

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

Gabriel Wade, Acting 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 3160-3 APD form.

Operator Signature Date: 9/19/2018

Well information;

Operator Hilcorp, Well Name and Number San Juan 32-8 Unit 222H

API# 30-045-35890, Section 9, Township 31 N/S, Range 8 E W

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 - 5.9 compliance
 - ☐ 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 recompletion operations
 - ☒ Regarding Hydraulic Fracturing, review EPA Underground Injection Control Guidance 84
 - ☒ Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system.
 - ☒ Well-bore communication is regulated under 19.15.29 NMAC. This requires well-bore Communication to be reported in accordance with 19.15.29.8.

Brenda Bell
NMOCD Approved by Signature

4/22/19
Date

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☒ DRILL ☐ REENTER		5. Lease Serial No. NMSF0079004
1b. Type of Well: ☐ Oil Well ☐ Gas Well ☒ Other CBNG		6. If Indian, Allottee or Tribe Name
1c. Type of Completion: ☐ Hydraulic Fracturing ☒ Single Zone ☐ Multiple Zone		7. If Unit or CA Agreement, Name and No. SAN JUAN 32-8 / NMNM078424X
2. Name of Operator HILCORP ENERGY COMPANY		8. Lease Name and Well No. SAN JUAN 32-8 UNIT 222H
3a. Address 1111 Travis Street Houston TX 77002	3b. Phone No. (include area code) (713)209-2400	9. API Well No. 30-045-35890
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface S NWSE / 1774 FSL / 1655 FEL / LAT 36.909223 / LONG -107.677141 At proposed prod. zone K NESW / 1568 FSL / 1302 FWL / LAT 36.923075 / LONG -107.684802		10. Field and Pool, or Exploratory BASIN FRUITLAND COAL
11. Sec., T. R. M. or Blk. and Survey or Area SEC 9 / T31N / R08W / NMP		
14. Distance in miles and direction from nearest town or post office*		12. County or Parish SAN JUAN
		13. State NM
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 1655 feet	16. No of acres in lease 1720	17. Spacing Unit dedicated to this well 640
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 100 feet	19. Proposed Depth 3276 feet / 5519 feet	20. BLM/BIA Bond No. in file FED: NMB001486
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 6675 feet	22. Approximate date work will start* 04/01/2019	23. Estimated duration 45 days
24. Attachments		

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

- | | |
|--|---|
| 1. Well plat certified by a registered surveyor. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan. | 5. Operator certification. |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be requested by the BLM. |

25. Signature (Electronic Submission)	Name (Printed/Typed) Amanda Walker / Ph: (505)324-5122	Date 09/19/2018
Title Operations/Regulatory Technician		
Approved by (Signature) <i>[Signature]</i>	Name (Printed/Typed)	Date 3/20/19
Title AFM		
Office FARMINGTON		

Application approval 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.

Conditions of approval, if any, are attached.

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.

DRILLING OPERATIONS
AUTHORIZED ARE SUBJECT TO
COMPLIANCE WITH ATTACHED
"GENERAL REQUIREMENTS"

**BLM'S APPROVAL OR ACCEPTANCE OF
THIS ACTION DOES NOT RELIEVE THE
LESSEE AND OPERATOR FROM
OBTAINING ANY OTHER AUTHORIZATION
REQUIRED FOR OPERATIONS ON
FEDERAL AND INDIAN LANDS**

This action is subject to technical
and procedural review pursuant to
43 CFR 3165.3 and appeal
pursuant to 43 CFR 3165.4

District I
1625 N. French Drive, Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

District II
811 S. First Street, Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

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

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102
Revised August 1, 2011

Submit one copy to
Appropriate District Office

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number 30-045-35890		*Pool Code 71629	*Pool Name BASIN FRUITLAND COAL
*Property Code 318435	*Property Name SAN JUAN 32-8 UNIT		*Well Number 222H
*GRID No. 372171	*Operator Name HILCORP ENERGY COMPANY		*Elevation 6675'

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
J	9	31N	8W		1774	SOUTH	1655	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
K	4	31N	8W		1568	SOUTH	1302	WEST	SAN JUAN

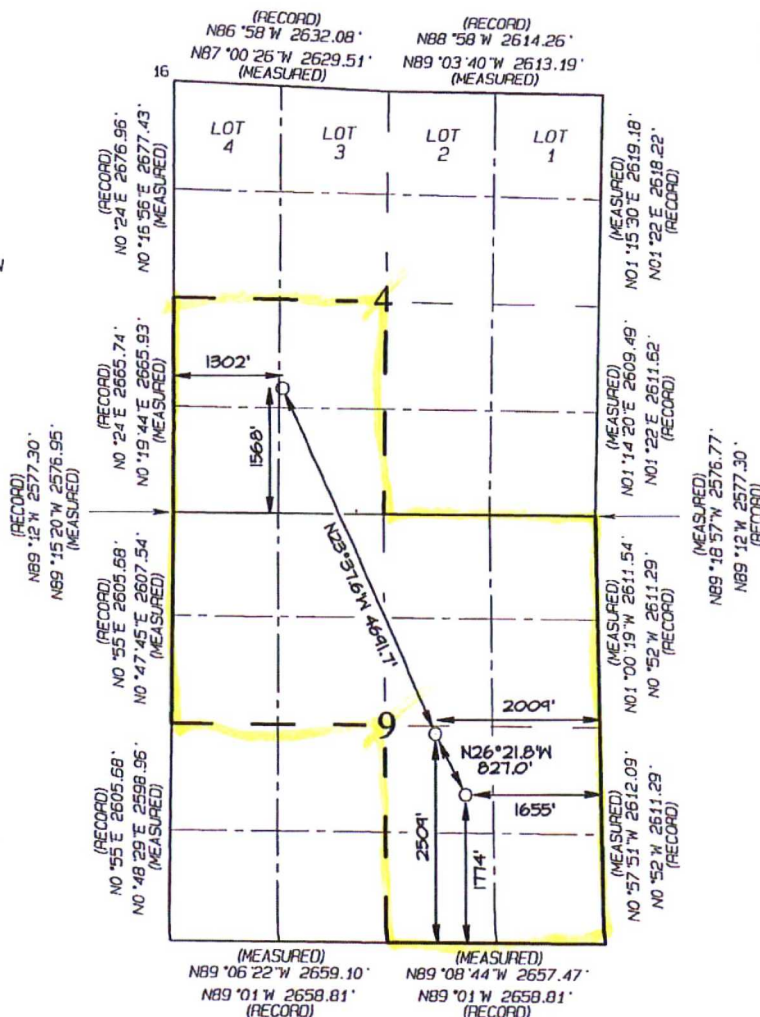
*Dedicated Acres 640.00	SW/4 - Section 4 N/2 & SE/4 - Section 9	*Joint or Infill	*Consolidation Code	*Order No.
----------------------------	--	------------------	---------------------	------------

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

BOTTOM HOLE LOCATION
1568' FSL 1302' FWL
SEC 4, T31N, R8W
LAT: 36.923071°N
LONG: 107.684188°W
DATUM: NAD1927
LAT: 36.923075°N
LONG: 107.684802°W
DATUM: NAD1983

FIRST TAKE POINT
2509' FSL 2009' FEL
SEC 9, T31N, R8W
LAT: 36.911256°N
LONG: 107.677779°W
DATUM: NAD1927
LAT: 36.911260°N
LONG: 107.678393°W
DATUM: NAD1983

SURFACE LOCATION
1774' FSL 1655' FWL
SEC 9, T31N, R8W
LAT: 36.909219°N
LONG: 107.676527°W
DATUM: NAD1927
LAT: 36.909223°N
LONG: 107.677141°W
DATUM: NAD1983



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 unless 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.

Amanda Walker 9/19/18
Signature Date

Amanda Walker
Printed Name
mwalker@hilcorp.com
E-mail Address

¹⁸ 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.

Date Revised: SEPTEMBER 18, 2018
Date of Survey: JUNE 21, 2018

Signature and Seal of Professional Surveyor



JASON C. EDWARDS
Certificate Number 15269



Hilcorp Energy Company

San Juan 32-8 Unit 222H

Hilcorp Energy Company Technical Plan

1. Location

San Juan 32-8 Unit 222H

SHL: 1774' FSL, 1655' FEL, Sec 9, T31N, R8W

Lat-1 BHL: 1568' FSL, 1302' FWL, Sec 4, T31N, R8W

GL: 6675'

2. Geological Markers

Anticipated formation tops with comments of any possible water, gas, or oil shows are indicated below:

Formation	Depth (TVD)	Remarks
Ojo Alamo	2320'	Wet
Kirtland	2398'	Wet
Fruitland	3276'	Possible Gas/Water
Pictured Cliffs	3598'	Wet

See attached directional plan for anticipated formation tops in measured depth.

Tops correlated from Oxnard 4 in Twn 31N 8W sec 8; well had NMOCD formation tops

3. Pressure Control Equipment

See Attached BOPE & Choke Manifold Schematic for a diagram of pressure control equipment.

- BOPE will be nipped up on top of wellhead after surface casing is set and cemented.
- Pressure control configuration will be designed to meet the minimum 2M standards.
- All equipment will have 3M pressure ratings.
- A rotating head will be rigged up on top of annular as seen in attached diagram.



Hilcorp Energy Company

San Juan 32-8 Unit 222H

4. Casing & Cement Program

A) The proposed casing program is outlined below:

Proposed Casing				
Casing	Hole Size	Casing Size	Weight/Grade	Depth
Surface	12-1/4"	9-5/8"	32.3# H-40	0' - 500' (MD)
Intermediate	8-3/4"	7"	23# L-80	0' - 4,268.66' (MD)
Prod Liner (predrilled)	6-1/4"	4-1/2"	11.6# J-55/L-80	3,685' - 8,372.99' (MD)

The intermediate hole section (pilot hole) will be drilled to target depth, then fully cased and cemented with 7" casing.

A whipstock will be run, and a window will be cut in the 7" casing above the target coal seam to allow for the lateral to be drilled.

First Take Point / Whipstock / casing exit depth is:
Lat1 - 3,673.13' MD / 3,346.32' TVD.

If the 6-1/4" hole is not drilled to total MD, the production liner setting depth and length will be adjusted accordingly.

The 7" casing shoe and the window / casing exit will be set inside the setback boundary line.



Hilcorp Energy Company

San Juan 32-8 Unit 222H

B) The proposed cement program is shown below:

Cement Program						
Interval	Depth (MD)	Sacks	Slurry	Excess	Volume	Planned Cement Top
Surface	500'	265	Lead Cmt: Varicem Cement 2% Calcium Chloride, pellet 0.1250 lbm/sk Poly-E-Flake 1.18 ft ³ / sk - 5.24 gal/sk 15.8 ppg	100%	313 ft ³	Surface
Intermediate	4,268.66'	456	Lead Cmt: Varicem Cement 0.3% Super CBL 0.3 % FE-2 5 lbm/sk Kol-Seal 0.125 lbm/sk Poly-E-Flake 2.11 ft ³ / sk – 11.25 gal/sk 12.9 ppg	50%	962 ft ³	Surface
Production		N/A	N/A – Open hole with pre-drilled liner	N/A	N/A	N/A

Actual cement volumes will be determined and may be adjusted onsite based on well conditions. For the intermediate hole, a 2-stage cement job may be performed if hole conditions indicate during operations. Stage tool will be placed appropriately as conditions indicate.

C) The proposed centralizer program is shown below:

Centralizer Program	
Interval	Centralizers
Surface	1 per joint on bottom 3 joints
Intermediate	10' above shoe joint with collar clamp On top of 2nd, 4th, 6th, 8th, 10th joints 1 every 4th joint to Ojo Alamo 1 every joint through Ojo Alamo 1 Turbolizer will be placed mid-way into Ojo Alamo 1 every 4th joint from top of Ojo Alamo to surface shoe 1 inside surface casing
Production	N/A

To allow adequate time for cement to achieve a minimum of 500 psi compressive strength, a minimum of 8 hours wait on cement time for each hole section will be observed. The



Hilcorp Energy Company

San Juan 32-8 Unit 222H

wellhead will not be installed, casing will not be tested, and the prior casing shoe will not be drilled out until adequate wait on cement time is achieved.

5. Drilling Fluids

A) The proposed drilling fluid program is outlined below:

Mud Program			
Interval	Mud Type	Weight (ppg)	Fluid Loss (cc)
Surface	Air / Water Gel System	Air 8.3 - 9.2	NC
Intermediate	LSND / Gel System	8.4 - 9.5	6 - 16
Production	LSND Brine (if needed)*	8.5 - 10	4 - 14

In the production hole, Brine will be utilized only if a weighting agent is needed to raise MW (for either well control or wellbore stability purposes).

LCM may be added to the mud system if hole conditions indicate.

↓ B) Closed loop equipment will be utilized for solids control. Cuttings from surface, intermediate, and production hole will be hauled to an approved disposal site.

6. Abnormal Pressures & Hazards

- No over-pressured intervals expected.
- Estimated Reservoir Pressure = 1500 psi.
- Maximum anticipated surface pressure = 1,300 psi
- There is some offset Fruitland Coal and Mesa Verde production within the area which could result in these respective formations being under pressured.
- No hydrogen sulfide gas is expected based on nearby well production.

7. Intermediate Hole Section / Pilot Hole

- The intermediate or "pilot" hole section will be drilled through the target Fruitland coal seam.
- GR will be run in the BHA and will be used in conjunction with mud logger data to determine the exact TVD depth of the target coal seam.
- 7" casing will be run completely through the interval, and cemented to surface.



Hilcorp Energy Company

San Juan 32-8 Unit 222H

8. Testing, Logging, Coring

Testing, Logging, Coring Procedure		
Evaluation Method	Start Depth	End depth
Mud Logs	Fruitland Coal Top	TD
MWD Directional Surveys	KOP	TD
LWD GR	7" window	TD
Temp Survey	If needed on intermediate casing	

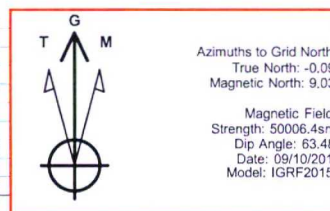
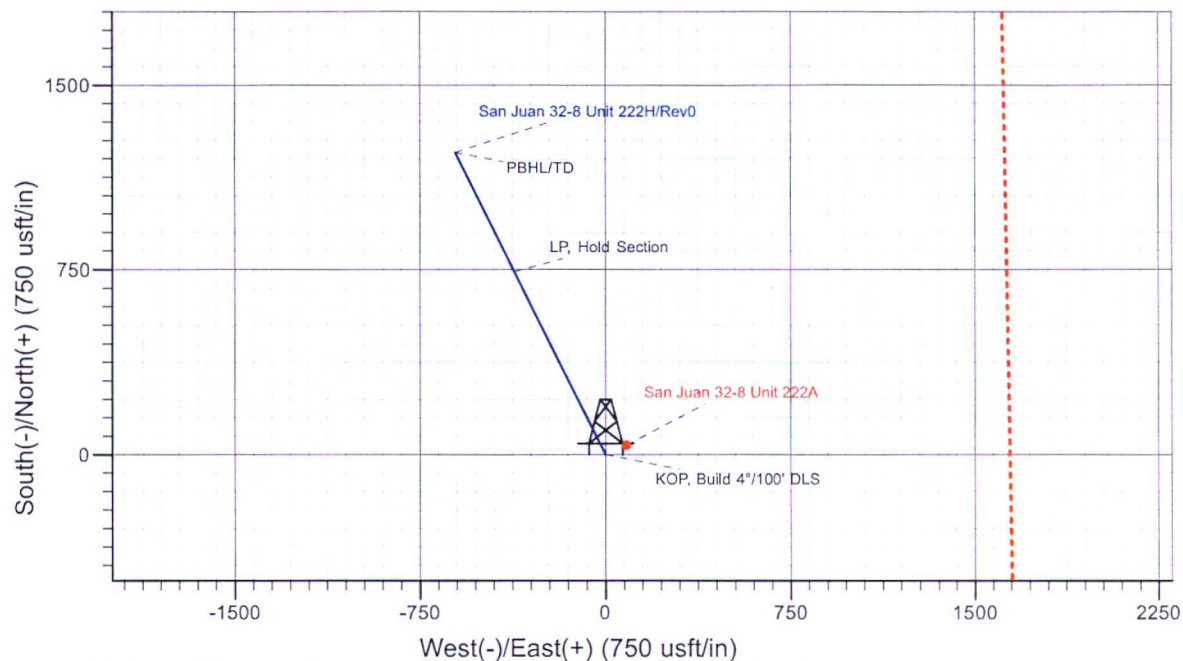
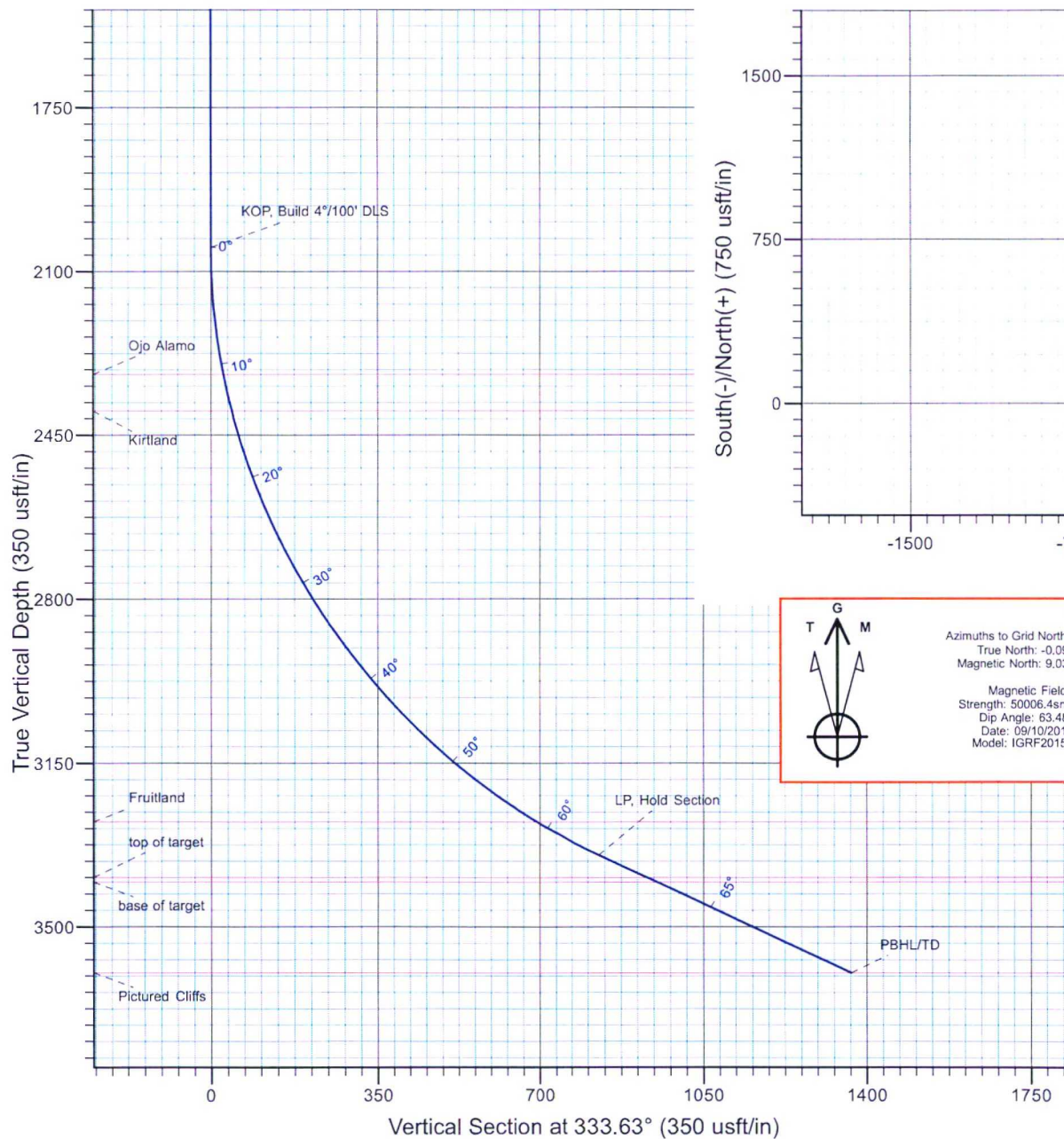
9. Directional Plan

The planned wellbore directional plan and plot is attached.

The planned directional plan is built off geological targets from offset wells. The production hole will be landed and drilled within target formation horizontally utilizing LWD equipment to help steer the wellbore. On site adjustments will be made to the directional plan as formation and hole indicates.



Company: Hilcorp Energy Company
 Field: San Juan Co., NM (NAD27)
 Location: Sec.09-T31N-R08W
 Well: San Juan 32-8 Unit 222H
 Borehole: Pilot Hole
 Plan: Rev0



WELL DETAILS: San Juan 32-8 Unit 222H									
		GL 6675.00		KB @ 6690.00usft					
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude				
0.00	0.00	2150257.85	545844.23	36.90922°N	107.67653°W				
SECTION DETAILS									
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2048.13	0.00	0.00	2048.13	0.00	0.00	0.00	0.00	0.00
3	3673.13	65.00	333.63	3346.32	740.98	-367.34	4.00	333.63	827.04
4	4268.66	65.00	333.63	3598.00	1224.55	-607.07	0.00	0.00	1366.77
FORMATION TOP DETAILS									
TVDPath	MDPath	Formation							
2320.00	2321.66	Ojo Alamo							
2398.00	2401.58	Kirtland							
3276.00	3523.26	Fruitland							
3394.00	3785.95	top of target							
3404.00	3809.61	base of target							
3598.00	4268.66	Pictured Cliffs							
ANNOTATIONS									
TVD	MD	Annotation							
2048.13	2048.13	KOP, Build 4°/100' DLS							
3346.32	3673.13	LP, Hold Section							
3598.00	4268.66	PBHL/TD							



Hilcorp Energy Company

San Juan Co., NM (NAD27)

Sec.09-T31N-R08W

San Juan 32-8 Unit 222H

Pilot Hole

Plan: Rev0

Standard Planning Report - Geographic

11 September, 2018





Koltek Energy Services
Planning Report - Geographic



Database: EDM 5000.1 Single User Db
Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Site: Sec.09-T31N-R08W
Well: San Juan 32-8 Unit 222H
Wellbore: Pilot Hole
Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Project San Juan Co., NM (NAD27)

Map System: US State Plane 1927 (Exact solution) System Datum: Mean Sea Level
Geo Datum: NAD 1927 (NADCON CONUS)
Map Zone: New Mexico West 3003

Site Sec.09-T31N-R08W

Site Position: Northing: 2,150,257.84 usft Latitude: 36.90922°N
From: Map Easting: 545,844.23 usft Longitude: 107.67653°W
Position Uncertainty: 0.00 usft Slot Radius: 13.200 in Grid Convergence: 0.09 °

Well San Juan 32-8 Unit 222H

Well Position +N/-S 0.00 usft Northing: 2,150,257.84 usft Latitude: 36.90922°N
+E/-W 0.00 usft Easting: 545,844.23 usft Longitude: 107.67653°W
Position Uncertainty 0.00 usft Wellhead Elevation: 0.00 usft Ground Level: 6,675.00 usft

Wellbore Pilot Hole

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	09/10/18	9.12	63.48	50,006

Design Rev0

Audit Notes:

Version: Phase: PROTOTYPE Tie On Depth: 0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	333.63

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,048.13	0.00	0.00	2,048.13	0.00	0.00	0.00	0.00	0.00	0.00	
3,673.13	65.00	333.63	3,346.32	740.98	-367.34	4.00	4.00	0.00	333.63	
4,268.66	65.00	333.63	3,598.00	1,224.55	-607.07	0.00	0.00	0.00	0.00	



Database: EDM 5000.1 Single User Db
Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Site: Sec.09-T31N-R08W
Well: San Juan 32-8 Unit 222H
Wellbore: Pilot Hole
Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	2,150,257.84	545,844.23	36.90922°N	107.67653°W
100.00	0.00	0.00	100.00	0.00	0.00	2,150,257.84	545,844.23	36.90922°N	107.67653°W
200.00	0.00	0.00	200.00	0.00	0.00	2,150,257.84	545,844.23	36.90922°N	107.67653°W
300.00	0.00	0.00	300.00	0.00	0.00	2,150,257.84	545,844.23	36.90922°N	107.67653°W
400.00	0.00	0.00	400.00	0.00	0.00	2,150,257.84	545,844.23	36.90922°N	107.67653°W
500.00	0.00	0.00	500.00	0.00	0.00	2,150,257.84	545,844.23	36.90922°N	107.67653°W
600.00	0.00	0.00	600.00	0.00	0.00	2,150,257.84	545,844.23	36.90922°N	107.67653°W
700.00	0.00	0.00	700.00	0.00	0.00	2,150,257.84	545,844.23	36.90922°N	107.67653°W
800.00	0.00	0.00	800.00	0.00	0.00	2,150,257.84	545,844.23	36.90922°N	107.67653°W
900.00	0.00	0.00	900.00	0.00	0.00	2,150,257.84	545,844.23	36.90922°N	107.67653°W
1,000.00	0.00	0.00	1,000.00	0.00	0.00	2,150,257.84	545,844.23	36.90922°N	107.67653°W
1,100.00	0.00	0.00	1,100.00	0.00	0.00	2,150,257.84	545,844.23	36.90922°N	107.67653°W
1,200.00	0.00	0.00	1,200.00	0.00	0.00	2,150,257.84	545,844.23	36.90922°N	107.67653°W
1,300.00	0.00	0.00	1,300.00	0.00	0.00	2,150,257.84	545,844.23	36.90922°N	107.67653°W
1,400.00	0.00	0.00	1,400.00	0.00	0.00	2,150,257.84	545,844.23	36.90922°N	107.67653°W
1,500.00	0.00	0.00	1,500.00	0.00	0.00	2,150,257.84	545,844.23	36.90922°N	107.67653°W
1,600.00	0.00	0.00	1,600.00	0.00	0.00	2,150,257.84	545,844.23	36.90922°N	107.67653°W
1,700.00	0.00	0.00	1,700.00	0.00	0.00	2,150,257.84	545,844.23	36.90922°N	107.67653°W
1,800.00	0.00	0.00	1,800.00	0.00	0.00	2,150,257.84	545,844.23	36.90922°N	107.67653°W
1,900.00	0.00	0.00	1,900.00	0.00	0.00	2,150,257.84	545,844.23	36.90922°N	107.67653°W
2,000.00	0.00	0.00	2,000.00	0.00	0.00	2,150,257.84	545,844.23	36.90922°N	107.67653°W
2,048.13	0.00	0.00	2,048.13	0.00	0.00	2,150,257.84	545,844.23	36.90922°N	107.67653°W
KOP, Build 4"/100' DLS									
2,100.00	2.07	333.63	2,099.99	0.84	-0.42	2,150,258.68	545,843.82	36.90922°N	107.67653°W
2,200.00	6.07	333.63	2,199.72	7.21	-3.57	2,150,265.05	545,840.66	36.90924°N	107.67654°W
2,300.00	10.07	333.63	2,298.70	19.79	-9.81	2,150,277.63	545,834.42	36.90927°N	107.67656°W
2,400.00	14.07	333.63	2,396.47	38.53	-19.10	2,150,296.37	545,825.13	36.90933°N	107.67659°W
2,500.00	18.07	333.63	2,492.54	63.33	-31.40	2,150,321.17	545,812.84	36.90939°N	107.67664°W
2,600.00	22.07	333.63	2,586.45	94.08	-46.64	2,150,351.92	545,797.59	36.90948°N	107.67669°W
2,700.00	26.07	333.63	2,677.73	130.62	-64.75	2,150,388.46	545,779.48	36.90958°N	107.67675°W
2,800.00	30.07	333.63	2,765.95	172.77	-85.65	2,150,430.62	545,758.58	36.90969°N	107.67682°W
2,900.00	34.07	333.63	2,850.66	220.34	-109.24	2,150,478.19	545,735.00	36.90983°N	107.67690°W
3,000.00	38.07	333.63	2,931.47	273.09	-135.38	2,150,530.93	545,708.85	36.90997°N	107.67699°W
3,100.00	42.07	333.63	3,007.98	330.76	-163.97	2,150,588.60	545,680.26	36.91013°N	107.67709°W
3,200.00	46.07	333.63	3,079.81	393.07	-194.86	2,150,650.91	545,649.37	36.91030°N	107.67719°W
3,300.00	50.07	333.63	3,146.61	459.71	-227.90	2,150,717.56	545,616.33	36.91048°N	107.67731°W
3,400.00	54.07	333.63	3,208.06	530.37	-262.93	2,150,788.21	545,581.30	36.91068°N	107.67743°W
3,500.00	58.07	333.63	3,263.86	604.70	-299.78	2,150,862.54	545,544.45	36.91088°N	107.67755°W
3,600.00	62.07	333.63	3,313.74	682.33	-338.27	2,150,940.18	545,505.97	36.91110°N	107.67768°W
3,673.13	65.00	333.63	3,346.32	740.98	-367.34	2,150,998.82	545,476.89	36.91126°N	107.67778°W
LP, Hold Section									
3,700.00	65.00	333.63	3,357.67	762.80	-378.16	2,151,020.64	545,466.07	36.91132°N	107.67782°W
3,800.00	65.00	333.63	3,399.94	844.00	-418.41	2,151,101.84	545,425.82	36.91154°N	107.67796°W
3,900.00	65.00	333.63	3,442.20	925.20	-458.67	2,151,183.04	545,385.56	36.91176°N	107.67809°W
4,000.00	65.00	333.63	3,484.46	1,006.40	-498.92	2,151,264.24	545,345.31	36.91199°N	107.67823°W
4,100.00	65.00	333.63	3,526.72	1,087.60	-539.18	2,151,345.44	545,305.05	36.91221°N	107.67837°W
4,200.00	65.00	333.63	3,568.98	1,168.80	-579.44	2,151,426.64	545,264.80	36.91243°N	107.67851°W
4,268.66	65.00	333.63	3,598.00	1,224.55	-607.07	2,151,482.39	545,237.16	36.91259°N	107.67860°W
PBHL/TD									



Database: EDM 5000.1 Single User Db
Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Site: Sec.09-T31N-R08W
Well: San Juan 32-8 Unit 222H
Wellbore: Pilot Hole
Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,321.66	2,320.00	Ojo Alamo		0.00	
2,401.58	2,398.00	Kirtland		0.00	
3,523.26	3,276.00	Fruitland		0.00	
3,785.95	3,394.00	top of target		0.00	
3,809.61	3,404.00	base of target		0.00	
4,268.66	3,598.00	Pictured Cliffs		0.00	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,048.13	2,048.13	0.00	0.00	KOP, Build 4"/100' DLS
3,673.13	3,346.32	740.98	-367.34	LP, Hold Section
4,268.66	3,598.00	1,224.55	-607.07	PBHL/TD



Hilcorp Energy Company

San Juan Co., NM (NAD27)

Sec.09-T31N-R08W

San Juan 32-8 Unit 222H

Pilot Hole

Rev0

Anticollision Report

11 September, 2018





Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T31N-R08W
Site Error: 0.00 usft
Reference Well: San Juan 32-8 Unit 222H
Well Error: 0.00 usft
Reference Wellbore: Pilot Hole
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Reference Rev0

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 10,000.00 usft
Warning Levels Evaluated at: 2.00 Sigma
Error Model: ISCWSA
Scan Method: Closest Approach 3D
Error Surface: Elliptical Conic
Casing Method: Not applied

Survey Tool Program Date 09/10/18

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	4,268.66	Rev0 (Pilot Hole)	MWD	MWD - Standard

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						
Sec.09-T31N-R08W						
San Juan 32-8 Unit 222A - Original Hole - Original Hole	122.05	108.08	91.24	88.30	31.083	CC
San Juan 32-8 Unit 222A - Original Hole - Original Hole	2,200.00	2,185.89	92.33	23.53	1.342	Level 3, ES
San Juan 32-8 Unit 222A - Original Hole - Original Hole	2,300.00	2,284.89	95.21	23.64	1.330	Level 3, SF

Offset Design Sec.09-T31N-R08W - San Juan 32-8 Unit 222A - Original Hole - Original Hole

Survey Program: 216-INC_ONLY<10

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	66.24	36.91	83.85	92.67				
100.00	100.00	86.15	86.15	0.10	2.22	66.76	36.00	83.85	91.25	88.93	2.32	39.335	
122.05	122.05	108.08	108.07	0.15	2.79	66.78	35.96	83.85	91.24	88.30	2.94	31.083	CC
200.00	200.00	185.51	185.51	0.32	4.79	66.50	36.45	83.85	91.43	86.32	5.11	17.894	
300.00	300.00	285.75	285.74	0.55	8.30	65.94	37.43	83.85	91.82	82.98	8.84	10.387	
400.00	400.00	385.88	385.85	0.77	12.20	65.68	37.89	83.85	92.01	79.04	12.97	7.094	
500.00	500.00	486.05	486.00	0.99	16.10	65.62	38.00	83.85	92.05	74.96	17.10	5.384	
600.00	600.00	586.24	586.17	1.22	20.01	65.76	37.75	83.85	91.96	70.73	21.23	4.331	
700.00	700.00	686.46	686.37	1.44	23.92	66.09	37.16	83.85	91.72	66.35	25.36	3.616	
769.31	769.31	755.41	755.31	1.60	26.14	66.24	36.91	83.85	91.61	63.87	27.74	3.303	
800.00	800.00	786.11	786.00	1.67	26.95	66.24	36.91	83.85	91.61	62.99	28.62	3.201	
900.00	900.00	886.11	886.00	1.89	29.59	66.24	36.91	83.85	91.61	60.13	31.48	2.910	
1,000.00	1,000.00	986.12	986.00	2.12	32.23	66.24	36.91	83.85	91.61	57.26	34.35	2.667	
1,100.00	1,100.00	1,086.12	1,086.00	2.34	34.88	66.24	36.91	83.85	91.61	54.39	37.22	2.461	
1,200.00	1,200.00	1,186.13	1,186.00	2.57	37.52	66.24	36.91	83.85	91.61	51.52	40.09	2.285	
1,300.00	1,300.00	1,286.13	1,286.00	2.79	40.17	66.24	36.91	83.85	91.61	48.65	42.96	2.133	
1,400.00	1,400.00	1,386.14	1,386.00	3.02	42.81	66.24	36.91	83.85	91.61	45.78	45.83	1.999	
1,500.00	1,500.00	1,486.14	1,486.00	3.24	45.46	66.24	36.91	83.85	91.61	42.91	48.70	1.881	
1,600.00	1,600.00	1,586.15	1,586.00	3.47	48.11	66.24	36.91	83.85	91.61	40.03	51.58	1.776	
1,700.00	1,700.00	1,686.15	1,686.00	3.69	50.76	66.24	36.91	83.85	91.61	37.16	54.45	1.682	
1,800.00	1,800.00	1,786.16	1,786.00	3.92	53.41	66.24	36.91	83.85	91.61	34.29	57.32	1.598	
1,900.00	1,900.00	1,886.16	1,886.00	4.14	56.05	66.24	36.91	83.85	91.61	31.42	60.19	1.522	
2,000.00	2,000.00	1,986.17	1,986.00	4.37	58.70	66.24	36.91	83.85	91.61	28.54	63.07	1.453	Level 3
2,048.13	2,048.13	2,034.30	2,034.13	4.47	59.98	66.24	36.91	83.85	91.61	27.16	64.45	1.421	Level 3

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



Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T31N-R08W
Site Error: 0.00 usft
Reference Well: San Juan 32-8 Unit 222H
Well Error: 0.00 usft
Reference Wellbore: Pilot Hole
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design Sec.09-T31N-R08W - San Juan 32-8 Unit 222A - Original Hole - Original Hole												Offset Site Error:	0.00 usft
Survey Program: 216-INC_ONLY<10												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)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
2,100.00	2,099.99	2,086.16	2,085.99	4.59	61.35	93.20	36.91	83.85	91.66	25.72	65.94	1.390	Level 3
2,200.00	2,199.72	2,185.89	2,185.72	4.82	63.99	97.56	36.91	83.85	92.33	23.53	68.79	1.342	Level 3, ES
2,300.00	2,298.70	2,284.89	2,284.70	5.05	66.61	105.78	36.91	83.85	95.21	23.64	71.57	1.330	Level 3, SF
2,400.00	2,396.47	2,382.68	2,382.49	5.30	70.29	116.92	36.27	83.85	102.97	27.85	75.12	1.371	Level 3
2,500.00	2,492.54	2,478.71	2,478.51	5.60	74.03	128.36	35.86	83.85	118.47	40.36	78.11	1.517	
2,600.00	2,586.45	2,572.70	2,572.50	5.98	77.70	138.30	35.75	83.85	142.93	62.71	80.22	1.782	
2,700.00	2,677.73	2,664.25	2,664.05	6.45	81.26	146.12	35.93	83.85	176.21	94.75	81.46	2.163	
2,800.00	2,765.95	2,752.96	2,752.75	7.04	84.72	151.95	36.36	83.85	217.58	135.65	81.93	2.656	
2,900.00	2,850.66	2,836.88	2,836.66	7.77	88.12	156.17	36.91	83.85	266.33	184.56	81.76	3.257	
3,000.00	2,931.47	2,917.70	2,917.47	8.65	92.29	159.38	36.91	83.85	322.25	240.64	81.60	3.949	
3,100.00	3,007.98	2,994.22	2,993.98	9.67	96.23	161.73	36.91	83.85	384.40	303.75	80.64	4.767	
3,200.00	3,079.81	3,066.06	3,065.81	10.84	99.93	163.41	36.91	83.85	452.25	373.34	78.91	5.731	
3,300.00	3,146.61	3,132.88	3,132.61	12.16	103.37	164.59	36.91	83.85	525.31	448.87	76.44	6.872	
3,400.00	3,208.06	3,194.34	3,194.06	13.62	106.53	165.34	36.91	83.85	603.13	529.81	73.32	8.226	
3,500.00	3,263.86	3,250.15	3,249.86	15.19	109.41	165.70	36.91	83.85	685.24	615.57	69.67	9.835	
3,600.00	3,313.74	3,300.04	3,299.74	16.89	111.98	165.88	36.91	83.85	771.20	705.49	65.71	11.737	
3,673.13	3,346.32	3,332.63	3,332.32	18.19	113.66	165.40	36.91	83.85	836.23	773.43	62.81	13.314	
3,700.00	3,357.67	3,343.99	3,343.67	18.68	114.24	165.80	36.91	83.85	860.45	797.55	62.89	13.681	
3,800.00	3,399.94	3,386.26	3,385.94	20.52	116.42	167.11	36.91	83.85	950.61	887.22	63.39	14.996	
3,900.00	3,442.20	3,428.53	3,428.20	22.39	118.60	168.20	36.91	83.85	1,040.86	976.75	64.11	16.235	
4,000.00	3,484.46	3,470.80	3,470.46	24.27	120.78	169.13	36.91	83.85	1,131.17	1,066.17	65.00	17.404	
4,100.00	3,526.72	3,513.07	3,512.72	26.16	122.96	169.92	36.91	83.85	1,221.52	1,155.52	66.00	18.507	
4,200.00	3,568.98	3,555.34	3,554.98	28.07	125.13	170.60	36.91	83.85	1,311.92	1,244.81	67.11	19.549	
4,268.66	3,598.00	3,584.36	3,584.00	29.38	126.63	171.02	36.91	83.85	1,374.00	1,306.09	67.91	20.232	

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



Koltek Energy Services
Anticollision Report



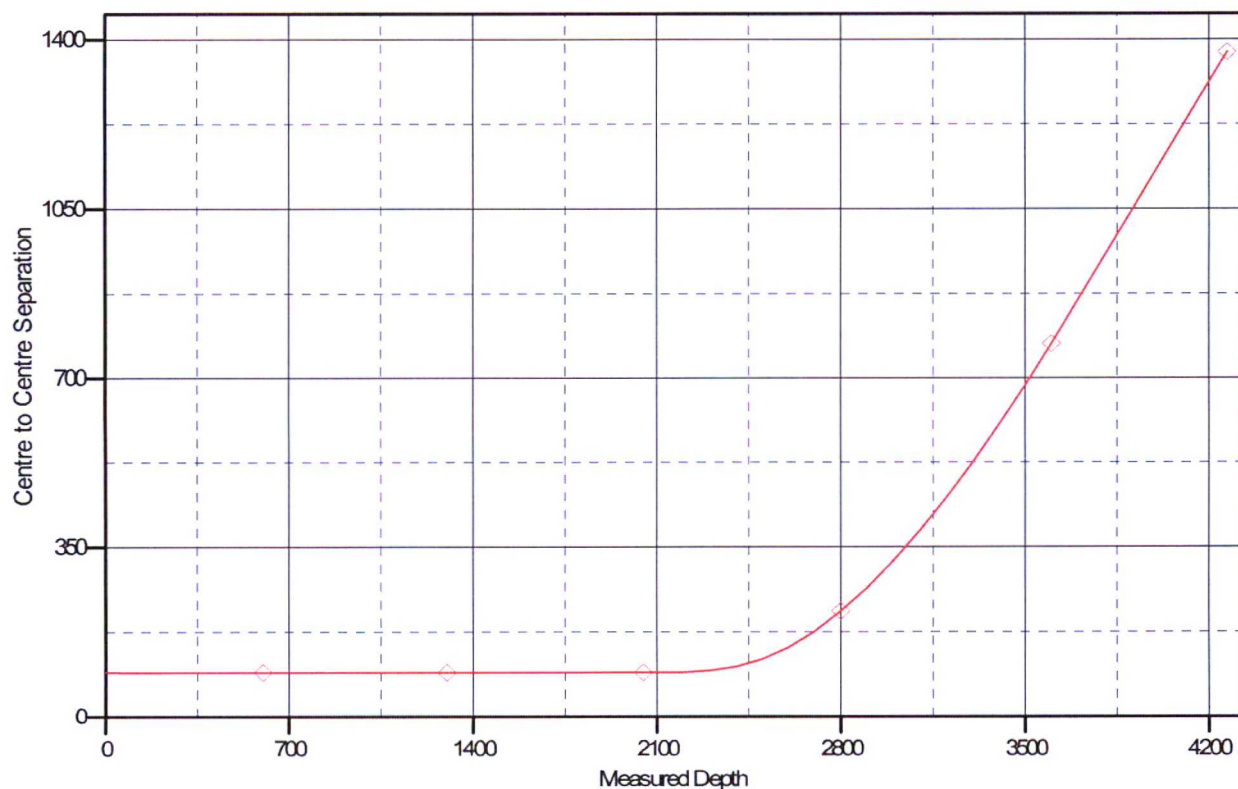
Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T31N-R08W
Site Error: 0.00 usft
Reference Well: San Juan 32-8 Unit 222H
Well Error: 0.00 usft
Reference Wellbore: Pilot Hole
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Reference Depths are relative to KB @ 6690.00usft
Offset Depths are relative to Offset Datum
Central Meridian is 107.83334°W

Coordinates are relative to: San Juan 32-8 Unit 222H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico West 30
Grid Convergence at Surface is: 0.09°

Ladder Plot



LEGEND

San Juan 32-8 Unit 222A, Original Hole, Original Hole V0



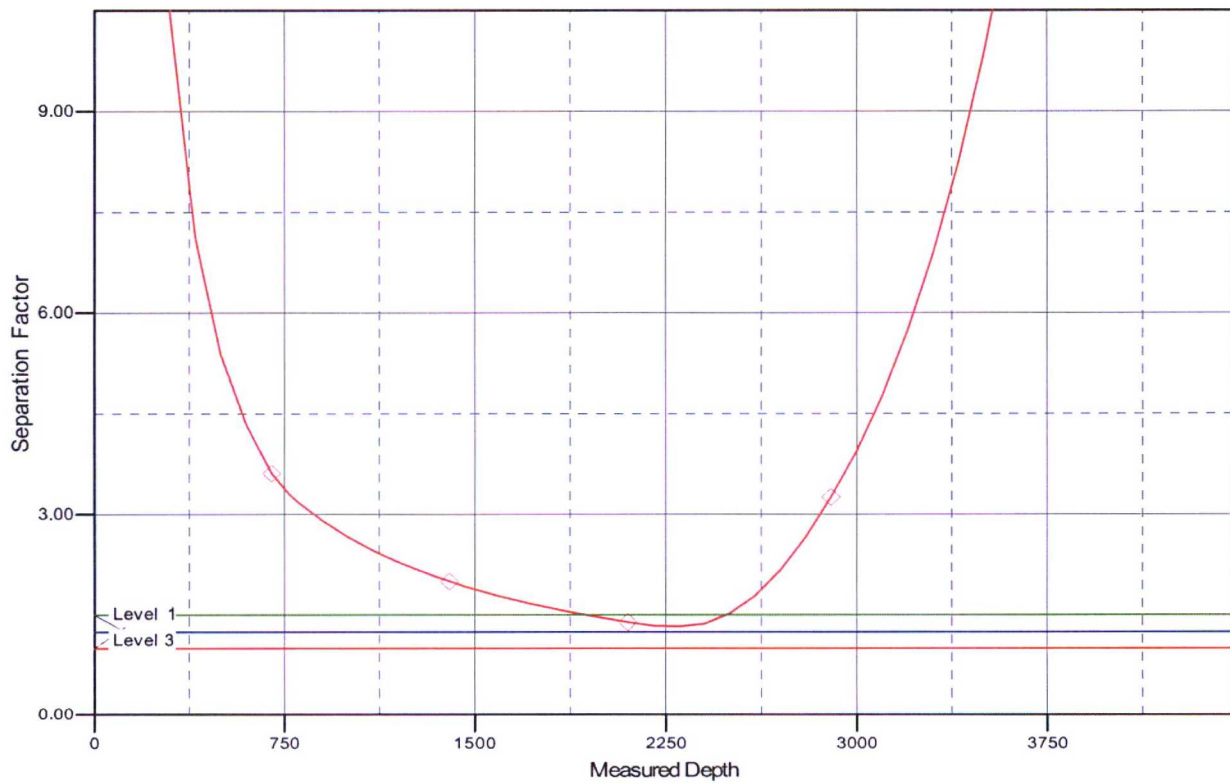
Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T31N-R08W
Site Error: 0.00 usft
Reference Well: San Juan 32-8 Unit 222H
Well Error: 0.00 usft
Reference Wellbore: Pilot Hole
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Reference Depths are relative to KB @ 6690.00usft
Offset Depths are relative to Offset Datum
Central Meridian is 107.83334°W

Coordinates are relative to: San Juan 32-8 Unit 222H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico West 30
Grid Convergence at Surface is: 0.09°

Separation Factor Plot



LEGEND

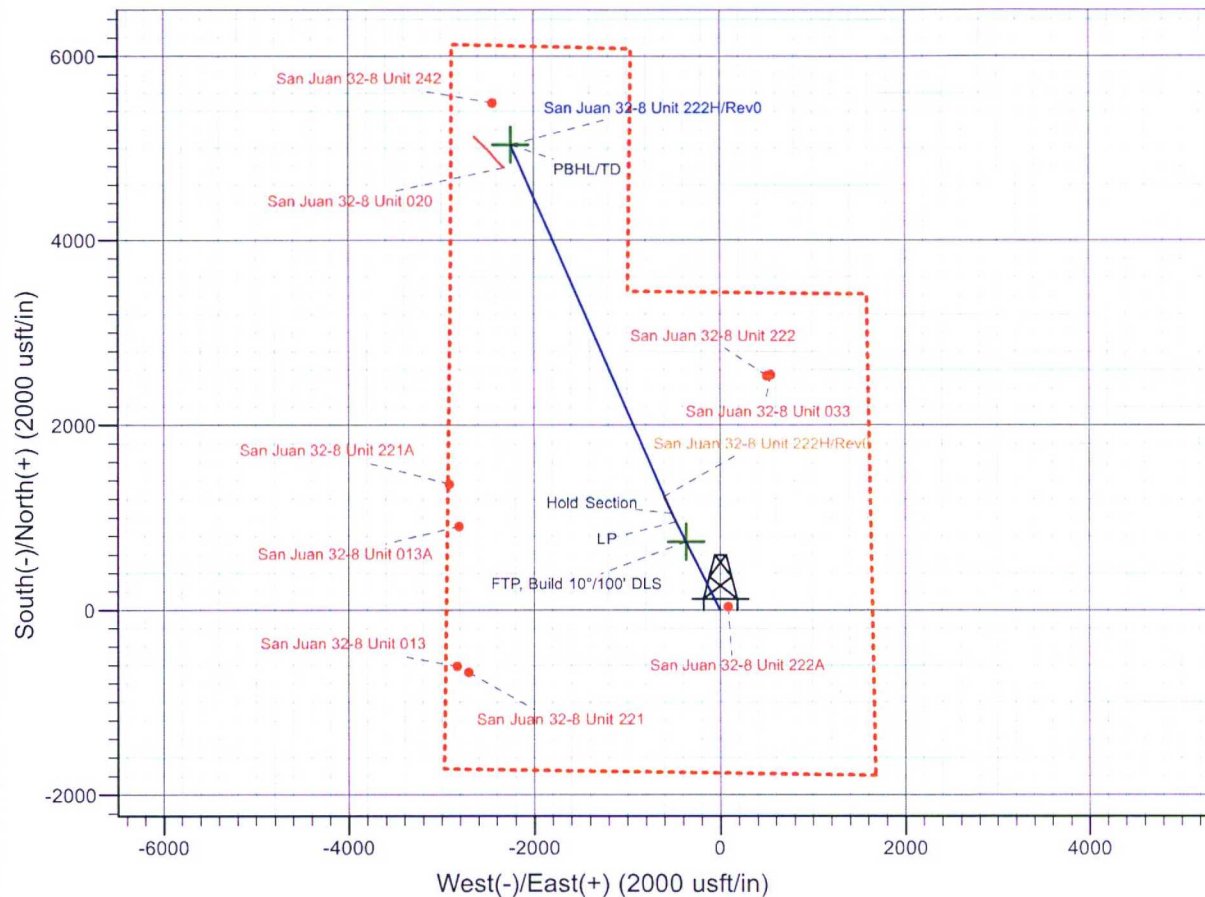
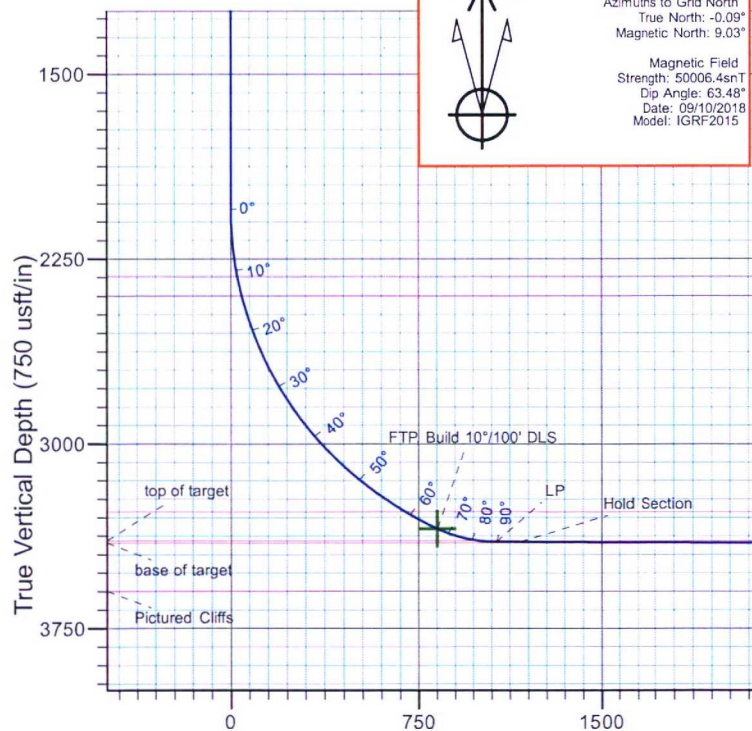
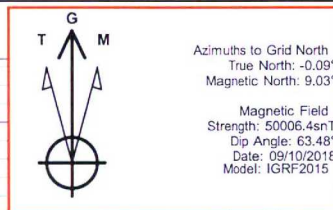
ar 32-8 Unit222A, Original Hole, Original Hole V0



Company: Hilcorp Energy Company
 Field: San Juan Co., NM (NAD27)
 Location: Sec.09-T31N-R08W
 Well: San Juan 32-8 Unit 222H
 Borehole: Lat 1
 Plan: Rev0



WELL DETAILS: San Juan 32-8 Unit 222H									
		GL 6675.00		KB @ 6690.00usft					
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude				
0.00	0.00	2150257.85	545844.23	36.90922°N	107.67653°W				
SECTION DETAILS									
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec
1	3673.13	65.00	333.63	3346.32	740.98	-367.34	0.00	0.00	826.35
2	3923.13	90.00	333.63	3400.00	957.93	-474.89	10.00	0.00	1068.30
3	4020.81	89.82	336.55	3400.16	1046.51	-516.03	3.00	93.57	1165.95
4	8372.99	89.82	336.55	3414.00	5039.35	-2247.63	0.00	0.00	5517.88
DESIGN TARGET DETAILS									
Name		TVD	+N/-S	+E/-W	Latitude	Longitude			
SJ 32-8 Unit 222H FTP		3346.32	740.98	-367.34	36.91126°N	107.67778°W			
SJ 32-8 Unit 222H Toe		3414.00	5039.35	-2247.63	36.92307°N	107.68419°W			
FORMATION TOP DETAILS					ANNOTATIONS				
TVDPath	MDPath	Formation			TVD	MD	Annotation		
2320.00	2321.66	Ojo Alamo			3346.32	3673.13	FTP, Build 10°/100' DLS		
2398.00	2401.58	Kirtland			3400.00	3923.13	LP		
3276.00	3523.26	Fruitland			3400.16	4020.81	Hold Section		
3394.00	3840.13	top of target			3414.00	8372.99	PBHL/TD		
3404.00	5229.25	base of target							



San Juan 32-8 Unit 222H	Rev0
Created By: J Rieke	Date: 8:57, September 11 2018

Vertical Section at 335.96° (750 usft/in)



Hilcorp Energy Company

San Juan Co., NM (NAD27)

Sec.09-T31N-R08W

San Juan 32-8 Unit 222H

Lat 1

Plan: Rev0

Standard Planning Report - Geographic

11 September, 2018





Koltek Energy Services
Planning Report - Geographic



Database: EDM 5000.1 Single User Db
Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Site: Sec.09-T31N-R08W
Well: San Juan 32-8 Unit 222H
Wellbore: Lat 1
Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Project	San Juan Co., NM (NAD27)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico West 3003		

Site	Sec.09-T31N-R08W				
Site Position:		Northing:	2,150,257.84 usft	Latitude:	36.90922°N
From:	Map	Easting:	545,844.23 usft	Longitude:	107.67653°W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.09 °

Well	San Juan 32-8 Unit 222H					
Well Position	+N/-S	0.00 usft	Northing:	2,150,257.84 usft	Latitude:	36.90922°N
	+E/-W	0.00 usft	Easting:	545,844.23 usft	Longitude:	107.67653°W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,675.00 usft

Wellbore	Lat 1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	09/10/18	9.12	63.48	50,006

Design	Rev0				
Audit Notes:					
Version:	Phase:	PROTOTYPE	Tie On Depth:	3,673.13	
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	335.96	

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
3,673.13	65.00	333.63	3,346.32	740.98	-367.34	0.00	0.00	0.00	0.00	
3,923.13	90.00	333.63	3,400.00	957.93	-474.89	10.00	10.00	0.00	0.00	
4,020.81	89.82	336.55	3,400.16	1,046.51	-516.03	3.00	-0.19	2.99	93.57	
8,372.99	89.82	336.55	3,414.00	5,039.36	-2,247.63	0.00	0.00	0.00	0.00	SJ 32-8 Unit 222H To



Database: EDM 5000.1 Single User Db
Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Site: Sec.09-T31N-R08W
Well: San Juan 32-8 Unit 222H
Wellbore: Lat 1
Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
3,673.13	65.00	333.63	3,346.32	740.98	-367.34	2,150,998.82	545,476.89	36.91126°N	107.67778°W
FTP, Build 10°/100' DLS									
3,700.00	67.69	333.63	3,357.10	763.03	-378.27	2,151,020.87	545,465.96	36.91132°N	107.67782°W
3,800.00	77.69	333.63	3,386.82	848.46	-420.62	2,151,106.30	545,423.61	36.91155°N	107.67796°W
3,900.00	87.69	333.63	3,399.53	937.21	-464.62	2,151,195.05	545,379.61	36.91180°N	107.67811°W
3,923.13	90.00	333.63	3,400.00	957.93	-474.89	2,151,215.77	545,369.34	36.91185°N	107.67815°W
LP									
4,000.00	89.86	335.93	3,400.10	1,027.47	-507.65	2,151,285.31	545,336.59	36.91204°N	107.67826°W
4,020.81	89.82	336.55	3,400.16	1,046.51	-516.03	2,151,304.36	545,328.21	36.91210°N	107.67829°W
Hold Section									
4,100.00	89.82	336.55	3,400.41	1,119.16	-547.54	2,151,377.01	545,296.70	36.91230°N	107.67840°W
4,200.00	89.82	336.55	3,400.73	1,210.91	-587.32	2,151,468.75	545,256.91	36.91255°N	107.67853°W
4,300.00	89.82	336.55	3,401.04	1,302.65	-627.11	2,151,560.49	545,217.12	36.91280°N	107.67867°W
4,400.00	89.82	336.55	3,401.36	1,394.40	-666.90	2,151,652.24	545,177.34	36.91305°N	107.67880°W
4,500.00	89.82	336.55	3,401.68	1,486.14	-706.68	2,151,743.98	545,137.55	36.91331°N	107.67894°W
4,600.00	89.82	336.55	3,402.00	1,577.88	-746.47	2,151,835.73	545,097.76	36.91356°N	107.67907°W
4,700.00	89.82	336.55	3,402.32	1,669.63	-786.26	2,151,927.47	545,057.98	36.91381°N	107.67921°W
4,800.00	89.82	336.55	3,402.63	1,761.37	-826.05	2,152,019.21	545,018.19	36.91406°N	107.67935°W
4,900.00	89.82	336.55	3,402.95	1,853.11	-865.83	2,152,110.96	544,978.40	36.91431°N	107.67948°W
5,000.00	89.82	336.55	3,403.27	1,944.86	-905.62	2,152,202.70	544,938.61	36.91457°N	107.67962°W
5,100.00	89.82	336.55	3,403.59	2,036.60	-945.41	2,152,294.44	544,898.83	36.91482°N	107.67975°W
5,200.00	89.82	336.55	3,403.91	2,128.34	-985.19	2,152,386.19	544,859.04	36.91507°N	107.67989°W
5,300.00	89.82	336.55	3,404.23	2,220.09	-1,024.98	2,152,477.93	544,819.25	36.91532°N	107.68002°W
5,400.00	89.82	336.55	3,404.54	2,311.83	-1,064.77	2,152,569.67	544,779.47	36.91557°N	107.68016°W
5,500.00	89.82	336.55	3,404.86	2,403.57	-1,104.55	2,152,661.42	544,739.68	36.91583°N	107.68029°W
5,600.00	89.82	336.55	3,405.18	2,495.32	-1,144.34	2,152,753.16	544,699.89	36.91608°N	107.68043°W
5,700.00	89.82	336.55	3,405.50	2,587.06	-1,184.13	2,152,844.91	544,660.10	36.91633°N	107.68057°W
5,800.00	89.82	336.55	3,405.82	2,678.81	-1,223.92	2,152,936.65	544,620.32	36.91658°N	107.68070°W
5,900.00	89.82	336.55	3,406.13	2,770.55	-1,263.70	2,153,028.39	544,580.53	36.91684°N	107.68084°W
6,000.00	89.82	336.55	3,406.45	2,862.29	-1,303.49	2,153,120.14	544,540.74	36.91709°N	107.68097°W
6,100.00	89.82	336.55	3,406.77	2,954.04	-1,343.28	2,153,211.88	544,500.96	36.91734°N	107.68111°W
6,200.00	89.82	336.55	3,407.09	3,045.78	-1,383.06	2,153,303.62	544,461.17	36.91759°N	107.68124°W
6,300.00	89.82	336.55	3,407.41	3,137.52	-1,422.85	2,153,395.37	544,421.38	36.91784°N	107.68138°W
6,400.00	89.82	336.55	3,407.72	3,229.27	-1,462.64	2,153,487.11	544,381.60	36.91810°N	107.68151°W
6,500.00	89.82	336.55	3,408.04	3,321.01	-1,502.43	2,153,578.85	544,341.81	36.91835°N	107.68165°W
6,600.00	89.82	336.55	3,408.36	3,412.75	-1,542.21	2,153,670.60	544,302.02	36.91860°N	107.68179°W
6,700.00	89.82	336.55	3,408.68	3,504.50	-1,582.00	2,153,762.34	544,262.23	36.91885°N	107.68192°W
6,800.00	89.82	336.55	3,409.00	3,596.24	-1,621.79	2,153,854.08	544,222.45	36.91911°N	107.68206°W
6,900.00	89.82	336.55	3,409.31	3,687.99	-1,661.57	2,153,945.83	544,182.66	36.91936°N	107.68219°W
7,000.00	89.82	336.55	3,409.63	3,779.73	-1,701.36	2,154,037.57	544,142.87	36.91961°N	107.68233°W
7,100.00	89.82	336.55	3,409.95	3,871.47	-1,741.15	2,154,129.32	544,103.09	36.91986°N	107.68246°W
7,200.00	89.82	336.55	3,410.27	3,963.22	-1,780.94	2,154,221.06	544,063.30	36.92011°N	107.68260°W
7,300.00	89.82	336.55	3,410.59	4,054.96	-1,820.72	2,154,312.80	544,023.51	36.92037°N	107.68274°W
7,400.00	89.82	336.55	3,410.91	4,146.70	-1,860.51	2,154,404.55	543,983.72	36.92062°N	107.68287°W
7,500.00	89.82	336.55	3,411.22	4,238.45	-1,900.30	2,154,496.29	543,943.94	36.92087°N	107.68301°W
7,600.00	89.82	336.55	3,411.54	4,330.19	-1,940.08	2,154,588.03	543,904.15	36.92112°N	107.68314°W
7,700.00	89.82	336.55	3,411.86	4,421.93	-1,979.87	2,154,679.78	543,864.36	36.92137°N	107.68328°W
7,800.00	89.82	336.55	3,412.18	4,513.68	-2,019.66	2,154,771.52	543,824.58	36.92163°N	107.68341°W
7,900.00	89.82	336.55	3,412.50	4,605.42	-2,059.44	2,154,863.26	543,784.79	36.92188°N	107.68355°W
8,000.00	89.82	336.55	3,412.81	4,697.16	-2,099.23	2,154,955.01	543,745.00	36.92213°N	107.68368°W
8,100.00	89.82	336.55	3,413.13	4,788.91	-2,139.02	2,155,046.75	543,705.22	36.92238°N	107.68382°W
8,200.00	89.82	336.55	3,413.45	4,880.65	-2,178.81	2,155,138.50	543,665.43	36.92264°N	107.68396°W
8,300.00	89.82	336.55	3,413.77	4,972.40	-2,218.59	2,155,230.24	543,625.64	36.92289°N	107.68409°W



Database: EDM 5000.1 Single User Db
Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Site: Sec.09-T31N-R08W
Well: San Juan 32-8 Unit 222H
Wellbore: Lat 1
Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
8,372.99	89.82	336.55	3,414.00	5,039.36	-2,247.63	2,155,297.20	543,596.60	36.92307°N	107.68419°W
PBHL/TD									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SJ 32-8 Unit 222H FTP - plan hits target center - Point	0.00	0.00	3,346.32	740.98	-367.34	2,150,998.82	545,476.89	36.91126°N	107.67778°W
SJ 32-8 Unit 222H Toe - plan hits target center - Point	0.00	0.00	3,414.00	5,039.36	-2,247.63	2,155,297.20	543,596.60	36.92307°N	107.68419°W

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,321.66	2,320.00	Ojo Alamo		0.00	
2,401.58	2,398.00	Kirtland		0.00	
3,523.26	3,276.00	Fruitland		0.00	
3,840.13	3,394.00	top of target		0.00	
5,229.25	3,404.00	base of target		0.00	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
3,673.13	3,346.32	740.98	-367.34	FTP, Build 10"/100' DLS
3,923.13	3,400.00	957.93	-474.89	LP
4,020.81	3,400.16	1,046.51	-516.03	Hold Section
8,372.99	3,414.00	5,039.36	-2,247.63	PBHL/TD



Hilcorp Energy Company

San Juan Co., NM (NAD27)

Sec.09-T31N-R08W

San Juan 32-8 Unit 222H

Lat 1

Rev0

Anticollision Report

11 September, 2018





Koltek Energy Services

Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T31N-R08W
Site Error: 0.00 usft
Reference Well: San Juan 32-8 Unit 222H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Reference	Rev0		
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 center-center distance of 10,000.00 usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date	09/11/18		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	3,673.13	Rev0 (Pilot Hole)	MWD	MWD - Standard	
3,673.13	8,372.99	Rev0 (Lat 1)	MWD	MWD - Standard	

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						
Sec.04-T31N-R08W						
San Juan 32-8 Unit 020 - Original Hole - Original Hole	8,372.99	3,170.00	405.76	290.91	3.533	CC, ES, SF
San Juan 32-8 Unit 242 - Original Hole - Original Hole	8,372.99	3,167.12	495.29	452.00	11.441	CC, ES, SF
Sec.09-T31N-R08W						
San Juan 32-8 Unit 013 - Original Hole - Original Hole	3,543.09	3,248.09	2,805.80	2,778.63	103.274	CC
San Juan 32-8 Unit 013 - Original Hole - Original Hole	3,600.00	3,275.74	2,806.24	2,778.01	99.410	ES
San Juan 32-8 Unit 013 - Original Hole - Original Hole	8,372.99	3,376.00	5,677.78	5,554.81	46.172	SF
San Juan 32-8 Unit 013A - Original Hole - Original Hole	4,807.18	3,324.25	2,158.25	2,067.70	23.835	CC, ES
San Juan 32-8 Unit 013A - Original Hole - Original Hole	5,900.00	3,323.64	2,419.15	2,306.43	21.462	SF
San Juan 32-8 Unit 033 - Original Hole - Original Hole	4,974.55	3,300.19	1,569.61	1,518.42	30.662	CC
San Juan 32-8 Unit 033 - Original Hole - Original Hole	5,000.00	3,300.27	1,569.82	1,518.13	30.368	ES
San Juan 32-8 Unit 033 - Original Hole - Original Hole	6,000.00	3,303.45	1,874.89	1,802.69	25.969	SF
San Juan 32-8 Unit 221 - Original Hole - Original Hole	3,404.29	3,184.57	2,726.32	2,701.62	110.343	CC
San Juan 32-8 Unit 221 - Original Hole - Original Hole	3,500.00	3,237.86	2,727.48	2,701.08	103.301	ES
San Juan 32-8 Unit 221 - Original Hole - Original Hole	8,372.99	3,388.00	5,735.25	5,612.24	46.623	SF
San Juan 32-8 Unit 221A - Original Hole - Original Hole	5,267.07	3,329.36	2,074.29	1,925.63	13.954	CC
San Juan 32-8 Unit 221A - Original Hole - Original Hole	5,300.00	3,329.46	2,074.55	1,925.22	13.893	ES
San Juan 32-8 Unit 221A - Original Hole - Original Hole	5,900.00	3,331.37	2,168.70	2,006.90	13.404	SF
San Juan 32-8 Unit 222 - Original Hole - Original Hole	4,984.09	3,303.30	1,529.15	1,427.96	15.112	CC
San Juan 32-8 Unit 222 - Original Hole - Original Hole	5,000.00	3,303.35	1,529.23	1,427.73	15.066	ES
San Juan 32-8 Unit 222 - Original Hole - Original Hole	5,500.00	3,304.94	1,613.83	1,502.18	14.454	SF
San Juan 32-8 Unit 222A - Original Hole - Original Hole	122.05	108.08	91.24	88.30	31.083	CC
San Juan 32-8 Unit 222A - Original Hole - Original Hole	2,200.00	2,185.89	92.33	23.53	1.342	Level 3, ES
San Juan 32-8 Unit 222A - Original Hole - Original Hole	2,300.00	2,284.89	95.21	23.64	1.330	Level 3, SF
San Juan 32-8 Unit 222H - Pilot Hole - Rev0	3,673.13	3,673.13	0.00	0.00	10,000.000	CC
San Juan 32-8 Unit 222H - Pilot Hole - Rev0	3,685.42	3,685.42	0.13	-0.04	0.787	Level 1, ES, SF

Offset Design											Offset Site Error:	0.00 usft
Survey Program: 3503-MWD											Offset Well Error:	0.00 usft
Reference												
Measured Depth (usft)		Vertical Depth (usft)		Offset		Semi Major Axis		Distance		Warning		
Reference		Vertical		Reference		Offset		Highside				
Depth (usft)		Depth (usft)		Depth (usft)		Depth (usft)		Toolface (°)				
0.00		0.00		0.00		0.00		-27.29				
								5,125.33				
								-2,644.18				
								5,772.37				

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



Koltek Energy Services

Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T31N-R08W
Site Error: 0.00 usft
Reference Well: San Juan 32-8 Unit 222H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 3503-MWD												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)					
100.00	100.00	0.00	0.00	0.10	0.00	-27.29	5,125.33	-2,644.18	5,769.01	5,768.91	0.10	N/A	
200.00	200.00	0.00	0.00	0.32	0.00	-27.29	5,125.33	-2,644.18	5,767.38	5,767.06	0.32	N/A	
259.52	259.52	15.52	15.52	0.45	0.02	-27.29	5,125.33	-2,644.18	5,767.21	5,766.74	0.47	N/A	
300.00	300.00	56.00	56.00	0.55	0.06	-27.29	5,125.33	-2,644.18	5,767.21	5,766.60	0.61	9,482.594	
400.00	400.00	156.00	156.00	0.77	0.18	-27.29	5,125.33	-2,644.18	5,767.21	5,766.26	0.95	6,100.722	
500.00	500.00	256.00	256.00	0.99	0.29	-27.29	5,125.33	-2,644.18	5,767.21	5,765.93	1.28	4,496.935	
600.00	600.00	356.00	356.00	1.22	0.40	-27.29	5,125.33	-2,644.18	5,767.21	5,765.59	1.62	3,560.843	
700.00	700.00	456.00	456.00	1.44	0.51	-27.29	5,125.33	-2,644.18	5,767.21	5,765.25	1.96	2,947.322	
800.00	800.00	556.00	556.00	1.67	0.63	-27.29	5,125.33	-2,644.18	5,767.21	5,764.92	2.29	2,514.144	
900.00	900.00	656.00	656.00	1.89	0.74	-27.29	5,125.33	-2,644.18	5,767.21	5,764.58	2.63	2,191.981	
1,000.00	1,000.00	756.00	756.00	2.12	0.85	-27.29	5,125.33	-2,644.18	5,767.21	5,764.24	2.97	1,943.004	
1,100.00	1,100.00	856.00	856.00	2.34	0.96	-27.29	5,125.33	-2,644.18	5,767.21	5,763.90	3.31	1,744.818	
1,200.00	1,200.00	956.00	956.00	2.57	1.07	-27.29	5,125.33	-2,644.18	5,767.21	5,763.57	3.64	1,583.320	
1,300.00	1,300.00	1,056.00	1,056.00	2.79	1.19	-27.29	5,125.33	-2,644.18	5,767.21	5,763.23	3.98	1,449.185	
1,400.00	1,400.00	1,156.00	1,156.00	3.02	1.30	-27.29	5,125.33	-2,644.18	5,767.21	5,762.89	4.32	1,336.002	
1,500.00	1,500.00	1,256.00	1,256.00	3.24	1.41	-27.29	5,125.33	-2,644.18	5,767.21	5,762.56	4.65	1,239.218	
1,600.00	1,600.00	1,356.00	1,356.00	3.47	1.52	-27.29	5,125.33	-2,644.18	5,767.21	5,762.22	4.99	1,155.510	
1,700.00	1,700.00	1,456.00	1,456.00	3.69	1.64	-27.29	5,125.33	-2,644.18	5,767.21	5,761.88	5.33	1,082.394	
1,800.00	1,800.00	1,556.00	1,556.00	3.92	1.75	-27.29	5,125.33	-2,644.18	5,767.21	5,761.54	5.67	1,017.981	
1,900.00	1,900.00	1,656.00	1,656.00	4.14	1.86	-27.29	5,125.33	-2,644.18	5,767.21	5,761.21	6.00	960.804	
2,000.00	2,000.00	1,756.00	1,756.00	4.37	1.97	-27.29	5,125.33	-2,644.18	5,767.21	5,760.87	6.34	909.708	
2,048.13	2,048.13	1,804.13	1,804.13	4.47	2.03	-27.29	5,125.33	-2,644.18	5,767.21	5,760.71	6.50	887.005	
2,100.00	2,099.99	1,855.99	1,855.99	4.59	2.09	-0.92	5,125.33	-2,644.18	5,766.27	5,759.60	6.67	864.106	
2,200.00	2,199.72	1,955.72	1,955.72	4.82	2.20	-0.93	5,125.33	-2,644.18	5,759.17	5,752.18	6.98	824.627	
2,300.00	2,298.70	2,054.70	2,054.70	5.05	2.31	-0.94	5,125.33	-2,644.18	5,745.13	5,737.86	7.27	790.305	
2,400.00	2,396.47	2,152.47	2,152.47	5.30	2.42	-0.95	5,125.33	-2,644.18	5,724.21	5,716.68	7.53	760.266	
2,500.00	2,492.54	2,248.54	2,248.54	5.60	2.53	-0.98	5,125.33	-2,644.18	5,696.53	5,688.77	7.76	733.651	
2,600.00	2,586.45	2,342.45	2,342.45	5.98	2.63	-1.01	5,125.33	-2,644.18	5,662.22	5,654.24	7.98	709.697	
2,611.18	2,596.79	2,352.79	2,352.79	6.03	2.64	-1.01	5,125.33	-2,644.18	5,657.98	5,649.97	8.01	706.707	
2,700.00	2,677.73	4,357.92	4,322.21	6.45	7.19	-0.24	4,962.60	-2,478.85	5,722.08	5,710.92	11.16	512.516	
2,800.00	2,765.95	4,367.00	4,330.74	7.04	7.23	-0.24	4,960.31	-2,476.75	5,648.86	5,637.68	11.18	505.332	
2,900.00	2,850.66	4,367.00	4,330.74	7.77	7.23	-0.26	4,960.31	-2,476.75	5,571.79	5,560.63	11.16	499.143	
3,000.00	2,931.47	4,367.00	4,330.74	8.65	7.23	-0.29	4,960.31	-2,476.75	5,491.12	5,479.98	11.14	492.804	
3,100.00	3,007.98	4,367.00	4,330.74	9.67	7.23	-0.32	4,960.31	-2,476.75	5,407.07	5,395.95	11.13	486.023	
3,200.00	3,079.81	4,471.57	4,429.63	10.84	7.72	-0.17	4,934.85	-2,454.23	5,317.23	5,305.95	11.28	471.523	
3,300.00	3,146.61	4,487.50	4,444.80	12.16	7.80	-0.16	4,931.14	-2,451.09	5,226.34	5,215.04	11.30	462.648	
3,400.00	3,208.06	4,501.29	4,457.95	13.62	7.86	-0.17	4,927.96	-2,448.44	5,132.92	5,121.59	11.33	452.944	
3,500.00	3,263.86	4,512.80	4,468.94	15.19	7.91	-0.18	4,925.33	-2,446.27	5,037.37	5,025.98	11.39	442.283	
3,600.00	3,313.74	4,521.89	4,477.64	16.89	7.96	-0.20	4,923.26	-2,444.58	4,940.06	4,928.59	11.47	430.611	
3,673.13	3,346.32	4,526.95	4,482.47	18.19	7.98	-0.25	4,922.12	-2,443.65	4,868.04	4,856.49	11.55	421.450	
3,673.13	3,346.32	4,526.95	4,482.47	18.19	7.98	-0.25	4,922.12	-2,443.65	4,868.04	4,856.49	11.55	421.450	
3,700.00	3,357.10	4,528.30	4,483.77	18.56	7.99	-0.35	4,921.82	-2,443.40	4,841.39	4,830.08	11.31	428.206	
3,750.00	3,374.04	4,529.49	4,484.91	19.06	7.99	-2.29	4,921.55	-2,443.19	4,791.49	4,780.78	10.71	447.245	
3,800.00	3,386.82	4,528.92	4,484.36	19.62	7.99	-179.49	4,921.68	-2,443.29	4,741.52	4,731.38	10.14	467.598	
3,850.00	3,395.34	4,526.55	4,482.10	20.24	7.98	-179.76	4,922.21	-2,443.72	4,691.88	4,682.26	9.62	487.799	
3,900.00	3,399.53	4,522.38	4,478.10	20.90	7.96	-179.83	4,923.15	-2,444.49	4,642.93	4,633.75	9.18	505.553	
3,923.13	3,400.00	4,519.84	4,475.67	21.22	7.95	-179.84	4,923.73	-2,444.96	4,620.63	4,611.62	9.02	512.406	
4,000.00	3,400.10	4,510.74	4,466.98	22.31	7.90	-172.09	4,925.80	-2,446.65	4,546.99	4,536.82	10.17	446.977	
4,020.81	3,400.16	4,508.28	4,464.63	22.61	7.89	-170.01	4,926.36	-2,447.11	4,527.07	4,516.33	10.74	421.514	
4,100.00	3,400.41	4,498.83	4,455.61	23.81	7.85	-169.91	4,928.52	-2,448.91	4,451.33	4,440.22	11.11	400.732	
4,200.00	3,400.73	4,486.65	4,443.99	25.43	7.79	-169.78	4,931.34	-2,451.26	4,355.79	4,344.15	11.64	374.324	
4,300.00	3,401.04	4,474.17	4,432.10	27.12	7.73	-169.63	4,934.25	-2,453.72	4,260.37	4,248.15	12.22	348.554	

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



Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T31N-R08W
Site Error: 0.00 usft
Reference Well: San Juan 32-8 Unit 222H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 3503-MWD												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 Tooface (")	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
4,400.00	3,401.36	4,461.39	4,419.95	28.88	7.67	-169.48	4,937.25	-2,456.28	4,165.08	4,152.22	12.86	323.934	
4,500.00	3,401.68	4,367.00	4,330.74	30.69	7.23	-168.24	4,960.31	-2,476.75	4,071.74	4,057.95	13.79	295.356	
4,600.00	3,402.00	4,367.00	4,330.74	32.54	7.23	-168.24	4,960.31	-2,476.75	3,976.18	3,961.71	14.47	274.731	
4,700.00	3,402.32	4,367.00	4,330.74	34.43	7.23	-168.24	4,960.31	-2,476.75	3,880.84	3,865.66	15.18	255.619	
4,800.00	3,402.63	4,367.00	4,330.74	36.36	7.23	-168.24	4,960.31	-2,476.75	3,785.75	3,769.84	15.91	237.958	
4,900.00	3,402.95	4,367.00	4,330.74	38.31	7.23	-168.24	4,960.31	-2,476.75	3,690.91	3,674.26	16.65	221.657	
5,000.00	3,403.27	4,367.00	4,330.74	40.28	7.23	-168.24	4,960.31	-2,476.75	3,596.35	3,578.95	17.41	206.617	
5,100.00	3,403.59	4,356.45	4,320.83	42.27	7.18	-168.08	4,962.97	-2,479.19	3,502.08	3,483.86	18.22	192.164	
5,200.00	3,403.91	4,320.83	4,287.36	44.28	6.99	-167.54	4,971.87	-2,487.50	3,407.89	3,388.69	19.20	177.454	
5,300.00	3,404.23	4,285.52	4,254.18	46.31	6.80	-166.96	4,980.59	-2,495.85	3,313.69	3,293.46	20.23	163.783	
5,400.00	3,404.54	4,250.53	4,221.29	48.34	6.62	-166.34	4,989.14	-2,504.22	3,219.50	3,198.19	21.31	151.070	
5,500.00	3,404.86	4,215.84	4,188.70	50.39	6.44	-165.69	4,997.52	-2,512.61	3,125.32	3,102.88	22.45	139.238	
5,600.00	3,405.18	4,158.80	4,135.03	52.45	6.15	-164.52	5,010.99	-2,526.49	3,031.06	3,007.16	23.89	126.852	
5,700.00	3,405.50	4,100.58	4,080.10	54.52	5.85	-163.20	5,024.20	-2,540.54	2,936.55	2,911.04	25.52	115.091	
5,800.00	3,405.82	3,999.37	3,984.07	56.59	5.43	-160.53	5,045.90	-2,563.98	2,841.65	2,813.58	28.07	101.225	
5,900.00	3,406.13	3,950.26	3,937.16	58.68	5.24	-159.06	5,055.89	-2,574.53	2,746.21	2,716.19	30.02	91.483	
6,000.00	3,406.45	3,928.20	3,916.07	60.77	5.17	-158.36	5,060.37	-2,579.22	2,650.84	2,619.33	31.51	84.115	
6,100.00	3,406.77	3,162.77	3,162.77	62.86	3.55	-88.61	5,125.33	-2,644.18	2,531.18	2,464.79	66.39	38.126	
6,200.00	3,407.09	3,163.09	3,163.09	64.96	3.55	-88.67	5,125.33	-2,644.18	2,432.07	2,363.57	68.49	35.509	
6,300.00	3,407.41	3,163.41	3,163.41	67.07	3.56	-88.72	5,125.33	-2,644.18	2,333.03	2,262.43	70.60	33.047	
6,400.00	3,407.72	3,163.72	3,163.72	69.17	3.56	-88.78	5,125.33	-2,644.18	2,234.08	2,161.37	72.71	30.727	
6,500.00	3,408.04	3,164.04	3,164.04	71.29	3.56	-88.83	5,125.33	-2,644.18	2,135.22	2,060.40	74.82	28.538	
6,600.00	3,408.36	3,164.36	3,164.36	73.40	3.56	-88.89	5,125.33	-2,644.18	2,036.48	1,959.54	76.94	26.469	
6,700.00	3,408.68	3,164.68	3,164.68	75.52	3.56	-88.94	5,125.33	-2,644.18	1,937.87	1,858.81	79.06	24.511	
6,800.00	3,409.00	3,165.00	3,165.00	77.64	3.56	-89.00	5,125.33	-2,644.18	1,839.40	1,758.22	81.18	22.657	
6,900.00	3,409.31	3,165.31	3,165.31	79.77	3.56	-89.05	5,125.33	-2,644.18	1,741.11	1,657.80	83.31	20.899	
7,000.00	3,409.63	3,165.63	3,165.63	81.90	3.56	-89.11	5,125.33	-2,644.18	1,643.03	1,557.59	85.44	19.230	
7,100.00	3,409.95	3,165.95	3,165.95	84.03	3.56	-89.17	5,125.33	-2,644.18	1,545.20	1,457.62	87.57	17.645	
7,200.00	3,410.27	3,166.27	3,166.27	86.16	3.56	-89.22	5,125.33	-2,644.18	1,447.65	1,357.95	89.70	16.138	
7,300.00	3,410.59	3,166.59	3,166.59	88.29	3.56	-89.28	5,125.33	-2,644.18	1,350.47	1,258.63	91.84	14.705	
7,400.00	3,410.91	3,166.91	3,166.91	90.43	3.56	-89.33	5,125.33	-2,644.18	1,253.74	1,159.76	93.98	13.341	
7,500.00	3,411.22	3,167.22	3,167.22	92.57	3.56	-89.39	5,125.33	-2,644.18	1,157.55	1,061.44	96.12	12.043	
7,600.00	3,411.54	3,167.54	3,167.54	94.71	3.56	-89.44	5,125.33	-2,644.18	1,062.07	963.82	98.26	10.809	
7,700.00	3,411.86	3,167.86	3,167.86	96.85	3.56	-89.50	5,125.33	-2,644.18	967.51	867.11	100.40	9.637	
7,800.00	3,412.18	3,168.18	3,168.18	98.99	3.56	-89.55	5,125.33	-2,644.18	874.16	771.61	102.54	8.525	
7,900.00	3,412.50	3,168.50	3,168.50	101.13	3.56	-89.61	5,125.33	-2,644.18	782.45	677.76	104.69	7.474	
8,000.00	3,412.81	3,168.81	3,168.81	103.28	3.56	-89.66	5,125.33	-2,644.18	693.03	586.20	106.83	6.487	
8,100.00	3,413.13	3,169.13	3,169.13	105.42	3.56	-89.72	5,125.33	-2,644.18	606.93	497.95	108.98	5.569	
8,200.00	3,413.45	3,169.45	3,169.45	107.57	3.56	-89.77	5,125.33	-2,644.18	525.78	414.65	111.13	4.731	
8,300.00	3,413.77	3,169.77	3,169.77	109.72	3.56	-89.83	5,125.33	-2,644.18	452.23	338.95	113.28	3.992	
8,372.99	3,414.00	3,170.00	3,170.00	111.29	3.56	-89.87	5,125.33	-2,644.18	405.76	290.91	114.85	3.533 CC, ES, SF	



Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T31N-R08W
Site Error: 0.00 usft
Reference Well: San Juan 32-8 Unit 222H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design Sec.04-T31N-R08W - San Juan 32-8 Unit 242 - Original Hole - Original Hole													Offset Site Error: 0.00 usft
Survey Program: 290-INC_ONLY<10													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 +N/-S (usft)	Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	-23.99	5,493.70	-2,444.81	6,018.21				
100.00	100.00	0.00	0.00	0.10	0.00	-23.99	5,493.70	-2,444.81	6,014.94	6,014.84	0.10	N/A	
200.00	200.00	0.00	0.00	0.32	0.00	-23.99	5,493.70	-2,444.81	6,013.33	6,013.01	0.32	N/A	
300.00	300.00	71.28	71.28	0.55	0.73	-23.99	5,493.35	-2,444.81	6,012.85	6,011.58	1.27	4,725.745	
392.00	392.00	145.01	145.01	0.75	1.48	-23.99	5,493.23	-2,444.81	6,012.71	6,010.48	2.23	2,694.909	
400.00	400.00	151.41	151.41	0.77	1.54	-23.99	5,493.23	-2,444.81	6,012.71	6,010.40	2.31	2,597.877	
500.00	500.00	231.54	231.54	0.99	2.36	-23.99	5,493.40	-2,444.81	6,012.90	6,009.55	3.36	1,791.412	
600.00	600.00	290.00	290.00	1.22	2.96	-23.99	5,493.70	-2,444.81	6,013.47	6,009.29	4.18	1,439.459	
700.00	700.00	453.00	453.00	1.44	6.28	-23.99	5,493.70	-2,444.81	6,013.14	6,005.41	7.73	778.110	
800.00	800.00	553.01	553.00	1.67	8.32	-23.99	5,493.70	-2,444.81	6,013.14	6,003.15	9.99	601.745	
900.00	900.00	653.01	653.00	1.89	10.36	-23.99	5,493.70	-2,444.81	6,013.14	6,000.88	12.26	490.556	
1,000.00	1,000.00	753.01	753.00	2.12	12.40	-23.99	5,493.70	-2,444.81	6,013.14	5,998.62	14.52	414.049	
1,025.90	1,025.90	778.92	778.90	2.18	12.93	-23.99	5,493.70	-2,444.81	6,013.14	5,998.03	15.11	397.973	
1,100.00	1,100.00	798.00	797.99	2.34	13.32	-23.99	5,493.70	-2,444.81	6,013.39	5,997.73	15.67	383.867	
1,191.01	1,191.01	938.86	938.84	2.55	15.77	-23.99	5,493.92	-2,444.81	6,013.35	5,995.02	18.32	328.209	
1,200.00	1,200.00	948.31	948.29	2.57	15.94	-23.99	5,493.93	-2,444.81	6,013.35	5,994.85	18.51	324.934	
1,300.00	1,300.00	1,053.40	1,053.38	2.79	17.77	-23.99	5,493.97	-2,444.81	6,013.39	5,992.83	20.56	292.474	
1,400.00	1,400.00	1,158.50	1,158.47	3.02	19.60	-23.99	5,493.92	-2,444.81	6,013.34	5,990.73	22.61	265.906	
1,500.00	1,500.00	1,263.60	1,263.57	3.24	21.43	-23.99	5,493.76	-2,444.81	6,013.21	5,988.54	24.67	243.759	
1,600.00	1,600.00	1,361.65	1,361.62	3.47	23.13	-23.99	5,493.57	-2,444.81	6,013.03	5,986.43	26.60	226.045	
1,700.00	1,700.00	1,456.98	1,456.95	3.69	24.79	-23.99	5,493.47	-2,444.81	6,012.93	5,984.44	28.49	211.082	
1,784.47	1,784.47	1,537.51	1,537.47	3.88	26.20	-23.99	5,493.44	-2,444.81	6,012.90	5,982.82	30.08	199.906	
1,800.00	1,800.00	1,552.31	1,552.28	3.92	26.45	-23.99	5,493.44	-2,444.81	6,012.90	5,982.53	30.37	197.979	
1,900.00	1,900.00	1,647.63	1,647.60	4.14	28.12	-23.99	5,493.49	-2,444.81	6,012.95	5,980.69	32.26	186.411	
2,000.00	2,000.00	1,742.96	1,742.92	4.37	29.78	-23.99	5,493.62	-2,444.81	6,013.08	5,978.94	34.14	176.122	
2,048.13	2,048.13	1,782.00	1,781.97	4.47	30.46	-23.99	5,493.70	-2,444.81	6,013.17	5,978.24	34.93	172.150	
2,100.00	2,099.99	1,782.00	1,781.97	4.59	30.46	2.38	5,493.70	-2,444.81	6,012.62	5,977.59	35.03	171.621	
2,200.00	2,199.72	1,959.69	1,959.65	4.82	35.14	2.39	5,493.20	-2,444.81	6,004.65	5,964.87	39.79	150.923	
2,300.00	2,298.70	2,050.04	2,049.99	5.05	37.53	2.42	5,493.16	-2,444.81	5,990.58	5,948.56	42.02	142.578	
2,400.00	2,396.47	2,139.30	2,139.25	5.30	39.88	2.47	5,493.26	-2,444.81	5,969.78	5,925.81	43.97	135.777	
2,500.00	2,492.54	2,227.08	2,227.03	5.60	42.20	2.53	5,493.49	-2,444.81	5,942.35	5,896.75	45.60	130.308	
2,600.00	2,586.45	2,282.00	2,281.95	5.98	43.65	2.60	5,493.70	-2,444.81	5,908.51	5,862.39	46.12	128.099	
2,700.00	2,677.73	2,430.79	2,430.73	6.45	48.48	2.72	5,493.70	-2,444.81	5,867.48	5,818.05	49.43	118.694	
2,800.00	2,765.95	2,463.00	2,462.94	7.04	49.52	2.82	5,493.70	-2,444.81	5,820.74	5,771.81	48.93	118.960	
2,900.00	2,850.66	2,597.21	2,597.14	7.77	53.48	2.99	5,493.93	-2,444.81	5,767.64	5,717.04	50.61	113.967	
3,000.00	2,931.47	2,681.18	2,681.10	8.65	55.96	3.18	5,494.01	-2,444.81	5,708.90	5,658.31	50.59	112.845	
3,100.00	3,007.98	2,760.62	2,760.54	9.67	58.31	3.42	5,494.04	-2,444.81	5,644.62	5,594.55	50.07	112.739	
3,200.00	3,079.81	2,835.15	2,835.06	10.84	60.50	3.70	5,494.03	-2,444.81	5,575.13	5,526.09	49.04	113.675	
3,300.00	3,146.61	2,904.39	2,904.29	12.16	62.55	4.06	5,493.98	-2,444.81	5,500.78	5,453.24	47.54	115.718	
3,400.00	3,208.06	2,968.01	2,967.91	13.62	64.43	4.50	5,493.91	-2,444.81	5,421.93	5,376.36	45.57	118.972	
3,500.00	3,263.86	3,025.71	3,025.60	15.19	66.13	5.07	5,493.81	-2,444.81	5,338.98	5,295.77	43.21	123.567	
3,600.00	3,313.74	3,077.20	3,077.09	16.89	67.65	5.82	5,493.71	-2,444.81	5,252.34	5,211.81	40.52	129.612	
3,673.13	3,346.32	3,082.00	3,081.89	18.19	67.79	6.46	5,493.70	-2,444.81	5,186.96	5,148.93	38.03	136.388	
3,673.13	3,346.32	3,082.00	3,081.89	18.19	67.79	6.46	5,493.70	-2,444.81	5,186.96	5,148.93	38.03	136.388	
3,700.00	3,357.10	3,082.00	3,081.89	18.56	67.79	7.17	5,493.70	-2,444.81	5,162.43	5,127.00	35.42	145.745	
3,750.00	3,374.04	3,082.00	3,081.89	19.06	67.79	9.07	5,493.70	-2,444.81	5,115.58	5,084.59	30.99	165.095	
3,800.00	3,386.82	3,082.00	3,081.89	19.62	67.79	12.40	5,493.70	-2,444.81	5,067.45	5,038.59	28.86	175.607	
3,850.00	3,395.34	3,082.00	3,081.89	20.24	67.79	19.53	5,493.70	-2,444.81	5,018.36	4,984.41	33.96	147.792	
3,900.00	3,399.53	3,082.00	3,081.89	20.90	67.79	42.67	5,493.70	-2,444.81	4,968.68	4,907.03	61.65	80.593	
3,923.13	3,400.00	3,082.00	3,081.89	21.22	67.79	74.10	5,493.70	-2,444.81	4,945.59	4,859.59	86.00	57.504	
4,000.00	3,400.10	3,082.00	3,081.89	22.31	67.79	32.29	5,493.70	-2,444.81	4,868.77	4,818.75	50.03	97.324	
4,020.81	3,400.16	3,082.00	3,081.89	22.61	67.79	-0.09	5,493.70	-2,444.81	4,847.97	4,838.78	9.18	527.871	

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



Koltek Energy Services

Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T31N-R08W
Site Error: 0.00 usft
Reference Well: San Juan 32-8 Unit 222H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design Sec.04-T31N-R08W - San Juan 32-8 Unit 242 - Original Hole - Original Hole												Offset Site Error:	0.00 usft
Survey Program: 290-INC_ONLY<10												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)					
4,100.00	3,400.41	3,082.00	3,081.89	23.81	67.79	-0.09	5,493.70	-2,444.81	4,768.79	4,759.32	9.47	503.392	
4,200.00	3,400.73	3,082.00	3,081.89	25.43	67.79	-0.09	5,493.70	-2,444.81	4,668.81	4,658.91	9.90	471.570	
4,300.00	3,401.04	3,082.00	3,081.89	27.12	67.79	-0.09	5,493.70	-2,444.81	4,568.82	4,558.44	10.38	439.994	
4,400.00	3,401.36	3,154.48	3,154.36	28.88	69.71	-0.52	5,493.70	-2,444.81	4,468.26	4,457.19	11.07	403.719	
4,500.00	3,401.68	3,154.80	3,154.68	30.69	69.72	-0.53	5,493.70	-2,444.81	4,368.26	4,356.62	11.63	375.469	
4,600.00	3,402.00	3,155.11	3,155.00	32.54	69.73	-0.54	5,493.70	-2,444.81	4,268.26	4,256.03	12.23	349.045	
4,700.00	3,402.32	3,155.43	3,155.32	34.43	69.73	-0.56	5,493.70	-2,444.81	4,168.26	4,155.41	12.84	324.509	
4,800.00	3,402.63	3,155.75	3,155.63	36.36	69.74	-0.57	5,493.70	-2,444.81	4,068.26	4,054.78	13.48	301.818	
4,900.00	3,402.95	3,156.07	3,155.95	38.31	69.75	-0.59	5,493.70	-2,444.81	3,968.26	3,954.13	14.13	280.875	
5,000.00	3,403.27	3,156.39	3,156.27	40.28	69.76	-0.60	5,493.70	-2,444.81	3,868.26	3,853.47	14.79	261.560	
5,100.00	3,403.59	3,156.71	3,156.59	42.27	69.77	-0.62	5,493.70	-2,444.81	3,768.26	3,752.80	15.46	243.738	
5,200.00	3,403.91	3,157.02	3,156.91	44.28	69.78	-0.63	5,493.70	-2,444.81	3,668.26	3,652.12	16.14	227.280	
5,300.00	3,404.23	3,157.34	3,157.23	46.31	69.79	-0.65	5,493.70	-2,444.81	3,568.26	3,551.43	16.83	212.060	
5,400.00	3,404.54	3,157.66	3,157.54	48.34	69.79	-0.67	5,493.70	-2,444.81	3,468.26	3,450.74	17.52	197.963	
5,500.00	3,404.86	3,157.98	3,157.86	50.39	69.80	-0.69	5,493.70	-2,444.81	3,368.26	3,350.04	18.22	184.883	
5,600.00	3,405.18	3,158.30	3,158.18	52.45	69.81	-0.71	5,493.70	-2,444.81	3,268.26	3,249.34	18.92	172.725	
5,700.00	3,405.50	3,158.61	3,158.50	54.52	69.82	-0.73	5,493.70	-2,444.81	3,168.26	3,148.63	19.63	161.401	
5,800.00	3,405.82	3,158.93	3,158.82	56.59	69.83	-0.76	5,493.70	-2,444.81	3,068.26	3,047.92	20.34	150.836	
5,900.00	3,406.13	3,159.25	3,159.13	58.68	69.84	-0.78	5,493.70	-2,444.81	2,968.26	2,947.21	21.06	140.960	
6,000.00	3,406.45	3,159.57	3,159.45	60.77	69.84	-0.81	5,493.70	-2,444.81	2,868.26	2,846.49	21.78	131.711	
6,100.00	3,406.77	3,159.89	3,159.77	62.86	69.85	-0.84	5,493.70	-2,444.81	2,768.26	2,745.76	22.50	123.035	
6,200.00	3,407.09	3,160.20	3,160.09	64.96	69.86	-0.87	5,493.70	-2,444.81	2,668.26	2,645.04	23.23	114.882	
6,300.00	3,407.41	3,160.52	3,160.41	67.07	69.87	-0.90	5,493.70	-2,444.81	2,568.27	2,544.31	23.96	107.207	
6,400.00	3,407.72	3,160.84	3,160.72	69.17	69.88	-0.94	5,493.70	-2,444.81	2,468.27	2,443.58	24.69	99.972	
6,500.00	3,408.04	3,161.16	3,161.04	71.29	69.89	-0.98	5,493.70	-2,444.81	2,368.27	2,342.84	25.43	93.140	
6,600.00	3,408.36	3,161.48	3,161.36	73.40	69.89	-1.02	5,493.70	-2,444.81	2,268.27	2,242.10	26.17	86.680	
6,700.00	3,408.68	3,161.80	3,161.68	75.52	69.90	-1.07	5,493.70	-2,444.81	2,168.27	2,141.35	26.91	80.563	
6,800.00	3,409.00	3,162.11	3,162.00	77.64	69.91	-1.12	5,493.70	-2,444.81	2,068.27	2,040.60	27.66	74.761	
6,900.00	3,409.31	3,162.43	3,162.31	79.77	69.92	-1.18	5,493.70	-2,444.81	1,968.27	1,939.85	28.42	69.253	
7,000.00	3,409.63	3,162.75	3,162.63	81.90	69.93	-1.24	5,493.70	-2,444.81	1,868.27	1,839.08	29.18	64.015	
7,100.00	3,409.95	3,163.07	3,162.95	84.03	69.94	-1.31	5,493.70	-2,444.81	1,768.27	1,738.31	29.96	59.029	
7,200.00	3,410.27	3,163.39	3,163.27	86.16	69.95	-1.39	5,493.70	-2,444.81	1,668.27	1,637.53	30.74	54.277	
7,300.00	3,410.59	3,163.70	3,163.59	88.29	69.95	-1.48	5,493.70	-2,444.81	1,568.27	1,536.74	31.53	49.743	
7,400.00	3,410.91	3,164.02	3,163.91	90.43	69.96	-1.58	5,493.70	-2,444.81	1,468.27	1,435.94	32.33	45.410	
7,500.00	3,411.22	3,164.34	3,164.22	92.57	69.97	-1.70	5,493.70	-2,444.81	1,368.27	1,335.11	33.16	41.267	
7,600.00	3,411.54	3,164.66	3,164.54	94.71	69.98	-1.83	5,493.70	-2,444.81	1,268.27	1,234.27	34.00	37.300	
7,700.00	3,411.86	3,164.98	3,164.86	96.85	69.99	-1.99	5,493.70	-2,444.81	1,168.27	1,133.39	34.88	33.496	
7,800.00	3,412.18	3,165.29	3,165.18	98.99	70.00	-2.17	5,493.70	-2,444.81	1,068.27	1,032.48	35.79	29.847	
7,900.00	3,412.50	3,165.61	3,165.50	101.13	70.00	-2.40	5,493.70	-2,444.81	968.27	931.51	36.76	26.341	
8,000.00	3,412.81	3,165.93	3,165.81	103.28	70.01	-2.67	5,493.70	-2,444.81	868.27	830.47	37.80	22.969	
8,100.00	3,413.13	3,166.25	3,166.13	105.42	70.02	-3.02	5,493.70	-2,444.81	768.27	729.32	38.95	19.722	
8,200.00	3,413.45	3,166.57	3,166.45	107.57	70.03	-3.47	5,493.70	-2,444.81	668.27	628.00	40.27	16.594	
8,300.00	3,413.77	3,166.88	3,166.77	109.72	70.04	-4.08	5,493.70	-2,444.81	568.28	526.42	41.86	13.576	
8,372.99	3,414.00	3,167.12	3,167.00	111.29	70.04	-4.68	5,493.70	-2,444.81	495.29	452.00	43.29	11.441 CC, ES, SF	

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



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T31N-R08W
Site Error: 0.00 usft
Reference Well: San Juan 32-8 Unit 222H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design Sec.09-T31N-R08W - San Juan 32-8 Unit 013 - Original Hole - Original Hole												Offset Site Error:	0.00 usft
Survey Program: 6090-INC_ONLY<10												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)					
0.00	0.00	0.00	0.00	0.00	0.00	-102.13	-608.48	-2,830.01	2,894.94				
100.00	100.00	62.00	62.00	0.10	0.21	-102.13	-608.48	-2,830.01	2,894.69	2,894.38	0.31	9,326.324	
200.00	200.00	162.00	162.00	0.32	0.56	-102.13	-608.48	-2,830.01	2,894.69	2,893.81	0.88	3,284.350	
300.00	300.00	262.00	262.00	0.55	0.91	-102.13	-608.48	-2,830.01	2,894.69	2,893.24	1.45	1,993.123	
400.00	400.00	362.00	362.00	0.77	1.25	-102.13	-608.48	-2,830.01	2,894.69	2,892.66	2.02	1,430.664	
500.00	500.00	462.00	462.00	0.99	1.60	-102.13	-608.48	-2,830.01	2,894.69	2,892.09	2.59	1,115.789	
600.00	600.00	562.00	562.00	1.22	1.95	-102.13	-608.48	-2,830.01	2,894.69	2,891.52	3.17	914.513	
700.00	700.00	662.00	662.00	1.44	2.29	-102.13	-608.48	-2,830.01	2,894.69	2,890.95	3.74	774.756	
800.00	800.00	762.00	762.00	1.67	2.64	-102.13	-608.48	-2,830.01	2,894.69	2,890.38	4.31	672.052	
900.00	900.00	862.00	862.00	1.89	2.98	-102.13	-608.48	-2,830.01	2,894.69	2,889.81	4.88	593.391	
1,000.00	1,000.00	962.00	962.00	2.12	3.33	-102.13	-608.48	-2,830.01	2,894.69	2,889.24	5.45	531.214	
1,100.00	1,100.00	1,062.00	1,062.00	2.34	3.68	-102.13	-608.48	-2,830.01	2,894.69	2,888.67	6.02	480.831	
1,200.00	1,200.00	1,162.00	1,162.00	2.57	4.02	-102.13	-608.48	-2,830.01	2,894.69	2,888.10	6.59	439.178	
1,300.00	1,300.00	1,262.00	1,262.00	2.79	4.37	-102.13	-608.48	-2,830.01	2,894.69	2,887.53	7.16	404.165	
1,400.00	1,400.00	1,362.00	1,362.00	3.02	4.72	-102.13	-608.48	-2,830.01	2,894.69	2,886.95	7.73	374.324	
1,500.00	1,500.00	1,462.00	1,462.00	3.24	5.06	-102.13	-608.48	-2,830.01	2,894.69	2,886.38	8.30	348.586	
1,600.00	1,600.00	1,562.00	1,562.00	3.47	5.41	-102.13	-608.48	-2,830.01	2,894.69	2,885.81	8.88	326.159	
1,700.00	1,700.00	1,662.00	1,662.00	3.69	5.75	-102.13	-608.48	-2,830.01	2,894.69	2,885.24	9.45	306.444	
1,800.00	1,800.00	1,762.00	1,762.00	3.92	6.10	-102.13	-608.48	-2,830.01	2,894.69	2,884.67	10.02	288.977	
1,900.00	1,900.00	1,862.00	1,862.00	4.14	6.45	-102.13	-608.48	-2,830.01	2,894.69	2,884.10	10.59	273.393	
2,000.00	2,000.00	1,962.00	1,962.00	4.37	6.79	-102.13	-608.48	-2,830.01	2,894.69	2,883.53	11.16	259.404	
2,048.13	2,048.13	2,010.13	2,010.13	4.47	6.96	-102.13	-608.48	-2,830.01	2,894.69	2,883.25	11.43	253.169	
2,100.00	2,099.99	2,061.99	2,061.99	4.59	7.14	-75.79	-608.48	-2,830.01	2,894.46	2,882.71	11.74	246.477	
2,200.00	2,199.72	2,161.72	2,161.72	4.82	7.48	-75.99	-608.48	-2,830.01	2,892.72	2,880.38	12.34	234.491	
2,300.00	2,298.70	2,260.70	2,260.70	5.05	7.83	-76.39	-608.48	-2,830.01	2,889.34	2,876.40	12.93	223.436	
2,400.00	2,398.47	2,358.47	2,358.47	5.30	8.17	-76.98	-608.48	-2,830.01	2,884.41	2,870.87	13.54	212.989	
2,500.00	2,492.54	2,454.54	2,454.54	5.60	8.50	-77.74	-608.48	-2,830.01	2,878.12	2,863.93	14.19	202.833	
2,600.00	2,586.45	2,548.45	2,548.45	5.98	8.82	-78.67	-608.48	-2,830.01	2,870.67	2,855.77	14.90	192.705	
2,700.00	2,677.73	2,639.73	2,639.73	6.45	9.14	-79.73	-608.48	-2,830.01	2,862.33	2,846.64	15.69	182.445	
2,800.00	2,765.95	2,727.95	2,727.95	7.04	9.44	-80.91	-608.48	-2,830.01	2,853.40	2,836.81	16.59	172.021	
2,900.00	2,850.66	2,812.66	2,812.66	7.77	9.74	-82.17	-608.48	-2,830.01	2,844.22	2,826.61	17.61	161.521	
3,000.00	2,931.47	2,893.47	2,893.47	8.65	10.02	-83.49	-608.48	-2,830.01	2,835.17	2,816.41	18.76	151.117	
3,100.00	3,007.98	2,969.98	2,969.98	9.67	10.28	-84.82	-608.48	-2,830.01	2,826.65	2,806.60	20.05	141.006	
3,200.00	3,079.81	3,041.81	3,041.81	10.84	10.53	-86.14	-608.48	-2,830.01	2,819.06	2,797.60	21.46	131.370	
3,300.00	3,146.61	3,108.61	3,108.61	12.16	10.76	-87.40	-608.48	-2,830.01	2,812.83	2,789.84	22.99	122.342	
3,400.00	3,208.06	3,170.06	3,170.06	13.62	10.98	-88.56	-608.48	-2,830.01	2,806.36	2,783.72	24.63	114.003	
3,500.00	3,263.86	3,225.86	3,225.86	15.19	11.17	-89.60	-608.48	-2,830.01	2,806.04	2,779.67	26.38	106.384	
3,543.09	3,286.09	3,248.09	3,248.09	15.92	11.25	-90.00	-608.48	-2,830.01	2,805.80	2,778.63	27.17	103.274 CC	
3,600.00	3,313.74	3,275.74	3,275.74	16.89	11.34	-90.48	-608.48	-2,830.01	2,806.24	2,778.01	28.23	99.410 ES	
3,673.13	3,346.32	3,308.32	3,308.32	18.19	11.45	-90.99	-608.48	-2,830.01	2,808.16	2,778.52	29.64	94.728	
3,673.13	3,346.32	3,308.32	3,308.32	18.19	11.45	-90.99	-608.48	-2,830.01	2,808.16	2,778.52	29.64	94.728	
3,700.00	3,357.10	3,319.10	3,319.10	18.56	11.49	-91.08	-608.48	-2,830.01	2,809.28	2,779.23	30.05	93.483	
3,750.00	3,374.04	3,336.04	3,336.04	19.06	11.55	-91.14	-608.48	-2,830.01	2,812.01	2,781.40	30.61	91.863	
3,800.00	3,386.82	3,348.82	3,348.82	19.62	11.59	-91.02	-608.48	-2,830.01	2,815.64	2,784.42	31.22	90.200	
3,850.00	3,395.34	3,357.34	3,357.34	20.24	11.62	-90.74	-608.48	-2,830.01	2,820.18	2,788.32	31.86	88.519	
3,900.00	3,399.53	3,361.53	3,361.53	20.90	11.64	-90.28	-608.48	-2,830.01	2,825.64	2,793.10	32.54	86.848	
3,923.13	3,400.00	3,362.00	3,362.00	21.22	11.64	-90.00	-608.48	-2,830.01	2,828.46	2,795.61	32.86	86.086	
4,000.00	3,400.10	3,362.10	3,362.10	22.31	11.64	-90.03	-608.48	-2,830.01	2,840.72	2,806.79	33.93	83.725	
4,020.81	3,400.16	3,362.16	3,362.16	22.61	11.64	-90.04	-608.48	-2,830.01	2,844.91	2,810.69	34.22	83.133	
4,100.00	3,400.41	3,362.41	3,362.41	23.81	11.64	-90.04	-608.48	-2,830.01	2,862.59	2,827.17	35.43	80.806	
4,200.00	3,400.73	3,362.73	3,362.73	25.43	11.64	-90.05	-608.48	-2,830.01	2,887.87	2,850.83	37.04	77.959	
4,300.00	3,401.04	3,363.04	3,363.04	27.12	11.64	-90.06	-608.48	-2,830.01	2,916.37	2,877.63	38.74	75.282	

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



Koltek Energy Services

Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T31N-R08W
Site Error: 0.00 usft
Reference Well: San Juan 32-8 Unit 222H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design Sec.09-T31N-R08W - San Juan 32-8 Unit 013 - Original Hole - Original Hole													Offset Site Error: 0.00 usft	
Survey Program: 6090-INC_ONLY<10													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)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
4,400.00	3,401.36	3,363.36	3,363.36	28.88	11.64	-90.06	-608.48	-2,830.01	2,947.98	2,907.48	40.50	72.791		
4,500.00	3,401.68	3,363.68	3,363.68	30.69	11.65	-90.07	-608.48	-2,830.01	2,982.61	2,940.29	42.31	70.490		
4,600.00	3,402.00	3,364.00	3,364.00	32.54	11.65	-90.08	-608.48	-2,830.01	3,020.15	2,975.98	44.17	68.376		
4,700.00	3,402.32	3,364.32	3,364.32	34.43	11.65	-90.08	-608.48	-2,830.01	3,060.50	3,014.44	46.06	66.439		
4,800.00	3,402.63	3,364.63	3,364.63	36.36	11.65	-90.09	-608.48	-2,830.01	3,103.56	3,055.57	47.99	64.670		
4,900.00	3,402.95	3,364.95	3,364.95	38.31	11.65	-90.10	-608.48	-2,830.01	3,149.20	3,099.25	49.94	63.056		
5,000.00	3,403.27	3,365.27	3,365.27	40.28	11.65	-90.10	-608.48	-2,830.01	3,197.31	3,145.39	51.92	61.584		
5,100.00	3,403.59	3,365.59	3,365.59	42.27	11.65	-90.11	-608.48	-2,830.01	3,247.80	3,193.88	53.91	60.242		
5,200.00	3,403.91	3,365.91	3,365.91	44.28	11.65	-90.12	-608.48	-2,830.01	3,300.54	3,244.61	55.92	59.018		
5,300.00	3,404.23	3,366.23	3,366.23	46.31	11.65	-90.12	-608.48	-2,830.01	3,355.43	3,297.48	57.95	57.902		
5,400.00	3,404.54	3,366.54	3,366.54	48.34	11.66	-90.13	-608.48	-2,830.01	3,412.37	3,352.38	59.99	56.883		
5,500.00	3,404.86	3,366.86	3,366.86	50.39	11.66	-90.14	-608.48	-2,830.01	3,471.26	3,409.22	62.04	55.952		
5,600.00	3,405.18	3,367.18	3,367.18	52.45	11.66	-90.14	-608.48	-2,830.01	3,532.00	3,467.90	64.10	55.101		
5,700.00	3,405.50	3,367.50	3,367.50	54.52	11.66	-90.15	-608.48	-2,830.01	3,594.50	3,528.33	66.17	54.322		
5,800.00	3,405.82	3,367.82	3,367.82	56.59	11.66	-90.16	-608.48	-2,830.01	3,658.66	3,590.41	68.25	53.609		
5,900.00	3,406.13	3,368.13	3,368.13	58.68	11.66	-90.16	-608.48	-2,830.01	3,724.40	3,654.07	70.33	52.955		
6,000.00	3,406.45	3,368.45	3,368.45	60.77	11.66	-90.17	-608.48	-2,830.01	3,791.64	3,719.22	72.42	52.355		
6,100.00	3,406.77	3,368.77	3,368.77	62.86	11.66	-90.18	-608.48	-2,830.01	3,860.30	3,785.78	74.52	51.804		
6,200.00	3,407.09	3,369.09	3,369.09	64.96	11.66	-90.18	-608.48	-2,830.01	3,930.30	3,853.68	76.62	51.297		
6,300.00	3,407.41	3,369.41	3,369.41	67.07	11.67	-90.19	-608.48	-2,830.01	4,001.58	3,922.85	78.72	50.830		
6,400.00	3,407.72	3,369.72	3,369.72	69.17	11.67	-90.20	-608.48	-2,830.01	4,074.06	3,993.23	80.83	50.400		
6,500.00	3,408.04	3,370.04	3,370.04	71.29	11.67	-90.20	-608.48	-2,830.01	4,147.69	4,064.75	82.95	50.003		
6,600.00	3,408.36	3,370.36	3,370.36	73.40	11.67	-90.21	-608.48	-2,830.01	4,222.41	4,137.34	85.07	49.637		
6,700.00	3,408.68	3,370.68	3,370.68	75.52	11.67	-90.21	-608.48	-2,830.01	4,298.15	4,210.96	87.19	49.298		
6,800.00	3,409.00	3,371.00	3,371.00	77.64	11.67	-90.22	-608.48	-2,830.01	4,374.87	4,285.56	89.31	48.985		
6,900.00	3,409.31	3,371.31	3,371.31	79.77	11.67	-90.23	-608.48	-2,830.01	4,452.51	4,361.07	91.44	48.695		
7,000.00	3,409.63	3,371.63	3,371.63	81.90	11.67	-90.23	-608.48	-2,830.01	4,531.03	4,437.46	93.57	48.426		
7,100.00	3,409.95	3,371.95	3,371.95	84.03	11.67	-90.24	-608.48	-2,830.01	4,610.38	4,514.68	95.70	48.177		
7,200.00	3,410.27	3,372.27	3,372.27	86.16	11.68	-90.25	-608.48	-2,830.01	4,690.52	4,592.69	97.83	47.946		
7,300.00	3,410.59	3,372.59	3,372.59	88.29	11.68	-90.25	-608.48	-2,830.01	4,771.41	4,671.44	99.96	47.731		
7,400.00	3,410.91	3,372.91	3,372.91	90.43	11.68	-90.26	-608.48	-2,830.01	4,853.01	4,750.90	102.10	47.531		
7,500.00	3,411.22	3,373.22	3,373.22	92.57	11.68	-90.27	-608.48	-2,830.01	4,935.29	4,831.04	104.24	47.345		
7,600.00	3,411.54	3,373.54	3,373.54	94.71	11.68	-90.27	-608.48	-2,830.01	5,018.21	4,911.83	106.38	47.172		
7,700.00	3,411.86	3,373.86	3,373.86	96.85	11.68	-90.28	-608.48	-2,830.01	5,101.74	4,993.22	108.52	47.011		
7,800.00	3,412.18	3,374.18	3,374.18	98.99	11.68	-90.29	-608.48	-2,830.01	5,185.86	5,075.19	110.67	46.860		
7,900.00	3,412.50	3,374.50	3,374.50	101.13	11.68	-90.29	-608.48	-2,830.01	5,270.53	5,157.72	112.81	46.720		
8,000.00	3,412.81	3,374.81	3,374.81	103.28	11.68	-90.30	-608.48	-2,830.01	5,355.73	5,240.78	114.96	46.589		
8,100.00	3,413.13	3,375.13	3,375.13	105.42	11.69	-90.31	-608.48	-2,830.01	5,441.44	5,324.33	117.10	46.467		
8,200.00	3,413.45	3,375.45	3,375.45	107.57	11.69	-90.31	-608.48	-2,830.01	5,527.62	5,408.37	119.25	46.352		
8,300.00	3,413.77	3,375.77	3,375.77	109.72	11.69	-90.32	-608.48	-2,830.01	5,614.27	5,492.86	121.40	46.245		
8,372.99	3,414.00	3,376.00	3,376.00	111.29	11.69	-90.32	-608.48	-2,830.01	5,677.78	5,554.81	122.97	46.172 SF		

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



Koltek Energy Services

Anticollision Report



Company: Hilcorp Energy Company
 Project: San Juan Co., NM (NAD27)
 Reference Site: Sec.09-T31N-R08W
 Site Error: 0.00 usft
 Reference Well: San Juan 32-8 Unit 222H
 Well Error: 0.00 usft
 Reference Wellbore: Lat 1
 Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
 TVD Reference: KB @ 6690.00usft
 MD Reference: KB @ 6690.00usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at 2.00 sigma
 Database: EDM 5000.1 Single User Db
 Offset TVD Reference: Offset Datum

Offset Design Sec.09-T31N-R08W - San Juan 32-8 Unit 013A - Original Hole - Original Hole												Offset Site Error:	0.00 usft
Survey Program: 115-INC_ONLY<10												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)					
0.00	0.00	0.00	0.00	0.00	0.00	-72.06	909.67	-2,808.97	2,953.54				
100.00	100.00	28.95	28.94	0.10	0.38	-72.06	909.48	-2,808.97	2,952.53	2,952.05	0.48	6,159.918	
132.50	132.50	57.50	57.50	0.17	0.76	-72.06	909.42	-2,808.97	2,952.51	2,951.58	0.93	3,171.844	
200.00	200.00	115.00	115.00	0.32	1.52	-72.06	909.67	-2,808.97	2,952.61	2,950.76	1.84	1,600.757	
300.00	300.00	225.01	225.00	0.55	4.44	-72.06	909.67	-2,808.97	2,952.59	2,947.60	4.99	592.268	
400.00	400.00	323.79	323.78	0.77	6.48	-72.05	909.94	-2,808.97	2,952.67	2,945.42	7.25	407.101	
500.00	500.00	426.84	426.82	0.99	8.58	-72.05	909.90	-2,808.97	2,952.66	2,943.09	9.58	308.319	
600.00	600.00	525.02	525.00	1.22	10.43	-72.06	909.67	-2,808.97	2,952.59	2,940.94	11.65	253.397	
700.00	700.00	625.02	625.00	1.44	11.87	-72.06	909.67	-2,808.97	2,952.59	2,939.27	13.32	221.719	
800.00	800.00	725.02	725.00	1.67	13.31	-72.06	909.67	-2,808.97	2,952.59	2,937.61	14.98	197.081	
900.00	900.00	825.02	825.00	1.89	14.75	-72.06	909.67	-2,808.97	2,952.59	2,935.94	16.65	177.372	
1,000.00	1,000.00	925.02	925.00	2.12	16.19	-72.06	909.67	-2,808.97	2,952.59	2,934.28	18.31	161.246	
1,100.00	1,100.00	1,025.03	1,025.00	2.34	17.63	-72.06	909.67	-2,808.97	2,952.59	2,932.61	19.98	147.792	
1,200.00	1,200.00	1,125.03	1,125.00	2.57	19.08	-72.06	909.67	-2,808.97	2,952.59	2,930.94	21.65	136.369	
1,300.00	1,300.00	1,225.03	1,225.00	2.79	20.53	-72.06	909.67	-2,808.97	2,952.59	2,929.26	23.33	126.585	
1,400.00	1,400.00	1,325.03	1,325.00	3.02	21.98	-72.06	909.67	-2,808.97	2,952.59	2,927.59	25.00	118.111	
1,500.00	1,500.00	1,425.03	1,425.00	3.24	23.43	-72.06	909.67	-2,808.97	2,952.59	2,925.92	26.67	110.700	
1,600.00	1,600.00	1,525.03	1,525.00	3.47	24.88	-72.06	909.67	-2,808.97	2,952.59	2,924.24	28.35	104.162	
1,700.00	1,700.00	1,625.03	1,625.00	3.69	26.33	-72.06	909.67	-2,808.97	2,952.59	2,922.57	30.02	98.346	
1,800.00	1,800.00	1,725.04	1,725.00	3.92	27.78	-72.06	909.67	-2,808.97	2,952.59	2,920.89	31.70	93.146	
1,900.00	1,900.00	1,825.04	1,825.00	4.14	29.23	-72.06	909.67	-2,808.97	2,952.59	2,919.21	33.37	88.467	
2,000.00	2,000.00	1,925.04	1,925.00	4.37	30.69	-72.06	909.67	-2,808.97	2,952.59	2,917.54	35.05	84.237	
2,048.13	2,048.13	1,973.17	1,973.13	4.47	31.38	-72.06	909.67	-2,808.97	2,952.59	2,916.73	35.86	82.341	
2,100.00	2,099.99	2,025.03	2,024.99	4.59	32.14	-45.72	909.67	-2,808.97	2,951.93	2,915.21	36.73	80.374	
2,200.00	2,199.72	2,124.76	2,124.72	4.82	33.59	-45.96	909.67	-2,808.97	2,946.98	2,908.64	38.34	76.870	
2,300.00	2,298.70	2,223.75	2,223.70	5.05	35.02	-46.44	909.67	-2,808.97	2,937.20	2,897.35	39.85	73.705	
2,400.00	2,396.47	2,321.51	2,321.47	5.30	36.44	-47.16	909.67	-2,808.97	2,922.71	2,881.44	41.27	70.813	
2,500.00	2,492.54	2,417.59	2,417.54	5.60	37.84	-48.13	909.67	-2,808.97	2,903.65	2,861.03	42.62	68.123	
2,600.00	2,586.45	2,511.49	2,511.45	5.98	39.20	-49.35	909.67	-2,808.97	2,880.22	2,836.28	43.93	65.556	
2,700.00	2,677.73	2,602.78	2,602.73	6.45	40.53	-50.82	909.67	-2,808.97	2,852.65	2,807.39	45.26	63.033	
2,800.00	2,765.95	2,690.99	2,690.95	7.04	41.81	-52.55	909.67	-2,808.97	2,821.25	2,774.61	46.64	60.486	
2,900.00	2,850.66	2,775.71	2,775.66	7.77	43.04	-54.54	909.67	-2,808.97	2,786.34	2,738.19	48.16	57.859	
3,000.00	2,931.47	2,856.52	2,856.47	8.65	44.22	-56.77	909.67	-2,808.97	2,748.32	2,698.46	49.86	55.121	
3,100.00	3,007.98	2,933.03	2,932.98	9.67	45.33	-59.25	909.67	-2,808.97	2,707.61	2,655.81	51.80	52.275	
3,200.00	3,079.81	3,006.97	3,006.92	10.84	46.44	-61.96	909.64	-2,808.97	2,664.66	2,610.59	54.07	49.285	
3,300.00	3,146.61	3,072.38	3,072.32	12.16	47.77	-64.81	909.45	-2,808.97	2,619.95	2,563.10	56.85	46.082	
3,400.00	3,208.06	3,132.83	3,132.78	13.62	49.00	-67.78	909.43	-2,808.97	2,574.10	2,514.24	59.85	43.008	
3,500.00	3,263.86	3,188.03	3,187.98	15.19	50.12	-70.83	909.53	-2,808.97	2,527.63	2,464.63	63.00	40.121	
3,600.00	3,313.74	3,239.78	3,239.72	16.89	51.32	-73.93	909.61	-2,808.97	2,481.13	2,414.70	66.43	37.352	
3,673.13	3,346.32	3,272.10	3,272.04	18.19	52.37	-76.14	909.48	-2,808.97	2,447.43	2,378.27	69.16	35.388	
3,700.00	3,357.10	3,282.78	3,282.72	18.56	52.72	-77.74	909.43	-2,808.97	2,435.10	2,364.94	70.16	34.708	
3,750.00	3,374.04	3,299.55	3,299.49	19.06	53.26	-80.70	909.36	-2,808.97	2,412.06	2,340.37	71.69	33.647	
3,800.00	3,386.82	3,312.15	3,312.09	19.62	53.67	-83.58	909.31	-2,808.97	2,389.12	2,316.09	73.02	32.718	
3,850.00	3,395.34	3,320.49	3,320.43	20.24	53.94	-86.33	909.27	-2,808.97	2,366.52	2,292.40	74.13	31.925	
3,900.00	3,399.53	3,324.50	3,324.44	20.90	54.07	-88.89	909.26	-2,808.97	2,344.51	2,269.52	74.99	31.265	
3,923.13	3,400.00	3,324.88	3,324.82	21.22	54.08	-90.00	909.26	-2,808.97	2,334.58	2,259.27	75.30	31.002	
4,000.00	3,400.10	3,324.70	3,324.63	22.31	54.08	-89.93	909.26	-2,808.97	2,304.35	2,227.98	76.37	30.173	
4,020.81	3,400.16	3,324.68	3,324.62	22.61	54.08	-89.92	909.26	-2,808.97	2,297.04	2,220.38	76.66	29.962	
4,100.00	3,400.41	3,324.64	3,324.57	23.81	54.07	-89.92	909.26	-2,808.97	2,271.15	2,193.28	77.87	29.167	
4,200.00	3,400.73	3,324.58	3,324.52	25.43	54.07	-89.92	909.26	-2,808.97	2,242.03	2,162.55	79.48	28.208	
4,300.00	3,401.04	3,324.53	3,324.46	27.12	54.07	-89.92	909.26	-2,808.97	2,217.04	2,135.86	81.17	27.312	

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



Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T31N-R08W
Site Error: 0.00 usft
Reference Well: San Juan 32-8 Unit 222H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design Sec.09-T31N-R08W - San Juan 32-8 Unit 013A - Original Hole - Original Hole													Offset Site Error: 0.00 usft
Survey Program: 115-INC_ONLY<10													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	
4,400.00	3,401.36	3,324.47	3,324.41	28.88	54.07	-89.91	909.26	-2,808.97	2,196.32	2,113.39	82.93	26.484	
4,500.00	3,401.68	3,324.42	3,324.35	30.69	54.07	-89.91	909.26	-2,808.97	2,180.00	2,095.25	84.74	25.725	
4,600.00	3,402.00	3,324.36	3,324.30	32.54	54.06	-89.91	909.26	-2,808.97	2,168.17	2,081.57	86.60	25.038	
4,700.00	3,402.32	3,324.31	3,324.24	34.43	54.06	-89.91	909.26	-2,808.97	2,160.91	2,072.42	88.49	24.420	
4,800.00	3,402.63	3,324.25	3,324.19	36.36	54.06	-89.91	909.26	-2,808.97	2,158.26	2,067.85	90.41	23.872	
4,807.18	3,402.66	3,324.25	3,324.18	36.50	54.06	-89.91	909.26	-2,808.97	2,158.25	2,067.70	90.55	23.835 CC, ES	
4,900.00	3,402.95	3,324.20	3,324.13	38.31	54.06	-89.91	909.26	-2,808.97	2,160.24	2,067.88	92.36	23.389	
5,000.00	3,403.27	3,324.14	3,324.08	40.28	54.06	-89.90	909.26	-2,808.97	2,166.84	2,072.51	94.33	22.970	
5,100.00	3,403.59	3,324.09	3,324.02	42.27	54.06	-89.90	909.26	-2,808.97	2,178.02	2,081.70	96.32	22.611	
5,200.00	3,403.91	3,324.03	3,323.97	44.28	54.05	-89.90	909.26	-2,808.97	2,193.70	2,095.37	98.33	22.309	
5,300.00	3,404.23	3,323.98	3,323.91	46.31	54.05	-89.90	909.26	-2,808.97	2,213.80	2,113.44	100.36	22.059	
5,400.00	3,404.54	3,323.92	3,323.86	48.34	54.05	-89.90	909.26	-2,808.97	2,238.18	2,135.79	102.39	21.859	
5,500.00	3,404.86	3,323.87	3,323.80	50.39	54.05	-89.90	909.26	-2,808.97	2,266.72	2,162.28	104.44	21.703	
5,600.00	3,405.18	3,323.81	3,323.75	52.45	54.05	-89.90	909.26	-2,808.97	2,299.26	2,192.76	106.50	21.590	
5,700.00	3,405.50	3,323.76	3,323.69	54.52	54.05	-89.89	909.26	-2,808.97	2,335.63	2,227.06	108.56	21.514	
5,800.00	3,405.82	3,323.70	3,323.64	56.59	54.04	-89.89	909.26	-2,808.97	2,375.65	2,265.01	110.64	21.472	
5,900.00	3,406.13	3,323.64	3,323.58	58.68	54.04	-89.89	909.26	-2,808.97	2,419.15	2,306.43	112.72	21.462 SF	
6,000.00	3,406.45	3,323.59	3,323.53	60.77	54.04	-89.89	909.26	-2,808.97	2,465.94	2,351.13	114.81	21.479	
6,100.00	3,406.77	3,323.53	3,323.47	62.86	54.04	-89.89	909.26	-2,808.97	2,515.83	2,398.93	116.90	21.521	
6,200.00	3,407.09	3,323.48	3,323.42	64.96	54.04	-89.89	909.26	-2,808.97	2,568.65	2,449.65	119.00	21.585	
6,300.00	3,407.41	3,323.42	3,323.36	67.07	54.03	-89.89	909.26	-2,808.97	2,624.22	2,503.12	121.10	21.669	
6,400.00	3,407.72	3,323.37	3,323.31	69.17	54.03	-89.88	909.26	-2,808.97	2,682.37	2,559.16	123.21	21.771	
6,500.00	3,408.04	3,323.31	3,323.25	71.29	54.03	-89.88	909.26	-2,808.97	2,742.93	2,617.61	125.32	21.887	
6,600.00	3,408.36	3,323.26	3,323.19	73.40	54.03	-89.88	909.26	-2,808.97	2,805.75	2,678.32	127.44	22.017	
6,700.00	3,408.68	3,323.20	3,323.14	75.52	54.03	-89.88	909.26	-2,808.97	2,870.68	2,741.13	129.55	22.158	
6,800.00	3,409.00	3,323.15	3,323.08	77.64	54.03	-89.88	909.26	-2,808.97	2,937.58	2,805.90	131.67	22.310	
6,900.00	3,409.31	3,323.09	3,323.03	79.77	54.02	-89.88	909.26	-2,808.97	3,006.31	2,872.52	133.80	22.469	
7,000.00	3,409.63	3,323.03	3,322.97	81.90	54.02	-89.88	909.26	-2,808.97	3,076.77	2,940.84	135.92	22.636	
7,100.00	3,409.95	3,322.98	3,322.92	84.03	54.02	-89.87	909.26	-2,808.97	3,148.82	3,010.77	138.05	22.809	
7,200.00	3,410.27	3,322.92	3,322.86	86.16	54.02	-89.87	909.26	-2,808.97	3,222.36	3,082.18	140.18	22.987	
7,300.00	3,410.59	3,322.87	3,322.81	88.29	54.02	-89.87	909.26	-2,808.97	3,297.30	3,154.99	142.31	23.169	
7,400.00	3,410.91	3,322.81	3,322.75	90.43	54.01	-89.87	909.26	-2,808.97	3,373.54	3,229.09	144.45	23.355	
7,500.00	3,411.22	3,322.76	3,322.69	92.57	54.01	-89.87	909.27	-2,808.97	3,450.99	3,304.40	146.58	23.543	
7,600.00	3,411.54	3,322.70	3,322.64	94.71	54.01	-89.87	909.27	-2,808.97	3,529.57	3,380.85	148.72	23.733	
7,700.00	3,411.86	3,322.64	3,322.58	96.85	54.01	-89.87	909.27	-2,808.97	3,609.22	3,458.36	150.86	23.924	
7,800.00	3,412.18	3,322.59	3,322.53	98.99	54.01	-89.86	909.27	-2,808.97	3,689.85	3,536.85	153.00	24.116	
7,900.00	3,412.50	3,322.53	3,322.47	101.13	54.01	-89.86	909.27	-2,808.97	3,771.42	3,616.27	155.14	24.309	
8,000.00	3,412.81	3,322.48	3,322.41	103.28	54.00	-89.86	909.27	-2,808.97	3,853.85	3,696.56	157.29	24.502	
8,100.00	3,413.13	3,322.42	3,322.36	105.42	54.00	-89.86	909.27	-2,808.97	3,937.09	3,777.66	159.43	24.695	
8,200.00	3,413.45	3,322.36	3,322.30	107.57	54.00	-89.86	909.27	-2,808.97	4,021.10	3,859.53	161.58	24.887	
8,300.00	3,413.77	3,322.31	3,322.25	109.72	54.00	-89.86	909.27	-2,808.97	4,105.83	3,942.11	163.72	25.078	
8,372.99	3,414.00	3,322.27	3,322.21	111.29	54.00	-89.86	909.27	-2,808.97	4,168.09	4,002.80	165.29	25.217	

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



Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T31N-R08W
Site Error: 0.00 usft
Reference Well: San Juan 32-8 Unit 222H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 6047-INC_ONLY<10												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	12.07	2,546.02	544.53	2,605.63				
100.00	100.00	0.00	0.00	0.10	0.00	12.07	2,546.02	544.53	2,603.60	2,603.50	0.10	N/A	
134.36	134.36	31.36	31.36	0.17	0.11	12.07	2,546.02	544.53	2,603.60	2,603.32	0.28	9,247.296	
200.00	200.00	97.00	97.00	0.32	0.34	12.07	2,546.02	544.53	2,603.60	2,602.94	0.66	3,966.968	
300.00	300.00	197.00	197.00	0.55	0.68	12.07	2,546.02	544.53	2,603.60	2,602.37	1.23	2,121.404	
400.00	400.00	297.00	297.00	0.77	1.03	12.07	2,546.02	544.53	2,603.60	2,601.80	1.80	1,447.827	
500.00	500.00	397.00	397.00	0.99	1.37	12.07	2,546.02	544.53	2,603.60	2,601.23	2.37	1,098.908	
600.00	600.00	497.00	497.00	1.22	1.72	12.07	2,546.02	544.53	2,603.60	2,600.66	2.94	885.505	
700.00	700.00	597.00	597.00	1.44	2.07	12.07	2,546.02	544.53	2,603.60	2,600.09	3.51	741.508	
800.00	800.00	697.00	697.00	1.67	2.41	12.07	2,546.02	544.53	2,603.60	2,599.51	4.08	637.793	
900.00	900.00	797.00	797.00	1.89	2.76	12.07	2,546.02	544.53	2,603.60	2,598.94	4.65	559.531	
1,000.00	1,000.00	897.00	897.00	2.12	3.11	12.07	2,546.02	544.53	2,603.60	2,598.37	5.22	498.376	
1,100.00	1,100.00	997.00	997.00	2.34	3.45	12.07	2,546.02	544.53	2,603.60	2,597.80	5.80	449.273	
1,200.00	1,200.00	1,097.00	1,097.00	2.57	3.80	12.07	2,546.02	544.53	2,603.60	2,597.23	6.37	408.977	
1,300.00	1,300.00	1,197.00	1,197.00	2.79	4.14	12.07	2,546.02	544.53	2,603.60	2,596.66	6.94	375.315	
1,400.00	1,400.00	1,297.00	1,297.00	3.02	4.49	12.07	2,546.02	544.53	2,603.60	2,596.09	7.51	346.773	
1,500.00	1,500.00	1,397.00	1,397.00	3.24	4.84	12.07	2,546.02	544.53	2,603.60	2,595.52	8.08	322.265	
1,600.00	1,600.00	1,497.00	1,497.00	3.47	5.18	12.07	2,546.02	544.53	2,603.60	2,594.95	8.65	300.993	
1,700.00	1,700.00	1,597.00	1,597.00	3.69	5.53	12.07	2,546.02	544.53	2,603.60	2,594.38	9.22	282.355	
1,800.00	1,800.00	1,697.00	1,697.00	3.92	5.88	12.07	2,546.02	544.53	2,603.60	2,593.80	9.79	265.890	
1,900.00	1,900.00	1,797.00	1,797.00	4.14	6.22	12.07	2,546.02	544.53	2,603.60	2,593.23	10.36	251.240	
2,000.00	2,000.00	1,897.00	1,897.00	4.37	6.57	12.07	2,546.02	544.53	2,603.60	2,592.66	10.93	238.120	
2,048.13	2,048.13	1,945.13	1,945.13	4.47	6.73	12.07	2,546.02	544.53	2,603.60	2,592.39	11.21	232.282	
2,100.00	2,099.99	1,996.99	1,996.99	4.59	6.91	38.47	2,546.02	544.53	2,602.86	2,591.32	11.55	225.435	
2,200.00	2,199.72	2,096.72	2,096.72	4.82	7.26	38.71	2,546.02	544.53	2,597.30	2,585.13	12.18	213.315	
2,300.00	2,298.70	2,195.70	2,195.70	5.05	7.60	39.18	2,546.02	544.53	2,586.33	2,573.55	12.78	202.370	
2,400.00	2,396.47	2,293.47	2,293.47	5.30	7.94	39.90	2,546.02	544.53	2,570.06	2,556.69	13.36	192.319	
2,500.00	2,492.54	2,389.54	2,389.54	5.60	8.27	40.86	2,546.02	544.53	2,548.61	2,534.67	13.94	182.861	
2,600.00	2,586.45	2,483.45	2,483.45	5.98	8.60	42.08	2,546.02	544.53	2,522.20	2,507.68	14.52	173.689	
2,700.00	2,677.73	2,574.73	2,574.73	6.45	8.91	43.58	2,546.02	544.53	2,491.06	2,475.92	15.14	164.508	
2,800.00	2,765.95	2,662.95	2,662.95	7.04	9.22	45.37	2,546.02	544.53	2,455.49	2,439.65	15.83	155.068	
2,900.00	2,850.66	2,747.66	2,747.66	7.77	9.51	47.46	2,546.02	544.53	2,415.82	2,399.18	16.64	145.201	
3,000.00	2,931.47	2,828.47	2,828.47	8.65	9.79	49.85	2,546.02	544.53	2,372.44	2,354.85	17.59	134.870	
3,100.00	3,007.98	2,904.98	2,904.98	9.67	10.06	52.55	2,546.02	544.53	2,325.80	2,307.07	18.73	124.187	
3,200.00	3,079.81	2,976.81	2,976.81	10.84	10.31	55.55	2,546.02	544.53	2,276.38	2,256.30	20.07	113.395	
3,300.00	3,146.61	3,043.61	3,043.61	12.16	10.54	58.82	2,546.02	544.53	2,224.71	2,203.07	21.64	102.810	
3,400.00	3,208.06	3,105.06	3,105.06	13.62	10.75	62.32	2,546.02	544.53	2,171.36	2,147.95	23.41	92.748	
3,500.00	3,263.86	3,160.86	3,160.86	15.19	10.94	65.98	2,546.02	544.53	2,116.97	2,091.61	25.36	83.462	
3,600.00	3,313.74	3,210.74	3,210.74	16.89	11.12	69.71	2,546.02	544.53	2,062.20	2,034.74	27.46	75.111	
3,673.13	3,346.32	3,243.32	3,243.32	18.19	11.23	72.44	2,546.02	544.53	2,022.29	1,993.25	29.04	69.632	
3,673.13	3,346.32	3,243.32	3,243.32	18.19	11.23	72.44	2,546.02	544.53	2,022.29	1,993.25	29.04	69.632	
3,700.00	3,357.10	3,254.10	3,254.10	18.56	11.27	74.44	2,546.02	544.53	2,007.64	1,978.05	29.59	67.857	
3,750.00	3,374.04	3,271.04	3,271.04	19.06	11.32	78.16	2,546.02	544.53	1,980.18	1,949.83	30.36	65.230	
3,800.00	3,386.82	3,283.82	3,283.82	19.62	11.37	81.81	2,546.02	544.53	1,952.75	1,921.66	31.09	62.815	
3,850.00	3,395.34	3,292.34	3,292.34	20.24	11.40	85.31	2,546.02	544.53	1,925.63	1,893.88	31.76	60.632	
3,900.00	3,399.53	3,296.53	3,296.53	20.90	11.41	88.58	2,546.02	544.53	1,899.12	1,866.75	32.37	58.672	
3,923.13	3,400.00	3,297.00	3,297.00	21.22	11.41	90.00	2,546.02	544.53	1,887.13	1,854.50	32.63	57.832	
4,000.00	3,400.10	3,297.10	3,297.10	22.31	11.42	89.91	2,546.02	544.53	1,847.45	1,813.74	33.71	54.807	
4,020.81	3,400.16	3,297.16	3,297.16	22.61	11.42	89.89	2,546.02	544.53	1,836.65	1,802.65	34.00	54.017	
4,100.00	3,400.41	3,297.41	3,297.41	23.81	11.42	89.90	2,546.02	544.53	1,796.81	1,761.60	35.21	51.038	
4,200.00	3,400.73	3,297.73	3,297.73	25.43	11.42	89.91	2,546.02	544.53	1,750.32	1,713.49	36.82	47.534	
4,300.00	3,401.04	3,298.04	3,298.04	27.12	11.42	89.92	2,546.02	544.53	1,708.42	1,669.90	38.52	44.354	

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



Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T31N-R08W
Site Error: 0.00 usft
Reference Well: San Juan 32-8 Unit 222H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design Sec.09-T31N-R08W - San Juan 32-8 Unit 033 - Original Hole - Original Hole													Offset Site Error: 0.00 usft
Survey Program: 6047-INC_ONLY<10													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)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
4,400.00	3,401.36	3,298.36	3,298.36	28.88	11.42	89.93	2,546.02	544.53	1,671.46	1,631.19	40.28	41.499	
4,500.00	3,401.68	3,298.68	3,298.68	30.69	11.42	89.94	2,546.02	544.53	1,639.78	1,597.69	42.09	38.959	
4,600.00	3,402.00	3,299.00	3,299.00	32.54	11.42	89.96	2,546.02	544.53	1,613.68	1,569.74	43.95	36.719	
4,700.00	3,402.32	3,299.32	3,299.32	34.43	11.42	89.97	2,546.02	544.53	1,593.44	1,547.60	45.84	34.760	
4,800.00	3,402.63	3,299.63	3,299.63	36.36	11.42	89.98	2,546.02	544.53	1,579.29	1,531.52	47.77	33.063	
4,900.00	3,402.95	3,299.95	3,299.95	38.31	11.43	89.99	2,546.02	544.53	1,571.38	1,521.66	49.72	31.606	
4,974.55	3,403.19	3,300.19	3,300.19	39.78	11.43	90.00	2,546.02	544.53	1,569.61	1,518.42	51.19	30.662 CC	
5,000.00	3,403.27	3,300.27	3,300.27	40.28	11.43	90.00	2,546.02	544.53	1,569.82	1,518.13	51.69	30.368 ES	
5,100.00	3,403.59	3,300.59	3,300.59	42.27	11.43	90.01	2,546.02	544.53	1,574.62	1,520.93	53.69	29.329	
5,200.00	3,403.91	3,300.91	3,300.91	44.28	11.43	90.03	2,546.02	544.53	1,585.72	1,530.02	55.70	28.469	
5,300.00	3,404.23	3,301.23	3,301.23	46.31	11.43	90.04	2,546.02	544.53	1,603.00	1,545.27	57.73	27.769	
5,400.00	3,404.54	3,301.54	3,301.54	48.34	11.43	90.05	2,546.02	544.53	1,626.25	1,566.48	59.76	27.211	
5,500.00	3,404.86	3,301.86	3,301.86	50.39	11.43	90.06	2,546.02	544.53	1,655.23	1,593.41	61.81	26.777	
5,600.00	3,405.18	3,302.18	3,302.18	52.45	11.43	90.07	2,546.02	544.53	1,689.63	1,625.76	63.88	26.452	
5,700.00	3,405.50	3,302.50	3,302.50	54.52	11.43	90.08	2,546.02	544.53	1,729.15	1,663.20	65.94	26.221	
5,800.00	3,405.82	3,302.82	3,302.82	56.59	11.44	90.10	2,546.02	544.53	1,773.42	1,705.40	68.02	26.072	
5,900.00	3,406.13	3,303.13	3,303.13	58.68	11.44	90.11	2,546.02	544.53	1,822.12	1,752.02	70.11	25.991	
6,000.00	3,406.45	3,303.45	3,303.45	60.77	11.44	90.12	2,546.02	544.53	1,874.89	1,802.69	72.20	25.969 SF	
6,100.00	3,406.77	3,303.77	3,303.77	62.86	11.44	90.13	2,546.02	544.53	1,931.40	1,857.11	74.29	25.997	
6,200.00	3,407.09	3,304.09	3,304.09	64.96	11.44	90.14	2,546.02	544.53	1,991.33	1,914.93	76.39	26.067	
6,300.00	3,407.41	3,304.41	3,304.41	67.07	11.44	90.15	2,546.02	544.53	2,054.38	1,975.88	78.50	26.171	
6,400.00	3,407.72	3,304.72	3,304.72	69.17	11.44	90.17	2,546.02	544.53	2,120.27	2,039.66	80.61	26.303	
6,500.00	3,408.04	3,305.04	3,305.04	71.29	11.44	90.18	2,546.02	544.53	2,188.75	2,106.03	82.72	26.459	
6,600.00	3,408.36	3,305.36	3,305.36	73.40	11.44	90.19	2,546.02	544.53	2,259.59	2,174.75	84.84	26.633	
6,700.00	3,408.68	3,305.68	3,305.68	75.52	11.44	90.20	2,546.02	544.53	2,332.56	2,245.59	86.96	26.823	
6,800.00	3,409.00	3,306.00	3,306.00	77.64	11.45	90.21	2,546.02	544.53	2,407.47	2,318.38	89.08	27.025	
6,900.00	3,409.31	3,306.31	3,306.31	79.77	11.45	90.22	2,546.02	544.53	2,484.15	2,392.94	91.21	27.235	
7,000.00	3,409.63	3,306.63	3,306.63	81.90	11.45	90.24	2,546.02	544.53	2,562.43	2,469.10	93.34	27.453	
7,100.00	3,409.95	3,306.95	3,306.95	84.03	11.45	90.25	2,546.02	544.53	2,642.19	2,546.72	95.47	27.675	
7,200.00	3,410.27	3,307.27	3,307.27	86.16	11.45	90.26	2,546.02	544.53	2,723.28	2,625.67	97.60	27.901	
7,300.00	3,410.59	3,307.59	3,307.59	88.29	11.45	90.27	2,546.02	544.53	2,805.59	2,705.85	99.74	28.129	
7,400.00	3,410.91	3,307.91	3,307.91	90.43	11.45	90.28	2,546.02	544.53	2,889.02	2,787.14	101.88	28.358	
7,500.00	3,411.22	3,308.22	3,308.22	92.57	11.45	90.29	2,546.02	544.53	2,973.47	2,869.45	104.01	28.587	
7,600.00	3,411.54	3,308.54	3,308.54	94.71	11.45	90.30	2,546.02	544.53	3,058.85	2,952.70	106.15	28.815	
7,700.00	3,411.86	3,308.86	3,308.86	96.85	11.46	90.32	2,546.02	544.53	3,145.10	3,036.80	108.30	29.042	
7,800.00	3,412.18	3,309.18	3,309.18	98.99	11.46	90.33	2,546.02	544.53	3,232.14	3,121.70	110.44	29.266	
7,900.00	3,412.50	3,309.50	3,309.50	101.13	11.46	90.34	2,546.02	544.53	3,319.91	3,207.33	112.58	29.488	
8,000.00	3,412.81	3,309.81	3,309.81	103.28	11.46	90.35	2,546.02	544.53	3,408.36	3,293.63	114.73	29.708	
8,100.00	3,413.13	3,310.13	3,310.13	105.42	11.46	90.36	2,546.02	544.53	3,497.43	3,380.55	116.88	29.924	
8,200.00	3,413.45	3,310.45	3,310.45	107.57	11.46	90.37	2,546.02	544.53	3,587.07	3,468.05	119.03	30.137	
8,300.00	3,413.77	3,310.77	3,310.77	109.72	11.46	90.39	2,546.02	544.53	3,677.25	3,556.08	121.17	30.347	
8,372.99	3,414.00	3,311.00	3,311.00	111.29	11.46	90.39	2,546.02	544.53	3,743.38	3,620.64	122.74	30.498	

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



Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T31N-R08W
Site Error: 0.00 usft
Reference Well: San Juan 32-8 Unit 222H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 3554-INC_ONLY<10												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance		Minimum Separation		Separation Factor		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)		
0.00	0.00	0.00	0.00	0.00	0.00	-104.05	-677.46	-2,707.11	2,790.71				
100.00	100.00	74.00	74.00	0.10	0.26	-104.05	-677.46	-2,707.11	2,790.59	2,790.24	0.35	7,929.570	
200.00	200.00	174.00	174.00	0.32	0.60	-104.05	-677.46	-2,707.11	2,790.59	2,789.67	0.92	3,023.722	
300.00	300.00	274.00	274.00	0.55	0.95	-104.05	-677.46	-2,707.11	2,790.59	2,789.10	1.49	1,868.019	
400.00	400.00	374.00	374.00	0.77	1.30	-104.05	-677.46	-2,707.11	2,790.59	2,788.53	2.06	1,351.471	
500.00	500.00	474.00	474.00	0.99	1.64	-104.05	-677.46	-2,707.11	2,790.59	2,787.96	2.64	1,058.714	
600.00	600.00	574.00	574.00	1.22	1.99	-104.05	-677.46	-2,707.11	2,790.59	2,787.38	3.21	870.208	
700.00	700.00	674.00	674.00	1.44	2.33	-104.05	-677.46	-2,707.11	2,790.59	2,786.81	3.78	738.684	
800.00	800.00	774.00	774.00	1.67	2.68	-104.05	-677.46	-2,707.11	2,790.59	2,786.24	4.35	641.698	
900.00	900.00	874.00	874.00	1.89	3.03	-104.05	-677.46	-2,707.11	2,790.59	2,785.67	4.92	567.223	
1,000.00	1,000.00	974.00	974.00	2.12	3.37	-104.05	-677.46	-2,707.11	2,790.59	2,785.10	5.49	508.238	
1,100.00	1,100.00	1,074.00	1,074.00	2.34	3.72	-104.05	-677.46	-2,707.11	2,790.59	2,784.53	6.06	460.365	
1,200.00	1,200.00	1,174.00	1,174.00	2.57	4.06	-104.05	-677.46	-2,707.11	2,790.59	2,783.96	6.63	420.734	
1,300.00	1,300.00	1,274.00	1,274.00	2.79	4.41	-104.05	-677.46	-2,707.11	2,790.59	2,783.39	7.20	387.386	
1,400.00	1,400.00	1,374.00	1,374.00	3.02	4.76	-104.05	-677.46	-2,707.11	2,790.59	2,782.82	7.77	358.936	
1,500.00	1,500.00	1,474.00	1,474.00	3.24	5.10	-104.05	-677.46	-2,707.11	2,790.59	2,782.25	8.35	334.378	
1,600.00	1,600.00	1,574.00	1,574.00	3.47	5.45	-104.05	-677.46	-2,707.11	2,790.59	2,781.67	8.92	312.966	
1,700.00	1,700.00	1,674.00	1,674.00	3.69	5.80	-104.05	-677.46	-2,707.11	2,790.59	2,781.10	9.49	294.132	
1,800.00	1,800.00	1,774.00	1,774.00	3.92	6.14	-104.05	-677.46	-2,707.11	2,790.59	2,780.53	10.06	277.435	
1,900.00	1,900.00	1,874.00	1,874.00	4.14	6.49	-104.05	-677.46	-2,707.11	2,790.59	2,779.96	10.63	262.532	
2,000.00	2,000.00	1,974.00	1,974.00	4.37	6.83	-104.05	-677.46	-2,707.11	2,790.59	2,779.39	11.20	249.149	
2,048.13	2,048.13	2,022.13	2,022.13	4.47	7.00	-104.05	-677.46	-2,707.11	2,790.59	2,779.12	11.48	243.182	
2,100.00	2,099.98	2,073.99	2,073.99	4.59	7.18	-77.71	-677.46	-2,707.11	2,790.39	2,778.61	11.78	236.924	
2,200.00	2,199.72	2,173.72	2,173.72	4.82	7.53	-77.91	-677.46	-2,707.11	2,788.89	2,776.53	12.36	225.702	
2,300.00	2,298.70	2,272.70	2,272.70	5.05	7.87	-78.30	-677.46	-2,707.11	2,785.96	2,773.02	12.94	215.325	
2,400.00	2,396.47	2,370.47	2,370.47	5.30	8.21	-78.88	-677.46	-2,707.11	2,781.73	2,768.20	13.54	205.481	
2,500.00	2,492.54	2,466.54	2,466.54	5.60	8.54	-79.63	-677.46	-2,707.11	2,776.37	2,762.19	14.18	195.864	
2,600.00	2,586.45	2,560.45	2,560.45	5.98	8.86	-80.54	-677.46	-2,707.11	2,770.09	2,755.21	14.88	186.224	
2,700.00	2,677.73	2,651.73	2,651.73	6.45	9.18	-81.57	-677.46	-2,707.11	2,763.16	2,747.49	15.66	176.417	
2,800.00	2,765.95	2,739.95	2,739.95	7.04	9.49	-82.72	-677.46	-2,707.11	2,755.89	2,739.33	16.56	166.421	
2,900.00	2,850.66	2,824.66	2,824.66	7.77	9.78	-83.94	-677.46	-2,707.11	2,748.64	2,731.06	17.58	156.334	
3,000.00	2,931.47	2,905.47	2,905.47	8.65	10.06	-85.20	-677.46	-2,707.11	2,741.77	2,723.04	18.74	146.330	
3,100.00	3,007.98	2,981.98	2,981.98	9.67	10.32	-86.47	-677.46	-2,707.11	2,735.70	2,715.67	20.03	136.609	
3,200.00	3,079.81	3,053.81	3,053.81	10.84	10.57	-87.72	-677.46	-2,707.11	2,730.83	2,709.38	21.44	127.349	
3,300.00	3,146.61	3,120.61	3,120.61	12.16	10.80	-88.89	-677.46	-2,707.11	2,727.57	2,704.59	22.98	118.680	
3,400.00	3,208.06	3,182.06	3,182.06	13.62	11.02	-89.96	-677.46	-2,707.11	2,726.33	2,701.69	24.63	110.681	
3,404.29	3,210.57	3,184.57	3,184.57	13.68	11.03	-90.00	-677.46	-2,707.11	2,726.32	2,701.62	24.71	110.343 CC	
3,500.00	3,263.86	3,237.86	3,237.86	15.19	11.21	-90.88	-677.46	-2,707.11	2,727.48	2,701.08	26.40	103.301 ES	
3,600.00	3,313.74	3,287.74	3,287.74	16.89	11.38	-91.63	-677.46	-2,707.11	2,731.38	2,703.12	28.26	96.637	
3,673.13	3,346.32	3,320.32	3,320.32	18.19	11.50	-92.06	-677.46	-2,707.11	2,736.14	2,706.47	29.68	92.200	
3,700.00	3,357.10	3,331.10	3,331.10	18.56	11.53	-92.04	-677.46	-2,707.11	2,738.34	2,708.25	30.08	91.026	
3,750.00	3,374.04	3,348.04	3,348.04	19.06	11.59	-91.90	-677.46	-2,707.11	2,743.14	2,712.49	30.64	89.515	
3,800.00	3,386.82	3,360.82	3,360.82	19.62	11.64	-91.58	-677.46	-2,707.11	2,748.90	2,717.65	31.25	87.960	
3,850.00	3,395.34	3,369.34	3,369.34	20.24	11.67	-91.07	-677.46	-2,707.11	2,755.63	2,723.73	31.90	86.387	
3,900.00	3,399.53	3,373.53	3,373.53	20.90	11.68	-90.38	-677.46	-2,707.11	2,763.31	2,730.74	32.58	84.825	
3,923.13	3,400.00	3,374.00	3,374.00	21.22	11.68	-90.00	-677.46	-2,707.11	2,767.18	2,734.28	32.90	84.115	
4,000.00	3,400.10	3,374.10	3,374.10	22.31	11.68	-90.04	-677.46	-2,707.11	2,782.88	2,748.91	33.97	81.920	
4,020.81	3,400.16	3,374.16	3,374.16	22.61	11.68	-90.05	-677.46	-2,707.11	2,788.00	2,753.73	34.26	81.371	
4,100.00	3,400.41	3,374.41	3,374.41	23.81	11.68	-90.05	-677.46	-2,707.11	2,809.20	2,773.74	35.47	79.206	
4,200.00	3,400.73	3,374.73	3,374.73	25.43	11.68	-90.06	-677.46	-2,707.11	2,838.91	2,801.83	37.08	76.552	
4,300.00	3,401.04	3,375.04	3,375.04	27.12	11.68	-90.07	-677.46	-2,707.11	2,871.80	2,833.02	38.78	74.052	

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



Koltek Energy Services

Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T31N-R08W
Site Error: 0.00 usft
Reference Well: San Juan 32-8 Unit 222H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design Sec.09-T31N-R08W - San Juan 32-8 Unit 221 - Original Hole - Original Hole													Offset Site Error:	0.00 usft
Survey Program: 3554-INC_ONLY<10													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)						
4,400.00	3,401.36	3,375.36	3,375.36	28.88	11.69	-90.07	-677.46	-2,707.11	2,907.76	2,867.22	40.54	71.724		
4,500.00	3,401.68	3,375.68	3,375.68	30.69	11.69	-90.08	-677.46	-2,707.11	2,946.67	2,904.31	42.35	69.572		
4,600.00	3,402.00	3,376.00	3,376.00	32.54	11.69	-90.09	-677.46	-2,707.11	2,988.42	2,944.21	44.21	67.594		
4,700.00	3,402.32	3,376.32	3,376.32	34.43	11.69	-90.09	-677.46	-2,707.11	3,032.90	2,986.79	46.11	65.781		
4,800.00	3,402.63	3,376.63	3,376.63	36.36	11.69	-90.10	-677.46	-2,707.11	3,079.98	3,031.95	48.03	64.124		
4,900.00	3,402.95	3,376.95	3,376.95	38.31	11.69	-90.11	-677.46	-2,707.11	3,129.55	3,079.57	49.98	62.611		
5,000.00	3,403.27	3,377.27	3,377.27	40.28	11.69	-90.11	-677.46	-2,707.11	3,181.49	3,129.53	51.96	61.230		
5,100.00	3,403.59	3,377.59	3,377.59	42.27	11.69	-90.12	-677.46	-2,707.11	3,235.69	3,181.74	53.95	59.971		
5,200.00	3,403.91	3,377.91	3,377.91	44.28	11.69	-90.13	-677.46	-2,707.11	3,292.04	3,236.07	55.97	58.822		
5,300.00	3,404.23	3,378.23	3,378.23	46.31	11.70	-90.13	-677.46	-2,707.11	3,350.42	3,292.43	57.99	57.774		
5,400.00	3,404.54	3,378.54	3,378.54	48.34	11.70	-90.14	-677.46	-2,707.11	3,410.74	3,350.71	60.03	56.816		
5,500.00	3,404.86	3,378.86	3,378.86	50.39	11.70	-90.15	-677.46	-2,707.11	3,472.89	3,410.81	62.08	55.941		
5,600.00	3,405.18	3,379.18	3,379.18	52.45	11.70	-90.15	-677.46	-2,707.11	3,536.77	3,472.63	64.14	55.140		
5,700.00	3,405.50	3,379.50	3,379.50	54.52	11.70	-90.16	-677.46	-2,707.11	3,602.30	3,536.09	66.21	54.406		
5,800.00	3,405.82	3,379.82	3,379.82	56.59	11.70	-90.17	-677.46	-2,707.11	3,669.38	3,601.09	68.29	53.734		
5,900.00	3,406.13	3,380.13	3,380.13	58.68	11.70	-90.18	-677.46	-2,707.11	3,737.94	3,667.57	70.37	53.117		
6,000.00	3,406.45	3,380.45	3,380.45	60.77	11.70	-90.18	-677.46	-2,707.11	3,807.88	3,735.42	72.46	52.550		
6,100.00	3,406.77	3,380.77	3,380.77	62.86	11.70	-90.19	-677.46	-2,707.11	3,879.15	3,804.59	74.56	52.028		
6,200.00	3,407.09	3,381.09	3,381.09	64.96	11.71	-90.20	-677.46	-2,707.11	3,951.66	3,875.00	76.66	51.548		
6,300.00	3,407.41	3,381.41	3,381.41	67.07	11.71	-90.20	-677.46	-2,707.11	4,025.35	3,946.58	78.77	51.105		
6,400.00	3,407.72	3,381.72	3,381.72	69.17	11.71	-90.21	-677.46	-2,707.11	4,100.15	4,019.27	80.88	50.697		
6,500.00	3,408.04	3,382.04	3,382.04	71.29	11.71	-90.22	-677.46	-2,707.11	4,176.00	4,093.02	82.99	50.320		
6,600.00	3,408.36	3,382.36	3,382.36	73.40	11.71	-90.22	-677.46	-2,707.11	4,252.86	4,167.75	85.11	49.971		
6,700.00	3,408.68	3,382.68	3,382.68	75.52	11.71	-90.23	-677.46	-2,707.11	4,330.66	4,243.43	87.23	49.648		
6,800.00	3,409.00	3,383.00	3,383.00	77.64	11.71	-90.24	-677.46	-2,707.11	4,409.36	4,320.01	89.35	49.348		
6,900.00	3,409.31	3,383.31	3,383.31	79.77	11.71	-90.24	-677.46	-2,707.11	4,488.90	4,397.42	91.48	49.071		
7,000.00	3,409.63	3,383.63	3,383.63	81.90	11.71	-90.25	-677.46	-2,707.11	4,569.25	4,475.64	93.61	48.813		
7,100.00	3,409.95	3,383.95	3,383.95	84.03	11.72	-90.26	-677.46	-2,707.11	4,650.36	4,554.62	95.74	48.574		
7,200.00	3,410.27	3,384.27	3,384.27	86.16	11.72	-90.26	-677.46	-2,707.11	4,732.19	4,634.32	97.87	48.351		
7,300.00	3,410.59	3,384.59	3,384.59	88.29	11.72	-90.27	-677.46	-2,707.11	4,814.71	4,714.71	100.01	48.144		
7,400.00	3,410.91	3,384.91	3,384.91	90.43	11.72	-90.28	-677.46	-2,707.11	4,897.88	4,795.74	102.14	47.951		
7,500.00	3,411.22	3,385.22	3,385.22	92.57	11.72	-90.28	-677.46	-2,707.11	4,981.67	4,877.39	104.28	47.771		
7,600.00	3,411.54	3,385.54	3,385.54	94.71	11.72	-90.29	-677.46	-2,707.11	5,066.05	4,959.63	106.42	47.603		
7,700.00	3,411.86	3,385.86	3,385.86	96.85	11.72	-90.30	-677.46	-2,707.11	5,150.99	5,042.42	108.56	47.446		
7,800.00	3,412.18	3,386.18	3,386.18	98.99	11.72	-90.30	-677.46	-2,707.11	5,236.46	5,125.75	110.71	47.300		
7,900.00	3,412.50	3,386.50	3,386.50	101.13	11.72	-90.31	-677.46	-2,707.11	5,322.43	5,209.58	112.85	47.163		
8,000.00	3,412.81	3,386.81	3,386.81	103.28	11.73	-90.32	-677.46	-2,707.11	5,408.89	5,293.89	115.00	47.034		
8,100.00	3,413.13	3,387.13	3,387.13	105.42	11.73	-90.32	-677.46	-2,707.11	5,495.81	5,378.66	117.15	46.914		
8,200.00	3,413.45	3,387.45	3,387.45	107.57	11.73	-90.33	-677.46	-2,707.11	5,583.16	5,463.87	119.29	46.802		
8,300.00	3,413.77	3,387.77	3,387.77	109.72	11.73	-90.34	-677.46	-2,707.11	5,670.93	5,549.49	121.44	46.696		
8,372.99	3,414.00	3,388.00	3,388.00	111.29	11.73	-90.34	-677.46	-2,707.11	5,735.25	5,612.24	123.01	46.623 SF		



Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T31N-R08W
Site Error: 0.00 usft
Reference Well: San Juan 32-8 Unit 222H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design Sec.09-T31N-R08W - San Juan 32-8 Unit 221A - Original Hole - Original Hole													Offset Site Error:	0.00 usft
Survey Program: 212-INC_ONLY<10													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)	Between Centres (usft)					Between Ellipses (usft)	
0.00	0.00	0.00	0.00	0.00	0.00	-64.91	1,364.58	-2,914.91	3,219.38					
100.00	100.00	29.31	29.31	0.10	0.21	-64.92	1,364.47	-2,914.91	3,218.46	3,218.15	0.31	N/A		
181.44	181.44	106.42	106.42	0.28	0.77	-64.92	1,364.34	-2,914.91	3,218.41	3,217.36	1.05	3,057.067		
200.00	200.00	123.99	123.99	0.32	0.90	-64.92	1,364.35	-2,914.91	3,218.41	3,217.19	1.22	2,633.171		
300.00	300.00	230.51	230.51	0.55	1.92	-64.92	1,364.50	-2,914.91	3,218.48	3,216.01	2.46	1,306.106		
400.00	400.00	328.17	328.17	0.77	3.91	-64.92	1,364.19	-2,914.91	3,218.34	3,213.67	4.68	687.920		
500.00	500.00	425.82	425.82	0.99	5.90	-64.92	1,364.05	-2,914.91	3,218.28	3,211.39	6.89	466.930		
534.50	534.50	459.52	459.51	1.07	6.58	-64.92	1,364.04	-2,914.91	3,218.28	3,210.62	7.66	420.342		
600.00	600.00	523.47	523.46	1.22	7.89	-64.92	1,364.07	-2,914.91	3,218.29	3,209.19	9.11	353.412		
700.00	700.00	621.11	621.10	1.44	9.88	-64.92	1,364.27	-2,914.91	3,218.38	3,207.06	11.32	284.307		
800.00	800.00	707.00	706.99	1.67	11.63	-64.91	1,364.58	-2,914.91	3,218.56	3,205.26	13.29	242.096		
900.00	900.00	825.01	825.00	1.89	14.75	-64.91	1,364.58	-2,914.91	3,218.51	3,201.87	16.64	193.422		
1,000.00	1,000.00	925.02	925.00	2.12	17.39	-64.91	1,364.58	-2,914.91	3,218.51	3,199.00	19.51	164.976		
1,100.00	1,100.00	1,025.02	1,025.00	2.34	20.03	-64.91	1,364.58	-2,914.91	3,218.51	3,196.13	22.38	143.824		
1,200.00	1,200.00	1,125.03	1,125.00	2.57	22.68	-64.91	1,364.58	-2,914.91	3,218.51	3,193.26	25.25	127.479		
1,256.69	1,256.69	1,181.72	1,181.69	2.70	24.18	-64.91	1,364.58	-2,914.91	3,218.51	3,191.63	26.87	119.763		
1,300.00	1,300.00	1,202.00	1,201.97	2.79	24.71	-64.91	1,364.58	-2,914.91	3,218.59	3,191.08	27.51	117.008		
1,400.00	1,400.00	1,325.04	1,325.00	3.02	27.97	-64.91	1,364.58	-2,914.91	3,218.51	3,187.52	30.99	103.851		
1,500.00	1,500.00	1,425.04	1,425.00	3.24	30.62	-64.91	1,364.58	-2,914.91	3,218.51	3,184.64	33.87	95.037		
1,600.00	1,600.00	1,525.05	1,525.00	3.47	33.27	-64.91	1,364.58	-2,914.91	3,218.51	3,181.77	36.74	87.602		
1,700.00	1,700.00	1,625.05	1,625.00	3.69	35.92	-64.91	1,364.58	-2,914.91	3,218.51	3,178.89	39.61	81.247		
1,800.00	1,800.00	1,725.06	1,725.00	3.92	38.57	-64.91	1,364.58	-2,914.91	3,218.51	3,176.02	42.49	75.751		
1,900.00	1,900.00	1,825.06	1,825.00	4.14	41.22	-64.91	1,364.58	-2,914.91	3,218.51	3,173.14	45.36	70.951		
2,000.00	2,000.00	1,925.07	1,925.00	4.37	43.87	-64.91	1,364.58	-2,914.91	3,218.51	3,170.27	48.24	66.723		
2,048.13	2,048.13	1,973.20	1,973.13	4.47	45.15	-64.91	1,364.58	-2,914.91	3,218.51	3,168.89	49.62	64.863		
2,100.00	2,099.99	2,025.06	2,024.99	4.59	46.52	-38.57	1,364.58	-2,914.91	3,217.77	3,166.67	51.10	62.969		
2,200.00	2,199.72	2,124.79	2,124.72	4.82	49.16	-38.79	1,364.58	-2,914.91	3,212.22	3,158.38	53.84	59.666		
2,300.00	2,298.70	2,233.84	2,233.75	5.05	52.49	-39.25	1,364.29	-2,914.91	3,201.16	3,144.07	57.09	56.073		
2,400.00	2,396.47	2,327.13	2,327.04	5.30	56.12	-39.91	1,363.74	-2,914.91	3,184.64	3,124.19	60.45	52.679		
2,500.00	2,492.54	2,418.90	2,418.80	5.60	59.68	-40.79	1,363.51	-2,914.91	3,163.09	3,099.50	63.59	49.742		
2,600.00	2,586.45	2,508.73	2,508.63	5.98	63.17	-41.90	1,363.57	-2,914.91	3,136.66	3,070.13	66.52	47.153		
2,700.00	2,677.73	2,596.25	2,596.14	6.45	66.56	-43.25	1,363.90	-2,914.91	3,105.55	3,036.26	69.29	44.819		
2,800.00	2,765.95	2,681.05	2,680.95	7.04	69.86	-44.84	1,364.47	-2,914.91	3,070.01	2,998.04	71.97	42.656		
2,900.00	2,850.66	2,775.79	2,775.66	7.77	74.57	-46.83	1,364.58	-2,914.91	3,030.03	2,953.91	76.12	39.805		
3,000.00	2,931.47	2,856.61	2,856.47	8.65	78.72	-49.03	1,364.58	-2,914.91	2,986.16	2,906.19	79.97	37.342		
3,100.00	3,007.98	2,933.13	2,932.98	9.67	82.65	-51.51	1,364.58	-2,914.91	2,938.78	2,854.80	83.99	34.990		
3,200.00	3,079.81	3,004.98	3,004.81	10.84	86.34	-54.28	1,364.58	-2,914.91	2,888.34	2,800.04	88.30	32.710		
3,300.00	3,146.61	3,071.79	3,071.61	12.16	89.77	-57.33	1,364.58	-2,914.91	2,835.28	2,742.30	92.98	30.494		
3,400.00	3,208.06	3,133.26	3,133.06	13.62	92.93	-60.61	1,364.58	-2,914.91	2,780.09	2,682.06	98.03	28.359		
3,500.00	3,263.86	3,189.07	3,188.86	15.19	95.80	-64.09	1,364.58	-2,914.91	2,723.29	2,619.89	103.40	26.336		
3,600.00	3,313.74	3,238.95	3,238.74	16.89	98.36	-67.71	1,364.58	-2,914.91	2,665.44	2,556.49	108.95	24.465		
3,673.13	3,346.32	3,251.00	3,250.78	18.19	98.98	-69.92	1,364.58	-2,914.91	2,622.86	2,511.13	111.74	23.474		
3,673.13	3,346.32	3,251.00	3,250.78	18.19	98.98	-69.92	1,364.58	-2,914.91	2,622.86	2,511.12	111.74	23.473		
3,700.00	3,357.10	3,282.33	3,282.10	18.56	100.59	-72.50	1,364.58	-2,914.91	2,606.99	2,492.17	114.82	22.704		
3,750.00	3,374.04	3,299.27	3,299.04	19.06	101.46	-76.49	1,364.58	-2,914.91	2,577.20	2,459.38	117.82	21.874		
3,800.00	3,386.82	3,312.05	3,311.82	19.62	102.12	-80.52	1,364.58	-2,914.91	2,547.13	2,426.72	120.41	21.154		
3,850.00	3,395.34	3,320.57	3,320.34	20.24	102.56	-84.49	1,364.58	-2,914.91	2,517.06	2,394.67	122.39	20.566		
3,900.00	3,399.53	3,324.77	3,324.53	20.90	102.77	-88.30	1,364.58	-2,914.91	2,487.28	2,363.60	123.68	20.111		
3,923.13	3,400.00	3,325.24	3,325.00	21.22	102.80	-90.00	1,364.58	-2,914.91	2,473.67	2,349.64	124.03	19.944		
4,000.00	3,400.10	3,325.33	3,325.10	22.31	102.80	-89.91	1,364.58	-2,914.91	2,430.76	2,305.65	125.11	19.429		
4,020.81	3,400.16	3,325.39	3,325.16	22.61	102.81	-89.89	1,364.58	-2,914.91	2,419.88	2,294.48	125.40	19.297		
4,100.00	3,400.41	3,325.64	3,325.41	23.81	102.82	-89.90	1,364.58	-2,914.91	2,380.06	2,253.44	126.62	18.797		

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



Koltek Energy Services

Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T31N-R08W
Site Error: 0.00 usft
Reference Well: San Juan 32-8 Unit 222H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 212-INC_ONLY<10												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	
4,200.00	3,400.73	3,325.96	3,325.73	25.43	102.83	-89.91	1,364.58	-2,914.91	2,332.66	2,204.40	128.25	18.188	
4,300.00	3,401.04	3,326.28	3,326.04	27.12	102.85	-89.92	1,364.58	-2,914.91	2,288.64	2,158.68	129.96	17.610	
4,400.00	3,401.36	3,326.60	3,326.36	28.88	102.87	-89.92	1,364.58	-2,914.91	2,248.21	2,116.48	131.74	17.066	
4,500.00	3,401.68	3,326.92	3,326.68	30.69	102.88	-89.93	1,364.58	-2,914.91	2,211.57	2,078.01	133.57	16.558	
4,600.00	3,402.00	3,327.23	3,327.00	32.54	102.90	-89.94	1,364.58	-2,914.91	2,178.91	2,043.47	135.44	16.088	
4,700.00	3,402.32	3,327.55	3,327.32	34.43	102.92	-89.95	1,364.58	-2,914.91	2,150.40	2,013.05	137.35	15.656	
4,800.00	3,402.63	3,327.87	3,327.63	36.36	102.93	-89.96	1,364.58	-2,914.91	2,126.22	1,986.93	139.29	15.265	
4,900.00	3,402.95	3,328.19	3,327.95	38.31	102.95	-89.97	1,364.58	-2,914.91	2,106.51	1,965.26	141.26	14.913	
5,000.00	3,403.27	3,328.51	3,328.27	40.28	102.97	-89.98	1,364.58	-2,914.91	2,091.41	1,948.16	143.25	14.600	
5,100.00	3,403.59	3,328.83	3,328.59	42.27	102.98	-89.99	1,364.58	-2,914.91	2,081.00	1,935.75	145.26	14.326	
5,200.00	3,403.91	3,329.14	3,328.91	44.28	103.00	-89.99	1,364.58	-2,914.91	2,075.37	1,928.09	147.28	14.091	
5,267.07	3,404.12	3,329.36	3,329.12	45.64	103.01	-90.00	1,364.58	-2,914.91	2,074.29	1,925.63	148.65	13.954 CC	
5,300.00	3,404.23	3,329.46	3,329.23	46.31	103.01	-90.00	1,364.58	-2,914.91	2,074.55	1,925.22	149.33	13.893 ES	
5,400.00	3,404.54	3,329.78	3,329.54	48.34	103.03	-90.01	1,364.58	-2,914.91	2,078.54	1,927.16	151.38	13.731	
5,500.00	3,404.86	3,330.10	3,329.86	50.39	103.05	-90.02	1,364.58	-2,914.91	2,087.32	1,933.88	153.45	13.603	
5,600.00	3,405.18	3,330.42	3,330.18	52.45	103.06	-90.03	1,364.58	-2,914.91	2,100.83	1,945.31	155.52	13.508	
5,700.00	3,405.50	3,330.73	3,330.50	54.52	103.08	-90.04	1,364.58	-2,914.91	2,118.98	1,961.38	157.60	13.445	
5,800.00	3,405.82	3,331.05	3,330.82	56.59	103.10	-90.05	1,364.58	-2,914.91	2,141.65	1,981.95	159.70	13.411	
5,900.00	3,406.13	3,331.37	3,331.13	58.68	103.11	-90.06	1,364.58	-2,914.91	2,168.70	2,006.90	161.80	13.404 SF	
6,000.00	3,406.45	3,331.69	3,331.45	60.77	103.13	-90.06	1,364.58	-2,914.91	2,199.96	2,036.06	163.90	13.422	
6,100.00	3,406.77	3,332.01	3,331.77	62.86	103.15	-90.07	1,364.58	-2,914.91	2,235.27	2,069.26	166.01	13.464	
6,200.00	3,407.09	3,332.32	3,332.09	64.96	103.16	-90.08	1,364.58	-2,914.91	2,274.43	2,106.30	168.13	13.528	
6,300.00	3,407.41	3,332.64	3,332.41	67.07	103.18	-90.09	1,364.58	-2,914.91	2,317.24	2,146.99	170.25	13.611	
6,400.00	3,407.72	3,332.96	3,332.72	69.17	103.19	-90.10	1,364.58	-2,914.91	2,363.51	2,191.13	172.37	13.711	
6,500.00	3,408.04	3,333.28	3,333.04	71.29	103.21	-90.11	1,364.58	-2,914.91	2,413.04	2,238.54	174.50	13.828	
6,600.00	3,408.36	3,333.60	3,333.36	73.40	103.23	-90.12	1,364.58	-2,914.91	2,465.63	2,289.00	176.64	13.959	
6,700.00	3,408.68	3,333.92	3,333.68	75.52	103.24	-90.13	1,364.58	-2,914.91	2,521.10	2,342.32	178.77	14.102	
6,800.00	3,409.00	3,334.23	3,334.00	77.64	103.26	-90.13	1,364.58	-2,914.91	2,579.25	2,398.34	180.91	14.257	
6,900.00	3,409.31	3,334.55	3,334.31	79.77	103.28	-90.14	1,364.58	-2,914.91	2,639.90	2,456.85	183.05	14.422	
7,000.00	3,409.63	3,334.87	3,334.63	81.90	103.29	-90.15	1,364.58	-2,914.91	2,702.90	2,517.71	185.20	14.595	
7,100.00	3,409.95	3,335.19	3,334.95	84.03	103.31	-90.16	1,364.58	-2,914.91	2,768.08	2,580.74	187.34	14.776	
7,200.00	3,410.27	3,335.51	3,335.27	86.16	103.33	-90.17	1,364.58	-2,914.91	2,835.28	2,645.79	189.49	14.963	
7,300.00	3,410.59	3,335.82	3,335.59	88.29	103.34	-90.18	1,364.58	-2,914.91	2,904.38	2,712.74	191.64	15.155	
7,400.00	3,410.91	3,336.14	3,335.91	90.43	103.36	-90.19	1,364.58	-2,914.91	2,975.23	2,781.44	193.79	15.353	
7,500.00	3,411.22	3,336.46	3,336.22	92.57	103.37	-90.20	1,364.58	-2,914.91	3,047.72	2,851.77	195.95	15.554	
7,600.00	3,411.54	3,336.78	3,336.54	94.71	103.39	-90.20	1,364.58	-2,914.91	3,121.72	2,923.62	198.10	15.758	
7,700.00	3,411.86	3,337.10	3,336.86	96.85	103.41	-90.21	1,364.58	-2,914.91	3,197.15	2,996.89	200.26	15.965	
7,800.00	3,412.18	3,337.42	3,337.18	98.99	103.42	-90.22	1,364.58	-2,914.91	3,273.89	3,071.47	202.42	16.174	
7,900.00	3,412.50	3,337.73	3,337.50	101.13	103.44	-90.23	1,364.58	-2,914.91	3,351.85	3,147.27	204.58	16.384	
8,000.00	3,412.81	3,338.05	3,337.81	103.28	103.46	-90.24	1,364.58	-2,914.91	3,430.96	3,224.22	206.74	16.596	
8,100.00	3,413.13	3,338.37	3,338.13	105.42	103.47	-90.25	1,364.58	-2,914.91	3,511.14	3,302.23	208.90	16.808	
8,200.00	3,413.45	3,338.69	3,338.45	107.57	103.49	-90.26	1,364.58	-2,914.91	3,592.30	3,381.24	211.06	17.020	
8,300.00	3,413.77	3,339.01	3,338.77	109.72	103.51	-90.27	1,364.58	-2,914.91	3,674.40	3,461.17	213.23	17.232	
8,372.99	3,414.00	3,339.24	3,339.00	111.29	103.52	-90.27	1,364.58	-2,914.91	3,734.87	3,520.06	214.81	17.387	

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



Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T31N-R08W
Site Error: 0.00 usft
Reference Well: San Juan 32-8 Unit 222H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design Sec.09-T31N-R08W - San Juan 32-8 Unit 222 - Original Hole - Original Hole												Offset Site Error:	0.00 usft
Survey Program: 285-INC_ONLY<10												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)					
0.00	0.00	0.00	0.00	0.00	0.00	11.22	2,538.67	503.62	2,590.07				
100.00	100.00	14.88	14.88	0.10	0.15	11.22	2,538.58	503.62	2,588.09	2,587.84	0.25	N/A	
200.00	200.00	104.44	104.44	0.32	1.07	11.22	2,538.23	503.62	2,587.72	2,586.33	1.39	1,867.296	
242.50	242.50	142.51	142.51	0.42	1.45	11.22	2,538.20	503.62	2,587.68	2,585.81	1.87	1,384.085	
300.00	300.00	194.00	194.00	0.55	1.98	11.22	2,538.26	503.62	2,587.75	2,585.22	2.52	1,025.240	
400.00	400.00	285.00	285.00	0.77	2.91	11.22	2,538.67	503.62	2,588.18	2,584.51	3.68	703.876	
500.00	500.00	400.00	400.00	0.99	5.25	11.22	2,538.67	503.62	2,588.14	2,581.89	6.25	414.232	
600.00	600.00	500.01	500.00	1.22	7.29	11.22	2,538.67	503.62	2,588.14	2,579.63	8.51	304.022	
700.00	700.00	600.01	600.00	1.44	9.33	11.22	2,538.67	503.62	2,588.14	2,577.36	10.78	240.133	
800.00	800.00	700.01	700.00	1.67	11.37	11.22	2,538.67	503.62	2,588.14	2,575.10	13.04	198.432	
862.12	862.12	762.13	762.12	1.81	12.64	11.22	2,538.67	503.62	2,588.14	2,573.69	14.45	179.112	
900.00	900.00	788.00	787.99	1.89	13.17	11.22	2,538.67	503.62	2,588.17	2,573.10	15.06	171.825	
1,000.00	1,000.00	896.92	896.91	2.12	15.07	11.22	2,538.85	503.62	2,588.32	2,571.14	17.18	150.629	
1,100.00	1,100.00	999.22	999.20	2.34	16.85	11.22	2,538.93	503.62	2,588.40	2,569.21	19.19	134.890	
1,200.00	1,200.00	1,101.53	1,101.51	2.57	18.63	11.22	2,538.92	503.62	2,588.38	2,567.19	21.19	122.126	
1,300.00	1,300.00	1,203.84	1,203.81	2.79	20.41	11.22	2,538.81	503.62	2,588.28	2,565.08	23.20	111.564	
1,374.53	1,374.53	1,280.08	1,280.06	2.96	21.73	11.22	2,538.67	503.62	2,588.15	2,563.45	24.69	104.806	
1,400.00	1,400.00	1,281.00	1,280.97	3.02	21.75	11.22	2,538.67	503.62	2,588.21	2,563.44	24.77	104.499	
1,500.00	1,500.00	1,403.28	1,403.25	3.24	23.88	11.22	2,538.46	503.62	2,587.93	2,560.81	27.12	95.416	
1,600.00	1,600.00	1,501.44	1,501.40	3.47	25.59	11.22	2,538.37	503.62	2,587.84	2,558.79	29.06	89.061	
1,675.98	1,675.98	1,576.01	1,575.98	3.64	26.89	11.22	2,538.35	503.62	2,587.82	2,557.30	30.53	84.772	
1,700.00	1,700.00	1,599.59	1,599.56	3.69	27.30	11.22	2,538.35	503.62	2,587.83	2,556.83	30.99	83.501	
1,800.00	1,800.00	1,697.75	1,697.71	3.92	29.01	11.22	2,538.40	503.62	2,587.88	2,554.95	32.93	78.597	
1,900.00	1,900.00	1,795.90	1,795.86	4.14	30.72	11.22	2,538.52	503.62	2,588.00	2,553.14	34.86	74.239	
2,000.00	2,000.00	1,871.00	1,870.96	4.37	32.03	11.22	2,538.67	503.62	2,588.30	2,551.91	36.39	71.120	
2,048.13	2,048.13	1,948.17	1,948.13	4.47	33.60	11.22	2,538.67	503.62	2,588.14	2,550.06	38.08	67.975	
2,100.00	2,099.99	2,000.03	1,999.99	4.59	34.66	37.62	2,538.67	503.62	2,587.39	2,548.15	39.24	65.934	
2,200.00	2,199.72	2,099.76	2,099.72	4.82	36.69	37.86	2,538.67	503.62	2,581.77	2,540.36	41.41	62.350	
2,300.00	2,298.70	2,198.75	2,198.70	5.05	38.71	38.32	2,538.67	503.62	2,570.67	2,527.24	43.43	59.188	
2,400.00	2,396.47	2,296.52	2,296.47	5.30	40.70	39.03	2,538.67	503.62	2,554.20	2,508.89	45.31	56.372	
2,500.00	2,492.54	2,392.59	2,392.54	5.60	42.66	39.99	2,538.67	503.62	2,532.50	2,485.45	47.05	53.828	
2,600.00	2,586.45	2,481.00	2,480.95	5.98	44.47	41.17	2,538.67	503.62	2,505.76	2,457.20	48.56	51.599	
2,700.00	2,677.73	2,577.79	2,577.73	6.45	46.44	42.70	2,538.67	503.62	2,474.22	2,423.98	50.24	49.251	
2,800.00	2,765.95	2,666.00	2,665.95	7.04	48.24	44.48	2,538.67	503.62	2,438.17	2,386.37	51.80	47.069	
2,900.00	2,850.66	2,750.73	2,750.66	7.77	49.97	46.56	2,538.67	503.62	2,397.96	2,344.52	53.45	44.867	
3,000.00	2,931.47	2,831.54	2,831.47	8.65	51.62	48.96	2,538.67	503.62	2,353.97	2,298.70	55.27	42.593	
3,100.00	3,007.98	2,908.04	2,907.98	9.67	53.18	51.67	2,538.67	503.62	2,306.63	2,249.28	57.35	40.218	
3,200.00	3,079.81	2,979.87	2,979.81	10.84	54.64	54.69	2,538.67	503.62	2,256.43	2,196.65	59.78	37.747	
3,300.00	3,146.61	3,046.68	3,046.61	12.16	56.00	57.99	2,538.67	503.62	2,203.90	2,141.32	62.58	35.218	
3,400.00	3,208.06	3,108.13	3,108.06	13.62	57.26	61.54	2,538.67	503.62	2,149.62	2,083.88	65.74	32.699	
3,500.00	3,263.86	3,163.93	3,163.86	15.19	58.40	65.26	2,538.67	503.62	2,094.20	2,025.01	69.19	30.267	
3,600.00	3,313.74	3,213.81	3,213.74	16.89	59.41	69.07	2,538.67	503.62	2,038.32	1,965.50	72.82	27.992	
3,673.13	3,346.32	3,246.39	3,246.32	18.19	60.08	71.86	2,538.67	503.62	1,997.56	1,922.07	75.49	26.460	
3,673.13	3,346.32	3,246.39	3,246.32	18.19	60.08	71.86	2,538.67	503.62	1,997.56	1,922.07	75.49	26.460	
3,700.00	3,357.10	3,257.18	3,257.10	18.56	60.30	73.91	2,538.67	503.62	1,982.58	1,905.97	76.61	25.879	
3,750.00	3,374.04	3,274.12	3,274.04	19.06	60.64	77.75	2,538.67	503.62	1,954.49	1,876.12	78.37	24.939	
3,800.00	3,386.82	3,285.00	3,284.92	19.62	60.86	81.45	2,538.67	503.62	1,926.40	1,846.54	79.86	24.122	
3,850.00	3,395.34	3,285.00	3,284.92	20.24	60.86	84.77	2,538.67	503.62	1,898.64	1,817.74	80.90	23.468	
3,900.00	3,399.53	3,285.00	3,284.92	20.90	60.86	88.00	2,538.67	503.62	1,871.46	1,789.70	81.76	22.890	
3,923.13	3,400.00	3,285.00	3,284.92	21.22	60.86	89.45	2,538.67	503.62	1,859.15	1,777.07	82.08	22.650	
4,000.00	3,400.10	3,285.00	3,284.92	22.31	60.86	89.35	2,538.67	503.62	1,818.41	1,735.25	83.16	21.867	
4,020.81	3,400.16	3,285.00	3,284.92	22.61	60.86	89.31	2,538.67	503.62	1,807.33	1,723.88	83.45	21.658	

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



Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T31N-R08W
Site Error: 0.00 usft
Reference Well: San Juan 32-8 Unit 222H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design Sec.09-T31N-R08W - San Juan 32-8 Unit 222 - Original Hole - Original Hole												Offset Site Error:	0.00 usft
Survey Program: 285-INC_ONLY<10												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)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,100.00	3,400.41	3,285.00	3,284.92	23.81	60.86	89.31	2,538.67	503.62	1,766.39	1,681.74	84.65	20.866	
4,200.00	3,400.73	3,285.00	3,284.92	25.43	60.86	89.31	2,538.67	503.62	1,718.53	1,632.26	86.27	19.920	
4,300.00	3,401.04	3,285.00	3,284.92	27.12	60.86	89.31	2,538.67	503.62	1,675.27	1,587.31	87.96	19.045	
4,400.00	3,401.36	3,301.44	3,301.36	28.88	61.20	89.93	2,538.67	503.62	1,636.91	1,546.85	90.05	18.177	
4,500.00	3,401.68	3,301.76	3,301.68	30.69	61.21	89.94	2,538.67	503.62	1,603.95	1,512.07	91.87	17.458	
4,600.00	3,402.00	3,302.08	3,302.00	32.54	61.21	89.95	2,538.67	503.62	1,576.65	1,482.91	93.74	16.820	
4,700.00	3,402.32	3,302.39	3,302.32	34.43	61.22	89.97	2,538.67	503.62	1,555.32	1,459.68	95.64	16.263	
4,800.00	3,402.63	3,302.71	3,302.63	36.36	61.23	89.98	2,538.67	503.62	1,540.19	1,442.62	97.57	15.786	
4,900.00	3,402.95	3,303.03	3,302.95	38.31	61.23	89.99	2,538.67	503.62	1,531.46	1,431.94	99.53	15.388	
4,984.09	3,403.22	3,303.30	3,303.22	39.97	61.24	90.00	2,538.67	503.62	1,529.15	1,427.96	101.19	15.112 CC	
5,000.00	3,403.27	3,303.35	3,303.27	40.28	61.24	90.00	2,538.67	503.62	1,529.23	1,427.73	101.51	15.066 ES	
5,100.00	3,403.59	3,303.67	3,303.59	42.27	61.25	90.01	2,538.67	503.62	1,533.54	1,430.03	103.51	14.816	
5,200.00	3,403.91	3,303.98	3,303.91	44.28	61.25	90.03	2,538.67	503.62	1,544.32	1,438.80	105.52	14.635	
5,300.00	3,404.23	3,304.30	3,304.23	46.31	61.26	90.04	2,538.67	503.62	1,561.44	1,453.89	107.55	14.518	
5,400.00	3,404.54	3,304.62	3,304.54	48.34	61.26	90.05	2,538.67	503.62	1,584.70	1,475.10	109.60	14.459	
5,500.00	3,404.86	3,304.94	3,304.86	50.39	61.27	90.06	2,538.67	503.62	1,613.83	1,502.18	111.65	14.454 SF	
5,600.00	3,405.18	3,305.26	3,305.18	52.45	61.28	90.07	2,538.67	503.62	1,648.53	1,534.81	113.72	14.496	
5,700.00	3,405.50	3,305.57	3,305.50	54.52	61.28	90.09	2,538.67	503.62	1,688.44	1,572.64	115.79	14.581	
5,800.00	3,405.82	3,305.89	3,305.82	56.59	61.29	90.10	2,538.67	503.62	1,733.21	1,615.33	117.88	14.703	
5,900.00	3,406.13	3,306.21	3,306.13	58.68	61.30	90.11	2,538.67	503.62	1,782.47	1,662.50	119.97	14.858	
6,000.00	3,406.45	3,306.53	3,306.45	60.77	61.30	90.12	2,538.67	503.62	1,835.86	1,713.79	122.06	15.040	
6,100.00	3,406.77	3,306.85	3,306.77	62.86	61.31	90.13	2,538.67	503.62	1,893.03	1,768.86	124.16	15.246	
6,200.00	3,407.09	3,307.16	3,307.09	64.96	61.32	90.14	2,538.67	503.62	1,953.64	1,827.37	126.27	15.472	
6,300.00	3,407.41	3,307.48	3,307.41	67.07	61.32	90.16	2,538.67	503.62	2,017.40	1,889.02	128.38	15.714	
6,400.00	3,407.72	3,307.80	3,307.72	69.17	61.33	90.17	2,538.67	503.62	2,084.01	1,953.51	130.50	15.970	
6,500.00	3,408.04	3,308.12	3,308.04	71.29	61.34	90.18	2,538.67	503.62	2,153.20	2,020.58	132.62	16.236	
6,600.00	3,408.36	3,308.44	3,308.36	73.40	61.34	90.19	2,538.67	503.62	2,224.73	2,090.00	134.74	16.511	
6,700.00	3,408.68	3,308.76	3,308.68	75.52	61.35	90.20	2,538.67	503.62	2,298.39	2,161.53	136.86	16.793	
6,800.00	3,409.00	3,309.07	3,309.00	77.64	61.36	90.22	2,538.67	503.62	2,373.98	2,234.99	138.99	17.080	
6,900.00	3,409.31	3,309.39	3,309.31	79.77	61.36	90.23	2,538.67	503.62	2,451.32	2,310.20	141.13	17.370	
7,000.00	3,409.63	3,309.71	3,309.63	81.90	61.37	90.24	2,538.67	503.62	2,530.25	2,386.99	143.26	17.662	
7,100.00	3,409.95	3,310.03	3,309.95	84.03	61.38	90.25	2,538.67	503.62	2,610.62	2,465.22	145.40	17.955	
7,200.00	3,410.27	3,310.35	3,310.27	86.16	61.38	90.26	2,538.67	503.62	2,692.31	2,544.77	147.53	18.249	
7,300.00	3,410.59	3,310.66	3,310.59	88.29	61.39	90.28	2,538.67	503.62	2,775.19	2,625.52	149.67	18.541	
7,400.00	3,410.91	3,310.98	3,310.91	90.43	61.39	90.29	2,538.67	503.62	2,859.17	2,707.35	151.82	18.833	
7,500.00	3,411.22	3,311.30	3,311.22	92.57	61.40	90.30	2,538.67	503.62	2,944.15	2,790.19	153.96	19.123	
7,600.00	3,411.54	3,311.62	3,311.54	94.71	61.41	90.31	2,538.67	503.62	3,030.05	2,873.95	156.11	19.410	
7,700.00	3,411.86	3,311.94	3,311.86	96.85	61.41	90.32	2,538.67	503.62	3,116.79	2,958.54	158.25	19.695	
7,800.00	3,412.18	3,312.25	3,312.18	98.99	61.42	90.34	2,538.67	503.62	3,204.31	3,043.90	160.40	19.977	
7,900.00	3,412.50	3,312.57	3,312.50	101.13	61.43	90.35	2,538.67	503.62	3,292.53	3,129.98	162.55	20.255	
8,000.00	3,412.81	3,312.89	3,312.81	103.28	61.43	90.36	2,538.67	503.62	3,381.41	3,216.71	164.70	20.530	
8,100.00	3,413.13	3,313.21	3,313.13	105.42	61.44	90.37	2,538.67	503.62	3,470.89	3,304.04	166.86	20.802	
8,200.00	3,413.45	3,313.53	3,313.45	107.57	61.45	90.38	2,538.67	503.62	3,560.94	3,391.93	169.01	21.070	
8,300.00	3,413.77	3,313.85	3,313.77	109.72	61.45	90.40	2,538.67	503.62	3,651.50	3,480.34	171.16	21.333	
8,372.99	3,414.00	3,314.08	3,314.00	111.29	61.46	90.40	2,538.67	503.62	3,717.90	3,545.17	172.74	21.524	

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



Koltek Energy Services

Anticollision Report



Company: Hilcorp Energy Company
 Project: San Juan Co., NM (NAD27)
 Reference Site: Sec.09-T31N-R08W
 Site Error: 0.00 usft
 Reference Well: San Juan 32-8 Unit 222H
 Well Error: 0.00 usft
 Reference Wellbore: Lat 1
 Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
 TVD Reference: KB @ 6690.00usft
 MD Reference: KB @ 6690.00usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at 2.00 sigma
 Database: EDM 5000.1 Single User Db
 Offset TVD Reference: Offset Datum

Offset Design Sec.09-T31N-R08W - San Juan 32-8 Unit 222A - Original Hole - Original Hole													Offset Site Error: 0.00 usft
Survey Program: 216-INC_ONLY<10													Offset Well Error: 0.00 usft
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		Separation Factor		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	Warning
0.00	0.00	0.00	0.00	0.00	0.00	66.24	36.91	83.85	92.67				
100.00	100.00	86.15	86.15	0.10	2.22	66.76	36.00	83.85	91.25	88.93	2.32	39.335	
122.05	122.05	108.08	108.07	0.15	2.79	66.78	35.96	83.85	91.24	88.30	2.94	31.083 CC	
200.00	200.00	185.51	185.51	0.32	4.79	66.50	36.45	83.85	91.43	86.32	5.11	17.894	
300.00	300.00	285.75	285.74	0.55	8.30	65.94	37.43	83.85	91.82	82.98	8.84	10.387	
400.00	400.00	385.88	385.85	0.77	12.20	65.68	37.89	83.85	92.01	79.04	12.97	7.094	
500.00	500.00	486.05	486.00	0.99	16.10	65.62	38.00	83.85	92.05	74.96	17.10	5.384	
600.00	600.00	586.24	586.17	1.22	20.01	65.76	37.75	83.85	91.96	70.73	21.23	4.331	
700.00	700.00	686.46	686.37	1.44	23.92	66.09	37.16	83.85	91.72	66.35	25.36	3.616	
769.31	769.31	755.41	755.31	1.60	26.14	66.24	36.91	83.85	91.61	63.87	27.74	3.303	
800.00	800.00	786.11	786.00	1.67	26.95	66.24	36.91	83.85	91.61	62.99	28.62	3.201	
900.00	900.00	886.11	886.00	1.89	29.59	66.24	36.91	83.85	91.61	60.13	31.48	2.910	
1,000.00	1,000.00	986.12	986.00	2.12	32.23	66.24	36.91	83.85	91.61	57.26	34.35	2.667	
1,100.00	1,100.00	1,086.12	1,086.00	2.34	34.88	66.24	36.91	83.85	91.61	54.39	37.22	2.461	
1,200.00	1,200.00	1,186.13	1,186.00	2.57	37.52	66.24	36.91	83.85	91.61	51.52	40.09	2.285	
1,300.00	1,300.00	1,286.13	1,286.00	2.79	40.17	66.24	36.91	83.85	91.61	48.65	42.96	2.133	
1,400.00	1,400.00	1,386.14	1,386.00	3.02	42.81	66.24	36.91	83.85	91.61	45.78	45.83	1.999	
1,500.00	1,500.00	1,486.14	1,486.00	3.24	45.46	66.24	36.91	83.85	91.61	42.91	48.70	1.881	
1,600.00	1,600.00	1,586.15	1,586.00	3.47	48.11	66.24	36.91	83.85	91.61	40.03	51.58	1.776	
1,700.00	1,700.00	1,686.15	1,686.00	3.69	50.76	66.24	36.91	83.85	91.61	37.16	54.45	1.682	
1,800.00	1,800.00	1,786.16	1,786.00	3.92	53.41	66.24	36.91	83.85	91.61	34.29	57.32	1.598	
1,900.00	1,900.00	1,886.16	1,886.00	4.14	56.05	66.24	36.91	83.85	91.61	31.42	60.19	1.522	
2,000.00	2,000.00	1,986.17	1,986.00	4.37	58.70	66.24	36.91	83.85	91.61	28.54	63.07	1.453 Level 3	
2,048.13	2,048.13	2,034.30	2,034.13	4.47	59.98	66.24	36.91	83.85	91.61	27.16	64.45	1.421 Level 3	
2,100.00	2,099.99	2,086.16	2,085.99	4.59	61.35	93.20	36.91	83.85	91.66	25.72	65.94	1.390 Level 3	
2,200.00	2,199.72	2,185.89	2,185.72	4.82	63.99	97.56	36.91	83.85	92.33	23.53	68.79	1.342 Level 3, ES	
2,300.00	2,298.70	2,284.89	2,284.70	5.05	66.61	105.78	36.91	83.85	95.21	23.64	71.57	1.330 Level 3, SF	
2,400.00	2,396.47	2,382.68	2,382.49	5.30	70.29	116.92	36.27	83.85	102.97	27.85	75.12	1.371 Level 3	
2,500.00	2,492.54	2,478.71	2,478.51	5.60	74.03	128.36	35.86	83.85	118.47	40.36	78.11	1.517	
2,600.00	2,586.45	2,572.70	2,572.50	5.98	77.70	138.30	35.75	83.85	142.93	62.71	80.22	1.782	
2,700.00	2,677.73	2,664.25	2,664.05	6.45	81.26	146.12	35.93	83.85	176.21	94.75	81.46	2.163	
2,800.00	2,765.95	2,752.96	2,752.75	7.04	84.72	151.95	36.36	83.85	217.58	135.65	81.93	2.656	
2,900.00	2,850.66	2,836.88	2,836.66	7.77	88.12	156.17	36.91	83.85	266.33	184.56	81.76	3.257	
3,000.00	2,931.47	2,917.70	2,917.47	8.65	92.29	159.38	36.91	83.85	322.25	240.64	81.60	3.949	
3,100.00	3,007.98	2,994.22	2,993.98	9.67	96.23	161.73	36.91	83.85	384.40	303.75	80.64	4.767	
3,200.00	3,079.81	3,066.06	3,065.81	10.84	99.93	163.41	36.91	83.85	452.25	373.34	78.91	5.731	
3,300.00	3,146.61	3,132.88	3,132.61	12.16	103.37	164.59	36.91	83.85	525.31	448.87	76.44	6.872	
3,400.00	3,208.06	3,194.34	3,194.06	13.62	106.53	165.34	36.91	83.85	603.13	529.81	73.32	8.226	
3,500.00	3,263.86	3,250.15	3,249.86	15.19	109.41	165.70	36.91	83.85	685.24	615.57	69.67	9.835	
3,600.00	3,313.74	3,300.04	3,299.74	16.89	111.98	165.68	36.91	83.85	771.20	705.49	65.71	11.737	
3,673.13	3,346.32	3,332.63	3,332.32	18.19	113.66	165.40	36.91	83.85	836.23	773.43	62.81	13.314	
3,673.13	3,346.32	3,332.63	3,332.32	18.19	113.66	165.40	36.91	83.85	836.24	773.43	62.81	13.314	
3,700.00	3,357.10	3,343.41	3,343.10	18.56	114.21	164.27	36.91	83.85	860.70	800.43	60.28	14.279	
3,750.00	3,374.04	3,360.36	3,360.04	19.06	115.08	161.19	36.91	83.85	907.48	849.58	57.90	15.673	
3,800.00	3,386.82	3,373.14	3,372.82	19.62	115.74	155.72	36.91	83.85	955.57	893.21	62.35	15.326	
3,850.00	3,395.34	3,381.66	3,381.34	20.24	116.18	144.30	36.91	83.85	1,004.60	923.15	81.45	12.333	
3,900.00	3,399.53	3,385.86	3,385.53	20.90	116.40	114.85	36.91	83.85	1,054.21	929.51	124.70	8.454	
3,923.13	3,400.00	3,386.32	3,386.00	21.22	116.42	90.00	36.91	83.85	1,077.25	939.61	137.64	7.827	
4,000.00	3,400.10	3,386.42	3,386.10	22.31	116.43	91.21	36.91	83.85	1,153.72	1,015.03	138.69	8.319	
4,020.81	3,400.16	3,386.48	3,386.16	22.61	116.43	91.43	36.91	83.85	1,174.37	1,035.40	138.97	8.451	
4,100.00	3,400.41	3,386.73	3,386.41	23.81	116.44	91.52	36.91	83.85	1,252.97	1,112.79	140.18	8.938	
4,200.00	3,400.73	3,387.05	3,386.73	25.43	116.46	91.65	36.91	83.85	1,352.31	1,210.51	141.80	9.537	

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



Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T31N-R08W
Site Error: 0.00 usft
Reference Well: San Juan 32-8 Unit 222H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design Sec.09-T31N-R08W - San Juan 32-8 Unit 222A - Original Hole - Original Hole													Offset Site Error: 0.00 usft
Survey Program: 216-INC_ONLY<10													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	
4,300.00	3,401.04	3,387.37	3,387.04	27.12	116.48	91.77	36.91	83.85	1,451.75	1,308.24	143.50	10.116	
4,400.00	3,401.36	3,387.69	3,387.36	28.88	116.49	91.89	36.91	83.85	1,551.25	1,405.99	145.27	10.678	
4,500.00	3,401.68	3,388.00	3,387.68	30.69	116.51	92.01	36.91	83.85	1,650.82	1,503.74	147.09	11.223	
4,600.00	3,402.00	3,388.32	3,388.00	32.54	116.53	92.14	36.91	83.85	1,750.44	1,601.49	148.95	11.752	
4,700.00	3,402.32	3,388.64	3,388.32	34.43	116.54	92.26	36.91	83.85	1,850.10	1,699.25	150.84	12.265	
4,800.00	3,402.63	3,388.96	3,388.63	36.36	116.56	92.38	36.91	83.85	1,949.79	1,797.02	152.77	12.763	
4,900.00	3,402.95	3,389.28	3,388.95	38.31	116.58	92.50	36.91	83.85	2,049.51	1,894.79	154.72	13.246	
5,000.00	3,403.27	3,389.59	3,389.27	40.28	116.59	92.63	36.91	83.85	2,149.26	1,992.56	156.70	13.716	
5,100.00	3,403.59	3,389.91	3,389.59	42.27	116.61	92.75	36.91	83.85	2,249.03	2,090.34	158.69	14.173	
5,200.00	3,403.91	3,390.23	3,389.91	44.28	116.62	92.87	36.91	83.85	2,348.82	2,188.12	160.70	14.617	
5,300.00	3,404.23	3,390.55	3,390.23	46.31	116.64	92.99	36.91	83.85	2,448.63	2,285.91	162.72	15.048	
5,400.00	3,404.54	3,390.87	3,390.54	48.34	116.66	93.12	36.91	83.85	2,548.45	2,383.70	164.75	15.469	
5,500.00	3,404.86	3,391.19	3,390.86	50.39	116.67	93.24	36.91	83.85	2,648.29	2,481.49	166.79	15.878	
5,600.00	3,405.18	3,391.50	3,391.18	52.45	116.69	93.36	36.91	83.85	2,748.13	2,579.29	168.85	16.276	
5,700.00	3,405.50	3,391.82	3,391.50	54.52	116.71	93.48	36.91	83.85	2,847.99	2,677.09	170.91	16.664	
5,800.00	3,405.82	3,392.14	3,391.82	56.59	116.72	93.60	36.91	83.85	2,947.86	2,774.89	172.97	17.042	
5,900.00	3,406.13	3,392.46	3,392.13	58.68	116.74	93.73	36.91	83.85	3,047.74	2,872.69	175.04	17.411	
6,000.00	3,406.45	3,392.78	3,392.45	60.77	116.76	93.85	36.91	83.85	3,147.62	2,970.50	177.12	17.771	
6,100.00	3,406.77	3,393.09	3,392.77	62.86	116.77	93.97	36.91	83.85	3,247.51	3,068.31	179.20	18.122	
6,200.00	3,407.09	3,393.41	3,393.09	64.96	116.79	94.09	36.91	83.85	3,347.41	3,166.12	181.29	18.465	
6,300.00	3,407.41	3,393.73	3,393.41	67.07	116.80	94.21	36.91	83.85	3,447.31	3,263.94	183.38	18.799	
6,400.00	3,407.72	3,394.05	3,393.72	69.17	116.82	94.34	36.91	83.85	3,547.22	3,361.75	185.47	19.126	
6,500.00	3,408.04	3,394.37	3,394.04	71.29	116.84	94.46	36.91	83.85	3,647.14	3,459.57	187.56	19.445	
6,600.00	3,408.36	3,394.68	3,394.36	73.40	116.85	94.58	36.91	83.85	3,747.05	3,557.40	189.66	19.757	
6,700.00	3,408.68	3,395.00	3,394.68	75.52	116.87	94.70	36.91	83.85	3,846.98	3,655.22	191.76	20.062	
6,800.00	3,409.00	3,395.32	3,395.00	77.64	116.89	94.82	36.91	83.85	3,946.90	3,753.05	193.85	20.360	
6,900.00	3,409.31	3,395.64	3,395.31	79.77	116.90	94.95	36.91	83.85	4,046.83	3,850.88	195.95	20.652	
7,000.00	3,409.63	3,395.96	3,395.63	81.90	116.92	95.07	36.91	83.85	4,146.77	3,948.71	198.06	20.937	
7,100.00	3,409.95	3,396.28	3,395.95	84.03	116.94	95.19	36.91	83.85	4,246.70	4,046.55	200.16	21.217	
7,200.00	3,410.27	3,396.59	3,396.27	86.16	116.95	95.31	36.91	83.85	4,346.64	4,144.38	202.26	21.490	
7,300.00	3,410.59	3,396.91	3,396.59	88.29	116.97	95.43	36.91	83.85	4,446.59	4,242.22	204.36	21.758	
7,400.00	3,410.91	3,397.23	3,396.91	90.43	116.99	95.55	36.91	83.85	4,546.53	4,340.07	206.47	22.021	
7,500.00	3,411.22	3,397.55	3,397.22	92.57	117.00	95.68	36.91	83.85	4,646.48	4,437.91	208.57	22.278	
7,600.00	3,411.54	3,397.87	3,397.54	94.71	117.02	95.80	36.91	83.85	4,746.43	4,535.76	210.67	22.530	
7,700.00	3,411.86	3,398.18	3,397.86	96.85	117.03	95.92	36.91	83.85	4,846.38	4,633.60	212.77	22.777	
7,800.00	3,412.18	3,398.50	3,398.18	98.99	117.05	96.04	36.91	83.85	4,946.33	4,731.46	214.88	23.019	
7,900.00	3,412.50	3,398.82	3,398.50	101.13	117.07	96.16	36.91	83.85	5,046.29	4,829.31	216.98	23.257	
8,000.00	3,412.81	3,399.14	3,398.81	103.28	117.08	96.28	36.91	83.85	5,146.24	4,927.16	219.08	23.490	
8,100.00	3,413.13	3,399.46	3,399.13	105.42	117.10	96.40	36.91	83.85	5,246.20	5,025.02	221.18	23.719	
8,200.00	3,413.45	3,399.78	3,399.45	107.57	117.12	96.52	36.91	83.85	5,346.16	5,122.88	223.28	23.944	
8,300.00	3,413.77	3,400.09	3,399.77	109.72	117.13	96.64	36.91	83.85	5,446.13	5,220.74	225.38	24.164	
8,372.99	3,414.00	3,400.33	3,400.00	111.29	117.14	96.73	36.91	83.85	5,519.08	5,292.17	226.91	24.323	



Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T31N-R08W
Site Error: 0.00 usft
Reference Well: San Juan 32-8 Unit 222H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design Sec.09-T31N-R08W - San Juan 32-8 Unit 222H - Pilot Hole - Rev0													Offset Site Error: 0.00 usft
Survey Program: 0-MWD													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)					
3,673.13	3,346.32	3,673.13	3,346.32	0.00	0.00	0.00	740.98	-367.34	0.00	0.00	0.00	N/A CC	
3,685.42	3,351.39	3,685.42	3,351.51	0.18	0.23	-180.00	750.96	-372.29	0.13	-0.04	0.17	0.787 Level 1, ES, SF	
3,700.00	3,357.10	3,699.99	3,357.67	0.39	0.49	180.00	762.79	-378.16	0.63	0.27	0.36	1.758	
3,750.00	3,374.04	3,749.77	3,378.71	0.87	1.42	-180.00	803.21	-398.19	5.15	4.49	0.66	7.842	
3,800.00	3,386.82	3,798.97	3,399.50	1.43	2.33	-180.00	843.16	-418.00	13.99	13.06	0.93	15.062	
3,850.00	3,395.34	3,847.20	3,419.89	2.05	3.24	180.00	882.33	-437.42	27.08	25.92	1.17	23.189	
3,900.00	3,399.53	3,894.12	3,439.71	2.72	4.12	180.00	920.42	-456.30	44.33	42.99	1.34	33.056	
3,923.13	3,400.00	3,915.27	3,448.65	3.04	4.52	-180.00	937.60	-464.82	53.68	52.31	1.37	39.097	
4,000.00	3,400.10	3,984.96	3,478.11	4.14	5.83	-179.94	994.19	-492.87	86.09	84.09	1.99	43.210	
4,020.81	3,400.16	4,003.83	3,486.08	4.45	6.19	-179.70	1,009.51	-500.47	94.84	92.67	2.17	43.706	
4,100.00	3,400.41	4,075.61	3,516.41	5.66	7.55	-178.14	1,067.80	-529.36	128.17	125.25	2.91	44.027	
4,200.00	3,400.73	4,166.26	3,554.72	7.28	9.28	-177.05	1,141.40	-565.85	170.32	166.39	3.93	43.347	
4,300.00	3,401.04	4,256.90	3,593.03	8.98	11.02	-176.38	1,215.01	-602.34	212.50	207.49	5.01	42.437	
4,400.00	3,401.36	4,268.66	3,598.00	10.75	11.24	-176.32	1,224.55	-607.07	266.63	261.01	5.62	47.455	
4,500.00	3,401.68	4,268.66	3,598.00	12.56	11.24	-176.32	1,224.55	-607.07	341.89	335.70	6.19	55.236	
4,600.00	3,402.00	4,268.66	3,598.00	14.42	11.24	-176.32	1,224.55	-607.07	427.42	420.64	6.79	62.959	
4,700.00	3,402.32	4,268.66	3,598.00	16.32	11.24	-176.32	1,224.55	-607.07	518.16	510.75	7.41	69.922	
4,800.00	3,402.63	4,268.66	3,598.00	18.25	11.24	-176.32	1,224.55	-607.07	611.79	603.74	8.05	75.998	
4,900.00	3,402.95	4,268.66	3,598.00	20.20	11.24	-176.32	1,224.55	-607.07	707.17	698.47	8.70	81.245	
5,000.00	3,403.27	4,268.66	3,598.00	22.18	11.24	-176.32	1,224.55	-607.07	803.67	794.30	9.37	85.770	
5,100.00	3,403.59	4,268.66	3,598.00	24.17	11.24	-176.32	1,224.55	-607.07	900.94	890.89	10.05	89.683	
5,200.00	3,403.91	4,268.66	3,598.00	26.18	11.24	-176.32	1,224.55	-607.07	998.74	988.01	10.73	93.083	
5,300.00	3,404.23	4,268.66	3,598.00	28.21	11.24	-176.32	1,224.55	-607.07	1,096.94	1,085.52	11.42	96.053	
5,400.00	3,404.54	4,268.66	3,598.00	30.25	11.24	-176.32	1,224.55	-607.07	1,195.44	1,183.33	12.12	98.661	
5,500.00	3,404.86	4,268.66	3,598.00	32.30	11.24	-176.32	1,224.55	-607.07	1,294.17	1,281.36	12.82	100.965	
5,600.00	3,405.18	4,268.66	3,598.00	34.36	11.24	-176.32	1,224.55	-607.07	1,393.09	1,379.56	13.52	103.012	
5,700.00	3,405.50	4,268.66	3,598.00	36.43	11.24	-176.32	1,224.55	-607.07	1,492.14	1,477.91	14.23	104.838	
5,800.00	3,405.82	4,268.66	3,598.00	38.50	11.24	-176.32	1,224.55	-607.07	1,591.32	1,576.37	14.95	106.476	
5,900.00	3,406.13	4,268.66	3,598.00	40.59	11.24	-176.32	1,224.55	-607.07	1,690.59	1,674.93	15.66	107.952	
6,000.00	3,406.45	4,268.66	3,598.00	42.68	11.24	-176.32	1,224.55	-607.07	1,789.94	1,773.56	16.38	109.288	
6,100.00	3,406.77	4,268.66	3,598.00	44.77	11.24	-176.32	1,224.55	-607.07	1,889.36	1,872.26	17.10	110.502	
6,200.00	3,407.09	4,268.66	3,598.00	46.87	11.24	-176.32	1,224.55	-607.07	1,988.84	1,971.02	17.82	111.609	
6,300.00	3,407.41	4,268.66	3,598.00	48.98	11.24	-176.32	1,224.55	-607.07	2,088.37	2,069.83	18.54	112.622	
6,400.00	3,407.72	4,268.66	3,598.00	51.09	11.24	-176.32	1,224.55	-607.07	2,187.94	2,168.67	19.27	113.552	
6,500.00	3,408.04	4,268.66	3,598.00	53.20	11.24	-176.32	1,224.55	-607.07	2,287.55	2,267.55	19.99	114.408	
6,600.00	3,408.36	4,268.66	3,598.00	55.32	11.24	-176.32	1,224.55	-607.07	2,387.19	2,366.47	20.72	115.199	
6,700.00	3,408.68	4,268.66	3,598.00	57.44	11.24	-176.32	1,224.55	-607.07	2,486.86	2,465.41	21.45	115.931	
6,800.00	3,409.00	4,268.66	3,598.00	59.56	11.24	-176.32	1,224.55	-607.07	2,586.56	2,564.38	22.18	116.611	
6,900.00	3,409.31	4,268.66	3,598.00	61.68	11.24	-176.32	1,224.55	-607.07	2,686.28	2,663.36	22.91	117.244	
7,000.00	3,409.63	4,268.66	3,598.00	63.81	11.24	-176.32	1,224.55	-607.07	2,786.02	2,762.37	23.64	117.835	
7,100.00	3,409.95	4,268.66	3,598.00	65.94	11.24	-176.32	1,224.55	-607.07	2,885.77	2,861.40	24.38	118.386	
7,200.00	3,410.27	4,268.66	3,598.00	68.07	11.24	-176.32	1,224.55	-607.07	2,985.55	2,960.44	25.11	118.903	
7,300.00	3,410.59	4,268.66	3,598.00	70.21	11.24	-176.32	1,224.55	-607.07	3,085.33	3,059.49	25.84	119.388	
7,400.00	3,410.91	4,268.66	3,598.00	72.34	11.24	-176.32	1,224.55	-607.07	3,185.13	3,158.56	26.58	119.843	
7,500.00	3,411.22	4,268.66	3,598.00	74.48	11.24	-176.32	1,224.55	-607.07	3,284.95	3,257.63	27.31	120.272	
7,600.00	3,411.54	4,268.66	3,598.00	76.62	11.24	-176.32	1,224.55	-607.07	3,384.77	3,356.72	28.05	120.677	
7,700.00	3,411.86	4,268.66	3,598.00	78.76	11.24	-176.32	1,224.55	-607.07	3,484.61	3,455.82	28.78	121.059	
7,800.00	3,412.18	4,268.66	3,598.00	80.90	11.24	-176.32	1,224.55	-607.07	3,584.45	3,554.93	29.52	121.420	
7,900.00	3,412.50	4,268.66	3,598.00	83.05	11.24	-176.32	1,224.55	-607.07	3,684.30	3,654.04	30.26	121.762	
8,000.00	3,412.81	4,268.66	3,598.00	85.19	11.24	-176.32	1,224.55	-607.07	3,784.16	3,753.17	31.00	122.086	
8,100.00	3,413.13	4,268.66	3,598.00	87.34	11.24	-176.32	1,224.55	-607.07	3,884.03	3,852.29	31.73	122.394	
8,200.00	3,413.45	4,268.66	3,598.00	89.49	11.24	-176.32	1,224.55	-607.07	3,983.90	3,951.43	32.47	122.686	

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



Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T31N-R08W
Site Error: 0.00 usft
Reference Well: San Juan 32-8 Unit 222H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 0-MWD												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	
8,300.00	3,413.77	4,268.66	3,598.00	91.63	11.24	-176.32	1,224.55	-607.07	4,083.78	4,050.57	33.21	122.964	
8,372.99	3,414.00	4,268.66	3,598.00	93.20	11.24	-176.32	1,224.55	-607.07	4,156.68	4,122.93	33.75	123.158	



Koltek Energy Services
Anticollision Report



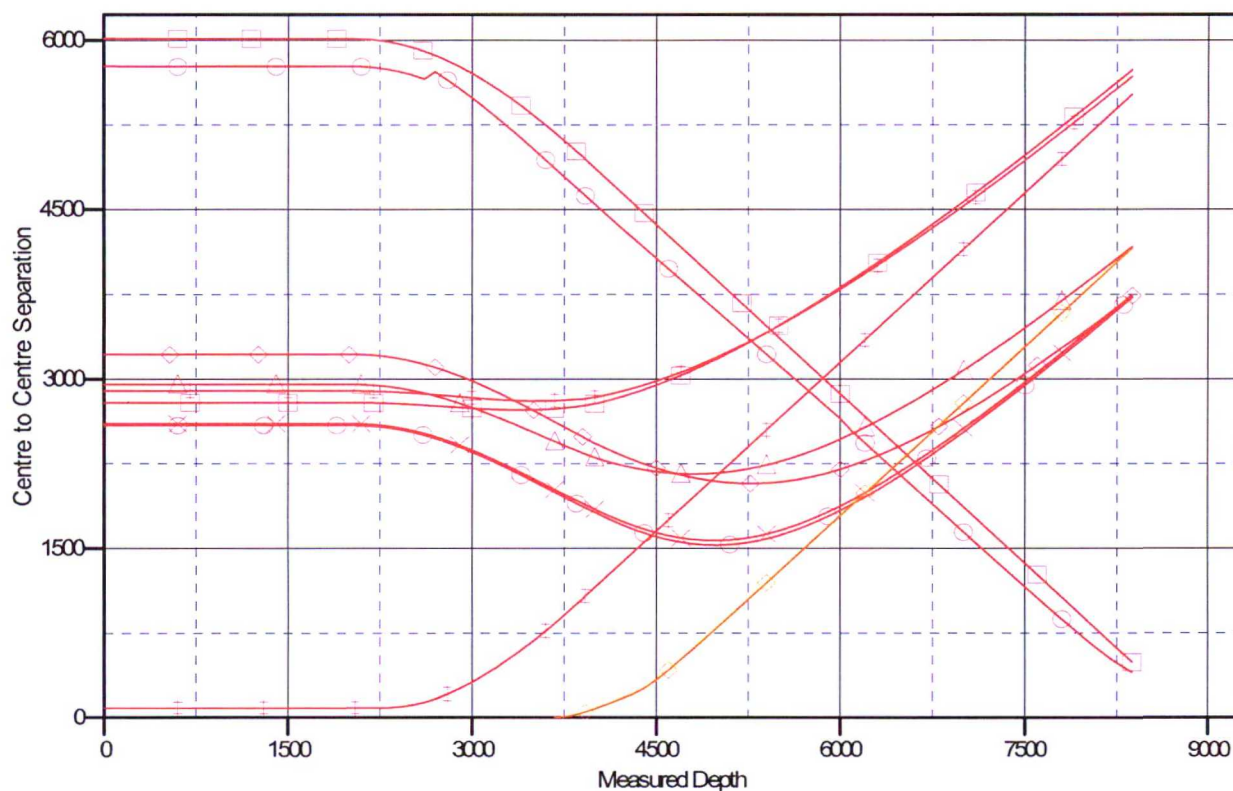
Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T31N-R08W
Site Error: 0.00 usft
Reference Well: San Juan 32-8 Unit 222H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Reference Depths are relative to KB @ 6690.00usft
Offset Depths are relative to Offset Datum
Central Meridian is 107.83334°W

Coordinates are relative to: San Juan 32-8 Unit 222H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico West 30
Grid Convergence at Surface is: 0.09°

Ladder Plot



LEGEND

San Juan 32-8 Unit222A, Original Hole, Original Hole V0	San Juan 32-8 Unit222, Original Hole, Original Hole V0	San Juan 32-8 Unit242, Original Hole, Original Hole V0
San Juan 32-8 Unit033, Original Hole, Original Hole V0	San Juan 32-8 Unit221A, Original Hole, Original Hole V0	San Juan 32-8 Unit222H, Pilot Hole, Rev0
San Juan 32-8 Unit221, Original Hole, Original Hole V0	San Juan 32-8 Unit013, Original Hole, Original Hole V0	
San Juan 32-8 Unit013A, Original Hole, Original Hole V0	San Juan 32-8 Unit020, Original Hole, Original Hole V0	



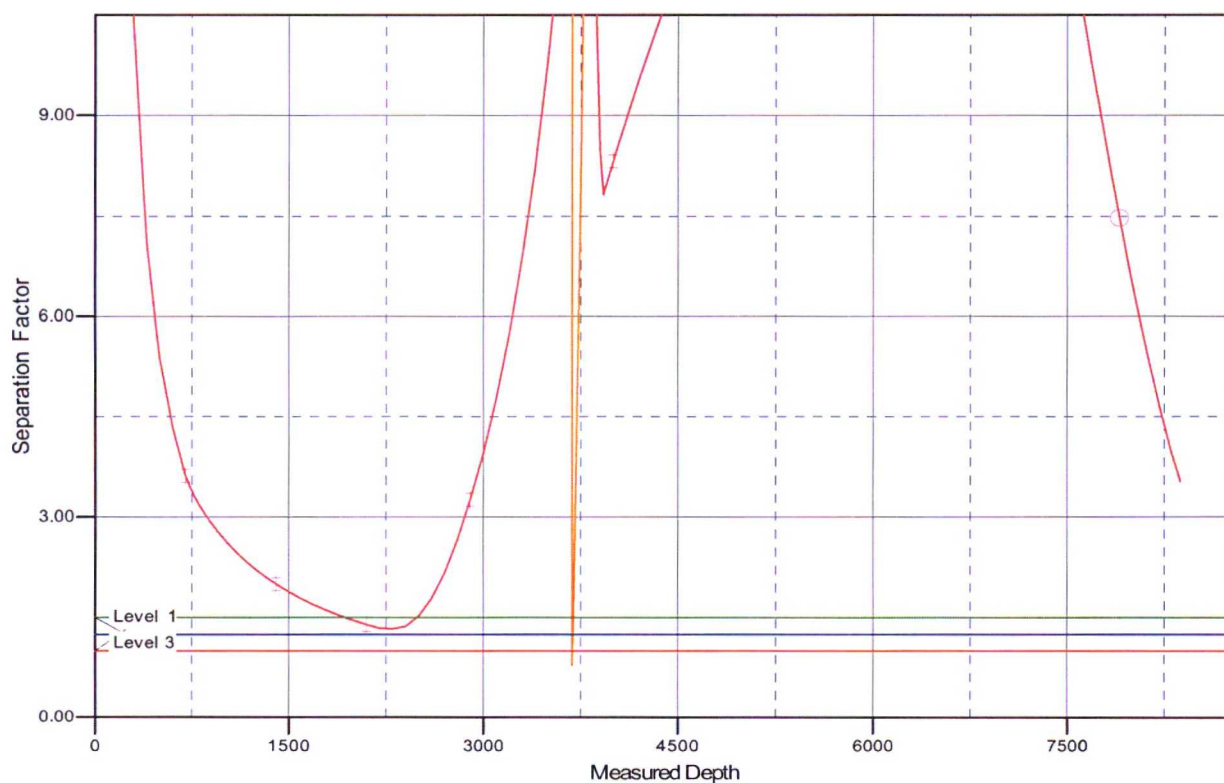
Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T31N-R08W
Site Error: 0.00 usft
Reference Well: San Juan 32-8 Unit 222H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-8 Unit 222H
TVD Reference: KB @ 6690.00usft
MD Reference: KB @ 6690.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Reference Depths are relative to KB @ 6690.00usft
Offset Depths are relative to Offset Datum
Central Meridian is 107.83334°W

Coordinates are relative to: San Juan 32-8 Unit 222H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico West 30
Grid Convergence at Surface is: 0.09°

Separation Factor Plot

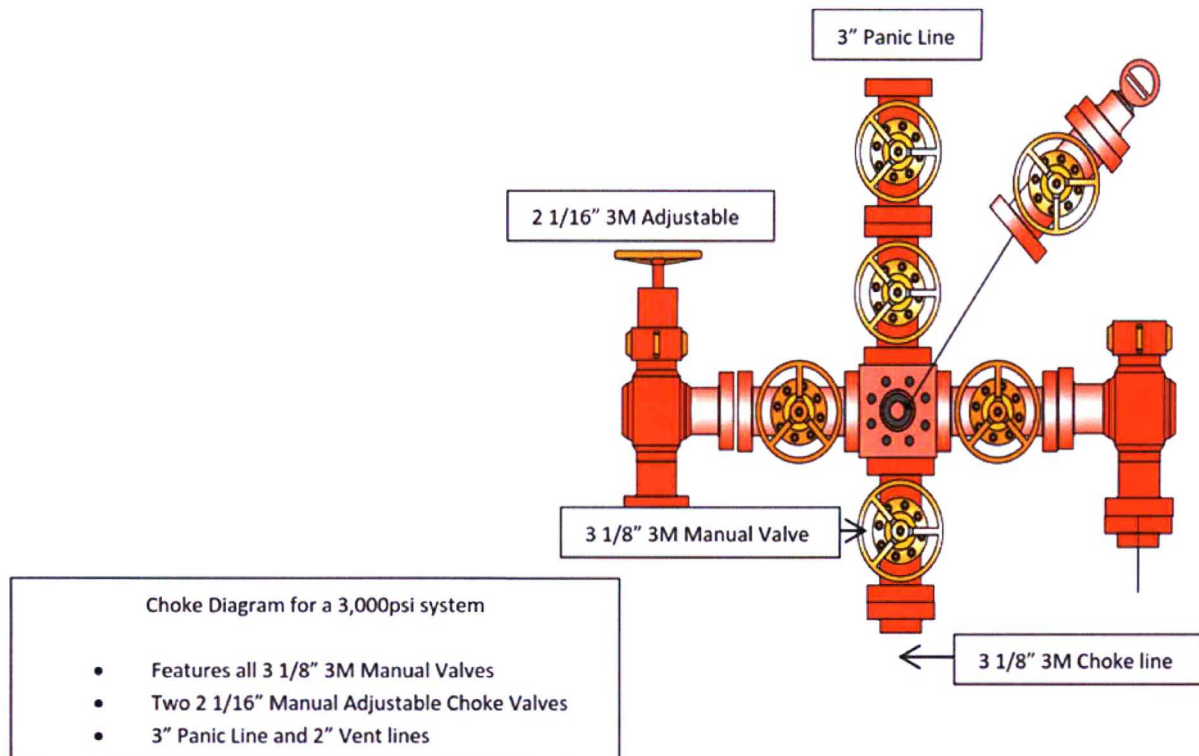


LEGEND

San Juan 32-8 Unit 222A, Original Hole, Original Hole V0
San Juan 32-8 Unit 033, Original Hole, Original Hole V0
San Juan 32-8 Unit 221, Original Hole, Original Hole V0
San Juan 32-8 Unit 013A, Original Hole, Original Hole V0
San Juan 32-8 Unit 222, Original Hole, Original Hole V0
San Juan 32-8 Unit 221A, Original Hole, Original Hole V0
San Juan 32-8 Unit 013, Original Hole, Original Hole V0
San Juan 32-8 Unit 020, Original Hole, Original Hole V0
San Juan 32-8 Unit 242, Original Hole, Original Hole V0
San Juan 32-8 Unit 222H, Pilot Hole, Rev0

San Juan 32-8 Unit 222H

Choke Manifold Schematic – Aztec 777



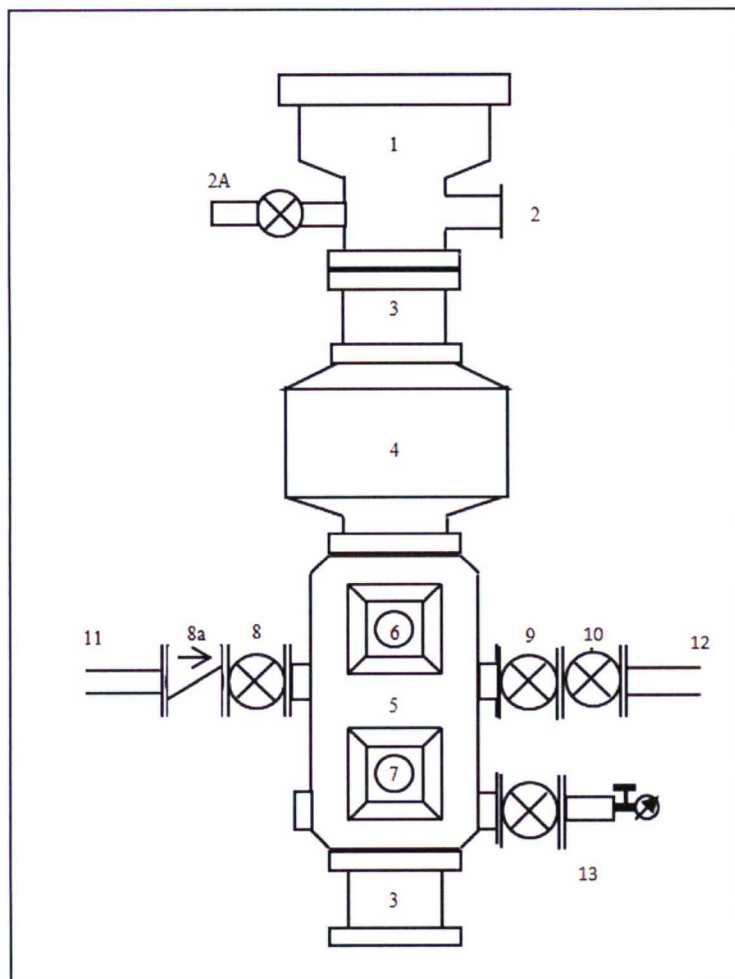


Hilcorp Energy Company

San Juan 32-8 Unit 222H

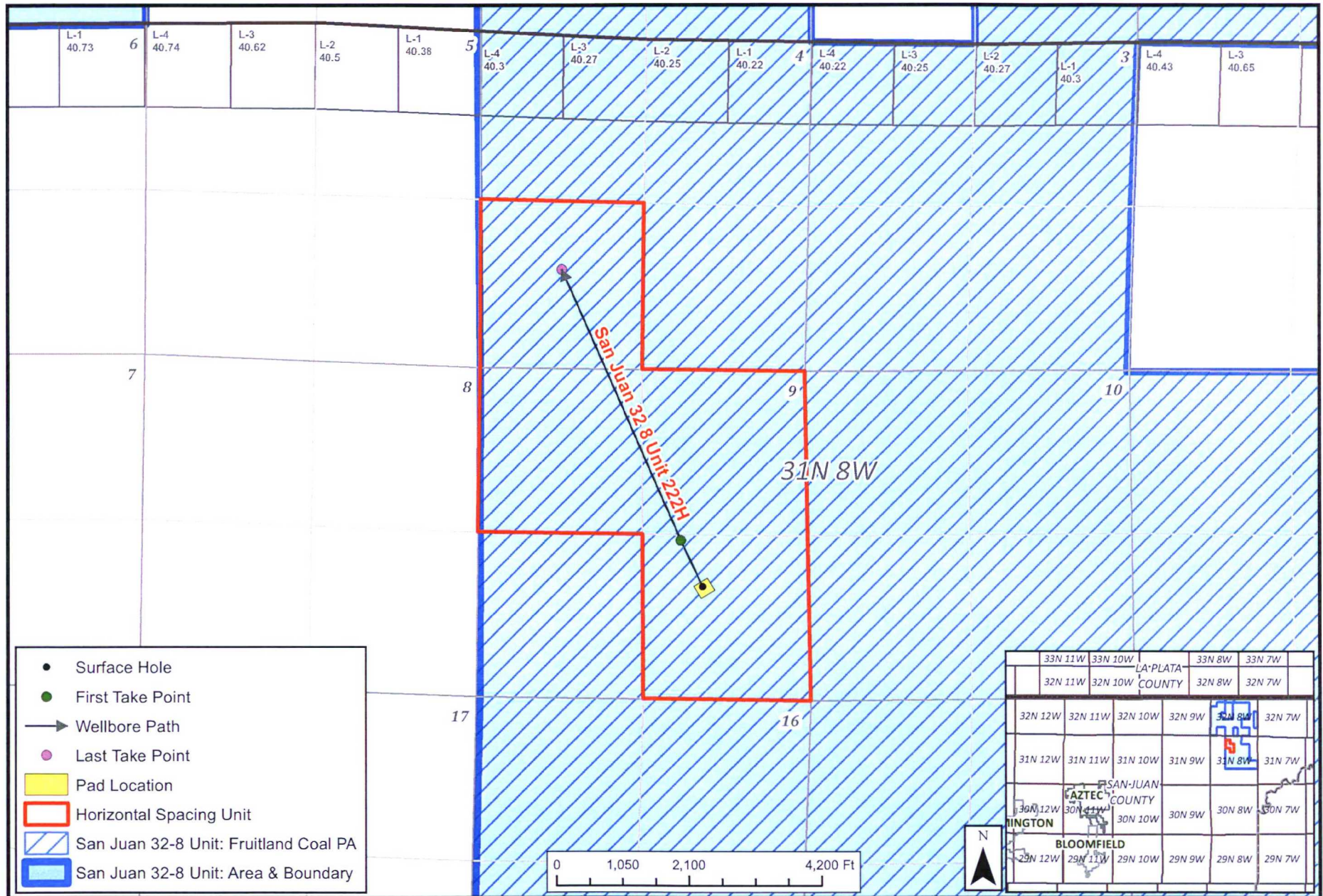
BOPE Schematic – Aztec 777

1. Rotating Head
2. Flow line
- 2A. Fill up line and valve
3. Spacer Spools (as needed)
4. 11" 3M Annular Preventer
5. 11" 3M Double Ram Preventer
6. Blind Rams
7. Pipe Rams
8. 3M Gate Valve (2")
- 8a. Check valve
9. 3M Manual Gate Valve (3")
10. 3M Manual Gate Valve (3")
11. Kill Line Connection, 2" hard line
12. Choke Line (3" Co-Flex)
13. Secondary outlet with valve, bull plug, needle valve, and pressure gauge



Fruitland Coal HSU Reference Map

San Juan 32-8 Unit #222H



Scale 1:25,000

Directions from the Intersection of US Hwy 550 & State Hwy 173
in Aztec, NM to Hilcorp Energy Company San Juan 32-8 Unit #222H
1774' FSL & 1655' FEL, Section 9, T31N, R8W, N.M.P.M., San Juan County, NM

Latitude: 36.909223°N Longitude: 107.677141°W Datum: NAD1983

From the intersection of US Hwy 550 & State Hwy 173 in Aztec, NM, travel Easterly on State Hwy 173 for 1.0 mile to fork in roadway;

Go Left (Easterly) remaining on State Hwy 173 for 17.0 miles to Tee-intersection;

Go Left (North-Easterly) exiting State Hwy 173 onto State Hwy 511 for 14.8 miles to County Road #4600 left-hand side of State Hwy 511 @ Mile Marker 22.9;

Go Left (South-westerly) onto County Road #4600 roadway for 0.5 miles to fork in roadway;

Go Left (Southerly) onto existing Hilcorp San Juan 32-8 Unit #222A location, with the Hilcorp San Juan 32-8 Unit #222H staked offset #222A wellhead.