

**District I**

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

**District II**

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

**District III**

1000 Rio Brazos Rd., Aztec, NM 87410  
Phone:(505) 334-6178 Fax:(505) 334-6170

**District IV**

1220 S. St Francis Dr., Santa Fe, NM 87505  
Phone:(505) 476-3470 Fax:(505) 476-3462

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

Form C-101  
August 1, 2011

Permit 286956

**APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE**

|                                                                                                          |                                             |                               |
|----------------------------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------|
| 1. Operator Name and Address<br>LONGFELLOW ENERGY, LP<br>16803 North Dallas Parkway<br>Addison, TX 75001 |                                             | 2. OGRID Number<br>372210     |
|                                                                                                          |                                             | 3. API Number<br>30-015-47477 |
| 4. Property Code<br>329704                                                                               | 5. Property Name<br>HENDRIX STATE COM 13 CD | 6. Well No.<br>005H           |

**7. Surface Location**

|               |               |                 |              |              |                   |               |                  |               |                |
|---------------|---------------|-----------------|--------------|--------------|-------------------|---------------|------------------|---------------|----------------|
| UL - Lot<br>P | Section<br>14 | Township<br>17S | Range<br>28E | Lot Idn<br>P | Feet From<br>1287 | N/S Line<br>S | Feet From<br>175 | E/W Line<br>E | County<br>Eddy |
|---------------|---------------|-----------------|--------------|--------------|-------------------|---------------|------------------|---------------|----------------|

**8. Proposed Bottom Hole Location**

|               |               |                 |              |              |                  |               |                 |               |                |
|---------------|---------------|-----------------|--------------|--------------|------------------|---------------|-----------------|---------------|----------------|
| UL - Lot<br>P | Section<br>13 | Township<br>17S | Range<br>28E | Lot Idn<br>I | Feet From<br>390 | N/S Line<br>S | Feet From<br>20 | E/W Line<br>E | County<br>Eddy |
|---------------|---------------|-----------------|--------------|--------------|------------------|---------------|-----------------|---------------|----------------|

**9. Pool Information**

|                       |       |
|-----------------------|-------|
| EMPIRE; GLORIETA-YESO | 96210 |
|-----------------------|-------|

**Additional Well Information**

|                           |                            |                                        |                         |                                    |
|---------------------------|----------------------------|----------------------------------------|-------------------------|------------------------------------|
| 11. Work Type<br>New Well | 12. Well Type<br>OIL       | 13. Cable/Rotary                       | 14. Lease Type<br>State | 15. Ground Level Elevation<br>3636 |
| 16. Multiple<br>N         | 17. Proposed Depth<br>9535 | 18. Formation<br>Paddock               | 19. Contractor          | 20. Spud Date<br>11/1/2020         |
| Depth to Ground water     |                            | Distance from nearest fresh water well |                         | Distance to nearest surface water  |

☒ We will be using a closed-loop system in lieu of lined pits

**21. Proposed Casing and Cement Program**

| Type | Hole Size | Casing Size | Casing Weight/ft | Setting Depth | Sacks of Cement | Estimated TOC |
|------|-----------|-------------|------------------|---------------|-----------------|---------------|
| Surf | 12.25     | 9.625       | 36               | 1250          | 564             | 0             |
| Prod | 8.75      | 7           | 32               | 3400          | 1970            | 1050          |
| Prod | 8.75      | 5.5         | 20               | 9535          | 1970            | 1050          |

**Casing/Cement Program: Additional Comments**

|  |
|--|
|  |
|--|

**22. Proposed Blowout Prevention Program**

| Type       | Working Pressure | Test Pressure | Manufacturer |
|------------|------------------|---------------|--------------|
| Double Ram | 3000             | 3000          | TBD          |

|                                                                                                                                                                                                                                                                                                                      |                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| 23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief.<br>I further certify I have complied with 19.15.14.9 (A) NMAC <input checked="" type="checkbox"/> and/or 19.15.14.9 (B) NMAC <input checked="" type="checkbox"/> if applicable.<br><br>Signature: | <b>OIL CONSERVATION DIVISION</b>                         |
| Printed Name: Electronically filed by Ryan Culpepper                                                                                                                                                                                                                                                                 | Approved By: Scott Cox                                   |
| Title:                                                                                                                                                                                                                                                                                                               | Title: Petroleum Engineer Supervisor                     |
| Email Address: ryan.culpepper@longfellowenergy.com                                                                                                                                                                                                                                                                   | Approved Date: 9/29/2020      Expiration Date: 9/29/2022 |
| Date: 9/25/2020      Phone: 972-590-9933                                                                                                                                                                                                                                                                             | Conditions of Approval Attached                          |

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State of New Mexico  
Energy, Minerals & Natural Resources Department  
OIL CONSERVATION DIVISION  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

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<br><b>30-015-</b> | <sup>2</sup> Pool Code<br><b>96210</b>                      | <sup>3</sup> Pool Name<br><b>EMPIRE; GLORIETA-YESO</b> |
| <sup>4</sup> Property Code                | <sup>5</sup> Property Name<br><b>HENDRIX STATE COM 13CD</b> | <sup>6</sup> Well Number<br><b>005H</b>                |
| <sup>7</sup> OGRID No.<br><b>372210</b>   | <sup>8</sup> Operator Name<br><b>LONGFELLOW ENERGY, LP</b>  | <sup>9</sup> Elevation<br><b>3636.9</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>P</b>      | <b>14</b> | <b>17 S</b> | <b>28 E</b> |         | <b>1287</b>   | <b>SOUTH</b>     | <b>175</b>    | <b>EAST</b>    | <b>EDDY</b> |

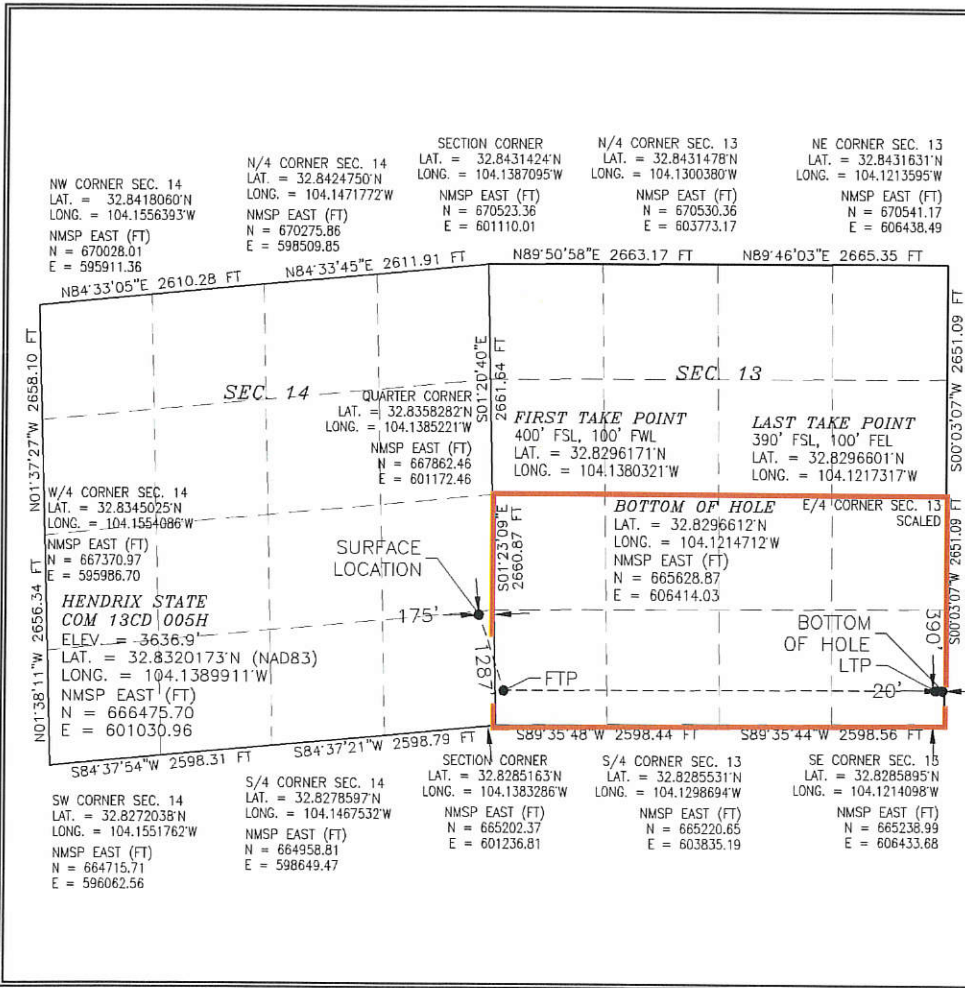
<sup>11</sup> Bottom Hole Location If Different From Surface

| UL or lot no. | Section   | Township    | Range       | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County      |
|---------------|-----------|-------------|-------------|---------|---------------|------------------|---------------|----------------|-------------|
| <b>P</b>      | <b>13</b> | <b>17 S</b> | <b>28 E</b> |         | <b>390</b>    | <b>SOUTH</b>     | <b>20</b>     | <b>EAST</b>    | <b>EDDY</b> |

| <sup>12</sup> Dedicated Acres | <sup>13</sup> Joint or Infill | <sup>14</sup> Consolidation Code | <sup>15</sup> Order No. |
|-------------------------------|-------------------------------|----------------------------------|-------------------------|
| <b>320.00</b>                 |                               | <b>C</b>                         |                         |

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.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <p><sup>17</sup> OPERATOR CERTIFICATION</p> <p>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p>Signature: <i>Brian Wood</i> Date: <b>9-25-20</b></p> <p>Printed Name: <b>BRIAN WOOD</b></p> <p>E-mail Address: <b>brian@permitswest.com</b></p> <p><b>505 466-8120</b></p> |  |
| <p><sup>18</sup> SURVEYOR CERTIFICATION</p> <p>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.</p> <p>SEPTEMBER 1, 2020</p> <p>Date of Survey</p> <p>Signature and Seal of Professional Surveyor: <i>William F. Jaramillo</i></p> <p>Certificate Number: <b>12797</b></p> <p>PROFESSIONAL SURVEYOR NO. 8446</p>                                                                                                                                                                                                                                                             |  |



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**Oil Conservation Division**  
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**Santa Fe, NM 87505**

## GAS CAPTURE PLAN

Date: 9/29/2020

☒ Original

Operator & OGRID No.: [372210] LONGFELLOW ENERGY, LP

☐ Amended - Reason for  
Amendment:

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomple to new zone, re-frac) activity.

*Note: Form C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule (Subsection A of 19.15.18.12 NMAC).*

### Well(s)/Production Facility – Name of facility

The well(s) that will be located at the production facility are shown in the table below.

| Well Name                     | API          | Well Location (ULSTR) | Footages    | Expected MCF/D | Flared or Vented | Comments |
|-------------------------------|--------------|-----------------------|-------------|----------------|------------------|----------|
| HENDRIX STATE COM 13 CD #005H | 30-015-47477 | P-14-17S-28E          | 1287S 0175E | 100            | Flared           |          |

### Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. The gas produced from production facility is dedicated to FRONTIER FIELD SERVICES, LLC and will be connected to FRONTIER FIELD SERVICES, LLC Low Pressure gathering system located in Dona Ana County, New Mexico. It will require 300' of pipeline to connect the facility to Low Pressure gathering system. LONGFELLOW ENERGY, LP provides (periodically) to FRONTIER FIELD SERVICES, LLC a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, LONGFELLOW ENERGY, LP and FRONTIER FIELD SERVICES, LLC have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at FRONTIER FIELD SERVICES, LLC Processing Plant located in Sec. 14, Twn. 17S, Rng. 28E, Eddy County, New Mexico. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

### Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on FRONTIER FIELD SERVICES, LLC system at that time. Based on current information, it is LONGFELLOW ENERGY, LP's belief the system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

### Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease
  - Only a portion of gas is consumed operating the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
  - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
  - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

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**1220 S. St Francis Dr.**  
**Santa Fe, NM 87505**

Form APD Comments

Permit 286956

PERMIT COMMENTS

|                                                                                                                 |         |                                        |
|-----------------------------------------------------------------------------------------------------------------|---------|----------------------------------------|
| Operator Name and Address:<br>LONGFELLOW ENERGY, LP [372210]<br>16803 North Dallas Parkway<br>Addison, TX 75001 |         | API Number:<br>30-015-47477            |
|                                                                                                                 |         | Well:<br>HENDRIX STATE COM 13 CD #005H |
| Created By                                                                                                      | Comment | Comment Date                           |

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Form APD Conditions

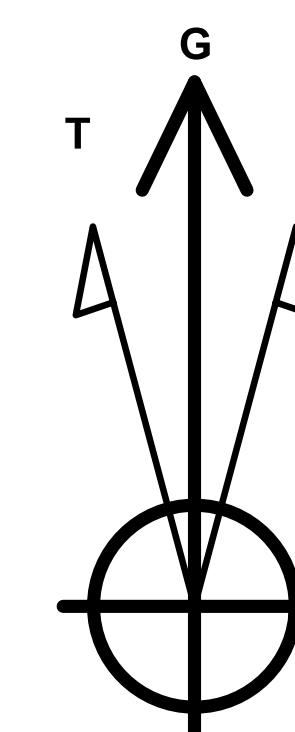
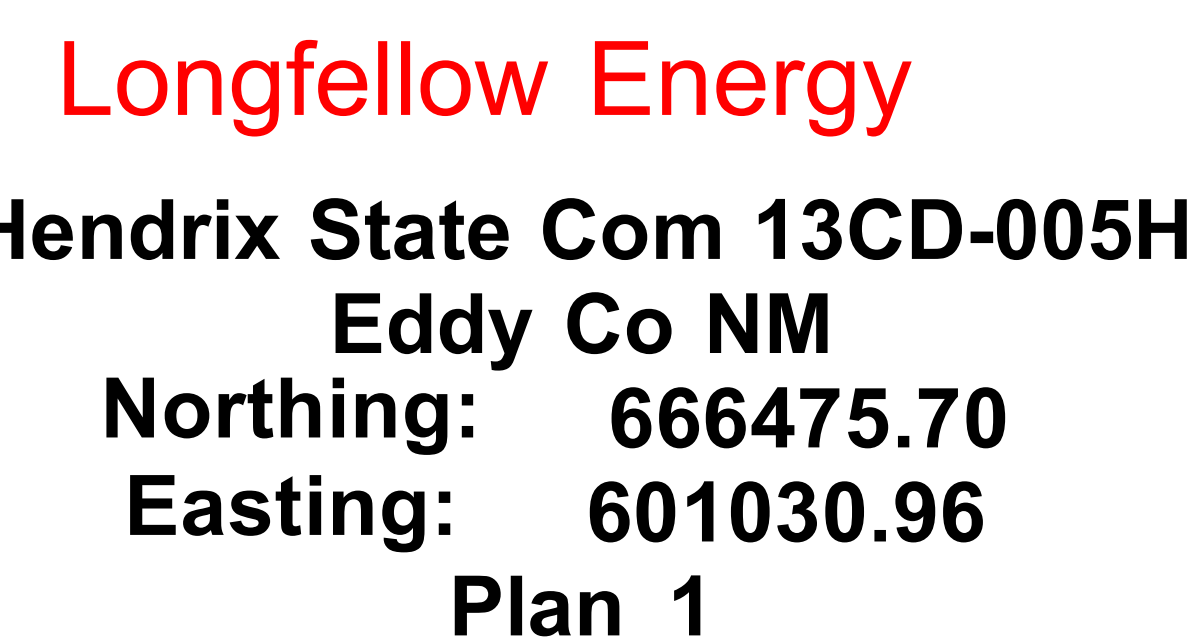
Permit 286956

**PERMIT CONDITIONS OF APPROVAL**

|                                                                                                                 |                                        |
|-----------------------------------------------------------------------------------------------------------------|----------------------------------------|
| Operator Name and Address:<br>LONGFELLOW ENERGY, LP [372210]<br>16803 North Dallas Parkway<br>Addison, TX 75001 | API Number:<br>30-015-47477            |
|                                                                                                                 | Well:<br>HENDRIX STATE COM 13 CD #005H |

|                 |                                                                                                                                                                                                                                                                      |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OCD<br>Reviewer | Condition                                                                                                                                                                                                                                                            |
| ksimmons        | Will require a directional survey with the C-104                                                                                                                                                                                                                     |
| ksimmons        | Cement is required to circulate on both surface and intermediate1 strings of casing                                                                                                                                                                                  |
| kpickford       | Will require administrative order for non-standard spacing unit                                                                                                                                                                                                      |
| kpickford       | Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string |
| kpickford       | 1)- The Operator is to notify NMOCD by sundry (Form C-103) within ten (10) days of the well being spud 2)- Drilling Sundries Form C-103 (Casing and Cement test are to be submitted within 10 days 3)- Completion Reports & Logs are to be submitted within 45 days  |
| kpickford       | The Operator is to notify NMOCD by sundry (Form C-103) within ten (10) days of the well being spud                                                                                                                                                                   |
| kpickford       | Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system.                 |





Magnetic Field  
Strength: 47858.8nT  
Dip Angle: 60.47°  
Date: 9/13/2020  
Model: HDGM FILE

Geodetic System: US State Plane 1983  
Datum: North American Datum 1983  
Ellipsoid: GRS 1980  
Zone: New Mexico Eastern Zone  
System Datum: Mean Sea Level

Site Centre Northing: 665375.40  
Easting: 605413.55

Positional Uncertainty: 0.00  
Convergence: 0.11  
Local North: Grid

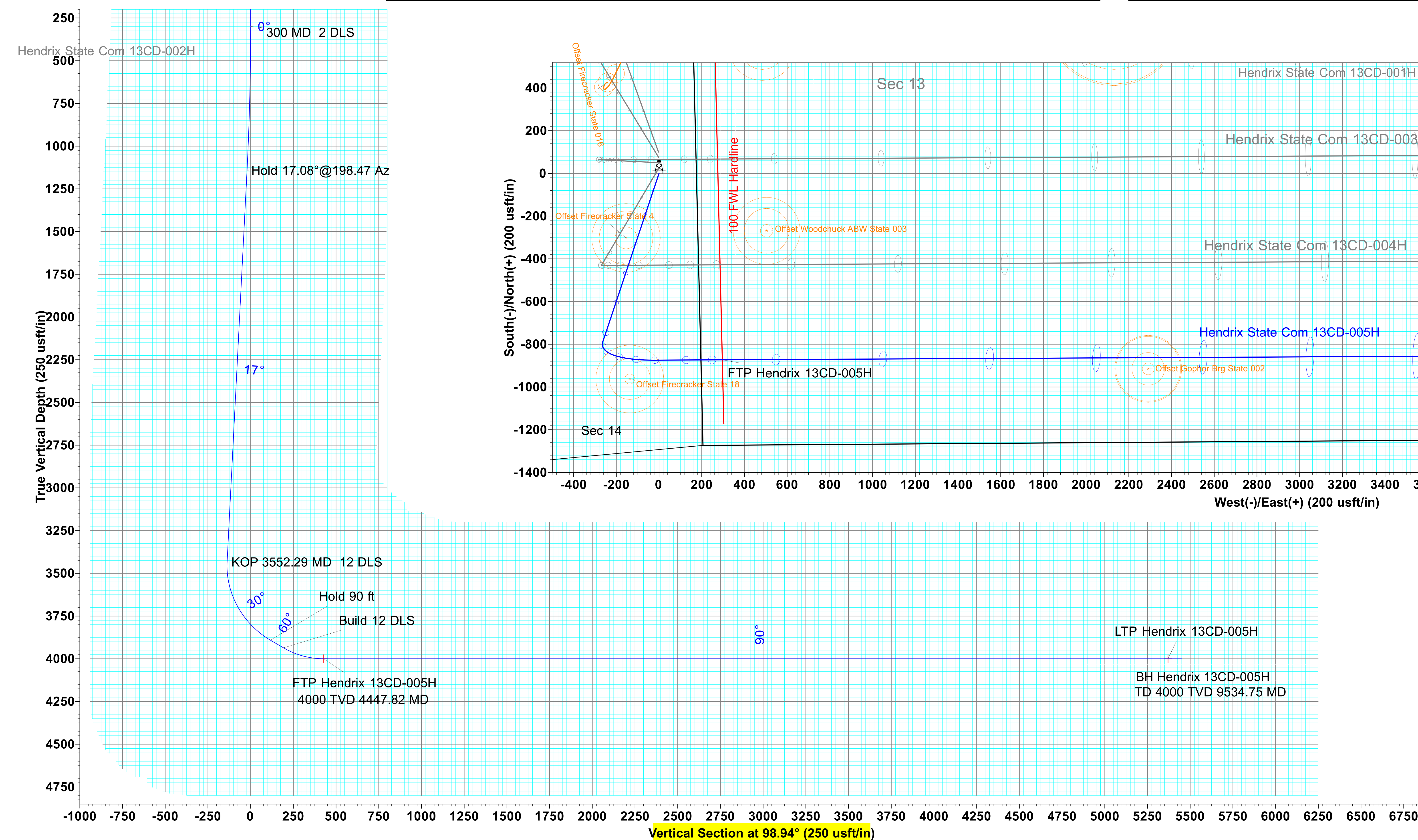
| DESIGN TARGET DETAILS |         |         |         |           |           |
|-----------------------|---------|---------|---------|-----------|-----------|
| Name                  | TVD     | +N/-S   | +E/-W   | Northing  | Easting   |
| FTP Hendrix 13CD-005H | 4000.00 | -872.68 | 298.18  | 665603.02 | 601327.14 |
| LTP Hendrix 13CD-005H | 4000.00 | -847.40 | 5303.07 | 665628.30 | 606334.03 |
| BH Hendrix 13CD-005H  | 4000.00 | -846.83 | 5383.07 | 665628.87 | 606414.03 |

**WELLBORE DETAILS:** OH Wellbore

Section 14/13-17S-28E

SHL: 1287 FSL 175 FEL (Sec14)  
BH: 390 FSL 20 FEL (Sec 13)

3636 GL + 12 KB @ 3648.00usf  
Gr: 3636.00







# Scientific Drilling, Intl

## Planning Report

|                  |                             |                                     |                                  |
|------------------|-----------------------------|-------------------------------------|----------------------------------|
| <b>Database:</b> | Midland                     | <b>Local Co-ordinate Reference:</b> | Well Hendrix State Com 13CD-005H |
| <b>Company:</b>  | Longfellow Energy           | <b>TVD Reference:</b>               | 3636 GL + 12 KB @ 3648.00usft    |
| <b>Project:</b>  | Eddy Co NM                  | <b>MD Reference:</b>                | 3636 GL + 12 KB @ 3648.00usft    |
| <b>Site:</b>     | Sec 13/18-17S-29E           | <b>North Reference:</b>             | Grid                             |
| <b>Well:</b>     | Hendrix State Com 13CD-005H | <b>Survey Calculation Method:</b>   | Minimum Curvature                |
| <b>Wellbore:</b> | OH Wellbore                 |                                     |                                  |
| <b>Design:</b>   | Plan 1                      |                                     |                                  |

|                    |                                     |                      |                |
|--------------------|-------------------------------------|----------------------|----------------|
| <b>Project</b>     | Eddy Co NM, Eddy County, New Mexico |                      |                |
| <b>Map System:</b> | US State Plane 1983                 | <b>System Datum:</b> | Mean Sea Level |
| <b>Geo Datum:</b>  | North American Datum 1983           |                      |                |
| <b>Map Zone:</b>   | New Mexico Eastern Zone             |                      |                |

|                              |                   |                          |                 |
|------------------------------|-------------------|--------------------------|-----------------|
| <b>Site</b>                  | Sec 13/18-17S-29E |                          |                 |
| <b>Site Position:</b>        |                   | <b>Northing:</b>         | 665,375.41 usft |
| <b>From:</b>                 | Lat/Long          | <b>Easting:</b>          | 605,413.56 usft |
| <b>Position Uncertainty:</b> | 0.00 usft         | <b>Slot Radius:</b>      | 13-3/16 "       |
|                              |                   | <b>Latitude:</b>         | 32.828970       |
|                              |                   | <b>Longitude:</b>        | -104.124730     |
|                              |                   | <b>Grid Convergence:</b> | 0.11 °          |

|                             |                                      |                            |                                  |
|-----------------------------|--------------------------------------|----------------------------|----------------------------------|
| <b>Well</b>                 | Hendrix State Com 13CD-005H, Paddock |                            |                                  |
| <b>Well Position</b>        | <b>+N/-S</b>                         | 1,100.30 usft              | <b>Northing:</b> 666,475.70 usft |
|                             | <b>+E/-W</b>                         | -4,382.59 usft             | <b>Easting:</b> 601,030.96 usft  |
| <b>Position Uncertainty</b> | 0.00 usft                            | <b>Wellhead Elevation:</b> | 3,648.00 usft                    |
|                             |                                      | <b>Latitude:</b>           | 32.832017                        |
|                             |                                      | <b>Longitude:</b>          | -104.138991                      |
|                             |                                      | <b>Ground Level:</b>       | 3,636.00 usft                    |

|                  |                   |                    |                        |                      |                            |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| <b>Wellbore</b>  | OH Wellbore       |                    |                        |                      |                            |
| <b>Magnetics</b> | <b>Model Name</b> | <b>Sample Date</b> | <b>Declination (°)</b> | <b>Dip Angle (°)</b> | <b>Field Strength (nT)</b> |
|                  | HDGM_FILE         | 9/13/2020          | 7.13                   | 60.47                | 47,858.80000000            |

|                          |                                |                     |                      |                      |
|--------------------------|--------------------------------|---------------------|----------------------|----------------------|
| <b>Design</b>            | Plan 1                         |                     |                      |                      |
| <b>Audit Notes:</b>      |                                |                     |                      |                      |
| <b>Version:</b>          | <b>Phase:</b>                  | PLAN                | <b>Tie On Depth:</b> | 0.00                 |
| <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                 | 98.94                |

| <b>Plan Sections</b>  |                 |             |                       |              |              |                         |                        |                       |         |                   |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|------------------------|-----------------------|---------|-------------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) | TFO (°) | Target            |
| 0.00                  | 0.00            | 0.00        | 0.00                  | 0.00         | 0.00         | 0.00                    | 0.00                   | 0.00                  | 0.00    |                   |
| 300.00                | 0.00            | 0.00        | 300.00                | 0.00         | 0.00         | 0.00                    | 0.00                   | 0.00                  | 0.00    |                   |
| 1,154.24              | 17.08           | 198.47      | 1,141.64              | -119.91      | -40.04       | 2.00                    | 2.00                   | 0.00                  | 198.47  |                   |
| 3,552.29              | 17.08           | 198.47      | 3,433.86              | -788.15      | -263.21      | 0.00                    | 0.00                   | 0.00                  | 0.00    |                   |
| 4,107.82              | 60.00           | 89.71       | 3,891.03              | -874.28      | -20.49       | 12.00                   | 7.73                   | -19.58                | -116.74 |                   |
| 4,197.82              | 60.00           | 89.71       | 3,936.03              | -873.89      | 57.45        | 0.00                    | 0.00                   | 0.00                  | 0.00    |                   |
| 4,447.82              | 90.00           | 89.71       | 4,000.00              | -872.68      | 296.18       | 12.00                   | 12.00                  | 0.00                  | 0.00    | FTP Hendrix 13CD- |
| 9,454.77              | 90.00           | 89.71       | 4,000.00              | -847.40      | 5,303.07     | 0.00                    | 0.00                   | 0.00                  | 0.00    | LTP Hendrix 13CD- |
| 9,534.75              | 90.00           | 89.71       | 4,000.00              | -846.99      | 5,383.04     | 0.00                    | 0.00                   | 0.00                  | 0.00    | BH Hendrix 13CD-C |



# Scientific Drilling, Intl

## Planning Report

|                  |                             |                                     |                                  |
|------------------|-----------------------------|-------------------------------------|----------------------------------|
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| <b>Company:</b>  | Longfellow Energy           | <b>TVD Reference:</b>               | 3636 GL + 12 KB @ 3648.00usft    |
| <b>Project:</b>  | Eddy Co NM                  | <b>MD Reference:</b>                | 3636 GL + 12 KB @ 3648.00usft    |
| <b>Site:</b>     | Sec 13/18-17S-29E           | <b>North Reference:</b>             | Grid                             |
| <b>Well:</b>     | Hendrix State Com 13CD-005H | <b>Survey Calculation Method:</b>   | Minimum Curvature                |
| <b>Wellbore:</b> | OH Wellbore                 |                                     |                                  |
| <b>Design:</b>   | Plan 1                      |                                     |                                  |

| Planned Survey               |                 |             |                       |              |              |                         |                         |                        |                       |
|------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| Measured Depth (usft)        | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
| 0.00                         | 0.00            | 0.00        | 0.00                  | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| 300.00                       | 0.00            | 0.00        | 300.00                | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
| <b>300 MD 2 DLS</b>          |                 |             |                       |              |              |                         |                         |                        |                       |
| 400.00                       | 2.00            | 198.47      | 399.98                | -1.66        | -0.55        | -0.29                   | 2.00                    | 2.00                   | 0.00                  |
| 500.00                       | 4.00            | 198.47      | 499.84                | -6.62        | -2.21        | -1.16                   | 2.00                    | 2.00                   | 0.00                  |
| 600.00                       | 6.00            | 198.47      | 599.45                | -14.89       | -4.97        | -2.60                   | 2.00                    | 2.00                   | 0.00                  |
| 700.00                       | 8.00            | 198.47      | 698.70                | -26.44       | -8.83        | -4.61                   | 2.00                    | 2.00                   | 0.00                  |
| 800.00                       | 10.00           | 198.47      | 797.47                | -41.28       | -13.79       | -7.20                   | 2.00                    | 2.00                   | 0.00                  |
| 900.00                       | 12.00           | 198.47      | 895.62                | -59.38       | -19.83       | -10.36                  | 2.00                    | 2.00                   | 0.00                  |
| 1,000.00                     | 14.00           | 198.47      | 993.06                | -80.71       | -26.96       | -14.08                  | 2.00                    | 2.00                   | 0.00                  |
| 1,100.00                     | 16.00           | 198.47      | 1,089.64              | -105.26      | -35.15       | -18.37                  | 2.00                    | 2.00                   | 0.00                  |
| 1,154.24                     | 17.08           | 198.47      | 1,141.64              | -119.91      | -40.04       | -20.92                  | 2.00                    | 2.00                   | 0.00                  |
| <b>Hold 17.08°@198.47 Az</b> |                 |             |                       |              |              |                         |                         |                        |                       |
| 1,200.00                     | 17.08           | 198.47      | 1,185.38              | -132.66      | -44.30       | -23.15                  | 0.00                    | 0.00                   | 0.00                  |
| 1,300.00                     | 17.08           | 198.47      | 1,280.96              | -160.53      | -53.61       | -28.01                  | 0.00                    | 0.00                   | 0.00                  |
| 1,400.00                     | 17.08           | 198.47      | 1,376.55              | -188.39      | -62.92       | -32.87                  | 0.00                    | 0.00                   | 0.00                  |
| 1,500.00                     | 17.08           | 198.47      | 1,472.14              | -216.26      | -72.22       | -37.74                  | 0.00                    | 0.00                   | 0.00                  |
| 1,600.00                     | 17.08           | 198.47      | 1,567.73              | -244.13      | -81.53       | -42.60                  | 0.00                    | 0.00                   | 0.00                  |
| 1,700.00                     | 17.08           | 198.47      | 1,663.31              | -271.99      | -90.83       | -47.46                  | 0.00                    | 0.00                   | 0.00                  |
| 1,800.00                     | 17.08           | 198.47      | 1,758.90              | -299.86      | -100.14      | -52.32                  | 0.00                    | 0.00                   | 0.00                  |
| 1,900.00                     | 17.08           | 198.47      | 1,854.49              | -327.72      | -109.45      | -57.19                  | 0.00                    | 0.00                   | 0.00                  |
| 2,000.00                     | 17.08           | 198.47      | 1,950.07              | -355.59      | -118.75      | -62.05                  | 0.00                    | 0.00                   | 0.00                  |
| 2,100.00                     | 17.08           | 198.47      | 2,045.66              | -383.45      | -128.06      | -66.91                  | 0.00                    | 0.00                   | 0.00                  |
| 2,200.00                     | 17.08           | 198.47      | 2,141.25              | -411.32      | -137.36      | -71.77                  | 0.00                    | 0.00                   | 0.00                  |
| 2,300.00                     | 17.08           | 198.47      | 2,236.84              | -439.19      | -146.67      | -76.64                  | 0.00                    | 0.00                   | 0.00                  |
| 2,400.00                     | 17.08           | 198.47      | 2,332.42              | -467.05      | -155.98      | -81.50                  | 0.00                    | 0.00                   | 0.00                  |
| 2,500.00                     | 17.08           | 198.47      | 2,428.01              | -494.92      | -165.28      | -86.36                  | 0.00                    | 0.00                   | 0.00                  |
| 2,600.00                     | 17.08           | 198.47      | 2,523.60              | -522.78      | -174.59      | -91.22                  | 0.00                    | 0.00                   | 0.00                  |
| 2,700.00                     | 17.08           | 198.47      | 2,619.18              | -550.65      | -183.89      | -96.09                  | 0.00                    | 0.00                   | 0.00                  |
| 2,800.00                     | 17.08           | 198.47      | 2,714.77              | -578.52      | -193.20      | -100.95                 | 0.00                    | 0.00                   | 0.00                  |
| 2,900.00                     | 17.08           | 198.47      | 2,810.36              | -606.38      | -202.50      | -105.81                 | 0.00                    | 0.00                   | 0.00                  |
| 3,000.00                     | 17.08           | 198.47      | 2,905.95              | -634.25      | -211.81      | -110.67                 | 0.00                    | 0.00                   | 0.00                  |
| 3,100.00                     | 17.08           | 198.47      | 3,001.53              | -662.11      | -221.12      | -115.54                 | 0.00                    | 0.00                   | 0.00                  |
| 3,200.00                     | 17.08           | 198.47      | 3,097.12              | -689.98      | -230.42      | -120.40                 | 0.00                    | 0.00                   | 0.00                  |
| 3,300.00                     | 17.08           | 198.47      | 3,192.71              | -717.85      | -239.73      | -125.26                 | 0.00                    | 0.00                   | 0.00                  |
| 3,400.00                     | 17.08           | 198.47      | 3,288.29              | -745.71      | -249.03      | -130.12                 | 0.00                    | 0.00                   | 0.00                  |
| 3,500.00                     | 17.08           | 198.47      | 3,383.88              | -773.58      | -258.34      | -134.99                 | 0.00                    | 0.00                   | 0.00                  |
| 3,552.29                     | 17.08           | 198.47      | 3,433.86              | -788.15      | -263.21      | -137.53                 | 0.00                    | 0.00                   | 0.00                  |
| <b>KOP 3552.29 MD 12 DLS</b> |                 |             |                       |              |              |                         |                         |                        |                       |
| 3,600.00                     | 15.36           | 178.81      | 3,479.71              | -801.12      | -265.30      | -137.58                 | 12.00                   | -3.62                  | -41.20                |
| 3,700.00                     | 18.06           | 137.18      | 3,575.81              | -825.82      | -254.45      | -123.02                 | 12.00                   | 2.70                   | -41.63                |
| 3,800.00                     | 26.41           | 113.87      | 3,668.47              | -846.27      | -223.46      | -89.23                  | 12.00                   | 8.35                   | -23.30                |
| 3,900.00                     | 36.74           | 102.04      | 3,753.63              | -861.56      | -173.69      | -37.69                  | 12.00                   | 10.33                  | -11.83                |
| 4,000.00                     | 47.77           | 94.97       | 3,827.57              | -871.04      | -107.31      | 29.35                   | 12.00                   | 11.03                  | -7.07                 |
| 4,100.00                     | 59.11           | 90.04       | 3,887.07              | -874.29      | -27.23       | 108.97                  | 12.00                   | 11.34                  | -4.93                 |
| 4,107.82                     | 60.00           | 89.71       | 3,891.03              | -874.28      | -20.49       | 115.63                  | 12.00                   | 11.43                  | -4.24                 |
| <b>Hold 90 ft</b>            |                 |             |                       |              |              |                         |                         |                        |                       |
| 4,197.82                     | 60.00           | 89.71       | 3,936.03              | -873.89      | 57.45        | 192.56                  | 0.00                    | 0.00                   | 0.00                  |
| <b>Build 12 DLS</b>          |                 |             |                       |              |              |                         |                         |                        |                       |
| 4,200.00                     | 60.26           | 89.71       | 3,937.12              | -873.88      | 59.34        | 194.42                  | 12.00                   | 12.00                  | 0.00                  |
| 4,300.00                     | 72.26           | 89.71       | 3,977.30              | -873.41      | 150.71       | 284.61                  | 12.00                   | 12.00                  | 0.00                  |
| 4,400.00                     | 84.26           | 89.71       | 3,997.61              | -872.92      | 248.44       | 381.08                  | 12.00                   | 12.00                  | 0.00                  |
| 4,447.82                     | 90.00           | 89.71       | 4,000.00              | -872.68      | 296.18       | 428.20                  | 12.00                   | 12.00                  | 0.00                  |





# Scientific Drilling, Intl

## Planning Report

|                  |                             |                                     |                                  |
|------------------|-----------------------------|-------------------------------------|----------------------------------|
| <b>Database:</b> | Midland                     | <b>Local Co-ordinate Reference:</b> | Well Hendrix State Com 13CD-005H |
| <b>Company:</b>  | Longfellow Energy           | <b>TVD Reference:</b>               | 3636 GL + 12 KB @ 3648.00usft    |
| <b>Project:</b>  | Eddy Co NM                  | <b>MD Reference:</b>                | 3636 GL + 12 KB @ 3648.00usft    |
| <b>Site:</b>     | Sec 13/18-17S-29E           | <b>North Reference:</b>             | Grid                             |
| <b>Well:</b>     | Hendrix State Com 13CD-005H | <b>Survey Calculation Method:</b>   | Minimum Curvature                |
| <b>Wellbore:</b> | OH Wellbore                 |                                     |                                  |
| <b>Design:</b>   | Plan 1                      |                                     |                                  |

| Planned Survey                                     |                 |             |                       |              |              |                         |                         |                        |                       |
|----------------------------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| Measured Depth (usft)                              | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
| <b>4000 TVD 4447.82 MD - FTP Hendrix 13CD-005H</b> |                 |             |                       |              |              |                         |                         |                        |                       |
| 4,500.00                                           | 90.00           | 89.71       | 4,000.00              | -872.42      | 348.36       | 479.70                  | 0.00                    | 0.00                   | 0.00                  |
| 4,600.00                                           | 90.00           | 89.71       | 4,000.00              | -871.91      | 448.36       | 578.41                  | 0.00                    | 0.00                   | 0.00                  |
| 4,700.00                                           | 90.00           | 89.71       | 4,000.00              | -871.41      | 548.36       | 677.11                  | 0.00                    | 0.00                   | 0.00                  |
| 4,800.00                                           | 90.00           | 89.71       | 4,000.00              | -870.90      | 648.36       | 775.82                  | 0.00                    | 0.00                   | 0.00                  |
| 4,900.00                                           | 90.00           | 89.71       | 4,000.00              | -870.40      | 748.36       | 874.53                  | 0.00                    | 0.00                   | 0.00                  |
| 5,000.00                                           | 90.00           | 89.71       | 4,000.00              | -869.89      | 848.35       | 973.23                  | 0.00                    | 0.00                   | 0.00                  |
| 5,100.00                                           | 90.00           | 89.71       | 4,000.00              | -869.39      | 948.35       | 1,071.94                | 0.00                    | 0.00                   | 0.00                  |
| 5,200.00                                           | 90.00           | 89.71       | 4,000.00              | -868.88      | 1,048.35     | 1,170.64                | 0.00                    | 0.00                   | 0.00                  |
| 5,300.00                                           | 90.00           | 89.71       | 4,000.00              | -868.38      | 1,148.35     | 1,269.35                | 0.00                    | 0.00                   | 0.00                  |
| 5,400.00                                           | 90.00           | 89.71       | 4,000.00              | -867.87      | 1,248.35     | 1,368.05                | 0.00                    | 0.00                   | 0.00                  |
| 5,500.00                                           | 90.00           | 89.71       | 4,000.00              | -867.37      | 1,348.35     | 1,466.76                | 0.00                    | 0.00                   | 0.00                  |
| 5,600.00                                           | 90.00           | 89.71       | 4,000.00              | -866.86      | 1,448.35     | 1,565.46                | 0.00                    | 0.00                   | 0.00                  |
| 5,700.00                                           | 90.00           | 89.71       | 4,000.00              | -866.36      | 1,548.35     | 1,664.17                | 0.00                    | 0.00                   | 0.00                  |
| 5,800.00                                           | 90.00           | 89.71       | 4,000.00              | -865.85      | 1,648.34     | 1,762.87                | 0.00                    | 0.00                   | 0.00                  |
| 5,900.00                                           | 90.00           | 89.71       | 4,000.00              | -865.35      | 1,748.34     | 1,861.58                | 0.00                    | 0.00                   | 0.00                  |
| 6,000.00                                           | 90.00           | 89.71       | 4,000.00              | -864.84      | 1,848.34     | 1,960.28                | 0.00                    | 0.00                   | 0.00                  |
| 6,100.00                                           | 90.00           | 89.71       | 4,000.00              | -864.34      | 1,948.34     | 2,058.99                | 0.00                    | 0.00                   | 0.00                  |
| 6,200.00                                           | 90.00           | 89.71       | 4,000.00              | -863.83      | 2,048.34     | 2,157.70                | 0.00                    | 0.00                   | 0.00                  |
| 6,300.00                                           | 90.00           | 89.71       | 4,000.00              | -863.33      | 2,148.34     | 2,256.40                | 0.00                    | 0.00                   | 0.00                  |
| 6,400.00                                           | 90.00           | 89.71       | 4,000.00              | -862.82      | 2,248.34     | 2,355.11                | 0.00                    | 0.00                   | 0.00                  |
| 6,500.00                                           | 90.00           | 89.71       | 4,000.00              | -862.32      | 2,348.33     | 2,453.81                | 0.00                    | 0.00                   | 0.00                  |
| 6,600.00                                           | 90.00           | 89.71       | 4,000.00              | -861.81      | 2,448.33     | 2,552.52                | 0.00                    | 0.00                   | 0.00                  |
| 6,700.00                                           | 90.00           | 89.71       | 4,000.00              | -861.31      | 2,548.33     | 2,651.22                | 0.00                    | 0.00                   | 0.00                  |
| 6,800.00                                           | 90.00           | 89.71       | 4,000.00              | -860.80      | 2,648.33     | 2,749.93                | 0.00                    | 0.00                   | 0.00                  |
| 6,900.00                                           | 90.00           | 89.71       | 4,000.00              | -860.30      | 2,748.33     | 2,848.63                | 0.00                    | 0.00                   | 0.00                  |
| 7,000.00                                           | 90.00           | 89.71       | 4,000.00              | -859.79      | 2,848.33     | 2,947.34                | 0.00                    | 0.00                   | 0.00                  |
| 7,100.00                                           | 90.00           | 89.71       | 4,000.00              | -859.29      | 2,948.33     | 3,046.04                | 0.00                    | 0.00                   | 0.00                  |
| 7,200.00                                           | 90.00           | 89.71       | 4,000.00              | -858.78      | 3,048.33     | 3,144.75                | 0.00                    | 0.00                   | 0.00                  |
| 7,300.00                                           | 90.00           | 89.71       | 4,000.00              | -858.28      | 3,148.32     | 3,243.45                | 0.00                    | 0.00                   | 0.00                  |
| 7,400.00                                           | 90.00           | 89.71       | 4,000.00              | -857.77      | 3,248.32     | 3,342.16                | 0.00                    | 0.00                   | 0.00                  |
| 7,500.00                                           | 90.00           | 89.71       | 4,000.00              | -857.27      | 3,348.32     | 3,440.87                | 0.00                    | 0.00                   | 0.00                  |
| 7,600.00                                           | 90.00           | 89.71       | 4,000.00              | -856.76      | 3,448.32     | 3,539.57                | 0.00                    | 0.00                   | 0.00                  |
| 7,700.00                                           | 90.00           | 89.71       | 4,000.00              | -856.26      | 3,548.32     | 3,638.28                | 0.00                    | 0.00                   | 0.00                  |
| 7,800.00                                           | 90.00           | 89.71       | 4,000.00              | -855.75      | 3,648.32     | 3,736.98                | 0.00                    | 0.00                   | 0.00                  |
| 7,900.00                                           | 90.00           | 89.71       | 4,000.00              | -855.25      | 3,748.32     | 3,835.69                | 0.00                    | 0.00                   | 0.00                  |
| 8,000.00                                           | 90.00           | 89.71       | 4,000.00              | -854.74      | 3,848.32     | 3,934.39                | 0.00                    | 0.00                   | 0.00                  |
| 8,100.00                                           | 90.00           | 89.71       | 4,000.00              | -854.24      | 3,948.31     | 4,033.10                | 0.00                    | 0.00                   | 0.00                  |
| 8,200.00                                           | 90.00           | 89.71       | 4,000.00              | -853.73      | 4,048.31     | 4,131.80                | 0.00                    | 0.00                   | 0.00                  |
| 8,300.00                                           | 90.00           | 89.71       | 4,000.00              | -853.23      | 4,148.31     | 4,230.51                | 0.00                    | 0.00                   | 0.00                  |
| 8,400.00                                           | 90.00           | 89.71       | 4,000.00              | -852.72      | 4,248.31     | 4,329.21                | 0.00                    | 0.00                   | 0.00                  |
| 8,500.00                                           | 90.00           | 89.71       | 4,000.00              | -852.22      | 4,348.31     | 4,427.92                | 0.00                    | 0.00                   | 0.00                  |
| 8,600.00                                           | 90.00           | 89.71       | 4,000.00              | -851.71      | 4,448.31     | 4,526.63                | 0.00                    | 0.00                   | 0.00                  |
| 8,700.00                                           | 90.00           | 89.71       | 4,000.00              | -851.21      | 4,548.31     | 4,625.33                | 0.00                    | 0.00                   | 0.00                  |
| 8,800.00                                           | 90.00           | 89.71       | 4,000.00              | -850.70      | 4,648.31     | 4,724.04                | 0.00                    | 0.00                   | 0.00                  |
| 8,900.00                                           | 90.00           | 89.71       | 4,000.00              | -850.20      | 4,748.30     | 4,822.74                | 0.00                    | 0.00                   | 0.00                  |
| 9,000.00                                           | 90.00           | 89.71       | 4,000.00              | -849.69      | 4,848.30     | 4,921.45                | 0.00                    | 0.00                   | 0.00                  |
| 9,100.00                                           | 90.00           | 89.71       | 4,000.00              | -849.19      | 4,948.30     | 5,020.15                | 0.00                    | 0.00                   | 0.00                  |
| 9,200.00                                           | 90.00           | 89.71       | 4,000.00              | -848.68      | 5,048.30     | 5,118.86                | 0.00                    | 0.00                   | 0.00                  |
| 9,300.00                                           | 90.00           | 89.71       | 4,000.00              | -848.18      | 5,148.30     | 5,217.56                | 0.00                    | 0.00                   | 0.00                  |
| 9,400.00                                           | 90.00           | 89.71       | 4,000.00              | -847.67      | 5,248.30     | 5,316.27                | 0.00                    | 0.00                   | 0.00                  |
| 9,454.77                                           | 90.00           | 89.71       | 4,000.00              | -847.40      | 5,303.07     | 5,370.33                | 0.00                    | 0.00                   | 0.00                  |
| <b>LTP Hendrix 13CD-005H</b>                       |                 |             |                       |              |              |                         |                         |                        |                       |
| 9,500.00                                           | 90.00           | 89.71       | 4,000.00              | -847.17      | 5,348.30     | 5,414.97                | 0.00                    | 0.00                   | 0.00                  |



## Scientific Drilling, Intl Planning Report

|                  |                             |                                     |                                  |
|------------------|-----------------------------|-------------------------------------|----------------------------------|
| <b>Database:</b> | Midland                     | <b>Local Co-ordinate Reference:</b> | Well Hendrix State Com 13CD-005H |
| <b>Company:</b>  | Longfellow Energy           | <b>TVD Reference:</b>               | 3636 GL + 12 KB @ 3648.00usft    |
| <b>Project:</b>  | Eddy Co NM                  | <b>MD Reference:</b>                | 3636 GL + 12 KB @ 3648.00usft    |
| <b>Site:</b>     | Sec 13/18-17S-29E           | <b>North Reference:</b>             | Grid                             |
| <b>Well:</b>     | Hendrix State Com 13CD-005H | <b>Survey Calculation Method:</b>   | Minimum Curvature                |
| <b>Wellbore:</b> | OH Wellbore                 |                                     |                                  |
| <b>Design:</b>   | Plan 1                      |                                     |                                  |

| Planned Survey                                |                 |             |                       |              |              |                         |                         |                        |                       |
|-----------------------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| Measured Depth (usft)                         | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
| 9,534.75                                      | 90.00           | 89.71       | 4,000.00              | -846.99      | 5,383.04     | 5,449.27                | 0.00                    | 0.00                   | 0.00                  |
| TD 4000 TVD 9534.75 MD - BH Hendrix 13CD-005H |                 |             |                       |              |              |                         |                         |                        |                       |

| 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                   |               |              |            |              |              |                 |                |           |             |
| FTP Hendrix 13CD-00       | 0.00          | 0.00         | 4,000.00   | -872.68      | 296.18       | 665,603.02      | 601,327.15     | 32.829617 | -104.138032 |
| - plan hits target center |               |              |            |              |              |                 |                |           |             |
| - Point                   |               |              |            |              |              |                 |                |           |             |
| LTP Hendrix 13CD-00       | 0.00          | 0.00         | 4,000.00   | -847.40      | 5,303.07     | 665,628.31      | 606,334.03     | 32.829660 | -104.121732 |
| - plan hits target center |               |              |            |              |              |                 |                |           |             |
| - Point                   |               |              |            |              |              |                 |                |           |             |

| Plan Annotations      |                       |                   |              |                        |
|-----------------------|-----------------------|-------------------|--------------|------------------------|
| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates |              | Comment                |
|                       |                       | +N/-S (usft)      | +E/-W (usft) |                        |
| 300.00                | 300.00                | 0.00              | 0.00         | 300 MD 2 DLS           |
| 1,154.24              | 1,141.64              | -119.91           | -40.04       | Hold 17.08°@198.47 Az  |
| 3,552.29              | 3,433.86              | -788.15           | -263.21      | KOP 3552.29 MD 12 DLS  |
| 4,107.82              | 3,891.03              | -874.28           | -20.49       | Hold 90 ft             |
| 4,197.82              | 3,936.03              | -873.89           | 57.45        | Build 12 DLS           |
| 4,447.82              | 4,000.00              | -872.68           | 296.18       | 4000 TVD 4447.82 MD    |
| 9,534.75              | 4,000.00              | -846.99           | 5,383.04     | TD 4000 TVD 9534.75 MD |