

DISTRICT I  
1625 N. French Dr., Hobbs, N.M. 88240  
Phone: (575) 393-6161 Fax: (575) 393-0720

DISTRICT II  
811 S. First St., Artesia, N.M. 88210  
Phone: (575) 748-1283 Fax: (575) 748-9720

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

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

State of New Mexico  
Energy, Minerals & Natural Resources Department

## OIL CONSERVATION DIVISION

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

AS DRILLED PLAT

Form C-102  
Revised August 1, 2011  
Submit one copy to appropriate  
District Office

☐ AMENDED REPORT

### WELL LOCATION AND ACREAGE DEDICATION PLAT

<sup>1</sup> API Number 30-045-29363	<sup>2</sup> Pool Code 71629	<sup>3</sup> Pool Name BASIN FRUITLAND COAL LATERAL 1
<sup>4</sup> Property Code 318864	<sup>5</sup> Property Name ALLISON UNIT	<sup>6</sup> Well Number 145 H
<sup>7</sup> OGRID No. 372171	<sup>8</sup> Operator Name HILCORP ENERGY COMPANY	<sup>9</sup> Elevation 6519'

#### <sup>10</sup> Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	7	32-N	6-W	7	880	SOUTH	925	WEST	SAN JUAN

#### <sup>11</sup> 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	13	32-N	7-W		209	NORTH	1779	EAST	SAN JUAN

<sup>12</sup> Dedicated Acres PROJECT AREA 637.04 ACRES HSH-957.04	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> Order No. R-8768-C
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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

NMOC  
JUL 26 2018  
DISTRICT III

SURFACE  
LATITUDE: 36°59.3992' N  
LONGITUDE: 107°30.3216' W  
NAD27

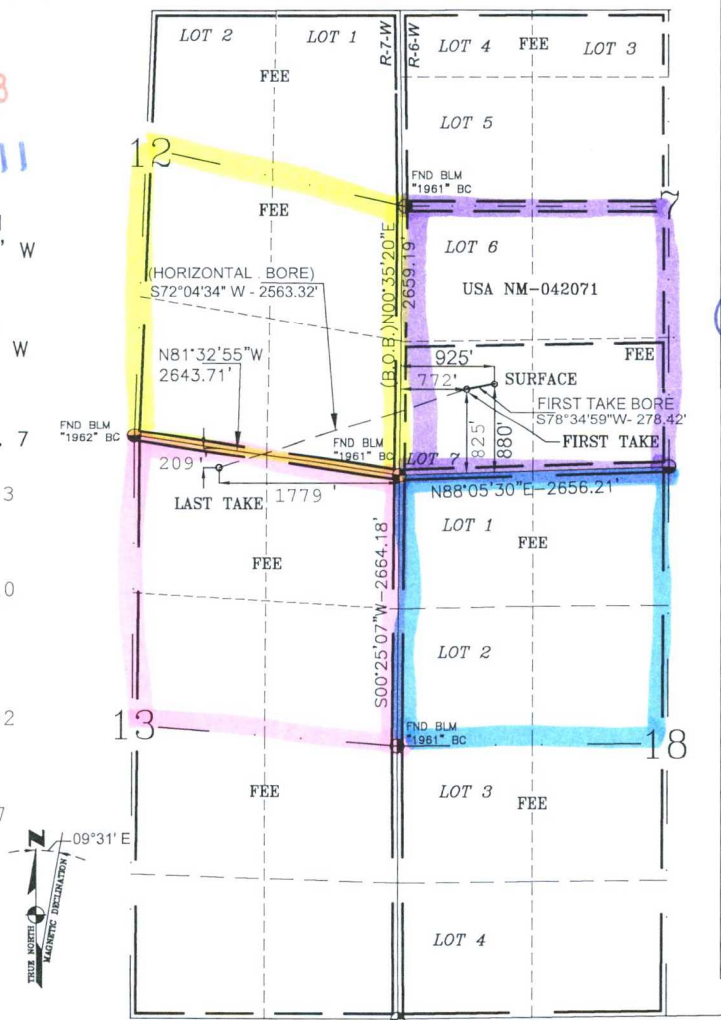
LATITUDE: 36.989992° N  
LONGITUDE: 107.505966° W  
NAD83

FIRST TAKE  
825' FSL 722' FWL SEC. 7  
LATITUDE: 36.989840  
LONGITUDE: -107.506603  
NAD27

LATITUDE: 36.989845  
LONGITUDE: -107.507210  
NAD83

LAST TAKE  
LATITUDE: 36.9876392  
LONGITUDE: -107.5146502  
NAD27

LATITUDE: 36.987644  
LONGITUDE: -107.515257  
NAD83



#### 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 a working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

160 160 158.27 158.77

*Amanda Walker*  
Signature Date 7/26/2018

Amanda Walker

Printed Name

mwalker@hilcorp.com

E-mail Address

#### 18 SURVEYOR CERTIFICATION

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

Original C-102 Attached

GLEN W. RUSSELL

Certificate Number

15703

DISTRICT I  
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☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

<sup>1</sup> API Number 30-045-29363	<sup>2</sup> Pool Code 71629	<sup>3</sup> Pool Name BASIN FRUITLAND COAL LATERAL 1 SIDETRACK 1
<sup>4</sup> Property Code 318864	<sup>5</sup> Property Name ALLISON UNIT	<sup>6</sup> Well Number 145 H
<sup>7</sup> OGRID No. 372171	<sup>8</sup> Operator Name HILCORP ENERGY COMPANY	<sup>9</sup> Elevation 6519'

<sup>10</sup> Surface Location

UL or lot no. M	Section 7	Township 32-N	Range 6-W	Lot Idn 7	Feet from the 880	North/South line SOUTH	Feet from the 925	East/West line WEST	County SAN JUAN
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<sup>11</sup> Bottom Hole Location If Different From Surface

UL or lot no. H	Section 13	Township 32-N	Range 7-W	Lot Idn	Feet from the 1838'	North/South line NORTH	Feet from the 816'	East/West line EAST	County SAN JUAN
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<sup>12</sup> Dedicated Acres PROJECT AREA 637.04 ACRES HSH = 957.04	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> Order No. R-8768-C
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OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

NMOCD

JUL 26 2018

DISTRICT III

SURFACE

LATITUDE: 36°59.3992' N  
LONGITUDE: 107°30.3216' W  
NAD27

LATITUDE: 36.989992° N  
LONGITUDE: 107.505966° W  
NAD83

FIRST TAKE

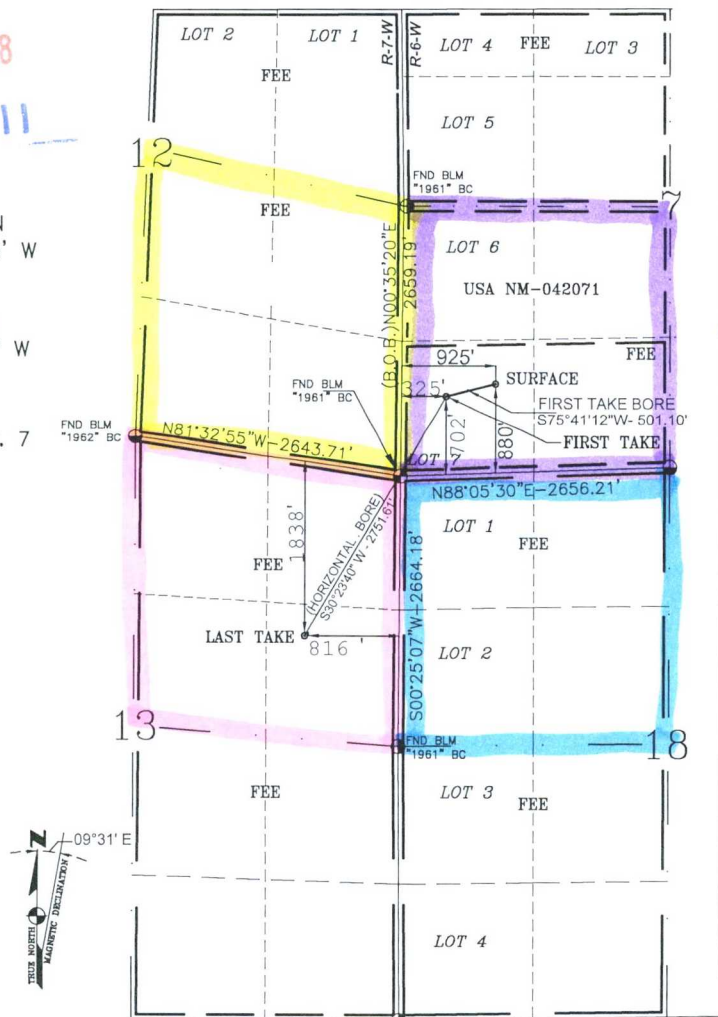
702' FSL 325' FWL SEC. 7  
LATITUDE: 36.989837  
LONGITUDE: -107.506620  
NAD27

LATITUDE: 36.989842  
LONGITUDE: -107.504312  
NAD83

LAST TAKE

LATITUDE: 36.982825  
LONGITUDE: 107.511394  
NAD27

LATITUDE: 36.982830  
LONGITUDE: -107.512001  
NAD83



<sup>17</sup> OPERATOR CERTIFICATION

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Signature: Amanda Walker  
Date: 7/26/2018  
Printed Name: Amanda Walker  
E-mail Address: mwalker@hilcorp.com

<sup>18</sup> SURVEYOR CERTIFICATION

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AS DRILLED PLAT

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

<sup>1</sup> API Number 30-045-29363	<sup>2</sup> Pool Code 71629	<sup>3</sup> Pool Name BASIN FRUITLAND COAL LATERAL 1 SIDETRACK 2
<sup>4</sup> Property Code 318864	<sup>5</sup> Property Name ALLISON UNIT	<sup>6</sup> Well Number 145 H
<sup>7</sup> OGRID No. 372171	<sup>8</sup> Operator Name HILCORP ENERGY COMPANY	<sup>9</sup> Elevation 6519'

<sup>10</sup> Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	7	32-N	6-W	7	880	SOUTH	925	WEST	SAN JUAN

<sup>11</sup> 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
H	13	32-N	7-W		1838'	NORTH	816'	EAST	SAN JUAN

<sup>12</sup> Dedicated Acres PROJECT AREA 637.04 ACRES HSH = 957.04	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> Order No. R-8768-C
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NMOCD

JUL 26 2018

DISTRICT III

SURFACE  
LATITUDE: 36°59.3992' N  
LONGITUDE: 107°30.3216' W  
NAD27

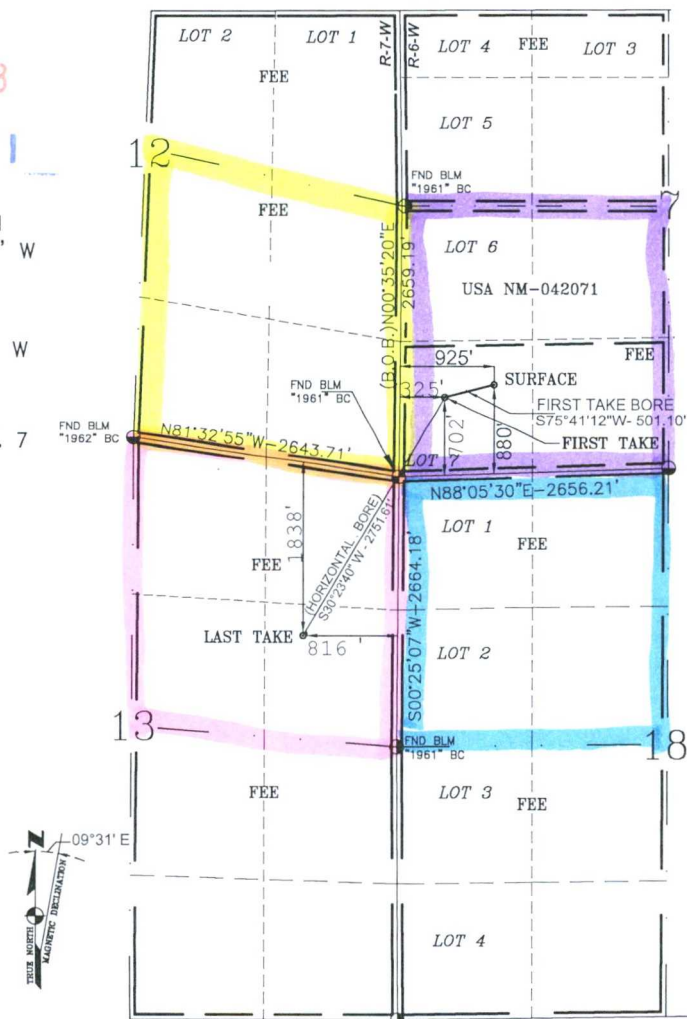
LATITUDE: 36.989992° N  
LONGITUDE: 107.505966° W  
NAD83

FIRST TAKE  
702' FSL 325' FWL SEC. 7  
LATITUDE: 36.989837  
LONGITUDE: -107.506620  
NAD27

LATITUDE: 36.989842  
LONGITUDE: -107.504312  
NAD83

LAST TAKE  
LATITUDE: 36.982825  
LONGITUDE: 107.511394  
NAD27

LATITUDE: 36.982830  
LONGITUDE: -107.512001  
NAD83



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100 100 58.27 158.77

*Amanda Walker* 7/26/2018  
Signature Date

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

<sup>18</sup> SURVEYOR CERTIFICATION

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☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

<sup>1</sup> API Number <b>30-045-29363</b>	<sup>2</sup> Pool Code <b>71629</b>	<sup>3</sup> Pool Name <b>BASIN FRUITLAND COAL LATERAL 2</b>
<sup>4</sup> Property Code <b>318864</b>	<sup>5</sup> Property Name <b>ALLISON UNIT</b>	<sup>6</sup> Well Number <b>145 H</b>
<sup>7</sup> OGRID No. <b>372171</b>	<sup>8</sup> Operator Name <b>HILCORP ENERGY COMPANY</b>	<sup>9</sup> Elevation <b>6519'</b>

<sup>10</sup> Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
<b>M</b>	<b>7</b>	<b>32-N</b>	<b>6-W</b>	<b>7</b>	<b>880</b>	<b>SOUTH</b>	<b>925</b>	<b>WEST</b>	<b>SAN JUAN</b>

<sup>11</sup> 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>A</b>	<b>18</b>	<b>32-N</b>	<b>6-W</b>		<b>498'</b>	<b>NORTH</b>	<b>1189'</b>	<b>EAST</b>	<b>SAN JUAN</b>

<sup>12</sup> Dedicated Acres PROJECT AREA: 637.04 ACRES <b>H34 = 957.04</b>	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> Order No. <b>R-8768-C</b>
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NMOCB

JUL 26 2018

DISTRICT III

SURFACE  
LATITUDE: 36°59.3992' N  
LONGITUDE: 107°30.3216' W  
NAD27

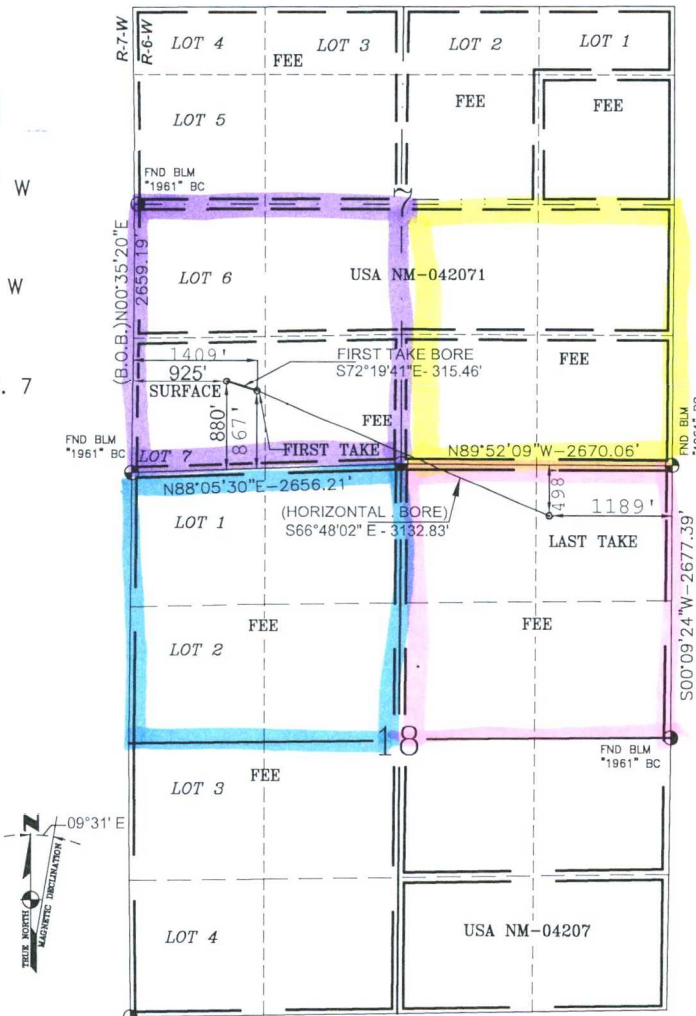
LATITUDE: 36.989992° N  
LONGITUDE: 107.505966° W  
NAD83

FIRST TAKE  
867' FSL 1409' FWL SEC. 7  
LATITUDE: 36.989466  
LONGITUDE: -107.503706  
NAD27

LATITUDE: 36.989471  
LONGITUDE: -107.504312  
NAD83

LAST TAKE  
LATITUDE: 36.986348  
LONGITUDE: -107.494411  
NAD27

LATITUDE: 36.986353  
LONGITUDE: -107.495016  
NAD83



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**158.07 158.77 160 160**

*Amanda Walker* 7/26/2018  
Signature Date

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

18 SURVEYOR CERTIFICATION

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Original C-102 Attached

Certificate Number **15703**

DISTRICT II  
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Geology, Minerals & Natural Resources Department  
OIL CONSERVATION DIVISION  
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## WELL LOCATION AND ACREAGE DEDICATION PLAT

<sup>1</sup> API Number 30-045-29363		<sup>2</sup> Pool Code 71629	<sup>3</sup> Pool Name BASIN FRUITLAND COAL LATERAL 2 SIDETRACK 1
<sup>4</sup> Property Code 318864	<sup>5</sup> Property Name ALLISON UNIT		<sup>6</sup> Well Number 145 H
<sup>7</sup> OGRID No. 372171	<sup>8</sup> Operator Name HILCORP ENERGY COMPANY		<sup>9</sup> Elevation 6519'

<sup>10</sup> Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	7	32-N	6-W	7	880	SOUTH	925	WEST	SAN JUAN

<sup>11</sup> 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
G	18	32-N	6-W		2042'	NORTH	2555'	EAST	SAN JUAN

<sup>12</sup> Dedicated Acres PROJECT AREA 637.04 ACRES HSN = 957.04	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> Order No.  R-8768-C
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NMCD

JUL 26 2018

SURFACE  
LATITUDE: 36°59.3992' N  
LONGITUDE: 107°30.3216' W  
NAD27

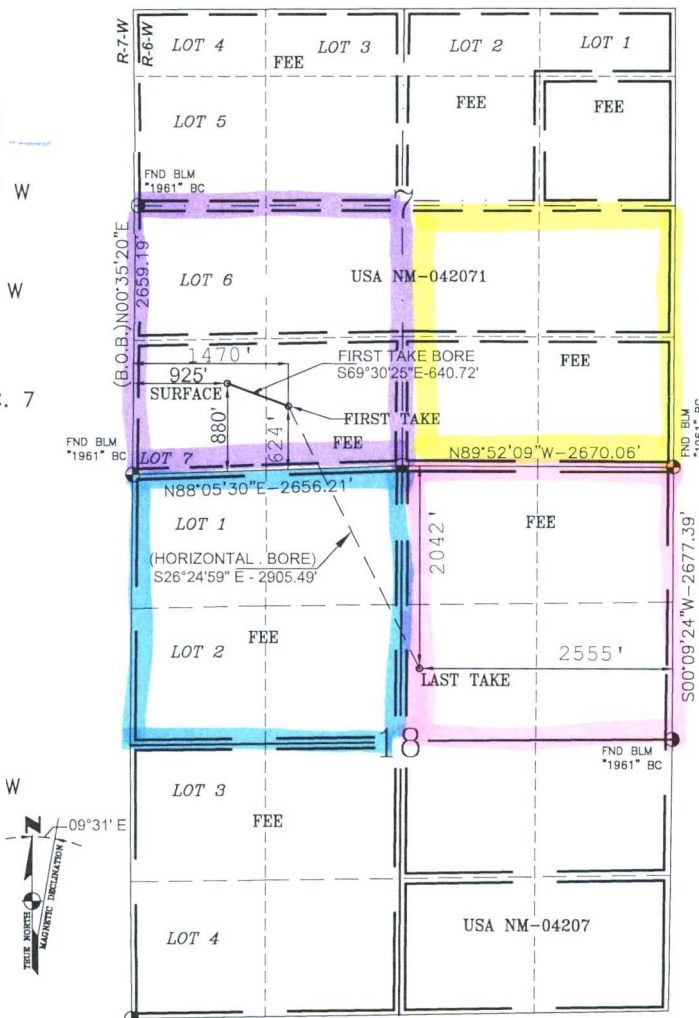
LATITUDE: 36.989992° N  
LONGITUDE: 107.505966° W  
NAD83

FIRST TAKE  
624' FSL 1470' FWL SEC. 7  
LATITUDE: 36.989402  
LONGITUDE:-107.503506  
NAD27

LATITUDE: 36.989407  
LONGITUDE: -107.504112  
NAD83

LAST TAKE  
LATITUDE: 36.982123  
LONGITUDE:-107.499103  
NAD27

LATITUDE: 36.982128  
LONGITUDE: -107.499709  
NAD83



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158.27 158.77 160 160

*Amber G. Calkins* 7/26/2018

Signature \_\_\_\_\_ Date \_\_\_\_\_  
Amanda Walker  
Printed Name \_\_\_\_\_  
mwalker@hilcorp.com  
E-mail Address \_\_\_\_\_

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<sup>10</sup> Surface Location

UL or lot no. M	Section 7	Township 32-N	Range 6-W	Lot Idn 7	Feet from the 880	North/South line SOUTH	Feet from the 925	East/West line WEST	County SAN JUAN
--------------------	--------------	------------------	--------------	--------------	----------------------	---------------------------	----------------------	------------------------	--------------------

<sup>11</sup> Bottom Hole Location If Different From Surface

UL or lot no. G	Section 18	Township 32-N	Range 6-W	Lot Idn	Feet from the 2042'	North/South line NORTH	Feet from the 2555'	East/West line EAST	County SAN JUAN
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NMOCB

JUL 26 2018

DISTRICT III

SURFACE  
LATITUDE: 36°59.3992' N  
LONGITUDE: 107°30.3216' W  
NAD27

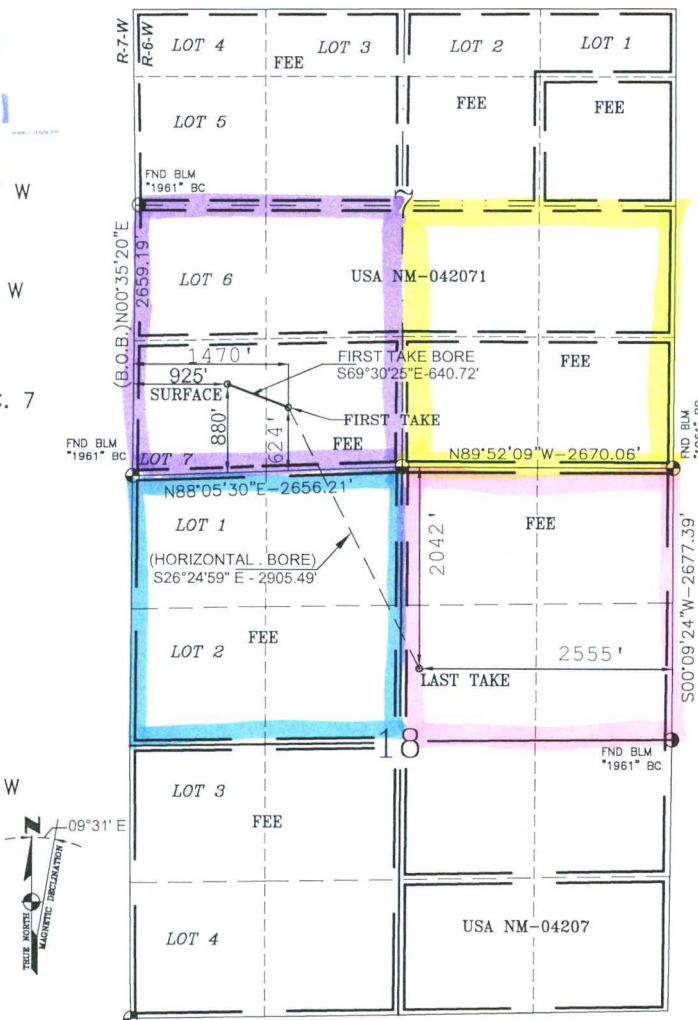
LATITUDE: 36.989992° N  
LONGITUDE: 107.505966° W  
NAD83

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624' FSL 1470' FWL SEC. 7  
LATITUDE: 36.989402  
LONGITUDE: -107.503506  
NAD27

LATITUDE: 36.989407  
LONGITUDE: -107.504112  
NAD83

LAST TAKE  
LATITUDE: 36.982123  
LONGITUDE: -107.499103  
NAD27

LATITUDE: 36.982128  
LONGITUDE: -107.499709  
NAD83



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158.27 158.77 160 160  
Signature: Amanda Walker  
Date: 7/26/2018  
Printed Name: Amanda Walker  
E-mail Address: mwalker@hilcorp.com

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Original C-102 Attached

Certificate Number 15703

Well Name: ALLISON UNIT #145


Operator HILCORP SAN JUAN, L.P.	Legal WellName ALLISON UNIT #145	API / UWI 3004529363	County SAN JUAN	State/Province NEW MEXICO
Surface Legal Location 007-032N-006W-M	North/South Distance (ft) 880.0	N/S Ref FSL	East/West Distance (ft) 925.0	EW Ref FWL

Date	Description MAIN WELLBORE
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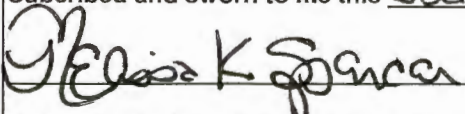
## Survey Data

Date	MD (ftKB)	Incl (")	Azm (")	Method	Survey Company
6/6/1996	0.00	0.00	0.00		
6/2/1996	155.00	0.75	0.00	MS	
6/3/1996	585.00	0.75	0.00	MS	
6/3/1996	1,070.00	0.25	0.00	MS	
6/4/1996	1,570.00	0.25	0.00	MS	
6/4/1996	1,976.00	1.00	0.00	MS	
6/4/1996	2,470.00	0.75	0.00	MS	
6/5/1996	2,955.00	1.00	0.00	MS	

I, the undersigned, certify that I acting in my capacity as Operations Manager for Hilcorp Energy Company, am authorized by said Company to make this report; and that said report was prepared under my supervision and directions, and that the facts stated herein are true to the best of my knowledge and belief.

  
Thomas R. Jacques

Subscribed and sworn to me this July 12, 2018

 #1113572

Notary Public in and for San Juan County, New Mexico

My Commission expires Nov. 4, 2019

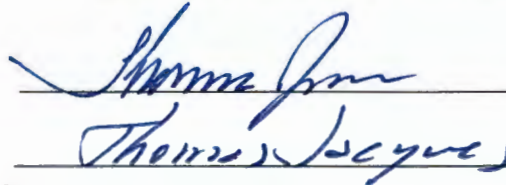


54

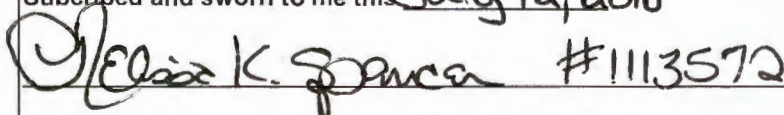
Well Name: ALLISON UNIT #145

Operator HILCORP SAN JUAN, L.P.		Legal WellName ALLISON UNIT #145		API / UWI 3004529363		County SAN JUAN		State/Province NEW MEXICO	
Surface Legal Location 007-032N-006W-M				North/South Distance (ft) 880.0		N/S Ref FSL		East/West Distance (ft) 925.0	
Date		Description INCLINATION SURVEY							
<b>Survey Data</b>									
Date	MD (ftKB)	Incl (°)	Azm (°)	Method		Survey Company			
Date 6/18/2018		Description DIRECTIONAL SURVEY							
<b>Survey Data</b>									
Date	MD (ftKB)	Incl (°)	Azm (°)	Method		Survey Company			
6/18/2018	-4.00	0.00	0.00	IncAzi-MWD		Scientific Drilling			
6/18/2018	-2.00	0.00	0.00	IncAzi-MWD		Scientific Drilling			
6/18/2018	153.00	0.75	0.00	IncAzi-MWD		Scientific Drilling			
6/18/2018	583.00	0.75	0.00	IncAzi-MWD		Scientific Drilling			
6/18/2018	1,068.00	0.25	0.00	IncAzi-MWD		Scientific Drilling			
6/18/2018	1,568.00	0.25	0.00	IncAzi-MWD		Scientific Drilling			
6/18/2018	1,973.00	1.00	0.00	IncAzi-MWD		Scientific Drilling			
6/18/2018	2,468.00	0.75	0.00	IncAzi-MWD		Scientific Drilling			
6/18/2018	2,722.36	0.88	0.00	IncAzi-MWD		Scientific Drilling			
6/18/2018	2,756.00	8.53	266.72	IncAzi-MWD		Scientific Drilling			
6/18/2018	2,787.00	14.16	262.94	IncAzi-MWD		Scientific Drilling			
6/18/2018	2,804.00	17.50	263.41	IncAzi-MWD		Scientific Drilling			
6/18/2018	2,835.00	22.29	259.60	IncAzi-MWD		Scientific Drilling			
6/18/2018	2,861.00	27.44	259.78	IncAzi-MWD		Scientific Drilling			
6/18/2018	2,892.00	33.73	258.23	IncAzi-MWD		Scientific Drilling			
6/18/2018	2,924.00	43.81	258.43	IncAzi-MWD		Scientific Drilling			
6/18/2018	2,955.00	53.62	258.57	IncAzi-MWD		Scientific Drilling			
6/18/2018	2,969.00	58.36	257.38	IncAzi-MWD		Scientific Drilling			
6/18/2018	3,001.00	66.54	256.39	IncAzi-MWD		Scientific Drilling			
6/18/2018	3,032.00	70.88	255.97	IncAzi-MWD		Scientific Drilling			
6/18/2018	3,063.00	74.22	256.11	IncAzi-MWD		Scientific Drilling			
6/18/2018	3,125.00	77.47	255.73	IncAzi-MWD		Scientific Drilling			
6/18/2018	3,186.00	79.58	255.87	IncAzi-MWD		Scientific Drilling			
6/18/2018	3,247.00	88.62	255.80	IncAzi-MWD		Scientific Drilling			
6/18/2018	3,309.00	92.86	256.61	IncAzi-MWD		Scientific Drilling			
6/18/2018	3,370.00	91.98	256.88	IncAzi-MWD		Scientific Drilling			
6/18/2018	3,431.00	90.97	253.51	IncAzi-MWD		Scientific Drilling			
6/18/2018	3,492.00	89.73	252.72	IncAzi-MWD		Scientific Drilling			
6/18/2018	3,554.00	90.44	252.32	IncAzi-MWD		Scientific Drilling			

I, the undersigned, certify that I acting in my capacity as OPS Manager for Hilcorp Energy Company, am authorized by said Company to make this report; and that said report was prepared under my supervision and directions, and that the facts stated herein are true to the best of my knowledge and belief.

  
Thomas J. Jones

Subscribed and sworn to me this July 12, 2018

 #1113572

Notary Public in and for San Juan County, New Mexico

My Commission expires Nov. 4, 2019




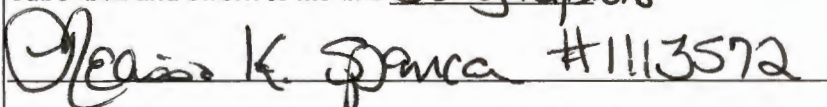
Well Name: ALLISON UNIT #145

## Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	Method	Survey Company
6/18/2018	3,615.00	90.47	248.59	IncAzi-MWD	Scientific Drilling
6/18/2018	3,676.00	88.76	250.18	IncAzi-MWD	Scientific Drilling
6/18/2018	3,737.00	89.87	252.34	IncAzi-MWD	Scientific Drilling
6/18/2018	3,799.00	89.97	252.25	IncAzi-MWD	Scientific Drilling
6/18/2018	3,860.00	89.97	247.36	IncAzi-MWD	Scientific Drilling
6/18/2018	3,921.00	89.70	248.01	IncAzi-MWD	Scientific Drilling
6/18/2018	3,983.00	87.32	248.23	IncAzi-MWD	Scientific Drilling
6/18/2018	4,044.00	85.98	247.74	IncAzi-MWD	Scientific Drilling
6/18/2018	4,105.00	84.87	248.62	IncAzi-MWD	Scientific Drilling
6/18/2018	4,166.00	85.59	248.40	IncAzi-MWD	Scientific Drilling
6/18/2018	4,197.00	85.64	248.60	IncAzi-MWD	Scientific Drilling
6/18/2018	4,228.00	85.80	247.77	IncAzi-MWD	Scientific Drilling
6/18/2018	4,289.00	87.42	248.40	IncAzi-MWD	Scientific Drilling
6/18/2018	4,350.00	87.68	247.76	IncAzi-MWD	Scientific Drilling
6/18/2018	4,412.00	85.37	248.42	IncAzi-MWD	Scientific Drilling
6/18/2018	4,473.00	87.75	246.98	IncAzi-MWD	Scientific Drilling
6/18/2018	4,534.00	88.73	247.55	IncAzi-MWD	Scientific Drilling
6/18/2018	4,596.00	88.19	250.85	IncAzi-MWD	Scientific Drilling
6/18/2018	4,657.00	89.50	250.41	IncAzi-MWD	Scientific Drilling
6/18/2018	4,718.00	89.03	250.91	IncAzi-MWD	Scientific Drilling
6/18/2018	4,780.00	90.50	251.35	IncAzi-MWD	Scientific Drilling
6/18/2018	4,841.00	91.48	251.56	IncAzi-MWD	Scientific Drilling
6/18/2018	4,902.00	92.95	252.74	IncAzi-MWD	Scientific Drilling
6/18/2018	4,965.00	94.10	253.36	IncAzi-MWD	Scientific Drilling
6/18/2018	5,028.00	93.72	252.25	IncAzi-MWD	Scientific Drilling
6/18/2018	5,091.00	89.46	251.52	IncAzi-MWD	Scientific Drilling
6/18/2018	5,154.00	87.68	252.18	IncAzi-MWD	Scientific Drilling
6/18/2018	5,217.00	89.10	253.23	IncAzi-MWD	Scientific Drilling
6/18/2018	5,280.00	90.34	252.42	IncAzi-MWD	Scientific Drilling
6/18/2018	5,342.00	89.33	251.94	IncAzi-MWD	Scientific Drilling
6/18/2018	5,405.00	87.22	251.55	IncAzi-MWD	Scientific Drilling
6/18/2018	5,468.00	87.92	251.36	IncAzi-MWD	Scientific Drilling
6/18/2018	5,531.00	89.30	251.19	IncAzi-MWD	Scientific Drilling
6/18/2018	5,594.00	88.02	251.95	IncAzi-MWD	Scientific Drilling
6/18/2018	5,656.00	91.17	252.48	IncAzi-MWD	Scientific Drilling
6/18/2018	5,734.00	91.17	252.48	IncAzi-MWD	Scientific Drilling

I, the undersigned, certify that I acting in my capacity as OPS Manager for Hilcorp Energy Company, am authorized by said Company to make this report; and that said report was prepared under my supervision and directions, and that the facts stated herein are true to the best of my knowledge and belief.

  
Thomas J. Jagers

Subscribed and sworn to me this July 12, 2018  
 #1113572

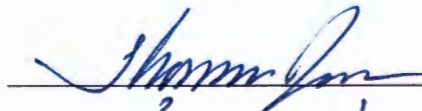
Notary Public in and for San Juan County, New Mexico

My Commission expires Nov. 4, 2019

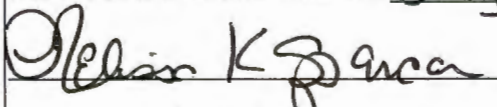

Well Name: ALLISON UNIT #145

Operator HILCORP SAN JUAN, L.P.	Legal WellName ALLISON UNIT #145	API / UWI 3004529363	County SAN JUAN	State/Province NEW MEXICO	
Surface Legal Location 007-032N-006W-M		North/South Distance (ft) 880.0	N/S Ref FSL	East/West Distance (ft) 925.0	E/W Ref FWL
Date 6/21/2018		Description DIRECTIONAL SURVEY			
Survey Data					
Date	MD (ftKB)	Incl (")	Azm (")	Method	Survey Company
6/21/2018	-4.00	0.00	0.00	IncAzi-MWD	Scientific Drilling
6/21/2018	-2.00	0.00	0.00	IncAzi-MWD	Scientific Drilling
6/21/2018	153.00	0.75	0.00	IncAzi-MWD	Scientific Drilling
6/21/2018	583.00	0.75	0.00	IncAzi-MWD	Scientific Drilling
6/21/2018	1,068.00	0.25	0.00	IncAzi-MWD	Scientific Drilling
6/21/2018	1,568.00	0.25	0.00	IncAzi-MWD	Scientific Drilling
6/21/2018	1,973.00	1.00	0.00	IncAzi-MWD	Scientific Drilling
6/21/2018	2,468.00	0.75	0.00	IncAzi-MWD	Scientific Drilling
6/21/2018	2,722.36	0.88	0.00	IncAzi-MWD	Scientific Drilling
6/21/2018	2,756.00	8.53	266.72	IncAzi-MWD	Scientific Drilling
6/21/2018	2,787.00	14.16	262.94	IncAzi-MWD	Scientific Drilling
6/21/2018	2,804.00	17.50	263.41	IncAzi-MWD	Scientific Drilling
6/21/2018	2,835.00	22.29	259.60	IncAzi-MWD	Scientific Drilling
6/21/2018	2,861.00	27.44	259.78	IncAzi-MWD	Scientific Drilling
6/21/2018	2,892.00	33.73	258.23	IncAzi-MWD	Scientific Drilling
6/21/2018	2,924.00	43.81	258.43	IncAzi-MWD	Scientific Drilling
6/21/2018	2,955.00	53.62	258.57	IncAzi-MWD	Scientific Drilling
6/21/2018	2,969.00	58.36	257.38	IncAzi-MWD	Scientific Drilling
6/21/2018	3,001.00	66.54	256.39	IncAzi-MWD	Scientific Drilling
6/21/2018	3,032.00	70.88	255.97	IncAzi-MWD	Scientific Drilling
6/21/2018	3,063.00	74.22	256.11	IncAzi-MWD	Scientific Drilling
6/21/2018	3,125.00	77.47	255.73	IncAzi-MWD	Scientific Drilling
6/21/2018	3,186.00	79.58	255.87	IncAzi-MWD	Scientific Drilling
6/21/2018	3,247.00	88.62	255.80	IncAzi-MWD	Scientific Drilling
6/21/2018	3,309.00	92.86	256.61	IncAzi-MWD	Scientific Drilling
6/21/2018	3,370.00	91.98	256.88	IncAzi-MWD	Scientific Drilling
6/21/2018	3,431.00	90.97	253.51	IncAzi-MWD	Scientific Drilling
6/21/2018	3,440.00	88.96	253.20	IncAzi-MWD	Scientific Drilling
6/21/2018	3,503.00	88.36	250.42	IncAzi-MWD	Scientific Drilling
6/21/2018	3,688.00	92.22	244.20	IncAzi-MWD	Scientific Drilling
6/21/2018	3,750.00	90.91	241.66	IncAzi-MWD	Scientific Drilling
6/21/2018	3,811.00	89.40	237.77	IncAzi-MWD	Scientific Drilling
6/21/2018	3,872.00	90.17	233.18	IncAzi-MWD	Scientific Drilling

I, the undersigned, certify that I acting in my capacity as O&S Manager for Hilcorp Energy Company, am authorized by said Company to make this report; and that said report was prepared under my supervision and directions, and that the facts stated herein are true to the best of my knowledge and belief.

  
Thomas Jaquez

Subscribed and sworn to me this July 12, 2018

 #1113572

Notary Public in and for San Juan County, New Mexico


My Commission expires Nov. 4, 2019



Well Name: ALLISON UNIT #145

Survey Data					
Date	MD (ftKB)	Incl (°)	Azm (°)	Method	Survey Company
6/21/2018	3,934.00	90.07	228.19	IncAzi-MWD	Scientific Drilling
6/21/2018	3,995.00	89.23	221.93	IncAzi-MWD	Scientific Drilling
6/21/2018	4,056.00	87.69	215.75	IncAzi-MWD	Scientific Drilling
6/21/2018	4,118.00	86.77	211.83	IncAzi-MWD	Scientific Drilling
6/21/2018	4,179.00	87.31	210.57	IncAzi-MWD	Scientific Drilling
6/21/2018	4,240.00	88.56	206.65	IncAzi-MWD	Scientific Drilling
6/21/2018	4,301.00	88.49	205.04	IncAzi-MWD	Scientific Drilling
6/21/2018	4,363.00	88.39	203.76	IncAzi-MWD	Scientific Drilling
6/21/2018	4,424.00	88.12	202.62	IncAzi-MWD	Scientific Drilling
6/21/2018	4,485.00	90.10	201.51	IncAzi-MWD	Scientific Drilling
6/21/2018	4,547.00	90.34	200.76	IncAzi-MWD	Scientific Drilling
6/21/2018	4,608.00	90.57	200.24	IncAzi-MWD	Scientific Drilling
6/21/2018	4,669.00	90.71	200.42	IncAzi-MWD	Scientific Drilling
6/21/2018	4,730.00	90.87	199.62	IncAzi-MWD	Scientific Drilling
6/21/2018	4,792.00	90.03	199.14	IncAzi-MWD	Scientific Drilling
6/21/2018	4,853.00	89.26	197.49	IncAzi-MWD	Scientific Drilling
6/21/2018	4,914.00	90.03	195.26	IncAzi-MWD	Scientific Drilling
6/21/2018	4,976.00	90.13	195.35	IncAzi-MWD	Scientific Drilling
6/21/2018	5,037.00	89.53	195.41	IncAzi-MWD	Scientific Drilling
6/21/2018	5,098.00	87.99	195.15	IncAzi-MWD	Scientific Drilling
6/21/2018	5,160.00	88.19	195.75	IncAzi-MWD	Scientific Drilling
6/21/2018	5,221.00	88.59	197.35	IncAzi-MWD	Scientific Drilling
6/21/2018	5,282.00	89.73	198.68	IncAzi-MWD	Scientific Drilling
6/21/2018	5,344.00	90.27	198.61	IncAzi-MWD	Scientific Drilling
6/21/2018	5,405.00	91.88	198.78	IncAzi-MWD	Scientific Drilling
6/21/2018	5,468.00	91.98	197.49	IncAzi-MWD	Scientific Drilling
6/21/2018	5,530.00	92.35	198.56	IncAzi-MWD	Scientific Drilling
6/21/2018	5,593.00	91.31	198.55	IncAzi-MWD	Scientific Drilling
6/21/2018	5,656.00	90.44	196.90	IncAzi-MWD	Scientific Drilling
6/21/2018	5,719.00	91.11	196.76	IncAzi-MWD	Scientific Drilling
6/21/2018	5,782.00	88.59	195.67	IncAzi-MWD	Scientific Drilling
6/21/2018	5,845.00	88.69	197.38	IncAzi-MWD	Scientific Drilling
6/21/2018	5,908.00	89.43	196.12	IncAzi-MWD	Scientific Drilling
6/21/2018	5,971.00	90.30	196.54	IncAzi-MWD	Scientific Drilling
6/21/2018	6,034.00	90.91	196.38	IncAzi-MWD	Scientific Drilling
6/21/2018	6,096.00	91.98	195.39	IncAzi-MWD	Scientific Drilling
6/21/2018	6,159.00	90.24	195.84	IncAzi-MWD	Scientific Drilling
6/21/2018	6,222.00	90.34	195.52	IncAzi-MWD	Scientific Drilling

I, the undersigned, certify that I acting in my capacity as OPS Manager for Hilcorp Energy Company, am authorized by said Company to make this report; and that said report was prepared under my supervision and directions, and that the facts stated herein are true to the best of my knowledge and belief.

  
Thomas Jacques

Subscribed and sworn to me this July 12, 2018  
Melissa K. Spence #1113572

Notary Public in and for San Juan County, New Mexico

My Commission expires Nov. 4, 2019




Well Name: ALLISON UNIT #145

## Survey Data

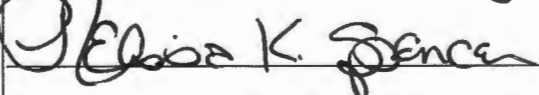
Date	MD (ftKB)	Incl (")	Azm (")	Method	Survey Company
6/21/2018	6,239.00	90.24	194.80	IncAzi-MWD	Scientific Drilling
6/21/2018	6,308.00	90.24	194.80	IncAzi-MWD	Scientific Drilling

I, the undersigned, certify that I acting in my capacity as OPS Manager for Hilcorp Energy Company, am authorized by said Company to make this report; and that said report was prepared under my supervision and directions, and that the facts stated herein are true to the best of my knowledge and belief.

  
\_\_\_\_\_  
Thomas R. Jorgensen

Subscribed and sworn to me this

July 12, 2018

 #1113572

Notary Public in and for San Juan County, New Mexico

My Commission expires

Nov. 4, 2019

Well Name: ALLISON UNIT #145

Operator HILCORP SAN JUAN, L.P.	Legal Well Name ALLISON UNIT #145	API / UWI 3004529363	County SAN JUAN	State/Province NEW MEXICO	
Surface Legal Location 007-032N-006W-M		North/South Distance (ft) 880.0	N/S Ref FSL	East/West Distance (ft) 925.0	E/W Ref FWL
Date 6/24/2018		Description DIRECTIONAL SURVEY			
Survey Data					
Date	MD (ftKB)	Incl (°)	Azm (°)	Method	Survey Company
6/24/2018	-4.00	0.00	0.00	IncAzi-MWD	Scientific Drilling
6/24/2018	-2.00	0.00	0.00	IncAzi-MWD	Scientific Drilling
6/24/2018	153.00	0.75	0.00	IncAzi-MWD	Scientific Drilling
6/24/2018	583.00	0.75	0.00	IncAzi-MWD	Scientific Drilling
6/24/2018	1,068.00	0.25	0.00	IncAzi-MWD	Scientific Drilling
6/24/2018	1,568.00	0.25	0.00	IncAzi-MWD	Scientific Drilling
6/24/2018	1,973.00	1.00	0.00	IncAzi-MWD	Scientific Drilling
6/24/2018	2,468.00	0.75	0.00	IncAzi-MWD	Scientific Drilling
6/24/2018	2,722.36	0.88	0.00	IncAzi-MWD	Scientific Drilling
6/24/2018	2,756.00	8.53	266.72	IncAzi-MWD	Scientific Drilling
6/24/2018	2,787.00	14.16	262.94	IncAzi-MWD	Scientific Drilling
6/24/2018	2,804.00	17.50	263.41	IncAzi-MWD	Scientific Drilling
6/24/2018	2,835.00	22.29	259.60	IncAzi-MWD	Scientific Drilling
6/24/2018	2,861.00	27.44	259.78	IncAzi-MWD	Scientific Drilling
6/24/2018	2,892.00	33.73	258.23	IncAzi-MWD	Scientific Drilling
6/24/2018	2,924.00	43.81	258.43	IncAzi-MWD	Scientific Drilling
6/24/2018	2,955.00	53.62	258.57	IncAzi-MWD	Scientific Drilling
6/24/2018	2,969.00	58.36	257.38	IncAzi-MWD	Scientific Drilling
6/24/2018	3,001.00	66.54	256.39	IncAzi-MWD	Scientific Drilling
6/24/2018	3,032.00	70.88	255.97	IncAzi-MWD	Scientific Drilling
6/24/2018	3,063.00	74.22	256.11	IncAzi-MWD	Scientific Drilling
6/24/2018	3,125.00	77.47	255.73	IncAzi-MWD	Scientific Drilling
6/24/2018	3,186.00	79.58	255.87	IncAzi-MWD	Scientific Drilling
6/24/2018	3,247.00	88.62	255.80	IncAzi-MWD	Scientific Drilling
6/24/2018	3,252.00	88.96	255.87	IncAzi-MWD	Scientific Drilling
6/24/2018	3,315.00	89.56	249.82	IncAzi-MWD	Scientific Drilling
6/24/2018	3,378.00	92.92	244.52	IncAzi-MWD	Scientific Drilling
6/24/2018	3,440.00	95.15	239.30	IncAzi-MWD	Scientific Drilling
6/24/2018	3,503.00	93.89	235.82	IncAzi-MWD	Scientific Drilling
6/24/2018	3,566.00	92.45	233.30	IncAzi-MWD	Scientific Drilling
6/24/2018	3,627.00	92.95	231.26	IncAzi-MWD	Scientific Drilling
6/24/2018	3,689.00	92.62	228.34	IncAzi-MWD	Scientific Drilling
6/24/2018	3,750.00	89.50	226.57	IncAzi-MWD	Scientific Drilling

I, the undersigned, certify that I acting in my capacity as OPS Manager for Hilcorp Energy Company, am authorized by said Company to make this report; and that said report was prepared under my supervision and directions, and that the facts stated herein are true to the best of my knowledge and belief.

Thomas Jacques  
Thomas Jacques

Subscribed and sworn to me this July 12, 2018

Debbie K. Spencer #1113572

Notary Public in and for San Juan County, New Mexico

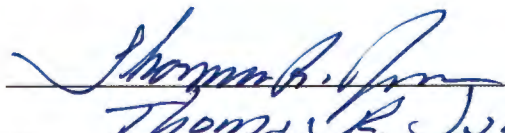
My Commission expires Nov. 4, 2019



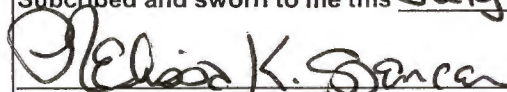
Well Name: ALLISON UNIT #145

Survey Data					
Date	MD (ftKB)	Incl (°)	Azm (°)	Method	Survey Company
6/24/2018	3,811.00	90.00	225.01	IncAzi-MWD	Scientific Drilling
6/24/2018	3,873.00	89.46	221.28	IncAzi-MWD	Scientific Drilling
6/24/2018	3,934.00	86.77	218.41	IncAzi-MWD	Scientific Drilling
6/24/2018	3,995.00	86.07	216.61	IncAzi-MWD	Scientific Drilling
6/24/2018	4,056.00	86.61	214.44	IncAzi-MWD	Scientific Drilling
6/24/2018	4,118.00	88.49	210.72	IncAzi-MWD	Scientific Drilling
6/24/2018	4,179.00	88.22	207.01	IncAzi-MWD	Scientific Drilling
6/24/2018	4,240.00	88.89	207.24	IncAzi-MWD	Scientific Drilling
6/24/2018	4,301.00	88.59	205.77	IncAzi-MWD	Scientific Drilling
6/24/2018	4,363.00	89.46	207.87	IncAzi-MWD	Scientific Drilling
6/24/2018	4,424.00	87.78	207.10	IncAzi-MWD	Scientific Drilling
6/24/2018	4,485.00	88.99	207.42	IncAzi-MWD	Scientific Drilling
6/24/2018	4,547.00	89.09	206.99	IncAzi-MWD	Scientific Drilling
6/24/2018	4,608.00	88.99	205.24	IncAzi-MWD	Scientific Drilling
6/24/2018	4,669.00	90.77	203.80	IncAzi-MWD	Scientific Drilling
6/24/2018	4,730.00	89.90	202.11	IncAzi-MWD	Scientific Drilling
6/24/2018	4,792.00	90.47	201.32	IncAzi-MWD	Scientific Drilling
6/24/2018	4,853.00	90.20	201.11	IncAzi-MWD	Scientific Drilling
6/24/2018	4,914.00	90.71	202.24	IncAzi-MWD	Scientific Drilling
6/24/2018	4,976.00	89.56	202.33	IncAzi-MWD	Scientific Drilling
6/24/2018	5,037.00	89.70	203.27	IncAzi-MWD	Scientific Drilling
6/24/2018	5,098.00	89.93	202.87	IncAzi-MWD	Scientific Drilling
6/24/2018	5,160.00	90.87	201.34	IncAzi-MWD	Scientific Drilling
6/24/2018	5,221.00	91.38	198.73	IncAzi-MWD	Scientific Drilling
6/24/2018	5,283.00	90.20	199.69	IncAzi-MWD	Scientific Drilling
6/24/2018	5,344.00	90.74	198.96	IncAzi-MWD	Scientific Drilling
6/24/2018	5,405.00	88.93	198.36	IncAzi-MWD	Scientific Drilling
6/24/2018	5,468.00	89.93	199.00	IncAzi-MWD	Scientific Drilling
6/24/2018	5,531.00	90.87	197.82	IncAzi-MWD	Scientific Drilling
6/24/2018	5,593.00	91.71	197.60	IncAzi-MWD	Scientific Drilling
6/24/2018	5,656.00	91.27	196.46	IncAzi-MWD	Scientific Drilling
6/24/2018	5,719.00	91.81	194.54	IncAzi-MWD	Scientific Drilling
6/24/2018	5,782.00	89.93	194.56	IncAzi-MWD	Scientific Drilling
6/24/2018	5,845.00	88.56	194.28	IncAzi-MWD	Scientific Drilling
6/24/2018	5,908.00	89.66	193.53	IncAzi-MWD	Scientific Drilling
6/24/2018	5,971.00	90.97	192.91	IncAzi-MWD	Scientific Drilling
6/24/2018	6,034.00	88.79	194.03	IncAzi-MWD	Scientific Drilling
6/24/2018	6,097.00	89.46	192.80	IncAzi-MWD	Scientific Drilling

I, the undersigned, certify that I acting in my capacity as OPS Manager for Hilcorp Energy Company, am authorized by said Company to make this report; and that said report was prepared under my supervision and directions, and that the facts stated herein are true to the best of my knowledge and belief.

  
Thomas R. Jucque

Subscribed and sworn to me this July 12, 2018

 #1113572

Notary Public in and for San Juan County, New Mexico

My Commission expires Nov. 4, 2019

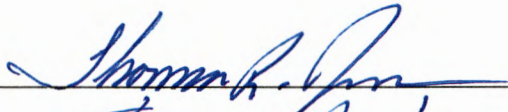


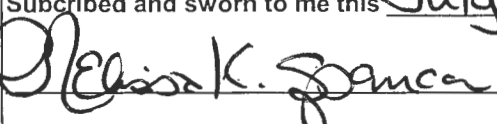
Well Name: ALLISON UNIT #145

## Survey Data

Date	MD (ftKB)	Incl (")	Azm (")	Method	Survey Company
6/24/2018	6,159.00	88.32	192.37	IncAzi-MWD	Scientific Drilling
6/24/2018	6,201.00	89.13	192.30	IncAzi-MWD	Scientific Drilling
6/24/2018	6,270.00	89.13	192.30	IncAzi-MWD	Scientific Drilling

I, the undersigned, certify that I acting in my capacity as Ops. Manager for Hilcorp Energy Company, am authorized by said Company to make this report; and that said report was prepared under my supervision and directions, and that the facts stated herein are true to the best of my knowledge and belief.

  
\_\_\_\_\_  
Thomas R. Jagers

Subscribed and sworn to me this July 12, 2018  
 #111,3572


Notary Public in and for San Juan County, New Mexico

My Commission expires Nov. 4, 2019

**Well Name: ALLISON UNIT #145**

Operator HILCORP SAN JUAN, L.P.	Legal WellName ALLISON UNIT #145	API / UWI 3004529363	County SAN JUAN	State/Province NEW MEXICO	
Surface Legal Location 007-032N-006W-M		North/South Distance (ft) 880.0	N/S Ref FSL	East/West Distance (ft) 925.0	
Date 6/26/2018		Description DIRECTIONAL SURVEY			
Survey Data					
Date	MD (ftKB)	Incl (")	Azm (")	Method	Survey Company
6/26/2018	-4.00	0.00	0.00	IncAzi-MWD	Scientific Drilling
6/26/2018	-2.00	0.00	0.00	IncAzi-MWD	Scientific Drilling
6/26/2018	153.00	0.75	0.00	IncAzi-MWD	Scientific Drilling
6/26/2018	583.00	0.75	0.00	IncAzi-MWD	Scientific Drilling
6/26/2018	1,068.00	0.25	0.00	IncAzi-MWD	Scientific Drilling
6/26/2018	1,568.00	0.25	0.00	IncAzi-MWD	Scientific Drilling
6/26/2018	1,973.00	1.00	0.00	IncAzi-MWD	Scientific Drilling
6/26/2018	2,468.00	0.75	0.00	IncAzi-MWD	Scientific Drilling
6/26/2018	2,682.00	0.86	0.00	IncAzi-MWD	Scientific Drilling
6/26/2018	2,692.00	6.42	89.01	IncAzi-MWD	Scientific Drilling
6/26/2018	2,724.00	13.11	83.21	IncAzi-MWD	Scientific Drilling
6/26/2018	2,755.00	18.56	103.07	IncAzi-MWD	Scientific Drilling
6/26/2018	2,787.00	23.31	111.68	IncAzi-MWD	Scientific Drilling
6/26/2018	2,818.00	29.03	115.29	IncAzi-MWD	Scientific Drilling
6/26/2018	2,849.00	33.52	114.94	IncAzi-MWD	Scientific Drilling
6/26/2018	2,881.00	39.50	114.76	IncAzi-MWD	Scientific Drilling
6/26/2018	2,897.00	41.66	114.17	IncAzi-MWD	Scientific Drilling
6/26/2018	2,929.00	46.60	114.64	IncAzi-MWD	Scientific Drilling
6/26/2018	2,960.00	51.37	113.89	IncAzi-MWD	Scientific Drilling
6/26/2018	2,991.00	56.72	114.47	IncAzi-MWD	Scientific Drilling
6/26/2018	3,023.00	62.66	115.46	IncAzi-MWD	Scientific Drilling
6/26/2018	3,064.00	69.68	115.71	IncAzi-MWD	Scientific Drilling
6/26/2018	3,127.00	79.35	115.39	IncAzi-MWD	Scientific Drilling
6/26/2018	3,158.00	82.96	114.96	IncAzi-MWD	Scientific Drilling
6/26/2018	3,190.00	84.15	114.66	IncAzi-MWD	Scientific Drilling
6/26/2018	3,221.00	84.28	114.98	IncAzi-MWD	Scientific Drilling
6/26/2018	3,253.00	84.86	115.25	IncAzi-MWD	Scientific Drilling
6/26/2018	3,284.00	85.34	115.17	IncAzi-MWD	Scientific Drilling
6/26/2018	3,315.00	85.70	115.16	IncAzi-MWD	Scientific Drilling
6/26/2018	3,378.00	87.55	112.59	IncAzi-MWD	Scientific Drilling
6/26/2018	3,441.00	90.64	110.67	IncAzi-MWD	Scientific Drilling
6/26/2018	3,504.00	93.02	111.46	IncAzi-MWD	Scientific Drilling
6/26/2018	3,535.00	90.23	110.20	IncAzi-MWD	Scientific Drilling

I, the undersigned, certify that I acting in my capacity as Ops Manager for Hilcorp Energy Company, am authorized by said Company to make this report; and that said report was prepared under my supervision and directions, and that the facts stated herein are true to the best of my knowledge and belief.

  
Thomas R. Segres

Subscribed and sworn to me this July 12, 2018  
Debra K. Sanchez #1113572

Notary Public in and for San Juan County, New Mexico

My Commission expires Nov. 4, 2019



Well Name: ALLISON UNIT #145

## Survey Data

Date	MD (ftKB)	Incl (")	Azm (")	Method	Survey Company
6/26/2018	3,567.00	90.44	110.12	IncAzi-MWD	Scientific Drilling
6/26/2018	3,630.00	89.77	109.20	IncAzi-MWD	Scientific Drilling
6/26/2018	3,693.00	87.89	108.82	IncAzi-MWD	Scientific Drilling
6/26/2018	3,754.00	87.82	107.72	IncAzi-MWD	Scientific Drilling
6/26/2018	3,815.00	86.98	108.97	IncAzi-MWD	Scientific Drilling
6/26/2018	3,876.00	87.51	108.37	IncAzi-MWD	Scientific Drilling
6/26/2018	3,938.00	88.16	108.55	IncAzi-MWD	Scientific Drilling
6/26/2018	3,999.00	87.85	111.78	IncAzi-MWD	Scientific Drilling
6/26/2018	4,060.00	88.32	111.53	IncAzi-MWD	Scientific Drilling
6/26/2018	4,121.00	88.19	112.65	IncAzi-MWD	Scientific Drilling
6/26/2018	4,183.00	88.96	112.47	IncAzi-MWD	Scientific Drilling
6/26/2018	4,244.00	89.09	116.06	IncAzi-MWD	Scientific Drilling
6/26/2018	4,306.00	89.50	115.39	IncAzi-MWD	Scientific Drilling
6/26/2018	4,366.00	89.90	113.93	IncAzi-MWD	Scientific Drilling
6/26/2018	4,428.00	87.65	112.32	IncAzi-MWD	Scientific Drilling
6/26/2018	4,489.00	88.89	111.83	IncAzi-MWD	Scientific Drilling
6/26/2018	4,550.00	89.26	114.45	IncAzi-MWD	Scientific Drilling
6/26/2018	4,612.00	89.66	113.56	IncAzi-MWD	Scientific Drilling
6/26/2018	4,673.00	87.08	113.13	IncAzi-MWD	Scientific Drilling
6/26/2018	4,734.00	87.31	114.55	IncAzi-MWD	Scientific Drilling
6/26/2018	4,796.00	88.72	114.92	IncAzi-MWD	Scientific Drilling
6/26/2018	4,857.00	88.59	113.57	IncAzi-MWD	Scientific Drilling
6/26/2018	4,918.00	91.48	114.54	IncAzi-MWD	Scientific Drilling
6/26/2018	4,979.00	91.31	112.70	IncAzi-MWD	Scientific Drilling
6/26/2018	5,041.00	92.32	112.75	IncAzi-MWD	Scientific Drilling
6/26/2018	5,102.00	91.41	113.00	IncAzi-MWD	Scientific Drilling
6/26/2018	5,163.00	89.13	113.59	IncAzi-MWD	Scientific Drilling
6/26/2018	5,225.00	89.40	112.24	IncAzi-MWD	Scientific Drilling
6/26/2018	5,286.00	89.53	112.05	IncAzi-MWD	Scientific Drilling
6/26/2018	5,348.00	89.90	111.25	IncAzi-MWD	Scientific Drilling
6/26/2018	5,409.00	90.74	110.86	IncAzi-MWD	Scientific Drilling
6/26/2018	5,470.00	91.44	109.45	IncAzi-MWD	Scientific Drilling
6/26/2018	5,531.00	92.02	109.28	IncAzi-MWD	Scientific Drilling
6/26/2018	5,594.00	92.78	108.42	IncAzi-MWD	Scientific Drilling
6/26/2018	5,657.00	90.91	111.66	IncAzi-MWD	Scientific Drilling
6/26/2018	5,720.00	91.48	111.79	IncAzi-MWD	Scientific Drilling
6/26/2018	5,783.00	89.33	114.97	IncAzi-MWD	Scientific Drilling
6/26/2018	5,846.00	90.47	114.80	IncAzi-MWD	Scientific Drilling

I, the undersigned, certify that I acting in my capacity as Ops Manager for Hilcorp Energy Company, am authorized by said Company to make this report; and that said report was prepared under my supervision and directions, and that the facts stated herein are true to the best of my knowledge and belief.

Thomas R. Spencer  
Thomas R. Spencer

Subscribed and sworn to me this July 12, 2018  
Nelissa K. Spencer #1113572

Notary Public in and for San Juan County, New Mexico

My Commission expires Nov. 4, 2019


Well Name: ALLISON UNIT #145

## Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	Method	Survey Company
6/26/2018	5,909.00	91.17	114.66	IncAzi-MWD	Scientific Drilling
6/26/2018	5,971.00	91.24	114.57	IncAzi-MWD	Scientific Drilling
6/26/2018	6,034.00	89.80	116.81	IncAzi-MWD	Scientific Drilling
6/26/2018	6,097.00	90.34	116.21	IncAzi-MWD	Scientific Drilling
6/26/2018	6,160.00	90.91	115.57	IncAzi-MWD	Scientific Drilling
6/26/2018	6,223.00	91.44	114.94	IncAzi-MWD	Scientific Drilling
6/26/2018	6,254.00	91.81	114.89	IncAzi-MWD	Scientific Drilling
6/26/2018	6,324.00	91.81	114.89	IncAzi-MWD	Scientific Drilling

I, the undersigned, certify that I acting in my capacity as OPS Manager for Hilcorp Energy Company, am authorized by said Company to make this report; and that said report was prepared under my supervision and directions, and that the facts stated herein are true to the best of my knowledge and belief.


Thomas R. Spender

Subscribed and sworn to me this

July 12, 2018
Melissa K. Spender #111,3572

Notary Public in and for San Juan County, New Mexico

My Commission expires

Nov. 4, 2019

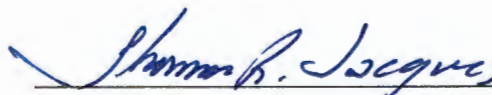

Well Name: ALLISON UNIT #145

Operator HILCORP SAN JUAN, L.P.	Legal Well Name ALLISON UNIT #145	API / UWI 3004529363	County SAN JUAN	State/Province NEW MEXICO
Surface Legal Location 007-032N-006W-M	North/South Distance (ft) 880.0	N/S Ref FSL	East/West Distance (ft) 925.0	E/W Ref FWL

Date 6/28/2018	Description DIRECTIONAL SURVEY
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Survey Data					
Date	MD (ftKB)	Incl (°)	Azm (°)	Method	Survey Company
6/28/2018	-4.00	0.00	0.00	IncAzi-MWD	Scientific Drilling
6/28/2018	-2.00	0.00	0.00	IncAzi-MWD	Scientific Drilling
6/28/2018	153.00	0.75	0.00	IncAzi-MWD	Scientific Drilling
6/28/2018	583.00	0.75	0.00	IncAzi-MWD	Scientific Drilling
6/28/2018	1,068.00	0.25	0.00	IncAzi-MWD	Scientific Drilling
6/28/2018	1,568.00	0.25	0.00	IncAzi-MWD	Scientific Drilling
6/28/2018	1,973.00	1.00	0.00	IncAzi-MWD	Scientific Drilling
6/28/2018	2,468.00	0.75	0.00	IncAzi-MWD	Scientific Drilling
6/28/2018	2,682.00	0.86	0.00	IncAzi-MWD	Scientific Drilling
6/28/2018	2,692.00	6.42	89.01	IncAzi-MWD	Scientific Drilling
6/28/2018	2,724.00	13.11	83.21	IncAzi-MWD	Scientific Drilling
6/28/2018	2,755.00	18.56	103.07	IncAzi-MWD	Scientific Drilling
6/28/2018	2,787.00	23.31	111.68	IncAzi-MWD	Scientific Drilling
6/28/2018	2,818.00	29.03	115.29	IncAzi-MWD	Scientific Drilling
6/28/2018	2,849.00	33.52	114.94	IncAzi-MWD	Scientific Drilling
6/28/2018	2,881.00	39.50	114.76	IncAzi-MWD	Scientific Drilling
6/28/2018	2,897.00	41.66	114.17	IncAzi-MWD	Scientific Drilling
6/28/2018	2,929.00	46.60	114.64	IncAzi-MWD	Scientific Drilling
6/28/2018	2,960.00	51.37	113.89	IncAzi-MWD	Scientific Drilling
6/28/2018	2,991.00	56.72	114.47	IncAzi-MWD	Scientific Drilling
6/28/2018	3,023.00	62.66	115.46	IncAzi-MWD	Scientific Drilling
6/28/2018	3,064.00	69.68	115.71	IncAzi-MWD	Scientific Drilling
6/28/2018	3,127.00	79.35	115.39	IncAzi-MWD	Scientific Drilling
6/28/2018	3,158.00	82.96	114.96	IncAzi-MWD	Scientific Drilling
6/28/2018	3,190.00	84.15	114.66	IncAzi-MWD	Scientific Drilling
6/28/2018	3,221.00	84.28	114.98	IncAzi-MWD	Scientific Drilling
6/28/2018	3,253.00	84.86	115.25	IncAzi-MWD	Scientific Drilling
6/28/2018	3,284.00	85.34	115.17	IncAzi-MWD	Scientific Drilling
6/28/2018	3,315.00	85.70	115.16	IncAzi-MWD	Scientific Drilling
6/28/2018	3,378.00	87.55	112.59	IncAzi-MWD	Scientific Drilling
6/28/2018	3,442.00	86.34	117.42	IncAzi-MWD	Scientific Drilling
6/28/2018	3,505.00	90.67	116.03	IncAzi-MWD	Scientific Drilling
6/28/2018	3,567.00	94.50	122.46	IncAzi-MWD	Scientific Drilling

I, the undersigned, certify that I acting in my capacity as OPS Manager for Hilcorp Energy Company, am authorized by said Company to make this report; and that said report was prepared under my supervision and directions, and that the facts stated herein are true to the best of my knowledge and belief.


Thomas R. Jorgensen

(Printed Name)

Subscribed and sworn to me this July 12, 2018
Melissa K. Spencer #1113572

Notary Public in and for San Juan County, New Mexico

My Commission expires Nov. 4, 2019


**Well Name: ALLISON UNIT #145**
**Survey Data**

Date	MD (ftKB)	Incl (°)	Azm (°)	Method	Survey Company
6/28/2018	3,630.00	89.66	127.11	IncAzi-MWD	Scientific Drilling
6/28/2018	3,693.00	88.02	127.20	IncAzi-MWD	Scientific Drilling
6/28/2018	3,756.00	88.15	129.41	IncAzi-MWD	Scientific Drilling
6/28/2018	3,819.00	87.89	134.95	IncAzi-MWD	Scientific Drilling
6/28/2018	3,880.00	88.02	138.30	IncAzi-MWD	Scientific Drilling
6/28/2018	3,941.00	88.62	140.57	IncAzi-MWD	Scientific Drilling
6/28/2018	4,003.00	90.47	145.24	IncAzi-MWD	Scientific Drilling
6/28/2018	4,064.00	91.18	148.37	IncAzi-MWD	Scientific Drilling
6/28/2018	4,125.00	89.73	150.72	IncAzi-MWD	Scientific Drilling
6/28/2018	4,186.00	90.00	151.43	IncAzi-MWD	Scientific Drilling
6/28/2018	4,248.00	90.87	152.21	IncAzi-MWD	Scientific Drilling
6/28/2018	4,309.00	91.41	153.16	IncAzi-MWD	Scientific Drilling
6/28/2018	4,370.00	91.61	154.23	IncAzi-MWD	Scientific Drilling
6/28/2018	4,432.00	90.10	155.32	IncAzi-MWD	Scientific Drilling
6/28/2018	4,493.00	88.69	155.84	IncAzi-MWD	Scientific Drilling
6/28/2018	4,554.00	89.46	157.24	IncAzi-MWD	Scientific Drilling
6/28/2018	4,615.00	90.54	157.25	IncAzi-MWD	Scientific Drilling
6/28/2018	4,677.00	90.44	157.77	IncAzi-MWD	Scientific Drilling
6/28/2018	4,738.00	91.11	157.25	IncAzi-MWD	Scientific Drilling
6/28/2018	4,799.00	91.58	155.93	IncAzi-MWD	Scientific Drilling
6/28/2018	4,861.00	92.15	157.02	IncAzi-MWD	Scientific Drilling
6/28/2018	4,922.00	88.99	157.84	IncAzi-MWD	Scientific Drilling
6/28/2018	4,983.00	88.46	158.91	IncAzi-MWD	Scientific Drilling
6/28/2018	5,044.00	88.96	160.14	IncAzi-MWD	Scientific Drilling
6/28/2018	5,106.00	89.60	159.82	IncAzi-MWD	Scientific Drilling
6/28/2018	5,167.00	90.40	160.73	IncAzi-MWD	Scientific Drilling
6/28/2018	5,228.00	90.07	161.07	IncAzi-MWD	Scientific Drilling
6/28/2018	5,290.00	88.42	160.95	IncAzi-MWD	Scientific Drilling
6/28/2018	5,351.00	88.62	161.08	IncAzi-MWD	Scientific Drilling
6/28/2018	5,412.00	88.76	160.38	IncAzi-MWD	Scientific Drilling
6/28/2018	5,474.00	89.43	161.08	IncAzi-MWD	Scientific Drilling
6/28/2018	5,535.00	88.86	161.66	IncAzi-MWD	Scientific Drilling
6/28/2018	5,596.00	87.42	162.68	IncAzi-MWD	Scientific Drilling
6/28/2018	5,658.00	87.28	163.36	IncAzi-MWD	Scientific Drilling
6/28/2018	5,720.00	89.13	161.70	IncAzi-MWD	Scientific Drilling
6/28/2018	5,783.00	91.41	160.87	IncAzi-MWD	Scientific Drilling
6/28/2018	5,846.00	92.15	160.72	IncAzi-MWD	Scientific Drilling
6/28/2018	5,909.00	92.21	161.35	IncAzi-MWD	Scientific Drilling

I, the undersigned, certify that I acting in my capacity as OPS Manager for Hilcorp Energy Company, am authorized by said Company to make this report; and that said report was prepared under my supervision and directions, and that the facts stated herein are true to the best of my knowledge and belief.



Thomas R. Jacques  
(Printed Name)

Subscribed and sworn to me this July 12, 2018

Melissa K. Ponca #1113572

Notary Public in and for San Juan County, New Mexico

My Commission expires Nov. 4, 2019



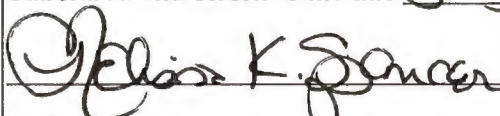
Well Name: ALLISON UNIT #145

Survey Data					
Date	MD (ftKB)	Incl (°)	Azm (°)	Method	Survey Company
6/28/2018	5,972.00	90.91	160.23	IncAzi-MWD	Scientific Drilling
6/28/2018	6,035.00	88.72	158.71	IncAzi-MWD	Scientific Drilling
6/28/2018	6,098.00	87.95	159.10	IncAzi-MWD	Scientific Drilling
6/28/2018	6,161.00	87.78	158.37	IncAzi-MWD	Scientific Drilling
6/28/2018	6,224.00	85.26	156.06	IncAzi-MWD	Scientific Drilling
6/28/2018	6,286.00	86.00	156.30	IncAzi-MWD	Scientific Drilling
6/28/2018	6,349.00	86.44	157.41	IncAzi-MWD	Scientific Drilling
6/28/2018	6,406.00	86.51	158.78	IncAzi-MWD	Scientific Drilling
6/28/2018	6,480.00	86.51	158.78	IncAzi-MWD	Scientific Drilling

I, the undersigned, certify that I acting in my capacity as OPS. Manager for Hilcorp Energy Company, am authorized by said Company to make this report; and that said report was prepared under my supervision and directions, and that the facts stated herein are true to the best of my knowledge and belief.


Thomas R. Jaeger

(Printed Name)

Subscribed and sworn to me this July 12, 2018
 #1113572

Notary Public in and for San Juan County, New Mexico


My Commission expires Nov. 4, 2019


**Well Name: ALLISON UNIT #145**

Operator HILCORP SAN JUAN, L.P.	Legal Well Name ALLISON UNIT #145	API / UWI 3004529363	County SAN JUAN	State/Province NEW MEXICO
Surface Legal Location 007-032N-006W-M		North/South Distance (ft) 880.0	N/S Ref FSL	East/West Distance (ft) 925.0
Date 6/30/2018	Description DIRECTIONAL SURVEY			E/W Ref FWL

Survey Data					
Date	MD (ftKB)	Incl (°)	Azm (°)	Method	Survey Company
6/30/2018	-4.00	0.00	0.00	IncAzi-MWD	Scientific Drilling
6/30/2018	-2.00	0.00	0.00	IncAzi-MWD	Scientific Drilling
6/30/2018	153.00	0.75	0.00	IncAzi-MWD	Scientific Drilling
6/30/2018	583.00	0.75	0.00	IncAzi-MWD	Scientific Drilling
6/30/2018	1,068.00	0.25	0.00	IncAzi-MWD	Scientific Drilling
6/30/2018	1,568.00	0.25	0.00	IncAzi-MWD	Scientific Drilling
6/30/2018	1,973.00	1.00	0.00	IncAzi-MWD	Scientific Drilling
6/30/2018	2,468.00	0.75	0.00	IncAzi-MWD	Scientific Drilling
6/30/2018	2,682.00	0.86	0.00	IncAzi-MWD	Scientific Drilling
6/30/2018	2,692.00	6.42	89.01	IncAzi-MWD	Scientific Drilling
6/30/2018	2,724.00	13.11	83.21	IncAzi-MWD	Scientific Drilling
6/30/2018	2,755.00	18.56	103.07	IncAzi-MWD	Scientific Drilling
6/30/2018	2,787.00	23.31	111.68	IncAzi-MWD	Scientific Drilling
6/30/2018	2,818.00	29.03	115.29	IncAzi-MWD	Scientific Drilling
6/30/2018	2,849.00	33.52	114.94	IncAzi-MWD	Scientific Drilling
6/30/2018	2,881.00	39.50	114.76	IncAzi-MWD	Scientific Drilling
6/30/2018	2,897.00	41.66	114.17	IncAzi-MWD	Scientific Drilling
6/30/2018	2,929.00	46.60	114.64	IncAzi-MWD	Scientific Drilling
6/30/2018	2,960.00	51.37	113.89	IncAzi-MWD	Scientific Drilling
6/30/2018	2,991.00	56.72	114.47	IncAzi-MWD	Scientific Drilling
6/30/2018	3,023.00	62.66	115.46	IncAzi-MWD	Scientific Drilling
6/30/2018	3,064.00	69.68	115.71	IncAzi-MWD	Scientific Drilling
6/30/2018	3,127.00	79.35	115.39	IncAzi-MWD	Scientific Drilling
6/30/2018	3,158.00	82.96	114.96	IncAzi-MWD	Scientific Drilling
6/30/2018	3,190.00	84.15	114.66	IncAzi-MWD	Scientific Drilling
6/30/2018	3,221.00	84.28	114.98	IncAzi-MWD	Scientific Drilling
6/30/2018	3,253.00	84.86	115.25	IncAzi-MWD	Scientific Drilling
6/30/2018	3,284.00	85.34	115.17	IncAzi-MWD	Scientific Drilling
6/30/2018	3,315.00	85.70	115.16	IncAzi-MWD	Scientific Drilling
6/30/2018	3,378.00	87.55	112.59	IncAzi-MWD	Scientific Drilling
6/30/2018	3,441.00	90.64	110.67	IncAzi-MWD	Scientific Drilling
6/30/2018	3,457.00	94.81	238.36	IncAzi-MWD	Scientific Drilling
6/30/2018	3,505.00	85.39	120.60	IncAzi-MWD	Scientific Drilling

I, the undersigned, certify that I acting in my capacity as OPS Manager for Hilcorp Energy Company, am authorized by said Company to make this report; and that said report was prepared under my supervision and directions, and that the facts stated herein are true to the best of my knowledge and belief.

  
Thomas R. Segura

Subscribed and sworn to me this July 12, 2018  
Melissa K. Spencer #111,3572

Notary Public in and for San Juan County, New Mexico


My Commission expires Nov. 4, 2019



**Well Name: ALLISON UNIT #145**

Survey Data					
Date	MD (ftKB)	Incl (")	Azm (")	Method	Survey Company
6/30/2018	3,567.00	90.00	122.06	IncAzi-MWD	Scientific Drilling
6/30/2018	3,630.00	91.11	126.83	IncAzi-MWD	Scientific Drilling
6/30/2018	3,693.00	89.46	125.86	IncAzi-MWD	Scientific Drilling
6/30/2018	3,756.00	89.66	126.10	IncAzi-MWD	Scientific Drilling
6/30/2018	3,819.00	88.66	126.59	IncAzi-MWD	Scientific Drilling
6/30/2018	3,880.00	89.93	128.40	IncAzi-MWD	Scientific Drilling
6/30/2018	3,941.00	91.28	130.25	IncAzi-MWD	Scientific Drilling
6/30/2018	4,003.00	92.75	136.69	IncAzi-MWD	Scientific Drilling
6/30/2018	4,064.00	88.69	141.73	IncAzi-MWD	Scientific Drilling
6/30/2018	4,125.00	87.58	145.10	IncAzi-MWD	Scientific Drilling
6/30/2018	4,186.00	87.79	146.75	IncAzi-MWD	Scientific Drilling
6/30/2018	4,248.00	90.84	148.85	IncAzi-MWD	Scientific Drilling
6/30/2018	4,309.00	90.94	155.36	IncAzi-MWD	Scientific Drilling
6/30/2018	4,370.00	89.56	161.11	IncAzi-MWD	Scientific Drilling
6/30/2018	4,432.00	90.30	161.08	IncAzi-MWD	Scientific Drilling
6/30/2018	4,493.00	90.57	162.27	IncAzi-MWD	Scientific Drilling
6/30/2018	4,554.00	89.36	162.86	IncAzi-MWD	Scientific Drilling
6/30/2018	4,615.00	87.75	160.55	IncAzi-MWD	Scientific Drilling
6/30/2018	4,677.00	90.77	156.44	IncAzi-MWD	Scientific Drilling
6/30/2018	4,738.00	92.39	156.14	IncAzi-MWD	Scientific Drilling
6/30/2018	4,799.00	92.35	156.24	IncAzi-MWD	Scientific Drilling
6/30/2018	4,861.00	93.13	156.80	IncAzi-MWD	Scientific Drilling
6/30/2018	4,922.00	90.40	157.93	IncAzi-MWD	Scientific Drilling
6/30/2018	4,983.00	88.59	157.70	IncAzi-MWD	Scientific Drilling
6/30/2018	5,044.00	89.16	157.62	IncAzi-MWD	Scientific Drilling
6/30/2018	5,106.00	89.53	157.80	IncAzi-MWD	Scientific Drilling
6/30/2018	5,167.00	89.53	157.58	IncAzi-MWD	Scientific Drilling
6/30/2018	5,228.00	88.56	159.87	IncAzi-MWD	Scientific Drilling
6/30/2018	5,290.00	88.22	160.03	IncAzi-MWD	Scientific Drilling
6/30/2018	5,351.00	89.13	161.19	IncAzi-MWD	Scientific Drilling
6/30/2018	5,412.00	88.29	163.09	IncAzi-MWD	Scientific Drilling
6/30/2018	5,474.00	89.19	164.06	IncAzi-MWD	Scientific Drilling
6/30/2018	5,535.00	90.44	165.58	IncAzi-MWD	Scientific Drilling
6/30/2018	5,596.00	88.05	164.27	IncAzi-MWD	Scientific Drilling
6/30/2018	5,658.00	88.93	161.25	IncAzi-MWD	Scientific Drilling
6/30/2018	5,720.00	90.20	161.14	IncAzi-MWD	Scientific Drilling
6/30/2018	5,783.00	89.63	160.63	IncAzi-MWD	Scientific Drilling
6/30/2018	5,846.00	89.90	160.42	IncAzi-MWD	Scientific Drilling

I, the undersigned, certify that I acting in my capacity as Ops Manager for Hilcorp Energy Company, am authorized by said Company to make this report; and that said report was prepared under my supervision and directions, and that the facts stated herein are true to the best of my knowledge and belief.

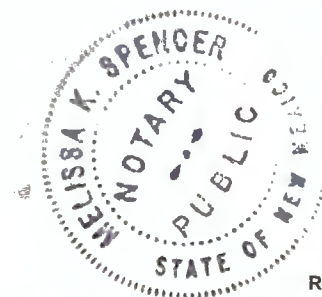
  
Thomas R. Segura

Subscribed and sworn to me this July 12, 2018

  
Melissa K. Spencer #1113572

Notary Public in and for San Juan County, New Mexico

My Commission expires Nov. 4, 2019



Well Name: ALLISON UNIT #145

Survey Data					
Date	MD (ft)	Incl (")	Azm (")	Method	Survey Company
6/30/2018	5,909.00	89.50	160.07	IncAzi-MWD	Scientific Drilling
6/30/2018	5,972.00	90.70	161.67	IncAzi-MWD	Scientific Drilling
6/30/2018	6,035.00	89.06	162.98	IncAzi-MWD	Scientific Drilling
6/30/2018	6,098.00	88.19	163.58	IncAzi-MWD	Scientific Drilling
6/30/2018	6,161.00	87.01	162.58	IncAzi-MWD	Scientific Drilling
6/30/2018	6,224.00	86.64	160.74	IncAzi-MWD	Scientific Drilling
6/30/2018	6,286.00	87.38	161.02	IncAzi-MWD	Scientific Drilling
6/30/2018	6,349.00	88.39	161.65	IncAzi-MWD	Scientific Drilling
6/30/2018	6,411.00	87.31	160.83	IncAzi-MWD	Scientific Drilling
6/30/2018	6,479.00	87.31	160.83	IncAzi-MWD	Scientific Drilling

I, the undersigned, certify that I acting in my capacity as OPS. Manager for Hilcorp Energy Company, am authorized by said Company to make this report; and that said report was prepared under my supervision and directions, and that the facts stated herein are true to the best of my knowledge and belief.

Thomas R. Ingram  
Thomas R. Ingram

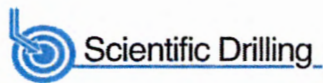
Subscribed and sworn to me this July 12, 2018

Gloria K. Spencer #111.3572

Notary Public in and for San Juan County, New Mexico

My Commission expires Nov. 4, 2019





## Directional Survey Certification

2948 I-70 Business Loop  
Grand Junction, CO 81504  
(970)-245-9447 Fax (970)-245-9454

<b>Operator</b>	HilCorp Enregy
<b>Well Name &amp; No.</b>	Allison Unit 145H Lateral 1
<b>County &amp; State</b>	San Juan County, NM
<b>SDI Job No.</b>	OP. 010942
<b>Rig</b>	Aztec 777

I, Mel Mireles Jr., having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 2,760 feet to a measured depth of 5,738 feet is true and correct as determined from all available records.

Mel Mireles Jr.  
Signature

02-Jul-18  
Date

**Mel Mireles Jr.**  
Grand Junction Assistant Well Planner  
Scientific Drilling - Colorado District



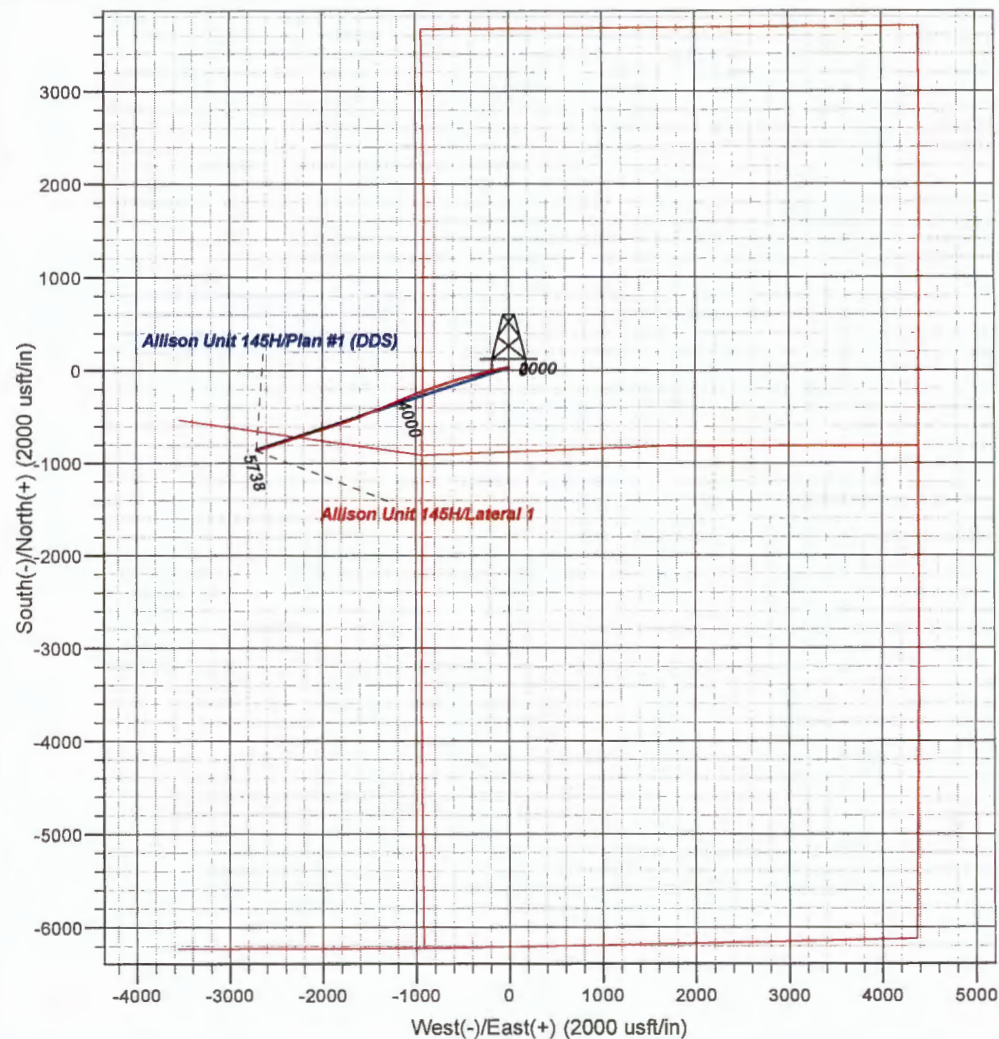
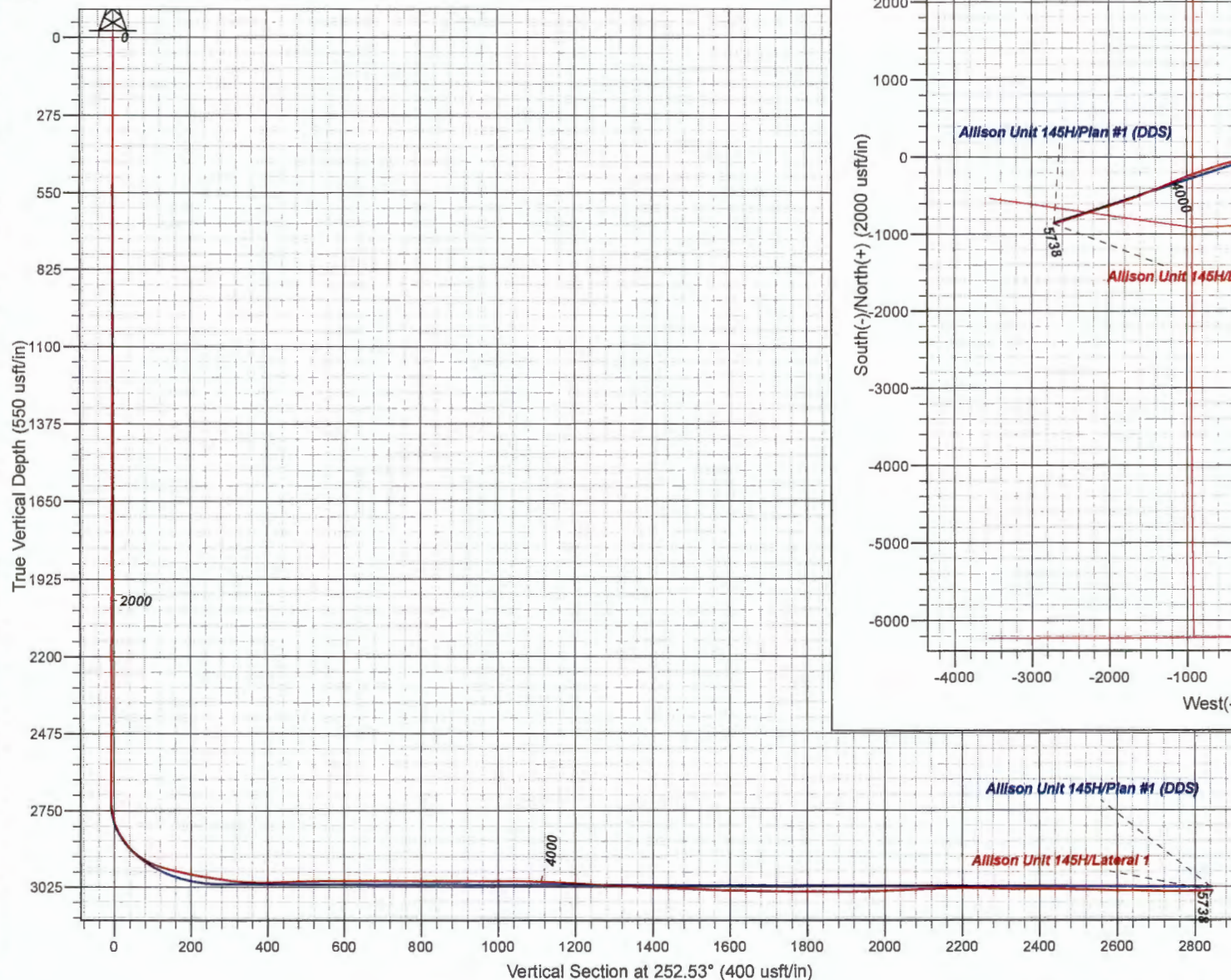
Company Name: Hilcorp Energy Corp.  
Project: San Juan, NM NAD27  
Site: Allison Unit 145H  
Well: Allison Unit 145H  
Wellbore: Lateral 1



WELL DETAILS: Allison Unit 145H

GL 6519' & RKB 15' @ 6534.00usft (Aztec 777) 6519.00

+N/-S	+E/-W	North	East	Latitude	Longitude
0.00	0.00	2179789.30	595785.90	36.9899870	-107.5053600



Design: Lateral 1 (Allison Unit 145H/Lateral 1)

Created By: Janie Collins Date: 9:57, July 02 2018

PROJECT DETAILS: San Juan, 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  
Local North: Grid



## **Hilcorp Energy Corp.**

San Juan, NM NAD27

Allison Unit 145H

Allison Unit 145H

Lateral 1

Design: Lateral 1

## **Survey Report - Geographic**

02 July, 2018



**Scientific Drilling**

[www.scientificdrilling.com](http://www.scientificdrilling.com)



# Scientific Drilling, Intl Survey Report - Geographic

<b>Company:</b>	Hilcorp Energy Corp.	<b>Local Co-ordinate Reference:</b>	Well Allison Unit 145H
<b>Project:</b>	San Juan, NM NAD27	<b>TVD Reference:</b>	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
<b>Site:</b>	Allison Unit 145H	<b>MD Reference:</b>	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
<b>Well:</b>	Allison Unit 145H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Lateral 1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Lateral 1	<b>Database:</b>	Grand Junction District

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

<b>Site</b>	Allison Unit 145H		
<b>Site Position:</b>		<b>Northing:</b>	2,179,789.30 usft
<b>From:</b>	Map	<b>Easting:</b>	595,785.90 usft
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13.20 in
		<b>Latitude:</b>	36.9899870
		<b>Longitude:</b>	-107.5053601
		<b>Grid Convergence:</b>	0.20 °

<b>Well</b>	Allison Unit 145H		
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b> 2,179,789.30 usft
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b> 595,785.90 usft
<b>Position Uncertainty</b>	0.00 usft	<b>Wellhead Elevation:</b>	0.00 usft
		<b>Latitude:</b>	36.9899870
		<b>Longitude:</b>	-107.5053601
		<b>Ground Level:</b>	6,519.00 usft

<b>Wellbore</b>	Lateral 1		
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>
	HDGM	5/18/2018	9.03
			<b>Dip Angle (°)</b> 63.53
			<b>Field Strength (nT)</b> 49,963

<b>Design</b>	Lateral 1		
<b>Audit Notes:</b>			
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL
		<b>Tie On Depth:</b>	2,726.36
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>
	0.00	0.00	0.00
			<b>Direction (°)</b> 252.53

<b>Survey Program</b>	<b>Date</b> 6/19/2018		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>
2.00	2,726.36	Survey #1 (OH)	MWD
2,760.00	5,738.00	Survey #1 - Lateral 1 MWD Survey (Latera	MWD+HDGM
			<b>Description</b>
			MWD - Standard
			OWSG MWD + HDGM

<b>Survey</b>										
<b>Measured</b>	<b>Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Map Northing (usft)</b>	<b>Map Easting (usft)</b>	<b>Latitude</b>	<b>Longitude</b>
	0.00	0.00	0.00	0.00	0.00	0.00	2,179,789.30	595,785.90	36.9899870	-107.5053601
	2.00	0.00	0.00	2.00	0.00	0.00	2,179,789.30	595,785.90	36.9899870	-107.5053601
	157.00	0.75	0.00	157.00	1.01	0.00	2,179,790.31	595,785.90	36.9899898	-107.5053601
	587.00	0.75	0.00	586.96	6.64	0.00	2,179,795.94	595,785.90	36.9900052	-107.5053600
	1,072.00	0.25	0.00	1,071.94	10.88	0.00	2,179,800.17	595,785.90	36.9900169	-107.5053600
	1,572.00	0.25	0.00	1,571.93	13.06	0.00	2,179,802.36	595,785.90	36.9900229	-107.5053599
	1,977.00	1.00	0.00	1,976.91	17.47	0.00	2,179,806.77	595,785.90	36.9900350	-107.5053599
	2,472.00	0.75	0.00	2,471.85	25.03	0.00	2,179,814.33	595,785.90	36.9900558	-107.5053598
	2,726.36	0.88	0.00	2,726.18	28.65	0.00	2,179,817.95	595,785.90	36.9900657	-107.5053598
	2,760.00	8.53	266.72	2,759.70	28.77	-2.50	2,179,818.07	595,783.41	36.9900661	-107.5053683
	2,791.00	14.16	262.94	2,790.08	28.17	-8.56	2,179,817.47	595,777.34	36.9900645	-107.5053891



# Scientific Drilling, Intl

## Survey Report - Geographic

<b>Company:</b>	Hilcorp Energy Corp.	<b>Local Co-ordinate Reference:</b>	Well Allison Unit 145H
<b>Project:</b>	San Juan, NM NAD27	<b>TVD Reference:</b>	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
<b>Site:</b>	Allison Unit 145H	<b>MD Reference:</b>	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
<b>Well:</b>	Allison Unit 145H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Lateral 1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Lateral 1	<b>Database:</b>	Grand Junction District

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
2,808.00	17.50	263.41	2,806.43	27.62	-13.16	2,179,816.92	595,772.74	36.9900630	-107.5054048
2,839.00	22.29	259.60	2,835.58	26.03	-23.58	2,179,815.32	595,762.32	36.9900587	-107.5054405
2,865.00	27.44	259.78	2,859.16	24.07	-34.33	2,179,813.37	595,751.57	36.9900534	-107.5054774
2,896.00	33.73	258.23	2,885.83	21.05	-49.81	2,179,810.34	595,736.10	36.9900453	-107.5055304
2,928.00	43.81	258.43	2,910.75	17.00	-69.41	2,179,806.30	595,716.50	36.9900344	-107.5055975
2,959.00	53.62	258.57	2,931.18	12.37	-92.20	2,179,801.66	595,693.70	36.9900218	-107.5056756
2,973.00	58.36	257.38	2,939.01	9.94	-103.55	2,179,799.24	595,682.35	36.9900153	-107.5057145
3,005.00	66.54	256.39	2,953.80	3.50	-131.16	2,179,792.80	595,654.75	36.9899979	-107.5058091
3,036.00	70.88	255.97	2,965.05	-3.40	-159.20	2,179,785.90	595,626.71	36.9899792	-107.5059052
3,067.00	74.22	256.11	2,974.34	-10.53	-187.89	2,179,778.77	595,598.01	36.9899599	-107.5060036
3,129.00	77.47	255.73	2,989.50	-25.15	-246.20	2,179,764.15	595,539.71	36.9899202	-107.5062034
3,190.00	79.58	255.87	3,001.64	-39.82	-304.15	2,179,749.48	595,481.76	36.9898805	-107.5064019
3,251.00	88.62	255.80	3,007.90	-54.65	-362.92	2,179,734.65	595,422.99	36.9898403	-107.5066034
3,313.00	92.86	256.61	3,007.10	-69.43	-423.11	2,179,719.87	595,362.79	36.9898003	-107.5068096
3,374.00	91.98	256.88	3,004.53	-83.40	-482.43	2,179,705.90	595,303.47	36.9897625	-107.5070129
3,435.00	90.97	253.51	3,002.96	-98.98	-541.38	2,179,690.32	595,244.53	36.9897202	-107.5072149
3,496.00	89.73	252.72	3,002.58	-116.70	-599.75	2,179,672.60	595,186.16	36.9896721	-107.5074150
3,558.00	90.44	252.32	3,002.49	-135.32	-658.88	2,179,653.98	595,127.02	36.9896215	-107.5076177
3,619.00	90.47	248.59	3,002.01	-155.73	-716.35	2,179,633.57	595,069.55	36.9895660	-107.5078147
3,680.00	88.76	250.18	3,002.42	-177.20	-773.44	2,179,612.10	595,012.46	36.9895076	-107.5080104
3,741.00	89.87	252.34	3,003.15	-196.80	-831.20	2,179,592.50	594,954.70	36.9894543	-107.5082084
3,803.00	89.97	252.25	3,003.23	-215.65	-890.26	2,179,573.65	594,895.64	36.9894030	-107.5084109
3,864.00	89.97	247.36	3,003.26	-236.70	-947.50	2,179,552.60	594,838.41	36.9893458	-107.5086071
3,925.00	89.70	248.01	3,003.44	-259.86	-1,003.93	2,179,529.43	594,781.98	36.9892827	-107.5088005
3,987.00	87.32	248.23	3,005.05	-282.96	-1,061.44	2,179,506.34	594,724.46	36.9892198	-107.5089977
4,048.00	85.98	247.74	3,008.62	-305.79	-1,117.89	2,179,483.51	594,668.01	36.9891576	-107.5091913
4,109.00	84.87	248.62	3,013.48	-328.39	-1,174.34	2,179,460.91	594,611.56	36.9890960	-107.5093848
4,170.00	85.59	248.40	3,018.55	-350.66	-1,230.90	2,179,438.64	594,555.00	36.9890354	-107.5095788
4,201.00	85.64	248.60	3,020.92	-361.98	-1,259.66	2,179,427.31	594,526.24	36.9890046	-107.5096774
4,232.00	85.80	247.77	3,023.24	-373.47	-1,288.36	2,179,415.83	594,497.54	36.9889733	-107.5097757
4,293.00	87.42	248.40	3,026.84	-396.20	-1,344.85	2,179,393.10	594,441.05	36.9889114	-107.5099694
4,354.00	87.68	247.76	3,029.45	-418.95	-1,401.39	2,179,370.35	594,384.51	36.9888494	-107.5101633
4,416.00	85.37	248.42	3,033.21	-442.04	-1,458.80	2,179,347.26	594,327.10	36.9887865	-107.5103601
4,477.00	87.75	246.98	3,036.87	-465.14	-1,515.13	2,179,324.15	594,270.77	36.9887236	-107.5105533
4,538.00	88.73	247.55	3,038.74	-488.71	-1,571.36	2,179,300.59	594,214.54	36.9886594	-107.5107461
4,600.00	88.19	250.85	3,040.41	-510.71	-1,629.29	2,179,278.59	594,156.61	36.9885995	-107.5109447
4,661.00	89.50	250.41	3,041.64	-530.94	-1,686.83	2,179,258.36	594,099.07	36.9885445	-107.5111419
4,722.00	89.03	250.91	3,042.42	-551.14	-1,744.38	2,179,238.16	594,041.52	36.9884895	-107.5113392
4,784.00	90.50	251.35	3,042.68	-571.19	-1,803.05	2,179,218.11	593,982.86	36.9884350	-107.5115403
4,845.00	91.48	251.56	3,041.62	-590.59	-1,860.87	2,179,198.71	593,925.03	36.9883822	-107.5117385
4,906.00	92.95	252.74	3,039.27	-609.27	-1,918.89	2,179,180.03	593,867.02	36.9883314	-107.5119374
4,969.00	94.10	253.36	3,035.39	-627.61	-1,979.04	2,179,161.69	593,806.87	36.9882817	-107.5121435
5,032.00	93.72	252.25	3,031.10	-646.19	-2,039.08	2,179,143.11	593,746.82	36.9882312	-107.5123493
5,095.00	89.46	251.52	3,029.35	-665.76	-2,098.92	2,179,123.54	593,686.98	36.9881780	-107.5125544
5,158.00	87.68	252.18	3,030.92	-685.38	-2,158.76	2,179,103.92	593,627.14	36.9881246	-107.5127595
5,221.00	89.10	253.23	3,032.69	-704.10	-2,218.89	2,179,085.20	593,567.02	36.9880738	-107.5129656
5,284.00	90.34	252.42	3,033.00	-722.70	-2,279.08	2,179,066.59	593,506.83	36.9880232	-107.5131719
5,346.00	89.33	251.94	3,033.18	-741.68	-2,338.10	2,179,047.62	593,447.80	36.9879716	-107.5133742
5,409.00	87.22	251.55	3,035.07	-761.40	-2,397.90	2,179,027.90	593,388.00	36.9879180	-107.5135792
5,472.00	87.92	251.36	3,037.74	-781.42	-2,457.57	2,179,007.88	593,328.33	36.9878636	-107.5137837
5,535.00	89.30	251.19	3,039.27	-801.64	-2,517.22	2,178,987.66	593,268.68	36.9878086	-107.5139882
5,598.00	88.02	251.95	3,040.75	-821.55	-2,576.97	2,178,967.75	593,208.93	36.9877545	-107.5141930
5,660.00	91.17	252.48	3,041.18	-840.49	-2,636.00	2,178,948.81	593,149.90	36.9877030	-107.5143953
5,738.00	91.17	252.48	3,039.59	-863.96	-2,710.36	2,178,925.34	593,075.54	36.9876392	-107.5146502

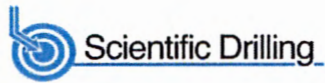


Scientific Drilling, Intl  
Survey Report - Geographic

Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well Allison Unit 145H
Project:	San Juan, NM NAD27	TVD Reference:	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
Site:	Allison Unit 145H	MD Reference:	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
Well:	Allison Unit 145H	North Reference:	Grid
Wellbore:	Lateral 1	Survey Calculation Method:	Minimum Curvature
Design:	Lateral 1	Database:	Grand Junction District

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_



## Directional Survey Certification

2948 I-70 Business Loop  
Grand Junction, CO 81504  
(970)-245-9447 Fax (970)-245-9454

<b>Operator</b>	HilCorp Enregy
<b>Well Name &amp; No.</b>	Allison Unit 145H Lateral 1 ST1
<b>County &amp; State</b>	San Juan County, NM
<b>SDI Job No.</b>	OP. 010942
<b>Rig</b>	Aztec 777

I, Mel Mireles Jr., having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 3,444 feet to a measured depth of 6,312 feet is true and correct as determined from all available records.

  
Signature

02-Jul-18  
Date

**Mel Mireles Jr.**  
Grand Junction Assistant Well Planner  
Scientific Drilling - Colorado District

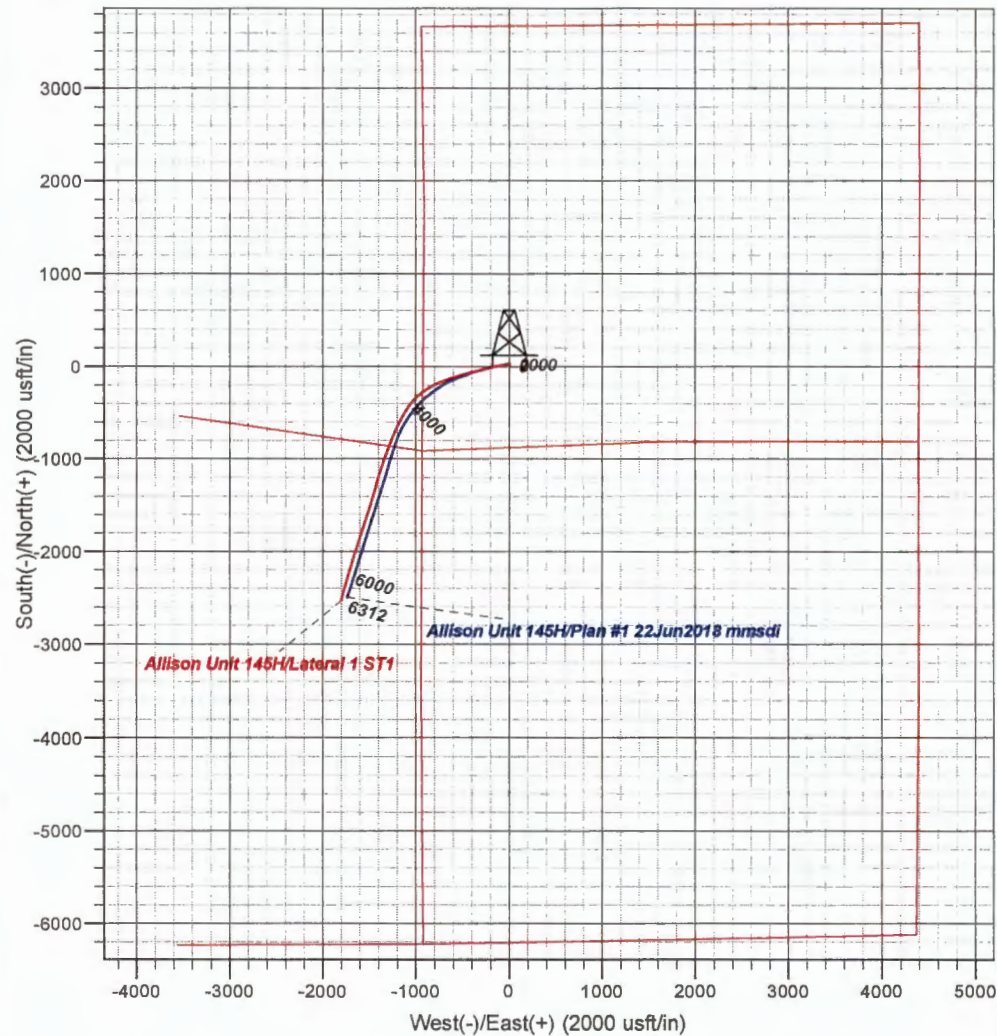
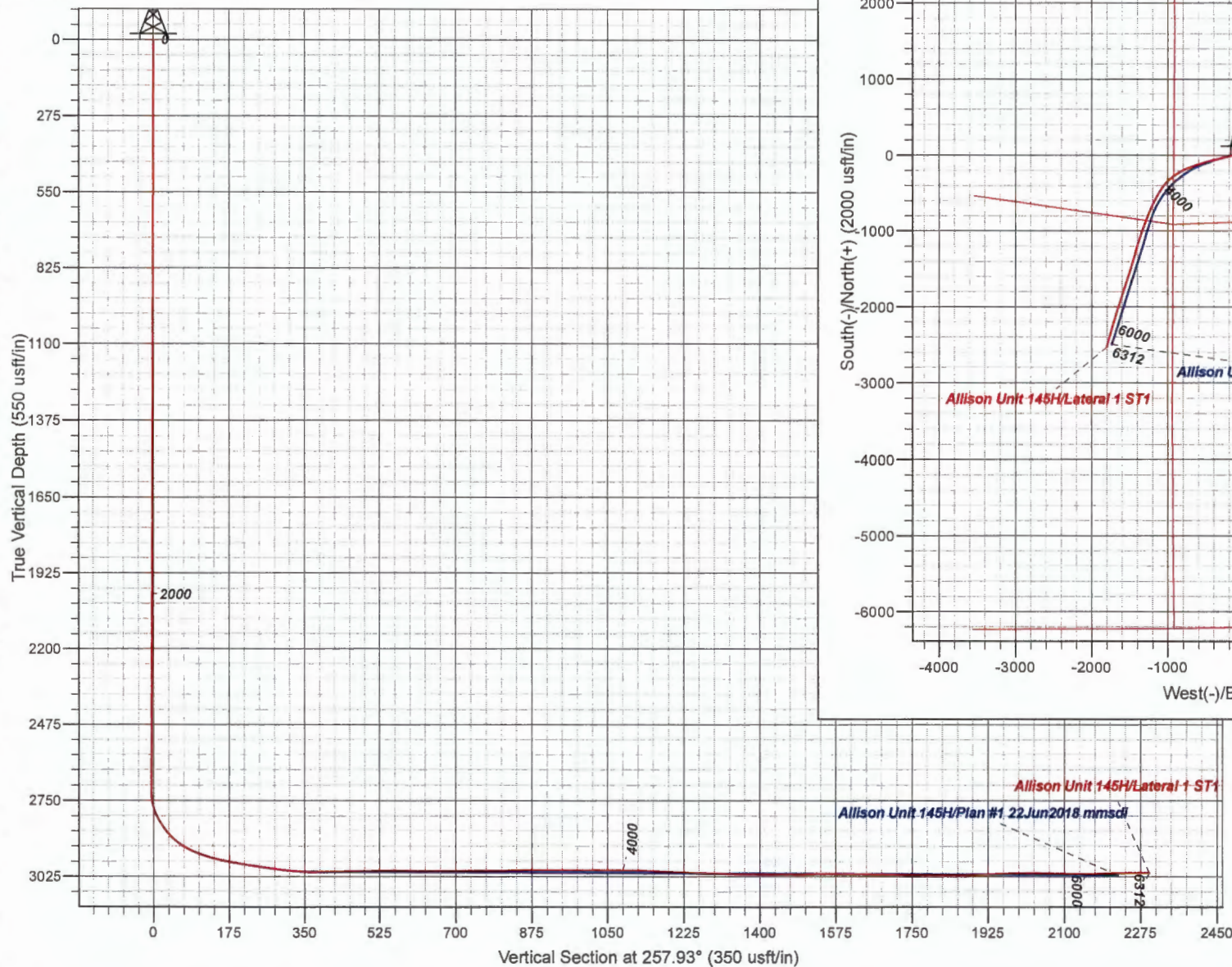


Company Name: Hilcorp Energy Corp.  
Project: San Juan, NM NAD27  
Site: Allison Unit 145H  
Well: Allison Unit 145H  
Wellbore: Lateral 1 ST1



WELL DETAILS: Allison Unit 145H

+N/-S	+E/-W	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777) 6519.00	North	East	Lat	Long
0.00	0.00		2179789.30	595785.90	36.9899870	-107.5053600



Design: Lateral 1 ST1 (Allison Unit 145H/Lateral 1 ST1)

Created By: Janie Collins Date: 10:22, July 02 2018

PROJECT DETAILS: San Juan, 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  
Local North: Grid



## **Hilcorp Energy Corp.**

San Juan, NM NAD27

Allison Unit 145H

Allison Unit 145H

Lateral 1 ST1

Design: Lateral 1 ST1

## **Survey Report - Geographic**

02 July, 2018





# Scientific Drilling, Intl Survey Report - Geographic

Company:		Hilcorp Energy Corp.		Local Co-ordinate Reference:		Well Allison Unit 145H	
Project:		San Juan, NM NAD27		TVD Reference:		GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)	
Site:		Allison Unit 145H		MD Reference:		GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)	
Well:		Allison Unit 145H		North Reference:		Grid	
Wellbore:		Lateral 1 ST1		Survey Calculation Method:		Minimum Curvature	
Design:		Lateral 1 ST1		Database:		Grand Junction District	

Project		San Juan, 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		Allison Unit 145H									
Site Position:		Northing:		2,179,789.30 usft		Latitude:		36.9899870			
From:		Map		Easting:		595,785.90 usft		Longitude:		-107.5053601	
Position Uncertainty:		0.00 usft		Slot Radius:		13.20 in		Grid Convergence:		0.20 °	

Well		Allison Unit 145H											
Well Position		+N/-S		0.00 usft		Northing:		2,179,789.30 usft		Latitude:		36.9899870	
		+E/-W		0.00 usft		Easting:		595,785.90 usft		Longitude:		-107.5053601	
Position Uncertainty		0.00 usft		Wellhead Elevation:		0.00 usft		Ground Level:		6,519.00 usft			

Wellbore		Lateral 1 ST1									
Magnetics		Model Name		Sample Date		Declination (°)		Dip Angle (°)		Field Strength (nT)	
		HDGM		5/18/2018		9.03		63.53		49,963	

Design		Lateral 1 ST1									
Audit Notes:											
Version:		1.0		Phase:		ACTUAL		Tie On Depth:		3,435.00	
Vertical Section:		Depth From (TVD) (usft)		+N/-S (usft)		+E/-W (usft)		Direction (°)			
		0.00		0.00		0.00		257.93			

Survey Program		Date 7/2/2018							
From (usft)		To (usft)		Survey (Wellbore)		Tool Name		Description	
2.00		2,726.36		Survey #1 (OH)		MWD		MWD - Standard	
2,760.00		3,435.00		Survey #1 - Lateral 1 MWD Survey (Latera		MWD+HDGM		OWSG MWD + HDGM	
3,444.00		6,312.00		Survey #1 - Lat 1 ST1 MWD Survey (Later		MWD+HDGM		OWSG MWD + HDGM	

Survey																			
Measured Depth (usft)		Inclination (°)		Azimuth (°)		Vertical Depth (usft)		+N/-S (usft)		+E/-W (usft)		Map Northing (usft)		Map Easting (usft)		Latitude		Longitude	
0.00		0.00		0.00		0.00		0.00		0.00		2,179,789.30		595,785.90		36.9899870		-107.5053601	
2.00		0.00		0.00		2.00		0.00		0.00		2,179,789.30		595,785.90		36.9899870		-107.5053601	
157.00		0.75		0.00		157.00		1.01		0.00		2,179,790.31		595,785.90		36.9899898		-107.5053601	
587.00		0.75		0.00		586.96		6.64		0.00		2,179,795.94		595,785.90		36.9900052		-107.5053600	
1,072.00		0.25		0.00		1,071.94		10.88		0.00		2,179,800.17		595,785.90		36.9900169		-107.5053600	
1,572.00		0.25		0.00		1,571.93		13.06		0.00		2,179,802.36		595,785.90		36.9900229		-107.5053599	
1,977.00		1.00		0.00		1,976.91		17.47		0.00		2,179,806.77		595,785.90		36.9900350		-107.5053599	
2,472.00		0.75		0.00		2,471.85		25.03		0.00		2,179,814.33		595,785.90		36.9900558		-107.5053598	
2,726.36		0.88		0.00		2,726.18		28.65		0.00		2,179,817.95		595,785.90		36.9900657		-107.5053598	
2,760.00		8.53		266.72		2,759.70		28.77		-2.50		2,179,818.07		595,783.41		36.9900661		-107.5053683	



# Scientific Drilling, Intl Survey Report - Geographic

Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well Allison Unit 145H
Project:	San Juan, NM NAD27	TVD Reference:	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
Site:	Allison Unit 145H	MD Reference:	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
Well:	Allison Unit 145H	North Reference:	Grid
Wellbore:	Lateral 1 ST1	Survey Calculation Method:	Minimum Curvature
Design:	Lateral 1 ST1	Database:	Grand Junction District

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
2,791.00	14.16	262.94	2,790.08	28.17	-8.56	2,179,817.47	595,777.34	36.9900645	-107.5053891
2,808.00	17.50	263.41	2,806.43	27.62	-13.16	2,179,816.92	595,772.74	36.9900630	-107.5054048
2,839.00	22.29	259.60	2,835.58	26.03	-23.58	2,179,815.32	595,762.32	36.9900587	-107.5054405
2,865.00	27.44	259.78	2,859.16	24.07	-34.33	2,179,813.37	595,751.57	36.9900534	-107.5054774
2,896.00	33.73	258.23	2,885.83	21.05	-49.81	2,179,810.34	595,736.10	36.9900453	-107.5055304
2,928.00	43.81	258.43	2,910.75	17.00	-69.41	2,179,806.30	595,716.50	36.9900344	-107.5055975
2,959.00	53.62	258.57	2,931.18	12.37	-92.20	2,179,801.66	595,693.70	36.9900218	-107.5056756
2,973.00	58.36	257.38	2,939.01	9.94	-103.55	2,179,799.24	595,682.35	36.9900153	-107.5057145
3,005.00	66.54	256.39	2,953.80	3.50	-131.16	2,179,792.80	595,654.75	36.9899979	-107.5058091
3,036.00	70.88	255.97	2,965.05	-3.40	-159.20	2,179,785.90	595,626.71	36.9899792	-107.5059052
3,067.00	74.22	256.11	2,974.34	-10.53	-187.89	2,179,778.77	595,598.01	36.9899599	-107.5060036
3,129.00	77.47	255.73	2,989.50	-25.15	-246.20	2,179,764.15	595,539.71	36.9899202	-107.5062034
3,190.00	79.58	255.87	3,001.64	-39.82	-304.15	2,179,749.48	595,481.76	36.9898805	-107.5064019
3,251.00	88.62	255.80	3,007.90	-54.65	-362.92	2,179,734.65	595,422.99	36.9898403	-107.5066034
3,313.00	92.86	256.61	3,007.10	-69.43	-423.11	2,179,719.87	595,362.79	36.9898003	-107.5068096
3,374.00	91.98	256.88	3,004.53	-83.40	-482.43	2,179,705.90	595,303.47	36.9897625	-107.5070129
3,435.00	90.97	253.51	3,002.96	-98.98	-541.38	2,179,690.32	595,244.53	36.9897202	-107.5072149
3,444.00	88.96	253.20	3,002.96	-101.56	-550.00	2,179,687.74	595,235.90	36.9897132	-107.5072445
3,507.00	88.36	250.42	3,004.43	-121.22	-609.83	2,179,668.08	595,176.07	36.9896598	-107.5074495
3,692.00	92.22	244.20	3,003.50	-192.53	-780.39	2,179,596.77	595,005.51	36.9894655	-107.5080344
3,754.00	90.91	241.66	3,001.80	-220.73	-835.58	2,179,568.56	594,950.33	36.9893886	-107.5082237
3,815.00	89.40	237.77	3,001.64	-251.49	-888.24	2,179,537.81	594,897.66	36.9893046	-107.5084043
3,876.00	90.17	233.18	3,001.87	-286.05	-938.48	2,179,503.25	594,847.42	36.9892101	-107.5085768
3,938.00	90.07	228.19	3,001.74	-325.32	-986.43	2,179,463.98	594,799.47	36.9891027	-107.5087414
3,999.00	89.23	221.93	3,002.11	-368.39	-1,029.59	2,179,420.91	594,756.31	36.9889848	-107.5088897
4,060.00	87.69	215.75	3,003.75	-415.86	-1,067.81	2,179,373.44	594,718.09	36.9888548	-107.5090211
4,122.00	86.77	211.83	3,006.75	-467.31	-1,102.25	2,179,321.98	594,683.66	36.9887138	-107.5091396
4,183.00	87.31	210.57	3,009.90	-519.42	-1,133.80	2,179,269.88	594,652.10	36.9885709	-107.5092483
4,244.00	88.56	206.65	3,012.10	-572.93	-1,162.99	2,179,216.37	594,622.92	36.9884242	-107.5093488
4,305.00	88.49	205.04	3,013.67	-627.81	-1,189.57	2,179,161.49	594,596.33	36.9882738	-107.5094405
4,367.00	88.39	203.76	3,015.36	-684.25	-1,215.17	2,179,105.05	594,570.73	36.9881190	-107.5095288
4,428.00	88.12	202.62	3,017.21	-740.29	-1,239.18	2,179,049.01	594,546.72	36.9879653	-107.5096116
4,489.00	90.10	201.51	3,018.16	-796.81	-1,262.09	2,178,992.49	594,523.81	36.9878102	-107.5096907
4,551.00	90.34	200.76	3,017.92	-854.64	-1,284.45	2,178,934.66	594,501.46	36.9876516	-107.5097679
4,612.00	90.57	200.24	3,017.44	-911.78	-1,305.81	2,178,877.52	594,480.09	36.9874948	-107.5098418
4,673.00	90.71	200.42	3,016.76	-968.97	-1,327.00	2,178,820.33	594,458.90	36.9873379	-107.5099150
4,734.00	90.87	199.62	3,015.92	-1,026.28	-1,347.88	2,178,763.02	594,438.02	36.9871807	-107.5099871
4,796.00	90.03	199.14	3,015.43	-1,084.76	-1,368.45	2,178,704.53	594,417.45	36.9870203	-107.5100583
4,857.00	89.26	197.49	3,015.81	-1,142.67	-1,387.62	2,178,646.63	594,398.28	36.9868614	-107.5101246
4,918.00	90.03	195.26	3,016.19	-1,201.19	-1,404.82	2,178,588.11	594,381.09	36.9867008	-107.5101841
4,980.00	90.13	195.35	3,016.10	-1,260.99	-1,421.18	2,178,528.31	594,364.72	36.9865367	-107.5102408
5,041.00	89.53	195.41	3,016.28	-1,319.81	-1,437.36	2,178,469.49	594,348.54	36.9863753	-107.5102969
5,102.00	87.99	195.15	3,017.60	-1,378.64	-1,453.43	2,178,410.66	594,332.47	36.9862139	-107.5103526
5,164.00	88.19	195.75	3,019.67	-1,438.36	-1,469.94	2,178,350.94	594,315.96	36.9860500	-107.5104098
5,225.00	88.59	197.35	3,021.38	-1,496.81	-1,487.31	2,178,292.49	594,298.59	36.9858896	-107.5104700
5,286.00	89.73	198.68	3,022.27	-1,554.81	-1,506.17	2,178,234.49	594,279.73	36.9857305	-107.5105352
5,348.00	90.27	198.61	3,022.27	-1,613.56	-1,525.99	2,178,175.74	594,259.91	36.9855693	-107.5106038
5,409.00	91.88	198.78	3,021.13	-1,671.33	-1,545.54	2,178,117.97	594,240.36	36.9854108	-107.5106714
5,472.00	91.98	197.49	3,019.01	-1,731.16	-1,565.14	2,178,058.14	594,220.76	36.9852466	-107.5107392
5,534.00	92.35	198.56	3,016.67	-1,790.07	-1,584.31	2,177,999.22	594,201.59	36.9850850	-107.5108055
5,597.00	91.31	198.55	3,014.65	-1,849.77	-1,604.35	2,177,939.53	594,181.56	36.9849212	-107.5108748
5,660.00	90.44	196.90	3,013.69	-1,909.77	-1,623.52	2,177,879.53	594,162.38	36.9847566	-107.5109411
5,723.00	91.11	196.76	3,012.84	-1,970.06	-1,641.76	2,177,819.23	594,144.14	36.9845911	-107.5110043
5,786.00	88.59	195.67	3,013.00	-2,030.55	-1,659.35	2,177,758.75	594,126.55	36.9844251	-107.5110652
5,849.00	88.69	197.38	3,014.50	-2,090.93	-1,677.27	2,177,698.37	594,108.64	36.9842594	-107.5111272



# Scientific Drilling, Intl

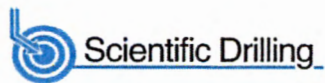
## Survey Report - Geographic

<b>Company:</b>	Hilcorp Energy Corp.	<b>Local Co-ordinate Reference:</b>	Well Allison Unit 145H
<b>Project:</b>	San Juan, NM NAD27	<b>TVD Reference:</b>	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
<b>Site:</b>	Allison Unit 145H	<b>MD Reference:</b>	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
<b>Well:</b>	Allison Unit 145H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Lateral 1 ST1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Lateral 1 ST1	<b>Database:</b>	Grand Junction District

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,912.00	89.43	196.12	3,015.53	-2,151.25	-1,695.42	2,177,638.05	594,090.48	36.9840939	-107.5111901
5,975.00	90.30	196.54	3,015.68	-2,211.71	-1,713.13	2,177,577.59	594,072.77	36.9839280	-107.5112514
6,038.00	90.91	196.38	3,015.02	-2,272.12	-1,730.98	2,177,517.18	594,054.92	36.9837623	-107.5113132
6,100.00	91.98	195.39	3,013.45	-2,331.73	-1,747.95	2,177,457.57	594,037.96	36.9835987	-107.5113720
6,163.00	90.24	195.84	3,012.23	-2,392.39	-1,764.90	2,177,396.91	594,021.00	36.9834322	-107.5114308
6,226.00	90.34	195.52	3,011.91	-2,453.05	-1,781.93	2,177,336.25	594,003.98	36.9832658	-107.5114898
6,243.00	90.24	194.80	3,011.83	-2,469.46	-1,786.37	2,177,319.84	593,999.53	36.9832207	-107.5115052
6,312.00	90.24	194.80	3,011.54	-2,536.17	-1,804.00	2,177,253.13	593,981.90	36.9830377	-107.5115663

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									

Checked By: _____	Approved By: _____	Date: _____
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## Directional Survey Certification

2948 I-70 Business Loop  
Grand Junction, CO 81504  
(970)-245-9447 Fax (970)-245-9454

<b>Operator</b>	HilCorp Enregy
<b>Well Name &amp; No.</b>	Allison Unit 145H Lateral 1 ST2
<b>County &amp; State</b>	San Juan County, NM
<b>SDI Job No.</b>	OP. 010942
<b>Rig</b>	Aztec 777

I, Mel Mireles Jr., having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 3,319 feet to a measured depth of 6,274 feet is true and correct as determined from all available records.

  
Signature

02-Jul-18  
Date

**Mel Mireles Jr.**  
Grand Junction Assistant Well Planner  
Scientific Drilling - Colorado District



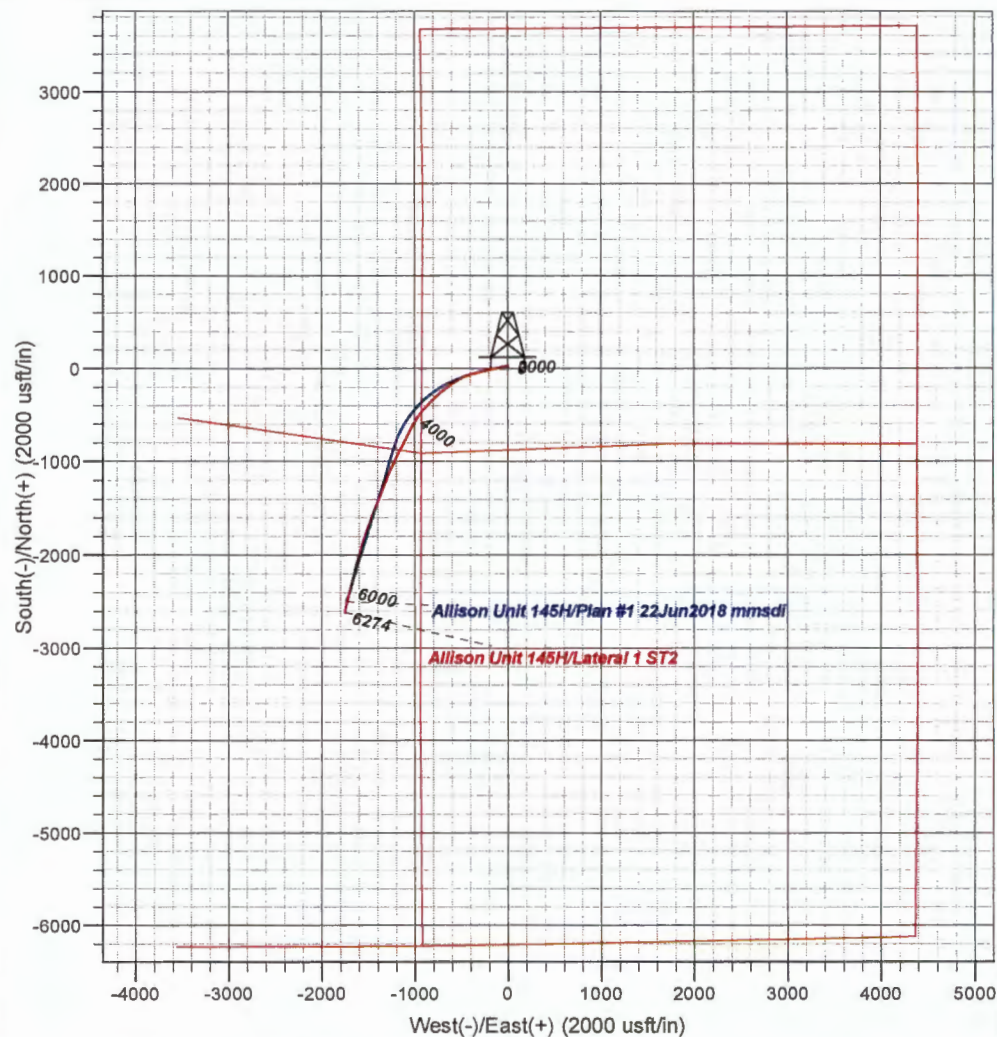
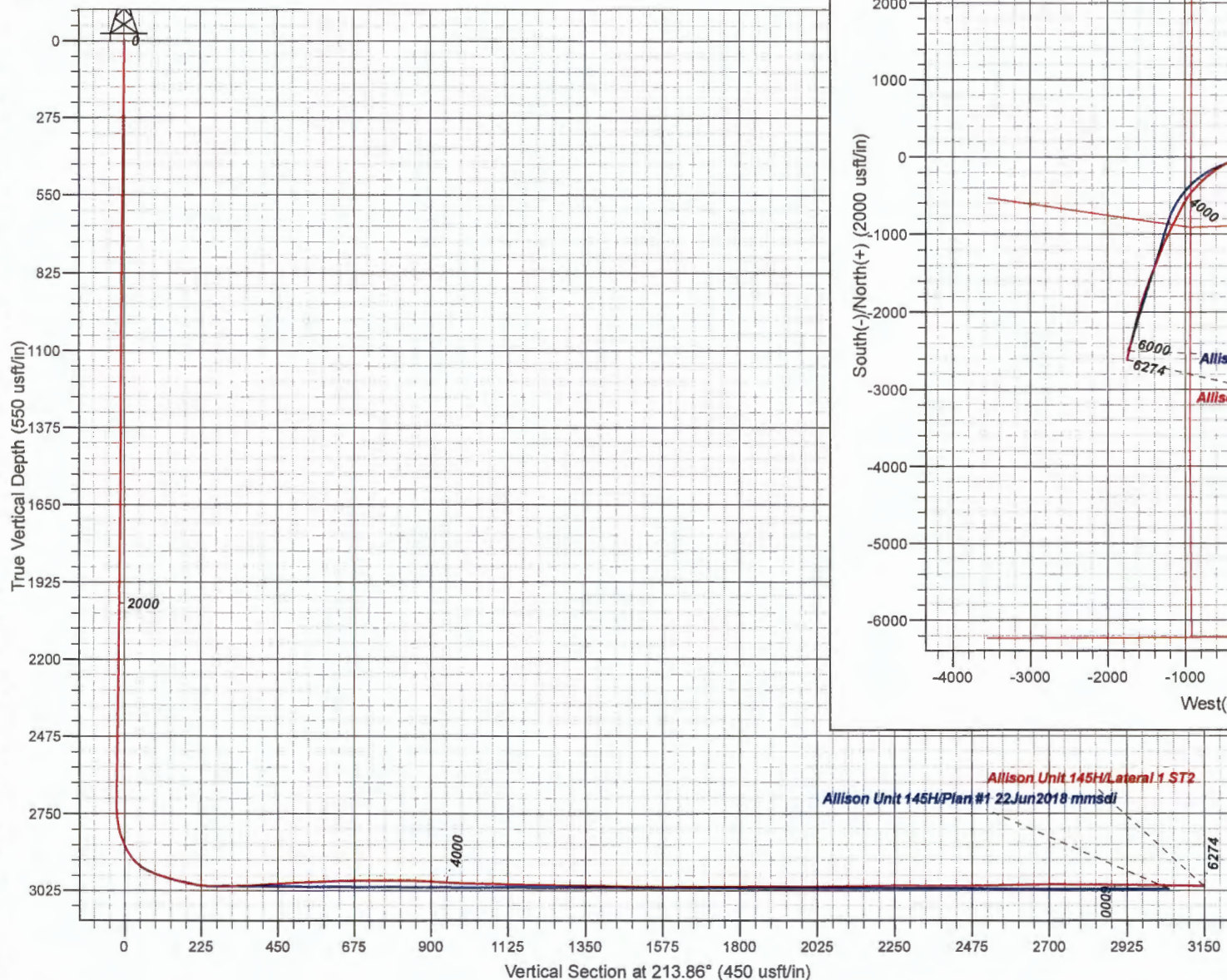
Company Name: Hilcorp Energy Corp.  
Project: San Juan, NM NAD27  
Site: Allison Unit 145H  
Well: Allison Unit 145H  
Wellbore: Lateral 1 ST2



WELL DETAILS: Allison Unit 145H

GL 6519' & RKB 15' @ 6534.00usft (Aztec 777) 6519.00

+N/-S	+E/-W	North	East	Latitude	Longitude
0.00	0.00	2179789.30	595785.90	36.9899870	-107.5053600



Design: Lateral 1 ST2 (Allison Unit 145H/Lateral 1 ST2)

Created By: Janie Collins Date: 10:33, July 02 2018

PROJECT DETAILS: San Juan, 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  
Local North: Grid



## **Hilcorp Energy Corp.**

San Juan, NM NAD27

Allison Unit 145H

Allison Unit 145H

Lateral 1 ST2

Design: Lateral 1 ST2

## **Survey Report - Geographic**

02 July, 2018





# Scientific Drilling, Intl Survey Report - Geographic

Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well Allison Unit 145H
Project:	San Juan, NM NAD27	TVD Reference:	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
Site:	Allison Unit 145H	MD Reference:	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
Well:	Allison Unit 145H	North Reference:	Grid
Wellbore:	Lateral 1 ST2	Survey Calculation Method:	Minimum Curvature
Design:	Lateral 1 ST2	Database:	Grand Junction District

Project	San Juan, 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	Allison Unit 145H		
Site Position:		Northing:	2,179,789.30 usft
From:	Map	Easting:	595,785.90 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in
		Grid Convergence:	0.20 °

Well	Allison Unit 145H		
Well Position	+N/-S	0.00 usft	Latitude: 36.9899870
	+E/-W	0.00 usft	Longitude: -107.5053601
Position Uncertainty	0.00 usft	Wellhead Elevation:	6,519.00 usft

Wellbore	Lateral 1 ST2		
Magnetics	Model Name	Sample Date	Declination (°)
	HDGM	6/22/2018	9.02
			Dip Angle (°)
			63.53
			Field Strength (nT)
			49,952

Design	Lateral 1 ST2		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	3,256.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.00	0.00	0.00
			Direction (°)
			213.86

Survey Program	Date 6/25/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
2.00	2,726.36	Survey #1 (OH)	MWD
2,760.00	3,256.00	Survey #1 - Lateral 1 MWD Survey (Lateral 1 ST2)	MWD+HDGM
3,319.00	6,274.00	Survey #1 - Lateral 1 ST2 MWD Survey (Lateral 1 ST2)	MWD+HDGM
			Description
			MWD - Standard
			OWSG MWD + HDGM
			OWSG MWD + HDGM

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.00	0.00	0.00	0.00	0.00	0.00	2,179,789.30	595,785.90	36.9899870	-107.5053601	
2.00	0.00	0.00	2.00	0.00	0.00	2,179,789.30	595,785.90	36.9899870	-107.5053601	
157.00	0.75	0.00	157.00	1.01	0.00	2,179,790.31	595,785.90	36.9899898	-107.5053601	
587.00	0.75	0.00	586.96	6.64	0.00	2,179,795.94	595,785.90	36.9900052	-107.5053600	
1,072.00	0.25	0.00	1,071.94	10.88	0.00	2,179,800.17	595,785.90	36.9900169	-107.5053600	
1,572.00	0.25	0.00	1,571.93	13.06	0.00	2,179,802.36	595,785.90	36.9900229	-107.5053599	
1,977.00	1.00	0.00	1,976.91	17.47	0.00	2,179,806.77	595,785.90	36.9900350	-107.5053599	
2,472.00	0.75	0.00	2,471.85	25.03	0.00	2,179,814.33	595,785.90	36.9900558	-107.5053598	
2,726.36	0.88	0.00	2,726.18	28.65	0.00	2,179,817.95	595,785.90	36.9900657	-107.5053598	
2,760.00	8.53	266.72	2,759.70	28.77	-2.50	2,179,818.07	595,783.41	36.9900661	-107.5053683	



# Scientific Drilling, Intl

## Survey Report - Geographic

<b>Company:</b>	Hilcorp Energy Corp.	<b>Local Co-ordinate Reference:</b>	Well Allison Unit 145H
<b>Project:</b>	San Juan, NM NAD27	<b>TVD Reference:</b>	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
<b>Site:</b>	Allison Unit 145H	<b>MD Reference:</b>	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
<b>Well:</b>	Allison Unit 145H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Lateral 1 ST2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Lateral 1 ST2	<b>Database:</b>	Grand Junction District

### Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
2,791.00	14.16	262.94	2,790.08	28.17	-8.56	2,179,817.47	595,777.34	36.9900645	-107.5053891
2,808.00	17.50	263.41	2,806.43	27.62	-13.16	2,179,816.92	595,772.74	36.9900630	-107.5054048
2,839.00	22.29	259.60	2,835.58	26.03	-23.58	2,179,815.32	595,762.32	36.9900587	-107.5054405
2,865.00	27.44	259.78	2,859.16	24.07	-34.33	2,179,813.37	595,751.57	36.9900534	-107.5054774
2,896.00	33.73	258.23	2,885.83	21.05	-49.81	2,179,810.34	595,736.10	36.9900453	-107.5055304
2,928.00	43.81	258.43	2,910.75	17.00	-69.41	2,179,806.30	595,716.50	36.9900344	-107.5055975
2,959.00	53.62	258.57	2,931.18	12.37	-92.20	2,179,801.66	595,693.70	36.9900218	-107.5056756
2,973.00	58.36	257.38	2,939.01	9.94	-103.55	2,179,799.24	595,682.35	36.9900153	-107.5057145
3,005.00	66.54	256.39	2,953.80	3.50	-131.16	2,179,792.80	595,654.75	36.9899979	-107.5058091
3,036.00	70.88	255.97	2,965.05	-3.40	-159.20	2,179,785.90	595,626.71	36.9899792	-107.5059052
3,067.00	74.22	256.11	2,974.34	-10.53	-187.89	2,179,778.77	595,598.01	36.9899599	-107.5060036
3,129.00	77.47	255.73	2,989.50	-25.15	-246.20	2,179,764.15	595,539.71	36.9899202	-107.5062034
3,190.00	79.58	255.87	3,001.64	-39.82	-304.15	2,179,749.48	595,481.76	36.9898805	-107.5064019
3,251.00	88.62	255.80	3,007.90	-54.65	-362.92	2,179,734.65	595,422.99	36.9898403	-107.5066034
3,256.00	88.96	255.87	3,008.01	-55.87	-367.76	2,179,733.42	595,418.14	36.9898370	-107.5066200
3,319.00	89.56	249.82	3,008.82	-74.45	-427.93	2,179,714.85	595,357.98	36.9897865	-107.5068262
3,382.00	92.92	244.52	3,007.46	-98.87	-485.95	2,179,690.43	595,299.95	36.9897200	-107.5070251
3,444.00	95.15	239.30	3,003.09	-127.98	-540.49	2,179,661.32	595,245.41	36.9896406	-107.5072122
3,507.00	93.89	235.82	2,998.12	-161.66	-593.48	2,179,627.64	595,192.42	36.9895486	-107.5073941
3,570.00	92.45	233.30	2,994.64	-198.13	-644.73	2,179,591.16	595,141.18	36.9894489	-107.5075699
3,631.00	92.95	231.26	2,991.77	-235.41	-692.92	2,179,553.89	595,092.98	36.9893469	-107.5077354
3,693.00	92.62	228.34	2,988.75	-275.38	-740.22	2,179,513.92	595,045.69	36.9892376	-107.5078978
3,754.00	89.50	226.57	2,987.63	-316.61	-785.14	2,179,472.69	595,000.76	36.9891247	-107.5080521
3,815.00	90.00	225.01	2,987.89	-359.14	-828.87	2,179,430.16	594,957.04	36.9890083	-107.5082023
3,877.00	89.46	221.28	2,988.18	-404.37	-871.26	2,179,384.93	594,914.65	36.9888845	-107.5083480
3,938.00	86.77	218.41	2,990.19	-451.17	-910.31	2,179,338.13	594,875.59	36.9887563	-107.5084822
3,999.00	86.07	216.61	2,994.00	-499.46	-947.38	2,179,289.84	594,838.52	36.9886240	-107.5086097
4,060.00	86.61	214.44	2,997.89	-549.00	-982.75	2,179,240.30	594,803.15	36.9884883	-107.5087314
4,122.00	88.49	210.72	3,000.55	-601.19	-1,016.10	2,179,188.11	594,769.81	36.9883452	-107.5088462
4,183.00	88.22	207.01	3,002.30	-654.58	-1,045.53	2,179,134.72	594,740.38	36.9881989	-107.5089476
4,244.00	88.89	207.24	3,003.84	-708.85	-1,073.33	2,179,080.45	594,712.57	36.9880501	-107.5090434
4,305.00	88.59	205.77	3,005.18	-763.43	-1,100.55	2,179,025.87	594,685.36	36.9879004	-107.5091372
4,367.00	89.46	207.87	3,006.23	-818.74	-1,128.51	2,178,970.55	594,657.39	36.9877487	-107.5092336
4,428.00	87.78	207.10	3,007.70	-872.84	-1,156.66	2,178,916.46	594,629.25	36.9876004	-107.5093306
4,489.00	88.99	207.42	3,009.42	-927.04	-1,184.59	2,178,862.26	594,601.32	36.9874518	-107.5094269
4,551.00	89.09	206.99	3,010.46	-982.18	-1,212.93	2,178,807.12	594,572.98	36.9873006	-107.5095246
4,612.00	88.99	205.24	3,011.48	-1,036.94	-1,239.77	2,178,752.36	594,546.13	36.9871504	-107.5096171
4,673.00	90.77	203.80	3,011.61	-1,092.43	-1,265.09	2,178,696.86	594,520.82	36.9869982	-107.5097044
4,734.00	89.90	202.11	3,011.25	-1,148.60	-1,288.87	2,178,640.70	594,497.03	36.9868442	-107.5097865
4,796.00	90.47	201.32	3,011.05	-1,206.20	-1,311.81	2,178,583.10	594,474.09	36.9866862	-107.5098657
4,857.00	90.20	201.11	3,010.70	-1,263.07	-1,333.89	2,178,526.23	594,452.02	36.9865302	-107.5099420
4,918.00	90.71	202.24	3,010.21	-1,319.75	-1,356.42	2,178,469.55	594,429.49	36.9863747	-107.5100198
4,980.00	89.56	202.33	3,010.06	-1,377.12	-1,379.93	2,178,412.18	594,405.98	36.9862174	-107.5101009
5,041.00	89.70	203.27	3,010.46	-1,433.35	-1,403.56	2,178,355.95	594,382.34	36.9860631	-107.5101825
5,102.00	89.93	202.87	3,010.66	-1,489.47	-1,427.47	2,178,299.83	594,358.44	36.9859092	-107.5102650
5,164.00	90.87	201.34	3,010.22	-1,546.91	-1,450.80	2,178,242.39	594,335.11	36.9857516	-107.5103455
5,225.00	91.38	198.73	3,009.02	-1,604.20	-1,471.69	2,178,185.10	594,314.21	36.9855945	-107.5104177
5,287.00	90.20	199.69	3,008.17	-1,662.74	-1,492.09	2,178,126.56	594,293.82	36.9854339	-107.5104883
5,348.00	90.74	198.96	3,007.67	-1,720.30	-1,512.27	2,178,069.00	594,273.63	36.9852759	-107.5105580
5,409.00	88.93	198.36	3,007.85	-1,778.09	-1,531.79	2,178,011.21	594,254.11	36.9851174	-107.5106255
5,472.00	89.93	199.00	3,008.47	-1,837.77	-1,551.96	2,177,951.53	594,233.94	36.9849537	-107.5106953
5,535.00	90.87	197.82	3,008.03	-1,897.54	-1,571.86	2,177,891.76	594,214.04	36.9847897	-107.5107641
5,597.00	91.71	197.60	3,006.64	-1,956.59	-1,590.72	2,177,832.71	594,195.19	36.9846276	-107.5108293
5,660.00	91.27	196.46	3,005.00	-2,016.80	-1,609.16	2,177,772.49	594,176.74	36.9844624	-107.5108932
5,723.00	91.81	194.54	3,003.30	-2,077.49	-1,625.99	2,177,711.81	594,159.91	36.9842959	-107.5109515

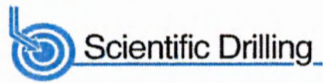


Scientific Drilling, Intl  
Survey Report - Geographic

<b>Company:</b>	Hilcorp Energy Corp.	<b>Local Co-ordinate Reference:</b>	Well Allison Unit 145H
<b>Project:</b>	San Juan, NM NAD27	<b>TVD Reference:</b>	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
<b>Site:</b>	Allison Unit 145H	<b>MD Reference:</b>	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
<b>Well:</b>	Allison Unit 145H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Lateral 1 ST2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Lateral 1 ST2	<b>Database:</b>	Grand Junction District

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,786.00	89.93	194.56	3,002.35	-2,138.46	-1,641.81	2,177,650.84	594,144.09	36.9841286	-107.5110064
5,849.00	88.56	194.28	3,003.18	-2,199.47	-1,657.50	2,177,589.83	594,128.40	36.9839611	-107.5110608
5,912.00	89.66	193.53	3,004.16	-2,260.61	-1,672.64	2,177,528.69	594,113.26	36.9837933	-107.5111134
5,975.00	90.97	192.91	3,003.81	-2,321.94	-1,687.05	2,177,467.36	594,098.86	36.9836250	-107.5111634
6,038.00	88.79	194.03	3,003.94	-2,383.20	-1,701.72	2,177,406.10	594,084.18	36.9834569	-107.5112143
6,101.00	89.46	192.80	3,004.90	-2,444.47	-1,716.33	2,177,344.82	594,069.57	36.9832887	-107.5112651
6,163.00	88.32	192.37	3,006.11	-2,504.97	-1,729.84	2,177,284.33	594,056.06	36.9831227	-107.5113120
6,205.00	89.13	192.30	3,007.04	-2,545.99	-1,738.81	2,177,243.31	594,047.09	36.9830101	-107.5113432
6,274.00	89.13	192.30	3,008.09	-2,613.40	-1,753.51	2,177,175.90	594,032.40	36.9828251	-107.5113943

Checked By: _____	Approved By: _____	Date: _____
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## Directional Survey Certification

2948 I-70 Business Loop  
Grand Junction, CO 81504  
(970)-245-9447 Fax (970)-245-9454

<b>Operator</b>	HilCorp Enregy
<b>Well Name &amp; No.</b>	Allison Unit 145H Lateral 2
<b>County &amp; State</b>	San Juan County, NM
<b>SDI Job No.</b>	OP. 011074
<b>Rig</b>	Aztec 777

I, Mel Mireles Jr., having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 2,696 feet to a measured depth of 6,328 feet is true and correct as determined from all available records.

Mel Mireles Jr.  
Signature

02-Jul-18  
Date

**Mel Mireles Jr.**  
Grand Junction Assistant Well Planner  
Scientific Drilling - Colorado District

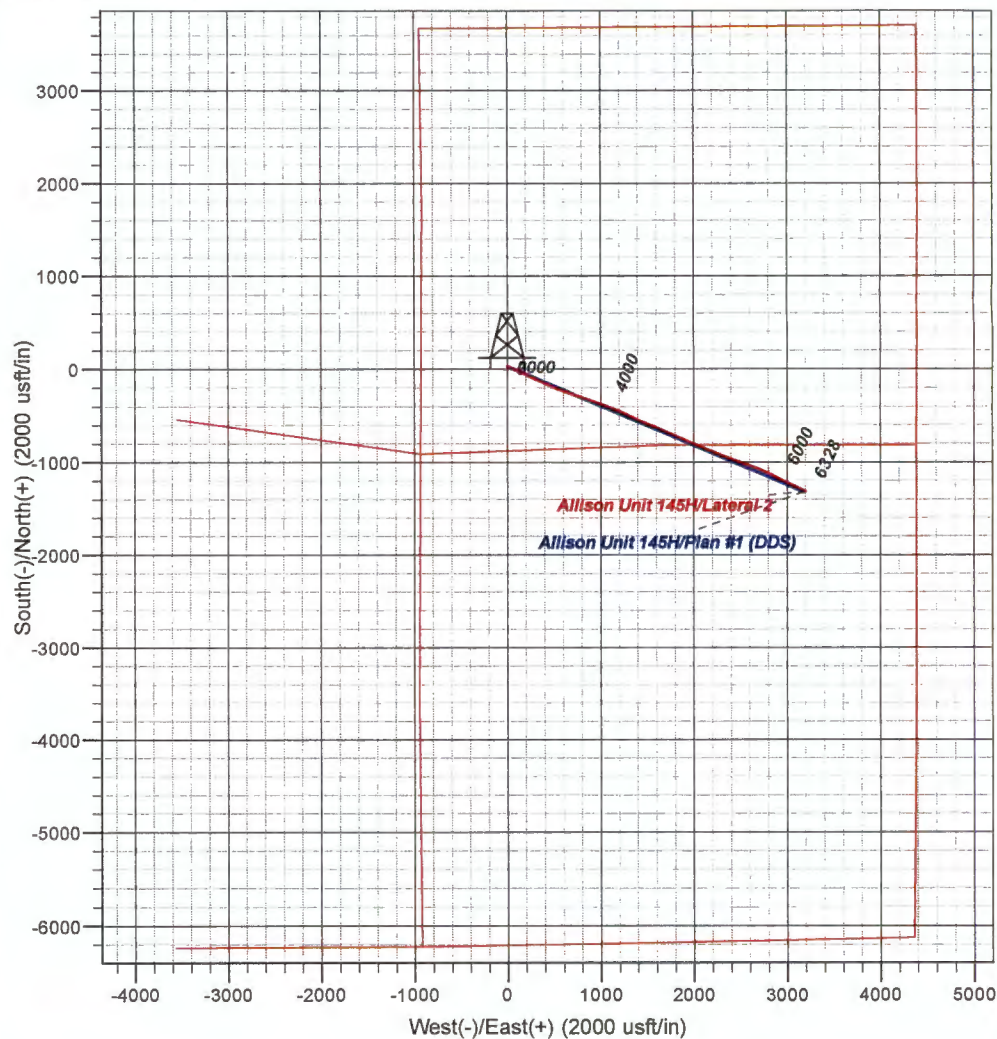
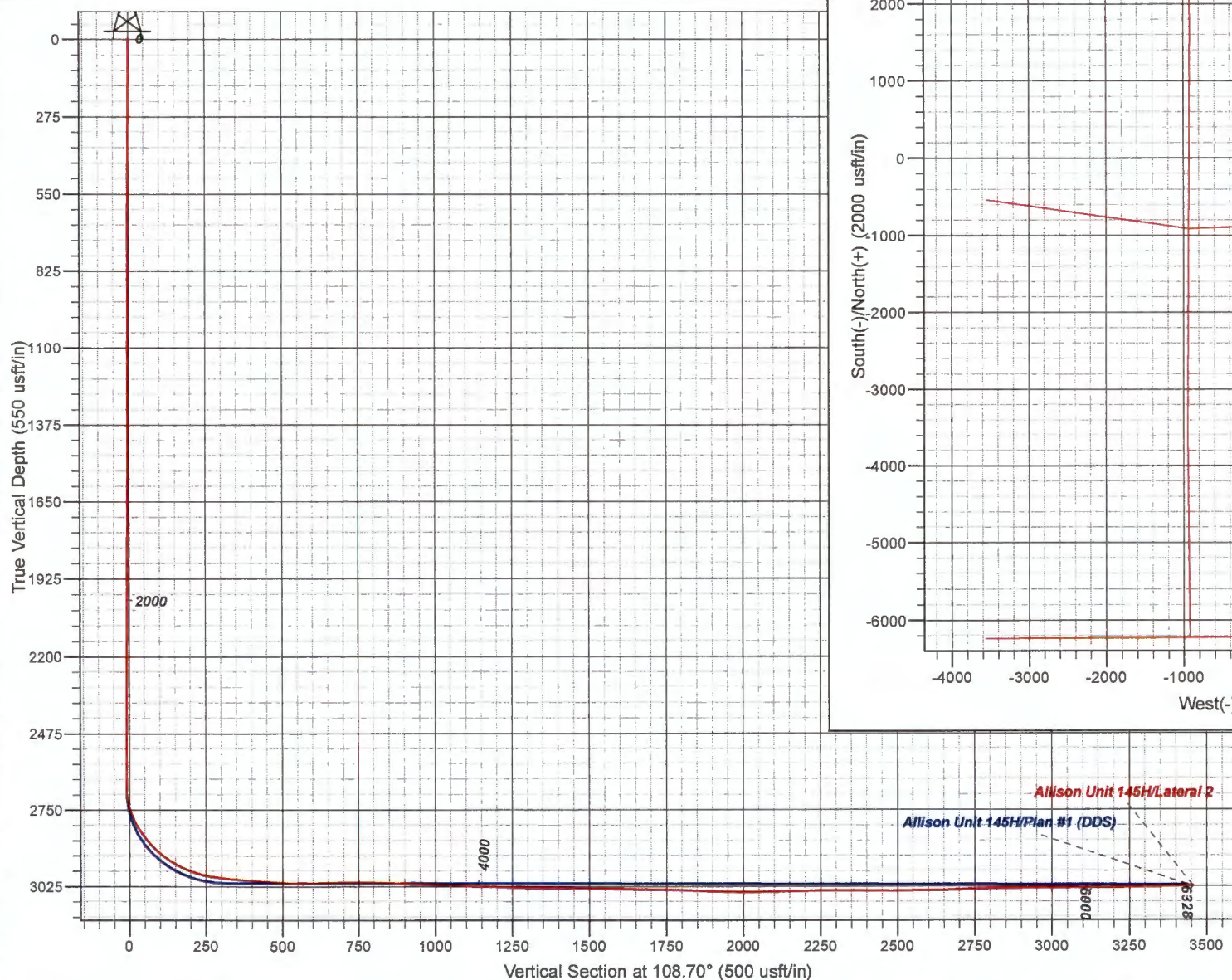


Company Name: Hilcorp Energy Corp.  
Project: San Juan, NM NAD27  
Site: Allison Unit 145H  
Well: Allison Unit 145H  
Wellbore: Lateral 2



WELL DETAILS: Allison Unit 145H

+N/-S	+E/-W	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777) 6519.00			
		Northing	Easting	Latitude	Longitude
0.00	0.00	2179789.30	595785.90	36.9899870	-107.5053600



Design: Lateral 2 (Allison Unit 145H/Lateral 2)

Created By: Janie Collins Date: 10:53, July 02 2018

PROJECT DETAILS: San Juan, 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  
Local North: Grid



# **Hilcorp Energy Corp.**

San Juan, NM NAD27

Allison Unit 145H

Allison Unit 145H

Lateral 2

Design: Lateral 2

## **Survey Report - Geographic**

02 July, 2018





# Scientific Drilling, Intl Survey Report - Geographic

<b>Company:</b>	Hilcorp Energy Corp.	<b>Local Co-ordinate Reference:</b>	Well Allison Unit 145H
<b>Project:</b>	San Juan, NM NAD27	<b>TVD Reference:</b>	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
<b>Site:</b>	Allison Unit 145H	<b>MD Reference:</b>	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
<b>Well:</b>	Allison Unit 145H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Lateral 2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Lateral 2	<b>Database:</b>	Grand Junction District

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

<b>Site</b>	Allison Unit 145H			
<b>Site Position:</b>		<b>Northing:</b>	2,179,789.30 usft	<b>Latitude:</b> 36.9899870
<b>From:</b>	Map	<b>Easting:</b>	595,785.90 usft	<b>Longitude:</b> -107.5053601
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13.20 in	<b>Grid Convergence:</b> 0.20 °

<b>Well</b>	Allison Unit 145H			
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	2,179,789.30 usft
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	595,785.90 usft
<b>Position Uncertainty</b>	0.00 usft	<b>Wellhead Elevation:</b>	0.00 usft	<b>Ground Level:</b> 6,519.00 usft

<b>Wellbore</b>	Lateral 2				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM	5/18/2018	9.03	63.53	49,963

<b>Design</b>	Lateral 2			
<b>Audit Notes:</b>				
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b> 2,686.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	108.70

<b>Survey Program</b>	<b>Date</b>	7/2/2018		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
2.00	2,686.00	Survey #1 (OH)	MWD	MWD - Standard
2,696.00	6,328.00	Survey #1 - Lateral 2 MWD Survey (Latera	MWD+HDGM	OWSG MWD + HDGM

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	2,179,789.30	595,785.90	36.9899870	-107.5053601
2.00	0.00	0.00	2.00	0.00	0.00	2,179,789.30	595,785.90	36.9899870	-107.5053601
157.00	0.75	0.00	157.00	1.01	0.00	2,179,790.31	595,785.90	36.9899898	-107.5053601
587.00	0.75	0.00	586.96	6.64	0.00	2,179,795.94	595,785.90	36.9900052	-107.5053600
1,072.00	0.25	0.00	1,071.94	10.88	0.00	2,179,800.17	595,785.90	36.9900169	-107.5053600
1,572.00	0.25	0.00	1,571.93	13.06	0.00	2,179,802.36	595,785.90	36.9900229	-107.5053599
1,977.00	1.00	0.00	1,976.91	17.47	0.00	2,179,806.77	595,785.90	36.9900350	-107.5053599
2,472.00	0.75	0.00	2,471.85	25.03	0.00	2,179,814.33	595,785.90	36.9900558	-107.5053598
2,686.00	0.86	0.00	2,685.83	28.04	0.00	2,179,817.34	595,785.90	36.9900640	-107.5053598
2,696.00	6.42	89.01	2,695.81	28.13	0.56	2,179,817.42	595,786.46	36.9900643	-107.5053578
2,728.00	13.11	83.21	2,727.33	28.59	5.96	2,179,817.89	595,791.86	36.9900655	-107.5053394



# Scientific Drilling, Intl

## Survey Report - Geographic

<b>Company:</b>	Hilcorp Energy Corp.	<b>Local Co-ordinate Reference:</b>	Well Allison Unit 145H
<b>Project:</b>	San Juan, NM NAD27	<b>TVD Reference:</b>	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
<b>Site:</b>	Allison Unit 145H	<b>MD Reference:</b>	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
<b>Well:</b>	Allison Unit 145H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Lateral 2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Lateral 2	<b>Database:</b>	Grand Junction District

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
2,759.00	18.56	103.07	2,757.16	27.89	14.27	2,179,817.18	595,800.17	36.9900635	-107.5053109
2,791.00	23.31	111.68	2,787.05	24.39	25.12	2,179,813.69	595,811.02	36.9900538	-107.5052738
2,822.00	29.03	115.29	2,814.86	18.91	37.63	2,179,808.21	595,823.54	36.9900386	-107.5052310
2,853.00	33.52	114.94	2,841.35	12.08	52.20	2,179,801.38	595,838.10	36.9900197	-107.5051812
2,885.00	39.50	114.76	2,867.05	4.09	69.47	2,179,793.39	595,855.37	36.9899976	-107.5051222
2,901.00	41.66	114.17	2,879.21	-0.22	78.94	2,179,789.08	595,864.85	36.9899856	-107.5050898
2,933.00	46.60	114.64	2,902.17	-9.43	99.23	2,179,779.87	595,885.13	36.9899602	-107.5050205
2,964.00	51.37	113.89	2,922.51	-19.03	120.55	2,179,770.26	595,906.45	36.9899336	-107.5049476
2,995.00	56.72	114.47	2,940.70	-29.31	143.43	2,179,759.99	595,929.33	36.9899051	-107.5048693
3,027.00	62.66	115.46	2,956.84	-40.97	168.46	2,179,748.32	595,954.36	36.9898729	-107.5047838
3,068.00	69.68	115.71	2,973.40	-57.16	202.26	2,179,732.14	595,988.17	36.9898281	-107.5046682
3,131.00	79.35	115.39	2,990.20	-83.31	256.98	2,179,705.99	596,042.88	36.9897557	-107.5044812
3,162.00	82.96	114.96	2,994.96	-96.34	284.69	2,179,692.96	596,070.60	36.9897197	-107.5043864
3,194.00	84.15	114.66	2,998.56	-109.68	313.56	2,179,679.62	596,099.46	36.9896828	-107.5042878
3,225.00	84.28	114.98	3,001.68	-122.63	341.55	2,179,666.67	596,127.45	36.9896469	-107.5041921
3,257.00	84.86	115.25	3,004.71	-136.15	370.39	2,179,653.15	596,156.30	36.9896095	-107.5040935
3,288.00	85.34	115.17	3,007.36	-149.31	398.34	2,179,639.99	596,184.24	36.9895731	-107.5039980
3,319.00	85.70	115.16	3,009.78	-162.45	426.31	2,179,626.85	596,212.21	36.9895368	-107.5039023
3,382.00	87.55	112.59	3,013.49	-187.90	483.81	2,179,601.40	596,269.72	36.9894663	-107.5037058
3,445.00	90.64	110.67	3,014.48	-211.11	542.36	2,179,578.19	596,328.26	36.9894020	-107.5035056
3,508.00	93.02	111.46	3,012.47	-233.74	601.11	2,179,555.56	596,387.02	36.9893393	-107.5033047
3,539.00	90.23	110.20	3,011.59	-244.76	630.07	2,179,544.54	596,415.98	36.9893087	-107.5032056
3,571.00	90.44	110.12	3,011.40	-255.79	660.11	2,179,533.51	596,446.02	36.9892781	-107.5031029
3,634.00	89.77	109.20	3,011.29	-276.98	719.44	2,179,512.31	596,505.34	36.9892194	-107.5029000
3,697.00	87.89	108.82	3,012.58	-297.50	778.99	2,179,491.80	596,564.89	36.9891624	-107.5028964
3,758.00	87.82	107.72	3,014.86	-316.61	836.87	2,179,472.69	596,622.77	36.9891094	-107.5024984
3,819.00	86.98	108.97	3,017.63	-335.79	894.71	2,179,453.51	596,680.61	36.9890562	-107.5023006
3,880.00	87.51	108.37	3,020.56	-355.29	952.43	2,179,434.01	596,738.34	36.9890020	-107.5021032
3,942.00	88.16	108.55	3,022.90	-374.91	1,011.20	2,179,414.39	596,797.10	36.9889476	-107.5019022
4,003.00	87.85	111.78	3,025.02	-395.92	1,068.42	2,179,393.38	596,854.32	36.9888893	-107.5017066
4,064.00	88.32	111.53	3,027.06	-418.42	1,125.08	2,179,370.88	596,910.98	36.9888270	-107.5015128
4,125.00	88.19	112.65	3,028.92	-441.35	1,181.58	2,179,347.95	596,967.48	36.9887635	-107.5013197
4,187.00	88.96	112.47	3,030.46	-465.13	1,238.81	2,179,324.17	597,024.72	36.9886976	-107.5011240
4,248.00	89.09	116.06	3,031.50	-490.19	1,294.41	2,179,299.11	597,080.31	36.9886282	-107.5009339
4,310.00	89.50	115.39	3,032.26	-517.10	1,350.26	2,179,272.20	597,136.16	36.9885538	-107.5007430
4,370.00	89.90	113.93	3,032.58	-542.13	1,404.78	2,179,247.17	597,190.69	36.9884845	-107.5005566
4,432.00	87.65	112.32	3,033.90	-566.47	1,461.78	2,179,222.83	597,247.69	36.9884171	-107.5003618
4,493.00	88.89	111.83	3,035.74	-589.39	1,518.28	2,179,199.91	597,304.19	36.9883536	-107.5001686
4,554.00	89.26	114.45	3,036.73	-613.35	1,574.36	2,179,175.95	597,360.27	36.9882873	-107.4999769
4,616.00	89.66	113.56	3,037.31	-638.57	1,631.00	2,179,150.72	597,416.90	36.9882174	-107.4997833
4,677.00	87.08	113.13	3,039.05	-662.73	1,686.98	2,179,126.56	597,472.88	36.9881505	-107.4995919
4,738.00	87.31	114.55	3,042.03	-687.36	1,742.71	2,179,101.94	597,528.61	36.9880824	-107.4994014
4,800.00	88.72	114.92	3,044.18	-713.29	1,798.98	2,179,076.01	597,584.88	36.9880106	-107.4992090
4,861.00	88.59	113.57	3,045.61	-738.33	1,854.58	2,179,050.97	597,640.49	36.9879413	-107.4990189
4,922.00	91.48	114.54	3,045.58	-763.19	1,910.28	2,179,026.11	597,696.18	36.9878725	-107.4988285
4,983.00	91.31	112.70	3,044.09	-787.62	1,966.15	2,179,001.68	597,752.05	36.9878048	-107.4986375
5,045.00	92.32	112.75	3,042.13	-811.56	2,023.31	2,178,977.74	597,809.21	36.9877385	-107.4984421
5,106.00	91.41	113.00	3,040.14	-835.26	2,079.48	2,178,954.04	597,865.38	36.9876729	-107.4982501
5,167.00	89.13	113.59	3,039.85	-859.38	2,135.50	2,178,929.92	597,921.41	36.9876061	-107.4980585
5,229.00	89.40	112.24	3,040.65	-883.52	2,192.60	2,178,905.78	597,978.51	36.9875392	-107.4978633
5,290.00	89.53	112.05	3,041.22	-906.51	2,249.10	2,178,882.79	598,035.01	36.9874755	-107.4976702
5,352.00	89.90	111.25	3,041.53	-929.39	2,306.73	2,178,859.91	598,092.63	36.9874121	-107.4974731
5,413.00	90.74	110.86	3,041.19	-951.30	2,363.65	2,178,838.00	598,149.56	36.9873514	-107.4972785
5,474.00	91.44	109.45	3,040.03	-972.31	2,420.91	2,178,816.98	598,206.81	36.9872931	-107.4970827
5,535.00	92.02	109.28	3,038.19	-992.53	2,478.43	2,178,796.77	598,264.33	36.9872370	-107.4968860



Scientific Drilling, Intl  
Survey Report - Geographic

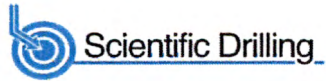
Company: Hilcorp Energy Corp.  
Project: San Juan, NM NAD27  
Site: Allison Unit 145H  
Well: Allison Unit 145H  
Wellbore: Lateral 2  
Design: Lateral 2

Local Co-ordinate Reference: Well Allison Unit 145H  
TVD Reference: GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)  
MD Reference: GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature  
Database: Grand Junction District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,598.00	92.78	108.42	3,035.55	-1,012.87	2,538.00	2,178,776.43	598,323.90	36.9871806	-107.4966823
5,661.00	90.91	111.66	3,033.52	-1,034.44	2,597.14	2,178,754.86	598,383.04	36.9871207	-107.4964801
5,724.00	91.48	111.79	3,032.20	-1,057.76	2,655.65	2,178,731.54	598,441.56	36.9870561	-107.4962800
5,787.00	89.33	114.97	3,031.76	-1,082.75	2,713.47	2,178,706.55	598,499.37	36.9869869	-107.4960824
5,850.00	90.47	114.80	3,031.87	-1,109.26	2,770.62	2,178,680.04	598,556.52	36.9869135	-107.4958870
5,913.00	91.17	114.66	3,030.97	-1,135.61	2,827.83	2,178,653.68	598,613.74	36.9868406	-107.4956915
5,975.00	91.24	114.57	3,029.66	-1,161.43	2,884.19	2,178,627.87	598,670.09	36.9867691	-107.4954988
6,038.00	89.80	116.81	3,029.09	-1,188.74	2,940.95	2,178,600.56	598,726.85	36.9866936	-107.4953048
6,101.00	90.34	116.21	3,029.02	-1,216.86	2,997.33	2,178,572.44	598,783.23	36.9866158	-107.4951121
6,164.00	90.91	115.57	3,028.33	-1,244.37	3,054.00	2,178,544.93	598,839.90	36.9865397	-107.4949184
6,227.00	91.44	114.94	3,027.04	-1,271.24	3,110.97	2,178,518.06	598,896.87	36.9864653	-107.4947237
6,258.00	91.81	114.89	3,026.16	-1,284.29	3,139.07	2,178,505.00	598,924.97	36.9864292	-107.4946276
6,328.00	91.81	114.89	3,023.95	-1,313.74	3,202.54	2,178,475.56	598,988.44	36.9863477	-107.4944107

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_



## Directional Survey Certification

2948 I-70 Business Loop  
Grand Junction, CO 81504  
(970)-245-9447 Fax (970)-245-9454

<b>Operator</b>	HilCorp Enregy
<b>Well Name &amp; No.</b>	Allison Unit 145H Lateral 2 ST1
<b>County &amp; State</b>	San Juan County, NM
<b>SDI Job No.</b>	OP. 011074
<b>Rig</b>	Aztec 777

I, Mel Mireles Jr., having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 3,446 feet to a measured depth of 6,484 feet is true and correct as determined from all available records.

Signature

02-Jul-18  
Date

**Mel Mireles Jr.**  
Grand Junction Assistant Well Planner  
Scientific Drilling - Colorado District

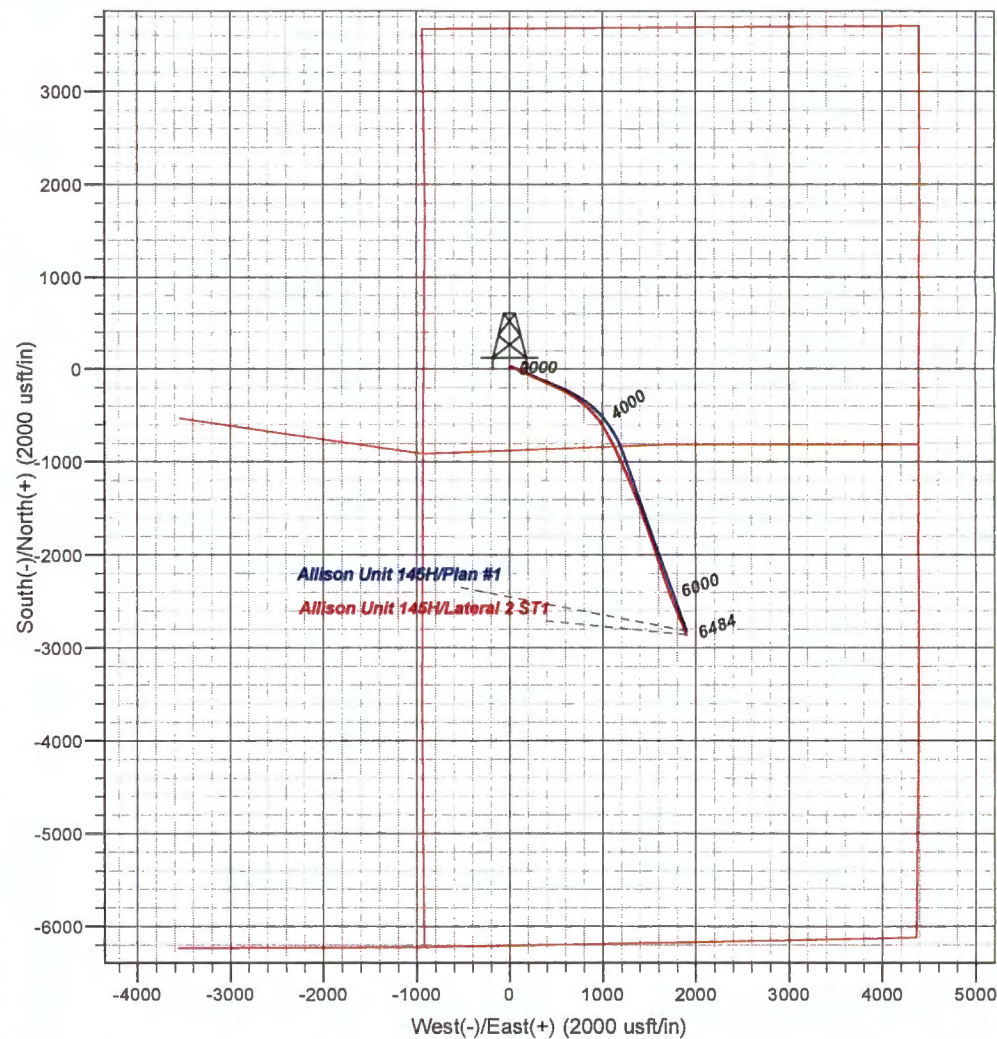
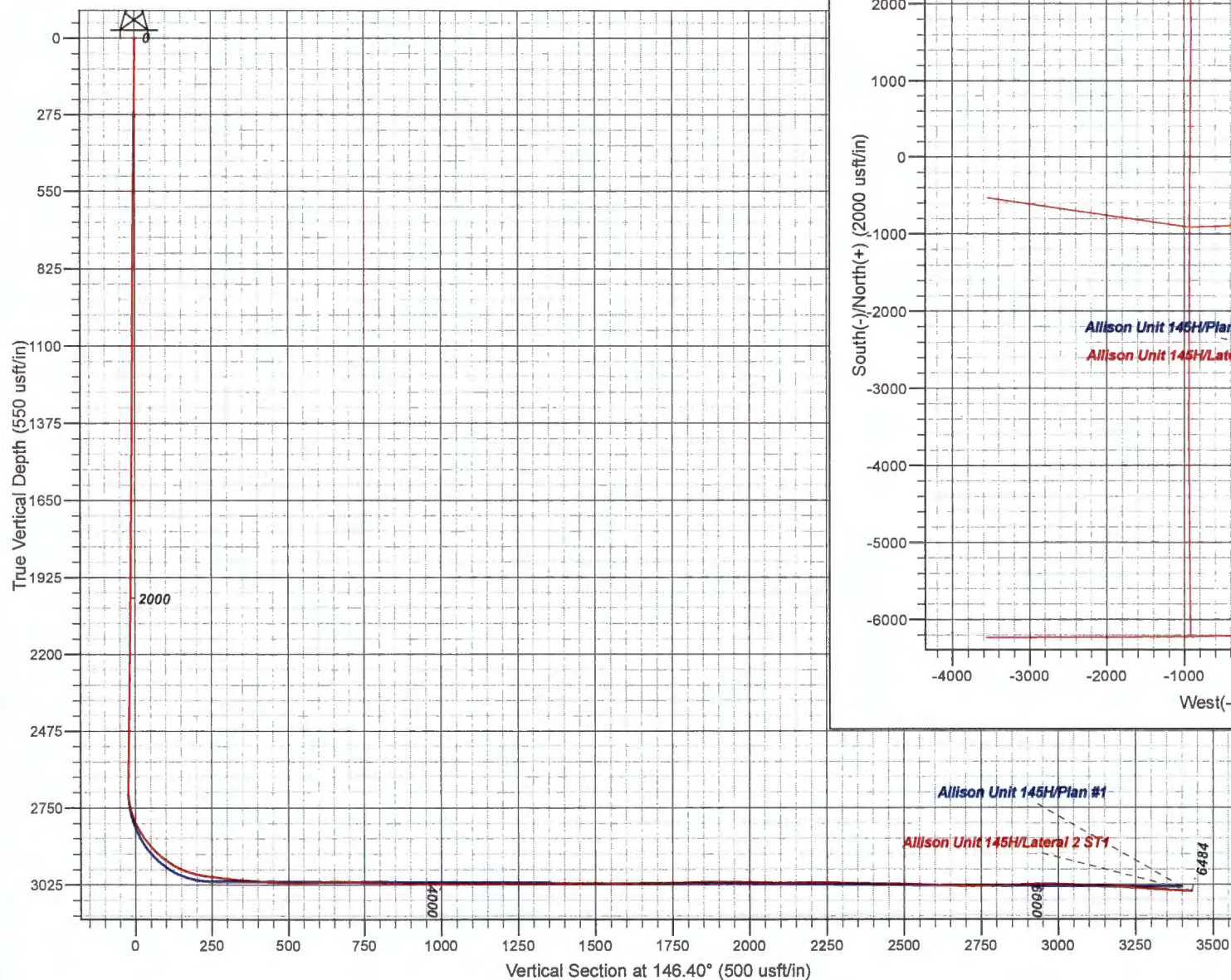


Company Name: Hilcorp Energy Corp.  
Project: San Juan, NM NAD27  
Site: Allison Unit 145H  
Well: Allison Unit 145H  
Wellbore: Lateral 2 ST1



WELL DETAILS: Allison Unit 145H

+N/-S	+E/-W	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777) 6519.00	North	East	Lat	Long
0.00	0.00		2179789.30	595785.90	36.9899870	-107.5053600



Design: Lateral 2 ST1 (Allison Unit 145H/Lateral 2 ST1)

Created By: Janie Collins Date: 11:26, July 02 2018

PROJECT DETAILS: San Juan, 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  
Local North: Grid



# **Hilcorp Energy Corp.**

San Juan, NM NAD27

Allison Unit 145H

Allison Unit 145H

Lateral 2 ST1

Design: Lateral 2 ST1

## **Survey Report - Geographic**

02 July, 2018



[www.scientificdrilling.com](http://www.scientificdrilling.com)



# Scientific Drilling, Intl Survey Report - Geographic

<b>Company:</b>	Hilcorp Energy Corp.	<b>Local Co-ordinate Reference:</b>	Well Allison Unit 145H
<b>Project:</b>	San Juan, NM NAD27	<b>TVD Reference:</b>	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
<b>Site:</b>	Allison Unit 145H	<b>MD Reference:</b>	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
<b>Well:</b>	Allison Unit 145H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Lateral 2 ST1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Lateral 2 ST1	<b>Database:</b>	Grand Junction District

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

<b>Site</b>	Allison Unit 145H				
<b>Site Position:</b>		<b>Northing:</b>	2,179,789.30 usft	<b>Latitude:</b>	36.9899870
<b>From:</b>	Map	<b>Easting:</b>	595,785.90 usft	<b>Longitude:</b>	-107.5053601
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13.20 in	<b>Grid Convergence:</b>	0.20 °

<b>Well</b>	Allison Unit 145H				
<b>Well Position</b>	+N/-S	0.00 usft	<b>Northing:</b>	2,179,789.30 usft	<b>Latitude:</b> 36.9899870
	+E/-W	0.00 usft	<b>Easting:</b>	595,785.90 usft	<b>Longitude:</b> -107.5053601
<b>Position Uncertainty</b>	0.00 usft		<b>Wellhead Elevation:</b>	0.00 usft	<b>Ground Level:</b> 6,519.00 usft

<b>Wellbore</b>	Lateral 2 ST1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM	5/18/2018	9.03	63.53	49,963

<b>Design</b>	Lateral 2 ST1				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	3,382.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	146.40	

<b>Survey Program</b>	Date 7/2/2018				
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
2.00	2,686.00	Survey #1 (OH)	MWD	MWD - Standard	
2,696.00	3,382.00	Survey #1 - Lateral 2 MWD Survey (Lateral 2 ST1)	MWD+HDGM	OWSG MWD + HDGM	
3,446.00	6,484.00	Survey #1 - Lateral 2 ST1 MWD Survey (Lateral 2 ST1)	MWD+HDGM	OWSG MWD + HDGM	

<b>Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Map Northing (usft)</b>	<b>Map Easting (usft)</b>	<b>Latitude</b>	<b>Longitude</b>	
0.00	0.00	0.00	0.00	0.00	0.00	2,179,789.30	595,785.90	36.9899870	-107.5053601	
2.00	0.00	0.00	2.00	0.00	0.00	2,179,789.30	595,785.90	36.9899870	-107.5053601	
157.00	0.75	0.00	157.00	1.01	0.00	2,179,790.31	595,785.90	36.9899898	-107.5053601	
587.00	0.75	0.00	586.96	6.64	0.00	2,179,795.94	595,785.90	36.9900052	-107.5053600	
1,072.00	0.25	0.00	1,071.94	10.88	0.00	2,179,800.17	595,785.90	36.9900169	-107.5053600	
1,572.00	0.25	0.00	1,571.93	13.06	0.00	2,179,802.36	595,785.90	36.9900229	-107.5053599	
1,977.00	1.00	0.00	1,976.91	17.47	0.00	2,179,806.77	595,785.90	36.9900350	-107.5053599	
2,472.00	0.75	0.00	2,471.85	25.03	0.00	2,179,814.33	595,785.90	36.9900558	-107.5053598	
2,686.00	0.86	0.00	2,685.83	28.04	0.00	2,179,817.34	595,785.90	36.9900640	-107.5053598	
2,696.00	6.42	89.01	2,695.81	28.13	0.56	2,179,817.42	595,786.46	36.9900643	-107.5053578	



# Scientific Drilling, Intl Survey Report - Geographic

Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well Allison Unit 145H
Project:	San Juan, NM NAD27	TVD Reference:	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
Site:	Allison Unit 145H	MD Reference:	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
Well:	Allison Unit 145H	North Reference:	Grid
Wellbore:	Lateral 2 ST1	Survey Calculation Method:	Minimum Curvature
Design:	Lateral 2 ST1	Database:	Grand Junction District

## Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
2,728.00	13.11	83.21	2,727.33	28.59	5.96	2,179,817.89	595,791.86	36.9900655	-107.5053394
2,759.00	18.56	103.07	2,757.16	27.89	14.27	2,179,817.18	595,800.17	36.9900635	-107.5053109
2,791.00	23.31	111.68	2,787.05	24.39	25.12	2,179,813.69	595,811.02	36.9900538	-107.5052738
2,822.00	29.03	115.29	2,814.86	18.91	37.63	2,179,808.21	595,823.54	36.9900386	-107.5052310
2,853.00	33.52	114.94	2,841.35	12.08	52.20	2,179,801.38	595,838.10	36.9900197	-107.5051812
2,885.00	39.50	114.76	2,867.05	4.09	69.47	2,179,793.39	595,855.37	36.9899976	-107.5051222
2,901.00	41.66	114.17	2,879.21	-0.22	78.94	2,179,789.08	595,864.85	36.9899856	-107.5050898
2,933.00	46.60	114.64	2,902.17	-9.43	99.23	2,179,779.87	595,885.13	36.9899602	-107.5050205
2,964.00	51.37	113.89	2,922.51	-19.03	120.55	2,179,770.26	595,906.45	36.9899336	-107.5049476
2,995.00	56.72	114.47	2,940.70	-29.31	143.43	2,179,759.99	595,929.33	36.9899051	-107.5048693
3,027.00	62.66	115.46	2,956.84	-40.97	168.46	2,179,748.32	595,954.36	36.9898729	-107.5047838
3,068.00	69.68	115.71	2,973.40	-57.16	202.26	2,179,732.14	595,988.17	36.9898281	-107.5046682
3,131.00	79.35	115.39	2,990.20	-83.31	256.98	2,179,705.99	596,042.88	36.9897557	-107.5044812
3,162.00	82.96	114.96	2,994.96	-96.34	284.69	2,179,692.96	596,070.60	36.9897197	-107.5043864
3,194.00	84.15	114.66	2,998.56	-109.68	313.56	2,179,679.62	596,099.46	36.9896828	-107.5042878
3,225.00	84.28	114.98	3,001.68	-122.63	341.55	2,179,666.67	596,127.45	36.9896469	-107.5041921
3,257.00	84.86	115.25	3,004.71	-136.15	370.39	2,179,653.15	596,156.30	36.9896095	-107.5040935
3,288.00	85.34	115.17	3,007.36	-149.31	398.34	2,179,639.99	596,184.24	36.9895731	-107.5039980
3,319.00	85.70	115.16	3,009.78	-162.45	426.31	2,179,626.85	596,212.21	36.9895368	-107.5039023
3,382.00	87.55	112.59	3,013.49	-187.90	483.81	2,179,601.40	596,269.72	36.9894663	-107.5037058
3,446.00	86.34	117.42	3,016.90	-214.90	541.71	2,179,574.40	596,327.62	36.9893916	-107.5035078
3,509.00	90.67	116.03	3,018.54	-243.22	597.95	2,179,546.08	596,383.85	36.9893133	-107.5033156
3,571.00	94.50	122.46	3,015.75	-273.45	651.96	2,179,515.85	596,437.86	36.9892297	-107.5031311
3,634.00	89.66	127.11	3,013.46	-309.35	703.63	2,179,479.95	596,489.54	36.9891306	-107.5029545
3,697.00	88.02	127.20	3,014.73	-347.39	753.83	2,179,441.91	596,539.74	36.9890256	-107.5027831
3,760.00	88.15	129.41	3,016.84	-386.42	803.24	2,179,402.88	596,589.14	36.9889180	-107.5026144
3,823.00	87.89	134.95	3,019.02	-428.68	849.88	2,179,360.62	596,635.78	36.9888015	-107.5024552
3,884.00	88.02	138.30	3,021.19	-472.98	891.74	2,179,316.32	596,677.64	36.9886794	-107.5023124
3,945.00	88.62	140.57	3,022.98	-519.30	931.39	2,179,270.00	596,717.29	36.9885518	-107.5021772
4,007.00	90.47	145.24	3,023.48	-568.73	968.77	2,179,220.56	596,754.67	36.9884156	-107.5020498
4,068.00	91.18	148.37	3,022.60	-619.77	1,002.16	2,179,169.53	596,788.06	36.9882751	-107.5019361
4,129.00	89.73	150.72	3,022.11	-672.34	1,033.07	2,179,116.95	596,818.98	36.9881304	-107.5018309
4,190.00	90.00	151.43	3,022.26	-725.73	1,062.58	2,179,063.56	596,848.48	36.9879835	-107.5017305
4,252.00	90.87	152.21	3,021.79	-780.38	1,091.85	2,179,008.92	596,877.76	36.9878331	-107.5016309
4,313.00	91.41	153.16	3,020.57	-834.57	1,119.84	2,178,954.73	596,905.74	36.9876840	-107.5015357
4,374.00	91.61	154.23	3,018.96	-889.23	1,146.86	2,178,900.07	596,932.76	36.9875336	-107.5014439
4,436.00	90.10	155.32	3,018.04	-945.31	1,173.28	2,178,843.99	596,959.18	36.9873793	-107.5013541
4,497.00	88.69	155.84	3,018.68	-1,000.85	1,198.50	2,178,788.45	596,984.40	36.9872265	-107.5012684
4,558.00	89.46	157.24	3,019.67	-1,056.80	1,222.78	2,178,732.50	597,008.68	36.9870726	-107.5011860
4,619.00	90.54	157.25	3,019.67	-1,113.05	1,246.37	2,178,676.25	597,032.27	36.9869179	-107.5011058
4,681.00	90.44	157.77	3,019.14	-1,170.33	1,270.09	2,178,618.97	597,055.99	36.9867603	-107.5010253
4,742.00	91.11	157.25	3,018.31	-1,226.69	1,293.42	2,178,562.61	597,079.32	36.9866053	-107.5009461
4,803.00	91.58	155.93	3,016.88	-1,282.65	1,317.65	2,178,506.65	597,103.55	36.9864513	-107.5008638
4,865.00	92.15	157.02	3,014.86	-1,339.47	1,342.38	2,178,449.83	597,128.28	36.9862950	-107.5007798
4,926.00	88.99	157.84	3,014.26	-1,395.78	1,365.79	2,178,393.51	597,151.69	36.9861401	-107.5007004
4,987.00	88.46	158.91	3,015.61	-1,452.48	1,388.26	2,178,336.82	597,174.17	36.9859842	-107.5006241
5,048.00	88.96	160.14	3,016.99	-1,509.61	1,409.59	2,178,279.69	597,195.50	36.9858270	-107.5005517
5,110.00	89.60	159.82	3,017.77	-1,567.85	1,430.82	2,178,221.44	597,216.72	36.9856669	-107.5004798
5,171.00	90.40	160.73	3,017.77	-1,625.27	1,451.41	2,178,164.02	597,237.31	36.9855089	-107.5004100
5,232.00	90.07	161.07	3,017.52	-1,682.92	1,471.37	2,178,106.38	597,257.27	36.9853504	-107.5003423
5,294.00	88.42	160.95	3,018.33	-1,741.53	1,491.54	2,178,047.76	597,277.44	36.9851892	-107.5002740
5,355.00	88.62	161.08	3,019.91	-1,799.20	1,511.38	2,177,990.10	597,297.28	36.9850306	-107.5002067
5,416.00	88.76	160.38	3,021.30	-1,856.76	1,531.50	2,177,932.54	597,317.41	36.9848723	-107.5001385
5,478.00	89.43	161.08	3,022.28	-1,915.28	1,551.96	2,177,874.02	597,337.86	36.9847114	-107.5000692
5,539.00	88.86	161.66	3,023.19	-1,973.08	1,571.44	2,177,816.22	597,357.35	36.9845524	-107.5000032

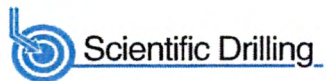


Scientific Drilling, Intl  
Survey Report - Geographic

Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well Allison Unit 145H
Project:	San Juan, NM NAD27	TVD Reference:	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
Site:	Allison Unit 145H	MD Reference:	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
Well:	Allison Unit 145H	North Reference:	Grid
Wellbore:	Lateral 2 ST1	Survey Calculation Method:	Minimum Curvature
Design:	Lateral 2 ST1	Database:	Grand Junction District

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,600.00	87.42	162.68	3,025.17	-2,031.12	1,590.11	2,177,758.18	597,376.02	36.9843929	-107.4999399
5,662.00	87.28	163.36	3,028.04	-2,090.35	1,608.20	2,177,698.95	597,394.10	36.9842300	-107.4998787
5,724.00	89.13	161.70	3,029.98	-2,149.46	1,626.80	2,177,639.84	597,412.71	36.9840674	-107.4998157
5,787.00	91.41	160.87	3,029.68	-2,209.12	1,647.01	2,177,580.18	597,432.92	36.9839034	-107.4997473
5,850.00	92.15	160.72	3,027.73	-2,268.58	1,667.73	2,177,520.71	597,453.63	36.9837398	-107.4996770
5,913.00	92.21	161.35	3,025.33	-2,328.12	1,688.19	2,177,461.18	597,474.09	36.9835761	-107.4996077
5,976.00	90.91	160.23	3,023.62	-2,387.59	1,708.91	2,177,401.71	597,494.81	36.9834126	-107.4995375
6,039.00	88.72	158.71	3,023.82	-2,446.58	1,731.00	2,177,342.72	597,516.90	36.9832503	-107.4994626
6,102.00	87.95	159.10	3,025.65	-2,505.33	1,753.66	2,177,283.96	597,539.57	36.9830887	-107.4993857
6,165.00	87.78	158.37	3,028.00	-2,564.00	1,776.50	2,177,225.29	597,562.40	36.9829273	-107.4993082
6,228.00	85.26	156.06	3,031.82	-2,621.97	1,800.85	2,177,167.33	597,586.75	36.9827679	-107.4992255
6,290.00	86.00	156.30	3,036.55	-2,678.53	1,825.81	2,177,110.77	597,611.72	36.9826123	-107.4991407
6,353.00	86.44	157.41	3,040.70	-2,736.33	1,850.52	2,177,052.97	597,636.42	36.9824533	-107.4990568
6,410.00	86.51	158.78	3,044.20	-2,789.11	1,871.74	2,177,000.19	597,657.65	36.9823081	-107.4989848
6,484.00	86.51	158.78	3,048.71	-2,857.97	1,898.48	2,176,931.33	597,684.38	36.9821187	-107.4988941

Checked By: _____	Approved By: _____	Date: _____
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## Directional Survey Certification

2948 I-70 Business Loop  
Grand Junction, CO 81504  
(970)-245-9447 Fax (970)-245-9454

<b>Operator</b>	HilCorp Enregy
<b>Well Name &amp; No.</b>	Allison Unit 145H Lateral 2 ST2
<b>County &amp; State</b>	San Juan County, NM
<b>SDI Job No.</b>	OP. 011074
<b>Rig</b>	Aztec 777

I, Mel Mireles Jr., having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 3,509 feet to a measured depth of 6,483 feet is true and correct as determined from all available records.

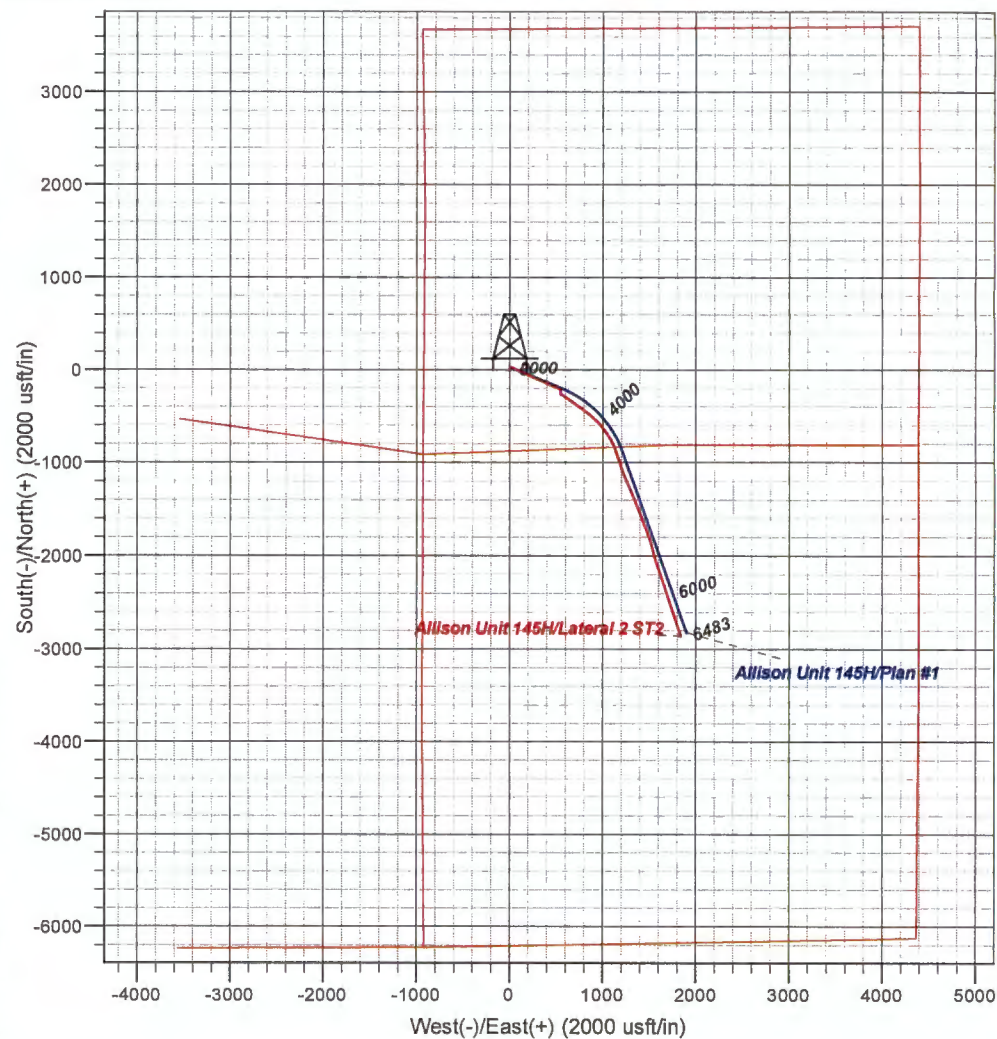
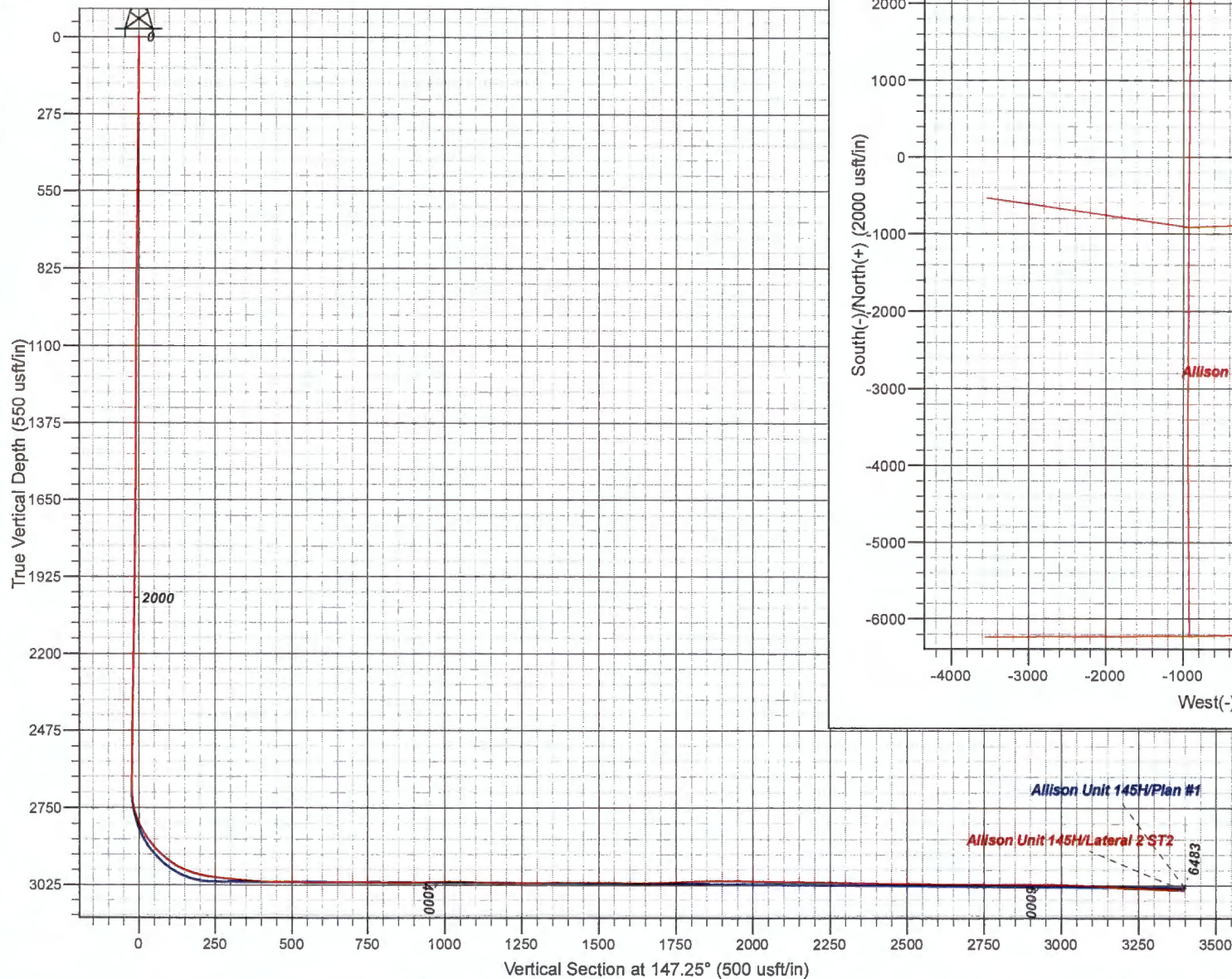
Mel Mireles Jr.  
Signature

02-Jul-18  
Date

**Mel Mireles Jr.**  
Grand Junction Assistant Well Planner  
Scientific Drilling - Colorado District

WELL DETAILS: Allison Unit 145H

GL 6519' & RKB 15' @ 6534.00usft (Aztec 777) 6519.00			
+N/-S	+E/-W	Northing	Easting
0.00	0.00	2179789.30	595785.90
			Latitude
			36.9899870
			Longitude
			-107.5053600



Design: Lateral 2 ST2 (Allison Unit 145H/Lateral 2 ST2)

Created By: Janie Collins Date: 11:32, July 06 2018

PROJECT DETAILS: San Juan, 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  
Local North: Grid



# **Hilcorp Energy Corp.**

San Juan, NM NAD27

Allison Unit 145H

Allison Unit 145H

Lateral 2 ST2

Design: Lateral 2 ST2

## **Survey Report - Geographic**

06 July, 2018



[www.scientificdrilling.com](http://www.scientificdrilling.com)





# Scientific Drilling, Intl Survey Report - Geographic

<b>Company:</b>	Hilcorp Energy Corp.	<b>Local Co-ordinate Reference:</b>	Well Allison Unit 145H
<b>Project:</b>	San Juan, NM NAD27	<b>TVD Reference:</b>	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
<b>Site:</b>	Allison Unit 145H	<b>MD Reference:</b>	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
<b>Well:</b>	Allison Unit 145H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Lateral 2 ST2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Lateral 2 ST2	<b>Database:</b>	Grand Junction District

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

<b>Site</b>	Allison Unit 145H				
<b>Site Position:</b>		<b>Northing:</b>	2,179,789.30 usft	<b>Latitude:</b>	36.9899870
<b>From:</b>	Map	<b>Easting:</b>	595,785.90 usft	<b>Longitude:</b>	-107.5053601
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13.20 in	<b>Grid Convergence:</b>	0.20 °

<b>Well</b>	Allison Unit 145H				
<b>Well Position</b>	+N/-S	0.00 usft	<b>Northing:</b>	2,179,789.30 usft	<b>Latitude:</b> 36.9899870
	+E/-W	0.00 usft	<b>Easting:</b>	595,785.90 usft	<b>Longitude:</b> -107.5053601
<b>Position Uncertainty</b>	0.00 usft		<b>Wellhead Elevation:</b>	0.00 usft	<b>Ground Level:</b> 6,519.00 usft

<b>Wellbore</b>	Lateral 2 ST2				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM	6/29/2018	9.02	63.53	49,950

<b>Design</b>	Lateral 2 ST2				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	3,461.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	147.25	

<b>Survey Program</b>	<b>Date</b>	7/8/2018			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
2.00	2,686.00	Survey #1 (OH)	MWD	MWD - Standard	
2,696.00	3,461.00	Survey #1 - Lateral 2 MWD Survey (Lateral 2 ST2)	MWD+HDGM	OWSG MWD + HDGM	
3,509.00	6,483.00	Survey #1 - Lateral 2 ST2 MWD Survey (Lateral 2 ST2)	MWD+HDGM	OWSG MWD + HDGM	

<b>Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Map Northing (usft)</b>	<b>Map Easting (usft)</b>	<b>Latitude</b>	<b>Longitude</b>	
0.00	0.00	0.00	0.00	0.00	0.00	2,179,789.30	595,785.90	36.9899870	-107.5053601	
2.00	0.00	0.00	2.00	0.00	0.00	2,179,789.30	595,785.90	36.9899870	-107.5053601	
157.00	0.75	0.00	157.00	1.01	0.00	2,179,790.31	595,785.90	36.9899898	-107.5053601	
587.00	0.75	0.00	586.96	6.64	0.00	2,179,795.94	595,785.90	36.9900052	-107.5053600	
1,072.00	0.25	0.00	1,071.94	10.88	0.00	2,179,800.17	595,785.90	36.9900169	-107.5053600	
1,572.00	0.25	0.00	1,571.93	13.06	0.00	2,179,802.36	595,785.90	36.9900229	-107.5053599	
1,977.00	1.00	0.00	1,976.91	17.47	0.00	2,179,806.77	595,785.90	36.9900350	-107.5053599	
2,472.00	0.75	0.00	2,471.85	25.03	0.00	2,179,814.33	595,785.90	36.9900558	-107.5053598	
2,686.00	0.86	0.00	2,685.83	28.04	0.00	2,179,817.34	595,785.90	36.9900640	-107.5053598	
2,696.00	6.42	89.01	2,695.81	28.13	0.56	2,179,817.42	595,786.46	36.9900643	-107.5053578	



# Scientific Drilling, Intl Survey Report - Geographic

Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well Allison Unit 145H
Project:	San Juan, NM NAD27	TVD Reference:	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
Site:	Allison Unit 145H	MD Reference:	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
Well:	Allison Unit 145H	North Reference:	Grid
Wellbore:	Lateral 2 ST2	Survey Calculation Method:	Minimum Curvature
Design:	Lateral 2 ST2	Database:	Grand Junction District

## Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
2,728.00	13.11	83.21	2,727.33	28.59	5.96	2,179,817.89	595,791.86	36.9900655	-107.5053394
2,759.00	18.56	103.07	2,757.16	27.89	14.27	2,179,817.18	595,800.17	36.9900635	-107.5053109
2,791.00	23.31	111.68	2,787.05	24.39	25.12	2,179,813.69	595,811.02	36.9900538	-107.5052738
2,822.00	29.03	115.29	2,814.86	18.91	37.63	2,179,808.21	595,823.54	36.9900386	-107.5052310
2,853.00	33.52	114.94	2,841.35	12.08	52.20	2,179,801.38	595,836.10	36.9900197	-107.5051812
2,885.00	39.50	114.76	2,867.05	4.09	69.47	2,179,793.39	595,855.37	36.9899976	-107.5051222
2,901.00	41.66	114.17	2,879.21	-0.22	78.94	2,179,789.08	595,864.85	36.9899856	-107.5050898
2,933.00	46.60	114.64	2,902.17	-9.43	99.23	2,179,779.87	595,885.13	36.9899602	-107.5050205
2,964.00	51.37	113.89	2,922.51	-19.03	120.55	2,179,770.26	595,906.45	36.9899336	-107.5049476
2,995.00	56.72	114.47	2,940.70	-29.31	143.43	2,179,759.99	595,929.33	36.9899051	-107.5048693
3,027.00	62.66	115.46	2,956.84	-40.97	168.46	2,179,748.32	595,954.36	36.9898729	-107.5047838
3,068.00	69.68	115.71	2,973.40	-57.16	202.26	2,179,732.14	595,988.17	36.9898281	-107.5046682
3,131.00	79.35	115.39	2,990.20	-83.31	256.98	2,179,705.99	596,042.88	36.9897557	-107.5044812
3,162.00	82.96	114.96	2,994.96	-96.34	284.69	2,179,692.96	596,070.60	36.9897197	-107.5043864
3,194.00	84.15	114.66	2,998.56	-109.68	313.56	2,179,679.62	596,099.46	36.9896828	-107.5042878
3,225.00	84.28	114.98	3,001.68	-122.63	341.55	2,179,666.67	596,127.45	36.9896469	-107.5041921
3,257.00	84.86	115.25	3,004.71	-136.15	370.39	2,179,653.15	596,156.30	36.9896095	-107.5040935
3,288.00	85.34	115.17	3,007.36	-149.31	398.34	2,179,639.99	596,184.24	36.9895731	-107.5039980
3,319.00	85.70	115.16	3,009.78	-162.45	426.31	2,179,626.85	596,212.21	36.9895368	-107.5039023
3,382.00	87.55	112.59	3,013.49	-187.90	483.81	2,179,601.40	596,269.72	36.9894663	-107.5037058
3,445.00	90.64	110.67	3,014.48	-211.11	542.36	2,179,578.19	596,328.26	36.9894020	-107.5035056
3,461.00	94.81	238.36	3,013.10	-223.87	543.63	2,179,565.42	596,329.53	36.9893669	-107.5035014
3,509.00	85.39	120.60	3,012.96	-263.83	544.00	2,179,525.47	596,329.91	36.9892572	-107.5035006
3,571.00	90.00	122.06	3,015.45	-296.03	596.90	2,179,493.27	596,382.81	36.9891682	-107.5033198
3,634.00	91.11	126.83	3,014.84	-331.65	648.84	2,179,457.65	596,434.74	36.9890699	-107.5031424
3,697.00	89.46	125.86	3,014.53	-368.99	699.58	2,179,420.31	596,485.48	36.9889668	-107.5029691
3,760.00	89.66	126.10	3,015.01	-406.00	750.56	2,179,383.30	596,536.46	36.9888647	-107.5027950
3,823.00	88.66	126.59	3,015.94	-443.33	801.30	2,179,345.97	596,587.20	36.9887617	-107.5026217
3,884.00	89.93	128.40	3,016.69	-480.46	849.69	2,179,308.84	596,635.59	36.9886592	-107.5024565
3,945.00	91.28	130.25	3,016.04	-519.11	896.87	2,179,270.19	596,682.77	36.9885526	-107.5022954
4,007.00	92.75	136.69	3,013.86	-561.71	941.81	2,179,227.59	596,727.72	36.9884352	-107.5021420
4,068.00	88.69	141.73	3,013.10	-607.87	981.64	2,179,181.43	596,767.54	36.9883080	-107.5020062
4,129.00	87.58	145.10	3,015.08	-656.82	1,017.97	2,179,132.48	596,803.88	36.9881732	-107.5018824
4,190.00	87.79	146.75	3,017.55	-707.30	1,052.12	2,179,082.00	596,838.02	36.9880342	-107.5017661
4,252.00	90.84	148.85	3,018.29	-759.75	1,085.15	2,179,029.55	596,871.05	36.9878898	-107.5016536
4,313.00	90.94	155.36	3,017.34	-813.63	1,113.67	2,178,975.67	596,899.57	36.9877416	-107.5015566
4,374.00	89.56	161.11	3,017.07	-870.25	1,136.28	2,178,919.05	596,922.18	36.9875858	-107.5014799
4,436.00	90.30	161.08	3,017.15	-928.91	1,156.37	2,178,860.39	596,942.27	36.9874245	-107.5014118
4,497.00	90.57	162.27	3,016.68	-986.81	1,175.54	2,178,802.49	596,961.45	36.9872653	-107.5013468
4,558.00	89.36	162.86	3,016.72	-1,045.01	1,193.82	2,178,744.29	596,979.72	36.9871053	-107.5012850
4,619.00	87.75	160.55	3,018.26	-1,102.90	1,212.96	2,178,686.40	596,998.86	36.9869461	-107.5012201
4,681.00	90.77	156.44	3,019.06	-1,160.56	1,235.68	2,178,628.74	597,021.58	36.9867875	-107.5011430
4,742.00	92.39	156.14	3,017.38	-1,216.39	1,260.20	2,178,572.91	597,046.10	36.9866339	-107.5010597
4,803.00	92.35	156.24	3,014.86	-1,272.15	1,284.80	2,178,517.15	597,070.71	36.9864805	-107.5009762
4,865.00	93.13	156.80	3,011.89	-1,328.95	1,309.48	2,178,460.35	597,095.38	36.9863242	-107.5008924
4,926.00	90.40	157.93	3,010.01	-1,385.22	1,332.94	2,178,404.08	597,118.84	36.9861694	-107.5008127
4,987.00	88.59	157.70	3,010.55	-1,441.70	1,355.97	2,178,347.60	597,141.87	36.9860141	-107.5007345
5,048.00	89.16	157.62	3,011.75	-1,498.11	1,379.15	2,178,291.19	597,165.06	36.9858589	-107.5006558
5,110.00	89.53	157.80	3,012.46	-1,555.47	1,402.67	2,178,233.83	597,188.57	36.9857011	-107.5005760
5,171.00	89.53	157.58	3,012.96	-1,611.90	1,425.82	2,178,177.40	597,211.73	36.9855459	-107.5004974
5,232.00	88.56	159.87	3,013.98	-1,668.73	1,447.95	2,178,120.57	597,233.86	36.9853896	-107.5004223
5,294.00	88.22	160.03	3,015.72	-1,726.95	1,469.20	2,178,062.35	597,255.10	36.9852295	-107.5003503
5,355.00	89.13	161.19	3,017.13	-1,784.48	1,489.45	2,178,004.82	597,275.35	36.9850713	-107.5002816
5,416.00	88.29	163.09	3,018.50	-1,842.52	1,508.15	2,177,946.78	597,294.05	36.9849117	-107.5002183
5,478.00	89.19	164.06	3,019.86	-1,901.97	1,525.67	2,177,887.33	597,311.58	36.9847482	-107.5001590



Scientific Drilling, Intl  
Survey Report - Geographic

Company:	Hilcorp Energy Corp.	Local Co-ordinate Reference:	Well Allison Unit 145H
Project:	San Juan, NM NAD27	TVD Reference:	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
Site:	Allison Unit 145H	MD Reference:	GL 6519' & RKB 15' @ 6534.00usft (Aztec 777)
Well:	Allison Unit 145H	North Reference:	Grid
Wellbore:	Lateral 2 ST2	Survey Calculation Method:	Minimum Curvature
Design:	Lateral 2 ST2	Database:	Grand Junction District

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,539.00	90.44	165.58	3,020.06	-1,960.84	1,541.65	2,177,828.46	597,327.55	36.9845863	-107.5001050
5,600.00	88.05	164.27	3,020.87	-2,019.73	1,557.51	2,177,769.57	597,343.41	36.9844244	-107.5000514
5,662.00	88.93	161.25	3,022.50	-2,078.92	1,575.88	2,177,710.38	597,361.78	36.9842617	-107.4999893
5,724.00	90.20	161.14	3,022.97	-2,137.60	1,595.86	2,177,651.69	597,381.76	36.9841003	-107.4999215
5,787.00	89.63	160.63	3,023.06	-2,197.13	1,616.49	2,177,592.17	597,402.39	36.9839366	-107.4998516
5,850.00	89.90	160.42	3,023.32	-2,256.53	1,637.49	2,177,532.77	597,423.40	36.9837733	-107.4997804
5,913.00	89.50	160.07	3,023.65	-2,315.82	1,658.79	2,177,473.48	597,444.69	36.9836102	-107.4997082
5,976.00	90.70	161.67	3,023.54	-2,375.33	1,679.43	2,177,413.96	597,465.34	36.9834465	-107.4996383
6,039.00	89.06	162.98	3,023.67	-2,435.36	1,698.56	2,177,353.94	597,484.46	36.9832815	-107.4995735
6,102.00	88.19	163.58	3,025.19	-2,495.68	1,716.68	2,177,293.62	597,502.58	36.9831156	-107.4995122
6,165.00	87.01	162.58	3,027.82	-2,555.89	1,735.00	2,177,233.40	597,520.90	36.9829500	-107.4994502
6,228.00	86.64	160.74	3,031.31	-2,615.60	1,754.79	2,177,173.70	597,540.69	36.9827858	-107.4993831
6,290.00	87.38	161.02	3,034.55	-2,674.10	1,775.07	2,177,115.20	597,560.97	36.9826250	-107.4993144
6,353.00	88.39	161.65	3,036.87	-2,733.74	1,795.22	2,177,055.56	597,581.12	36.9824609	-107.4992462
6,415.00	87.31	160.83	3,039.20	-2,792.41	1,815.14	2,176,996.89	597,601.05	36.9822996	-107.4991786
6,483.00	87.31	160.83	3,042.39	-2,856.57	1,837.45	2,176,932.73	597,623.35	36.9821232	-107.4991030

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_