitland	1181	1172	C	G	8.3	9.0 - 9.5
Pictured Cliffs	1478	1456	Sd	W	8.3	9.0 - 9.5
Lewis	1655	1624	Sh	-		9.0 - 9.5
Chacra	2283	2222	Sd	-	8.3	9.0 - 9.5
Menefee	3039	2942	Sd, C	G	8.3	9.0 - 9.5
Point Lookout	3983	3841	Sd	-	8.3	9.0 - 9.5
Mancos	4172	4021	Sh	-		9.0 - 9.5
Mancos Silt	4523	4355	Slt	O/G	6.6	9.0 - 9.5
Gallup A	5036	4830	Slt	O/G	6.6	9.0 - 9.5
Gallup B	5078	4864	Sd	O/G	6.6	8.8 -9.0
Gallup C	5247	4966	Sd	O/G	6.6	8.8 -9.0
Target	5711	5140	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	5643	surf	5137	surface
4-1/2"	6-1/8"	11.6	P-110	BTC	5359	15172	5050	5171	5359

Note: all casing will be new

Casing Design Load Cases

		Casing String		
	Description	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

		Design Factors			
Casing string	Casing OD	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	4217-ft
Density (ppg)	12.30	13.50
Yield (cf/sx)	2.34	1.50
Mix water (gal/sx)	13.26	7.20
Volume (sx)	422	236
Volume (bbls)	176	63
Volume (cu.ft.)	989	352
Excess %	50	50

4-1/2" Production Liner

	BJ Services
Type	Poz/G
Planned top	5359-ft
Density (ppg)	13.3
Yield (cf/sx)	1.56
Mix water (gal/sx)	7.71
Volume (sx)	825
Volume (bbls)	230
Volume (cu.ft)	1290
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% 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 – 350	8.4 – 8.8	32 – 44	2 – 12	NC
Intermediate	7% KCl Low solids, non-dispersed	350 – 5643	9.0 – 9.5	38 – 45	8 – 14	<20
Production	Low solids, non-dispersed	5643 – 15172	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.



DJR Operating

North Alamito Unit

J31 2307

NAU 528H

Original drilling

Plan: APD rev 3

Standard Planning Report

12 December, 2019



Scientific Drilling

Database: DJR
Company: DJR Operating
Project: North Alamito Unit
Site: J31 2307
Well: NAU 528H
Wellbore: Original drilling
Design: APD rev 3

Local Co-ordinate Reference: Well NAU 528H
TVD Reference: RKB @ 6993.00usft (RIG TBD)
MD Reference: RKB @ 6993.00usft (RIG TBD)
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	J31 2307		
Site Position:		Northing:	1,885,649.91 usft
From:	Lat/Long	Easting:	2,787,494.55 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in
		Latitude:	36.18208900
		Longitude:	-107.61509700
		Grid Convergence:	0.13 °

Well	NAU 528H		
Well Position	+N/-S	29.49 usft	Northing:
	+E/-W	26.85 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	Ground Level:
			6,979.00 usft

Wellbore	Original drilling		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2015	3/27/2019	8.96
			Dip Angle (°)
			62.87
			Field Strength (nT)
			49,544.46089392

Design	APD rev 3		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			Direction (°)
			319.234

Plan Survey Tool Program	Date 12/11/2019		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name
1	0.00	15,171.87	APD rev 3 (Original drilling)
			MWD+IGRF
			OWSG MWD + IGRF or WMM
			Remarks

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	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	
1,315.62	17.81	39.713	1,301.34	105.64	87.75	2.00	2.00	0.00	39.71	
4,717.11	17.81	39.713	4,539.77	906.06	752.59	0.00	0.00	0.00	0.00	
5,710.91	90.00	311.536	5,140.01	1,472.47	403.89	9.00	7.26	-8.87	-88.27	528H heel rev 2
15,171.87	90.00	311.536	5,140.01	7,745.90	-6,678.03	0.00	0.00	0.00	0.00	528H toe rev 2



Scientific Drilling, Intl
Planning Report



Database: DJR
Company: DJR Operating
Project: North Alamito Unit
Site: J31 2307
Well: NAU 528H
Wellbore: Original drilling
Design: APD rev 3

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:

Well NAU 528H
RKB @ 6993.00usft (RIG TBD)
RKB @ 6993.00usft (RIG TBD)
True
Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
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	39.713	499.99	0.76	0.63	0.16	2.00	2.00	0.00
600.00	3.50	39.713	599.89	4.11	3.41	0.88	2.00	2.00	0.00
700.00	5.50	39.713	699.58	10.15	8.43	2.18	2.00	2.00	0.00
800.00	7.50	39.713	798.93	18.85	15.66	4.05	2.00	2.00	0.00
900.00	9.50	39.713	897.83	30.22	25.10	6.50	2.00	2.00	0.00
1,000.00	11.50	39.713	996.15	44.24	36.75	9.51	2.00	2.00	0.00
1,100.00	13.50	39.713	1,093.77	60.89	50.58	13.09	2.00	2.00	0.00
1,200.00	15.50	39.713	1,190.58	80.15	66.57	17.23	2.00	2.00	0.00
1,300.00	17.50	39.713	1,286.46	102.00	84.72	21.93	2.00	2.00	0.00
1,315.62	17.81	39.713	1,301.34	105.64	87.75	22.71	2.00	2.00	0.00
1,400.00	17.81	39.713	1,381.68	125.50	104.24	26.98	0.00	0.00	0.00
1,500.00	17.81	39.713	1,476.88	149.03	123.78	32.04	0.00	0.00	0.00
1,600.00	17.81	39.713	1,572.09	172.56	143.33	37.10	0.00	0.00	0.00
1,700.00	17.81	39.713	1,667.30	196.09	162.88	42.16	0.00	0.00	0.00
1,800.00	17.81	39.713	1,762.50	219.62	182.42	47.22	0.00	0.00	0.00
1,900.00	17.81	39.713	1,857.71	243.15	201.97	52.28	0.00	0.00	0.00
2,000.00	17.81	39.713	1,952.92	266.69	221.51	57.34	0.00	0.00	0.00
2,100.00	17.81	39.713	2,048.12	290.22	241.06	62.40	0.00	0.00	0.00
2,200.00	17.81	39.713	2,143.33	313.75	260.60	67.46	0.00	0.00	0.00
2,300.00	17.81	39.713	2,238.53	337.28	280.15	72.52	0.00	0.00	0.00
2,400.00	17.81	39.713	2,333.74	360.81	299.70	77.58	0.00	0.00	0.00
2,500.00	17.81	39.713	2,428.95	384.34	319.24	82.64	0.00	0.00	0.00
2,600.00	17.81	39.713	2,524.15	407.87	338.79	87.70	0.00	0.00	0.00
2,700.00	17.81	39.713	2,619.36	431.41	358.33	92.76	0.00	0.00	0.00
2,800.00	17.81	39.713	2,714.57	454.94	377.88	97.82	0.00	0.00	0.00
2,900.00	17.81	39.713	2,809.77	478.47	397.42	102.88	0.00	0.00	0.00
3,000.00	17.81	39.713	2,904.98	502.00	416.97	107.94	0.00	0.00	0.00
3,100.00	17.81	39.713	3,000.18	525.53	436.51	113.00	0.00	0.00	0.00
3,200.00	17.81	39.713	3,095.39	549.06	456.06	118.06	0.00	0.00	0.00
3,300.00	17.81	39.713	3,190.60	572.60	475.61	123.12	0.00	0.00	0.00
3,400.00	17.81	39.713	3,285.80	596.13	495.15	128.18	0.00	0.00	0.00
3,500.00	17.81	39.713	3,381.01	619.66	514.70	133.24	0.00	0.00	0.00
3,600.00	17.81	39.713	3,476.22	643.19	534.24	138.30	0.00	0.00	0.00
3,700.00	17.81	39.713	3,571.42	666.72	553.79	143.36	0.00	0.00	0.00
3,800.00	17.81	39.713	3,666.63	690.25	573.33	148.42	0.00	0.00	0.00
3,900.00	17.81	39.713	3,761.83	713.78	592.88	153.48	0.00	0.00	0.00
4,000.00	17.81	39.713	3,857.04	737.32	612.43	158.54	0.00	0.00	0.00
4,100.00	17.81	39.713	3,952.25	760.85	631.97	163.60	0.00	0.00	0.00
4,200.00	17.81	39.713	4,047.45	784.38	651.52	168.66	0.00	0.00	0.00
4,300.00	17.81	39.713	4,142.66	807.91	671.06	173.72	0.00	0.00	0.00
4,400.00	17.81	39.713	4,237.87	831.44	690.61	178.78	0.00	0.00	0.00
4,500.00	17.81	39.713	4,333.07	854.97	710.15	183.84	0.00	0.00	0.00
4,600.00	17.81	39.713	4,428.28	878.51	729.70	188.90	0.00	0.00	0.00
4,700.00	17.81	39.713	4,523.49	902.04	749.24	193.96	0.00	0.00	0.00
4,717.11	17.81	39.713	4,539.77	906.06	752.59	194.82	0.00	0.00	0.00
4,800.00	19.47	16.802	4,618.42	929.07	764.70	204.34	9.00	2.00	-27.64
4,900.00	24.44	356.507	4,711.27	965.75	768.27	229.79	9.00	4.96	-20.29
5,000.00	31.17	343.599	4,799.75	1,011.32	759.68	269.91	9.00	6.74	-12.91

Database: DJR
Company: DJR Operating
Project: North Alamo Unit
Site: J31 2307
Well: NAU 528H
Wellbore: Original drilling
Design: APD rev 3

Local Co-ordinate Reference: Well NAU 528H
TVD Reference: RKB @ 6993.00usft (RIG TBD)
MD Reference: RKB @ 6993.00usft (RIG TBD)
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
5,100.00	38.76	335.112	4,881.69	1,064.65	739.16	323.71	9.00	7.59	-8.49
5,200.00	46.79	329.095	4,955.06	1,124.44	707.20	389.86	9.00	8.03	-6.02
5,300.00	55.06	324.503	5,018.07	1,189.21	664.59	466.73	9.00	8.27	-4.59
5,400.00	63.47	320.763	5,069.15	1,257.37	612.39	552.44	9.00	8.41	-3.74
5,500.00	71.96	317.540	5,107.05	1,327.23	551.88	644.87	9.00	8.49	-3.22
5,600.00	80.50	314.616	5,130.83	1,397.09	484.54	741.74	9.00	8.54	-2.92
5,700.00	89.06	311.836	5,139.92	1,465.21	412.04	840.68	9.00	8.56	-2.78
5,710.91	90.00	311.536	5,140.01	1,472.47	403.89	851.49	9.00	8.57	-2.75
5,800.00	90.00	311.536	5,140.01	1,531.54	337.21	939.78	0.00	0.00	0.00
5,900.00	90.00	311.536	5,140.01	1,597.85	262.35	1,038.88	0.00	0.00	0.00
6,000.00	90.00	311.536	5,140.01	1,664.16	187.50	1,137.97	0.00	0.00	0.00
6,100.00	90.00	311.536	5,140.01	1,730.46	112.64	1,237.07	0.00	0.00	0.00
6,200.00	90.00	311.536	5,140.01	1,796.77	37.79	1,336.17	0.00	0.00	0.00
6,300.00	90.00	311.536	5,140.01	1,863.08	-37.06	1,435.27	0.00	0.00	0.00
6,400.00	90.00	311.536	5,140.01	1,929.39	-111.92	1,534.37	0.00	0.00	0.00
6,500.00	90.00	311.536	5,140.01	1,995.70	-186.77	1,633.47	0.00	0.00	0.00
6,600.00	90.00	311.536	5,140.01	2,062.01	-261.63	1,732.57	0.00	0.00	0.00
6,700.00	90.00	311.536	5,140.01	2,128.32	-336.48	1,831.67	0.00	0.00	0.00
6,800.00	90.00	311.536	5,140.01	2,194.63	-411.33	1,930.76	0.00	0.00	0.00
6,900.00	90.00	311.536	5,140.01	2,260.93	-486.19	2,029.86	0.00	0.00	0.00
7,000.00	90.00	311.536	5,140.01	2,327.24	-561.04	2,128.96	0.00	0.00	0.00
7,100.00	90.00	311.536	5,140.01	2,393.55	-635.90	2,228.06	0.00	0.00	0.00
7,200.00	90.00	311.536	5,140.01	2,459.86	-710.75	2,327.16	0.00	0.00	0.00
7,300.00	90.00	311.536	5,140.01	2,526.17	-785.61	2,426.26	0.00	0.00	0.00
7,400.00	90.00	311.536	5,140.01	2,592.48	-860.46	2,525.36	0.00	0.00	0.00
7,500.00	90.00	311.536	5,140.01	2,658.79	-935.31	2,624.45	0.00	0.00	0.00
7,600.00	90.00	311.536	5,140.01	2,725.10	-1,010.17	2,723.55	0.00	0.00	0.00
7,700.00	90.00	311.536	5,140.01	2,791.40	-1,085.02	2,822.65	0.00	0.00	0.00
7,800.00	90.00	311.536	5,140.01	2,857.71	-1,159.88	2,921.75	0.00	0.00	0.00
7,900.00	90.00	311.536	5,140.01	2,924.02	-1,234.73	3,020.85	0.00	0.00	0.00
8,000.00	90.00	311.536	5,140.01	2,990.33	-1,309.58	3,119.95	0.00	0.00	0.00
8,100.00	90.00	311.536	5,140.01	3,056.64	-1,384.44	3,219.05	0.00	0.00	0.00
8,200.00	90.00	311.536	5,140.01	3,122.95	-1,459.29	3,318.15	0.00	0.00	0.00
8,300.00	90.00	311.536	5,140.01	3,189.26	-1,534.15	3,417.24	0.00	0.00	0.00
8,400.00	90.00	311.536	5,140.01	3,255.57	-1,609.00	3,516.34	0.00	0.00	0.00
8,500.00	90.00	311.536	5,140.01	3,321.87	-1,683.86	3,615.44	0.00	0.00	0.00
8,600.00	90.00	311.536	5,140.01	3,388.18	-1,758.71	3,714.54	0.00	0.00	0.00
8,700.00	90.00	311.536	5,140.01	3,454.49	-1,833.56	3,813.64	0.00	0.00	0.00
8,800.00	90.00	311.536	5,140.01	3,520.80	-1,908.42	3,912.74	0.00	0.00	0.00
8,900.00	90.00	311.536	5,140.01	3,587.11	-1,983.27	4,011.84	0.00	0.00	0.00
9,000.00	90.00	311.536	5,140.01	3,653.42	-2,058.13	4,110.94	0.00	0.00	0.00
9,100.00	90.00	311.536	5,140.01	3,719.73	-2,132.98	4,210.03	0.00	0.00	0.00
9,200.00	90.00	311.536	5,140.01	3,786.04	-2,207.84	4,309.13	0.00	0.00	0.00
9,300.00	90.00	311.536	5,140.01	3,852.34	-2,282.69	4,408.23	0.00	0.00	0.00
9,400.00	90.00	311.536	5,140.01	3,918.65	-2,357.54	4,507.33	0.00	0.00	0.00
9,500.00	90.00	311.536	5,140.01	3,984.96	-2,432.40	4,606.43	0.00	0.00	0.00
9,600.00	90.00	311.536	5,140.01	4,051.27	-2,507.25	4,705.53	0.00	0.00	0.00
9,700.00	90.00	311.536	5,140.01	4,117.58	-2,582.11	4,804.63	0.00	0.00	0.00
9,800.00	90.00	311.536	5,140.01	4,183.89	-2,656.96	4,903.72	0.00	0.00	0.00
9,900.00	90.00	311.536	5,140.01	4,250.20	-2,731.81	5,002.82	0.00	0.00	0.00
10,000.00	90.00	311.536	5,140.01	4,316.50	-2,806.67	5,101.92	0.00	0.00	0.00
10,100.00	90.00	311.536	5,140.01	4,382.81	-2,881.52	5,201.02	0.00	0.00	0.00
10,200.00	90.00	311.536	5,140.01	4,449.12	-2,956.38	5,300.12	0.00	0.00	0.00
10,300.00	90.00	311.536	5,140.01	4,515.43	-3,031.23	5,399.22	0.00	0.00	0.00



Scientific Drilling, Intl
Planning Report



Database: DJR
Company: DJR Operating
Project: North Alamito Unit
Site: J31 2307
Well: NAU 528H
Wellbore: Original drilling
Design: APD rev 3

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:

Well NAU 528H
RKB @ 6993.00usft (RIG TBD)
RKB @ 6993.00usft (RIG TBD)
True
Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
10,400.00	90.00	311.536	5,140.01	4,581.74	-3,106.09	5,498.32	0.00	0.00	0.00
10,500.00	90.00	311.536	5,140.01	4,648.05	-3,180.94	5,597.42	0.00	0.00	0.00
10,600.00	90.00	311.536	5,140.01	4,714.36	-3,255.79	5,696.51	0.00	0.00	0.00
10,700.00	90.00	311.536	5,140.01	4,780.67	-3,330.65	5,795.61	0.00	0.00	0.00
10,800.00	90.00	311.536	5,140.01	4,846.97	-3,405.50	5,894.71	0.00	0.00	0.00
10,900.00	90.00	311.536	5,140.01	4,913.28	-3,480.36	5,993.81	0.00	0.00	0.00
11,000.00	90.00	311.536	5,140.01	4,979.59	-3,555.21	6,092.91	0.00	0.00	0.00
11,100.00	90.00	311.536	5,140.01	5,045.90	-3,630.07	6,192.01	0.00	0.00	0.00
11,200.00	90.00	311.536	5,140.01	5,112.21	-3,704.92	6,291.11	0.00	0.00	0.00
11,300.00	90.00	311.536	5,140.01	5,178.52	-3,779.77	6,390.21	0.00	0.00	0.00
11,400.00	90.00	311.536	5,140.01	5,244.83	-3,854.63	6,489.30	0.00	0.00	0.00
11,500.00	90.00	311.536	5,140.01	5,311.14	-3,929.48	6,588.40	0.00	0.00	0.00
11,600.00	90.00	311.536	5,140.01	5,377.44	-4,004.34	6,687.50	0.00	0.00	0.00
11,700.00	90.00	311.536	5,140.01	5,443.75	-4,079.19	6,786.60	0.00	0.00	0.00
11,800.00	90.00	311.536	5,140.01	5,510.06	-4,154.04	6,885.70	0.00	0.00	0.00
11,900.00	90.00	311.536	5,140.01	5,576.37	-4,228.90	6,984.80	0.00	0.00	0.00
12,000.00	90.00	311.536	5,140.01	5,642.68	-4,303.75	7,083.90	0.00	0.00	0.00
12,100.00	90.00	311.536	5,140.01	5,708.99	-4,378.61	7,182.99	0.00	0.00	0.00
12,200.00	90.00	311.536	5,140.01	5,775.30	-4,453.46	7,282.09	0.00	0.00	0.00
12,300.00	90.00	311.536	5,140.01	5,841.61	-4,528.32	7,381.19	0.00	0.00	0.00
12,400.00	90.00	311.536	5,140.01	5,907.91	-4,603.17	7,480.29	0.00	0.00	0.00
12,500.00	90.00	311.536	5,140.01	5,974.22	-4,678.02	7,579.39	0.00	0.00	0.00
12,600.00	90.00	311.536	5,140.01	6,040.53	-4,752.88	7,678.49	0.00	0.00	0.00
12,700.00	90.00	311.536	5,140.01	6,106.84	-4,827.73	7,777.59	0.00	0.00	0.00
12,800.00	90.00	311.536	5,140.01	6,173.15	-4,902.59	7,876.69	0.00	0.00	0.00
12,900.00	90.00	311.536	5,140.01	6,239.46	-4,977.44	7,975.78	0.00	0.00	0.00
13,000.00	90.00	311.536	5,140.01	6,305.77	-5,052.30	8,074.88	0.00	0.00	0.00
13,100.00	90.00	311.536	5,140.01	6,372.08	-5,127.15	8,173.98	0.00	0.00	0.00
13,200.00	90.00	311.536	5,140.01	6,438.38	-5,202.00	8,273.08	0.00	0.00	0.00
13,300.00	90.00	311.536	5,140.01	6,504.69	-5,276.86	8,372.18	0.00	0.00	0.00
13,400.00	90.00	311.536	5,140.01	6,571.00	-5,351.71	8,471.28	0.00	0.00	0.00
13,500.00	90.00	311.536	5,140.01	6,637.31	-5,426.57	8,570.38	0.00	0.00	0.00
13,600.00	90.00	311.536	5,140.01	6,703.62	-5,501.42	8,669.48	0.00	0.00	0.00
13,700.00	90.00	311.536	5,140.01	6,769.93	-5,576.27	8,768.57	0.00	0.00	0.00
13,800.00	90.00	311.536	5,140.01	6,836.24	-5,651.13	8,867.67	0.00	0.00	0.00
13,900.00	90.00	311.536	5,140.01	6,902.55	-5,725.98	8,966.77	0.00	0.00	0.00
14,000.00	90.00	311.536	5,140.01	6,968.85	-5,800.84	9,065.87	0.00	0.00	0.00
14,100.00	90.00	311.536	5,140.01	7,035.16	-5,875.69	9,164.97	0.00	0.00	0.00
14,200.00	90.00	311.536	5,140.01	7,101.47	-5,950.55	9,264.07	0.00	0.00	0.00
14,300.00	90.00	311.536	5,140.01	7,167.78	-6,025.40	9,363.17	0.00	0.00	0.00
14,400.00	90.00	311.536	5,140.01	7,234.09	-6,100.25	9,462.26	0.00	0.00	0.00
14,500.00	90.00	311.536	5,140.01	7,300.40	-6,175.11	9,561.36	0.00	0.00	0.00
14,600.00	90.00	311.536	5,140.01	7,366.71	-6,249.96	9,660.46	0.00	0.00	0.00
14,700.00	90.00	311.536	5,140.01	7,433.02	-6,324.82	9,759.56	0.00	0.00	0.00
14,800.00	90.00	311.536	5,140.01	7,499.32	-6,399.67	9,858.66	0.00	0.00	0.00
14,900.00	90.00	311.536	5,140.01	7,565.63	-6,474.53	9,957.76	0.00	0.00	0.00
15,000.00	90.00	311.536	5,140.01	7,631.94	-6,549.38	10,056.86	0.00	0.00	0.00
15,100.00	90.00	311.536	5,140.01	7,698.25	-6,624.23	10,155.96	0.00	0.00	0.00
15,171.87	90.00	311.536	5,140.01	7,745.90	-6,678.03	10,227.17	0.00	0.00	0.00

Database: DJR
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Wellbore: Original drilling
Design: APD rev 3

Local Co-ordinate Reference: Well NAU 528H
TVD Reference: RKB @ 6993.00usft (RIG TBD)
MD Reference: RKB @ 6993.00usft (RIG TBD)
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
528H heel rev 2 - plan hits target center - Circle (radius 50.00)	0.00	0.000	5,140.01	1,472.47	403.89	1,887,152.82	2,787,921.92	36.18621500	-107.61363730
528H toe rev 2 - plan hits target center - Circle (radius 100.00)	0.00	0.000	5,140.01	7,745.90	-6,678.03	1,893,410.31	2,780,825.90	36.20344660	-107.63764130

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
5,642.98	5,136.56	Intermediate casing	7.00	8.75

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
891.05	889.00	Ojo Alamo		0.00	0.000
931.64	929.00	Kirtland		0.00	0.000
1,180.74	1,172.00	Fruitland		0.00	0.000
1,478.06	1,456.00	Picture Cliffs		0.00	0.000
1,654.52	1,624.00	Lewis		0.00	0.000
2,282.63	2,222.00	Chacra		0.00	0.000
3,038.90	2,942.02	Menefee		0.00	0.000
3,983.16	3,841.01	Point Lookout		0.00	0.000
4,172.23	4,021.01	Mancos		0.00	0.000
4,523.04	4,355.01	Mancos Silt		0.00	0.000
5,035.87	4,830.01	Gallup A		0.00	0.000
5,077.59	4,864.01	Gallup B		0.00	0.000
5,246.90	4,986.01	Gallup C		0.00	0.000



DJR Operating

North Alamito Unit

J31 2307

NAU 528H

Original drilling

APD rev 3

Anticollision Report

12 December, 2019



Company:	DJR Operating	Local Co-ordinate Reference:	Well NAU 528H
Project:	North Alamito Unit	TVD Reference:	RKB @ 6993.00usft (RIG TBD)
Reference Site:	J31 2307	MD Reference:	RKB @ 6993.00usft (RIG TBD)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	NAU 528H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	Original drilling	Database:	DJR
Reference Design:	APD rev 3	Offset TVD Reference:	Offset Datum

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

Survey Tool Program		Date	12/12/2019		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	15,171.87	APD rev 3 (Original drilling)	MWD+IGRF	OWSG MWD + IGRF or WMM	

Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
ECA Fed C #1						
Well #1 - Re-entry - P&A						Out of range
J31 2307						
NAU 333H - Original drilling - APD rev 3	425.00	425.00	39.88	37.24	15.116	CC, ES
NAU 333H - Original drilling - APD rev 3	600.00	599.09	46.48	42.62	12.044	SF
NAU 529H - Original drilling - APD rev 3	425.00	425.00	19.98	17.34	7.572	CC, ES
NAU 529H - Original drilling - APD rev 3	600.00	599.98	25.23	21.34	6.492	SF

Offset Design													Offset Site Error:		0.00 usft
Survey Program: 0-MWD+IGRF													Offset Well Error:		0.00 usft
Reference		Offset		Semi Major Axis			Distance								
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)	Minimum Separation (usft)	Separation Factor	Warning		
0.00	0.00	0.00	0.00	0.00	0.00	-137.67	-29.49	-26.85	39.88						
100.00	100.00	100.00	100.00	0.15	0.15	-137.67	-29.49	-26.85	39.88	39.57	0.31	129.367			
200.00	200.00	200.00	200.00	0.51	0.51	-137.67	-29.49	-26.85	39.88	38.86	1.03	38.901			
300.00	300.00	300.00	300.00	0.87	0.87	-137.67	-29.49	-26.85	39.88	38.14	1.74	22.892			
400.00	400.00	400.00	400.00	1.23	1.23	-137.67	-29.49	-26.85	39.88	37.42	2.46	16.218			
425.00	425.00	425.00	425.00	1.32	1.32	-137.67	-29.49	-26.85	39.88	37.24	2.64	15.116	CC, ES		
500.00	499.99	499.79	499.78	1.59	1.58	-178.03	-29.85	-26.63	40.99	37.82	3.17	12.944			
600.00	599.89	599.09	599.02	1.95	1.91	177.71	-32.79	-24.83	46.48	42.62	3.86	12.044	SF		
700.00	699.58	698.10	697.82	2.31	2.26	171.97	-38.24	-21.50	56.92	52.35	4.57	12.464			
800.00	798.93	796.97	796.46	2.69	2.61	168.30	-43.99	-17.98	71.32	66.04	5.28	13.502			
900.00	897.83	895.31	894.58	3.09	2.97	166.37	-49.71	-14.48	89.26	83.26	6.00	14.867			
1,000.00	996.15	993.00	992.04	3.53	3.33	165.51	-55.40	-11.00	110.57	103.84	6.73	16.429			
1,100.00	1,093.77	1,089.92	1,088.73	3.99	3.69	165.26	-61.04	-7.55	135.17	127.71	7.46	18.120			
1,200.00	1,190.58	1,185.95	1,184.54	4.51	4.04	165.35	-66.63	-4.14	163.03	154.84	8.19	19.901			
1,300.00	1,286.46	1,280.98	1,279.35	5.06	4.40	165.63	-72.16	-0.75	194.13	185.20	8.93	21.746			
1,315.62	1,301.34	1,295.73	1,294.06	5.16	4.46	165.68	-73.02	-0.23	199.28	190.23	9.05	22.027			
1,400.00	1,381.68	1,375.31	1,373.45	5.66	4.76	166.07	-77.65	2.60	227.30	217.64	9.66	23.528			
1,500.00	1,476.88	1,469.62	1,467.54	6.28	5.11	166.42	-83.14	5.96	260.52	250.13	10.39	25.069			
1,600.00	1,572.09	1,563.93	1,561.64	6.91	5.47	166.69	-88.63	9.32	293.74	282.62	11.13	26.397			
1,700.00	1,667.30	1,658.24	1,655.73	7.54	5.82	166.90	-94.11	12.68	326.98	315.11	11.87	27.551			
1,800.00	1,762.50	1,752.55	1,749.82	8.19	6.18	167.08	-99.60	16.03	360.21	347.60	12.61	28.563			

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

Company: DJR Operating
Project: North Alamito Unit
Reference Site: J31 2307
Site Error: 0.00 usft
Reference Well: NAU 528H
Well Error: 0.00 usft
Reference Wellbore: Original drilling
Reference Design: APD rev 3

Local Co-ordinate Reference: Well NAU 528H
TVD Reference: RKB @ 6993.00usft (RIG TBD)
MD Reference: RKB @ 6993.00usft (RIG TBD)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: DJR
Offset TVD Reference: Offset Datum

Offset Design J31 2307 - NAU 333H - Original drilling - APD rev 3														Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IGRF														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (")	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)					
1,900.00	1,857.71	1,846.86	1,843.91	8.84	6.54	167.22	-105.09	19.39	393.45	380.09	13.36	29.457			
2,000.00	1,952.92	1,941.17	1,938.00	9.49	6.90	167.35	-110.58	22.75	426.68	412.58	14.10	30.251			
2,100.00	2,048.12	2,035.48	2,032.09	10.15	7.25	167.45	-116.07	26.11	459.92	445.07	14.85	30.962			
2,200.00	2,143.33	2,129.79	2,126.18	10.81	7.61	167.54	-121.56	29.46	493.17	477.56	15.61	31.601			
2,300.00	2,238.53	2,224.10	2,220.27	11.47	7.97	167.62	-127.05	32.82	526.41	510.05	16.36	32.178			
2,400.00	2,333.74	2,318.41	2,314.36	12.13	8.33	167.69	-132.54	36.18	559.65	542.54	17.11	32.703			
2,500.00	2,428.95	2,412.72	2,408.45	12.80	8.69	167.75	-138.02	39.53	592.89	575.03	17.87	33.181			
2,600.00	2,524.15	2,507.03	2,502.55	13.47	9.05	167.81	-143.51	42.89	626.14	607.51	18.62	33.619			
2,700.00	2,619.36	2,601.35	2,596.64	14.14	9.41	167.86	-149.00	46.25	659.38	640.00	19.38	34.021			
2,800.00	2,714.57	2,695.66	2,690.73	14.80	9.77	167.91	-154.49	49.61	692.63	672.49	20.14	34.392			
2,900.00	2,809.77	2,789.97	2,784.82	15.48	10.13	167.95	-159.98	52.96	725.87	704.98	20.90	34.735			
3,000.00	2,904.98	2,884.28	2,878.91	16.15	10.49	167.98	-165.47	56.32	759.12	737.46	21.66	35.052			
3,100.00	3,000.18	2,978.59	2,973.00	16.82	10.85	168.02	-170.96	59.68	792.37	769.95	22.42	35.348			
3,200.00	3,095.39	3,072.90	3,067.09	17.49	11.21	168.05	-176.45	63.04	825.61	802.44	23.18	35.623			
3,300.00	3,190.60	3,167.21	3,161.18	18.17	11.57	168.08	-181.94	66.39	858.86	834.92	23.94	35.880			
3,400.00	3,285.80	3,261.52	3,255.27	18.84	11.93	168.11	-187.42	69.75	892.10	867.41	24.70	36.121			
3,500.00	3,381.01	3,355.83	3,349.36	19.51	12.29	168.13	-192.91	73.11	925.35	899.89	25.46	36.346			
3,600.00	3,476.22	3,450.14	3,443.46	20.19	12.65	168.15	-198.40	76.46	958.60	932.38	26.22	36.558			
3,700.00	3,571.42	3,544.45	3,537.55	20.86	13.01	168.18	-203.89	79.82	991.85	964.86	26.98	36.758			

Company: DJR Operating
Project: North Alamito Unit
Reference Site: J31 2307
Site Error: 0.00 usft
Reference Well: NAU 528H
Well Error: 0.00 usft
Reference Wellbore: Original drilling
Reference Design: APD rev 3

Local Co-ordinate Reference: Well NAU 528H
TVD Reference: RKB @ 6993.00usft (RIG TBD)
MD Reference: RKB @ 6993.00usft (RIG TBD)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: DJR
Offset TVD Reference: Offset Datum

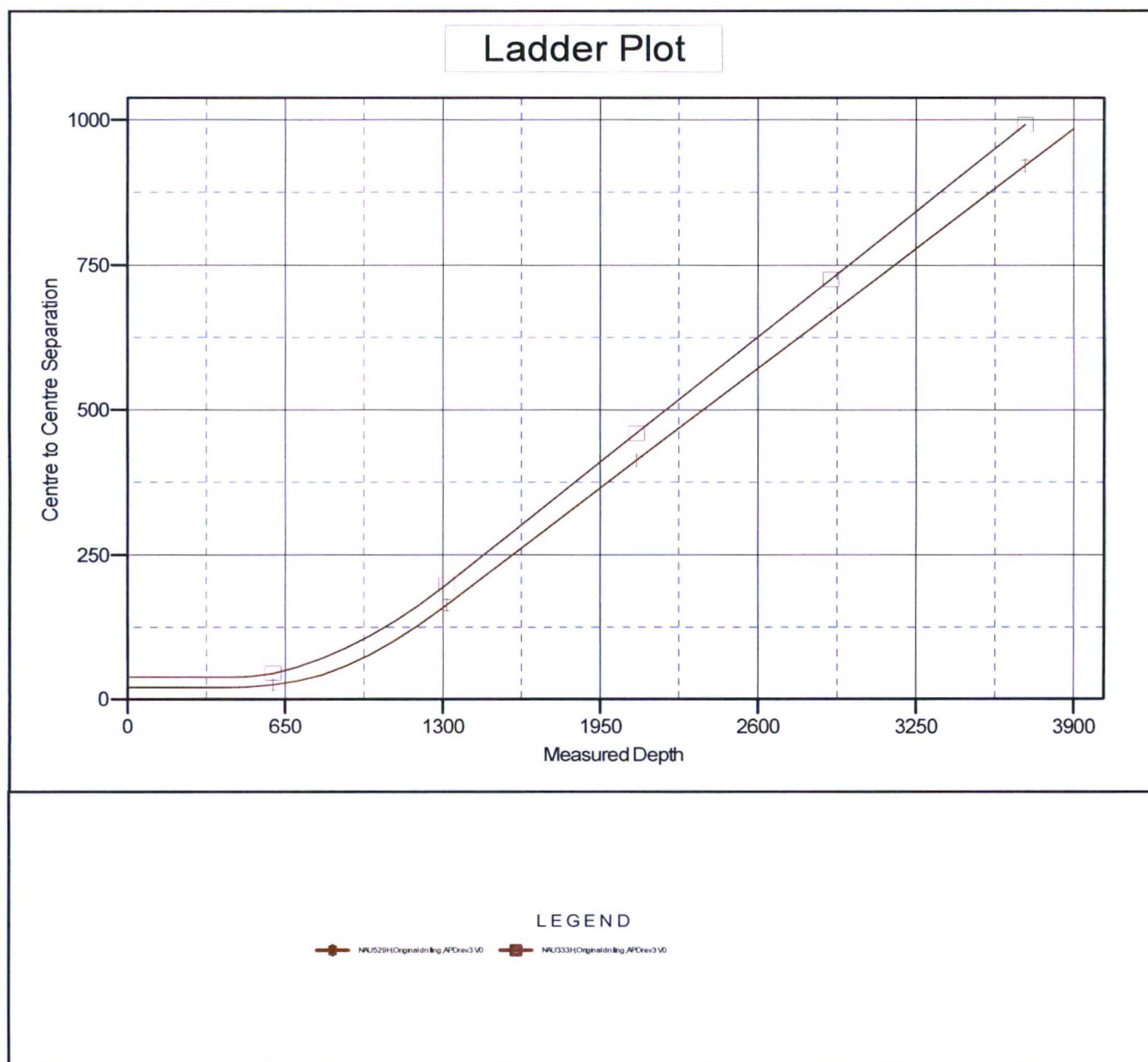
Offset Design J31 2307 - NAU 529H - Original drilling - APD rev 3														Offset Site Error:	0.00 usft
Survey Program: 0-MWD+IGRF														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning				
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)							
0.00	0.00	0.00	0.00	0.00	0.00	-138.34	-14.92	-13.28	19.98						
100.00	100.00	100.00	100.00	0.15	0.15	-138.34	-14.92	-13.28	19.98	19.67	0.31	64.802			
200.00	200.00	200.00	200.00	0.51	0.51	-138.34	-14.92	-13.28	19.98	18.95	1.03	19.486			
300.00	300.00	300.00	300.00	0.87	0.87	-138.34	-14.92	-13.28	19.98	18.24	1.74	11.467			
400.00	400.00	400.00	400.00	1.23	1.23	-138.34	-14.92	-13.28	19.98	17.52	2.46	8.124			
425.00	425.00	425.00	425.00	1.32	1.32	-138.34	-14.92	-13.28	19.98	17.34	2.64	7.572 CC, ES			
500.00	499.99	499.99	499.99	1.59	1.59	-178.14	-14.92	-13.28	20.96	17.78	3.18	6.601			
600.00	599.89	599.98	599.98	1.95	1.94	-179.43	-15.13	-12.90	25.23	21.34	3.89	6.492 SF			
700.00	699.58	699.82	699.75	2.31	2.28	-174.40	-16.79	-9.84	32.54	27.96	4.59	7.097			
800.00	798.93	799.12	798.80	2.69	2.63	-166.68	-20.08	-3.76	43.51	38.21	5.30	8.208			
900.00	897.83	897.61	896.75	3.09	2.99	-159.77	-24.95	5.24	58.65	52.62	6.04	9.717			
1,000.00	996.15	995.01	993.22	3.53	3.37	-154.25	-31.35	17.05	78.17	71.37	6.80	11.502			
1,100.00	1,093.77	1,091.59	1,088.43	3.99	3.77	-150.18	-39.05	31.27	101.92	94.34	7.59	13.435			
1,200.00	1,190.58	1,187.80	1,183.22	4.51	4.18	-148.16	-46.92	45.81	128.96	120.56	8.40	15.344			
1,300.00	1,286.46	1,283.20	1,277.20	5.06	4.61	-147.40	-54.72	60.22	158.89	149.65	9.24	17.190			
1,315.62	1,301.34	1,298.03	1,291.81	5.16	4.67	-147.36	-55.93	62.46	163.82	154.44	9.38	17.465			
1,400.00	1,381.68	1,378.03	1,370.62	5.66	5.03	-147.44	-62.48	74.55	190.62	180.53	10.10	18.881			
1,500.00	1,476.88	1,472.85	1,464.03	6.28	5.47	-147.52	-70.23	88.87	222.39	211.44	10.96	20.298			
1,600.00	1,572.09	1,567.67	1,557.44	6.91	5.90	-147.58	-77.99	103.20	254.16	242.34	11.83	21.488			
1,700.00	1,667.30	1,662.49	1,650.85	7.54	6.35	-147.62	-85.74	117.52	285.93	273.23	12.71	22.498			
1,800.00	1,762.50	1,757.31	1,744.26	8.19	6.79	-147.66	-93.50	131.84	317.70	304.11	13.60	23.365			
1,900.00	1,857.71	1,852.13	1,837.67	8.84	7.24	-147.69	-101.26	146.17	349.48	334.98	14.49	24.116			
2,000.00	1,952.92	1,946.95	1,931.08	9.49	7.68	-147.71	-109.01	160.49	381.25	365.85	15.39	24.771			
2,100.00	2,048.12	2,041.77	2,024.49	10.15	8.13	-147.73	-116.77	174.82	413.02	396.72	16.29	25.348			
2,200.00	2,143.33	2,136.59	2,117.90	10.81	8.59	-147.75	-124.52	189.14	444.79	427.59	17.20	25.859			
2,300.00	2,238.53	2,231.40	2,211.31	11.47	9.04	-147.76	-132.28	203.47	476.56	458.45	18.11	26.314			
2,400.00	2,333.74	2,326.22	2,304.72	12.13	9.49	-147.78	-140.03	217.79	508.33	489.31	19.02	26.723			
2,500.00	2,428.95	2,421.04	2,398.12	12.80	9.95	-147.79	-147.79	232.12	540.10	520.16	19.94	27.091			
2,600.00	2,524.15	2,515.86	2,491.53	13.47	10.40	-147.80	-155.55	246.44	571.87	551.02	20.85	27.424			
2,700.00	2,619.36	2,610.68	2,584.94	14.14	10.86	-147.81	-163.30	260.77	603.64	581.87	21.77	27.727			
2,800.00	2,714.57	2,705.50	2,678.35	14.80	11.31	-147.82	-171.06	275.09	635.41	612.72	22.69	28.004			
2,900.00	2,809.77	2,800.32	2,771.76	15.48	11.77	-147.82	-178.81	289.41	667.18	643.57	23.61	28.257			
3,000.00	2,904.98	2,895.14	2,865.17	16.15	12.23	-147.83	-186.57	303.74	698.95	674.42	24.53	28.491			
3,100.00	3,000.18	2,989.96	2,958.58	16.82	12.69	-147.84	-194.32	318.06	730.72	705.27	25.46	28.706			
3,200.00	3,095.39	3,084.77	3,051.99	17.49	13.15	-147.84	-202.08	332.39	762.49	736.11	26.38	28.905			
3,300.00	3,190.60	3,179.59	3,145.40	18.17	13.60	-147.85	-209.84	346.71	794.26	766.96	27.30	29.089			
3,400.00	3,285.80	3,274.41	3,238.81	18.84	14.06	-147.85	-217.59	361.04	826.03	797.80	28.23	29.261			
3,500.00	3,381.01	3,369.23	3,332.22	19.51	14.52	-147.86	-225.35	375.36	857.81	828.65	29.16	29.421			
3,600.00	3,476.22	3,464.05	3,425.63	20.19	14.98	-147.86	-233.10	389.69	889.58	859.49	30.08	29.571			
3,700.00	3,571.42	3,558.87	3,519.03	20.86	15.44	-147.87	-240.86	404.01	921.35	890.34	31.01	29.711			
3,800.00	3,666.63	3,653.69	3,612.44	21.54	15.90	-147.87	-248.61	418.34	953.12	921.18	31.94	29.843			
3,900.00	3,761.83	3,748.51	3,705.85	22.21	16.36	-147.87	-256.37	432.66	984.89	952.02	32.87	29.966			

Company: DJR Operating
Project: North Alamito Unit
Reference Site: J31 2307
Site Error: 0.00 usft
Reference Well: NAU 528H
Well Error: 0.00 usft
Reference Wellbore: Original drilling
Reference Design: APD rev 3

Local Co-ordinate Reference: Well NAU 528H
TVD Reference: RKB @ 6993.00usft (RIG TBD)
MD Reference: RKB @ 6993.00usft (RIG TBD)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: DJR
Offset TVD Reference: Offset Datum

Reference Depths are relative to RKB @ 6993.00usft (RIG TBD)
Offset Depths are relative to Offset Datum
Central Meridian is -107.83333333

Coordinates are relative to: NAU 528H
Coordinate System is US State Plane 1983, New Mexico Western Zone
Grid Convergence at Surface is: 0.13°



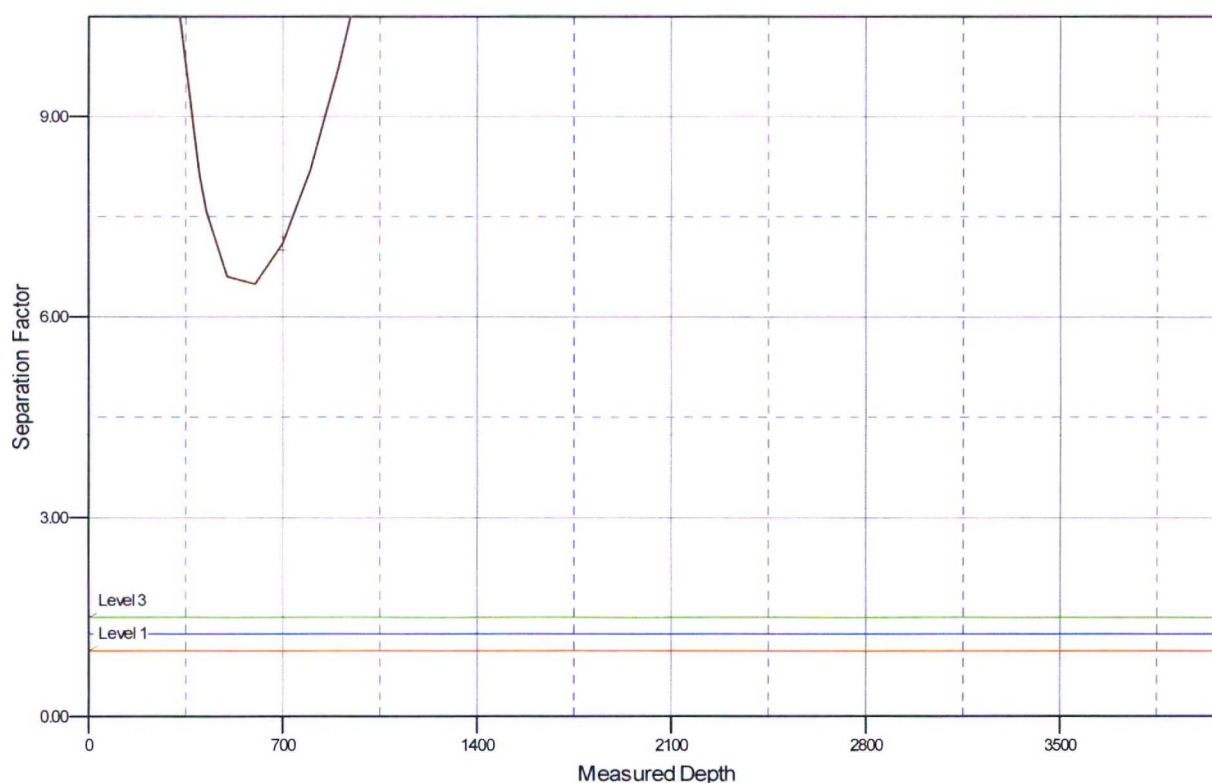
Company: DJR Operating
Project: North Alamito Unit
Reference Site: J31 2307
Site Error: 0.00 usft
Reference Well: NAU 528H
Well Error: 0.00 usft
Reference Wellbore: Original drilling
Reference Design: APD rev 3

Local Co-ordinate Reference: Well NAU 528H
TVD Reference: RKB @ 6993.00usft (RIG TBD)
MD Reference: RKB @ 6993.00usft (RIG TBD)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: DJR
Offset TVD Reference: Offset Datum

Reference Depths are relative to RKB @ 6993.00usft (RIG TBD)
Offset Depths are relative to Offset Datum
Central Meridian is -107.83333333

Coordinates are relative to: NAU 528H
Coordinate System is US State Plane 1983, New Mexico Western Zone
Grid Convergence at Surface is: 0.13°

Separation Factor Plot



LEGEND

NAU 528H (Original drilling, APD rev 3.0) NAU 333H (Original drilling, APD rev 3.0)

DJR OPERATING, LLC
NORTH ALAMITO UNIT #528H

2244' FSL & 2504' FEL
LOCATED IN THE NW/4 SE/4 OF SECTION 31,
T23N, R7W, N.M.P.M.,
SANDOVAL COUNTY, NEW MEXICO
NAU J31-2307

DIRECTIONS

- 1) FROM THE INTERSECTION OF HWY 64 & HWY 550 IN BLOOMFIELD, GO SOUTH ON HWY 550, 39.0 MILES TO INDIAN ROUTE 7061 (M.P. 112.7).
- 2) TURN RIGHT ONTO 7061 AND GO 5.4 MILES TO LYBROOK ROAD #2.
- 3) TURN LEFT AND GO 2.8 MILES TO A "Y" INTERSECTION.
- 4) TURN LEFT AND GO 1 MILE TO THE WELL PAD ACCESS ROAD ON THE RIGHT.
- 5) TURN RIGHT AND GO 0.2 MILES TO THE WELL PAD.

WELL FLAG LOCATED AT LAT. 36.182170° N, LONG. 107.615006° W (NAD 83).

CCI

CHENAULT CONSULTING INC.

4600 COLLEGE BLVD
SUITE 201
FARMINGTON, NM 87402
(505) 325-7707

 ***DJR OPERATING, LLC***

DATE: 12/13/19
DRAWN BY: GRR