

State of New Mexico
Energy, Minerals and Natural Resources Department

Michelle Lujan Grisham
Governor

Sarah Cottrell Propst
Cabinet Secretary

Todd E. Leahy, JD, PhD
Deputy Secretary

Adrienne Sandoval, Division Director
Oil Conservation Division



New Mexico Oil Conservation Division approval and conditions listed below are made in accordance with OCD Rule 19.15.7.11 and are in addition to the actions approved by BLM on the following 3160-5 form.

Operator Signature Date: **Original APD 11/14/2017**
Sundry Date 8/6/2019

WELL INFORMATION:
DJR OPERATING, LLC
30-045-35858 NAGEEZI UNIT #509H

Conditions of Approval:
(See the below checked and handwritten conditions)

- ☒ Notify Aztec OCD 24hrs prior to casing & cement.
- ☒ Hold C-104 for directional survey & "As Drilled" Plat
- ☐ Hold C-104 for NSL, NSP, DHC,
- ☐ Spacing rule violation. Operator must follow up with change of status notification on other well to be shut in or abandoned
- ☒ Regarding the use of a pit, closed loop system or below grade tank, the operator must comply with the following as applicable:
 - ☒ A pit requires a complete C-144 be submitted and approved prior to the construction or use of the pit, pursuant to 19.15.17.8.A
 - ☒ A closed loop system requires notification prior to use, pursuant to 19.15.17.9.A
 - ☒ A below grade tank requires a registration be filed prior to the construction or use of the below grade tank, pursuant to 19.15.17.8.C
- ☒ Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string
- ☒ Submit Gas Capture Plan form prior to spudding or initiating recompletions operations.
- ☒ Regarding Hydraulic Fracturing, review EPA Underground Injection Control Guidance 84

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0137
Expires: October 31, 2014

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.

RECEIVED
AUG 06 2019
FARMINGTON FIELD OFFICE

SUBMIT IN TRIPLICATE – Other instructions on page 2		5. Lease Serial No. NMNM 8005
1. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other		6. If Indian, Allottee or Tribe Name N/A
2. Name of Operator DJR Operating LLC.		7. If Unit of CA/Agreement, Name and/or No. NMNM 132981A
3a. Address 1 Road 3263 Aztec, New Mexico 87410		8. Well Name and No. NAGEEZI UNIT #509H
3b. Phone No. (include area code) 505-632-3476		9. API Well No. 30-045-35858
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) SHL: 260' FNL and 369' FEL Section 9, T23N, R9W BHL: 330' FSL and 2530' FEL Section 10, T23N, R9W		10. Field and Pool or Exploratory Area BASIN MANCOS
		11. County or Parish, State San Juan 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	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other BHL Change & New Drilling Plan
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or 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, Nageezi Unit 509H (API 30-045-35858) which will be part of the NAGEEZI UNIT. DJR Operating is submitting this sundry to change the BHL and Drilling Plan.

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

NMOCD

SEP 10 2019

DISTRICT III

14. I hereby certify that the foregoing is true and correct. Name (Printed/Typed) Steven Merrell	Title Regulatory Specialist
Signature 	Date 08/06/2019

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by	Title	Date
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	

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.

NMOCD

Form C-102
Revised August 1, 2011

DISTRICT II
811 S. First St., Artesia, N.M. 86210
Phone: (575) 748-1283 Fax: (575) 748-9720

DISTRICT III
1000 Rio Brazos Rd., Artec, 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

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

Submit one copy to appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number 30.045-35858		*Pool Code 98080	*Pool Name NAGEEZI UNIT MANCOS OIL POOL
*Property Code 325268	*Property Name NAGEEZI UNIT		*Well Number 509H
*OGRID No. 371838	*Operator Name DJR OPERATING, LLC		*Elevation 6747

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
A	9	23N	9W		260'	NORTH	369'	EAST	SAN JUAN

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
0	10	23N	9W		330'	SOUTH	2530'	EAST	SAN JUAN

¹³ Dedicated Acres PENETRATED SPACING UNIT; SW/NW, NW/SW, NE/SW, SE/SW AND SW/SE SEC. 10 (200 ACRES), NE/NE & SE/NE SEC 9 (80 ACRES) = 280 ACRES TOTAL	¹² Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No. R-13856, R-13856A
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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

16

S 89°39' W
2610.96' (R)
N 89°38'42" E
2611.09' (M)

S 89°36' W
5334.12' (R)

S 89°36'32" E
2667.62' (M)

S 89°36'07" E
2666.27' (M)

N 00°21'38" W
2642.35' (M)

N 0°24' W
2640.99' (R)

N 0°24' W
2640.99' (R)

N 00°23'49" W
2642.29' (M)

N 0°24' W
2640.99' (R)

S 42°40'16" E
5453.29'

HORIZONTAL DRILL

BASIS OF BEARINGS

KOP

SHL

PPP

EXH/BHL

BPL

N 87°24'52" W
2654.35' (M)

N 87°26' W
2653.20' (R)

S 88°12'22" W
2696.54' (M)

S 88°12' W
2694.78' (R)

N 01°14' W
2648.58' (R)

S 01°17'43" E
2650.59' (M)

N 0°19' E
2635.38' (R)

S 00°15'29" W
2633.23' (M)

LAT 36.248044° N (NAD83)
LONG 107.786622° W (NAD83)

LAT 36.247402° N (NAD83)
LONG 107.789373° W (NAD83)

LAT 36.245866° N (NAD83)
LONG 107.788237° W (NAD83)

LAT 36.234846° N (NAD83)
LONG 107.775710° W (NAD83)

DISTRICT I

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

DISTRICT II

811 S. First St., Artesia, N.M. 88210
Phone: (575) 746-1883 Fax: (575) 746-9720

DISTRICT III

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

DISTRICT IV

1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3482

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102
Revised August 1, 2011

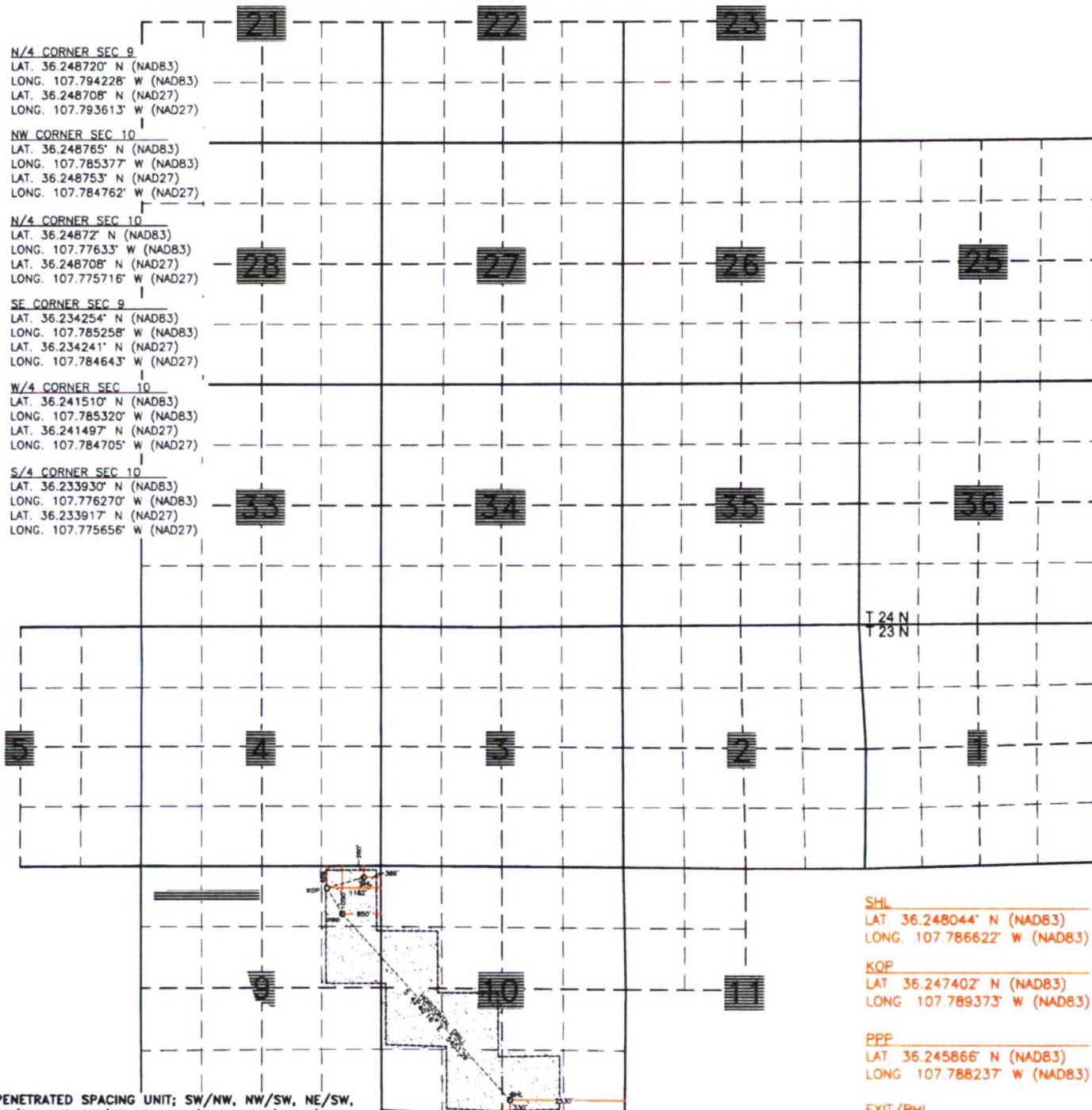
Submit one copy to appropriate
District Office

OIL CONSERVATION DIVISION

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

☐ AMENDED REPORT

DJR OPERATING, LTD
NAGEEZI UNIT #509H



PENETRATED SPACING UNIT; SW/NW, NW/SW, NE/SW,
SE/SW AND SW/SE SEC. 10 (200 ACRES), NE/NE &
SE/NE SEC 9 (80 ACRES) = 280 ACRES TOTAL
10,415.12 ACRES:
SEC. 21-23 (S/2); 25-28, 33-36, 1-4, 9-10 (ALL);
5 (W/2); 11 (NW/4) - UNDIVIDED UNIT

DRILLING PLAN **Nageezi Unit 509H** **San Juan County, New Mexico**

Surface Location
 369-ft FEL & 260-ft FNL
 Sec 9 TT23N RR09W
 Graded Elevation 6748' MSL
 RKB Elevation 6773' (25' KB)

SHL Geographical Coordinates (NAD-83)

Latitude 36.2480440° N
 Longitude 107.7866220° W

Kick Off Point for Horizontal Build Curve
 4227-ft MD
 4139-ft TVD

Local Coordinates (from SHL)

234-ft South
 811-ft West

First Take Point (Heel target)

5778-ft MD
 850-ft FEL & 1050-ft FNL
 Sec 9 TT23N RR09W

FTP Geographical Coordinates (NAD-83)

Latitude 36.245866° N
 Longitude 107.78823700° W

Last Take Point (Toe target & BHL)

10744-ft MD
 2530-ft FEL & 330-ft FSL
 Sec 10 TT23N RR09W

LTP Geographical Coordinates (NAD-83)

Latitude 36.234846° N
 Longitude 107.7757100° W

Well objectives

This well is planned as a 5450-ft lateral in the Gallup CR3 sand.

Bottom Hole temperature and pressure

The temperature in the Gallup CR3 horizontal objective is 135.0°F. Bottom hole pressure in the Gallup CR3 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	461	461	Sd	W	8.3	8.4 - 8.8
Kirtland	600	593	Sh	-	8.3	8.4 - 8.8
Fruitland	917	903	C	G	8.3	9.0 - 9.5
Picture Cliffs	1189	1169	Sd	W	8.3	9.0 - 9.5
Lewis	1294	1272	Sh	-		9.0 - 9.5
Chacra	1895	1859	Sd	-	8.3	9.0 - 9.5
Menefee	2654	2601	Sd, C	G	8.3	9.0 - 9.5
Point Lookout	3609	3535	Sd	-	8.3	9.0 - 9.5
Mancos	3804	3725	Sh	-		9.0 - 9.5
Mancos Silt	4134	4048	Slt	O/G	6.6	9.0 - 9.5
Gallup A	4686	4564	Slt	O/G	6.6	9.0 - 9.5
Gallup B	4733	4601	Sd	O/G	6.6	8.8 - 9.0
Gallup C	4876	4697	Sd	O/G	6.6	8.8 - 9.0
Target	5291	4823	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	5281	surf	4823	surface
4-1/2"	6-1/8"	11.6	P-110	BTC	5081	10744	4791	4791	5081

Note: all casing will be new

Casing Design Load Cases

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

Note

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

Casing Design Factors

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

Cement Design

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

9-5/8" Surface Casing

	Lead
Name	Redi-Mix
Type	I-II
Additives	20% Fly Ash
Planned top	Surface
Density (ppg)	14.50
Yield (cf/sx)	1.61
Mix water (gal/sx)	7.41
Volume (sx)	114
Volume (bbls)	33

7" Intermediate Casing

	Lead	Tail
Halliburton Name	HALCEM	VARICEM
Type	Poz/G	Poz/G
Additives	Ex, L, SA	Ex, FI, SA, L, THX
Planned top	Surface	3304-ft
Density (ppg)	12.30	13.50
Yield (cf/sx)	1.90	1.31
Mix water (gal/sx)	10.03	5.81
Volume (sx)	428	393
Volume (bbls)	145	92

4-1/2" Production Liner	Lead
Halliburton Name	EXTENDACEM
Type	Poz/G
Additives	B, De, Di, Fi, Re, V
Planned top	5081-ft
Density (ppg)	13.3
Yield (cf/sx)	1.36
Mix water (gal/sx)	6.01
Volume (sx)	549
Volume (bbls)	133

Wellhead & Pressure Control

The well head will be an 11" 5M multi-bowl system. A 2M 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 – 5281	9.0 – 9.5	38 – 45	8 – 14	<20
Production	Low solids, non-dispersed	5281 – 10744	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

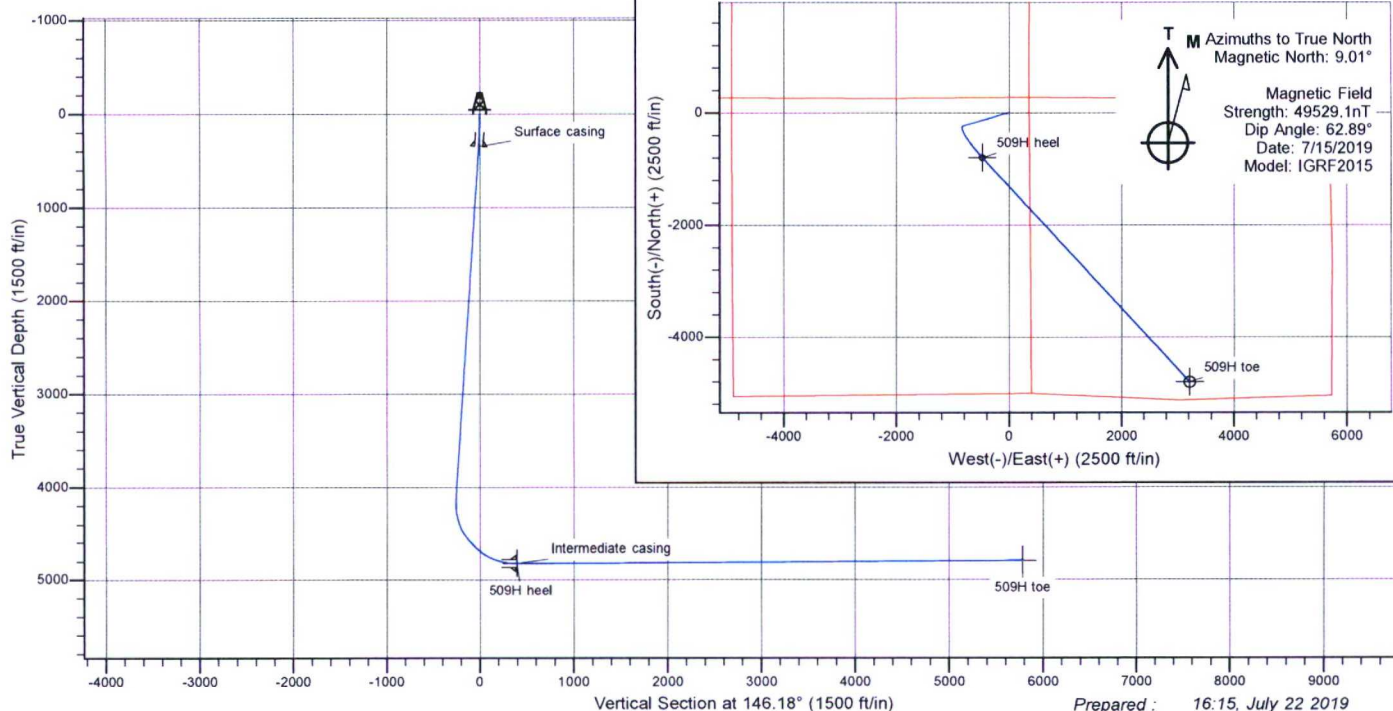
It is envisioned that this well will be completed with a multi-stage sand frac, using the plug and perf technique. After drilling out the plugs, the current plan is to install a 2-7/8" plunger-assisted gas lift tubing string. The stimulation and completion plan will be sundried at a later date.



Pad name : A09 2309
Well name : Nageezie Unit #509H

SHL Latitude : 36.24804400
SHL Longitude : -107.78662200

US State Plane 1983
North American Datum 1983
New Mexico Western Zone



TRAJECTORY DETAILS									
Pad elevation : 6748 RIG @ 6773ft (AD #1000)									
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
0	0.00	0.00	0	0	0	0.00	0.00	0	
434	12.14	253.88	430	-13	-44	2.80	253.88	-14	
4227	12.14	253.88	4139	-234	-811	0.00	0.00	-257	
5291	90.34	137.36	4823	-793	-476	9.00	-115.95	394	509H heel
10744	90.34	137.36	4791	-4804	3218	0.00	0.00	5782	509H toe

TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
509H toe	4791	-4804	3218	1904787	2740085	36.23484600	-107.77571000
509H heel	4823	-793	-476	1908797	2736389	36.24586600	-107.78823700

DJR Operating

Nageezi Unit

A09 2309

509H

Original drilling

Plan: APD

Standard Planning Report

22 July, 2019

Planning Report

Database: EDM
Company: DJR Operating
Project: Nageezi Unit
Site: A09 2309
Well: 509H
Wellbore: Original drilling
Design: APD

Local Co-ordinate Reference: Well 509H
TVD Reference: RIG @ 6773ft (AD #1000)
MD Reference: RIG @ 6773ft (AD #1000)
North Reference: True
Survey Calculation Method: Minimum Curvature

Project	Nageezi 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	A09 2309				
Site Position:		Northing:	1,909,590 usft	Latitude:	36.24804400
From:	Lat/Long	Easting:	2,736,895 usft	Longitude:	-107.78651900
Position Uncertainty:	0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.03 °

Well	509H					
Well Position	+N/-S	0 ft	Northing:	1,909,590 usft	Latitude:	36.24804400
	+E/-W	-30 ft	Easting:	2,736,865 usft	Longitude:	-107.78662200
Position Uncertainty		0 ft	Wellhead Elevation:		Ground Level:	6748 ft

Wellbore	Original drilling				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	7/15/2019	9.01	62.89	49,529.09111301

Design	APD				
Audit Notes:					
Version:		Phase:	PROTOTYPE	Tie On Depth:	0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0	0	0	146.18	

Plan Survey Tool Program	Date 7/22/2019				
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks	
1	0	10,744	APD (Original drilling)	MWD+IGRF	
				OWSG MWD + IGRF or W	

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0	0.00	0.00	0	0	0	0.00	0.00	0.00	0.00	
434	12.14	253.88	430	-13	-44	2.80	2.80	0.00	253.88	
4227	12.14	253.88	4139	-234	-811	0.00	0.00	0.00	0.00	
5291	90.34	137.36	4823	-793	-476	9.00	7.35	-10.96	-115.95	509H heel
10,744	90.34	137.36	4791	-4804	3218	0.00	0.00	0.00	0.00	509H toe

Planning Report

Database: EDM
Company: DJR Operating
Project: Nageezi Unit
Site: A09 2309
Well: 509H
Wellbore: Original drilling
Design: APD

Local Co-ordinate Reference: Well 509H
TVD Reference: RIG @ 6773ft (AD #1000)
MD Reference: RIG @ 6773ft (AD #1000)
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0	0.00	0.00	0	0	0	0	0.00	0.00	0.00
100	2.80	253.88	100	-1	-2	-1	2.80	2.80	0.00
200	5.60	253.88	200	-3	-9	-3	2.80	2.80	0.00
300	8.40	253.88	299	-6	-21	-7	2.80	2.80	0.00
350	9.80	253.88	348	-8	-29	-9	2.80	2.80	0.00
Surface casing									
400	11.20	253.88	397	-11	-37	-12	2.80	2.80	0.00
434	12.14	253.88	430	-13	-44	-14	2.80	2.80	0.00
465	12.14	253.88	461	-15	-50	-16	0.00	0.00	0.00
Ojo Alamo									
500	12.14	253.88	495	-17	-57	-18	0.00	0.00	0.00
600	12.14	253.88	593	-22	-78	-25	0.00	0.00	0.00
Kirtland									
700	12.14	253.88	691	-28	-98	-31	0.00	0.00	0.00
800	12.14	253.88	789	-34	-118	-37	0.00	0.00	0.00
900	12.14	253.88	886	-40	-138	-44	0.00	0.00	0.00
917	12.14	253.88	903	-41	-142	-45	0.00	0.00	0.00
Fruitland									
1000	12.14	253.88	984	-46	-158	-50	0.00	0.00	0.00
1100	12.14	253.88	1082	-52	-179	-57	0.00	0.00	0.00
1189	12.14	253.88	1169	-57	-197	-62	0.00	0.00	0.00
Picture Cliffs									
1200	12.14	253.88	1180	-57	-199	-63	0.00	0.00	0.00
1294	12.14	253.88	1272	-63	-218	-69	0.00	0.00	0.00
Lewis									
1300	12.14	253.88	1277	-63	-219	-69	0.00	0.00	0.00
1400	12.14	253.88	1375	-69	-239	-76	0.00	0.00	0.00
1500	12.14	253.88	1473	-75	-259	-82	0.00	0.00	0.00
1600	12.14	253.88	1571	-81	-280	-89	0.00	0.00	0.00
1700	12.14	253.88	1668	-87	-300	-95	0.00	0.00	0.00
1800	12.14	253.88	1766	-92	-320	-101	0.00	0.00	0.00
1895	12.14	253.88	1859	-98	-339	-107	0.00	0.00	0.00
Chacra									
1900	12.14	253.88	1864	-98	-340	-108	0.00	0.00	0.00
2000	12.14	253.88	1962	-104	-361	-114	0.00	0.00	0.00
2100	12.14	253.88	2059	-110	-381	-120	0.00	0.00	0.00
2200	12.14	253.88	2157	-116	-401	-127	0.00	0.00	0.00
2300	12.14	253.88	2255	-122	-421	-133	0.00	0.00	0.00
2400	12.14	253.88	2353	-128	-441	-140	0.00	0.00	0.00
2500	12.14	253.88	2451	-133	-462	-146	0.00	0.00	0.00
2600	12.14	253.88	2548	-139	-482	-152	0.00	0.00	0.00
2654	12.14	253.88	2601	-142	-493	-156	0.00	0.00	0.00
Menefee									
2700	12.14	253.88	2646	-145	-502	-159	0.00	0.00	0.00
2800	12.14	253.88	2744	-151	-522	-165	0.00	0.00	0.00
2900	12.14	253.88	2842	-157	-542	-172	0.00	0.00	0.00
3000	12.14	253.88	2939	-163	-563	-178	0.00	0.00	0.00
3100	12.14	253.88	3037	-168	-583	-184	0.00	0.00	0.00
3200	12.14	253.88	3135	-174	-603	-191	0.00	0.00	0.00
3300	12.14	253.88	3233	-180	-623	-197	0.00	0.00	0.00
3400	12.14	253.88	3330	-186	-643	-204	0.00	0.00	0.00
3500	12.14	253.88	3428	-192	-664	-210	0.00	0.00	0.00
3600	12.14	253.88	3526	-198	-684	-216	0.00	0.00	0.00

Planning Report

Database: EDM
Company: DJR Operating
Project: Nageezi Unit
Site: A09 2309
Well: 509H
Wellbore: Original drilling
Design: APD

Local Co-ordinate Reference: Well 509H
TVD Reference: RIG @ 6773ft (AD #1000)
MD Reference: RIG @ 6773ft (AD #1000)
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
3609	12.14	253.88	3535	-198	-686	-217	0.00	0.00	0.00
Point Lookout									
3700	12.14	253.88	3624	-203	-704	-223	0.00	0.00	0.00
3800	12.14	253.88	3721	-209	-724	-229	0.00	0.00	0.00
3804	12.14	253.88	3725	-209	-725	-229	0.00	0.00	0.00
Mancos									
3900	12.14	253.88	3819	-215	-744	-236	0.00	0.00	0.00
4000	12.14	253.88	3917	-221	-765	-242	0.00	0.00	0.00
4100	12.14	253.88	4015	-227	-785	-248	0.00	0.00	0.00
4134	12.14	253.88	4048	-229	-792	-251	0.00	0.00	0.00
Mancos Silt									
4200	12.14	253.88	4112	-233	-805	-255	0.00	0.00	0.00
4227	12.14	253.88	4139	-234	-811	-257	0.00	0.00	0.00
4250	11.40	244.59	4161	-236	-815	-258	9.00	-3.29	-41.12
4300	10.96	221.34	4210	-242	-823	-257	9.00	-0.87	-46.51
4350	12.27	199.79	4259	-250	-827	-253	9.00	2.61	-43.10
4400	14.86	183.98	4308	-262	-830	-245	9.00	5.18	-31.62
4450	18.19	173.30	4356	-276	-829	-232	9.00	6.67	-21.36
4500	21.94	165.99	4403	-292	-826	-217	9.00	7.49	-14.62
4550	25.91	160.78	4449	-312	-820	-197	9.00	7.95	-10.43
4600	30.03	156.89	4493	-334	-812	-174	9.00	8.23	-7.78
4650	34.23	153.86	4535	-358	-801	-148	9.00	8.41	-6.04
4686	37.26	152.09	4564	-376	-791	-128	9.00	8.51	-5.00
Gallup A									
4700	38.50	151.44	4575	-384	-787	-119	9.00	8.56	-4.52
4733	41.37	150.06	4601	-403	-777	-97	9.00	8.60	-4.14
Gallup B									
4750	42.80	149.43	4613	-412	-771	-86	9.00	8.63	-3.79
4800	47.14	147.72	4649	-443	-752	-51	9.00	8.67	-3.41
4850	51.50	146.24	4681	-474	-732	-13	9.00	8.72	-2.96
4876	53.76	145.54	4697	-491	-720	7	9.00	8.74	-2.70
Gallup C									
4900	55.87	144.92	4711	-508	-709	27	9.00	8.76	-2.55
4950	60.26	143.74	4737	-542	-684	70	9.00	8.77	-2.37
5000	64.65	142.66	4760	-578	-658	114	9.00	8.79	-2.17
5050	69.06	141.65	4780	-614	-629	160	9.00	8.81	-2.01
5100	73.47	140.70	4796	-651	-600	207	9.00	8.82	-1.90
5150	77.88	139.79	4809	-688	-569	255	9.00	8.83	-1.81
5200	82.30	138.91	4817	-725	-537	304	9.00	8.83	-1.76
5250	86.72	138.05	4822	-763	-504	353	9.00	8.84	-1.72
5281	89.45	137.53	4823	-785	-483	384	9.00	8.84	-1.70
Intermediate casing									
5291	90.34	137.36	4823	-793	-476	394	9.00	8.84	-1.70
Target - 509H heel									
5300	90.34	137.36	4823	-799	-470	403	0.00	0.00	0.00
5400	90.34	137.36	4822	-873	-402	501	0.00	0.00	0.00
5500	90.34	137.36	4822	-947	-335	600	0.00	0.00	0.00
5600	90.34	137.36	4821	-1020	-267	699	0.00	0.00	0.00
5700	90.34	137.36	4821	-1094	-199	798	0.00	0.00	0.00
5800	90.34	137.36	4820	-1167	-131	897	0.00	0.00	0.00
5900	90.34	137.36	4819	-1241	-64	995	0.00	0.00	0.00
6000	90.34	137.36	4819	-1314	4	1094	0.00	0.00	0.00
6100	90.34	137.36	4818	-1388	72	1193	0.00	0.00	0.00

Planning Report

Database: EDM
Company: DJR Operating
Project: Nageezi Unit
Site: A09 2309
Well: 509H
Wellbore: Original drilling
Design: APD

Local Co-ordinate Reference: Well 509H
TVD Reference: RIG @ 6773ft (AD #1000)
MD Reference: RIG @ 6773ft (AD #1000)
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6200	90.34	137.36	4818	-1461	140	1292	0.00	0.00	0.00
6300	90.34	137.36	4817	-1535	207	1391	0.00	0.00	0.00
6400	90.34	137.36	4816	-1609	275	1490	0.00	0.00	0.00
6500	90.34	137.36	4816	-1682	343	1588	0.00	0.00	0.00
6600	90.34	137.36	4815	-1756	411	1687	0.00	0.00	0.00
6700	90.34	137.36	4815	-1829	478	1786	0.00	0.00	0.00
6800	90.34	137.36	4814	-1903	546	1885	0.00	0.00	0.00
6900	90.34	137.36	4814	-1976	614	1984	0.00	0.00	0.00
7000	90.34	137.36	4813	-2050	682	2082	0.00	0.00	0.00
7100	90.34	137.36	4812	-2124	749	2181	0.00	0.00	0.00
7200	90.34	137.36	4812	-2197	817	2280	0.00	0.00	0.00
7300	90.34	137.36	4811	-2271	885	2379	0.00	0.00	0.00
7400	90.34	137.36	4811	-2344	952	2478	0.00	0.00	0.00
7500	90.34	137.36	4810	-2418	1020	2577	0.00	0.00	0.00
7600	90.34	137.36	4809	-2491	1088	2675	0.00	0.00	0.00
7700	90.34	137.36	4809	-2565	1156	2774	0.00	0.00	0.00
7800	90.34	137.36	4808	-2638	1223	2873	0.00	0.00	0.00
7900	90.34	137.36	4808	-2712	1291	2972	0.00	0.00	0.00
8000	90.34	137.36	4807	-2786	1359	3071	0.00	0.00	0.00
8100	90.34	137.36	4807	-2859	1427	3169	0.00	0.00	0.00
8200	90.34	137.36	4806	-2933	1494	3268	0.00	0.00	0.00
8300	90.34	137.36	4805	-3006	1562	3367	0.00	0.00	0.00
8400	90.34	137.36	4805	-3080	1630	3466	0.00	0.00	0.00
8500	90.34	137.36	4804	-3153	1698	3565	0.00	0.00	0.00
8600	90.34	137.36	4804	-3227	1765	3663	0.00	0.00	0.00
8700	90.34	137.36	4803	-3300	1833	3762	0.00	0.00	0.00
8800	90.34	137.36	4802	-3374	1901	3861	0.00	0.00	0.00
8900	90.34	137.36	4802	-3448	1969	3960	0.00	0.00	0.00
9000	90.34	137.36	4801	-3521	2036	4059	0.00	0.00	0.00
9100	90.34	137.36	4801	-3595	2104	4158	0.00	0.00	0.00
9200	90.34	137.36	4800	-3668	2172	4256	0.00	0.00	0.00
9300	90.34	137.36	4799	-3742	2240	4355	0.00	0.00	0.00
9400	90.34	137.36	4799	-3815	2307	4454	0.00	0.00	0.00
9500	90.34	137.36	4798	-3889	2375	4553	0.00	0.00	0.00
9600	90.34	137.36	4798	-3962	2443	4652	0.00	0.00	0.00
9700	90.34	137.36	4797	-4036	2511	4750	0.00	0.00	0.00
9800	90.34	137.36	4797	-4110	2578	4849	0.00	0.00	0.00
9900	90.34	137.36	4796	-4183	2646	4948	0.00	0.00	0.00
10,000	90.34	137.36	4795	-4257	2714	5047	0.00	0.00	0.00
10,100	90.34	137.36	4795	-4330	2782	5146	0.00	0.00	0.00
10,200	90.34	137.36	4794	-4404	2849	5244	0.00	0.00	0.00
10,300	90.34	137.36	4794	-4477	2917	5343	0.00	0.00	0.00
10,400	90.34	137.36	4793	-4551	2985	5442	0.00	0.00	0.00
10,500	90.34	137.36	4792	-4624	3052	5541	0.00	0.00	0.00
10,600	90.34	137.36	4792	-4698	3120	5640	0.00	0.00	0.00
10,700	90.34	137.36	4791	-4772	3188	5739	0.00	0.00	0.00
10,744	90.34	137.36	4791	-4804	3218	5782	0.00	0.00	0.00

509H toe

Planning Report

Database: EDM
Company: DJR Operating
Project: Nageezi Unit
Site: A09 2309
Well: 509H
Wellbore: Original drilling
Design: APD

Local Co-ordinate Reference: Well 509H
TVD Reference: RIG @ 6773ft (AD #1000)
MD Reference: RIG @ 6773ft (AD #1000)
North Reference: True
Survey Calculation Method: Minimum Curvature

Design Targets

Target Name

- hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
509H toe - plan hits target center - Circle (radius 100)	0.00	0.00	4791	-4804	3218	1,904,787	2,740,085	36.23484600	-107.77571000
509H heel - plan hits target center - Circle (radius 50)	0.00	0.00	4823	-793	-476	1,908,797	2,736,389	36.24586600	-107.78823700

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
350	348	Surface casing	9.625	12.250
5281	4823	Intermediate casing	7.000	8.750

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
465	461	Ojo Alamo		0.00	
600	593	Kirtland		0.00	
917	903	Fruitland		0.00	
1189	1169	Picture Cliffs		0.00	
1294	1272	Lewis		0.00	
1895	1859	Chacra		0.00	
2654	2601	Menefee		0.00	
3609	3535	Point Lookout		0.00	
3804	3725	Mancos		0.00	
4134	4048	Mancos Silt		0.00	
4686	4564	Gallup A		0.00	
4733	4601	Gallup B		0.00	
4876	4697	Gallup C		0.00	
5291	4823	Target		0.00	

DJR Operating

Nageezi Unit

A09 2309

509H

Original drilling

APD

Anticollision Report

22 July, 2019

Anticollision Report

Company: DJR Operating
Project: Nageezi Unit
Reference Site: A09 2309
Site Error: 0 ft
Reference Well: 509H
Well Error: 0 ft
Reference Wellbore: Original drilling
Reference Design: APD

Local Co-ordinate Reference: Well 509H
TVD Reference: RIG @ 6773ft (AD #1000)
MD Reference: RIG @ 6773ft (AD #1000)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM
Offset TVD Reference: Offset Datum

Reference	APD
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method:	Stations
Depth Range:	Unlimited
Results Limited by:	Maximum center-center distance of 10,000 ft
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	7/22/2019		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0	10,744	APD (Original drilling)	MWD+IGRF	OWSG MWD + IGRF or WMM	

Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
A09 2309						
507H (ECA) - Original drilling - As drilled	0	0	61			
507H (ECA) - Original drilling - As drilled	6200	4409	1743	1696	37.338 SF	
508H - Original drilling - APD	0	0	30			
508H - Original drilling - APD	4958	4947	70	33	1.878 SF	
510H (ECA) - Original drilling - Original drilling	348	335	11	9	6.203 CC, ES	
510H (ECA) - Original drilling - Original drilling	10,744	11,072	1647	1352	5.585 SF	

Offset Design A09 2309 - 507H (ECA) - Original drilling - As drilled													Offset Site Error:	0 ft
Survey Program: 366-MWD+HDGM, 4189-MWD+HDGM, 5511-MWD+HDGM													Offset Well Error:	0 ft
Reference	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0	0	0	0	0	0	0	89.30	1	60	61				
100	100	89	89	0	0	0	-165.27	1	60	62	62	0.32	191.565	
200	200	189	189	1	0	0	-167.12	1	59	69	68	0.85	81.081	
300	299	288	288	1	0	0	-169.52	2	59	80	79	1.41	57.039	
400	397	387	387	1	1	1	-171.92	3	58	97	95	2.01	48.082	
434	430	420	420	2	1	1	-172.64	3	58	103	101	2.27	45.421	
500	495	484	484	2	1	1	-173.74	4	58	117	114	2.74	42.661	
600	593	577	576	2	1	1	-174.53	4	60	140	137	3.43	40.835	
700	691	668	667	3	2	2	-174.96	4	65	166	162	4.11	40.498	
800	789	758	757	4	2	2	-174.97	4	73	196	191	4.78	40.990	
900	886	846	845	4	2	2	-174.64	3	84	229	223	5.45	41.964	
1000	984	934	931	5	3	3	-174.31	3	97	263	257	6.10	43.157	
1100	1082	1018	1014	5	3	3	-173.94	2	112	301	294	6.74	44.672	
1200	1180	1102	1096	6	3	3	-173.56	1	129	341	334	7.38	46.253	
1300	1277	1193	1186	6	4	4	-173.26	0	149	382	374	8.08	47.341	
1400	1375	1280	1270	7	4	4	-173.03	0	168	424	415	8.74	48.494	
1500	1473	1370	1358	7	5	5	-172.85	0	189	466	456	9.44	49.371	
1600	1571	1461	1447	8	5	5	-172.63	-1	209	508	498	10.14	50.077	
1700	1668	1556	1539	8	5	5	-172.51	-1	230	549	538	10.88	50.494	
1800	1766	1638	1619	9	6	6	-172.36	-2	248	591	580	11.52	51.348	
1900	1864	1725	1704	10	6	6	-172.20	-3	269	635	622	12.20	52.016	

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

Anticollision Report

Company: DJR Operating
Project: Nageezi Unit
Reference Site: A09 2309
Site Error: 0 ft
Reference Well: 509H
Well Error: 0 ft
Reference Wellbore: Original drilling
Reference Design: APD

Local Co-ordinate Reference: Well 509H
TVD Reference: RIG @ 6773ft (AD #1000)
MD Reference: RIG @ 6773ft (AD #1000)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM
Offset TVD Reference: Offset Datum

Offset Design A09 2309 - 507H (ECA) - Original drilling - As drilled													Offset Site Error:	0 ft
Survey Program: 366-MWD+HDGM, 4189-MWD+HDGM, 5511-MWD+HDGM													Offset Well Error:	0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
2000	1962	1812	1788	10	7	-172.09	-4	290	678	665	12.88	52.624		
2100	2059	1903	1877	11	7	-171.99	-4	312	722	708	13.60	53.041		
2200	2157	1993	1963	11	8	-171.87	-5	334	765	751	14.31	53.470		
2300	2255	2083	2051	12	8	-171.78	-6	356	809	794	15.02	53.837		
2400	2353	2183	2148	12	9	-171.64	-7	379	852	836	15.82	53.832		
2500	2451	2286	2248	13	9	-171.49	-9	402	893	877	16.63	53.706		
2600	2548	2380	2341	13	10	-171.38	-11	423	935	917	17.38	53.768		
2700	2646	2474	2432	14	10	-171.33	-12	443	975	957	18.12	53.825		
2800	2744	2565	2521	14	10	-171.29	-13	462	1016	997	18.84	53.933		
2900	2842	2679	2632	15	11	-171.25	-14	485	1056	1036	19.72	53.545		
3000	2939	2755	2708	15	11	-171.25	-14	500	1096	1075	20.33	53.889		
3100	3037	2856	2806	16	12	-171.23	-15	521	1136	1114	21.12	53.776		
3200	3135	2921	2870	17	12	-171.20	-16	534	1176	1154	21.64	54.338		
3300	3233	3003	2950	17	12	-171.19	-16	552	1218	1195	22.29	54.623		
3400	3330	3099	3043	18	13	-171.19	-17	574	1260	1236	23.05	54.647		
3500	3428	3187	3129	18	13	-171.19	-17	593	1301	1278	23.75	54.800		
3600	3526	3293	3233	19	14	-171.20	-17	617	1343	1318	24.58	54.629		
3700	3624	3375	3312	19	14	-171.21	-17	634	1384	1359	25.23	54.879		
3800	3721	3465	3400	20	15	-171.20	-18	654	1426	1400	25.94	54.966		
3900	3819	3564	3497	20	15	-171.17	-18	676	1468	1441	26.73	54.903		
4000	3917	3653	3584	21	16	-171.16	-19	695	1508	1481	27.43	54.986		
4100	4015	3724	3653	21	16	-171.17	-19	711	1550	1522	27.99	55.377		
4200	4112	3833	3759	22	16	-171.13	-20	735	1592	1563	28.86	55.167		
4227	4139	5266	4834	22	20	162.71	584	367	1598	1564	33.54	47.648		
4250	4161	5272	4835	22	20	171.09	588	363	1592	1558	33.87	47.015		
4300	4210	5280	4836	23	20	-167.49	595	357	1580	1546	34.54	45.763		
4350	4259	5285	4837	23	20	-147.54	599	354	1570	1535	35.11	44.704		
4400	4308	5286	4837	23	20	-133.08	600	354	1560	1524	35.60	43.824		
4450	4356	5284	4837	23	20	-123.53	598	355	1552	1516	36.00	43.107		
4500	4403	5280	4836	23	20	-117.13	595	358	1545	1508	36.31	42.539		
4550	4449	5273	4835	23	20	-112.62	589	362	1539	1502	36.55	42.106		
4600	4493	5259	4832	23	20	-109.08	579	371	1535	1498	36.64	41.884		
4650	4535	5259	4832	24	20	-106.79	579	371	1532	1495	36.91	41.490		
4700	4575	5242	4828	24	19	-104.41	567	382	1530	1493	36.90	41.460		
4750	4613	5218	4822	24	19	-102.13	550	397	1529	1492	36.77	41.593		
4753	4616	5217	4822	24	19	-101.99	549	398	1529	1492	36.76	41.599		
4800	4649	5148	4799	24	18	-98.54	500	441	1529	1493	36.03	42.441		
4850	4681	5122	4789	24	18	-96.63	481	457	1530	1494	35.88	42.642		
4900	4711	5098	4780	24	18	-94.97	465	471	1531	1496	35.78	42.799		
4950	4737	5072	4770	24	18	-93.37	447	487	1533	1498	35.77	42.860		
5000	4760	5045	4759	24	18	-91.86	428	503	1536	1500	35.78	42.920		
5050	4780	5021	4749	24	18	-90.52	412	518	1539	1503	35.84	42.933		
5100	4796	4989	4734	24	18	-89.10	390	536	1542	1506	35.89	42.963		
5150	4809	4949	4715	24	18	-87.57	364	560	1545	1509	35.94	42.979		
5200	4817	4895	4686	24	18	-85.84	330	589	1547	1511	36.03	42.947		
5250	4822	4843	4655	24	18	-84.30	298	615	1549	1513	36.23	42.758		
5291	4823	4820	4640	24	18	-83.61	284	626	1551	1514	36.55	42.425		
5300	4823	4820	4640	24	18	-83.61	284	626	1551	1514	36.64	42.323		
5400	4822	4777	4611	25	18	-82.55	259	647	1556	1519	37.61	41.378		
5500	4822	4733	4580	26	18	-81.42	236	667	1566	1528	38.71	40.467		
5600	4821	4638	4508	27	18	-78.80	188	705	1580	1540	39.77	39.719		
5700	4821	4569	4452	29	18	-76.76	154	729	1596	1555	40.94	38.981		

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

Anticollision Report

Company: DJR Operating
Project: Nageezi Unit
Reference Site: A09 2309
Site Error: 0 ft
Reference Well: 509H
Well Error: 0 ft
Reference Wellbore: Original drilling
Reference Design: APD

Local Co-ordinate Reference: Well 509H
TVD Reference: RIG @ 6773ft (AD #1000)
MD Reference: RIG @ 6773ft (AD #1000)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM
Offset TVD Reference: Offset Datum

Offset Design A09 2309 - 507H (ECA) - Original drilling - As drilled													Offset Site Error:		0 ft
Survey Program: 366-MWD+HDGM, 4189-MWD+HDGM, 5511-MWD+HDGM													Offset Well Error:		0 ft
Reference		Offset		Semi Major Axis			Distance		Minimum Separation		Separation Factor		Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
5800	4820	4529	4418	31	18	-75.56	136	741	1616	1574	42.18	38.316	SF		
5900	4819	4495	4390	32	18	-74.51	121	751	1641	1598	43.39	37.815			
6000	4819	4460	4359	34	18	-73.43	106	760	1671	1626	44.55	37.498			
6100	4818	4431	4333	36	18	-72.50	95	766	1705	1659	45.64	37.343			
6200	4818	4409	4313	38	18	-71.80	86	771	1743	1696	46.68	37.338			
6300	4817	4390	4296	40	18	-71.18	79	775	1786	1738	47.63	37.487			
6400	4816	4378	4285	42	18	-70.80	75	777	1832	1784	48.52	37.766			
6500	4816	4347	4256	45	18	-69.80	65	782	1883	1834	49.25	38.237			
6600	4815	4347	4256	47	18	-69.80	65	782	1937	1887	50.00	38.743			
6700	4815	4324	4235	49	18	-69.06	58	785	1995	1944	50.59	39.430			
6800	4814	4315	4226	51	18	-68.75	55	786	2055	2004	51.14	40.183			
6900	4814	4295	4207	54	18	-68.08	49	789	2118	2067	51.59	41.064			
7000	4813	4275	4189	56	18	-67.45	43	790	2184	2132	51.97	42.028			
7100	4812	4252	4166	58	18	-66.68	37	792	2252	2200	52.27	43.086			
7200	4812	4252	4166	60	18	-66.68	37	792	2322	2270	52.63	44.126			
7300	4811	4234	4149	63	18	-66.09	32	793	2395	2342	52.86	45.297			
7400	4811	4221	4136	65	18	-65.66	28	794	2469	2416	53.08	46.510			
7500	4810	4215	4131	67	18	-65.48	27	794	2544	2491	53.29	47.745			
7600	4809	4198	4115	70	18	-64.92	23	794	2622	2568	53.42	49.079			
7700	4809	4189	4105	72	18	-64.61	20	794	2700	2647	53.55	50.426			
7800	4808	4179	4096	75	18	-64.28	17	794	2780	2727	53.66	51.814			
7900	4808	4172	4089	77	18	-64.06	16	794	2861	2808	53.75	53.235			
8000	4807	4157	4075	79	18	-63.55	12	793	2944	2890	53.74	54.779			
8100	4807	4157	4075	82	18	-63.55	12	793	3027	2973	53.84	56.224			
8200	4806	4157	4075	84	18	-63.55	12	793	3111	3057	53.92	57.698			
8300	4805	4157	4075	86	18	-63.55	12	793	3196	3142	54.00	59.197			
8400	4805	4157	4075	89	18	-63.55	12	793	3283	3228	54.06	60.721			
8500	4804	4144	4062	91	18	-63.13	9	793	3369	3315	54.01	62.387			
8600	4804	4141	4059	94	18	-63.02	8	792	3457	3403	54.02	63.985			
8700	4803	4138	4056	96	18	-62.92	7	792	3545	3491	54.03	65.601			
8800	4802	4125	4044	98	18	-62.48	4	791	3634	3580	53.96	67.342			
8900	4802	4125	4044	101	18	-62.48	4	791	3723	3669	53.98	68.961			
9000	4801	4125	4044	103	18	-62.48	4	791	3813	3759	54.01	70.594			
9100	4801	4125	4044	106	18	-62.48	4	791	3903	3849	54.03	72.240			
9200	4800	4125	4044	108	18	-62.48	4	791	3994	3939	54.04	73.898			
9300	4799	4125	4044	110	18	-62.48	4	791	4085	4031	54.05	75.568			
9400	4799	4125	4044	113	18	-62.48	4	791	4176	4122	54.06	77.247			
9500	4798	4125	4044	115	18	-62.48	4	791	4268	4214	54.07	78.936			
9600	4798	4125	4044	118	18	-62.48	4	791	4361	4306	54.08	80.634			
9700	4797	4125	4044	120	18	-62.48	4	791	4453	4399	54.08	82.339			
9800	4797	4125	4044	123	18	-62.48	4	791	4546	4492	54.09	84.051			
9900	4796	4125	4044	125	18	-62.48	4	791	4639	4585	54.09	85.771			
10,000	4795	4125	4044	127	18	-62.48	4	791	4733	4679	54.09	87.496			
10,100	4795	4125	4044	130	18	-62.48	4	791	4827	4773	54.09	89.226			
10,200	4794	4111	4031	132	18	-62.03	1	789	4921	4867	53.98	91.148			
10,300	4794	4110	4029	135	18	-62.00	1	789	5015	4961	53.98	92.906			
10,400	4793	4109	4028	137	18	-61.96	1	789	5109	5055	53.97	94.667			
10,500	4792	4108	4027	140	18	-61.93	0	789	5204	5150	53.96	96.432			
10,600	4792	4094	4014	142	18	-61.45	-3	787	5299	5245	53.85	98.406			
10,700	4791	4094	4014	145	18	-61.45	-3	787	5394	5340	53.85	100.165			
10,744	4791	4094	4014	146	18	-61.45	-3	787	5436	5382	53.85	100.947			

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

Anticollision Report

Company: DJR Operating
Project: Nageezi Unit
Reference Site: A09 2309
Site Error: 0 ft
Reference Well: 509H
Well Error: 0 ft
Reference Wellbore: Original drilling
Reference Design: APD

Local Co-ordinate Reference: Well 509H
TVD Reference: RIG @ 6773ft (AD #1000)
MD Reference: RIG @ 6773ft (AD #1000)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM
Offset TVD Reference: Offset Datum

Offset Design A09 2309 - 508H - Original drilling - APD														Offset Site Error:	0 ft
Survey Program: 0-MWD+IGRF														Offset Well Error:	0 ft
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		Separation Factor		Warning					
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
0	0	0	0	0	0	90.00	0	30	30						
100	100	100	100	0	0	-165.05	0	30	33	32	0.31	106.295			
200	200	200	200	1	0	-167.73	0	30	40	39	1.02	39.103			
300	299	299	299	1	1	-170.54	0	30	52	50	1.76	29.393			
400	397	397	397	1	1	-172.81	0	30	69	66	2.51	27.409			
434	430	431	431	2	1	-173.33	0	30	75	73	2.76	27.282			
500	495	498	498	2	2	-173.49	-2	29	88	85	3.22	27.268			
600	593	599	599	2	2	-172.15	-7	26	105	101	3.94	26.567			
700	691	701	701	3	2	-169.49	-17	20	118	114	4.69	25.262			
800	789	804	802	4	3	-165.78	-30	11	130	124	5.49	23.641			
900	886	906	902	4	3	-161.12	-47	0	139	133	6.38	21.874			
1000	984	1006	999	5	4	-155.81	-67	-13	148	141	7.35	20.161			
1100	1082	1105	1095	5	4	-151.01	-86	-25	158	149	8.37	18.835			
1200	1180	1204	1191	6	5	-146.77	-106	-38	168	159	9.43	17.831			
1300	1277	1302	1287	6	5	-143.05	-126	-51	180	169	10.52	17.068			
1400	1375	1401	1383	7	6	-139.78	-146	-64	192	180	11.62	16.484			
1500	1473	1500	1478	7	6	-136.89	-166	-77	204	191	12.73	16.034			
1600	1571	1599	1574	8	7	-134.35	-186	-90	217	203	13.85	15.684			
1700	1668	1697	1670	8	7	-132.09	-206	-103	231	216	14.97	15.410			
1800	1766	1796	1766	9	8	-130.08	-226	-116	244	228	16.08	15.195			
1900	1864	1895	1862	10	9	-128.29	-246	-128	258	241	17.19	15.023			
2000	1962	1993	1957	10	9	-126.68	-266	-141	273	254	18.31	14.887			
2100	2059	2092	2053	11	10	-125.23	-286	-154	287	268	19.42	14.778			
2200	2157	2191	2149	11	10	-123.92	-306	-167	302	281	20.52	14.690			
2300	2255	2289	2245	12	11	-122.73	-326	-180	316	295	21.63	14.620			
2400	2353	2388	2341	12	11	-121.64	-346	-193	331	308	22.73	14.563			
2500	2451	2487	2437	13	12	-120.65	-366	-206	346	322	23.83	14.517			
2600	2548	2586	2532	13	13	-119.74	-386	-218	361	336	24.93	14.480			
2700	2646	2684	2628	14	13	-118.91	-406	-231	376	350	26.03	14.450			
2800	2744	2783	2724	14	14	-118.13	-426	-244	391	364	27.12	14.426			
2900	2842	2882	2820	15	14	-117.42	-445	-257	407	378	28.22	14.408			
3000	2939	2980	2916	15	15	-116.76	-465	-270	422	393	29.31	14.393			
3100	3037	3079	3011	16	15	-116.14	-485	-283	437	407	30.40	14.382			
3200	3135	3178	3107	17	16	-115.57	-505	-296	453	421	31.49	14.373			
3300	3233	3277	3203	17	17	-115.03	-525	-309	468	435	32.58	14.367			
3400	3330	3375	3299	18	17	-114.53	-545	-321	484	450	33.66	14.363			
3500	3428	3474	3395	18	18	-114.05	-565	-334	499	464	34.75	14.360			
3600	3526	3573	3490	19	18	-113.61	-585	-347	515	479	35.83	14.359			
3700	3624	3671	3586	19	19	-113.19	-605	-360	530	493	36.92	14.359			
3800	3721	3770	3682	20	19	-112.80	-625	-373	546	508	38.00	14.360			
3900	3819	3869	3778	20	20	-112.43	-645	-386	561	522	39.09	14.362			
4000	3917	3968	3874	21	21	-112.08	-665	-399	577	537	40.17	14.365			
4100	4015	4066	3970	21	21	-111.75	-685	-412	593	551	41.25	14.368			
4200	4112	4165	4065	22	22	-111.43	-705	-424	608	566	42.33	14.371			
4227	4139	4192	4092	22	22	-111.35	-710	-428	613	570	42.63	14.372			
4250	4161	4214	4113	22	22	-102.20	-715	-431	616	573	42.87	14.364			
4300	4210	4264	4162	23	22	-79.23	-725	-437	620	577	43.40	14.284			
4350	4259	5032	4768	23	25	-42.76	-545	-786	589	564	25.42	23.178			
4400	4308	5127	4800	23	26	3.46	-484	-851	541	519	21.20	25.501			
4450	4356	5141	4804	23	26	51.13	-474	-861	491	470	20.74	23.685			
4500	4403	5136	4803	23	26	82.06	-478	-857	442	421	21.16	20.873			
4550	4449	5122	4799	23	26	98.71	-487	-848	393	371	21.96	17.878			

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

Anticollision Report

Company: DJR Operating
Project: Nageezi Unit
Reference Site: A09 2309
Site Error: 0 ft
Reference Well: 509H
Well Error: 0 ft
Reference Wellbore: Original drilling
Reference Design: APD

Local Co-ordinate Reference: Well 509H
TVD Reference: RIG @ 6773ft (AD #1000)
MD Reference: RIG @ 6773ft (AD #1000)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM
Offset TVD Reference: Offset Datum

Offset Design A09 2309 - 508H - Original drilling - APD														Offset Site Error:	0 ft
Survey Program: 0-MWD+IGRF														Offset Well Error:	0 ft
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		Separation Factor		Warning					
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
4600	4493	5105	4794	23	25	107.81	-498	-836	344	321	22.99	14.971			
4650	4535	5086	4788	24	25	112.62	-511	-823	296	272	24.18	12.253			
4700	4575	5065	4780	24	25	114.47	-525	-809	249	224	25.55	9.765			
4750	4613	5043	4772	24	25	113.81	-538	-794	204	177	27.12	7.520			
4800	4649	5021	4763	24	25	110.58	-552	-779	160	131	29.03	5.527			
4850	4681	4998	4753	24	25	104.28	-566	-764	120	89	31.52	3.821			
4900	4711	4975	4742	24	25	94.19	-579	-749	88	53	34.86	2.512			
4950	4737	4951	4730	24	25	79.98	-593	-733	71	33	37.42	1.890			
4958	4741	4947	4728	24	25	77.26	-595	-731	70	33	37.45	1.878 SF			
5000	4760	4928	4717	24	25	63.10	-605	-718	79	43	35.95	2.203			
5050	4780	4904	4704	24	25	46.88	-618	-703	106	72	34.29	3.087			
5100	4796	4880	4690	24	25	33.84	-630	-688	140	106	34.12	4.094			
5150	4809	4856	4675	24	25	24.30	-641	-673	176	141	34.69	5.069			
5200	4817	4832	4659	24	25	17.46	-653	-658	212	177	35.54	5.976			
5250	4822	4807	4642	24	25	12.49	-663	-644	248	212	36.48	6.811			
5291	4823	4787	4628	24	24	9.37	-671	-632	277	240	37.27	7.444			
5300	4823	4783	4625	24	24	9.04	-673	-630	284	246	37.44	7.579			
5400	4822	4739	4593	25	24	6.06	-689	-605	357	318	39.17	9.116			
5500	4822	4700	4562	26	24	3.93	-702	-584	435	395	40.49	10.745			
5600	4821	4668	4537	27	24	2.45	-711	-568	517	475	41.62	12.414			
5700	4821	4650	4522	29	24	1.68	-716	-559	601	558	42.86	14.028			
5800	4820	4616	4493	31	24	0.41	-724	-543	688	645	43.16	15.938			
5900	4819	4600	4479	32	24	-0.12	-727	-536	776	732	43.86	17.701			
6000	4819	4576	4457	34	24	-0.87	-732	-525	866	822	44.15	19.623			
6100	4818	4550	4434	36	24	-1.59	-735	-514	958	913	44.31	21.614			
6200	4818	4550	4434	38	24	-1.59	-735	-514	1050	1005	44.93	23.366			
6300	4817	4531	4417	40	24	-2.08	-738	-507	1143	1098	45.07	25.359			
6400	4816	4519	4406	42	24	-2.37	-739	-502	1237	1191	45.28	27.311			
6500	4816	4500	4388	45	24	-2.81	-741	-495	1331	1286	45.33	29.364			
6600	4815	4500	4388	47	24	-2.81	-741	-495	1426	1380	45.63	31.247			
6700	4815	4500	4388	49	24	-2.81	-741	-495	1521	1476	45.89	33.158			
6800	4814	4481	4371	51	23	-3.21	-742	-489	1617	1571	45.86	35.260			
6900	4814	4474	4364	54	23	-3.36	-742	-486	1713	1667	45.97	37.273			
7000	4813	4450	4341	56	23	-3.83	-743	-478	1810	1764	45.86	39.467			
7100	4812	4450	4341	58	23	-3.83	-743	-478	1907	1861	46.02	41.428			
7200	4812	4450	4341	60	23	-3.83	-743	-478	2004	1957	46.16	43.401			
7300	4811	4450	4341	63	23	-3.83	-743	-478	2101	2054	46.29	45.385			
7400	4811	4450	4341	65	23	-3.83	-743	-478	2198	2152	46.40	47.377			
7500	4810	4450	4341	67	23	-3.83	-743	-478	2296	2249	46.50	49.376			
7600	4809	4450	4341	70	23	-3.83	-743	-478	2394	2347	46.59	51.381			
7700	4809	4450	4341	72	23	-3.83	-743	-478	2492	2445	46.67	53.391			
7800	4808	4427	4319	75	23	-4.24	-743	-471	2589	2543	46.55	55.632			
7900	4808	4423	4316	77	23	-4.30	-743	-470	2688	2641	46.59	57.686			
8000	4807	4400	4293	79	23	-4.68	-742	-464	2786	2740	46.47	59.959			
8100	4807	4400	4293	82	23	-4.68	-742	-464	2884	2838	46.54	61.979			
8200	4806	4400	4293	84	23	-4.68	-742	-464	2983	2936	46.60	64.001			
8300	4805	4400	4293	86	23	-4.68	-742	-464	3081	3035	46.67	66.024			
8400	4805	4400	4293	89	23	-4.68	-742	-464	3180	3133	46.73	68.048			
8500	4804	4400	4293	91	23	-4.68	-742	-464	3278	3232	46.79	70.073			
8600	4804	4400	4293	94	23	-4.68	-742	-464	3377	3330	46.84	72.098			
8700	4803	4400	4293	96	23	-4.68	-742	-464	3476	3429	46.89	74.122			
8800	4802	4400	4293	98	23	-4.68	-742	-464	3575	3528	46.95	76.146			

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

Anticollision Report

Company: DJR Operating
Project: Nageezi Unit
Reference Site: A09 2309
Site Error: 0 ft
Reference Well: 509H
Well Error: 0 ft
Reference Wellbore: Original drilling
Reference Design: APD

Local Co-ordinate Reference: Well 509H
TVD Reference: RIG @ 6773ft (AD #1000)
MD Reference: RIG @ 6773ft (AD #1000)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM
Offset TVD Reference: Offset Datum

Offset Design A09 2309 - 508H - Original drilling - APD													Offset Site Error:	0 ft
Survey Program: 0-MWD+IGRF													Offset Well Error:	0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
8900	4802	4400	4293	101	23	-4.68	-742	-464	3674	3627	47.00	78.169		
9000	4801	4400	4293	103	23	-4.68	-742	-464	3773	3726	47.05	80.191		
9100	4801	4400	4293	106	23	-4.68	-742	-464	3872	3825	47.09	82.211		
9200	4800	4400	4293	108	23	-4.68	-742	-464	3971	3924	47.14	84.230		
9300	4799	4400	4293	110	23	-4.68	-742	-464	4070	4023	47.19	86.246		
9400	4799	4400	4293	113	23	-4.68	-742	-464	4169	4122	47.24	88.261		
9500	4798	4400	4293	115	23	-4.68	-742	-464	4268	4221	47.28	90.273		
9600	4798	4400	4293	118	23	-4.68	-742	-464	4367	4320	47.33	92.282		
9700	4797	4400	4293	120	23	-4.68	-742	-464	4467	4419	47.37	94.289		
9800	4797	4400	4293	123	23	-4.68	-742	-464	4566	4519	47.42	96.293		
9900	4796	4400	4293	125	23	-4.68	-742	-464	4665	4618	47.46	98.294		
10,000	4795	4377	4271	127	23	-5.04	-741	-458	4764	4717	47.35	100.614		
10,100	4795	4375	4270	130	23	-5.06	-741	-458	4864	4816	47.39	102.631		
10,200	4794	4374	4268	132	23	-5.08	-740	-457	4963	4916	47.43	104.644		
10,300	4794	4373	4267	135	23	-5.09	-740	-457	5062	5015	47.47	106.653		
10,400	4793	4350	4245	137	23	-5.41	-738	-452	5162	5115	47.36	108.993		
10,500	4792	4350	4245	140	23	-5.41	-738	-452	5262	5214	47.41	110.981		
10,600	4792	4350	4245	142	23	-5.41	-738	-452	5361	5313	47.46	112.964		
10,700	4791	4350	4245	145	23	-5.41	-738	-452	5460	5413	47.50	114.944		
10,744	4791	4350	4245	146	23	-5.41	-738	-452	5504	5457	47.53	115.821		

Anticollision Report

Company: DJR Operating
Project: Nageezi Unit
Reference Site: A09 2309
Site Error: 0 ft
Reference Well: 509H
Well Error: 0 ft
Reference Wellbore: Original drilling
Reference Design: APD

Local Co-ordinate Reference: Well 509H
TVD Reference: RIG @ 6773ft (AD #1000)
MD Reference: RIG @ 6773ft (AD #1000)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM
Offset TVD Reference: Offset Datum

Offset Design A09 2309 - 510H (ECA) - Original drilling - Original drilling													Offset Site Error:	0 ft
Survey Program: 368-MWD+HDGM, 5232-MWD+HDGM													Offset Well Error:	0 ft
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		Separation Factor		Warning				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0	0	0	0	0	0	-90.00	0	-30	32					
100	100	89	89	0	0	17.79	0	-30	28	28	0.32	87.514		
200	200	189	189	1	0	24.99	1	-31	22	21	0.85	25.724		
300	299	288	288	1	0	51.68	1	-32	13	12	1.43	9.118		
348	346	335	335	1	1	84.98	2	-32	11	9	1.75	6.203 CC, ES		
400	397	386	386	1	1	124.59	3	-33	14	12	2.08	6.836		
434	430	419	419	2	1	139.81	3	-33	19	17	2.33	8.334		
500	495	483	483	2	1	153.54	5	-33	33	30	2.79	11.725		
600	593	580	579	2	1	158.84	11	-33	56	53	3.50	16.012		
700	691	676	675	3	2	159.35	19	-32	81	77	4.23	19.142		
800	789	770	769	4	2	159.02	29	-32	107	102	4.96	21.607		
900	886	863	861	4	2	158.18	41	-30	136	130	5.69	23.866		
1000	984	957	954	5	3	157.07	56	-28	166	160	6.44	25.795		
1100	1082	1052	1047	5	3	155.52	73	-28	197	190	7.22	27.268		
1200	1180	1141	1134	6	4	154.17	90	-27	229	221	7.96	28.782		
1300	1277	1231	1223	6	4	153.05	109	-25	263	254	8.71	30.204		
1400	1375	1315	1304	7	4	152.11	129	-22	300	290	9.41	31.864		
1500	1473	1403	1389	7	5	150.81	153	-19	339	328	10.17	33.291		
1600	1571	1500	1482	8	5	149.18	180	-19	377	366	11.05	34.138		
1700	1668	1587	1565	8	6	147.78	206	-20	416	404	11.84	35.132		
1800	1766	1672	1646	9	6	146.53	233	-20	456	444	12.61	36.170		
1900	1864	1762	1731	10	7	145.35	262	-20	497	484	13.44	36.984		
2000	1962	1855	1819	10	7	144.27	292	-21	539	524	14.31	37.622		
2100	2059	1947	1905	11	8	143.40	322	-22	579	564	15.17	38.186		
2200	2157	2031	1985	11	8	142.72	349	-22	621	605	15.95	38.930		
2300	2255	2128	2078	12	9	142.12	380	-21	663	646	16.86	39.306		
2400	2353	2231	2176	12	9	141.55	412	-22	703	685	17.83	39.439		
2500	2451	2324	2264	13	10	141.14	439	-22	743	724	18.69	39.742		
2600	2548	2415	2351	13	10	140.78	466	-23	782	763	19.53	40.061		
2700	2646	2506	2438	14	11	140.53	493	-22	822	802	20.36	40.374		
2800	2744	2592	2520	14	11	140.33	518	-21	862	841	21.14	40.780		
2900	2842	2684	2608	15	12	140.14	545	-20	903	881	21.98	41.055		
3000	2939	2783	2703	15	12	139.99	574	-19	942	920	22.89	41.167		
3100	3037	2863	2779	16	12	139.85	597	-18	983	959	23.61	41.610		
3200	3135	2939	2851	17	13	139.69	621	-17	1024	1000	24.30	42.157		
3300	3233	3050	2957	17	13	139.47	655	-16	1066	1041	25.35	42.056		
3400	3330	3154	3057	18	14	139.26	686	-17	1105	1079	26.32	41.995		
3500	3428	3242	3141	18	14	139.15	711	-16	1145	1118	27.12	42.216		
3600	3526	3325	3220	19	15	139.06	735	-15	1185	1157	27.87	42.506		
3700	3624	3417	3309	19	15	138.95	763	-14	1225	1197	28.72	42.656		
3800	3721	3521	3408	20	16	138.88	792	-13	1265	1235	29.67	42.618		
3900	3819	3594	3478	20	16	138.87	813	-12	1305	1274	30.32	43.028		
4000	3917	3678	3558	21	17	138.86	837	-9	1346	1315	31.08	43.311		
4100	4015	3748	3625	21	17	138.85	858	-7	1388	1356	31.70	43.777		
4200	4112	3813	3687	22	18	138.82	879	-4	1431	1399	32.28	44.344		
4227	4139	3834	3706	22	18	138.81	886	-3	1443	1411	32.46	44.463		
4250	4161	3860	3731	22	18	148.85	894	-2	1453	1421	32.70	44.442		
4300	4210	3966	3831	23	18	173.37	927	0	1476	1442	33.70	43.793		
4350	4259	4064	3926	23	19	-164.13	953	2	1496	1461	34.52	43.339		
4400	4308	4094	3955	23	19	-146.91	959	3	1517	1482	34.69	43.729		
4450	4356	4145	4005	23	19	-134.93	969	9	1539	1504	34.99	43.987		
4500	4403	4623	4461	23	20	-126.83	931	125	1551	1515	36.38	42.644		

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

Anticollision Report

Company: DJR Operating
Project: Nageezi Unit
Reference Site: A09 2309
Site Error: 0 ft
Reference Well: 509H
Well Error: 0 ft
Reference Wellbore: Original drilling
Reference Design: APD

Local Co-ordinate Reference: Well 509H
TVD Reference: RIG @ 6773ft (AD #1000)
MD Reference: RIG @ 6773ft (AD #1000)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM
Offset TVD Reference: Offset Datum

Offset Design A09 2309 - 510H (ECA) - Original drilling - Original drilling													Offset Site Error:	0 ft
Survey Program: 368-MWD+HDGM, 5232-MWD+HDGM													Offset Well Error:	0 ft
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		Separation Factor		Warning				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
4550	4449	4733	4555	23	20	-120.45	891	166	1560	1523	36.43	42.817		
4600	4493	4781	4593	23	20	-115.88	870	187	1568	1532	36.53	42.923		
4650	4535	4862	4653	24	20	-111.97	832	224	1576	1539	36.65	42.996		
4700	4575	4930	4700	24	20	-108.79	797	259	1584	1547	36.83	43.002		
4750	4613	5081	4783	24	20	-105.11	704	344	1588	1551	37.36	42.509		
4800	4649	5182	4821	24	21	-102.09	634	406	1592	1554	37.86	42.047		
4850	4681	5245	4843	24	21	-100.07	588	444	1594	1556	38.26	41.668		
4900	4711	5361	4871	24	21	-97.57	502	515	1596	1557	38.53	41.422		
4950	4737	5415	4876	24	21	-96.08	460	549	1596	1557	38.96	40.960		
5000	4760	5460	4877	24	21	-94.88	425	577	1595	1556	39.49	40.404		
5050	4780	5509	4878	24	21	-93.87	387	608	1595	1555	40.13	39.743		
5100	4796	5556	4879	24	22	-93.13	350	637	1594	1553	40.88	38.994		
5150	4809	5603	4880	24	22	-92.65	314	667	1593	1551	41.73	38.171		
5200	4817	5649	4880	24	23	-92.39	278	696	1591	1548	42.66	37.292		
5250	4822	5693	4880	24	23	-92.33	244	724	1589	1545	43.68	36.376		
5291	4823	5734	4879	24	24	-92.43	212	750	1587	1542	44.64	35.543		
5300	4823	5743	4878	24	24	-92.43	205	756	1586	1541	44.87	35.352		
5400	4822	5830	4876	25	25	-92.35	138	811	1581	1533	47.32	33.407		
5500	4822	5916	4873	26	26	-92.29	73	866	1576	1526	50.08	31.479		
5600	4821	6011	4872	27	28	-92.28	0	928	1572	1519	53.24	29.534		
5700	4821	6081	4873	29	29	-92.33	-52	974	1570	1514	56.14	27.960		
5774	4820	6127	4874	30	30	-92.37	-86	1004	1569	1511	58.25	26.937		
5800	4820	6145	4874	31	30	-92.38	-100	1017	1569	1510	59.06	26.567		
5900	4819	6212	4875	32	32	-92.43	-148	1063	1571	1509	62.16	25.271		
6000	4819	6331	4875	34	34	-92.46	-233	1145	1573	1507	66.61	23.621		
6100	4818	6408	4876	36	36	-92.48	-289	1199	1576	1505	70.19	22.447		
6200	4818	6530	4875	38	38	-92.48	-377	1283	1578	1503	74.99	21.040		
6300	4817	6653	4873	40	41	-92.45	-467	1368	1578	1498	79.92	19.747		
6400	4816	6756	4871	42	43	-92.40	-543	1437	1578	1494	84.39	18.701		
6500	4816	6869	4865	45	46	-92.18	-626	1513	1577	1488	89.20	17.684		
6600	4815	6962	4859	47	48	-92.00	-695	1575	1577	1483	93.52	16.858		
6653	4815	7006	4856	48	49	-91.90	-727	1605	1577	1481	95.71	16.472		
6700	4815	7048	4854	49	50	-91.82	-758	1634	1577	1479	97.74	16.131		
6800	4814	7141	4848	51	52	-91.63	-826	1697	1577	1475	102.15	15.439		
6900	4814	7242	4843	54	54	-91.46	-899	1766	1578	1471	106.82	14.772		
7000	4813	7346	4836	56	57	-91.24	-975	1837	1578	1467	111.63	14.140		
7100	4812	7441	4831	58	59	-91.06	-1045	1902	1579	1463	116.21	13.588		
7200	4812	7527	4827	60	61	-90.94	-1107	1961	1580	1460	120.54	13.109		
7300	4811	7614	4825	63	63	-90.88	-1170	2021	1582	1457	124.92	12.666		
7400	4811	7714	4823	65	66	-90.82	-1242	2091	1585	1455	129.73	12.219		
7500	4810	7800	4822	67	68	-90.80	-1303	2151	1588	1454	134.12	11.840		
7600	4809	7888	4821	70	70	-90.78	-1365	2213	1592	1453	138.57	11.486		
7700	4809	8066	4818	72	74	-90.73	-1493	2337	1595	1450	145.75	10.945		
7800	4808	8163	4818	75	77	-90.74	-1565	2402	1594	1444	150.50	10.593		
7873	4808	8225	4817	76	78	-90.73	-1610	2444	1594	1440	153.69	10.371		
7900	4808	8242	4817	77	79	-90.73	-1623	2456	1594	1439	154.74	10.302		
8000	4807	8317	4817	79	80	-90.76	-1677	2507	1596	1437	158.85	10.046		
8100	4807	8422	4818	82	83	-90.79	-1754	2580	1598	1434	163.90	9.749		
8200	4806	8504	4818	84	85	-90.81	-1812	2637	1600	1432	168.22	9.514		
8300	4805	8618	4817	86	88	-90.82	-1893	2717	1604	1430	173.57	9.240		
8400	4805	8763	4816	89	92	-90.81	-2000	2815	1604	1424	179.79	8.921		
8500	4804	8860	4816	91	94	-90.83	-2072	2881	1603	1418	184.59	8.684		

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

Anticollision Report

Company: DJR Operating
Project: Nageezi Unit
Reference Site: A09 2309
Site Error: 0 ft
Reference Well: 509H
Well Error: 0 ft
Reference Wellbore: Original drilling
Reference Design: APD

Local Co-ordinate Reference: Well 509H
TVD Reference: RIG @ 6773ft (AD #1000)
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Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM
Offset TVD Reference: Offset Datum

Offset Design A09 2309 - 510H (ECA) - Original drilling - Original drilling													Offset Site Error:	0 ft
Survey Program: 368-MWD+HDGM, 5232-MWD+HDGM													Offset Well Error:	0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore +N/-S (ft)	Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
8516	4804	8872	4817	92	94	-90.84	-2080	2889	1603	1418	185.26	8.653		
8600	4804	8936	4817	94	96	-90.88	-2127	2932	1603	1415	188.78	8.494		
8700	4803	9052	4817	96	99	-90.91	-2212	3011	1604	1410	194.16	8.263		
8800	4802	9136	4816	98	101	-90.89	-2273	3069	1605	1406	198.61	8.080		
8900	4802	9205	4816	101	103	-90.88	-2323	3117	1607	1405	202.59	7.933		
9000	4801	9303	4815	103	105	-90.87	-2393	3185	1610	1403	207.47	7.762		
9100	4801	9408	4814	106	108	-90.87	-2467	3259	1614	1401	212.58	7.592		
9200	4800	9514	4814	108	110	-90.89	-2544	3333	1616	1398	217.74	7.423		
9300	4799	9615	4813	110	113	-90.86	-2616	3403	1619	1396	222.72	7.269		
9400	4799	9718	4811	113	116	-90.80	-2690	3476	1623	1395	227.82	7.122		
9500	4798	9833	4809	115	119	-90.75	-2774	3555	1623	1390	233.24	6.960		
9600	4798	9899	4808	118	120	-90.74	-2821	3600	1626	1389	237.10	6.857		
9700	4797	9993	4807	120	123	-90.72	-2887	3666	1630	1388	241.88	6.737		
9800	4797	10,086	4806	123	125	-90.71	-2953	3732	1633	1387	246.62	6.623		
9900	4796	10,168	4806	125	127	-90.72	-3011	3790	1638	1387	250.97	6.528		
10,000	4795	10,361	4806	127	132	-90.75	-3150	3924	1640	1381	258.97	6.333		
10,011	4795	10,366	4806	128	132	-90.75	-3154	3927	1640	1381	259.34	6.324		
10,100	4795	10,412	4806	130	133	-90.77	-3187	3959	1641	1379	262.43	6.254		
10,200	4794	10,508	4806	132	136	-90.79	-3255	4026	1644	1377	267.29	6.152		
10,300	4794	10,682	4802	135	140	-90.68	-3383	4144	1644	1369	274.43	5.990		
10,400	4793	10,769	4801	137	142	-90.65	-3448	4202	1643	1364	279.03	5.887		
10,452	4793	10,807	4800	138	143	-90.65	-3477	4228	1642	1361	281.23	5.840		
10,500	4792	10,842	4800	140	144	-90.64	-3502	4252	1643	1359	283.23	5.800		
10,600	4792	10,920	4800	142	146	-90.64	-3558	4305	1644	1357	287.52	5.719		
10,700	4791	11,019	4800	145	149	-90.66	-3630	4374	1647	1354	292.47	5.630		
10,744	4791	11,072	4799	146	150	-90.65	-3668	4410	1647	1352	294.95	5.585 SF		

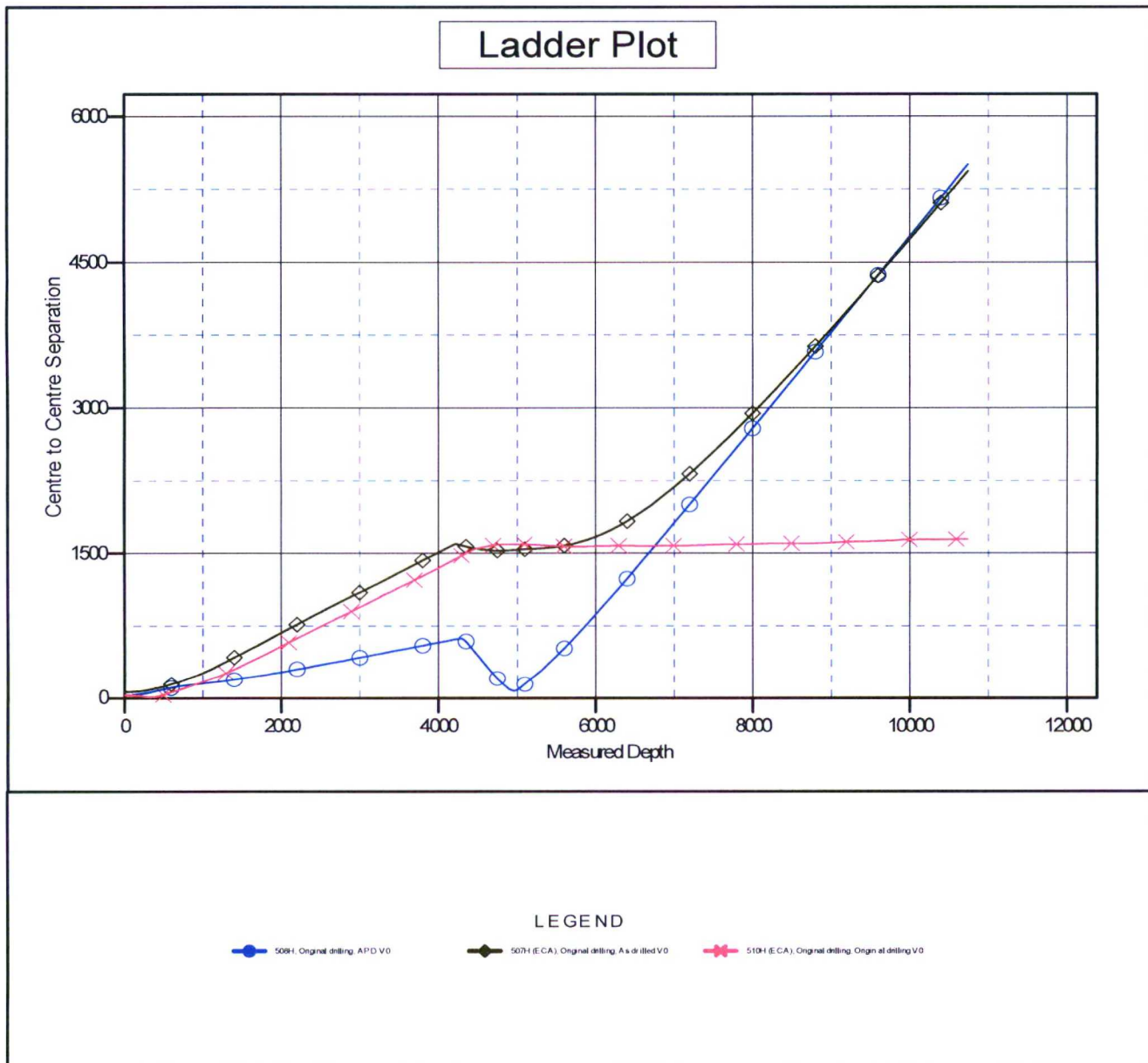
Anticollision Report

Company: DJR Operating
Project: Nageezi Unit
Reference Site: A09 2309
Site Error: 0 ft
Reference Well: 509H
Well Error: 0 ft
Reference Wellbore: Original drilling
Reference Design: APD

Local Co-ordinate Reference: Well 509H
TVD Reference: RIG @ 6773ft (AD #1000)
MD Reference: RIG @ 6773ft (AD #1000)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM
Offset TVD Reference: Offset Datum

Reference Depths are relative to RIG @ 6773ft (AD #1000)
 Offset Depths are relative to Offset Datum
 Central Meridian is -107.8333333

Coordinates are relative to: 509H
 Coordinate System is US State Plane 1983, New Mexico Western Zone
 Grid Convergence at Surface is: 0.03°



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

Anticollision Report

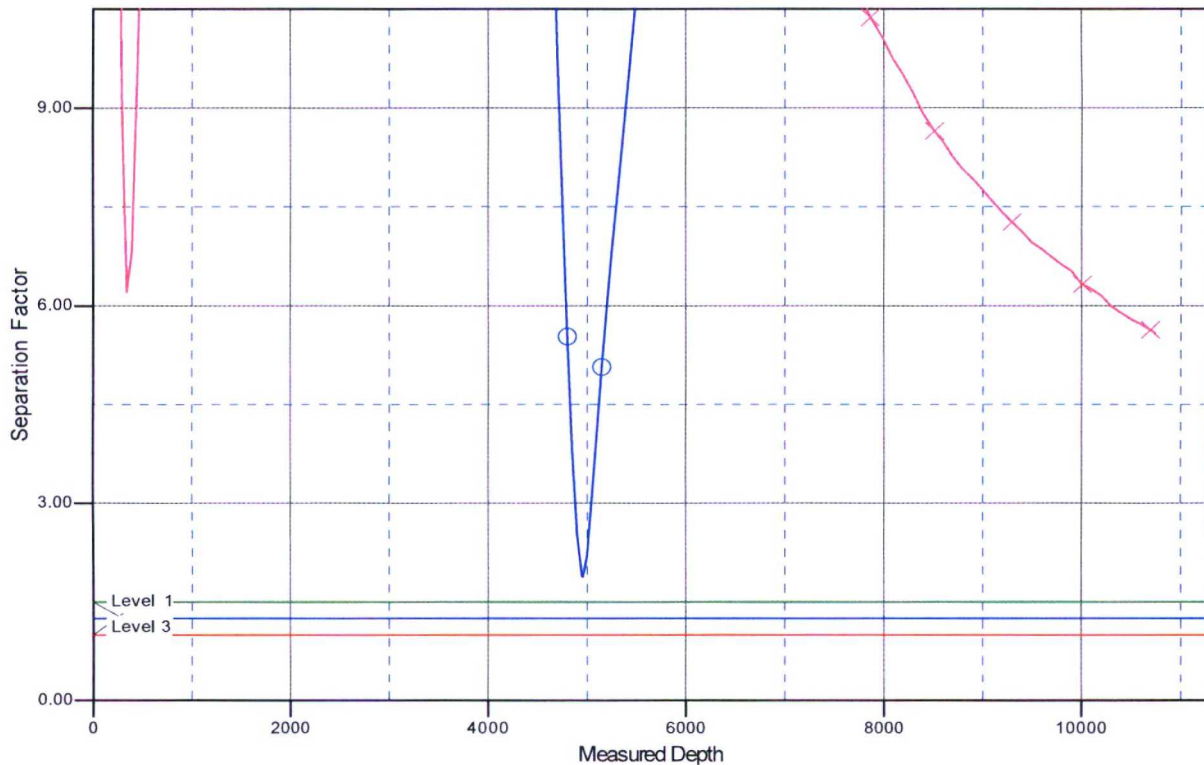
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Coordinate System is US State Plane 1983, New Mexico Western Zone
Grid Convergence at Surface is: 0.03°

Separation Factor Plot



LEGEND

509H, Original drilling, APD V0

507H (E CA), Original drilling, A's drilled V0

510H (E CA), Original drilling, Original drilling V0