

1000 Noble Energy Drive  
Canonsburg, PA 15317-9504

Tel: 724-820-3000  
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www.nobleenergyinc.com



November 12, 2015

Beverly D. McKeone,  
West Virginia Department of Environmental Protection  
Division of Air Quality  
601 57th Street  
Charleston, WV 25304-2345

RECEIVED  
NOV 16 2015  
WV DEP / DIV OF AIR QUALITY  
ID # 095-00036  
Reg G70-A038B  
Company Noble Energy, Inc.  
Facility SHR1 Initials GM

Re: **Class I Administrative Update**  
**Registration G70-A038A**  
**Facility ID No. 095-00036**

Dear Ms. McKeone:

Noble Energy Inc. (Noble) plans to change equipment at the Shirley 1 Production Facility (SHR 1). This update reflects the removal of one (1) Gas Jack GJ230 (3S-ENG2), rated at 46 horsepower (hp), used for recovery of tank vapors. In lieu of the GJ230, Noble intends to route all tank vapor to the existing, registered Vapor Destruction Units (VDU).

The existing VDUs were registered to operate 8,760 hours per year, controlling tank vapors. The requested update accounts for a net reduction of emissions wholly attributed to the operation of 3S-ENG2 driving the Vapor Recovery Unit (VRU).

Additionally, Noble requests the registration to be updated to reflect the five (5) Condensate storage tanks and five (5) Produced Water storage tanks that were installed. Additional, registered tanks were not and will not be installed.

Further, the previous administrative update, G70-A038A declares New Source Performance Standards (NSPS), Subpart JJJJ applicability to 3S-ENG1. Noble requests that the registration be updated to remove applicability and testing requirements per engine specifications enclosed with previous application.

As the facility changes constitute a decrease in emissions pursuant to limitations outlined in 45 CSR 13 4.2.a.8, Noble hereby requests a Class I Administrative Update to the aforementioned registration, detail enclosed.

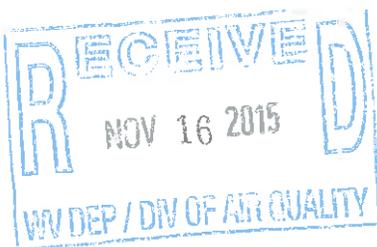
If further information is required, please contact me at 724-820-3077 or clayton.murrall@nblenergy.com.

Sincerely,

Clayton Murrall  
Senior Environmental Specialist  
Noble Energy, Inc.

Enclosures

*Entire Document*  
**NON-CONFIDENTIAL**



WEST VIRGINIA  
 DEPARTMENT OF ENVIRONMENTAL PROTECTION  
 DIVISION OF AIR QUALITY  
 601 57th Street, SE  
 Charleston, WV 25304  
 Phone: (304) 926-0475 • www.dep.wv.gov/daq

**APPLICATION FOR GENERAL PERMIT REGISTRATION**  
 CONSTRUCT, MODIFY, RELOCATE OR ADMINISTRATIVELY UPDATE  
 A STATIONARY SOURCE OF AIR POLLUTANTS

- CONSTRUCTION     
  MODIFICATION     
  RELOCATION     
  CLASS I ADMINISTRATIVE UPDATE  
 CLASS II ADMINISTRATIVE UPDATE

CHECK WHICH TYPE OF GENERAL PERMIT REGISTRATION YOU ARE APPLYING FOR:

- |  |  |
|--|--|
| <input type="checkbox"/> G10-D - Coal Preparation and Handling                                   | <input type="checkbox"/> G40-C - Nonmetallic Minerals Processing                             |
| <input type="checkbox"/> G20-B - Hot Mix Asphalt   | <input type="checkbox"/> G50-B - Concrete Batch  |
| <input type="checkbox"/> G30-D - Natural Gas Compressor Stations                                 | <input type="checkbox"/> G60-C - Class II Emergency Generator                                |
| <input type="checkbox"/> G33-A - Spark Ignition Internal Combustion Engines                      | <input type="checkbox"/> G65-C - Class I Emergency Generator                                 |
| <input type="checkbox"/> G35-A - Natural Gas Compressor Stations (Flare/Glycol Dehydration Unit) | <input checked="" type="checkbox"/> G70-A - Class II Oil and Natural Gas Production Facility |

**SECTION I. GENERAL INFORMATION**

|   |  |   |  |
|---|--|---|--|
| 1. Name of Applicant (as registered with the WV Secretary of State's Office):<br><b>Noble Energy, Inc</b>   |  | 2. Federal Employer ID No. (FEIN):<br><b>73-0785597</b>                                     |  |
| 3. Applicant's mailing address:<br><b>Clayton Murrall<br/>1000 Noble Energy Drive<br/>Canonsburg, PA 15317</b>  |  | 4. Applicant's Physical Address:<br><b>1000 Noble Energy Drive<br/>Canonsburg, PA 15317</b> |  |
| 5. If applicant is a subsidiary corporation, please provide the name of parent corporation:   |  |   |  |
| 6. WV BUSINESS REGISTRATION. Is the applicant a resident of the State of West Virginia? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no<br>- IF YES, provide a copy of the Certificate of Incorporation/ Organization / Limited Partnership (one page) including any name change amendments or other Business Registration Certificate as Attachment A.<br>- IF NO, provide a copy of the Certificate of Authority / Authority of LLC / Registration (one page) including any name change amendments or other Business Certificate as Attachment A. |  |   |  |

**SECTION II. FACILITY INFORMATION**

|  |  |  |  |
|--|--|--|--|
| 7. Type of plant or facility (stationary source) to be constructed, modified, relocated or administratively updated (e.g., coal preparation plant, primary crusher, etc.):<br><b>Oil and Gas Production Facility</b> |  | 8a. Standard Industrial Classification (SIC) code:<br><b>1311</b>  | 8b. North American Industry Classification System (NAICS) code:<br><b>211111</b> |
| 9. DAQ Plant ID No. (for existing facilities only):<br><b>095-00036</b>  |  | 10. List all current 45CSR13 and other General Permit numbers associated with this process (for existing facilities only):<br><b>G70-A038A</b> |  |

**A: PRIMARY OPERATING SITE INFORMATION**

|  |                                    |   |  |
|--|------------------------------------|---|--|
| 11A. Facility name of primary operating site:<br><b>Shirley 1 Production Facility</b>  |                                    | 12A. Address of primary operating site:<br>Mailing: _____ Physical: <u>See Section 14A</u>  |  |
| 13A. Does the applicant own, lease, have an option to buy, or otherwise have control of the proposed site? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO<br>- IF YES, please explain: <u>Lease</u><br>- IF NO, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.  |                                    |   |  |
| 14A. - For Modifications or Administrative Updates at an existing facility, please provide directions to the present location of the facility from the nearest state road;<br>- For Construction or Relocation permits, please provide directions to the proposed new site location from the nearest state road. Include a MAP as Attachment F.<br><br>From the Wheeling area, from WV 2 south make a left onto WV 180 south of New Martinsville, follow WV 180 and travel approximately 7.4 miles to the intersection of WV 180 and WV 18, make a left onto WV 18 south and travel approximately 15.1 miles to lease road on the right. |                                    |   |  |
| 15A. Nearest city or town:<br><b>Centerville</b>   | 16A. County<br><b>Tyler County</b> | 17A. UTM Coordinates<br>Northing (KM): <b>4362.828</b><br>Easting (KM): <b>513.255</b><br>Zone: <b>17</b>                                   |  |
| 18A. Briefly describe the proposed new operation or change (s) to the facility:<br><br><b>Removal of Vapor Recovery Unit controlling tank vapor. Tank vapor to be routed to existing VDUs.</b><br><br><b>Update registration to reflect quantity of tanks actually installed.</b>  |                                    | 19A. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits):<br><br>Latitude: <b>39.41487</b><br>Longitude: <b>-80.84602</b> |  |

**B: 1st ALTERNATE OPERATING SITE INFORMATION (only available for G20, G40, & G50 General Permits)**

|   |  |   |  |
|---|--|---|--|
| 11B. Name of 1st alternate operating site:  |  | 12B. Address of 1st alternate operating site:<br>Mailing: _____ Physical: _____ |  |
| 13B. Does the applicant own, lease, have an option to buy, or otherwise have control of the proposed site? <input type="checkbox"/> YES <input type="checkbox"/> NO<br>- IF YES, please explain: _____<br>- IF NO, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE. |  |   |  |

|   |             |  |
|---|-------------|--|
| <p>14B. - For <b>Modifications or Administrative Updates</b> at an existing facility, please provide directions to the present location of the facility from the nearest state road;<br/>         - For <b>Construction or Relocation permits</b>, please provide directions to the proposed new site location from the nearest state road. Include a <b>MAP as Attachment F</b>.</p> |             |  |
| 15B. Nearest city or town:  | 16B. County | 17B. UTM Coordinates<br>Northing (KM):<br>Easting (KM):<br>Zone:   |
| 18B. Briefly describe the proposed new operation or change (s) to the facility:   |             | 19B. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits):<br><br>Latitude:<br>Longitude: |

**C: 2nd ALTERNATE OPERATING SITE INFORMATION (only available for G20, G40, & G50 General Permits)**

|   |   |  |
|---|---|--|
| 11C. Name of 1st alternate operating site:  | 12C. Address of 1st alternate operating site: |  |
|   | Mailing: _____                                | Physical: _____  |
| <p>13C. Does the applicant own, lease, have an option to buy, or otherwise have control of the proposed site? <input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>- IF YES, please explain: _____</p> <p>- IF NO, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.</p>  |   |  |
| <p>14C. - For <b>Modifications or Administrative Updates</b> at an existing facility, please provide directions to the present location of the facility from the nearest state road;<br/>         - For <b>Construction or Relocation permits</b>, please provide directions to the proposed new site location from the nearest state road. Include a <b>MAP as Attachment F</b>.</p> |   |  |
| 15C. Nearest city or town:  | 16C. County                                   | 17C. UTM Coordinates<br>Northing (KM):<br>Easting (KM):<br>Zone:   |
| 18C. Briefly describe the proposed new operation or change (s) to the facility:   |   | 19C. Latitude & Longitude Coordinates (NAD83, Decimal Degrees to 5 digits):<br><br>Latitude:<br>Longitude: |

|   |  |               |           |                |           |                         |            |                         |            |
|---|--|---------------|-----------|----------------|-----------|-------------------------|------------|-------------------------|------------|
| <p>20. Provide the date of anticipated installation or change:</p> <p style="text-align: center;"><b>11/16/2015</b></p> <p>If this is an after the fact permit application, provide the date upon which the proposed change did happen:<br/> / /</p>  | <p>21. Date of anticipated Start-up if registration is granted:</p> <p style="text-align: center;"><b>11/16/2015</b></p> |               |           |                |           |                         |            |                         |            |
| <p>22. Provide maximum projected Operating Schedule of activity/activities outlined in this application if other than 8760 hours/year. (Note: anything other than 24/7/52 may result in a restriction to the facility's operation).</p> <table border="0"> <tr> <td>Hours per day</td> <td style="text-align: center;"><b>24</b></td> <td>Days per week</td> <td style="text-align: center;"><b>7</b></td> <td>Weeks per year</td> <td style="text-align: center;"><b>52</b></td> <td>Percentage of Operation</td> <td style="text-align: center;"><b>100</b></td> </tr> </table> |  | Hours per day | <b>24</b> | Days per week  | <b>7</b>  | Weeks per year          | <b>52</b>  | Percentage of Operation | <b>100</b> |
| Hours per day   | <b>24</b>  | Days per week | <b>7</b>  | Weeks per year | <b>52</b> | Percentage of Operation | <b>100</b> |                         |            |

### SECTION III. ATTACHMENTS AND SUPPORTING DOCUMENTS

|   |
|---|
| <p>23. Include a check payable to WVDEP – Division of Air Quality with the appropriate application fee (per 45CSR22 and 45CSR13).</p>   |
| <p>24. Include a Table of Contents as the first page of your application package.</p>   |
| <p>All of the required forms and additional information can be found under the Permitting Section (General Permits) of DAQ's website, or requested by phone.</p>  |
| <p>25. Please check all attachments included with this permit application. Please refer to the appropriate reference document for an explanation of the attachments listed below.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> ATTACHMENT A : CURRENT BUSINESS CERTIFICATE</li> <li><input type="checkbox"/> ATTACHMENT B: PROCESS DESCRIPTION</li> <li><input type="checkbox"/> ATTACHMENT C: DESCRIPTION OF FUGITIVE EMISSIONS</li> <li><input type="checkbox"/> ATTACHMENT D: PROCESS FLOW DIAGRAM</li> <li><input type="checkbox"/> ATTACHMENT E: PLOT PLAN</li> <li><input type="checkbox"/> ATTACHMENT F: AREA MAP</li> <li><input type="checkbox"/> ATTACHMENT G: EQUIPMENT DATA SHEETS AND REGISTRATION SECTION APPLICABILITY FORM</li> <li><input type="checkbox"/> ATTACHMENT H: AIR POLLUTION CONTROL DEVICE SHEETS</li> <li><input checked="" type="checkbox"/> ATTACHMENT I: EMISSIONS CALCULATIONS</li> <li><input type="checkbox"/> ATTACHMENT J: CLASS I LEGAL ADVERTISEMENT</li> <li><input type="checkbox"/> ATTACHMENT K: ELECTRONIC SUBMITTAL</li> <li><input type="checkbox"/> ATTACHMENT L: GENERAL PERMIT REGISTRATION APPLICATION FEE</li> <li><input type="checkbox"/> ATTACHMENT M: SITING CRITERIA WAIVER</li> <li><input type="checkbox"/> ATTACHMENT N: MATERIAL SAFETY DATA SHEETS (MSDS)</li> <li><input type="checkbox"/> ATTACHMENT O: EMISSIONS SUMMARY SHEETS</li> <li><input type="checkbox"/> OTHER SUPPORTING DOCUMENTATION NOT DESCRIBED ABOVE (Equipment Drawings, Aggregation Discussion, etc.)</li> </ul> <p>Please mail an original and two copies of the complete General Permit Registration Application with the signature(s) to the DAQ Permitting Section, at the address shown on the front page of this application. Please DO NOT fax permit applications. For questions regarding applications or West Virginia Air Pollution Rules and Regulations, please refer to the website shown on the front page of the application or call the phone number also provided on the front page of the application.</p> |

SECTION IV. CERTIFICATION OF INFORMATION

This General Permit Registration Application shall be signed below by a Responsible Official. A Responsible Official is a President, Vice President, Secretary, Treasurer, General Partner, General Manager, a member of a Board of Directors, or Owner, depending on business structure. A business may certify an Authorized Representative who shall have authority to bind the Corporation, Partnership, Limited Liability Company, Association, Joint Venture or Sole Proprietorship. Required records of daily throughput, hours of operation and maintenance, general correspondence, Emission Inventory, Certified Emission Statement, compliance certifications and all required notifications must be signed by a Responsible Official or an Authorized Representative. If a business wishes to certify an Authorized Representative, the official agreement below shall be checked off and the appropriate names and signatures entered. Any administratively incomplete or improperly signed or unsigned Registration Application will be returned to the applicant.

FOR A CORPORATION (domestic or foreign)

I certify that I am a President, Vice President, Secretary, Treasurer or in charge of a principal business function of the corporation

FOR A PARTNERSHIP

I certify that I am a General Partner

FOR A LIMITED LIABILITY COMPANY

I certify that I am a General Partner or General Manager

FOR AN ASSOCIATION

I certify that I am the President or a member of the Board of Directors

FOR A JOINT VENTURE

I certify that I am the President, General Partner or General Manager

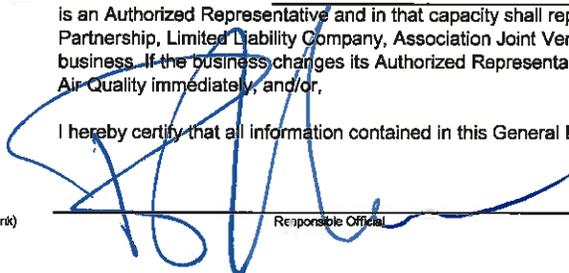
FOR A SOLE PROPRIETORSHIP

I certify that I am the Owner and Proprietor

I hereby certify that \_\_\_\_\_ is an Authorized Representative and in that capacity shall represent the interest of the business (e.g., Corporation, Partnership, Limited Liability Company, Association Joint Venture or Sole Proprietorship) and may obligate and legally bind the business. If the business changes its Authorized Representative, a Responsible Official shall notify the Director of the Office of Air Quality immediately, and/or,

I hereby certify that all information contained in this General Permit Registration Application and any supporting documents

Signature  
(Please use blue ink)

 \_\_\_\_\_  
Responsible Official

11/12/15  
\_\_\_\_\_  
Date

Name & Title  
(Please print or type)

RJ Moses Operations Manager Marcellus Business Unit

Signature  
(Please use blue ink)

\_\_\_\_\_  
Authorized Representative (if applicable)

\_\_\_\_\_  
Date

Applicant's Name Noble Energy, Inc

Phone & Fax

(724) 820-3001  
Phone Fax

Email

[rj.moses@nblenergy.com](mailto:rj.moses@nblenergy.com) cc: [clayton.murral@nblenergy.com](mailto:clayton.murral@nblenergy.com)

**Shirley1 Production Facility; Noble Energy, Inc**  
**Emission Summary Sheet**  
**With Vapor Recovery Unit**

| Emission Unit ID Number                                     | Source Description                    | NOx          | CO           | VOC           | SOx         | Potential Emissions (tpy) |             |              |              |                 |                 |                  |            |     |
|---|---------------------------------------|--------------|--------------|---------------|-------------|---------------------------|-------------|--------------|--------------|-----------------|-----------------|------------------|------------|-----|
|   |                                       |              |              |               |             | PM                        | PM10        | Formaldehyde | Total HAPs   | CH <sub>4</sub> | CO <sub>2</sub> | CO <sub>2e</sub> |            |     |
| 1S-TK1 - TK10   | 10 - 400 bbl Condensate Tanks         | ---          | ---          | VRU           | ---         | ---                       | ---         | ---          | ---          | ---             | ---             | ---              | ---        | --- |
| 2S-TK11-21  | 11 - 400 bbl Prod Water Storage Tanks | ---          | ---          | VRU           | ---         | ---                       | ---         | ---          | ---          | ---             | ---             | ---              | ---        | --- |
| 3S-ENG-1  | 265 hp CAT G342TA                     | 3.89         | 7.78         | 2.71          | 0.01        | 0.08                      | 0.08        | 0.18         | 0.20         | 1.98            | 947.11          | 996.62           | ---        |     |
| 3S-ENG-2  | 46 hp Gas Jack                        | 0.89         | 1.78         | 0.44          | 0.00        | 0.02                      | 0.02        | 0.04         | 0.04         | 0.50            | 228.76          | 239.25           | ---        |     |
| 4S-GPU1   | 1.0 MMBtu/hr Heater                   | 0.36         | 0.30         | 0.02          | 0.00        | 0.03                      | 0.03        | 0.00         | 0.01         | 0.01            | 430.82          | 430.99           | ---        |     |
| 4S-GPU2   | 1.0 MMBtu/hr Heater                   | 0.36         | 0.30         | 0.02          | 0.00        | 0.03                      | 0.03        | 0.00         | 0.01         | 0.01            | 430.82          | 430.99           | ---        |     |
| 4S-GPU3   | 1.0 MMBtu/hr Heater                   | 0.36         | 0.30         | 0.02          | 0.00        | 0.03                      | 0.03        | 0.00         | 0.01         | 0.01            | 430.82          | 430.99           | ---        |     |
| 4S-GPU4   | 1.0 MMBtu/hr Heater                   | 0.36         | 0.30         | 0.02          | 0.00        | 0.03                      | 0.03        | 0.00         | 0.01         | 0.01            | 430.82          | 430.99           | ---        |     |
| 4S-GPU5   | 1.0 MMBtu/hr Heater                   | 0.36         | 0.30         | 0.02          | 0.00        | 0.03                      | 0.03        | 0.00         | 0.01         | 0.01            | 430.82          | 430.99           | ---        |     |
| 4S-GPU6   | 1.0 MMBtu/hr Heater                   | 0.36         | 0.30         | 0.02          | 0.00        | 0.03                      | 0.03        | 0.00         | 0.01         | 0.01            | 430.82          | 430.99           | ---        |     |
| 5S-LP   | 0.75 MMBtu/hr Heater                  | 0.27         | 0.23         | 0.01          | 0.00        | 0.02                      | 0.02        | 0.00         | 0.01         | 0.01            | 323.11          | 323.24           | ---        |     |
| 6S-TL1  | Condensate Truck Loading              | ---          | ---          | COMB          | ---         | ---                       | ---         | ---          | COMB         | COMB            | ---             | ---              | ---        |     |
| 7S-TL2  | Produced Water Truck Loading          | ---          | ---          | 1.69          | ---         | ---                       | ---         | ---          | 0.05         | ---             | ---             | ---              | ---        |     |
| 8S-COMB1 82   | 2-Vapor Combustors                    | 3.45         | 18.79        | 7.79          | ---         | ---                       | ---         | ---          | 0.32         | 6.19            | 5975.41         | 6121.53          | ---        |     |
| 9S-Pilot  | Combustor Pilot Emissions             | 0.03         | 0.03         | 0.00          | 0.00        | 0.00                      | 0.00        | ---          | ---          | ---             | ---             | 39.42            | ---        |     |
| 10S-Comb  | Flare                                 | 5.18         | 28.17        | 36.20         | ---         | ---                       | ---         | ---          | 3.11         | ---             | ---             | ---              | ---        |     |
| 11S-TE Gen  | Thermo Electric Generator             | 0.02         | 0.01         | 0.00          | ---         | ---                       | ---         | ---          | ---          | 0.00            | 16.88           | 16.89            | ---        |     |
| FUG   | Equipmt Component Fugitives Estimate  | ---          | ---          | 25.04         | ---         | ---                       | ---         | ---          | 2.80         | 22.32           | ---             | 468.73           | ---        |     |
| FUG - TL  | Truck Loading Fugitives Estimate      | ---          | ---          | 40.56         | ---         | ---                       | ---         | ---          | 6.86         | ---             | ---             | ---              | ---        |     |
| <b>Total Facility Emissions</b>                             |                                       | <b>15.88</b> | <b>58.60</b> | <b>114.57</b> | <b>0.02</b> | <b>0.29</b>               | <b>0.29</b> | <b>0.22</b>  | <b>13.43</b> | <b>31.05</b>    | <b>10076.19</b> | <b>10791.63</b>  | <b>---</b> |     |
| <b>Total Facility Emissions for Major Source Threshold*</b> |                                       | <b>15.88</b> | <b>58.60</b> | <b>48.98</b>  | <b>0.02</b> | <b>0.29</b>               | <b>0.29</b> | <b>0.22</b>  | <b>3.77</b>  | <b>8.73</b>     | <b>10076.19</b> | <b>10322.90</b>  | <b>---</b> |     |

\* Excludes fugitive emissions per 45 CSR 14-2.43.e.

Shirley1 Production Facility; Noble Energy, Inc  
 Emission Summary Sheet  
 With Vapor Recovery Unit

| Emission Unit<br>ID Number                                  | Source<br>Description                | NOX          | CO           | VOC           | SOX         | Potential Emissions (tpy) |             |              |              |                 |                 |                  |     |     |     |
|---|--------------------------------------|--------------|--------------|---------------|-------------|---------------------------|-------------|--------------|--------------|-----------------|-----------------|------------------|-----|-----|-----|
|   |                                      |              |              |               |             | PM                        | PM10        | Formaldehyde | Total HAPs   | CH <sub>4</sub> | CO <sub>2</sub> | CO <sub>2e</sub> |     |     |     |
| 1S-TK1 - TK5  | 5 - 400 bbl Condensate Tanks         | ---          | ---          | COMB          | ---         | ---                       | ---         | ---          | ---          | ---             | ---             | ---              | --- | --- | --- |
| 2S-TK6 - TK10   | 5 - 400 bbl Prod Water Storage Tanks | ---          | ---          | COMB          | ---         | ---                       | ---         | ---          | ---          | ---             | ---             | ---              | --- | --- | --- |
| 3S-ENG-1  | 265 hp CAT G342TA                    | 3.89         | 7.78         | 2.71          | 0.01        | 0.08                      | 0.08        | 0.18         | 0.20         | 1.98            | 947.11          | 996.62           |     |     |     |
| 4S-GPU1   | 1.0 MMBtu/hr Heater                  | 0.36         | 0.30         | 0.02          | 0.00        | 0.03                      | 0.03        | 0.00         | 0.01         | 0.01            | 430.82          | 430.99           |     |     |     |
| 4S-GPU2   | 1.0 MMBtu/hr Heater                  | 0.36         | 0.30         | 0.02          | 0.00        | 0.03                      | 0.03        | 0.00         | 0.01         | 0.01            | 430.82          | 430.99           |     |     |     |
| 4S-GPU3   | 1.0 MMBtu/hr Heater                  | 0.36         | 0.30         | 0.02          | 0.00        | 0.03                      | 0.03        | 0.00         | 0.01         | 0.01            | 430.82          | 430.99           |     |     |     |
| 4S-GPU4   | 1.0 MMBtu/hr Heater                  | 0.36         | 0.30         | 0.02          | 0.00        | 0.03                      | 0.03        | 0.00         | 0.01         | 0.01            | 430.82          | 430.99           |     |     |     |
| 4S-GPU5   | 1.0 MMBtu/hr Heater                  | 0.36         | 0.30         | 0.02          | 0.00        | 0.03                      | 0.03        | 0.00         | 0.01         | 0.01            | 430.82          | 430.99           |     |     |     |
| 4S-GPU6   | 1.0 MMBtu/hr Heater                  | 0.36         | 0.30         | 0.02          | 0.00        | 0.03                      | 0.03        | 0.00         | 0.01         | 0.01            | 430.82          | 430.99           |     |     |     |
| 5S-LP   | 0.75 MMBtu/hr Heater                 | 0.27         | 0.23         | 0.01          | 0.00        | 0.02                      | 0.02        | 0.00         | 0.01         | 0.01            | 323.11          | 323.24           |     |     |     |
| 6S-TL1  | Condensate Truck Loading             | ---          | ---          | COMB          | ---         | ---                       | ---         | ---          | COMB         | COMB            | ---             | ---              |     |     |     |
| 7S-TL2  | Produced Water Truck Loading         | ---          | ---          | COMB          | ---         | ---                       | ---         | ---          | 0.05         | ---             | ---             | ---              |     |     |     |
| 8S-COMB1 &2   | 2-Vapor Combustors                   | 3.45         | 18.79        | 7.79          | ---         | ---                       | ---         | ---          | 0.32         | 6.19            | 5975.41         | 6121.53          |     |     |     |
| 9S-Pilot  | Combustor Pilot Emissions            | 0.03         | 0.03         | 0.00          | 0.00        | 0.00                      | 0.00        | ---          | ---          | ---             | ---             | 39.42            |     |     |     |
| 10S-Comb  | Flare                                | 5.18         | 28.17        | 36.20         | ---         | ---                       | ---         | ---          | 3.11         | ---             | ---             | ---              |     |     |     |
| 11S-TE Gen  | Thermo Electric Generator            | 0.02         | 0.01         | 0.00          | ---         | ---                       | ---         | ---          | ---          | 0.00            | 16.88           | 16.89            |     |     |     |
| FUG   | Equipmt Component Fugitives Estimate | ---          | ---          | 25.04         | ---         | ---                       | ---         | ---          | 2.80         | 22.32           | ---             | 468.73           |     |     |     |
| FUG - TL  | Truck Loading Fugitives Estimate     | ---          | ---          | 40.56         | ---         | ---                       | ---         | ---          | 6.86         | ---             | ---             | ---              |     |     |     |
| <b>Total Facility Emissions</b>                             |                                      | <b>14.99</b> | <b>56.82</b> | <b>112.44</b> | <b>0.02</b> | <b>0.27</b>               | <b>0.27</b> | <b>0.18</b>  | <b>13.39</b> | <b>30.55</b>    | <b>9847.44</b>  | <b>10552.39</b>  |     |     |     |
| <b>Total Facility Emissions for Major Source Threshold*</b> |                                      | <b>14.99</b> | <b>56.82</b> | <b>46.84</b>  | <b>0.02</b> | <b>0.27</b>               | <b>0.27</b> | <b>0.18</b>  | <b>3.73</b>  | <b>8.23</b>     | <b>9847.44</b>  | <b>10083.66</b>  |     |     |     |

\* Excludes fugitive emissions per 45 CSR 14-2.43.e.

**Shirley1 Production Facility; Noble Energy, Inc**

|                                      | Potential Emissions (tpy) |       |        |      |       |       |            |       |          |          |  |
|--------------------------------------|---------------------------|-------|--------|------|-------|-------|------------|-------|----------|----------|--|
|                                      | NOx                       | CO    | VOC    | SOx  | PM    | PM10  | Total HAPS | CH4   | CO2      | CO2e     |  |
| Total Facility Emissions With VRU    | 15.88                     | 58.60 | 114.57 | 0.02 | 0.29  | 0.29  | 13.43      | 31.05 | 10076.19 | 10791.63 |  |
| Total Facility Emissions Without VRU | 14.99                     | 56.82 | 112.44 | 0.02 | 0.27  | 0.27  | 13.39      | 30.55 | 9847.44  | 10552.39 |  |
|                                      | -0.89                     | -1.78 | -2.13  | 0.00 | -0.02 | -0.02 | -0.04      | -0.50 | -228.76  | -239.25  |  |