

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

Ken McQueen
Cabinet Secretary

Matthias Sayer
Deputy Cabinet Secretary

Heather Riley, Division Director
Oil Conservation Division



New Mexico Oil Conservation Division approval and conditions listed below are made in accordance with OCD Rule 19.15.7.11 and are in addition to the actions approved by BLM on the following 3160-3 APD form.

Operator Signature Date: 9/18/2008

Well information;

Operator Hilcorp, Well Name and Number Trial Canyon 104H

API# 30-045-35884, Section 21, Township 32 NS, Range 8 EW

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

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

Brandon Penell
NMOCD Approved by Signature

2/18/19
Date

30

NMOCD

FEB 06 2019

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

DISTRICT 11

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☒ DRILL ☐ REENTER		5. Lease Serial No. NMNM0558144
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. TRAIL CANYON 104H
3a. Address 1111 Travis Street Houston TX 77002	3b. Phone No. (include area code) (713)209-2400	9. API Well No. 30045-35884
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface SESE / 1294 FSL / 399 FEL / LAT 36.965589 / LONG -107.67305 At proposed prod. zone NWNW / 561 FNL / 492 FWL / LAT 36.975285 / LONG -107.687593		10. Field and Pool, or Exploratory BASIN FRUITLAND COAL
14. Distance in miles and direction from nearest town or post office*		11. Sec., T. R. M. or Blk. and Survey or Area SEC 21 / T32N / R08W / NMP
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 338 feet		12. County or Parish SAN JUAN
16. No of acres in lease 640		13. State NM
17. Spacing Unit dedicated to this well 640		
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 1289 feet		20. BLM/BIA Bond No. in file FED: NMB001486
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 6906 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 09/18/2018
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Title

Operations/Regulatory Technician

Approved by (Signature) 	Name (Printed/Typed) Richard A Field	Date 2/4/19
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Title

Field Manager

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

(Continued on page 2)

*(Instructions on page 2)

NMOCD

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 30045-35884		*Pool Code 71629	*Pool Name BASIN FRUITLAND COAL
*Property Code 318755	*Property Name TRAIL CANYON		*Well Number 104H
*GRID No. 372171	*Operator Name HILCORP ENERGY COMPANY		*Elevation 6906'

¹⁰ Surface Location

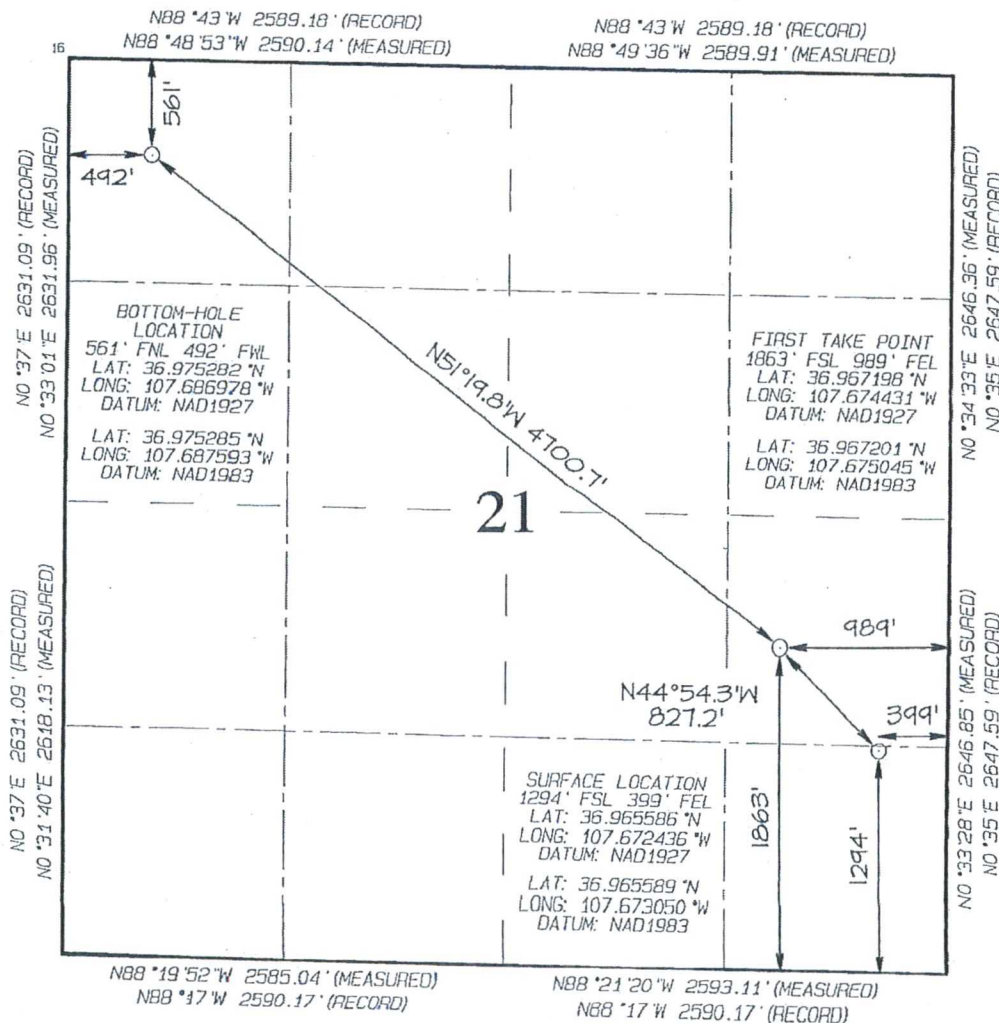
UL or lot no.	Section	Township	Range	Lot Ion	Feet from the	North/South line	Feet from the	East/West line	County
P	21	32N	8W		1294	SOUTH	399	EAST	SAN JUAN

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Ion	Feet from the	North/South line	Feet from the	East/West line	County
D	21	32N	8W		561	NORTH	492	WEST	SAN JUAN

¹² Dedicated Acres 640.00	Entire Section 21	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



¹⁷ OPERATOR CERTIFICATION
I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom-hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature: *Amanda Walker* Date: 9/13/2018
Printed Name: Amanda Walker
E-mail Address: mwalker@hilcorp.com

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 13, 2018
Date of Survey: JUNE 19, 2018

Signature and Seal of Professional Surveyor

JASON C. EDWARDS
NEW MEXICO
REGISTERED PROFESSIONAL SURVEYOR
15269

JASON C. EDWARDS
Certificate Number 15269

Surface = Federal

Trail Canyon 104H



Hilcorp Energy Company

Hilcorp Energy Company Technical Plan

1. Location

Trail Canyon 104H
SHL: 1294' FSL, 399' FEL, Sec 21, T32N, R8W
Lat-1 BHL: 561' FNL, 492' FWL, Sec 21, T32N, R8W
GL: 6906'

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	2334'	Wet
Kirtland	2379'	Wet
Fruitland	3388'	Possible Gas/Water
Pictured Cliffs	3829'	Wet

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

Susco 16 state 002 well was used as offset for regional 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

Trail Canyon 104H

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' - 4,536.23' (MD)
Prod Liner (predrilled)	6-1/4"	4-1/2"	11.6# J-55/L-80	3,890' - 8,586.62' (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 - 3,877.36' MD / 3,550.55' 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

Trail Canyon 104H

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	4,536.23'	485	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%	1023 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

Trail Canyon 104H

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

Trail Canyon 104H

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	

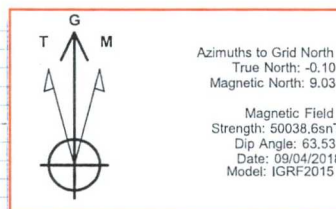
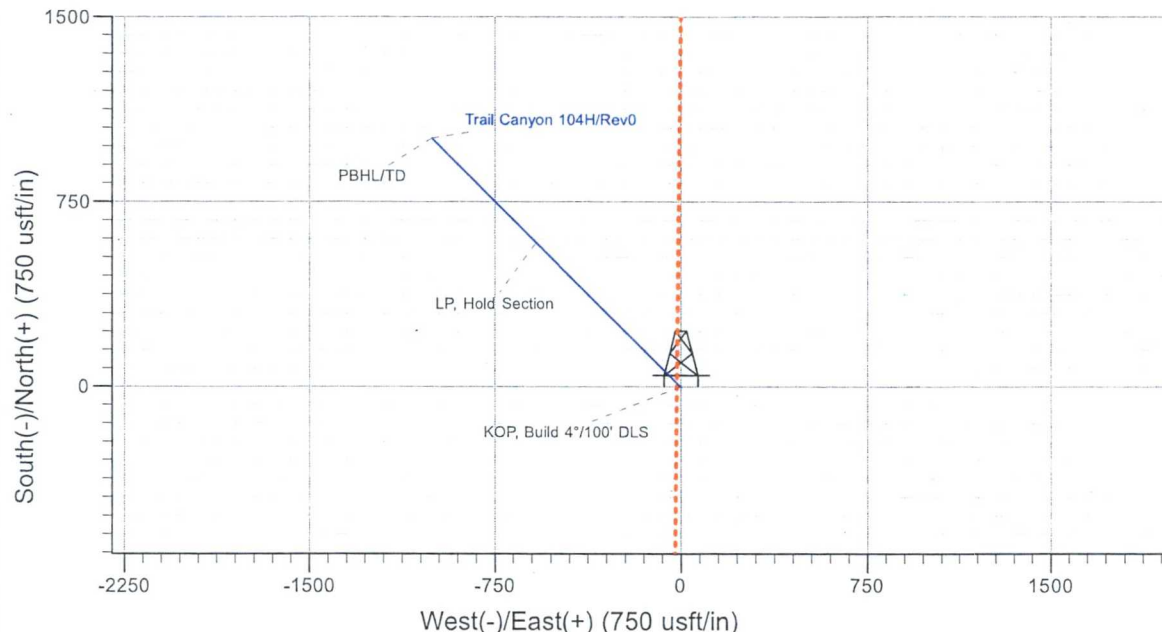
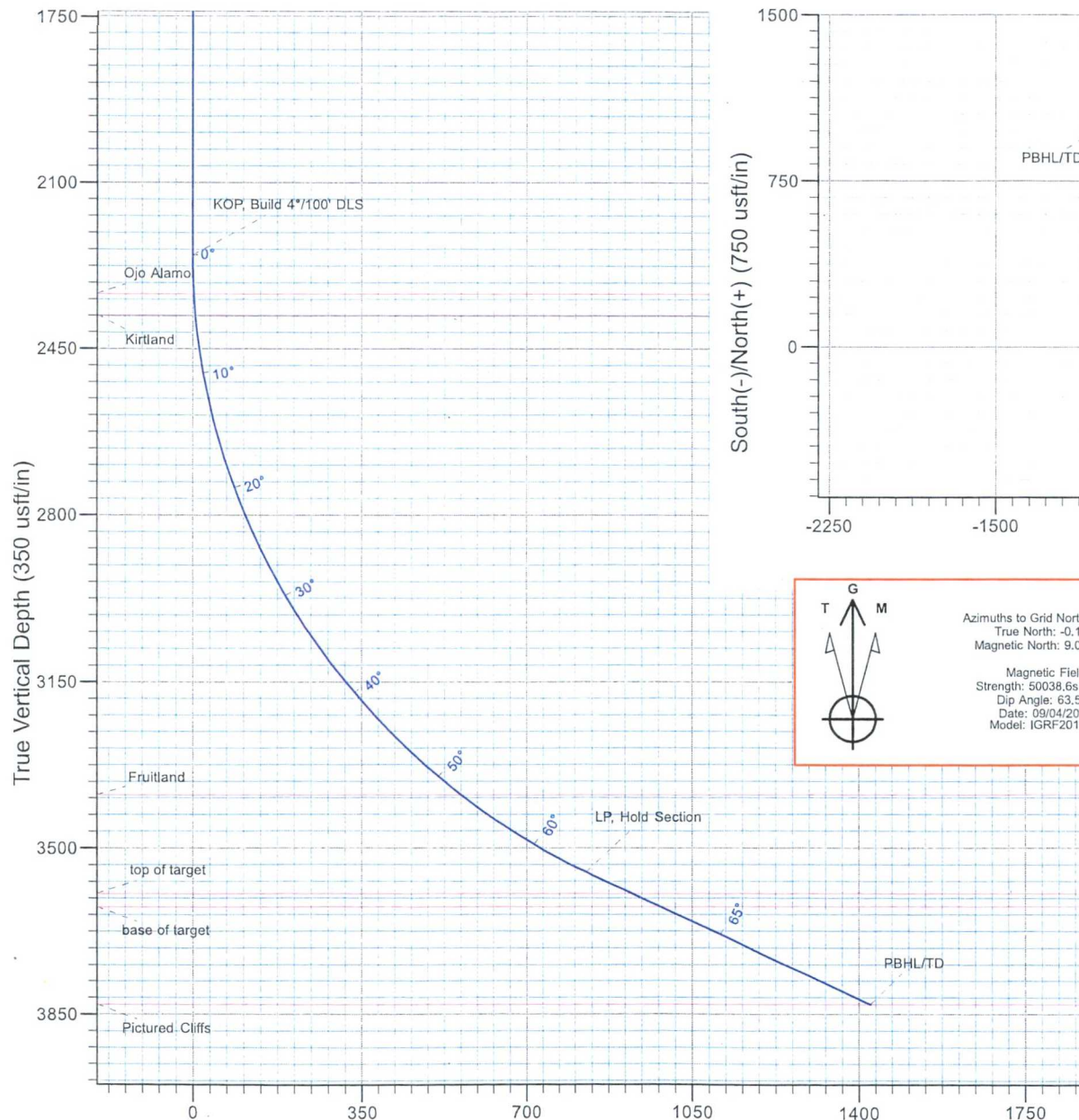
9. Directional Plan

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.21-T32N-R08W
 Well: Trail Canyon 104H
 Borehole: Pilot Hole
 Plan: Rev0



WELL DETAILS: Trail Canyon 104H					
+N/-S	+E/-W	GL	KB	Latitude	Longitude
0.00	0.00	6906.00	@ 6921.00usft	36.96559°N	107.67244°W
		2170780.62	547005.66		

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	2252.36	0.00	0.00	2252.36	0.00	0.00	0.00	0.00	0.00
3	3877.36	65.00	315.09	3550.55	585.72	-583.88	4.00	315.09	827.04
4	4536.23	65.00	315.09	3829.00	1008.63	-1005.46	0.00	0.00	1424.18

FORMATION TOP DETAILS			
TVDPath	MDPath	Formation	
2334.00	2334.04	Ojo Alamo	
2379.00	2379.17	Kirtland	
3388.00	3563.62	Fruitland	
3596.00	3984.91	top of target	
3623.00	4048.79	base of target	
3829.00	4536.23	Pictured Cliffs	

ANNOTATIONS		
TVD	MD	Annotation
2252.36	2252.36	KOP, Build 4"/100' DLS
3550.55	3877.36	LP, Hold Section
3829.00	4536.23	PBHL/TD

Trail Canyon 104H	Rev0
Created By: J Rieke	Date: 8:44, September 05 2018



Hilcorp Energy Company

San Juan Co., NM (NAD27)

Sec.21-T32N-R08W

Trail Canyon 104H

Pilot Hole

Plan: Rev0

Standard Planning Report - Geographic

05 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.21-T32N-R08W
Well: Trail Canyon 104H
Wellbore: Pilot Hole
Design: Rev0

Local Co-ordinate Reference: Well Trail Canyon 104H
TVD Reference: KB @ 6921.00usft
MD Reference: KB @ 6921.00usft
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.21-T32N-R08W			
Site Position:		Northing:	2,170,780.62 usft	Latitude: 36.96559°N
From:	Map	Easting:	547,005.66 usft	Longitude: 107.67244°W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence: 0.10 °

Well	Trail Canyon 104H			
Well Position	+N/-S	0.00 usft	Northing: 2,170,780.62 usft	Latitude: 36.96559°N
	+E/-W	0.00 usft	Easting: 547,005.66 usft	Longitude: 107.67244°W
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level: 6,906.00 usft

Wellbore	Pilot Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	09/04/18	9.13	63.53	50,039

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	315.09

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	
2,252.36	0.00	0.00	2,252.36	0.00	0.00	0.00	0.00	0.00	0.00	
3,877.36	65.00	315.09	3,550.55	585.72	-583.88	4.00	4.00	0.00	315.09	
4,536.23	65.00	315.09	3,829.00	1,008.63	-1,005.46	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.21-T32N-R08W
Well: Trail Canyon 104H
Wellbore: Pilot Hole
Design: Rev0

Local Co-ordinate Reference: Well Trail Canyon 104H
TVD Reference: KB @ 6921.00usft
MD Reference: KB @ 6921.00usft
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	2,170,780.62	547,005.66	36.96559°N	107.67244°W
100.00	0.00	0.00	100.00	0.00	0.00	2,170,780.62	547,005.66	36.96559°N	107.67244°W
200.00	0.00	0.00	200.00	0.00	0.00	2,170,780.62	547,005.66	36.96559°N	107.67244°W
300.00	0.00	0.00	300.00	0.00	0.00	2,170,780.62	547,005.66	36.96559°N	107.67244°W
400.00	0.00	0.00	400.00	0.00	0.00	2,170,780.62	547,005.66	36.96559°N	107.67244°W
500.00	0.00	0.00	500.00	0.00	0.00	2,170,780.62	547,005.66	36.96559°N	107.67244°W
600.00	0.00	0.00	600.00	0.00	0.00	2,170,780.62	547,005.66	36.96559°N	107.67244°W
700.00	0.00	0.00	700.00	0.00	0.00	2,170,780.62	547,005.66	36.96559°N	107.67244°W
800.00	0.00	0.00	800.00	0.00	0.00	2,170,780.62	547,005.66	36.96559°N	107.67244°W
900.00	0.00	0.00	900.00	0.00	0.00	2,170,780.62	547,005.66	36.96559°N	107.67244°W
1,000.00	0.00	0.00	1,000.00	0.00	0.00	2,170,780.62	547,005.66	36.96559°N	107.67244°W
1,100.00	0.00	0.00	1,100.00	0.00	0.00	2,170,780.62	547,005.66	36.96559°N	107.67244°W
1,200.00	0.00	0.00	1,200.00	0.00	0.00	2,170,780.62	547,005.66	36.96559°N	107.67244°W
1,300.00	0.00	0.00	1,300.00	0.00	0.00	2,170,780.62	547,005.66	36.96559°N	107.67244°W
1,400.00	0.00	0.00	1,400.00	0.00	0.00	2,170,780.62	547,005.66	36.96559°N	107.67244°W
1,500.00	0.00	0.00	1,500.00	0.00	0.00	2,170,780.62	547,005.66	36.96559°N	107.67244°W
1,600.00	0.00	0.00	1,600.00	0.00	0.00	2,170,780.62	547,005.66	36.96559°N	107.67244°W
1,700.00	0.00	0.00	1,700.00	0.00	0.00	2,170,780.62	547,005.66	36.96559°N	107.67244°W
1,800.00	0.00	0.00	1,800.00	0.00	0.00	2,170,780.62	547,005.66	36.96559°N	107.67244°W
1,900.00	0.00	0.00	1,900.00	0.00	0.00	2,170,780.62	547,005.66	36.96559°N	107.67244°W
2,000.00	0.00	0.00	2,000.00	0.00	0.00	2,170,780.62	547,005.66	36.96559°N	107.67244°W
2,100.00	0.00	0.00	2,100.00	0.00	0.00	2,170,780.62	547,005.66	36.96559°N	107.67244°W
2,200.00	0.00	0.00	2,200.00	0.00	0.00	2,170,780.62	547,005.66	36.96559°N	107.67244°W
2,252.36	0.00	0.00	2,252.36	0.00	0.00	2,170,780.62	547,005.66	36.96559°N	107.67244°W
KOP, Build 4°/100' DLS									
2,300.00	1.91	315.09	2,299.99	0.56	-0.56	2,170,781.18	547,005.10	36.96559°N	107.67244°W
2,400.00	5.91	315.09	2,399.74	5.38	-5.37	2,170,786.01	547,000.29	36.96560°N	107.67246°W
2,500.00	9.91	315.09	2,498.77	15.12	-15.08	2,170,795.75	546,990.58	36.96563°N	107.67249°W
2,600.00	13.91	315.09	2,596.60	29.73	-29.64	2,170,810.35	546,976.02	36.96567°N	107.67254°W
2,700.00	17.91	315.09	2,692.75	49.14	-48.98	2,170,829.76	546,956.68	36.96572°N	107.67261°W
2,800.00	21.91	315.09	2,786.76	73.24	-73.01	2,170,853.87	546,932.64	36.96579°N	107.67269°W
2,900.00	25.91	315.09	2,878.16	101.94	-101.62	2,170,882.56	546,904.04	36.96587°N	107.67279°W
3,000.00	29.91	315.09	2,966.51	135.08	-134.65	2,170,915.70	546,871.01	36.96596°N	107.67290°W
3,100.00	33.91	315.09	3,051.39	172.50	-171.96	2,170,953.12	546,833.70	36.96606°N	107.67303°W
3,200.00	37.91	315.09	3,132.37	214.02	-213.35	2,170,994.65	546,792.31	36.96618°N	107.67317°W
3,300.00	41.91	315.09	3,209.06	259.45	-258.63	2,171,040.07	546,747.02	36.96630°N	107.67332°W
3,400.00	45.91	315.09	3,281.10	308.55	-307.58	2,171,089.17	546,698.07	36.96644°N	107.67349°W
3,500.00	49.91	315.09	3,348.12	361.09	-359.96	2,171,141.72	546,645.70	36.96658°N	107.67367°W
3,600.00	53.91	315.09	3,409.80	416.82	-415.51	2,171,197.44	546,590.15	36.96673°N	107.67386°W
3,700.00	57.91	315.09	3,465.85	475.46	-473.96	2,171,256.08	546,531.69	36.96690°N	107.67406°W
3,800.00	61.91	315.09	3,515.98	536.72	-535.03	2,171,317.34	546,470.62	36.96706°N	107.67427°W
3,877.36	65.00	315.09	3,550.55	585.72	-583.89	2,171,366.35	546,421.77	36.96720°N	107.67443°W
LP, Hold Section									
3,900.00	65.00	315.09	3,560.12	600.26	-598.37	2,171,380.88	546,407.29	36.96724°N	107.67448°W
4,000.00	65.00	315.09	3,602.38	664.44	-662.36	2,171,445.06	546,343.30	36.96742°N	107.67470°W
4,100.00	65.00	315.09	3,644.64	728.63	-726.34	2,171,509.25	546,279.32	36.96759°N	107.67492°W
4,200.00	65.00	315.09	3,686.90	792.81	-790.33	2,171,573.44	546,215.33	36.96777°N	107.67514°W
4,300.00	65.00	315.09	3,729.16	857.00	-854.31	2,171,637.62	546,151.35	36.96794°N	107.67536°W
4,400.00	65.00	315.09	3,771.43	921.19	-918.30	2,171,701.81	546,087.36	36.96812°N	107.67558°W
4,500.00	65.00	315.09	3,813.69	985.37	-982.28	2,171,765.99	546,023.38	36.96830°N	107.67580°W
4,536.23	65.00	315.09	3,829.00	1,008.63	-1,005.46	2,171,789.25	546,000.19	36.96836°N	107.67587°W
PBHL/TD									



Database: EDM 5000.1 Single User Db
Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Site: Sec.21-T32N-R08W
Well: Trail Canyon 104H
Wellbore: Pilot Hole
Design: Rev0

Local Co-ordinate Reference: Well Trail Canyon 104H
TVD Reference: KB @ 6921.00usft
MD Reference: KB @ 6921.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,334.04	2,334.00	Ojo Alamo		0.00	
2,379.17	2,379.00	Kirtland		0.00	
3,563.62	3,388.00	Fruitland		0.00	
3,984.91	3,596.00	top of target		0.00	
4,048.79	3,623.00	base of target		0.00	
4,536.23	3,829.00	Pictured Cliffs		0.00	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,252.36	2,252.36	0.00	0.00	KOP, Build 4°/100' DLS
3,877.36	3,550.55	585.72	-583.89	LP, Hold Section
4,536.23	3,829.00	1,008.63	-1,005.46	PBHL/TD



Company: Hilcorp Energy Company
 Field: San Juan Co., NM (NAD27)
 Location: Sec.21-T32N-R08W
 Well: Trail Canyon 104H
 Borehole: Lat 1
 Plan: Rev0

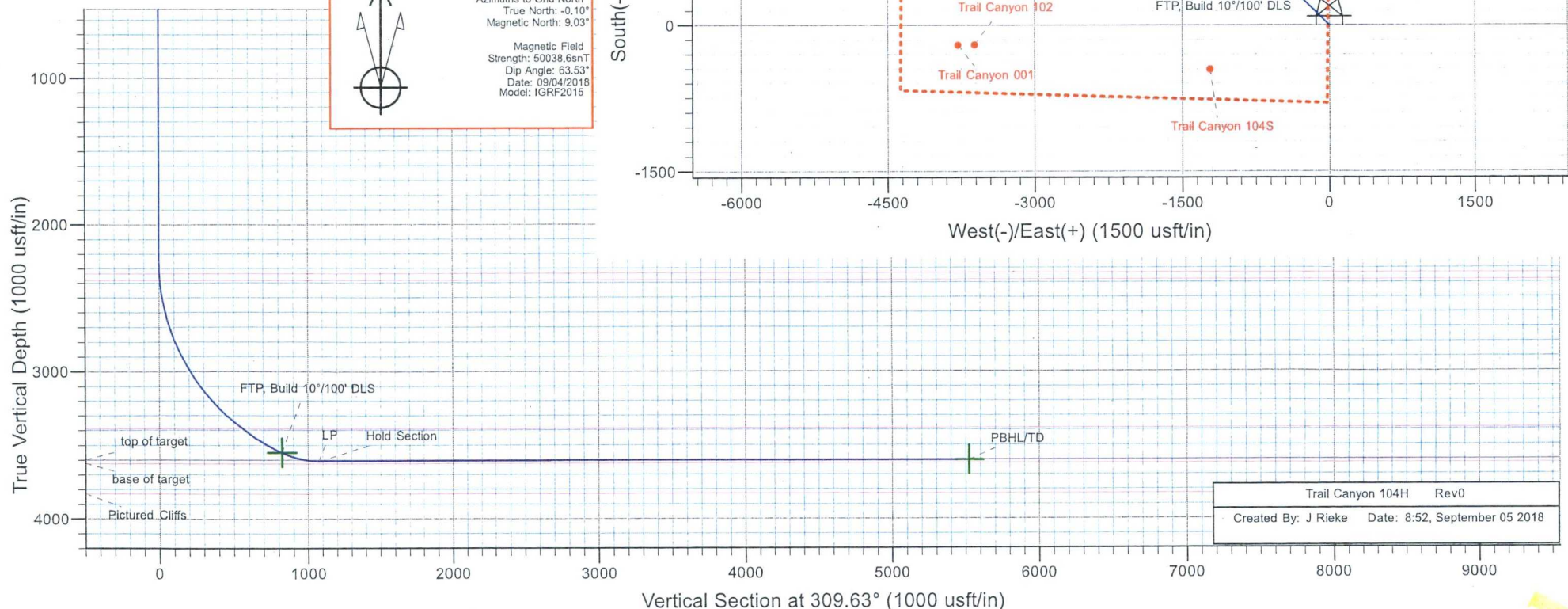
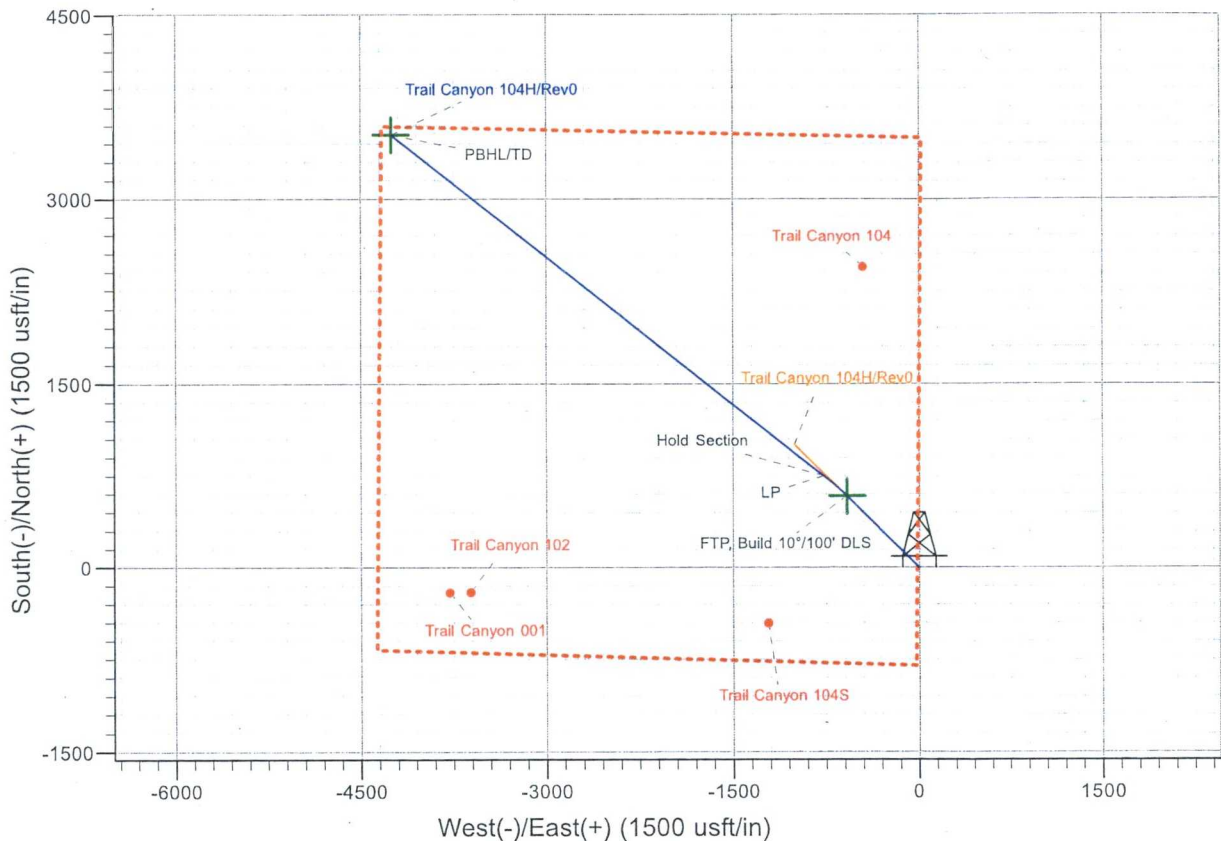
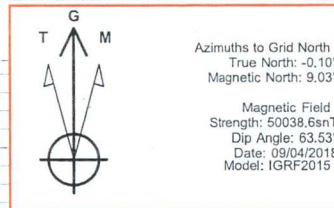


WELL DETAILS: Trail Canyon 104H						
		GL 6906.00	KB @ 6921.00usft			
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	
0.00	0.00	2170780.62	547005.66	36.96559°N	107.67244°W	

SECTION DETAILS									
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec
1	3877.36	65.00	315.09	3550.55	585.72	-583.89	0.00	0.00	823.29
2	4135.35	90.00	308.50	3606.00	751.64	-770.53	10.00	-15.28	1072.86
3	4137.49	90.06	308.50	3606.00	752.98	-772.21	3.00	0.00	1075.01
4	8586.62	90.06	308.50	3601.00	3522.92	-4253.89	0.00	0.00	5523.27

DESIGN TARGET DETAILS						
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	
Trail Canyon 104H FTP	3550.55	585.72	-583.89	36.96720°N	107.67443°W	
Trail Canyon 104H Toe	3601.00	3522.92	-4253.89	36.97528°N	107.68698°W	

FORMATION TOP DETAILS			ANNOTATIONS		
TVDPath	MDPath	Formation	TVD	MD	Annotation
2334.00	2334.04	Ojo Alamo	3550.55	3877.36	FTP, Build 10°/100' DLS
2379.00	2379.17	Kirtland	3606.00	4135.35	LP
3388.00	3563.62	Fruitland	3606.00	4137.49	Hold Section
3596.00	4026.53	top of target	3601.00	8586.62	PBHL/TD



Trail Canyon 104H	Rev0
Created By: J Rieke	Date: 8:52, September 05 2018



Hilcorp Energy Company

San Juan Co., NM (NAD27)

Sec.21-T32N-R08W

Trail Canyon 104H

Lat 1

Plan: Rev0

Standard Planning Report - Geographic

05 September, 2018





Database: EDM 5000.1 Single User Db
Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Site: Sec.21-T32N-R08W
Well: Trail Canyon 104H
Wellbore: Lat 1
Design: Rev0

Local Co-ordinate Reference: Well Trail Canyon 104H
TVD Reference: KB @ 6921.00usft
MD Reference: KB @ 6921.00usft
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.21-T32N-R08W		
Site Position:		Northing:	2,170,780.62 usft
From:	Map	Easting:	547,005.66 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in
		Latitude:	36.96559°N
		Longitude:	107.67244°W
		Grid Convergence:	0.10 °

Well	Trail Canyon 104H		
Well Position	+N/-S	0.00 usft	Northing: 2,170,780.62 usft
	+E/-W	0.00 usft	Easting: 547,005.66 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	36.96559°N
		Longitude:	107.67244°W
		Ground Level:	6,906.00 usft

Wellbore	Lat 1		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2015	09/04/18	9.13
			Dip Angle (°)
			63.53
			Field Strength (nT)
			50,039

Design	Rev0		
Audit Notes:			
Version:	Phase:	PROTOTYPE	Tie On Depth: 3,877.36
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.00	0.00	0.00
			Direction (°)
			309.63

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
3,877.36	65.00	315.09	3,550.55	585.72	-583.89	0.00	0.00	0.00	0.00	
4,135.35	90.00	308.50	3,606.00	751.64	-770.53	10.00	9.69	-2.55	-15.28	Trail Canyon 104H To
4,137.49	90.06	308.50	3,606.00	752.98	-772.21	3.00	3.00	0.00	0.00	
8,586.62	90.06	308.50	3,601.00	3,522.92	-4,253.89	0.00	0.00	0.00	0.00	Trail Canyon 104H To



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.21-T32N-R08W
Well: Trail Canyon 104H
Wellbore: Lat 1
Design: Rev0

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

Well Trail Canyon 104H
KB @ 6921.00usft
KB @ 6921.00usft
Grid
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
3,877.36	65.00	315.09	3,550.55	585.72	-583.89	2,171,366.35	546,421.77	36.96720°N	107.67443°W
FTP, Build 10"/100' DLS									
3,900.00	67.19	314.44	3,559.72	600.30	-598.58	2,171,380.92	546,407.08	36.96724°N	107.67448°W
4,000.00	76.86	311.80	3,590.55	665.18	-667.96	2,171,445.81	546,337.70	36.96742°N	107.67472°W
4,100.00	86.57	309.35	3,604.95	729.44	-743.05	2,171,510.07	546,262.61	36.96759°N	107.67498°W
4,135.35	90.00	308.50	3,606.00	751.64	-770.53	2,171,532.26	546,235.13	36.96766°N	107.67507°W
LP									
4,137.49	90.06	308.50	3,606.00	752.98	-772.21	2,171,533.60	546,233.45	36.96766°N	107.67508°W
Hold Section									
4,200.00	90.06	308.50	3,605.93	791.89	-821.13	2,171,572.52	546,184.53	36.96777°N	107.67524°W
4,300.00	90.06	308.50	3,605.82	854.15	-899.38	2,171,634.77	546,106.28	36.96794°N	107.67551°W
4,400.00	90.06	308.50	3,605.71	916.41	-977.64	2,171,697.03	546,028.02	36.96811°N	107.67578°W
4,500.00	90.06	308.50	3,605.60	978.67	-1,055.89	2,171,759.29	545,949.77	36.96828°N	107.67605°W
4,600.00	90.06	308.50	3,605.48	1,040.93	-1,134.15	2,171,821.55	545,871.51	36.96845°N	107.67631°W
4,700.00	90.06	308.50	3,605.37	1,103.18	-1,212.40	2,171,883.81	545,793.26	36.96862°N	107.67658°W
4,800.00	90.06	308.50	3,605.26	1,165.44	-1,290.66	2,171,946.06	545,715.00	36.96879°N	107.67685°W
4,900.00	90.06	308.50	3,605.15	1,227.70	-1,368.91	2,172,008.32	545,636.74	36.96897°N	107.67712°W
5,000.00	90.06	308.50	3,605.03	1,289.96	-1,447.17	2,172,070.58	545,558.49	36.96914°N	107.67739°W
5,100.00	90.06	308.50	3,604.92	1,352.22	-1,525.42	2,172,132.84	545,480.23	36.96931°N	107.67765°W
5,200.00	90.06	308.50	3,604.81	1,414.47	-1,603.68	2,172,195.10	545,401.98	36.96948°N	107.67792°W
5,300.00	90.06	308.50	3,604.70	1,476.73	-1,681.94	2,172,257.35	545,323.72	36.96965°N	107.67819°W
5,400.00	90.06	308.50	3,604.58	1,538.99	-1,760.19	2,172,319.61	545,245.47	36.96982°N	107.67846°W
5,500.00	90.06	308.50	3,604.47	1,601.25	-1,838.45	2,172,381.87	545,167.21	36.96999°N	107.67872°W
5,600.00	90.06	308.50	3,604.36	1,663.51	-1,916.70	2,172,444.13	545,088.96	36.97016°N	107.67899°W
5,700.00	90.06	308.50	3,604.25	1,725.76	-1,994.96	2,172,506.39	545,010.70	36.97034°N	107.67926°W
5,800.00	90.06	308.50	3,604.13	1,788.02	-2,073.21	2,172,568.65	544,932.45	36.97051°N	107.67953°W
5,900.00	90.06	308.50	3,604.02	1,850.28	-2,151.47	2,172,630.90	544,854.19	36.97068°N	107.67979°W
6,000.00	90.06	308.50	3,603.91	1,912.54	-2,229.72	2,172,693.16	544,775.93	36.97085°N	107.68006°W
6,100.00	90.06	308.50	3,603.80	1,974.80	-2,307.98	2,172,755.42	544,697.68	36.97102°N	107.68033°W
6,200.00	90.06	308.50	3,603.68	2,037.06	-2,386.23	2,172,817.68	544,619.42	36.97119°N	107.68060°W
6,300.00	90.06	308.50	3,603.57	2,099.31	-2,464.49	2,172,879.94	544,541.17	36.97136°N	107.68086°W
6,400.00	90.06	308.50	3,603.46	2,161.57	-2,542.75	2,172,942.19	544,462.91	36.97154°N	107.68113°W
6,500.00	90.06	308.50	3,603.35	2,223.83	-2,621.00	2,173,004.45	544,384.66	36.97171°N	107.68140°W
6,600.00	90.06	308.50	3,603.23	2,286.09	-2,699.26	2,173,066.71	544,306.40	36.97188°N	107.68167°W
6,700.00	90.06	308.50	3,603.12	2,348.35	-2,777.51	2,173,128.97	544,228.15	36.97205°N	107.68193°W
6,800.00	90.06	308.50	3,603.01	2,410.60	-2,855.77	2,173,191.23	544,149.89	36.97222°N	107.68220°W
6,900.00	90.06	308.50	3,602.90	2,472.86	-2,934.02	2,173,253.48	544,071.64	36.97239°N	107.68247°W
7,000.00	90.06	308.50	3,602.78	2,535.12	-3,012.28	2,173,315.74	543,993.38	36.97256°N	107.68274°W
7,100.00	90.06	308.50	3,602.67	2,597.38	-3,090.53	2,173,378.00	543,915.12	36.97274°N	107.68300°W
7,200.00	90.06	308.50	3,602.56	2,659.64	-3,168.79	2,173,440.26	543,836.87	36.97291°N	107.68327°W
7,300.00	90.06	308.50	3,602.45	2,721.89	-3,247.04	2,173,502.52	543,758.61	36.97308°N	107.68354°W
7,400.00	90.06	308.50	3,602.33	2,784.15	-3,325.30	2,173,564.77	543,680.36	36.97325°N	107.68381°W
7,500.00	90.06	308.50	3,602.22	2,846.41	-3,403.56	2,173,627.03	543,602.10	36.97342°N	107.68407°W
7,600.00	90.06	308.50	3,602.11	2,908.67	-3,481.81	2,173,689.29	543,523.85	36.97359°N	107.68434°W
7,700.00	90.06	308.50	3,602.00	2,970.93	-3,560.07	2,173,751.55	543,445.59	36.97376°N	107.68461°W
7,800.00	90.06	308.50	3,601.88	3,033.18	-3,638.32	2,173,813.81	543,367.34	36.97393°N	107.68488°W
7,900.00	90.06	308.50	3,601.77	3,095.44	-3,716.58	2,173,876.07	543,289.08	36.97411°N	107.68514°W
8,000.00	90.06	308.50	3,601.66	3,157.70	-3,794.83	2,173,938.32	543,210.83	36.97428°N	107.68541°W
8,100.00	90.06	308.50	3,601.55	3,219.96	-3,873.09	2,174,000.58	543,132.57	36.97445°N	107.68568°W
8,200.00	90.06	308.50	3,601.43	3,282.22	-3,951.34	2,174,062.84	543,054.31	36.97462°N	107.68595°W
8,300.00	90.06	308.50	3,601.32	3,344.48	-4,029.60	2,174,125.10	542,976.06	36.97479°N	107.68621°W
8,400.00	90.06	308.50	3,601.21	3,406.73	-4,107.85	2,174,187.36	542,897.80	36.97496°N	107.68648°W
8,500.00	90.06	308.50	3,601.10	3,468.99	-4,186.11	2,174,249.61	542,819.55	36.97513°N	107.68675°W



Database: EDM 5000.1 Single User Db
Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Site: Sec.21-T32N-R08W
Well: Trail Canyon 104H
Wellbore: Lat 1
Design: Rev0

Local Co-ordinate Reference: Well Trail Canyon 104H
TVD Reference: KB @ 6921.00usft
MD Reference: KB @ 6921.00usft
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
8,586.62	90.06	308.50	3,601.00	3,522.92	-4,253.89	2,174,303.54	542,751.77	36.97528°N	107.68698°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
Trail Canyon 104H FTP - plan hits target center - Point	0.00	0.00	3,550.55	585.72	-583.89	2,171,366.35	546,421.77	36.96720°N	107.67443°W
Trail Canyon 104H Toe - plan hits target center - Point	0.00	0.00	3,601.00	3,522.92	-4,253.89	2,174,303.54	542,751.77	36.97528°N	107.68698°W

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,334.04	2,334.00	Ojo Alamo		0.00	
2,379.17	2,379.00	Kirtland		0.00	
3,563.62	3,388.00	Fruitland		0.00	
4,026.53	3,596.00	top of target		0.00	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
3,877.36	3,550.55	585.72	-583.89	FTP, Build 10°/100' DLS
4,135.35	3,606.00	751.64	-770.53	LP
4,137.49	3,606.00	752.98	-772.21	Hold Section
8,586.62	3,601.00	3,522.92	-4,253.89	PBHL/TD



Hilcorp Energy Company

San Juan Co., NM (NAD27)

Sec.21-T32N-R08W

Trail Canyon 104H

Lat 1

Rev0

Anticollision Report

05 September, 2018





Koltek Energy Services

Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.21-T32N-R08W
Site Error: 0.00 usft
Reference Well: Trail Canyon 104H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well Trail Canyon 104H
TVD Reference: KB @ 6921.00usft
MD Reference: KB @ 6921.00usft
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	09/05/18		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	3,877.36	Rev0 (Pilot Hole)	MWD	MWD - Standard	
3,877.36	8,586.62	Rev0 (Lat 1)	MWD	MWD - Standard	

Summary		Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Site Name							
Offset Well - Wellbore - Design							
Sec.21-T32N-R08W							
Trail Canyon 001 - Original Hole - Original Hole		5,895.87	3,357.11	2,622.96	2,500.00	21.332	CC
Trail Canyon 001 - Original Hole - Original Hole		6,000.00	3,356.99	2,625.03	2,499.48	20.909	ES
Trail Canyon 001 - Original Hole - Original Hole		7,300.00	3,355.53	2,975.15	2,816.74	18.781	SF
Trail Canyon 102 - Original Hole - Original Hole		5,765.69	3,370.00	2,514.43	2,401.10	22.187	CC
Trail Canyon 102 - Original Hole - Original Hole		5,800.00	3,370.00	2,514.66	2,400.49	22.025	ES
Trail Canyon 102 - Original Hole - Original Hole		7,200.00	3,370.00	2,894.75	2,745.26	19.364	SF
Trail Canyon 104 - Original Hole - Original Hole		4,941.88	3,382.89	1,525.01	1,245.74	5.461	CC
Trail Canyon 104 - Original Hole - Original Hole		5,000.00	3,382.83	1,526.12	1,245.52	5.439	ES
Trail Canyon 104 - Original Hole - Original Hole		5,100.00	3,382.72	1,533.18	1,250.27	5.419	SF
Trail Canyon 104H - Pilot Hole - Rev0		3,877.36	3,877.36	0.00	0.00	10,000.000	CC
Trail Canyon 104H - Pilot Hole - Rev0		3,886.85	3,886.85	0.08	-0.09	0.475	Level 1, ES, SF
Trail Canyon 104S - Original Hole - Original Hole		3,537.64	3,353.38	1,180.27	1,054.95	9.418	CC
Trail Canyon 104S - Original Hole - Original Hole		3,600.00	3,391.51	1,181.30	1,054.16	9.291	ES
Trail Canyon 104S - Original Hole - Original Hole		3,900.00	3,540.02	1,219.94	1,084.12	8.982	SF

Offset Design		Sec.21-T32N-R08W - Trail Canyon 001 - Original Hole - Original Hole										Offset Site Error:	0.00 usft
Survey Program:		820-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)		Between Centres (usft)	Between Ellipses (usft)					
0.00	0.00	0.00	0.00	0.00	0.00	-93.10	-204.90	-3,781.24	3,794.84				
100.00	100.00	0.00	0.00	0.10	0.00	-93.10	-204.90	-3,781.24	3,789.64	0.10	N/A		
200.00	200.00	0.00	0.00	0.32	0.00	-93.10	-204.90	-3,781.24	3,787.08	0.32	N/A		
255.46	255.46	7.58	7.58	0.44	0.06	-93.10	-204.94	-3,781.24	3,786.79	0.50	7,569.405		
300.00	300.00	52.22	52.22	0.55	0.38	-93.11	-205.12	-3,781.24	3,786.80	0.93	4,093.451		
400.00	400.00	152.44	152.44	0.77	1.11	-93.11	-205.45	-3,781.24	3,786.82	1.88	2,015.544		
500.00	500.00	252.66	252.66	0.99	1.84	-93.11	-205.67	-3,781.24	3,786.83	2.83	1,336.913		
600.00	600.00	352.88	352.88	1.22	2.57	-93.12	-205.78	-3,781.24	3,786.84	3.79	1,000.162		
700.00	700.00	453.10	453.10	1.44	3.30	-93.12	-205.79	-3,781.24	3,786.84	4.74	798.925		
800.00	800.00	553.31	553.31	1.67	4.02	-93.11	-205.69	-3,781.24	3,786.83	5.69	665.104		
900.00	900.00	653.53	653.53	1.89	4.75	-93.11	-205.48	-3,781.24	3,786.82	6.65	569.681		
1,000.00	1,000.00	753.74	753.74	2.12	5.48	-93.11	-205.17	-3,781.24	3,786.81	7.60	498.204		
1,100.00	1,100.00	853.00	853.00	2.34	6.44	-93.10	-204.90	-3,781.24	3,786.79	8.79	430.920		

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.21-T32N-R08W
 Site Error: 0.00 usft
 Reference Well: Trail Canyon 104H
 Well Error: 0.00 usft
 Reference Wellbore: Lat 1
 Reference Design: Rev0

Local Co-ordinate Reference: Well Trail Canyon 104H
 TVD Reference: KB @ 6921.00usft
 MD Reference: KB @ 6921.00usft
 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.21-T32N-R08W - Trail Canyon 001 - Original Hole - Original Hole														Offset Site Error: 0.00 usft
Survey Program: 820-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)				Between Centres (usft)	Between Ellipses (usft)	
1,200.00	1,200.00	953.00	953.00	2.57	7.90	-93.10	-204.90	-3,781.24	3,786.79	3,776.32	10.47	361.776		
1,300.00	1,300.00	1,053.00	1,053.00	2.79	9.35	-93.10	-204.90	-3,781.24	3,786.79	3,774.64	12.15	311.753		
1,400.00	1,400.00	1,153.00	1,153.00	3.02	10.81	-93.10	-204.90	-3,781.24	3,786.79	3,772.96	13.83	273.884		
1,500.00	1,500.00	1,253.01	1,253.00	3.24	12.26	-93.10	-204.90	-3,781.24	3,786.79	3,771.29	15.51	244.218		
1,550.47	1,550.47	1,303.48	1,303.47	3.36	13.00	-93.10	-204.90	-3,781.24	3,786.79	3,770.44	16.35	231.558		
1,600.00	1,600.00	1,352.59	1,352.58	3.47	13.76	-93.10	-204.94	-3,781.24	3,786.79	3,769.57	17.22	219.862		
1,700.00	1,700.00	1,452.77	1,452.77	3.69	15.50	-93.10	-205.10	-3,781.24	3,786.80	3,767.61	19.19	197.331		
1,800.00	1,800.00	1,552.96	1,552.95	3.92	17.24	-93.11	-205.17	-3,781.24	3,786.81	3,765.65	21.16	178.989		
1,900.00	1,900.00	1,653.14	1,653.12	4.14	18.98	-93.11	-205.15	-3,781.24	3,786.80	3,763.68	23.12	163.767		
2,000.00	2,000.00	1,753.31	1,753.30	4.37	20.72	-93.10	-205.05	-3,781.24	3,786.80	3,761.71	25.09	150.931		
2,078.99	2,078.99	1,832.00	1,831.99	4.54	22.09	-93.10	-204.90	-3,781.24	3,786.79	3,760.16	26.64	142.172		
2,100.00	2,100.00	1,852.62	1,852.61	4.59	22.57	-93.10	-204.95	-3,781.24	3,786.79	3,759.63	27.16	139.420		
2,200.00	2,200.00	1,952.89	1,952.88	4.82	24.90	-93.10	-205.07	-3,781.24	3,786.80	3,757.09	29.71	127.446		
2,252.36	2,252.36	2,005.39	2,005.38	4.93	26.12	-93.10	-205.09	-3,781.24	3,786.80	3,755.75	31.05	121.962		
2,300.00	2,299.99	2,053.15	2,053.13	5.04	27.22	-48.22	-205.07	-3,781.24	3,786.27	3,754.00	32.27	117.340		
2,400.00	2,399.74	2,153.17	2,153.15	5.26	29.55	-48.43	-204.94	-3,781.24	3,781.73	3,746.97	34.76	108.785		
2,500.00	2,498.77	2,251.79	2,251.77	5.49	32.09	-48.86	-204.90	-3,781.24	3,772.59	3,735.18	37.41	100.855		
2,600.00	2,596.60	2,349.63	2,349.60	5.74	34.66	-49.51	-204.90	-3,781.24	3,758.94	3,718.93	40.00	93.962		
2,700.00	2,692.75	2,445.79	2,445.75	6.04	37.19	-50.39	-204.90	-3,781.24	3,740.90	3,698.39	42.51	88.008		
2,800.00	2,786.76	2,539.80	2,539.76	6.41	39.66	-51.49	-204.90	-3,781.24	3,718.65	3,673.71	44.93	82.761		
2,900.00	2,878.16	2,631.20	2,631.16	6.88	42.06	-52.82	-204.90	-3,781.24	3,692.40	3,645.08	47.32	78.027		
3,000.00	2,966.51	2,719.56	2,719.51	7.48	44.39	-54.37	-204.90	-3,781.24	3,662.41	3,612.67	49.74	73.632		
3,100.00	3,051.39	2,804.44	2,804.39	8.22	46.63	-56.15	-204.90	-3,781.24	3,628.96	3,576.73	52.23	69.477		
3,200.00	3,132.37	2,885.43	2,885.37	9.13	48.77	-58.15	-204.90	-3,781.24	3,592.40	3,537.54	54.86	65.481		
3,300.00	3,209.06	2,962.13	2,962.06	10.21	50.79	-60.36	-204.90	-3,781.24	3,553.08	3,495.40	57.68	61.601		
3,400.00	3,281.10	3,034.16	3,034.10	11.46	52.69	-62.75	-204.90	-3,781.24	3,511.40	3,450.69	60.72	57.832		
3,500.00	3,348.12	3,101.19	3,101.12	12.87	54.46	-65.31	-204.90	-3,781.24	3,467.78	3,403.80	63.98	54.199		
3,600.00	3,409.80	3,162.88	3,162.80	14.45	56.09	-68.00	-204.90	-3,781.24	3,422.67	3,355.22	67.45	50.741		
3,700.00	3,465.85	3,218.92	3,218.85	16.19	57.57	-70.77	-204.90	-3,781.24	3,376.53	3,305.45	71.08	47.500		
3,800.00	3,515.98	3,269.06	3,268.98	18.06	58.90	-73.58	-204.90	-3,781.24	3,329.85	3,255.05	74.80	44.517		
3,877.36	3,550.55	3,303.63	3,303.55	19.59	59.81	-75.74	-204.90	-3,781.24	3,293.66	3,215.98	77.68	42.402		
3,877.36	3,550.55	3,303.63	3,303.55	19.59	59.81	-75.74	-204.90	-3,781.24	3,293.66	3,215.98	77.68	42.402		
3,900.00	3,559.72	3,312.80	3,312.72	19.92	60.05	-76.70	-204.90	-3,781.24	3,282.94	3,204.49	78.45	41.847		
3,950.00	3,577.15	3,330.23	3,330.15	20.39	60.51	-79.07	-204.90	-3,781.24	3,258.32	3,178.45	79.87	40.797		
4,000.00	3,590.55	3,343.63	3,343.55	20.94	60.87	-81.73	-204.90	-3,781.24	3,232.58	3,151.36	81.22	39.799		
4,050.00	3,599.84	3,352.93	3,352.84	21.56	61.11	-84.63	-204.90	-3,781.24	3,205.94	3,123.50	82.44	38.890		
4,100.00	3,604.95	3,358.03	3,357.95	22.23	61.25	-87.73	-204.90	-3,781.24	3,178.62	3,095.19	83.43	38.101		
4,135.35	3,606.00	3,359.09	3,359.00	22.75	61.28	-90.00	-204.90	-3,781.24	3,159.01	3,075.06	83.95	37.627		
4,137.49	3,606.00	3,359.09	3,359.00	22.78	61.28	-90.04	-204.90	-3,781.24	3,157.82	3,073.83	83.99	37.599		
4,200.00	3,605.93	3,359.02	3,358.93	23.75	61.27	-90.04	-204.90	-3,781.24	3,123.44	3,038.48	84.96	36.764		
4,300.00	3,605.82	3,358.90	3,358.82	25.44	61.27	-90.04	-204.90	-3,781.24	3,070.30	2,983.64	86.66	35.430		
4,400.00	3,605.71	3,358.79	3,358.71	27.28	61.27	-90.04	-204.90	-3,781.24	3,019.53	2,931.03	88.50	34.120		
4,500.00	3,605.60	3,358.68	3,358.60	29.23	61.27	-90.03	-204.90	-3,781.24	2,971.26	2,880.80	90.45	32.848		
4,600.00	3,605.48	3,358.57	3,358.48	31.28	61.26	-90.03	-204.90	-3,781.24	2,925.61	2,833.11	92.51	31.626		
4,700.00	3,605.37	3,358.45	3,358.37	33.41	61.26	-90.03	-204.90	-3,781.24	2,882.71	2,788.08	94.63	30.462		
4,800.00	3,605.26	3,358.34	3,358.26	35.60	61.26	-90.03	-204.90	-3,781.24	2,842.69	2,745.86	96.82	29.359		
4,900.00	3,605.15	3,358.23	3,358.15	37.84	61.25	-90.02	-204.90	-3,781.24	2,805.65	2,706.59	99.07	28.321		
5,000.00	3,605.03	3,358.12	3,358.03	40.12	61.25	-90.02	-204.90	-3,781.24	2,771.73	2,670.38	101.35	27.347		
5,100.00	3,604.92	3,358.00	3,357.92	42.44	61.25	-90.02	-204.90	-3,781.24	2,741.05	2,637.37	103.68	26.438		
5,200.00	3,604.81	3,357.89	3,357.81	44.80	61.24	-90.02	-204.90	-3,781.24	2,713.70	2,607.67	106.03	25.594		
5,300.00	3,604.70	3,357.78	3,357.70	47.18	61.24	-90.01	-204.90	-3,781.24	2,689.79	2,581.39	108.41	24.812		
5,400.00	3,604.58	3,357.67	3,357.58	49.58	61.24	-90.01	-204.90	-3,781.24	2,669.42	2,558.61	110.81	24.090		

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.21-T32N-R08W
Site Error: 0.00 usft
Reference Well: Trail Canyon 104H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well Trail Canyon 104H
TVD Reference: KB @ 6921.00usft
MD Reference: KB @ 6921.00usft
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.21-T32N-R08W - Trail Canyon 001 - Original Hole - Original Hole												Offset Site Error:	0.00 usft
Survey Program: 820-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
5,500.00	3,604.47	3,357.55	3,357.47	52.00	61.24	-90.01	-204.90	-3,781.24	2,652.67	2,539.44	113.23	23.427	
5,600.00	3,604.36	3,357.44	3,357.36	54.44	61.23	-90.01	-204.90	-3,781.24	2,639.60	2,523.93	115.67	22.820	
5,700.00	3,604.25	3,357.33	3,357.25	56.89	61.23	-90.00	-204.90	-3,781.24	2,630.27	2,512.15	118.12	22.268	
5,800.00	3,604.13	3,357.22	3,357.13	59.36	61.23	-90.00	-204.90	-3,781.24	2,624.71	2,504.13	120.59	21.766	
5,895.87	3,604.03	3,357.11	3,357.03	61.74	61.22	-90.00	-204.90	-3,781.24	2,622.96	2,500.00	122.96	21.332 CC	
5,900.00	3,604.02	3,357.10	3,357.02	61.84	61.22	-90.00	-204.90	-3,781.24	2,622.97	2,499.90	123.06	21.314	
6,000.00	3,603.91	3,356.99	3,356.91	64.33	61.22	-90.00	-204.90	-3,781.24	2,625.03	2,499.48	125.55	20.909 ES	
6,100.00	3,603.80	3,356.88	3,356.80	66.82	61.22	-89.99	-204.90	-3,781.24	2,630.89	2,502.85	128.04	20.547	
6,200.00	3,603.68	3,356.77	3,356.68	69.33	61.21	-89.99	-204.90	-3,781.24	2,640.54	2,509.99	130.54	20.227	
6,300.00	3,603.57	3,356.65	3,356.57	71.84	61.21	-89.99	-204.90	-3,781.24	2,653.91	2,520.86	133.05	19.946	
6,400.00	3,603.46	3,356.54	3,356.46	74.36	61.21	-89.99	-204.90	-3,781.24	2,670.97	2,535.40	135.57	19.702	
6,500.00	3,603.35	3,356.43	3,356.35	76.88	61.21	-89.99	-204.90	-3,781.24	2,691.64	2,553.55	138.09	19.492	
6,600.00	3,603.23	3,356.32	3,356.23	79.41	61.20	-89.98	-204.90	-3,781.24	2,715.83	2,575.21	140.62	19.314	
6,700.00	3,603.12	3,356.20	3,356.12	81.94	61.20	-89.98	-204.90	-3,781.24	2,743.46	2,600.31	143.15	19.165	
6,800.00	3,603.01	3,356.09	3,356.01	84.48	61.20	-89.98	-204.90	-3,781.24	2,774.42	2,628.73	145.68	19.044	
6,900.00	3,602.90	3,355.98	3,355.90	87.02	61.19	-89.98	-204.90	-3,781.24	2,808.60	2,660.37	148.22	18.949	
7,000.00	3,602.78	3,355.87	3,355.78	89.57	61.19	-89.97	-204.90	-3,781.24	2,845.88	2,695.12	150.77	18.876	
7,100.00	3,602.67	3,355.75	3,355.67	92.12	61.19	-89.97	-204.90	-3,781.24	2,886.15	2,732.84	153.31	18.825	
7,200.00	3,602.56	3,355.64	3,355.56	94.67	61.19	-89.97	-204.90	-3,781.24	2,929.28	2,773.42	155.86	18.794	
7,300.00	3,602.45	3,355.53	3,355.45	97.22	61.18	-89.97	-204.90	-3,781.24	2,975.15	2,816.74	158.41	18.781 SF	
7,400.00	3,602.33	3,355.42	3,355.33	99.78	61.18	-89.96	-204.90	-3,781.24	3,023.63	2,862.66	160.97	18.784	
7,500.00	3,602.22	3,355.30	3,355.22	102.34	61.18	-89.96	-204.90	-3,781.24	3,074.60	2,911.08	163.52	18.802	
7,600.00	3,602.11	3,355.19	3,355.11	104.90	61.17	-89.96	-204.90	-3,781.24	3,127.94	2,961.86	166.08	18.834	
7,700.00	3,602.00	3,355.08	3,355.00	107.46	61.17	-89.96	-204.90	-3,781.24	3,183.52	3,014.88	168.64	18.877	
7,800.00	3,601.88	3,354.97	3,354.88	110.03	61.17	-89.95	-204.90	-3,781.24	3,241.24	3,070.04	171.21	18.932	
7,900.00	3,601.77	3,354.85	3,354.77	112.60	61.16	-89.95	-204.90	-3,781.24	3,300.98	3,127.21	173.77	18.996	
8,000.00	3,601.66	3,354.74	3,354.66	115.16	61.16	-89.95	-204.90	-3,781.24	3,362.63	3,186.30	176.34	19.069	
8,100.00	3,601.55	3,354.63	3,354.55	117.73	61.16	-89.95	-204.90	-3,781.24	3,426.09	3,247.19	178.90	19.151	
8,200.00	3,601.43	3,354.52	3,354.43	120.31	61.16	-89.94	-204.90	-3,781.24	3,491.27	3,309.80	181.47	19.239	
8,300.00	3,601.32	3,354.41	3,354.32	122.88	61.15	-89.94	-204.90	-3,781.24	3,558.06	3,374.01	184.04	19.333	
8,400.00	3,601.21	3,354.29	3,354.21	125.45	61.15	-89.94	-204.90	-3,781.24	3,626.38	3,439.76	186.61	19.432	
8,500.00	3,601.10	3,354.18	3,354.10	128.03	61.15	-89.94	-204.90	-3,781.24	3,696.14	3,506.95	189.19	19.537	
8,586.62	3,601.00	3,354.08	3,354.00	130.26	61.14	-89.93	-204.90	-3,781.24	3,757.67	3,566.25	191.42	19.631	



Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.21-T32N-R08W
Site Error: 0.00 usft
Reference Well: Trail Canyon 104H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well Trail Canyon 104H
TVD Reference: KB @ 6921.00usft
MD Reference: KB @ 6921.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database errors are at EDM 5000.1
Offset: Single User Db
Offset TVD Reference: Offset Datum

Offset Design Sec.21-T32N-R08W - Trail Canyon 102 - Original Hole - Original Hole													Offset Site Error: 0.00 usft
Survey Program: 234-JNC_ONLY<10													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Tooface (")	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	-93.19	-201.00	-3,611.80	3,625.48				
100.00	100.00	0.00	0.00	0.10	0.00	-93.19	-201.00	-3,611.80	3,620.18	3,620.08	0.10	N/A	
200.00	200.00	0.00	0.00	0.32	0.00	-93.19	-201.00	-3,611.80	3,617.63	3,617.31	0.32	N/A	
251.15	251.15	8.74	8.74	0.44	0.04	-93.19	-201.02	-3,611.80	3,617.39	3,616.92	0.48	7,589.419	
300.00	300.00	57.78	57.78	0.55	0.27	-93.19	-201.09	-3,611.80	3,617.40	3,616.58	0.82	4,424.697	
400.00	400.00	158.15	158.15	0.77	0.75	-93.19	-201.11	-3,611.80	3,617.40	3,615.88	1.52	2,387.171	
476.00	476.00	234.00	234.00	0.94	1.10	-93.19	-201.00	-3,611.80	3,617.39	3,615.35	2.04	1,770.103	
500.00	500.00	257.60	257.60	0.99	1.38	-93.19	-201.05	-3,611.80	3,617.39	3,615.02	2.38	1,522.475	
600.00	600.00	357.76	357.76	1.22	2.56	-93.19	-201.21	-3,611.80	3,617.40	3,613.62	3.78	956.342	
700.00	700.00	457.92	457.92	1.44	3.74	-93.19	-201.29	-3,611.80	3,617.41	3,612.22	5.19	697.121	
800.00	800.00	558.08	558.08	1.67	4.93	-93.19	-201.29	-3,611.80	3,617.41	3,610.81	6.60	548.460	
900.00	900.00	658.24	658.24	1.89	6.11	-93.19	-201.21	-3,611.80	3,617.40	3,609.40	8.00	452.059	
1,000.00	1,000.00	758.40	758.39	2.12	7.29	-93.19	-201.05	-3,611.80	3,617.39	3,607.99	9.41	384.480	
1,067.53	1,067.53	825.53	825.53	2.27	8.20	-93.19	-201.00	-3,611.80	3,617.39	3,606.92	10.47	345.562	
1,100.00	1,100.00	858.00	858.00	2.34	8.67	-93.19	-201.00	-3,611.80	3,617.39	3,606.38	11.01	328.538	
1,200.00	1,200.00	958.00	958.00	2.57	10.11	-93.19	-201.00	-3,611.80	3,617.39	3,604.71	12.68	285.260	
1,300.00	1,300.00	1,058.01	1,058.00	2.79	11.56	-93.19	-201.00	-3,611.80	3,617.39	3,603.04	14.35	252.056	
1,400.00	1,400.00	1,158.01	1,158.00	3.02	13.00	-93.19	-201.00	-3,611.80	3,617.39	3,601.37	16.02	225.776	
1,500.00	1,500.00	1,258.01	1,258.00	3.24	14.45	-93.19	-201.00	-3,611.80	3,617.39	3,599.70	17.69	204.459	
1,600.00	1,600.00	1,357.66	1,357.65	3.47	16.04	-93.19	-201.10	-3,611.80	3,617.40	3,597.89	19.50	185.473	
1,700.00	1,700.00	1,457.83	1,457.82	3.69	17.77	-93.19	-201.24	-3,611.80	3,617.40	3,595.95	21.46	168.572	
1,800.00	1,800.00	1,558.00	1,557.98	3.92	19.50	-93.19	-201.29	-3,611.80	3,617.41	3,593.99	23.41	154.495	
1,900.00	1,900.00	1,658.16	1,658.15	4.14	21.23	-93.19	-201.26	-3,611.80	3,617.41	3,592.04	25.37	142.587	
2,000.00	2,000.00	1,758.32	1,758.31	4.37	22.96	-93.19	-201.14	-3,611.80	3,617.40	3,590.07	27.33	132.384	
2,100.00	2,100.00	1,858.02	1,858.00	4.59	24.75	-93.19	-201.00	-3,611.80	3,617.39	3,588.05	29.34	123.294	
2,200.00	2,200.00	1,958.02	1,958.00	4.82	26.77	-93.19	-201.00	-3,611.80	3,617.39	3,585.81	31.58	114.529	
2,252.36	2,252.36	2,010.38	2,010.36	4.93	27.83	-93.19	-201.00	-3,611.80	3,617.39	3,584.63	32.76	110.419	
2,300.00	2,299.99	2,058.01	2,057.99	5.04	28.79	-48.30	-201.00	-3,611.80	3,616.86	3,583.03	33.83	106.904	
2,400.00	2,399.74	2,157.76	2,157.74	5.26	30.80	-48.52	-201.00	-3,611.80	3,612.34	3,576.32	36.02	100.285	
2,500.00	2,498.77	2,256.80	2,256.77	5.49	32.81	-48.96	-201.00	-3,611.80	3,603.21	3,565.10	38.12	94.524	
2,600.00	2,596.60	2,354.17	2,354.14	5.74	34.85	-49.62	-201.05	-3,611.80	3,589.59	3,549.40	40.19	89.316	
2,700.00	2,692.75	2,450.49	2,450.46	6.04	37.08	-50.51	-201.20	-3,611.80	3,571.61	3,529.20	42.41	84.222	
2,800.00	2,786.76	2,544.69	2,544.65	6.41	39.27	-51.63	-201.28	-3,611.80	3,549.42	3,504.86	44.56	79.652	
2,900.00	2,878.16	2,636.31	2,636.27	6.88	41.39	-52.98	-201.28	-3,611.80	3,523.26	3,476.56	46.69	75.453	
3,000.00	2,966.51	2,724.92	2,724.88	7.48	43.45	-54.56	-201.21	-3,611.80	3,493.37	3,444.52	48.86	71.498	
3,100.00	3,051.39	2,810.10	2,810.05	8.22	45.43	-56.37	-201.09	-3,611.80	3,460.07	3,408.96	51.12	67.690	
3,200.00	3,132.37	2,891.34	2,891.29	9.13	47.20	-58.40	-200.88	-3,611.80	3,423.68	3,370.26	53.42	64.084	
3,300.00	3,209.06	2,966.18	2,966.13	10.21	48.73	-60.62	-200.87	-3,611.80	3,384.62	3,328.83	55.78	60.675	
3,400.00	3,281.10	3,039.15	3,039.10	11.46	50.02	-63.06	-201.00	-3,611.80	3,343.28	3,285.01	58.27	57.378	
3,500.00	3,348.12	3,106.17	3,106.12	12.87	51.00	-65.64	-201.00	-3,611.80	3,300.06	3,239.28	60.78	54.291	
3,600.00	3,409.80	3,167.86	3,167.80	14.45	51.89	-68.35	-201.00	-3,611.80	3,255.45	3,191.91	63.55	51.228	
3,700.00	3,465.85	3,223.90	3,223.85	16.19	52.70	-71.14	-201.00	-3,611.80	3,209.93	3,143.42	66.51	48.263	
3,800.00	3,515.98	3,274.03	3,273.98	18.06	53.43	-73.95	-201.00	-3,611.80	3,163.97	3,094.37	69.60	45.459	
3,877.36	3,550.55	3,308.60	3,308.55	19.59	53.93	-76.10	-201.00	-3,611.80	3,128.45	3,056.42	72.03	43.431	
3,877.36	3,550.55	3,308.60	3,308.55	19.59	53.93	-76.10	-201.00	-3,611.80	3,128.45	3,056.42	72.03	43.431	
3,900.00	3,559.72	3,317.78	3,317.72	19.92	54.07	-77.05	-201.00	-3,611.80	3,117.95	3,045.27	72.68	42.902	
3,950.00	3,577.15	3,335.20	3,335.15	20.39	54.32	-79.38	-201.00	-3,611.80	3,093.83	3,020.00	73.83	41.906	
4,000.00	3,590.55	3,348.61	3,348.55	20.94	54.51	-81.98	-201.00	-3,611.80	3,068.63	2,993.66	74.96	40.935	
4,050.00	3,599.84	3,357.90	3,357.84	21.56	54.65	-84.80	-201.00	-3,611.80	3,042.57	2,966.56	76.01	40.029	
4,100.00	3,604.95	3,370.00	3,369.94	22.23	54.82	-87.96	-201.00	-3,611.80	3,015.88	2,938.87	77.01	39.163	
4,135.35	3,606.00	3,370.00	3,369.94	22.75	54.82	-90.14	-201.00	-3,611.80	2,996.73	2,919.23	77.49	38.670	
4,137.49	3,606.00	3,370.00	3,369.94	22.78	54.82	-90.18	-201.00	-3,611.80	2,995.56	2,918.04	77.53	38.640	

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.21-T32N-R08W
Site Error: 0.00 usft
Reference Well: Trail Canyon 104H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well Trail Canyon 104H
TVD Reference: KB @ 6921.00usft
MD Reference: KB @ 6921.00usft
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

Sec.21-T32N-R08W - Trail Canyon 102 - Original Hole - Original Hole														Offset Site Error:	0.00 usft
Survey Program: 234-INC_ONLY<10														Offset Well Error:	0.00 usft
Reference														Warning	
Measured		Vertical		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	
Depth (usft)		Depth (usft)		Depth (usft)		Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
4,200.00	3,605.93	3,370.00	3,369.94	23.75	54.82	-90.18	-201.00	-3,611.80	2,962.05	2,883.55	78.50	37.733			
4,300.00	3,605.82	3,370.00	3,369.94	25.44	54.82	-90.18	-201.00	-3,611.80	2,910.43	2,830.23	80.20	36.289			
4,400.00	3,605.71	3,370.00	3,369.94	27.28	54.82	-90.18	-201.00	-3,611.80	2,861.38	2,779.33	82.04	34.876			
4,500.00	3,605.60	3,370.00	3,369.94	29.23	54.82	-90.18	-201.00	-3,611.80	2,815.02	2,731.01	84.00	33.510			
4,600.00	3,605.48	3,370.00	3,369.94	31.28	54.82	-90.18	-201.00	-3,611.80	2,771.50	2,685.44	86.06	32.205			
4,700.00	3,605.37	3,370.00	3,369.94	33.41	54.82	-90.18	-201.00	-3,611.80	2,730.94	2,642.76	88.19	30.967			
4,800.00	3,605.26	3,370.00	3,369.94	35.60	54.82	-90.18	-201.00	-3,611.80	2,693.50	2,603.11	90.38	29.801			
4,900.00	3,605.15	3,370.00	3,369.94	37.84	54.82	-90.18	-201.00	-3,611.80	2,659.28	2,566.65	92.63	28.709			
5,000.00	3,605.03	3,370.00	3,369.94	40.12	54.82	-90.18	-201.00	-3,611.80	2,628.43	2,533.51	94.92	27.692			
5,100.00	3,604.92	3,370.00	3,369.94	42.44	54.82	-90.18	-201.00	-3,611.80	2,601.06	2,503.81	97.24	26.748			
5,200.00	3,604.81	3,370.00	3,369.94	44.80	54.82	-90.18	-201.00	-3,611.80	2,577.28	2,477.68	99.60	25.876			
5,300.00	3,604.70	3,370.00	3,369.94	47.18	54.82	-90.18	-201.00	-3,611.80	2,557.19	2,455.21	101.98	25.075			
5,400.00	3,604.58	3,370.00	3,369.94	49.58	54.82	-90.18	-201.00	-3,611.80	2,540.88	2,436.50	104.39	24.341			
5,500.00	3,604.47	3,370.00	3,369.94	52.00	54.82	-90.18	-201.00	-3,611.80	2,528.43	2,421.62	106.81	23.672			
5,600.00	3,604.36	3,370.00	3,369.94	54.44	54.82	-90.18	-201.00	-3,611.80	2,519.88	2,410.63	109.25	23.065			
5,700.00	3,604.25	3,370.00	3,369.94	56.89	54.82	-90.18	-201.00	-3,611.80	2,515.29	2,403.58	111.71	22.517			
5,765.69	3,604.17	3,370.00	3,369.94	58.52	54.82	-90.18	-201.00	-3,611.80	2,514.43	2,401.10	113.33	22.187 CC			
5,800.00	3,604.13	3,370.00	3,369.94	59.36	54.82	-90.18	-201.00	-3,611.80	2,514.66	2,400.49	114.17	22.025 ES			
5,900.00	3,604.02	3,370.00	3,369.94	61.84	54.82	-90.18	-201.00	-3,611.80	2,518.01	2,401.36	116.65	21.586			
6,000.00	3,603.91	3,370.00	3,369.94	64.33	54.82	-90.18	-201.00	-3,611.80	2,525.32	2,406.18	119.14	21.196			
6,100.00	3,603.80	3,370.00	3,369.94	66.82	54.82	-90.18	-201.00	-3,611.80	2,536.56	2,414.92	121.64	20.853			
6,200.00	3,603.68	3,370.00	3,369.94	69.33	54.82	-90.18	-201.00	-3,611.80	2,551.66	2,427.52	124.14	20.554			
6,300.00	3,603.57	3,370.00	3,369.94	71.84	54.82	-90.18	-201.00	-3,611.80	2,570.57	2,443.92	126.66	20.296			
6,400.00	3,603.46	3,370.00	3,369.94	74.36	54.82	-90.18	-201.00	-3,611.80	2,593.20	2,464.03	129.17	20.075			
6,500.00	3,603.35	3,370.00	3,369.94	76.88	54.82	-90.18	-201.00	-3,611.80	2,619.46	2,487.76	131.70	19.890			
6,600.00	3,603.23	3,370.00	3,369.94	79.41	54.82	-90.18	-201.00	-3,611.80	2,649.23	2,515.00	134.23	19.737			
6,700.00	3,603.12	3,370.00	3,369.94	81.94	54.82	-90.18	-201.00	-3,611.80	2,682.40	2,545.64	136.76	19.614			
6,800.00	3,603.01	3,370.00	3,369.94	84.48	54.82	-90.18	-201.00	-3,611.80	2,718.85	2,579.55	139.30	19.518			
6,900.00	3,602.90	3,370.00	3,369.94	87.02	54.82	-90.18	-201.00	-3,611.80	2,758.44	2,616.60	141.84	19.447			
7,000.00	3,602.78	3,370.00	3,369.94	89.57	54.82	-90.18	-201.00	-3,611.80	2,801.05	2,656.66	144.39	19.399			
7,100.00	3,602.67	3,370.00	3,369.94	92.12	54.82	-90.18	-201.00	-3,611.80	2,846.53	2,699.59	146.94	19.372			
7,200.00	3,602.56	3,370.00	3,369.94	94.67	54.82	-90.18	-201.00	-3,611.80	2,894.75	2,745.26	149.49	19.364 SF			
7,300.00	3,602.45	3,370.00	3,369.94	97.22	54.82	-90.18	-201.00	-3,611.80	2,945.58	2,793.54	152.04	19.373			
7,400.00	3,602.33	3,370.00	3,369.94	99.78	54.82	-90.18	-201.00	-3,611.80	2,998.88	2,844.28	154.60	19.398			
7,500.00	3,602.22	3,370.00	3,369.94	102.34	54.82	-90.18	-201.00	-3,611.80	3,054.53	2,897.37	157.16	19.436			
7,600.00	3,602.11	3,370.00	3,369.94	104.90	54.82	-90.18	-201.00	-3,611.80	3,112.40	2,952.68	159.72	19.486			
7,700.00	3,602.00	3,370.00	3,369.94	107.46	54.82	-90.18	-201.00	-3,611.80	3,172.36	3,010.08	162.29	19.548			
7,800.00	3,601.88	3,370.00	3,369.94	110.03	54.82	-90.18	-201.00	-3,611.80	3,234.31	3,069.46	164.85	19.620			
7,900.00	3,601.77	3,370.00	3,369.94	112.60	54.82	-90.18	-201.00	-3,611.80	3,298.12	3,130.70	167.42	19.700			
8,000.00	3,601.66	3,370.00	3,369.94	115.16	54.82	-90.18	-201.00	-3,611.80	3,363.70	3,193.71	169.99	19.788			
8,100.00	3,601.55	3,370.00	3,369.94	117.73	54.82	-90.18	-201.00	-3,611.80	3,430.94	3,258.38	172.56	19.883			
8,200.00	3,601.43	3,370.00	3,369.94	120.31	54.82	-90.18	-201.00	-3,611.80	3,499.74	3,324.61	175.13	19.984			
8,300.00	3,601.32	3,370.00	3,369.94	122.88	54.82	-90.18	-201.00	-3,611.80	3,570.02	3,392.32	177.70	20.090			
8,400.00	3,601.21	3,370.00	3,369.94	125.45	54.82	-90.18	-201.00	-3,611.80	3,641.69	3,461.41	180.28	20.200			
8,500.00	3,601.10	3,370.00	3,369.94	128.03	54.82	-90.18	-201.00	-3,611.80	3,714.67	3,531.82	182.85	20.315			
8,586.62	3,601.00	3,370.00	3,369.94	130.26	54.82	-90.18	-201.00	-3,611.80	3,778.88	3,593.80	185.09	20.417			

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.21-T32N-R08W
Site Error: 0.00 usft
Reference Well: Trail Canyon 104H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well Trail Canyon 104H
TVD Reference: KB @ 6921.00usft
MD Reference: KB @ 6921.00usft
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.21-T32N-R08W - Trail Canyon 104 - Original Hole - Original Hole														Offset Site Error:	0.00 usft
Survey Program: 114-INC_ONLY<10														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)							
0.00	0.00	0.00	0.00	0.00	0.00	-10.47	2,447.18	-452.25	2,498.68						
100.00	100.00	0.00	0.00	0.10	0.00	-10.47	2,447.18	-452.25	2,491.70	2,491.61	0.10	N/A			
200.00	200.00	0.00	0.00	0.32	0.00	-10.47	2,447.18	-452.25	2,488.73	2,488.41	0.32	7,765.355			
281.01	281.01	57.01	57.01	0.50	1.29	-10.47	2,446.74	-452.25	2,488.19	2,486.39	1.79	1,386.945			
300.00	300.00	68.48	68.48	0.55	1.55	-10.47	2,446.76	-452.25	2,488.22	2,486.12	2.10	1,186.832			
400.00	400.00	174.66	174.64	0.77	6.10	-10.47	2,446.93	-452.25	2,488.37	2,481.51	6.87	362.303			
500.00	500.00	228.00	227.98	0.99	9.19	-10.47	2,447.18	-452.25	2,489.08	2,478.89	10.18	244.388			
577.21	577.21	337.00	336.94	1.17	18.28	-10.47	2,447.18	-452.25	2,488.67	2,469.23	19.44	127.990			
600.00	600.00	337.00	336.94	1.22	18.28	-10.47	2,447.18	-452.25	2,488.92	2,469.43	19.50	127.666			
679.97	679.97	451.00	450.86	1.40	33.21	-10.47	2,447.18	-452.25	2,488.62	2,454.01	34.61	71.905			
700.00	700.00	451.00	450.86	1.44	33.21	-10.47	2,447.18	-452.25	2,488.74	2,454.09	34.66	71.815			
800.00	800.00	576.59	576.18	1.67	53.92	-10.47	2,447.23	-452.25	2,488.66	2,433.08	55.58	44.773			
900.00	900.00	678.74	678.12	1.89	70.18	-10.47	2,447.22	-452.25	2,488.65	2,416.58	72.07	34.529			
1,000.00	1,000.00	781.15	780.34	2.12	85.72	-10.47	2,447.19	-452.25	2,488.64	2,400.79	87.84	28.330			
1,042.59	1,042.59	789.00	788.18	2.21	86.90	-10.47	2,447.18	-452.25	2,488.80	2,399.68	89.12	27.927			
1,100.00	1,100.00	876.97	876.00	2.34	99.84	-10.47	2,447.18	-452.25	2,488.62	2,386.43	102.18	24.355			
1,165.59	1,165.59	950.49	949.40	2.49	110.00	-10.47	2,447.29	-452.25	2,488.74	2,376.25	112.49	22.125			
1,200.00	1,200.00	974.00	972.86	2.57	113.23	-10.47	2,447.18	-452.25	2,488.62	2,372.82	115.80	21.491			
1,269.54	1,269.54	1,068.26	1,067.00	2.72	124.09	-10.47	2,447.18	-452.25	2,488.71	2,361.89	126.81	19.625			
1,300.00	1,300.00	1,068.00	1,066.75	2.79	124.06	-10.47	2,447.18	-452.25	2,488.63	2,361.78	126.85	19.618			
1,368.22	1,368.22	1,145.54	1,144.22	2.95	132.01	-10.47	2,447.18	-452.25	2,488.62	2,353.66	134.95	18.441			
1,400.00	1,400.00	1,156.00	1,154.67	3.02	133.08	-10.47	2,447.18	-452.25	2,488.71	2,352.61	136.10	18.286			
1,469.15	1,469.15	1,469.15	1,245.15	3.17	162.18	-10.47	2,447.18	-452.25	2,488.62	2,323.26	165.36	15.050			
1,500.00	1,500.00	1,249.00	1,247.60	3.24	141.72	-10.47	2,447.18	-452.25	2,488.78	2,343.81	144.96	17.168			
1,570.34	1,570.34	1,344.00	1,342.55	3.40	149.64	-10.47	2,447.18	-452.25	2,488.62	2,335.58	153.04	16.261			
1,600.00	1,600.00	1,344.00	1,342.55	3.47	149.64	-10.47	2,447.18	-452.25	2,488.84	2,335.73	153.11	16.255			
1,669.38	1,669.38	1,437.00	1,435.50	3.62	157.10	-10.47	2,447.18	-452.25	2,488.64	2,327.91	160.72	15.484			
1,700.00	1,700.00	1,437.00	1,435.50	3.69	157.10	-10.47	2,447.18	-452.25	2,488.95	2,328.15	160.79	15.479			
1,800.00	1,800.00	1,582.88	1,581.32	3.92	166.94	-10.47	2,447.50	-452.25	2,488.93	2,318.08	170.86	14.567			
1,878.35	1,878.35	1,674.79	1,673.18	4.09	173.14	-10.47	2,447.05	-452.25	2,488.56	2,311.32	177.23	14.041			
1,900.00	1,900.00	1,656.00	1,654.40	4.14	171.87	-10.47	2,447.18	-452.25	2,488.71	2,312.70	176.01	14.139			
1,970.53	1,970.53	1,748.16	1,746.53	4.30	177.21	-10.47	2,447.18	-452.25	2,488.62	2,307.11	181.51	13.711			
2,000.00	2,000.00	1,751.00	1,749.37	4.37	177.37	-10.47	2,447.18	-452.25	2,488.76	2,307.02	181.74	13.694			
2,068.41	2,068.41	1,843.00	1,841.35	4.52	182.40	-10.47	2,447.18	-452.25	2,488.62	2,301.69	186.92	13.314			
2,100.00	2,100.00	1,843.00	1,841.35	4.59	182.40	-10.47	2,447.18	-452.25	2,488.86	2,301.86	187.00	13.310			
2,169.45	2,169.45	1,936.00	1,934.33	4.75	186.60	-10.47	2,447.18	-452.25	2,488.64	2,297.29	191.35	13.006			
2,200.00	2,200.00	1,936.00	1,934.33	4.82	186.60	-10.47	2,447.18	-452.25	2,488.97	2,297.55	191.42	13.003			
2,252.36	2,252.36	2,030.00	2,028.32	4.93	190.25	-10.47	2,447.18	-452.25	2,488.62	2,293.44	195.18	12.750			
2,257.39	2,257.39	2,030.00	2,028.32	4.94	190.25	34.44	2,447.18	-452.25	2,488.61	2,293.42	195.19	12.750			
2,300.00	2,299.99	2,078.02	2,076.34	5.04	191.80	34.47	2,447.28	-452.25	2,488.06	2,291.29	196.77	12.645			
2,400.00	2,399.74	2,188.48	2,186.78	5.26	195.59	34.69	2,446.82	-452.25	2,482.02	2,281.86	200.15	12.401			
2,500.00	2,498.77	2,280.55	2,278.85	5.49	198.87	35.13	2,446.53	-452.25	2,470.40	2,268.01	202.40	12.206			
2,600.00	2,596.60	2,371.55	2,369.84	5.74	202.11	35.79	2,446.51	-452.25	2,453.45	2,249.47	203.98	12.082			
2,700.00	2,692.75	2,461.05	2,459.34	6.04	205.30	36.67	2,446.73	-452.25	2,431.29	2,226.34	204.96	11.862			
2,800.00	2,786.76	2,546.00	2,544.29	6.41	208.32	37.79	2,447.18	-452.25	2,404.11	2,198.76	205.35	11.707			
2,900.00	2,878.16	2,650.80	2,649.07	6.88	212.06	39.31	2,447.63	-452.25	2,371.76	2,165.55	206.21	11.502			
3,000.00	2,966.51	2,748.72	2,746.98	7.48	215.55	41.13	2,447.65	-452.25	2,334.28	2,127.43	206.85	11.285			
3,100.00	3,051.39	2,842.50	2,840.74	8.22	218.89	43.29	2,447.28	-452.25	2,292.02	2,084.35	207.67	11.037			
3,200.00	3,132.37	2,924.24	2,922.47	9.13	222.02	45.72	2,446.69	-452.25	2,245.45	2,036.54	208.91	10.748			
3,300.00	3,209.06	2,994.94	2,993.17	10.21	224.76	48.40	2,446.33	-452.25	2,195.46	1,984.73	210.72	10.419			
3,400.00	3,281.10	3,061.52	3,059.74	11.46	227.35	51.41	2,446.17	-452.25	2,142.51	1,928.84	213.67	10.027			
3,500.00	3,348.12	3,123.67	3,121.89	12.87	229.76	54.73	2,446.17	-452.25	2,087.12	1,869.19	217.92	9.577			

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.21-T32N-R08W
Site Error: 0.00 usft
Reference Well: Trail Canyon 104H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well Trail Canyon 104H
TVD Reference: KB @ 6921.00usft
MD Reference: KB @ 6921.00usft
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.21-T32N-R08W - Trail Canyon 104 - Original Hole - Original Hole														Offset Site Error:	0.00 usft
Survey Program: 114-INC_ONLY<10														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)							
3,600.00	3,409.80	3,181.08	3,179.29	14.45	231.99	58.35	2,446.29	-452.25	2,029.81	1,806.31	223.51	9.082			
3,700.00	3,465.85	3,233.45	3,231.67	16.19	234.03	62.19	2,446.51	-452.25	1,971.20	1,740.98	230.22	8.562			
3,800.00	3,515.98	3,280.53	3,278.75	18.06	235.86	66.18	2,446.79	-452.25	1,911.91	1,674.24	237.68	8.044			
3,877.36	3,550.55	3,313.16	3,311.38	19.59	237.13	69.31	2,447.04	-452.25	1,866.03	1,622.41	243.62	7.660			
3,877.36	3,550.55	3,313.16	3,311.38	19.59	237.13	69.31	2,447.04	-452.25	1,866.02	1,622.40	243.62	7.660			
3,900.00	3,559.72	3,330.00	3,328.22	19.92	237.78	71.78	2,447.18	-452.25	1,852.68	1,605.53	247.15	7.496			
3,950.00	3,577.15	3,330.00	3,328.22	20.39	237.78	75.83	2,447.18	-452.25	1,823.58	1,572.19	251.38	7.254			
4,000.00	3,590.55	3,330.00	3,328.22	20.94	237.78	79.58	2,447.18	-452.25	1,795.41	1,540.53	254.89	7.044			
4,050.00	3,599.84	3,330.00	3,328.22	21.56	237.78	83.00	2,447.18	-452.25	1,768.46	1,510.91	257.55	6.866			
4,100.00	3,604.95	3,330.00	3,328.22	22.23	237.78	86.05	2,447.18	-452.25	1,742.97	1,483.57	259.40	6.719			
4,135.35	3,606.00	3,330.00	3,328.22	22.75	237.78	87.98	2,447.18	-452.25	1,725.99	1,465.69	260.30	6.631			
4,137.49	3,606.00	3,330.00	3,328.22	22.78	237.78	88.01	2,447.18	-452.25	1,724.99	1,464.66	260.33	6.626			
4,200.00	3,605.93	3,330.00	3,328.22	23.75	237.78	88.01	2,447.18	-452.25	1,696.74	1,435.43	261.31	6.493			
4,300.00	3,605.82	3,330.00	3,328.22	25.44	237.78	88.01	2,447.18	-452.25	1,655.46	1,392.45	263.01	6.294			
4,400.00	3,605.71	3,383.50	3,381.71	27.28	240.54	90.02	2,447.18	-452.25	1,618.42	1,350.67	267.75	6.044			
4,500.00	3,605.60	3,383.39	3,381.60	29.23	240.53	90.02	2,447.18	-452.25	1,587.74	1,318.03	269.71	5.887			
4,600.00	3,605.48	3,383.28	3,381.48	31.28	240.53	90.01	2,447.18	-452.25	1,562.86	1,291.11	271.75	5.751			
4,700.00	3,605.37	3,383.17	3,381.37	33.41	240.52	90.01	2,447.18	-452.25	1,544.07	1,270.19	273.88	5.638			
4,800.00	3,605.26	3,383.05	3,381.26	35.60	240.52	90.01	2,447.18	-452.25	1,531.59	1,255.53	276.07	5.548			
4,900.00	3,605.15	3,382.94	3,381.15	37.84	240.51	90.00	2,447.18	-452.25	1,525.58	1,247.28	278.31	5.482			
4,941.88	3,605.10	3,382.89	3,381.10	38.79	240.51	90.00	2,447.18	-452.25	1,525.01	1,245.74	279.26	5.461	CC		
5,000.00	3,605.03	3,382.83	3,381.03	40.12	240.51	90.00	2,447.18	-452.25	1,526.12	1,245.52	280.59	5.439	ES		
5,100.00	3,604.92	3,382.72	3,380.92	42.44	240.50	89.99	2,447.18	-452.25	1,533.18	1,250.27	282.91	5.419	SF		
5,200.00	3,604.81	3,382.60	3,380.81	44.80	240.49	89.99	2,447.18	-452.25	1,546.70	1,261.44	285.26	5.422			
5,300.00	3,604.70	3,382.49	3,380.70	47.18	240.49	89.98	2,447.18	-452.25	1,566.49	1,278.85	287.64	5.446			
5,400.00	3,604.58	3,382.38	3,380.58	49.58	240.48	89.98	2,447.18	-452.25	1,592.33	1,302.29	290.04	5.490			
5,500.00	3,604.47	3,382.27	3,380.47	52.00	240.48	89.98	2,447.18	-452.25	1,623.93	1,331.47	292.45	5.553			
5,600.00	3,604.36	3,382.15	3,380.36	54.44	240.47	89.97	2,447.18	-452.25	1,660.95	1,366.06	294.89	5.632			
5,700.00	3,604.25	3,382.04	3,380.25	56.89	240.46	89.97	2,447.18	-452.25	1,703.05	1,405.71	297.34	5.728			
5,800.00	3,604.13	3,381.93	3,380.13	59.36	240.46	89.96	2,447.18	-452.25	1,749.86	1,450.06	299.80	5.837			
5,900.00	3,604.02	3,381.82	3,380.02	61.84	240.45	89.96	2,447.18	-452.25	1,801.01	1,498.74	302.27	5.958			
6,000.00	3,603.91	3,381.70	3,379.91	64.33	240.45	89.96	2,447.18	-452.25	1,856.14	1,551.38	304.76	6.091			
6,100.00	3,603.80	3,381.59	3,379.80	66.82	240.44	89.95	2,447.18	-452.25	1,914.91	1,607.66	307.25	6.232			
6,200.00	3,603.68	3,381.48	3,379.68	69.33	240.44	89.95	2,447.18	-452.25	1,976.99	1,667.25	309.75	6.383			
6,300.00	3,603.57	3,381.37	3,379.57	71.84	240.43	89.94	2,447.18	-452.25	2,042.09	1,729.84	312.25	6.540			
6,400.00	3,603.46	3,381.25	3,379.46	74.36	240.42	89.94	2,447.18	-452.25	2,109.92	1,795.15	314.77	6.703			
6,500.00	3,603.35	3,381.14	3,379.35	76.88	240.42	89.93	2,447.18	-452.25	2,180.22	1,862.94	317.28	6.872			
6,600.00	3,603.23	3,381.03	3,379.23	79.41	240.41	89.93	2,447.18	-452.25	2,252.77	1,932.97	319.81	7.044			
6,700.00	3,603.12	3,380.92	3,379.12	81.94	240.41	89.93	2,447.18	-452.25	2,327.36	2,005.03	322.34	7.220			
6,800.00	3,603.01	3,380.80	3,379.01	84.48	240.40	89.92	2,447.18	-452.25	2,403.80	2,078.93	324.87	7.399			
6,900.00	3,602.90	3,380.69	3,378.90	87.02	240.39	89.92	2,447.18	-452.25	2,481.91	2,154.50	327.41	7.581			
7,000.00	3,602.78	3,380.58	3,378.78	89.57	240.39	89.91	2,447.18	-452.25	2,561.54	2,231.59	329.95	7.764			
7,100.00	3,602.67	3,380.47	3,378.67	92.12	240.38	89.91	2,447.18	-452.25	2,642.56	2,310.07	332.49	7.948			
7,200.00	3,602.56	3,380.35	3,378.56	94.67	240.38	89.90	2,447.18	-452.25	2,724.84	2,389.80	335.03	8.133			
7,300.00	3,602.45	3,380.24	3,378.45	97.22	240.37	89.90	2,447.18	-452.25	2,808.27	2,470.68	337.58	8.319			
7,400.00	3,602.33	3,380.13	3,378.33	99.78	240.37	89.90	2,447.18	-452.25	2,892.75	2,552.61	340.13	8.505			
7,500.00	3,602.22	3,380.02	3,378.22	102.34	240.36	89.89	2,447.18	-452.25	2,978.19	2,635.50	342.69	8.691			
7,600.00	3,602.11	3,379.90	3,378.11	104.90	240.35	89.89	2,447.18	-452.25	3,064.51	2,719.27	345.24	8.876			
7,700.00	3,602.00	3,379.79	3,378.00	107.46	240.35	89.88	2,447.18	-452.25	3,151.64	2,803.84	347.80	9.062			
7,800.00	3,601.88	3,379.68	3,377.88	110.03	240.34	89.88	2,447.18	-452.25	3,239.52	2,889.15	350.36	9.246			
7,900.00	3,601.77	3,379.57	3,377.77	112.60	240.34	89.88	2,447.18	-452.25	3,328.08	2,975.15	352.92	9.430			
8,000.00	3,601.66	3,379.45	3,377.66	115.16	240.33	89.87	2,447.18	-452.25	3,417.27	3,061.78	355.49	9.613			

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.21-T32N-R08W
Site Error: 0.00 usft
Reference Well: Trail Canyon 104H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well Trail Canyon 104H
TVD Reference: KB @ 6921.00usft
MD Reference: KB @ 6921.00usft
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.21-T32N-R08W - Trail Canyon 104 - Original Hole - Original Hole		Offset Site Error:		0.00 usft	
Survey Program: 114-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						
8,100.00	3,601.55	3,379.34	3,377.55	117.73	240.33	89.87	2,447.18	-452.25	3,507.04	3,148.99	358.05	9.795						
8,200.00	3,601.43	3,379.23	3,377.43	120.31	240.32	89.86	2,447.18	-452.25	3,597.35	3,236.74	360.62	9.976						
8,300.00	3,601.32	3,379.12	3,377.32	122.88	240.31	89.86	2,447.18	-452.25	3,688.17	3,324.98	363.19	10.155						
8,400.00	3,601.21	3,379.00	3,377.21	125.45	240.31	89.85	2,447.18	-452.25	3,779.44	3,413.69	365.75	10.333						
8,500.00	3,601.10	3,378.89	3,377.10	128.03	240.30	89.85	2,447.18	-452.25	3,871.15	3,502.83	368.32	10.510						
8,586.62	3,601.00	3,378.79	3,377.00	130.26	240.30	89.85	2,447.18	-452.25	3,950.91	3,580.36	370.55	10.662						



Koltek Energy Services

Anticollision Report



Company: Hilcorp Energy Company
 Project: San Juan Co., NM (NAD27)
 Reference Site: Sec.21-T32N-R08W
 Site Error: 0.00 usft
 Reference Well: Trail Canyon 104H
 Well Error: 0.00 usft
 Reference Wellbore: Lat 1
 Reference Design: Rev0

Local Co-ordinate Reference: Well Trail Canyon 104H
 TVD Reference: KB @ 6921.00usft
 MD Reference: KB @ 6921.00usft
 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.21-T32N-R08W - Trail Canyon 104H - Pilot Hole - Rev0													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		
3,877.36	3,550.55	3,877.36	3,550.55	0.00	0.00	0.00	585.72	-583.89	0.00	0.00	0.00	N/A CC		
3,886.85	3,554.49	3,886.85	3,554.56	0.15	0.20	164.84	591.82	-589.96	0.08	-0.09	0.17	0.475 Level 1, ES, SF		
3,900.00	3,559.72	3,899.99	3,560.11	0.36	0.47	164.98	600.25	-598.37	0.45	0.06	0.39	1.150 Level 2		
3,950.00	3,577.15	3,949.81	3,581.17	0.80	1.50	165.46	632.22	-630.24	4.60	3.75	0.85	5.416		
4,000.00	3,590.55	3,999.07	3,601.98	1.35	2.52	165.80	663.84	-661.76	13.08	11.75	1.32	9.877		
4,050.00	3,599.84	4,047.40	3,622.41	1.97	3.54	166.03	694.87	-692.69	25.81	24.01	1.80	14.342		
4,100.00	3,604.95	4,094.44	3,642.29	2.66	4.52	166.16	725.06	-722.78	42.72	40.47	2.25	19.013		
4,135.35	3,606.00	4,126.72	3,655.93	3.18	5.20	166.18	745.78	-743.44	57.11	54.57	2.53	22.546		
4,137.49	3,606.00	4,128.65	3,656.75	3.21	5.24	166.18	747.02	-744.67	58.04	55.49	2.55	22.724		
4,200.00	3,605.93	4,184.90	3,680.52	4.20	6.43	166.19	783.12	-780.66	85.31	82.09	3.22	26.511		
4,300.00	3,605.82	4,274.88	3,718.55	5.91	8.35	166.20	840.88	-838.24	128.93	124.56	4.37	29.502		
4,400.00	3,605.71	4,364.87	3,756.58	7.77	10.27	166.20	898.64	-895.82	172.55	166.93	5.61	30.748		
4,500.00	3,605.60	4,454.85	3,794.61	9.74	12.20	166.20	956.39	-953.39	216.17	209.24	6.92	31.224		
4,600.00	3,605.48	4,536.23	3,829.00	11.81	13.94	166.21	1,008.63	-1,005.46	259.93	251.70	8.22	31.603		
4,700.00	3,605.37	4,536.23	3,829.00	13.94	13.94	166.21	1,008.63	-1,005.46	319.02	310.07	8.96	35.622		
4,800.00	3,605.26	4,536.23	3,829.00	16.15	13.94	166.21	1,008.63	-1,005.46	394.95	385.23	9.72	40.635		
4,900.00	3,605.15	4,536.23	3,829.00	18.40	13.94	166.21	1,008.63	-1,005.46	479.79	469.28	10.51	45.654		
5,000.00	3,605.03	4,536.23	3,829.00	20.69	13.94	166.21	1,008.63	-1,005.46	569.57	558.25	11.32	50.313		
5,100.00	3,604.92	4,536.23	3,829.00	23.02	13.94	166.21	1,008.63	-1,005.46	662.29	650.14	12.15	54.514		
5,200.00	3,604.81	4,536.23	3,829.00	25.38	13.94	166.21	1,008.63	-1,005.46	756.86	743.87	12.99	58.257		
5,300.00	3,604.70	4,536.23	3,829.00	27.76	13.94	166.21	1,008.63	-1,005.46	852.67	838.82	13.85	61.580		
5,400.00	3,604.58	4,536.23	3,829.00	30.17	13.94	166.21	1,008.63	-1,005.46	949.35	934.64	14.71	64.532		
5,500.00	3,604.47	4,536.23	3,829.00	32.60	13.94	166.21	1,008.63	-1,005.46	1,046.65	1,031.06	15.58	67.159		
5,600.00	3,604.36	4,536.23	3,829.00	35.04	13.94	166.21	1,008.63	-1,005.46	1,144.41	1,127.95	16.47	69.506		
5,700.00	3,604.25	4,536.23	3,829.00	37.49	13.94	166.21	1,008.63	-1,005.46	1,242.54	1,225.18	17.35	71.609		
5,800.00	3,604.13	4,536.23	3,829.00	39.96	13.94	166.21	1,008.63	-1,005.46	1,340.94	1,322.69	18.24	73.502		
5,900.00	3,604.02	4,536.23	3,829.00	42.44	13.94	166.21	1,008.63	-1,005.46	1,439.56	1,420.42	19.14	75.211		
6,000.00	3,603.91	4,536.23	3,829.00	44.93	13.94	166.21	1,008.63	-1,005.46	1,538.35	1,518.31	20.04	76.761		
6,100.00	3,603.80	4,536.23	3,829.00	47.43	13.94	166.21	1,008.63	-1,005.46	1,637.30	1,616.35	20.95	78.171		
6,200.00	3,603.68	4,536.23	3,829.00	49.93	13.94	166.21	1,008.63	-1,005.46	1,736.36	1,714.51	21.85	79.458		
6,300.00	3,603.57	4,536.23	3,829.00	52.45	13.94	166.21	1,008.63	-1,005.46	1,835.53	1,812.77	22.76	80.637		
6,400.00	3,603.46	4,536.23	3,829.00	54.97	13.94	166.21	1,008.63	-1,005.46	1,934.78	1,911.11	23.68	81.721		
6,500.00	3,603.35	4,536.23	3,829.00	57.49	13.94	166.21	1,008.63	-1,005.46	2,034.11	2,009.52	24.59	82.719		
6,600.00	3,603.23	4,536.23	3,829.00	60.02	13.94	166.21	1,008.63	-1,005.46	2,133.50	2,107.99	25.51	83.642		
6,700.00	3,603.12	4,536.23	3,829.00	62.55	13.94	166.21	1,008.63	-1,005.46	2,232.94	2,206.51	26.43	84.497		
6,800.00	3,603.01	4,536.23	3,829.00	65.09	13.94	166.21	1,008.63	-1,005.46	2,332.43	2,305.08	27.35	85.291		
6,900.00	3,602.90	4,536.23	3,829.00	67.64	13.94	166.21	1,008.63	-1,005.46	2,431.96	2,403.69	28.27	86.031		
7,000.00	3,602.78	4,536.23	3,829.00	70.18	13.94	166.21	1,008.63	-1,005.46	2,531.53	2,502.34	29.19	86.721		
7,100.00	3,602.67	4,536.23	3,829.00	72.73	13.94	166.21	1,008.63	-1,005.46	2,631.13	2,601.02	30.12	87.367		
7,200.00	3,602.56	4,536.23	3,829.00	75.28	13.94	166.21	1,008.63	-1,005.46	2,730.77	2,699.72	31.04	87.972		
7,300.00	3,602.45	4,536.23	3,829.00	77.84	13.94	166.21	1,008.63	-1,005.46	2,830.42	2,798.45	31.97	88.539		
7,400.00	3,602.33	4,536.23	3,829.00	80.39	13.94	166.21	1,008.63	-1,005.46	2,930.10	2,897.21	32.90	89.074		
7,500.00	3,602.22	4,536.23	3,829.00	82.95	13.94	166.21	1,008.63	-1,005.46	3,029.80	2,995.98	33.82	89.577		
7,600.00	3,602.11	4,536.23	3,829.00	85.52	13.94	166.21	1,008.63	-1,005.46	3,129.53	3,094.77	34.75	90.052		
7,700.00	3,602.00	4,536.23	3,829.00	88.08	13.94	166.21	1,008.63	-1,005.46	3,229.26	3,193.58	35.68	90.501		
7,800.00	3,601.88	4,536.23	3,829.00	90.64	13.94	166.21	1,008.63	-1,005.46	3,329.02	3,292.40	36.61	90.926		
7,900.00	3,601.77	4,536.23	3,829.00	93.21	13.94	166.21	1,008.63	-1,005.46	3,428.78	3,391.24	37.54	91.329		
8,000.00	3,601.66	4,536.23	3,829.00	95.78	13.94	166.21	1,008.63	-1,005.46	3,528.57	3,490.09	38.47	91.712		
8,100.00	3,601.55	4,536.23	3,829.00	98.35	13.94	166.21	1,008.63	-1,005.46	3,628.36	3,588.95	39.41	92.075		
8,200.00	3,601.43	4,536.23	3,829.00	100.92	13.94	166.21	1,008.63	-1,005.46	3,728.16	3,687.82	40.34	92.421		
8,300.00	3,601.32	4,536.23	3,829.00	103.50	13.94	166.21	1,008.63	-1,005.46	3,827.98	3,786.71	41.27	92.751		
8,400.00	3,601.21	4,536.23	3,829.00	106.07	13.94	166.21	1,008.63	-1,005.46	3,927.80	3,885.60	42.20	93.066		

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.21-T32N-R08W
Site Error: 0.00 usft
Reference Well: Trail Canyon 104H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well Trail Canyon 104H
TVD Reference: KB @ 6921.00usft
MD Reference: KB @ 6921.00usft
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		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
8,500.00	3,601.10	4,536.23	3,829.00	108.65	13.94	166.21	1,008.63	-1,005.46	4,027.63	3,984.50	43.14	93.366	
8,586.62	3,601.00	4,536.23	3,829.00	110.88	13.94	166.21	1,008.63	-1,005.46	4,114.11	4,070.17	43.95	93.616	



Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.21-T32N-R08W
Site Error: 0.00 usft
Reference Well: Trail Canyon 104H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well Trail Canyon 104H
TVD Reference: KB @ 6921.00usft
MD Reference: KB @ 6921.00usft
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.21-T32N-R08W - Trail Canyon 104S - Original Hole - Original Hole													Offset Site Error: 0.00 usft
Survey Program: 140-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)		
0.00	0.00	0.00	0.00	0.00	0.00	-110.39	-452.00	-1,215.76	1,297.22				
100.00	100.00	80.29	80.29	0.10	0.58	-110.40	-452.15	-1,215.76	1,297.12	1,296.44	0.68	1,908.577	
154.56	154.56	136.43	136.43	0.22	0.99	-110.40	-452.02	-1,215.76	1,297.07	1,295.86	1.21	1,071.533	
200.00	200.00	177.67	177.67	0.32	1.90	-110.40	-452.22	-1,215.76	1,297.15	1,294.93	2.22	584.424	
300.00	300.00	279.35	279.34	0.55	4.28	-110.42	-452.56	-1,215.76	1,297.26	1,292.44	4.82	269.021	
400.00	400.00	381.01	381.00	0.77	6.65	-110.42	-452.52	-1,215.76	1,297.25	1,289.82	7.42	174.728	
500.00	500.00	482.65	482.64	0.99	9.03	-110.40	-452.11	-1,215.76	1,297.11	1,287.08	10.03	129.373	
517.87	517.87	500.00	500.00	1.03	9.44	-110.39	-452.00	-1,215.76	1,297.07	1,286.60	10.47	123.860	
600.00	600.00	575.90	575.87	1.22	13.34	-110.43	-452.85	-1,215.76	1,297.37	1,282.81	14.56	89.122	
700.00	700.00	678.28	678.24	1.44	18.60	-110.46	-453.53	-1,215.76	1,297.60	1,277.56	20.04	64.738	
800.00	800.00	780.61	780.57	1.67	23.86	-110.46	-453.68	-1,215.76	1,297.65	1,272.12	25.53	50.833	
900.00	900.00	882.88	882.83	1.89	29.11	-110.45	-453.30	-1,215.76	1,297.52	1,266.51	31.01	41.845	
1,000.00	1,000.00	985.07	985.03	2.12	34.37	-110.41	-452.38	-1,215.76	1,297.21	1,260.72	36.49	35.554	
1,093.92	1,093.92	1,073.98	1,073.92	2.33	39.49	-110.39	-451.81	-1,215.76	1,297.00	1,255.18	41.82	31.011	
1,100.00	1,100.00	1,079.77	1,079.70	2.34	39.85	-110.39	-451.82	-1,215.76	1,297.00	1,254.81	42.19	30.742	
1,200.00	1,200.00	1,182.74	1,182.64	2.57	45.01	-110.38	-451.63	-1,215.76	1,296.94	1,249.36	47.58	27.257	
1,300.00	1,300.00	1,280.29	1,280.17	2.79	48.82	-110.37	-451.32	-1,215.76	1,296.83	1,245.22	51.61	25.128	
1,307.86	1,307.86	1,287.96	1,287.84	2.81	49.12	-110.37	-451.32	-1,215.76	1,296.83	1,244.90	51.93	24.974	
1,400.00	1,400.00	1,377.89	1,377.75	3.02	52.62	-110.38	-451.55	-1,215.76	1,296.91	1,241.27	55.64	23.309	
1,500.00	1,500.00	1,478.49	1,478.33	3.24	56.33	-110.40	-452.14	-1,215.76	1,297.12	1,237.54	59.57	21.774	
1,600.00	1,600.00	1,579.38	1,579.21	3.47	59.63	-110.41	-452.42	-1,215.76	1,297.21	1,234.12	63.10	20.560	
1,700.00	1,700.00	1,680.25	1,680.08	3.69	62.93	-110.42	-452.50	-1,215.76	1,297.24	1,230.62	66.62	19.473	
1,800.00	1,800.00	1,781.11	1,780.94	3.92	66.23	-110.41	-452.39	-1,215.76	1,297.20	1,227.06	70.14	18.494	
1,900.00	1,900.00	1,881.96	1,881.78	4.14	69.52	-110.40	-452.08	-1,215.76	1,297.09	1,223.43	73.66	17.608	
2,000.00	2,000.00	1,980.85	1,980.66	4.37	73.01	-110.39	-451.86	-1,215.76	1,297.01	1,219.64	77.38	16.762	
2,100.00	2,100.00	2,080.46	2,080.27	4.59	76.58	-110.38	-451.75	-1,215.76	1,296.98	1,215.80	81.17	15.978	
2,169.79	2,169.79	2,149.99	2,149.78	4.75	79.08	-110.38	-451.73	-1,215.76	1,296.97	1,213.15	83.82	15.473	
2,200.00	2,200.00	2,180.08	2,179.88	4.82	80.15	-110.38	-451.73	-1,215.76	1,296.97	1,212.00	84.97	15.264	
2,252.36	2,252.36	2,232.25	2,232.04	4.93	82.03	-110.38	-451.76	-1,215.76	1,296.98	1,210.02	86.96	14.915	
2,300.00	2,299.99	2,279.70	2,279.48	5.04	83.73	-65.52	-451.80	-1,215.76	1,296.67	1,207.90	88.77	14.607	
2,400.00	2,399.74	2,379.08	2,378.85	5.26	87.29	-65.90	-451.96	-1,215.76	1,293.92	1,201.41	92.50	13.988	
2,500.00	2,498.77	2,480.38	2,480.14	5.49	90.16	-66.66	-451.71	-1,215.76	1,288.25	1,192.76	95.49	13.491	
2,600.00	2,596.60	2,577.44	2,577.20	5.74	92.73	-67.78	-451.50	-1,215.76	1,280.03	1,181.89	98.14	13.043	
2,700.00	2,692.75	2,672.80	2,672.55	6.04	95.25	-69.27	-451.46	-1,215.76	1,269.63	1,168.85	100.78	12.598	
2,800.00	2,786.76	2,765.97	2,765.71	6.41	97.71	-71.09	-451.57	-1,215.76	1,257.50	1,154.04	103.46	12.154	
2,900.00	2,878.16	2,856.47	2,856.20	6.88	100.11	-73.23	-451.83	-1,215.76	1,244.18	1,137.93	106.24	11.711	
3,000.00	2,966.51	2,945.71	2,945.44	7.48	102.33	-75.66	-452.09	-1,215.76	1,230.27	1,121.20	109.07	11.279	
3,100.00	3,051.39	3,030.94	3,030.66	8.22	104.31	-78.28	-452.22	-1,215.76	1,216.47	1,104.55	111.92	10.869	
3,200.00	3,132.37	3,112.30	3,112.02	9.13	106.21	-81.03	-452.29	-1,215.76	1,203.66	1,088.75	114.91	10.475	
3,300.00	3,209.06	3,189.40	3,189.12	10.21	108.01	-83.82	-452.31	-1,215.76	1,192.76	1,074.76	118.00	10.108	
3,400.00	3,281.10	3,261.87	3,261.58	11.46	109.70	-86.56	-452.28	-1,215.76	1,184.76	1,063.65	121.11	9.783	
3,500.00	3,348.12	3,329.35	3,329.06	12.87	111.27	-89.15	-452.22	-1,215.76	1,180.63	1,056.45	124.17	9.508	
3,537.64	3,371.98	3,353.38	3,353.10	13.47	111.83	-90.07	-452.19	-1,215.76	1,180.27	1,054.95	125.32	9.418 CC	
3,600.00	3,409.80	3,391.51	3,391.22	14.45	112.72	-91.50	-452.13	-1,215.76	1,181.30	1,054.16	127.15	9.291 ES	
3,700.00	3,465.85	3,460.00	3,459.71	16.19	114.32	-94.00	-452.00	-1,215.76	1,187.70	1,057.42	130.28	9.116	
3,800.00	3,515.98	3,496.27	3,495.98	18.06	115.28	-95.01	-452.00	-1,215.76	1,200.40	1,067.45	132.95	9.029	
3,877.36	3,550.55	3,530.84	3,530.55	19.59	116.19	-95.91	-452.00	-1,215.76	1,214.97	1,079.76	135.20	8.986	
3,877.36	3,550.55	3,530.84	3,530.55	19.59	116.19	-95.91	-452.00	-1,215.76	1,214.97	1,079.76	135.20	8.986	
3,900.00	3,559.72	3,540.02	3,539.72	19.92	116.44	-95.54	-452.00	-1,215.76	1,219.94	1,084.12	135.82	8.982 SF	
3,950.00	3,577.15	3,557.44	3,557.15	20.39	116.90	-94.67	-452.00	-1,215.76	1,231.61	1,094.73	136.88	8.998	
4,000.00	3,590.55	3,570.85	3,570.55	20.94	117.25	-93.65	-452.00	-1,215.76	1,244.26	1,106.35	137.91	9.022	
4,050.00	3,599.84	3,580.14	3,579.84	21.56	117.50	-92.46	-452.00	-1,215.76	1,257.91	1,119.02	138.89	9.057	

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.21-T32N-R08W
Site Error: 0.00 usft
Reference Well: Trail Canyon 104H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well Trail Canyon 104H
TVD Reference: KB @ 6921.00usft
MD Reference: KB @ 6921.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at EDM 5000.1 Single User Db
Database:
Offset TVD Reference: Offset Datum

Offset Design Sec.21-T32N-R08W - Trail Canyon 104S - Original Hole - Original Hole													Offset Site Error: 0.00 usft
Survey Program: 140-INC_ONLY<10													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)					
4,100.00	3,604.95	3,585.24	3,584.95	22.23	117.63	-91.08	-452.00	-1,215.76	1,272.51	1,132.73	139.78	9.104	
4,135.35	3,606.00	3,586.30	3,586.00	22.75	117.66	-90.00	-452.00	-1,215.76	1,283.35	1,143.00	140.35	9.144	
4,137.49	3,606.00	3,586.30	3,586.00	22.78	117.66	-89.98	-452.00	-1,215.76	1,284.02	1,143.64	140.38	9.147	
4,200.00	3,605.93	3,586.23	3,585.93	23.75	117.66	-89.98	-452.00	-1,215.76	1,305.00	1,163.64	141.36	9.232	
4,300.00	3,605.82	3,586.12	3,585.82	25.44	117.66	-89.97	-452.00	-1,215.76	1,343.93	1,200.87	143.05	9.395	
4,400.00	3,605.71	3,586.00	3,585.71	27.28	117.65	-89.96	-452.00	-1,215.76	1,388.98	1,244.08	144.89	9.586	
4,500.00	3,605.60	3,585.89	3,585.60	29.23	117.65	-89.96	-452.00	-1,215.76	1,439.57	1,292.72	146.85	9.803	
4,600.00	3,605.48	3,585.78	3,585.48	31.28	117.65	-89.95	-452.00	-1,215.76	1,495.16	1,346.25	148.90	10.041	
4,700.00	3,605.37	3,585.67	3,585.37	33.41	117.64	-89.95	-452.00	-1,215.76	1,555.19	1,404.16	151.03	10.297	
4,800.00	3,605.26	3,585.55	3,585.26	35.60	117.64	-89.94	-452.00	-1,215.76	1,619.18	1,465.96	153.22	10.568	
4,900.00	3,605.15	3,585.44	3,585.15	37.84	117.64	-89.94	-452.00	-1,215.76	1,686.67	1,531.21	155.46	10.849	
5,000.00	3,605.03	3,585.33	3,585.03	40.12	117.64	-89.93	-452.00	-1,215.76	1,757.26	1,599.51	157.75	11.139	
5,100.00	3,604.92	3,585.22	3,584.92	42.44	117.63	-89.93	-452.00	-1,215.76	1,830.60	1,670.53	160.07	11.436	
5,200.00	3,604.81	3,585.10	3,584.81	44.80	117.63	-89.92	-452.00	-1,215.76	1,906.36	1,743.94	162.43	11.737	
5,300.00	3,604.70	3,584.99	3,584.70	47.18	117.63	-89.92	-452.00	-1,215.76	1,984.27	1,819.47	164.81	12.040	
5,400.00	3,604.58	3,584.88	3,584.58	49.58	117.62	-89.91	-452.00	-1,215.76	2,064.09	1,896.88	167.21	12.344	
5,500.00	3,604.47	3,584.77	3,584.47	52.00	117.62	-89.91	-452.00	-1,215.76	2,145.60	1,975.97	169.63	12.649	
5,600.00	3,604.36	3,584.65	3,584.36	54.44	117.62	-89.90	-452.00	-1,215.76	2,228.61	2,056.54	172.07	12.952	
5,700.00	3,604.25	3,584.54	3,584.25	56.89	117.61	-89.90	-452.00	-1,215.76	2,312.97	2,138.45	174.52	13.253	
5,800.00	3,604.13	3,584.43	3,584.13	59.36	117.61	-89.89	-452.00	-1,215.76	2,398.53	2,221.55	176.98	13.552	
5,900.00	3,604.02	3,584.32	3,584.02	61.84	117.61	-89.89	-452.00	-1,215.76	2,485.17	2,305.71	179.46	13.848	
6,000.00	3,603.91	3,584.20	3,583.91	64.33	117.61	-89.88	-452.00	-1,215.76	2,572.78	2,390.83	181.95	14.140	
6,100.00	3,603.80	3,584.09	3,583.80	66.82	117.60	-89.87	-452.00	-1,215.76	2,661.26	2,476.82	184.44	14.429	
6,200.00	3,603.68	3,583.98	3,583.68	69.33	117.60	-89.87	-452.00	-1,215.76	2,750.53	2,563.59	186.94	14.713	
6,300.00	3,603.57	3,583.87	3,583.57	71.84	117.60	-89.86	-452.00	-1,215.76	2,840.52	2,651.07	189.45	14.993	
6,400.00	3,603.46	3,583.75	3,583.46	74.36	117.59	-89.86	-452.00	-1,215.76	2,931.15	2,739.19	191.97	15.269	
6,500.00	3,603.35	3,583.64	3,583.35	76.88	117.59	-89.85	-452.00	-1,215.76	3,022.38	2,827.89	194.49	15.540	
6,600.00	3,603.23	3,583.53	3,583.23	79.41	117.59	-89.85	-452.00	-1,215.76	3,114.15	2,917.13	197.01	15.807	
6,700.00	3,603.12	3,583.42	3,583.12	81.94	117.58	-89.84	-452.00	-1,215.76	3,206.40	3,006.86	199.55	16.068	
6,800.00	3,603.01	3,583.30	3,583.01	84.48	117.58	-89.84	-452.00	-1,215.76	3,299.11	3,097.03	202.08	16.326	
6,900.00	3,602.90	3,583.19	3,582.90	87.02	117.58	-89.83	-452.00	-1,215.76	3,392.24	3,187.61	204.62	16.578	
7,000.00	3,602.78	3,583.08	3,582.78	89.57	117.58	-89.83	-452.00	-1,215.76	3,485.74	3,278.58	207.16	16.826	
7,100.00	3,602.67	3,582.97	3,582.67	92.12	117.57	-89.82	-452.00	-1,215.76	3,579.60	3,369.89	209.71	17.069	
7,200.00	3,602.56	3,582.85	3,582.56	94.67	117.57	-89.82	-452.00	-1,215.76	3,673.77	3,461.52	212.26	17.308	
7,300.00	3,602.45	3,582.74	3,582.45	97.22	117.57	-89.81	-452.00	-1,215.76	3,768.25	3,553.44	214.81	17.542	
7,400.00	3,602.33	3,582.63	3,582.33	99.78	117.56	-89.81	-452.00	-1,215.76	3,863.01	3,645.65	217.36	17.772	
7,500.00	3,602.22	3,582.52	3,582.22	102.34	117.56	-89.80	-452.00	-1,215.76	3,958.03	3,738.11	219.92	17.997	
7,600.00	3,602.11	3,582.41	3,582.11	104.90	117.56	-89.80	-452.00	-1,215.76	4,053.28	3,830.80	222.48	18.219	
7,700.00	3,602.00	3,582.29	3,582.00	107.46	117.56	-89.79	-452.00	-1,215.76	4,148.76	3,923.72	225.04	18.436	
7,800.00	3,601.88	3,582.18	3,581.88	110.03	117.55	-89.79	-452.00	-1,215.76	4,244.45	4,016.84	227.60	18.648	
7,900.00	3,601.77	3,582.07	3,581.77	112.60	117.55	-89.78	-452.00	-1,215.76	4,340.33	4,110.16	230.17	18.857	
8,000.00	3,601.66	3,581.96	3,581.66	115.16	117.55	-89.77	-452.00	-1,215.76	4,436.39	4,203.66	232.73	19.062	
8,100.00	3,601.55	3,581.84	3,581.55	117.73	117.54	-89.77	-452.00	-1,215.76	4,532.63	4,297.32	235.30	19.263	
8,200.00	3,601.43	3,581.73	3,581.43	120.31	117.54	-89.76	-452.00	-1,215.76	4,629.02	4,391.15	237.87	19.460	
8,300.00	3,601.32	3,581.62	3,581.32	122.88	117.54	-89.76	-452.00	-1,215.76	4,725.56	4,485.12	240.44	19.654	
8,400.00	3,601.21	3,581.51	3,581.21	125.45	117.53	-89.75	-452.00	-1,215.76	4,822.25	4,579.23	243.01	19.844	
8,500.00	3,601.10	3,581.39	3,581.10	128.03	117.53	-89.75	-452.00	-1,215.76	4,919.06	4,673.48	245.59	20.030	
8,586.62	3,601.00	3,581.30	3,581.00	130.26	117.53	-89.74	-452.00	-1,215.76	5,003.02	4,755.21	247.81	20.189	

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



Koltek Energy Services
Anticollision Report



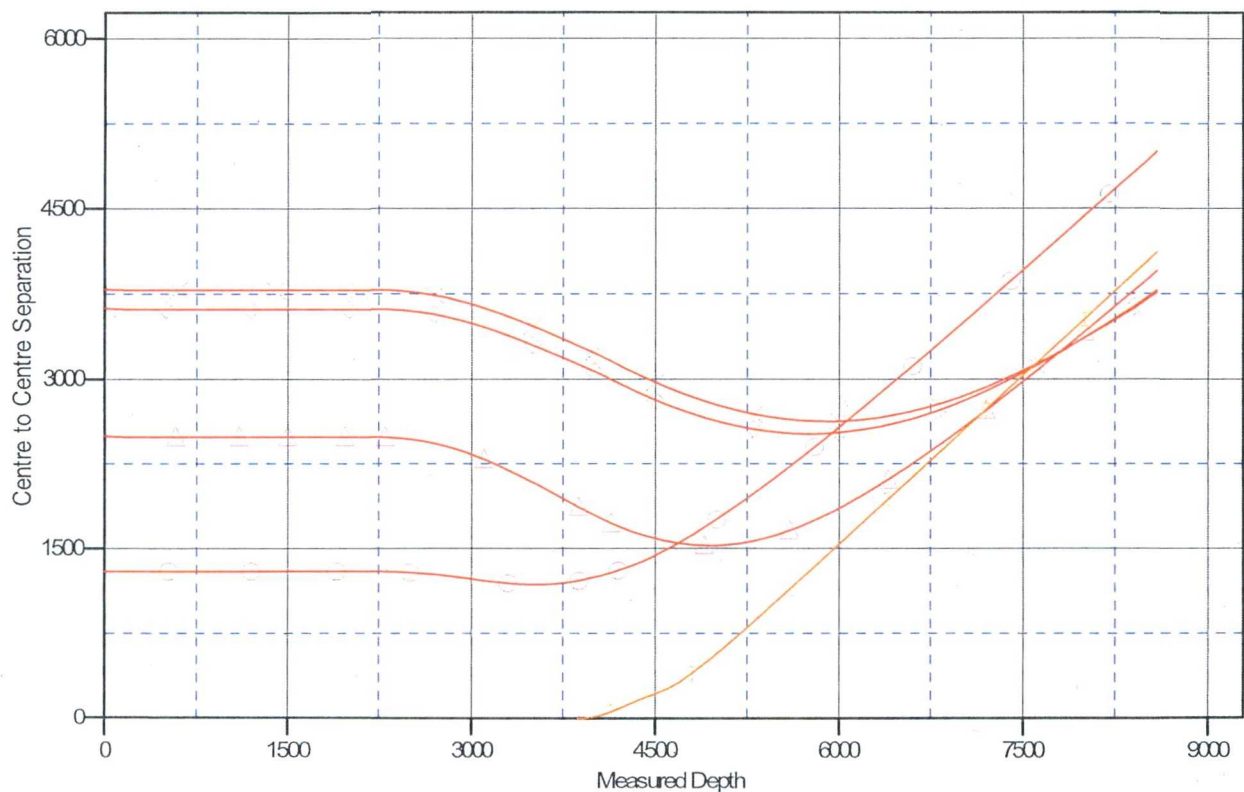
Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.21-T32N-R08W
Site Error: 0.00 usft
Reference Well: Trail Canyon 104H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well Trail Canyon 104H
TVD Reference: KB @ 6921.00usft
MD Reference: KB @ 6921.00usft
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 @ 6921.00usft
Offset Depths are relative to Offset Datum
Central Meridian is 107.83334°W

Coordinates are relative to: Trail Canyon 104H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico West 30
Grid Convergence at Surface is: 0.10°

Ladder Plot



LEGEND

- Trail Canyon 104S, Original Hole, Original Hole V0
- Trail Canyon 104, Original Hole, Original Hole V0
- Trail Canyon 104H, Pilot Hole, Rev0 V0
- Trail Canyon 102, Original Hole, Original Hole V0
- Trail Canyon 001, Original Hole, Original Hole V0



Koltek Energy Services
Anticollision Report



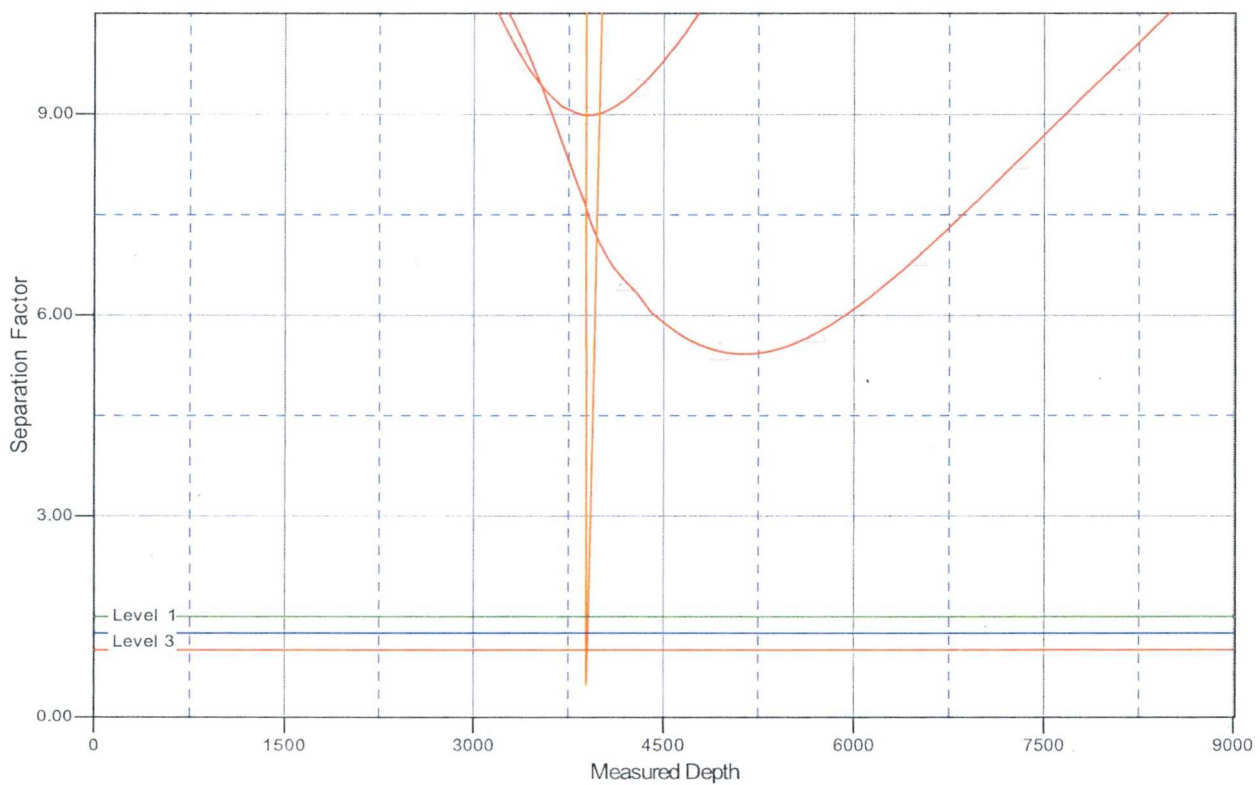
Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.21-T32N-R08W
Site Error: 0.00 usft
Reference Well: Trail Canyon 104H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well Trail Canyon 104H
TVD Reference: KB @ 6921.00usft
MD Reference: KB @ 6921.00usft
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 @ 6921.00usft
Offset Depths are relative to Offset Datum
Central Meridian is 107.83334°W

Coordinates are relative to: Trail Canyon 104H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico West 30
Grid Convergence at Surface is: 0.10°

Separation Factor Plot



LEGEND

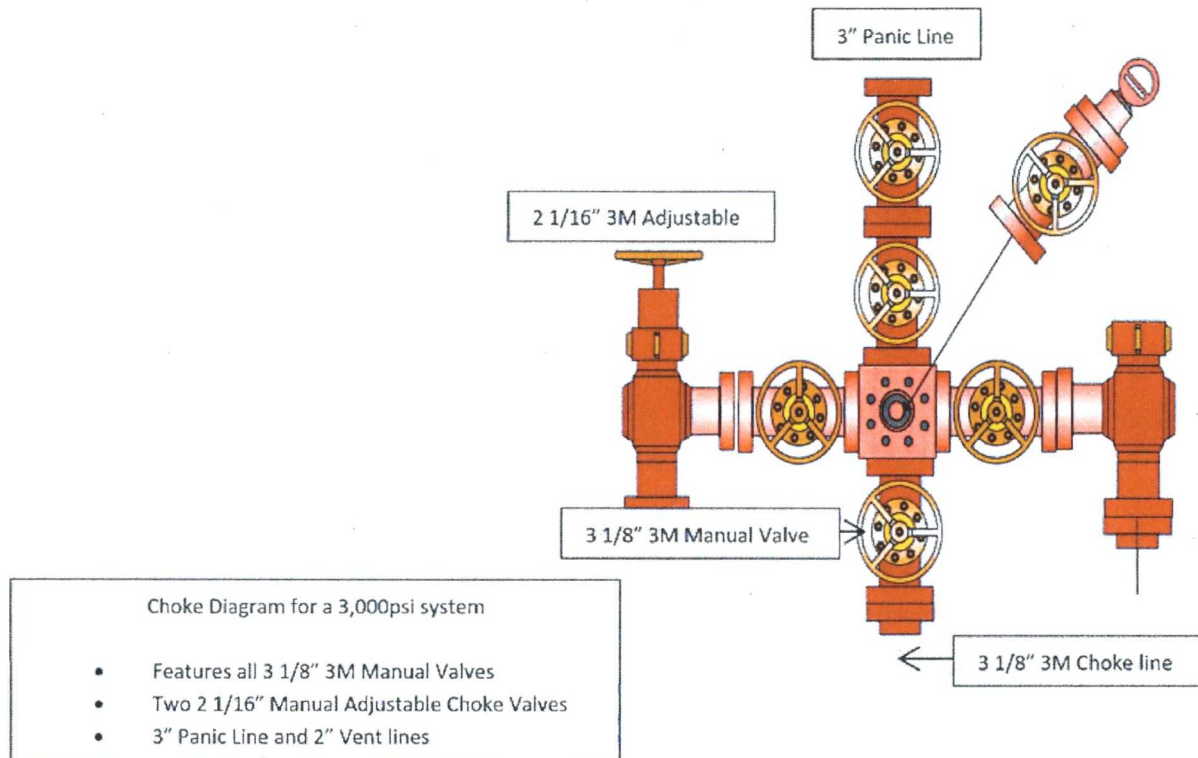
- Trail Canyon 104S, Original Hole, Original Hole V0
- Trail Canyon 102, Original Hole, Original Hole V0
- Trail Canyon 104, Original Hole, Original Hole V0
- Trail Canyon 001, Original Hole, Original Hole V0
- Trail Canyon 104H, Pilot Hole, Rev0 V0



Hilcorp Energy Company

Trail Canyon 104H

Choke Manifold Schematic – Aztec 777



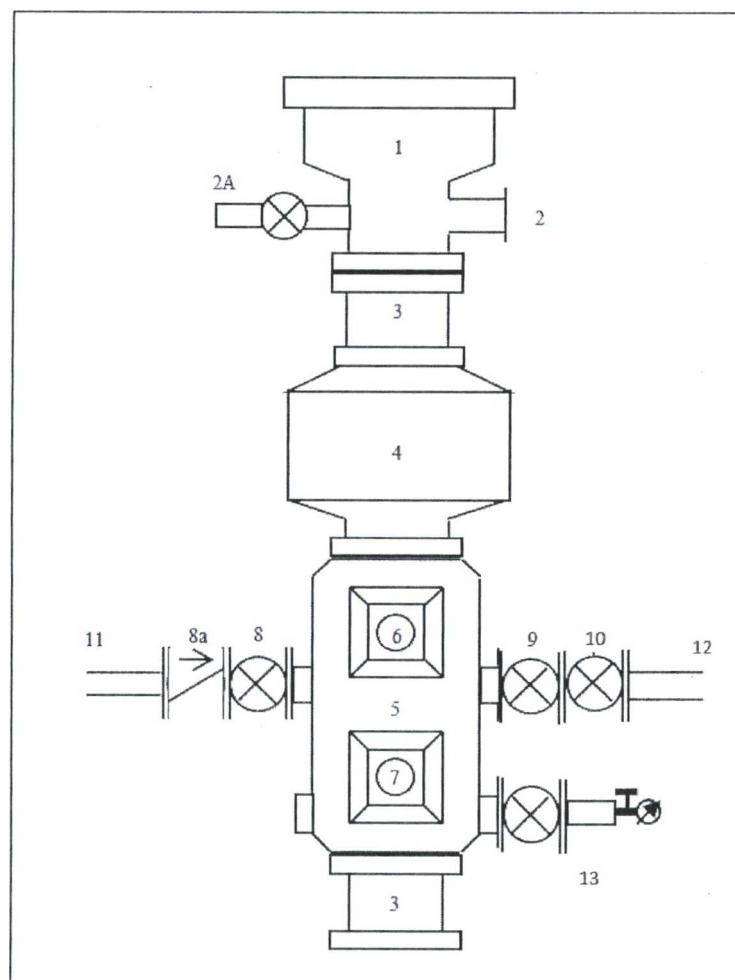
Trail Canyon 104H



Hilcorp Energy Company

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



Directions from the Intersection of US Hwy 550 & State Hwy 173

in Aztec, NM to Hilcorp Energy Company Trail Canyon #104H

1294' FSL & 399' FEL, Section 21, T32N, R8W, N.M.P.M., San Juan County, NM

Latitude: 36.965589°N Longitude: 107.673050°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 17.9 miles to existing roadway on left-hand side of State Hwy 511 @ Mile Marker 26;

Go Left (North-westerly) exiting State Hwy 511 onto existing roadway for 0.4 miles to fork in roadway;

Go Right (Northerly) for 0.6 miles to fork in roadway;

Go Left (Northerly) for 0.3 miles to fork in roadway;

Go Left (Westerly) for 0.2 miles to begin access on left-hand side of existing roadway, which continues for 77.7' to staked Hilcorp Trail Canyon #104H.