

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 <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other		5. Lease Serial No. NMNM6681
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 335H
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 31 T23N R7W NWSW 2002FSL 713FWL 36.181531 N Lat, 107.621937 W Lon		9. API Well No. 30-043-21340-00-X1
		10. Field and Pool or Exploratory Area WILDCAT 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			
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Hydraulic Fracturing	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice BP	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input type="checkbox"/> Other
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	
	<input type="checkbox"/> Convert to Injection	<input checked="" type="checkbox"/> Plug Back	<input type="checkbox"/> 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 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.

**Plug Back & Sidetrack**

On the original 4.5 inch liner, the liner top packer was erroneously set prior to pumping cement, no cement was pumped down hole. DJR Operating, LLC wishes to plug back and sidetrack the subject well. Attached please find the following items in regard to Sidetrack operations:

Cement Bond Log: outside 7 inch casing  
Revised C-102  
Revised Drilling Plan Report with Sidetrack procedure  
Revised Standard Planning Report  
Revised Anti-Collision Report  
Revised Liner Casing & Cement Design  
Wellhead Blowout Control System

Adhere to Previous NMOCD  
Conditions of Approval

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

**Electronic Submission #512901 verified by the BLM Well Information System  
For DJR OPERATING LLC, sent to the Farmington  
Committed to AFMSS for processing by JOE KILLINS on 04/30/2020 (20JK0248SE)**

Name (Printed/Typed) SHAW-MARIE FORD

Title REGULATORY SPECIALIST

Signature (Electronic Submission)

Date 04/27/2020

**THIS SPACE FOR FEDERAL OR STATE OFFICE USE**

Approved By JOE KILLINS

Title PETROLEUM ENGINEER

Date 04/30/2020

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 \*\***

DISTRICT I  
1626 N. French Dr., Hobbs, N.M. 88240  
Phone: (575) 393-6161 Fax: (575) 393-0720

DISTRICT II  
611 S. First St., Artesia, N.M. 88210  
Phone: (575) 748-1283 Fax: (575) 748-9720

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

DISTRICT IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505  
Phone: (505) 476-3480 Fax: (505) 476-3482

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

<sup>1</sup> API Number <b>30-043-2134</b>	<sup>2</sup> Pool Code <b>98174</b>	<sup>3</sup> Pool Name <b>NORTH ALAMITO UNIT MANCOS OIL POOL</b>
<sup>4</sup> Property Code <b>325267</b>	<sup>5</sup> Property Name <b>NORTH ALAMITO UNIT</b>	<sup>6</sup> Well Number <b>335H</b>
<sup>7</sup> OGRID No. <b>371838</b>	<sup>8</sup> Operator Name <b>DJR OPERATING, LLC</b>	<sup>9</sup> Elevation <b>6964'</b>

<sup>10</sup> Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	31	23N	7W	3	2002'	SOUTH	713'	WEST	SANDOVAL

<sup>11</sup> 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
L	25	23N	8W		2172'	SOUTH	588'	WEST	SAN JUAN

<sup>12</sup> Dedicated Acres PENETRATED SPACING UNIT;  
SEC. 31: SW/NW (40.63 AC.); SEC. 36: NE/4 &  
NE/NW (200 AC.); SEC. 25: SW/4 & SW/SE (200  
AC.) = 440.63 ACRES TOTAL

<sup>13</sup> Joint or Infill

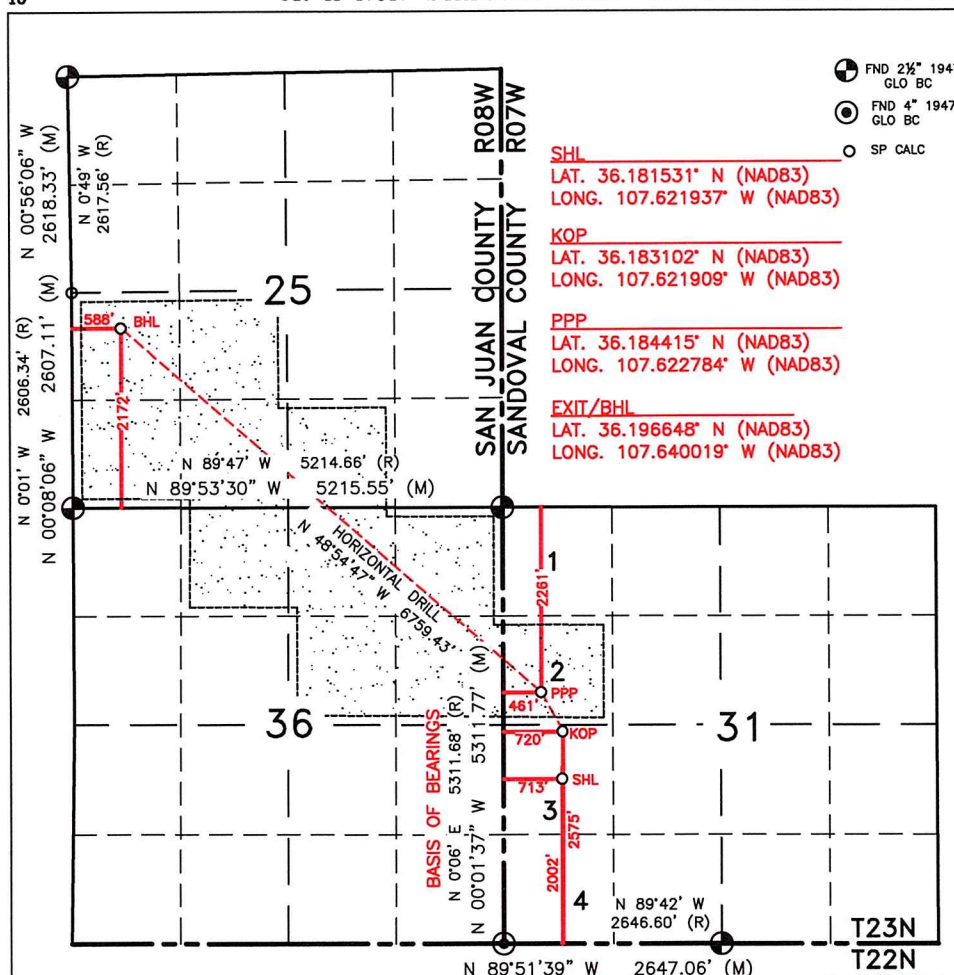
<sup>14</sup> Consolidation Code

<sup>15</sup> Order No.

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

16



17

17 OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Shaw-Marie Ford 04/24/20  
Signature Date

Shaw-Marie Ford

Printed Name

sford@djrlc.com

E-mail Address

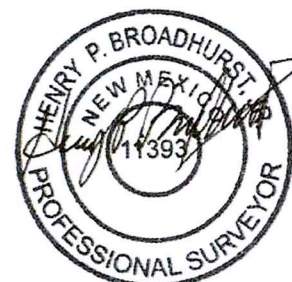
SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

MARCH 15, 2019

Date of Survey

Signature and Seal of Professional Surveyor:



Certificate Number

11393

**DISTRICT I**  
1625 N. French Dr., Hobbs, N.M. 88240  
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State of New Mexico  
Energy, Minerals & Natural Resources Department

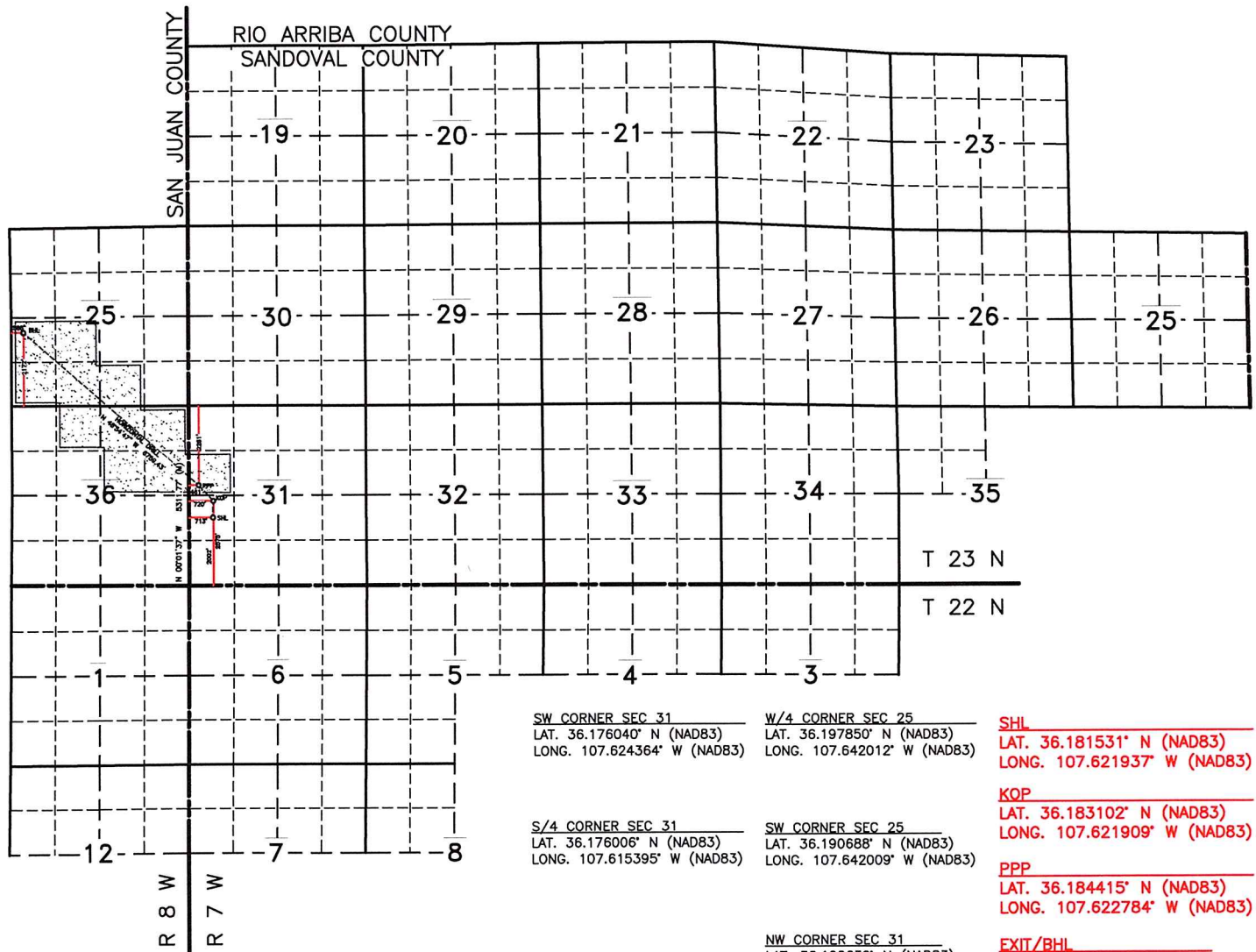
Form C-102  
Revised August 1, 2011

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 #335H



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

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

**SHL**  
LAT. 36.181531° N (NAD83)  
LONG. 107.621937° W (NAD83)

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

SW CORNER SEC 25  
LAT. 36.190688° N (NAD83)  
LONG. 107.642009° W (NAD83)

**KOP**  
LAT. 36.183102° N (NAD83)  
LONG. 107.621909° W (NAD83)

**PPP**  
LAT. 36.184415° N (NAD83)  
LONG. 107.622784° W (NAD83)

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

**EXIT/BHL**  
LAT. 36.196648° N (NAD83)  
LONG. 107.640019° W (NAD83)

E/4 CORNER SEC 25  
LAT. 36.197921° N (NAD83)  
LONG. 107.624319° W (NAD83)

PENETRATED SPACING UNIT;  
SEC. 31: SW/NW (40.63 AC.); SEC. 36: NE/4 &  
NE/NW (200 AC.); SEC. 25: SW/4 & SW/SE (200  
AC.) = 440.63 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 #335H ST

### Sandoval County, New Mexico

**Surface Location**

713-ft FWL & 2002-ft FSL  
 Sec 31 T23N R7W  
 Graded Elevation 6964' MSL  
 RKB Elevation 6978' (14' KB)

**SHL Geographical Coordinates (NAD-83)**

Latitude 36.1815310° N  
 Longitude 107.6219370° W

**Sidetrack KOP**

5029-ft MD  
 4900-ft TVD

**Local Coordinates (from SHL)**

572-ft North  
 7-ft East

**Heel Location (Pay zone entry)**

461-ft FWL & 2261-ft FNL  
 Sec 31 T23N R7W

**Heel Geographical Coordinates (NAD-83)**

Latitude 36.18441545° N  
 Longitude 107.62278418° W

**Bottom Hole Location (TD)**

588-ft FWL & 2172-ft FSL  
 Sec 25 T23N R8W

**BHL Geographical Coordinates (NAD-83)**

Latitude 36.19664801° N  
 Longitude 107.6400185° W

**Well Objectives**

Sidetrack the existing wellbore from a whipstock set in the 7" casing and drill a 6757-ft lateral in the Gallup C. Cement a 4-1/2" liner from TD back into 7" casing with at least 100-ft of overlap. [See page 5 for snapshot procedure.](#)

**Bottom Hole temperature and pressure**

The temperature in the Gallup C horizontal objective is 139°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	1047	1043	Sd	W	8.3	8.4 – 8.8
Kirtland	898	898	Sh	-	8.3	8.4 – 8.8
Fruitland	1153	1152	C	G	8.3	9.0 - 9.5
Pictured Cliffs	1427	1424	Sd	W	8.3	9.0 - 9.5
Lewis	1600	1596	Sh	-		9.0 - 9.5
Chacra	2183	2174	Sd	-	8.3	9.0 - 9.5
Menefee	2930	2912	Sd, C	G	8.3	9.0 - 9.5
Point Lookout	3842	3820	Sd	-	8.3	9.0 - 9.5
Mancos	4017	3994	Sh	-		9.0 - 9.5
Mancos Silt	4309	4284	Slt	O/G	6.6	9.0 - 9.5
Gallup A	4854	4782	Slt	O/G	6.6	9.0 - 9.5
Gallup B	4919	4830	Sd	O/G	6.6	8.8 - 9.0
Gallup C	5071	4925	Sd	O/G	6.6	8.8 - 9.0
Total Depth	12379	5113	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	380	surf	380	surface
7"	8-3/4"	26	K-55	LTC	surf	5029	surf	4900	surface
4-1/2"	6-1/8"	11.6	P-110	BTC	4919	12379	4830	5113	4919

*Note: The 9-5/8" surface and 7" intermediate casing are already set & cemented to surface.*

## Casing Design Load Cases

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

### 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

**Additives:** A=Accelerator; B=Bond Enhancer; De=Defoamer; Di=Dispersant; Ex=Extender; FI=Fluid Loss L=Lost Circulation; R=Retarder; SA=Suspending Agent; THX=Thixotropic Additive; V=Viscosifier

### 4-1/2" Production Liner

	Lead
Name	BJ Services
Type	Poz/G
Additives	De, R, FI, Ex
Planned top	4919-ft
Density (ppg)	13.3
Yield (cf/sx)	1.56
Mix water (gal/sx)	7.71
Volume (sx)	630
Volume (bbls)	175
Volume (cu.ft)	984
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**

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)
Production	Low solids, non-dispersed	5029 – 12379	8.8 – 9.2	34 – 38	6 – 8	6 – 8

**Cores, tests and logs**

MWD directional surveys will be taken in production hole.

Logging while drilling: GR in 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 bond log has been run on the 7" intermediate casing. 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.

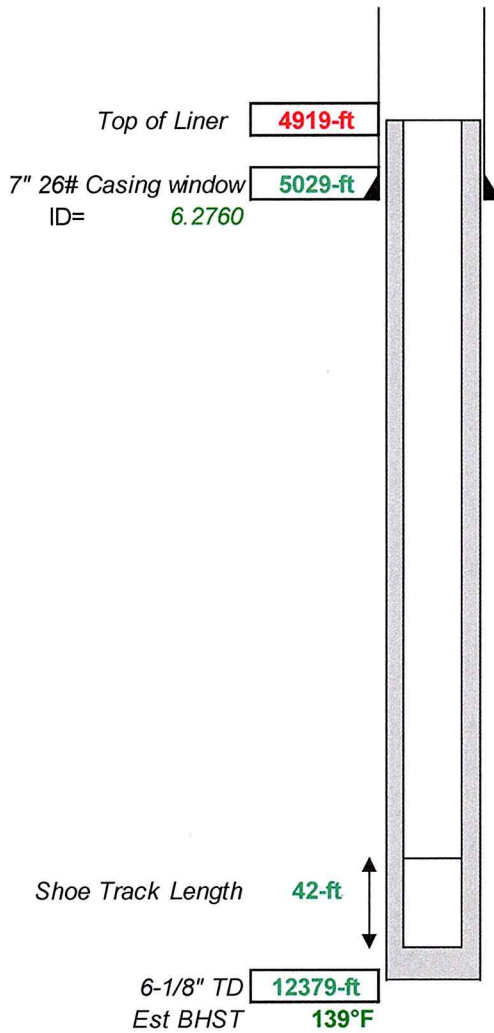
**Completion**

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.

### Snapshot Procedure

1. Pre-rig work: Run bond log on 7" intermediate casing. Log was run on 4/24/20, copy attached. The log shows good cement outside the casing.
2. MIRU Aztec rig #920. Nipple up and test BOPE.
3. Make a gauging run with the following BHA to 5100-ft MD:
  - 6-1/8" bit
  - 7" 26# casing scraper
  - Tandem string mills
4. With BHA at 5100-ft, circulate and condition the drilling fluid to lateral drilling mud properties. Pull out of hole with BHA.
5. Make up 7" 26# bridge plug, run in hole on drill pipe and set at 5039-ft MD. Weight test bridge plug and pressure test to 2000 psi.
6. Run in hole with 7" 26# whipstock and MWD. Tag bridge plug, orient and set whipstock 30° right of highside.
7. Shear off whipstock and cut window in 7" casing, 5019 to 5029-ft MD. Circulate clean, POH with mills.
8. Make up and run in hole with 6-1/8" directional BHA drill build curve and land well at heel target.
9. Drill 6-1/8" lateral to TD.
10. Wipe hole from TD back to 7" window, then POH for 4-1/2" liner.
11. Run 4-1/2" 11.6# liner to TD. Liner lap to be 100-ft as a minimum.
12. Set liner hanger, pump cement, set liner top packer.
13. Test liner top to 500 psi, circulate out excess cement, displace well to treated freshwater
14. POH with running tools.
15. Nipple down BOP, set back pressure valve, install night cap and secure well.
16. Clean pits, release rig.

### 4-1/2" Liner Cementing NAU 335H



Assumed Hole Size **6.1250** in

Casing OD **4.5000** in

Casing ID **4.0000** in

% Excess Open Hole **40%**

Capacity CH Ann **0.0186** bbl/ft

Capacity OH Ann **0.0168** bbl/ft

Capacity Pipe **0.0155** bbl/ft

#### 4-1/2" 11.6# P-110 LT&C

Pipe OD **4.500** in

Weight **11.6** lbs/ft

Grade **P-110**

Coupling **LTC**

Coupling OD **5.000** in

ID **4.000** in

Drift **3.875** in

Burst **10690** psi

Collapse **7580** psi

Tensile (body) **367** kips

Tensile (joint) **279** kips

Min Torque **ft-lbs**

Opt Torque **ft-lbs**

Max Torque **ft-lbs**

BJ Lead Slurry		Properties	
G+Pozz	50:50	Density	13.30 ppg
BA-90	3 lb/sx	Yield	1.5629 cf/sk
GW-86	0.10%	Total Mix Fluid	7.70 gal/sk
R-3	0.40%	Thickening Time	6:04 hr:min
FP-25	30.00%	Time to 50 psi (147°F)	7:15 hr:min
FL-24	0.40%	24-hr UCA (147°F)	1293 psi
Gel	4.00%		
Volumes			
Lead Volume	175 bbls	630 sx	
Approx Displacement	134 bbls		
Total Volume	309 bbls		



Company: DJR Operating  
Project: North Alamito Unit  
Site: L31 2307  
Well: NAU 335H  
Wellbore: ST1  
Design: Pre-Drill

PROJECT DETAILS: North Alamito 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: 8.85°  
Magnetic Field  
Strength: 49429.3nT  
Dip Angle: 62.85°  
Date: 4/22/2020  
Model: IGRF2015

WELL DETAILS: NAU 335H

+N/-S	+E/-W	North	East	Longitude
0.00	0.00	1885442.31	2785476.46	-107.62193700

Plan: Pre-Drill (NAU 335H/ST1)  
Created By: Janie Collins Date: 11:43, April 27 2020

DESIGN TARGET DETAILS

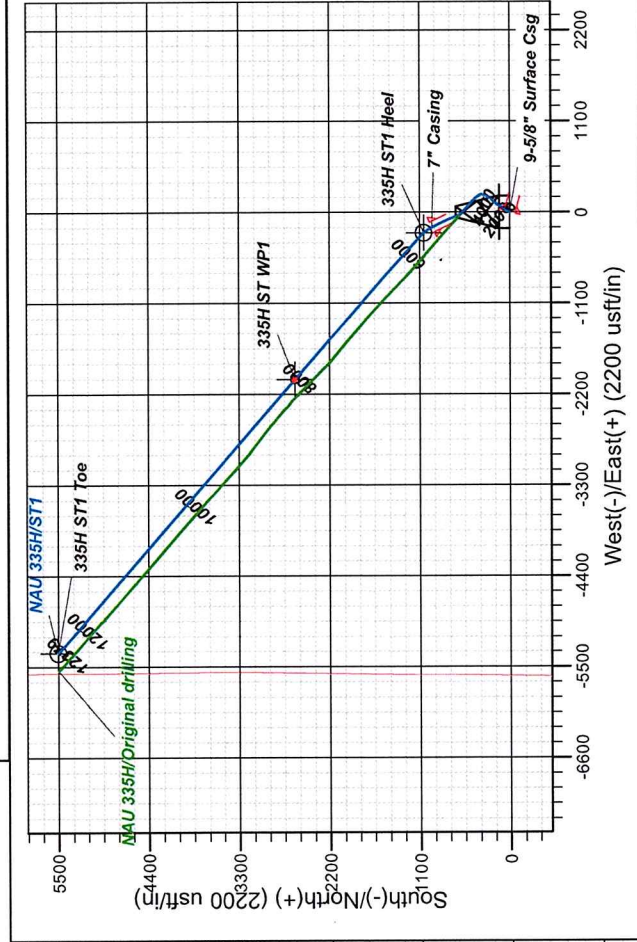
Name	TVD	+N/-S	+E/-W	North	East	Latitude	Longitude
335H ST1 WP1	5071.61	2622.62	-2020.00	1889080.03	2785450.75	36.18673512	-107.62878255
335H ST1 Toe	5113.00	5503.40	-5335.00	1890934.08	2780129.49	36.19064801	-107.64001852
335H ST1 Heel	5079.00	1050.00	-250.00	1886451.77	2785224.17	36.18441545	-107.62278418

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Diag	TFace	VSecl	Target
5025.00	53.70	311.736	4895.87	571.79	6.80	0.00	0.00	405.82	
5164.00	55.00	339.000	4979.54	660.73	-54.37	16.38	94.74	512.25	
5413.65	85.00	334.000	5064.00	872.94	-147.72	12.16	-9.89	729.60	
5503.65	85.00	334.000	5071.84	953.52	-187.03	0.00	0.00	814.81	
5657.28	89.71	314.588	5079.00	1077.48	-276.18	12.99	-76.93	965.86	
5814.95	89.73	311.435	5079.77	1185.02	-391.45	2.00	-89.64	1123.32	335H ST WP1
7987.20	89.73	311.435	5090.00	2622.52	-2020.00	0.00	0.00	3288.98	335H ST1 Toe
8009.43	89.70	310.991	5090.11	2637.17	-2036.72	2.00	-93.91	3311.14	
12379.15	89.70	310.991	5113.00	5503.40	-5335.00	0.00	0.00	7664.83	

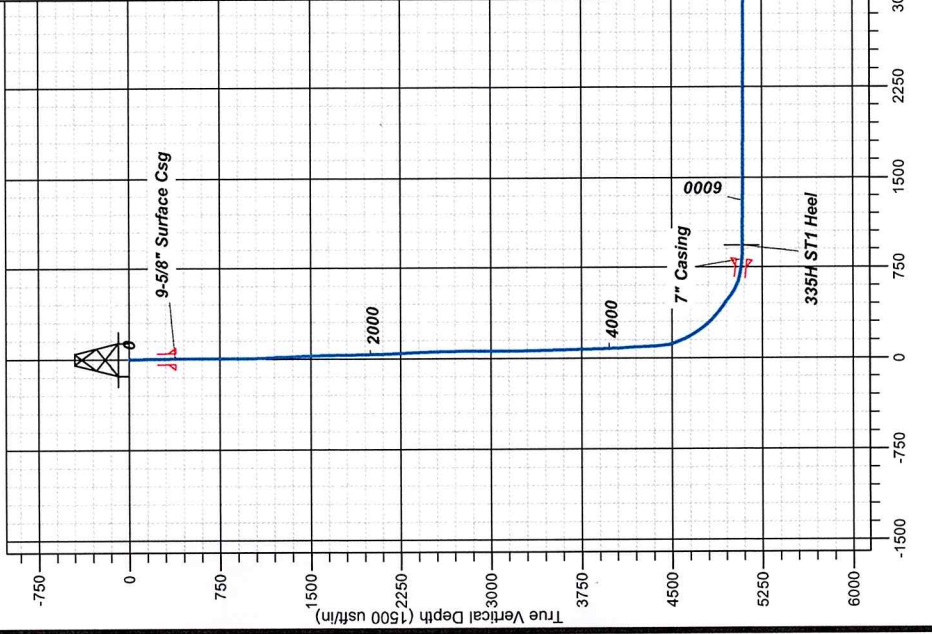
CASING DETAILS

TVD	MD	Name
5071.61	5501.00	7" Casing



FORMATION DETAILS

MDPath	Formation
820.00	Ojo Alamo
898.00	Kirtland
1152.00	Fruitland
1424.00	Pictured Cliffs
1596.00	Lewis
2174.00	Chacra
2912.00	Menefee
3820.00	Point Lookout
3994.00	Mancos
4284.00	Mancos Silt
4782.00	Gallup A
4830.00	Gallup B
4925.00	Gallup C





## **DJR Operating**

**North Alamito Unit**

**L31 2307**

**NAU 335H**

**ST1**

**Plan: Pre-Drill**

## **Standard Planning Report**

**27 April, 2020**



# Scientific Drilling, Intl

## Planning Report

<b>Database:</b>	DJR	<b>Local Co-ordinate Reference:</b>	Well NAU 335H
<b>Company:</b>	DJR Operating	<b>TVD Reference:</b>	GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
<b>Project:</b>	North Alamito Unit	<b>MD Reference:</b>	GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
<b>Site:</b>	L31 2307	<b>North Reference:</b>	True
<b>Well:</b>	NAU 335H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ST1		
<b>Design:</b>	Pre-Drill		

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

<b>Site</b>	L31 2307				
<b>Site Position:</b>		<b>Northing:</b>	1,885,429.49 usft	<b>Latitude:</b>	36.18149600
<b>From:</b>	Lat/Long	<b>Easting:</b>	2,785,438.72 usft	<b>Longitude:</b>	-107.62206500
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13.20 in	<b>Grid Convergence:</b>	0.12 °

Well	NAU 335H					
Well Position	+N/-S	12.74 usft	Northing:	1,885,442.32 usft	Latitude:	36.18153100
	+E/-W	37.77 usft	Easting:	2,785,476.46 usft	Longitude:	-107.62193700
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	6,964.00 usft

<b>Wellbore</b>	ST1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	4/22/2020	8.85	62.85	49,429.28201985

<b>Design</b>	Pre-Drill				
<b>Audit Notes:</b>					
<b>Version:</b>		<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	5,029.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	315.890	

<b>Plan Survey Tool Program</b>		<b>Date</b> 4/27/2020			
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>	
1	5,029.00	12,379.15	Pre-Drill (ST1)	MWD+HDGM	
				OWSG MWD + HDGM	



# Scientific Drilling, Intl

## Planning Report

<b>Database:</b>	DJR	<b>Local Co-ordinate Reference:</b>	Well NAU 335H
<b>Company:</b>	DJR Operating	<b>TVD Reference:</b>	GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
<b>Project:</b>	North Alamito Unit	<b>MD Reference:</b>	GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
<b>Site:</b>	L31 2307	<b>North Reference:</b>	True
<b>Well:</b>	NAU 335H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ST1		
<b>Design:</b>	Pre-Drill		

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
5,029.00	53.70	311.736	4,899.87	571.79	6.80	0.00	0.00	0.00	0.00	
5,164.00	55.00	339.000	4,979.54	660.73	-54.37	16.38	0.97	20.20	94.74	
5,413.65	85.00	334.000	5,064.00	872.94	-147.72	12.16	12.02	-2.00	-9.89	
5,503.65	85.00	334.000	5,071.84	953.52	-187.03	0.00	0.00	0.00	0.00	
5,657.28	89.71	314.588	5,079.00	1,077.48	-276.18	12.99	3.07	-12.64	-76.93	
5,814.95	89.73	311.435	5,079.77	1,185.02	-391.45	2.00	0.01	-2.00	-89.64	
7,987.20	89.73	311.435	5,090.00	2,622.52	-2,020.00	0.00	0.00	0.00	0.00	335H ST WP1
8,009.43	89.70	310.991	5,090.11	2,637.17	-2,036.72	2.00	-0.14	-2.00	-93.91	
12,379.15	89.70	310.991	5,113.00	5,503.40	-5,335.00	0.00	0.00	0.00	0.00	335H ST1 Toe



# Scientific Drilling, Intl

## Planning Report

Database:	DJR	Local Co-ordinate Reference:	Well NAU 335H
Company:	DJR Operating	TVD Reference:	GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
Project:	North Alamito Unit	MD Reference:	GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
Site:	L31 2307	North Reference:	True
Well:	NAU 335H	Survey Calculation Method:	Minimum Curvature
Wellbore:	ST1		
Design:	Pre-Drill		

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)
5,029.00	53.70	311.736	4,899.87	571.79	6.80	405.82	0.00	0.00	0.00
5,100.00	53.61	326.192	4,942.09	614.72	-30.58	462.66	16.38	-0.13	20.36
5,164.00	55.00	339.000	4,979.54	660.73	-54.37	512.25	16.38	2.18	20.01
5,200.00	59.32	338.126	4,999.06	688.87	-65.43	540.16	12.16	11.99	-2.43
5,300.00	71.33	336.041	5,040.74	772.38	-100.82	624.74	12.16	12.01	-2.09
5,400.00	83.36	334.236	5,062.62	860.72	-141.79	716.70	12.16	12.03	-1.81
5,413.65	85.00	334.000	5,064.00	872.94	-147.72	729.60	12.16	12.04	-1.73
5,500.00	85.00	334.000	5,071.53	950.25	-185.43	811.36	0.00	0.00	0.00
5,503.65	85.00	334.000	5,071.84	953.52	-187.03	814.81	0.00	0.00	0.00
5,600.00	87.92	321.809	5,077.81	1,034.82	-238.03	908.69	12.99	3.03	-12.65
5,657.28	89.71	314.588	5,079.00	1,077.48	-276.18	965.86	12.99	3.12	-12.61
5,700.00	89.72	313.734	5,079.21	1,107.24	-306.82	1,008.57	2.00	0.01	-2.00
5,800.00	89.73	311.734	5,079.70	1,175.09	-380.27	1,108.41	2.00	0.01	-2.00
5,814.95	89.73	311.435	5,079.77	1,185.02	-391.45	1,123.32	2.00	0.01	-2.00
5,900.00	89.73	311.435	5,080.17	1,241.30	-455.22	1,208.11	0.00	0.00	0.00
6,000.00	89.73	311.435	5,080.64	1,307.48	-530.19	1,307.80	0.00	0.00	0.00
6,100.00	89.73	311.435	5,081.11	1,373.65	-605.16	1,407.50	0.00	0.00	0.00
6,200.00	89.73	311.435	5,081.58	1,439.83	-680.13	1,507.20	0.00	0.00	0.00
6,300.00	89.73	311.435	5,082.05	1,506.00	-755.10	1,606.89	0.00	0.00	0.00
6,400.00	89.73	311.435	5,082.53	1,572.18	-830.07	1,706.59	0.00	0.00	0.00
6,500.00	89.73	311.435	5,083.00	1,638.35	-905.04	1,806.29	0.00	0.00	0.00
6,600.00	89.73	311.435	5,083.47	1,704.53	-980.01	1,905.98	0.00	0.00	0.00
6,700.00	89.73	311.435	5,083.94	1,770.70	-1,054.98	2,005.68	0.00	0.00	0.00
6,800.00	89.73	311.435	5,084.41	1,836.88	-1,129.95	2,105.38	0.00	0.00	0.00
6,900.00	89.73	311.435	5,084.88	1,903.06	-1,204.92	2,205.07	0.00	0.00	0.00
7,000.00	89.73	311.435	5,085.35	1,969.23	-1,279.89	2,304.77	0.00	0.00	0.00
7,100.00	89.73	311.435	5,085.82	2,035.41	-1,354.86	2,404.47	0.00	0.00	0.00
7,200.00	89.73	311.435	5,086.29	2,101.58	-1,429.83	2,504.16	0.00	0.00	0.00
7,300.00	89.73	311.435	5,086.76	2,167.76	-1,504.80	2,603.86	0.00	0.00	0.00
7,400.00	89.73	311.435	5,087.23	2,233.93	-1,579.77	2,703.56	0.00	0.00	0.00
7,500.00	89.73	311.435	5,087.71	2,300.11	-1,654.74	2,803.25	0.00	0.00	0.00
7,600.00	89.73	311.435	5,088.18	2,366.29	-1,729.71	2,902.95	0.00	0.00	0.00
7,700.00	89.73	311.435	5,088.65	2,432.46	-1,804.68	3,002.65	0.00	0.00	0.00
7,800.00	89.73	311.435	5,089.12	2,498.64	-1,879.65	3,102.34	0.00	0.00	0.00
7,900.00	89.73	311.435	5,089.59	2,564.81	-1,954.62	3,202.04	0.00	0.00	0.00
7,987.20	89.73	311.435	5,090.00	2,622.52	-2,020.00	3,288.98	0.00	0.00	0.00
8,000.00	89.71	311.179	5,090.06	2,630.97	-2,029.61	3,301.74	2.00	-0.14	-2.00
8,009.43	89.70	310.991	5,090.11	2,637.17	-2,036.72	3,311.14	2.00	-0.14	-2.00
8,100.00	89.70	310.991	5,090.59	2,696.57	-2,105.08	3,401.37	0.00	0.00	0.00
8,200.00	89.70	310.991	5,091.11	2,762.16	-2,180.56	3,501.00	0.00	0.00	0.00
8,300.00	89.70	310.991	5,091.63	2,827.76	-2,256.04	3,600.64	0.00	0.00	0.00
8,400.00	89.70	310.991	5,092.16	2,893.35	-2,331.52	3,700.27	0.00	0.00	0.00
8,500.00	89.70	310.991	5,092.68	2,958.94	-2,407.00	3,799.90	0.00	0.00	0.00
8,600.00	89.70	310.991	5,093.20	3,024.54	-2,482.48	3,899.54	0.00	0.00	0.00
8,700.00	89.70	310.991	5,093.73	3,090.13	-2,557.96	3,999.17	0.00	0.00	0.00
8,800.00	89.70	310.991	5,094.25	3,155.72	-2,633.44	4,098.80	0.00	0.00	0.00
8,900.00	89.70	310.991	5,094.78	3,221.32	-2,708.93	4,198.44	0.00	0.00	0.00
9,000.00	89.70	310.991	5,095.30	3,286.91	-2,784.41	4,298.07	0.00	0.00	0.00
9,100.00	89.70	310.991	5,095.82	3,352.50	-2,859.89	4,397.70	0.00	0.00	0.00
9,200.00	89.70	310.991	5,096.35	3,418.10	-2,935.37	4,497.34	0.00	0.00	0.00
9,300.00	89.70	310.991	5,096.87	3,483.69	-3,010.85	4,596.97	0.00	0.00	0.00
9,400.00	89.70	310.991	5,097.39	3,549.28	-3,086.33	4,696.60	0.00	0.00	0.00



# Scientific Drilling, Intl Planning Report

<b>Database:</b>	DJR	<b>Local Co-ordinate Reference:</b>	Well NAU 335H
<b>Company:</b>	DJR Operating	<b>TVD Reference:</b>	GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
<b>Project:</b>	North Alamito Unit	<b>MD Reference:</b>	GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
<b>Site:</b>	L31 2307	<b>North Reference:</b>	True
<b>Well:</b>	NAU 335H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ST1		
<b>Design:</b>	Pre-Drill		

## 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)
9,500.00	89.70	310.991	5,097.92	3,614.88	-3,161.81	4,796.24	0.00	0.00	0.00
9,600.00	89.70	310.991	5,098.44	3,680.47	-3,237.29	4,895.87	0.00	0.00	0.00
9,700.00	89.70	310.991	5,098.97	3,746.06	-3,312.77	4,995.50	0.00	0.00	0.00
9,800.00	89.70	310.991	5,099.49	3,811.65	-3,388.25	5,095.14	0.00	0.00	0.00
9,900.00	89.70	310.991	5,100.01	3,877.25	-3,463.73	5,194.77	0.00	0.00	0.00
10,000.00	89.70	310.991	5,100.54	3,942.84	-3,539.21	5,294.40	0.00	0.00	0.00
10,100.00	89.70	310.991	5,101.06	4,008.43	-3,614.69	5,394.04	0.00	0.00	0.00
10,200.00	89.70	310.991	5,101.59	4,074.03	-3,690.17	5,493.67	0.00	0.00	0.00
10,300.00	89.70	310.991	5,102.11	4,139.62	-3,765.65	5,593.30	0.00	0.00	0.00
10,400.00	89.70	310.991	5,102.63	4,205.21	-3,841.13	5,692.94	0.00	0.00	0.00
10,500.00	89.70	310.991	5,103.16	4,270.81	-3,916.61	5,792.57	0.00	0.00	0.00
10,600.00	89.70	310.991	5,103.68	4,336.40	-3,992.09	5,892.20	0.00	0.00	0.00
10,700.00	89.70	310.991	5,104.20	4,401.99	-4,067.57	5,991.84	0.00	0.00	0.00
10,800.00	89.70	310.991	5,104.73	4,467.59	-4,143.05	6,091.47	0.00	0.00	0.00
10,900.00	89.70	310.991	5,105.25	4,533.18	-4,218.53	6,191.10	0.00	0.00	0.00
11,000.00	89.70	310.991	5,105.78	4,598.77	-4,294.01	6,290.74	0.00	0.00	0.00
11,100.00	89.70	310.991	5,106.30	4,664.36	-4,369.49	6,390.37	0.00	0.00	0.00
11,200.00	89.70	310.991	5,106.82	4,729.96	-4,444.97	6,490.00	0.00	0.00	0.00
11,300.00	89.70	310.991	5,107.35	4,795.55	-4,520.45	6,589.64	0.00	0.00	0.00
11,400.00	89.70	310.991	5,107.87	4,861.14	-4,595.93	6,689.27	0.00	0.00	0.00
11,500.00	89.70	310.991	5,108.39	4,926.74	-4,671.41	6,788.90	0.00	0.00	0.00
11,600.00	89.70	310.991	5,108.92	4,992.33	-4,746.89	6,888.54	0.00	0.00	0.00
11,700.00	89.70	310.991	5,109.44	5,057.92	-4,822.37	6,988.17	0.00	0.00	0.00
11,800.00	89.70	310.991	5,109.97	5,123.52	-4,897.85	7,087.80	0.00	0.00	0.00
11,900.00	89.70	310.991	5,110.49	5,189.11	-4,973.33	7,187.44	0.00	0.00	0.00
12,000.00	89.70	310.991	5,111.01	5,254.70	-5,048.81	7,287.07	0.00	0.00	0.00
12,100.00	89.70	310.991	5,111.54	5,320.30	-5,124.29	7,386.70	0.00	0.00	0.00
12,200.00	89.70	310.991	5,112.06	5,385.89	-5,199.77	7,486.34	0.00	0.00	0.00
12,300.00	89.70	310.991	5,112.59	5,451.48	-5,275.26	7,585.97	0.00	0.00	0.00
12,379.15	89.70	310.991	5,113.00	5,503.40	-5,335.00	7,664.83	0.00	0.00	0.00

## Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
335H ST1 Heel - hit/miss target - Shape	0.00	0.000	5,079.00	1,050.00	-250.00	1,886,491.77	2,785,224.18	36.18441545	-107.62278418
- plan misses target center by 0.70usft at 5619.33usft MD (5078.41 TVD, 1049.74 N, -250.30 E) - Circle (radius 100.00)									
335H ST WP1 - plan hits target center - Circle (radius 50.00)	0.00	0.000	5,090.00	2,622.52	-2,020.00	1,888,060.43	2,783,450.76	36.18873512	-107.62878255
335H ST1 Toe - plan hits target center - Circle (radius 100.00)	0.00	0.000	5,113.00	5,503.40	-5,335.00	1,890,934.08	2,780,129.49	36.19664801	-107.64001853



**Scientific Drilling, Intl**  
Planning Report

<b>Database:</b>	DJR	<b>Local Co-ordinate Reference:</b>	Well NAU 335H
<b>Company:</b>	DJR Operating	<b>TVD Reference:</b>	GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
<b>Project:</b>	North Alamito Unit	<b>MD Reference:</b>	GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
<b>Site:</b>	L31 2307	<b>North Reference:</b>	True
<b>Well:</b>	NAU 335H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ST1		
<b>Design:</b>	Pre-Drill		

Casing Points					
	Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
	380.00	379.98	9-5/8" Surface Csg	9.62	12.25
	5,501.00	5,071.61	7" Casing	7.00	8.75

Formations						
	Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
	820.06	820.00	Ojo Alamo			
	898.09	898.00	Kirtland			
	1,152.89	1,152.00	Fruitland			
	1,426.61	1,424.00	Pictured Cliffs			
	1,600.12	1,596.00	Lewis			
	2,182.60	2,174.00	Chacra			
	2,929.89	2,912.00	Menefee			
	3,842.34	3,820.00	Point Lookout			
	4,016.98	3,994.00	Mancos			
	4,308.67	4,284.00	Mancos Silt			
	4,853.55	4,782.00	Gallup A			
	4,919.13	4,830.00	Gallup B			
	5,071.27	4,925.00	Gallup C			



## **DJR Operating**

**North Alamito Unit**

**L31 2307**

**NAU 335H**

**ST1**

**Pre-Drill**

## **Anticollision Report**

**22 April, 2020**



# Scientific Drilling, Intl

## Anticollision Report

<b>Company:</b>	DJR Operating	<b>Local Co-ordinate Reference:</b>	Well NAU 335H
<b>Project:</b>	North Alamito Unit	<b>TVD Reference:</b>	GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
<b>Reference Site:</b>	L31 2307	<b>MD Reference:</b>	GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	NAU 335H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	ST1	<b>Database:</b>	DJR
<b>Reference Design:</b>	Pre-Drill	<b>Offset TVD Reference:</b>	Offset Datum

Reference	Pre-Drill		
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	4/22/2020		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
439.00	4,412.00	Survey #1 - Surface MWD Survey (Original)	MWD+HDGM	OWSG MWD + HDGM	
4,475.00	5,029.00	Survey #2 - Curve MWD Survey (Original)	MWD+HDGM	OWSG MWD + HDGM	
5,029.00	12,379.15	Pre-Drill (ST1)	MWD+HDGM	OWSG MWD + HDGM	

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
J31 2307						
NAU 529H - Original drilling - Original drilling	7,744.32	10,282.49	1,043.77	849.14	5.363	CC
NAU 529H - Original drilling - Original drilling	12,379.15	14,911.41	1,091.68	652.29	2.485	ES, SF
L31 2307						
NAU 335H - Original drilling - Original drilling	5,350.00	5,328.74	98.41	90.63	12.663	CC
NAU 335H - Original drilling - Original drilling	12,379.15	12,339.48	147.99	-207.12	0.417	Level 1, ES, SF

J31 2307 - NAU 529H - Original drilling - Original drilling												Offset Site Error:	0.00 usft
Survey Program: 440-MWD+HDGM, 4599-MWD+HDGM, 5754-MWD+HDGM												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							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)	Minimum Separation (usft)	Separation Factor	
0.00	0.00	14.28	14.28	0.00	0.02	83.88	217.76	2,032.11	2,043.74				
439.00	438.96	440.00	439.98	0.76	0.76	159.47	220.54	2,034.22	2,050.71	2,049.18	1.53	1,341.853	
501.00	500.96	492.10	492.07	0.99	0.95	163.67	221.26	2,034.73	2,052.29	2,050.35	1.94	1,059.834	
561.00	560.96	537.57	537.54	1.19	1.11	-13.67	221.76	2,035.34	2,053.21	2,050.91	2.30	891.959	
622.00	621.95	577.25	577.21	1.39	1.25	-24.87	221.70	2,036.27	2,054.16	2,051.51	2.64	776.802	
682.00	681.95	624.00	623.91	1.60	1.42	-34.52	221.11	2,038.13	2,055.95	2,052.93	3.01	682.666	
743.00	742.95	643.28	643.16	1.81	1.49	-21.09	220.68	2,039.17	2,058.33	2,055.04	3.29	625.727	
804.00	803.94	684.00	683.76	2.02	1.64	28.57	219.32	2,041.97	2,061.42	2,057.78	3.64	565.863	
864.00	863.93	709.46	709.10	2.23	1.73	47.87	218.17	2,044.08	2,065.01	2,061.07	3.94	523.903	
925.00	924.88	745.00	744.43	2.44	1.86	55.02	216.19	2,047.43	2,068.90	2,064.62	4.28	483.519	
986.00	985.77	785.59	784.70	2.66	2.01	53.21	213.44	2,051.75	2,072.84	2,068.21	4.64	447.000	
1,047.00	1,046.62	831.21	829.86	2.88	2.18	61.11	209.78	2,057.08	2,077.17	2,072.16	5.02	414.003	
1,107.00	1,106.37	893.87	891.78	3.09	2.42	58.08	203.94	2,064.69	2,081.21	2,075.75	5.46	380.970	
1,168.00	1,167.02	961.30	958.39	3.31	2.69	60.93	197.01	2,072.50	2,084.45	2,078.51	5.94	351.116	
1,228.00	1,226.63	1,016.59	1,012.97	3.53	2.91	57.85	191.01	2,078.97	2,087.52	2,081.15	6.36	327.995	
1,289.00	1,287.25	1,065.57	1,061.30	3.75	3.11	55.14	185.54	2,084.80	2,090.57	2,083.79	6.77	308.622	
1,350.00	1,347.90	1,107.00	1,102.08	3.98	3.28	65.04	180.52	2,090.13	2,094.70	2,087.54	7.16	292.738	
1,411.00	1,408.50	1,143.03	1,137.47	4.21	3.43	62.92	176.00	2,095.12	2,099.68	2,092.16	7.52	279.253	



# Scientific Drilling, Intl

## Anticollision Report

**Company:** DJR Operating  
**Project:** North Alamito Unit  
**Reference Site:** L31 2307  
**Site Error:** 0.00 usft  
**Reference Well:** NAU 335H  
**Well Error:** 0.00 usft  
**Reference Wellbore:** ST1  
**Reference Design:** Pre-Drill

**Local Co-ordinate Reference:** Well NAU 335H  
**TVD Reference:** GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)  
**MD Reference:** GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 2.00 sigma  
**Database:** DJR  
**Offset TVD Reference:** Offset Datum

Offset Design J31 2307 - NAU 529H - Original drilling - Original drilling													Offset Site Error:	0.00 usft
Survey Program: 440-MWD+HDGM, 4599-MWD+HDGM, 5754-MWD+HDGM													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (usft)	Between Ellipses (usft)	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)						
1,472.00	1,469.02	1,184.24	1,177.92	4.44	3.61	61.85	170.93	2,101.21	2,104.81	2,096.91	7.90	266.371		
1,532.00	1,528.51	1,229.00	1,221.85	4.67	3.80	59.37	165.89	2,108.09	2,109.92	2,101.62	8.30	254.229		
1,593.00	1,588.95	1,269.19	1,261.26	4.90	3.98	52.92	161.40	2,114.57	2,114.96	2,106.28	8.68	243.632		
1,653.00	1,648.45	1,310.91	1,302.05	5.13	4.16	45.76	156.25	2,121.70	2,120.03	2,110.97	9.07	233.844		
1,714.00	1,709.02	1,350.00	1,340.15	5.36	4.34	47.29	150.94	2,128.60	2,125.72	2,116.27	9.44	225.111		
1,776.00	1,770.59	1,396.38	1,385.24	5.60	4.56	48.40	144.25	2,137.16	2,132.21	2,122.35	9.86	216.262		
1,837.00	1,831.16	1,436.01	1,423.66	5.83	4.75	49.28	138.34	2,144.86	2,139.31	2,129.06	10.24	208.873		
1,900.00	1,893.69	1,473.00	1,459.44	6.07	4.93	49.55	132.66	2,152.35	2,147.20	2,136.58	10.62	202.213		
1,963.00	1,956.23	1,504.72	1,490.00	6.31	5.09	52.20	127.58	2,159.15	2,156.07	2,145.10	10.97	196.516		
2,026.00	2,018.75	1,533.00	1,517.11	6.56	5.24	55.66	122.77	2,165.62	2,166.18	2,154.87	11.31	191.608		
2,089.00	2,081.23	1,568.50	1,550.97	6.80	5.43	58.28	116.45	2,174.18	2,177.34	2,165.66	11.68	186.438		
2,152.00	2,143.68	1,607.22	1,587.76	7.05	5.64	61.82	109.28	2,183.92	2,189.53	2,177.46	12.07	181.425		
2,215.00	2,206.07	1,657.19	1,635.16	7.30	5.92	62.79	100.08	2,196.78	2,202.28	2,189.76	12.52	175.897		
2,278.00	2,268.34	1,730.28	1,704.61	7.55	6.33	61.00	87.24	2,215.57	2,214.66	2,201.56	13.10	169.092		
2,342.00	2,331.50	1,826.17	1,796.18	7.80	6.86	57.24	71.23	2,239.12	2,225.81	2,212.01	13.80	161.313		
2,405.00	2,393.61	1,902.49	1,869.31	8.06	7.28	58.18	58.79	2,257.03	2,235.75	2,221.36	14.39	155.362		
2,468.00	2,455.63	1,963.23	1,927.56	8.32	7.61	57.95	48.76	2,271.06	2,245.32	2,230.42	14.90	150.659		
2,531.00	2,517.60	2,025.00	1,986.83	8.58	7.95	53.74	38.59	2,285.17	2,254.33	2,238.90	15.42	146.182		
2,594.00	2,579.57	2,076.06	2,035.83	8.84	8.23	52.88	30.35	2,296.93	2,263.09	2,247.21	15.88	142.504		
2,657.00	2,641.61	2,127.87	2,085.49	9.10	8.52	53.35	22.12	2,309.15	2,272.44	2,256.10	16.34	139.045		
2,720.00	2,703.77	2,179.76	2,135.22	9.36	8.81	52.26	13.98	2,321.55	2,282.44	2,265.63	16.80	135.830		
2,784.00	2,767.04	2,238.06	2,191.00	9.62	9.14	52.66	4.52	2,335.65	2,293.26	2,275.96	17.30	132.564		
2,847.00	2,829.52	2,296.48	2,246.89	9.87	9.47	50.64	-5.08	2,349.65	2,304.65	2,286.86	17.79	129.555		
2,910.00	2,892.20	2,341.00	2,289.39	10.10	9.73	45.25	-12.61	2,360.58	2,317.17	2,298.98	18.20	127.350		
2,973.00	2,954.91	2,392.72	2,338.68	10.34	10.03	44.73	-21.46	2,373.52	2,330.07	2,311.43	18.64	125.011		
3,036.00	3,017.63	2,441.73	2,385.35	10.58	10.32	47.69	-29.78	2,385.93	2,343.27	2,324.20	19.07	122.899		
3,100.00	3,081.33	2,487.83	2,429.20	10.82	10.59	48.01	-37.59	2,397.86	2,357.23	2,337.75	19.48	121.010		
3,163.00	3,144.03	2,531.73	2,470.85	11.06	10.85	53.60	-45.02	2,409.52	2,371.56	2,351.69	19.88	119.310		
3,226.00	3,206.72	2,582.73	2,514.67	11.30	11.03	47.41	1,250.96	1,120.30	2,350.79	2,313.53	37.26	63.093		
3,289.00	3,269.38	2,634.54	2,564.68	11.54	11.26	47.46	1,252.19	1,118.98	2,296.72	2,258.78	37.94	60.529		
3,352.00	3,332.02	2,687.26	2,614.69	11.78	11.50	47.52	1,254.04	1,116.99	2,243.05	2,204.38	38.67	58.007		
3,415.00	3,394.61	2,720.29	2,647.71	12.03	11.75	47.59	1,256.11	1,114.77	2,189.72	2,150.30	39.42	55.543		
3,478.00	3,457.22	2,773.02	2,698.72	12.27	11.99	47.65	1,257.97	1,112.77	2,136.96	2,096.76	40.20	53.152		
3,542.00	3,520.90	2,825.22	2,748.73	12.51	12.23	47.70	1,259.47	1,111.16	2,084.30	2,043.27	41.03	50.799		
3,605.00	3,583.62	2,876.88	2,796.74	12.75	12.47	47.74	1,260.60	1,109.95	2,033.28	1,991.41	41.87	48.557		
3,668.00	3,646.34	2,928.53	2,844.74	12.99	12.71	47.77	1,261.73	1,108.74	1,983.02	1,940.27	42.75	46.381		
3,731.00	3,709.08	2,980.56	2,894.75	13.23	12.95	47.82	1,263.11	1,107.25	1,933.60	1,889.93	43.68	44.269		
3,795.00	3,772.83	3,032.77	2,944.75	13.47	13.19	47.87	1,264.62	1,105.64	1,884.39	1,839.73	44.66	42.196		
3,858.00	3,835.60	3,084.72	2,994.76	13.70	13.42	47.91	1,265.95	1,104.21	1,836.98	1,791.32	45.66	40.233		
3,921.00	3,898.39	3,136.66	3,044.76	13.94	13.66	47.96	1,267.27	1,102.79	1,790.65	1,743.96	46.70	38.346		
3,984.00	3,961.16	3,188.90	3,094.76	14.17	13.89	48.01	1,268.80	1,101.16	1,745.28	1,697.51	47.77	36.533		
4,047.00	4,023.90	3,241.66	3,144.76	14.41	14.13	48.07	1,270.68	1,099.14	1,700.99	1,652.10	48.89	34.792		
4,110.00	4,086.57	3,293.31	3,196.76	14.65	14.37	48.15	1,273.17	1,096.47	1,657.58	1,607.53	50.05	33.118		
4,173.00	4,149.18	3,345.20	3,248.76	14.89	14.61	48.24	1,275.83	1,093.63	1,615.04	1,563.80	51.24	31.521		
4,237.00	4,212.79	3,397.87	3,299.76	15.13	14.85	48.33	1,278.33	1,090.95	1,573.24	1,520.78	52.46	29.988		
4,300.00	4,275.39	3,450.00	3,351.74	15.37	15.09	48.40	1,280.47	1,088.65	1,533.37	1,479.69	53.68	28.565		
4,363.00	4,337.98	3,502.46	3,404.73	15.62	15.34	48.45	1,282.15	1,086.86	1,494.82	1,439.92	54.90	27.229		
4,426.00	4,398.66	3,554.52	3,456.72	15.86	15.58	48.50	1,283.56	1,085.35	1,466.11	1,410.25	55.85	26.249		
4,489.00	4,468.96	3,606.53	3,508.68	15.96	15.68	48.66	1,288.34	1,080.24	1,431.23	1,374.14	57.09	25.070		
4,552.00	4,529.83	3,658.61	3,560.60	16.00	15.72	49.03	1,299.32	1,068.48	1,398.22	1,339.83	58.39	23.946		
4,615.00	4,588.58	3,710.32	3,612.69	16.07	15.79	49.62	1,316.74	1,049.57	1,368.31	1,308.45	59.86	22.860		



# Scientific Drilling, Intl

## Anticollision Report

<b>Company:</b>	DJR Operating	<b>Local Co-ordinate Reference:</b>	Well NAU 335H
<b>Project:</b>	North Alamito Unit	<b>TVD Reference:</b>	GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
<b>Reference Site:</b>	L31 2307	<b>MD Reference:</b>	GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	NAU 335H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	ST1	<b>Database:</b>	DJR
<b>Reference Design:</b>	Pre-Drill	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design J31 2307 - NAU 529H - Original drilling - Original drilling													Offset Site Error: 0.00 usft
Survey Program: 440-MWD+HDGM, 4599-MWD+HDGM, 5754-MWD+HDGM													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
4,664.00	4,625.29	7,393.66	5,115.21	16.14	50.41	92.50	1,339.79	1,024.12	1,342.63	1,281.15	61.48	21.838	
4,728.00	4,680.62	7,437.28	5,115.93	16.23	51.43	96.64	1,368.81	991.57	1,320.69	1,257.38	63.31	20.862	
4,791.00	4,732.67	7,486.37	5,116.55	16.33	52.59	98.61	1,401.17	954.66	1,303.32	1,238.10	65.23	19.982	
4,854.00	4,782.34	7,538.42	5,116.87	16.46	53.83	99.47	1,435.14	915.23	1,289.71	1,222.50	67.21	19.190	
4,916.00	4,827.83	7,583.23	5,116.80	16.64	54.91	97.86	1,464.17	881.09	1,278.59	1,209.57	69.02	18.525	
4,980.00	4,870.10	7,617.93	5,116.90	16.90	55.74	97.43	1,486.80	854.79	1,268.98	1,198.33	70.65	17.962	
5,029.00	4,899.87	7,646.66	5,117.15	17.17	56.43	97.31	1,505.72	833.17	1,263.34	1,191.38	71.96	17.557	
5,050.00	4,912.33	7,659.24	5,117.21	17.82	56.74	94.46	1,514.07	823.75	1,260.75	1,188.29	72.45	17.400	
5,075.00	4,927.22	7,674.03	5,117.22	17.88	57.09	91.05	1,523.92	812.73	1,256.26	1,183.23	73.02	17.203	
5,100.00	4,942.09	7,688.54	5,117.17	17.96	57.44	87.65	1,533.65	801.96	1,250.27	1,176.68	73.59	16.990	
5,125.00	4,956.87	7,704.25	5,117.06	18.05	57.82	84.25	1,544.23	790.35	1,242.80	1,168.61	74.18	16.753	
5,150.00	4,971.47	7,721.90	5,116.99	18.15	58.24	80.84	1,556.13	777.32	1,233.82	1,159.01	74.81	16.492	
5,164.00	4,979.54	7,731.62	5,116.99	18.22	58.48	78.96	1,562.68	770.14	1,228.15	1,152.98	75.16	16.340	
5,175.00	4,985.74	7,739.28	5,117.00	18.27	58.66	79.51	1,567.86	764.48	1,223.52	1,148.09	75.43	16.220	
5,200.00	4,999.06	7,757.30	5,117.10	18.41	59.10	80.72	1,580.02	751.19	1,213.11	1,137.05	76.06	15.950	
5,225.00	5,011.25	7,775.88	5,117.24	18.56	59.54	81.88	1,592.57	737.49	1,202.83	1,126.13	76.70	15.683	
5,250.00	5,022.28	7,794.97	5,117.31	18.72	60.01	83.02	1,605.48	723.43	1,192.69	1,115.33	77.35	15.419	
5,275.00	5,032.12	7,814.55	5,117.31	18.90	60.48	84.13	1,618.75	709.03	1,182.69	1,104.67	78.02	15.158	
5,300.00	5,040.74	7,838.92	5,117.23	19.09	61.07	85.14	1,635.26	691.11	1,172.82	1,094.01	78.81	14.882	
5,325.00	5,048.12	7,866.89	5,117.06	19.29	61.75	86.12	1,654.13	670.46	1,162.98	1,083.30	79.68	14.595	
5,350.00	5,054.24	7,893.95	5,116.85	19.51	62.41	87.16	1,672.28	650.39	1,153.16	1,072.61	80.54	14.317	
5,375.00	5,059.07	7,918.75	5,116.91	19.74	63.02	88.26	1,688.86	631.94	1,143.42	1,062.05	81.36	14.053	
5,400.00	5,062.62	7,943.91	5,117.29	19.99	63.63	89.42	1,705.63	613.19	1,133.78	1,051.58	82.20	13.793	
5,413.65	5,064.00	7,956.91	5,117.59	20.13	63.95	90.07	1,714.28	603.50	1,128.57	1,045.93	82.65	13.656	
5,503.65	5,071.84	8,033.06	5,118.98	21.13	65.83	89.80	1,765.00	546.71	1,094.49	1,009.03	85.46	12.807	
5,525.00	5,073.59	8,048.13	5,119.16	21.39	66.20	90.20	1,775.13	535.55	1,087.02	1,000.94	86.09	12.627	
5,550.00	5,075.33	8,066.16	5,119.34	21.70	66.65	90.60	1,787.31	522.27	1,079.61	992.76	86.85	12.431	
5,575.00	5,076.74	8,086.98	5,119.51	22.04	67.16	90.90	1,801.46	506.98	1,073.65	985.95	87.70	12.243	
5,600.00	5,077.81	8,109.96	5,119.81	22.38	67.72	91.14	1,817.09	490.15	1,069.08	980.47	88.61	12.065	
5,625.00	5,078.55	8,133.16	5,120.25	22.73	68.29	91.31	1,832.90	473.18	1,065.91	976.36	89.55	11.903	
5,650.00	5,078.95	8,165.87	5,121.19	23.09	69.10	91.44	1,855.12	449.19	1,064.07	973.35	90.71	11.730	
5,657.28	5,079.00	8,175.94	5,121.58	23.20	69.35	91.48	1,861.92	441.77	1,063.75	972.68	91.06	11.681	
5,700.00	5,079.21	8,224.83	5,123.88	23.85	70.56	91.59	1,894.68	405.55	1,062.27	969.33	92.95	11.429	
5,784.96	5,079.63	8,311.53	5,125.99	25.23	72.73	91.69	1,952.77	341.24	1,061.14	964.53	96.61	10.984	
5,800.00	5,079.70	8,327.49	5,126.20	25.48	73.13	91.70	1,963.45	329.37	1,061.18	963.90	97.28	10.909	
5,814.95	5,079.77	8,344.13	5,126.37	25.74	73.55	91.71	1,974.57	316.99	1,061.27	963.30	97.97	10.833	
5,900.00	5,080.17	8,442.78	5,126.85	27.29	76.03	91.71	2,040.02	243.19	1,061.48	959.45	102.03	10.404	
6,000.00	5,080.64	8,544.12	5,127.24	29.23	78.60	91.70	2,106.74	166.91	1,061.02	954.37	106.66	9.948	
6,100.00	5,081.11	8,656.07	5,127.73	31.29	81.46	91.71	2,179.84	82.12	1,059.85	948.27	111.58	9.499	
6,200.00	5,081.58	8,775.05	5,127.86	33.43	84.53	91.69	2,256.16	-9.15	1,057.16	940.46	116.70	9.059	
6,300.00	5,082.05	8,850.45	5,128.27	35.66	86.47	91.69	2,304.80	-66.76	1,054.92	933.75	121.17	8.706	
6,400.00	5,082.53	8,941.33	5,128.63	37.94	88.81	91.69	2,364.48	-135.28	1,054.25	928.33	125.92	8.372	
6,500.00	5,083.00	9,058.01	5,130.11	40.27	91.82	91.74	2,440.57	-223.72	1,052.99	921.81	131.18	8.027	
6,600.00	5,083.47	9,149.96	5,131.92	42.65	94.20	91.82	2,500.22	-293.66	1,051.34	915.29	136.05	7.728	
6,700.00	5,083.94	9,243.35	5,131.59	45.06	96.62	91.78	2,561.51	-364.13	1,050.58	909.61	140.97	7.452	
6,800.00	5,084.41	9,349.88	5,129.87	47.49	99.38	91.66	2,631.30	-444.60	1,049.63	903.47	146.16	7.181	
6,900.00	5,084.88	9,443.04	5,128.19	49.95	101.80	91.55	2,692.56	-514.76	1,049.02	897.88	151.14	6.941	
6,986.22	5,085.29	9,523.78	5,126.99	52.10	103.89	91.46	2,745.83	-575.43	1,048.76	893.31	155.44	6.747	
7,000.00	5,085.35	9,535.21	5,126.95	52.44	104.19	91.45	2,753.41	-583.98	1,048.78	892.67	156.10	6.718	
7,100.00	5,085.82	9,619.02	5,127.96	54.94	106.35	91.49	2,809.52	-646.23	1,049.83	888.94	160.88	6.525	



# Scientific Drilling, Intl

## Anticollision Report

<b>Company:</b>	DJR Operating	<b>Local Co-ordinate Reference:</b>	Well NAU 335H
<b>Project:</b>	North Alamito Unit	<b>TVD Reference:</b>	GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
<b>Reference Site:</b>	L31 2307	<b>MD Reference:</b>	GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	NAU 335H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	ST1	<b>Database:</b>	DJR
<b>Reference Design:</b>	Pre-Drill	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design J31 2307 - NAU 529H - Original drilling - Original drilling													Offset Site Error: 0.00 usft
Survey Program: 440-MWD+HDGM, 4599-MWD+HDGM, 5754-MWD+HDGM													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (usft)	Between Ellipses (usft)	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)					
7,200.00	5,086.29	9,721.82	5,128.98	57.46	109.00	91.51	2,879.01	-721.97	1,051.77	885.71	166.06	6.334	
7,300.00	5,086.76	9,834.36	5,129.07	59.99	111.92	91.49	2,954.19	-805.71	1,052.59	881.13	171.45	6.139	
7,400.00	5,087.23	9,945.17	5,128.74	62.53	114.81	91.44	3,027.41	-888.88	1,052.44	875.62	176.82	5.952	
7,500.00	5,087.71	10,091.70	5,129.61	65.08	118.68	91.46	3,120.86	-1,001.72	1,049.19	866.48	182.71	5.742	
7,600.00	5,088.18	10,163.76	5,130.97	67.64	120.59	91.52	3,166.49	-1,057.47	1,045.47	857.91	187.56	5.574	
7,700.00	5,088.65	10,246.16	5,133.98	70.21	122.75	91.66	3,220.00	-1,120.05	1,043.97	851.49	192.47	5.424	
7,744.32	5,088.86	10,282.49	5,135.95	71.36	123.70	91.76	3,243.85	-1,147.40	1,043.77	849.14	194.62	5.363 CC	
7,800.00	5,089.12	10,323.49	5,137.78	72.79	124.77	91.85	3,271.13	-1,177.95	1,044.16	846.95	197.21	5.295	
7,900.00	5,089.59	10,429.70	5,140.09	75.37	127.54	91.95	3,342.45	-1,256.61	1,045.57	843.04	202.53	5.163	
7,987.20	5,090.00	10,539.92	5,141.01	77.63	130.43	91.97	3,414.89	-1,339.67	1,044.99	837.48	207.51	5.036	
8,009.43	5,090.11	10,558.37	5,141.08	78.21	130.92	91.97	3,426.93	-1,353.65	1,044.80	836.20	208.61	5.008	
8,024.89	5,090.19	10,571.19	5,141.10	78.61	131.25	91.97	3,435.33	-1,363.34	1,044.78	835.41	209.37	4.990	
8,100.00	5,090.59	10,628.99	5,141.08	80.57	132.77	91.95	3,473.60	-1,406.64	1,045.39	832.42	212.97	4.909	
8,200.00	5,091.11	10,700.00	5,141.15	83.17	134.61	91.93	3,521.97	-1,458.63	1,048.68	831.18	217.50	4.821	
8,300.00	5,091.63	10,821.13	5,140.66	85.78	137.74	91.86	3,604.90	-1,546.91	1,052.61	829.38	223.23	4.715	
8,400.00	5,092.16	10,941.21	5,138.72	88.40	140.89	91.72	3,685.02	-1,636.32	1,054.06	825.17	228.90	4.605	
8,500.00	5,092.68	11,034.26	5,136.94	91.02	143.33	91.59	3,746.74	-1,705.94	1,054.97	820.95	234.03	4.508	
8,600.00	5,093.20	11,140.80	5,136.56	93.64	146.13	91.54	3,817.33	-1,785.73	1,055.83	816.41	239.42	4.410	
8,700.00	5,093.73	11,227.47	5,137.31	96.27	148.40	91.56	3,874.83	-1,850.58	1,056.86	812.46	244.41	4.324	
8,800.00	5,094.25	11,328.16	5,139.12	98.90	151.04	91.62	3,942.24	-1,925.35	1,058.73	809.06	249.67	4.241	
8,900.00	5,094.78	11,422.81	5,140.23	101.53	153.52	91.65	4,005.74	-1,995.53	1,060.74	805.94	254.80	4.163	
9,000.00	5,095.30	11,503.12	5,141.54	104.16	155.61	91.70	4,060.40	-2,054.35	1,064.07	804.52	259.55	4.100	
9,100.00	5,095.82	11,609.00	5,144.42	106.80	158.37	91.81	4,132.65	-2,131.70	1,067.72	802.78	264.93	4.030	
9,200.00	5,096.35	11,710.99	5,145.45	109.43	161.02	91.84	4,202.27	-2,206.21	1,071.34	801.11	270.22	3.965	
9,300.00	5,096.87	11,835.21	5,146.39	112.07	164.28	91.85	4,285.83	-2,298.12	1,073.59	797.56	276.03	3.889	
9,400.00	5,097.39	11,927.61	5,147.75	114.72	166.71	91.89	4,347.31	-2,367.08	1,074.90	793.76	281.14	3.823	
9,500.00	5,097.92	12,024.06	5,147.45	117.36	169.24	91.84	4,412.06	-2,438.57	1,076.93	790.58	286.34	3.761	
9,600.00	5,098.44	12,140.91	5,149.71	120.01	172.32	91.93	4,489.70	-2,525.85	1,078.11	786.14	291.96	3.693	
9,700.00	5,098.97	12,228.63	5,150.04	122.65	174.63	91.92	4,548.11	-2,591.29	1,079.41	782.41	297.00	3.634	
9,800.00	5,099.49	12,357.67	5,152.23	125.30	178.05	92.00	4,632.76	-2,688.63	1,079.40	776.58	302.82	3.565	
9,900.00	5,100.01	12,448.23	5,153.02	127.95	180.46	92.02	4,691.69	-2,757.40	1,078.73	770.76	307.97	3.503	
10,000.00	5,100.54	12,564.32	5,153.77	130.60	183.55	92.03	4,767.28	-2,845.49	1,078.15	764.62	313.53	3.439	
10,100.00	5,101.06	12,664.92	5,156.52	133.25	186.24	92.15	4,831.35	-2,923.00	1,075.76	756.92	318.84	3.374	
10,137.84	5,101.26	12,688.34	5,157.07	134.26	186.86	92.17	4,846.52	-2,940.84	1,075.38	754.75	320.64	3.354	
10,200.00	5,101.59	12,730.58	5,157.77	135.90	187.98	92.20	4,874.43	-2,972.54	1,075.79	752.25	323.54	3.325	
10,300.00	5,102.11	12,803.35	5,157.66	138.56	189.89	92.17	4,923.71	-3,026.06	1,078.63	750.50	328.13	3.287	
10,400.00	5,102.63	12,901.18	5,156.66	141.21	192.43	92.08	4,991.15	-3,096.94	1,083.07	749.73	333.34	3.249	
10,500.00	5,103.16	13,005.65	5,157.04	143.87	195.16	92.06	5,062.77	-3,172.98	1,087.06	748.33	338.73	3.209	
10,600.00	5,103.68	13,133.48	5,158.57	146.53	198.51	92.10	5,149.32	-3,267.04	1,090.01	745.31	344.70	3.162	
10,700.00	5,104.20	13,230.99	5,158.37	149.18	201.08	92.06	5,214.59	-3,339.48	1,091.78	741.83	349.94	3.120	
10,800.00	5,104.73	13,404.31	5,158.13	151.84	205.70	92.00	5,326.60	-3,471.63	1,090.96	734.84	356.12	3.063	
10,900.00	5,105.25	13,491.00	5,160.23	154.50	208.05	92.10	5,380.00	-3,539.89	1,085.93	724.50	361.43	3.005	
11,000.00	5,105.78	13,553.00	5,161.89	157.16	209.72	92.17	5,419.26	-3,587.85	1,083.31	716.94	366.37	2.957	
11,039.61	5,105.98	13,587.24	5,162.64	158.21	210.63	92.20	5,441.51	-3,613.86	1,083.05	714.67	368.38	2.940	
11,100.00	5,106.30	13,638.68	5,162.11	159.82	211.99	92.16	5,475.56	-3,652.40	1,083.48	712.05	371.43	2.917	
11,200.00	5,106.82	13,744.86	5,159.19	162.48	214.80	91.98	5,545.68	-3,732.08	1,083.98	707.08	376.90	2.876	
11,269.12	5,107.19	13,816.86	5,157.36	164.32	216.72	91.86	5,592.79	-3,786.50	1,083.77	703.12	380.65	2.847	
11,300.00	5,107.35	13,839.30	5,156.83	165.14	217.31	91.83	5,607.59	-3,803.36	1,083.89	701.75	382.14	2.836	
11,400.00	5,107.87	13,920.76	5,154.62	167.80	219.46	91.68	5,662.14	-3,863.82	1,085.63	698.59	387.05	2.805	
11,500.00	5,108.39	14,029.18	5,153.59	170.47	222.31	91.60	5,735.16	-3,943.95	1,087.96	695.40	392.56	2.771	
11,600.00	5,108.92	14,149.78	5,155.01	173.13	225.51	91.64	5,814.79	-4,034.50	1,088.53	690.25	398.29	2.733	



**Scientific Drilling, Intl**  
Anticollision Report

<b>Company:</b>	DJR Operating	<b>Local Co-ordinate Reference:</b>	Well NAU 335H
<b>Project:</b>	North Alamito Unit	<b>TVD Reference:</b>	GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
<b>Reference Site:</b>	L31 2307	<b>MD Reference:</b>	GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	NAU 335H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	ST1	<b>Database:</b>	DJR
<b>Reference Design:</b>	Pre-Drill	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design J31 2307 - NAU 529H - Original drilling - Original drilling													Offset Site Error:	0.00 usft
Survey Program: 440-MWD+HDGM, 4599-MWD+HDGM, 5754-MWD+HDGM													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)	Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
11,700.00	5,109.44	14,250.86	5,155.19	175.79	228.21	91.62	5,880.78	-4,111.07	1,088.11	684.47	403.64	2.696		
11,727.06	5,109.58	14,274.91	5,155.45	176.51	228.85	91.63	5,896.53	-4,129.25	1,088.07	683.05	405.03	2.686		
11,800.00	5,109.97	14,344.00	5,156.09	178.46	230.69	91.64	5,941.95	-4,181.30	1,088.23	679.39	408.84	2.662		
11,900.00	5,110.49	14,441.96	5,157.36	181.12	233.29	91.68	6,006.61	-4,254.88	1,088.81	674.70	414.11	2.629		
12,000.00	5,111.01	14,546.86	5,159.06	183.79	236.08	91.74	6,075.66	-4,333.83	1,089.16	669.64	419.51	2.596		
12,068.58	5,111.37	14,616.45	5,159.21	185.61	237.93	91.73	6,121.25	-4,386.40	1,089.08	665.89	423.19	2.574		
12,100.00	5,111.54	14,644.91	5,159.40	186.45	238.69	91.73	6,139.94	-4,407.85	1,089.12	664.32	424.81	2.564		
12,200.00	5,112.06	14,745.48	5,160.56	189.12	241.36	91.76	6,206.38	-4,483.35	1,089.77	659.64	430.13	2.534		
12,300.00	5,112.59	14,831.00	5,161.28	191.78	243.63	91.78	6,262.79	-4,547.62	1,090.33	655.18	435.15	2.506		
12,379.15	5,113.00	14,911.41	5,161.54	193.89	245.76	91.77	6,316.57	-4,607.41	1,091.68	652.29	439.38	2.485 ES, SF		



# Scientific Drilling, Intl

## Anticollision Report

<b>Company:</b>	DJR Operating	<b>Local Co-ordinate Reference:</b>	Well NAU 335H
<b>Project:</b>	North Alamito Unit	<b>TVD Reference:</b>	GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
<b>Reference Site:</b>	L31 2307	<b>MD Reference:</b>	GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	NAU 335H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	ST1	<b>Database:</b>	DJR
<b>Reference Design:</b>	Pre-Drill	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design L31 2307 - NAU 335H - Original drilling - Original drilling													Offset Site Error: 0.00 usft	
Survey Program: 439-MWD+HDGM, 4475-MWD+HDGM, 5558-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)					Between Centres (usft)	Between Ellipses (usft)
5,031.32	4,901.24	5,031.32	4,901.24	0.60	0.06	-71.61	573.03	5.40	0.01	-0.61	0.62	0.014 Level 1		
5,050.00	4,912.33	5,049.98	4,912.15	5.47	0.50	-74.02	583.08	-5.93	0.71	-4.90	5.61	0.126 Level 1		
5,075.00	4,927.22	5,074.81	4,926.34	5.25	0.99	-77.57	596.50	-21.25	3.40	-2.49	5.89	0.578 Level 1		
5,100.00	4,942.09	5,099.30	4,939.98	4.99	1.49	-80.76	609.79	-36.64	8.09	1.99	6.11	1.325 Level 3		
5,125.00	4,956.87	5,123.32	4,952.93	4.69	1.95	-83.25	622.96	-52.00	14.71	8.48	6.23	2.361		
5,150.00	4,971.47	5,146.74	4,964.88	4.34	2.40	-84.77	636.15	-67.22	23.13	16.88	6.25	3.701		
5,164.00	4,979.54	5,159.52	4,971.12	4.10	2.64	-85.52	643.50	-75.62	28.62	22.41	6.20	4.612		
5,175.00	4,985.74	5,169.47	4,975.84	3.91	2.83	-84.51	649.28	-82.19	33.12	26.96	6.17	5.371		
5,200.00	4,999.06	5,192.22	4,986.06	3.28	3.28	-82.88	662.82	-97.35	43.21	37.33	5.88	7.349		
5,225.00	5,011.25	5,215.05	4,995.47	1.93	3.72	-81.71	676.86	-112.70	53.02	48.52	4.50	11.778		
5,250.00	5,022.28	5,237.92	5,004.05	1.69	4.17	-80.81	691.35	-128.18	62.55	57.77	4.78	13.094		
5,275.00	5,032.12	5,260.69	5,011.89	1.76	4.63	-80.27	706.03	-143.70	71.83	66.15	5.69	12.634		
5,300.00	5,040.74	5,283.50	5,019.11	1.94	5.09	-80.05	720.94	-159.38	80.89	74.53	6.36	12.718		
5,325.00	5,048.12	5,306.20	5,025.69	2.13	5.55	-80.07	735.95	-175.09	89.72	82.70	7.02	12.783		
5,350.00	5,054.24	5,328.74	5,031.72	2.36	6.02	-80.37	750.91	-190.83	98.41	90.63	7.77	12.663 CC		
5,375.00	5,059.07	5,351.25	5,037.27	2.62	6.49	-80.89	765.89	-206.69	106.97	98.38	8.58	12.462		
5,400.00	5,062.62	5,373.39	5,042.29	2.94	6.96	-81.58	780.64	-222.43	115.45	106.02	9.43	12.243		
5,413.65	5,064.00	5,385.36	5,044.83	3.12	7.21	-82.02	788.58	-231.01	120.09	110.19	9.90	12.130		
5,503.65	5,071.84	5,462.41	5,058.39	4.50	8.78	-86.63	839.02	-287.63	153.01	140.17	12.84	11.913		
5,525.00	5,073.59	5,481.54	5,061.07	4.85	8.89	-86.87	851.32	-302.04	160.93	147.61	13.32	12.084		
5,550.00	5,075.33	5,504.35	5,063.96	5.28	9.04	-87.10	865.95	-319.30	169.11	155.19	13.91	12.155		
5,575.00	5,076.74	5,527.53	5,066.54	5.74	9.20	-87.31	880.78	-336.92	176.08	161.53	14.55	12.103		
5,600.00	5,077.81	5,551.03	5,068.80	6.23	9.37	-87.53	895.78	-354.87	181.83	166.61	15.22	11.948		
5,625.00	5,078.55	5,576.44	5,070.83	6.74	9.59	-87.79	912.02	-374.31	186.27	170.31	15.96	11.671		
5,650.00	5,078.95	5,602.82	5,072.50	7.26	9.84	-88.08	929.07	-394.37	189.15	172.40	16.75	11.293		
5,657.28	5,079.00	5,610.54	5,072.89	7.42	9.91	-88.17	934.10	-400.22	189.69	172.70	16.98	11.169		
5,700.00	5,079.21	5,655.20	5,074.57	8.35	10.39	-88.62	963.45	-433.83	191.91	173.50	18.41	10.422		
5,800.00	5,079.70	5,751.40	5,076.92	10.56	11.58	-89.19	1,026.75	-506.23	194.62	172.94	21.69	8.974		
5,814.95	5,079.77	5,766.31	5,077.42	10.90	11.79	-89.31	1,036.39	-517.59	194.95	172.73	22.23	8.771		
5,900.00	5,080.17	5,850.04	5,080.41	12.82	13.02	-90.08	1,090.39	-581.51	196.78	171.48	25.30	7.778		
6,000.00	5,080.64	5,954.33	5,083.76	15.10	14.73	-90.90	1,158.09	-660.76	198.43	169.05	29.38	6.754		
6,100.00	5,081.11	6,063.67	5,085.15	17.41	16.67	-91.16	1,230.95	-742.23	197.91	164.06	33.85	5.846		
6,200.00	5,081.58	6,164.33	5,083.10	19.76	18.55	-90.44	1,300.86	-814.63	193.40	155.26	38.14	5.071		
6,300.00	5,082.05	6,265.29	5,081.31	22.13	20.53	-89.76	1,371.26	-886.97	188.54	146.01	42.53	4.433		
6,400.00	5,082.53	6,363.99	5,080.55	24.52	22.54	-89.37	1,440.01	-957.78	183.80	136.88	46.92	3.917		
6,500.00	5,083.00	6,462.01	5,081.87	26.94	24.60	-89.63	1,507.74	-1,028.62	179.81	128.45	51.36	3.501		
6,600.00	5,083.47	6,560.21	5,083.55	29.38	26.73	-90.02	1,574.90	-1,100.26	176.82	120.94	55.88	3.165		
6,700.00	5,083.94	6,658.16	5,085.49	31.83	28.91	-90.50	1,641.05	-1,172.47	174.98	114.54	60.44	2.895		
6,800.00	5,084.41	6,756.80	5,087.61	34.31	31.14	-91.05	1,706.98	-1,245.80	174.09	109.00	65.09	2.675		
6,900.00	5,084.88	6,856.66	5,090.08	36.80	33.45	-91.72	1,773.58	-1,320.17	173.42	103.56	69.86	2.482		
6,937.16	5,085.06	6,893.09	5,091.02	37.73	34.30	-91.97	1,797.75	-1,347.40	173.34	101.74	71.59	2.421		
7,000.00	5,085.35	6,954.61	5,092.79	39.31	35.75	-92.46	1,838.29	-1,393.64	173.61	99.08	74.53	2.330		
7,100.00	5,085.82	7,054.68	5,094.54	41.82	38.13	-92.86	1,903.89	-1,469.20	174.49	95.08	79.41	2.197		
7,200.00	5,086.29	7,156.37	5,093.48	44.35	40.57	-92.36	1,971.06	-1,545.53	174.57	90.07	84.50	2.066		
7,233.73	5,086.45	7,189.72	5,092.79	45.21	41.38	-92.08	1,993.12	-1,570.52	174.53	88.37	86.16	2.026		
7,300.00	5,086.76	7,254.98	5,091.58	46.89	42.96	-91.58	2,036.12	-1,619.60	174.73	85.31	89.41	1.954		
7,400.00	5,087.23	7,353.58	5,089.59	49.44	45.37	-90.77	2,100.64	-1,694.14	175.65	81.31	94.34	1.862		
7,500.00	5,087.71	7,451.58	5,086.91	51.99	47.80	-89.75	2,163.99	-1,768.85	177.63	78.41	99.21	1.790		
7,600.00	5,088.18	7,552.60	5,083.78	54.56	50.31	-88.61	2,228.69	-1,846.38	180.45	76.10	104.35	1.729		
7,700.00	5,088.65	7,654.58	5,080.87	57.13	53.08	-87.50	2,303.89	-1,929.26	179.20	69.11	110.09	1.628		
7,800.00	5,089.12	7,769.41	5,080.72	59.70	55.64	-87.19	2,378.16	-2,003.23	172.79	57.59	115.20	1.500 Level 3		



Scientific Drilling, Intl  
Anticollision Report

Company:	DJR Operating	Local Co-ordinate Reference:	Well NAU 335H
Project:	North Alamito Unit	TVD Reference:	GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
Reference Site:	L31 2307	MD Reference:	GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	NAU 335H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	ST1	Database:	DJR
Reference Design:	Pre-Drill	Offset TVD Reference:	Offset Datum

Offset Design L31 2307 - NAU 335H - Original drilling - Original drilling													Offset Site Error:	0.00 usft
Survey Program: 439-MWD+HDGM, 4475-MWD+HDGM, 5558-MWD+HDGM													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (usft)	Between Ellipses (usft)	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)						
7,900.00	5,089.59	7,869.96	5,083.15	62.29	58.08	-87.73	2,450.33	-2,073.19	164.94	44.69	120.25	1.372	Level 3	
7,987.20	5,090.00	7,953.98	5,085.61	64.54	60.13	-88.40	2,510.25	-2,132.04	158.67	34.04	124.63	1.273	Level 3	
8,009.43	5,090.11	7,974.93	5,086.36	65.12	60.65	-88.61	2,524.97	-2,146.93	157.31	31.59	125.73	1.251	Level 3	
8,100.00	5,090.59	8,062.51	5,089.67	67.47	62.83	-89.64	2,585.56	-2,210.08	152.80	22.56	130.24	1.173	Level 2	
8,200.00	5,091.11	8,159.23	5,093.29	70.08	65.26	-90.83	2,651.12	-2,281.09	149.80	14.65	135.14	1.108	Level 2	
8,300.00	5,091.63	8,257.31	5,094.63	72.69	67.75	-91.16	2,716.45	-2,354.23	148.46	8.33	140.13	1.059	Level 2	
8,400.00	5,092.16	8,356.32	5,095.68	75.30	70.28	-91.36	2,781.69	-2,428.70	148.07	2.87	145.20	1.020	Level 2	
8,413.49	5,092.23	8,369.68	5,095.80	75.65	70.62	-91.38	2,790.46	-2,438.79	148.07	2.18	145.89	1.015	Level 2	
8,500.00	5,092.68	8,454.88	5,096.30	77.91	72.82	-91.40	2,846.11	-2,503.28	148.37	-1.87	150.24	0.988	Level 1	
8,600.00	5,093.20	8,552.18	5,096.78	80.53	75.33	-91.37	2,908.63	-2,577.84	150.13	-5.00	155.13	0.968	Level 1	
8,700.00	5,093.73	8,650.19	5,096.98	83.15	77.89	-91.22	2,970.34	-2,653.98	153.56	-6.56	160.11	0.959	Level 1	
8,800.00	5,094.25	8,748.61	5,096.38	85.78	80.47	-90.79	3,031.49	-2,731.10	158.03	-7.13	165.16	0.957	Level 1	
8,900.00	5,094.78	8,845.64	5,096.08	88.41	83.03	-90.48	3,090.99	-2,807.74	163.55	-6.42	169.97	0.962	Level 1	
9,000.00	5,095.30	8,944.96	5,097.37	91.04	85.66	-90.72	3,150.36	-2,887.35	171.02	-4.15	175.17	0.976	Level 1	
9,100.00	5,095.82	9,050.91	5,096.78	93.67	88.46	-90.32	3,215.69	-2,970.75	176.10	-5.28	181.37	0.971	Level 1	
9,200.00	5,096.35	9,156.49	5,094.01	96.30	91.22	-89.25	3,283.32	-3,051.77	178.10	-9.11	187.21	0.951	Level 1	
9,300.00	5,096.87	9,263.42	5,093.12	98.94	93.99	-88.77	3,354.54	-3,131.52	176.79	-16.07	192.86	0.917	Level 1	
9,400.00	5,097.39	9,366.19	5,095.41	101.58	96.62	-89.32	3,425.75	-3,205.56	171.70	-26.46	198.16	0.866	Level 1	
9,500.00	5,097.92	9,462.78	5,099.58	104.22	99.10	-90.56	3,492.08	-3,275.65	167.46	-35.81	203.27	0.824	Level 1	
9,600.00	5,098.44	9,560.80	5,101.67	106.86	101.63	-91.11	3,558.07	-3,348.09	165.14	-43.24	208.37	0.793	Level 1	
9,700.00	5,098.97	9,661.18	5,102.17	109.50	104.24	-91.12	3,625.73	-3,422.23	162.70	-50.93	213.63	0.762	Level 1	
9,800.00	5,099.49	9,758.57	5,102.07	112.14	106.77	-90.91	3,690.63	-3,494.85	161.30	-57.42	218.72	0.737	Level 1	
9,842.47	5,099.71	9,799.95	5,101.97	113.27	107.86	-90.80	3,717.88	-3,525.99	161.15	-59.71	220.86	0.730	Level 1	
9,900.00	5,100.01	9,853.75	5,101.73	114.79	109.28	-90.61	3,752.78	-3,566.94	161.70	-61.79	223.50	0.724	Level 1	
10,000.00	5,100.54	9,955.31	5,102.00	117.44	111.96	-90.52	3,817.55	-3,645.15	164.08	-64.91	228.99	0.717	Level 1	
10,100.00	5,101.06	10,056.48	5,102.13	120.08	114.63	-90.37	3,883.00	-3,722.31	165.28	-69.13	234.41	0.705	Level 1	
10,200.00	5,101.59	10,160.47	5,101.64	122.73	117.35	-90.01	3,952.10	-3,800.01	164.10	-75.90	240.01	0.684	Level 1	
10,300.00	5,102.11	10,259.78	5,100.86	125.38	119.95	-89.56	4,018.24	-3,874.08	162.76	-82.47	245.22	0.664	Level 1	
10,400.00	5,102.63	10,363.75	5,099.89	128.03	122.66	-89.00	4,088.50	-3,950.71	160.12	-90.52	250.64	0.639	Level 1	
10,500.00	5,103.16	10,459.58	5,099.97	130.69	125.15	-88.84	4,153.25	-4,021.35	157.48	-98.21	255.68	0.616	Level 1	
10,541.97	5,103.38	10,499.63	5,100.45	131.80	126.21	-88.93	4,179.69	-4,051.42	157.23	-100.52	257.75	0.610	Level 1	
10,600.00	5,103.68	10,555.42	5,101.45	133.34	127.68	-89.19	4,215.96	-4,093.81	157.66	-102.94	260.60	0.605	Level 1	
10,700.00	5,104.20	10,654.98	5,103.72	135.99	130.32	-89.83	4,279.82	-4,170.16	159.53	-106.35	265.88	0.600	Level 1	
10,800.00	5,104.73	10,758.27	5,106.14	138.65	133.05	-90.51	4,347.57	-4,248.06	159.47	-112.05	271.52	0.587	Level 1	
10,807.66	5,104.77	10,765.38	5,106.30	138.85	133.24	-90.55	4,352.25	-4,253.42	159.46	-112.41	271.87	0.587	Level 1	
10,900.00	5,105.25	10,855.39	5,108.82	141.30	135.62	-91.28	4,410.47	-4,322.01	160.55	-115.92	276.47	0.581	Level 1	
11,000.00	5,105.78	10,957.43	5,108.92	143.96	138.32	-91.12	4,477.06	-4,399.32	160.98	-121.03	282.01	0.571	Level 1	
11,100.00	5,106.30	11,053.39	5,107.63	146.62	140.87	-90.48	4,538.80	-4,472.76	162.58	-124.29	286.87	0.567	Level 1	
11,200.00	5,106.82	11,156.05	5,107.53	149.28	143.60	-90.25	4,604.69	-4,551.48	164.43	-128.13	292.55	0.562	Level 1	
11,300.00	5,107.35	11,259.98	5,107.07	151.93	146.35	-89.90	4,672.90	-4,629.90	164.38	-133.82	298.21	0.551	Level 1	
11,400.00	5,107.87	11,362.96	5,106.46	154.59	149.05	-89.49	4,742.22	-4,706.04	162.07	-141.55	303.62	0.534	Level 1	
11,500.00	5,108.39	11,460.12	5,106.13	157.25	151.59	-89.18	4,808.10	-4,777.45	159.13	-149.61	308.74	0.515	Level 1	
11,564.08	5,108.73	11,522.02	5,106.38	158.96	153.22	-89.15	4,849.02	-4,823.89	158.70	-153.27	311.96	0.509	Level 1	
11,600.00	5,108.92	11,556.88	5,106.70	159.91	154.15	-89.20	4,871.80	-4,850.28	158.81	-154.96	313.77	0.506	Level 1	
11,700.00	5,109.44	11,660.39	5,107.89	162.57	156.89	-89.43	4,939.59	-4,928.48	158.95	-160.45	319.39	0.498	Level 1	
11,800.00	5,109.97	11,764.65	5,107.87	165.24	159.61	-89.22	5,010.51	-5,004.91	155.68	-169.10	324.78	0.479	Level 1	
11,900.00	5,110.49	11,861.21	5,107.07	167.90	162.14	-88.71	5,076.15	-5,075.72	152.49	-177.44	329.93	0.462	Level 1	
11,974.74	5,110.88	11,932.79	5,106.80	169.89	164.03	-88.46	5,123.72	-5,129.20	151.65	-181.97	333.62	0.456	Level 1	
12,000.00	5,111.01	11,957.08	5,106.83	170.56	164.67	-88.42	5,139.59	-5,147.59	151.74	-183.11	334.85	0.453	Level 1	
12,100.00	5,111.54	12,055.58	5,107.03	173.22	167.29	-88.32	5,203.25	-5,222.76	153.02	-186.95	339.97	0.450	Level 1	



**Scientific Drilling, Intl**  
Anticollision Report

<b>Company:</b>	DJR Operating	<b>Local Co-ordinate Reference:</b>	Well NAU 335H
<b>Project:</b>	North Alamito Unit	<b>TVD Reference:</b>	GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
<b>Reference Site:</b>	L31 2307	<b>MD Reference:</b>	GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	NAU 335H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	ST1	<b>Database:</b>	DJR
<b>Reference Design:</b>	Pre-Drill	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> L31 2307 - NAU 335H - Original drilling - Original drilling													Offset Site Error:	0.00 usft
Survey Program: 439-MWD+HDGM, 4475-MWD+HDGM, 5558-MWD+HDGM													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	
12,200.00	5,112.06	12,161.56	5,106.89	175.89	170.10	-88.05	5,272.95	-5,302.58	152.81	-192.96	345.78	0.442	Level 1	
12,300.00	5,112.59	12,262.57	5,106.78	178.55	172.75	-87.77	5,341.50	-5,376.76	149.77	-201.26	351.03	0.427	Level 1	
12,379.15	5,113.00	12,339.48	5,107.07	180.66	174.77	-87.70	5,393.25	-5,433.65	147.99	-207.12	355.11	0.417	Level 1, ES, SF	



# Scientific Drilling, Intl

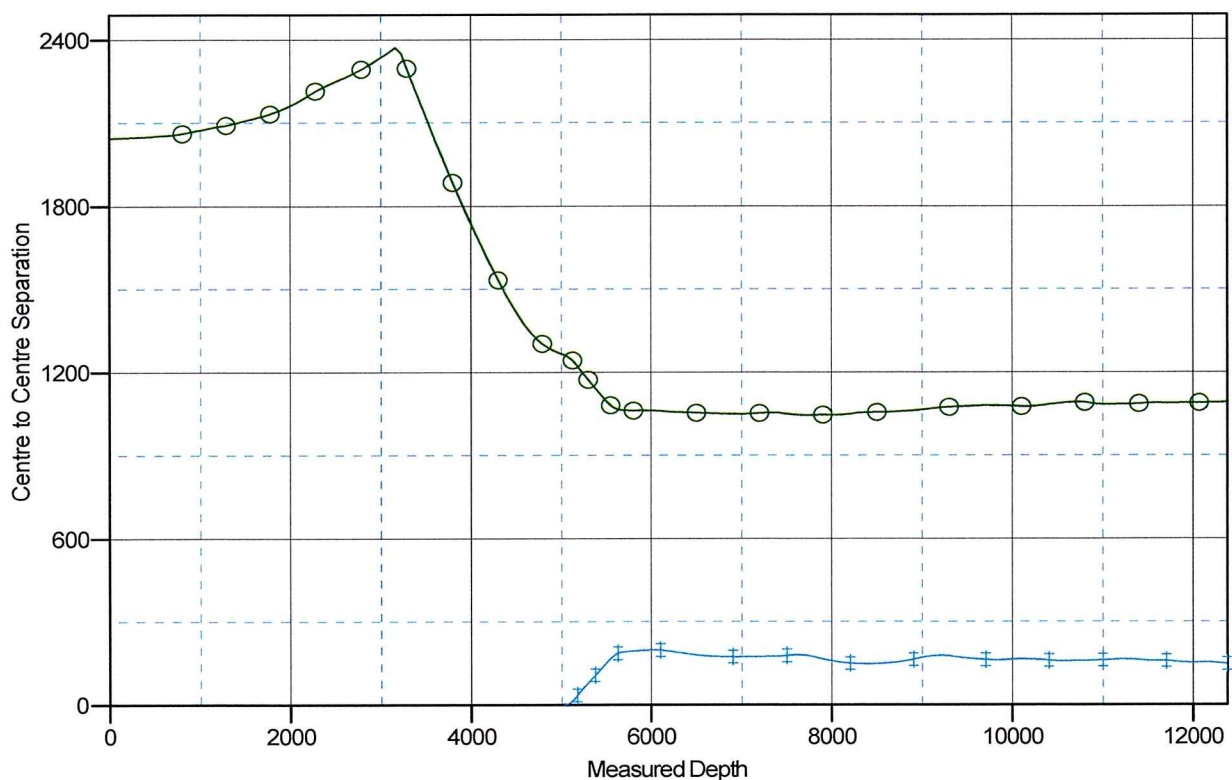
## Anticollision Report

Company:	DJR Operating	Local Co-ordinate Reference:	Well NAU 335H
Project:	North Alamito Unit	TVD Reference:	GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
Reference Site:	L31 2307	MD Reference:	GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	NAU 335H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	ST1	Database:	DJR
Reference Design:	Pre-Drill	Offset TVD Reference:	Offset Datum

Reference Depths are relative to GL 6964' & RKB 14' @ 6978.00usft (A)  
 Offset Depths are relative to Offset Datum  
 Central Meridian is -107.8333333

Coordinates are relative to: NAU 335H  
 Coordinate System is US State Plane 1983, New Mexico Western Zone  
 Grid Convergence at Surface is: 0.12°

### Ladder Plot



### LEGEND

NAU335HOriginaldrilling.Originaldrilling VO NAU529HOriginaldrilling.Originaldrilling VO



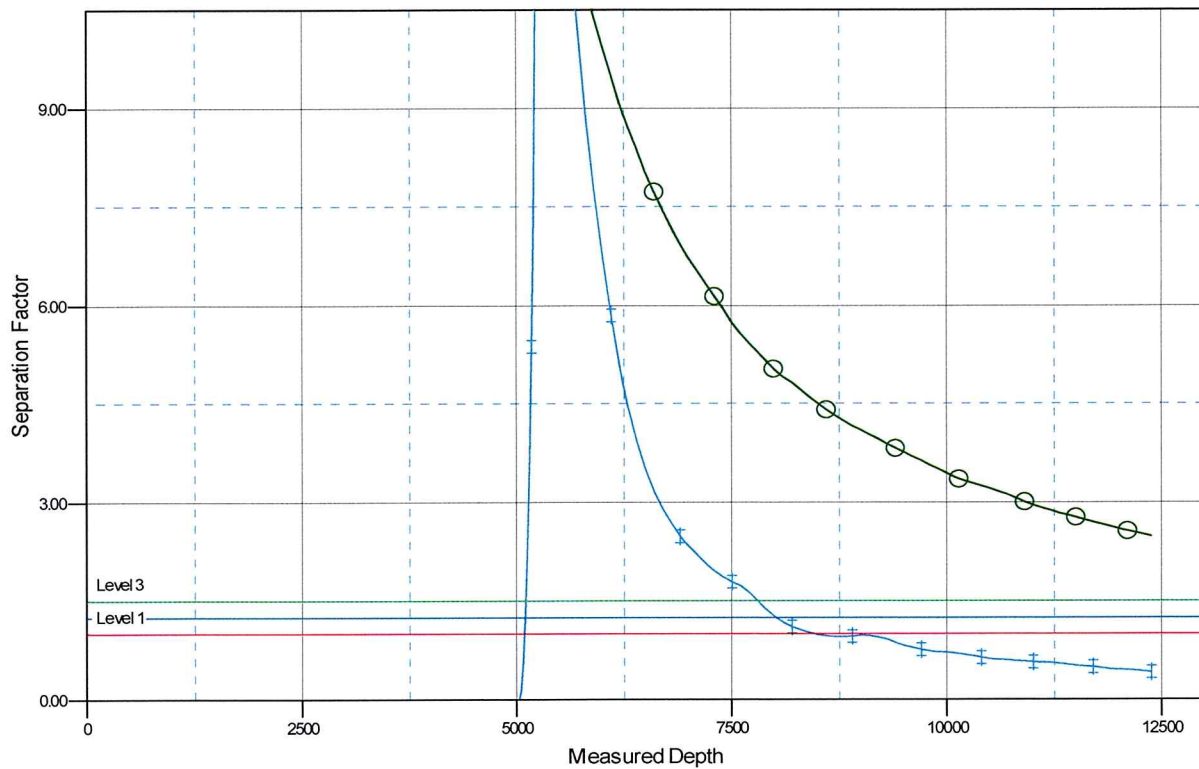
Scientific Drilling, Intl  
Anticollision Report

Company:	DJR Operating	Local Co-ordinate Reference:	Well NAU 335H
Project:	North Alamito Unit	TVD Reference:	GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
Reference Site:	L31 2307	MD Reference:	GL 6964' & RKB 14' @ 6978.00usft (Aztec 920)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	NAU 335H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	ST1	Database:	DJR
Reference Design:	Pre-Drill	Offset TVD Reference:	Offset Datum

Reference Depths are relative to GL 6964' & RKB 14' @ 6978.00usft (A)  
Offset Depths are relative to Offset Datum  
Central Meridian is -107.8333333

Coordinates are relative to: NAU 335H  
Coordinate System is US State Plane 1983, New Mexico Western Zone  
Grid Convergence at Surface is: 0.12°

## Separation Factor Plot



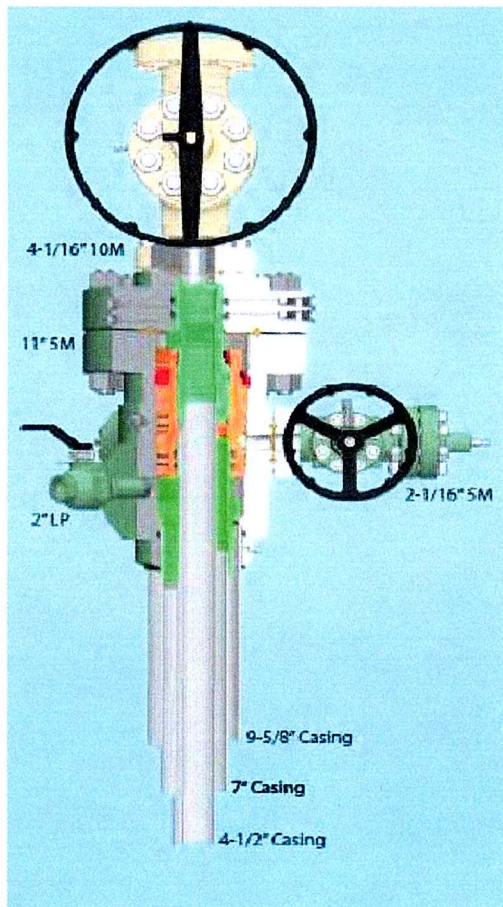
### LEGEND

NAU335HOriginal drilling Original drilling VO NAU529HOriginal drilling Original drilling VO

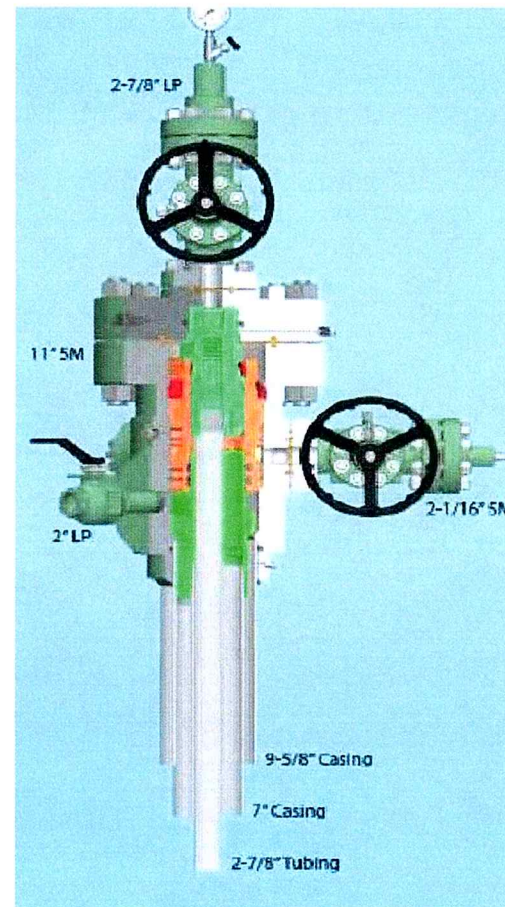
## Proposed Wellhead 11" 5M Multi-bowl



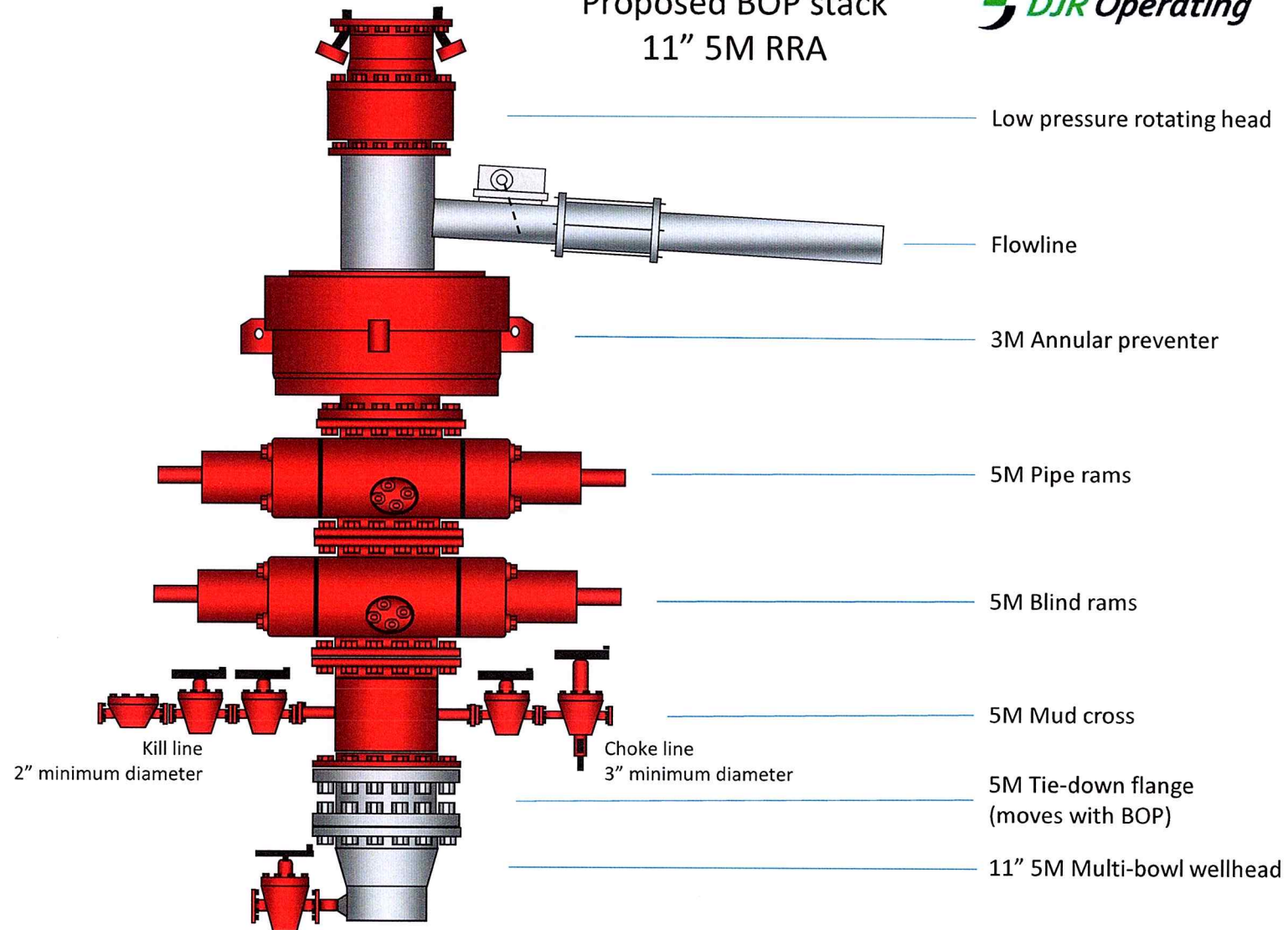
Frac configuration with 4-1/2" tieback



Production configuration with 2-7/8" tubing



Proposed BOP stack  
11" 5M RRA



## Choke Manifold

Actual system to conform with Onshore Order 2

