

Well Name: SAN JUAN 29-7 NP	Well Location: T29N / R7W / SEC 19 / SWNE / 36.714996 / -107.611038	County or Parish/State: RIO ARRIBA / NM
Well Number: 512	Type of Well: OTHER	Allottee or Tribe Name:
Lease Number: NMSF078503A	Unit or CA Name:	Unit or CA Number:
US Well Number: 3003924342	Operator: HILCORP ENERGY COMPANY	

Notice of Intent

Sundry ID: 2796814

Type of Submission: Notice of Intent

Type of Action: Deepen Well

Date Sundry Submitted: 06/24/2024

Time Sundry Submitted: 02:57

Date proposed operation will begin: 07/15/2024

Procedure Description: Hilcorp Energy Company requests permission to deepen the subject well into the Mesaverde/Mancos/Dakota formations and permanently abandon the existing Fruitland Coal formation. The MV/MC/DK will be downhole commingled. Please see the attached procedure, current and proposed wellbore diagrams, plat and natural gas management plan. A closed loop system will be used. There will not be any additional surface disturbance. Hilcorp will contact the FFO Surface group within 90 days after the well has been deepened, before any interim reclamation work, to conduct the onsite. A reclamation plan will be submitted after the onsite.

Surface Disturbance

Is any additional surface disturbance proposed?: No

NOI Attachments

Procedure Description

San_Juan_29_7_Unit_NP_512_Sidetrack_APD_20240624145614.pdf

Well Name: SAN JUAN 29-7 NP

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SWNE / 36.714996 / -107.611038

County or Parish/State: RIO
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Lease Number: NMSF078503A

Unit or CA Name:

Unit or CA Number:

US Well Number: 3003924342

Operator: HILCORP ENERGY
COMPANY

Operator

I certify that the foregoing is true and correct. 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. Electronic submission of Sundry Notices through this system satisfies regulations requiring a

Operator Electronic Signature: CHERYLENE WESTON

Signed on: JUN 24, 2024 02:55 PM

Name: HILCORP ENERGY COMPANY

Title: Operations/Regulatory Tech - Sr

Street Address: 1111 TRAVIS STREET

City: HOUSTON

State: TX

Phone: (713) 289-2615

Email address: CWESTON@HILCORP.COM

Field

Representative Name:

Street Address:

City:

State:

Zip:

Phone:

Email address:

BLM Point of Contact

BLM POC Name: KENNETH G RENNICK

BLM POC Title: Petroleum Engineer

BLM POC Phone: 5055647742

BLM POC Email Address: krennick@blm.gov

Disposition: Approved

Disposition Date: 06/24/2024

Signature: Kenneth Rennick



Rio Arriba County, New Mexico

San Juan 29 7 Unit NP 512 ST 1

Hilcorp Energy Company

Technical Drilling Plan (Rev. 0)

Hilcorp Energy Company proposes to deepen and complete the referenced well targeting the Mesa Verde and Dakota formations.

Note: This technical drilling plan will be adjusted based upon actual conditions.

1. Location

Date:	June 14, 2024	Pool:	MVDK
Well Name:	San Juan 29-7Unit NP #512	Ground Elevation (ft. MSL):	6543
API			
Surface Hole Location:	36.71473° N, -107.61077° W	Total Measured Depth (ft.)	8,160'
Bottom Hole Location:	36.71688° N, -107.61149° W	County, State:	Rio Arriba, NM

Note: All depths in the directional drilling plan are referenced from an estimated RKB datum of 15' above ground level.

2. Geological Markers

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

Formation	Depth (ft. TVD)	Remarks
Ojo Alamo	2,480	Water (fresh/useable)
Kirtland	2,560	None
Fruitland	3,117	Gas, Water
Pictured Cliffs	3,378	Gas
Chacra	4,349	None
Cliff House	5,010	Gas
Menefee	5,156	None
Pt. Lookout	5,556	Gas
El Vado	6,797	Gas
El Vado A	6,856	Gas
El Vado B	6,832	Gas
El Vado C	7,009	Gas
Greenhorn	7,533	Gas
Graneros	7,581	Gas
Two Wells	7,625	Gas
Dakota	7,713	Gas
Paguate	7,724	Gas
Cubero	7,751	Gas
Lower Cubero	7,780	Gas
Encinal	7,834	Water

3. Pressure Control Equipment

See attached BOP equipment and choke manifold schematics for a diagram of pressure control equipment.

- BOP equipment will be nipped up on top of the wellhead after surface casing is set and cemented.
- Pressure control configurations will be designed to meet the minimum 2M standards.

Rio Arriba County, New Mexico

San Juan 29 7 Unit NP 512 ST 1

Hilcorp Energy Company

- All equipment will have a minimum of 3M pressure rating and will be rated for 8,000' (TVD).
- A rotating head will be installed on top of the annular as seen in the attached diagram.
- BOP Testing: The BOPE will be tested to **250 psi (Low) for 5 minutes and 3,000 psi (High) for 10 minutes**. Utilize a BOPE Testing Unit with a recording chart and appropriate test plug for testing. BOP equipment will be tested upon installation, every 30 days, and after any repairs are made to the BOP equipment. Annular preventors will be functionally tested at least once per week. Pipe and blind rams will be function tested each trip. **The New Mexico Oil & Gas Conservation Division and the BLM will be notified 24 hours in advance of testing BOPE.** All tests and inspections will be recorded and logged with time and results.

4. Casing & Cement Program

1. Proposed/Current Casing Program:

Proposed Casing Design					
Casing String	Hole Size	Casing Size	Weight/Grade	Top Depth (MD/TVD)	Shoe Depth (MD/TVD)
Surface (existing)	12-1/4"	9-5/8"	36# K55 STC	0'	522' / 522'
Intermediate (existing)	8-3/4"	7"	20# K55 LTC	0'	3,415' / 3,415'
Production Casing	6-1/4"	4-1/2"	11.6# J55 (or equiv.) LTC	0'	8,235' / 8,100'
Proposed Casing Design Safety Factors					
Casing String	Casing Description		Burst Design SF	Collapse Design SF	Joint Tensile Design SF
Surface (existing)	9-5/8" 36# K55 STC		30.8	22.5	64.2
Intermediate (existing)	7" 23# J55 LTC		1.9	1.4	4.7
Production	4-1/2" 11.6# J55 LTC		1.2	1.3	1.9

Notes:

- The 6-1/4" hole will be drilled to through the Encinal formation and TD will be called onsite by mud loggers.
- If the 6-1/4" hole is not drilled to the total planned measured depth, the production casing setting depth and length will be adjusted accordingly.
- Production casing will be run from surface to TD.
- The existing perfs in the 7" (~3115' – 3377') will be squeezed off by a workover rig prior to MIRU.
- Casing Design Parameters – Designed for full evacuation. Mud Weights used for calculations: Surface = 9.0 ppg, Intermediate = 11.5 ppg, Production = 11.0 ppg. Burst: 1.15; Collapse: 1.125; Tensile: 1.6.
 - Burst: (Casing Burst Rating) / (Maximum Burst Load (Max MW x TVD x .052))
 - Collapse: (Full hydrostatic of MW in annulus) – (Hydrostatic of vacated casing, 0.1 psi/ft)
 - Tensile: (Tensile rating) / (measured depth x casing weight)

Rio Arriba County, New Mexico

San Juan 29 7 Unit NP 512 ST 1

Hilcorp Energy Company

2. Proposed Centralizer Program:

Proposed Centralizer Program	
Interval	Centralizers & Placement
Production	1 centralizer 10' above the shoe with a lock collar. 1 centralizer every other joint on bottom 10 joints. 1 centralizer every 4 joints to inside 7" casing. (~25)

3. Proposed Cement Program:

Proposed Cement Design							
Interval	Depth (ft. MD)	Lead/Tail	Volume (ft ³)	Sacks	Slurry	Density	Planned TOC
Surface	522'				Existing		
Intermediate (perfs)	3115' – 3377'	Tail	138 ft ³	100	Type III Cement 1% CaCl, 0.50 pps celloflake, 0.2% FL-52 1.38ft ³ /sk – 6.64 gal/sk	14.6 ppg	3,190'
Production	8,235'	Tail	800 ft ³	556	50/50 POZ: Class G cement + 0.25 lb/sx D029 Cellophane Flakes + 3% D020 Bentonite + 1.0 lb/sx D024 Gilsonite Extender + 0.25% D167 Fluid Loss + 0.25% D065 Dispersant + 0.1% D800 Retarder + 0.1% D046 Antifoamer + 3.5 lb/sx Phenoseal 1.44ft ³ /sk – 6.47 gal/sk	13.0 ppg	3,272'

Notes:

- A 2-stage cement job may be required depending on losses. Placement will be determined based from well conditions and zones where losses were incurred.

Rio Arriba County, New Mexico

San Juan 29 7 Unit NP 512 ST 1

Hilcorp Energy Company

5. Drilling Fluids Program

1. Proposed Drilling Fluids Program:

Proposed Drilling Fluids Program					
Interval	Fluid Type	Density	Fluid Loss	Max Chlorides	Depth
		(ppg)	(mL/30 min)	(mg/L)	(ft. MD)
Production	LSND / Gel System	8.4 – 9.2	6-16	1,000	3,416' – 8,235'

Notes:

- The well will be drilled utilizing a closed-loop circulating system. Drill cuttings will be transported to an approved disposal site.
- Estimated total volume of drill cuttings for disposal: 178 bbls (1,000 ft³).

6. Estimated Pressures & Drilling Hazards

A. Estimated Pressures

- The Mesa Verde and/or Dakota formations will be completed and commingled if both formations are completed.
- No abnormal temperatures or hazards are anticipated.
- Anticipated pore pressures are as follows:
 - Fruitland Coal 1,253 psi
 - Pictured Cliffs 1,610 psi
 - Mesa Verde 2,371 psi
 - Dakota 1,715 psi

B. Water Flows

- No water flows are expected.

C. Lost Circulation

- Lost circulation is possible in the Fruitland Coal & Mesa Verde. Losses will be mitigated by adding LCM to the mud system.

D. Hydrogen Sulfide

- No hydrogen sulfide is expected to be encountered based on nearby well production.

7. Testing, Logging, Coring

A. Mud Logging

- Mud loggers will collect formation samples every 60' from the intermediate casing shoe to TD of the production hole.



Rio Arriba County, New Mexico

San Juan 29 7 Unit NP 512 ST 1

Hilcorp Energy Company

B. MWD

- Measurement while drilling tools will be utilized from the intermediate casing shoe to TD of the production hole to measure and record inclination.

C. LWD

- There are no planned LWD tools planned.

D. Open Hole Logging

- There are no planned open hole logs post drilling.

E. Coring

- There is no coring or formation testing planned.

8. Directional Drilling Plan

- Directional plans are plans attached.

9. Pre-Drill Preparation Procedure

1. RU slickline, clear tubing to verify that it free of equipment that could become mobile while pulling. Set a 3-slip stop, if necessary
2. MIRU workover rig and associated equipment; NU and test BOP per HEC, State, and Federal guidelines.
3. TOOH with 2-3/8" tubing
4. TIH with 2-3/8" tubing and spot an LCM plug from TD to 3115'. Load hole with water-based drilling mud and squeeze LCM pill into formation.
5. P/U a 6-1/4" drill bit & clean to original TD @ 3416' using drilling fluid. Circulate hole clean and monitor for losses. If losses are seen, multiple LCM pills or cement plugs may be required to squeeze off zone. If no losses, continue to next step.
6. L/D tubing from well, Nipple down tubing head, Nipple up night cap, RDMO workover rig.

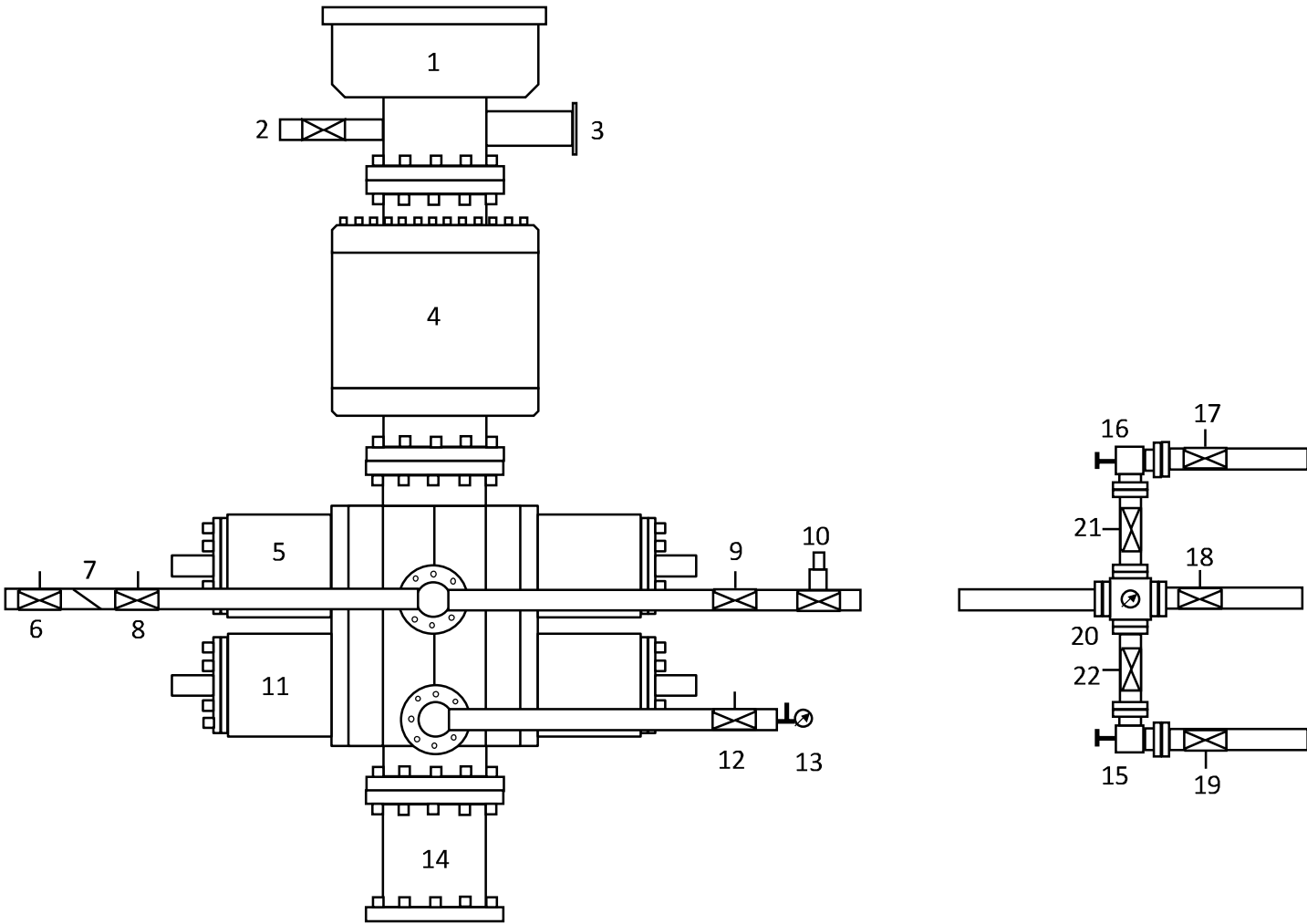
Rio Arriba County, New Mexico

San Juan 29 7 Unit NP 512 ST 1



Appendix A

Pressure Control Equipment Configuration



1	Rotating Head	12	Manual Isolation Valve
2	Flow Line	13	Needle Valve & Pressure Gauge
3	Fill-Up Line	14	Spacer Spool (if needed)
4	3M Annular Preventer	15	Manual Choke
5	3M Pipe Rams	16	Manual Choke
6	Manual Isolation Valve	17	Manual Isolation Valve
7	Check Valve	18	Manual Isolation Valve
8	Manual Isolation Valve	19	Manual Isolation Valve
9	Manual Isolation Valve	20	Valve Block & Pressure Gauge
10	High Closing Ratio Valve	21	Manual Isolation Valve
11	3M Blind Rams	22	Manual Isolation Valve

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

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

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

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

Submit one copy to
Appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-039-24342		² Pool Code 72319 / 71599	³ Pool Name BLANCO MESAVERDE/BASIN MANCOS / BASIN DAKOTA	
⁴ Property Code 318714	⁵ Property Name SAN JUAN 29-7 UNIT NP			⁶ Well Number 512
⁷ OGRID No. 372171	⁸ Operator Name HILCORP ENERGY COMPANY			⁹ Elevation 6674 '

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
G	19	29N	7W		1448	NORTH	2370	EAST	RIO ARBITRA

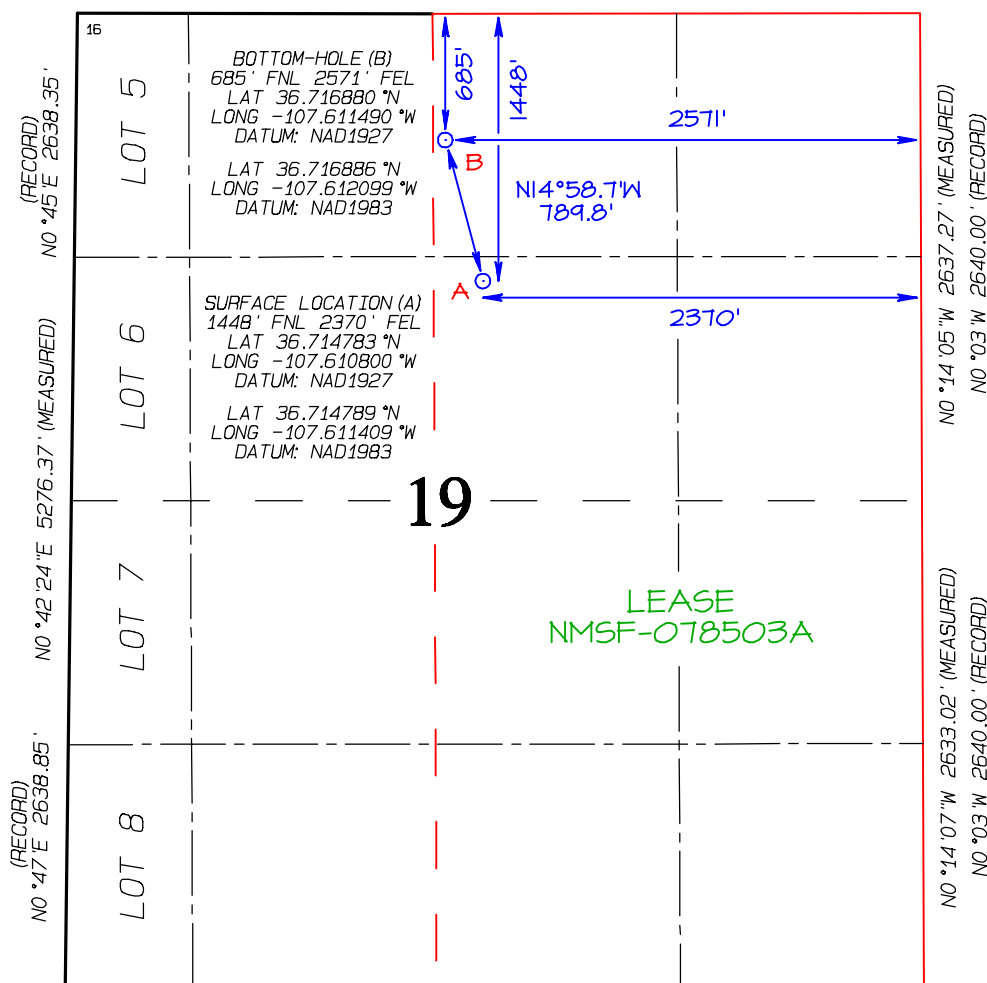
¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	19	29N	7W		685	NORTH	2571	EAST	RIO ARBITA

¹² Dedicated Acres 320.00	E/2 - Section 19	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

WEST 1927.20' (RECORD) WEST 2640.00' (RECORD)
N89°57'37"W 1923.26' (MEASURED) S89°56'24"W 2637.36' (MEASURED)



17 OPERATOR CERTIFICATION

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

Cherylene Weston 6/6/2024
Signature Date

Cherylene Weston, Ops/Regulatory Tech.
Printed Name

cweston@hilcorp.com

E-mail Address

¹⁸ SURVEYOR CERTIFICATION

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

Date Revised: MAY 2, 2024
Date of Survey: MAY 1, 2024

Signature and Seal of Professional Surveyor



JASON C. EDWARDS

Certificate Number	15269
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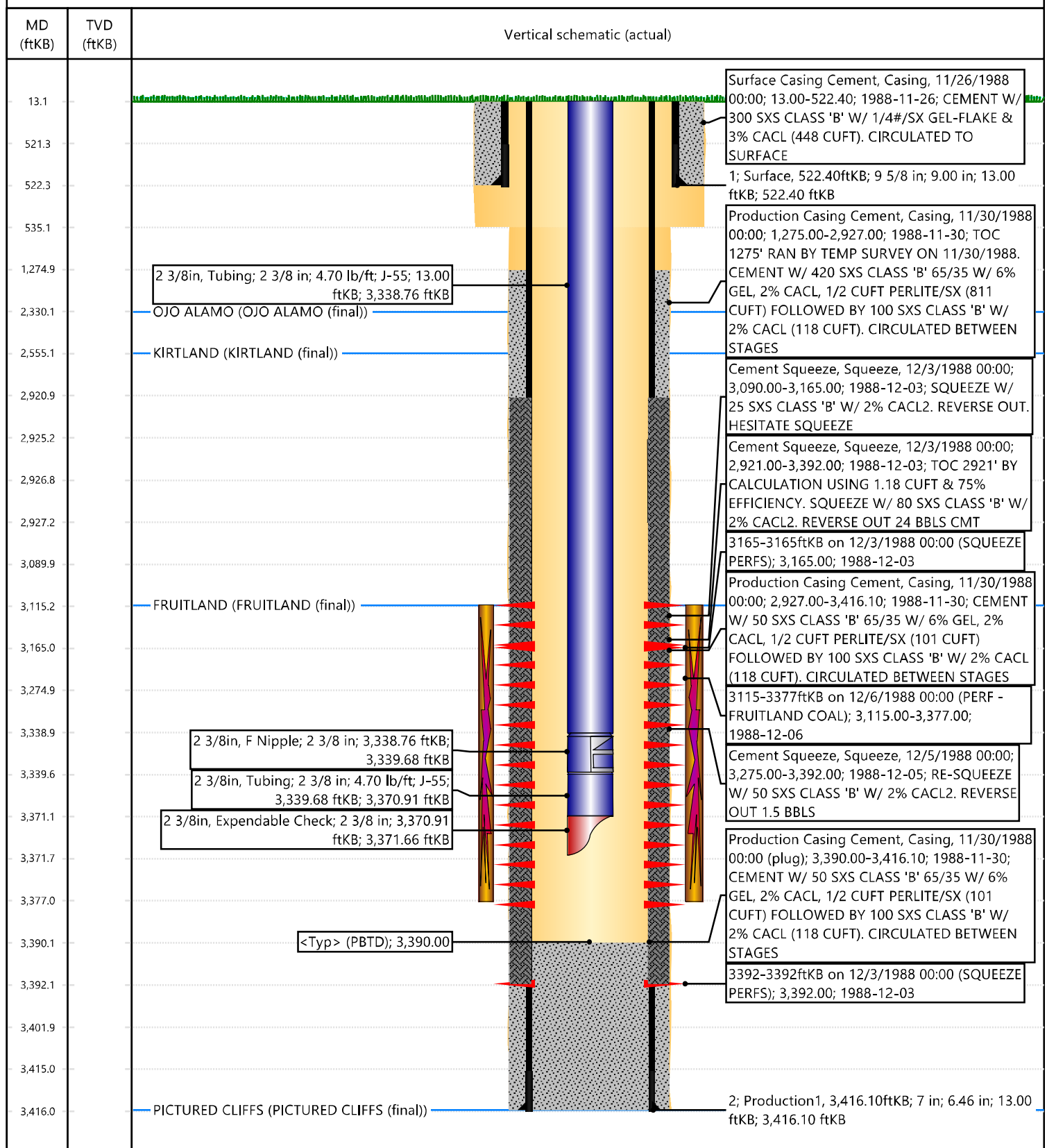


Current Schematic - Version 3

Well Name: SAN JUAN 29-7 UNIT NP #512

API / UWI 3003924342	Surface Legal Location 019-029N-007W-G	Field Name BASIN (FRUITLAND COAL)	Route 1001	State/Province NEW MEXICO	Well Configuration Type VERTICAL
Ground Elevation (ft) 6,673.00	Original KB/RT Elevation (ft) 6,686.00	Tubing Hanger Elevation (ft)	RKB to GL (ft) 13.00	KB-Casing Flange Distance (ft)	KB-Tubing Hanger Distance (ft)

Original Hole [VERTICAL]



San Juan 29-7 Unit NP 512 - Proposed Wellbore Diagram

sand/casing	MD	TVD	PP	Hole size	MW
				12.25	water
				Existing	
	9.625	522	522	8.75	
OJO_ALAMO_TOP	2480	2480			
KIRTLAND	2560	2560	8.8		
FRUITLAND *	3117	3117	8.8	Existing	
	7	3416		6.125	8.4
Pictured Cliffs	3561	3378			
Chacra	4502	4349			
Upper Cliff House	5226	5010			
Mefee	5336	5156			
Pt Lookout	5731	5556			
El Vado	6933	6797			
Juana Lopez	7364	7228			
Greenhorn	7669	7533			
Graneros	7718	7581			
Dakota	7717	7717			
Cubero	7887	7751			
Cubero L	7923	7780			
Encinal	7970	7834			
	4.5	8235	8100	9.2	

TOC = 3457
542 sxs at 13.0 ppg 1.44 ft^3/sx

Released to Imaging: 7/23/2024 10:09:58 AM

All depth are from KB

OD	\$/ft	Depth	Cxn	Wt	Grade	ID	Drift	Capacity	Displacement	
									Closed	Open
9.625	na	522	STC	36	H40	8.921	8.765	0.077311	0.089995	0.01268349
7	na	3416	LTC	23	J55	6.366	6.241	0.039369	0.047601	0.00823202
4.5		8235	LTC	11.6	J55	4	3.875	0.015543	0.019672	0.00412862

OD	Burst	SF	Collapse	SF	Tension			
					Body	SF	jt	SF
9.625	2550	1.6	1720	18.3	410	3.8	294	2.7
7	4350	1.4	3270	1.9	366	2.0	313	1.7
4.5	5350	2.4	4960	1.3	184	1.3	180	1.3

State of New Mexico
Energy, Minerals and Natural Resources Department

Submit Electronically
Via E-permitting

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

NATURAL GAS MANAGEMENT PLAN

This Natural Gas Management Plan must be submitted with each Application for Permit to Drill (APD) for a new or recompleted well.

Section 1 – Plan Description

Effective May 25, 2021

I. Operator: Hilcorp Energy Company **OGRID:** 372171 **Date:** 6/21/2024

II. Type: ☒ Original ☐ Amendment due to ☐ 19.15.27.9.D(6)(a) NMAC ☐ 19.15.27.9.D(6)(b) NMAC ☐ Other.

If Other, please describe: _____

III. Well(s): Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	ULSTR	Footages	Anticipated Oil BBL/D	Anticipated Gas MCF/D	Anticipated Produced Water BBL/D
SJ 29-7 Unit NP 512	3003924342	G-19-29N-07W	1448' FNL & 2370' FEL	2.18	906	1.5

IV. Central Delivery Point Name: Chaco-Blanco Processing Plant [See 19.15.27.9(D)(1) NMAC]

V. Anticipated Schedule: Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	Spud Date	TD Reached Date	Completion Commencement Date	Initial Flow Back Date	First Production Date
<u>SJ 29-7 Unit NP 512</u>	<u>3003924342</u>	<u>2024-2025</u>				<u>2024-2025</u>

VI. Separation Equipment: ☒ Attach a complete description of how Operator will size separation equipment to optimize gas capture.

VII. Operational Practices: ☒ Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F of 19.15.27.8 NMAC.

VIII. Best Management Practices: ☒ Attach a complete description of Operator's best management practices to minimize venting during active and planned maintenance.

Section 2 – Enhanced Plan

EFFECTIVE APRIL 1, 2022

Beginning April 1, 2022, an operator that is not in compliance with its statewide natural gas capture requirement for the applicable reporting area must complete this section.

☒ Operator certifies that it is not required to complete this section because Operator is in compliance with its statewide natural gas capture requirement for the applicable reporting area.

IX. Anticipated Natural Gas Production:

Well	API	Anticipated Average Natural Gas Rate MCF/D	Anticipated Volume of Natural Gas for the First Year MCF

X. Natural Gas Gathering System (NGGS):

Operator	System	ULSTR of Tie-in	Anticipated Gathering Start Date	Available Maximum Daily Capacity of System Segment Tie-in

XI. Map. ☐ Attach an accurate and legible map depicting the location of the well(s), the anticipated pipeline route(s) connecting the production operations to the existing or planned interconnect of the natural gas gathering system(s), and the maximum daily capacity of the segment or portion of the natural gas gathering system(s) to which the well(s) will be connected.

XII. Line Capacity. The natural gas gathering system ☐ will ☐ will not have capacity to gather 100% of the anticipated natural gas production volume from the well prior to the date of first production.

XIII. Line Pressure. Operator ☐ does ☐ does not anticipate that its existing well(s) connected to the same segment, or portion, of the natural gas gathering system(s) described above will continue to meet anticipated increases in line pressure caused by the new well(s).

☐ Attach Operator's plan to manage production in response to the increased line pressure.

XIV. Confidentiality: ☐ Operator asserts confidentiality pursuant to Section 71-2-8 NMSA 1978 for the information provided in Section 2 as provided in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and attaches a full description of the specific information for which confidentiality is asserted and the basis for such assertion.

Section 3 - Certifications

Effective May 25, 2021

Operator certifies that, after reasonable inquiry and based on the available information at the time of submittal:

☒ Operator will be able to connect the well(s) to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system; or

☐ Operator will not be able to connect to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system.

If Operator checks this box, Operator will select one of the following:

Well Shut-In. ☐ Operator will shut-in and not produce the well until it submits the certification required by Paragraph (4) of Subsection D of 19.15.27.9 NMAC; or

Venting and Flaring Plan. ☐ Operator has attached a venting and flaring plan that evaluates and selects one or more of the potential alternative beneficial uses for the natural gas until a natural gas gathering system is available, including:

- (a) power generation on lease;
- (b) power generation for grid;
- (c) compression on lease;
- (d) liquids removal on lease;
- (e) reinjection for underground storage;
- (f) reinjection for temporary storage;
- (g) reinjection for enhanced oil recovery;
- (h) fuel cell production; and
- (i) other alternative beneficial uses approved by the division.

Section 4 - Notices

1. If, at any time after Operator submits this Natural Gas Management Plan and before the well is spud:

(a) Operator becomes aware that the natural gas gathering system it planned to connect the well(s) to has become unavailable or will not have capacity to transport one hundred percent of the production from the well(s), no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised venting and flaring plan containing the information specified in Paragraph (5) of Subsection D of 19.15.27.9 NMAC; or

(b) Operator becomes aware that it has, cumulatively for the year, become out of compliance with its baseline natural gas capture rate or natural gas capture requirement, no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised Natural Gas Management Plan for each well it plans to spud during the next 90 days containing the information specified in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and shall file an update for each Natural Gas Management Plan until Operator is back in compliance with its baseline natural gas capture rate or natural gas capture requirement.

2. OCD may deny or conditionally approve an APD if Operator does not make a certification, fails to submit an adequate venting and flaring plan which includes alternative beneficial uses for the anticipated volume of natural gas produced, or if OCD determines that Operator will not have adequate natural gas takeaway capacity at the time a well will be spud.

I certify that, after reasonable inquiry, the statements in and attached to this Natural Gas Management Plan are true and correct to the best of my knowledge and acknowledge that a false statement may be subject to civil and criminal penalties under the Oil and Gas Act.

Signature: <i>Cherylene Weston</i>
Printed Name: Cherylene Weston
Title: Operations Regulatory Tech-Sr.
E-mail Address: cweston@hilcorp.com
Date: 6/21/2024
Phone: 713-289-2615

OIL CONSERVATION DIVISION (Only applicable when submitted as a standalone form)
Approved By:
Title:
Approval Date:
Conditions of Approval:

Hilcorp Energy Natural Gas Management Plan Attachments

VI. Separation Equipment

The operator will select separation equipment for the maximum anticipated throughput and pressure to optimize gas capture. Separation equipment is sized according to manufacturer's design specifications. Separation vessels are built following the A.S.M.E. section VIII division 1 codes for pressure vessel design, fabrication, inspection, testing and certification. Anticipated well pressures and production rates are evaluated to select separation equipment according to the equipment's designed operating pressure and throughput.

After completion, the operator utilizes flowback equipment, including separators, to manage wellbore fluids and solids during the initial separation period. After the initial flowback period is complete the operator utilizes iterative facility separation equipment to ensure that optimal separation is achieved.

VII. Operational Practices 19.15.27.8 NMAC A through F

- A. The operator will maximize the recovery of natural gas and minimize the amount of gas vented or flared when technically and safely feasible as further described and detailed within the following subsections (B-F of 19.15.27.8). In all cases where natural gas venting and flaring requires regulatory reporting, reporting will be submitted accurately and within the required time frames.
- B. Venting and flaring during drilling operations:
 - a. New Drill HZ Gas Wells: The operator drills wells in the area by utilizing a balanced mud to safely drill the wellbore. This technique prevents gas from coming to surface during the drilling process. If there is an emergency or malfunction and natural gas does come to surface the natural gas will be captured and routed to sales if technically and safely feasible.
- C. Venting and flaring during completion or recompletion operations:
 - a. New Drill HZ Gas Wells: The operator's facilities are designed to handle the maximum throughput and pressures from the newly drilled and completed wellbores. The amount of gas vented and flared will be minimized when technically and safely feasible. During initial flowback and initial separation flowback the operator will utilize contracted flowback equipment, including separators, to manage wellbore fluids and solids. The initial flowback period will be minimized and flow will be sent to separation equipment as soon as possible to reduce the amount of gas that is vented to atmosphere. The natural gas will be utilized on site as needed for fuel gas and natural gas will be sold.
- D. Venting and flaring during production operations:
 - a. New Drill HZ Gas Wells: The operator's facilities are designed to handle the maximum throughput and pressures from producing wellbores. The amount of gas vented and flared will be minimized when technically and safely feasible.

Operations will effectively manage the following scenarios to minimize the quantity of natural gas that is vented or flared:

- (a) If there is an emergency or malfunction vented or flared natural gas will be reported, if required, and the emergency or malfunction will be resolved as soon as technically and safely feasible.
- (b) If the wellbore needs to be unloaded to atmosphere the operator will not vent the well after the well has achieved a stabilized rate and pressure. The operator will remain on site during unloading. Plunger lift systems will be optimized to reduce the amount of natural gas venting. Downhole maintenance, such as workovers, swabbing, etc. will only be conducted as needed and best management practices will be utilized to reduce venting of natural gas.
- (c) The operator will minimize the amount of time that natural gas is vented to atmosphere from gauging and sampling a storage tank or low pressure vessel. The formation is only anticipated to produce water and therefore tank emissions are anticipated to be negligible.
- (d) The operator will reduce the amount of time needed for loading out liquids from a storage tanks or other low-pressure vessels whenever feasible. Operations will always utilize the water transfer systems when available. Water loading emissions are anticipated to be negligible.
- (e) Equipment will be repaired and maintained routinely to minimize the venting or flaring of natural gas. Repairs and maintenance will be conducted in a manner that minimizes the amount of natural gas vented to atmosphere through the isolation of the equipment that is being repaired or maintained.
- (f) Electric controllers and pumps will be installed to replace pneumatic controllers whenever feasible. Pneumatic controllers and pumps will be inspected frequently to ensure that no excess gas is vented to atmosphere.
- (g) No dehydration or amine units are anticipated to be set on location.
- (h) Compressors, compressor engines, turbines, flanges, connectors, valves, storage tanks, and other low-pressure vessels and flanges will be routinely inspected to ensure that no excess venting occurs outside of normal operations.
- (i) Regulatory required testing, such as bradenhead and packer testing will be performed in a manner that minimizes the amount of natural gas vented to atmosphere.
- (j) If natural gas does not meet gathering pipeline specifications gas samples will be collected twice per week to determine when pipeline specification gas content has been achieved. During this time frame gas will be flared and not vented to atmosphere. Natural gas that meets pipeline specifications will be sold via pipeline and natural gas that can be utilized for fuel gas will be used during this time.
- (k) If pipeline, equipment, or facilities need purged of impurities gas losses will be minimized as much as technically and safely feasible.

E. Performance standards:

- a. The production facilities are designed to handle the maximum throughput and pressures from producing wellbores and will be designed to minimize waste. The amount of gas vented and flared will be minimized when technically and safely feasible.
 - b. All tanks that are routed to a control device that is installed after 5/25/2021 will have an automatic gauging system to minimize the amount of vented natural gas.
 - c. If a flare stack is installed or replaced after 5/25/2021 it will be equipped with an automatic ignitor or continuous pilot. The flare stack will be properly sized and designed to ensure proper combustion efficiency. The flare stack will be located 100 feet away from the nearest wellhead or storage tank.
 - d. AVO inspections will be conducted weekly for the year after completion and for all wells producing greater than 60,000 cubic feet of natural gas daily. The AVO inspection will include all components, including flare stacks, thief hatches, closed vent systems, pumps, compressors, pressure relief devices, valves, lines, flanges, connectors, and associated pipeline to identify any leaks and releases by comprehensive auditory, visual, and olfactory inspection. The AVO inspection records will be maintained for 5 years which will be available at the department's request. Identified leaks will be repaired as soon as feasible to minimize the amount of vented natural gas.
- F. Measurement or estimation of vented and flared natural gas.
- a. The volume of natural gas that is vented, flared or consumed for beneficial use will be measured when possible, or estimated, during drilling, completions, or production operations.
 - b. Equipment will be installed to measure the volume of natural gas flared for all APD's issued after 5/25/2021 on facilities that will have an average daily gas rate greater than 60,000 cubic feet of natural gas. Measurement equipment will conform to API MPMS Chapter 14.10 regulations. The measurement equipment will not have a manifold that allows the diversion of natural gas around the metering element except for the sole purpose of inspecting and servicing the measurement equipment. If metering is not practical then the volume of gas will be estimated.



Company: Hilcorp Energy Corp.
Project: Rio Arriba, NM NAD27
Site: San Juan 29-7 Unit NP 512 Pad
Well: San Juan 29-7 Unit NP 512
Wellbore: OH
Design: Plan #1



Well Details: San Juan 29-7 Unit NP 512

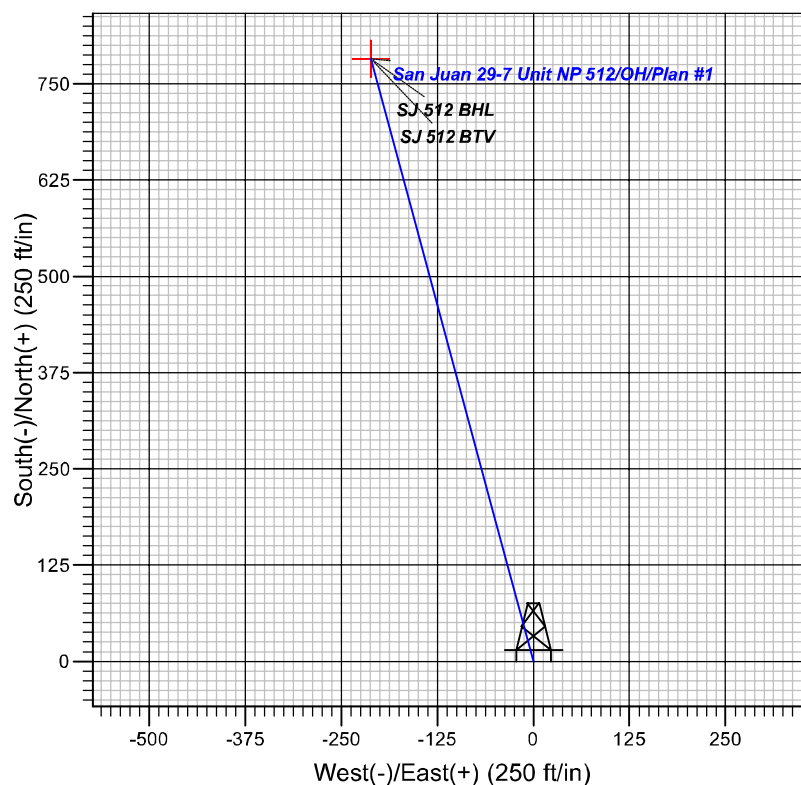
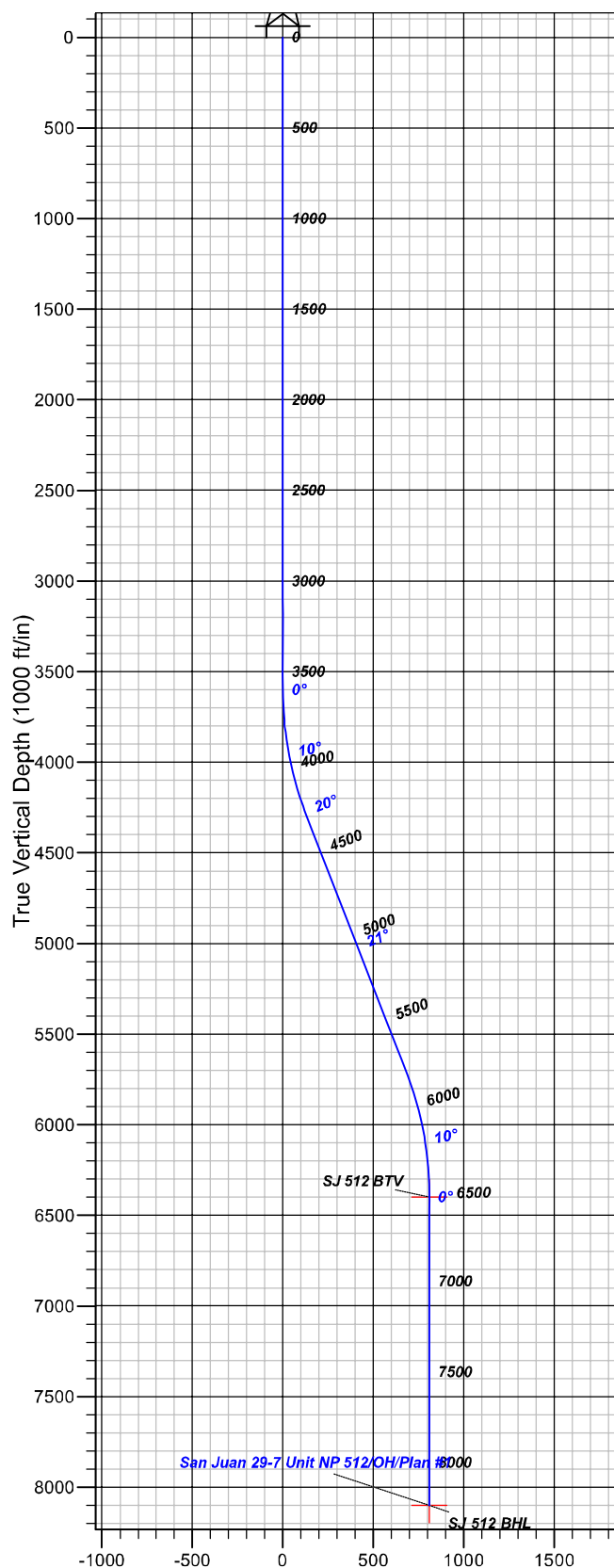
GL 6686' @ 6686.00ft

+N/-S +E/-W		North	East	Latitude	Longitude	Slot
0.00	0.00	2079492.47	565233.91	36.7147300	-107.6107700	



Azimuths to True North
Magnetic North: 8.67°

Magnetic Field
Strength: 49484.4nT
Dip Angle: 63.18°
Date: 12/31/2021
Model: HDGM2021 FILE



FORMATION TOP DETAILS

TVDPATH	MDP	FORMATION
2480.00	2480.00	OJO_ALAMO_TOP
2560.00	2560.00	KIRTLAND
3117.00	3117.00	FRUITLAND_A
3378.00	3378.00	PICTURED_CLIFFS
3463.00	3463.00	LEWIS
4008.00	4008.00	REFANITO_BENTONITE *
4349.00	4369.28	CHACRA
5010.00	5078.57	CLIFF_HOUSE
5156.00	5235.24	MENEFE
5556.00	5664.47	POINT_LOOKOUT
6797.00	6932.69	EL_VADO
6856.00	6991.69	EL_VADO_A
6932.00	7067.69	EL_VADO_B
7009.00	7144.69	EL_VADO_C
7228.00	7363.69	JUANA_LOPEZ
7533.00	7668.69	GREENHORN
7581.00	7716.69	GRANEROS
7625.00	7760.69	TWO_WELLS
7713.00	7848.69	DAKOTA
7724.00	7859.69	PAUGATE
7751.00	7886.69	CUBERO
7780.00	7915.69	CUBERO_LWR
7834.00	7969.69	ENCINAL_CANYON

Plan: Plan #1

9:55, April 30 2024
Created By: Janie Collins

PROJECT DETAILS: Rio Arriba, NM NAD27

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico West 3003

System Datum: Mean Sea Level

CASING DETAILS

No casing data is available

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00
3600.00	0.00	0.000	3600.00	0.00	0.00	0.00	0.00	0.00
4308.86	21.27	344.911	4292.69	125.56	-33.85	3.00	344.91	130.04
5826.83	21.27	344.911	5707.31	657.14	-177.18	0.00	0.00	680.60
6535.69	0.00	0.000	6400.00	782.70	-211.03	3.00	180.00	810.65
8235.69	0.00	0.000	8100.00	782.70	-211.03	0.00	0.00	810.65

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SJ 512 BTV	6400.00	782.70	-211.03	2080274.67	565021.06	36.7168800	-107.6114900
- plan hits target center							
SJ 512 BHL	8100.00	782.70	-211.03	2080274.67	565021.06	36.7168800	-107.6114900
- plan hits target center							



Hilcorp Energy Corp.

Rio Arriba, NM NAD27

San Juan 29-7 Unit NP 512 Pad

San Juan 29-7 Unit NP 512

Released to Imaging: 7/23/2024 10:09:58 AM

OH

Plan: Plan #1

Standard Planning Report

30 April, 2024





Database:	Grand Junction	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Company:	Hilcorp Energy Corp.	TVD Reference:	GL 6686' @ 6686.00ft
Project:	Rio Arriba, NM NAD27	MD Reference:	GL 6686' @ 6686.00ft
Site:	San Juan 29-7 Unit NP 512 Pad	North Reference:	True
Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Project	Rio Arriba, 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	San Juan 29-7 Unit NP 512 Pad			
Site Position:		Northing:	2,079,492.46 usft	Latitude: 36.7147300
From:	Lat/Long	Easting:	565,233.91 usft	Longitude: -107.6107700
Position Uncertainty:	0.00 ft	Slot Radius:	13.20 in	Grid Convergence: 0.13 °

Well	San Juan 29-7 Unit NP 512			
Well Position	+N/-S	0.00 ft	Northing:	2,079,492.46 usft
	+E/-W	0.00 ft	Easting:	565,233.91 usft
Position Uncertainty		0.00 ft	Wellhead Elevation:	Latitude: 36.7147300
				Longitude: -107.6107700
				Ground Level: 6,686.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM2021_FILE	12/31/2021	8.67	63.18	49,484.40000000

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	344.911

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,600.00	0.00	0.000	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,308.86	21.27	344.911	4,292.69	125.56	-33.85	3.00	3.00	0.00	344.91	
5,826.83	21.27	344.911	5,707.31	657.14	-177.18	0.00	0.00	0.00	0.00	
6,535.69	0.00	0.000	6,400.00	782.70	-211.03	3.00	-3.00	0.00	180.00	SJ 512 BTV
8,235.69	0.00	0.000	8,100.00	782.70	-211.03	0.00	0.00	0.00	0.00	SJ 512 BHL



Database:	Grand Junction	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Company:	Hilcorp Energy Corp.	TVD Reference:	GL 6686' @ 6686.00ft
Project:	Rio Arriba, NM NAD27	MD Reference:	GL 6686' @ 6686.00ft
Site:	San Juan 29-7 Unit NP 512 Pad	North Reference:	True
Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.000	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.000	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.000	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.000	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.000	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.000	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.000	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.000	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.000	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.000	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.000	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.000	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.000	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.000	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.000	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.000	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.000	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.000	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.000	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.000	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.000	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.000	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.000	2,300.00	0.00	0.00	93.00	0.00	0.00	0.00
2,400.00	0.00	0.000	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.000	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.000	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.000	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.000	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.000	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.000	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.000	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.000	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.000	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.000	3,400.00	0.00	0.00	53.00	0.00	0.00	0.00
3,500.00	0.00	0.000	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.000	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	3.00	344.911	3,699.95	2.53	-0.68	2.62	3.00	3.00	0.00
3,800.00	6.00	344.911	3,799.63	10.10	-2.72	10.46	3.00	3.00	0.00
3,900.00	9.00	344.911	3,898.77	22.70	-6.12	23.51	3.00	3.00	0.00
4,000.00	12.00	344.911	3,997.08	40.30	-10.86	41.73	3.00	3.00	0.00
4,100.00	15.00	344.911	4,094.31	62.83	-16.94	65.08	3.00	3.00	0.00
4,200.00	18.00	344.911	4,190.18	90.25	-24.33	93.47	3.00	3.00	0.00
4,300.00	21.00	344.911	4,284.43	122.48	-33.02	126.85	3.00	3.00	0.00
4,308.86	21.27	344.911	4,292.69	125.56	-33.85	130.04	3.00	3.00	0.00
4,400.00	21.27	344.911	4,377.63	157.48	-42.46	163.10	0.00	0.00	0.00
4,500.00	21.27	344.911	4,470.82	192.50	-51.90	199.37	0.00	0.00	0.00
4,600.00	21.27	344.911	4,564.01	227.52	-61.34	235.64	0.00	0.00	0.00
4,700.00	21.27	344.911	4,657.20	262.53	-70.78	271.91	0.00	0.00	0.00
4,800.00	21.27	344.911	4,750.39	297.55	-80.23	308.18	0.00	0.00	0.00
4,900.00	21.27	344.911	4,843.59	332.57	-89.67	344.45	0.00	0.00	0.00
5,000.00	21.27	344.911	4,936.78	367.59	-99.11	380.72	0.00	0.00	0.00
5,100.00	21.27	344.911	5,029.97	402.61	-108.55	416.99	0.00	0.00	0.00
5,200.00	21.27	344.911	5,123.16	437.63	-117.99	453.26	0.00	0.00	0.00

Released to Imaging: 7/23/2024 10:09:58 AM



Database:	Grand Junction	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Company:	Hilcorp Energy Corp.	TVD Reference:	GL 6686' @ 6686.00ft
Project:	Rio Arriba, NM NAD27	MD Reference:	GL 6686' @ 6686.00ft
Site:	San Juan 29-7 Unit NP 512 Pad	North Reference:	True
Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
5,300.00	21.27	344.911	5,216.35	472.65	-127.43	489.53	0.00	0.00	0.00	
5,400.00	21.27	344.911	5,309.54	507.67	-136.88	525.79	0.00	0.00	0.00	
5,500.00	21.27	344.911	5,402.73	542.68	-146.32	562.06	0.00	0.00	0.00	
5,600.00	21.27	344.911	5,495.92	577.70	-155.76	598.33	0.00	0.00	0.00	
5,700.00	21.27	344.911	5,589.11	612.72	-165.20	634.60	0.00	0.00	0.00	
5,800.00	21.27	344.911	5,682.30	647.74	-174.64	670.87	0.00	0.00	0.00	
5,826.83	21.27	344.911	5,707.31	657.14	-177.18	680.60	0.00	0.00	0.00	
5,900.00	19.07	344.911	5,775.99	681.49	-183.74	705.83	3.00	-3.00	0.00	
6,000.00	16.07	344.911	5,871.31	710.64	-191.60	736.01	3.00	-3.00	0.00	
6,100.00	13.07	344.911	5,968.08	734.92	-198.15	761.17	3.00	-3.00	0.00	
6,200.00	10.07	344.911	6,066.04	754.29	-203.37	781.22	3.00	-3.00	0.00	
6,300.00	7.07	344.911	6,164.91	768.67	-207.25	796.12	3.00	-3.00	0.00	
6,400.00	4.07	344.911	6,264.43	778.05	-209.78	805.83	3.00	-3.00	0.00	
6,500.00	1.07	344.911	6,364.32	782.38	-210.94	810.31	3.00	-3.00	0.00	
6,535.69	0.00	0.000	6,400.00	782.70	-211.03	810.65	3.00	-3.00	0.00	
6,600.00	0.00	0.000	6,464.31	782.70	-211.03	810.65	0.00	0.00	0.00	
6,700.00	0.00	0.000	6,564.31	782.70	-211.03	810.65	0.00	0.00	0.00	
6,800.00	0.00	0.000	6,664.31	782.70	-211.03	810.65	0.00	0.00	0.00	
6,900.00	0.00	0.000	6,764.31	782.70	-211.03	810.65	0.00	0.00	0.00	
7,000.00	0.00	0.000	6,864.31	782.70	-211.03	810.65	0.00	0.00	0.00	
7,100.00	0.00	0.000	6,964.31	782.70	-211.03	810.65	0.00	0.00	0.00	
7,200.00	0.00	0.000	7,064.31	782.70	-211.03	810.65	0.00	0.00	0.00	
7,300.00	0.00	0.000	7,164.31	782.70	-211.03	810.65	0.00	0.00	0.00	
7,400.00	0.00	0.000	7,264.31	782.70	-211.03	810.65	0.00	0.00	0.00	
7,500.00	0.00	0.000	7,364.31	782.70	-211.03	810.65	0.00	0.00	0.00	
7,600.00	0.00	0.000	7,464.31	782.70	-211.03	810.65	0.00	0.00	0.00	
7,700.00	0.00	0.000	7,564.31	782.70	-211.03	810.65	0.00	0.00	0.00	
7,800.00	0.00	0.000	7,664.31	782.70	-211.03	810.65	0.00	0.00	0.00	
7,900.00	0.00	0.000	7,764.31	782.70	-211.03	810.65	0.00	0.00	0.00	
8,000.00	0.00	0.000	7,864.31	782.70	-211.03	810.65	0.00	0.00	0.00	
8,100.00	0.00	0.000	7,964.31	782.70	-211.03	810.65	0.00	0.00	0.00	
8,200.00	0.00	0.000	8,064.31	782.70	-211.03	810.65	0.00	0.00	0.00	
8,235.69	0.00	0.000	8,100.00	782.70	-211.03	810.65	0.00	0.00	0.00	

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
SJ 512 BTV	0.00	0.000	6,400.00	782.70	-211.03	2,080,274.67	565,021.07	36.7168800	-107.6114900
- plan hits target center									
- Point									
SJ 512 BHL	0.00	0.000	8,100.00	782.70	-211.03	2,080,274.67	565,021.07	36.7168800	-107.6114900
- plan hits target center									
- Point									



Database:	Grand Junction	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Company:	Hilcorp Energy Corp.	TVD Reference:	GL 6686' @ 6686.00ft
Project:	Rio Arriba, NM NAD27	MD Reference:	GL 6686' @ 6686.00ft
Site:	San Juan 29-7 Unit NP 512 Pad	North Reference:	True
Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,480.00	2,480.00	OJO_ALAMO_TOP		0.00	0.000	
2,560.00	2,560.00	KIRTLAND		0.00	0.000	
3,117.00	3,117.00	FRUITLAND *		0.00	0.000	
3,378.00	3,378.00	PICTURED_CLIFFS		0.00	0.000	
3,463.00	3,463.00	LEWIS		0.00	0.000	
4,011.17	4,008.00	HUERFANITO_BENTONITE *		0.00	0.000	
4,369.28	4,349.00	CHACRA		0.00	0.000	
5,078.57	5,010.00	CLIFF_HOUSE		0.00	0.000	
5,235.24	5,156.00	MENEFEE		0.00	0.000	
5,664.47	5,556.00	POINT_LOOKOUT		0.00	0.000	
6,932.69	6,797.00	EL_VADO		0.00	0.000	
6,991.69	6,856.00	EL_VADO_A		0.00	0.000	
7,067.69	6,932.00	EL_VADO_B		0.00	0.000	
7,144.69	7,009.00	EL_VADO_C		0.00	0.000	
7,363.69	7,228.00	JUANA_LOPEZ		0.00	0.000	
7,668.69	7,533.00	GREENHORN		0.00	0.000	
7,716.69	7,581.00	GRANEROS		0.00	0.000	
7,760.69	7,625.00	TWO_WELLS		0.00	0.000	
7,848.69	7,713.00	DAKOTA		0.00	0.000	
7,859.69	7,724.00	PAUGATE		0.00	0.000	
7,886.69	7,751.00	CUBERO		0.00	0.000	
7,915.69	7,780.00	CUBERO_LWR		0.00	0.000	
7,969.69	7,834.00	ENCINAL_CANYON		0.00	0.000	



Hilcorp Energy Corp.

Rio Arriba, NM NAD27

San Juan 29-7 Unit NP 512 Pad

San Juan 29-7 Unit NP 512

OH

Released to Imaging: 7/23/2024 10:09:58 AM

Plan #1

Anticollision Report

08 May, 2024





Scientific Drilling
Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6686' @ 6686.00ft
Reference Site:	San Juan 29-7 Unit NP 512 Pad	MD Reference:	GL 6686' @ 6686.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference	Plan #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD + Stations Interval 100.00ft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum ellipse separation of 1,000.00 ft	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date	5/8/2024		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.00	8,235.69	Plan #1 (OH)	MWD+HDGM	OWSG MWD + HDGM	

Summary						
	Reference	Offset	Distance		Separation	Warning
Site Name	Measured	Measured	Between	Between		
Offset Well - Wellbore - Design	Depth	Depth	Centres	Ellipses	Factor	
San Juan 29-7 Unit NP 512 Pad						
San Juan 29-7 UN 076B - OH - OH	6,299.39	6,211.00	1,462.13	1,192.74	5.428	CC, ES, SF
San Juan 29-7 UN 076R - OH - OH	6,200.00	6,060.00	2,445.62	2,182.01	9.277	SF
San Juan 29-7 UN 076R - OH - OH	6,282.66	6,060.00	2,442.46	2,179.46	9.287	CC, ES
San Juan 29-7 UN 081A - OH - OH	8,000.00	8,092.31	1,934.64	1,581.29	5.475	CC, ES, SF
San Juan 29-7 UN 087 - OH - OH	3,600.00	3,577.00	618.72	462.73	3.967	CC
San Juan 29-7 UN 087 - OH - OH	3,900.00	3,875.77	625.91	456.91	3.704	ES
San Juan 29-7 UN 087 - OH - OH	4,300.00	4,261.43	666.49	480.63	3.586	SF
San Juan 29-7 UN 087B - OH - OH	3,600.00	3,831.00	2,204.66	2,038.51	13.269	CC
San Juan 29-7 UN 087B - OH - OH	3,700.00	3,930.95	2,206.45	2,035.95	12.941	ES
San Juan 29-7 UN 087B - OH - OH	6,100.00	6,199.08	2,782.14	2,511.73	10.288	SF
San Juan 29-7 UN 094A - OH - OH	4,060.64	4,087.19	1,463.50	1,285.47	8.220	CC
San Juan 29-7 UN 094A - OH - OH	4,600.00	4,595.01	1,474.57	1,274.12	7.356	ES
San Juan 29-7 UN 094A - OH - OH	6,200.00	6,046.00	1,634.45	1,368.73	6.151	SF
San Juan 29-7 UN 117 - OH - OH	3,600.00	3,626.00	2,348.71	2,190.76	14.870	CC
San Juan 29-7 UN 117 - OH - OH	3,800.00	3,825.63	2,353.74	2,187.10	14.124	ES
San Juan 29-7 UN 117 - OH - OH	8,100.00	7,960.00	2,828.38	2,480.11	8.121	SF
San Juan 29-7 UN 117M - OH - OH	8,000.00	8,095.31	776.61	423.80	2.201	CC, ES, SF
San Juan 29-7 UN 126 - OH - OH	8,000.00	8,088.31	1,816.90	1,464.82	5.160	CC
San Juan 29-7 UN 126 - OH - OH	8,100.00	8,119.00	1,818.22	1,464.73	5.144	ES, SF
San Juan 29-7 UN 127 - OH - OH	4,253.36	4,226.69	512.51	328.19	2.781	CC
San Juan 29-7 UN 127 - OH - OH	4,400.00	4,363.63	515.19	324.83	2.706	ES
San Juan 29-7 UN 127 - OH - OH	8,010.00	7,860.31	867.55	524.05	2.526	SF
San Juan 29-7 UN 94 - OH - OH	3,600.00	3,628.00	2,756.60	2,598.57	17.444	CC
San Juan 29-7 UN 94 - OH - OH	3,700.00	3,727.95	2,758.44	2,596.05	16.987	ES
San Juan 29-7 UN 94 - OH - OH	6,200.00	6,060.00	3,352.13	3,086.76	12.632	SF
San Juan 29-7 UN NP 511 - OH - OH	3,364.91	3,594.91	2,631.19	2,475.33	16.882	CC
San Juan 29-7 UN NP 511 - OH - OH	3,400.00	3,625.00	2,631.20	2,474.01	16.739	ES
San Juan 29-7 UN NP 511 - OH - OH	3,500.00	3,625.00	2,633.29	2,475.86	16.727	SF
Tom Bolack 001 - OH - OH	6,100.00	6,015.00	1,807.48	1,546.40	6.923	SF
Tom Bolack 001 - OH - OH	6,196.31	6,015.00	1,802.61	1,542.99	6.943	CC, ES



Scientific Drilling
Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6686' @ 6686.00ft
Reference Site:	San Juan 29-7 Unit NP 512 Pad	MD Reference:	GL 6686' @ 6686.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design													San Juan 29-7 Unit NP 512 Pad - San Juan 29-7 UN 076B - OH - OH		Offset Site Error:		0.00 ft
Survey Program: 100-UNKNOWN													Offset Well Error:		0.00 ft		
Reference		Offset		Semi Major Axis			Distance							Warning			
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor					
							+N/-S (ft)	+E/-W (ft)									
0.00	0.00	224.00	224.00	0.00	8.96	-7.68	2,217.04	-298.94	2,237.10	2,228.14	8.96	249.676					
100.00	100.00	324.00	324.00	0.36	12.96	-7.68	2,217.04	-298.94	2,237.10	2,223.78	13.32	167.970					
200.00	200.00	424.00	424.00	0.72	16.96	-7.68	2,217.04	-298.94	2,237.10	2,219.42	17.68	126.555					
300.00	300.00	524.00	524.00	1.08	20.96	-7.68	2,217.04	-298.94	2,237.10	2,215.07	22.04	101.523					
400.00	400.00	624.00	624.00	1.43	24.96	-7.68	2,217.04	-298.94	2,237.10	2,210.71	26.39	84.758					
500.00	500.00	724.00	724.00	1.79	28.96	-7.68	2,217.04	-298.94	2,237.10	2,206.35	30.75	72.746					
600.00	600.00	824.00	824.00	2.15	32.96	-7.68	2,217.04	-298.94	2,237.10	2,201.99	35.11	63.715					
700.00	700.00	924.00	924.00	2.51	36.96	-7.68	2,217.04	-298.94	2,237.10	2,197.63	39.47	56.680					
800.00	800.00	1,024.00	1,024.00	2.87	40.96	-7.68	2,217.04	-298.94	2,237.10	2,193.27	43.83	51.043					
900.00	900.00	1,124.00	1,124.00	3.23	44.96	-7.68	2,217.04	-298.94	2,237.10	2,188.91	48.19	46.426					
1,000.00	1,000.00	1,224.00	1,224.00	3.58	48.96	-7.68	2,217.04	-298.94	2,237.10	2,184.56	52.54	42.575					
1,100.00	1,100.00	1,324.00	1,324.00	3.94	52.96	-7.68	2,217.04	-298.94	2,237.10	2,180.20	56.90	39.314					
1,200.00	1,200.00	1,424.00	1,424.00	4.30	56.96	-7.68	2,217.04	-298.94	2,237.10	2,175.84	61.26	36.517					
1,300.00	1,300.00	1,524.00	1,524.00	4.66	60.96	-7.68	2,217.04	-298.94	2,237.10	2,171.48	65.62	34.092					
1,400.00	1,400.00	1,624.00	1,624.00	5.02	64.96	-7.68	2,217.04	-298.94	2,237.10	2,167.12	69.98	31.968					
1,500.00	1,500.00	1,724.00	1,724.00	5.38	68.96	-7.68	2,217.04	-298.94	2,237.10	2,162.76	74.34	30.094					
1,600.00	1,600.00	1,824.00	1,824.00	5.74	72.96	-7.68	2,217.04	-298.94	2,237.10	2,158.41	78.70	28.427					
1,700.00	1,700.00	1,924.00	1,924.00	6.09	76.96	-7.68	2,217.04	-298.94	2,237.10	2,154.05	83.05	26.935					
1,800.00	1,800.00	2,024.00	2,024.00	6.45	80.96	-7.68	2,217.04	-298.94	2,237.10	2,149.69	87.41	25.592					
1,900.00	1,900.00	2,124.00	2,124.00	6.81	84.96	-7.68	2,217.04	-298.94	2,237.10	2,145.33	91.77	24.377					
2,000.00	2,000.00	2,224.00	2,224.00	7.17	88.96	-7.68	2,217.04	-298.94	2,237.10	2,140.97	96.13	23.272					
2,100.00	2,100.00	2,324.00	2,324.00	7.53	92.96	-7.68	2,217.04	-298.94	2,237.10	2,136.61	100.49	22.262					
2,200.00	2,200.00	2,424.00	2,424.00	7.89	96.96	-7.68	2,217.04	-298.94	2,237.10	2,132.25	104.85	21.337					
2,300.00	2,300.00	2,524.00	2,524.00	8.24	100.96	-7.68	2,217.04	-298.94	2,237.10	2,127.90	109.20	20.485					
2,400.00	2,400.00	2,624.00	2,624.00	8.60	104.96	-7.68	2,217.04	-298.94	2,237.10	2,123.54	113.56	19.699					
2,500.00	2,500.00	2,724.00	2,724.00	8.96	108.96	-7.68	2,217.04	-298.94	2,237.10	2,119.18	117.92	18.971					
2,600.00	2,600.00	2,824.00	2,824.00	9.32	112.96	-7.68	2,217.04	-298.94	2,237.10	2,114.82	122.28	18.295					
2,700.00	2,700.00	2,924.00	2,924.00	9.68	116.96	-7.68	2,217.04	-298.94	2,237.10	2,110.46	126.64	17.665					
2,800.00	2,800.00	3,024.00	3,024.00	10.04	120.96	-7.68	2,217.04	-298.94	2,237.10	2,106.10	131.00	17.077					
2,900.00	2,900.00	3,124.00	3,124.00	10.40	124.96	-7.68	2,217.04	-298.94	2,237.10	2,101.75	135.36	16.528					
3,000.00	3,000.00	3,224.00	3,224.00	10.75	128.96	-7.68	2,217.04	-298.94	2,237.10	2,097.39	139.71	16.012					
3,100.00	3,100.00	3,324.00	3,324.00	11.11	132.96	-7.68	2,217.04	-298.94	2,237.10	2,093.03	144.07	15.528					
3,200.00	3,200.00	3,424.00	3,424.00	11.47	136.96	-7.68	2,217.04	-298.94	2,237.10	2,088.67	148.43	15.072					
3,300.00	3,300.00	3,524.00	3,524.00	11.83	140.96	-7.68	2,217.04	-298.94	2,237.10	2,084.31	152.79	14.642					
3,400.00	3,400.00	3,624.00	3,624.00	12.19	144.96	-7.68	2,217.04	-298.94	2,237.10	2,079.95	157.15	14.236					
3,500.00	3,500.00	3,724.00	3,724.00	12.55	148.96	-7.68	2,217.04	-298.94	2,237.10	2,075.59	161.51	13.851					
3,600.00	3,600.00	3,824.00	3,824.00	12.90	152.96	-7.68	2,217.04	-298.94	2,237.10	2,071.24	165.86	13.487					
3,700.00	3,699.95	3,923.95	3,923.95	13.26	156.96	7.43	2,217.04	-298.94	2,234.51	2,064.28	170.22	13.127					
3,800.00	3,799.63	4,023.63	4,023.63	13.62	160.95	7.49	2,217.04	-298.94	2,226.73	2,052.16	174.57	12.756					
3,900.00	3,898.77	4,122.77	4,122.77	13.98	164.91	7.58	2,217.04	-298.94	2,213.79	2,034.90	178.89	12.375					
4,000.00	3,997.08	4,221.08	4,221.08	14.33	168.84	7.72	2,217.04	-298.94	2,195.72	2,012.55	183.17	11.987					
4,100.00	4,094.31	4,318.31	4,318.31	14.69	172.73	7.90	2,217.04	-298.94	2,172.58	1,985.17	187.41	11.593					
4,200.00	4,190.18	4,414.18	4,414.18	15.05	176.57	8.12	2,217.04	-298.94	2,144.44	1,952.85	191.59	11.193					
4,300.00	4,284.43	4,508.43	4,508.43	15.43	180.34	8.40	2,217.04	-298.94	2,111.37	1,915.68	195.70	10.789					
4,308.86	4,292.69	4,516.69	4,516.69	15.47	180.67	8.43	2,217.04	-298.94	2,108.21	1,912.15	196.06	10.753					
4,400.00	4,377.63	4,601.63	4,601.63	15.82	184.07	8.57	2,217.04	-298.94	2,075.47	1,875.71	199.76	10.390					
4,500.00	4,470.82	4,694.82	4,694.82	16.23	187.79	8.72	2,217.04	-298.94	2,039.56	1,835.73	203.82	10.006					
4,600.00	4,454.01	4,788.01	4,788.01	16.65	191.52	8.87	2,217.04	-298.94	2,003.66	1,795.77	207.89	9.638					
4,700.00	4,457.20	4,881.20	4,881.20	17.09	195.25	9.04	2,217.04	-298.94	1,967.77	1,755.81	211.97	9.283					
4,800.00	4,750.39	4,974.39	4,974.39	17.53	198.98	9.21	2,217.04	-298.94	1,931.90	1,715.86	216.04	8.942					
4,900.00	4,843.59	5,067.59	5,067.59	17.99	202.70	9.38	2,217.04	-298.94	1,896.05	1,675.93	220.12	8.614					
5,000.00	4,936.78	5,160.78	5,160.78	18.46	206.43	9.56	2,217.04	-298.94	1,860.21	1,636.01	224.20	8.297					

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



Scientific Drilling
Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6686' @ 6686.00ft
Reference Site:	San Juan 29-7 Unit NP 512 Pad	MD Reference:	GL 6686' @ 6686.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,100.00	5,029.97	5,253.97	5,253.97	18.94	210.16	9.75	2,217.04	-298.94	1,824.39	1,596.10	228.29	7.992	
5,200.00	5,123.16	5,347.16	5,347.16	19.42	213.89	9.95	2,217.04	-298.94	1,788.59	1,556.21	232.38	7.697	
5,300.00	5,216.35	5,440.35	5,440.35	19.92	217.61	10.15	2,217.04	-298.94	1,752.80	1,516.33	236.47	7.412	
5,400.00	5,309.54	5,533.54	5,533.54	20.42	221.34	10.37	2,217.04	-298.94	1,717.04	1,476.47	240.57	7.137	
5,500.00	5,402.73	5,626.73	5,626.73	20.93	225.07	10.59	2,217.04	-298.94	1,681.29	1,436.63	244.67	6.872	
5,600.00	5,495.92	5,719.92	5,719.92	21.44	228.80	10.82	2,217.04	-298.94	1,645.57	1,396.81	248.77	6.615	
5,700.00	5,589.11	5,813.11	5,813.11	21.96	232.52	11.06	2,217.04	-298.94	1,609.88	1,357.01	252.87	6.366	
5,800.00	5,682.30	5,906.30	5,906.30	22.49	236.25	11.31	2,217.04	-298.94	1,574.21	1,317.23	256.98	6.126	
5,826.83	5,707.31	5,931.31	5,931.31	22.63	237.25	11.38	2,217.04	-298.94	1,564.65	1,306.56	258.08	6.063	
5,900.00	5,775.99	5,999.99	5,999.99	23.01	240.00	11.41	2,217.04	-298.94	1,539.86	1,278.75	261.11	5.897	
6,000.00	5,871.31	6,095.31	6,095.31	23.51	243.81	11.45	2,217.04	-298.94	1,510.22	1,244.92	265.30	5.692	
6,100.00	5,968.08	6,192.08	6,192.08	23.98	247.68	11.49	2,217.04	-298.94	1,485.54	1,215.98	269.55	5.511	
6,200.00	6,066.04	6,211.00	6,211.00	24.42	248.44	11.42	2,217.04	-298.94	1,468.00	1,197.57	270.43	5.428	
6,299.39	6,164.31	6,211.00	6,211.00	24.83	248.44	11.38	2,217.04	-298.94	1,462.13	1,192.74	269.39	5.428	CC, ES, SF
6,300.00	6,164.91	6,211.00	6,211.00	24.83	248.44	11.38	2,217.04	-298.94	1,462.13	1,192.75	269.38	5.428	
6,400.00	6,264.43	6,211.00	6,211.00	25.21	248.44	11.42	2,217.04	-298.94	1,468.20	1,201.12	267.08	5.497	
6,500.00	6,364.32	6,211.00	6,211.00	25.55	248.44	11.52	2,217.04	-298.94	1,486.06	1,222.41	263.65	5.637	
6,535.69	6,400.00	6,211.00	6,211.00	25.67	248.44	-3.51	2,217.04	-298.94	1,495.20	1,233.02	262.18	5.703	
6,600.00	6,464.31	6,211.00	6,211.00	25.87	248.44	-3.51	2,217.04	-298.94	1,514.23	1,254.96	259.26	5.841	
6,700.00	6,564.31	6,211.00	6,211.00	26.19	248.44	-3.51	2,217.04	-298.94	1,548.66	1,294.58	254.08	6.095	
6,800.00	6,664.31	6,211.00	6,211.00	26.51	248.44	-3.51	2,217.04	-298.94	1,588.65	1,340.38	248.28	6.399	
6,900.00	6,764.31	6,211.00	6,211.00	26.83	248.44	-3.51	2,217.04	-298.94	1,633.79	1,391.78	242.01	6.751	
7,000.00	6,864.31	6,211.00	6,211.00	27.15	248.44	-3.51	2,217.04	-298.94	1,683.67	1,448.23	235.44	7.151	
7,100.00	6,964.31	6,211.00	6,211.00	27.47	248.44	-3.51	2,217.04	-298.94	1,737.87	1,509.17	228.70	7.599	
7,200.00	7,064.31	6,211.00	6,211.00	27.79	248.44	-3.51	2,217.04	-298.94	1,796.01	1,574.11	221.91	8.094	
7,300.00	7,164.31	6,211.00	6,211.00	28.12	248.44	-3.51	2,217.04	-298.94	1,857.72	1,642.58	215.14	8.635	
7,400.00	7,264.31	6,211.00	6,211.00	28.44	248.44	-3.51	2,217.04	-298.94	1,922.65	1,714.16	208.49	9.222	
7,500.00	7,364.31	6,211.00	6,211.00	28.77	248.44	-3.51	2,217.04	-298.94	1,990.49	1,788.49	202.00	9.854	
7,600.00	7,464.31	6,211.00	6,211.00	29.09	248.44	-3.51	2,217.04	-298.94	2,060.95	1,865.24	195.71	10.531	
7,700.00	7,564.31	6,211.00	6,211.00	29.42	248.44	-3.51	2,217.04	-298.94	2,133.77	1,944.12	189.65	11.251	
7,800.00	7,664.31	6,211.00	6,211.00	29.75	248.44	-3.51	2,217.04	-298.94	2,208.72	2,024.89	183.83	12.015	
7,900.00	7,764.31	6,211.00	6,211.00	30.08	248.44	-3.51	2,217.04	-298.94	2,285.59	2,107.32	178.27	12.821	
8,000.00	7,864.31	6,211.00	6,211.00	30.41	248.44	-3.51	2,217.04	-298.94	2,364.18	2,191.22	172.96	13.669	
8,100.00	7,964.31	6,211.00	6,211.00	30.74	248.44	-3.51	2,217.04	-298.94	2,444.35	2,276.43	167.91	14.557	
8,200.00	8,064.31	6,211.00	6,211.00	31.07	248.44	-3.51	2,217.04	-298.94	2,525.92	2,362.81	163.12	15.485	
8,235.69	8,100.00	6,211.00	6,211.00	31.18	248.44	-3.51	2,217.04	-298.94	2,555.35	2,393.89	161.46	15.826	



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6686' @ 6686.00ft
Reference Site:	San Juan 29-7 Unit NP 512 Pad	MD Reference:	GL 6686' @ 6686.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
San Juan 29-7 Unit NP 512 Pad - San Juan 29-7 UN 076R - OH - OH												Offset Well Error:	0.00 ft
Survey Program: 100-UNKNOWN													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	229.00	229.00	0.00	9.16	-23.38	2,941.51	-1,271.94	3,204.74	3,195.58	9.16	349.862	
100.00	100.00	329.00	329.00	0.36	13.16	-23.38	2,941.51	-1,271.94	3,204.74	3,191.22	13.52	237.064	
200.00	200.00	429.00	429.00	0.72	17.16	-23.38	2,941.51	-1,271.94	3,204.74	3,186.86	17.88	179.266	
300.00	300.00	529.00	529.00	1.08	21.16	-23.38	2,941.51	-1,271.94	3,204.74	3,182.50	22.24	144.128	
400.00	400.00	629.00	629.00	1.43	25.16	-23.38	2,941.51	-1,271.94	3,204.74	3,178.14	26.59	120.507	
500.00	500.00	729.00	729.00	1.79	29.16	-23.38	2,941.51	-1,271.94	3,204.74	3,173.78	30.95	103.538	
600.00	600.00	829.00	829.00	2.15	33.16	-23.38	2,941.51	-1,271.94	3,204.74	3,169.43	35.31	90.758	
700.00	700.00	929.00	929.00	2.51	37.16	-23.38	2,941.51	-1,271.94	3,204.74	3,165.07	39.67	80.786	
800.00	800.00	1,029.00	1,029.00	2.87	41.16	-23.38	2,941.51	-1,271.94	3,204.74	3,160.71	44.03	72.789	
900.00	900.00	1,129.00	1,129.00	3.23	45.16	-23.38	2,941.51	-1,271.94	3,204.74	3,156.35	48.39	66.232	
1,000.00	1,000.00	1,229.00	1,229.00	3.58	49.16	-23.38	2,941.51	-1,271.94	3,204.74	3,151.99	52.74	60.759	
1,100.00	1,100.00	1,329.00	1,329.00	3.94	53.16	-23.38	2,941.51	-1,271.94	3,204.74	3,147.63	57.10	56.122	
1,200.00	1,200.00	1,429.00	1,429.00	4.30	57.16	-23.38	2,941.51	-1,271.94	3,204.74	3,143.28	61.46	52.142	
1,300.00	1,300.00	1,529.00	1,529.00	4.66	61.16	-23.38	2,941.51	-1,271.94	3,204.74	3,138.92	65.82	48.689	
1,400.00	1,400.00	1,629.00	1,629.00	5.02	65.16	-23.38	2,941.51	-1,271.94	3,204.74	3,134.56	70.18	45.665	
1,500.00	1,500.00	1,729.00	1,729.00	5.38	69.16	-23.38	2,941.51	-1,271.94	3,204.74	3,130.20	74.54	42.995	
1,600.00	1,600.00	1,829.00	1,829.00	5.74	73.16	-23.38	2,941.51	-1,271.94	3,204.74	3,125.84	78.90	40.620	
1,700.00	1,700.00	1,929.00	1,929.00	6.09	77.16	-23.38	2,941.51	-1,271.94	3,204.74	3,121.48	83.25	38.493	
1,800.00	1,800.00	2,029.00	2,029.00	6.45	81.16	-23.38	2,941.51	-1,271.94	3,204.74	3,117.12	87.61	36.579	
1,900.00	1,900.00	2,129.00	2,129.00	6.81	85.16	-23.38	2,941.51	-1,271.94	3,204.74	3,112.77	91.97	34.845	
2,000.00	2,000.00	2,229.00	2,229.00	7.17	89.16	-23.38	2,941.51	-1,271.94	3,204.74	3,108.41	96.33	33.269	
2,100.00	2,100.00	2,329.00	2,329.00	7.53	93.16	-23.38	2,941.51	-1,271.94	3,204.74	3,104.05	100.69	31.828	
2,200.00	2,200.00	2,429.00	2,429.00	7.89	97.16	-23.38	2,941.51	-1,271.94	3,204.74	3,099.69	105.05	30.508	
2,300.00	2,300.00	2,529.00	2,529.00	8.24	101.16	-23.38	2,941.51	-1,271.94	3,204.74	3,095.33	109.40	29.292	
2,400.00	2,400.00	2,629.00	2,629.00	8.60	105.16	-23.38	2,941.51	-1,271.94	3,204.74	3,090.97	113.76	28.170	
2,500.00	2,500.00	2,729.00	2,729.00	8.96	109.16	-23.38	2,941.51	-1,271.94	3,204.74	3,086.62	118.12	27.131	
2,600.00	2,600.00	2,829.00	2,829.00	9.32	113.16	-23.38	2,941.51	-1,271.94	3,204.74	3,082.26	122.48	26.165	
2,700.00	2,700.00	2,929.00	2,929.00	9.68	117.16	-23.38	2,941.51	-1,271.94	3,204.74	3,077.90	126.84	25.266	
2,800.00	2,800.00	3,029.00	3,029.00	10.04	121.16	-23.38	2,941.51	-1,271.94	3,204.74	3,073.54	131.20	24.427	
2,900.00	2,900.00	3,129.00	3,129.00	10.40	125.16	-23.38	2,941.51	-1,271.94	3,204.74	3,069.18	135.56	23.641	
3,000.00	3,000.00	3,229.00	3,229.00	10.75	129.16	-23.38	2,941.51	-1,271.94	3,204.74	3,064.82	139.91	22.905	
3,100.00	3,100.00	3,329.00	3,329.00	11.11	133.16	-23.38	2,941.51	-1,271.94	3,204.74	3,060.46	144.27	22.213	
3,200.00	3,200.00	3,429.00	3,429.00	11.47	137.16	-23.38	2,941.51	-1,271.94	3,204.74	3,056.11	148.63	21.562	
3,300.00	3,300.00	3,529.00	3,529.00	11.83	141.16	-23.38	2,941.51	-1,271.94	3,204.74	3,051.75	152.99	20.947	
3,400.00	3,400.00	3,629.00	3,629.00	12.19	145.16	-23.38	2,941.51	-1,271.94	3,204.74	3,047.39	157.35	20.367	
3,500.00	3,500.00	3,729.00	3,729.00	12.55	149.16	-23.38	2,941.51	-1,271.94	3,204.74	3,043.03	161.71	19.818	
3,600.00	3,600.00	3,829.00	3,829.00	12.90	153.16	-23.38	2,941.51	-1,271.94	3,204.74	3,038.67	166.06	19.298	
3,700.00	3,699.95	3,928.95	3,928.95	13.26	157.16	-8.31	2,941.51	-1,271.94	3,202.15	3,031.73	170.42	18.790	
3,800.00	3,799.63	4,028.63	4,028.63	13.62	161.15	-8.37	2,941.51	-1,271.94	3,194.38	3,019.62	174.77	18.278	
3,900.00	3,898.77	4,127.77	4,127.77	13.98	165.11	-8.46	2,941.51	-1,271.94	3,181.47	3,002.39	179.09	17.765	
4,000.00	3,997.08	4,226.08	4,226.08	14.33	169.04	-8.59	2,941.51	-1,271.94	3,163.44	2,980.08	183.37	17.252	
4,100.00	4,094.31	4,323.31	4,323.31	14.69	172.93	-8.76	2,941.51	-1,271.94	3,140.36	2,952.75	187.61	16.739	
4,200.00	4,190.18	4,419.18	4,419.18	15.05	176.77	-8.98	2,941.51	-1,271.94	3,112.27	2,920.49	191.78	16.228	
4,300.00	4,284.43	4,513.43	4,513.43	15.43	180.54	-9.24	2,941.51	-1,271.94	3,079.27	2,883.38	195.89	15.719	
4,308.86	4,292.69	4,521.69	4,521.69	15.47	180.87	-9.27	2,941.51	-1,271.94	3,076.11	2,879.86	196.25	15.674	
4,400.00	4,377.63	4,606.63	4,606.63	15.82	184.27	-9.37	2,941.51	-1,271.94	3,043.43	2,843.48	199.95	15.221	
4,500.00	4,470.82	4,699.82	4,699.82	16.23	187.99	-9.48	2,941.51	-1,271.94	3,007.59	2,803.58	204.01	14.742	
4,600.00	4,564.01	4,793.01	4,793.01	16.65	191.72	-9.59	2,941.51	-1,271.94	2,971.76	2,763.68	208.08	14.282	
4,700.00	4,657.20	4,886.20	4,886.20	17.09	195.45	-9.71	2,941.51	-1,271.94	2,935.93	2,723.78	212.15	13.839	
4,800.00	4,750.39	4,979.39	4,979.39	17.53	199.18	-9.83	2,941.51	-1,271.94	2,900.12	2,683.90	216.22	13.413	
4,900.00	4,843.59	5,072.59	5,072.59	17.99	202.90	-9.95	2,941.51	-1,271.94	2,864.32	2,644.02	220.30	13.002	
5,000.00	4,936.78	5,165.78	5,165.78	18.46	206.63	-10.08	2,941.51	-1,271.94	2,828.54	2,604.16	224.38	12.606	

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



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6686' @ 6686.00ft
Reference Site:	San Juan 29-7 Unit NP 512 Pad	MD Reference:	GL 6686' @ 6686.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,100.00	5,029.97	5,258.97	5,258.97	18.94	210.36	-10.21	2,941.51	-1,271.94	2,792.76	2,564.30	228.46	12.224	
5,200.00	5,123.16	5,352.16	5,352.16	19.42	214.09	-10.34	2,941.51	-1,271.94	2,757.00	2,524.45	232.55	11.855	
5,300.00	5,216.35	5,445.35	5,445.35	19.92	217.81	-10.48	2,941.51	-1,271.94	2,721.25	2,484.61	236.64	11.499	
5,400.00	5,309.54	5,538.54	5,538.54	20.42	221.54	-10.62	2,941.51	-1,271.94	2,685.51	2,444.78	240.73	11.156	
5,500.00	5,402.73	5,631.73	5,631.73	20.93	225.27	-10.77	2,941.51	-1,271.94	2,649.79	2,404.97	244.83	10.823	
5,600.00	5,495.92	5,724.92	5,724.92	21.44	229.00	-10.91	2,941.51	-1,271.94	2,614.09	2,365.16	248.93	10.501	
5,700.00	5,589.11	5,818.11	5,818.11	21.96	232.72	-11.07	2,941.51	-1,271.94	2,578.40	2,325.37	253.03	10.190	
5,800.00	5,682.30	5,911.30	5,911.30	22.49	236.45	-11.22	2,941.51	-1,271.94	2,542.73	2,285.60	257.13	9.889	
5,826.83	5,707.31	5,936.31	5,936.31	22.63	237.45	-11.27	2,941.51	-1,271.94	2,533.16	2,274.93	258.23	9.810	
5,900.00	5,775.99	6,004.99	6,004.99	23.01	240.20	-11.22	2,941.51	-1,271.94	2,508.36	2,247.11	261.25	9.601	
6,000.00	5,871.31	6,060.00	6,060.00	23.51	242.40	-11.12	2,941.51	-1,271.94	2,479.03	2,215.19	263.83	9.396	
6,100.00	5,968.08	6,060.00	6,060.00	23.98	242.40	-11.00	2,941.51	-1,271.94	2,457.82	2,193.88	263.93	9.312	
6,200.00	6,066.04	6,060.00	6,060.00	24.42	242.40	-10.93	2,941.51	-1,271.94	2,445.62	2,182.01	263.61	9.277 SF	
6,282.66	6,147.71	6,060.00	6,060.00	24.76	242.40	-10.91	2,941.51	-1,271.94	2,442.46	2,179.46	263.01	9.287 CC, ES	
6,300.00	6,164.91	6,060.00	6,060.00	24.83	242.40	-10.91	2,941.51	-1,271.94	2,442.60	2,179.76	262.84	9.293	
6,400.00	6,264.43	6,060.00	6,060.00	25.21	242.40	-10.95	2,941.51	-1,271.94	2,448.81	2,187.17	261.63	9.360	
6,500.00	6,364.32	6,060.00	6,060.00	25.55	242.40	-11.04	2,941.51	-1,271.94	2,464.15	2,204.13	260.02	9.477	
6,535.69	6,400.00	6,060.00	6,060.00	25.67	242.40	-26.17	2,941.51	-1,271.94	2,471.80	2,212.45	259.35	9.531	
6,600.00	6,464.31	6,060.00	6,060.00	25.87	242.40	-26.17	2,941.51	-1,271.94	2,487.39	2,229.36	258.03	9.640	
6,700.00	6,564.31	6,060.00	6,060.00	26.19	242.40	-26.17	2,941.51	-1,271.94	2,514.71	2,259.01	255.70	9.834	
6,800.00	6,664.31	6,060.00	6,060.00	26.51	242.40	-26.17	2,941.51	-1,271.94	2,545.67	2,292.59	253.08	10.059	
6,900.00	6,764.31	6,060.00	6,060.00	26.83	242.40	-26.17	2,941.51	-1,271.94	2,580.13	2,329.95	250.18	10.313	
7,000.00	6,864.31	6,060.00	6,060.00	27.15	242.40	-26.17	2,941.51	-1,271.94	2,617.97	2,370.92	247.05	10.597	
7,100.00	6,964.31	6,060.00	6,060.00	27.47	242.40	-26.17	2,941.51	-1,271.94	2,659.03	2,415.30	243.73	10.910	
7,200.00	7,064.31	6,060.00	6,060.00	27.79	242.40	-26.17	2,941.51	-1,271.94	2,703.16	2,462.92	240.24	11.252	
7,300.00	7,164.31	6,060.00	6,060.00	28.12	242.40	-26.17	2,941.51	-1,271.94	2,750.23	2,513.60	236.62	11.623	
7,400.00	7,264.31	6,060.00	6,060.00	28.44	242.40	-26.17	2,941.51	-1,271.94	2,800.07	2,567.17	232.91	12.022	
7,500.00	7,364.31	6,060.00	6,060.00	28.77	242.40	-26.17	2,941.51	-1,271.94	2,852.56	2,623.44	229.12	12.450	
7,600.00	7,464.31	6,060.00	6,060.00	29.09	242.40	-26.17	2,941.51	-1,271.94	2,907.53	2,682.24	225.29	12.906	
7,700.00	7,564.31	6,060.00	6,060.00	29.42	242.40	-26.17	2,941.51	-1,271.94	2,964.86	2,743.43	221.43	13.389	
7,800.00	7,664.31	6,060.00	6,060.00	29.75	242.40	-26.17	2,941.51	-1,271.94	3,024.41	2,806.83	217.58	13.900	
7,900.00	7,764.31	6,060.00	6,060.00	30.08	242.40	-26.17	2,941.51	-1,271.94	3,086.05	2,872.31	213.74	14.438	
8,000.00	7,864.31	6,060.00	6,060.00	30.41	242.40	-26.17	2,941.51	-1,271.94	3,149.66	2,939.73	209.94	15.003	
8,100.00	7,964.31	6,060.00	6,060.00	30.74	242.40	-26.17	2,941.51	-1,271.94	3,215.13	3,008.95	206.17	15.594	
8,200.00	8,064.31	6,060.00	6,060.00	31.07	242.40	-26.17	2,941.51	-1,271.94	3,282.33	3,079.87	202.47	16.212	
8,235.69	8,100.00	6,060.00	6,060.00	31.18	242.40	-26.17	2,941.51	-1,271.94	3,306.72	3,105.56	201.16	16.438	

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



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6686' @ 6686.00ft
Reference Site:	San Juan 29-7 Unit NP 512 Pad	MD Reference:	GL 6686' @ 6686.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
San Juan 29-7 Unit NP 512 Pad - San Juan 29-7 UN 081A - OH - OH												Offset Well Error:	0.00 ft
Survey Program: 100-UNKNOWN													
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	228.00	228.00	0.00	9.12	20.27	2,380.87	879.24	2,538.03	2,528.91	9.12	278.293	
100.00	100.00	328.00	328.00	0.36	13.12	20.27	2,380.87	879.24	2,538.03	2,524.55	13.48	188.303	
200.00	200.00	428.00	428.00	0.72	17.12	20.27	2,380.87	879.24	2,538.03	2,520.19	17.84	142.291	
300.00	300.00	528.00	528.00	1.08	21.12	20.27	2,380.87	879.24	2,538.03	2,515.84	22.20	114.349	
400.00	400.00	628.00	628.00	1.43	25.12	20.27	2,380.87	879.24	2,538.03	2,511.48	26.55	95.580	
500.00	500.00	728.00	728.00	1.79	29.12	20.27	2,380.87	879.24	2,538.03	2,507.12	30.91	82.104	
600.00	600.00	828.00	828.00	2.15	33.12	20.27	2,380.87	879.24	2,538.03	2,502.76	35.27	71.958	
700.00	700.00	928.00	928.00	2.51	37.12	20.27	2,380.87	879.24	2,538.03	2,498.40	39.63	64.044	
800.00	800.00	1,028.00	1,028.00	2.87	41.12	20.27	2,380.87	879.24	2,538.03	2,494.04	43.99	57.699	
900.00	900.00	1,128.00	1,128.00	3.23	45.12	20.27	2,380.87	879.24	2,538.03	2,489.69	48.35	52.497	
1,000.00	1,000.00	1,228.00	1,228.00	3.58	49.12	20.27	2,380.87	879.24	2,538.03	2,485.33	52.70	48.156	
1,100.00	1,100.00	1,328.00	1,328.00	3.94	53.12	20.27	2,380.87	879.24	2,538.03	2,480.97	57.06	44.478	
1,200.00	1,200.00	1,428.00	1,428.00	4.30	57.12	20.27	2,380.87	879.24	2,538.03	2,476.61	61.42	41.321	
1,300.00	1,300.00	1,528.00	1,528.00	4.66	61.12	20.27	2,380.87	879.24	2,538.03	2,472.25	65.78	38.584	
1,400.00	1,400.00	1,628.00	1,628.00	5.02	65.12	20.27	2,380.87	879.24	2,538.03	2,467.89	70.14	36.186	
1,500.00	1,500.00	1,728.00	1,728.00	5.38	69.12	20.27	2,380.87	879.24	2,538.03	2,463.53	74.50	34.069	
1,600.00	1,600.00	1,828.00	1,828.00	5.74	73.12	20.27	2,380.87	879.24	2,538.03	2,459.18	78.86	32.186	
1,700.00	1,700.00	1,928.00	1,928.00	6.09	77.12	20.27	2,380.87	879.24	2,538.03	2,454.82	83.21	30.500	
1,800.00	1,800.00	2,028.00	2,028.00	6.45	81.12	20.27	2,380.87	879.24	2,538.03	2,450.46	87.57	28.982	
1,900.00	1,900.00	2,128.00	2,128.00	6.81	85.12	20.27	2,380.87	879.24	2,538.03	2,446.10	91.93	27.608	
2,000.00	2,000.00	2,228.00	2,228.00	7.17	89.12	20.27	2,380.87	879.24	2,538.03	2,441.74	96.29	26.358	
2,100.00	2,100.00	2,328.00	2,328.00	7.53	93.12	20.27	2,380.87	879.24	2,538.03	2,437.38	100.65	25.217	
2,200.00	2,200.00	2,428.00	2,428.00	7.89	97.12	20.27	2,380.87	879.24	2,538.03	2,433.02	105.01	24.170	
2,300.00	2,300.00	2,528.00	2,528.00	8.24	101.12	20.27	2,380.87	879.24	2,538.03	2,428.67	109.36	23.207	
2,400.00	2,400.00	2,628.00	2,628.00	8.60	105.12	20.27	2,380.87	879.24	2,538.03	2,424.31	113.72	22.318	
2,500.00	2,500.00	2,728.00	2,728.00	8.96	109.12	20.27	2,380.87	879.24	2,538.03	2,419.95	118.08	21.494	
2,600.00	2,600.00	2,828.00	2,828.00	9.32	113.12	20.27	2,380.87	879.24	2,538.03	2,415.59	122.44	20.729	
2,700.00	2,700.00	2,928.00	2,928.00	9.68	117.12	20.27	2,380.87	879.24	2,538.03	2,411.23	126.80	20.016	
2,800.00	2,800.00	3,028.00	3,028.00	10.04	121.12	20.27	2,380.87	879.24	2,538.03	2,406.87	131.16	19.351	
2,900.00	2,900.00	3,128.00	3,128.00	10.40	125.12	20.27	2,380.87	879.24	2,538.03	2,402.52	135.52	18.729	
3,000.00	3,000.00	3,228.00	3,228.00	10.75	129.12	20.27	2,380.87	879.24	2,538.03	2,398.16	139.87	18.145	
3,100.00	3,100.00	3,328.00	3,328.00	11.11	133.12	20.27	2,380.87	879.24	2,538.03	2,393.80	144.23	17.597	
3,200.00	3,200.00	3,428.00	3,428.00	11.47	137.12	20.27	2,380.87	879.24	2,538.03	2,389.44	148.59	17.081	
3,300.00	3,300.00	3,528.00	3,528.00	11.83	141.12	20.27	2,380.87	879.24	2,538.03	2,385.08	152.95	16.594	
3,400.00	3,400.00	3,628.00	3,628.00	12.19	145.12	20.27	2,380.87	879.24	2,538.03	2,380.72	157.31	16.134	
3,500.00	3,500.00	3,728.00	3,728.00	12.55	149.12	20.27	2,380.87	879.24	2,538.03	2,376.36	161.67	15.699	
3,600.00	3,600.00	3,828.00	3,828.00	12.90	153.12	20.27	2,380.87	879.24	2,538.03	2,372.01	166.02	15.287	
3,700.00	3,699.95	3,927.95	3,927.95	13.26	157.12	35.43	2,380.87	879.24	2,535.90	2,365.52	170.38	14.884	
3,800.00	3,799.63	4,027.63	4,027.63	13.62	161.11	35.64	2,380.87	879.24	2,529.51	2,354.78	174.73	14.477	
3,900.00	3,898.77	4,126.77	4,126.77	13.98	165.07	36.00	2,380.87	879.24	2,518.89	2,339.84	179.05	14.068	
4,000.00	3,997.08	4,225.08	4,225.08	14.33	169.00	36.51	2,380.87	879.24	2,504.11	2,320.78	183.33	13.659	
4,100.00	4,094.31	4,322.31	4,322.31	14.69	172.89	37.18	2,380.87	879.24	2,485.24	2,297.67	187.58	13.249	
4,200.00	4,190.18	4,418.18	4,418.18	15.05	176.73	38.00	2,380.87	879.24	2,462.39	2,270.63	191.77	12.841	
4,300.00	4,284.43	4,512.43	4,512.43	15.43	180.50	39.00	2,380.87	879.24	2,435.68	2,239.79	195.89	12.434	
4,308.86	4,292.69	4,520.69	4,520.69	15.47	180.83	39.09	2,380.87	879.24	2,433.14	2,236.88	196.25	12.398	
4,400.00	4,377.63	4,605.63	4,605.63	15.82	184.23	39.57	2,380.87	879.24	2,406.86	2,206.88	199.98	12.036	
4,500.00	4,470.82	4,698.82	4,698.82	16.23	187.95	40.12	2,380.87	879.24	2,378.23	2,174.16	204.07	11.654	
4,600.00	4,564.01	4,792.01	4,792.01	16.65	191.68	40.67	2,380.87	879.24	2,349.81	2,141.64	208.18	11.288	
4,700.00	4,657.20	4,885.20	4,885.20	17.09	195.41	41.24	2,380.87	879.24	2,321.61	2,109.32	212.29	10.936	
4,800.00	4,750.39	4,978.39	4,978.39	17.53	199.14	41.82	2,380.87	879.24	2,293.64	2,077.23	216.41	10.598	
4,900.00	4,843.59	5,071.59	5,071.59	17.99	202.86	42.41	2,380.87	879.24	2,265.90	2,045.36	220.54	10.274	
5,000.00	4,936.78	5,164.78	5,164.78	18.46	206.59	43.02	2,380.87	879.24	2,238.41	2,013.72	224.68	9.963	

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



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6686' @ 6686.00ft
Reference Site:	San Juan 29-7 Unit NP 512 Pad	MD Reference:	GL 6686' @ 6686.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,100.00	5,029.97	5,257.97	5,257.97	18.94	210.32	43.64	2,380.87	879.24	2,211.16	1,982.33	228.83	9.663	
5,200.00	5,123.16	5,351.16	5,351.16	19.42	214.05	44.27	2,380.87	879.24	2,184.18	1,951.20	232.99	9.375	
5,300.00	5,216.35	5,444.35	5,444.35	19.92	217.77	44.92	2,380.87	879.24	2,157.48	1,920.32	237.15	9.097	
5,400.00	5,309.54	5,537.54	5,537.54	20.42	221.50	45.59	2,380.87	879.24	2,131.05	1,889.73	241.33	8.831	
5,500.00	5,402.73	5,630.73	5,630.73	20.93	225.23	46.27	2,380.87	879.24	2,104.92	1,859.41	245.51	8.574	
5,600.00	5,495.92	5,723.92	5,723.92	21.44	228.96	46.96	2,380.87	879.24	2,079.09	1,829.40	249.70	8.326	
5,700.00	5,589.11	5,817.11	5,817.11	21.96	232.68	47.68	2,380.87	879.24	2,053.58	1,799.69	253.89	8.088	
5,800.00	5,682.30	5,910.30	5,910.30	22.49	236.41	48.40	2,380.87	879.24	2,028.40	1,770.30	258.10	7.859	
5,826.83	5,707.31	5,935.31	5,935.31	22.63	237.41	48.60	2,380.87	879.24	2,021.70	1,762.47	259.23	7.799	
5,900.00	5,775.99	6,003.99	6,003.99	23.01	240.16	48.72	2,380.87	879.24	2,004.45	1,742.12	262.33	7.641	
6,000.00	5,871.31	6,099.31	6,099.31	23.51	243.97	48.89	2,380.87	879.24	1,984.03	1,717.42	266.61	7.442	
6,100.00	5,968.08	6,196.08	6,196.08	23.98	247.84	49.04	2,380.87	879.24	1,967.21	1,696.27	270.93	7.261	
6,200.00	6,066.04	6,294.04	6,294.04	24.42	251.76	49.18	2,380.87	879.24	1,953.92	1,678.64	275.28	7.098	
6,300.00	6,164.91	6,392.91	6,392.91	24.83	255.72	49.28	2,380.87	879.24	1,944.13	1,664.48	279.64	6.952	
6,400.00	6,264.43	6,492.43	6,492.43	25.21	259.70	49.35	2,380.87	879.24	1,937.78	1,653.78	284.00	6.823	
6,500.00	6,364.32	6,592.32	6,592.32	25.55	263.69	49.39	2,380.87	879.24	1,934.86	1,646.51	288.35	6.710	
6,535.69	6,400.00	6,628.00	6,628.00	25.67	265.12	34.30	2,380.87	879.24	1,934.64	1,644.75	289.90	6.674	
6,600.00	6,464.31	6,692.31	6,692.31	25.87	267.69	34.30	2,380.87	879.24	1,934.64	1,641.96	292.68	6.610	
6,700.00	6,564.31	6,792.31	6,792.31	26.19	271.69	34.30	2,380.87	879.24	1,934.64	1,637.63	297.01	6.514	
6,800.00	6,664.31	6,892.31	6,892.31	26.51	275.69	34.30	2,380.87	879.24	1,934.64	1,633.30	301.34	6.420	
6,900.00	6,764.31	6,992.31	6,992.31	26.83	279.69	34.30	2,380.87	879.24	1,934.64	1,628.97	305.67	6.329	
7,000.00	6,864.31	7,092.31	7,092.31	27.15	283.69	34.30	2,380.87	879.24	1,934.64	1,624.64	310.00	6.241	
7,100.00	6,964.31	7,192.31	7,192.31	27.47	287.69	34.30	2,380.87	879.24	1,934.64	1,620.31	314.33	6.155	
7,200.00	7,064.31	7,292.31	7,292.31	27.79	291.69	34.30	2,380.87	879.24	1,934.64	1,615.98	318.67	6.071	
7,300.00	7,164.31	7,392.31	7,392.31	28.12	295.69	34.30	2,380.87	879.24	1,934.64	1,611.64	323.00	5.990	
7,400.00	7,264.31	7,492.31	7,492.31	28.44	299.69	34.30	2,380.87	879.24	1,934.64	1,607.31	327.33	5.910	
7,500.00	7,364.31	7,592.31	7,592.31	28.77	303.69	34.30	2,380.87	879.24	1,934.64	1,602.97	331.67	5.833	
7,600.00	7,464.31	7,692.31	7,692.31	29.09	307.69	34.30	2,380.87	879.24	1,934.64	1,598.64	336.00	5.758	
7,700.00	7,564.31	7,792.31	7,792.31	29.42	311.69	34.30	2,380.87	879.24	1,934.64	1,594.30	340.34	5.684	
7,800.00	7,664.31	7,892.31	7,892.31	29.75	315.69	34.30	2,380.87	879.24	1,934.64	1,589.97	344.68	5.613	
7,900.00	7,764.31	7,992.31	7,992.31	30.08	319.69	34.30	2,380.87	879.24	1,934.64	1,585.63	349.01	5.543	
8,000.00	7,864.31	8,092.31	8,092.31	30.41	323.69	34.30	2,380.87	879.24	1,934.64	1,581.29	353.35	5.475 CC, ES, SF	
8,100.00	7,964.31	8,096.00	8,096.00	30.74	323.84	34.30	2,380.87	879.24	1,937.04	1,583.56	353.48	5.480	
8,200.00	8,064.31	8,096.00	8,096.00	31.07	323.84	34.30	2,380.87	879.24	1,944.58	1,592.02	352.55	5.516	
8,235.69	8,100.00	8,096.00	8,096.00	31.18	323.84	34.30	2,380.87	879.24	1,948.50	1,596.50	352.00	5.535	

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



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6686' @ 6686.00ft
Reference Site:	San Juan 29-7 Unit NP 512 Pad	MD Reference:	GL 6686' @ 6686.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)			
0.00	0.00	0.00	0.00	0.00	0.00	91.69	-18.20	618.45	619.15				
100.00	100.00	77.00	77.00	0.36	3.08	91.69	-18.20	618.45	618.72	615.28	3.44	179.938	
200.00	200.00	177.00	177.00	0.72	7.08	91.69	-18.20	618.45	618.72	610.92	7.80	79.354	
300.00	300.00	277.00	277.00	1.08	11.08	91.69	-18.20	618.45	618.72	606.56	12.16	50.901	
400.00	400.00	377.00	377.00	1.43	15.08	91.69	-18.20	618.45	618.72	602.20	16.51	37.467	
500.00	500.00	477.00	477.00	1.79	19.08	91.69	-18.20	618.45	618.72	597.85	20.87	29.643	
600.00	600.00	577.00	577.00	2.15	23.08	91.69	-18.20	618.45	618.72	593.49	25.23	24.522	
700.00	700.00	677.00	677.00	2.51	27.08	91.69	-18.20	618.45	618.72	589.13	29.59	20.910	
800.00	800.00	777.00	777.00	2.87	31.08	91.69	-18.20	618.45	618.72	584.77	33.95	18.226	
900.00	900.00	877.00	877.00	3.23	35.08	91.69	-18.20	618.45	618.72	580.41	38.31	16.152	
1,000.00	1,000.00	977.00	977.00	3.58	39.08	91.69	-18.20	618.45	618.72	576.05	42.66	14.502	
1,100.00	1,100.00	1,077.00	1,077.00	3.94	43.08	91.69	-18.20	618.45	618.72	571.70	47.02	13.158	
1,200.00	1,200.00	1,177.00	1,177.00	4.30	47.08	91.69	-18.20	618.45	618.72	567.34	51.38	12.042	
1,300.00	1,300.00	1,277.00	1,277.00	4.66	51.08	91.69	-18.20	618.45	618.72	562.98	55.74	11.100	
1,400.00	1,400.00	1,377.00	1,377.00	5.02	55.08	91.69	-18.20	618.45	618.72	558.62	60.10	10.295	
1,500.00	1,500.00	1,477.00	1,477.00	5.38	59.08	91.69	-18.20	618.45	618.72	554.26	64.46	9.599	
1,600.00	1,600.00	1,577.00	1,577.00	5.74	63.08	91.69	-18.20	618.45	618.72	549.90	68.82	8.991	
1,700.00	1,700.00	1,677.00	1,677.00	6.09	67.08	91.69	-18.20	618.45	618.72	545.54	73.17	8.455	
1,800.00	1,800.00	1,777.00	1,777.00	6.45	71.08	91.69	-18.20	618.45	618.72	541.19	77.53	7.980	
1,900.00	1,900.00	1,877.00	1,877.00	6.81	75.08	91.69	-18.20	618.45	618.72	536.83	81.89	7.555	
2,000.00	2,000.00	1,977.00	1,977.00	7.17	79.08	91.69	-18.20	618.45	618.72	532.47	86.25	7.174	
2,100.00	2,100.00	2,077.00	2,077.00	7.53	83.08	91.69	-18.20	618.45	618.72	528.11	90.61	6.829	
2,200.00	2,200.00	2,177.00	2,177.00	7.89	87.08	91.69	-18.20	618.45	618.72	523.75	94.97	6.515	
2,300.00	2,300.00	2,277.00	2,277.00	8.24	91.08	91.69	-18.20	618.45	618.72	519.39	99.32	6.229	
2,400.00	2,400.00	2,377.00	2,377.00	8.60	95.08	91.69	-18.20	618.45	618.72	515.04	103.68	5.967	
2,500.00	2,500.00	2,477.00	2,477.00	8.96	99.08	91.69	-18.20	618.45	618.72	510.68	108.04	5.727	
2,600.00	2,600.00	2,577.00	2,577.00	9.32	103.08	91.69	-18.20	618.45	618.72	506.32	112.40	5.505	
2,700.00	2,700.00	2,677.00	2,677.00	9.68	107.08	91.69	-18.20	618.45	618.72	501.96	116.76	5.299	
2,800.00	2,800.00	2,777.00	2,777.00	10.04	111.08	91.69	-18.20	618.45	618.72	497.60	121.12	5.108	
2,900.00	2,900.00	2,877.00	2,877.00	10.40	115.08	91.69	-18.20	618.45	618.72	493.24	125.48	4.931	
3,000.00	3,000.00	2,977.00	2,977.00	10.75	119.08	91.69	-18.20	618.45	618.72	488.88	129.83	4.765	
3,100.00	3,100.00	3,077.00	3,077.00	11.11	123.08	91.69	-18.20	618.45	618.72	484.53	134.19	4.611	
3,200.00	3,200.00	3,177.00	3,177.00	11.47	127.08	91.69	-18.20	618.45	618.72	480.17	138.55	4.466	
3,300.00	3,300.00	3,277.00	3,277.00	11.83	131.08	91.69	-18.20	618.45	618.72	475.81	142.91	4.329	
3,400.00	3,400.00	3,377.00	3,377.00	12.19	135.08	91.69	-18.20	618.45	618.72	471.45	147.27	4.201	
3,500.00	3,500.00	3,477.00	3,477.00	12.55	139.08	91.69	-18.20	618.45	618.72	467.09	151.63	4.081	
3,600.00	3,600.00	3,577.00	3,577.00	12.90	143.08	91.69	-18.20	618.45	618.72	462.73	155.98	3.967 CC	
3,700.00	3,699.95	3,676.95	3,676.95	13.26	147.08	106.98	-18.20	618.45	619.48	459.14	160.34	3.864	
3,800.00	3,799.63	3,776.63	3,776.63	13.62	151.07	107.61	-18.20	618.45	621.82	457.14	164.68	3.776	
3,900.00	3,898.77	3,875.77	3,875.77	13.98	155.03	108.62	-18.20	618.45	625.91	456.91	169.00	3.704 ES	
4,000.00	3,997.08	3,974.08	3,974.08	14.33	158.96	109.99	-18.20	618.45	632.03	458.74	173.29	3.647	
4,100.00	4,094.31	4,071.31	4,071.31	14.69	162.85	111.67	-18.20	618.45	640.54	463.01	177.53	3.608	
4,200.00	4,190.18	4,167.18	4,167.18	15.05	166.69	113.59	-18.20	618.45	651.87	470.14	181.72	3.587	
4,300.00	4,284.43	4,261.43	4,261.43	15.43	170.46	115.70	-18.20	618.45	666.49	480.63	185.86	3.586 SF	
4,308.86	4,292.69	4,269.69	4,269.69	15.47	170.79	115.90	-18.20	618.45	667.96	481.73	186.22	3.587	
4,400.00	4,377.63	4,354.63	4,354.63	15.82	174.19	118.26	-18.20	618.45	683.86	493.90	189.96	3.600	
4,500.00	4,470.82	4,447.82	4,447.82	16.23	177.91	120.73	-18.20	618.45	702.68	508.62	194.06	3.621	
4,600.00	4,564.01	4,541.01	4,541.01	16.65	181.64	123.09	-18.20	618.45	722.84	524.66	198.17	3.647	
4,700.00	4,657.20	4,634.20	4,634.20	17.09	185.37	125.32	-18.20	618.45	744.21	541.93	202.29	3.679	
4,800.00	4,750.39	4,727.39	4,727.39	17.53	189.10	127.44	-18.20	618.45	766.71	560.31	206.40	3.715	
4,900.00	4,843.59	4,820.59	4,820.59	17.99	192.82	129.45	-18.20	618.45	790.23	579.71	210.52	3.754	
5,000.00	4,936.78	4,913.78	4,913.78	18.46	196.55	131.34	-18.20	618.45	814.69	600.06	214.64	3.796	

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



Scientific Drilling
Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6686' @ 6686.00ft
Reference Site:	San Juan 29-7 Unit NP 512 Pad	MD Reference:	GL 6686' @ 6686.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,100.00	5,029.97	5,006.97	5,006.97	18.94	200.28	133.13	-18.20	618.45	840.01	621.25	218.75	3.840	
5,200.00	5,123.16	5,100.16	5,100.16	19.42	204.01	134.83	-18.20	618.45	866.10	643.22	222.87	3.886	
5,300.00	5,216.35	5,193.35	5,193.35	19.92	207.73	136.42	-18.20	618.45	892.90	665.91	226.99	3.934	
5,400.00	5,309.54	5,286.54	5,286.54	20.42	211.46	137.93	-18.20	618.45	920.35	689.25	231.11	3.982	
5,500.00	5,402.73	5,379.73	5,379.73	20.93	215.19	139.36	-18.20	618.45	948.40	713.17	235.22	4.032	
5,600.00	5,495.92	5,472.92	5,472.92	21.44	218.92	140.71	-18.20	618.45	976.98	737.64	239.34	4.082	
5,700.00	5,589.11	5,566.11	5,566.11	21.96	222.64	141.98	-18.20	618.45	1,006.07	762.61	243.46	4.132	
5,800.00	5,682.30	5,659.30	5,659.30	22.49	226.37	143.19	-18.20	618.45	1,035.60	788.03	247.57	4.183	
5,826.83	5,707.31	5,684.31	5,684.31	22.63	227.37	143.50	-18.20	618.45	1,043.60	794.92	248.67	4.197	
5,900.00	5,775.99	5,752.99	5,752.99	23.01	230.12	144.67	-18.20	618.45	1,064.46	812.76	251.70	4.229	
6,000.00	5,871.31	5,818.00	5,818.00	23.51	232.72	145.76	-18.20	618.45	1,090.09	835.55	254.54	4.283	
6,100.00	5,968.08	5,818.00	5,818.00	23.98	232.72	146.25	-18.20	618.45	1,118.11	864.90	253.21	4.416	
6,200.00	6,066.04	5,818.00	5,818.00	24.42	232.72	146.81	-18.20	618.45	1,150.11	899.94	250.18	4.597	
6,300.00	6,164.91	5,818.00	5,818.00	24.83	232.72	147.43	-18.20	618.45	1,185.69	940.03	245.66	4.827	
6,400.00	6,264.43	5,818.00	5,818.00	25.21	232.72	148.10	-18.20	618.45	1,224.44	984.55	239.89	5.104	
6,500.00	6,364.32	5,818.00	5,818.00	25.55	232.72	148.82	-18.20	618.45	1,265.96	1,032.88	233.09	5.431	
6,535.69	6,400.00	5,818.00	5,818.00	25.67	232.72	134.00	-18.20	618.45	1,281.39	1,050.94	230.45	5.560	
6,600.00	6,464.31	5,818.00	5,818.00	25.87	232.72	134.00	-18.20	618.45	1,310.72	1,085.22	225.50	5.813	
6,700.00	6,564.31	5,818.00	5,818.00	26.19	232.72	134.00	-18.20	618.45	1,361.12	1,143.63	217.49	6.258	
6,800.00	6,664.31	5,818.00	5,818.00	26.51	232.72	134.00	-18.20	618.45	1,416.80	1,207.48	209.32	6.769	
6,900.00	6,764.31	5,818.00	5,818.00	26.83	232.72	134.00	-18.20	618.45	1,477.15	1,275.98	201.17	7.343	
7,000.00	6,864.31	5,818.00	5,818.00	27.15	232.72	134.00	-18.20	618.45	1,541.63	1,348.46	193.17	7.981	
7,100.00	6,964.31	5,818.00	5,818.00	27.47	232.72	134.00	-18.20	618.45	1,609.75	1,424.31	185.45	8.680	
7,200.00	7,064.31	5,818.00	5,818.00	27.79	232.72	134.00	-18.20	618.45	1,681.06	1,503.02	178.04	9.442	
7,300.00	7,164.31	5,818.00	5,818.00	28.12	232.72	134.00	-18.20	618.45	1,755.17	1,584.16	171.01	10.263	
7,400.00	7,264.31	5,818.00	5,818.00	28.44	232.72	134.00	-18.20	618.45	1,831.74	1,667.38	164.37	11.144	
7,500.00	7,364.31	5,818.00	5,818.00	28.77	232.72	134.00	-18.20	618.45	1,910.48	1,752.37	158.11	12.083	
7,600.00	7,464.31	5,818.00	5,818.00	29.09	232.72	134.00	-18.20	618.45	1,991.13	1,838.89	152.24	13.079	
7,700.00	7,564.31	5,818.00	5,818.00	29.42	232.72	134.00	-18.20	618.45	2,073.47	1,926.73	146.74	14.130	
7,800.00	7,664.31	5,818.00	5,818.00	29.75	232.72	134.00	-18.20	618.45	2,157.30	2,015.70	141.60	15.235	
7,900.00	7,764.31	5,818.00	5,818.00	30.08	232.72	134.00	-18.20	618.45	2,242.45	2,105.66	136.80	16.392	
8,000.00	7,864.31	5,818.00	5,818.00	30.41	232.72	134.00	-18.20	618.45	2,328.79	2,196.48	132.31	17.601	
8,100.00	7,964.31	5,818.00	5,818.00	30.74	232.72	134.00	-18.20	618.45	2,416.18	2,288.06	128.12	18.859	
8,200.00	8,064.31	5,818.00	5,818.00	31.07	232.72	134.00	-18.20	618.45	2,504.51	2,380.31	124.20	20.165	
8,235.69	8,100.00	5,818.00	5,818.00	31.18	232.72	134.00	-18.20	618.45	2,536.25	2,413.38	122.87	20.642	



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6686' @ 6686.00ft
Reference Site:	San Juan 29-7 Unit NP 512 Pad	MD Reference:	GL 6686' @ 6686.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	231.00	231.00	0.00	9.24	118.18	-1,041.10	1,943.35	2,204.66	2,195.42	9.24	238.599	
100.00	100.00	331.00	331.00	0.36	13.24	118.18	-1,041.10	1,943.35	2,204.66	2,191.06	13.80	162.125	
200.00	200.00	431.00	431.00	0.72	17.24	118.18	-1,041.10	1,943.35	2,204.66	2,186.70	17.96	122.775	
300.00	300.00	531.00	531.00	1.08	21.24	118.18	-1,041.10	1,943.35	2,204.66	2,182.34	22.32	98.795	
400.00	400.00	631.00	631.00	1.43	25.24	118.18	-1,041.10	1,943.35	2,204.66	2,177.99	26.67	82.652	
500.00	500.00	731.00	731.00	1.79	29.24	118.18	-1,041.10	1,943.35	2,204.66	2,173.63	31.03	71.044	
600.00	600.00	831.00	831.00	2.15	33.24	118.18	-1,041.10	1,943.35	2,204.66	2,169.27	35.39	62.295	
700.00	700.00	931.00	931.00	2.51	37.24	118.18	-1,041.10	1,943.35	2,204.66	2,164.91	39.75	55.464	
800.00	800.00	1,031.00	1,031.00	2.87	41.24	118.18	-1,041.10	1,943.35	2,204.66	2,160.55	44.11	49.983	
900.00	900.00	1,131.00	1,131.00	3.23	45.24	118.18	-1,041.10	1,943.35	2,204.66	2,156.19	48.47	45.489	
1,000.00	1,000.00	1,231.00	1,231.00	3.58	49.24	118.18	-1,041.10	1,943.35	2,204.66	2,151.83	52.82	41.735	
1,100.00	1,100.00	1,331.00	1,331.00	3.94	53.24	118.18	-1,041.10	1,943.35	2,204.66	2,147.48	57.18	38.554	
1,200.00	1,200.00	1,431.00	1,431.00	4.30	57.24	118.18	-1,041.10	1,943.35	2,204.66	2,143.12	61.54	35.824	
1,300.00	1,300.00	1,531.00	1,531.00	4.66	61.24	118.18	-1,041.10	1,943.35	2,204.66	2,138.76	65.90	33.455	
1,400.00	1,400.00	1,631.00	1,631.00	5.02	65.24	118.18	-1,041.10	1,943.35	2,204.66	2,134.40	70.26	31.379	
1,500.00	1,500.00	1,731.00	1,731.00	5.38	69.24	118.18	-1,041.10	1,943.35	2,204.66	2,130.04	74.62	29.546	
1,600.00	1,600.00	1,831.00	1,831.00	5.74	73.24	118.18	-1,041.10	1,943.35	2,204.66	2,125.68	78.98	27.916	
1,700.00	1,700.00	1,931.00	1,931.00	6.09	77.24	118.18	-1,041.10	1,943.35	2,204.66	2,121.32	83.33	26.456	
1,800.00	1,800.00	2,031.00	2,031.00	6.45	81.24	118.18	-1,041.10	1,943.35	2,204.66	2,116.97	87.69	25.141	
1,900.00	1,900.00	2,131.00	2,131.00	6.81	85.24	118.18	-1,041.10	1,943.35	2,204.66	2,112.61	92.05	23.950	
2,000.00	2,000.00	2,231.00	2,231.00	7.17	89.24	118.18	-1,041.10	1,943.35	2,204.66	2,108.25	96.41	22.868	
2,100.00	2,100.00	2,331.00	2,331.00	7.53	93.24	118.18	-1,041.10	1,943.35	2,204.66	2,103.89	100.77	21.879	
2,200.00	2,200.00	2,431.00	2,431.00	7.89	97.24	118.18	-1,041.10	1,943.35	2,204.66	2,099.53	105.13	20.972	
2,300.00	2,300.00	2,531.00	2,531.00	8.24	101.24	118.18	-1,041.10	1,943.35	2,204.66	2,095.17	109.48	20.137	
2,400.00	2,400.00	2,631.00	2,631.00	8.60	105.24	118.18	-1,041.10	1,943.35	2,204.66	2,090.82	113.84	19.366	
2,500.00	2,500.00	2,731.00	2,731.00	8.96	109.24	118.18	-1,041.10	1,943.35	2,204.66	2,086.46	118.20	18.652	
2,600.00	2,600.00	2,831.00	2,831.00	9.32	113.24	118.18	-1,041.10	1,943.35	2,204.66	2,082.10	122.56	17.988	
2,700.00	2,700.00	2,931.00	2,931.00	9.68	117.24	118.18	-1,041.10	1,943.35	2,204.66	2,077.74	126.92	17.371	
2,800.00	2,800.00	3,031.00	3,031.00	10.04	121.24	118.18	-1,041.10	1,943.35	2,204.66	2,073.38	131.28	16.794	
2,900.00	2,900.00	3,131.00	3,131.00	10.40	125.24	118.18	-1,041.10	1,943.35	2,204.66	2,069.02	135.64	16.254	
3,000.00	3,000.00	3,231.00	3,231.00	10.75	129.24	118.18	-1,041.10	1,943.35	2,204.66	2,064.66	139.99	15.748	
3,100.00	3,100.00	3,331.00	3,331.00	11.11	133.24	118.18	-1,041.10	1,943.35	2,204.66	2,060.31	144.35	15.273	
3,200.00	3,200.00	3,431.00	3,431.00	11.47	137.24	118.18	-1,041.10	1,943.35	2,204.66	2,055.95	148.71	14.825	
3,300.00	3,300.00	3,531.00	3,531.00	11.83	141.24	118.18	-1,041.10	1,943.35	2,204.66	2,051.59	153.07	14.403	
3,400.00	3,400.00	3,631.00	3,631.00	12.19	145.24	118.18	-1,041.10	1,943.35	2,204.66	2,047.23	157.43	14.004	
3,500.00	3,500.00	3,731.00	3,731.00	12.55	149.24	118.18	-1,041.10	1,943.35	2,204.66	2,042.87	161.79	13.627	
3,600.00	3,600.00	3,831.00	3,831.00	12.90	153.24	118.18	-1,041.10	1,943.35	2,204.66	2,038.51	166.14	13.269 CC	
3,700.00	3,699.95	3,930.95	3,930.95	13.26	157.24	133.28	-1,041.10	1,943.35	2,206.45	2,035.95	170.50	12.941 ES	
3,800.00	3,799.63	4,030.63	4,030.63	13.62	161.23	133.31	-1,041.10	1,943.35	2,211.84	2,037.00	174.84	12.650	
3,900.00	3,898.77	4,129.77	4,129.77	13.98	165.19	133.36	-1,041.10	1,943.35	2,220.84	2,041.68	179.16	12.396	
4,000.00	3,997.08	4,228.08	4,228.08	14.33	169.12	133.42	-1,041.10	1,943.35	2,233.47	2,050.03	183.45	12.175	
4,100.00	4,094.31	4,325.31	4,325.31	14.69	173.01	133.48	-1,041.10	1,943.35	2,249.76	2,062.08	187.69	11.987	
4,200.00	4,190.18	4,421.18	4,421.18	15.05	176.85	133.55	-1,041.10	1,943.35	2,269.75	2,077.88	191.87	11.830	
4,300.00	4,284.43	4,515.43	4,515.43	15.43	180.62	133.61	-1,041.10	1,943.35	2,293.47	2,097.47	196.00	11.702	
4,308.86	4,292.69	4,523.69	4,523.69	15.47	180.95	133.61	-1,041.10	1,943.35	2,295.75	2,099.39	196.36	11.692	
4,400.00	4,377.63	4,608.63	4,608.63	15.82	184.35	134.18	-1,041.10	1,943.35	2,319.49	2,119.41	200.08	11.593	
4,500.00	4,470.82	4,701.82	4,701.82	16.23	188.07	134.80	-1,041.10	1,943.35	2,345.81	2,141.64	204.17	11.489	
4,600.00	4,564.01	4,795.01	4,795.01	16.65	191.80	135.40	-1,041.10	1,943.35	2,372.38	2,164.11	208.27	11.391	
4,700.00	4,657.20	4,888.20	4,888.20	17.09	195.53	135.99	-1,041.10	1,943.35	2,399.21	2,186.84	212.37	11.297	
4,800.00	4,750.39	4,981.39	4,981.39	17.53	199.26	136.56	-1,041.10	1,943.35	2,426.29	2,209.80	216.48	11.208	
4,900.00	4,843.59	5,074.59	5,074.59	17.99	202.98	137.13	-1,041.10	1,943.35	2,453.60	2,233.00	220.60	11.122	
5,000.00	4,936.78	5,167.78	5,167.78	18.46	206.71	137.68	-1,041.10	1,943.35	2,481.14	2,256.43	224.72	11.041	

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



Scientific Drilling
Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6686' @ 6686.00ft
Reference Site:	San Juan 29-7 Unit NP 512 Pad	MD Reference:	GL 6686' @ 6686.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,100.00	5,029.97	5,260.97	5,260.97	18.94	210.44	138.22	-1,041.10	1,943.35	2,508.91	2,280.07	228.84	10.964	
5,200.00	5,123.16	5,354.16	5,354.16	19.42	214.17	138.75	-1,041.10	1,943.35	2,536.89	2,303.92	232.97	10.889	
5,300.00	5,216.35	5,447.35	5,447.35	19.92	217.89	139.27	-1,041.10	1,943.35	2,565.07	2,327.98	237.10	10.819	
5,400.00	5,309.54	5,540.54	5,540.54	20.42	221.62	139.78	-1,041.10	1,943.35	2,593.46	2,352.23	241.23	10.751	
5,500.00	5,402.73	5,633.73	5,633.73	20.93	225.35	140.28	-1,041.10	1,943.35	2,622.04	2,376.68	245.36	10.686	
5,600.00	5,495.92	5,726.92	5,726.92	21.44	229.08	140.76	-1,041.10	1,943.35	2,650.81	2,401.32	249.50	10.625	
5,700.00	5,589.11	5,820.11	5,820.11	21.96	232.80	141.24	-1,041.10	1,943.35	2,679.77	2,426.13	253.64	10.565	
5,800.00	5,682.30	5,913.30	5,913.30	22.49	236.53	141.71	-1,041.10	1,943.35	2,708.89	2,451.12	257.77	10.509	
5,826.83	5,707.31	5,938.31	5,938.31	22.63	237.53	141.83	-1,041.10	1,943.35	2,716.74	2,457.85	258.89	10.494	
5,900.00	5,775.99	6,006.99	6,006.99	23.01	240.28	142.54	-1,041.10	1,943.35	2,737.13	2,475.20	261.93	10.450	
6,000.00	5,871.31	6,102.31	6,102.31	23.51	244.09	143.37	-1,041.10	1,943.35	2,761.63	2,495.49	266.15	10.376	
6,100.00	5,968.08	6,199.08	6,199.08	23.98	247.96	144.05	-1,041.10	1,943.35	2,782.14	2,511.73	270.41	10.288 SF	
6,200.00	6,066.04	6,220.00	6,220.00	24.42	248.80	144.41	-1,041.10	1,943.35	2,799.60	2,528.12	271.48	10.312	
6,300.00	6,164.91	6,220.00	6,220.00	24.83	248.80	144.71	-1,041.10	1,943.35	2,816.26	2,544.90	271.36	10.378	
6,400.00	6,264.43	6,220.00	6,220.00	25.21	248.80	144.99	-1,041.10	1,943.35	2,832.16	2,561.26	270.90	10.454	
6,500.00	6,364.32	6,220.00	6,220.00	25.55	248.80	145.25	-1,041.10	1,943.35	2,847.27	2,577.16	270.11	10.541	
6,535.69	6,400.00	6,220.00	6,220.00	25.67	248.80	130.25	-1,041.10	1,943.35	2,852.46	2,582.72	269.74	10.575	
6,600.00	6,464.31	6,220.00	6,220.00	25.87	248.80	130.25	-1,041.10	1,943.35	2,862.44	2,593.45	268.99	10.642	
6,700.00	6,564.31	6,220.00	6,220.00	26.19	248.80	130.25	-1,041.10	1,943.35	2,880.73	2,613.16	267.57	10.766	
6,800.00	6,664.31	6,220.00	6,220.00	26.51	248.80	130.25	-1,041.10	1,943.35	2,902.35	2,636.48	265.87	10.916	
6,900.00	6,764.31	6,220.00	6,220.00	26.83	248.80	130.25	-1,041.10	1,943.35	2,927.24	2,663.32	263.91	11.092	
7,000.00	6,864.31	6,220.00	6,220.00	27.15	248.80	130.25	-1,041.10	1,943.35	2,955.30	2,693.58	261.72	11.292	
7,100.00	6,964.31	6,220.00	6,220.00	27.47	248.80	130.25	-1,041.10	1,943.35	2,986.44	2,727.14	259.30	11.517	
7,200.00	7,064.31	6,220.00	6,220.00	27.79	248.80	130.25	-1,041.10	1,943.35	3,020.58	2,763.89	256.70	11.767	
7,300.00	7,164.31	6,220.00	6,220.00	28.12	248.80	130.25	-1,041.10	1,943.35	3,057.61	2,803.69	253.92	12.042	
7,400.00	7,264.31	6,220.00	6,220.00	28.44	248.80	130.25	-1,041.10	1,943.35	3,097.42	2,846.44	250.99	12.341	
7,500.00	7,364.31	6,220.00	6,220.00	28.77	248.80	130.25	-1,041.10	1,943.35	3,139.92	2,891.99	247.93	12.664	
7,600.00	7,464.31	6,220.00	6,220.00	29.09	248.80	130.25	-1,041.10	1,943.35	3,184.99	2,940.22	244.77	13.012	
7,700.00	7,564.31	6,220.00	6,220.00	29.42	248.80	130.25	-1,041.10	1,943.35	3,232.53	2,991.00	241.53	13.384	
7,800.00	7,664.31	6,220.00	6,220.00	29.75	248.80	130.25	-1,041.10	1,943.35	3,282.42	3,044.20	238.22	13.779	
7,900.00	7,764.31	6,220.00	6,220.00	30.08	248.80	130.25	-1,041.10	1,943.35	3,334.57	3,099.71	234.86	14.198	
8,000.00	7,864.31	6,220.00	6,220.00	30.41	248.80	130.25	-1,041.10	1,943.35	3,388.87	3,157.39	231.47	14.640	
8,100.00	7,964.31	6,220.00	6,220.00	30.74	248.80	130.25	-1,041.10	1,943.35	3,445.21	3,217.14	228.07	15.106	
8,200.00	8,064.31	6,220.00	6,220.00	31.07	248.80	130.25	-1,041.10	1,943.35	3,503.50	3,278.84	224.67	15.594	
8,235.69	8,100.00	6,220.00	6,220.00	31.18	248.80	130.25	-1,041.10	1,943.35	3,524.76	3,301.31	223.45	15.774	



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6686' @ 6686.00ft
Reference Site:	San Juan 29-7 Unit NP 512 Pad	MD Reference:	GL 6686' @ 6686.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
San Juan 29-7 Unit NP 512 Pad - San Juan 29-7 UN 094A - OH - OH												Offset Well Error:	0.00 ft
Survey Program: 100-UNKNOWN													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	31.00	31.00	0.00	1.24	-102.93	-327.60	-1,427.44	1,464.55	1,463.31	1.24	1,180.954	
100.00	100.00	131.00	131.00	0.36	5.24	-102.93	-327.60	-1,427.44	1,464.55	1,458.95	5.60	261.598	
200.00	200.00	231.00	231.00	0.72	9.24	-102.93	-327.60	-1,427.44	1,464.55	1,454.59	9.96	147.088	
300.00	300.00	331.00	331.00	1.08	13.24	-102.93	-327.60	-1,427.44	1,464.55	1,450.23	14.32	102.306	
400.00	400.00	431.00	431.00	1.43	17.24	-102.93	-327.60	-1,427.44	1,464.55	1,445.87	18.67	78.428	
500.00	500.00	531.00	531.00	1.79	21.24	-102.93	-327.60	-1,427.44	1,464.55	1,441.51	23.03	63.586	
600.00	600.00	631.00	631.00	2.15	25.24	-102.93	-327.60	-1,427.44	1,464.55	1,437.16	27.39	53.468	
700.00	700.00	731.00	731.00	2.51	29.24	-102.93	-327.60	-1,427.44	1,464.55	1,432.80	31.75	46.128	
800.00	800.00	831.00	831.00	2.87	33.24	-102.93	-327.60	-1,427.44	1,464.55	1,428.44	36.11	40.560	
900.00	900.00	931.00	931.00	3.23	37.24	-102.93	-327.60	-1,427.44	1,464.55	1,424.08	40.47	36.192	
1,000.00	1,000.00	1,031.00	1,031.00	3.58	41.24	-102.93	-327.60	-1,427.44	1,464.55	1,419.72	44.82	32.673	
1,100.00	1,100.00	1,131.00	1,131.00	3.94	45.24	-102.93	-327.60	-1,427.44	1,464.55	1,415.36	49.18	29.777	
1,200.00	1,200.00	1,231.00	1,231.00	4.30	49.24	-102.93	-327.60	-1,427.44	1,464.55	1,411.00	53.54	27.353	
1,300.00	1,300.00	1,331.00	1,331.00	4.66	53.24	-102.93	-327.60	-1,427.44	1,464.55	1,406.65	57.90	25.294	
1,400.00	1,400.00	1,431.00	1,431.00	5.02	57.24	-102.93	-327.60	-1,427.44	1,464.55	1,402.29	62.26	23.524	
1,500.00	1,500.00	1,531.00	1,531.00	5.38	61.24	-102.93	-327.60	-1,427.44	1,464.55	1,397.93	66.62	21.985	
1,600.00	1,600.00	1,631.00	1,631.00	5.74	65.24	-102.93	-327.60	-1,427.44	1,464.55	1,393.57	70.98	20.635	
1,700.00	1,700.00	1,731.00	1,731.00	6.09	69.24	-102.93	-327.60	-1,427.44	1,464.55	1,389.21	75.33	19.441	
1,800.00	1,800.00	1,831.00	1,831.00	6.45	73.24	-102.93	-327.60	-1,427.44	1,464.55	1,384.85	79.69	18.377	
1,900.00	1,900.00	1,931.00	1,931.00	6.81	77.24	-102.93	-327.60	-1,427.44	1,464.55	1,380.50	84.05	17.425	
2,000.00	2,000.00	2,031.00	2,031.00	7.17	81.24	-102.93	-327.60	-1,427.44	1,464.55	1,376.14	88.41	16.565	
2,100.00	2,100.00	2,131.00	2,131.00	7.53	85.24	-102.93	-327.60	-1,427.44	1,464.55	1,371.78	92.77	15.787	
2,200.00	2,200.00	2,231.00	2,231.00	7.89	89.24	-102.93	-327.60	-1,427.44	1,464.55	1,367.42	97.13	15.079	
2,300.00	2,300.00	2,331.00	2,331.00	8.24	93.24	-102.93	-327.60	-1,427.44	1,464.55	1,363.06	101.48	14.431	
2,400.00	2,400.00	2,431.00	2,431.00	8.60	97.24	-102.93	-327.60	-1,427.44	1,464.55	1,358.70	105.84	13.837	
2,500.00	2,500.00	2,531.00	2,531.00	8.96	101.24	-102.93	-327.60	-1,427.44	1,464.55	1,354.34	110.20	13.290	
2,600.00	2,600.00	2,631.00	2,631.00	9.32	105.24	-102.93	-327.60	-1,427.44	1,464.55	1,349.99	114.56	12.784	
2,700.00	2,700.00	2,731.00	2,731.00	9.68	109.24	-102.93	-327.60	-1,427.44	1,464.55	1,345.63	118.92	12.316	
2,800.00	2,800.00	2,831.00	2,831.00	10.04	113.24	-102.93	-327.60	-1,427.44	1,464.55	1,341.27	123.28	11.880	
2,900.00	2,900.00	2,931.00	2,931.00	10.40	117.24	-102.93	-327.60	-1,427.44	1,464.55	1,336.91	127.64	11.474	
3,000.00	3,000.00	3,031.00	3,031.00	10.75	121.24	-102.93	-327.60	-1,427.44	1,464.55	1,332.55	131.99	11.096	
3,100.00	3,100.00	3,131.00	3,131.00	11.11	125.24	-102.93	-327.60	-1,427.44	1,464.55	1,328.19	136.35	10.741	
3,200.00	3,200.00	3,231.00	3,231.00	11.47	129.24	-102.93	-327.60	-1,427.44	1,464.55	1,323.84	140.71	10.408	
3,300.00	3,300.00	3,331.00	3,331.00	11.83	133.24	-102.93	-327.60	-1,427.44	1,464.55	1,319.48	145.07	10.095	
3,400.00	3,400.00	3,431.00	3,431.00	12.19	137.24	-102.93	-327.60	-1,427.44	1,464.55	1,315.12	149.43	9.801	
3,500.00	3,500.00	3,531.00	3,531.00	12.55	141.24	-102.93	-327.60	-1,427.44	1,464.55	1,310.76	153.79	9.523	
3,600.00	3,600.00	3,631.00	3,631.00	12.90	145.24	-102.93	-327.60	-1,427.44	1,464.55	1,306.40	158.14	9.261	
3,700.00	3,699.95	3,730.95	3,730.95	13.26	149.24	-87.94	-327.60	-1,427.44	1,464.45	1,301.95	162.50	9.012	
3,800.00	3,799.63	3,830.63	3,830.63	13.62	153.23	-88.26	-327.60	-1,427.44	1,464.19	1,297.35	166.84	8.776	
3,900.00	3,898.77	3,929.77	3,929.77	13.98	157.19	-88.77	-327.60	-1,427.44	1,463.85	1,292.69	171.16	8.552	
4,000.00	3,997.08	4,028.08	4,028.08	14.33	161.12	-89.48	-327.60	-1,427.44	1,463.57	1,288.12	175.45	8.342	
4,060.64	4,056.19	4,087.19	4,087.19	14.55	163.49	-90.00	-327.60	-1,427.44	1,463.50	1,285.47	178.03	8.220 CC	
4,100.00	4,094.31	4,125.31	4,125.31	14.69	165.01	-90.37	-327.60	-1,427.44	1,463.54	1,283.84	179.70	8.144	
4,200.00	4,190.18	4,221.18	4,221.18	15.05	168.85	-91.42	-327.60	-1,427.44	1,464.00	1,280.10	183.90	7.961	
4,300.00	4,284.43	4,315.43	4,315.43	15.43	172.62	-92.61	-327.60	-1,427.44	1,465.25	1,277.20	188.05	7.792	
4,308.86	4,292.69	4,323.69	4,323.69	15.47	172.95	-92.73	-327.60	-1,427.44	1,465.41	1,277.00	188.41	7.778	
4,400.00	4,377.63	4,408.63	4,408.63	15.82	176.35	-93.93	-327.60	-1,427.44	1,467.47	1,275.30	192.17	7.636	
4,500.00	4,470.82	4,501.82	4,501.82	16.23	180.07	-95.24	-327.60	-1,427.44	1,470.58	1,274.27	196.30	7.491	
4,600.00	4,564.01	4,595.01	4,595.01	16.65	183.80	-96.55	-327.60	-1,427.44	1,474.57	1,274.12	200.45	7.356 ES	
4,700.00	4,657.20	4,688.20	4,688.20	17.09	187.53	-97.85	-327.60	-1,427.44	1,479.45	1,274.83	204.61	7.230	
4,800.00	4,750.39	4,781.39	4,781.39	17.53	191.26	-99.15	-327.60	-1,427.44	1,485.19	1,276.41	208.78	7.114	
4,900.00	4,843.59	4,874.59	4,874.59	17.99	194.98	-100.43	-327.60	-1,427.44	1,491.80	1,278.83	212.96	7.005	

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



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6686' @ 6686.00ft
Reference Site:	San Juan 29-7 Unit NP 512 Pad	MD Reference:	GL 6686' @ 6686.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,000.00	4,936.78	4,967.78	4,967.78	18.46	198.71	-101.71	-327.60	-1,427.44	1,499.25	1,282.10	217.15	6.904	
5,100.00	5,029.97	5,060.97	5,060.97	18.94	202.44	-102.97	-327.60	-1,427.44	1,507.54	1,286.19	221.34	6.811	
5,200.00	5,123.16	5,154.16	5,154.16	19.42	206.17	-104.22	-327.60	-1,427.44	1,516.65	1,291.10	225.54	6.724	
5,300.00	5,216.35	5,247.35	5,247.35	19.92	209.89	-105.46	-327.60	-1,427.44	1,526.57	1,296.82	229.75	6.645	
5,400.00	5,309.54	5,340.54	5,340.54	20.42	213.62	-106.68	-327.60	-1,427.44	1,537.28	1,303.32	233.95	6.571	
5,500.00	5,402.73	5,433.73	5,433.73	20.93	217.35	-107.88	-327.60	-1,427.44	1,548.76	1,310.60	238.16	6.503	
5,600.00	5,495.92	5,526.92	5,526.92	21.44	221.08	-109.08	-327.60	-1,427.44	1,561.01	1,318.64	242.37	6.441	
5,700.00	5,589.11	5,620.11	5,620.11	21.96	224.80	-110.25	-327.60	-1,427.44	1,573.99	1,327.41	246.58	6.383	
5,800.00	5,682.30	5,713.30	5,713.30	22.49	228.53	-111.40	-327.60	-1,427.44	1,587.70	1,336.91	250.79	6.331	
5,826.83	5,707.31	5,738.31	5,738.31	22.63	229.53	-111.71	-327.60	-1,427.44	1,591.50	1,339.57	251.92	6.317	
5,900.00	5,775.99	5,806.99	5,806.99	23.01	232.28	-112.79	-327.60	-1,427.44	1,601.58	1,346.56	255.02	6.280	
6,000.00	5,871.31	5,902.31	5,902.31	23.51	236.09	-114.08	-327.60	-1,427.44	1,614.07	1,354.79	259.29	6.225	
6,100.00	5,968.08	5,999.08	5,999.08	23.98	239.96	-115.17	-327.60	-1,427.44	1,624.84	1,361.25	263.59	6.164	
6,200.00	6,066.04	6,046.00	6,046.00	24.42	241.84	-115.75	-327.60	-1,427.44	1,634.45	1,368.73	265.72	6.151 SF	
6,300.00	6,164.91	6,046.00	6,046.00	24.83	241.84	-116.09	-327.60	-1,427.44	1,647.17	1,382.09	265.08	6.214	
6,400.00	6,264.43	6,046.00	6,046.00	25.21	241.84	-116.54	-327.60	-1,427.44	1,663.54	1,400.04	263.50	6.313	
6,500.00	6,364.32	6,046.00	6,046.00	25.55	241.84	-117.08	-327.60	-1,427.44	1,683.43	1,422.41	261.02	6.449	
6,535.69	6,400.00	6,046.00	6,046.00	25.67	241.84	-132.39	-327.60	-1,427.44	1,691.34	1,431.41	259.93	6.507	
6,600.00	6,464.31	6,046.00	6,046.00	25.87	241.84	-132.39	-327.60	-1,427.44	1,707.13	1,449.40	257.73	6.624	
6,700.00	6,564.31	6,046.00	6,046.00	26.19	241.84	-132.39	-327.60	-1,427.44	1,736.13	1,482.38	253.75	6.842	
6,800.00	6,664.31	6,046.00	6,046.00	26.51	241.84	-132.39	-327.60	-1,427.44	1,770.32	1,521.13	249.19	7.104	
6,900.00	6,764.31	6,046.00	6,046.00	26.83	241.84	-132.39	-327.60	-1,427.44	1,809.39	1,565.23	244.16	7.411	
7,000.00	6,864.31	6,046.00	6,046.00	27.15	241.84	-132.39	-327.60	-1,427.44	1,853.04	1,614.26	238.77	7.761	
7,100.00	6,964.31	6,046.00	6,046.00	27.47	241.84	-132.39	-327.60	-1,427.44	1,900.95	1,667.82	233.13	8.154	
7,200.00	7,064.31	6,046.00	6,046.00	27.79	241.84	-132.39	-327.60	-1,427.44	1,952.81	1,725.48	227.33	8.590	
7,300.00	7,164.31	6,046.00	6,046.00	28.12	241.84	-132.39	-327.60	-1,427.44	2,008.32	1,786.86	221.46	9.069	
7,400.00	7,264.31	6,046.00	6,046.00	28.44	241.84	-132.39	-327.60	-1,427.44	2,067.17	1,851.60	215.57	9.589	
7,500.00	7,364.31	6,046.00	6,046.00	28.77	241.84	-132.39	-327.60	-1,427.44	2,129.10	1,919.37	209.73	10.152	
7,600.00	7,464.31	6,046.00	6,046.00	29.09	241.84	-132.39	-327.60	-1,427.44	2,193.84	1,989.86	203.98	10.755	
7,700.00	7,564.31	6,046.00	6,046.00	29.42	241.84	-132.39	-327.60	-1,427.44	2,261.15	2,062.79	198.36	11.399	
7,800.00	7,664.31	6,046.00	6,046.00	29.75	241.84	-132.39	-327.60	-1,427.44	2,330.80	2,137.91	192.89	12.083	
7,900.00	7,764.31	6,046.00	6,046.00	30.08	241.84	-132.39	-327.60	-1,427.44	2,402.60	2,215.00	187.60	12.807	
8,000.00	7,864.31	6,046.00	6,046.00	30.41	241.84	-132.39	-327.60	-1,427.44	2,476.36	2,293.87	182.50	13.569	
8,100.00	7,964.31	6,046.00	6,046.00	30.74	241.84	-132.39	-327.60	-1,427.44	2,551.91	2,374.32	177.59	14.370	
8,200.00	8,064.31	6,046.00	6,046.00	31.07	241.84	-132.39	-327.60	-1,427.44	2,629.09	2,456.21	172.88	15.208	
8,235.69	8,100.00	6,046.00	6,046.00	31.18	241.84	-132.39	-327.60	-1,427.44	2,657.00	2,485.75	171.25	15.516	



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6686' @ 6686.00ft
Reference Site:	San Juan 29-7 Unit NP 512 Pad	MD Reference:	GL 6686' @ 6686.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	26.00	26.00	0.00	1.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,347.67	1.04	2,258.053	
100.00	100.00	126.00	126.00	0.36	5.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,343.31	5.40	435.069	
200.00	200.00	226.00	226.00	0.72	9.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,338.95	9.76	240.722	
300.00	300.00	326.00	326.00	1.08	13.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,334.59	14.12	166.393	
400.00	400.00	426.00	426.00	1.43	17.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,330.24	18.47	127.137	
500.00	500.00	526.00	526.00	1.79	21.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,325.88	22.83	102.868	
600.00	600.00	626.00	626.00	2.15	25.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,321.52	27.19	86.379	
700.00	700.00	726.00	726.00	2.51	29.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,317.16	31.55	74.446	
800.00	800.00	826.00	826.00	2.87	33.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,312.80	35.91	65.409	
900.00	900.00	926.00	926.00	3.23	37.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,308.44	40.27	58.329	
1,000.00	1,000.00	1,026.00	1,026.00	3.58	41.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,304.08	44.62	52.632	
1,100.00	1,100.00	1,126.00	1,126.00	3.94	45.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,299.73	48.98	47.949	
1,200.00	1,200.00	1,226.00	1,226.00	4.30	49.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,295.37	53.34	44.031	
1,300.00	1,300.00	1,326.00	1,326.00	4.66	53.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,291.01	57.70	40.705	
1,400.00	1,400.00	1,426.00	1,426.00	5.02	57.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,286.65	62.06	37.847	
1,500.00	1,500.00	1,526.00	1,526.00	5.38	61.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,282.29	66.42	35.363	
1,600.00	1,600.00	1,626.00	1,626.00	5.74	65.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,277.93	70.78	33.185	
1,700.00	1,700.00	1,726.00	1,726.00	6.09	69.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,273.58	75.13	31.260	
1,800.00	1,800.00	1,826.00	1,826.00	6.45	73.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,269.22	79.49	29.546	
1,900.00	1,900.00	1,926.00	1,926.00	6.81	77.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,264.86	83.85	28.011	
2,000.00	2,000.00	2,026.00	2,026.00	7.17	81.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,260.50	88.21	26.627	
2,100.00	2,100.00	2,126.00	2,126.00	7.53	85.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,256.14	92.57	25.373	
2,200.00	2,200.00	2,226.00	2,226.00	7.89	89.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,251.78	96.93	24.232	
2,300.00	2,300.00	2,326.00	2,326.00	8.24	93.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,247.42	101.28	23.189	
2,400.00	2,400.00	2,426.00	2,426.00	8.60	97.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,243.07	105.64	22.232	
2,500.00	2,500.00	2,526.00	2,526.00	8.96	101.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,238.71	110.00	21.352	
2,600.00	2,600.00	2,626.00	2,626.00	9.32	105.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,234.35	114.36	20.538	
2,700.00	2,700.00	2,726.00	2,726.00	9.68	109.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,229.99	118.72	19.784	
2,800.00	2,800.00	2,826.00	2,826.00	10.04	113.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,225.63	123.08	19.083	
2,900.00	2,900.00	2,926.00	2,926.00	10.40	117.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,221.27	127.44	18.431	
3,000.00	3,000.00	3,026.00	3,026.00	10.75	121.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,216.92	131.79	17.821	
3,100.00	3,100.00	3,126.00	3,126.00	11.11	125.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,212.56	136.15	17.251	
3,200.00	3,200.00	3,226.00	3,226.00	11.47	129.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,208.20	140.51	16.715	
3,300.00	3,300.00	3,326.00	3,326.00	11.83	133.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,203.84	144.87	16.213	
3,400.00	3,400.00	3,426.00	3,426.00	12.19	137.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,199.48	149.23	15.739	
3,500.00	3,500.00	3,526.00	3,526.00	12.55	141.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,195.12	153.59	15.292	
3,600.00	3,600.00	3,626.00	3,626.00	12.90	145.04	-133.73	-1,623.59	-1,697.17	2,348.71	2,190.76	157.94	14.870	CC
3,700.00	3,699.95	3,725.95	3,725.95	13.26	149.04	-118.66	-1,623.59	-1,697.17	2,349.97	2,187.66	162.30	14.479	
3,800.00	3,799.63	3,825.63	3,825.63	13.62	153.03	-118.73	-1,623.59	-1,697.17	2,353.74	2,187.10	166.64	14.124	ES
3,900.00	3,898.77	3,924.77	3,924.77	13.98	156.99	-118.84	-1,623.59	-1,697.17	2,360.07	2,189.11	170.97	13.804	
4,000.00	3,997.08	4,023.08	4,023.08	14.33	160.92	-118.99	-1,623.59	-1,697.17	2,369.00	2,193.74	175.25	13.518	
4,100.00	4,094.31	4,120.31	4,120.31	14.69	164.81	-119.16	-1,623.59	-1,697.17	2,380.59	2,201.09	179.50	13.262	
4,200.00	4,190.18	4,216.18	4,216.18	15.05	168.65	-119.36	-1,623.59	-1,697.17	2,394.92	2,211.22	183.70	13.037	
4,300.00	4,284.43	4,310.43	4,310.43	15.43	172.42	-119.57	-1,623.59	-1,697.17	2,412.08	2,224.25	187.84	12.841	
4,308.86	4,292.69	4,318.69	4,318.69	15.47	172.75	-119.59	-1,623.59	-1,697.17	2,413.74	2,225.54	188.20	12.825	
4,400.00	4,377.63	4,403.63	4,403.63	15.82	176.15	-120.23	-1,623.59	-1,697.17	2,431.11	2,239.16	191.94	12.666	
4,500.00	4,470.82	4,496.82	4,496.82	16.23	179.87	-120.93	-1,623.59	-1,697.17	2,450.53	2,254.47	196.06	12.499	
4,600.00	4,564.01	4,590.01	4,590.01	16.65	183.60	-121.61	-1,623.59	-1,697.17	2,470.33	2,270.14	200.19	12.340	
4,700.00	4,657.20	4,683.20	4,683.20	17.09	187.33	-122.29	-1,623.59	-1,697.17	2,490.50	2,286.18	204.32	12.189	
4,800.00	4,750.39	4,776.39	4,776.39	17.53	191.06	-122.96	-1,623.59	-1,697.17	2,511.04	2,302.58	208.46	12.046	
4,900.00	4,843.59	4,869.59	4,869.59	17.99	194.78	-123.61	-1,623.59	-1,697.17	2,531.92	2,319.32	212.61	11.909	
5,000.00	4,936.78	4,962.78	4,962.78	18.46	198.51	-124.26	-1,623.59	-1,697.17	2,553.16	2,336.40	216.76	11.779	

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



Scientific Drilling
Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6686' @ 6686.00ft
Reference Site:	San Juan 29-7 Unit NP 512 Pad	MD Reference:	GL 6686' @ 6686.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,100.00	5,029.97	5,055.97	5,055.97	18.94	202.24	-124.90	-1,623.59	-1,697.17	2,574.72	2,353.81	220.92	11.655	
5,200.00	5,123.16	5,149.16	5,149.16	19.42	205.97	-125.52	-1,623.59	-1,697.17	2,596.62	2,371.54	225.08	11.537	
5,300.00	5,216.35	5,242.35	5,242.35	19.92	209.69	-126.14	-1,623.59	-1,697.17	2,618.83	2,389.59	229.24	11.424	
5,400.00	5,309.54	5,335.54	5,335.54	20.42	213.42	-126.75	-1,623.59	-1,697.17	2,641.36	2,407.95	233.41	11.316	
5,500.00	5,402.73	5,428.73	5,428.73	20.93	217.15	-127.35	-1,623.59	-1,697.17	2,664.19	2,426.61	237.58	11.214	
5,600.00	5,495.92	5,521.92	5,521.92	21.44	220.88	-127.94	-1,623.59	-1,697.17	2,687.31	2,445.56	241.75	11.116	
5,700.00	5,589.11	5,615.11	5,615.11	21.96	224.60	-128.52	-1,623.59	-1,697.17	2,710.72	2,464.80	245.93	11.023	
5,800.00	5,682.30	5,708.30	5,708.30	22.49	228.33	-129.09	-1,623.59	-1,697.17	2,734.42	2,484.32	250.10	10.933	
5,826.83	5,707.31	5,733.31	5,733.31	22.63	229.33	-129.24	-1,623.59	-1,697.17	2,740.82	2,489.60	251.22	10.910	
5,900.00	5,775.99	5,801.99	5,801.99	23.01	232.08	-130.02	-1,623.59	-1,697.17	2,757.51	2,503.22	254.29	10.844	
6,000.00	5,871.31	5,897.31	5,897.31	23.51	235.89	-130.96	-1,623.59	-1,697.17	2,777.65	2,519.11	258.54	10.744	
6,100.00	5,968.08	5,994.08	5,994.08	23.98	239.76	-131.72	-1,623.59	-1,697.17	2,794.58	2,531.75	262.83	10.633	
6,200.00	6,066.04	6,092.04	6,092.04	24.42	243.68	-132.33	-1,623.59	-1,697.17	2,808.16	2,541.01	267.14	10.512	
6,300.00	6,164.91	6,190.91	6,190.91	24.83	247.64	-132.78	-1,623.59	-1,697.17	2,818.30	2,546.82	271.48	10.381	
6,400.00	6,264.43	6,290.43	6,290.43	25.21	251.62	-133.07	-1,623.59	-1,697.17	2,824.93	2,549.10	275.83	10.242	
6,500.00	6,364.32	6,390.32	6,390.32	25.55	255.61	-133.20	-1,623.59	-1,697.17	2,827.99	2,547.83	280.17	10.094	
6,535.69	6,400.00	6,426.00	6,426.00	25.67	257.04	-148.30	-1,623.59	-1,697.17	2,828.22	2,546.51	281.71	10.039	
6,600.00	6,464.31	6,490.31	6,490.31	25.87	259.61	-148.30	-1,623.59	-1,697.17	2,828.22	2,543.72	284.50	9.941	
6,700.00	6,564.31	6,590.31	6,590.31	26.19	263.61	-148.30	-1,623.59	-1,697.17	2,828.22	2,539.39	288.83	9.792	
6,800.00	6,664.31	6,690.31	6,690.31	26.51	267.61	-148.30	-1,623.59	-1,697.17	2,828.22	2,535.06	293.16	9.647	
6,900.00	6,764.31	6,790.31	6,790.31	26.83	271.61	-148.30	-1,623.59	-1,697.17	2,828.22	2,530.73	297.49	9.507	
7,000.00	6,864.31	6,890.31	6,890.31	27.15	275.61	-148.30	-1,623.59	-1,697.17	2,828.22	2,526.40	301.82	9.370	
7,100.00	6,964.31	6,990.31	6,990.31	27.47	279.61	-148.30	-1,623.59	-1,697.17	2,828.22	2,522.07	306.16	9.238	
7,200.00	7,064.31	7,090.31	7,090.31	27.79	283.61	-148.30	-1,623.59	-1,697.17	2,828.22	2,517.73	310.49	9.109	
7,300.00	7,164.31	7,190.31	7,190.31	28.12	287.61	-148.30	-1,623.59	-1,697.17	2,828.22	2,513.40	314.82	8.983	
7,400.00	7,264.31	7,290.31	7,290.31	28.44	291.61	-148.30	-1,623.59	-1,697.17	2,828.22	2,509.06	319.16	8.861	
7,500.00	7,364.31	7,390.31	7,390.31	28.77	295.61	-148.30	-1,623.59	-1,697.17	2,828.22	2,504.73	323.50	8.743	
7,600.00	7,464.31	7,490.31	7,490.31	29.09	299.61	-148.30	-1,623.59	-1,697.17	2,828.22	2,500.39	327.83	8.627	
7,700.00	7,564.31	7,590.31	7,590.31	29.42	303.61	-148.30	-1,623.59	-1,697.17	2,828.22	2,496.05	332.17	8.514	
7,800.00	7,664.31	7,690.31	7,690.31	29.75	307.61	-148.30	-1,623.59	-1,697.17	2,828.22	2,491.72	336.51	8.405	
7,900.00	7,764.31	7,790.31	7,790.31	30.08	311.61	-148.30	-1,623.59	-1,697.17	2,828.22	2,487.38	340.84	8.298	
8,000.00	7,864.31	7,890.31	7,890.31	30.41	315.61	-148.30	-1,623.59	-1,697.17	2,828.22	2,483.04	345.18	8.193	
8,002.17	7,866.48	7,892.48	7,892.48	30.41	315.70	-148.30	-1,623.59	-1,697.17	2,828.22	2,482.95	345.28	8.191	
8,100.00	7,964.31	7,960.00	7,960.00	30.74	318.40	-148.30	-1,623.59	-1,697.17	2,828.38	2,480.11	348.27	8.121 SF	
8,200.00	8,064.31	7,960.00	7,960.00	31.07	318.40	-148.30	-1,623.59	-1,697.17	2,831.22	2,483.01	348.21	8.131	
8,235.69	8,100.00	7,960.00	7,960.00	31.18	318.40	-148.30	-1,623.59	-1,697.17	2,833.09	2,485.00	348.08	8.139	

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



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6686' @ 6686.00ft
Reference Site:	San Juan 29-7 Unit NP 512 Pad	MD Reference:	GL 6686' @ 6686.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	231.00	231.00	0.00	9.24	-31.84	1,288.73	-800.14	1,516.92	1,507.68	9.24	164.169	
100.00	100.00	331.00	331.00	0.36	13.24	-31.84	1,288.73	-800.14	1,516.92	1,503.32	13.80	111.551	
200.00	200.00	431.00	431.00	0.72	17.24	-31.84	1,288.73	-800.14	1,516.92	1,498.96	17.96	84.475	
300.00	300.00	531.00	531.00	1.08	21.24	-31.84	1,288.73	-800.14	1,516.92	1,494.61	22.32	67.976	
400.00	400.00	631.00	631.00	1.43	25.24	-31.84	1,288.73	-800.14	1,516.92	1,490.25	26.67	56.869	
500.00	500.00	731.00	731.00	1.79	29.24	-31.84	1,288.73	-800.14	1,516.92	1,485.89	31.03	48.882	
600.00	600.00	831.00	831.00	2.15	33.24	-31.84	1,288.73	-800.14	1,516.92	1,481.53	35.39	42.862	
700.00	700.00	931.00	931.00	2.51	37.24	-31.84	1,288.73	-800.14	1,516.92	1,477.17	39.75	38.162	
800.00	800.00	1,031.00	1,031.00	2.87	41.24	-31.84	1,288.73	-800.14	1,516.92	1,472.81	44.11	34.391	
900.00	900.00	1,131.00	1,131.00	3.23	45.24	-31.84	1,288.73	-800.14	1,516.92	1,468.45	48.47	31.299	
1,000.00	1,000.00	1,231.00	1,231.00	3.58	49.24	-31.84	1,288.73	-800.14	1,516.92	1,464.10	52.82	28.716	
1,100.00	1,100.00	1,331.00	1,331.00	3.94	53.24	-31.84	1,288.73	-800.14	1,516.92	1,459.74	57.18	26.527	
1,200.00	1,200.00	1,431.00	1,431.00	4.30	57.24	-31.84	1,288.73	-800.14	1,516.92	1,455.38	61.54	24.649	
1,300.00	1,300.00	1,531.00	1,531.00	4.66	61.24	-31.84	1,288.73	-800.14	1,516.92	1,451.02	65.90	23.018	
1,400.00	1,400.00	1,631.00	1,631.00	5.02	65.24	-31.84	1,288.73	-800.14	1,516.92	1,446.66	70.26	21.591	
1,500.00	1,500.00	1,731.00	1,731.00	5.38	69.24	-31.84	1,288.73	-800.14	1,516.92	1,442.30	74.62	20.329	
1,600.00	1,600.00	1,831.00	1,831.00	5.74	73.24	-31.84	1,288.73	-800.14	1,516.92	1,437.95	78.98	19.207	
1,700.00	1,700.00	1,931.00	1,931.00	6.09	77.24	-31.84	1,288.73	-800.14	1,516.92	1,433.59	83.33	18.203	
1,800.00	1,800.00	2,031.00	2,031.00	6.45	81.24	-31.84	1,288.73	-800.14	1,516.92	1,429.23	87.69	17.298	
1,900.00	1,900.00	2,131.00	2,131.00	6.81	85.24	-31.84	1,288.73	-800.14	1,516.92	1,424.87	92.05	16.479	
2,000.00	2,000.00	2,231.00	2,231.00	7.17	89.24	-31.84	1,288.73	-800.14	1,516.92	1,420.51	96.41	15.734	
2,100.00	2,100.00	2,331.00	2,331.00	7.53	93.24	-31.84	1,288.73	-800.14	1,516.92	1,416.15	100.77	15.054	
2,200.00	2,200.00	2,431.00	2,431.00	7.89	97.24	-31.84	1,288.73	-800.14	1,516.92	1,411.79	105.13	14.430	
2,300.00	2,300.00	2,531.00	2,531.00	8.24	101.24	-31.84	1,288.73	-800.14	1,516.92	1,407.44	109.48	13.855	
2,400.00	2,400.00	2,631.00	2,631.00	8.60	105.24	-31.84	1,288.73	-800.14	1,516.92	1,403.08	113.84	13.325	
2,500.00	2,500.00	2,731.00	2,731.00	8.96	109.24	-31.84	1,288.73	-800.14	1,516.92	1,398.72	118.20	12.833	
2,600.00	2,600.00	2,831.00	2,831.00	9.32	113.24	-31.84	1,288.73	-800.14	1,516.92	1,394.36	122.56	12.377	
2,700.00	2,700.00	2,931.00	2,931.00	9.68	117.24	-31.84	1,288.73	-800.14	1,516.92	1,390.00	126.92	11.952	
2,800.00	2,800.00	3,031.00	3,031.00	10.04	121.24	-31.84	1,288.73	-800.14	1,516.92	1,385.64	131.28	11.555	
2,900.00	2,900.00	3,131.00	3,131.00	10.40	125.24	-31.84	1,288.73	-800.14	1,516.92	1,381.29	135.64	11.184	
3,000.00	3,000.00	3,231.00	3,231.00	10.75	129.24	-31.84	1,288.73	-800.14	1,516.92	1,376.93	139.99	10.836	
3,100.00	3,100.00	3,331.00	3,331.00	11.11	133.24	-31.84	1,288.73	-800.14	1,516.92	1,372.57	144.35	10.508	
3,200.00	3,200.00	3,431.00	3,431.00	11.47	137.24	-31.84	1,288.73	-800.14	1,516.92	1,368.21	148.71	10.200	
3,300.00	3,300.00	3,531.00	3,531.00	11.83	141.24	-31.84	1,288.73	-800.14	1,516.92	1,363.85	153.07	9.910	
3,400.00	3,400.00	3,631.00	3,631.00	12.19	145.24	-31.84	1,288.73	-800.14	1,516.92	1,359.49	157.43	9.636	
3,500.00	3,500.00	3,731.00	3,731.00	12.55	149.24	-31.84	1,288.73	-800.14	1,516.92	1,355.13	161.79	9.376	
3,600.00	3,600.00	3,831.00	3,831.00	12.90	153.24	-31.84	1,288.73	-800.14	1,516.92	1,350.78	166.14	9.130	
3,700.00	3,699.95	3,930.95	3,930.95	13.26	157.24	-16.80	1,288.73	-800.14	1,514.41	1,343.91	170.50	8.882	
3,800.00	3,799.63	4,030.63	4,030.63	13.62	161.23	-16.95	1,288.73	-800.14	1,506.91	1,332.06	174.84	8.619	
3,900.00	3,898.77	4,129.77	4,129.77	13.98	165.19	-17.21	1,288.73	-800.14	1,494.42	1,315.26	179.16	8.341	
4,000.00	3,997.08	4,228.08	4,228.08	14.33	169.12	-17.57	1,288.73	-800.14	1,477.01	1,293.56	183.45	8.051	
4,100.00	4,094.31	4,325.31	4,325.31	14.69	173.01	-18.06	1,288.73	-800.14	1,454.73	1,267.04	187.68	7.751	
4,200.00	4,190.18	4,421.18	4,421.18	15.05	176.85	-18.68	1,288.73	-800.14	1,427.66	1,235.80	191.86	7.441	
4,300.00	4,284.43	4,515.43	4,515.43	15.43	180.62	-19.45	1,288.73	-800.14	1,395.93	1,199.96	195.97	7.123	
4,308.86	4,292.69	4,523.69	4,523.69	15.47	180.95	-19.53	1,288.73	-800.14	1,392.90	1,196.56	196.33	7.095	
4,400.00	4,377.63	4,608.63	4,608.63	15.82	184.35	-19.99	1,288.73	-800.14	1,361.55	1,161.51	200.04	6.806	
4,500.00	4,470.82	4,701.82	4,701.82	16.23	188.07	-20.52	1,288.73	-800.14	1,327.25	1,123.14	204.10	6.503	
4,600.00	4,464.01	4,795.01	4,795.01	16.65	191.80	-21.08	1,288.73	-800.14	1,293.06	1,084.88	208.18	6.211	
4,700.00	4,657.20	4,888.20	4,888.20	17.09	195.53	-21.66	1,288.73	-800.14	1,258.98	1,046.73	212.26	5.931	
4,800.00	4,750.39	4,981.39	4,981.39	17.53	199.26	-22.28	1,288.73	-800.14	1,225.03	1,008.69	216.34	5.662	
4,900.00	4,843.59	5,074.59	5,074.59	17.99	202.98	-22.94	1,288.73	-800.14	1,191.22	970.79	220.43	5.404	
5,000.00	4,936.78	5,167.78	5,167.78	18.46	206.71	-23.63	1,288.73	-800.14	1,157.56	933.03	224.53	5.155	

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



Scientific Drilling
Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6686' @ 6686.00ft
Reference Site:	San Juan 29-7 Unit NP 512 Pad	MD Reference:	GL 6686' @ 6686.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,100.00	5,029.97	5,260.97	5,260.97	18.94	210.44	-24.36	1,288.73	-800.14	1,124.06	895.42	228.63	4.916	
5,200.00	5,123.16	5,354.16	5,354.16	19.42	214.17	-25.14	1,288.73	-800.14	1,090.73	857.99	232.74	4.686	
5,300.00	5,216.35	5,447.35	5,447.35	19.92	217.89	-25.97	1,288.73	-800.14	1,057.60	820.74	236.86	4.465	
5,400.00	5,309.54	5,540.54	5,540.54	20.42	221.62	-26.84	1,288.73	-800.14	1,024.69	783.70	240.99	4.252	
5,500.00	5,402.73	5,633.73	5,633.73	20.93	225.35	-27.77	1,288.73	-800.14	992.00	746.88	245.12	4.047	
5,600.00	5,495.92	5,726.92	5,726.92	21.44	229.08	-28.77	1,288.73	-800.14	959.58	710.32	249.26	3.850	
5,700.00	5,589.11	5,820.11	5,820.11	21.96	232.80	-29.83	1,288.73	-800.14	927.43	674.03	253.41	3.660	
5,800.00	5,682.30	5,913.30	5,913.30	22.49	236.53	-30.96	1,288.73	-800.14	895.61	638.04	257.57	3.477	
5,826.83	5,707.31	5,938.31	5,938.31	22.63	237.53	-31.28	1,288.73	-800.14	887.13	628.44	258.69	3.429	
5,900.00	5,775.99	6,006.99	6,006.99	23.01	240.28	-31.77	1,288.73	-800.14	865.26	603.51	261.76	3.306	
6,000.00	5,871.31	6,102.31	6,102.31	23.51	244.09	-32.40	1,288.73	-800.14	839.35	573.35	266.01	3.155	
6,100.00	5,968.08	6,199.08	6,199.08	23.98	247.96	-32.98	1,288.73	-800.14	817.98	547.67	270.31	3.026	
6,200.00	6,066.04	6,297.04	6,297.04	24.42	251.88	-33.47	1,288.73	-800.14	801.10	526.46	274.65	2.917	
6,300.00	6,164.91	6,395.91	6,395.91	24.83	255.84	-33.86	1,288.73	-800.14	788.66	509.65	279.00	2.827	
6,400.00	6,264.43	6,495.43	6,495.43	25.21	259.82	-34.12	1,288.73	-800.14	780.59	497.23	283.36	2.755	
6,500.00	6,364.32	6,595.32	6,595.32	25.55	263.81	-34.24	1,288.73	-800.14	776.88	489.17	287.71	2.700	
6,535.69	6,400.00	6,631.00	6,631.00	25.67	265.24	-49.34	1,288.73	-800.14	776.61	487.34	289.26	2.685	
6,600.00	6,464.31	6,695.31	6,695.31	25.87	267.81	-49.34	1,288.73	-800.14	776.61	484.56	292.05	2.659	
6,700.00	6,564.31	6,795.31	6,795.31	26.19	271.81	-49.34	1,288.73	-800.14	776.61	480.22	296.39	2.620	
6,800.00	6,664.31	6,895.31	6,895.31	26.51	275.81	-49.34	1,288.73	-800.14	776.61	475.88	300.72	2.582	
6,900.00	6,764.31	6,995.31	6,995.31	26.83	279.81	-49.34	1,288.73	-800.14	776.61	471.55	305.06	2.546	
7,000.00	6,864.31	7,095.31	7,095.31	27.15	283.81	-49.34	1,288.73	-800.14	776.61	467.21	309.40	2.510	
7,100.00	6,964.31	7,195.31	7,195.31	27.47	287.81	-49.34	1,288.73	-800.14	776.61	462.87	313.74	2.475	
7,200.00	7,064.31	7,295.31	7,295.31	27.79	291.81	-49.34	1,288.73	-800.14	776.61	458.53	318.08	2.442	
7,300.00	7,164.31	7,395.31	7,395.31	28.12	295.81	-49.34	1,288.73	-800.14	776.61	454.19	322.41	2.409	
7,400.00	7,264.31	7,495.31	7,495.31	28.44	299.81	-49.34	1,288.73	-800.14	776.61	449.85	326.75	2.377	
7,500.00	7,364.31	7,595.31	7,595.31	28.77	303.81	-49.34	1,288.73	-800.14	776.61	445.51	331.10	2.346	
7,600.00	7,464.31	7,695.31	7,695.31	29.09	307.81	-49.34	1,288.73	-800.14	776.61	441.17	335.44	2.315	
7,700.00	7,564.31	7,795.31	7,795.31	29.42	311.81	-49.34	1,288.73	-800.14	776.61	436.83	339.78	2.286	
7,800.00	7,664.31	7,895.31	7,895.31	29.75	315.81	-49.34	1,288.73	-800.14	776.61	432.49	344.12	2.257	
7,900.00	7,764.31	7,995.31	7,995.31	30.08	319.81	-49.34	1,288.73	-800.14	776.61	428.15	348.46	2.229	
8,000.00	7,864.31	8,095.31	8,095.31	30.41	323.81	-49.34	1,288.73	-800.14	776.61	423.80	352.80	2.201 CC, ES, SF	
8,100.00	7,964.31	8,103.00	8,103.00	30.74	324.12	-49.34	1,288.73	-800.14	782.07	430.82	351.26	2.227	
8,200.00	8,064.31	8,103.00	8,103.00	31.07	324.12	-49.34	1,288.73	-800.14	800.06	455.99	344.08	2.325	
8,235.69	8,100.00	8,103.00	8,103.00	31.18	324.12	-49.34	1,288.73	-800.14	809.38	468.99	340.40	2.378	

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



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6686' @ 6686.00ft
Reference Site:	San Juan 29-7 Unit NP 512 Pad	MD Reference:	GL 6686' @ 6686.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	224.00	224.00	0.00	8.96	-26.84	2,322.63	-1,175.25	2,603.04	2,594.08	8.96	290.518	
100.00	100.00	324.00	324.00	0.36	12.96	-26.84	2,322.63	-1,175.25	2,603.04	2,589.73	13.32	195.446	
200.00	200.00	424.00	424.00	0.72	16.96	-26.84	2,322.63	-1,175.25	2,603.04	2,585.37	17.68	147.256	
300.00	300.00	524.00	524.00	1.08	20.96	-26.84	2,322.63	-1,175.25	2,603.04	2,581.01	22.04	118.130	
400.00	400.00	624.00	624.00	1.43	24.96	-26.84	2,322.63	-1,175.25	2,603.04	2,576.65	26.39	98.623	
500.00	500.00	724.00	724.00	1.79	28.96	-26.84	2,322.63	-1,175.25	2,603.04	2,572.29	30.75	84.645	
600.00	600.00	824.00	824.00	2.15	32.96	-26.84	2,322.63	-1,175.25	2,603.04	2,567.93	35.11	74.138	
700.00	700.00	924.00	924.00	2.51	36.96	-26.84	2,322.63	-1,175.25	2,603.04	2,563.58	39.47	65.951	
800.00	800.00	1,024.00	1,024.00	2.87	40.96	-26.84	2,322.63	-1,175.25	2,603.04	2,559.22	43.83	59.393	
900.00	900.00	1,124.00	1,124.00	3.23	44.96	-26.84	2,322.63	-1,175.25	2,603.04	2,554.86	48.19	54.020	
1,000.00	1,000.00	1,224.00	1,224.00	3.58	48.96	-26.84	2,322.63	-1,175.25	2,603.04	2,550.50	52.54	49.540	
1,100.00	1,100.00	1,324.00	1,324.00	3.94	52.96	-26.84	2,322.63	-1,175.25	2,603.04	2,546.14	56.90	45.745	
1,200.00	1,200.00	1,424.00	1,424.00	4.30	56.96	-26.84	2,322.63	-1,175.25	2,603.04	2,541.78	61.26	42.491	
1,300.00	1,300.00	1,524.00	1,524.00	4.66	60.96	-26.84	2,322.63	-1,175.25	2,603.04	2,537.42	65.62	39.668	
1,400.00	1,400.00	1,624.00	1,624.00	5.02	64.96	-26.84	2,322.63	-1,175.25	2,603.04	2,533.07	69.98	37.198	
1,500.00	1,500.00	1,724.00	1,724.00	5.38	68.96	-26.84	2,322.63	-1,175.25	2,603.04	2,528.71	74.34	35.017	
1,600.00	1,600.00	1,824.00	1,824.00	5.74	72.96	-26.84	2,322.63	-1,175.25	2,603.04	2,524.35	78.70	33.077	
1,700.00	1,700.00	1,924.00	1,924.00	6.09	76.96	-26.84	2,322.63	-1,175.25	2,603.04	2,519.99	83.05	31.342	
1,800.00	1,800.00	2,024.00	2,024.00	6.45	80.96	-26.84	2,322.63	-1,175.25	2,603.04	2,515.63	87.41	29.779	
1,900.00	1,900.00	2,124.00	2,124.00	6.81	84.96	-26.84	2,322.63	-1,175.25	2,603.04	2,511.27	91.77	28.365	
2,000.00	2,000.00	2,224.00	2,224.00	7.17	88.96	-26.84	2,322.63	-1,175.25	2,603.04	2,506.92	96.13	27.079	
2,100.00	2,100.00	2,324.00	2,324.00	7.53	92.96	-26.84	2,322.63	-1,175.25	2,603.04	2,502.56	100.49	25.904	
2,200.00	2,200.00	2,424.00	2,424.00	7.89	96.96	-26.84	2,322.63	-1,175.25	2,603.04	2,498.20	104.85	24.827	
2,300.00	2,300.00	2,524.00	2,524.00	8.24	100.96	-26.84	2,322.63	-1,175.25	2,603.04	2,493.84	109.20	23.836	
2,400.00	2,400.00	2,624.00	2,624.00	8.60	104.96	-26.84	2,322.63	-1,175.25	2,603.04	2,489.48	113.56	22.922	
2,500.00	2,500.00	2,724.00	2,724.00	8.96	108.96	-26.84	2,322.63	-1,175.25	2,603.04	2,485.12	117.92	22.074	
2,600.00	2,600.00	2,824.00	2,824.00	9.32	112.96	-26.84	2,322.63	-1,175.25	2,603.04	2,480.76	122.28	21.288	
2,700.00	2,700.00	2,924.00	2,924.00	9.68	116.96	-26.84	2,322.63	-1,175.25	2,603.04	2,476.41	126.64	20.555	
2,800.00	2,800.00	3,024.00	3,024.00	10.04	120.96	-26.84	2,322.63	-1,175.25	2,603.04	2,472.05	131.00	19.871	
2,900.00	2,900.00	3,124.00	3,124.00	10.40	124.96	-26.84	2,322.63	-1,175.25	2,603.04	2,467.69	135.36	19.231	
3,000.00	3,000.00	3,224.00	3,224.00	10.75	128.96	-26.84	2,322.63	-1,175.25	2,603.04	2,463.33	139.71	18.631	
3,100.00	3,100.00	3,324.00	3,324.00	11.11	132.96	-26.84	2,322.63	-1,175.25	2,603.04	2,458.97	144.07	18.068	
3,200.00	3,200.00	3,424.00	3,424.00	11.47	136.96	-26.84	2,322.63	-1,175.25	2,603.04	2,454.61	148.43	17.537	
3,300.00	3,300.00	3,524.00	3,524.00	11.83	140.96	-26.84	2,322.63	-1,175.25	2,603.04	2,450.26	152.79	17.037	
3,400.00	3,400.00	3,624.00	3,624.00	12.19	144.96	-26.84	2,322.63	-1,175.25	2,603.04	2,445.90	157.15	16.564	
3,500.00	3,500.00	3,724.00	3,724.00	12.55	148.96	-26.84	2,322.63	-1,175.25	2,603.04	2,441.54	161.51	16.117	
3,600.00	3,600.00	3,824.00	3,824.00	12.90	152.96	-26.84	2,322.63	-1,175.25	2,603.04	2,437.18	165.86	15.694	
3,700.00	3,699.95	3,923.95	3,923.95	13.26	156.96	-11.78	2,322.63	-1,175.25	2,600.48	2,430.26	170.22	15.277	
3,800.00	3,799.63	4,023.63	4,023.63	13.62	160.95	-11.86	2,322.63	-1,175.25	2,592.80	2,418.24	174.56	14.853	
3,900.00	3,898.77	4,122.77	4,122.77	13.98	164.91	-12.00	2,322.63	-1,175.25	2,580.03	2,401.14	178.88	14.423	
4,000.00	3,997.08	4,221.08	4,221.08	14.33	168.84	-12.20	2,322.63	-1,175.25	2,562.20	2,379.03	183.17	13.988	
4,100.00	4,094.31	4,318.31	4,318.31	14.69	172.73	-12.46	2,322.63	-1,175.25	2,539.37	2,351.96	187.40	13.550	
4,200.00	4,190.18	4,414.18	4,414.18	15.05	176.57	-12.79	2,322.63	-1,175.25	2,511.60	2,320.02	191.58	13.110	
4,300.00	4,284.43	4,508.43	4,508.43	15.43	180.34	-13.20	2,322.63	-1,175.25	2,478.99	2,283.30	195.69	12.668	
4,308.86	4,292.69	4,516.69	4,516.69	15.47	180.67	-13.24	2,322.63	-1,175.25	2,475.87	2,279.82	196.05	12.629	
4,400.00	4,377.63	4,601.63	4,601.63	15.82	184.07	-13.41	2,322.63	-1,175.25	2,443.59	2,243.83	199.75	12.233	
4,500.00	4,470.82	4,694.82	4,694.82	16.23	187.79	-13.61	2,322.63	-1,175.25	2,408.19	2,204.38	203.82	11.816	
4,600.00	4,464.01	4,788.01	4,788.01	16.65	191.52	-13.82	2,322.63	-1,175.25	2,372.83	2,164.94	207.88	11.414	
4,700.00	4,657.20	4,881.20	4,881.20	17.09	195.25	-14.03	2,322.63	-1,175.25	2,337.49	2,125.53	211.96	11.028	
4,800.00	4,750.39	4,974.39	4,974.39	17.53	198.98	-14.25	2,322.63	-1,175.25	2,302.18	2,086.15	216.03	10.657	
4,900.00	4,843.59	5,067.59	5,067.59	17.99	202.70	-14.47	2,322.63	-1,175.25	2,266.90	2,046.79	220.11	10.299	
5,000.00	4,936.78	5,160.78	5,160.78	18.46	206.43	-14.70	2,322.63	-1,175.25	2,231.65	2,007.46	224.20	9.954	

Released to Imaging: 7/23/2024 10:09:58 AM
CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation



Scientific Drilling
Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6686' @ 6686.00ft
Reference Site:	San Juan 29-7 Unit NP 512 Pad	MD Reference:	GL 6686' @ 6686.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,100.00	5,029.97	5,253.97	5,253.97	18.94	210.16	-14.94	2,322.63	-1,175.25	2,196.44	1,968.15	228.29	9.621	
5,200.00	5,123.16	5,347.16	5,347.16	19.42	213.89	-15.19	2,322.63	-1,175.25	2,161.26	1,928.88	232.38	9.301	
5,300.00	5,216.35	5,440.35	5,440.35	19.92	217.61	-15.44	2,322.63	-1,175.25	2,126.12	1,889.64	236.47	8.991	
5,400.00	5,309.54	5,533.54	5,533.54	20.42	221.34	-15.71	2,322.63	-1,175.25	2,091.01	1,850.44	240.57	8.692	
5,500.00	5,402.73	5,626.73	5,626.73	20.93	225.07	-15.98	2,322.63	-1,175.25	2,055.95	1,811.28	244.67	8.403	
5,600.00	5,495.92	5,719.92	5,719.92	21.44	228.80	-16.26	2,322.63	-1,175.25	2,020.93	1,772.15	248.78	8.123	
5,700.00	5,589.11	5,813.11	5,813.11	21.96	232.52	-16.55	2,322.63	-1,175.25	1,985.95	1,733.07	252.89	7.853	
5,800.00	5,682.30	5,906.30	5,906.30	22.49	236.25	-16.85	2,322.63	-1,175.25	1,951.02	1,694.02	257.00	7.592	
5,826.83	5,707.31	5,931.31	5,931.31	22.63	237.25	-16.94	2,322.63	-1,175.25	1,941.66	1,683.56	258.10	7.523	
5,900.00	5,775.99	5,999.99	5,999.99	23.01	240.00	-16.93	2,322.63	-1,175.25	1,917.40	1,656.27	261.13	7.343	
6,000.00	5,871.31	6,095.31	6,095.31	23.51	243.81	-16.93	2,322.63	-1,175.25	1,888.41	1,623.08	265.33	7.117	
6,100.00	5,968.08	6,192.08	6,192.08	23.98	247.68	-16.93	2,322.63	-1,175.25	1,864.28	1,594.70	269.58	6.915	
6,200.00	6,066.04	6,290.04	6,290.04	24.42	251.60	-16.94	2,322.63	-1,175.25	1,845.06	1,571.18	273.88	6.737	
6,300.00	6,164.91	6,388.91	6,388.91	24.83	255.56	-16.95	2,322.63	-1,175.25	1,830.80	1,552.59	278.21	6.581	
6,400.00	6,264.43	6,488.43	6,488.43	25.21	259.54	-16.96	2,322.63	-1,175.25	1,821.51	1,538.95	282.56	6.447	
6,500.00	6,364.32	6,588.32	6,588.32	25.55	263.53	-16.96	2,322.63	-1,175.25	1,817.22	1,530.31	286.91	6.334	
6,535.69	6,400.00	6,624.00	6,624.00	25.67	264.96	-32.05	2,322.63	-1,175.25	1,816.90	1,528.44	288.46	6.299	
6,600.00	6,464.31	6,688.31	6,688.31	25.87	267.53	-32.05	2,322.63	-1,175.25	1,816.90	1,525.65	291.25	6.238	
6,700.00	6,564.31	6,788.31	6,788.31	26.19	271.53	-32.05	2,322.63	-1,175.25	1,816.90	1,521.31	295.59	6.147	
6,800.00	6,664.31	6,888.31	6,888.31	26.51	275.53	-32.05	2,322.63	-1,175.25	1,816.90	1,516.97	299.93	6.058	
6,900.00	6,764.31	6,988.31	6,988.31	26.83	279.53	-32.05	2,322.63	-1,175.25	1,816.90	1,512.62	304.28	5.971	
7,000.00	6,864.31	7,088.31	7,088.31	27.15	283.53	-32.05	2,322.63	-1,175.25	1,816.90	1,508.28	308.62	5.887	
7,100.00	6,964.31	7,188.31	7,188.31	27.47	287.53	-32.05	2,322.63	-1,175.25	1,816.90	1,503.93	312.97	5.805	
7,200.00	7,064.31	7,288.31	7,288.31	27.79	291.53	-32.05	2,322.63	-1,175.25	1,816.90	1,499.59	317.31	5.726	
7,300.00	7,164.31	7,388.31	7,388.31	28.12	295.53	-32.05	2,322.63	-1,175.25	1,816.90	1,495.24	321.66	5.649	
7,400.00	7,264.31	7,488.31	7,488.31	28.44	299.53	-32.05	2,322.63	-1,175.25	1,816.90	1,490.90	326.00	5.573	
7,500.00	7,364.31	7,588.31	7,588.31	28.77	303.53	-32.05	2,322.63	-1,175.25	1,816.90	1,486.55	330.35	5.500	
7,600.00	7,464.31	7,688.31	7,688.31	29.09	307.53	-32.05	2,322.63	-1,175.25	1,816.90	1,482.20	334.70	5.429	
7,700.00	7,564.31	7,788.31	7,788.31	29.42	311.53	-32.05	2,322.63	-1,175.25	1,816.90	1,477.86	339.04	5.359	
7,800.00	7,664.31	7,888.31	7,888.31	29.75	315.53	-32.05	2,322.63	-1,175.25	1,816.90	1,473.51	343.39	5.291	
7,900.00	7,764.31	7,988.31	7,988.31	30.08	319.53	-32.05	2,322.63	-1,175.25	1,816.90	1,469.16	347.74	5.225	
8,000.00	7,864.31	8,088.31	8,088.31	30.41	323.53	-32.05	2,322.63	-1,175.25	1,816.90	1,464.82	352.08	5.160 CC	
8,100.00	7,964.31	8,119.00	8,119.00	30.74	324.76	-32.05	2,322.63	-1,175.25	1,818.22	1,464.73	353.49	5.144 ES, SF	
8,200.00	8,064.31	8,119.00	8,119.00	31.07	324.76	-32.05	2,322.63	-1,175.25	1,824.77	1,472.05	352.72	5.173	
8,235.69	8,100.00	8,119.00	8,119.00	31.18	324.76	-32.05	2,322.63	-1,175.25	1,828.43	1,476.23	352.20	5.192	

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



Scientific Drilling
Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6686' @ 6686.00ft
Reference Site:	San Juan 29-7 Unit NP 512 Pad	MD Reference:	GL 6686' @ 6686.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	62.73	240.27	466.03	524.51				
100.00	100.00	86.00	86.00	0.36	3.44	62.73	240.27	466.03	524.33	520.53	3.80	138.035	
200.00	200.00	186.00	186.00	0.72	7.44	62.73	240.27	466.03	524.33	516.17	8.16	64.280	
300.00	300.00	286.00	286.00	1.08	11.44	62.73	240.27	466.03	524.33	511.81	12.52	41.894	
400.00	400.00	386.00	386.00	1.43	15.44	62.73	240.27	466.03	524.33	507.45	16.87	31.073	
500.00	500.00	486.00	486.00	1.79	19.44	62.73	240.27	466.03	524.33	503.09	21.23	24.695	
600.00	600.00	586.00	586.00	2.15	23.44	62.73	240.27	466.03	524.33	498.73	25.59	20.489	
700.00	700.00	686.00	686.00	2.51	27.44	62.73	240.27	466.03	524.33	494.38	29.95	17.507	
800.00	800.00	786.00	786.00	2.87	31.44	62.73	240.27	466.03	524.33	490.02	34.31	15.283	
900.00	900.00	886.00	886.00	3.23	35.44	62.73	240.27	466.03	524.33	485.66	38.67	13.560	
1,000.00	1,000.00	986.00	986.00	3.58	39.44	62.73	240.27	466.03	524.33	481.30	43.02	12.187	
1,100.00	1,100.00	1,086.00	1,086.00	3.94	43.44	62.73	240.27	466.03	524.33	476.94	47.38	11.066	
1,200.00	1,200.00	1,186.00	1,186.00	4.30	47.44	62.73	240.27	466.03	524.33	472.58	51.74	10.134	
1,300.00	1,300.00	1,286.00	1,286.00	4.66	51.44	62.73	240.27	466.03	524.33	468.23	56.10	9.346	
1,400.00	1,400.00	1,386.00	1,386.00	5.02	55.44	62.73	240.27	466.03	524.33	463.87	60.46	8.672	
1,500.00	1,500.00	1,486.00	1,486.00	5.38	59.44	62.73	240.27	466.03	524.33	459.51	64.82	8.089	
1,600.00	1,600.00	1,586.00	1,586.00	5.74	63.44	62.73	240.27	466.03	524.33	455.15	69.18	7.580	
1,700.00	1,700.00	1,686.00	1,686.00	6.09	67.44	62.73	240.27	466.03	524.33	450.79	73.53	7.130	
1,800.00	1,800.00	1,786.00	1,786.00	6.45	71.44	62.73	240.27	466.03	524.33	446.43	77.89	6.731	
1,900.00	1,900.00	1,886.00	1,886.00	6.81	75.44	62.73	240.27	466.03	524.33	442.07	82.25	6.375	
2,000.00	2,000.00	1,986.00	1,986.00	7.17	79.44	62.73	240.27	466.03	524.33	437.72	86.61	6.054	
2,100.00	2,100.00	2,086.00	2,086.00	7.53	83.44	62.73	240.27	466.03	524.33	433.36	90.97	5.764	
2,200.00	2,200.00	2,186.00	2,186.00	7.89	87.44	62.73	240.27	466.03	524.33	429.00	95.33	5.500	
2,300.00	2,300.00	2,286.00	2,286.00	8.24	91.44	62.73	240.27	466.03	524.33	424.64	99.68	5.260	
2,400.00	2,400.00	2,386.00	2,386.00	8.60	95.44	62.73	240.27	466.03	524.33	420.28	104.04	5.039	
2,500.00	2,500.00	2,486.00	2,486.00	8.96	99.44	62.73	240.27	466.03	524.33	415.92	108.40	4.837	
2,600.00	2,600.00	2,586.00	2,586.00	9.32	103.44	62.73	240.27	466.03	524.33	411.57	112.76	4.650	
2,700.00	2,700.00	2,686.00	2,686.00	9.68	107.44	62.73	240.27	466.03	524.33	407.21	117.12	4.477	
2,800.00	2,800.00	2,786.00	2,786.00	10.04	111.44	62.73	240.27	466.03	524.33	402.85	121.48	4.316	
2,900.00	2,900.00	2,886.00	2,886.00	10.40	115.44	62.73	240.27	466.03	524.33	398.49	125.84	4.167	
3,000.00	3,000.00	2,986.00	2,986.00	10.75	119.44	62.73	240.27	466.03	524.33	394.13	130.19	4.027	
3,100.00	3,100.00	3,086.00	3,086.00	11.11	123.44	62.73	240.27	466.03	524.33	389.77	134.55	3.897	
3,200.00	3,200.00	3,186.00	3,186.00	11.47	127.44	62.73	240.27	466.03	524.33	385.41	138.91	3.775	
3,300.00	3,300.00	3,286.00	3,286.00	11.83	131.44	62.73	240.27	466.03	524.33	381.06	143.27	3.660	
3,400.00	3,400.00	3,386.00	3,386.00	12.19	135.44	62.73	240.27	466.03	524.33	376.70	147.63	3.552	
3,500.00	3,500.00	3,486.00	3,486.00	12.55	139.44	62.73	240.27	466.03	524.33	372.34	151.99	3.450	
3,600.00	3,600.00	3,586.00	3,586.00	12.90	143.44	62.73	240.27	466.03	524.33	367.98	156.34	3.354	
3,700.00	3,699.95	3,685.95	3,685.95	13.26	147.44	78.11	240.27	466.03	523.78	363.08	160.70	3.259	
3,800.00	3,799.63	3,785.63	3,785.63	13.62	151.43	79.00	240.27	466.03	522.22	357.17	165.04	3.164	
3,900.00	3,898.77	3,884.77	3,884.77	13.98	155.39	80.47	240.27	466.03	519.87	350.51	169.36	3.070	
4,000.00	3,997.08	3,983.08	3,983.08	14.33	159.32	82.50	240.27	466.03	517.13	343.48	173.65	2.978	
4,100.00	4,094.31	4,080.31	4,080.31	14.69	163.21	85.09	240.27	466.03	514.54	336.64	177.90	2.892	
4,200.00	4,190.18	4,176.18	4,176.18	15.05	167.05	88.17	240.27	466.03	512.80	330.70	182.10	2.816	
4,253.36	4,240.69	4,226.69	4,226.69	15.26	169.07	90.00	240.27	466.03	512.51	328.19	184.32	2.781 CC	
4,300.00	4,284.43	4,270.43	4,270.43	15.43	170.82	91.69	240.27	466.03	512.77	326.52	186.25	2.753	
4,308.86	4,292.69	4,278.69	4,278.69	15.47	171.15	92.02	240.27	466.03	512.88	326.27	186.61	2.748	
4,400.00	4,377.63	4,363.63	4,363.63	15.82	174.55	95.45	240.27	466.03	515.19	324.83	190.36	2.706 ES	
4,500.00	4,470.82	4,456.82	4,456.82	16.23	178.27	99.16	240.27	466.03	520.13	325.64	194.49	2.674	
4,600.00	4,564.01	4,550.01	4,550.01	16.65	182.00	102.80	240.27	466.03	527.53	328.90	198.62	2.656	
4,700.00	4,657.20	4,643.20	4,643.20	17.09	185.73	106.34	240.27	466.03	537.28	334.51	202.76	2.650	
4,800.00	4,750.39	4,736.39	4,736.39	17.53	189.46	109.75	240.27	466.03	549.25	342.35	206.91	2.655	
4,900.00	4,843.59	4,829.59	4,829.59	17.99	193.18	113.03	240.27	466.03	563.31	352.27	211.05	2.669	

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



Scientific Drilling
Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6686' @ 6686.00ft
Reference Site:	San Juan 29-7 Unit NP 512 Pad	MD Reference:	GL 6686' @ 6686.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,000.00	4,936.78	4,922.78	4,922.78	18.46	196.91	116.15	240.27	466.03	579.31	364.12	215.18	2.692	
5,100.00	5,029.97	5,015.97	5,015.97	18.94	200.64	119.12	240.27	466.03	597.08	377.76	219.32	2.722	
5,200.00	5,123.16	5,109.16	5,109.16	19.42	204.37	121.92	240.27	466.03	616.47	393.02	223.45	2.759	
5,300.00	5,216.35	5,202.35	5,202.35	19.92	208.09	124.56	240.27	466.03	637.34	409.76	227.58	2.801	
5,400.00	5,309.54	5,295.54	5,295.54	20.42	211.82	127.05	240.27	466.03	659.54	427.84	231.70	2.846	
5,500.00	5,402.73	5,388.73	5,388.73	20.93	215.55	129.38	240.27	466.03	682.95	447.13	235.82	2.896	
5,600.00	5,495.92	5,481.92	5,481.92	21.44	219.28	131.56	240.27	466.03	707.45	467.51	239.94	2.948	
5,700.00	5,589.11	5,575.11	5,575.11	21.96	223.00	133.61	240.27	466.03	732.92	488.87	244.05	3.003	
5,800.00	5,682.30	5,668.30	5,668.30	22.49	226.73	135.53	240.27	466.03	759.27	511.11	248.17	3.060	
5,826.83	5,707.31	5,693.31	5,693.31	22.63	227.73	136.02	240.27	466.03	766.48	517.21	249.27	3.075	
5,900.00	5,775.99	5,761.99	5,761.99	23.01	230.48	137.66	240.27	466.03	785.42	533.12	252.29	3.113	
6,000.00	5,871.31	5,857.31	5,857.31	23.51	234.29	139.54	240.27	466.03	808.53	552.05	256.48	3.152	
6,100.00	5,968.08	5,954.08	5,954.08	23.98	238.16	141.03	240.27	466.03	828.14	567.41	260.72	3.176	
6,200.00	6,066.04	6,052.04	6,052.04	24.42	242.08	142.18	240.27	466.03	843.98	578.98	265.01	3.185	
6,300.00	6,164.91	6,150.91	6,150.91	24.83	246.04	143.00	240.27	466.03	855.87	586.55	269.32	3.178	
6,400.00	6,264.43	6,250.43	6,250.43	25.21	250.02	143.53	240.27	466.03	863.66	590.01	273.65	3.156	
6,500.00	6,364.32	6,350.32	6,350.32	25.55	254.01	143.77	240.27	466.03	867.28	589.29	277.99	3.120	
6,535.69	6,400.00	6,386.00	6,386.00	25.67	255.44	128.70	240.27	466.03	867.55	588.01	279.54	3.103	
6,600.00	6,464.31	6,450.31	6,450.31	25.87	258.01	128.70	240.27	466.03	867.55	585.22	282.33	3.073	
6,700.00	6,564.31	6,550.31	6,550.31	26.19	262.01	128.70	240.27	466.03	867.55	580.89	286.66	3.026	
6,800.00	6,664.31	6,650.31	6,650.31	26.51	266.01	128.70	240.27	466.03	867.55	576.55	291.00	2.981	
6,900.00	6,764.31	6,750.31	6,750.31	26.83	270.01	128.70	240.27	466.03	867.55	572.21	295.33	2.938	
7,000.00	6,864.31	6,850.31	6,850.31	27.15	274.01	128.70	240.27	466.03	867.55	567.88	299.67	2.895	
7,100.00	6,964.31	6,950.31	6,950.31	27.47	278.01	128.70	240.27	466.03	867.55	563.54	304.01	2.854	
7,200.00	7,064.31	7,050.31	7,050.31	27.79	282.01	128.70	240.27	466.03	867.55	559.20	308.34	2.814	
7,300.00	7,164.31	7,150.31	7,150.31	28.12	286.01	128.70	240.27	466.03	867.55	554.86	312.68	2.775	
7,400.00	7,264.31	7,250.31	7,250.31	28.44	290.01	128.70	240.27	466.03	867.55	550.52	317.02	2.737	
7,500.00	7,364.31	7,350.31	7,350.31	28.77	294.01	128.70	240.27	466.03	867.55	546.18	321.36	2.700	
7,600.00	7,464.31	7,450.31	7,450.31	29.09	298.01	128.70	240.27	466.03	867.55	541.84	325.70	2.664	
7,700.00	7,564.31	7,550.31	7,550.31	29.42	302.01	128.70	240.27	466.03	867.55	537.50	330.04	2.629	
7,800.00	7,664.31	7,650.31	7,650.31	29.75	306.01	128.70	240.27	466.03	867.55	533.16	334.38	2.594	
7,900.00	7,764.31	7,750.31	7,750.31	30.08	310.01	128.70	240.27	466.03	867.55	528.82	338.72	2.561	
8,000.00	7,864.31	7,850.31	7,850.31	30.41	314.01	128.70	240.27	466.03	867.55	524.48	343.07	2.529	
8,010.00	7,874.31	7,860.31	7,860.31	30.44	314.41	128.70	240.27	466.03	867.55	524.05	343.50	2.526 SF	
8,100.00	7,964.31	7,889.00	7,889.00	30.74	315.56	128.70	240.27	466.03	869.71	525.73	343.98	2.528	
8,200.00	8,064.31	7,889.00	7,889.00	31.07	315.56	128.70	240.27	466.03	882.42	543.17	339.25	2.601	
8,235.69	8,100.00	7,889.00	7,889.00	31.18	315.56	128.70	240.27	466.03	889.63	553.04	336.59	2.643	



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6686' @ 6686.00ft
Reference Site:	San Juan 29-7 Unit NP 512 Pad	MD Reference:	GL 6686' @ 6686.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	28.00	28.00	0.00	1.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,755.48	1.12	2,460.930	
100.00	100.00	128.00	128.00	0.36	5.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,751.12	5.48	503.169	
200.00	200.00	228.00	228.00	0.72	9.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,746.76	9.84	280.229	
300.00	300.00	328.00	328.00	1.08	13.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,742.40	14.20	194.189	
400.00	400.00	428.00	428.00	1.43	17.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,738.04	18.55	148.572	
500.00	500.00	528.00	528.00	1.79	21.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,733.68	22.91	120.310	
600.00	600.00	628.00	628.00	2.15	25.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,729.33	27.27	101.082	
700.00	700.00	728.00	728.00	2.51	29.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,724.97	31.63	87.153	
800.00	800.00	828.00	828.00	2.87	33.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,720.61	35.99	76.598	
900.00	900.00	928.00	928.00	3.23	37.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,716.25	40.35	68.323	
1,000.00	1,000.00	1,028.00	1,028.00	3.58	41.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,711.89	44.70	61.662	
1,100.00	1,100.00	1,128.00	1,128.00	3.94	45.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,707.53	49.06	56.185	
1,200.00	1,200.00	1,228.00	1,228.00	4.30	49.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,703.17	53.42	51.601	
1,300.00	1,300.00	1,328.00	1,328.00	4.66	53.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,698.82	57.78	47.708	
1,400.00	1,400.00	1,428.00	1,428.00	5.02	57.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,694.46	62.14	44.362	
1,500.00	1,500.00	1,528.00	1,528.00	5.38	61.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,690.10	66.50	41.454	
1,600.00	1,600.00	1,628.00	1,628.00	5.74	65.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,685.74	70.86	38.904	
1,700.00	1,700.00	1,728.00	1,728.00	6.09	69.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,681.38	75.21	36.650	
1,800.00	1,800.00	1,828.00	1,828.00	6.45	73.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,677.02	79.57	34.643	
1,900.00	1,900.00	1,928.00	1,928.00	6.81	77.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,672.67	83.93	32.844	
2,000.00	2,000.00	2,028.00	2,028.00	7.17	81.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,668.31	88.29	31.222	
2,100.00	2,100.00	2,128.00	2,128.00	7.53	85.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,663.95	92.65	29.753	
2,200.00	2,200.00	2,228.00	2,228.00	7.89	89.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,659.59	97.01	28.417	
2,300.00	2,300.00	2,328.00	2,328.00	8.24	93.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,655.23	101.36	27.195	
2,400.00	2,400.00	2,428.00	2,428.00	8.60	97.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,650.87	105.72	26.074	
2,500.00	2,500.00	2,528.00	2,528.00	8.96	101.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,646.51	110.08	25.041	
2,600.00	2,600.00	2,628.00	2,628.00	9.32	105.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,642.16	114.44	24.088	
2,700.00	2,700.00	2,728.00	2,728.00	9.68	109.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,637.80	118.80	23.204	
2,800.00	2,800.00	2,828.00	2,828.00	10.04	113.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,633.44	123.16	22.383	
2,900.00	2,900.00	2,928.00	2,928.00	10.40	117.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,629.08	127.52	21.618	
3,000.00	3,000.00	3,028.00	3,028.00	10.75	121.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,624.72	131.87	20.903	
3,100.00	3,100.00	3,128.00	3,128.00	11.11	125.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,620.36	136.23	20.234	
3,200.00	3,200.00	3,228.00	3,228.00	11.47	129.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,616.00	140.59	19.607	
3,300.00	3,300.00	3,328.00	3,328.00	11.83	133.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,611.65	144.95	19.018	
3,400.00	3,400.00	3,428.00	3,428.00	12.19	137.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,607.29	149.31	18.462	
3,500.00	3,500.00	3,528.00	3,528.00	12.55	141.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,602.93	153.67	17.939	
3,600.00	3,600.00	3,628.00	3,628.00	12.90	145.12	-149.73	-2,380.82	-1,389.43	2,756.60	2,598.57	158.02	17.444	CC
3,700.00	3,699.95	3,727.95	3,727.95	13.26	149.12	-134.64	-2,380.82	-1,389.43	2,758.44	2,596.05	162.38	16.987	ES
3,800.00	3,799.63	3,827.63	3,827.63	13.62	153.11	-134.64	-2,380.82	-1,389.43	2,763.96	2,597.23	166.73	16.578	
3,900.00	3,898.77	3,926.77	3,926.77	13.98	157.07	-134.63	-2,380.82	-1,389.43	2,773.17	2,602.12	171.05	16.213	
4,000.00	3,997.08	4,025.08	4,025.08	14.33	161.00	-134.62	-2,380.82	-1,389.43	2,786.08	2,610.75	175.33	15.890	
4,100.00	4,094.31	4,122.31	4,122.31	14.69	164.89	-134.60	-2,380.82	-1,389.43	2,802.71	2,623.13	179.58	15.607	
4,200.00	4,190.18	4,218.18	4,218.18	15.05	168.73	-134.56	-2,380.82	-1,389.43	2,823.06	2,639.29	183.77	15.362	
4,300.00	4,284.43	4,312.43	4,312.43	15.43	172.50	-134.49	-2,380.82	-1,389.43	2,847.16	2,659.26	187.90	15.153	
4,308.86	4,292.69	4,320.69	4,320.69	15.47	172.83	-134.48	-2,380.82	-1,389.43	2,849.48	2,661.22	188.26	15.136	
4,400.00	4,377.63	4,405.63	4,405.63	15.82	176.23	-134.94	-2,380.82	-1,389.43	2,873.55	2,681.56	191.99	14.967	
4,500.00	4,470.82	4,498.82	4,498.82	16.23	179.95	-135.43	-2,380.82	-1,389.43	2,900.16	2,704.07	196.09	14.790	
4,600.00	4,564.01	4,592.01	4,592.01	16.65	183.68	-135.91	-2,380.82	-1,389.43	2,926.98	2,726.79	200.20	14.621	
4,700.00	4,657.20	4,685.20	4,685.20	17.09	187.41	-136.39	-2,380.82	-1,389.43	2,954.01	2,749.70	204.31	14.459	
4,800.00	4,750.39	4,778.39	4,778.39	17.53	191.14	-136.85	-2,380.82	-1,389.43	2,981.22	2,772.80	208.42	14.304	
4,900.00	4,843.59	4,871.59	4,871.59	17.99	194.86	-137.31	-2,380.82	-1,389.43	3,008.63	2,796.09	212.55	14.155	
5,000.00	4,936.78	4,964.78	4,964.78	18.46	198.59	-137.76	-2,380.82	-1,389.43	3,036.23	2,819.56	216.67	14.013	

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



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6686' @ 6686.00ft
Reference Site:	San Juan 29-7 Unit NP 512 Pad	MD Reference:	GL 6686' @ 6686.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,100.00	5,029.97	5,057.97	5,057.97	18.94	202.32	-138.20	-2,380.82	-1,389.43	3,064.01	2,843.20	220.80	13.877	
5,200.00	5,123.16	5,151.16	5,151.16	19.42	206.05	-138.64	-2,380.82	-1,389.43	3,091.96	2,867.02	224.94	13.746	
5,300.00	5,216.35	5,244.35	5,244.35	19.92	209.77	-139.06	-2,380.82	-1,389.43	3,120.08	2,891.01	229.08	13.620	
5,400.00	5,309.54	5,337.54	5,337.54	20.42	213.50	-139.48	-2,380.82	-1,389.43	3,148.37	2,915.16	233.22	13.500	
5,500.00	5,402.73	5,430.73	5,430.73	20.93	217.23	-139.90	-2,380.82	-1,389.43	3,176.82	2,939.47	237.36	13.384	
5,600.00	5,495.92	5,523.92	5,523.92	21.44	220.96	-140.30	-2,380.82	-1,389.43	3,205.43	2,963.93	241.50	13.273	
5,700.00	5,589.11	5,617.11	5,617.11	21.96	224.68	-140.70	-2,380.82	-1,389.43	3,234.20	2,988.55	245.65	13.166	
5,800.00	5,682.30	5,710.30	5,710.30	22.49	228.41	-141.10	-2,380.82	-1,389.43	3,263.11	3,013.31	249.80	13.063	
5,826.83	5,707.31	5,735.31	5,735.31	22.63	229.41	-141.20	-2,380.82	-1,389.43	3,270.89	3,019.98	250.91	13.036	
5,900.00	5,775.99	5,803.99	5,803.99	23.01	232.16	-141.86	-2,380.82	-1,389.43	3,291.12	3,037.15	253.96	12.959	
6,000.00	5,871.31	5,899.31	5,899.31	23.51	235.97	-142.64	-2,380.82	-1,389.43	3,315.40	3,057.22	258.19	12.841	
6,100.00	5,968.08	5,996.08	5,996.08	23.98	239.84	-143.27	-2,380.82	-1,389.43	3,335.72	3,073.26	262.46	12.709	
6,200.00	6,066.04	6,060.00	6,060.00	24.42	242.40	-143.70	-2,380.82	-1,389.43	3,352.13	3,086.76	265.37	12.632 SF	
6,300.00	6,164.91	6,060.00	6,060.00	24.83	242.40	-143.96	-2,380.82	-1,389.43	3,366.68	3,101.18	265.50	12.680	
6,400.00	6,264.43	6,060.00	6,060.00	25.21	242.40	-144.20	-2,380.82	-1,389.43	3,379.95	3,114.56	265.39	12.736	
6,500.00	6,364.32	6,060.00	6,060.00	25.55	242.40	-144.41	-2,380.82	-1,389.43	3,391.91	3,126.88	265.03	12.798	
6,535.69	6,400.00	6,060.00	6,060.00	25.67	242.40	-159.57	-2,380.82	-1,389.43	3,395.86	3,131.01	264.85	12.822	
6,600.00	6,464.31	6,060.00	6,060.00	25.87	242.40	-159.57	-2,380.82	-1,389.43	3,403.43	3,138.99	264.45	12.870	
6,700.00	6,564.31	6,060.00	6,060.00	26.19	242.40	-159.57	-2,380.82	-1,389.43	3,417.58	3,153.93	263.64	12.963	
6,800.00	6,664.31	6,060.00	6,060.00	26.51	242.40	-159.57	-2,380.82	-1,389.43	3,434.57	3,171.94	262.64	13.077	
6,900.00	6,764.31	6,060.00	6,060.00	26.83	242.40	-159.57	-2,380.82	-1,389.43	3,454.38	3,192.95	261.43	13.213	
7,000.00	6,864.31	6,060.00	6,060.00	27.15	242.40	-159.57	-2,380.82	-1,389.43	3,476.96	3,216.91	260.04	13.371	
7,100.00	6,964.31	6,060.00	6,060.00	27.47	242.40	-159.57	-2,380.82	-1,389.43	3,502.24	3,243.76	258.47	13.550	
7,200.00	7,064.31	6,060.00	6,060.00	27.79	242.40	-159.57	-2,380.82	-1,389.43	3,530.18	3,273.43	256.74	13.750	
7,300.00	7,164.31	6,060.00	6,060.00	28.12	242.40	-159.57	-2,380.82	-1,389.43	3,560.70	3,305.84	254.86	13.971	
7,400.00	7,264.31	6,060.00	6,060.00	28.44	242.40	-159.57	-2,380.82	-1,389.43	3,593.75	3,340.91	252.85	14.213	
7,500.00	7,364.31	6,060.00	6,060.00	28.77	242.40	-159.57	-2,380.82	-1,389.43	3,629.26	3,378.56	250.70	14.476	
7,600.00	7,464.31	6,060.00	6,060.00	29.09	242.40	-159.57	-2,380.82	-1,389.43	3,667.15	3,418.70	248.45	14.760	
7,700.00	7,564.31	6,060.00	6,060.00	29.42	242.40	-159.57	-2,380.82	-1,389.43	3,707.35	3,461.26	246.09	15.065	
7,800.00	7,664.31	6,060.00	6,060.00	29.75	242.40	-159.57	-2,380.82	-1,389.43	3,749.79	3,506.13	243.65	15.390	
7,900.00	7,764.31	6,060.00	6,060.00	30.08	242.40	-159.57	-2,380.82	-1,389.43	3,794.39	3,553.25	241.14	15.735	
8,000.00	7,864.31	6,060.00	6,060.00	30.41	242.40	-159.57	-2,380.82	-1,389.43	3,841.07	3,602.51	238.57	16.101	
8,100.00	7,964.31	6,060.00	6,060.00	30.74	242.40	-159.57	-2,380.82	-1,389.43	3,889.77	3,653.83	235.94	16.486	
8,200.00	8,064.31	6,060.00	6,060.00	31.07	242.40	-159.57	-2,380.82	-1,389.43	3,940.40	3,707.12	233.28	16.891	
8,235.69	8,100.00	6,060.00	6,060.00	31.18	242.40	-159.57	-2,380.82	-1,389.43	3,958.93	3,726.61	232.32	17.041	



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6686' @ 6686.00ft
Reference Site:	San Juan 29-7 Unit NP 512 Pad	MD Reference:	GL 6686' @ 6686.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	230.00	230.00	0.00	9.20	-25.75	2,369.96	-1,143.01	2,631.19	2,621.99	9.20	285.999	
100.00	100.00	330.00	330.00	0.36	13.20	-25.75	2,369.96	-1,143.01	2,631.19	2,617.63	13.56	194.063	
200.00	200.00	430.00	430.00	0.72	17.20	-25.75	2,369.96	-1,143.01	2,631.19	2,613.28	17.92	146.855	
300.00	300.00	530.00	530.00	1.08	21.20	-25.75	2,369.96	-1,143.01	2,631.19	2,608.92	22.28	118.121	
400.00	400.00	630.00	630.00	1.43	25.20	-25.75	2,369.96	-1,143.01	2,631.19	2,604.56	26.63	98.791	
500.00	500.00	730.00	730.00	1.79	29.20	-25.75	2,369.96	-1,143.01	2,631.19	2,600.20	30.99	84.898	
600.00	600.00	830.00	830.00	2.15	33.20	-25.75	2,369.96	-1,143.01	2,631.19	2,595.84	35.35	74.431	
700.00	700.00	930.00	930.00	2.51	37.20	-25.75	2,369.96	-1,143.01	2,631.19	2,591.48	39.71	66.261	
800.00	800.00	1,030.00	1,030.00	2.87	41.20	-25.75	2,369.96	-1,143.01	2,631.19	2,587.12	44.07	59.708	
900.00	900.00	1,130.00	1,130.00	3.23	45.20	-25.75	2,369.96	-1,143.01	2,631.19	2,582.77	48.43	54.334	
1,000.00	1,000.00	1,230.00	1,230.00	3.58	49.20	-25.75	2,369.96	-1,143.01	2,631.19	2,578.41	52.78	49.848	
1,100.00	1,100.00	1,330.00	1,330.00	3.94	53.20	-25.75	2,369.96	-1,143.01	2,631.19	2,574.05	57.14	46.046	
1,200.00	1,200.00	1,430.00	1,430.00	4.30	57.20	-25.75	2,369.96	-1,143.01	2,631.19	2,569.69	61.50	42.782	
1,300.00	1,300.00	1,530.00	1,530.00	4.66	61.20	-25.75	2,369.96	-1,143.01	2,631.19	2,565.33	65.86	39.951	
1,400.00	1,400.00	1,630.00	1,630.00	5.02	65.20	-25.75	2,369.96	-1,143.01	2,631.19	2,560.97	70.22	37.471	
1,500.00	1,500.00	1,730.00	1,730.00	5.38	69.20	-25.75	2,369.96	-1,143.01	2,631.19	2,556.62	74.58	35.282	
1,600.00	1,600.00	1,830.00	1,830.00	5.74	73.20	-25.75	2,369.96	-1,143.01	2,631.19	2,552.26	78.94	33.333	
1,700.00	1,700.00	1,930.00	1,930.00	6.09	77.20	-25.75	2,369.96	-1,143.01	2,631.19	2,547.90	83.29	31.589	
1,800.00	1,800.00	2,030.00	2,030.00	6.45	81.20	-25.75	2,369.96	-1,143.01	2,631.19	2,543.54	87.65	30.018	
1,900.00	1,900.00	2,130.00	2,130.00	6.81	85.20	-25.75	2,369.96	-1,143.01	2,631.19	2,539.18	92.01	28.597	
2,000.00	2,000.00	2,230.00	2,230.00	7.17	89.20	-25.75	2,369.96	-1,143.01	2,631.19	2,534.82	96.37	27.303	
2,100.00	2,100.00	2,330.00	2,330.00	7.53	93.20	-25.75	2,369.96	-1,143.01	2,631.19	2,530.46	100.73	26.122	
2,200.00	2,200.00	2,430.00	2,430.00	7.89	97.20	-25.75	2,369.96	-1,143.01	2,631.19	2,526.11	105.09	25.038	
2,300.00	2,300.00	2,530.00	2,530.00	8.24	101.20	-25.75	2,369.96	-1,143.01	2,631.19	2,521.75	109.44	24.041	
2,400.00	2,400.00	2,630.00	2,630.00	8.60	105.20	-25.75	2,369.96	-1,143.01	2,631.19	2,517.39	113.80	23.121	
2,500.00	2,500.00	2,730.00	2,730.00	8.96	109.20	-25.75	2,369.96	-1,143.01	2,631.19	2,513.03	118.16	22.268	
2,600.00	2,600.00	2,830.00	2,830.00	9.32	113.20	-25.75	2,369.96	-1,143.01	2,631.19	2,508.67	122.52	21.476	
2,700.00	2,700.00	2,930.00	2,930.00	9.68	117.20	-25.75	2,369.96	-1,143.01	2,631.19	2,504.31	126.88	20.738	
2,800.00	2,800.00	3,030.00	3,030.00	10.04	121.20	-25.75	2,369.96	-1,143.01	2,631.19	2,499.96	131.24	20.049	
2,900.00	2,900.00	3,130.00	3,130.00	10.40	125.20	-25.75	2,369.96	-1,143.01	2,631.19	2,495.60	135.60	19.405	
3,000.00	3,000.00	3,230.00	3,230.00	10.75	129.20	-25.75	2,369.96	-1,143.01	2,631.19	2,491.24	139.95	18.800	
3,100.00	3,100.00	3,330.00	3,330.00	11.11	133.20	-25.75	2,369.96	-1,143.01	2,631.19	2,486.88	144.31	18.233	
3,200.00	3,200.00	3,430.00	3,430.00	11.47	137.20	-25.75	2,369.96	-1,143.01	2,631.19	2,482.52	148.67	17.698	
3,300.00	3,300.00	3,530.00	3,530.00	11.83	141.20	-25.75	2,369.96	-1,143.01	2,631.19	2,478.16	153.03	17.194	
3,364.91	3,364.91	3,594.91	3,594.91	12.06	143.80	-25.75	2,369.96	-1,143.01	2,631.19	2,475.33	155.86	16.882	CC
3,400.00	3,400.00	3,625.00	3,625.00	12.19	145.00	-25.75	2,369.96	-1,143.01	2,631.20	2,474.01	157.19	16.739	ES
3,500.00	3,500.00	3,625.00	3,625.00	12.55	145.00	-25.75	2,369.96	-1,143.01	2,633.29	2,475.86	157.42	16.727	SF
3,600.00	3,600.00	3,625.00	3,625.00	12.90	145.00	-25.75	2,369.96	-1,143.01	2,639.17	2,481.73	157.43	16.764	
3,700.00	3,699.95	3,625.00	3,625.00	13.26	145.00	-10.62	2,369.96	-1,143.01	2,646.25	2,489.03	157.22	16.831	
3,800.00	3,799.63	3,625.00	3,625.00	13.62	145.00	-10.59	2,369.96	-1,143.01	2,651.96	2,495.18	156.79	16.914	
3,900.00	3,898.77	3,625.00	3,625.00	13.98	145.00	-10.56	2,369.96	-1,143.01	2,656.30	2,500.16	156.13	17.013	
4,000.00	3,997.08	3,625.00	3,625.00	14.33	145.00	-10.55	2,369.96	-1,143.01	2,659.24	2,503.99	155.26	17.128	
4,100.00	4,094.31	3,625.00	3,625.00	14.69	145.00	-10.54	2,369.96	-1,143.01	2,660.81	2,506.64	154.17	17.259	
4,200.00	4,190.18	3,625.00	3,625.00	15.05	145.00	-10.54	2,369.96	-1,143.01	2,660.98	2,508.12	152.86	17.408	
4,296.93	4,281.57	3,625.00	3,625.00	15.42	145.00	-10.54	2,369.96	-1,143.01	2,659.82	2,508.42	151.40	17.569	
4,300.00	4,284.43	3,625.00	3,625.00	15.43	145.00	-10.54	2,369.96	-1,143.01	2,659.76	2,508.41	151.35	17.574	
4,308.68	4,292.53	3,625.00	3,625.00	15.46	145.00	-10.55	2,369.96	-1,143.01	2,659.59	2,508.38	151.21	17.589	
4,308.86	4,292.69	3,625.00	3,625.00	15.47	145.00	-10.55	2,369.96	-1,143.01	2,659.59	2,508.38	151.20	17.590	
4,362.94	4,343.09	3,625.00	3,625.00	15.68	145.00	-10.55	2,369.96	-1,143.01	2,659.04	2,508.75	150.29	17.693	
4,400.00	4,377.63	3,625.00	3,625.00	15.82	145.00	-10.55	2,369.96	-1,143.01	2,659.29	2,509.67	149.62	17.773	
4,500.00	4,470.82	3,625.00	3,625.00	16.23	145.00	-10.55	2,369.96	-1,143.01	2,662.56	2,514.86	147.70	18.027	
4,600.00	4,564.01	3,625.00	3,625.00	16.65	145.00	-10.55	2,369.96	-1,143.01	2,669.58	2,523.99	145.59	18.336	

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



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6686' @ 6686.00ft
Reference Site:	San Juan 29-7 Unit NP 512 Pad	MD Reference:	GL 6686' @ 6686.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
4,700.00	4,657.20	3,625.00	3,625.00	17.09	145.00	-10.55	2,369.96	-1,143.01	2,680.31	2,537.01	143.30	18.704	
4,800.00	4,750.39	3,625.00	3,625.00	17.53	145.00	-10.55	2,369.96	-1,143.01	2,694.71	2,553.86	140.85	19.132	
4,900.00	4,843.59	3,625.00	3,625.00	17.99	145.00	-10.55	2,369.96	-1,143.01	2,712.72	2,574.47	138.25	19.621	
5,000.00	4,936.78	3,625.00	3,625.00	18.46	145.00	-10.55	2,369.96	-1,143.01	2,734.28	2,598.75	135.53	20.175	
5,100.00	5,029.97	3,625.00	3,625.00	18.94	145.00	-10.55	2,369.96	-1,143.01	2,759.29	2,626.60	132.69	20.795	
5,200.00	5,123.16	3,625.00	3,625.00	19.42	145.00	-10.55	2,369.96	-1,143.01	2,787.67	2,657.91	129.76	21.484	
5,300.00	5,216.35	3,625.00	3,625.00	19.92	145.00	-10.55	2,369.96	-1,143.01	2,819.31	2,692.56	126.75	22.243	
5,400.00	5,309.54	3,625.00	3,625.00	20.42	145.00	-10.55	2,369.96	-1,143.01	2,854.10	2,730.42	123.68	23.076	
5,500.00	5,402.73	3,625.00	3,625.00	20.93	145.00	-10.55	2,369.96	-1,143.01	2,891.94	2,771.36	120.58	23.984	
5,600.00	5,495.92	3,625.00	3,625.00	21.44	145.00	-10.55	2,369.96	-1,143.01	2,932.70	2,815.25	117.45	24.970	
5,700.00	5,589.11	3,625.00	3,625.00	21.96	145.00	-10.55	2,369.96	-1,143.01	2,976.26	2,861.95	114.31	26.037	
5,800.00	5,682.30	3,625.00	3,625.00	22.49	145.00	-10.55	2,369.96	-1,143.01	3,022.50	2,911.33	111.17	27.187	
5,826.83	5,707.31	3,625.00	3,625.00	22.63	145.00	-10.55	2,369.96	-1,143.01	3,035.35	2,925.02	110.34	27.510	
5,900.00	5,775.99	3,625.00	3,625.00	23.01	145.00	-10.79	2,369.96	-1,143.01	3,072.49	2,964.41	108.08	28.427	
6,000.00	5,871.31	3,625.00	3,625.00	23.51	145.00	-11.18	2,369.96	-1,143.01	3,129.00	3,023.88	105.12	29.765	
6,100.00	5,968.08	3,625.00	3,625.00	23.98	145.00	-11.66	2,369.96	-1,143.01	3,191.69	3,089.36	102.32	31.192	
6,200.00	6,066.04	3,625.00	3,625.00	24.42	145.00	-12.24	2,369.96	-1,143.01	3,260.03	3,160.32	99.70	32.697	
6,300.00	6,164.91	3,625.00	3,625.00	24.83	145.00	-12.95	2,369.96	-1,143.01	3,333.49	3,236.21	97.29	34.265	
6,400.00	6,264.43	3,625.00	3,625.00	25.21	145.00	-13.81	2,369.96	-1,143.01	3,411.56	3,316.48	95.08	35.880	
6,500.00	6,364.32	3,625.00	3,625.00	25.55	145.00	-14.89	2,369.96	-1,143.01	3,493.71	3,400.61	93.10	37.526	
6,535.69	6,400.00	3,625.00	3,625.00	25.67	145.00	-30.42	2,369.96	-1,143.01	3,523.92	3,431.47	92.45	38.117	
6,600.00	6,464.31	3,625.00	3,625.00	25.87	145.00	-30.42	2,369.96	-1,143.01	3,578.92	3,487.61	91.31	39.194	
6,700.00	6,564.31	3,625.00	3,625.00	26.19	145.00	-30.42	2,369.96	-1,143.01	3,665.04	3,575.44	89.60	40.903	
6,800.00	6,664.31	3,625.00	3,625.00	26.51	145.00	-30.42	2,369.96	-1,143.01	3,751.85	3,663.88	87.97	42.650	
6,900.00	6,764.31	3,625.00	3,625.00	26.83	145.00	-30.42	2,369.96	-1,143.01	3,839.30	3,752.90	86.40	44.434	
7,000.00	6,864.31	3,625.00	3,625.00	27.15	145.00	-30.42	2,369.96	-1,143.01	3,927.36	3,842.45	84.91	46.254	
7,100.00	6,964.31	3,625.00	3,625.00	27.47	145.00	-30.42	2,369.96	-1,143.01	4,015.97	3,932.49	83.48	48.109	
7,200.00	7,064.31	3,625.00	3,625.00	27.79	145.00	-30.42	2,369.96	-1,143.01	4,105.10	4,022.99	82.11	49.996	
7,300.00	7,164.31	3,625.00	3,625.00	28.12	145.00	-30.42	2,369.96	-1,143.01	4,194.72	4,113.92	80.80	51.914	
7,400.00	7,264.31	3,625.00	3,625.00	28.44	145.00	-30.42	2,369.96	-1,143.01	4,284.81	4,205.26	79.55	53.862	
7,500.00	7,364.31	3,625.00	3,625.00	28.77	145.00	-30.42	2,369.96	-1,143.01	4,375.32	4,296.96	78.36	55.838	
7,600.00	7,464.31	3,625.00	3,625.00	29.09	145.00	-30.42	2,369.96	-1,143.01	4,466.24	4,389.02	77.22	57.841	
7,700.00	7,564.31	3,625.00	3,625.00	29.42	145.00	-30.42	2,369.96	-1,143.01	4,557.54	4,481.41	76.12	59.869	
7,800.00	7,664.31	3,625.00	3,625.00	29.75	145.00	-30.42	2,369.96	-1,143.01	4,649.20	4,574.11	75.08	61.921	
7,900.00	7,764.31	3,625.00	3,625.00	30.08	145.00	-30.42	2,369.96	-1,143.01	4,741.19	4,667.10	74.09	63.994	
8,000.00	7,864.31	3,625.00	3,625.00	30.41	145.00	-30.42	2,369.96	-1,143.01	4,833.50	4,760.36	73.14	66.087	
8,100.00	7,964.31	3,625.00	3,625.00	30.74	145.00	-30.42	2,369.96	-1,143.01	4,926.11	4,853.88	72.23	68.199	
8,200.00	8,064.31	3,625.00	3,625.00	31.07	145.00	-30.42	2,369.96	-1,143.01	5,019.01	4,947.64	71.37	70.327	
8,235.69	8,100.00	3,625.00	3,625.00	31.18	145.00	-30.42	2,369.96	-1,143.01	5,052.23	4,981.16	71.07	71.091	

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



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6686' @ 6686.00ft
Reference Site:	San Juan 29-7 Unit NP 512 Pad	MD Reference:	GL 6686' @ 6686.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	255.00	255.00	0.00	10.20	-28.07	2,231.62	-1,189.91	2,529.04	2,518.84	10.20	247.945	
100.00	100.00	355.00	355.00	0.36	14.20	-28.07	2,231.62	-1,189.91	2,529.04	2,514.48	14.56	173.716	
200.00	200.00	455.00	455.00	0.72	18.20	-28.07	2,231.62	-1,189.91	2,529.04	2,510.12	18.92	133.692	
300.00	300.00	555.00	555.00	1.08	22.20	-28.07	2,231.62	-1,189.91	2,529.04	2,505.76	23.28	108.657	
400.00	400.00	655.00	655.00	1.43	26.20	-28.07	2,231.62	-1,189.91	2,529.04	2,501.40	27.63	91.519	
500.00	500.00	755.00	755.00	1.79	30.20	-28.07	2,231.62	-1,189.91	2,529.04	2,497.04	31.99	79.051	
600.00	600.00	855.00	855.00	2.15	34.20	-28.07	2,231.62	-1,189.91	2,529.04	2,492.69	36.35	69.573	
700.00	700.00	955.00	955.00	2.51	38.20	-28.07	2,231.62	-1,189.91	2,529.04	2,488.33	40.71	62.124	
800.00	800.00	1,055.00	1,055.00	2.87	42.20	-28.07	2,231.62	-1,189.91	2,529.04	2,483.97	45.07	56.116	
900.00	900.00	1,155.00	1,155.00	3.23	46.20	-28.07	2,231.62	-1,189.91	2,529.04	2,479.61	49.43	51.168	
1,000.00	1,000.00	1,255.00	1,255.00	3.58	50.20	-28.07	2,231.62	-1,189.91	2,529.04	2,475.25	53.78	47.021	
1,100.00	1,100.00	1,355.00	1,355.00	3.94	54.20	-28.07	2,231.62	-1,189.91	2,529.04	2,470.89	58.14	43.497	
1,200.00	1,200.00	1,455.00	1,455.00	4.30	58.20	-28.07	2,231.62	-1,189.91	2,529.04	2,466.53	62.50	40.464	
1,300.00	1,300.00	1,555.00	1,555.00	4.66	62.20	-28.07	2,231.62	-1,189.91	2,529.04	2,462.18	66.86	37.826	
1,400.00	1,400.00	1,655.00	1,655.00	5.02	66.20	-28.07	2,231.62	-1,189.91	2,529.04	2,457.82	71.22	35.511	
1,500.00	1,500.00	1,755.00	1,755.00	5.38	70.20	-28.07	2,231.62	-1,189.91	2,529.04	2,453.46	75.58	33.463	
1,600.00	1,600.00	1,855.00	1,855.00	5.74	74.20	-28.07	2,231.62	-1,189.91	2,529.04	2,449.10	79.94	31.638	
1,700.00	1,700.00	1,955.00	1,955.00	6.09	78.20	-28.07	2,231.62	-1,189.91	2,529.04	2,444.74	84.29	30.003	
1,800.00	1,800.00	2,055.00	2,055.00	6.45	82.20	-28.07	2,231.62	-1,189.91	2,529.04	2,440.38	88.65	28.528	
1,900.00	1,900.00	2,155.00	2,155.00	6.81	86.20	-28.07	2,231.62	-1,189.91	2,529.04	2,436.03	93.01	27.191	
2,000.00	2,000.00	2,255.00	2,255.00	7.17	90.20	-28.07	2,231.62	-1,189.91	2,529.04	2,431.67	97.37	25.974	
2,100.00	2,100.00	2,355.00	2,355.00	7.53	94.20	-28.07	2,231.62	-1,189.91	2,529.04	2,427.31	101.73	24.861	
2,200.00	2,200.00	2,455.00	2,455.00	7.89	98.20	-28.07	2,231.62	-1,189.91	2,529.04	2,422.95	106.09	23.839	
2,300.00	2,300.00	2,555.00	2,555.00	8.24	102.20	-28.07	2,231.62	-1,189.91	2,529.04	2,418.59	110.44	22.899	
2,400.00	2,400.00	2,655.00	2,655.00	8.60	106.20	-28.07	2,231.62	-1,189.91	2,529.04	2,414.23	114.80	22.029	
2,500.00	2,500.00	2,755.00	2,755.00	8.96	110.20	-28.07	2,231.62	-1,189.91	2,529.04	2,409.87	119.16	21.224	
2,600.00	2,600.00	2,855.00	2,855.00	9.32	114.20	-28.07	2,231.62	-1,189.91	2,529.04	2,405.52	123.52	20.475	
2,700.00	2,700.00	2,955.00	2,955.00	9.68	118.20	-28.07	2,231.62	-1,189.91	2,529.04	2,401.16	127.88	19.777	
2,800.00	2,800.00	3,055.00	3,055.00	10.04	122.20	-28.07	2,231.62	-1,189.91	2,529.04	2,396.80	132.24	19.125	
2,900.00	2,900.00	3,155.00	3,155.00	10.40	126.20	-28.07	2,231.62	-1,189.91	2,529.04	2,392.44	136.60	18.515	
3,000.00	3,000.00	3,255.00	3,255.00	10.75	130.20	-28.07	2,231.62	-1,189.91	2,529.04	2,388.08	140.95	17.942	
3,100.00	3,100.00	3,355.00	3,355.00	11.11	134.20	-28.07	2,231.62	-1,189.91	2,529.04	2,383.72	145.31	17.404	
3,200.00	3,200.00	3,455.00	3,455.00	11.47	138.20	-28.07	2,231.62	-1,189.91	2,529.04	2,379.36	149.67	16.897	
3,300.00	3,300.00	3,555.00	3,555.00	11.83	142.20	-28.07	2,231.62	-1,189.91	2,529.04	2,375.01	154.03	16.419	
3,400.00	3,400.00	3,655.00	3,655.00	12.19	146.20	-28.07	2,231.62	-1,189.91	2,529.04	2,370.65	158.39	15.967	
3,500.00	3,500.00	3,755.00	3,755.00	12.55	150.20	-28.07	2,231.62	-1,189.91	2,529.04	2,366.29	162.75	15.540	
3,600.00	3,600.00	3,855.00	3,855.00	12.90	154.20	-28.07	2,231.62	-1,189.91	2,529.04	2,361.93	167.10	15.134	
3,700.00	3,699.95	3,954.95	3,954.95	13.26	158.20	-13.01	2,231.62	-1,189.91	2,526.49	2,355.02	171.46	14.735	
3,800.00	3,799.63	4,054.63	4,054.63	13.62	162.19	-13.10	2,231.62	-1,189.91	2,518.84	2,343.04	175.80	14.327	
3,900.00	3,898.77	4,153.77	4,153.77	13.98	166.15	-13.26	2,231.62	-1,189.91	2,506.13	2,326.00	180.12	13.913	
4,000.00	3,997.08	4,252.08	4,252.08	14.33	170.08	-13.48	2,231.62	-1,189.91	2,488.38	2,303.98	184.41	13.494	
4,100.00	4,094.31	4,349.31	4,349.31	14.69	173.97	-13.77	2,231.62	-1,189.91	2,465.66	2,277.02	188.64	13.070	
4,200.00	4,190.18	4,445.18	4,445.18	15.05	177.81	-14.14	2,231.62	-1,189.91	2,438.04	2,245.22	192.82	12.644	
4,300.00	4,284.43	4,539.43	4,539.43	15.43	181.58	-14.59	2,231.62	-1,189.91	2,405.59	2,208.66	196.93	12.215	
4,308.86	4,292.69	4,547.69	4,547.69	15.47	181.91	-14.63	2,231.62	-1,189.91	2,402.49	2,205.20	197.29	12.177	
4,400.00	4,377.63	4,632.63	4,632.63	15.82	185.31	-14.83	2,231.62	-1,189.91	2,370.38	2,169.39	200.99	11.793	
4,500.00	4,470.82	4,725.82	4,725.82	16.23	189.03	-15.06	2,231.62	-1,189.91	2,335.19	2,130.13	205.06	11.388	
4,600.00	4,464.01	4,819.01	4,819.01	16.65	192.76	-15.29	2,231.62	-1,189.91	2,300.02	2,090.90	209.13	10.998	
4,700.00	4,657.20	4,912.20	4,912.20	17.09	196.49	-15.53	2,231.62	-1,189.91	2,264.89	2,051.70	213.20	10.623	
4,800.00	4,750.39	5,005.39	5,005.39	17.53	200.22	-15.78	2,231.62	-1,189.91	2,229.80	2,012.53	217.28	10.262	
4,900.00	4,843.59	5,098.59	5,098.59	17.99	203.94	-16.04	2,231.62	-1,189.91	2,194.75	1,973.39	221.36	9.915	
5,000.00	4,936.78	5,191.78	5,191.78	18.46	207.67	-16.30	2,231.62	-1,189.91	2,159.74	1,934.29	225.44	9.580	

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



Scientific Drilling
Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6686' @ 6686.00ft
Reference Site:	San Juan 29-7 Unit NP 512 Pad	MD Reference:	GL 6686' @ 6686.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 100-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,100.00	5,029.97	5,284.97	5,284.97	18.94	211.40	-16.58	2,231.62	-1,189.91	2,124.76	1,895.23	229.53	9.257	
5,200.00	5,123.16	5,378.16	5,378.16	19.42	215.13	-16.86	2,231.62	-1,189.91	2,089.84	1,856.21	233.63	8.945	
5,300.00	5,216.35	5,471.35	5,471.35	19.92	218.85	-17.15	2,231.62	-1,189.91	2,054.96	1,817.23	237.73	8.644	
5,400.00	5,309.54	5,564.54	5,564.54	20.42	222.58	-17.45	2,231.62	-1,189.91	2,020.13	1,778.30	241.83	8.354	
5,500.00	5,402.73	5,657.73	5,657.73	20.93	226.31	-17.76	2,231.62	-1,189.91	1,985.35	1,739.41	245.93	8.073	
5,600.00	5,495.92	5,750.92	5,750.92	21.44	230.04	-18.09	2,231.62	-1,189.91	1,950.62	1,700.58	250.04	7.801	
5,700.00	5,589.11	5,844.11	5,844.11	21.96	233.76	-18.42	2,231.62	-1,189.91	1,915.95	1,661.80	254.15	7.539	
5,800.00	5,682.30	5,937.30	5,937.30	22.49	237.49	-18.77	2,231.62	-1,189.91	1,881.34	1,623.08	258.27	7.285	
5,826.83	5,707.31	5,962.31	5,962.31	22.63	238.49	-18.86	2,231.62	-1,189.91	1,872.07	1,612.70	259.37	7.218	
5,900.00	5,775.99	6,015.00	6,015.00	23.01	240.60	-18.81	2,231.62	-1,189.91	1,848.12	1,586.34	261.77	7.060	
6,000.00	5,871.31	6,015.00	6,015.00	23.51	240.60	-18.56	2,231.62	-1,189.91	1,822.75	1,560.94	261.80	6.962	
6,100.00	5,968.08	6,015.00	6,015.00	23.98	240.60	-18.41	2,231.62	-1,189.91	1,807.48	1,546.40	261.08	6.923 SF	
6,196.31	6,062.41	6,015.00	6,015.00	24.41	240.60	-18.36	2,231.62	-1,189.91	1,802.61	1,542.99	259.63	6.943 CC, ES	
6,200.00	6,066.04	6,015.00	6,015.00	24.42	240.60	-18.36	2,231.62	-1,189.91	1,802.62	1,543.06	259.56	6.945	
6,300.00	6,164.91	6,015.00	6,015.00	24.83	240.60	-18.42	2,231.62	-1,189.91	1,808.26	1,551.01	257.24	7.029	
6,400.00	6,264.43	6,015.00	6,015.00	25.21	240.60	-18.57	2,231.62	-1,189.91	1,824.28	1,570.07	254.20	7.176	
6,500.00	6,364.32	6,015.00	6,015.00	25.55	240.60	-18.83	2,231.62	-1,189.91	1,850.38	1,599.82	250.56	7.385	
6,535.69	6,400.00	6,015.00	6,015.00	25.67	240.60	-34.04	2,231.62	-1,189.91	1,862.04	1,612.90	249.13	7.474	
6,600.00	6,464.31	6,015.00	6,015.00	25.87	240.60	-34.04	2,231.62	-1,189.91	1,885.11	1,638.68	246.43	7.650	
6,700.00	6,564.31	6,015.00	6,015.00	26.19	240.60	-34.04	2,231.62	-1,189.91	1,924.71	1,682.82	241.89	7.957	
6,800.00	6,664.31	6,015.00	6,015.00	26.51	240.60	-34.04	2,231.62	-1,189.91	1,968.60	1,731.56	237.03	8.305	
6,900.00	6,764.31	6,015.00	6,015.00	26.83	240.60	-34.04	2,231.62	-1,189.91	2,016.49	1,784.55	231.94	8.694	
7,000.00	6,864.31	6,015.00	6,015.00	27.15	240.60	-34.04	2,231.62	-1,189.91	2,068.11	1,841.42	226.70	9.123	
7,100.00	6,964.31	6,015.00	6,015.00	27.47	240.60	-34.04	2,231.62	-1,189.91	2,123.20	1,901.83	221.36	9.592	
7,200.00	7,064.31	6,015.00	6,015.00	27.79	240.60	-34.04	2,231.62	-1,189.91	2,181.47	1,965.48	216.00	10.100	
7,300.00	7,164.31	6,015.00	6,015.00	28.12	240.60	-34.04	2,231.62	-1,189.91	2,242.70	2,032.05	210.65	10.647	
7,400.00	7,264.31	6,015.00	6,015.00	28.44	240.60	-34.04	2,231.62	-1,189.91	2,306.63	2,101.27	205.36	11.232	
7,500.00	7,364.31	6,015.00	6,015.00	28.77	240.60	-34.04	2,231.62	-1,189.91	2,373.06	2,172.89	200.17	11.855	
7,600.00	7,464.31	6,015.00	6,015.00	29.09	240.60	-34.04	2,231.62	-1,189.91	2,441.78	2,246.69	195.09	12.516	
7,700.00	7,564.31	6,015.00	6,015.00	29.42	240.60	-34.04	2,231.62	-1,189.91	2,512.60	2,322.45	190.15	13.214	
7,800.00	7,664.31	6,015.00	6,015.00	29.75	240.60	-34.04	2,231.62	-1,189.91	2,585.34	2,399.98	185.36	13.948	
7,900.00	7,764.31	6,015.00	6,015.00	30.08	240.60	-34.04	2,231.62	-1,189.91	2,659.86	2,479.13	180.73	14.717	
8,000.00	7,864.31	6,015.00	6,015.00	30.41	240.60	-34.04	2,231.62	-1,189.91	2,736.00	2,559.74	176.26	15.522	
8,100.00	7,964.31	6,015.00	6,015.00	30.74	240.60	-34.04	2,231.62	-1,189.91	2,813.64	2,641.67	171.97	16.361	
8,200.00	8,064.31	6,015.00	6,015.00	31.07	240.60	-34.04	2,231.62	-1,189.91	2,892.65	2,724.81	167.84	17.235	
8,235.69	8,100.00	6,015.00	6,015.00	31.18	240.60	-34.04	2,231.62	-1,189.91	2,921.16	2,754.75	166.41	17.554	

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



Scientific Drilling Anticollision Report



Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6686' @ 6686.00ft
Reference Site:	San Juan 29-7 Unit NP 512 Pad	MD Reference:	GL 6686' @ 6686.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to GL 6686' @ 6686.00ft

Offset Depths are relative to Offset Datum

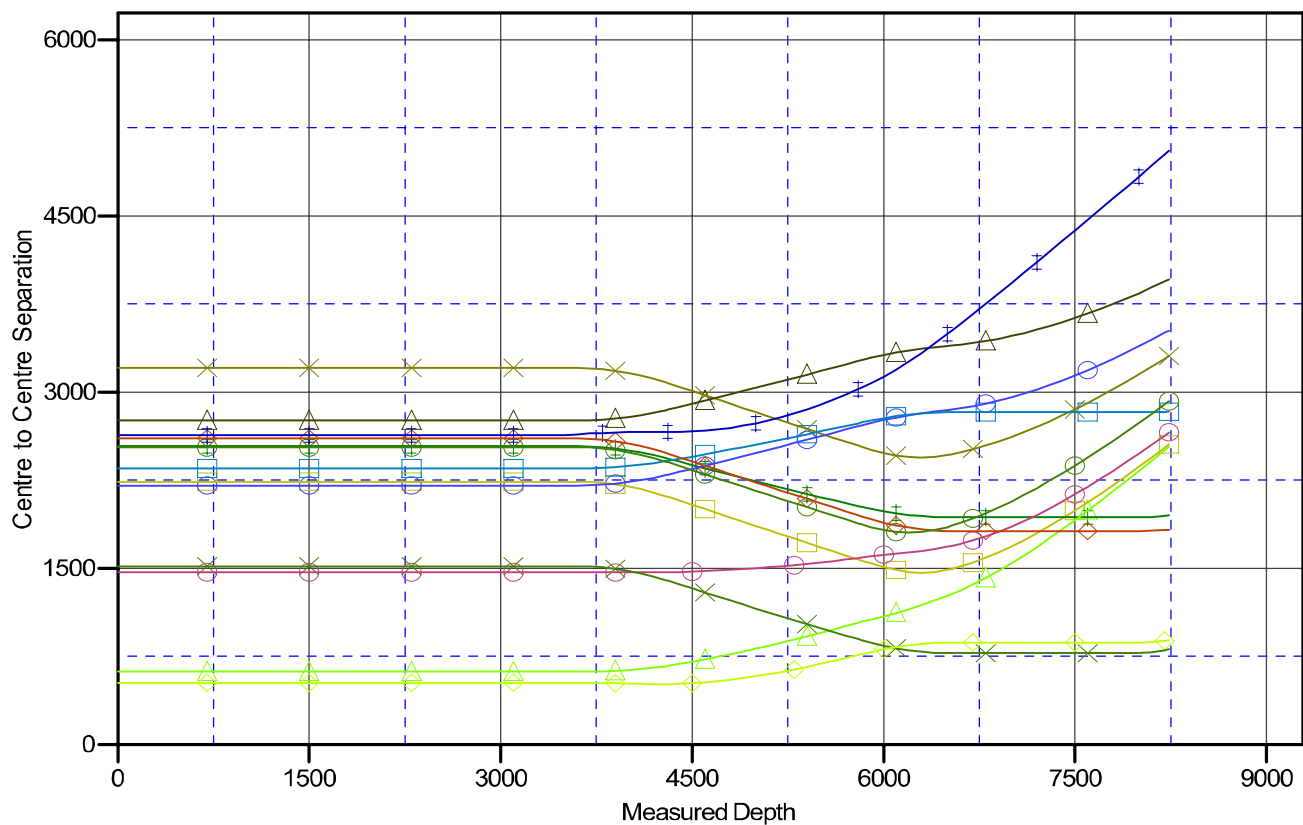
Central Meridian is -107.8333334

Coordinates are relative to: San Juan 29-7 Unit NP 512

Coordinate System is US State Plane 1927 (Exact solution), New Mexico West 30

Grid Convergence at Surface is: 0.13°

Ladder Plot



LEGEND

San Juan 29-7 UN 076B, OH, OH V0	San Juan 29-7 UN 094A, OH, OH V0	San Juan 29-7 UN 94, OH, OH V0
San Juan 29-7 UN 076R, OH, OH V0	San Juan 29-7 UN 117, OH, OH V0	San Juan 29-7 UN NP 511, OH, OH V0
San Juan 29-7 UN 081A, OH, OH V0	San Juan 29-7 UN 117M, OH, OH V0	Tom Bolack 001, OH, OH V0
San Juan 29-7 UN 087, OH, OH V0	San Juan 29-7 UN 126, OH, OH V0	
San Juan 29-7 UN 087B, OH, OH V0	San Juan 29-7 UN 127, OH, OH V0	

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Scientific Drilling Anticollision Report

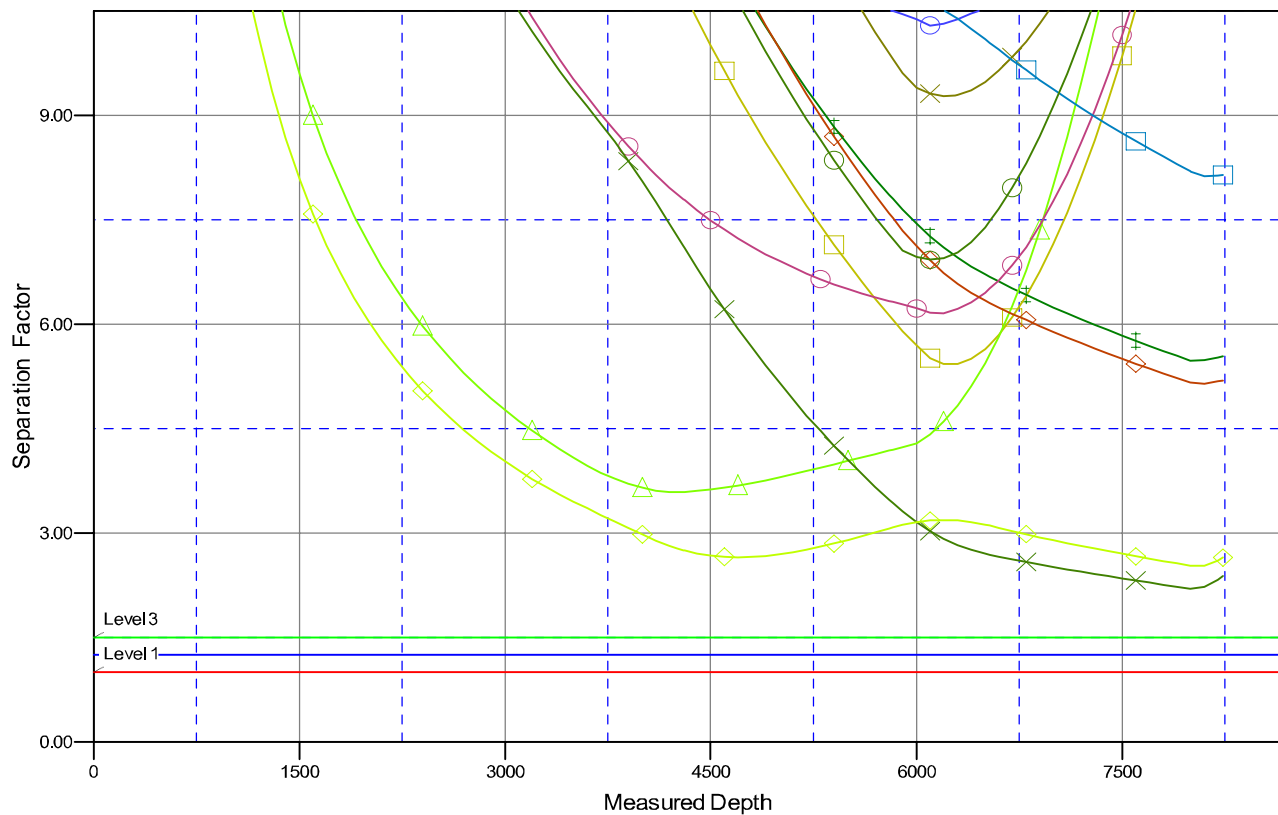


Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well San Juan 29-7 Unit NP 512
Project:	Rio Arriba, NM NAD27	TVD Reference:	GL 6686' @ 6686.00ft
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Reference Well:	San Juan 29-7 Unit NP 512	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to GL 6686' @ 6686.00ft
Offset Depths are relative to Offset Datum
Central Meridian is -107.833334

Coordinates are relative to: San Juan 29-7 Unit NP 512
Coordinate System is US State Plane 1927 (Exact solution), New Mexico West 30
Grid Convergence at Surface is: 0.13°

Separation Factor Plot



LEGEND

San Juan 29-7 UN 076B, OH, OH V0	San Juan 29-7 UN 094A, OH, OH V0	San Juan 29-7 UN 94, OH, OH V0
San Juan 29-7 UN 076R, OH, OH V0	San Juan 29-7 UN 117, OH, OH V0	San Juan 29-7 UN NP 511, OH, OH V0
San Juan 29-7 UN 081A, OH, OH V0	San Juan 29-7 UN 117M, OH, OH V0	Tom Bolack 001, OH, OH V0
San Juan 29-7 UN 087, OH, OH V0	San Juan 29-7 UN 126, OH, OH V0	
San Juan 29-7 UN 087B, OH, OH V0	San Juan 29-7 UN 127, OH, OH V0	

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

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 357100

CONDITIONS

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID:
	372171
	Action Number:
	357100
Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)	

CONDITIONS

Created By	Condition	Condition Date
ward.rikala	Notify OCD 24 hours prior to casing & cement	7/23/2024
ward.rikala	Will require a File As Drilled C-102 and a Directional Survey with the C-104	7/23/2024
ward.rikala	If cement does not circulate on any string, a CBL is required for that string of casing	7/23/2024
ward.rikala	TOC is required to be 100' above the top perforation in the Fruitland formation.	7/23/2024
ward.rikala	DHC approval is required if the well is to be commingled.	7/23/2024