

State of New Mexico
Energy, Minerals and Natural Resources Department

Michelle Lujan Grisham
Governor

Sarah Cottrell Propst
Cabinet Secretary

Todd E. Leahy, JD, PhD
Deputy Secretary

Gabriel Wade, Acting Director
Oil Conservation Division



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

Operator Signature Date: 9/21/2018

Well information;

Operator Oilcorp, Well Name and Number San Juan 32-7 21nd 249H

API# 30-045-35886 Section 9, Township 32N, Range 7 E/W

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

- ☒ Notify Aztec OCD 24hrs prior to casing & cement.
- ☒ Hold C-104 for directional survey & "As Drilled" Plat - 5.9 compliance
- ☒ Hold C-104 for NSL, NSP, DHC
- ☐ Spacing rule violation. Operator must follow up with change of status notification on other well to be shut in or abandoned
- ☐ Regarding the use of a pit, closed loop system or below grade tank, the operator must comply with the following as applicable:
 - A pit requires a complete C-144 be submitted and approved prior to the construction or use of the pit, pursuant to 19.15.17.8.A
 - A closed loop system requires notification prior to use, pursuant to 19.15.17.9.A
 - A below grade tank requires a registration be filed prior to the construction or use of the below grade tank, pursuant to 19.15.17.8.C
- ☐ Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string
- ☐ Submit Gas Capture Plan form prior to spudding or initiating recompletion operations
- ☒ Regarding Hydraulic Fracturing, review EPA Underground Injection Control Guidance 84
- ☒ Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system.
- ☒ Well-bore communication is regulated under 19.15.29 NMAC. This requires well-bore Communication to be reported in accordance with 19.15.29.8.

B. B. B.
NMOCD Approved by Signature

4/2/19
Date

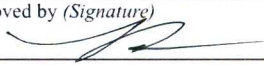
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☒ DRILL ☐ REENTER		5. Lease Serial No. NMNM0005540
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 32-7 / NMNM078423X
2. Name of Operator HILCORP ENERGY COMPANY		8. Lease Name and Well No. SAN JUAN 32-7 UNIT 249H
3a. Address 1111 Travis Street Houston TX 77002	3b. Phone No. (include area code) (713)209-2400	9. API Well No. 30-045-35886
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface NWSW / 2654 FSL / 421 FWL / LAT 36.997664 / LONG -107.579338 At proposed prod. zone SWNW / 2412 FNL / 355 FWL / LAT 36.983751 / LONG -107.580476		10. Field and Pool, or Exploratory BASIN FRUITLAND COAL
11. Sec., T. R. M. or Blk. and Survey or Area SEC 9 / T32N / R07W / NMP		12. County or Parish SAN JUAN
13. State NM		14. Distance in miles and direction from nearest town or post office*
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 421 feet	16. No of acres in lease 43.09	17. Spacing Unit dedicated to this well 364.22
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 100 feet	19. Proposed Depth 2768 feet / 5066 feet	20. BLM/BIA Bond No. in file FED: NMB001486
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 6339 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 09/21/2018
Title Operations/Regulatory Technician		
Approved by (Signature) 	Name (Printed/Typed) Richard A Fields	Date 3/5/19
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.

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)

DRILLING OPERATIONS
APPROVED AND SENT TO
COURTESY OF BLM ATTACHED
*GENERAL (Instructions on page 2)

NMOCD

San Juan Unit 249H



Hilcorp Energy Company

Technical Plan

1. Location

San Juan Unit 249H

SHL: 2654' FSL, 421' FWL, Sec 9, T32N, R7W

Lat-1 BHL: 2412' FNL, 355' FWL, Sec 16, T32N, R7W

GL: 6339'

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	1957'	Wet
Kirtland	2368'	Wet
Fruitland	2768'	Possible Gas/Water
Pictured Cliffs	3104'	Wet

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

Used the SJ 32-7 16-17 as the plugged well with approved NMOCD tops, correlated that well to the 37F and up to the 37 for projected expected FM regional tops

3. Pressure Control Equipment

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

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



Hilcorp Energy Company

San Juan Unit 249H

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' - 3,742.88' (MD)
Prod Liner (predrilled)	6-1/4"	4-1/2"	11.6# J-55/L-80	3,400' - 7,372.44' (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 - 3,391.06' MD / 2,955.32' TVD.

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

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



Hilcorp Energy Company

San Juan Unit 249H

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	3,742.88'	400	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%	844 ft ³	Surface
Production		N/A	N/A – Open hole with pre-drilled liner	N/A	N/A	N/A

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

C) The proposed centralizer program is shown below:

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

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



Hilcorp Energy Company

San Juan Unit 249H

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

5. Drilling Fluids

A) The proposed drilling fluid program is outlined below:

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

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

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

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

6. Abnormal Pressures & Hazards

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

7. Intermediate Hole Section / Pilot Hole

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



Hilcorp Energy Company

San Juan Unit 249H

8. Testing, Logging, Coring

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

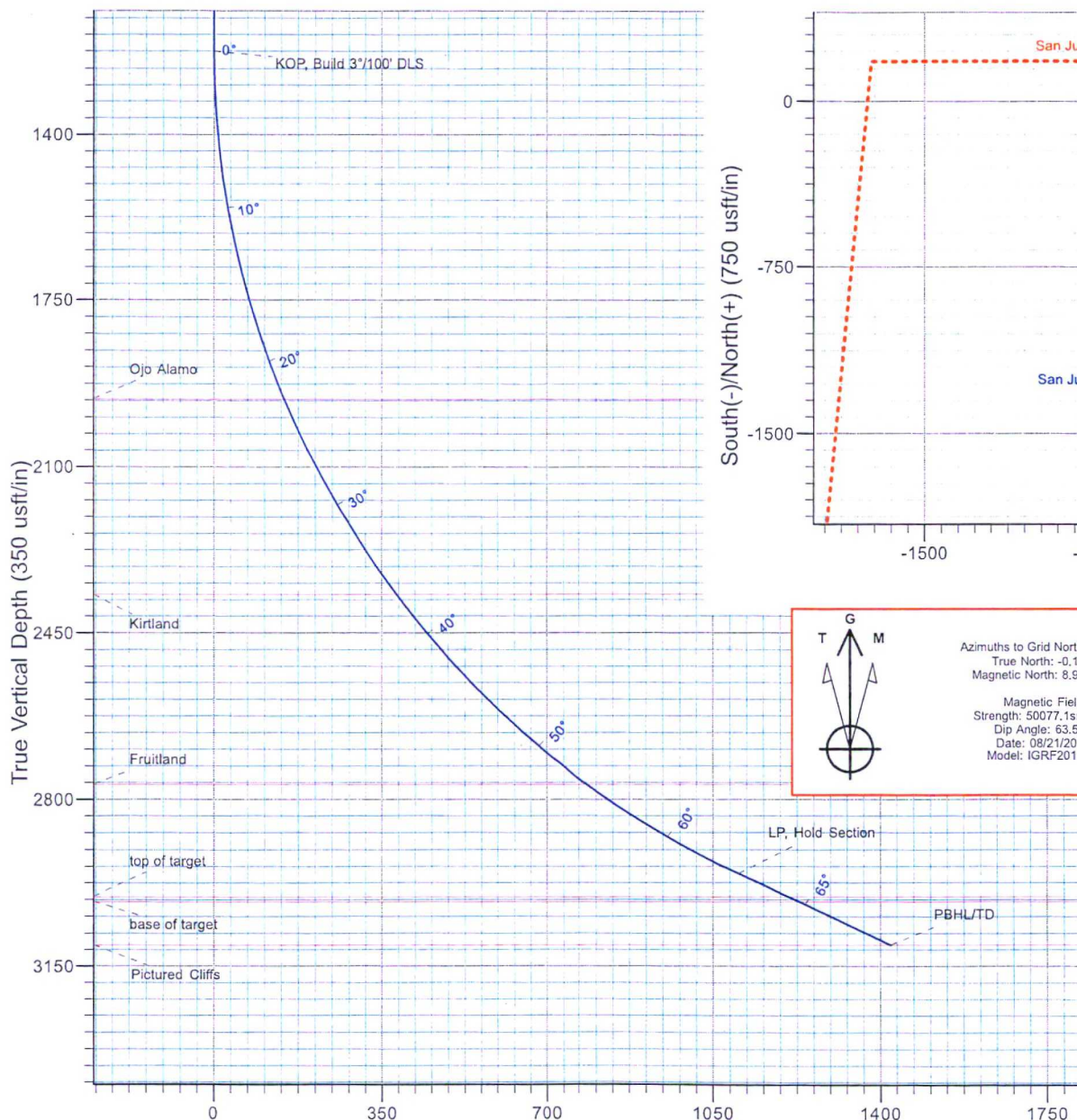
9. Directional Plan

The planned wellbore directional plan and plot is attached.

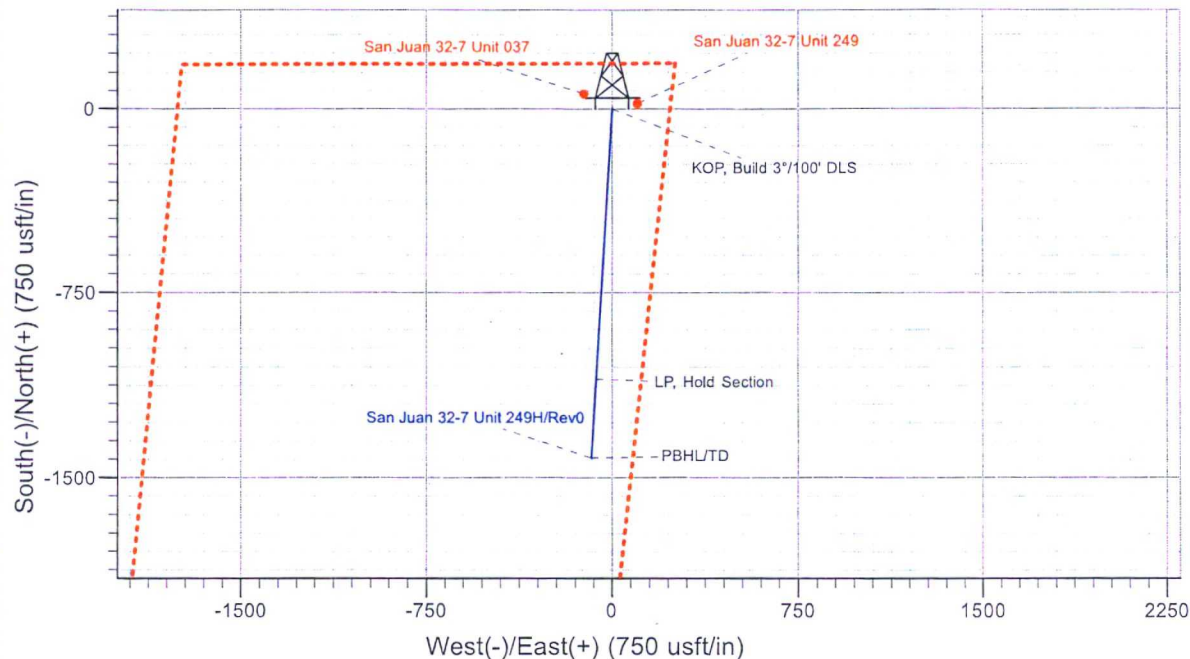
The planned directional plan is built off geological targets from offset wells. The production hole will be landed and drilled within target formation horizontally utilizing LWD equipment to help steer the wellbore. On site adjustments will be made to the directional plan as formation and hole indicates.



Company: Hilcorp Energy Company
 Field: San Juan Co., NM (NAD27)
 Location: Sec.09-T32N-R07W
 Well: San Juan 32-7 Unit 249H
 Borehole: Pilot Hole
 Plan: Rev0



Vertical Section at 183.38° (350 usft/in)



G
T M

Azimuths to Grid North
 True North: -0.15°
 Magnetic North: 8.94°

Magnetic Field
 Strength: 50077.1snT
 Dip Angle: 63.57°
 Date: 08/21/2018
 Model: IGRF2015

WELL DETAILS: San Juan 32-7 Unit 249H									
		GL 6339.00		KB @ 6354.00usft					
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude				
0.00	0.00	2182517.18	574350.98	36.99766°N	107.57873°W				
SECTION DETAILS									
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1224.40	0.00	0.00	1224.40	0.00	0.00	0.00	0.00	0.00
3	3391.06	65.00	183.38	2955.32	-1100.80	-65.01	3.00	183.38	1102.72
4	3742.88	65.00	183.38	3104.00	-1419.09	-83.81	0.00	0.00	1421.57
FORMATION TOP DETAILS					ANNOTATIONS				
TVDPath	MDPath	Formation			TVD	MD	Annotation		
1957.00	1976.27	Ojo Alamo			1224.40	1224.40	KOP, Build 3°/100' DLS		
2368.00	2450.50	Kirtland			2955.32	3391.06	LP, Hold Section		
2768.00	3021.84	Fruitland			3104.00	3742.88	PBHL/TD		
3004.00	3506.26	top of target							
3014.00	3529.92	base of target							
3104.00	3742.88	Pictured Cliffs							



Hilcorp Energy Company

San Juan Co., NM (NAD27)

Sec.09-T32N-R07W

San Juan 32-7 Unit 249H

Pilot Hole

Plan: Rev0

Standard Planning Report - Geographic

10 September, 2018





Koltek Energy Services
Planning Report - Geographic



Database: EDM 5000.1 Single User Db
Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Site: Sec.09-T32N-R07W
Well: San Juan 32-7 Unit 249H
Wellbore: Pilot Hole
Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 249H
TVD Reference: KB @ 6354.00usft
MD Reference: KB @ 6354.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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

Site	Sec.09-T32N-R07W				
Site Position:		Northing:	2,181,465.68 usft	Latitude:	36.99474°N
From:	Lat/Long	Easting:	578,341.97 usft	Longitude:	107.56507°W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.16 °

Well	San Juan 32-7 Unit 249H					
Well Position	+N/-S	0.00 usft	Northing:	2,182,517.18 usft	Latitude:	36.99766°N
	+E/-W	0.00 usft	Easting:	574,350.99 usft	Longitude:	107.57873°W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,339.00 usft

Wellbore	Pilot Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	08/21/18	9.10	63.57	50,077

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	183.38

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	
1,224.40	0.00	0.00	1,224.40	0.00	0.00	0.00	0.00	0.00	0.00	
3,391.06	65.00	183.38	2,955.32	-1,100.80	-65.01	3.00	3.00	0.00	183.38	
3,742.88	65.00	183.38	3,104.00	-1,419.09	-83.81	0.00	0.00	0.00	0.00	



Database: EDM 5000.1 Single User Db
Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Site: Sec.09-T32N-R07W
Well: San Juan 32-7 Unit 249H
Wellbore: Pilot Hole
Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 249H
TVD Reference: KB @ 6354.00usft
MD Reference: KB @ 6354.00usft
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	2,182,517.18	574,350.99	36.99766°N	107.57873°W
100.00	0.00	0.00	100.00	0.00	0.00	2,182,517.18	574,350.99	36.99766°N	107.57873°W
200.00	0.00	0.00	200.00	0.00	0.00	2,182,517.18	574,350.99	36.99766°N	107.57873°W
300.00	0.00	0.00	300.00	0.00	0.00	2,182,517.18	574,350.99	36.99766°N	107.57873°W
400.00	0.00	0.00	400.00	0.00	0.00	2,182,517.18	574,350.99	36.99766°N	107.57873°W
500.00	0.00	0.00	500.00	0.00	0.00	2,182,517.18	574,350.99	36.99766°N	107.57873°W
600.00	0.00	0.00	600.00	0.00	0.00	2,182,517.18	574,350.99	36.99766°N	107.57873°W
700.00	0.00	0.00	700.00	0.00	0.00	2,182,517.18	574,350.99	36.99766°N	107.57873°W
800.00	0.00	0.00	800.00	0.00	0.00	2,182,517.18	574,350.99	36.99766°N	107.57873°W
900.00	0.00	0.00	900.00	0.00	0.00	2,182,517.18	574,350.99	36.99766°N	107.57873°W
1,000.00	0.00	0.00	1,000.00	0.00	0.00	2,182,517.18	574,350.99	36.99766°N	107.57873°W
1,100.00	0.00	0.00	1,100.00	0.00	0.00	2,182,517.18	574,350.99	36.99766°N	107.57873°W
1,200.00	0.00	0.00	1,200.00	0.00	0.00	2,182,517.18	574,350.99	36.99766°N	107.57873°W
1,224.40	0.00	0.00	1,224.40	0.00	0.00	2,182,517.18	574,350.99	36.99766°N	107.57873°W
KOP, Build 3°/100' DLS									
1,300.00	2.27	183.38	1,299.98	-1.49	-0.09	2,182,515.69	574,350.90	36.99766°N	107.57873°W
1,400.00	5.27	183.38	1,399.75	-8.05	-0.48	2,182,509.13	574,350.51	36.99764°N	107.57873°W
1,500.00	8.27	183.38	1,499.04	-19.82	-1.17	2,182,497.36	574,349.82	36.99761°N	107.57873°W
1,600.00	11.27	183.38	1,597.58	-36.75	-2.17	2,182,480.43	574,348.82	36.99756°N	107.57874°W
1,700.00	14.27	183.38	1,695.10	-58.81	-3.47	2,182,458.37	574,347.51	36.99750°N	107.57874°W
1,800.00	17.27	183.38	1,791.33	-85.93	-5.08	2,182,431.25	574,345.91	36.99742°N	107.57875°W
1,900.00	20.27	183.38	1,886.00	-118.05	-6.97	2,182,399.13	574,344.01	36.99734°N	107.57876°W
2,000.00	23.27	183.38	1,978.86	-155.06	-9.16	2,182,362.12	574,341.83	36.99724°N	107.57876°W
2,100.00	26.27	183.38	2,069.65	-196.88	-11.63	2,182,320.30	574,339.36	36.99712°N	107.57877°W
2,200.00	29.27	183.38	2,158.12	-243.38	-14.37	2,182,273.80	574,336.61	36.99699°N	107.57878°W
2,300.00	32.27	183.38	2,244.04	-294.45	-17.39	2,182,222.73	574,333.60	36.99685°N	107.57879°W
2,400.00	35.27	183.38	2,327.16	-349.93	-20.67	2,182,167.25	574,330.32	36.99670°N	107.57880°W
2,500.00	38.27	183.38	2,407.25	-409.67	-24.20	2,182,107.51	574,326.79	36.99654°N	107.57882°W
2,600.00	41.27	183.38	2,484.11	-473.52	-27.97	2,182,043.66	574,323.02	36.99636°N	107.57883°W
2,700.00	44.27	183.38	2,557.51	-541.30	-31.97	2,181,975.88	574,319.02	36.99617°N	107.57885°W
2,800.00	47.27	183.38	2,627.26	-612.82	-36.19	2,181,904.36	574,314.79	36.99598°N	107.57886°W
2,900.00	50.27	183.38	2,693.16	-687.88	-40.63	2,181,829.30	574,310.36	36.99577°N	107.57888°W
3,000.00	53.27	183.38	2,755.04	-766.29	-45.26	2,181,750.89	574,305.73	36.99556°N	107.57889°W
3,100.00	56.27	183.38	2,812.72	-847.82	-50.07	2,181,669.36	574,300.91	36.99533°N	107.57891°W
3,200.00	59.27	183.38	2,866.05	-932.25	-55.06	2,181,584.93	574,295.93	36.99510°N	107.57893°W
3,300.00	62.27	183.38	2,914.88	-1,019.36	-60.20	2,181,497.82	574,290.78	36.99486°N	107.57895°W
3,391.06	65.00	183.38	2,955.32	-1,100.80	-65.01	2,181,416.38	574,285.97	36.99464°N	107.57896°W
LP, Hold Section									
3,400.00	65.00	183.38	2,959.09	-1,108.88	-65.49	2,181,408.30	574,285.49	36.99462°N	107.57897°W
3,500.00	65.00	183.38	3,001.36	-1,199.36	-70.83	2,181,317.82	574,280.15	36.99437°N	107.57898°W
3,600.00	65.00	183.38	3,043.62	-1,289.83	-76.18	2,181,227.35	574,274.81	36.99412°N	107.57900°W
3,700.00	65.00	183.38	3,085.88	-1,380.30	-81.52	2,181,136.88	574,269.46	36.99387°N	107.57902°W
3,742.88	65.00	183.38	3,104.00	-1,419.09	-83.81	2,181,098.09	574,267.17	36.99376°N	107.57903°W
PBHL/TD									



Koltek Energy Services
Planning Report - Geographic



Database: EDM 5000.1 Single User Db
Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Site: Sec.09-T32N-R07W
Well: San Juan 32-7 Unit 249H
Wellbore: Pilot Hole
Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 249H
TVD Reference: KB @ 6354.00usft
MD Reference: KB @ 6354.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,976.27	1,957.00	Ojo Alamo		0.00	
2,450.50	2,368.00	Kirtland		0.00	
3,021.84	2,768.00	Fruitland		0.00	
3,506.26	3,004.00	top of target		0.00	
3,529.92	3,014.00	base of target		0.00	
3,742.88	3,104.00	Pictured Cliffs		0.00	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,224.40	1,224.40	0.00	0.00	KOP, Build 3°/100' DLS
3,391.06	2,955.32	-1,100.80	-65.01	LP, Hold Section
3,742.88	3,104.00	-1,419.09	-83.81	PBHL/TD



Hilcorp Energy Company

San Juan Co., NM (NAD27)

Sec.09-T32N-R07W

San Juan 32-7 Unit 249H

Pilot Hole

Rev0

Anticollision Report

22 August, 2018





Koltek Energy Services

Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T32N-R07W
Site Error: 0.00 usft
Reference Well: San Juan 32-7 Unit 249H
Well Error: 0.00 usft
Reference Wellbore: Pilot Hole
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 249H
TVD Reference: KB @ 6354.00usft
MD Reference: KB @ 6354.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Reference	Rev0
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method:	Stations
Depth Range:	Unlimited
Results Limited by:	Maximum center-center distance of 10,000.00 usft
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	ISCSWA
Scan Method:	Closest Approach 3D
Error Surface:	Elliptical Conic
Casing Method:	Not applied

Survey Tool Program	Date	08/22/18
From (usft)	To (usft)	Survey (Wellbore)
0.00	3,742.88	Rev0 (Pilot Hole)
		Tool Name
		MWD
		Description
		MWD - Standard

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Sec.09-T32N-R07W						
San Juan 32-7 Unit 037 - Original Hole - Original Hole	900.00	882.07	129.25	107.17	5.853	CC
San Juan 32-7 Unit 037 - Original Hole - Original Hole	1,300.00	1,281.66	130.30	95.52	3.747	ES
San Juan 32-7 Unit 037 - Original Hole - Original Hole	1,600.00	1,579.47	149.63	105.39	3.383	SF
San Juan 32-7 Unit 249 - Original Hole - Original Hole	131.52	107.54	103.75	100.81	35.257	CC
San Juan 32-7 Unit 249 - Original Hole - Original Hole	1,400.00	1,375.89	106.41	60.68	2.327	ES
San Juan 32-7 Unit 249 - Original Hole - Original Hole	1,500.00	1,475.19	110.96	62.49	2.289	SF

Offset Design	Sec.09-T32N-R07W - San Juan 32-7 Unit 037 - Original Hole - Original Hole											Offset Site Error:	0.00 usft
Survey Program:	305-INC_ONLY<10											Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		Separation Factor	Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-61.75	61.59	-114.64	131.37				
100.00	100.00	82.19	82.19	0.10	0.84	-61.91	61.19	-114.64	129.95	129.01	0.93	139.119	
170.50	170.50	152.51	152.51	0.25	1.56	-61.95	61.09	-114.64	129.90	128.09	1.81	71.775	
200.00	200.00	181.93	181.92	0.32	1.86	-61.94	61.10	-114.64	129.91	127.73	2.18	59.696	
300.00	300.00	281.65	281.65	0.55	2.87	-61.81	61.44	-114.64	130.07	126.65	3.42	38.052	
400.00	400.00	382.37	382.36	0.77	5.40	-61.94	61.11	-114.64	129.91	123.74	6.17	21.053	
500.00	500.00	482.32	482.31	0.99	8.36	-62.14	60.60	-114.64	129.67	120.32	9.35	13.864	
600.00	600.00	582.27	582.25	1.22	11.32	-62.29	60.21	-114.64	129.49	116.95	12.54	10.330	
700.00	700.00	682.21	682.19	1.44	14.27	-62.40	59.92	-114.64	129.36	113.64	15.72	8.230	
800.00	800.00	782.14	782.11	1.67	17.23	-62.47	59.75	-114.64	129.28	110.38	18.90	6.840	
900.00	900.00	882.07	882.04	1.89	20.19	-62.49	59.70	-114.64	129.25	107.17	22.08	5.853	CC
910.77	910.77	892.83	892.80	1.92	20.51	-62.49	59.70	-114.64	129.25	106.83	22.42	5.764	
1,000.00	1,000.00	981.98	981.95	2.12	23.14	-62.47	59.75	-114.64	129.28	104.01	25.26	5.117	
1,100.00	1,100.00	1,081.89	1,081.86	2.34	26.10	-62.40	59.92	-114.64	129.35	100.91	28.44	4.548	
1,200.00	1,200.00	1,181.80	1,181.76	2.57	29.06	-62.29	60.20	-114.64	129.49	97.86	31.63	4.094	
1,224.40	1,224.40	1,206.17	1,206.14	2.62	29.78	-62.26	60.29	-114.64	129.53	97.12	32.40	3.998	
1,300.00	1,299.98	1,281.66	1,281.63	2.77	32.01	115.06	60.60	-114.64	130.30	95.52	34.78	3.747	ES
1,400.00	1,399.75	1,381.28	1,381.25	2.95	34.96	117.71	61.11	-114.64	133.48	95.61	37.87	3.525	
1,500.00	1,499.04	1,480.76	1,480.73	3.14	37.97	122.02	61.67	-114.64	139.70	98.72	40.98	3.409	
1,600.00	1,597.58	1,579.47	1,579.43	3.36	41.20	127.34	61.93	-114.64	149.63	105.39	44.23	3.383	SF
1,700.00	1,695.10	1,677.26	1,677.20	3.64	44.39	133.10	61.96	-114.64	164.14	116.84	47.31	3.470	

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



Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T32N-R07W
Site Error: 0.00 usft
Reference Well: San Juan 32-7 Unit 249H
Well Error: 0.00 usft
Reference Wellbore: Pilot Hole
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 249H
TVD Reference: KB @ 6354.00usft
MD Reference: KB @ 6354.00usft
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
Sec.09-T32N-R07W - San Juan 32-7 Unit 037 - Original Hole - Original Hole													Offset Well Error:	0.00 usft
Survey Program: 305-INC_ONLY<10														
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
1,800.00	1,791.33	1,773.89	1,773.82	3.98	47.56	138.78	61.76	-114.64	183.90	133.76	50.14	3.668		
1,900.00	1,886.00	1,868.07	1,868.00	4.41	50.34	143.96	61.59	-114.64	209.43	157.08	52.35	4.001		
2,000.00	1,978.86	1,960.94	1,960.86	4.94	52.80	148.54	61.59	-114.64	240.96	186.97	53.99	4.463		
2,100.00	2,069.65	2,051.73	2,051.65	5.57	55.20	152.41	61.59	-114.64	278.24	222.92	55.32	5.030		
2,200.00	2,158.12	2,140.21	2,140.12	6.29	57.55	155.61	61.59	-114.64	321.03	264.70	56.33	5.699		
2,300.00	2,244.04	2,227.43	2,227.34	7.12	60.30	158.27	61.30	-114.64	368.80	311.36	57.44	6.420		
2,400.00	2,327.16	2,310.41	2,310.31	8.04	63.01	160.38	61.04	-114.64	421.57	363.32	58.25	7.237		
2,500.00	2,407.25	2,390.29	2,390.18	9.05	65.63	162.09	60.85	-114.64	479.14	420.43	58.71	8.161		
2,600.00	2,484.11	2,466.84	2,466.73	10.15	68.13	163.46	60.74	-114.64	541.24	482.44	58.81	9.204		
2,700.00	2,557.51	2,539.86	2,539.75	11.33	70.52	164.55	60.68	-114.64	607.63	549.08	58.55	10.377		
2,800.00	2,627.26	2,609.14	2,609.02	12.59	72.79	165.39	60.68	-114.64	678.06	620.10	57.96	11.699		
2,900.00	2,693.16	2,674.50	2,674.38	13.93	74.92	166.03	60.73	-114.64	752.26	695.23	57.04	13.189		
3,000.00	2,755.04	2,735.76	2,735.63	15.33	76.93	166.46	60.81	-114.64	830.01	774.19	55.82	14.870		
3,100.00	2,812.72	2,792.75	2,792.62	16.79	78.79	166.72	60.93	-114.64	911.04	856.71	54.33	16.768		
3,200.00	2,866.05	2,845.32	2,845.19	18.31	80.51	166.78	61.06	-114.64	995.11	942.47	52.64	18.905		
3,300.00	2,914.88	2,893.34	2,893.21	19.89	82.08	166.64	61.21	-114.64	1,081.95	1,031.13	50.81	21.293		
3,391.06	2,955.32	2,933.01	2,932.88	21.37	83.38	166.32	61.35	-114.64	1,163.22	1,114.08	49.14	23.672		
3,400.00	2,959.09	2,936.71	2,936.58	21.51	83.50	166.41	61.37	-114.64	1,171.29	1,122.10	49.19	23.810		
3,500.00	3,001.36	2,978.07	2,977.94	23.16	84.85	167.35	61.53	-114.64	1,261.66	1,211.80	49.86	25.304		
3,600.00	3,043.62	3,023.01	3,022.87	24.81	86.43	168.23	61.65	-114.64	1,352.03	1,301.36	50.67	26.683		
3,700.00	3,085.88	3,065.37	3,065.23	26.47	87.95	168.96	61.74	-114.64	1,442.42	1,390.86	51.57	27.973		
3,742.88	3,104.00	3,083.54	3,083.40	27.18	88.60	169.24	61.77	-114.64	1,481.19	1,429.22	51.97	28.502		



Koltek Energy Services

Anticollision Report



Company: Hilcorp Energy Company
 Project: San Juan Co., NM (NAD27)
 Reference Site: Sec.09-T32N-R07W
 Site Error: 0.00 usft
 Reference Well: San Juan 32-7 Unit 249H
 Well Error: 0.00 usft
 Reference Wellbore: Pilot Hole
 Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 249H
 TVD Reference: KB @ 6354.00usft
 MD Reference: KB @ 6354.00usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at 2.00 sigma
 Database: EDM 5000.1 Single User Db
 Offset TVD Reference: Offset Datum

Offset Design Sec.09-T32N-R07W - San Juan 32-7 Unit 249 - Original Hole - Original Hole													Offset Site Error: 0.00 usft
Survey Program: 215-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	
0.00	0.00	0.00	0.00	0.00	0.00	77.72	22.12	101.57	106.68				
100.00	100.00	76.14	76.13	0.10	1.97	78.18	21.26	101.57	103.77	101.71	2.06	50.343	
131.52	131.52	107.54	107.53	0.17	2.78	78.22	21.18	101.57	103.75	100.81	2.94	35.257 CC	
200.00	200.00	175.74	175.74	0.32	4.54	78.02	21.56	101.57	103.83	98.97	4.86	21.376	
300.00	300.00	275.84	275.83	0.55	7.92	77.46	22.59	101.57	104.05	95.58	8.47	12.288	
400.00	400.00	375.91	375.88	0.77	11.82	77.19	23.09	101.57	104.16	91.56	12.59	8.271	
500.00	500.00	476.01	475.97	0.99	15.73	77.10	23.26	101.57	104.19	87.47	16.72	6.231	
600.00	600.00	576.15	576.08	1.22	19.63	77.19	23.09	101.57	104.16	83.31	20.85	4.996	
700.00	700.00	676.31	676.22	1.44	23.54	77.46	22.59	101.57	104.05	79.07	24.98	4.165	
800.00	800.00	776.11	776.00	1.67	26.95	77.72	22.12	101.57	103.95	75.33	28.62	3.632	
900.00	900.00	876.11	876.00	1.89	29.59	77.72	22.12	101.57	103.95	72.46	31.49	3.301	
1,000.00	1,000.00	976.12	976.00	2.12	32.23	77.72	22.12	101.57	103.95	69.59	34.35	3.026	
1,100.00	1,100.00	1,076.12	1,076.00	2.34	34.88	77.72	22.12	101.57	103.95	66.73	37.22	2.793	
1,200.00	1,200.00	1,176.13	1,176.00	2.57	37.52	77.72	22.12	101.57	103.95	63.86	40.09	2.593	
1,224.40	1,224.40	1,200.53	1,200.40	2.62	38.16	77.72	22.12	101.57	103.95	63.16	40.79	2.548	
1,300.00	1,299.98	1,276.11	1,275.98	2.77	40.16	-106.44	22.12	101.57	104.36	61.43	42.93	2.431	
1,400.00	1,399.75	1,375.89	1,375.75	2.95	42.80	-109.77	22.12	101.57	106.41	60.68	45.73	2.327 ES	
1,500.00	1,499.04	1,475.19	1,475.04	3.14	45.43	-115.35	22.12	101.57	110.96	62.49	48.47	2.289 SF	
1,600.00	1,597.58	1,573.73	1,573.58	3.36	48.04	-122.45	22.12	101.57	119.28	68.17	51.11	2.334	
1,700.00	1,695.10	1,671.25	1,671.10	3.64	50.62	-130.11	22.12	101.57	132.60	79.06	53.54	2.477	
1,800.00	1,791.33	1,767.48	1,767.33	3.98	53.17	-137.44	22.12	101.57	151.81	96.14	55.67	2.727	
1,900.00	1,886.00	1,862.16	1,862.00	4.41	55.68	-143.90	22.12	101.57	177.28	119.80	57.48	3.084	
2,000.00	1,978.86	1,955.02	1,954.86	4.94	58.14	-149.29	22.12	101.57	208.93	149.99	58.95	3.544	
2,100.00	2,069.65	2,045.82	2,045.65	5.57	60.54	-153.65	22.12	101.57	246.52	186.44	60.09	4.103	
2,200.00	2,158.12	2,134.30	2,134.12	6.29	62.89	-157.12	22.12	101.57	289.71	228.81	60.90	4.757	
2,300.00	2,244.04	2,220.22	2,220.04	7.12	65.16	-159.88	22.12	101.57	338.17	276.77	61.41	5.507	
2,400.00	2,327.16	2,303.34	2,303.16	8.04	67.36	-162.06	22.12	101.57	391.61	330.01	61.59	6.358	
2,500.00	2,407.25	2,383.44	2,383.25	9.05	69.48	-163.79	22.12	101.57	449.73	388.27	61.46	7.317	
2,600.00	2,484.11	2,460.30	2,460.11	10.15	71.52	-165.16	22.12	101.57	512.29	451.26	61.02	8.395	
2,700.00	2,557.51	2,533.71	2,533.51	11.33	73.46	-166.23	22.12	101.57	579.02	518.75	60.27	9.607	
2,800.00	2,627.26	2,603.46	2,603.26	12.59	75.31	-167.06	22.12	101.57	649.71	590.49	59.22	10.972	
2,900.00	2,693.16	2,669.37	2,669.16	13.93	77.06	-167.68	22.12	101.57	724.10	666.23	57.87	12.512	
3,000.00	2,755.04	2,731.25	2,731.04	15.33	78.70	-168.12	22.12	101.57	801.96	745.71	56.26	14.256	
3,100.00	2,812.72	2,788.93	2,788.72	16.79	80.23	-168.39	22.12	101.57	883.05	828.66	54.40	16.233	
3,200.00	2,866.05	2,842.26	2,842.05	18.31	81.64	-168.49	22.12	101.57	967.14	914.79	52.34	18.477	
3,300.00	2,914.88	2,891.10	2,890.88	19.89	82.93	-168.42	22.12	101.57	1,053.96	1,003.81	50.15	21.017	
3,391.06	2,955.32	2,931.53	2,931.32	21.37	84.00	-168.17	22.12	101.57	1,135.20	1,087.09	48.11	23.596	
3,400.00	2,959.09	2,935.31	2,935.09	21.51	84.10	-168.25	22.12	101.57	1,143.27	1,095.11	48.16	23.737	
3,500.00	3,001.36	2,977.58	2,977.36	23.16	85.22	-169.10	22.12	101.57	1,233.58	1,184.76	48.82	25.269	
3,600.00	3,043.62	3,019.84	3,019.62	24.81	86.34	-169.83	22.12	101.57	1,323.93	1,274.38	49.55	26.718	
3,700.00	3,085.88	3,062.10	3,061.88	26.47	87.46	-170.47	22.12	101.57	1,414.32	1,363.97	50.35	28.089	
3,742.88	3,104.00	3,080.23	3,080.00	27.18	87.94	-170.72	22.12	101.57	1,453.08	1,402.38	50.71	28.655	

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



Koltek Energy Services
Anticollision Report



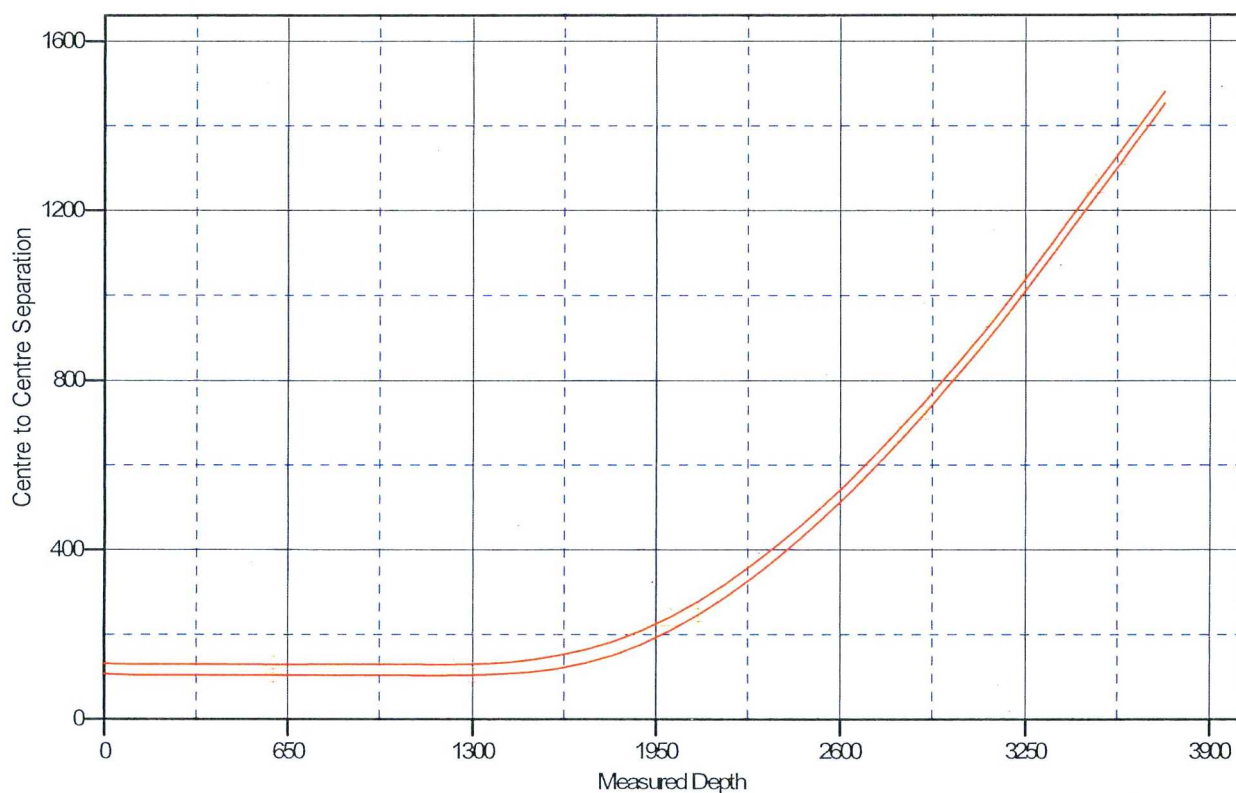
Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T32N-R07W
Site Error: 0.00 usft
Reference Well: San Juan 32-7 Unit 249H
Well Error: 0.00 usft
Reference Wellbore: Pilot Hole
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 249H
TVD Reference: KB @ 6354.00usft
MD Reference: KB @ 6354.00usft
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 @ 6354.00usft
Offset Depths are relative to Offset Datum
Central Meridian is 107° 50' 0.000 W

Coordinates are relative to: San Juan 32-7 Unit 249H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico West 30
Grid Convergence at Surface is: 0.15°

Ladder Plot



LEGEND

Juan 32-7 Unit037, Original Hole, Original Hole V0 — San Juan 32-7 Unit249, Original Hole, Original Hole V0



Koltek Energy Services
Anticollision Report



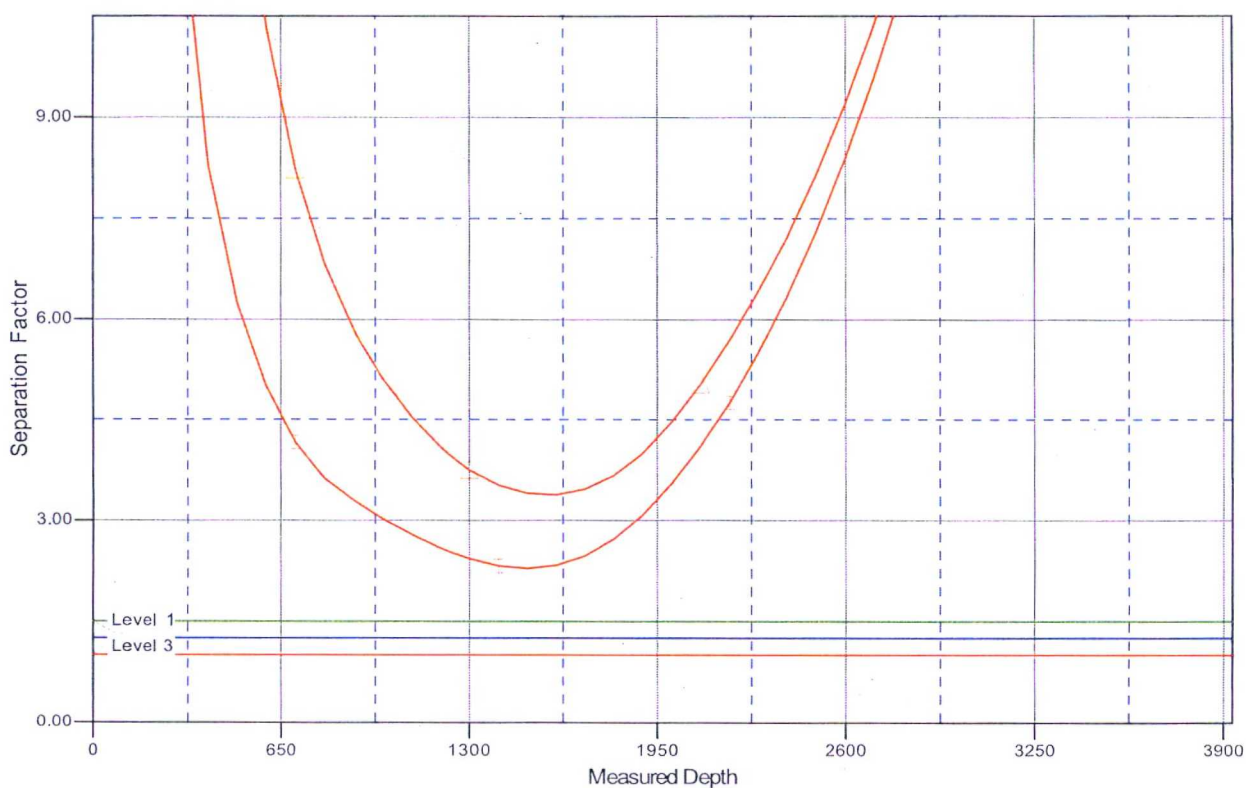
Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T32N-R07W
Site Error: 0.00 usft
Reference Well: San Juan 32-7 Unit 249H
Well Error: 0.00 usft
Reference Wellbore: Pilot Hole
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 249H
TVD Reference: KB @ 6354.00usft
MD Reference: KB @ 6354.00usft
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 @ 6354.00usft
Offset Depths are relative to Offset Datum
Central Meridian is 107° 50' 0.000 W

Coordinates are relative to: San Juan 32-7 Unit 249H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico West 30
Grid Convergence at Surface is: 0.15°

Separation Factor Plot



LEGEND

Juan 32-7 Unit037, Original Hole, Original Hole V0 — San Juan 32-7 Unit249, Original Hole, Original Hole V0



Company: Hilcorp Energy Company
 Field: San Juan Co., NM (NAD27)
 Location: Sec.09-T32N-R07W
 Well: San Juan 32-7 Unit 249H
 Borehole: Lat 1
 Plan: Rev0

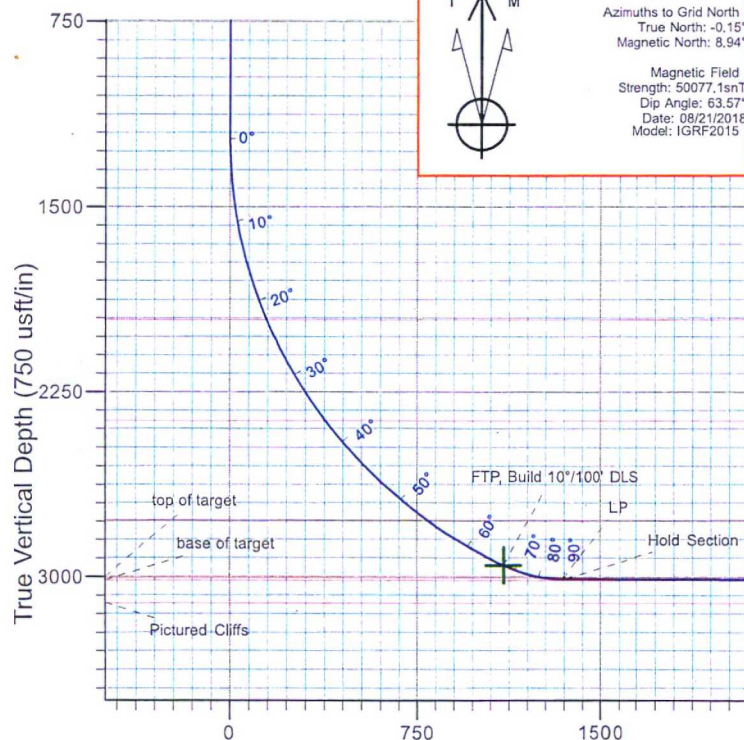
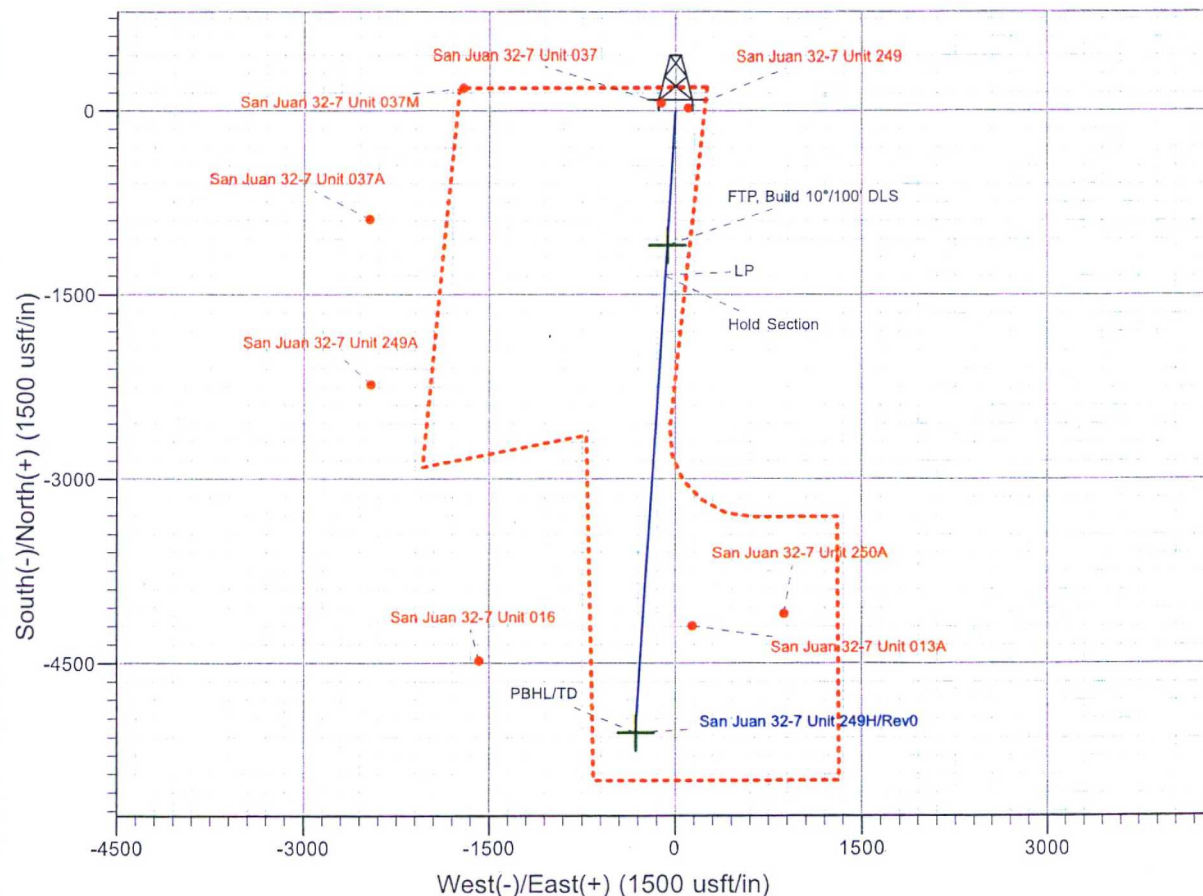
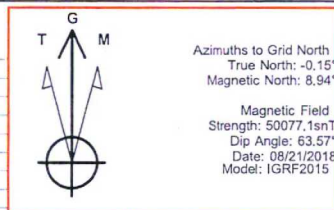


WELL DETAILS: San Juan 32-7 Unit 249H						
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	
0.00	0.00	2182517.18	574350.98	36.99766°N	107.57873°W	

SECTION DETAILS									
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec
1	3391.08	65.00	183.38	2955.32	-1100.80	-65.01	0.00	0.00	1102.71
2	3641.06	90.00	183.38	3009.00	-1342.52	-79.29	10.00	0.00	1344.85
3	3652.40	89.85	183.68	3009.01	-1353.84	-79.99	3.00	116.87	1356.19
4	7372.44	89.85	183.68	3019.00	-5066.18	-318.98	0.00	0.00	5076.21

DESIGN TARGET DETAILS					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
SJ 32-7 Unit 249H FTP	2955.32	-1100.80	-65.01	36.99464°N	107.57896°W
SJ 32-7 Unit 249H Toe	3019.00	-5066.18	-318.98	36.98375°N	107.57987°W

FORMATION TOP DETAILS			ANNOTATIONS		
TVDPath	MDPath	Formation	TVD	MD	Annotation
1957.00	1976.27	Ojo Alamo	2955.32	3391.06	FTP, Build 10°/100° DLS
2368.00	2450.50	Kirtland	3009.00	3641.06	LP
2768.00	3021.84	Fruitland	3009.01	3652.40	Hold Section
3004.00	3565.33	top of target	3019.00	7372.44	PBHL/TD
3014.00	5510.00	base of target			



San Juan 32-7 Unit 249H Rev0
 Created By: J Rieke Date: 14:49, September 10 2018



Hilcorp Energy Company

San Juan Co., NM (NAD27)

Sec.09-T32N-R07W

San Juan 32-7 Unit 249H

Lat 1

Plan: Rev0

Standard Planning Report - Geographic

10 September, 2018





Koltek Energy Services
Planning Report - Geographic



Database: EDM 5000.1 Single User Db
Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Site: Sec.09-T32N-R07W
Well: San Juan 32-7 Unit 249H
Wellbore: Lat 1
Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 249H
TVD Reference: KB @ 6354.00usft
MD Reference: KB @ 6354.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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

Site	Sec.09-T32N-R07W				
Site Position:		Northing:	2,181,465.68 usft	Latitude:	36.99474°N
From:	Lat/Long	Easting:	578,341.97 usft	Longitude:	107.56507°W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.16 °

Well	San Juan 32-7 Unit 249H					
Well Position	+N/-S	0.00 usft	Northing:	2,182,517.18 usft	Latitude:	36.99766°N
	+E/-W	0.00 usft	Easting:	574,350.99 usft	Longitude:	107.57873°W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,339.00 usft

Wellbore	Lat 1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	08/21/18	9.10	63.57	50,077

Design	Rev0				
Audit Notes:					
Version:	Phase:	PROTOTYPE	Tie On Depth:	3,391.06	
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	183.60	

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
3,391.06	65.00	183.38	2,955.32	-1,100.80	-65.01	0.00	0.00	0.00	0.00	
3,641.06	90.00	183.38	3,009.00	-1,342.52	-79.29	10.00	10.00	0.00	0.00	
3,652.40	89.85	183.68	3,009.01	-1,353.84	-79.99	3.00	-1.36	2.68	116.87	
7,372.44	89.85	183.68	3,019.00	-5,066.18	-318.98	0.00	0.00	0.00	0.00	SJ 32-7 Unit 249H 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.09-T32N-R07W
Well: San Juan 32-7 Unit 249H
Wellbore: Lat 1
Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 249H
TVD Reference: KB @ 6354.00usft
MD Reference: KB @ 6354.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
3,391.06	65.00	183.38	2,955.32	-1,100.80	-65.01	2,181,416.38	574,285.97	36.99464°N	107.57896°W
FTP, Build 10°/100' DLS									
3,400.00	65.89	183.38	2,959.03	-1,108.91	-65.49	2,181,408.27	574,285.49	36.99462°N	107.57897°W
3,500.00	75.89	183.38	2,991.72	-1,203.12	-71.06	2,181,314.06	574,279.93	36.99436°N	107.57899°W
3,600.00	85.89	183.38	3,007.53	-1,301.56	-76.87	2,181,215.62	574,274.11	36.99409°N	107.57901°W
3,641.06	90.00	183.38	3,009.00	-1,342.52	-79.29	2,181,174.66	574,271.70	36.99397°N	107.57901°W
LP									
3,652.40	89.85	183.68	3,009.01	-1,353.83	-79.99	2,181,163.34	574,271.00	36.99394°N	107.57902°W
Hold Section									
3,700.00	89.85	183.68	3,009.14	-1,401.34	-83.05	2,181,115.84	574,267.94	36.99381°N	107.57903°W
3,800.00	89.85	183.68	3,009.41	-1,501.13	-89.47	2,181,016.05	574,261.52	36.99354°N	107.57905°W
3,900.00	89.85	183.68	3,009.68	-1,600.92	-95.90	2,180,916.26	574,255.09	36.99326°N	107.57907°W
4,000.00	89.85	183.68	3,009.95	-1,700.72	-102.32	2,180,816.46	574,248.67	36.99299°N	107.57910°W
4,100.00	89.85	183.68	3,010.21	-1,800.51	-108.74	2,180,716.67	574,242.24	36.99272°N	107.57912°W
4,200.00	89.85	183.68	3,010.48	-1,900.30	-115.17	2,180,616.88	574,235.82	36.99244°N	107.57914°W
4,300.00	89.85	183.68	3,010.75	-2,000.09	-121.59	2,180,517.08	574,229.39	36.99217°N	107.57917°W
4,400.00	89.85	183.68	3,011.02	-2,099.89	-128.02	2,180,417.29	574,222.97	36.99189°N	107.57919°W
4,500.00	89.85	183.68	3,011.29	-2,199.68	-134.44	2,180,317.50	574,216.54	36.99162°N	107.57921°W
4,600.00	89.85	183.68	3,011.56	-2,299.47	-140.87	2,180,217.71	574,210.12	36.99135°N	107.57923°W
4,700.00	89.85	183.68	3,011.83	-2,399.27	-147.29	2,180,117.91	574,203.69	36.99107°N	107.57926°W
4,800.00	89.85	183.68	3,012.09	-2,499.06	-153.72	2,180,018.12	574,197.27	36.99080°N	107.57928°W
4,900.00	89.85	183.68	3,012.36	-2,598.85	-160.14	2,179,918.33	574,190.85	36.99052°N	107.57930°W
5,000.00	89.85	183.68	3,012.63	-2,698.65	-166.57	2,179,818.53	574,184.42	36.99025°N	107.57933°W
5,100.00	89.85	183.68	3,012.90	-2,798.44	-172.99	2,179,718.74	574,178.00	36.98998°N	107.57935°W
5,200.00	89.85	183.68	3,013.17	-2,898.23	-179.41	2,179,618.95	574,171.57	36.98970°N	107.57937°W
5,300.00	89.85	183.68	3,013.44	-2,998.03	-185.84	2,179,519.15	574,165.15	36.98943°N	107.57939°W
5,400.00	89.85	183.68	3,013.70	-3,097.82	-192.26	2,179,419.36	574,158.72	36.98915°N	107.57942°W
5,500.00	89.85	183.68	3,013.97	-3,197.61	-198.69	2,179,319.57	574,152.30	36.98888°N	107.57944°W
5,600.00	89.85	183.68	3,014.24	-3,297.40	-205.11	2,179,219.78	574,145.87	36.98861°N	107.57946°W
5,700.00	89.85	183.68	3,014.51	-3,397.20	-211.54	2,179,119.98	574,139.45	36.98833°N	107.57949°W
5,800.00	89.85	183.68	3,014.78	-3,496.99	-217.96	2,179,020.19	574,133.02	36.98806°N	107.57951°W
5,900.00	89.85	183.68	3,015.05	-3,596.78	-224.39	2,178,920.40	574,126.60	36.98778°N	107.57953°W
6,000.00	89.85	183.68	3,015.32	-3,696.58	-230.81	2,178,820.60	574,120.18	36.98751°N	107.57955°W
6,100.00	89.85	183.68	3,015.58	-3,796.37	-237.23	2,178,720.81	574,113.75	36.98723°N	107.57958°W
6,200.00	89.85	183.68	3,015.85	-3,896.16	-243.66	2,178,621.02	574,107.33	36.98696°N	107.57960°W
6,300.00	89.85	183.68	3,016.12	-3,995.96	-250.08	2,178,521.22	574,100.90	36.98669°N	107.57962°W
6,400.00	89.85	183.68	3,016.39	-4,095.75	-256.51	2,178,421.43	574,094.48	36.98641°N	107.57965°W
6,500.00	89.85	183.68	3,016.66	-4,195.54	-262.93	2,178,321.64	574,088.05	36.98614°N	107.57967°W
6,600.00	89.85	183.68	3,016.93	-4,295.34	-269.36	2,178,221.84	574,081.63	36.98586°N	107.57969°W
6,700.00	89.85	183.68	3,017.19	-4,395.13	-275.78	2,178,122.05	574,075.20	36.98559°N	107.57972°W
6,800.00	89.85	183.68	3,017.46	-4,494.92	-282.21	2,178,022.26	574,068.78	36.98532°N	107.57974°W
6,900.00	89.85	183.68	3,017.73	-4,594.71	-288.63	2,177,922.47	574,062.36	36.98504°N	107.57976°W
7,000.00	89.85	183.68	3,018.00	-4,694.51	-295.06	2,177,822.67	574,055.93	36.98477°N	107.57978°W
7,100.00	89.85	183.68	3,018.27	-4,794.30	-301.48	2,177,722.88	574,049.51	36.98449°N	107.57981°W
7,200.00	89.85	183.68	3,018.54	-4,894.09	-307.90	2,177,623.09	574,043.08	36.98422°N	107.57983°W
7,300.00	89.85	183.68	3,018.81	-4,993.89	-314.33	2,177,523.29	574,036.66	36.98395°N	107.57985°W
7,372.44	89.85	183.68	3,019.00	-5,066.18	-318.98	2,177,451.00	574,032.00	36.98375°N	107.57987°W
PBHL/TD									



Database: EDM 5000.1 Single User Db
Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Site: Sec.09-T32N-R07W
Well: San Juan 32-7 Unit 249H
Wellbore: Lat 1
Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 249H
TVD Reference: KB @ 6354.00usft
MD Reference: KB @ 6354.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SJ 32-7 Unit 249H FTP - plan hits target center - Point	0.00	0.00	2,955.32	-1,100.80	-65.01	2,181,416.38	574,285.97	36.99464°N	107.57896°W
SJ 32-7 Unit 249H Toe - plan hits target center - Point	0.00	0.00	3,019.00	-5,066.18	-318.98	2,177,451.00	574,032.00	36.98375°N	107.57987°W

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,976.27	1,957.00	Ojo Alamo		0.00	
2,450.50	2,368.00	Kirtland		0.00	
3,021.84	2,768.00	Fruitland		0.00	
3,565.33	3,004.00	top of target		0.00	
5,510.00	3,014.00	base of target		0.00	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
3,391.06	2,955.32	-1,100.80	-65.01	FTP, Build 10°/100' DLS
3,641.06	3,009.00	-1,342.52	-79.29	LP
3,652.40	3,009.01	-1,353.83	-79.99	Hold Section
7,372.44	3,019.00	-5,066.18	-318.98	PBHL/TD



Hilcorp Energy Company

San Juan Co., NM (NAD27)

Sec.09-T32N-R07W

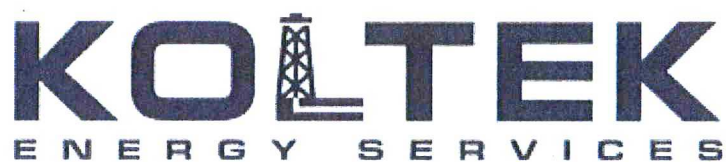
San Juan 32-7 Unit 249H

Lat 1

Rev0

Anticollision Report

22 August, 2018





Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T32N-R07W
Site Error: 0.00 usft
Reference Well: San Juan 32-7 Unit 249H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 249H
TVD Reference: KB @ 6354.00usft
MD Reference: KB @ 6354.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Reference Rev0

Filter type: NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method: Stations
Depth Range: Unlimited
Results Limited by: Maximum center-center distance of 10,000.00 usft
Warning Levels Evaluated at: 2.00 Sigma
Error Model: ISCWSA
Scan Method: Closest Approach 3D
Error Surface: Elliptical Conic
Casing Method: Not applied

Survey Tool Program Date 08/22/18

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	3,391.06	Rev0 (Pilot Hole)	MWD	MWD - Standard
3,391.06	7,372.44	Rev0 (Lat 1)		

Summary

Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Sec.08-T32N-R07W						
San Juan 32-7 Unit 037A - Original Hole - Original Hole	3,316.22	2,852.14	2,411.99	2,311.68	24.046	CC
San Juan 32-7 Unit 037A - Original Hole - Original Hole	3,400.00	2,888.99	2,413.16	2,309.86	23.361	ES
San Juan 32-7 Unit 037A - Original Hole - Original Hole	4,300.00	2,942.85	2,595.84	2,477.38	21.914	SF
San Juan 32-7 Unit 037M - Original Hole - Original Hole	1,240.32	1,147.29	1,718.63	1,672.14	36.970	CC
San Juan 32-7 Unit 037M - Original Hole - Original Hole	1,900.00	1,792.37	1,728.54	1,639.70	19.458	ES
San Juan 32-7 Unit 037M - Original Hole - Original Hole	3,550.00	2,908.20	2,174.55	2,038.43	15.975	SF
San Juan 32-7 Unit 249A - Original Hole - Original Hole	4,676.88	3,152.32	2,318.50	2,125.56	12.017	CC
San Juan 32-7 Unit 249A - Original Hole - Original Hole	4,700.00	3,152.38	2,318.61	2,125.28	11.993	ES
San Juan 32-7 Unit 249A - Original Hole - Original Hole	5,200.00	3,153.73	2,376.78	2,174.78	11.766	SF
Sec.09-T32N-R07W						
San Juan 32-7 Unit 037 - Original Hole - Original Hole	900.00	882.07	129.25	107.17	5.853	CC
San Juan 32-7 Unit 037 - Original Hole - Original Hole	1,300.00	1,281.66	130.30	95.52	3.747	ES
San Juan 32-7 Unit 037 - Original Hole - Original Hole	1,600.00	1,579.47	149.63	105.39	3.383	SF
San Juan 32-7 Unit 249 - Original Hole - Original Hole	131.52	107.54	103.75	100.81	35.257	CC
San Juan 32-7 Unit 249 - Original Hole - Original Hole	1,400.00	1,375.89	106.41	60.68	2.327	ES
San Juan 32-7 Unit 249 - Original Hole - Original Hole	1,500.00	1,475.19	110.96	62.49	2.289	SF
Sec.16-T32N-R07W						
San Juan 32-7 Unit 013A - Original Hole - Original Hole	6,479.73	3,315.04	398.70	200.81	2.015	CC, ES
San Juan 32-7 Unit 013A - Original Hole - Original Hole	6,500.00	3,315.09	399.21	200.96	2.014	SF
San Juan 32-7 Unit 250A - Original Hole - Original Hole	6,332.40	3,321.39	1,126.49	956.11	6.612	CC, ES
San Juan 32-7 Unit 250A - Original Hole - Original Hole	6,500.00	3,321.84	1,138.89	965.46	6.567	SF
Sec.17-T32N-R07W						
San Juan 32-7 Unit 016 - Original Hole - Original Hole	6,870.66	3,200.65	1,296.33	1,205.95	14.343	CC
San Juan 32-7 Unit 016 - Original Hole - Original Hole	6,900.00	3,200.73	1,296.66	1,205.75	14.263	ES
San Juan 32-7 Unit 016 - Original Hole - Original Hole	7,200.00	3,201.54	1,337.51	1,241.14	13.879	SF

Offset Design Sec.08-T32N-R07W - San Juan 32-7 Unit 037A - Original Hole - Original Hole

Survey Program: 155-INC_ONLY<10

Offset Site Error: 0.00 usft

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)	Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning

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



Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T32N-R07W
Site Error: 0.00 usft
Reference Well: San Juan 32-7 Unit 249H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 249H
TVD Reference: KB @ 6354.00usft
MD Reference: KB @ 6354.00usft
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: 155-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 Tooface (")	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-109.85	-891.17	-2,468.83	2,625.71					
100.00	100.00	26.44	26.44	0.10	0.19	-109.85	-891.26	-2,468.83	2,624.78	2,624.49	0.29	9,113.792		
200.00	200.00	131.72	131.72	0.32	0.96	-109.85	-891.25	-2,468.83	2,624.78	2,623.50	1.28	2,053.149		
281.91	281.91	210.91	210.91	0.50	1.94	-109.85	-891.17	-2,468.83	2,624.75	2,622.30	2.45	1,073.450		
300.00	300.00	229.00	229.00	0.55	2.20	-109.85	-891.17	-2,468.83	2,624.75	2,622.00	2.75	954.796		
345.90	345.90	274.90	274.90	0.65	2.87	-109.85	-891.17	-2,468.83	2,624.75	2,621.23	3.52	745.686		
400.00	400.00	321.92	321.92	0.77	3.73	-109.85	-891.29	-2,468.83	2,624.80	2,620.30	4.50	583.152		
500.00	500.00	426.77	426.77	0.99	6.49	-109.86	-891.84	-2,468.83	2,624.98	2,617.49	7.48	350.707		
600.00	600.00	531.60	531.59	1.22	9.25	-109.86	-891.82	-2,468.83	2,624.97	2,614.50	10.47	250.767		
700.00	700.00	644.00	643.99	1.44	12.21	-109.85	-891.17	-2,468.83	2,624.79	2,611.14	13.65	192.290		
800.00	800.00	732.05	732.03	1.67	14.81	-109.84	-890.73	-2,468.83	2,624.60	2,608.12	16.48	159.300		
899.50	899.50	828.51	828.49	1.89	17.66	-109.84	-890.56	-2,468.83	2,624.54	2,604.99	19.55	134.254		
900.00	900.00	829.00	828.97	1.89	17.67	-109.84	-890.56	-2,468.83	2,624.54	2,604.98	19.56	134.148		
1,000.00	1,000.00	925.97	925.93	2.12	20.54	-109.84	-890.73	-2,468.83	2,624.60	2,601.95	22.65	115.857		
1,100.00	1,100.00	1,029.05	1,029.00	2.34	23.43	-109.85	-891.17	-2,468.83	2,624.75	2,598.97	25.78	101.827		
1,200.00	1,200.00	1,129.05	1,129.00	2.57	25.47	-109.85	-891.17	-2,468.83	2,624.75	2,596.71	28.04	93.613		
1,224.40	1,224.40	1,153.45	1,153.40	2.62	25.97	-109.85	-891.17	-2,468.83	2,624.75	2,596.16	28.59	91.805		
1,300.00	1,299.98	1,229.03	1,228.98	2.77	27.51	66.82	-891.17	-2,468.83	2,624.16	2,593.88	30.28	86.668		
1,400.00	1,399.75	1,328.81	1,328.75	2.95	29.54	67.02	-891.17	-2,468.83	2,621.57	2,589.10	32.47	80.732		
1,500.00	1,499.04	1,424.71	1,424.65	3.14	32.12	67.37	-891.52	-2,468.83	2,617.10	2,581.88	35.22	74.303		
1,600.00	1,597.58	1,526.67	1,526.60	3.36	35.14	67.89	-891.72	-2,468.83	2,610.63	2,572.21	38.42	67.957		
1,700.00	1,695.10	1,627.38	1,627.31	3.64	38.12	68.59	-891.53	-2,468.83	2,602.19	2,560.59	41.61	62.542		
1,800.00	1,791.33	1,720.40	1,720.33	3.98	41.08	69.41	-891.17	-2,468.83	2,592.00	2,547.16	44.84	57.802		
1,900.00	1,886.00	1,815.08	1,815.00	4.41	44.76	70.37	-891.17	-2,468.83	2,580.40	2,531.54	48.86	52.812		
2,000.00	1,978.86	1,907.95	1,907.86	4.94	48.37	71.47	-891.17	-2,468.83	2,567.45	2,514.55	52.90	48.532		
2,100.00	2,069.65	1,998.75	1,998.65	5.57	51.89	72.70	-891.17	-2,468.83	2,553.40	2,496.43	56.97	44.817		
2,200.00	2,158.12	2,089.27	2,089.16	6.29	55.09	74.05	-890.97	-2,468.83	2,538.45	2,477.60	60.85	41.719		
2,300.00	2,244.04	2,173.84	2,173.72	7.12	57.86	75.47	-890.79	-2,468.83	2,522.93	2,458.52	64.41	39.169		
2,400.00	2,327.16	2,255.86	2,255.73	8.04	60.54	76.95	-890.78	-2,468.83	2,507.19	2,439.17	68.02	36.858		
2,500.00	2,407.25	2,335.13	2,334.99	9.05	63.13	78.49	-890.91	-2,468.83	2,491.55	2,419.88	71.67	34.765		
2,600.00	2,484.11	2,411.47	2,411.32	10.15	65.63	80.06	-891.18	-2,468.83	2,476.34	2,401.00	75.33	32.872		
2,700.00	2,557.51	2,485.70	2,485.54	11.33	68.06	81.65	-891.44	-2,468.83	2,461.89	2,382.85	79.03	31.149		
2,800.00	2,627.26	2,556.04	2,555.88	12.59	70.36	83.23	-891.59	-2,468.83	2,448.56	2,365.86	82.69	29.610		
2,900.00	2,693.16	2,622.32	2,622.16	13.93	72.53	84.75	-891.64	-2,468.83	2,436.73	2,350.44	86.29	28.239		
3,000.00	2,755.04	2,684.36	2,684.19	15.33	74.55	86.20	-891.61	-2,468.83	2,426.81	2,337.01	89.80	27.025		
3,100.00	2,812.72	2,741.98	2,741.81	16.79	76.44	87.55	-891.50	-2,468.83	2,419.15	2,325.95	93.20	25.956		
3,200.00	2,866.05	2,795.06	2,794.89	18.31	78.17	88.76	-891.35	-2,468.83	2,414.12	2,317.63	96.49	25.020		
3,300.00	2,914.88	2,843.00	2,842.83	19.89	79.74	89.82	-891.17	-2,468.83	2,412.03	2,312.40	99.63	24.209		
3,316.22	2,922.36	2,852.14	2,851.97	20.15	80.16	90.02	-891.21	-2,468.83	2,411.99	2,311.68	100.31	24.046 CC		
3,391.06	2,955.32	2,885.26	2,885.08	21.37	81.65	90.69	-891.33	-2,468.83	2,412.92	2,309.91	103.01	23.424		
3,400.00	2,959.03	2,888.99	2,888.81	21.48	81.82	90.75	-891.35	-2,468.83	2,413.16	2,309.86	103.30	23.361 ES		
3,450.00	2,977.44	2,907.48	2,907.30	22.02	82.66	90.97	-891.41	-2,468.83	2,415.06	2,310.39	104.67	23.074		
3,500.00	2,991.72	2,921.85	2,921.67	22.60	83.30	91.00	-891.46	-2,468.83	2,417.94	2,312.05	105.89	22.835		
3,550.00	3,001.78	2,931.99	2,931.80	23.21	83.76	90.85	-891.48	-2,468.83	2,421.86	2,314.90	106.96	22.643		
3,600.00	3,007.53	2,937.84	2,937.65	23.85	84.03	90.48	-891.50	-2,468.83	2,426.84	2,318.97	107.87	22.498		
3,641.06	3,009.00	2,939.41	2,939.22	24.39	84.10	90.03	-891.50	-2,468.83	2,431.71	2,323.23	108.48	22.415		
3,652.11	3,009.01	2,939.45	2,939.26	24.53	84.10	90.05	-891.50	-2,468.83	2,433.11	2,324.48	108.63	22.398		
3,700.00	3,009.14	2,939.70	2,939.52	25.16	84.11	90.06	-891.51	-2,468.83	2,439.63	2,330.35	109.27	22.326		
3,800.00	3,009.41	2,940.23	2,940.05	26.56	84.13	90.07	-891.51	-2,468.83	2,456.19	2,345.50	110.69	22.189		
3,900.00	3,009.68	2,940.76	2,940.57	28.01	84.16	90.08	-891.51	-2,468.83	2,476.69	2,364.52	112.17	22.080		
4,000.00	3,009.95	2,941.28	2,941.10	29.50	84.18	90.09	-891.51	-2,468.83	2,501.02	2,387.33	113.69	21.999		
4,100.00	3,010.22	2,941.81	2,941.62	31.04	84.21	90.11	-891.51	-2,468.83	2,529.07	2,413.82	115.24	21.945		

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



Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T32N-R07W
Site Error: 0.00 usft
Reference Well: San Juan 32-7 Unit 249H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 249H
TVD Reference: KB @ 6354.00usft
MD Reference: KB @ 6354.00usft
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.08-T32N-R07W - San Juan 32-7 Unit 037A - Original Hole - Original Hole													Offset Site Error:	0.00 usft
Survey Program: 155-INC_ONLY<10													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
4,200.00	3,010.48	2,942.33	2,942.14	32.61	84.23	90.12	-891.51	-2,468.83	2,560.72	2,443.88	116.84	21.917		
4,300.00	3,010.75	2,942.85	2,942.66	34.21	84.25	90.13	-891.51	-2,468.83	2,595.84	2,477.38	118.46	21.914 SF		
4,400.00	3,011.02	2,943.37	2,943.18	35.83	84.28	90.14	-891.52	-2,468.83	2,634.29	2,514.19	120.10	21.933		
4,500.00	3,011.29	2,943.88	2,943.70	37.47	84.30	90.15	-891.52	-2,468.83	2,675.93	2,554.15	121.77	21.975		
4,600.00	3,011.56	2,944.40	2,944.21	39.14	84.32	90.17	-891.52	-2,468.83	2,720.60	2,597.14	123.46	22.036		
4,700.00	3,011.83	2,944.91	2,944.72	40.82	84.35	90.18	-891.52	-2,468.83	2,768.17	2,643.01	125.16	22.117		
4,800.00	3,012.09	2,945.42	2,945.23	42.51	84.37	90.19	-891.52	-2,468.83	2,818.49	2,691.61	126.88	22.213		
4,900.00	3,012.36	2,945.93	2,945.74	44.22	84.39	90.20	-891.52	-2,468.83	2,871.40	2,742.79	128.61	22.326		
5,000.00	3,012.63	2,946.44	2,946.25	45.94	84.41	90.22	-891.52	-2,468.83	2,926.78	2,796.43	130.36	22.452		
5,100.00	3,012.90	2,946.94	2,946.76	47.68	84.44	90.23	-891.52	-2,468.83	2,984.49	2,852.37	132.11	22.591		
5,200.00	3,013.17	2,947.45	2,947.26	49.42	84.46	90.24	-891.53	-2,468.83	3,044.38	2,910.51	133.87	22.741		
5,300.00	3,013.44	2,947.95	2,947.76	51.16	84.48	90.25	-891.53	-2,468.83	3,106.34	2,970.69	135.65	22.900		
5,400.00	3,013.70	2,948.45	2,948.26	52.92	84.51	90.26	-891.53	-2,468.83	3,170.24	3,032.82	137.42	23.069		
5,500.00	3,013.97	2,948.95	2,948.76	54.68	84.53	90.27	-891.53	-2,468.83	3,235.97	3,096.76	139.21	23.245		
5,600.00	3,014.24	2,949.45	2,949.26	56.45	84.55	90.29	-891.53	-2,468.83	3,303.43	3,162.42	141.00	23.428		
5,700.00	3,014.51	2,949.94	2,949.75	58.23	84.57	90.30	-891.53	-2,468.83	3,372.49	3,229.69	142.80	23.617		
5,800.00	3,014.78	2,950.44	2,950.25	60.01	84.60	90.31	-891.53	-2,468.83	3,443.08	3,298.48	144.60	23.811		
5,900.00	3,015.05	2,950.93	2,950.74	61.79	84.62	90.32	-891.53	-2,468.83	3,515.10	3,368.69	146.41	24.009		
6,000.00	3,015.32	2,951.42	2,951.23	63.58	84.64	90.33	-891.54	-2,468.83	3,588.45	3,440.23	148.22	24.210		
6,100.00	3,015.58	2,951.91	2,951.72	65.38	84.66	90.35	-891.54	-2,468.83	3,663.07	3,513.03	150.03	24.415		
6,200.00	3,015.85	2,952.40	2,952.21	67.17	84.68	90.36	-891.54	-2,468.83	3,738.87	3,587.02	151.85	24.622		
6,300.00	3,016.12	2,952.88	2,952.69	68.97	84.71	90.37	-891.54	-2,468.83	3,815.79	3,662.12	153.67	24.830		
6,400.00	3,016.39	2,953.37	2,953.18	70.78	84.73	90.38	-891.54	-2,468.83	3,893.76	3,738.26	155.50	25.040		
6,500.00	3,016.66	2,953.85	2,953.66	72.58	84.75	90.39	-891.54	-2,468.83	3,972.71	3,815.38	157.33	25.251		
6,600.00	3,016.93	2,954.33	2,954.14	74.39	84.77	90.40	-891.54	-2,468.83	4,052.59	3,893.44	159.16	25.463		
6,700.00	3,017.19	2,954.81	2,954.62	76.20	84.79	90.41	-891.54	-2,468.83	4,133.35	3,972.36	160.99	25.675		
6,800.00	3,017.46	2,955.29	2,955.10	78.01	84.81	90.43	-891.54	-2,468.83	4,214.94	4,052.11	162.82	25.886		
6,900.00	3,017.73	2,955.76	2,955.57	79.83	84.84	90.44	-891.55	-2,468.83	4,297.30	4,132.64	164.66	26.098		
7,000.00	3,018.00	2,956.24	2,956.05	81.65	84.86	90.45	-891.55	-2,468.83	4,380.40	4,213.90	166.50	26.309		
7,100.00	3,018.27	2,956.71	2,956.52	83.47	84.88	90.46	-891.55	-2,468.83	4,464.19	4,295.85	168.34	26.519		
7,200.00	3,018.54	2,843.00	2,842.83	85.29	79.74	87.76	-891.17	-2,468.83	4,550.16	4,385.21	164.95	27.585		
7,300.00	3,018.81	2,843.00	2,842.83	87.11	79.74	87.76	-891.17	-2,468.83	4,635.21	4,468.44	166.77	27.794		
7,372.44	3,019.00	2,843.00	2,842.83	88.43	79.74	87.76	-891.17	-2,468.83	4,697.20	4,529.10	168.09	27.944		



Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T32N-R07W
Site Error: 0.00 usft
Reference Well: San Juan 32-7 Unit 249H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 249H
TVD Reference: KB @ 6354.00usft
MD Reference: KB @ 6354.00usft
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
Sec.08-T32N-R07W - San Juan 32-7 Unit 037M - Original Hole - Original Hole													Offset Well Error:	0.00 usft
Survey Program: 133-INC_ONLY<10														
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
0.00	0.00	0.00	0.00	0.00	0.00	-83.95	181.15	-1,709.42	1,721.56					
100.00	100.00	8.75	8.75	0.10	0.23	-83.96	181.01	-1,709.42	1,718.97	1,718.65	0.32	5,345.397		
160.51	160.51	66.52	66.52	0.23	1.72	-83.97	180.57	-1,709.42	1,718.93	1,716.98	1.95	881.958		
200.00	200.00	104.20	104.20	0.32	2.69	-83.96	180.76	-1,709.42	1,718.95	1,715.94	3.01	571.004		
300.00	300.00	206.06	206.05	0.55	6.97	-83.95	181.22	-1,709.42	1,718.99	1,711.48	7.52	228.605		
315.39	315.39	221.55	221.53	0.58	7.73	-83.95	181.22	-1,709.42	1,718.99	1,710.69	8.30	206.989		
400.00	400.00	305.33	305.29	0.77	11.25	-83.94	181.37	-1,709.42	1,719.01	1,706.99	12.02	143.011		
500.00	500.00	406.52	406.48	0.99	14.88	-83.94	181.44	-1,709.42	1,719.02	1,703.15	15.87	108.317		
600.00	600.00	506.06	506.00	1.22	18.08	-83.95	181.15	-1,709.42	1,718.99	1,699.68	19.30	89.052		
700.00	700.00	606.07	606.00	1.44	20.73	-83.95	181.15	-1,709.42	1,718.99	1,696.82	22.17	77.534		
800.00	800.00	706.07	706.00	1.67	23.37	-83.95	181.15	-1,709.42	1,718.99	1,693.95	25.04	68.654		
900.00	900.00	806.08	806.00	1.89	26.01	-83.95	181.15	-1,709.42	1,718.99	1,691.08	27.91	61.599		
1,000.00	1,000.00	906.08	906.00	2.12	28.66	-83.95	181.15	-1,709.42	1,718.99	1,688.21	30.77	55.859		
1,100.00	1,100.00	1,009.32	1,009.19	2.34	34.98	-84.02	179.10	-1,709.42	1,718.78	1,681.45	37.32	46.050		
1,200.00	1,200.00	1,107.67	1,107.52	2.57	41.29	-84.06	177.91	-1,709.42	1,718.65	1,674.79	43.86	39.185		
1,224.40	1,224.40	1,131.65	1,131.50	2.62	42.83	-84.06	177.76	-1,709.42	1,718.63	1,673.18	45.45	37.811		
1,240.32	1,240.32	1,147.29	1,147.14	2.65	43.83	92.56	177.69	-1,709.42	1,718.63	1,672.14	46.49	36.970 CC		
1,300.00	1,299.98	1,205.87	1,205.73	2.77	47.59	92.60	177.65	-1,709.42	1,718.69	1,668.33	50.36	34.126		
1,400.00	1,399.75	1,303.65	1,303.52	2.95	53.87	92.82	178.31	-1,709.42	1,719.07	1,662.26	56.81	30.261		
1,500.00	1,499.04	1,400.58	1,400.46	3.14	60.09	93.23	179.89	-1,709.42	1,719.89	1,656.67	63.22	27.206		
1,600.00	1,597.58	1,499.55	1,499.41	3.36	66.44	93.82	182.18	-1,709.42	1,721.23	1,651.44	69.79	24.662		
1,700.00	1,695.10	1,600.71	1,600.51	3.64	72.94	94.55	183.22	-1,709.42	1,723.03	1,646.46	76.56	22.505		
1,800.00	1,791.33	1,701.62	1,701.34	3.98	79.42	95.36	182.59	-1,709.42	1,725.37	1,641.99	83.37	20.694		
1,900.00	1,886.00	1,792.37	1,792.00	4.41	84.48	96.18	181.15	-1,709.42	1,728.54	1,639.70	88.83	19.458 ES		
2,000.00	1,978.86	1,885.23	1,884.86	4.94	86.93	97.18	181.15	-1,709.42	1,733.18	1,641.43	91.75	18.890		
2,100.00	2,069.65	1,976.02	1,975.65	5.57	89.32	98.24	181.15	-1,709.42	1,739.37	1,644.68	94.68	18.371		
2,200.00	2,158.12	2,064.50	2,064.12	6.29	91.65	99.34	181.15	-1,709.42	1,747.40	1,649.79	97.61	17.902		
2,300.00	2,244.04	2,150.42	2,150.04	7.12	93.91	100.46	181.15	-1,709.42	1,757.60	1,657.08	100.52	17.485		
2,400.00	2,327.16	2,233.55	2,233.16	8.04	96.10	101.57	181.15	-1,709.42	1,770.29	1,666.89	103.39	17.122		
2,500.00	2,407.25	2,313.65	2,313.25	9.05	98.21	102.64	181.15	-1,709.42	1,785.79	1,679.58	106.21	16.813		
2,600.00	2,484.11	2,390.51	2,390.11	10.15	100.24	103.64	181.15	-1,709.42	1,804.40	1,695.44	108.97	16.559		
2,700.00	2,557.51	2,463.91	2,463.51	11.33	102.17	104.55	181.15	-1,709.42	1,826.41	1,714.75	111.66	16.357		
2,800.00	2,627.26	2,533.66	2,533.26	12.59	104.01	105.34	181.15	-1,709.42	1,852.04	1,737.76	114.29	16.205		
2,900.00	2,693.16	2,599.57	2,599.16	13.93	105.75	105.98	181.15	-1,709.42	1,881.51	1,764.64	116.87	16.100		
3,000.00	2,755.04	2,661.45	2,661.04	15.33	107.39	106.45	181.15	-1,709.42	1,914.96	1,795.55	119.41	16.036		
3,100.00	2,812.72	2,719.14	2,718.72	16.79	108.91	106.73	181.15	-1,709.42	1,952.49	1,830.53	121.96	16.009		
3,200.00	2,866.05	2,772.47	2,772.05	18.31	110.31	106.79	181.15	-1,709.42	1,994.13	1,869.60	124.53	16.013		
3,300.00	2,914.88	2,821.30	2,820.88	19.89	111.60	106.62	181.15	-1,709.42	2,039.88	1,912.72	127.17	16.041		
3,391.06	2,955.32	2,852.00	2,851.58	21.37	112.41	105.96	181.15	-1,709.42	2,085.08	1,955.54	129.54	16.096		
3,400.00	2,959.03	2,852.00	2,851.58	21.48	112.41	105.44	181.15	-1,709.42	2,089.72	1,959.84	129.88	16.090		
3,450.00	2,977.44	2,883.86	2,883.44	22.02	113.25	103.27	181.15	-1,709.42	2,116.51	1,984.43	132.07	16.025		
3,500.00	2,991.72	2,898.14	2,897.72	22.60	113.63	100.34	181.15	-1,709.42	2,144.86	2,010.69	134.17	15.986		
3,550.00	3,001.78	2,908.20	2,907.78	23.21	113.90	97.01	181.15	-1,709.42	2,174.55	2,038.43	136.12	15.975 SF		
3,600.00	3,007.53	2,913.95	2,913.53	23.85	114.05	93.30	181.15	-1,709.42	2,205.36	2,067.69	137.67	16.019		
3,641.06	3,009.00	2,915.42	2,915.00	24.39	114.09	90.00	181.15	-1,709.42	2,231.32	2,092.85	138.47	16.114		
3,652.11	3,009.01	2,915.44	2,915.01	24.53	114.09	90.13	181.15	-1,709.42	2,238.38	2,099.76	138.62	16.148		
3,700.00	3,009.14	2,915.57	2,915.14	25.16	114.09	90.13	181.15	-1,709.42	2,269.20	2,129.95	139.25	16.295		
3,800.00	3,009.41	2,915.83	2,915.41	26.56	114.10	90.14	181.15	-1,709.42	2,335.43	2,194.77	140.66	16.604		
3,900.00	3,009.68	2,916.10	2,915.68	28.01	114.10	90.15	181.15	-1,709.42	2,403.99	2,261.88	142.11	16.916		
4,000.00	3,009.95	2,916.37	2,915.95	29.50	114.11	90.16	181.15	-1,709.42	2,474.70	2,331.08	143.62	17.231		
4,100.00	3,010.22	2,916.64	2,916.22	31.04	114.12	90.17	181.15	-1,709.42	2,547.36	2,402.21	145.16	17.549		
4,200.00	3,010.48	2,916.91	2,916.48	32.61	114.13	90.18	181.15	-1,709.42	2,621.83	2,475.10	146.73	17.868		

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



Koltek Energy Services

Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T32N-R07W
Site Error: 0.00 usft
Reference Well: San Juan 32-7 Unit 249H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 249H
TVD Reference: KB @ 6354.00usft
MD Reference: KB @ 6354.00usft
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
Sec.08-T32N-R07W - San Juan 32-7 Unit 037M - Original Hole - Original Hole														Offset Well Error:	0.00 usft
Survey Program: 133-INC_ONLY<10															
Reference		Offset		Semi Major Axis			Distance								
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
4,300.00	3,010.75	2,917.18	2,916.75	34.21	114.13	90.19	181.15	-1,709.42	2,697.96	2,549.62	148.34	18.188			
4,400.00	3,011.02	2,917.45	2,917.02	35.83	114.14	90.19	181.15	-1,709.42	2,775.59	2,626.62	149.97	18.508			
4,500.00	3,011.29	2,917.71	2,917.29	37.47	114.15	90.20	181.15	-1,709.42	2,854.62	2,703.00	151.62	18.828			
4,600.00	3,011.56	2,917.98	2,917.56	39.14	114.15	90.21	181.15	-1,709.42	2,934.93	2,781.64	153.29	19.146			
4,700.00	3,011.83	2,918.25	2,917.83	40.82	114.16	90.22	181.15	-1,709.42	3,016.41	2,861.43	154.98	19.463			
4,800.00	3,012.09	2,918.52	2,918.09	42.51	114.17	90.23	181.15	-1,709.42	3,098.98	2,942.30	156.68	19.779			
4,900.00	3,012.36	2,918.79	2,918.36	44.22	114.18	90.24	181.15	-1,709.42	3,182.55	3,024.16	158.40	20.092			
5,000.00	3,012.63	2,919.06	2,918.63	45.94	114.18	90.25	181.15	-1,709.42	3,267.05	3,106.92	160.13	20.403			
5,100.00	3,012.90	2,919.32	2,918.90	47.68	114.19	90.26	181.15	-1,709.42	3,352.39	3,190.53	161.86	20.711			
5,200.00	3,013.17	2,919.59	2,919.17	49.42	114.20	90.27	181.15	-1,709.42	3,438.53	3,274.92	163.61	21.017			
5,300.00	3,013.44	2,919.86	2,919.44	51.16	114.20	90.27	181.15	-1,709.42	3,525.40	3,360.03	165.37	21.319			
5,400.00	3,013.70	2,920.13	2,919.70	52.92	114.21	90.28	181.15	-1,709.42	3,612.95	3,445.82	167.13	21.618			
5,500.00	3,013.97	2,920.40	2,919.97	54.68	114.22	90.29	181.15	-1,709.42	3,701.12	3,532.22	168.90	21.913			
5,600.00	3,014.24	2,920.67	2,920.24	56.45	114.23	90.30	181.15	-1,709.42	3,789.89	3,619.21	170.68	22.205			
5,700.00	3,014.51	2,920.94	2,920.51	58.23	114.23	90.31	181.15	-1,709.42	3,879.20	3,706.74	172.46	22.494			
5,800.00	3,014.78	2,921.20	2,920.78	60.01	114.24	90.32	181.15	-1,709.42	3,969.02	3,794.78	174.25	22.778			
5,900.00	3,015.05	2,921.47	2,921.05	61.79	114.25	90.33	181.15	-1,709.42	4,059.32	3,883.29	176.04	23.059			
6,000.00	3,015.32	2,921.74	2,921.32	63.58	114.25	90.34	181.15	-1,709.42	4,150.07	3,972.23	177.83	23.337			
6,100.00	3,015.58	2,922.01	2,921.58	65.38	114.26	90.35	181.15	-1,709.42	4,241.22	4,061.59	179.63	23.610			
6,200.00	3,015.85	2,852.00	2,851.58	67.17	112.41	88.02	181.15	-1,709.42	4,333.34	4,153.83	179.52	24.139			
6,300.00	3,016.12	2,852.00	2,851.58	68.97	112.41	88.02	181.15	-1,709.42	4,425.25	4,243.94	181.32	24.406			
6,400.00	3,016.39	2,852.00	2,851.58	70.78	112.41	88.02	181.15	-1,709.42	4,517.50	4,334.39	183.12	24.670			
6,500.00	3,016.66	2,852.00	2,851.58	72.58	112.41	88.02	181.15	-1,709.42	4,610.08	4,425.16	184.92	24.930			
6,600.00	3,016.93	2,852.00	2,851.58	74.39	112.41	88.02	181.15	-1,709.42	4,702.96	4,516.23	186.73	25.186			
6,700.00	3,017.19	2,852.00	2,851.58	76.20	112.41	88.02	181.15	-1,709.42	4,796.12	4,607.58	188.54	25.438			
6,800.00	3,017.46	2,852.00	2,851.58	78.01	112.41	88.02	181.15	-1,709.42	4,889.56	4,699.20	190.35	25.687			
6,900.00	3,017.73	2,852.00	2,851.58	79.83	112.41	88.02	181.15	-1,709.42	4,983.25	4,791.08	192.17	25.932			
7,000.00	3,018.00	2,852.00	2,851.58	81.65	112.41	88.02	181.15	-1,709.42	5,077.18	4,883.19	193.98	26.173			
7,100.00	3,018.27	2,852.00	2,851.58	83.47	112.41	88.02	181.15	-1,709.42	5,171.34	4,975.53	195.80	26.411			
7,200.00	3,018.54	2,852.00	2,851.58	85.29	112.41	88.02	181.15	-1,709.42	5,265.71	5,068.09	197.62	26.645			
7,300.00	3,018.81	2,852.00	2,851.58	87.11	112.41	88.02	181.15	-1,709.42	5,360.29	5,160.84	199.44	26.876			
7,372.44	3,019.00	2,852.00	2,851.58	88.43	112.41	88.02	181.15	-1,709.42	5,428.92	5,228.16	200.76	27.041			

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



Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T32N-R07W
Site Error: 0.00 usft
Reference Well: San Juan 32-7 Unit 249H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 249H
TVD Reference: KB @ 6354.00usft
MD Reference: KB @ 6354.00usft
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.08-T32N-R07W - San Juan 32-7 Unit 249A - Original Hole - Original Hole													Offset Site Error:	0.00 usft
Survey Program: 76-INC_ONLY<10													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	136.00	136.00	0.00	1.38	-132.16	-2,227.25	-2,459.53	3,318.13					
100.00	100.00	230.97	230.96	0.10	5.07	-132.17	-2,227.86	-2,459.53	3,318.55	3,313.39	5.16	642.979		
200.00	200.00	343.22	343.20	0.32	9.42	-132.17	-2,228.01	-2,459.53	3,318.64	3,308.89	9.74	340.687		
300.00	300.00	492.00	491.98	0.55	15.19	-132.16	-2,227.25	-2,459.53	3,318.53	3,302.80	15.74	210.856		
369.42	369.42	509.44	509.42	0.70	16.09	-132.16	-2,227.25	-2,459.53	3,318.13	3,301.33	16.79	197.583		
400.00	400.00	540.03	540.00	0.77	17.67	-132.16	-2,227.25	-2,459.53	3,318.13	3,299.69	18.44	179.949		
500.00	500.00	640.05	640.00	0.99	22.83	-132.16	-2,227.25	-2,459.53	3,318.13	3,294.31	23.82	139.296		
600.00	600.00	745.00	744.93	1.22	28.24	-132.16	-2,227.25	-2,459.53	3,318.13	3,288.67	29.46	112.646		
635.06	635.06	775.14	775.06	1.30	29.79	-132.16	-2,227.25	-2,459.53	3,318.13	3,287.04	31.09	106.725		
700.00	700.00	840.09	840.00	1.44	33.14	-132.16	-2,227.25	-2,459.53	3,318.13	3,283.54	34.59	95.933		
800.00	800.00	940.11	940.00	1.67	38.31	-132.16	-2,227.25	-2,459.53	3,318.13	3,278.15	39.97	83.006		
900.00	900.00	1,040.13	1,040.00	1.89	43.47	-132.16	-2,227.25	-2,459.53	3,318.13	3,272.77	45.36	73.150		
1,000.00	1,000.00	1,140.15	1,140.00	2.12	48.63	-132.16	-2,227.25	-2,459.53	3,318.13	3,267.38	50.75	65.384		
1,100.00	1,100.00	1,257.00	1,256.83	2.34	54.66	-132.16	-2,227.25	-2,459.53	3,318.17	3,261.16	57.00	58.209		
1,140.08	1,140.08	1,280.26	1,280.08	2.43	55.86	-132.16	-2,227.25	-2,459.53	3,318.13	3,259.83	58.30	56.919		
1,200.00	1,200.00	1,340.19	1,340.00	2.57	58.96	-132.16	-2,227.25	-2,459.53	3,318.13	3,256.60	61.52	53.932		
1,224.40	1,224.40	1,364.60	1,364.40	2.62	60.22	-132.16	-2,227.25	-2,459.53	3,318.13	3,255.29	62.84	52.804		
1,300.00	1,299.98	1,482.00	1,481.78	2.77	66.28	44.52	-2,227.25	-2,459.53	3,317.32	3,248.29	69.04	48.053		
1,400.00	1,399.75	1,539.98	1,539.75	2.95	69.27	44.68	-2,227.25	-2,459.53	3,312.37	3,240.28	72.09	45.948		
1,500.00	1,499.04	1,707.00	1,706.74	3.14	77.89	45.12	-2,227.25	-2,459.53	3,304.68	3,224.02	80.66	40.972		
1,600.00	1,597.58	1,737.85	1,737.58	3.36	79.49	45.46	-2,227.25	-2,459.53	3,291.95	3,209.83	82.12	40.089		
1,700.00	1,695.10	1,835.39	1,835.10	3.64	84.52	46.08	-2,227.25	-2,459.53	3,276.34	3,189.43	86.91	37.699		
1,800.00	1,791.33	1,932.00	1,931.69	3.98	89.51	46.84	-2,227.25	-2,459.53	3,257.24	3,165.67	91.57	35.570		
1,900.00	1,886.00	2,026.33	2,026.00	4.41	94.38	47.75	-2,227.25	-2,459.53	3,234.78	3,138.71	96.07	33.670		
2,000.00	1,978.86	2,119.21	2,118.86	4.94	99.17	48.82	-2,227.25	-2,459.53	3,209.10	3,108.61	100.48	31.936		
2,100.00	2,069.65	2,210.01	2,209.65	5.57	103.86	50.04	-2,227.25	-2,459.53	3,180.35	3,075.53	104.83	30.339		
2,200.00	2,158.12	2,298.51	2,298.12	6.29	108.43	51.43	-2,227.25	-2,459.53	3,148.74	3,039.60	109.14	28.851		
2,300.00	2,244.04	2,384.44	2,384.04	7.12	112.87	52.97	-2,227.25	-2,459.53	3,114.45	3,000.98	113.47	27.448		
2,400.00	2,327.16	2,467.58	2,467.16	8.04	117.16	54.67	-2,227.25	-2,459.53	3,077.73	2,959.87	117.87	26.112		
2,500.00	2,407.25	2,547.69	2,547.25	9.05	121.30	56.52	-2,227.25	-2,459.53	3,038.83	2,916.45	122.38	24.831		
2,600.00	2,484.11	2,624.56	2,624.11	10.15	125.26	58.51	-2,227.25	-2,459.53	2,998.01	2,870.97	127.04	23.599		
2,700.00	2,557.51	2,697.98	2,697.51	11.33	129.06	60.63	-2,227.25	-2,459.53	2,955.59	2,823.71	131.88	22.411		
2,800.00	2,627.26	2,767.74	2,767.26	12.59	132.66	62.87	-2,227.25	-2,459.53	2,911.87	2,774.97	136.90	21.270		
2,900.00	2,693.16	2,833.66	2,833.16	13.93	136.06	65.21	-2,227.25	-2,459.53	2,867.19	2,725.11	142.07	20.181		
3,000.00	2,755.04	2,895.55	2,895.04	15.33	139.26	67.61	-2,227.25	-2,459.53	2,821.90	2,674.54	147.36	19.149		
3,100.00	2,812.72	2,953.24	2,952.72	16.79	142.23	70.05	-2,227.25	-2,459.53	2,776.39	2,623.69	152.70	18.182		
3,200.00	2,866.05	3,010.00	3,009.47	18.31	145.16	72.56	-2,227.25	-2,459.53	2,731.03	2,572.83	158.20	17.263		
3,300.00	2,914.88	3,055.42	3,054.88	19.89	147.51	74.90	-2,227.25	-2,459.53	2,686.22	2,523.08	163.14	16.466		
3,391.06	2,955.32	3,095.86	3,095.32	21.37	149.60	77.04	-2,227.25	-2,459.53	2,646.25	2,478.61	167.64	15.785		
3,400.00	2,959.03	3,099.58	3,099.03	21.48	149.79	77.54	-2,227.25	-2,459.53	2,642.37	2,474.21	168.16	15.713		
3,450.00	2,977.44	3,117.99	3,117.44	22.02	150.74	80.32	-2,227.25	-2,459.53	2,620.57	2,449.79	170.78	15.345		
3,500.00	2,991.72	3,132.28	3,131.72	22.60	151.48	83.04	-2,227.25	-2,459.53	2,598.78	2,425.75	173.03	15.019		
3,550.00	3,001.78	3,142.33	3,141.78	23.21	152.00	85.66	-2,227.25	-2,459.53	2,577.23	2,402.42	174.82	14.743		
3,600.00	3,007.53	3,148.08	3,147.53	23.85	152.29	88.12	-2,227.25	-2,459.53	2,556.15	2,380.06	176.09	14.516		
3,641.06	3,009.00	3,149.56	3,149.00	24.39	152.37	90.00	-2,227.25	-2,459.53	2,539.33	2,362.58	176.76	14.366		
3,652.11	3,009.01	3,149.57	3,149.01	24.53	152.37	89.93	-2,227.25	-2,459.53	2,534.87	2,357.97	176.90	14.329		
3,700.00	3,009.14	3,149.70	3,149.14	25.16	152.38	89.94	-2,227.25	-2,459.53	2,515.89	2,338.35	177.54	14.171		
3,800.00	3,009.41	3,149.97	3,149.41	26.56	152.39	89.94	-2,227.25	-2,459.53	2,478.78	2,299.83	178.95	13.852		
3,900.00	3,009.68	3,150.24	3,149.68	28.01	152.41	89.95	-2,227.25	-2,459.53	2,445.19	2,264.78	180.41	13.553		
4,000.00	3,009.95	3,150.50	3,149.95	29.50	152.42	89.96	-2,227.25	-2,459.53	2,415.29	2,233.36	181.92	13.276		
4,100.00	3,010.22	3,150.77	3,150.22	31.04	152.43	89.96	-2,227.25	-2,459.53	2,389.19	2,205.72	183.47	13.022		
4,200.00	3,010.48	3,151.04	3,150.48	32.61	152.45	89.97	-2,227.25	-2,459.53	2,367.03	2,181.98	185.05	12.791		

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



Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T32N-R07W
Site Error: 0.00 usft
Reference Well: San Juan 32-7 Unit 249H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 249H
TVD Reference: KB @ 6354.00usft
MD Reference: KB @ 6354.00usft
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.08-T32N-R07W - San Juan 32-7 Unit 249A - Original Hole - Original Hole													Offset Site Error: 0.00 usft
Survey Program: 78-INC_ONLY<10													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
4,300.00	3,010.75	3,151.31	3,150.75	34.21	152.46	89.97	-2,227.25	-2,459.53	2,348.93	2,162.27	186.67	12.584	
4,400.00	3,011.02	3,151.58	3,151.02	35.83	152.47	89.98	-2,227.25	-2,459.53	2,334.97	2,146.67	188.30	12.400	
4,500.00	3,011.29	3,151.85	3,151.29	37.47	152.49	89.99	-2,227.25	-2,459.53	2,325.24	2,135.28	189.96	12.241	
4,600.00	3,011.56	3,152.12	3,151.56	39.14	152.50	89.99	-2,227.25	-2,459.53	2,319.77	2,128.13	191.64	12.105	
4,676.88	3,011.76	3,152.32	3,151.76	40.43	152.51	90.00	-2,227.25	-2,459.53	2,318.50	2,125.56	192.94	12.017 CC	
4,700.00	3,011.83	3,152.38	3,151.83	40.82	152.52	90.00	-2,227.25	-2,459.53	2,318.61	2,125.28	193.33	11.993 ES	
4,800.00	3,012.09	3,152.65	3,152.09	42.51	152.53	90.01	-2,227.25	-2,459.53	2,321.77	2,126.72	195.04	11.904	
4,900.00	3,012.36	3,152.92	3,152.36	44.22	152.54	90.01	-2,227.25	-2,459.53	2,329.21	2,132.44	196.77	11.837	
5,000.00	3,012.63	3,153.19	3,152.63	45.94	152.56	90.02	-2,227.25	-2,459.53	2,340.91	2,142.41	198.50	11.793	
5,100.00	3,012.90	3,153.46	3,152.90	47.68	152.57	90.03	-2,227.25	-2,459.53	2,356.79	2,156.55	200.25	11.769	
5,200.00	3,013.17	3,153.73	3,153.17	49.42	152.59	90.03	-2,227.25	-2,459.53	2,376.78	2,174.78	202.00	11.766 SF	
5,300.00	3,013.44	3,154.00	3,153.44	51.16	152.60	90.04	-2,227.25	-2,459.53	2,400.77	2,197.01	203.76	11.782	
5,400.00	3,013.70	3,154.26	3,153.70	52.92	152.61	90.05	-2,227.25	-2,459.53	2,428.65	2,223.12	205.53	11.816	
5,500.00	3,013.97	3,154.53	3,153.97	54.68	152.63	90.05	-2,227.25	-2,459.53	2,460.28	2,252.97	207.31	11.868	
5,600.00	3,014.24	3,154.80	3,154.24	56.45	152.64	90.06	-2,227.25	-2,459.53	2,495.51	2,286.42	209.09	11.935	
5,700.00	3,014.51	3,155.07	3,154.51	58.23	152.65	90.07	-2,227.25	-2,459.53	2,534.21	2,323.32	210.88	12.017	
5,800.00	3,014.78	3,155.34	3,154.78	60.01	152.67	90.07	-2,227.25	-2,459.53	2,576.20	2,363.53	212.68	12.113	
5,900.00	3,015.05	3,155.61	3,155.05	61.79	152.68	90.08	-2,227.25	-2,459.53	2,621.35	2,406.87	214.48	12.222	
6,000.00	3,015.32	3,155.87	3,155.32	63.58	152.70	90.09	-2,227.25	-2,459.53	2,669.47	2,453.19	216.28	12.343	
6,100.00	3,015.58	3,156.14	3,155.58	65.38	152.71	90.09	-2,227.25	-2,459.53	2,720.42	2,502.34	218.09	12.474	
6,200.00	3,015.85	3,156.41	3,155.85	67.17	152.72	90.10	-2,227.25	-2,459.53	2,774.04	2,554.15	219.90	12.615	
6,300.00	3,016.12	3,156.68	3,156.12	68.97	152.74	90.11	-2,227.25	-2,459.53	2,830.18	2,608.47	221.71	12.765	
6,400.00	3,016.39	3,156.95	3,156.39	70.78	152.75	90.11	-2,227.25	-2,459.53	2,888.70	2,665.17	223.53	12.923	
6,500.00	3,016.66	3,157.22	3,156.66	72.58	152.77	90.12	-2,227.25	-2,459.53	2,949.44	2,724.09	225.35	13.088	
6,600.00	3,016.93	3,157.49	3,156.93	74.39	152.78	90.13	-2,227.25	-2,459.53	3,012.28	2,785.11	227.17	13.260	
6,700.00	3,017.19	3,157.75	3,157.19	76.20	152.79	90.13	-2,227.25	-2,459.53	3,077.08	2,848.09	228.99	13.437	
6,800.00	3,017.46	3,158.02	3,157.46	78.01	152.81	90.14	-2,227.25	-2,459.53	3,143.73	2,912.91	230.82	13.620	
6,900.00	3,017.73	3,158.29	3,157.73	79.83	152.82	90.15	-2,227.25	-2,459.53	3,212.11	2,979.46	232.65	13.807	
7,000.00	3,018.00	3,158.56	3,158.00	81.65	152.84	90.15	-2,227.25	-2,459.53	3,282.12	3,047.64	234.48	13.997	
7,100.00	3,018.27	3,158.83	3,158.27	83.47	152.85	90.16	-2,227.25	-2,459.53	3,353.64	3,117.33	236.31	14.191	
7,200.00	3,018.54	3,159.10	3,158.54	85.29	152.86	90.17	-2,227.25	-2,459.53	3,426.59	3,188.44	238.15	14.388	
7,300.00	3,018.81	3,159.37	3,158.81	87.11	152.88	90.17	-2,227.25	-2,459.53	3,500.88	3,260.89	239.99	14.588	
7,372.44	3,019.00	3,159.56	3,159.00	88.43	152.89	90.18	-2,227.25	-2,459.53	3,555.48	3,314.17	241.32	14.734	

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



Koltek Energy Services

Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T32N-R07W
Site Error: 0.00 usft
Reference Well: San Juan 32-7 Unit 249H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 249H
TVD Reference: KB @ 6354.00usft
MD Reference: KB @ 6354.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design Sec.09-T32N-R07W - San Juan 32-7 Unit 037 - Original Hole - Original Hole													Offset Site Error:	0.00 usft
Survey Program: 305-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	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)						
0.00	0.00	0.00	0.00	0.00	0.00	-61.75	61.59	-114.64	131.37					
100.00	100.00	82.19	82.19	0.10	0.84	-61.91	61.19	-114.64	129.95	129.01	0.93	139.119		
170.50	170.50	152.51	152.51	0.25	1.56	-61.95	61.09	-114.64	129.90	128.09	1.81	71.775		
200.00	200.00	181.93	181.92	0.32	1.86	-61.94	61.10	-114.64	129.91	127.73	2.18	59.696		
300.00	300.00	281.65	281.65	0.55	2.87	-61.81	61.44	-114.64	130.07	126.65	3.42	38.052		
400.00	400.00	382.37	382.36	0.77	5.40	-61.94	61.11	-114.64	129.91	123.74	6.17	21.053		
500.00	500.00	482.32	482.31	0.99	8.36	-62.14	60.60	-114.64	129.67	120.32	9.35	13.864		
600.00	600.00	582.27	582.25	1.22	11.32	-62.29	60.21	-114.64	129.49	116.95	12.54	10.330		
700.00	700.00	682.21	682.19	1.44	14.27	-62.40	59.92	-114.64	129.36	113.64	15.72	8.230		
800.00	800.00	782.14	782.11	1.67	17.23	-62.47	59.75	-114.64	129.28	110.38	18.90	6.840		
900.00	900.00	882.07	882.04	1.89	20.19	-62.49	59.70	-114.64	129.25	107.17	22.08	5.853 CC		
910.77	910.77	892.83	892.80	1.92	20.51	-62.49	59.70	-114.64	129.25	106.83	22.42	5.764		
1,000.00	1,000.00	981.98	981.95	2.12	23.14	-62.47	59.75	-114.64	129.28	104.01	25.26	5.117		
1,100.00	1,100.00	1,081.89	1,081.86	2.34	26.10	-62.40	59.92	-114.64	129.35	100.91	28.44	4.548		
1,200.00	1,200.00	1,181.80	1,181.76	2.57	29.06	-62.29	60.20	-114.64	129.49	97.86	31.63	4.094		
1,224.40	1,224.40	1,206.17	1,206.14	2.62	29.78	-62.26	60.29	-114.64	129.53	97.12	32.40	3.998		
1,300.00	1,299.98	1,281.66	1,281.63	2.77	32.01	115.06	60.60	-114.64	130.30	95.52	34.78	3.747 ES		
1,400.00	1,399.75	1,381.28	1,381.25	2.95	34.96	117.71	61.11	-114.64	133.48	95.61	37.87	3.525		
1,500.00	1,499.04	1,480.76	1,480.73	3.14	37.97	122.02	61.67	-114.64	139.70	98.72	40.98	3.409		
1,600.00	1,597.58	1,579.47	1,579.43	3.36	41.20	127.34	61.93	-114.64	149.63	105.39	44.23	3.383 SF		
1,700.00	1,695.10	1,677.26	1,677.20	3.64	44.39	133.10	61.96	-114.64	164.14	116.84	47.31	3.470		
1,800.00	1,791.33	1,773.89	1,773.82	3.98	47.56	138.78	61.76	-114.64	183.90	133.76	50.14	3.668		
1,900.00	1,886.00	1,868.07	1,868.00	4.41	50.34	143.96	61.59	-114.64	209.43	157.08	52.35	4.001		
2,000.00	1,978.86	1,960.94	1,960.86	4.94	52.80	148.54	61.59	-114.64	240.96	186.97	53.99	4.463		
2,100.00	2,069.65	2,051.73	2,051.65	5.57	55.20	152.41	61.59	-114.64	278.24	222.92	55.32	5.030		
2,200.00	2,158.12	2,140.21	2,140.12	6.29	57.55	155.61	61.59	-114.64	321.03	264.70	56.33	5.699		
2,300.00	2,244.04	2,227.43	2,227.34	7.12	60.30	158.27	61.30	-114.64	368.80	311.36	57.44	6.420		
2,400.00	2,327.16	2,310.41	2,310.31	8.04	63.01	160.38	61.04	-114.64	421.57	363.32	58.25	7.237		
2,500.00	2,407.25	2,390.29	2,390.18	9.05	65.63	162.09	60.85	-114.64	479.14	420.43	58.71	8.161		
2,600.00	2,484.11	2,466.84	2,466.73	10.15	68.13	163.46	60.74	-114.64	541.24	482.44	58.81	9.204		
2,700.00	2,557.51	2,539.86	2,539.75	11.33	70.52	164.55	60.68	-114.64	607.63	549.08	58.55	10.377		
2,800.00	2,627.26	2,609.14	2,609.02	12.59	72.79	165.39	60.68	-114.64	678.06	620.10	57.96	11.699		
2,900.00	2,693.16	2,674.50	2,674.38	13.93	74.92	166.03	60.73	-114.64	752.26	695.23	57.04	13.189		
3,000.00	2,755.04	2,735.76	2,735.63	15.33	76.93	166.46	60.81	-114.64	830.01	774.19	55.82	14.870		
3,100.00	2,812.72	2,792.75	2,792.62	16.79	78.79	166.72	60.93	-114.64	911.04	856.71	54.33	16.768		
3,200.00	2,866.05	2,845.32	2,845.19	18.31	80.51	166.78	61.06	-114.64	995.11	942.47	52.64	18.905		
3,300.00	2,914.88	2,893.34	2,893.21	19.89	82.08	166.64	61.21	-114.64	1,081.95	1,031.13	50.81	21.293		
3,391.06	2,955.32	2,933.01	2,932.88	21.37	83.38	166.32	61.35	-114.64	1,163.22	1,114.08	49.14	23.672		
3,400.00	2,959.03	2,936.65	2,936.52	21.48	83.50	165.95	61.37	-114.64	1,171.32	1,122.85	48.47	24.166		
3,450.00	2,977.44	2,954.64	2,954.51	22.02	84.09	163.23	61.44	-114.64	1,217.64	1,171.88	45.76	26.609		
3,500.00	2,991.72	2,968.55	2,968.42	22.60	84.54	158.63	61.49	-114.64	1,265.38	1,218.25	47.13	26.851		
3,550.00	3,001.78	2,978.27	2,978.13	23.21	84.86	149.61	61.53	-114.64	1,314.17	1,256.47	57.70	22.776		
3,600.00	3,007.53	2,983.73	2,983.59	23.85	85.04	127.69	61.56	-114.64	1,363.66	1,276.96	86.70	15.729		
3,641.06	3,009.00	2,990.00	2,989.87	24.39	85.24	89.45	61.59	-114.64	1,404.55	1,294.91	109.64	12.811		
3,652.11	3,009.01	2,990.00	2,989.87	24.53	85.24	91.20	61.59	-114.64	1,415.56	1,305.81	109.75	12.898		
3,700.00	3,009.14	2,990.00	2,989.87	25.16	85.24	91.20	61.59	-114.64	1,463.26	1,352.88	110.38	13.256		
3,800.00	3,009.41	2,990.00	2,989.87	26.56	85.24	91.20	61.59	-114.64	1,562.92	1,451.14	111.78	13.982		
3,900.00	3,009.68	2,990.00	2,989.87	28.01	85.24	91.20	61.59	-114.64	1,662.61	1,549.38	113.23	14.684		
4,000.00	3,009.95	2,990.00	2,989.87	29.50	85.24	91.20	61.59	-114.64	1,762.34	1,647.62	114.72	15.362		
4,100.00	3,010.22	2,990.00	2,989.87	31.04	85.24	91.20	61.59	-114.64	1,862.10	1,745.85	116.26	16.017		
4,200.00	3,010.48	2,990.00	2,989.87	32.61	85.24	91.20	61.59	-114.64	1,961.89	1,844.06	117.83	16.651		
4,300.00	3,010.75	2,990.00	2,989.87	34.21	85.24	91.20	61.59	-114.64	2,061.69	1,942.27	119.42	17.264		

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



Koltek Energy Services

Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T32N-R07W
Site Error: 0.00 usft
Reference Well: San Juan 32-7 Unit 249H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 249H
TVD Reference: KB @ 6354.00usft
MD Reference: KB @ 6354.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design Sec.09-T32N-R07W - San Juan 32-7 Unit 037 - Original Hole - Original Hole													Offset Site Error: 0.00 usft	
Survey Program: 305-INC_ONLY<10													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)				
4,400.00	3,011.02	2,990.00	2,989.87	35.83	85.24	91.20	61.59	-114.64	2,161.52	2,040.47	121.05	17.857		
4,500.00	3,011.29	2,990.00	2,989.87	37.47	85.24	91.20	61.59	-114.64	2,261.35	2,138.66	122.69	18.431		
4,600.00	3,011.56	2,990.00	2,989.87	39.14	85.24	91.20	61.59	-114.64	2,361.21	2,236.85	124.35	18.988		
4,700.00	3,011.83	2,990.00	2,989.87	40.82	85.24	91.20	61.59	-114.64	2,461.07	2,335.04	126.04	19.527		
4,800.00	3,012.09	2,990.00	2,989.87	42.51	85.24	91.20	61.59	-114.64	2,560.95	2,433.22	127.73	20.050		
4,900.00	3,012.36	2,990.00	2,989.87	44.22	85.24	91.20	61.59	-114.64	2,660.83	2,531.39	129.44	20.557		
5,000.00	3,012.63	2,990.00	2,989.87	45.94	85.24	91.20	61.59	-114.64	2,760.72	2,629.56	131.16	21.048		
5,100.00	3,012.90	2,990.00	2,989.87	47.68	85.24	91.20	61.59	-114.64	2,860.62	2,727.73	132.89	21.526		
5,200.00	3,013.17	2,990.00	2,989.87	49.42	85.24	91.20	61.59	-114.64	2,960.53	2,825.90	134.63	21.990		
5,300.00	3,013.44	2,990.00	2,989.87	51.16	85.24	91.20	61.59	-114.64	3,060.44	2,924.06	136.38	22.441		
5,400.00	3,013.70	2,990.00	2,989.87	52.92	85.24	91.20	61.59	-114.64	3,160.36	3,022.23	138.14	22.879		
5,500.00	3,013.97	2,990.00	2,989.87	54.68	85.24	91.20	61.59	-114.64	3,260.29	3,120.39	139.90	23.305		
5,600.00	3,014.24	2,990.00	2,989.87	56.45	85.24	91.20	61.59	-114.64	3,360.21	3,218.55	141.67	23.719		
5,700.00	3,014.51	2,990.00	2,989.87	58.23	85.24	91.20	61.59	-114.64	3,460.15	3,316.70	143.44	24.122		
5,800.00	3,014.78	2,990.00	2,989.87	60.01	85.24	91.20	61.59	-114.64	3,560.08	3,414.86	145.22	24.515		
5,900.00	3,015.05	2,990.00	2,989.87	61.79	85.24	91.20	61.59	-114.64	3,660.02	3,513.01	147.01	24.897		
6,000.00	3,015.32	2,990.00	2,989.87	63.58	85.24	91.20	61.59	-114.64	3,759.96	3,611.17	148.80	25.269		
6,100.00	3,015.58	2,990.00	2,989.87	65.38	85.24	91.20	61.59	-114.64	3,859.91	3,709.32	150.59	25.632		
6,200.00	3,015.85	2,990.00	2,989.87	67.17	85.24	91.20	61.59	-114.64	3,959.86	3,807.47	152.38	25.986		
6,300.00	3,016.12	2,990.00	2,989.87	68.97	85.24	91.20	61.59	-114.64	4,059.81	3,905.62	154.18	26.331		
6,400.00	3,016.39	2,990.00	2,989.87	70.78	85.24	91.20	61.59	-114.64	4,159.76	4,003.78	155.99	26.667		
6,500.00	3,016.66	2,990.00	2,989.87	72.58	85.24	91.20	61.59	-114.64	4,259.72	4,101.93	157.79	26.996		
6,600.00	3,016.93	2,990.00	2,989.87	74.39	85.24	91.20	61.59	-114.64	4,359.68	4,200.07	159.60	27.316		
6,700.00	3,017.19	2,990.00	2,989.87	76.20	85.24	91.20	61.59	-114.64	4,459.64	4,298.22	161.41	27.629		
6,800.00	3,017.46	2,990.00	2,989.87	78.01	85.24	91.20	61.59	-114.64	4,559.60	4,396.37	163.22	27.934		
6,900.00	3,017.73	2,990.00	2,989.87	79.83	85.24	91.20	61.59	-114.64	4,659.56	4,494.52	165.04	28.233		
7,000.00	3,018.00	2,990.00	2,989.87	81.65	85.24	91.20	61.59	-114.64	4,759.52	4,592.67	166.86	28.525		
7,100.00	3,018.27	2,990.00	2,989.87	83.47	85.24	91.20	61.59	-114.64	4,859.49	4,690.81	168.68	28.810		
7,200.00	3,018.54	2,990.00	2,989.87	85.29	85.24	91.20	61.59	-114.64	4,959.46	4,788.96	170.50	29.088		
7,300.00	3,018.81	2,990.00	2,989.87	87.11	85.24	91.20	61.59	-114.64	5,059.43	4,887.11	172.32	29.361		
7,372.44	3,019.00	2,990.00	2,989.87	88.43	85.24	91.20	61.59	-114.64	5,131.85	4,958.21	173.64	29.555		



Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T32N-R07W
Site Error: 0.00 usft
Reference Well: San Juan 32-7 Unit 249H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 249H
TVD Reference: KB @ 6354.00usft
MD Reference: KB @ 6354.00usft
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
Sec.09-T32N-R07W - San Juan 32-7 Unit 249 - Original Hole - Original Hole														Offset Well Error:	0.00 usft
Survey Program: 215-INC_ONLY<10															
Reference		Offset		Semi Major Axis			Distance								
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
0.00	0.00	0.00	0.00	0.00	0.00	77.72	22.12	101.57	106.68						
100.00	100.00	76.14	76.13	0.10	1.97	78.18	21.26	101.57	103.77	101.71	2.06	50.343			
131.52	131.52	107.54	107.53	0.17	2.78	78.22	21.18	101.57	103.75	100.81	2.94	35.257 CC			
200.00	200.00	175.74	175.74	0.32	4.54	78.02	21.56	101.57	103.83	98.97	4.86	21.376			
300.00	300.00	275.84	275.83	0.55	7.92	77.46	22.59	101.57	104.05	95.58	8.47	12.288			
400.00	400.00	375.91	375.88	0.77	11.82	77.19	23.09	101.57	104.16	91.56	12.59	8.271			
500.00	500.00	476.01	475.97	0.99	15.73	77.10	23.26	101.57	104.19	87.47	16.72	6.231			
600.00	600.00	576.15	576.08	1.22	19.63	77.19	23.09	101.57	104.16	83.31	20.85	4.996			
700.00	700.00	676.31	676.22	1.44	23.54	77.46	22.59	101.57	104.05	79.07	24.98	4.165			
800.00	800.00	776.11	776.00	1.67	26.95	77.72	22.12	101.57	103.95	75.33	28.62	3.632			
900.00	900.00	876.11	876.00	1.89	29.59	77.72	22.12	101.57	103.95	72.46	31.49	3.301			
1,000.00	1,000.00	976.12	976.00	2.12	32.23	77.72	22.12	101.57	103.95	69.59	34.35	3.026			
1,100.00	1,100.00	1,076.12	1,076.00	2.34	34.88	77.72	22.12	101.57	103.95	66.73	37.22	2.793			
1,200.00	1,200.00	1,176.13	1,176.00	2.57	37.52	77.72	22.12	101.57	103.95	63.86	40.09	2.593			
1,224.40	1,224.40	1,200.53	1,200.40	2.62	38.16	77.72	22.12	101.57	103.95	63.16	40.79	2.548			
1,300.00	1,299.98	1,276.11	1,275.98	2.77	40.16	-106.44	22.12	101.57	104.36	61.43	42.93	2.431			
1,400.00	1,399.75	1,375.89	1,375.75	2.95	42.80	-109.77	22.12	101.57	106.41	60.68	45.73	2.327 ES			
1,500.00	1,499.04	1,475.19	1,475.04	3.14	45.43	-115.35	22.12	101.57	110.96	62.49	48.47	2.289 SF			
1,600.00	1,597.58	1,573.73	1,573.58	3.36	48.04	-122.45	22.12	101.57	119.28	68.17	51.11	2.334			
1,700.00	1,695.10	1,671.25	1,671.10	3.64	50.62	-130.11	22.12	101.57	132.60	79.06	53.54	2.477			
1,800.00	1,791.33	1,767.48	1,767.33	3.98	53.17	-137.44	22.12	101.57	151.81	96.14	55.67	2.727			
1,900.00	1,886.00	1,862.16	1,862.00	4.41	55.68	-143.90	22.12	101.57	177.28	119.80	57.48	3.084			
2,000.00	1,978.86	1,955.02	1,954.86	4.94	58.14	-149.29	22.12	101.57	208.93	149.99	58.95	3.544			
2,100.00	2,069.65	2,045.82	2,045.65	5.57	60.54	-153.65	22.12	101.57	246.52	186.44	60.09	4.103			
2,200.00	2,158.12	2,134.30	2,134.12	6.29	62.89	-157.12	22.12	101.57	289.71	228.81	60.90	4.757			
2,300.00	2,244.04	2,220.22	2,220.04	7.12	65.16	-159.88	22.12	101.57	338.17	276.77	61.41	5.507			
2,400.00	2,327.16	2,303.34	2,303.16	8.04	67.36	-162.06	22.12	101.57	391.61	330.01	61.59	6.358			
2,500.00	2,407.25	2,383.44	2,383.25	9.05	69.48	-163.79	22.12	101.57	449.73	388.27	61.46	7.317			
2,600.00	2,484.11	2,460.30	2,460.11	10.15	71.52	-165.16	22.12	101.57	512.29	451.26	61.02	8.395			
2,700.00	2,557.51	2,533.71	2,533.51	11.33	73.46	-166.23	22.12	101.57	579.02	518.75	60.27	9.607			
2,800.00	2,627.26	2,603.46	2,603.26	12.59	75.31	-167.06	22.12	101.57	649.71	590.49	59.22	10.972			
2,900.00	2,693.16	2,669.37	2,669.16	13.93	77.06	-167.68	22.12	101.57	724.10	666.23	57.87	12.512			
3,000.00	2,755.04	2,731.25	2,731.04	15.33	78.70	-168.12	22.12	101.57	801.96	745.71	56.26	14.256			
3,100.00	2,812.72	2,788.93	2,788.72	16.79	80.23	-168.39	22.12	101.57	883.05	828.66	54.40	16.233			
3,200.00	2,866.05	2,842.26	2,842.05	18.31	81.64	-168.49	22.12	101.57	967.14	914.79	52.34	18.477			
3,300.00	2,914.88	2,891.10	2,890.88	19.89	82.93	-168.42	22.12	101.57	1,053.96	1,003.81	50.15	21.017			
3,391.06	2,955.32	2,931.53	2,931.32	21.37	84.00	-168.17	22.12	101.57	1,135.20	1,087.09	48.11	23.596			
3,400.00	2,959.03	2,935.25	2,935.03	21.48	84.10	-167.86	22.12	101.57	1,143.30	1,095.99	47.31	24.167			
3,450.00	2,977.44	2,953.65	2,953.44	22.02	84.59	-165.54	22.12	101.57	1,189.60	1,146.00	43.60	27.283			
3,500.00	2,991.72	2,967.94	2,967.72	22.60	84.97	-161.60	22.12	101.57	1,237.34	1,193.99	43.34	28.547			
3,550.00	3,001.78	2,978.00	2,977.78	23.21	85.23	-153.78	22.12	101.57	1,286.15	1,234.54	51.61	24.921			
3,600.00	3,007.53	2,983.75	2,983.53	23.85	85.39	-133.67	22.12	101.57	1,335.65	1,255.91	79.74	16.749			
3,641.06	3,009.00	2,985.22	2,985.00	24.39	85.43	-90.00	22.12	101.57	1,376.57	1,266.75	109.81	12.535			
3,652.11	3,009.01	2,985.23	2,985.01	24.53	85.43	-92.29	22.12	101.57	1,387.59	1,277.72	109.87	12.629			
3,700.00	3,009.14	2,985.36	2,985.14	25.16	85.43	-92.37	22.12	101.57	1,435.38	1,324.88	110.50	12.990			
3,800.00	3,009.41	2,985.63	2,985.41	26.56	85.44	-92.54	22.12	101.57	1,535.18	1,423.29	111.89	13.721			
3,900.00	3,009.68	2,985.90	2,985.68	28.01	85.44	-92.70	22.12	101.57	1,635.01	1,521.68	113.33	14.427			
4,000.00	3,009.95	2,986.17	2,985.95	29.50	85.45	-92.87	22.12	101.57	1,734.86	1,620.04	114.81	15.110			
4,100.00	3,010.22	2,986.44	2,986.22	31.04	85.46	-93.03	22.12	101.57	1,834.72	1,718.38	116.34	15.771			
4,200.00	3,010.48	2,986.70	2,986.48	32.61	85.47	-93.20	22.12	101.57	1,934.60	1,816.71	117.89	16.410			
4,300.00	3,010.75	2,986.97	2,986.75	34.21	85.47	-93.36	22.12	101.57	2,034.49	1,915.01	119.47	17.029			
4,400.00	3,011.02	2,987.24	2,987.02	35.83	85.48	-93.53	22.12	101.57	2,134.39	2,013.31	121.08	17.628			

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



Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T32N-R07W
Site Error: 0.00 usft
Reference Well: San Juan 32-7 Unit 249H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 249H
TVD Reference: KB @ 6354.00usft
MD Reference: KB @ 6354.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design Sec.09-T32N-R07W - San Juan 32-7 Unit 249 - Original Hole - Original Hole													Offset Site Error: 0.00 usft
Survey Program: 215-INC_ONLY<10													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
4,500.00	3,011.29	2,987.51	2,987.29	37.47	85.49	-93.69	22.12	101.57	2,234.30	2,111.59	122.71	18.208	
4,600.00	3,011.56	2,987.78	2,987.56	39.14	85.49	-93.86	22.12	101.57	2,334.21	2,209.86	124.35	18.771	
4,700.00	3,011.83	2,988.05	2,987.83	40.82	85.50	-94.02	22.12	101.57	2,434.14	2,308.12	126.01	19.316	
4,800.00	3,012.09	2,988.31	2,988.09	42.51	85.51	-94.19	22.12	101.57	2,534.07	2,406.38	127.69	19.846	
4,900.00	3,012.36	2,988.58	2,988.36	44.22	85.52	-94.35	22.12	101.57	2,634.00	2,504.63	129.37	20.360	
5,000.00	3,012.63	2,988.85	2,988.63	45.94	85.52	-94.52	22.12	101.57	2,733.94	2,602.88	131.07	20.859	
5,100.00	3,012.90	2,989.12	2,988.90	47.68	85.53	-94.68	22.12	101.57	2,833.89	2,701.12	132.77	21.344	
5,200.00	3,013.17	2,989.39	2,989.17	49.42	85.54	-94.85	22.12	101.57	2,933.84	2,799.35	134.48	21.816	
5,300.00	3,013.44	2,989.66	2,989.44	51.16	85.54	-95.01	22.12	101.57	3,033.79	2,897.59	136.20	22.274	
5,400.00	3,013.70	2,989.93	2,989.70	52.92	85.55	-95.18	22.12	101.57	3,133.74	2,995.82	137.92	22.721	
5,500.00	3,013.97	2,990.19	2,989.97	54.68	85.56	-95.34	22.12	101.57	3,233.70	3,094.04	139.65	23.155	
5,600.00	3,014.24	2,990.46	2,990.24	56.45	85.57	-95.51	22.12	101.57	3,333.66	3,192.27	141.39	23.578	
5,700.00	3,014.51	2,990.73	2,990.51	58.23	85.57	-95.67	22.12	101.57	3,433.62	3,290.50	143.12	23.991	
5,800.00	3,014.78	2,991.00	2,990.78	60.01	85.58	-95.83	22.12	101.57	3,533.58	3,388.72	144.86	24.393	
5,900.00	3,015.05	2,991.27	2,991.05	61.79	85.59	-96.00	22.12	101.57	3,633.55	3,486.95	146.60	24.785	
6,000.00	3,015.32	2,991.54	2,991.32	63.58	85.59	-96.16	22.12	101.57	3,733.52	3,585.17	148.35	25.167	
6,100.00	3,015.58	2,991.80	2,991.58	65.38	85.60	-96.33	22.12	101.57	3,833.49	3,683.39	150.09	25.540	
6,200.00	3,015.85	2,992.07	2,991.85	67.17	85.61	-96.49	22.12	101.57	3,933.46	3,781.62	151.84	25.905	
6,300.00	3,016.12	2,992.34	2,992.12	68.97	85.61	-96.65	22.12	101.57	4,033.43	3,879.84	153.59	26.261	
6,400.00	3,016.39	2,992.61	2,992.39	70.78	85.62	-96.82	22.12	101.57	4,133.40	3,978.06	155.34	26.608	
6,500.00	3,016.66	2,992.88	2,992.66	72.58	85.63	-96.98	22.12	101.57	4,233.38	4,076.29	157.09	26.948	
6,600.00	3,016.93	2,993.15	2,992.93	74.39	85.64	-97.14	22.12	101.57	4,333.36	4,174.51	158.84	27.281	
6,700.00	3,017.19	2,993.42	2,993.19	76.20	85.64	-97.31	22.12	101.57	4,433.33	4,272.74	160.59	27.606	
6,800.00	3,017.46	2,993.68	2,993.46	78.01	85.65	-97.47	22.12	101.57	4,533.31	4,370.97	162.34	27.924	
6,900.00	3,017.73	2,993.95	2,993.73	79.83	85.66	-97.63	22.12	101.57	4,633.29	4,469.19	164.10	28.235	
7,000.00	3,018.00	2,994.22	2,994.00	81.65	85.66	-97.79	22.12	101.57	4,733.27	4,567.42	165.85	28.540	
7,100.00	3,018.27	2,994.49	2,994.27	83.47	85.67	-97.96	22.12	101.57	4,833.25	4,665.66	167.60	28.839	
7,200.00	3,018.54	2,994.76	2,994.54	85.29	85.68	-98.12	22.12	101.57	4,933.23	4,763.89	169.34	29.131	
7,300.00	3,018.81	2,995.03	2,994.81	87.11	85.69	-98.28	22.12	101.57	5,033.21	4,862.12	171.09	29.418	
7,372.44	3,019.00	2,995.22	2,995.00	88.43	85.69	-98.40	22.12	101.57	5,105.65	4,933.29	172.36	29.622	



Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T32N-R07W
Site Error: 0.00 usft
Reference Well: San Juan 32-7 Unit 249H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 249H
TVD Reference: KB @ 6354.00usft
MD Reference: KB @ 6354.00usft
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.16-T32N-R07W - San Juan 32-7 Unit 013A - Original Hole - Original Hole														Offset Site Error:	0.00 usft
Survey Program: 123-INC_ONLY<10														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Tooface (")	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	294.45	294.44	0.00	4.24	178.14	-4,200.81	136.24	4,203.02						
100.00	100.00	370.00	369.99	0.10	5.56	178.14	-4,200.93	136.24	4,203.23	4,197.58	5.65	743.565			
200.00	200.00	528.00	527.99	0.32	10.68	178.14	-4,200.93	136.24	4,203.24	4,192.24	11.00	381.991			
247.61	247.61	545.63	545.61	0.43	11.59	178.14	-4,200.93	136.24	4,203.13	4,191.12	12.02	349.800			
300.00	300.00	598.02	598.00	0.55	14.28	178.14	-4,200.93	136.24	4,203.13	4,188.31	14.82	283.518			
400.00	400.00	698.04	698.00	0.77	19.42	178.14	-4,200.93	136.24	4,203.13	4,182.95	20.19	208.209			
500.00	500.00	914.00	913.91	0.99	30.51	178.14	-4,200.93	136.24	4,204.73	4,173.23	31.50	133.466			
600.00	600.00	914.00	913.91	1.22	30.51	178.14	-4,200.93	136.24	4,203.17	4,171.44	31.73	132.471			
639.64	639.64	937.73	937.64	1.31	31.73	178.14	-4,200.93	136.24	4,203.13	4,170.09	33.04	127.206			
700.00	700.00	998.10	998.00	1.44	34.85	178.14	-4,200.93	136.24	4,203.13	4,166.84	36.29	115.817			
800.00	800.00	1,098.12	1,098.00	1.67	40.01	178.14	-4,200.93	136.24	4,203.13	4,161.46	41.67	100.857			
900.00	900.00	1,256.00	1,255.84	1.89	48.15	178.14	-4,200.93	136.24	4,203.53	4,153.49	50.04	84.002			
1,000.00	1,000.00	1,312.05	1,311.88	2.12	50.69	178.14	-4,200.71	136.24	4,202.94	4,150.14	52.80	79.594			
1,100.00	1,100.00	1,404.74	1,404.55	2.34	54.88	178.14	-4,200.49	136.24	4,202.70	4,145.47	57.23	73.438			
1,189.78	1,189.78	1,487.97	1,487.77	2.54	58.65	178.14	-4,200.42	136.24	4,202.63	4,141.43	61.20	68.671			
1,200.00	1,200.00	1,497.44	1,497.24	2.57	59.08	178.14	-4,200.42	136.24	4,202.63	4,140.98	61.65	68.167			
1,224.40	1,224.40	1,520.06	1,519.86	2.62	60.11	178.14	-4,200.43	136.24	4,202.64	4,139.91	62.73	66.994			
1,300.00	1,299.98	1,590.14	1,589.92	2.77	63.28	-5.24	-4,200.52	136.24	4,201.25	4,135.22	66.03	63.628			
1,400.00	1,399.75	1,720.00	1,719.75	2.95	69.17	-5.27	-4,200.93	136.24	4,195.16	4,123.30	71.66	58.379			
1,500.00	1,499.04	1,784.35	1,784.08	3.14	72.08	-5.31	-4,201.17	136.24	4,183.63	4,109.11	74.52	56.144			
1,600.00	1,597.58	1,891.70	1,891.42	3.36	76.94	-5.39	-4,201.39	136.24	4,166.94	4,088.08	78.85	52.843			
1,700.00	1,695.10	1,997.83	1,997.55	3.64	81.75	-5.48	-4,201.38	136.24	4,144.93	4,062.08	82.85	50.032			
1,800.00	1,791.33	2,166.00	2,165.70	3.98	89.37	-5.63	-4,200.93	136.24	4,118.13	4,028.92	89.21	46.163			
1,900.00	1,886.00	2,224.87	2,224.56	4.41	91.29	-5.76	-4,200.25	136.24	4,084.91	3,995.15	89.76	45.510			
2,000.00	1,978.86	2,300.91	2,300.59	4.94	93.78	-5.93	-4,199.65	136.24	4,047.26	3,956.72	90.55	44.698			
2,100.00	2,069.65	2,375.52	2,375.18	5.57	96.22	-6.13	-4,199.36	136.24	4,005.21	3,914.23	90.98	44.023			
2,200.00	2,158.12	2,448.51	2,448.16	6.29	98.60	-6.36	-4,199.36	136.24	3,958.85	3,867.80	91.05	43.479			
2,300.00	2,244.04	2,519.73	2,519.37	7.12	100.93	-6.63	-4,199.64	136.24	3,908.28	3,817.53	90.75	43.064			
2,400.00	2,327.16	2,656.00	2,655.60	8.04	105.39	-7.03	-4,200.93	136.24	3,854.32	3,762.40	91.92	41.933			
2,500.00	2,407.25	2,675.60	2,675.20	9.05	105.90	-7.33	-4,201.09	136.24	3,794.93	3,705.46	89.47	42.417			
2,600.00	2,484.11	2,766.77	2,766.36	10.15	108.31	-7.80	-4,201.64	136.24	3,731.77	3,643.47	88.30	42.261			
2,700.00	2,557.51	2,853.31	2,852.90	11.33	110.60	-8.36	-4,201.86	136.24	3,664.42	3,577.67	86.75	42.240			
2,800.00	2,627.26	2,934.99	2,934.58	12.59	112.75	-9.02	-4,201.78	136.24	3,593.11	3,508.26	84.86	42.344			
2,900.00	2,693.16	3,011.59	3,011.18	13.93	114.77	-9.81	-4,201.46	136.24	3,518.08	3,435.42	82.67	42.557			
3,000.00	2,755.04	3,086.00	3,085.59	15.33	116.74	-10.76	-4,200.93	136.24	3,439.58	3,359.25	80.33	42.818			
3,100.00	2,812.72	3,111.13	3,110.72	16.79	117.72	-11.70	-4,200.93	136.24	3,358.28	3,281.01	77.27	43.461			
3,200.00	2,866.05	3,164.47	3,164.05	18.31	119.80	-13.00	-4,200.93	136.24	3,274.27	3,199.15	75.11	43.591			
3,300.00	2,914.88	3,213.30	3,212.88	19.89	121.70	-14.60	-4,200.93	136.24	3,187.63	3,114.35	73.27	43.503			
3,391.06	2,955.32	3,253.74	3,253.32	21.37	123.28	-16.41	-4,200.93	136.24	3,106.66	3,034.41	72.25	43.001			
3,400.00	2,959.03	3,257.46	3,257.03	21.48	123.43	-16.99	-4,200.93	136.24	3,098.59	3,026.94	71.64	43.251			
3,450.00	2,977.44	3,275.86	3,275.44	22.02	124.14	-21.17	-4,200.93	136.24	3,052.48	2,981.62	70.86	43.079			
3,500.00	2,991.72	3,290.15	3,289.72	22.60	124.70	-27.86	-4,200.93	136.24	3,004.97	2,927.07	77.90	38.575			
3,550.00	3,001.78	3,300.21	3,299.78	23.21	125.09	-39.62	-4,200.93	136.24	2,956.41	2,858.32	98.09	30.139			
3,600.00	3,007.53	3,305.96	3,305.53	23.85	125.32	-61.76	-4,200.93	136.24	2,907.19	2,774.77	132.41	21.955			
3,641.06	3,009.00	3,307.43	3,307.00	24.39	125.37	-90.00	-4,200.93	136.24	2,866.53	2,716.76	149.76	19.140			
3,652.11	3,009.01	3,307.45	3,307.01	24.53	125.37	-88.91	-4,200.93	136.24	2,855.58	2,705.67	149.91	19.049			
3,700.00	3,009.14	3,307.57	3,307.14	25.16	125.38	-88.93	-4,200.93	136.24	2,808.17	2,657.62	150.55	18.653			
3,800.00	3,009.41	3,307.84	3,307.41	26.56	125.39	-88.97	-4,200.93	136.24	2,709.22	2,557.26	151.95	17.829			
3,900.00	3,009.68	3,308.11	3,307.68	28.01	125.40	-89.00	-4,200.93	136.24	2,610.35	2,456.93	153.41	17.015			
4,000.00	3,009.95	3,308.38	3,307.95	29.50	125.41	-89.04	-4,200.93	136.24	2,511.57	2,356.65	154.92	16.212			
4,100.00	3,010.22	3,308.65	3,308.22	31.04	125.42	-89.08	-4,200.93	136.24	2,412.89	2,256.42	156.47	15.421			
4,200.00	3,010.48	3,308.92	3,308.48	32.61	125.43	-89.12	-4,200.93	136.24	2,314.32	2,156.28	158.05	14.643			

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



Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T32N-R07W
Site Error: 0.00 usft
Reference Well: San Juan 32-7 Unit 249H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 249H
TVD Reference: KB @ 6354.00usft
MD Reference: KB @ 6354.00usft
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	
Sec.16-T32N-R07W - San Juan 32-7 Unit 013A - Original Hole - Original Hole														Offset Well Error: 0.00 usft	
Survey Program: 123-INC_ONLY<10															
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
4,300.00	3,010.75	3,309.18	3,308.75	34.21	125.44	-89.16	-4,200.93	136.24	2,215.89	2,056.23	159.65	13.879			
4,400.00	3,011.02	3,309.45	3,309.02	35.83	125.45	-89.20	-4,200.93	136.24	2,117.59	1,956.31	161.29	13.129			
4,500.00	3,011.29	3,309.72	3,309.29	37.47	125.46	-89.24	-4,200.93	136.24	2,019.47	1,856.53	162.94	12.394			
4,600.00	3,011.56	3,309.99	3,309.56	39.14	125.47	-89.27	-4,200.93	136.24	1,921.54	1,756.92	164.62	11.673			
4,700.00	3,011.83	3,310.26	3,309.83	40.82	125.48	-89.31	-4,200.93	136.24	1,823.84	1,657.53	166.31	10.966			
4,800.00	3,012.09	3,310.53	3,310.09	42.51	125.49	-89.35	-4,200.93	136.24	1,726.39	1,558.38	168.02	10.275			
4,900.00	3,012.36	3,310.80	3,310.36	44.22	125.51	-89.39	-4,200.93	136.24	1,629.26	1,459.52	169.74	9.599			
5,000.00	3,012.63	3,311.06	3,310.63	45.94	125.52	-89.43	-4,200.93	136.24	1,532.50	1,361.03	171.47	8.937			
5,100.00	3,012.90	3,311.33	3,310.90	47.68	125.53	-89.47	-4,200.93	136.24	1,436.18	1,262.97	173.21	8.292			
5,200.00	3,013.17	3,311.60	3,311.17	49.42	125.54	-89.51	-4,200.93	136.24	1,340.40	1,165.43	174.96	7.661			
5,300.00	3,013.44	3,311.87	3,311.44	51.16	125.55	-89.54	-4,200.93	136.24	1,245.28	1,068.56	176.72	7.047			
5,400.00	3,013.70	3,312.14	3,311.70	52.92	125.56	-89.58	-4,200.93	136.24	1,150.99	972.50	178.49	6.449			
5,500.00	3,013.97	3,312.41	3,311.97	54.68	125.57	-89.62	-4,200.93	136.24	1,057.75	877.48	180.26	5.868			
5,600.00	3,014.24	3,312.67	3,312.24	56.45	125.58	-89.66	-4,200.93	136.24	965.86	783.82	182.04	5.306			
5,700.00	3,014.51	3,312.94	3,312.51	58.23	125.59	-89.70	-4,200.93	136.24	875.75	691.92	183.83	4.764			
5,800.00	3,014.78	3,313.21	3,312.78	60.01	125.60	-89.74	-4,200.93	136.24	788.03	602.41	185.62	4.245			
5,900.00	3,015.05	3,313.48	3,313.05	61.79	125.61	-89.78	-4,200.93	136.24	703.59	516.18	187.41	3.754			
6,000.00	3,015.32	3,313.75	3,313.32	63.58	125.62	-89.81	-4,200.93	136.24	623.78	434.57	189.21	3.297			
6,100.00	3,015.58	3,314.02	3,313.58	65.38	125.63	-89.85	-4,200.93	136.24	550.59	359.58	191.01	2.883			
6,200.00	3,015.85	3,314.29	3,313.85	67.17	125.64	-89.89	-4,200.93	136.24	487.04	294.22	192.82	2.526			
6,300.00	3,016.12	3,314.55	3,314.12	68.97	125.65	-89.93	-4,200.93	136.24	437.34	242.71	194.63	2.247			
6,400.00	3,016.39	3,314.82	3,314.39	70.78	125.66	-89.97	-4,200.93	136.24	406.59	210.15	196.44	2.070			
6,479.73	3,016.60	3,315.04	3,314.60	72.22	125.67	-90.00	-4,200.93	136.24	398.70	200.81	197.89	2.015 CC, ES			
6,500.00	3,016.66	3,315.09	3,314.66	72.58	125.67	-90.01	-4,200.93	136.24	399.21	200.96	198.26	2.014 SF			
6,600.00	3,016.93	3,315.36	3,314.93	74.39	125.68	-90.05	-4,200.93	136.24	416.44	216.37	200.07	2.081			
6,700.00	3,017.19	3,315.63	3,315.19	76.20	125.69	-90.08	-4,200.93	136.24	455.50	253.60	201.89	2.256			
6,800.00	3,017.46	3,315.90	3,315.46	78.01	125.70	-90.12	-4,200.93	136.24	511.40	307.68	203.72	2.510			
6,900.00	3,017.73	3,316.17	3,315.73	79.83	125.71	-90.16	-4,200.93	136.24	579.30	373.75	205.54	2.818			
7,000.00	3,018.00	3,316.43	3,316.00	81.65	125.73	-90.20	-4,200.93	136.24	655.47	448.10	207.37	3.161			
7,100.00	3,018.27	3,316.70	3,316.27	83.47	125.74	-90.24	-4,200.93	136.24	737.35	528.15	209.20	3.525			
7,200.00	3,018.54	3,316.97	3,316.54	85.29	125.75	-90.28	-4,200.93	136.24	823.25	612.22	211.03	3.901			
7,300.00	3,018.81	3,317.24	3,316.81	87.11	125.76	-90.32	-4,200.93	136.24	912.03	699.17	212.86	4.285			
7,372.44	3,019.00	3,317.43	3,317.00	88.43	125.76	-90.34	-4,200.93	136.24	977.70	763.51	214.19	4.565			

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



Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T32N-R07W
Site Error: 0.00 usft
Reference Well: San Juan 32-7 Unit 249H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 249H
TVD Reference: KB @ 6354.00usft
MD Reference: KB @ 6354.00usft
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						
Sec.16-T32N-R07W - San Juan 32-7 Unit 250A - Original Hole - Original Hole													Offset Well Error:		0.00 usft						
Survey Program: 216-INC_ONLY<10				Reference				Offset				Semi Major Axis				Distance				Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor									
0.00	0.00	305.00	305.00	0.00	5.22	168.00	-4,100.65	871.99	4,192.34												
100.00	100.00	405.01	405.00	0.10	7.87	168.00	-4,100.65	871.99	4,192.34	4,184.37	7.97	526.120									
200.00	200.00	505.01	505.00	0.32	10.52	168.00	-4,100.65	871.99	4,192.34	4,181.49	10.84	386.604									
300.00	300.00	605.02	605.00	0.55	13.17	168.00	-4,100.65	871.99	4,192.34	4,178.62	13.72	305.573									
400.00	400.00	740.00	739.97	0.77	16.75	168.00	-4,100.65	871.99	4,192.48	4,174.96	17.52	239.266									
451.26	451.26	756.29	756.26	0.89	17.18	168.00	-4,100.65	871.99	4,192.34	4,174.27	18.07	232.015									
500.00	500.00	805.03	805.00	0.99	18.48	168.00	-4,100.65	871.99	4,192.34	4,172.87	19.47	215.314									
600.00	600.00	905.04	905.00	1.22	21.13	168.00	-4,100.65	871.99	4,192.34	4,169.99	22.35	187.607									
700.00	700.00	1,005.04	1,005.00	1.44	23.78	168.00	-4,100.65	871.99	4,192.34	4,167.11	25.22	166.218									
800.00	800.00	1,105.05	1,105.00	1.67	26.43	168.00	-4,100.65	871.99	4,192.34	4,164.24	28.10	149.206									
900.00	900.00	1,205.05	1,205.00	1.89	29.08	168.00	-4,100.65	871.99	4,192.34	4,161.36	30.97	135.354									
1,000.00	1,000.00	1,305.06	1,305.00	2.12	31.73	168.00	-4,100.65	871.99	4,192.34	4,158.49	33.85	123.855									
1,100.00	1,100.00	1,405.06	1,405.00	2.34	34.38	168.00	-4,100.65	871.99	4,192.34	4,155.61	36.72	114.157									
1,200.00	1,200.00	1,505.07	1,505.00	2.57	37.03	168.00	-4,100.65	871.99	4,192.34	4,152.74	39.60	105.867									
1,224.40	1,224.40	1,529.47	1,529.40	2.62	37.68	168.00	-4,100.65	871.99	4,192.34	4,152.04	40.30	104.024									
1,300.00	1,299.98	1,605.05	1,604.98	2.77	39.68	-15.40	-4,100.65	871.99	4,190.89	4,148.45	42.44	98.743									
1,400.00	1,399.75	1,704.83	1,704.75	2.95	42.33	-15.48	-4,100.65	871.99	4,184.56	4,139.42	45.14	92.704									
1,500.00	1,499.04	1,804.13	1,804.04	3.14	44.96	-15.61	-4,100.65	871.99	4,173.20	4,125.50	47.70	87.488									
1,600.00	1,597.58	1,902.67	1,902.58	3.36	47.57	-15.81	-4,100.65	871.99	4,156.85	4,106.75	50.10	82.966									
1,700.00	1,695.10	2,000.19	2,000.10	3.64	50.16	-16.07	-4,100.65	871.99	4,135.56	4,083.24	52.33	79.034									
1,800.00	1,791.33	2,096.42	2,096.33	3.98	52.71	-16.41	-4,100.65	871.99	4,109.40	4,055.05	54.36	75.602									
1,900.00	1,886.00	2,228.00	2,227.90	4.41	56.19	-16.87	-4,100.65	871.99	4,078.61	4,021.50	57.11	71.418									
2,000.00	1,978.86	2,251.29	2,251.18	4.94	57.10	-17.24	-4,100.85	871.99	4,043.10	3,985.86	57.24	70.632									
2,100.00	2,069.65	2,349.69	2,349.57	5.57	60.93	-17.82	-4,101.57	871.99	4,003.50	3,943.56	59.94	66.790									
2,200.00	2,158.12	2,445.44	2,445.31	6.29	64.66	-18.51	-4,102.10	871.99	3,959.25	3,896.91	62.34	63.514									
2,300.00	2,244.04	2,538.25	2,538.12	7.12	68.27	-19.30	-4,102.45	871.99	3,910.50	3,846.07	64.43	60.694									
2,400.00	2,327.16	2,627.86	2,627.72	8.04	71.75	-20.23	-4,102.63	871.99	3,857.42	3,791.17	66.24	58.231									
2,500.00	2,407.25	2,714.00	2,713.86	9.05	75.10	-21.31	-4,102.67	871.99	3,800.18	3,732.37	67.81	56.041									
2,600.00	2,484.11	2,796.44	2,796.29	10.15	78.31	-22.55	-4,102.57	871.99	3,738.98	3,669.79	69.19	54.040									
2,700.00	2,557.51	2,874.94	2,874.79	11.33	81.37	-24.00	-4,102.35	871.99	3,674.02	3,603.56	70.46	52.143									
2,800.00	2,627.26	2,949.28	2,949.13	12.59	84.26	-25.67	-4,102.05	871.99	3,605.52	3,533.78	71.74	50.258									
2,900.00	2,693.16	3,019.27	3,019.12	13.93	86.98	-27.60	-4,101.66	871.99	3,533.72	3,460.54	73.18	48.290									
3,000.00	2,755.04	3,155.00	3,154.85	15.33	92.26	-30.58	-4,100.65	871.99	3,459.52	3,382.00	77.52	44.628									
3,100.00	2,812.72	3,155.00	3,154.85	16.79	92.26	-32.56	-4,100.65	871.99	3,381.19	3,303.52	77.68	43.530									
3,200.00	2,866.05	3,171.20	3,171.05	18.31	93.10	-35.00	-4,100.65	871.99	3,301.23	3,221.92	79.31	41.622									
3,300.00	2,914.88	3,220.04	3,219.88	19.89	95.61	-38.35	-4,100.65	871.99	3,219.21	3,135.54	83.67	38.473									
3,391.06	2,955.32	3,260.49	3,260.32	21.37	97.69	-41.84	-4,100.65	871.99	3,142.78	3,054.17	88.62	35.465									
3,400.00	2,959.03	3,264.20	3,264.03	21.48	97.88	-42.89	-4,100.65	871.99	3,135.18	3,045.57	89.61	34.986									
3,450.00	2,977.44	3,282.61	3,282.44	22.02	98.83	-49.67	-4,100.65	871.99	3,091.78	2,995.11	96.66	31.985									
3,500.00	2,991.72	3,296.90	3,296.72	22.60	99.56	-58.14	-4,100.65	871.99	3,047.13	2,941.25	105.89	28.777									
3,550.00	3,001.78	3,306.96	3,306.78	23.21	100.08	-68.37	-4,100.65	871.99	3,001.60	2,886.12	115.49	25.991									
3,600.00	3,007.53	3,312.71	3,312.53	23.85	100.37	-80.01	-4,100.65	871.99	2,955.55	2,832.91	122.63	24.101									
3,641.06	3,009.00	3,314.18	3,314.00	24.39	100.45	-90.00	-4,100.65	871.99	2,917.58	2,792.74	124.84	23.371									
3,652.11	3,009.01	3,314.19	3,314.01	24.53	100.45	-89.63	-4,100.65	871.99	2,907.37	2,782.38	124.99	23.261									
3,700.00	3,009.14	3,314.32	3,314.14	25.16	100.46	-89.64	-4,100.65	871.99	2,863.29	2,737.66	125.63	22.791									
3,800.00	3,009.41	3,314.59	3,314.41	26.56	100.47	-89.65	-4,100.65	871.99	2,771.63	2,644.59	127.04	21.817									
3,900.00	3,009.68	3,314.86	3,314.68	28.01	100.49	-89.67	-4,100.65	871.99	2,680.57	2,552.07	128.50	20.860									
4,000.00	3,009.95	3,315.13	3,314.95	29.50	100.50	-89.68	-4,100.65	871.99	2,590.17	2,460.16	130.01	19.923									
4,100.00	3,010.22	3,315.40	3,315.22	31.04	100.51	-89.70	-4,100.65	871.99	2,500.51	2,368.94	131.56	19.007									
4,200.00	3,010.48	3,315.67	3,315.48	32.61	100.53	-89.71	-4,100.65	871.99	2,411.65	2,278.51	133.14	18.113									
4,300.00	3,010.75	3,315.93	3,315.75	34.21	100.54	-89.72	-4,100.65	871.99	2,323.70	2,188.94	134.75	17.244									
4,400.00	3,011.02	3,316.20	3,316.02	35.83	100.55	-89.74	-4,100.65	871.99	2,236.76	2,100.37	136.39	16.400									

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



Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T32N-R07W
Site Error: 0.00 usft
Reference Well: San Juan 32-7 Unit 249H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 249H
TVD Reference: KB @ 6354.00usft
MD Reference: KB @ 6354.00usft
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.16-T32N-R07W - San Juan 32-7 Unit 250A - Original Hole - Original Hole													Offset Site Error:	0.00 usft
Survey Program: 216-INC_ONLY<10													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
4,500.00	3,011.29	3,316.47	3,316.29	37.47	100.57	-89.75	-4,100.65	871.99	2,150.96	2,012.91	138.05	15.581		
4,600.00	3,011.56	3,316.74	3,316.56	39.14	100.58	-89.76	-4,100.65	871.99	2,066.43	1,926.71	139.73	14.789		
4,700.00	3,011.83	3,317.01	3,316.83	40.82	100.60	-89.78	-4,100.65	871.99	1,983.35	1,841.93	141.42	14.024		
4,800.00	3,012.09	3,317.28	3,317.09	42.51	100.61	-89.79	-4,100.65	871.99	1,901.89	1,758.76	143.13	13.288		
4,900.00	3,012.36	3,317.54	3,317.36	44.22	100.62	-89.80	-4,100.65	871.99	1,822.28	1,677.43	144.85	12.580		
5,000.00	3,012.63	3,317.81	3,317.63	45.94	100.64	-89.82	-4,100.65	871.99	1,744.77	1,598.19	146.59	11.903		
5,100.00	3,012.90	3,318.08	3,317.90	47.68	100.65	-89.83	-4,100.65	871.99	1,669.66	1,521.33	148.33	11.256		
5,200.00	3,013.17	3,318.35	3,318.17	49.42	100.67	-89.85	-4,100.65	871.99	1,597.27	1,447.19	150.09	10.642		
5,300.00	3,013.44	3,318.62	3,318.44	51.16	100.68	-89.86	-4,100.65	871.99	1,528.01	1,376.16	151.85	10.063		
5,400.00	3,013.70	3,318.89	3,318.70	52.92	100.69	-89.87	-4,100.65	871.99	1,462.30	1,308.68	153.62	9.519		
5,500.00	3,013.97	3,319.16	3,318.97	54.68	100.71	-89.89	-4,100.65	871.99	1,400.66	1,245.26	155.40	9.014		
5,600.00	3,014.24	3,319.42	3,319.24	56.45	100.72	-89.90	-4,100.65	871.99	1,343.64	1,186.46	157.18	8.549		
5,700.00	3,014.51	3,319.69	3,319.51	58.23	100.73	-89.91	-4,100.65	871.99	1,291.86	1,132.89	158.97	8.127		
5,800.00	3,014.78	3,319.96	3,319.78	60.01	100.75	-89.93	-4,100.65	871.99	1,245.96	1,085.20	160.76	7.750		
5,900.00	3,015.05	3,320.23	3,320.05	61.79	100.76	-89.94	-4,100.65	871.99	1,206.62	1,044.06	162.56	7.423		
6,000.00	3,015.32	3,320.50	3,320.32	63.58	100.78	-89.95	-4,100.65	871.99	1,174.50	1,010.14	164.36	7.146		
6,100.00	3,015.58	3,320.77	3,320.58	65.38	100.79	-89.97	-4,100.65	871.99	1,150.21	984.04	166.17	6.922		
6,200.00	3,015.85	3,321.04	3,320.85	67.17	100.80	-89.98	-4,100.65	871.99	1,134.24	966.26	167.98	6.752		
6,300.00	3,016.12	3,321.30	3,321.12	68.97	100.82	-90.00	-4,100.65	871.99	1,126.95	957.16	169.79	6.637		
6,332.40	3,016.21	3,321.39	3,321.21	69.56	100.82	-90.00	-4,100.65	871.99	1,126.49	956.11	170.38	6.612 CC, ES		
6,400.00	3,016.39	3,321.57	3,321.39	70.78	100.83	-90.01	-4,100.65	871.99	1,128.51	956.90	171.61	6.576		
6,500.00	3,016.66	3,321.84	3,321.66	72.58	100.84	-90.02	-4,100.65	871.99	1,138.89	965.46	173.43	6.567 SF		
6,600.00	3,016.93	3,322.11	3,321.93	74.39	100.86	-90.04	-4,100.65	871.99	1,157.83	982.59	175.25	6.607		
6,700.00	3,017.19	3,322.38	3,322.19	76.20	100.87	-90.05	-4,100.65	871.99	1,184.95	1,007.87	177.07	6.692		
6,800.00	3,017.46	3,322.65	3,322.46	78.01	100.89	-90.06	-4,100.65	871.99	1,219.68	1,040.78	178.90	6.818		
6,900.00	3,017.73	3,322.92	3,322.73	79.83	100.90	-90.08	-4,100.65	871.99	1,261.40	1,080.68	180.73	6.980		
7,000.00	3,018.00	3,323.18	3,323.00	81.65	100.91	-90.09	-4,100.65	871.99	1,309.45	1,126.89	182.56	7.173		
7,100.00	3,018.27	3,323.45	3,323.27	83.47	100.93	-90.10	-4,100.65	871.99	1,363.15	1,178.76	184.39	7.393		
7,200.00	3,018.54	3,323.72	3,323.54	85.29	100.94	-90.12	-4,100.65	871.99	1,421.87	1,235.64	186.23	7.635		
7,300.00	3,018.81	3,323.99	3,323.81	87.11	100.96	-90.13	-4,100.65	871.99	1,485.00	1,296.93	188.06	7.896		
7,372.44	3,019.00	3,324.18	3,324.00	88.43	100.97	-90.14	-4,100.65	871.99	1,533.19	1,343.79	189.40	8.095		

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



Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T32N-R07W
Site Error: 0.00 usft
Reference Well: San Juan 32-7 Unit 249H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 249H
TVD Reference: KB @ 6354.00usft
MD Reference: KB @ 6354.00usft
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.17-T32N-R07W - San Juan 32-7 Unit 016 - Original Hole - Original Hole													Offset Site Error:	0.00 usft
Survey Program: 5930-INC_ONLY<10													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	Offset Wellbore Centre +E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	183.00	183.00	0.00	0.63	-160.58	-4,482.16	-1,580.40	4,752.62					
100.00	100.00	283.00	283.00	0.10	0.98	-160.58	-4,482.16	-1,580.40	4,752.62	4,751.55	1.08	4,418.946		
200.00	200.00	383.00	383.00	0.32	1.33	-160.58	-4,482.16	-1,580.40	4,752.62	4,750.98	1.65	2,886.517		
300.00	300.00	483.00	483.00	0.55	1.67	-160.58	-4,482.16	-1,580.40	4,752.62	4,750.40	2.22	2,143.264		
400.00	400.00	583.00	583.00	0.77	2.02	-160.58	-4,482.16	-1,580.40	4,752.62	4,749.83	2.79	1,704.396		
500.00	500.00	683.00	683.00	0.99	2.36	-160.58	-4,482.16	-1,580.40	4,752.62	4,749.26	3.36	1,414.711		
600.00	600.00	783.00	783.00	1.22	2.71	-160.58	-4,482.16	-1,580.40	4,752.62	4,748.69	3.93	1,209.193		
700.00	700.00	883.00	883.00	1.44	3.06	-160.58	-4,482.16	-1,580.40	4,752.62	4,748.12	4.50	1,055.812		
800.00	800.00	983.00	983.00	1.67	3.40	-160.58	-4,482.16	-1,580.40	4,752.62	4,747.55	5.07	936.963		
900.00	900.00	1,083.00	1,083.00	1.89	3.75	-160.58	-4,482.16	-1,580.40	4,752.62	4,746.98	5.64	842.164		
1,000.00	1,000.00	1,183.00	1,183.00	2.12	4.10	-160.58	-4,482.16	-1,580.40	4,752.62	4,746.41	6.21	764.785		
1,100.00	1,100.00	1,283.00	1,283.00	2.34	4.44	-160.58	-4,482.16	-1,580.40	4,752.62	4,745.84	6.79	700.428		
1,200.00	1,200.00	1,383.00	1,383.00	2.57	4.79	-160.58	-4,482.16	-1,580.40	4,752.62	4,745.27	7.36	646.063		
1,224.40	1,224.40	1,407.40	1,407.40	2.62	4.87	-160.58	-4,482.16	-1,580.40	4,752.62	4,745.13	7.50	634.054		
1,300.00	1,299.98	1,482.98	1,482.98	2.77	5.13	16.06	-4,482.16	-1,580.40	4,751.18	4,743.24	7.95	597.976		
1,400.00	1,399.75	1,582.75	1,582.75	2.95	5.48	16.13	-4,482.16	-1,580.40	4,744.87	4,736.36	8.51	557.808		
1,500.00	1,499.04	1,682.04	1,682.04	3.14	5.82	16.27	-4,482.16	-1,580.40	4,733.55	4,724.49	9.06	522.538		
1,600.00	1,597.58	1,780.58	1,780.58	3.36	6.16	16.47	-4,482.16	-1,580.40	4,717.25	4,707.65	9.60	491.322		
1,700.00	1,695.10	1,878.10	1,878.10	3.64	6.50	16.73	-4,482.16	-1,580.40	4,696.03	4,685.90	10.13	463.418		
1,800.00	1,791.33	1,974.33	1,974.33	3.98	6.84	17.06	-4,482.16	-1,580.40	4,669.95	4,659.29	10.66	438.199		
1,900.00	1,886.00	2,069.00	2,069.00	4.41	7.16	17.47	-4,482.16	-1,580.40	4,639.09	4,627.91	11.17	415.139		
2,000.00	1,978.86	2,161.86	2,161.86	4.94	7.48	17.95	-4,482.16	-1,580.40	4,603.54	4,591.85	11.69	393.796		
2,100.00	2,069.65	2,252.65	2,252.65	5.57	7.80	18.53	-4,482.16	-1,580.40	4,563.40	4,551.20	12.21	373.797		
2,200.00	2,158.12	2,341.12	2,341.12	6.29	8.11	19.20	-4,482.16	-1,580.40	4,518.81	4,506.08	12.74	354.827		
2,300.00	2,244.04	2,427.04	2,427.04	7.12	8.40	19.98	-4,482.16	-1,580.40	4,469.89	4,456.61	13.28	336.618		
2,400.00	2,327.16	2,510.16	2,510.16	8.04	8.69	20.88	-4,482.16	-1,580.40	4,416.80	4,402.95	13.85	318.938		
2,500.00	2,407.25	2,590.25	2,590.25	9.05	8.97	21.92	-4,482.16	-1,580.40	4,359.69	4,345.24	14.46	301.586		
2,600.00	2,484.11	2,667.11	2,667.11	10.15	9.23	23.12	-4,482.16	-1,580.40	4,298.75	4,283.63	15.12	284.385		
2,700.00	2,557.51	2,740.51	2,740.51	11.33	9.49	24.50	-4,482.16	-1,580.40	4,234.15	4,218.30	15.85	267.187		
2,800.00	2,627.26	2,810.26	2,810.26	12.59	9.73	26.08	-4,482.16	-1,580.40	4,166.10	4,149.42	16.67	249.872		
2,900.00	2,693.16	2,876.16	2,876.16	13.93	9.96	27.91	-4,482.16	-1,580.40	4,094.80	4,077.18	17.62	232.366		
3,000.00	2,755.04	2,938.04	2,938.04	15.33	10.17	30.02	-4,482.16	-1,580.40	4,020.49	4,001.76	18.73	214.659		
3,100.00	2,812.72	2,995.72	2,995.72	16.79	10.37	32.46	-4,482.16	-1,580.40	3,943.39	3,923.35	20.04	196.819		
3,200.00	2,866.05	3,049.05	3,049.05	18.31	10.56	35.27	-4,482.16	-1,580.40	3,863.74	3,842.16	21.58	179.015		
3,300.00	2,914.88	3,097.88	3,097.88	19.89	10.73	38.52	-4,482.16	-1,580.40	3,781.80	3,758.38	23.41	161.514		
3,391.06	2,955.32	3,138.32	3,138.32	21.37	10.87	41.89	-4,482.16	-1,580.40	3,705.40	3,680.05	25.36	146.131		
3,400.00	2,959.03	3,142.03	3,142.03	21.48	10.88	42.93	-4,482.16	-1,580.40	3,697.80	3,672.10	25.70	143.889		
3,450.00	2,977.44	3,160.44	3,160.44	22.02	10.94	49.64	-4,482.16	-1,580.40	3,654.40	3,626.60	27.80	131.447		
3,500.00	2,991.72	3,174.72	3,174.72	22.60	10.99	58.03	-4,482.16	-1,580.40	3,609.74	3,579.39	30.34	118.962		
3,550.00	3,001.78	3,184.78	3,184.78	23.21	11.03	68.23	-4,482.16	-1,580.40	3,564.17	3,531.26	32.91	108.287		
3,600.00	3,007.53	3,190.53	3,190.53	23.85	11.05	79.91	-4,482.16	-1,580.40	3,518.06	3,483.23	34.83	101.014		
3,641.06	3,009.00	3,192.00	3,192.00	24.39	11.05	90.00	-4,482.16	-1,580.40	3,480.03	3,444.60	35.44	98.201		
3,652.11	3,009.01	3,192.01	3,192.01	24.53	11.05	89.62	-4,482.16	-1,580.40	3,469.79	3,434.19	35.60	97.471		
3,700.00	3,009.14	3,192.14	3,192.14	25.16	11.05	89.62	-4,482.16	-1,580.40	3,425.42	3,389.19	36.23	94.541		
3,800.00	3,009.41	3,192.41	3,192.41	26.56	11.05	89.64	-4,482.16	-1,580.40	3,333.07	3,295.44	37.63	88.580		
3,900.00	3,009.68	3,192.68	3,192.68	28.01	11.05	89.65	-4,482.16	-1,580.40	3,241.18	3,202.10	39.08	82.943		
4,000.00	3,009.95	3,192.95	3,192.95	29.50	11.05	89.66	-4,482.16	-1,580.40	3,149.78	3,109.20	40.57	77.632		
4,100.00	3,010.22	3,193.22	3,193.22	31.04	11.06	89.67	-4,482.16	-1,580.40	3,058.92	3,016.81	42.11	72.644		
4,200.00	3,010.48	3,193.48	3,193.48	32.61	11.06	89.68	-4,482.16	-1,580.40	2,968.64	2,924.97	43.68	67.968		
4,300.00	3,010.75	3,193.75	3,193.75	34.21	11.06	89.69	-4,482.16	-1,580.40	2,879.01	2,833.74	45.28	63.589		
4,400.00	3,011.02	3,194.02	3,194.02	35.83	11.06	89.71	-4,482.16	-1,580.40	2,790.09	2,743.19	46.90	59.492		
4,500.00	3,011.29	3,194.29	3,194.29	37.47	11.06	89.72	-4,482.16	-1,580.40	2,701.94	2,653.39	48.54	55.660		

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



Koltek Energy Services
Anticollision Report



Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T32N-R07W
Site Error: 0.00 usft
Reference Well: San Juan 32-7 Unit 249H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 249H
TVD Reference: KB @ 6354.00usft
MD Reference: KB @ 6354.00usft
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.17-T32N-R07W - San Juan 32-7 Unit 016 - Original Hole - Original Hole													Offset Site Error: 0.00 usft
Survey Program: 5930-INC_ONLY<10													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance				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)	Minimum Separation (usft)	Separation Factor	
4,600.00	3,011.56	3,194.56	3,194.56	39.14	11.06	89.73	-4,482.16	-1,580.40	2,614.64	2,564.43	50.21	52.075	
4,700.00	3,011.83	3,194.83	3,194.83	40.82	11.06	89.74	-4,482.16	-1,580.40	2,528.28	2,476.39	51.89	48.724	
4,800.00	3,012.09	3,195.09	3,195.09	42.51	11.06	89.75	-4,482.16	-1,580.40	2,442.96	2,389.38	53.59	45.589	
4,900.00	3,012.36	3,195.36	3,195.36	44.22	11.06	89.77	-4,482.16	-1,580.40	2,358.80	2,303.51	55.30	42.658	
5,000.00	3,012.63	3,195.63	3,195.63	45.94	11.06	89.78	-4,482.16	-1,580.40	2,275.92	2,218.90	57.02	39.916	
5,100.00	3,012.90	3,195.90	3,195.90	47.68	11.06	89.79	-4,482.16	-1,580.40	2,194.47	2,135.72	58.75	37.353	
5,200.00	3,013.17	3,196.17	3,196.17	49.42	11.07	89.80	-4,482.16	-1,580.40	2,114.61	2,054.12	60.49	34.958	
5,300.00	3,013.44	3,196.44	3,196.44	51.16	11.07	89.81	-4,482.16	-1,580.40	2,036.52	1,974.28	62.24	32.721	
5,400.00	3,013.70	3,196.70	3,196.70	52.92	11.07	89.83	-4,482.16	-1,580.40	1,960.43	1,896.44	64.00	30.634	
5,500.00	3,013.97	3,196.97	3,196.97	54.68	11.07	89.84	-4,482.16	-1,580.40	1,886.58	1,820.82	65.76	28.689	
5,600.00	3,014.24	3,197.24	3,197.24	56.45	11.07	89.85	-4,482.16	-1,580.40	1,815.22	1,747.69	67.53	26.881	
5,700.00	3,014.51	3,197.51	3,197.51	58.23	11.07	89.86	-4,482.16	-1,580.40	1,746.69	1,677.38	69.30	25.203	
5,800.00	3,014.78	3,197.78	3,197.78	60.01	11.07	89.87	-4,482.16	-1,580.40	1,681.30	1,610.22	71.09	23.652	
5,900.00	3,015.05	3,198.05	3,198.05	61.79	11.07	89.88	-4,482.16	-1,580.40	1,619.46	1,546.59	72.87	22.224	
6,000.00	3,015.32	3,198.32	3,198.32	63.58	11.07	89.90	-4,482.16	-1,580.40	1,561.58	1,486.92	74.66	20.916	
6,100.00	3,015.58	3,198.58	3,198.58	65.38	11.07	89.91	-4,482.16	-1,580.40	1,508.11	1,431.65	76.45	19.726	
6,200.00	3,015.85	3,198.85	3,198.85	67.17	11.08	89.92	-4,482.16	-1,580.40	1,459.54	1,381.29	78.25	18.652	
6,300.00	3,016.12	3,199.12	3,199.12	68.97	11.08	89.93	-4,482.16	-1,580.40	1,416.38	1,336.33	80.05	17.693	
6,400.00	3,016.39	3,199.39	3,199.39	70.78	11.08	89.94	-4,482.16	-1,580.40	1,379.13	1,297.27	81.85	16.848	
6,500.00	3,016.66	3,199.66	3,199.66	72.58	11.08	89.96	-4,482.16	-1,580.40	1,348.28	1,264.62	83.66	16.116	
6,600.00	3,016.93	3,199.93	3,199.93	74.39	11.08	89.97	-4,482.16	-1,580.40	1,324.29	1,238.82	85.47	15.494	
6,700.00	3,017.19	3,200.19	3,200.19	76.20	11.08	89.98	-4,482.16	-1,580.40	1,307.52	1,220.24	87.28	14.980	
6,800.00	3,017.46	3,200.46	3,200.46	78.01	11.08	89.99	-4,482.16	-1,580.40	1,298.26	1,209.16	89.10	14.572	
6,870.66	3,017.65	3,200.65	3,200.65	79.30	11.08	90.00	-4,482.16	-1,580.40	1,296.33	1,205.95	90.38	14.343 CC	
6,900.00	3,017.73	3,200.73	3,200.73	79.83	11.08	90.00	-4,482.16	-1,580.40	1,296.66	1,205.75	90.91	14.263 ES	
7,000.00	3,018.00	3,201.00	3,201.00	81.65	11.08	90.02	-4,482.16	-1,580.40	1,302.77	1,210.04	92.73	14.049	
7,100.00	3,018.27	3,201.27	3,201.27	83.47	11.08	90.03	-4,482.16	-1,580.40	1,316.46	1,221.91	94.55	13.924	
7,200.00	3,018.54	3,201.54	3,201.54	85.29	11.08	90.04	-4,482.16	-1,580.40	1,337.51	1,241.14	96.37	13.879 SF	
7,300.00	3,018.81	3,201.81	3,201.81	87.11	11.09	90.05	-4,482.16	-1,580.40	1,365.58	1,267.39	98.20	13.907	
7,372.44	3,019.00	3,202.00	3,202.00	88.43	11.09	90.06	-4,482.16	-1,580.40	1,390.06	1,290.54	99.52	13.968	

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



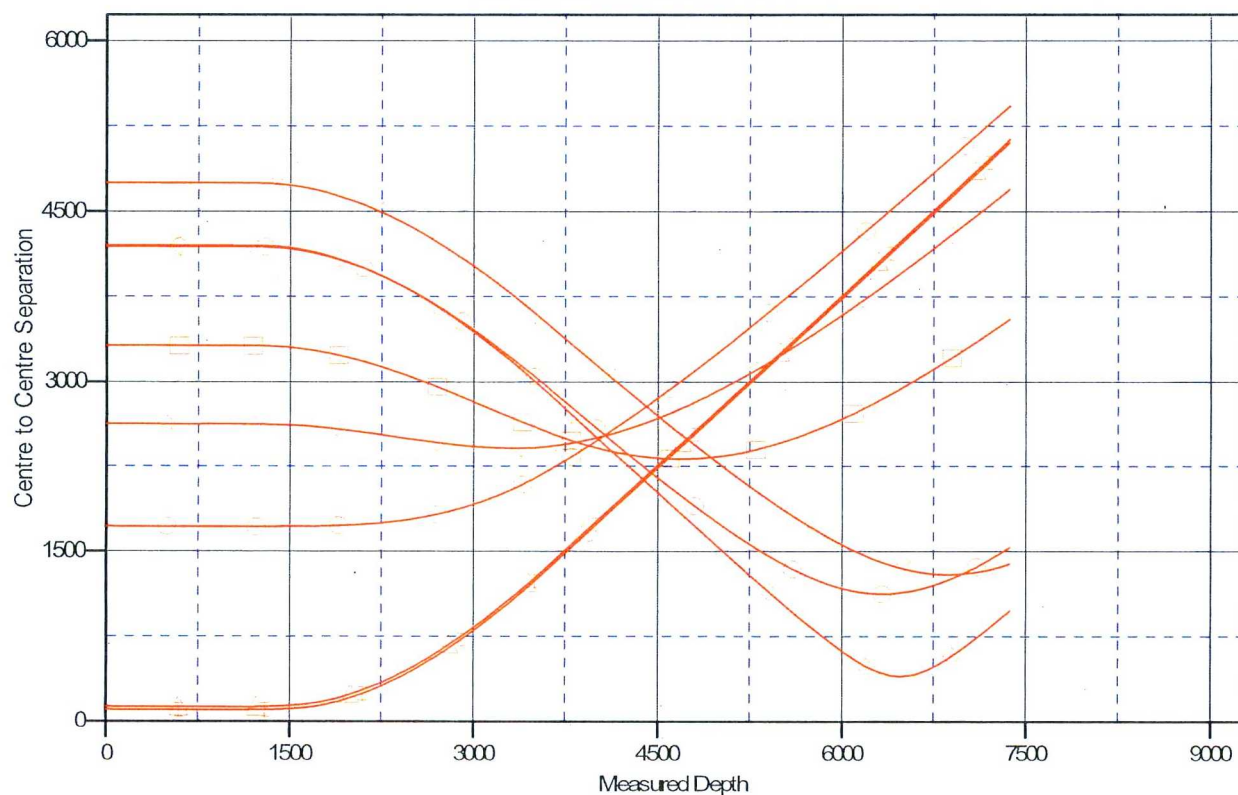
Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T32N-R07W
Site Error: 0.00 usft
Reference Well: San Juan 32-7 Unit 249H
Well Error: 0.00 usft
Reference Wellbore: Lat 1
Reference Design: Rev0

Local Co-ordinate Reference: Well San Juan 32-7 Unit 249H
TVD Reference: KB @ 6354.00usft
MD Reference: KB @ 6354.00usft
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 @ 6354.00usft
Offset Depths are relative to Offset Datum
Central Meridian is 107° 50' 0.000 W

Coordinates are relative to: San Juan 32-7 Unit 249H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico West 30
Grid Convergence at Surface is: 0.15°

Ladder Plot



LEGEND

ar 32-7 Unit250A, Original Hole, Original Hole V0 San Juan 32-7 Unit249, Original Hole, Original Hole V0 San Juan 32-7 Unit016, Original Hole, Original Hole V0
ar 32-7 Unit013A, Original Hole, Original Hole V0 San Juan 32-7 Unit249A, Original Hole, Original Hole V0 San Juan 32-7 Unit037M, Original Hole, Original Hole V0
ar 32-7 Unit037, Original Hole, Original Hole V0 San Juan 32-7 Unit037A, Original Hole, Original Hole V0



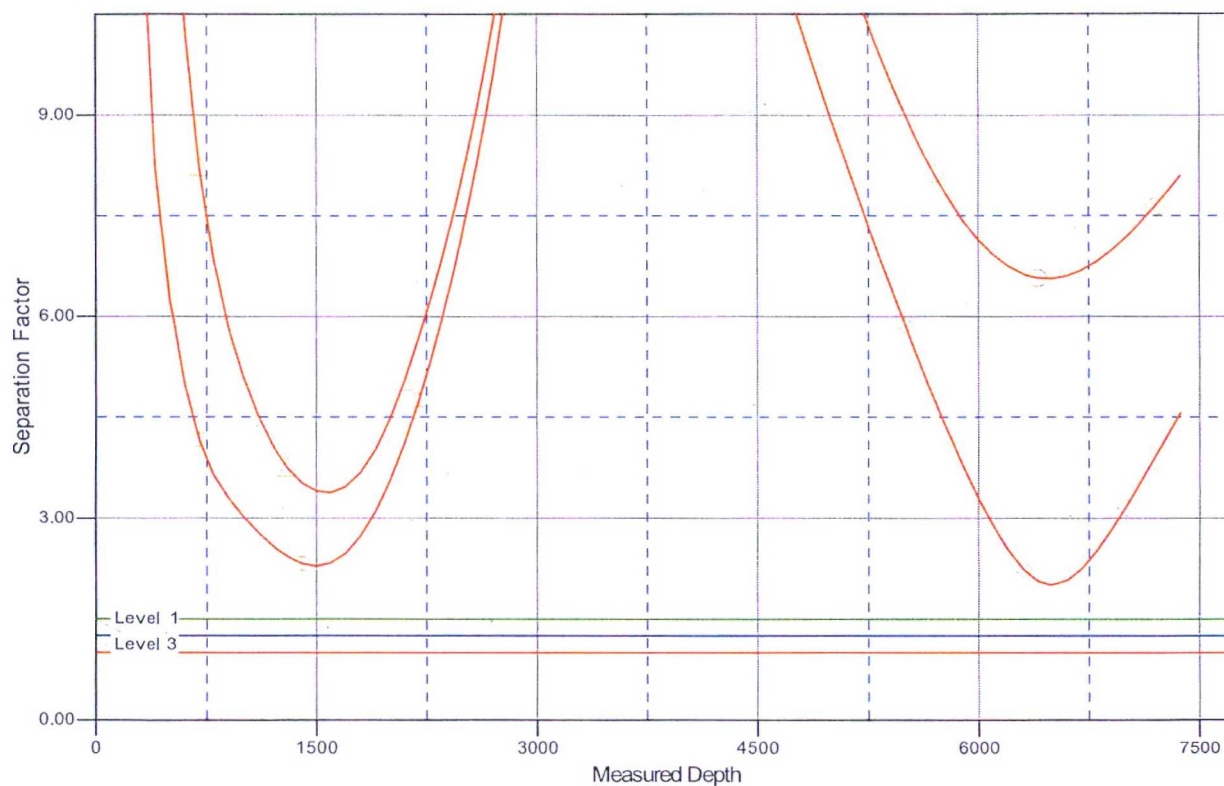
Company: Hilcorp Energy Company
Project: San Juan Co., NM (NAD27)
Reference Site: Sec.09-T32N-R07W
Site Error: 0.00 usft
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Well Error: 0.00 usft
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MD Reference: KB @ 6354.00usft
North Reference: Grid
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 @ 6354.00usft
Offset Depths are relative to Offset Datum
Central Meridian is 107° 50' 0.000 W

Coordinates are relative to: San Juan 32-7 Unit 249H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico West 30
Grid Convergence at Surface is: 0.15°

Separation Factor Plot

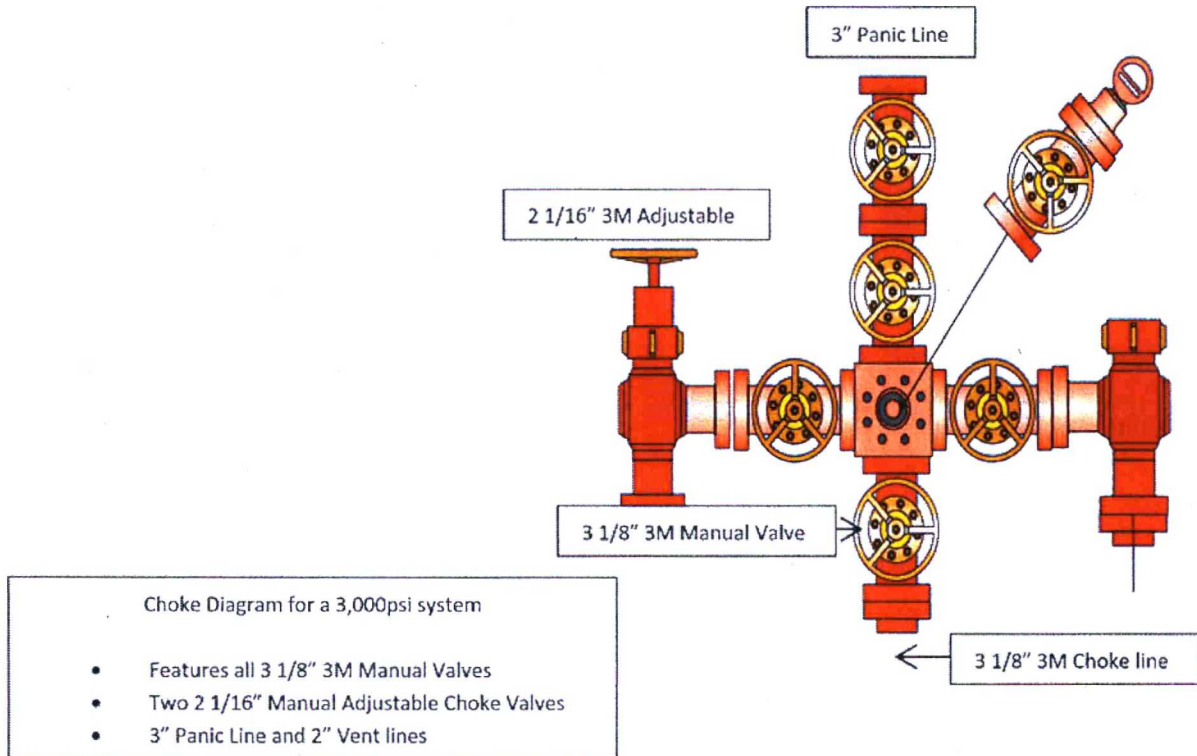


LEGEND

San Juan 32-7 Unit250A, Original Hole, Original Hole V0	San Juan 32-7 Unit249, Original Hole, Original Hole V0	San Juan 32-7 Unit016, Original Hole, Original Hole V0
San Juan 32-7 Unit013A, Original Hole, Original Hole V0	San Juan 32-7 Unit249A, Original Hole, Original Hole V0	San Juan 32-7 Unit037M, Original Hole, Original Hole V0
San Juan 32-7 Unit037, Original Hole, Original Hole V0	San Juan 32-7 Unit037A, Original Hole, Original Hole V0	

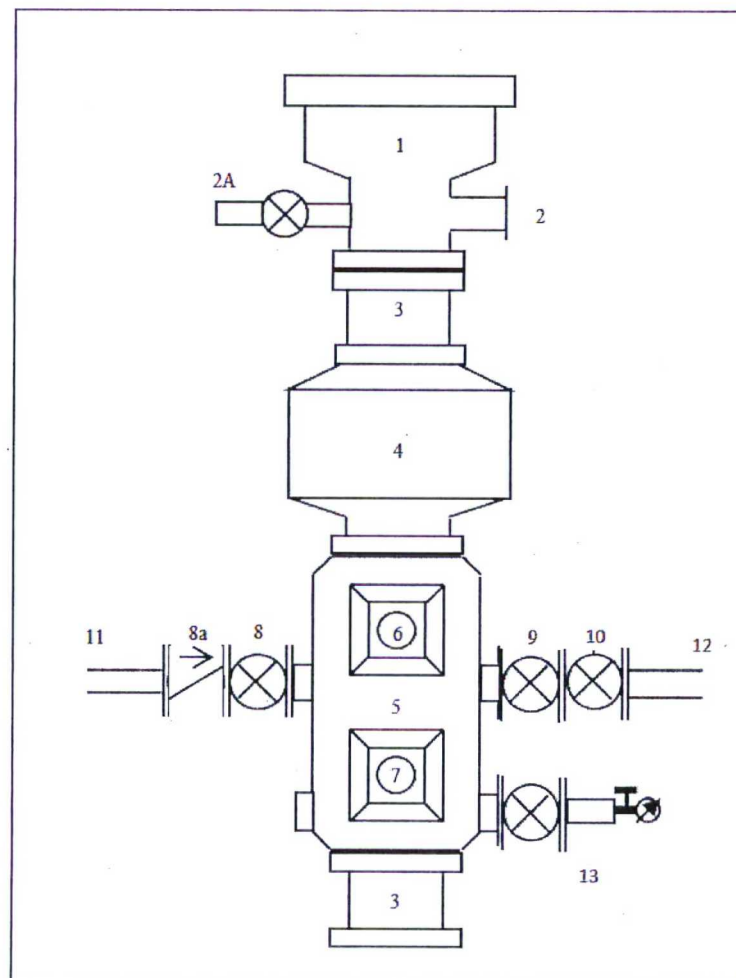
San Juan Unit 249H

Choke Manifold Schematic – Aztec 777

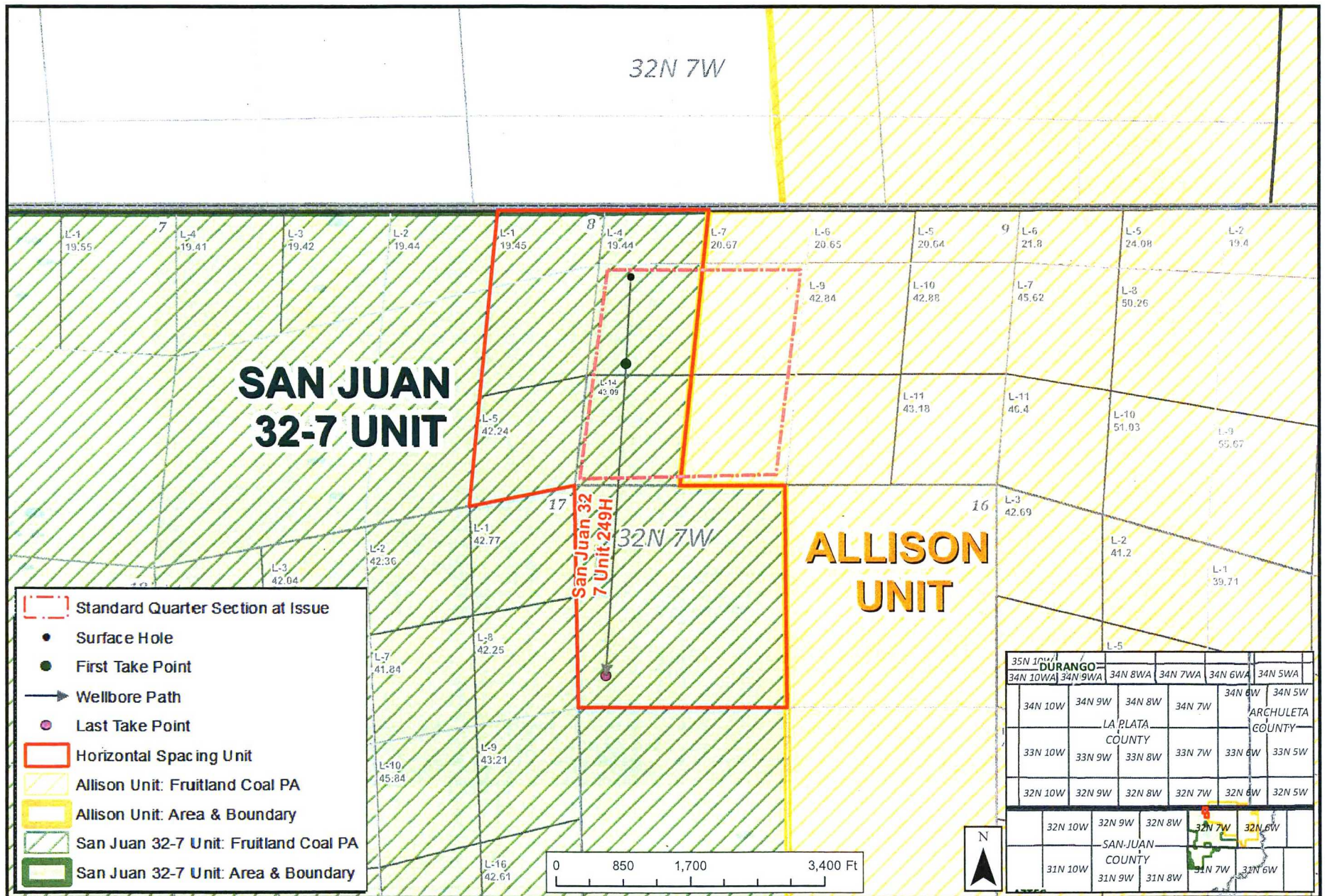


BOPE Schematic – Aztec 777

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



Reference Map
San Juan 32-7 Unit 249H



Scale 1:20,000

Directions from the Intersection of State Hwy 172 & State Hwy 151
in Ignacio, CO to Hilcorp Energy Company San Juan 32-7 Unit #249H
2654' FSL & 421' FWL, Section 9, T32N, R7W, N.M.P.M., San Juan County, NM

Latitude: 36.997664°N Longitude: 107.579338°W Datum: NAD1983

From the intersection of State Hwy 172 & State Hwy 151 in Ignacio, CO, travel Easterly on State Hwy 151 for 9.7 miles to County Road #328;

Go Right (Southerly) on County Road #328, crossing borderline then proceeding on County Road #4010 for 4.3 miles to fork in roadway;

Go Right (Westerly) exiting County Road #4010 onto County Road #4008 for 0.9 miles to fork in roadway;

Go Right (Westerly) exiting continuing on County Road #4004 for 1.2 miles to fork in roadway;

Go Right (North-westerly) on County Road #4004 for 0.2 miles to fork in roadway at compressor station;

Go Left (South-westerly) remaining on County Road #4004 for 1.3 miles to fork in roadway;

Go Right (Northerly) exiting County Road #4004 onto County Road #4000 for 0.8 miles to fork in roadway;

Go right (Easterly) exiting county Road #4000 onto existing roadway for 0.4 miles to fork in roadway;

Go Right (Easterly) on existing roadway for 0.6 miles to existing Hilcorp San Juan 32-7 #249 location, with the Hilcorp San Juan 32-7 Unit #249H staked offset #249 wellhead;