OCS Study
BOEM XXXX-XXX

Outer Continental Shelf Air Quality System (OCS AQS)
Operator User Manual (Version 1.13)

U.S. Department of the Interior
Bureau of Ocean Energy Management
Sterling, VA

OCS Study
BOEM XXXX-XXX

Outer Continental Shelf Air Quality System (OCS AQS) Operator User Manual (Version 1.13)

January 2024

Authors:
Jesse The', Cris The', Mohammad Munshed, Alexandra Torrens, Hanin Alkabbani, Bryan Matthews

Prepared under Contract # 140E0119C0006

By
Xator, LLC
1835 Alexander Bell Drive, Suite 210
Reston, Virginia 20191

Lakes Environmental Software
170 Columbia St. W. Suite 1
Waterloo, Ontario, N2L 3L3
Canada

U.S. Department of the Interior
Bureau of Ocean Energy Management
Sterling, VA

DISCLAIMER

Study concept, oversight, and funding were provided by the U.S. Department of the Interior, Bureau of Ocean Energy Management (BOEM), Environmental Studies Program, Washington, DC, under Contract Number 140E0119C0006. This report has been technically reviewed by BOEM, and it has been approved for publication. The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the opinions or policies of BOEM, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

REPORT AVAILABILITY

To download a PDF file of this report, go to the U.S. Department of the Interior, Bureau of Ocean Energy Management Data and Information Systems webpage (http://www.boem.gov/Environmental-Studies-EnvData/), click on the link for the Environmental Studies Program Information System (ESPIS), and search on 2022-048. The report is also available at the National Technical Reports Library at https://ntrl.ntis.gov/NTRL/.

CITATION

Thé J, Thé C, Munshed M, Torrens A, Alkabbani H, Matthews, B. 2023. Outer Continental Shelf Air Quality System (OCS AQS) operator user manual (version 1.13). Sterling (VA): U.S. Department of the Interior, Bureau of Ocean Energy Management. 245 p. Report No.: OCS Study BOEM xxxx-xxx.

Table of Contents

List of Figures

List of Tables

List of Acronyms and Abbreviations

Short Form	Long Form
AEM	Activity & Emissions Manager
BEC	Batch Emissions Calculator
BOEM	Bureau of Ocean Energy Management
BSEE	Bureau of Safety and Environmental Enforcement
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CSV	Construction Support Vessel
DOI	Department of the Interior
e-GGRT	electronic Greenhouse Gas Reporting Tool
FAQ	Frequently Asked Questions
GHG	greenhouse gas
GOADS	Gulfwide Offshore Activities Data System
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
LDAR	Leak Detection And Repair
MSL	mean sea level
NO_x	nitrogen oxide
NPLO	non-point lease operations
OCS AQS	Outer Continental Shelf Air Quality System
OPD	Official Protraction Diagram
$PM_{2.5}$	fine particulate matter
PM_{10}	coarse particulate matter
QA	Quality Assurance
QC	Quality Control
SO_x	sulfur oxide
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compounds

Units of Measure

Units	Description
%	Percent
bbl	U.S. barrel (42 gallons)
Btu	British thermal unit
days	24-hour period
deg F	degree(s) Fahrenheit
ft	foot/feet
hp	horsepower
hr	hour(s)
kW	kilowatt(s)
lb	pound(s)
lb xx/lb	fraction of xx in total weight
MMBtu	million Btus
mol	mole(s)
month	calendar month
Mscf	thousand standard cubic feet
ppm	parts per million
ppmv	parts per million volume
psia	pounds per square inch, atmosphere
psig	pounds per square inch, gauge
scf	standard cubic feet
wt%	percent of total weight
year	calendar year

1 Getting Started with OCS AQS

The Outer Continental Shelf Air Quality System (OCS AQS) is a comprehensive web-based software solution for managing and reporting OCS emission source data in the Gulf of Mexico and Alaska regions, including inputting activity data, calculating emissions, performing quality assurance and control, and submitting the emissions results. OCS AQS provides an intuitive user interface to facilitate the participation by the offshore operators in the annual survey program mandated by the Bureau of Ocean Energy Management (BOEM).

1.1 About this Document

This user manual was prepared to assist the operators in their use of OCS AQS to complete the 2023 OCS Emissions Inventory in compliance with 30 CFR 550.303(k) and 550.304(g). As OCS AQS is a web solution that supports regular updates, the user manual will serve as a living document which will be updated periodically to reflect software updates to OCS AQS.

> ***IMPORTANT:*** **This document is <u>for operators ONLY</u>**. While officials at BOEM have access to a broader range of functionality, it is not described here. A separate Administrator Guide is available to BOEM/BSEE users.

Please note that OCS AQS replaces the legacy Gulfwide Offshore Activities Data System (GOADS) but includes similar required data input fields. Key differences between OCS AQS and GOADS include the following:

- OCS AQS is a web-based system that can be accessed from a web browser and does not require a separate software installation.
- OCS AQS has dashboards, reports, and mapping features to provide user-friendly and content-rich interfaces.
- OCS AQS includes historical emissions inventories (2000, 2005, 2008, 2011, 2014, 2017, and 2021) for reference and review by operators and lessees.

1.2 Supported Browsers

OCS AQS can be accessed by authorized users from any computer with an internet connection. OCS AQS supports most major browsers including:

- Microsoft Edge™
- Mozilla Firefox™
- Google Chrome™

Other browsers may run OCS AQS without significant issues, but they are not explicitly supported.

> ***IMPORTANT:*** OCS AQS does not support Microsoft Internet Explorer™.

1.3 Accessing OCS AQS

To gain access OCS AQS, complete the following steps:

1. BOEM or the Bureau of Safety and Environmental Enforcement (BSEE) will send an invitation email with instructions on how to access OCS AQS. If you are an operator (or authorized

consultant) and did not receive an email, please send an account request to ocs.aqs_support@weblakes.com.

2. If you did receive the invitation email, follow the instructions, including the requirement to create a login.gov account. When setting up your login.gov account, you must use the same email address in which you received the OCS AQS invitation. If you would like to use a different email address, please send your request to ocs.aqs_support@weblakes.com.
3. In certain cases, the OCS AQS Systems Administrator may require 24 hours to complete the account setup process, so please keep this in mind the first time you log into the system.

1.4 Logging in the First Time

Go to https://ocsaqs.doi.gov.

You should see a login screen similar to Figure 1. Click **Continue**.

Figure 1. OCS AQS login screen

Click **Continue**, and this will take you to the login.gov screen as shown in Figure 2. Enter your login.gov credentials and click **Sign in**.

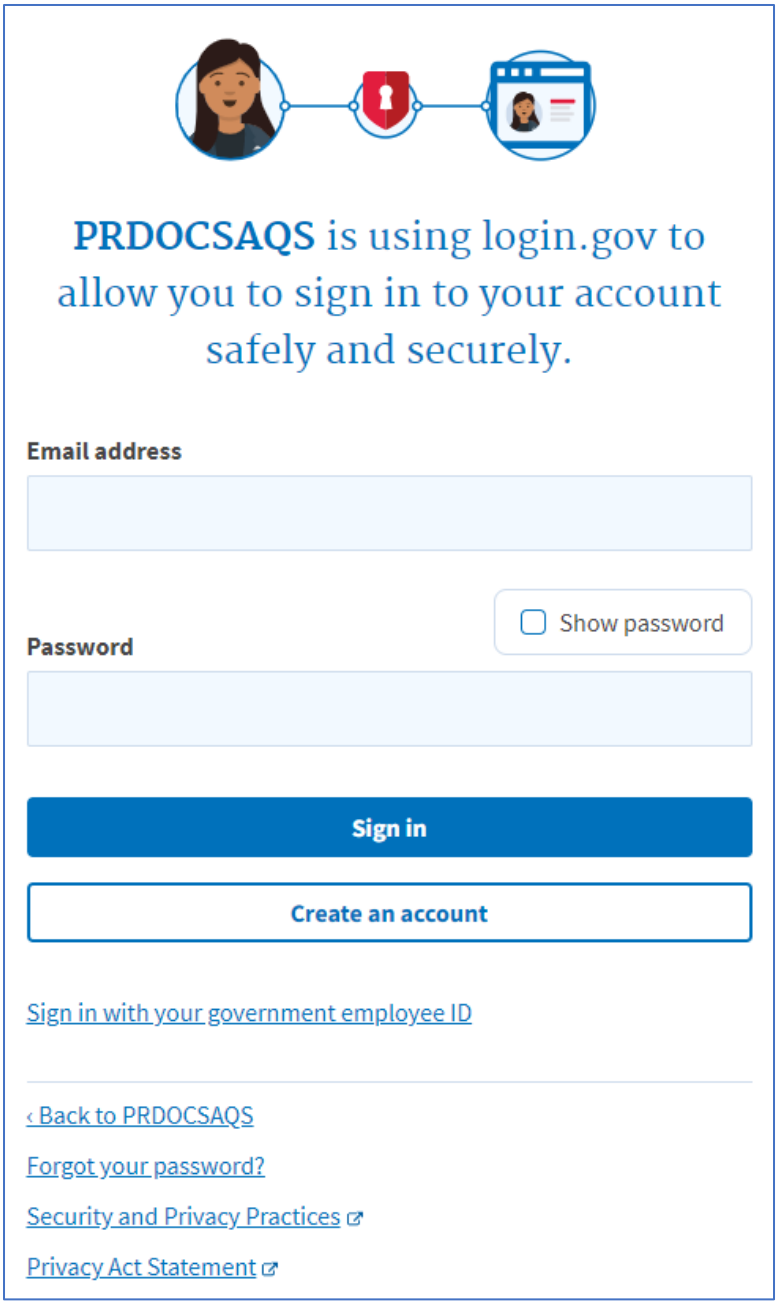


Figure 2. Main login.gov page

If this is your first time accessing OCS AQS through login.gov, depending on the two-factor authentication option you selected when you created your login.gov account, you will be prompted with additional instructions. For example, if you elected to use text messaging, login.gov will send a code to the phone you specified with instructions on how to enter the code to complete the two-factor authentication process. If you run into any problems with login.gov, please contact login.gov technical support.

After you have successfully logged in, your initial landing page (and home page) is the Dashboard module, similar to the one shown in Figure 3 below.

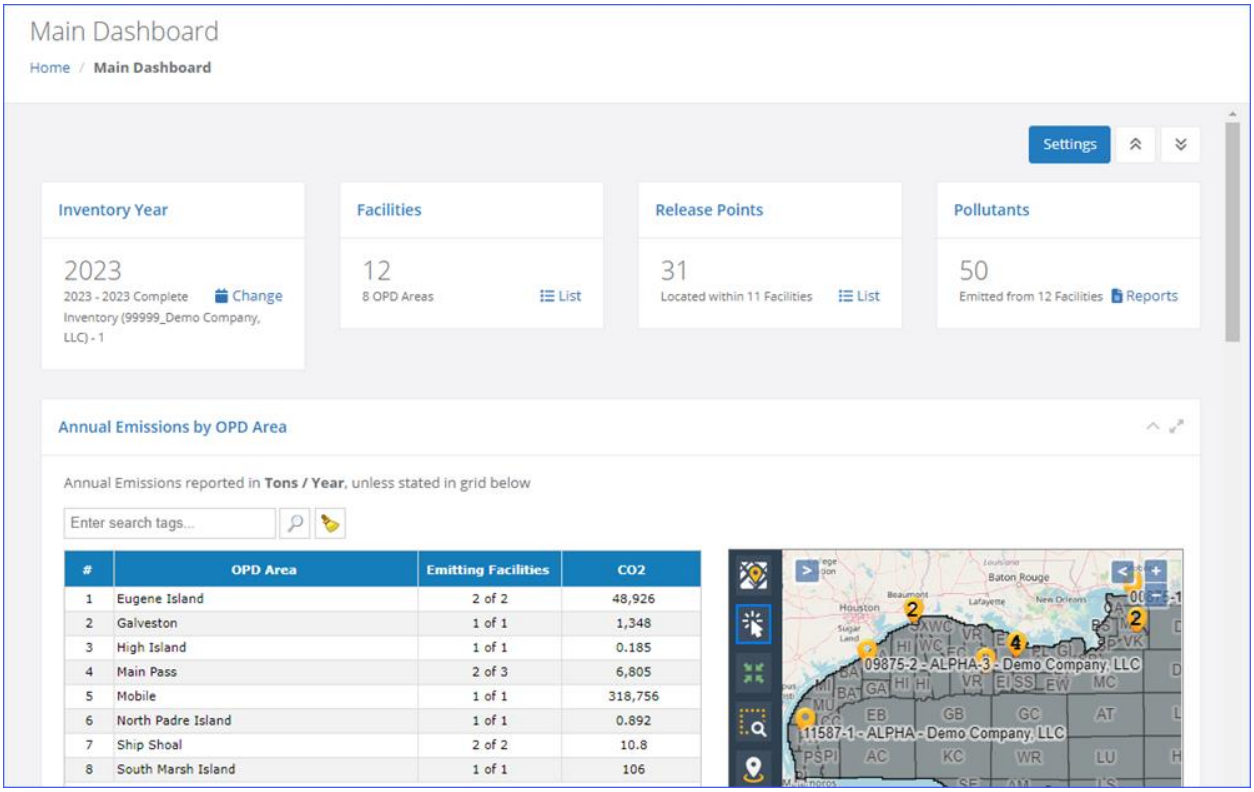


Figure 3. Main dashboard after login

The number of different dashboards available to you in the Navigation Panel may vary depending on assigned access rights, and the displayed data may vary due to the default inventory in your account.

1.5 System Security

1.5.1 Automatic Logout

Due to the U. S. Department of the Interior (DOI) security requirements, if you do not use the system for more than 15 minutes, you will be automatically logged out, and you will have to log back in again. You will be given a one-minute warning prior to the automatic logout, during which you can refresh your session and prevent the automatic end-of-session.

IMPORTANT: If you are logged out while in **Edit** mode, any unsaved changes will be lost.

1.5.2 Password Recovery

If you forget your password, simply click **Forgot your password?** (as shown toward the bottom of Figure 2), and follow the instructions provided.

1.6 Navigating the System

1.6.1 Overview

After you log in, you will see a screen similar to Figure 4 shown below. Although the content of each screen will vary based on available level of access and the location within the application, the main navigation tools are always located in the same area for easy reference. For the current submittal year,

users will only have access to their specific inventories and facilities. Users have access to all facilities for past, final inventories that are publicly available, and these inventories are locked.

> ***IMPORTANT:*** The **Dashboards** and **Map** modules do not have navicons but a custom interface (explained in corresponding sections).

The main navigation tools are as follows (Figure 4):

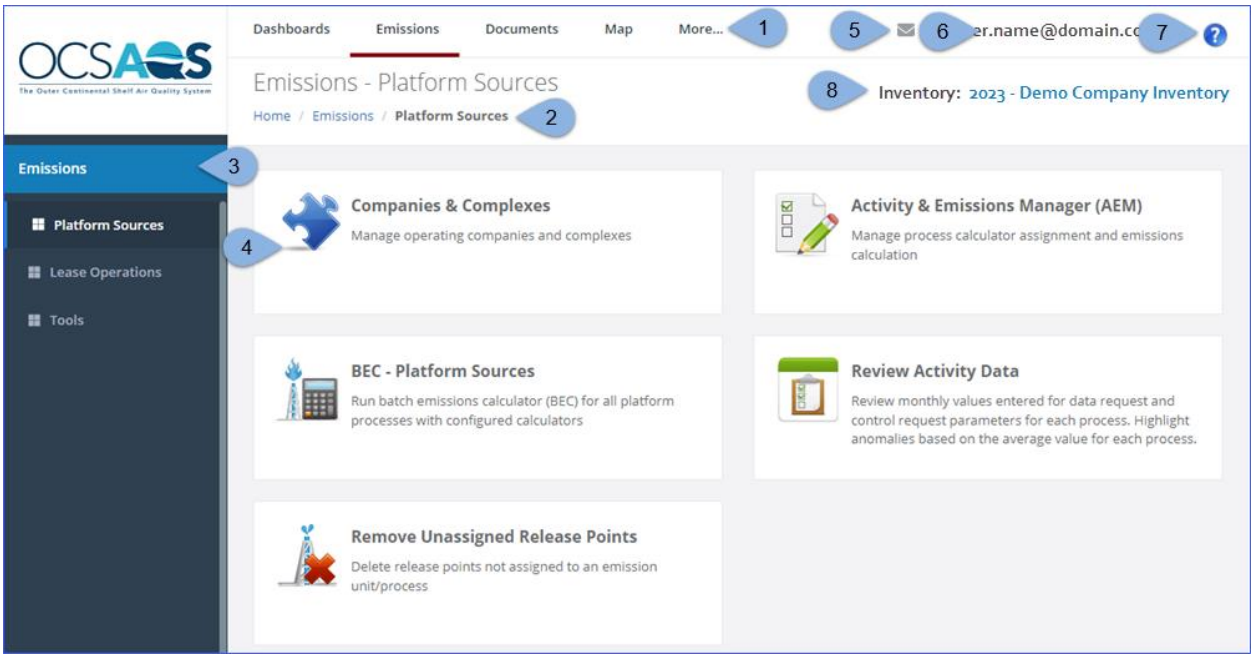


Figure 4: Example home screen

1. **Module Tabs:** These tabs provide access to the OCS AQS modules (see next section for a description of each module). The module you are in is underscored by a blue line.
2. **Breadcrumbs:** This link shows your current location within the web hierarchy and thus provides contextual information to the current page. Clicking on any text will take you to that particular page. Clicking on **Home** takes you back to the first page you see after login.
3. **Navigation Panel:** These folders provide navigation options for a given module and the steps you are taking. For pages other than the dashboard, there will be **Navicons** to access different pages and wizards.
4. **Navicons:** Icons and headings that represent sections and tools included in each section.
5. **Notification Indicator:** This icon shows if you have system messages related to OCS AQS operations.
6. **User ID:** Displays the ID of the user currently using the application. Clicking the user ID or the down arrow beside it allows you to log out of the system.
7. **Help:** Click to load context-sensitive help for the current page.
8. **Inventory Selector:** This tool is used to select the emissions inventory that you will be working in. Depending on your user rights, your access may be limited to a single inventory. Past inventories (2021, 2017, etc.) will be locked ( ) and available for review only.

   NOTE: During the 2023 reporting cycle, the inventory assigned to you is labeled as "2023-Company Name". However, if you submitted an inventory for 2021, you can click on this inventory and change to 2021 to review the 2021 inventory (see section 1.7).

1.6.2 Using Windows and Tables

Detailed data in OCS AQS is organized and presented using windows and tables. An example of a table that lists emission units for platform sources (to be covered later) is shown in Figure 5. A number of tools are available to navigate, search, manipulate, and export the information in the tables. These tools are identified in Figure 5 and described below.

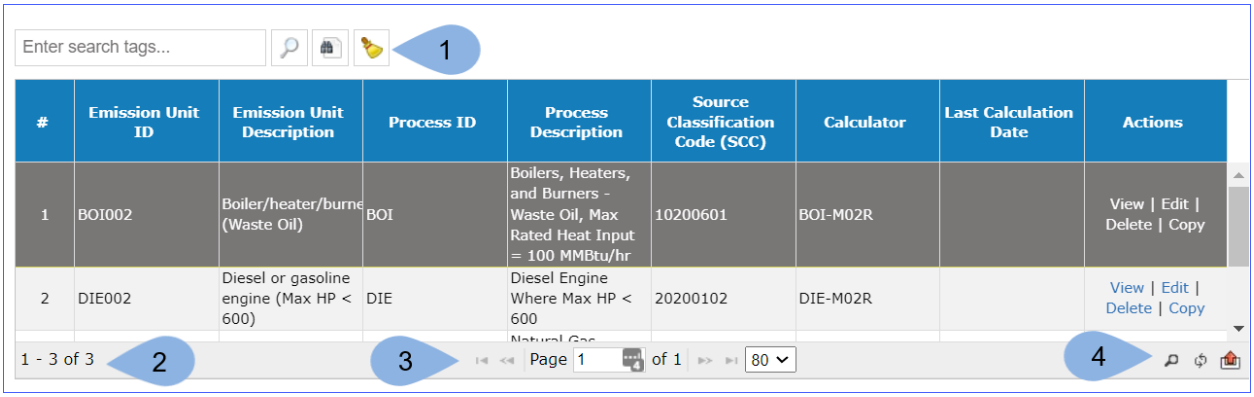


Figure 5. Window and table tools

1. The **Search Tool** in the upper left of the window allows you enter keywords to find specific records. Keywords can include partial spellings like "pneu" for "pneumatic" and are not case sensitive. The search button ( ) executes the search and the cleanup button ( ) removes all text in the search bar.
    a. **Advanced Search** ( ) allows you to search the table by utilizing multiple keywords for the different categories in any given table. Categories can include items such as Emission Unit ID, Equipment Type, and Unit Type Code for the Emission Units table. This type of search is not available in every table.
2. **Available Records** in the lower left corner of the window shows the number of records available in the table.
3. **Page Controls** in the lower center of the window allow you to navigate the table page by page, jump directly to a specific page, and control the number of rows displayed per page using the drop-down menu.
4. **Data Tools** in the lower right of the window allow you to perform a more customized search ( ) and reload the table after the query ( ). The export icon (up arrow) allows the user to export the table's records in Excel or CSV format. The table can also be printed from this icon.

1.6.3 Panel Controls

The OCS AQS interface uses data panels to organize information and for ease of navigation. Each panel, depending on context, will have one or more of the following controls:

Click to access panel/dialog-specific help.

Collapse/expand the panel. Collapsing a panel will hide the panel content, leaving only the panel header and reducing the amount of space it occupies. Recommended for smaller screens.

Maximize panel. Maximizing the panel will stretch it to fit the entirety of the available screen space. Recommended when viewing content-heavy panels (e.g., dashboards) on a small screen.

1.6.4 Getting Help

OCS AQS is designed to be easy to use and intuitive. Additional tools are provided to assist you:

- Online Help: Press the icon on the top right-hand corner of any page to go to a help section for the page or the button in the top right corner of a data panel (if available) as seen in Figure 6.

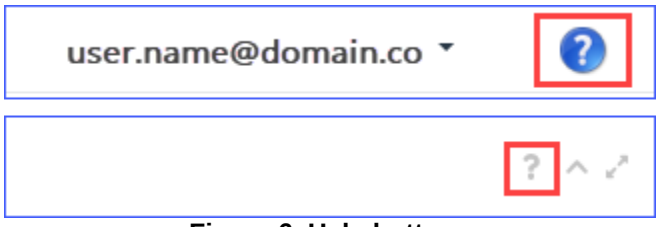


Figure 6. Help buttons

- Full Help: In the Online Help window, click **View Full Help** as seen in Figure 7. This will provide a searchable help feature.

Figure 7. View Full Help

- User Manual (this document): The user manual provides in-depth assistance with easy-to-follow examples and indexed content.
- OCS AQS support team: For help not covered above, contact tech support for OCS AQS at ocs.aqs_support@weblakes.com.

Technical support is available by clicking on the OCS AQS Technical Support link in the bottom part of the screen after you log in as shown in Figure 8. Clicking on the link opens up the OCS AQS Technical Support page that gives contact information for both technical support and BOEM point of contact email address (OCSEmissionsInventory@boem.gov).

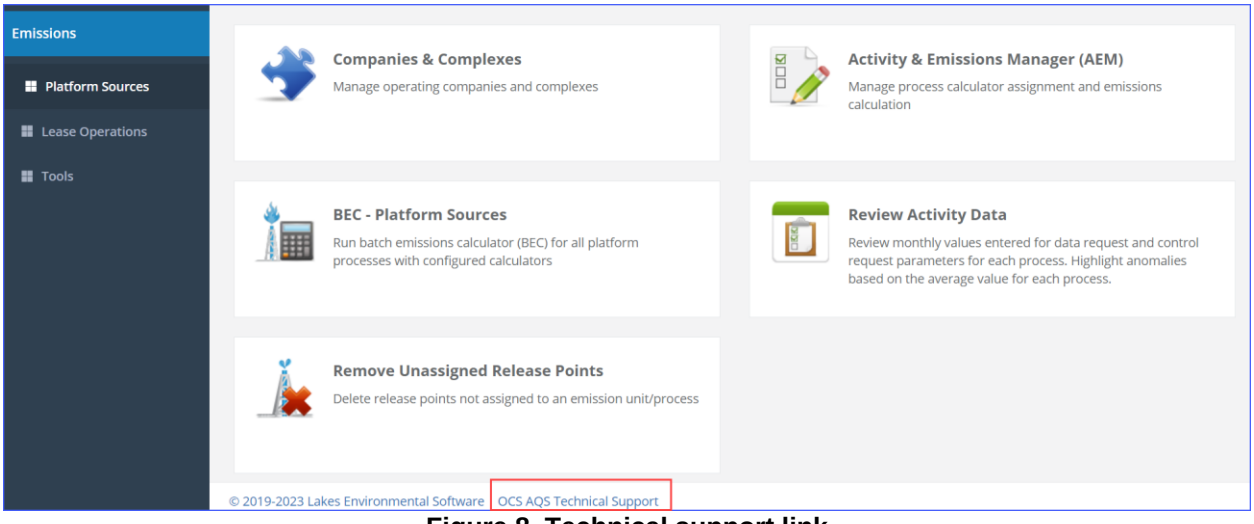


Figure 8. Technical support link

IMPORTANT: When requesting technical support, please let us know which web browser you are using so that we can tailor our response to your requirements. Each browser displays content slightly differently.

1.7 Selecting Inventories

The selected emissions inventory determines the year and emissions scenario you will be working with. It is therefore extremely important to make sure you select the correct inventory before you begin working. By default, upon the initial login users will automatically be directed to the most recent inventory, which currently is the 2023 inventory. If you have questions, contact your OCS AQS representative at OCSEmissionsInventory@boem.gov to determine which inventory you should be using.

Operators also are able to switch between inventories and select historical inventories. To change or select a specific inventory, click on **Inventory Selector** (as described in Section 1.6.1). This will take you to the **Inventory Configuration** page (as described in Section 10.1.1). Click on the desired inventory name. The name of the selected inventory should appear in the **Inventory Selector** area, similar to the example shown in Figure 9. In some cases, when you initially log in, there may be only one inventory.

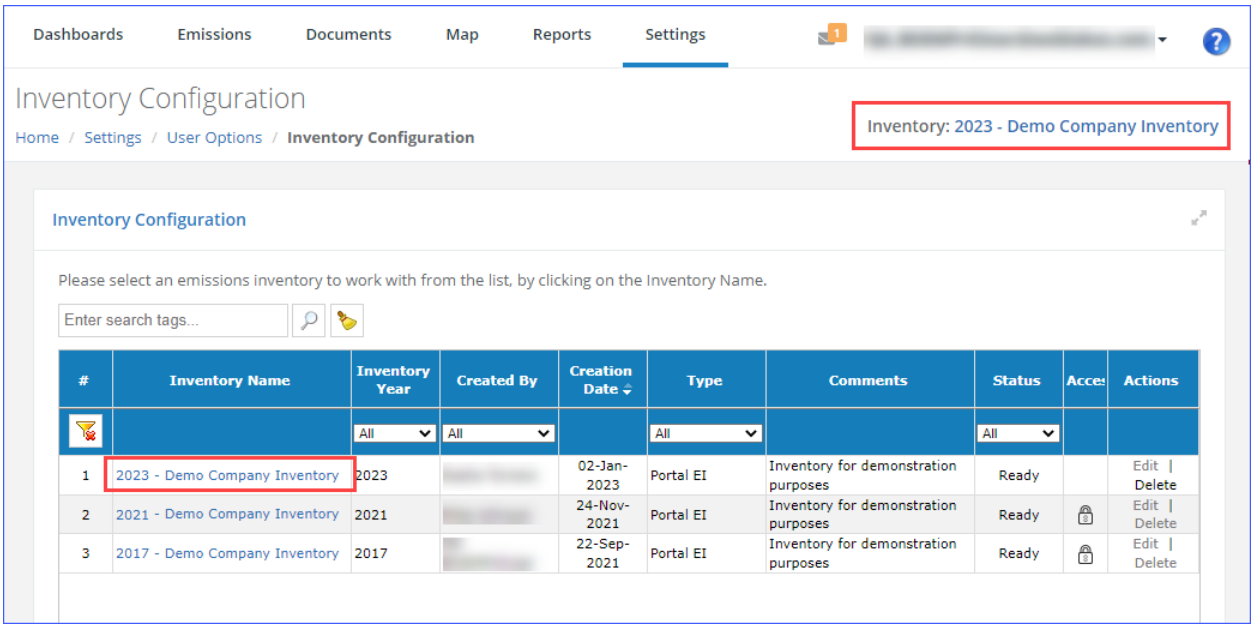


Figure 9. Inventory configuration page

Use the **Module Tabs** or **Breadcrumbs** to navigate to other pages.

1.8 OCS AQS Modules

OCS AQS has several modules that group functionalities for easy navigation. Switch between the modules by clicking on the **Module Tabs** as shown previously in Figure 4. The available modules are:

- **Dashboards**: This module presents a snapshot of activities based on your access rights. The Navigation Panel has several options you can choose from. You can customize what data is displayed on some dashboards the **Settings** button located in the upper right corner of the page.
- **Emissions**: This module provides all the resources you will need to add and update emission sources and pollutant totals.

- **Documents**: This module contains supplemental documentation—such as user guide and course materials—and allows you to review or download any file uploaded/downloaded/generated by the system.
- **Map**: This module provides an interactive GIS style map with different layers for sources, emissions, and shapefiles. Sources are linked to pages in the **Emissions** module for easy reference.
- **Analytics**: This module contains a collection of graphical and tabular analysis tools. These tools allow you to review data across the entire inventory, while still being able to filter it based on specific elements – pollutants, equipment type, or parameter type
- **Reports**: OCS AQS comes with multiple prepared reports ready to use. Each report has its own wizard to guide you through criteria selection to help create a report specific to your requirements.
- **Settings**: This module allows you to review your activity in the system as well as access the inventory list.

1.9 OCS AQS Definitions

OCS AQS uses the same nomenclature as GOADS in reference to hierarchies and definitions. The following terms are used throughout this manual:

- **Company** refers to the organization or legal entity that owns and operates assets and has the requirement and responsibility to submit the OCS Emissions Inventory.
- **Lease** refers to the legal agreement between the company and BOEM to operate in a specified manner and location.
- **Lease Operations** refer to specific activities taken by the Lessee as part of the Lease. Lease operations include platform sources; however, for OCS AQS, lease operations refer only to drilling operations in which the drilling rig is connected to the sea bed, and well stimulation and installation support vessels installing new platforms or pipelines.
- **Complex** refers to a group of related structures within a lease area that is assigned a BOEM Complex ID.
- **Facility** refers to an individual structure (Complex-Structure Number). A single facility or multiple facilities can make up a complex.
- **Emission Source** refers to a process or piece of equipment on a facility that generates air emissions and releases it to the environment. For OCS AQS, an emission source consists of an emission unit and a release point. In some cases, such as fugitive emissions, the emission unit and the release point are the same.
- **Emission Unit** refers to the process or equipment type of a facility capable of generating air emissions. In some cases, such as fugitive emissions, the emission unit is a collection of components that may be located throughout a facility.
- **Release Point** refers to the physical properties of an emission source that release emissions into the environment.
- **Process** refers to the physical and chemical reactions that take place in an emission source and convert throughput material into air emissions.

1.10 OCS AQS Function Map

An outline of all OCS AQS modules and functions located within the Navigation Panel selections is shown in Figure 10.

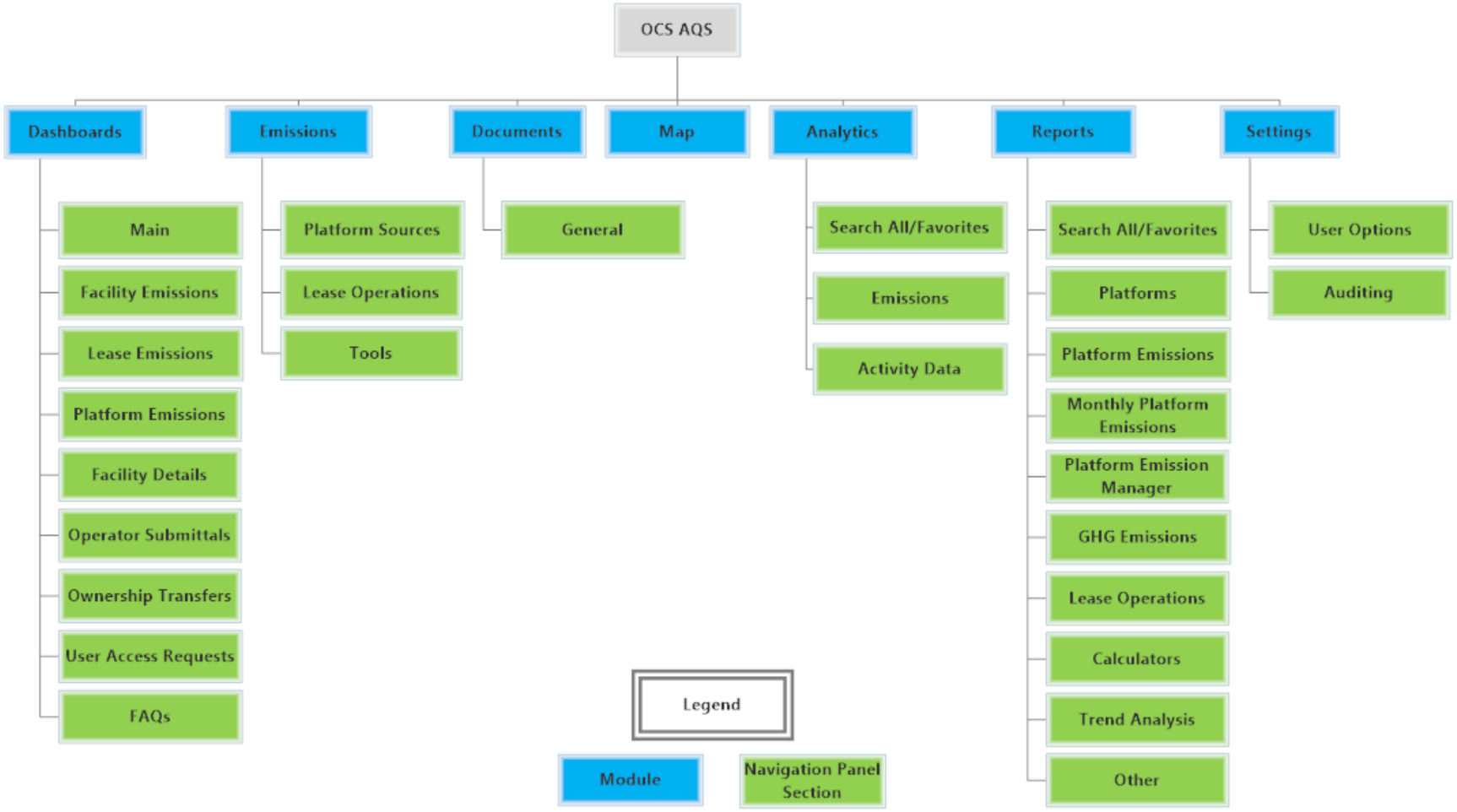


Figure 10. OCS AQS function map for operators

1.11 Layout of User Manual

The rest of the user manual is laid out in the following sections:

- Section 2 – Dashboards
- Section 3 – Emissions: Platform Sources
- Section 4 – Emissions: Lease Operations
- Section 5 – Emissions: Tools
- Section 6 – Documents
- Section 7 – Map
- Section 8 – Analytics
- Section 9 – Reports
- Section 10 – Settings
- Appendix A – Calculator Descriptions
- Appendix B – Lease Operation Calculator Descriptions
- Appendix C – Revision History

The **Emissions** module is broken into three parts in order to describe in greater detail each section within the module.

Each section will have a more detailed map of the functions accessed through the Navigation Panel.

2 Dashboards

Dashboards provide a summary of key OCS AQS data using tables, maps, and graphs. There are multiple dashboard screens available, all accessible on the Navigation Panel as shown on the module map in Figure 11. The specific dashboards available to you will depend on your access rights.

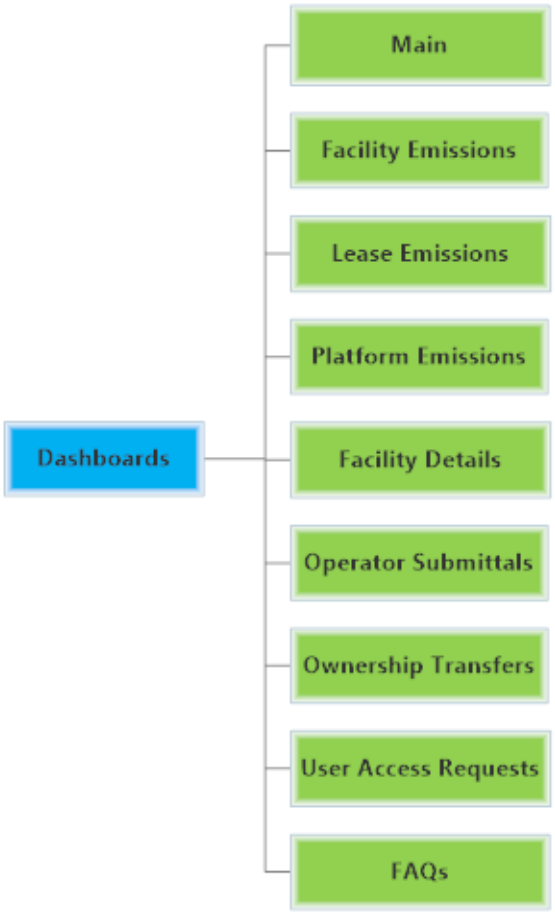


Figure 11. Dashboard module map showing panels available to operators

2.1 Dashboard Overview

Pathway: Dashboards

The dashboard pages share several common features:

- Graphs and visuals on the page can be changed by clicking on **Settings** in the top right of the page. Select (or deselect) the options you want to see on the dashboard page and click **Save** to apply the changes. Some pages do not have a **Settings** feature.
- Selecting the three bars next to a graph gives you the option to save the graph figure in .png or .jpg format. You can also export the data that was used to generate the chart into an .xlsx file.
- Scrolling over graphs reveals the data tables.

  IMPORTANT: Information in the dashboards is arranged vertically. Scroll down to see additional content.

TIP: If you do not see the data on a dashboard page that you want, check the inventory and make sure you are working in the right inventory year.

The available dashboards include the following:

- **Main** – This is the main dashboard that will be displayed when you log in. It shows the inventory year and includes a summary of facilities, release points, and pollutants inventoried. This dashboard also includes a map that shows the facilities that emit the pollutants selected in the Settings page and are located in the Official Protraction Diagram (OPD) Area currently selected in the table, as well as the summary graphs of selected pollutant emission totals. An example of this dashboard is shown in Figure 12.

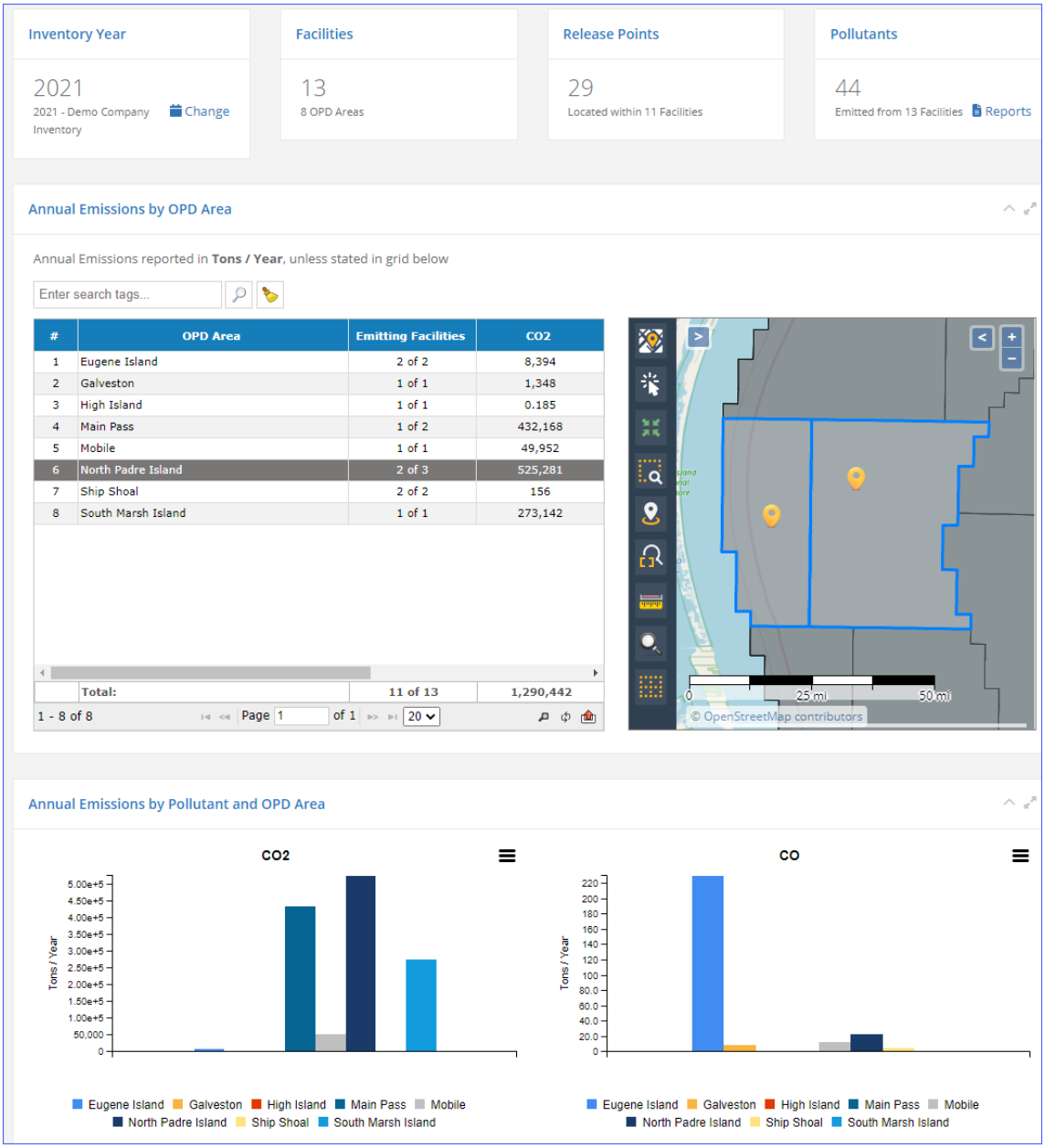


Figure 12. Main dashboard for operators

- **Facility Emissions**: This dashboard is similar to the Main dashboard but shows a breakdown of emissions by facility across a region.
- **Lease Emissions**: This dashboard is similar to the Facility Emissions dashboard but shows a breakdown of emissions by lease and lease source across a region.
- **Platform Emissions**: This dashboard provides an overview of emissions (groups or individual pollutants) for each emission period aggregated by location (platform) as bar charts.
- **Facility Details**: This dashboard provides facility level data details as well as a list of pollutant totals emitted by the facility.
- **Operator Submittals**: This dashboard provides controls to submit the completed inventory to BOEM and the status of facility inventory submittals. This dashboard is discussed in greater detail in the next section.
- **Ownership Transfers**: This dashboard shows the status of facility transfers made by BOEM on behalf of companies that have bought/sold a facility.
- **User Access Requests:** This dashboard allows you to request access to operator inventories when you have been retained by a new operating company (existing users only).
- **FAQs**: This is not technically a dashboard but provides a collection of Frequently Asked Questions (FAQs) about the OCS AQS software, emissions inventories and other topics. The FAQs are grouped in the following categories:
    - General Questions
    - Emissions Calculations
    - Lease Operations
    - Dashboards
    - Maps
    - Reports
    - Submittal

Some dashboard pages, especially the **Main**, **Facility Emissions**, and **Lease Emissions** dashboards, have quick links in the top row of summary information. These allow you to access the tables or reports that are associated with the displayed data.

2.2 Operator Submittals Dashboard

Pathway: Dashboards > Operator Submittals

Completed inventories are submitted to BOEM through the **Operators Submittals** dashboard. As shown in Figure 13, the submittal dashboard contains two sections – **Submittal Status Summary** and the **Submittal Information** table.

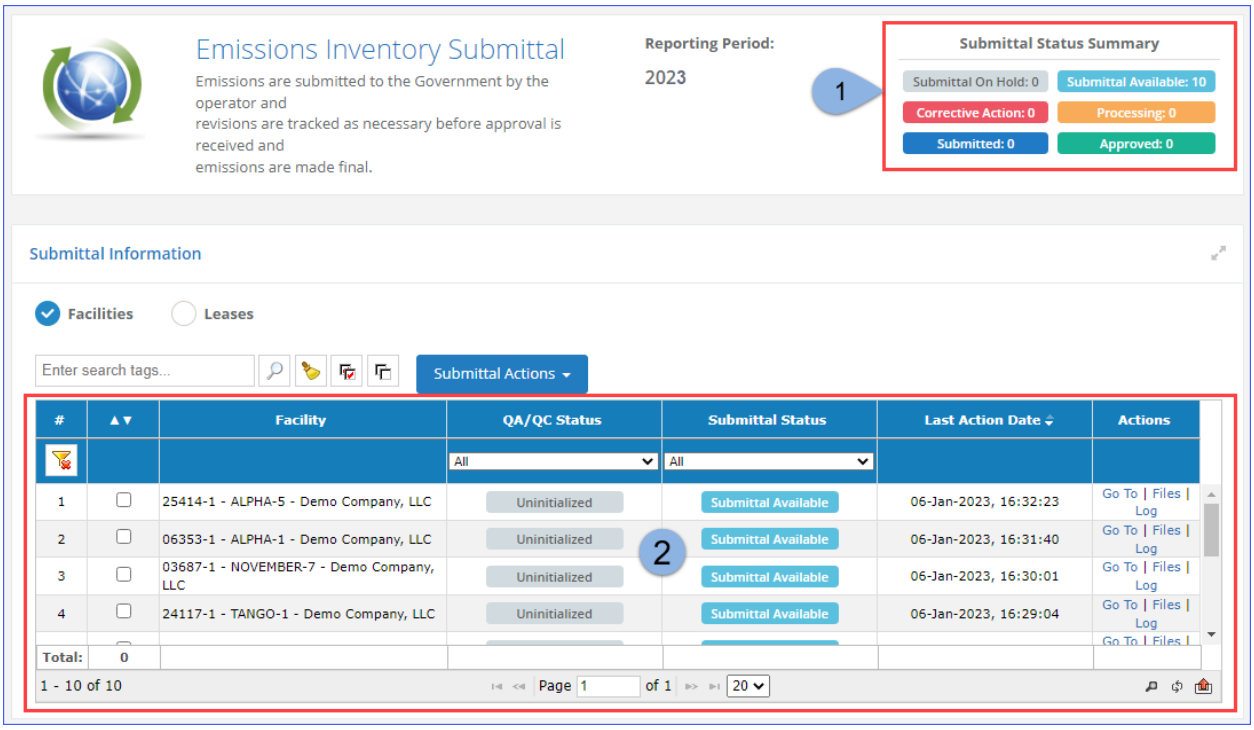


Figure 13. Operator Submittal dashboard

1. The **Submittal Status Summary** displays how many sources in the current inventory year are in various stages of the submittal process.
2. The **Submittal Information** table allows you to initiate and monitor the source inventory submittal process.

At the top of the **Submittal Information** table, the following options are available to allow you to quickly find specific information:

- **Facilities/Leases** filter, which allows you to select which source type is displayed.
- **Search** bar, which allows you to locate a specific source.
- **Submittal Actions** (Figure 14):
    - **Run QA/QC…:** Run a Quality Assurance/Quality Control (QA/QC) check on the selected facilities/leases. This process ensures that all required (i.e., mandatory) values have been specified and that the emissions calculations are based on the most recent data.
    - **Download QA/QC…:** Download generated QA/QC files from multiple facilities or leases at the same time.
    - **Submit…:** Submit the selected sources to BOEM for review. A final QA/QC check will be automatically performed on any source being submitted.

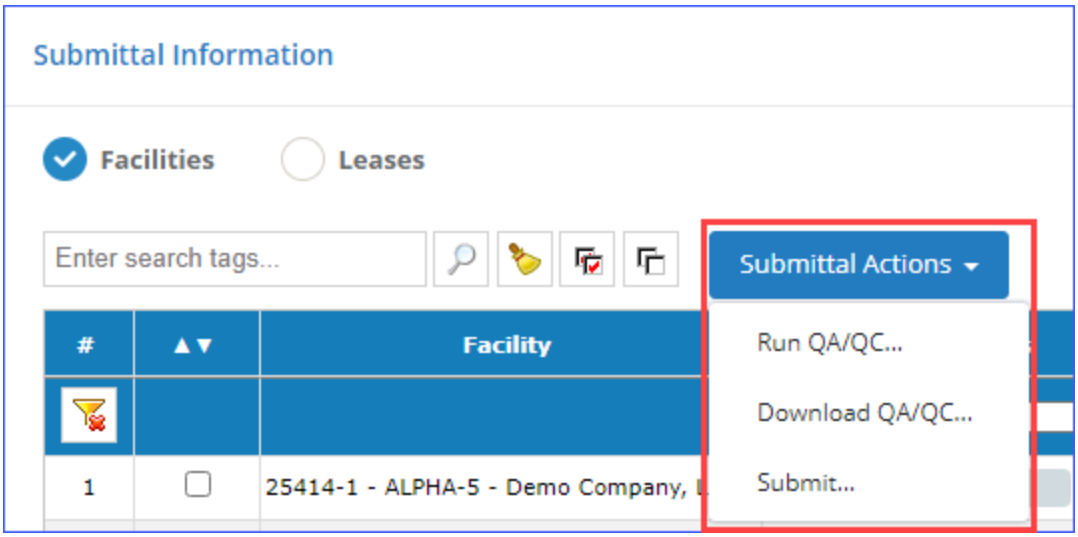


Figure 14. Submittal Actions button

The **Status Information** table displays the following information for each source:

- **Checkbox**: Check the box for any source you wish to submit or run a QA/QC check on
- **Facility/Lease**: Name of the structure or lease (depending on the active filter)
- **QA/QC Status**: Status of the QA/QC check last time it was performed will be one of the following:
  - **Uninitialized**: QA/QC check has not been performed.
  - **Processing**: QA/QC is being performed.
  - **Passed**: QA/QC check passed successfully, source is ready to be submitted.
  - **Failed**: QA/QC check detected issues. Click **Files** in the **Actions** column to download the QA/QC file and review the issues.
- **Submittal Status**: Current status of the source inventory in the submittal process will be one of the following:
  - **Submittal On Hold**: Submittal is not available at this time.
  - **Submittal Available**: Source can be submitted if all data is complete.
  - **Corrective Action**: The source has been reviewed by BOEM and returned for corrections, or the source failed the QA/QC check during the submittal procedure.
  - **Processing**: Temporary status while the system processes the submittal.
  - **Submitted**: The source has been submitted to BOEM for review.
  - **Approved**: BOEM has accepted the submitted source inventory as complete, and no further action on the part of the operator is required.

  IMPORTANT: When all sources in the inventory are of the status **Submitted** or **Approved**, the inventory will be locked and cannot be edited.

- **Last Action Date**: Date and time when the last QA/QC or submittal action was performed
- **Actions**:
  - **Go To:** Go to the **Activity & Emissions Manager** (for platform sources) or **Lease Operations Emissions Manager** (for lease sources) to correct any issues detected during QA/QC check.
  - **Files**: Open the dialog where you can download the QA/QC file. If issues are detected during the check, the title of the file will begin with "QAQC_FAILED."
  - **Log:** Display a log of submittal actions taken for this source (Figure 15).

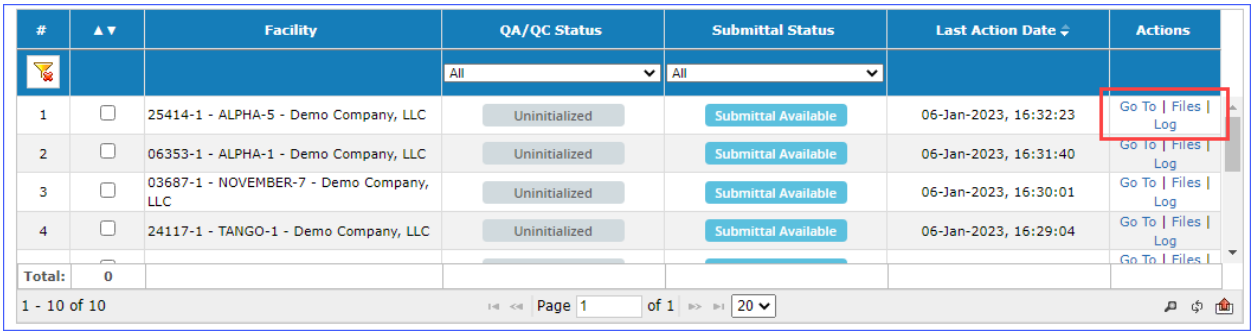


Figure 15. Source Submittal available actions

2.2.1 Begin Submittal Process

Pathway: Dashboards > Operator Submittals

IMPORTANT: Please make sure to use the **Review Activity Data** tool to detect any anomalies in the entered activity data (see section 3.3.3) before submitting the source inventory.

NOTE: It is advisable to review the operator comments before submitting the source inventory. You can do this by running the **QA/QC Comments** report in the **Platform Emission Manager** section of the **Reports** module (see section 9.2.4).

To submit a new source inventory that has a **Submittal Available** status, take the following steps:

1. Check the box for the sources to be submitted.
2. Click **Submittal Actions** and select **Run QA/QC…** (Figure 16).

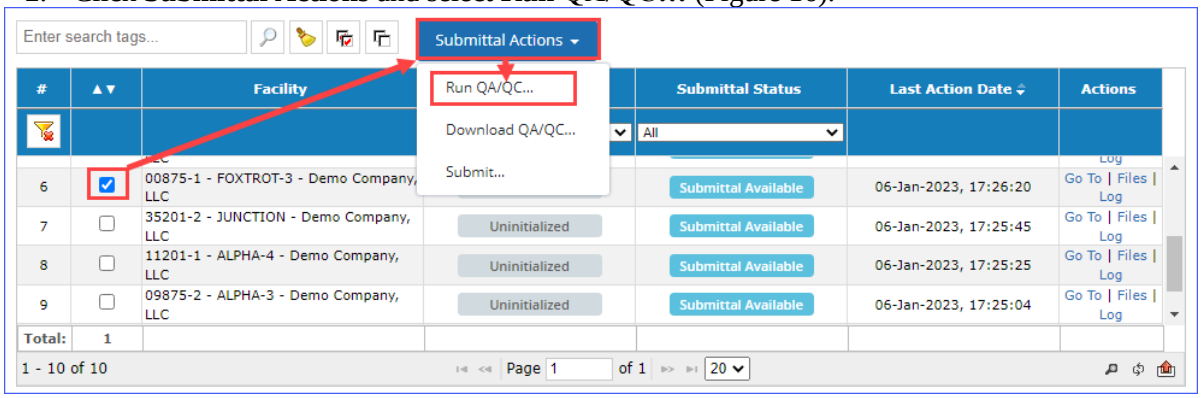


Figure 16. Run QA/QC check

3. The **Facility/Lease Submittal QA/QC** dialog with a list of all selected sources (Figure 17). Above the table the following statistics are displayed:
    a. **Selected Facility/Lease Count:** Total number of the sources selected
    b. **Valid Facility/Lease Count:** Number of sources for which the QA/QC check can be run
    c. **Invalid Facility/Lease Count:** Number of facilities on which the QA/QC check cannot be performed at this time. See the **Validation Message** column for more information.

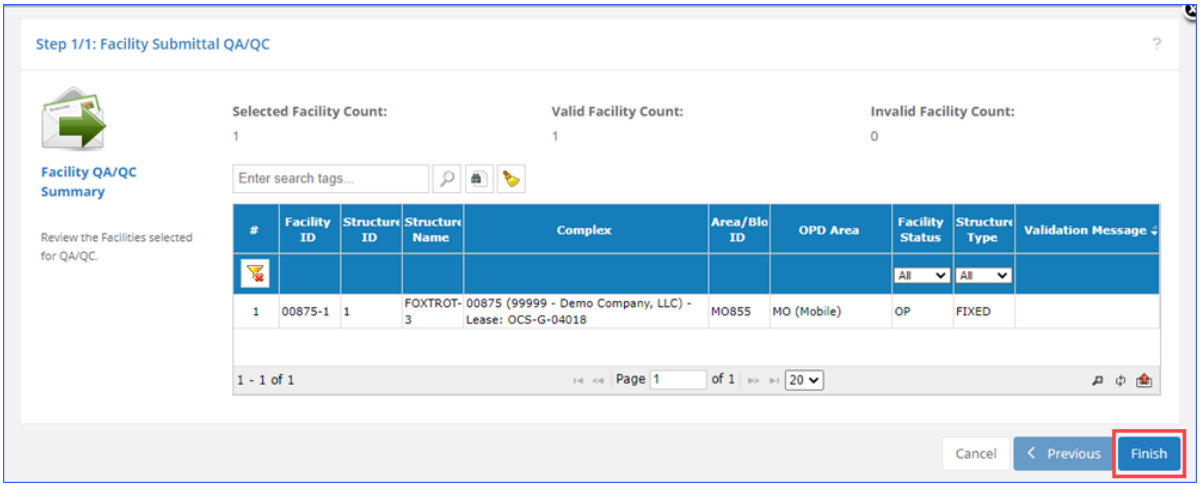


Figure 17: Source QA/QC Verification

4. Click **Finish** to run the QA/QC on the valid sources.
5. The **QA/QC Status** for the source will briefly display **Processing…** and then **Failed** or **Passed** depending on the case of the source you are submitting.
   a. If the **QA/QC Status** is flagged as **Passed**, skip steps 3–11 below and go to step 12.
   b. If the **QA/QC Status** is flagged as **Failed**, follow steps 3–12 below.
6. Click **Files** in the **Actions** column for the source flagged as **Failed.**
7. In the **Facility Submittal Files** dialog, locate the file with the name that starts with "QAQC_FAILED."
8. Click the file to download it to your local machine and open it (Figure 18).

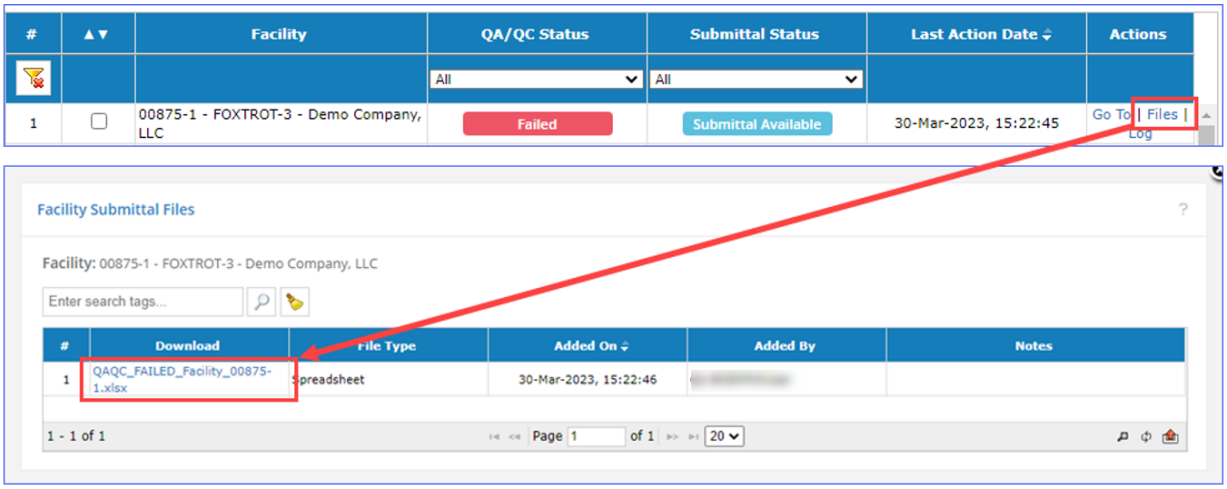


Figure 18. Download the facility QA/QC report

9. In the **Summary** tab, see what sections are labeled as **Failed.**
10. Click on the hyperlink of the failed sections or go directly to the tab for more detailed information regarding the issues detected (Figure 19).

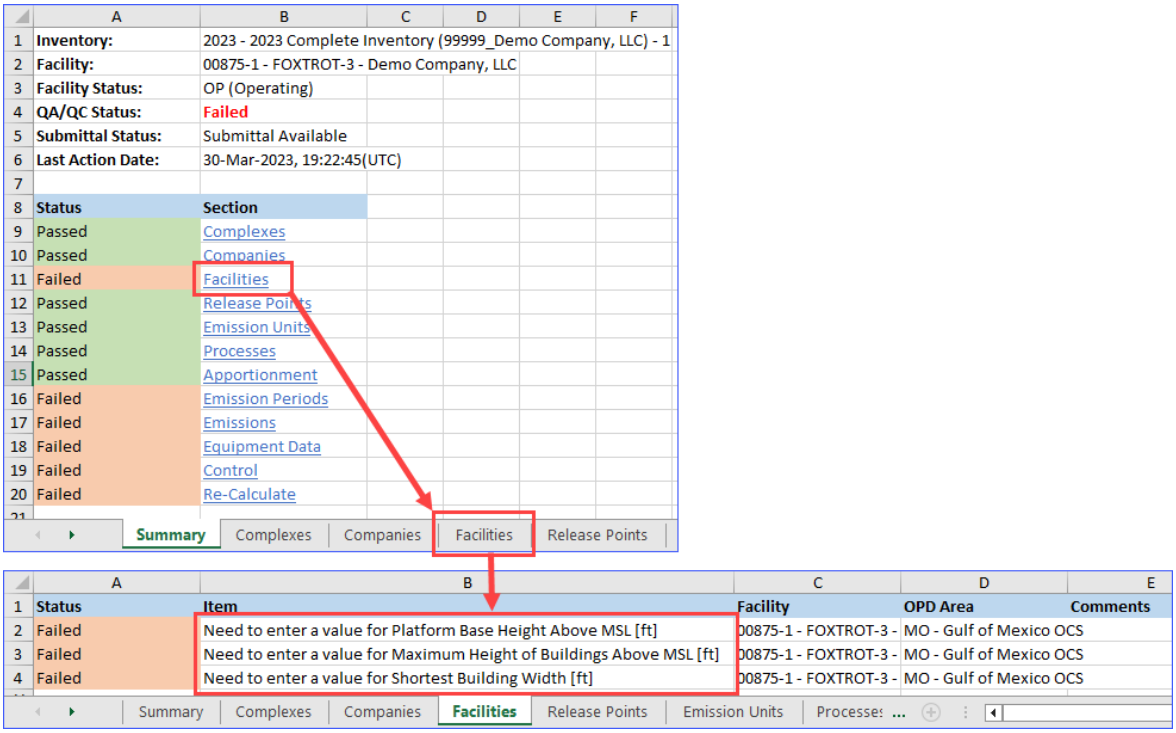


Figure 19. Sample QA/QC file report

11. In the **Actions** column for the source, click **Go To** to open the **Activity & Emissions Manager** (or **Lease Operations Emissions Manager** for a lease source) in a new tab (Figure 20).

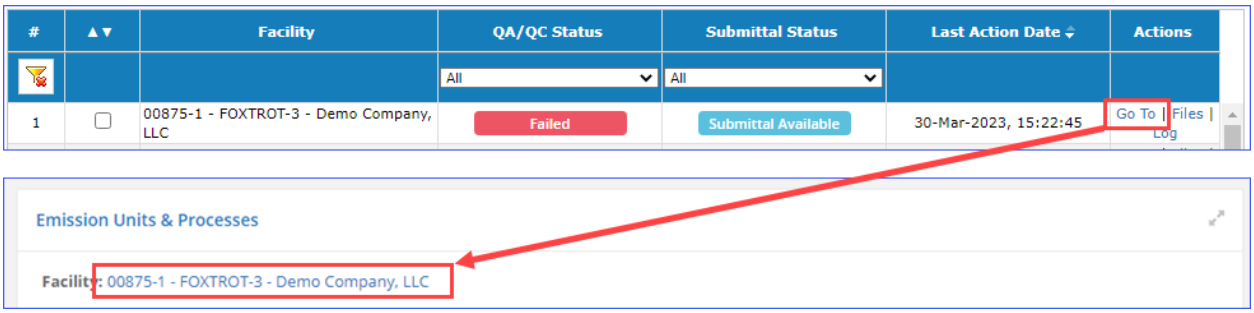


Figure 20. Use Go To feature to open AEM in new tab

12. Correct all issues flagged by the QA/QC check. The above example only demonstrates the correction of the **Facility** issues, but ALL failed items must be addressed.
13. Return to the **Operator Submittals** dashboard.
14. Re-run the QA/QC check on the source—this time it should come back as **Passed.**
15. Click **Submittal Actions** and select **Submit…** (Figure 21).

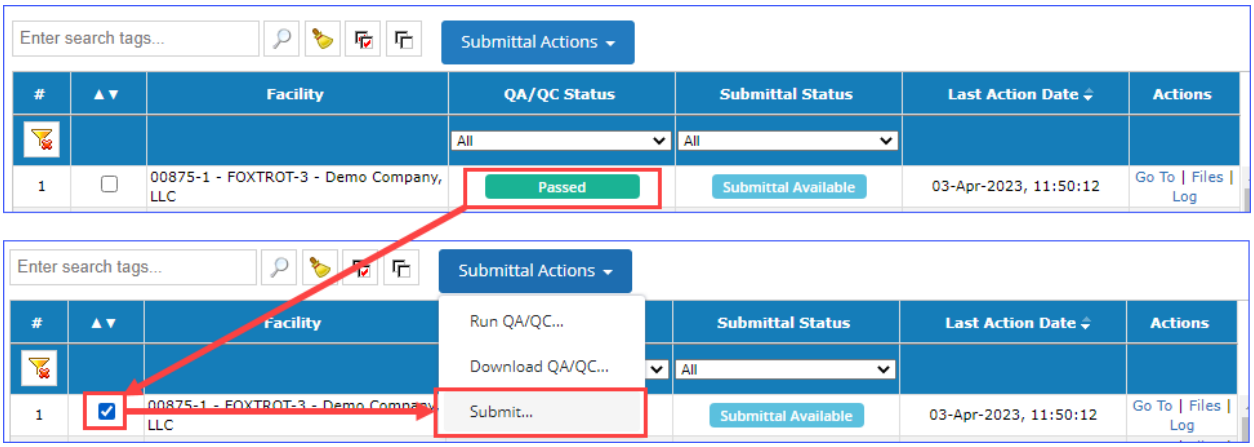


Figure 21. Facility submit

After BOEM reviews the submitted data, it will be marked either **Approved** or **Corrective Action**, depending on the result of the review.

> ***IMPORTANT***: You can check multiple boxes to run the QA/QC check or submit multiple sources.

2.2.2 Submittal Corrective Action

BOEM will review the source inventory after it has been submitted. If there are questions regarding the inventory data, BOEM may send it back with comments for corrective action and resubmission.

If this happens, correct the inventory, address the comments, and re-submit using the same procedure described above.

> ***IMPORTANT***: Though a notification email is sent when the sources are submitted for review, there is no notification issued if the source is returned for **Corrective Action**. Please continue to check the **Operator Submittals** dashboard regularly, until all sources are marked as **Approved**.

2.2.3 Download Multiple QA/QC Reports

OCS AQS allows you to download the QA/QC reports simultaneously for any sources for which they have been generated. To download multiple QA/QC reports check the box for each source you wish to include and select **Download QA/QC…** under **Submittal Actions**. Figure 22 demonstrates an example where the export is attempted for three facilities – 00875-1 (QA/QC ran and passed), 25414-1 (QA/QC ran and failed), and 06353-1 (QA/QC not run). In this case the **QAQC Download** dialog displays a warning that only QA/QC files that have been generated will be included in the downloaded file.

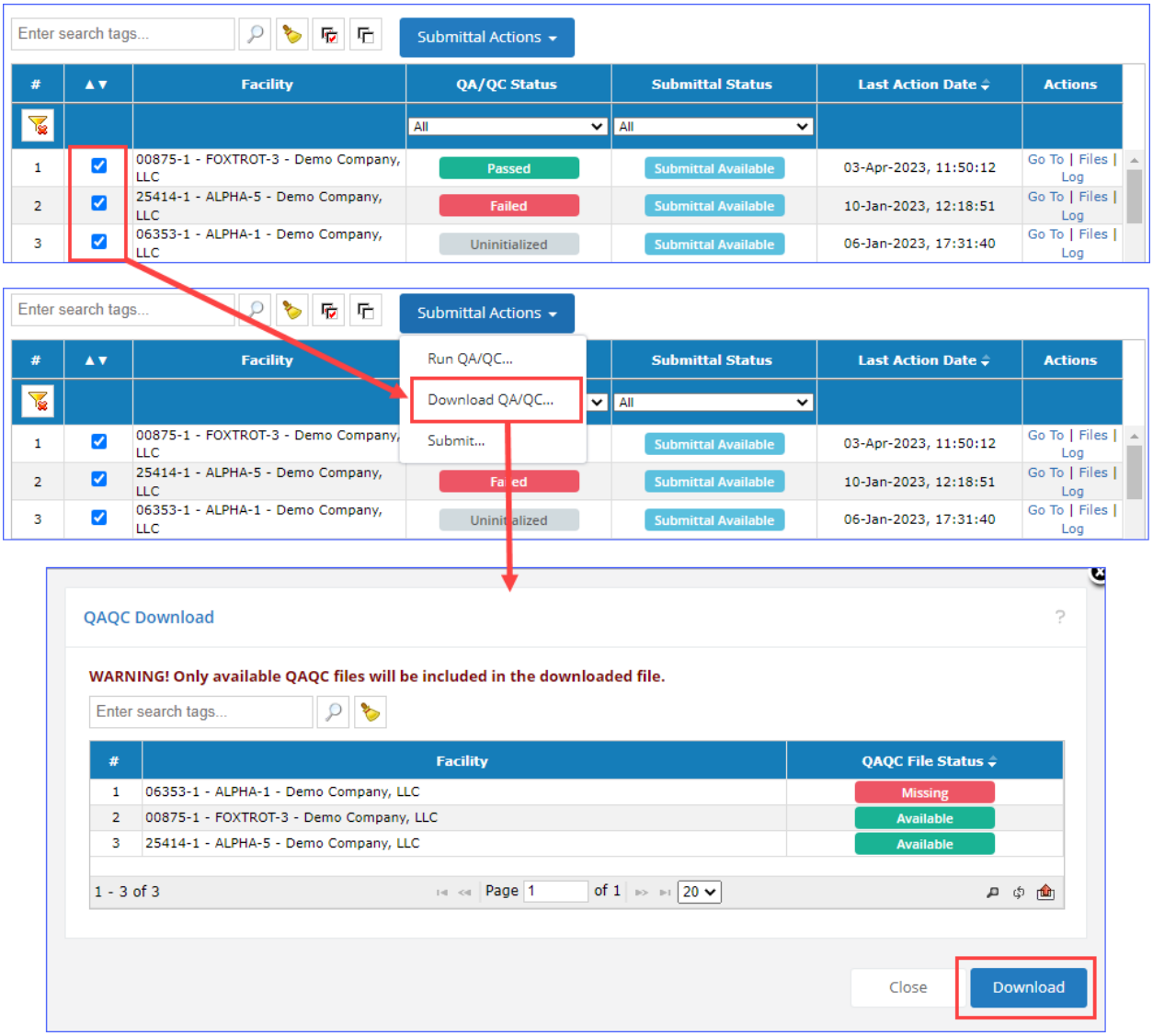


Figure 22: Export multiple QA/QC reports

The QA/QC files are exported as a .ZIP archive. Once you've downloaded the archive to your local machine, you can extract them and view each file individually.

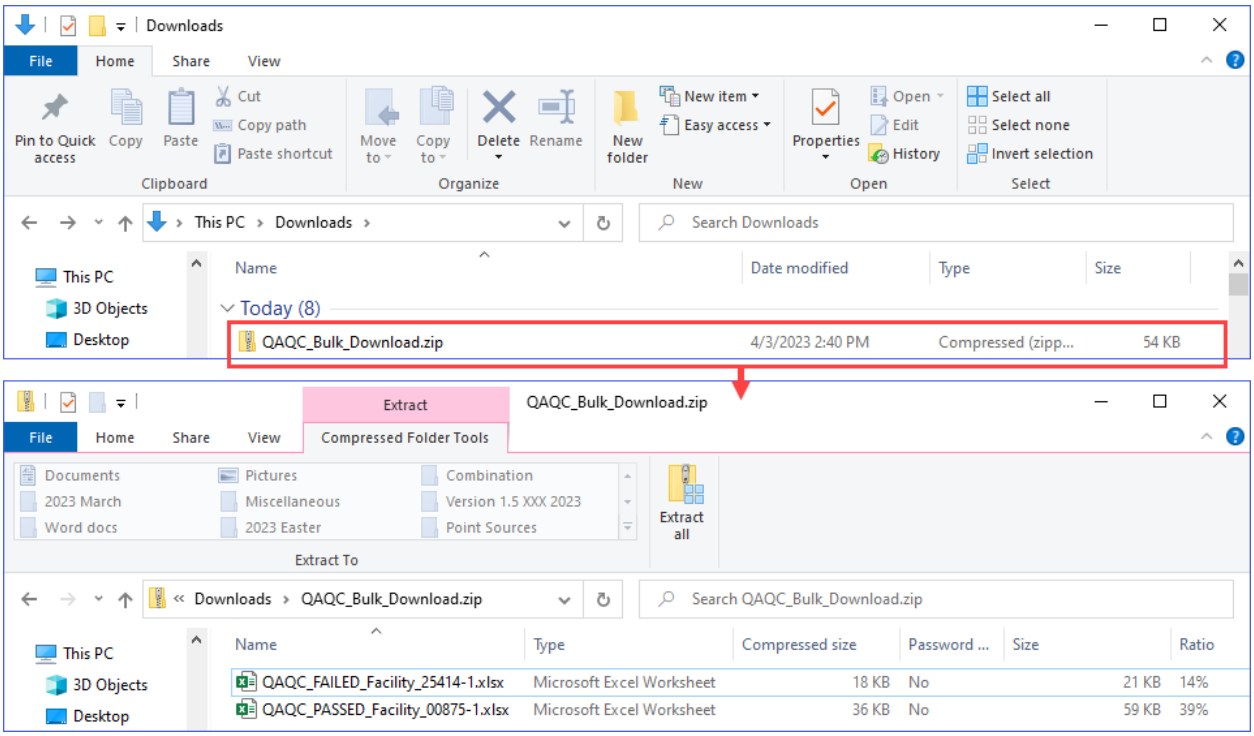


Figure 23: Exported QA/QC .ZIP archive

Note that in Figure 23 only the QA/QC files for the 25414-1 and 00875-1 facilities have been included.

3 Emissions: Platform Sources

Pathway: Emissions > Platform Sources

Platform sources make up the majority of emission sources and pollutant emissions in OCS AQS. You can manage all platform sources in the **Emissions** module. When you select the **Emissions** module, you are automatically taken to the **Emissions – Platform Sources** page. The **Platform Sources** page provides links to several different options, as shown in Figure 24 with the various navicons. Navigation to other **Emissions** module functions is done using links on the Navigation Panel.

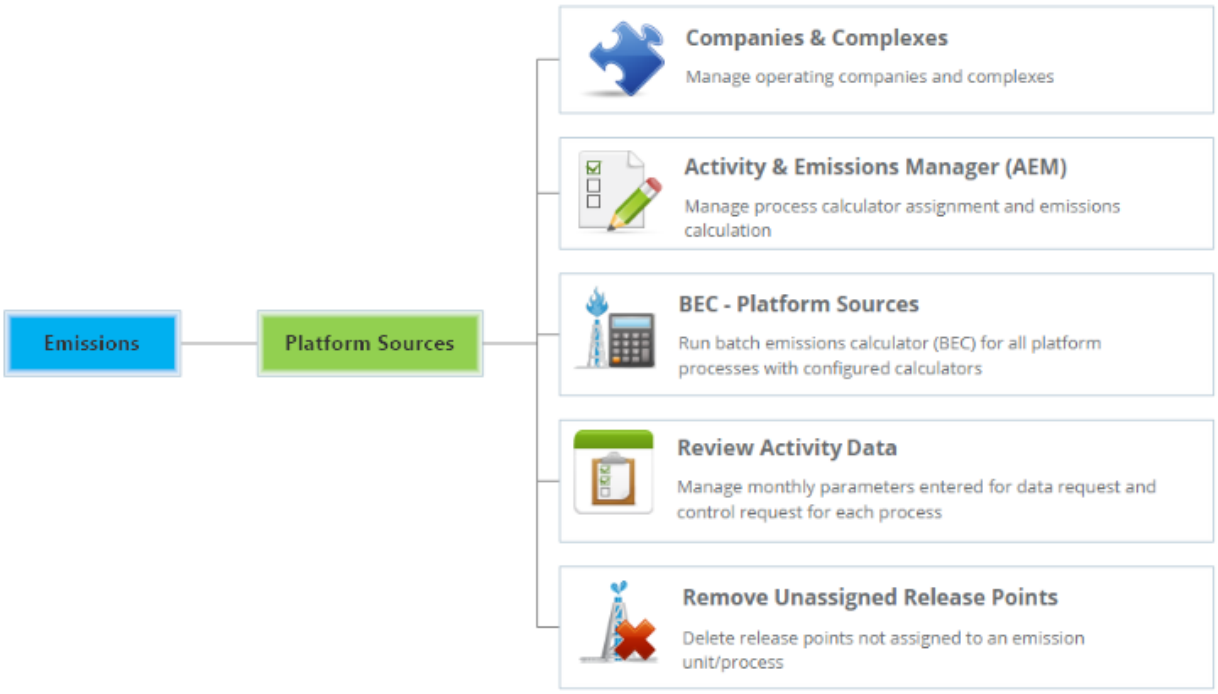


Figure 24. Emissions main page functions

A typical workflow for the **Platform Sources** section is as follows:

1. Use the **Activity & Emissions Manager (AEM)** (section 3.2) to manage existing or create new emission units, enter activity data, and calculate emissions.
2. Use **Review Activity Data** (section 3.3) to screen the entered activity data for any anomalies.
3. Use **BEC – Platform Sources** (section 3.4) to bulk-calculate emissions for the facilities where all required activity data has been specified.
4. Review complex/structure hierarchy and verify the supporting documentation (section 3.5).
5. Remove obsolete release points (section 3.6).

3.1 Platform Sources Emissions Calculation Workflow

OCS AQS is designed to make updating and editing emission sources easy in the **Activity & Emissions Manager (AEM)**. The AEM provides a one-stop shop for all platform emission source functions. The basic workflow using the AEM is shown in Figure 25.

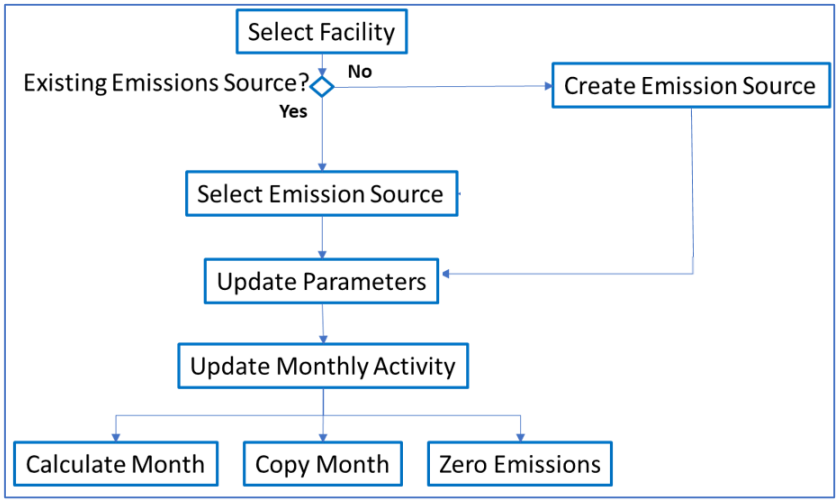


Figure 25. Emission source workflow using the Activity & Emissions Manager (AEM)

To implement this workflow, OCS AQS uses integrated toolsets and prepared import/export templates for all emission processes.

3.2 Using the Activity & Emissions Manager

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM)

To access the AEM, click on the **Activity & Emissions Manager (AEM)** navicon (shown in Figure 24 above). This takes you to the list of facilities in the inventory. Select the facility to work with by clicking the hyperlink in the **Facility ID** column or clicking on **View** in the **Actions** column, as shown in Figure 26 below. If your facility is not in the list, please contact OCS AQS support.

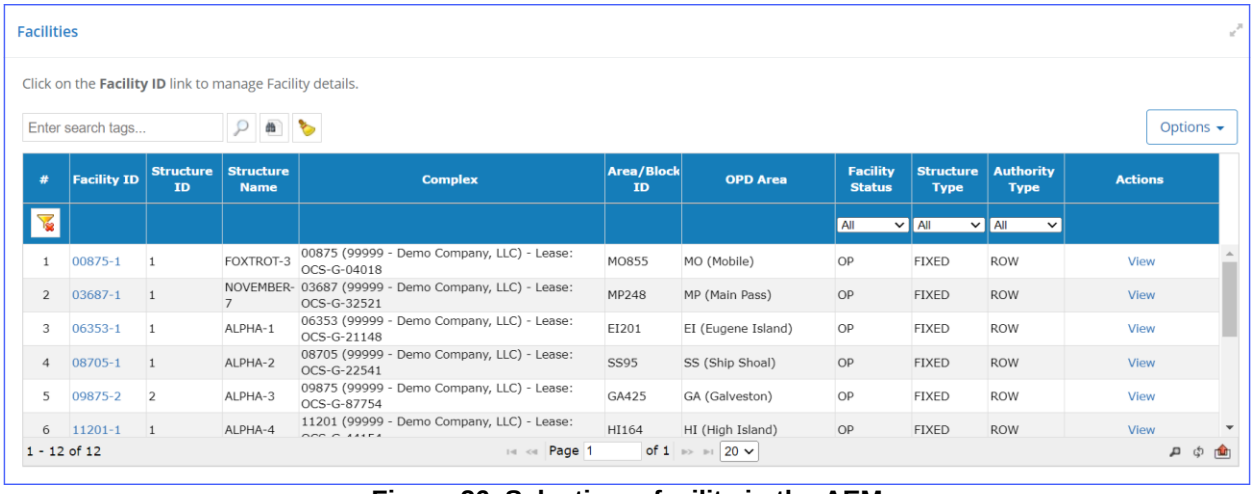


Figure 26. Selecting a facility in the AEM

3.2.1 Activity & Emissions Manager Details Page

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility

Selecting the facility takes you to the **AEM Details** page with a view similar to Figure 27. This page allows you to make changes in designated fields as well as perform certain other operations.

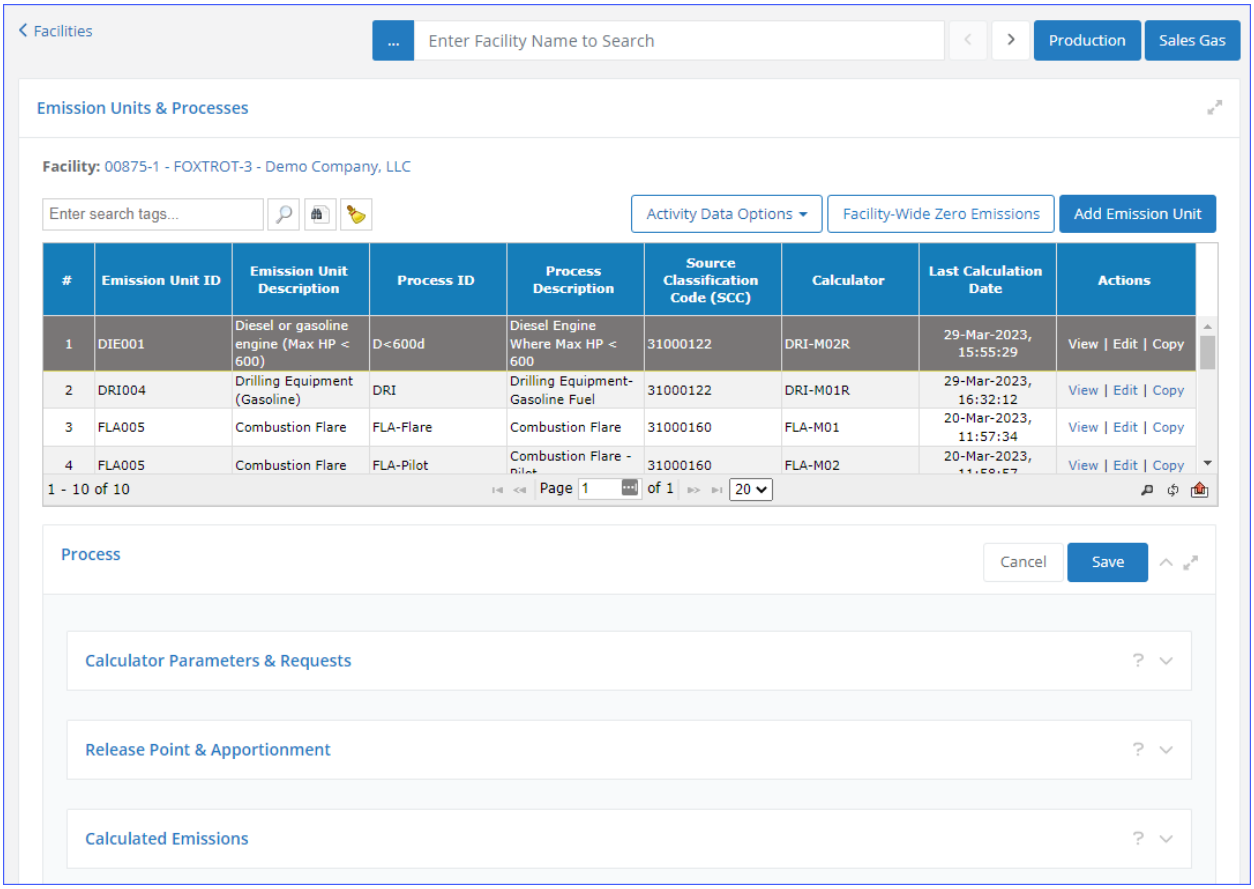


Figure 27. Default view of the AEM Details page

3.2.1.1 Main Features of AEM Details Page

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility

The **AEM Details** page has a number of features that can be seen by scrolling down the page. These features and their use will be described in detail in the sections that follow.

First, in the upper right part of the page, there are buttons to update annual **Production** and throughput values and **Sales Gas** composition for the selected facility. Below them, you can see the **Emission Units & Processes** section, which shows the different emission units and their associated processes within the facility in tabular form, and includes buttons to **Add Emission Unit**, **Activity Data Options** (which allows you to import and export activity data for the selected process), and **Facility-Wide Zero Emissions**.

The second section encompasses the **Process** section, which includes the following sections:

- **Calculator Parameters & Requests**: Provides the activity data entry for emission calculation parameters and associated metadata for individual sources. This will be described in greater detail below.
- **Release Point & Apportionment**: View and update release point parameters associated with an emission source or delete release points that are no longer in use.
- **Calculated Emissions**: Shows the calculated emissions for an emission unit for the entire year by month based on calculator parameters provided in the Process feature.
- **Attached Files**: Contains emission rate source files for the amine and glycol units. ***IMPORTANT:*** The **Attached Files** panel only becomes available after a data file has been imported.
- **Tags**: View and update keywords related to the process.
- **Data Entry QA and Log**: Shows when updates were made and by whom.

3.2.1.2 Edit Mode

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility

It is important to note that you will automatically be in Edit mode when you enter the **AEM Details** page. You can confirm this by checking if you are able to edit or otherwise make changes to fields in the **Process** section.

> ***TIP:*** If you are not in Edit mode and cannot load it by clicking **Edit**, check to make sure that your inventory is not locked; a locked inventory would have the displayed in front of the inventory name. A locked inventory icon appears in the **Inventory Selector** as follows:
>
> 
>

If you are not in Edit mode, the data will be read-only, and many options and buttons will not be available. You can exit Edit mode by clicking either **Save** or **Cancel** under the **Emission Units & Processes** panel.

To save data, click on **Save** in the upper right corner of the **Process** section. This will update the **Process** section and hide several buttons and selectors. To return to Edit mode, highlight the desired **Emission Unit** in the table at the top of the screen and click on **Edit** where **Save** used to be.

> ***IMPORTANT:*** If you do not save your work, it will be lost if you navigate away or are automatically logged off.

3.2.2 Updating Annual Production Rate and Sales Gas Composition

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility

3.2.2.1 Annual Production Rates

Production rates can be updated by clicking on **Production** in the upper right corner. This will open a window with fields for annual production, throughput, and usage. To edit the values, click on **Edit** in the top or bottom right corner as shown in Figure 28. Be aware that input fields are for specific energy type (crude oil, natural gas, and diesel) based on the units and field descriptions. All values must be greater than or equal to 0.

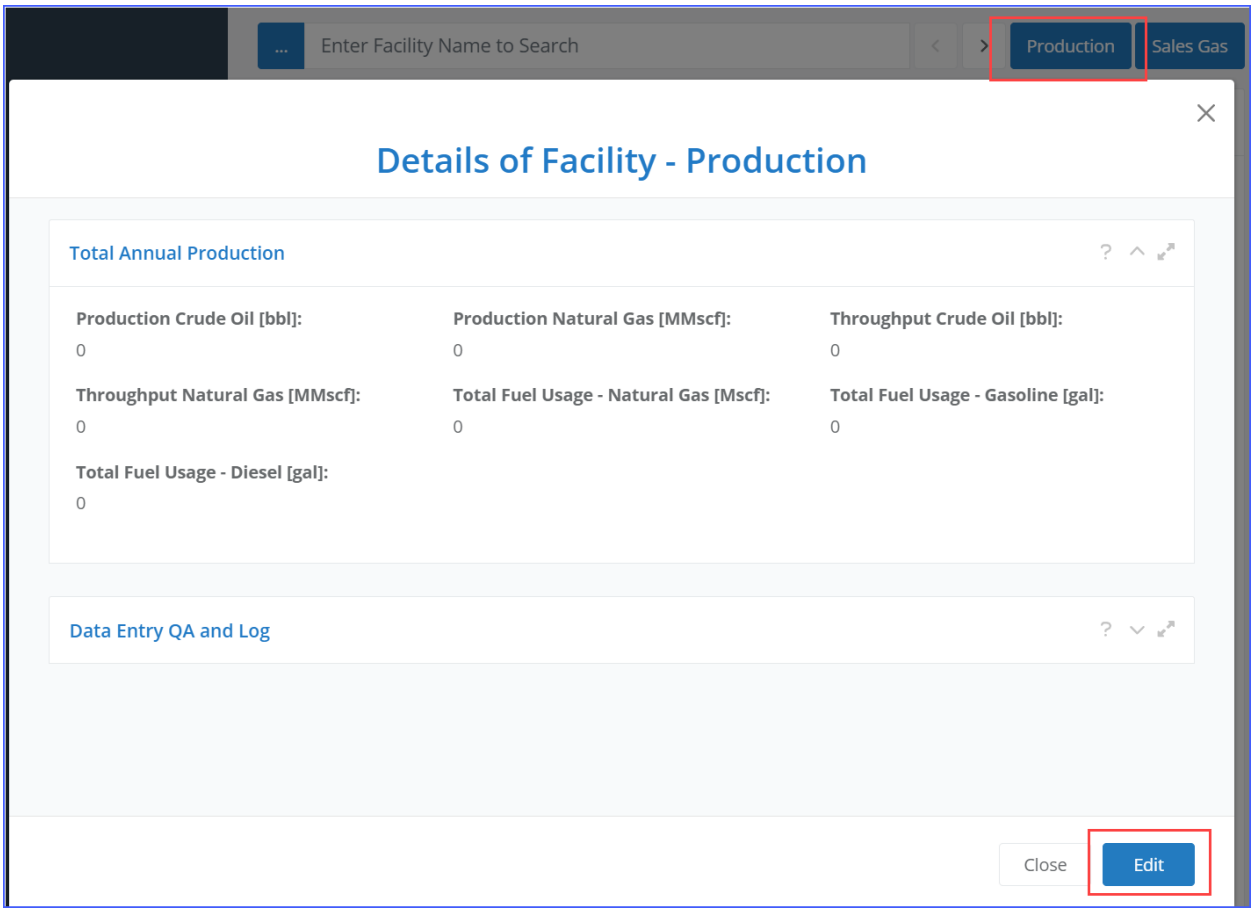


Figure 28. Production data

Click **Save** to save updates and get out of **Edit** mode. Click **Close** to close the window.

3.2.2.2 Sales Gas Composition

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility

Update sales gas composition by clicking on **Sales Gas** and **Edit**, similar to the procedure described above for production rates.

The input fields for the different mole fraction components will automatically sum in the lower right box (**Sales Gas Total [mole%]**). If the final sum does not equal 100% but is between 99% and 101%, you can normalize the value clicking on the **Normalize** button that will appear in the upper right corner of the window. **Normalize** will add or subtract from the non-zero elements in the fields by a linear weighting method that allows the composite total to sum exactly to 100.00%. If the sum is equal to 100.00%, the **Normalize** button will not appear.

> ***IMPORTANT:*** Sales gas composition is required as it affects certain calculations. If specific sales gas data is not available for the platform, default values can be found in the FAQs dashboard, Emissions Calculations section.

An example of the Sales Gas update screen with a sum not equal to 100.00% is shown in Figure 29.

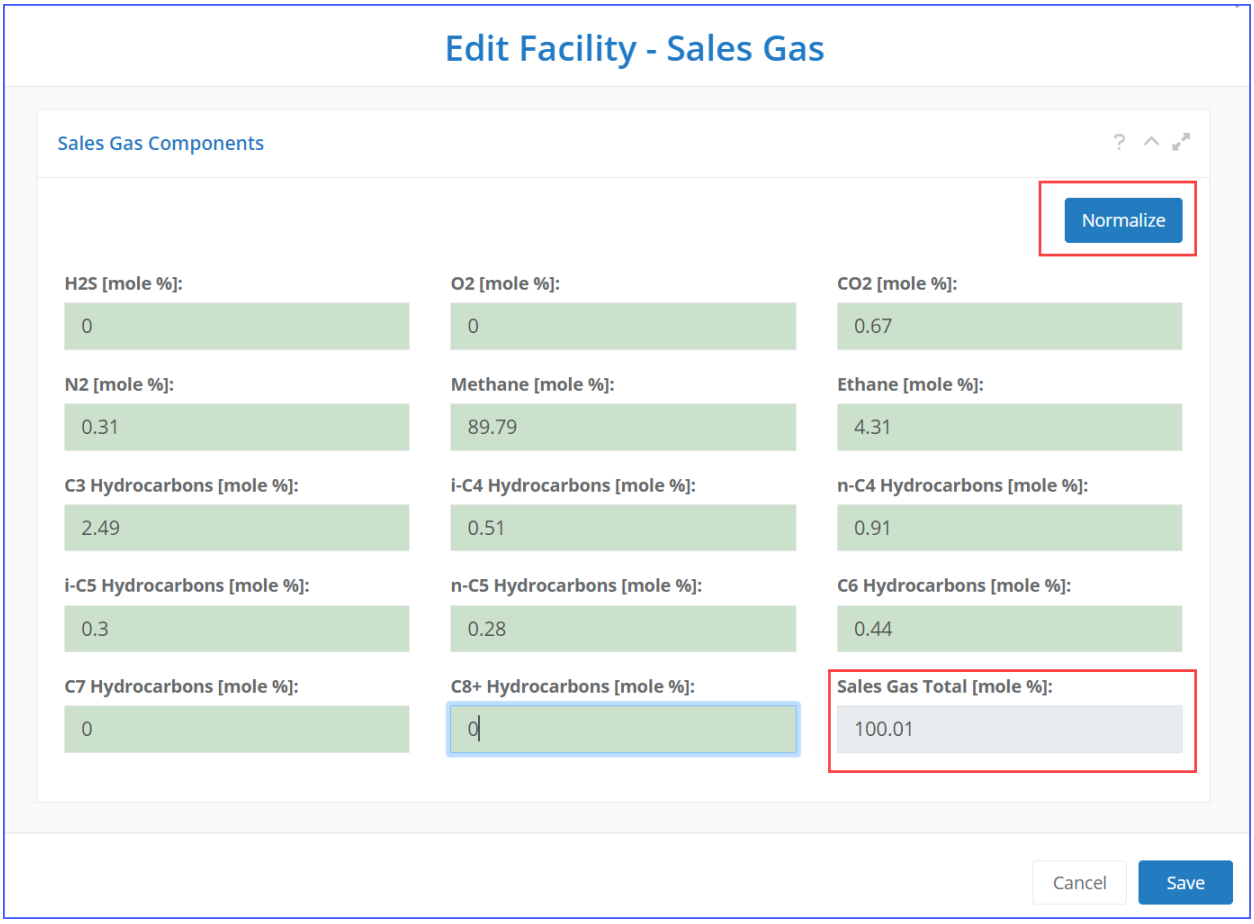


Figure 29. Sales Gas Components page

3.2.3 Importing Amine & Glycol Emissions

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility

Emissions for amine and glycol processes are calculated based on the emission rates generated by AMINECalc©[1] and GRI-GLYCalc™,[2] respectively. These values can be imported as emission rates for any relevant process directly in AEM. The emissions can then be calculated using these emission rates and the operating hours for each month.

To import the emission rates, follow these steps:

> ***IMPORTANT:*** You can only import amine emission rates for amine gas sweetening units and glycol emission rates for glycol dehydrator units.

1. In the **Emission Units & Processes** table, locate and select the amine unit (with calculator type AMI-000) or the glycol unit (with calculator type GLY-000) for which you wish to import data.
2. An **Import Amine Emission Rates** or **Import Glycol Emission Rates** button will become available in the **Calculator Parameters & Requests** panel, depending on your selection. Click this button (Figure 30).

[1] API PUBL 4679 Amine Unit Emissions Model AMINECalc Version 1.0

[2] www.gastechnology.org

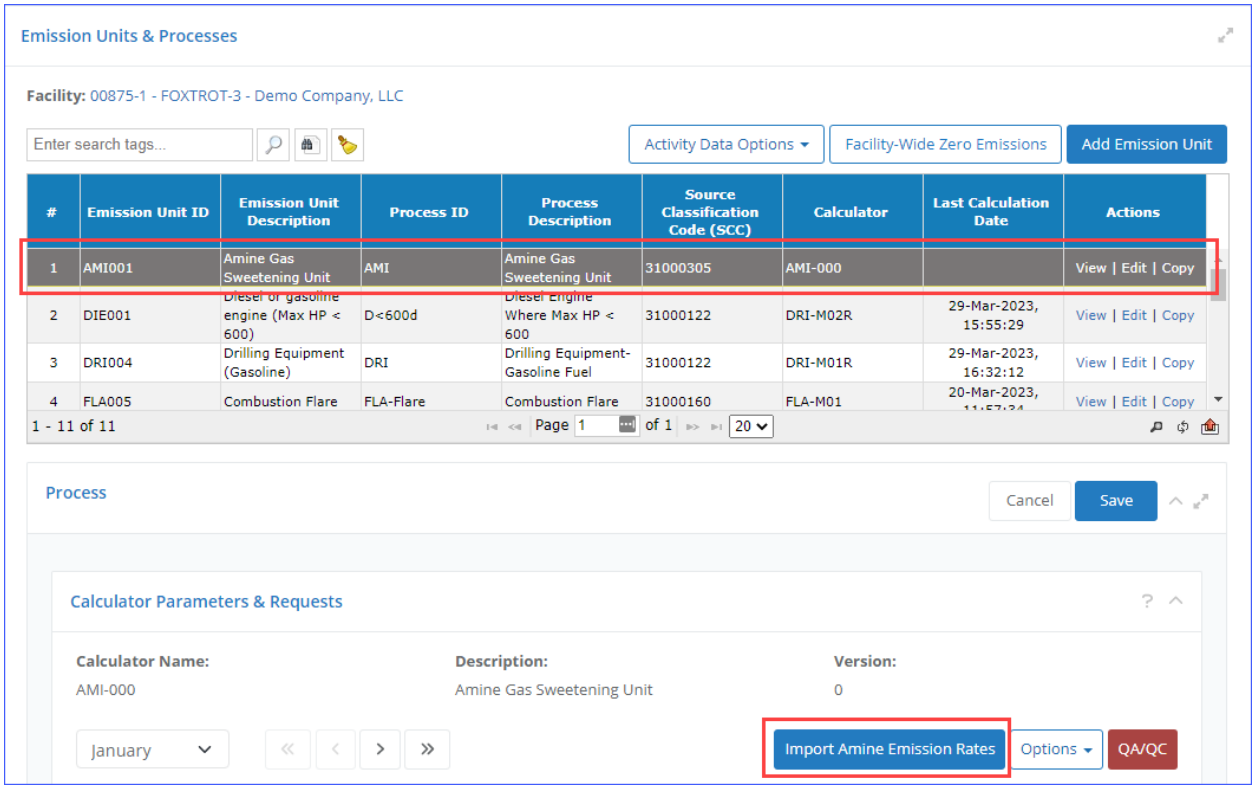


Figure 30. Import Amine & Glycol Emissions options

3. Click **Yes** in the message confirming that your any unsaved work will be saved.
4. Click **Select file**.
5. Navigate to and select the file that contains the data. Click **Next**.
6. Check the box for each **Stream** you wish to import. If a stream you are looking for is not available, the data file may be corrupted. Click **Next**.
7. Select the **Emission Periods** for which emissions will be imported. You can only select an emission period if:
   - The **Hours of Operation** have been specified in the **Data Request** tab of the **Calculator Parameters & Requests** panel, and
   - The period has not been set to **Zero Emissions**
8. Click **Next**.
9. Review the summary of the selections made. If all information is correct, click **Finish** to complete the import.

The imported emission rates values will be displayed in the **Emission Factors** tab of the **Calculator Parameters & Requests**. After the page is refreshed, the file will be displayed in the **Attached Files** panel (as seen in Figure 31). From here, you can download the file by clicking on the file name link in the **Download** column or view its contents by clicking the **View** option in the **Actions** column.

After the emission rates have been imported, the emissions can be calculated as they would be for any other process by clicking **Calculate** in the **Calculated Emissions** panel (for more details see section 3.2.13).

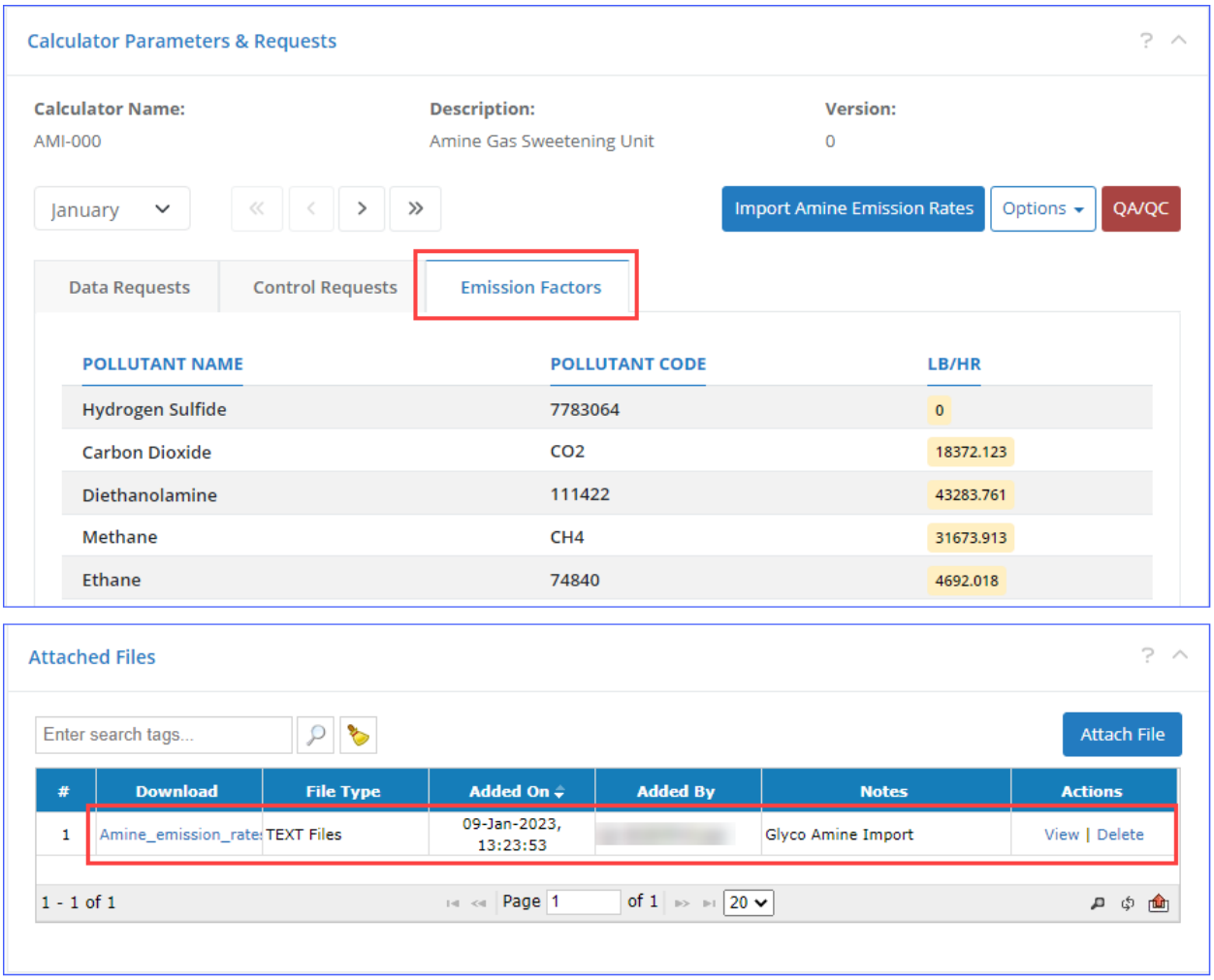


Figure 31. Amine Import

3.2.4 Selecting Fugitives Leak Detection Approach

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility > Select Fugitive Emission Unit

When a fugitive emission unit is first created (and for any fugitive emission units that have been previously created), it is assumed that no leak detection program is used, and the default calculator uses the average emission factor approach to calculate emissions. To account for any leak detection efforts, this approach may be changed to one of the following once the emission unit is created:

- Screening Ranges Approach
- Import Emissions Approach

The **Screening Ranges** approach is used when the number of leaking components is known. The **Import Emissions** approach is used if the emissions were obtained by other EPA-approved methods and not calculated in OCS AQS.

To apply a leak detection approach, click the **Apply Leak Detection Approach** button at the top of the **Calculator Parameters & Requests** Panel.

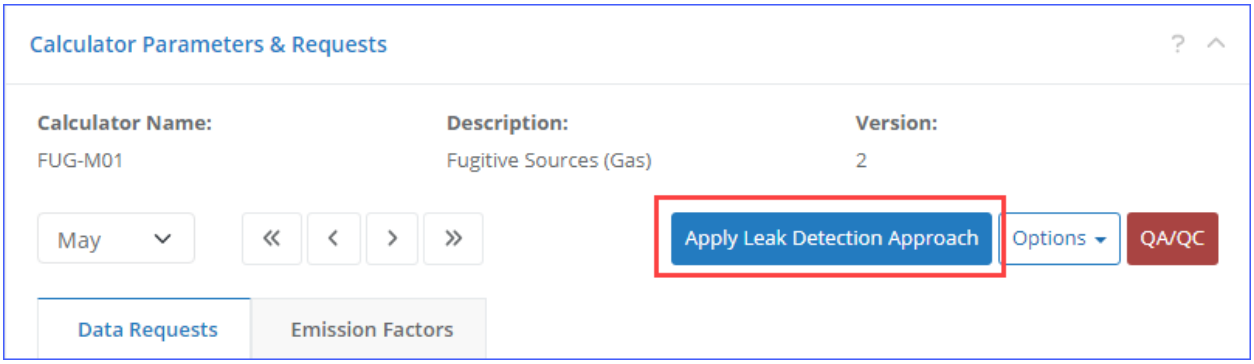


Figure 32: Apply Leak Detection Approach

Changing the leak detection approach will change which parameters have to be specified for the **Data Request**.

> ***IMPORTANT:*** You cannot use different approaches for different months. You must use a single approach for the entire year.

3.2.4.1 Screening Ranges Approach

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility > Select Fugitive Emission Unit

The screening ranges approach can be used if the number of leaking components is known.

To switch to a screening ranges approach:

1. Click the **Apply Leak Detection Approach** button above the **Data Request** tab of the **Calculator Parameters & Requests** panel.
2. In the **Leak Detection Selection Approach** step, check the **Screening Ranges** option and click **Next**.
3. In the **Supplemental Documents Upload** step, you have two options:
    a. If supporting documentation is available, click **Select File** to navigate to and select the appropriate files.
    b. If supporting documentation is not available yet, check the **Skip** option.

    IMPORTANT: Supporting documentation must be provided when using the screening ranges approach. While you will be able to calculate emissions without the documentation, you will not be able to submit the inventory. This documentation can be uploaded during the wizard, or at a later date in the **Attached Files** panel in the **Activity & Emissions Manager (AEM)**.

4. In the **Summary** step, review the information to verify that all selections are correct. Click **Finish**.

Before the screening ranges approach is applied, only one set of component parameters has to be specified in the **Data Request** panel – the **Total Components**. After the screening ranges approach is applied, a second set of parameters has to be specified – the **Leaking Components** (see Figure 33). A component is considered "leaking" if the component's screening value is greater than or equal to 10,000 ppmV. The number of Leaking Components cannot exceed the number of Total Components.

NOTE: If you change the leak detection approach to anything other than **Screening Ranges** after entering the leaking component counts, these values will be deleted.

The calculator will subtract the number of leaking components from the total number of components to obtain the number of non-leaking ones. The calculated emissions combine emissions from the leaking and non-leaking components.

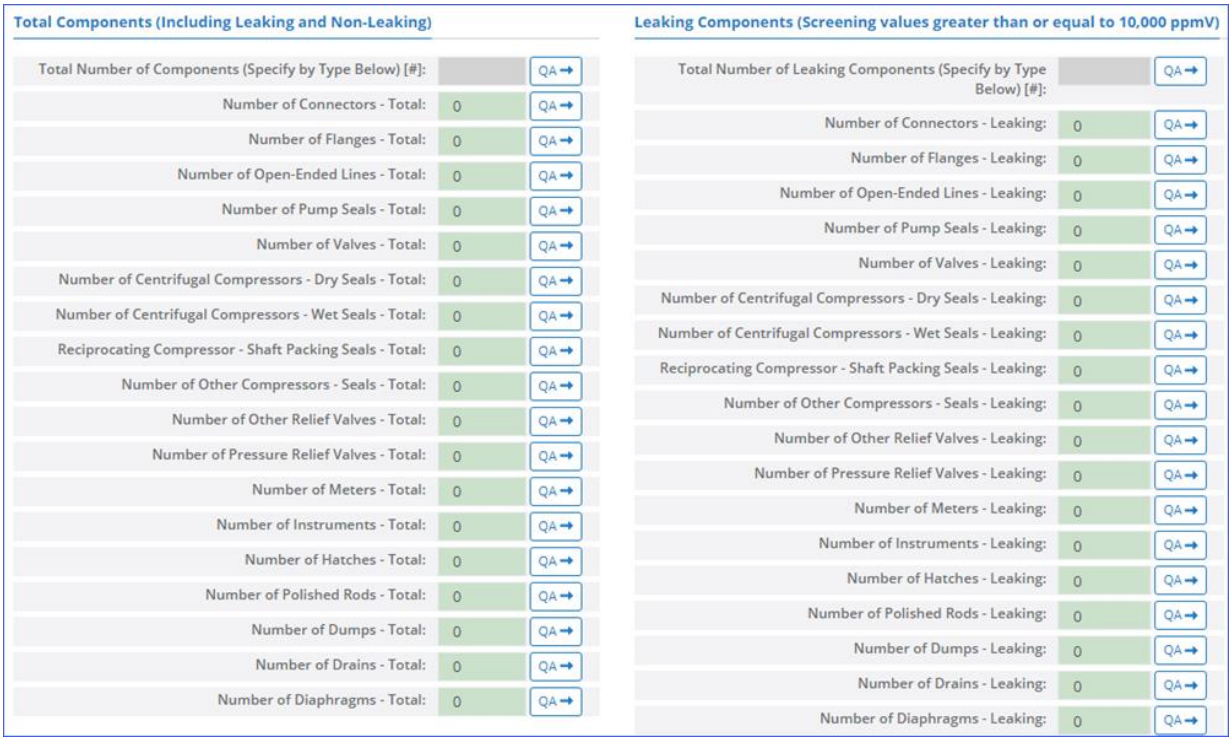


Figure 33: List of Leaking Components for Screening Ranges Approach

After changing the activity data you must calculate emissions (see section 3.2.13).

3.2.4.2 Import Emissions Approach

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility > Select Fugitive Emission Unit

The import emissions approach can be used if the emissions values for the fugitive process were acquired by other EPA-approved data acquisition means.

IMPORTANT: While this approach allows you to bypass having to calculate emissions based on the parameters in the **Data Request** tab, this information must still be provided for the inventory to be eligible for submittal.

To switch to the import emissions approach:

1. Click **Apply Leak Detection Approach** button above the **Data Request** tab of the **Calculator Parameters & Requests** panel.
2. In the **Leak Detection Approach Selection** step, check the **Import Emissions** option.
3. Click **Next**.
4. In the **Supplemental Documents Upload** step, you have two options:
    a. If supporting documentation is available, click **Select File** to navigate to and select the appropriate files.
    b. If supporting documentation is not available yet, check the **Skip** option.

IMPORTANT: Supporting documentation must be provided when using the screening ranges approach. While you will be able to calculate emissions without the documentation, you will not be able to submit the inventory. This documentation can be uploaded during the wizard, or at a later date in the **Attached Files** panel in the **Activity & Emissions Manager (AEM)**, as described further below.

5. Click **Next**.
6. In the **Export/Import Fugitive Emissions Template** step, click the **Click Here to Download Fugitive Emissions Template File** (see Figure 34). This will generate an Excel file specific to the currently selected fugitive process.

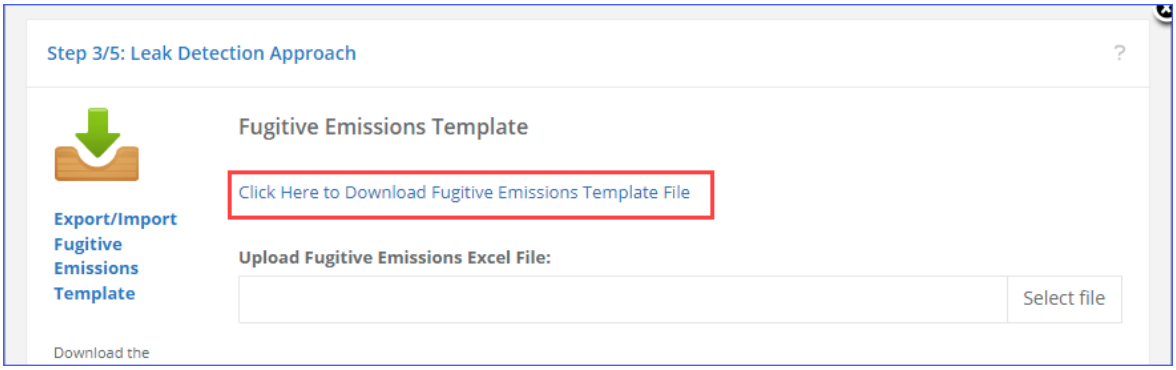


Figure 34: Download Fugitive Emissions Template File

7. Download and open the generated file.

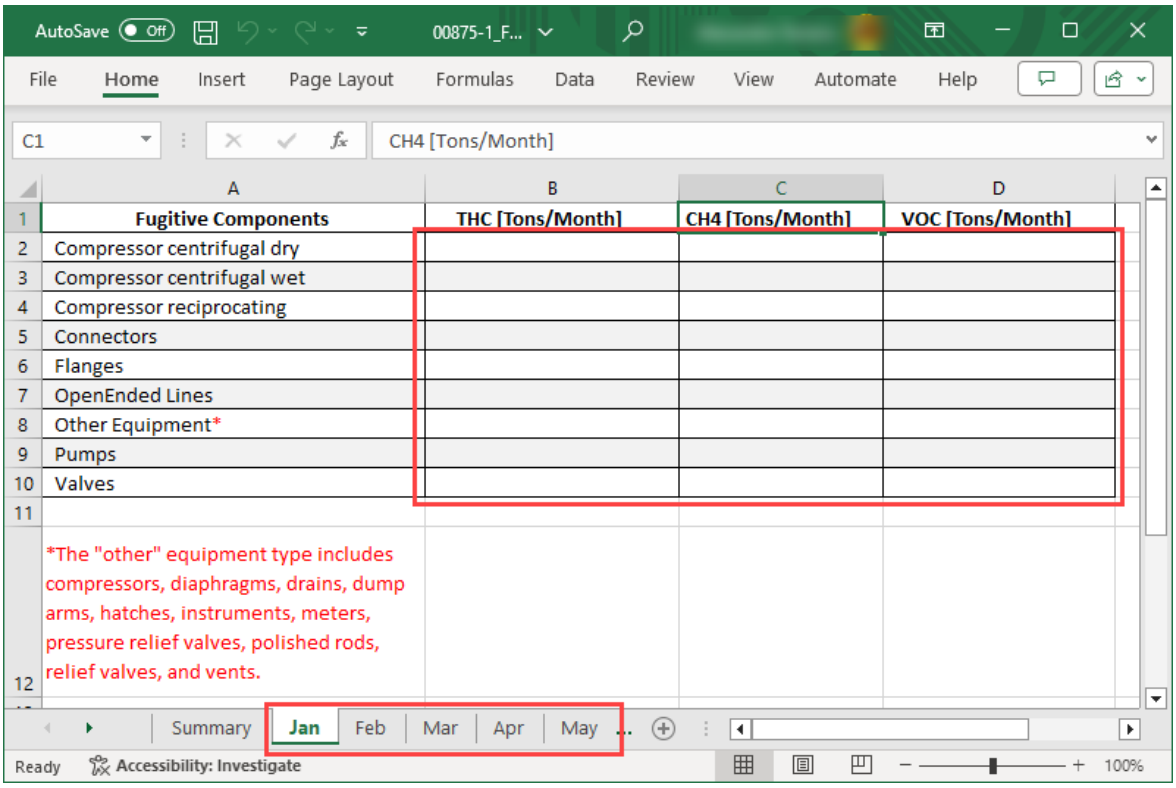


Figure 35: Enter Fugitive Emissions Data

8. Enter the emissions values for each month in its designated tab (see Figure 35) and save the file.

   IMPORTANT: Do not change the information in the **Summary** tab of the Excel file. If this information is changed, you will not be able to use the file to import emissions.

9. Back in the **Export/Import Fugitive Emissions Template** step of the **Leak Detection** wizard click **Select file** button.
10. Navigate to and select the updated emissions file (see Figure 36).

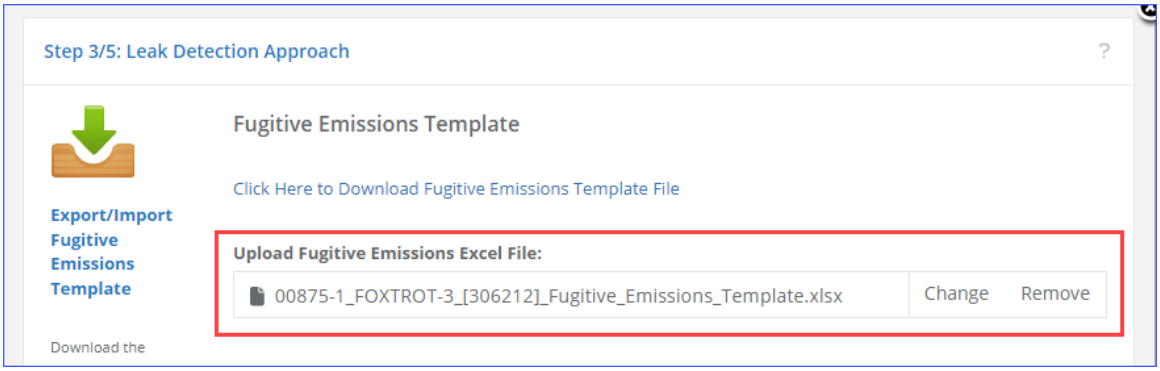


Figure 36: Select Fugitive Emissions File

11. Click **Next**.
12. In the **Emissions Period Selection** step, check the box for each month for which you wish to import emissions (see Figure 37).

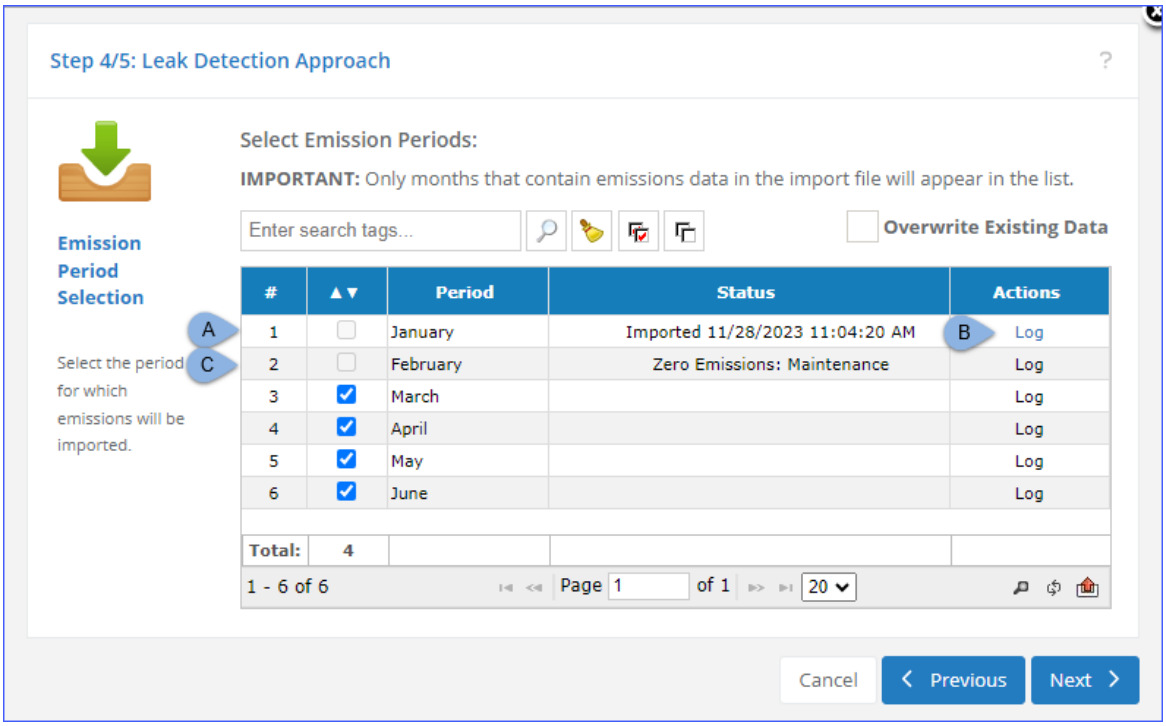


Figure 37: Select Fugitive Emission Periods

Regarding the period selection:

- Only months that have data in the Excel file will be displayed in the list (January to June in Figure 37)
- If data for a specific month has been previously imported, it will be displayed in the list, but you will not be able to select it (tag **A** in Figure 37). This is done to prevent overwriting existing data by accident. The **Log** link (tag **B** in Figure 37) in the **Actions** column contains the history of import activity for that month. If you still wish to import emissions for that month, check the **Overwrite Existing Data** option above the table. This will activate the check box for all emission periods.
- If the fugitive process is set to "zero emissions" for a specific month, it will be displayed in the list, but you will not be able to select it (tag **C** in Figure 37). This is done to prevent accidentally importing emissions where there should be none. If you still wish to import emissions for that month, check the **Overwrite Existing Data** option, which will activate all months. Importing emissions for a "zero emissions" month will reactivate the month in question.

13. Click **Next**.
14. In the **Summary** step, verify that all selections are accurate and review the data that will be imported in the **Emissions to be imported** table. If everything is correct, click **Finish**.

Once the **Import Emissions** approach has been applied, the **Calculate** button is no longer available in the **Calculated Emissions** panel, and the panel itself displays imported emissions. Please verify that emissions displayed in OCS AQS match your imported emissions.

3.2.4.2.1 Importing Additional Emissions Data

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility > Select Fugitive Emission Unit

It is not necessary to import emissions for the entire year at the same time. Additional emission data can be imported at a later date, as they become available.

To import additional emission data:

1. Update and save the template file you originally downloaded with new data.
2. Click **Apply Leak Detection Approach** button above the **Data Request** tab of the **Calculator Parameters & Requests** panel.
3. In the **Leak Detection Approach Selection** step, check the **Import Additional Data** option (this option is only available if the leak detection approach is already set to **Import Emissions**) (see Figure 38).

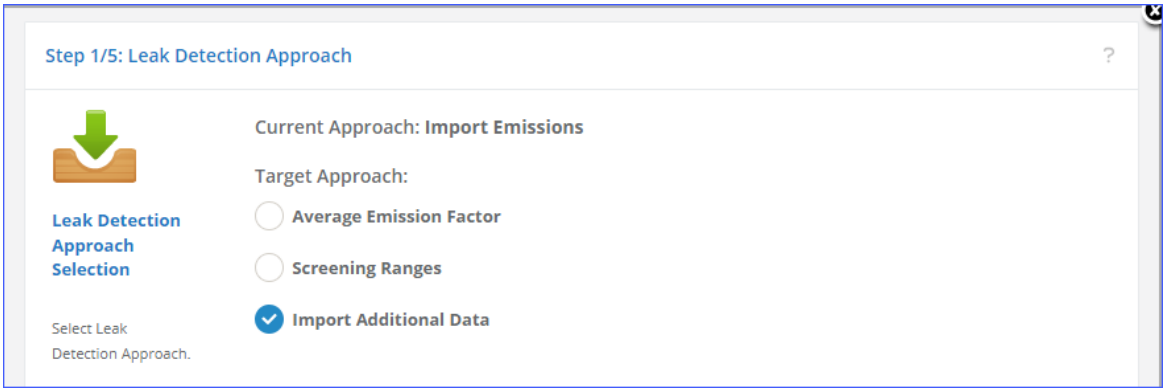


Figure 38: Import additional fugitive emissions data

4. Click **Next**.
5. In the **Export/Import Fugitive Emissions Template** step, click the **Select file** button.
6. Navigate to and select the updated emissions file.
7. Click **Next**.
8. Select the new emission periods.

   NOTE: If you are importing new emissions data for the months for which you had previously imported data, you will have to check the **Overwrite Existing Data** option to make these months available, as described above.

9. Click **Next**.
10. In the **Summary** step, verify that all selections are accurate and review the data that will be imported in the **Emissions to be imported** table. If everything is correct, click **Finish**.

3.2.4.3 Resetting to Default – No Leak Detection – Average Emission Factor Approach

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility > Select Fugitive Emission Unit

If, after applying a leak detection approach, you decide not to use it, you can reset to the original Average Emission Factor calculation method.

To do so:

1. Click the **Apply Leak Detection Approach** button above the **Data Request** tab of the **Calculator Parameters & Requests** panel.
2. In the **Leak Detection Selection Approach** step, check the **Average Emission Factor** option and click **Next** (see Figure 39).

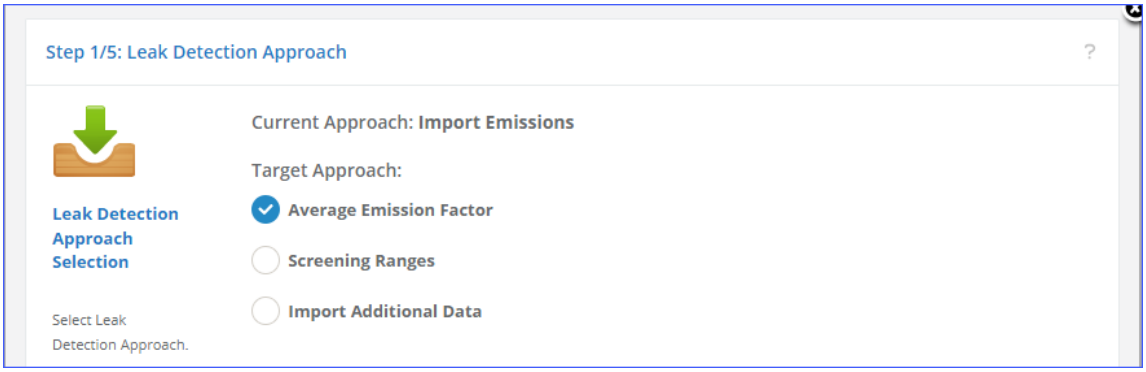


Figure 39: Reset default leak detection approach

3. In the **Summary** step, click **Finish**.

   IMPORTANT: You must recalculate emissions after changing the leak detection approach.

3.2.4.4 Importing Supplemental Documents

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility > Select Fugitive Emission Unit

If you did not import supplemental documentation during the **Leak Detection** wizard for either the Screening Ranges or Import Emissions approaches, you can do so in the **Attached Files** panel in the **Activity & Emissions Manager (AEM)**.

To import supplemental documents:

1. In the **Activity & Emissions Manager**, scroll down to the **Attached Files** panel.
2. Click the **Attach File** button.
3. In the **Attach New File** dialog that opens, click **Select file**.
4. Navigate to and select the supplemental documentation file.
5. In the **File Type** field select “Leak Detection Supplemental Documents” (see Figure 40).

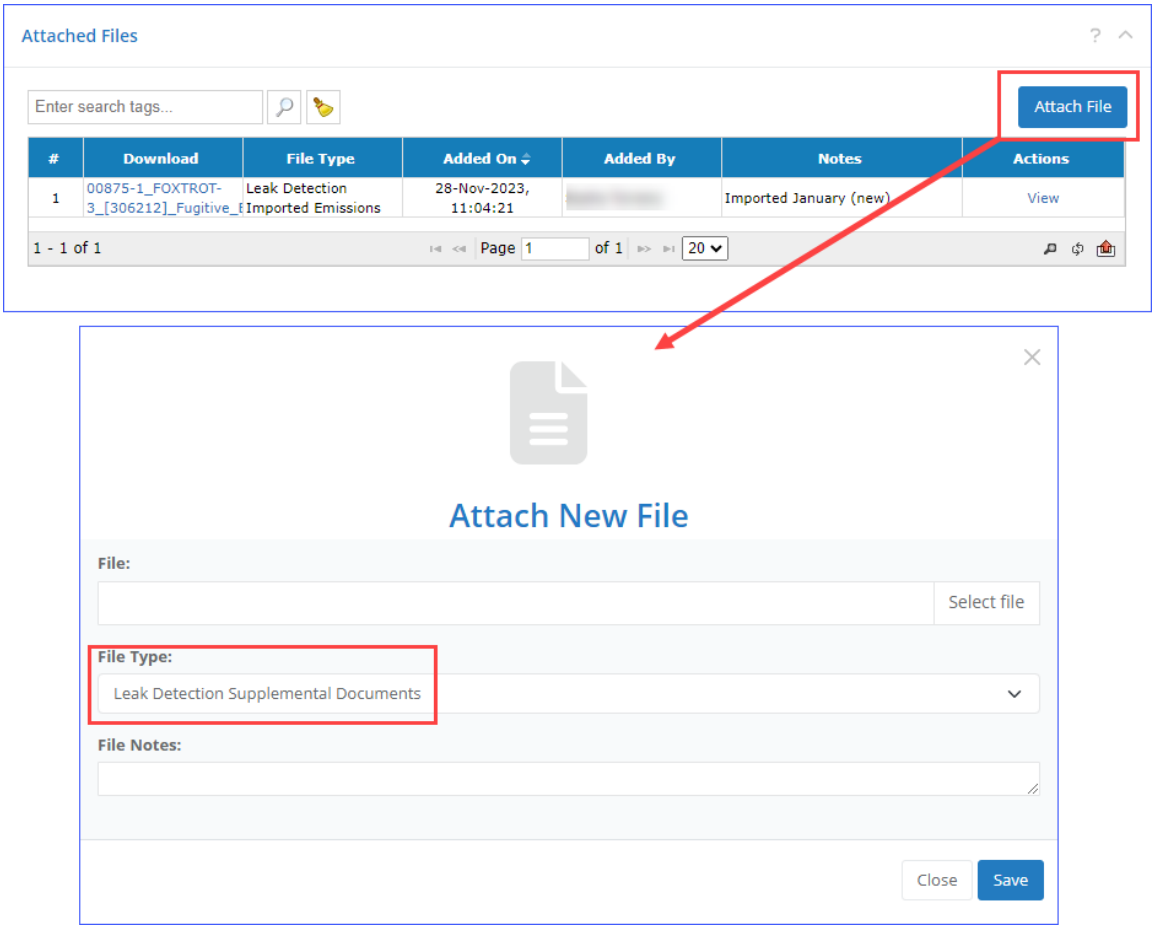


Figure 40: Attach leak detection supplemental documents

6. Add any additional information in the **File Notes** field.
7. Click **Save**.
8. Repeat the procedure with any remaining documents.

3.2.5 Updating Facility Details

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility

To check structure details such as design specifics, sales gas composition, and location click on the **Facility** name hyperlink above the **Emission Units & Processes** table as shown in Figure 41. A window will pop up with facility details. Scroll down to review available facility details.

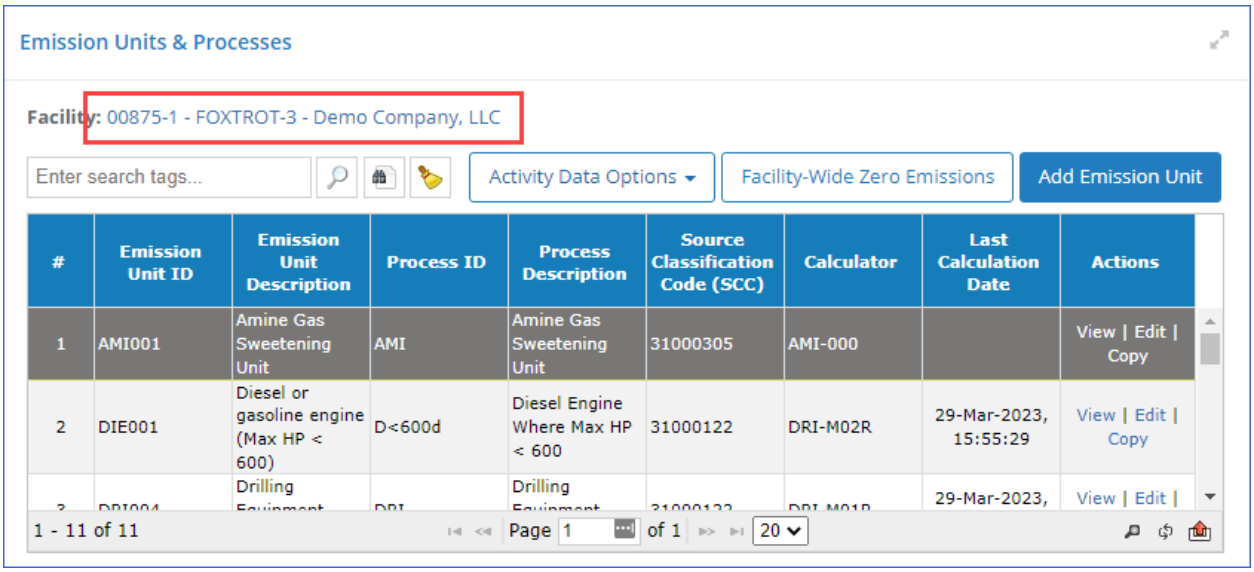


Figure 41. Facility details link location

To edit information about the facility, click **Edit** in the top or bottom right corner of the window to enter the edit mode. Click **Save** to complete the updates.

> ***IMPORTANT:*** Fields colored in green are required, and you will not be able to save any changes if any of the green fields are blank.

Production Rates and **Sales Gas Composition** can be edited in this window, as well as the individual windows described in sections 3.2.2.1 and 3.2.2.2 respectively.

3.2.5.1 Structure Details

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility > View Facility Details

The **Facility Details** page allows you to enter physical parameters associated with the platform structure, including:

- Distance from Shore
- Water Depth
- Structure Type
- Authority Type
- Platform X Length
- Platform Y Length
- Platform Angle

Platform X Length should be the dimension closest to the east-west orientation and **Platform Y Length** should be the dimension closest to the north-south axis.

The **Platform Angle** is the offset angle of the platform from true north.

3.2.5.2 Platform Building Downwash Parameters

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility > View Facility Details

For the 2023 reporting period, operators are required to submit structure data, which is essential for running the platform downwash algorithm incorporated into AERMOD within OCS AQS. This data should specifically include the three parameters found in the **Platform Building Downwash Parameters** panel:

- **Platform Base Height Above MSL (ft):** Defined as the elevation of the structure's base measured from Mean Sea Level (MSL)
- **Maximum Height of Building Above MSL (ft):** Represents the altitude of the highest point of the structure, measured from MSL
- **Shortest Building Width (ft):** Refers to the smallest width of the platform footprint.

The Platform Base Height should be measured from MSL up to the structure's lowermost point. The Maximum Building Height refers to the highest enclosed structure's altitude measured from MSL. Notably, fixtures mounted on the structure, such as satellite dishes, cranes, or other open frames, should be excluded from the measurements. Refer to Figure 42 for measurement references. Figure 42 and the above definitions were referenced from the EPA's **User's Guide for the AMS/EPA Regulatory Model (AERMOD)[3].**

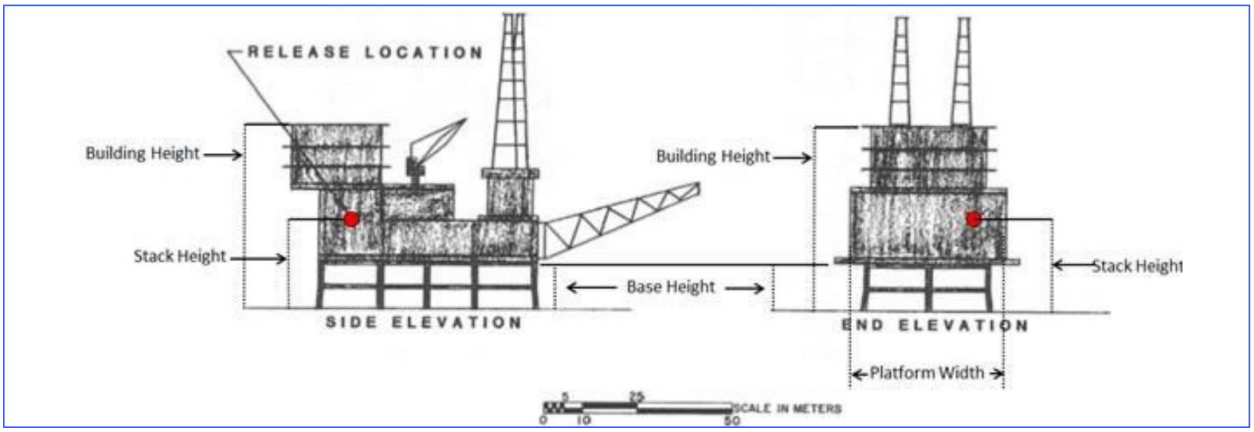


Figure 42. Measuring references for structure parameters[3]

These parameters have to be specified for every structure for it to pass the submittal QA/QC.

3.2.6 Emission Units & Processes

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility

The **Emissions Units & Processes** table includes all emission units and a summary of key information including:

- Process ID and description of each emission unit
- Source Classification Code (SCC)

[3] User's Guide for the AMS/EPA regulatory model (AERMOD) https://gaftp.epa.gov/Air/aqmg/SCRAM/models/preferred/aermod/aermod_userguide.pdf

- Assigned calculator
- Date and time of the last emission calculation (if applicable)

3.2.6.1 Select Emission Unit

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility

Emission units associated with a particular facility are shown in the table at the top of the **AEM Details** page. To view the details of any emission unit process, click anywhere in the row for that emission unit *other than the hyperlinks* to select it, as shown in Figure 43. This will update the **Process** section under the table. Clicking on the **View** or **Edit** in the **Actions** column will open the **Details of Emission Unit** window for viewing emission unit information.

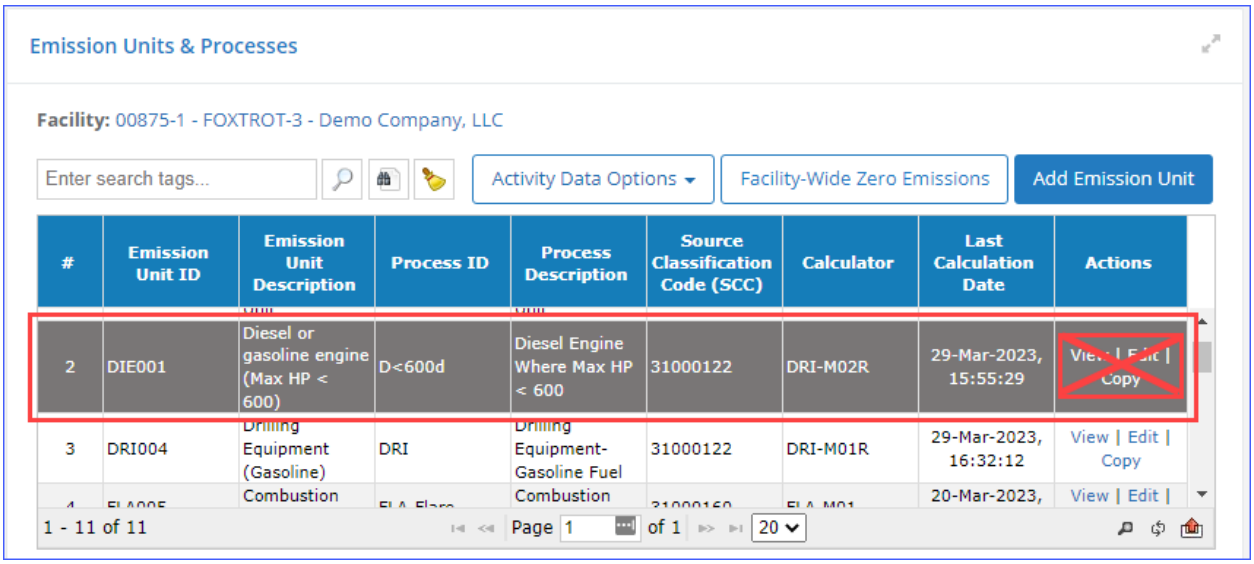


Figure 43. View Process details

3.2.6.2 View/Edit an Emission Unit

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility

To view the details of an emission unit, click **View** in the **Actions** column (Figure 44). Edit the emission unit by selecting **Edit** in the **Actions** column. Green fields represent required data that must be included before you can save the item. Click **Save** to save changes.

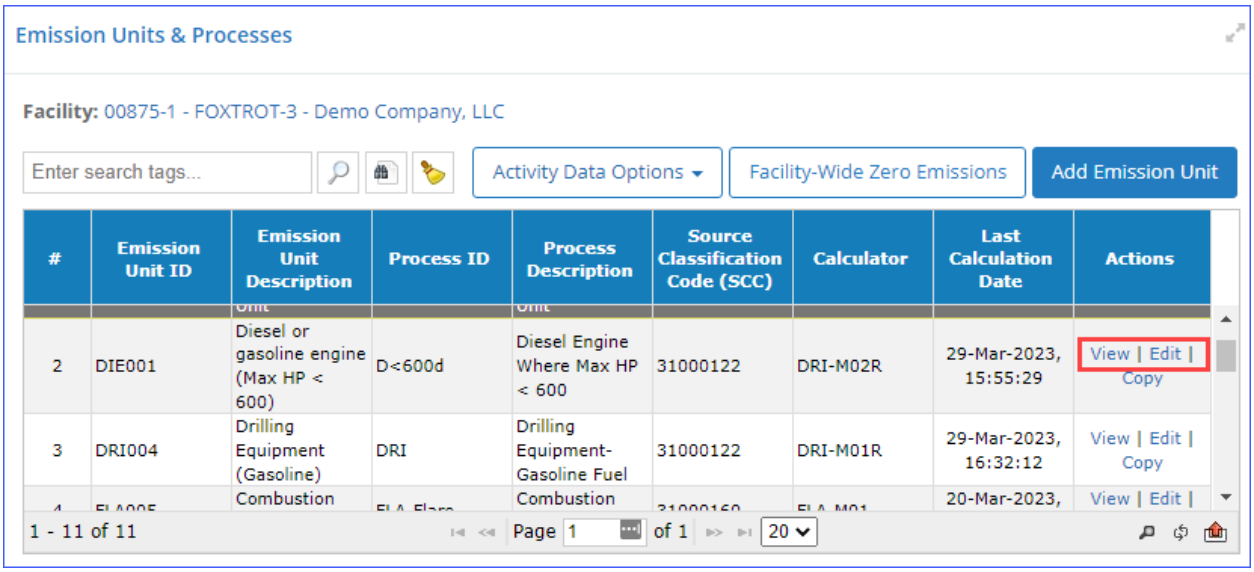


Figure 44. View Emission Unit details

3.2.6.3 Add an Emission Unit

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility

Adding a new emission unit will also create the associated process and automatically assign an appropriate calculator based on a template.

To add a new emission unit:

1. Click **Add Emission Unit** above the **Emission Units & Processes** table. A wizard will begin, starting with **Emission Unit Template Selection**.
   The table on this page lists all emission unit types for which templates have been created. A template will determine what process is created for the new emission unit and the emissions calculator that will be assigned to that process based on the emission unit type and description.
2. Select the template that best fits the emission unit you wish to create.
3. Click **Next**.
4. Fill out the necessary data (fields colored in green) for the emissions unit. You may need to scroll down to reach all necessary fields.
5. Click **Next**.
6. The next step allows you to specify a release point for the new emission unit. You MUST define a release point before you can calculate emissions, but you do not have to do it to finish the wizard. There are three options you can use:
   a. Use an **Existing Release Point**. If you check this option, select a release point from the list of ones already defined for the structure and click **Next**.
   b. Create a **New Release Point**. If you check this option, enter all required parameters (green fields) and click **Next**.
      TIP: To be created, a release point must be properly georeferenced. If you do not know the exact coordinates of the release point, click **From Facility Location** in the **Georeference** panel to assign the release point the same coordinates as the structure.
   c. **Skip Release Point**. You can finish the wizard without creating a release point, but you will not be able to calculate emissions for the new emission unit until you specify a point of release for it. Click **Next**.
7. Review selected options and click **Finish** to create the new release unit.

The new unit will be available for selection from the **Emission Units & Processes** table, and the assigned release point (if this was done during the procedure) will be displayed in the **Release Point & Apportionment** panel.

When you create an emission unit, the associated process will have the appropriate calculator assigned based on the template defined by BOEM. Calculators have been prepared for the following processes found on platforms, as shown in Table 1.

> ***IMPORTANT:*** If you accidentally create an emission unit with the wrong process/calculator, simply create another emission unit with the correct one. Follow the procedure described in section 3.2.6.5 to have the erroneous emission unit removed.

A description of each calculator and **Data Request** and **Control Request** input fields is provided in Appendix A.

Table 1. Available platform calculator types

Code	Description
AMI	Amine gas sweetening unit
BOI	Boilers
DIE	Diesel and gasoline engines
DRI	Drilling equipment
FLA	Flares
FUG	Fugitive emissions
GLY	Glycol dehydrators
LOA	Loading operation emissions
LOS	Losses from flashing
MUD	Mud degassing
NGE	Natural gas engines
NGT	Natural gas/diesel dual-fuel turbines
PNE	Pneumatic pumps
PRE	Pneumatic controllers
STO	Storage tanks
VEN	Cold vents

3.2.6.4 Copy an Emission Unit

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility

To copy an emission unit, click **Copy** under the **Actions** column, and a short wizard will guide you through the process. The fields will all copy from the original emission unit; however, you are required to change the **Emission Unit ID**, as shown in Figure 45. Click **Next** to move to the next step. The summary step allows you to review the specified information. Click **Finish** to create the new emission unit.

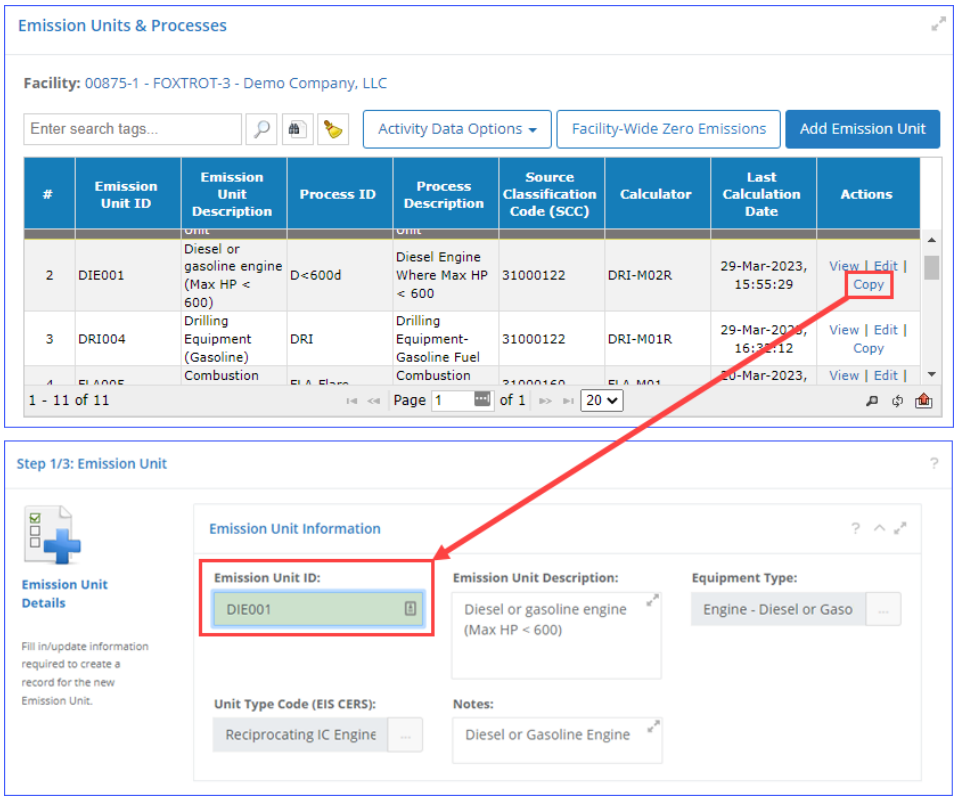


Figure 45. Copy Emission Unit

3.2.6.5 Delete Emission Unit

You cannot delete an emission unit as an operator.

If you need an emission unit to be removed from the structure, follow the steps below:

1. Set the emission unit in question to zero emissions (see section 3.2.11) with the applicable reason (if removing unit because the record was created by mistake, select “Other” as the reason and leave an appropriate comment).
2. Contact OCS AQS technical support at OCS.AQS_Support@webLakes.com to request that the emission unit be deleted. Make sure to include the following information:
    a. Company name
    b. Facility ID
    c. Emission Unit ID
    d. Process IDs associated with the unit
    e. Reason for removal

3.2.6.6 Bulk Import/Export

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility

Parameters required to calculate emissions produced by various units can be easily reviewed and updated by exporting them into an Excel spreadsheet and then importing them back into OCS AQS. This is done by clicking on **Activity Data Options** above the table of the **Emission Units & Processes** and is described below in Section 3.2.10.1.

3.2.6.7 Facility-Wide Zero Emissions

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility

If no emissions are generated for the entire facility for a specific month (or months) due to inactivity, maintenance, or natural disaster, you can zero out emissions for all sources by month without updating each unit individually.

Click **Facility-Wide Zero Emissions** above the **Emission Units & Processes** table to load the **Facility-Wide Zero Emissions** dialog as shown in Figure 46.

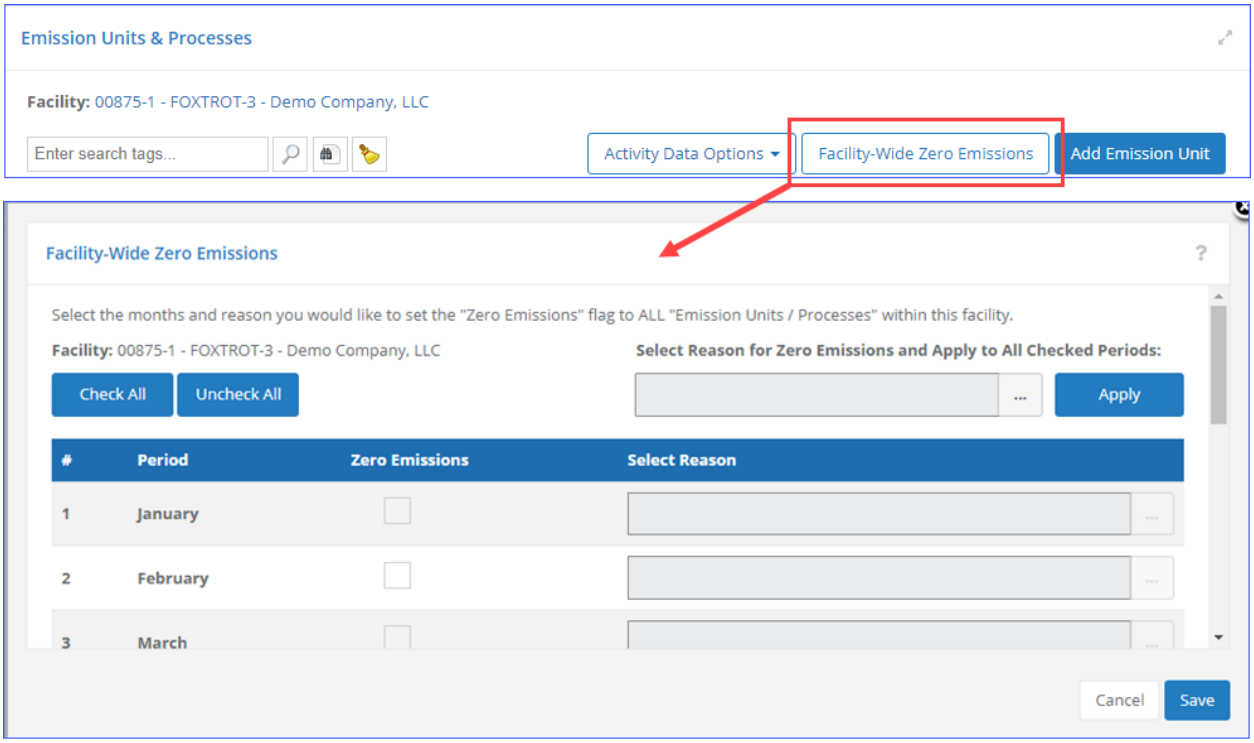


Figure 46. Facility-Wide Zero Emissions window

Check the box for the month (or months) of zero emissions that took place for the entire facility and click **[…]** to load the list of reasons why the facility did not produce emissions. Select the appropriate reason and click **OK**. Repeat the procedure for all months the facility has been idle. Click **Save** to commit the changes. A verification message allows you to confirm the selection. Figure 47 illustrates the process.

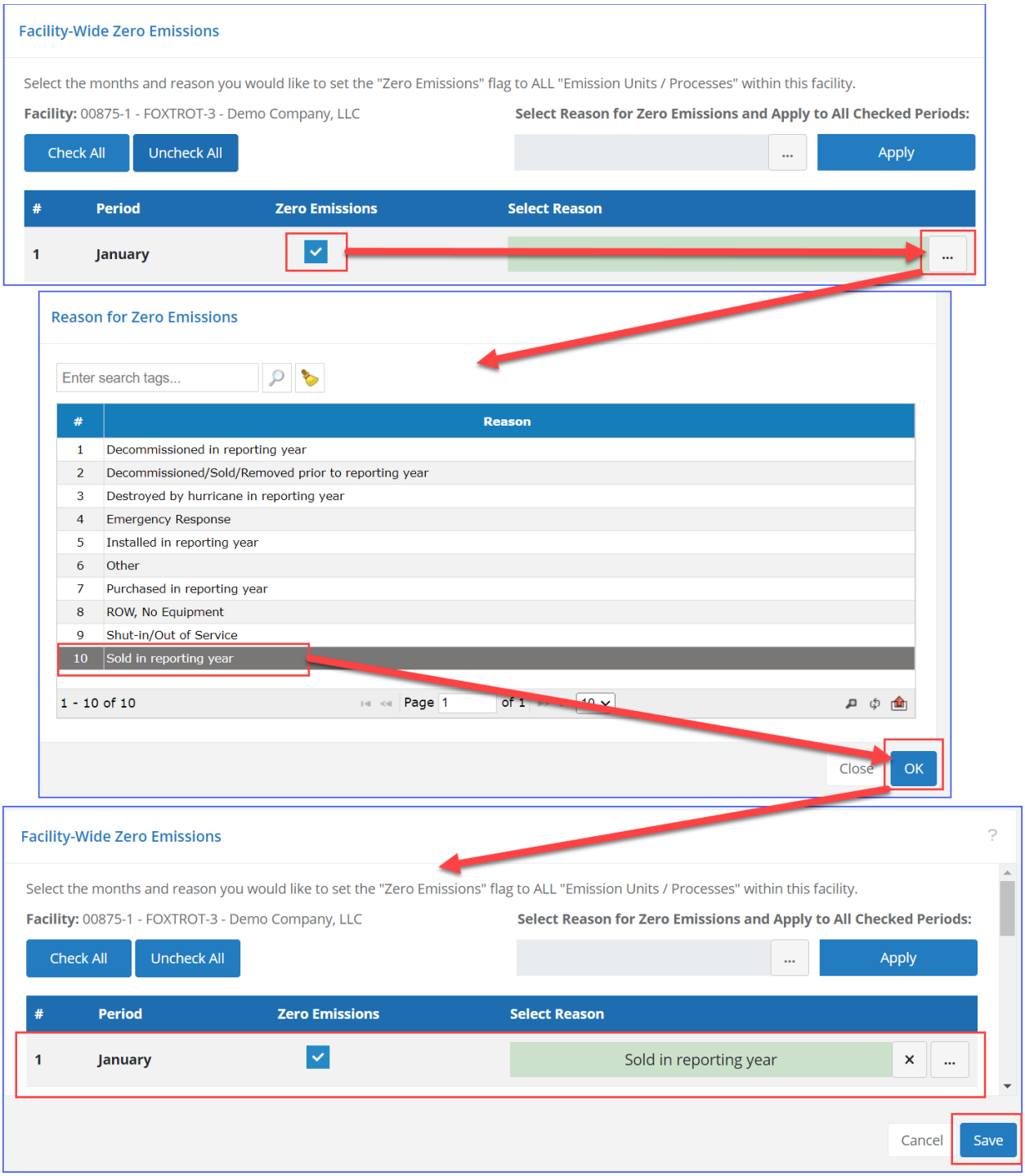


Figure 47. Set Facility-Wide Zero Emissions

IMPORTANT: If you need to show zero emissions for a particular emission unit, you can do that in the **Calculator Parameters & Request** section as described in Section 3.2.11.

If the facility has not been producing for the entire year (decommissioned, sold, etc.), you can select all months at the same time by clicking **Check All**; set the same reason by selecting it in the selection at the

top of the dialog and click **Apply** as seen in Figure 48. After you commit the changes, all processes will be set to zero emissions for all months.

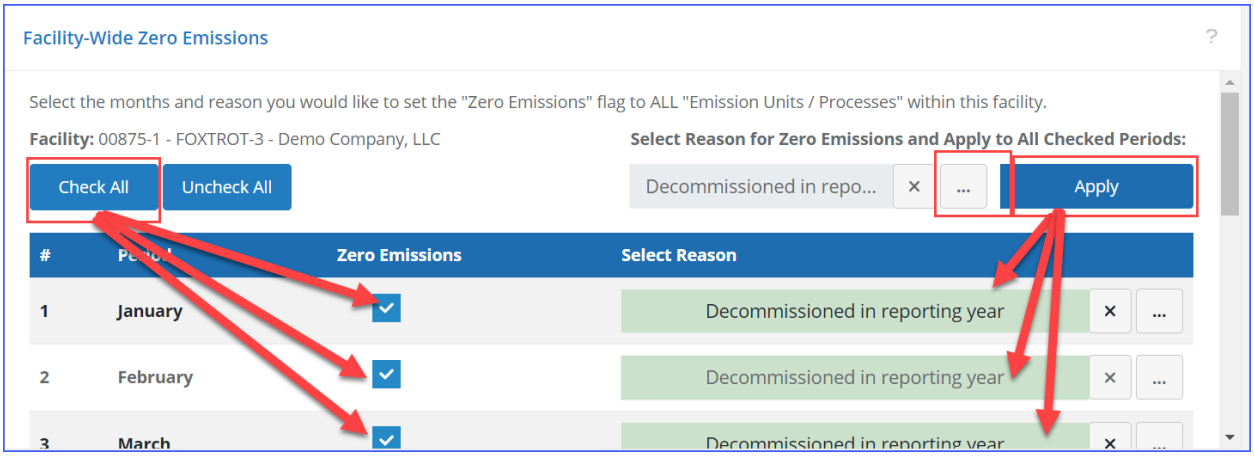


Figure 48. Facility-Wide Zero Emissions for all months

IMPORTANT: This procedure sets the emissions for all processes and emissions periods for this facility to 0 and deactivates data entry for the **Calculator Parameters & Requests** panel. If you then reactivate a specific process for a specific month, the Facility-Wide Zero Emissions setting for that month will be removed, but the other processes at the facility will still be set to zero emissions for that month.

3.2.6.7.1 Facility-Wide Zero Emissions During Facility Transfer

When a facility is transferred from one operating company to another, a duplicate facility is created by OCS AQS in the receiving operator's inventory. The month during which the transfer took place remains active for the facility in both inventories. The months from January up to, but not including, the month of transfer are zeroed out for that facility in the receiving operator's inventory (because that operator did not yet take possession of the facility and was not responsible for its emissions). The months from, but not including, the month of transfer until the end of the year are zeroed out for the facility in the former operator's inventory (because the facility is no longer in their possession).

The reason for zero emissions in this case is automatically set to **Facility ownership transfer** and disabled against further editing.

3.2.7 Decommissioned Facilities

If a facility is listed in the 2021 inventory but is not being used or was decommissioned before the 2023 reporting period, it will still show up in the 2023 inventory. Zero out the facility with the appropriate reason.

3.2.8 Release Point & Apportionment

Release points are used to designate where emissions transfer from a process into the atmosphere and are required for source characterization. All elevations for release points are measured from mean sea level (MSL).

Apportionment refers to the amount of emissions generated by a process that is sent to an individual release point. In OCS AQS, all apportionments are assumed to be 100%, meaning that all emissions from an emission unit goes to one release point.

IMPORTANT: Emissions will not be calculated for any emission unit/process that is not connected to a release point. Make sure that a release point is specified before calculating emissions.

3.2.8.1 Assign Release Point to an Emission Unit

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility

To assign a release point to an emission unit, perform the following steps (Figure 49):

1. Select the emission unit you want to assign by choosing it in the **Emissions Unit & Processes** table.
2. Scroll down to the **Release Point & Apportionment** panel.
3. To create a new release point for the emission unit, click **New Release Point** and fill in the required information (see section 3.2.8.4).
4. To remove the release point currently associated with the process, click the X button to the right of the field. This will not delete the release point but will sever the connection between it and the process. Remember that you need to have a release point assigned to the process to be able to calculate emissions for it.
5. To select an existing release point, click the **[…]** to the right of the field and select a release point from the list of available ones (see section 3.2.8.2).
6. If needed, after a release point is specified, you can edit its information by clicking **Details/Edit** (see section 3.2.8.3).

S

Figure 49. Release Point options

3.2.8.2 Select an Existing Release Point

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility

If a release point that the emission unit vents to already exists, you can select it as follows:

1. Click **[…]** to the right of the field.
2. Highlight the release point you wish to use.
3. Click **Select**.

The release point ID will now appear in the **Release Point** field.

3.2.8.3 Edit a Release Point

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility

When a release point is selected, a **Details/Edit** button will appear. Click this button to view details about the selected release point. You can edit the release point by clicking **Edit** at the top or bottom of the screen.

3.2.8.4 Create New Release Point

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility

To create a new release point:

1. Click **New Release Point**.
2. The **Add Release Point** window will open.
3. Complete the required information in green fields. You may need to scroll down to access all data panels.
   Some required data depends on the **Release Type** you select:
   - For all types except **Fugitive**, the following parameters are required:
     - **Stack Height** in ft
     - **Stack Diameter** in ft
     - **Exit Temperature** in deg F
     - **Exit Velocity** in ft/s
     - **Flow Rate** in ft^3/s

   TIP: You only need to enter two parameters of the **Stack Diameter**, **Exit Velocity**, and **Flow Rate**. The remaining value can be calculated by pressing the button on the right side of the field using the following relationship:

   $$Vs = 4V/\pi d^2$$

   where:
   Vs is **Exit Velocity**
   V is **Flow Rate**
   d is **Stack Diameter**
   - If the stack type is a **Fugitive**, the following parameters are required:
     - **Release Height** in ft
     - **Type** of the fugitive release
     - **Length of X side** (closest to east-west axis) in ft
     - **Length of Y side** (closest to north-south axis) in ft
     - **Orientation Angle** in degrees from true north

   The geometry of the fugitive release point is shown in Figure 50.

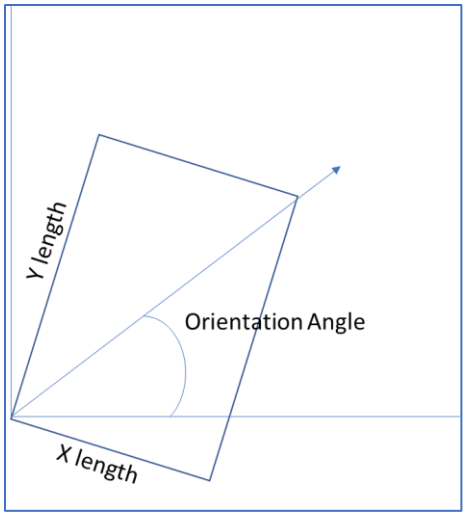


Figure 50. Geometry of a Fugitive release point

4. In the **Georeference** section, you can use latitude/longitude coordinates in decimal degrees instead of Universal Transverse Mercator (UTM) coordinates. OCS AQS automatically converts one coordinate system to the other.
5. You MUST specify the coordinates for the release point. If you do not know the coordinates of the release point, **From Facility Location** fills in the coordinates with default facility value, as shown in Figure 51. You can update these coordinates at any point, should the exact coordinates become available.

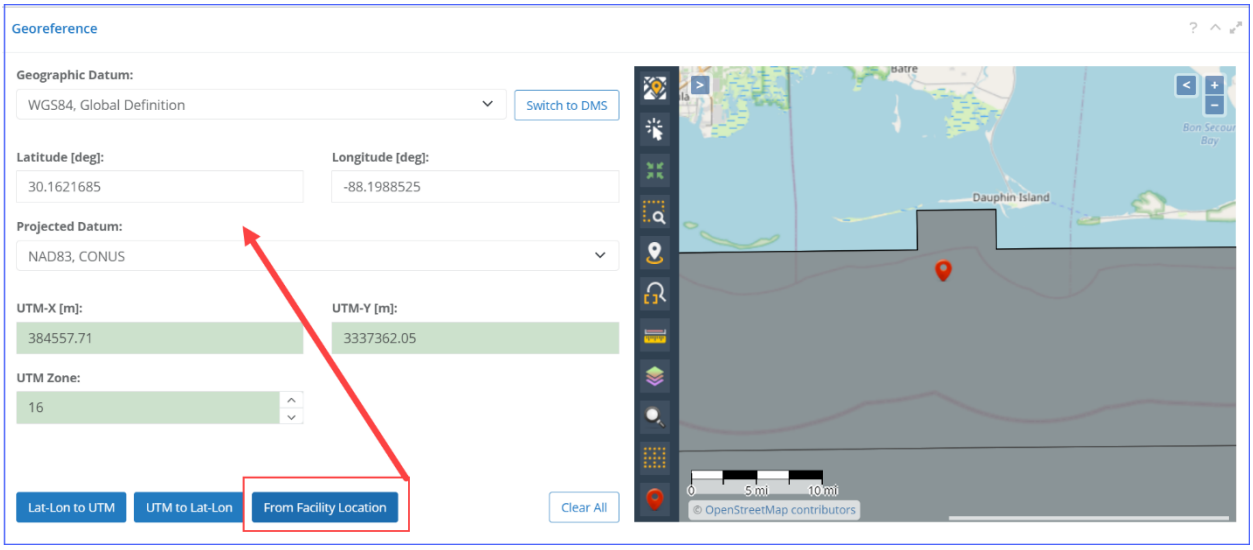


Figure 51. Set coordinates from facility

6. Click **Save** to save the release point information.

Though not required, it is recommended to provide a release point description to make it easier to identify.

3.2.8.5 Orphaned Release Points

Release points can be made but not assigned to sources. These unassigned, or orphaned, release points have no impact on emission calculations but should be either used or deleted. A report is available to

identify orphaned release points in the **Reports** module (section 9), under **Other Reports**. If you wish to bulk-delete unassigned release points, use the **Remove Unassigned Release Points** tool in the **Emissions** module. See section 3.6 for a detailed process description.

3.2.9 Calculator Parameters & Requests

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility

In the **Process** section, the **Calculator Parameters & Requests** panel contains the main functionality of the AEM. It allows you to set the following parameters for each emission unit by month:

- Select input and physical parameters by month
- Copy inputs from a month to one or more other months
- Assign zero emissions for a month
- Enter required throughput and calculation parameters in required fields (green boxes) and optional fields (white boxes)
- Provide process control information
- View emission factors for each pollutant
- Perform range checks and other QA for input parameters

Each emission unit has different input parameters based on the assigned calculator. For example, the input parameters for a combustion flare will differ significantly from the input parameters for fugitive emissions.

Input parameters used for emission calculations and process descriptions are called **Data Requests**, while parameters used to describe the pollution control technology are described under **Control Requests**. Each field allows annotation and comments with the **QA** button to the right of the field as shown in Figure 52 below.

The following tabs are available, to be described further in the sections that follow.

- **Data Requests** allow input of required and optional data used for emissions calculations and process metadata.
- **Control Requests** are used to provide input data that describes the pollution control technology used for an individual source (if applicable).
- **Emission Factors** provide engineering parameters to calculate individual pollutant emissions.

3.2.9.1 Data Requests

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility

A typical **Data Requests** tab is shown in Figure 52. Green backgrounds indicate fields that are required, while white backgrounds indicate optional fields. Most processes contain some green fields.

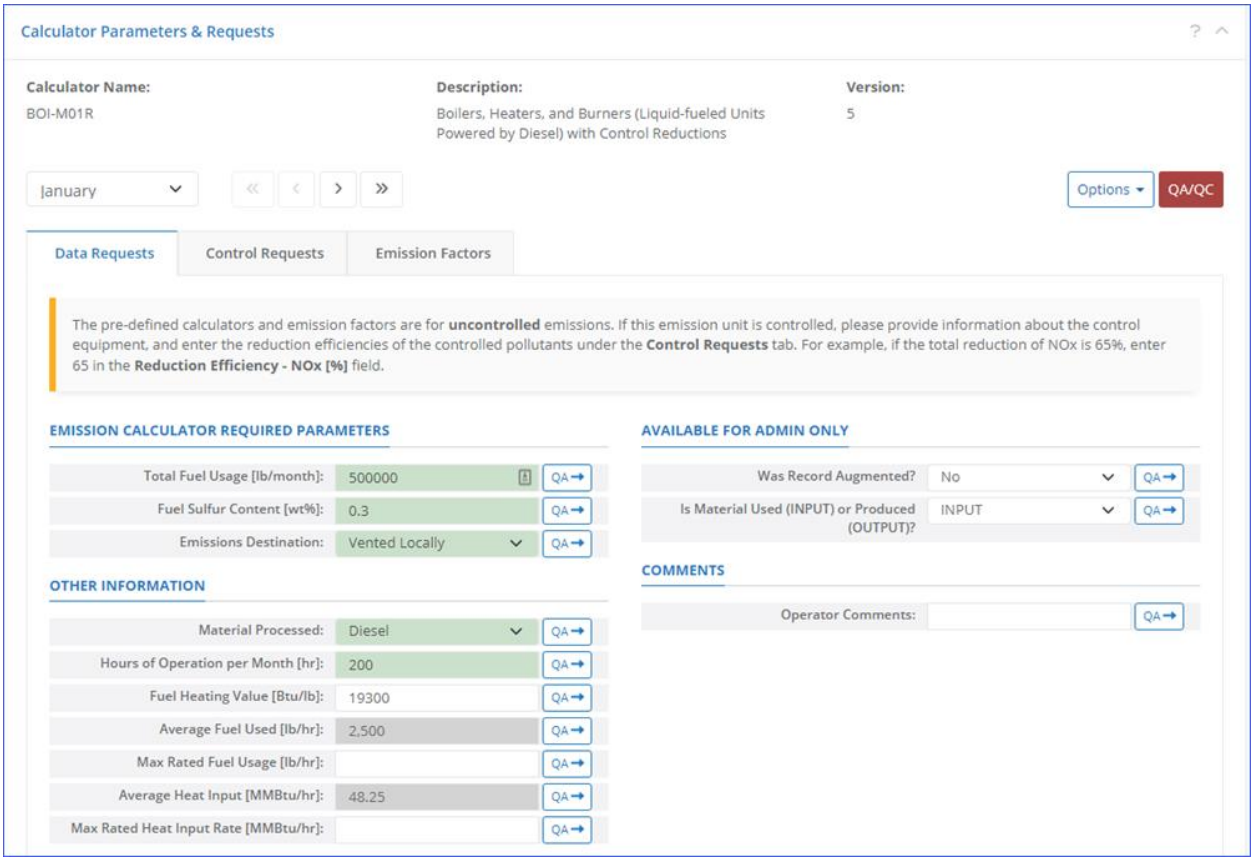


Figure 52. Data Request tab

> ***IMPORTANT:*** Although it is recommended that you complete as much information as possible, you can save your data even if not all information is complete. If only partial data is available, you can still enter it and save the changes to the process. You will not be able to calculate emissions for a particular month unless you have entered all required information for that month.

Please note that certain grey fields will auto-calculate results based on inputs to the required fields; for example, the **Average Fuel Used** shown in Figure 52 is calculated using the following formula:

$$Average\ Fuel\ Used = \frac{7.5 * Total\ Fuel\ Usage * Fuel\ Heating\ Value}{Operating\ Horsepower * Hours\ of\ Operation\ per\ Month}$$

Equation 1: Average Fuel Used calculation

The calculated result will appear automatically when the required input fields are filled.

Some input fields have drop-down menus with selection associated with the process, such as **Emissions Destination** and **Material Processed** shown in Figure 52. If a selection is not available for your process, contact the OCS AQS Support Team and let them know what additional options are required.

Finally, certain fields have pre-defined ranges of inputs to prevent out-of-range values or values with the wrong format (text in a numerical field). All field values must be within the defined ranges and format before they can be saved. A list of fields with ranges and the range values is provided for each calculator in **Appendix A – Calculator Descriptions**, but you can check the available range for any field by moving the mouse pointer over the field in question as shown on Figure 53.

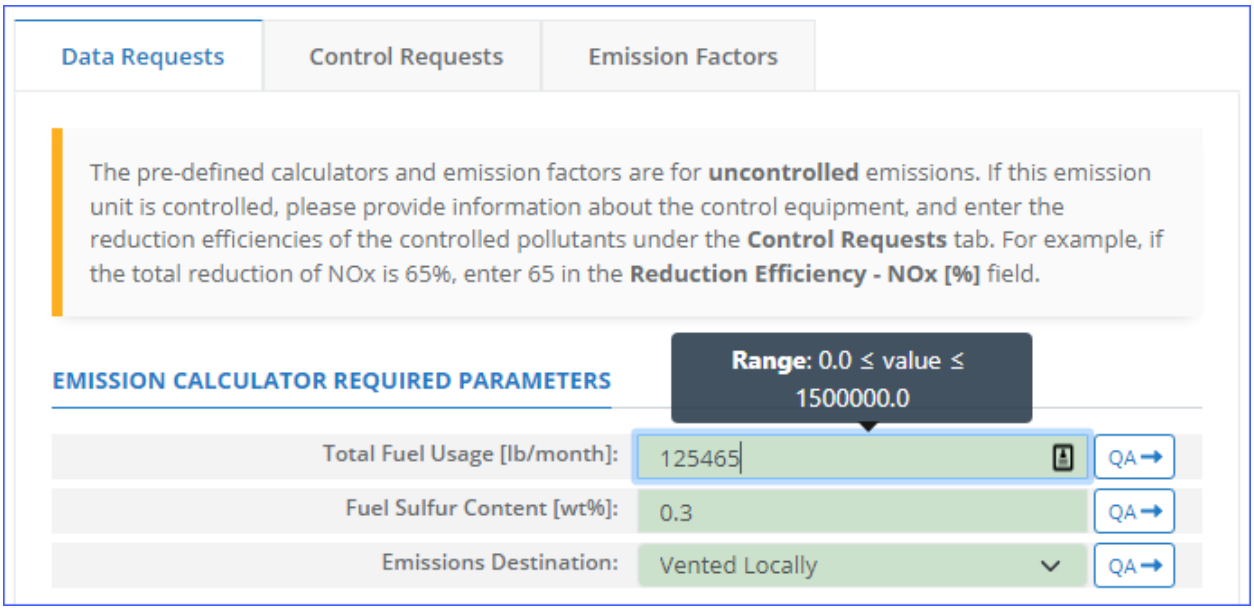


Figure 53. View field value range

3.2.9.2 Control Requests

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility > Click Control Request tab

Control requests only capture information regarding pollution control technology used by the individual source. Unlike the **Data Requests** tab, **Control Requests** tab has a set number of input fields with reduction efficiencies for six pollutants particulate matters [PM_{10} and $PM_{2.5}$], carbon monoxide [CO], sulfur oxide [SO_x], nitrogen oxide [NO_x], and volatile organic compounds [VOCs]). For some calculators, only VOC reduction efficiency is requested since the process does not involve combustion or chemical transformation. A typical **Control Request** tab is shown in Figure 54.

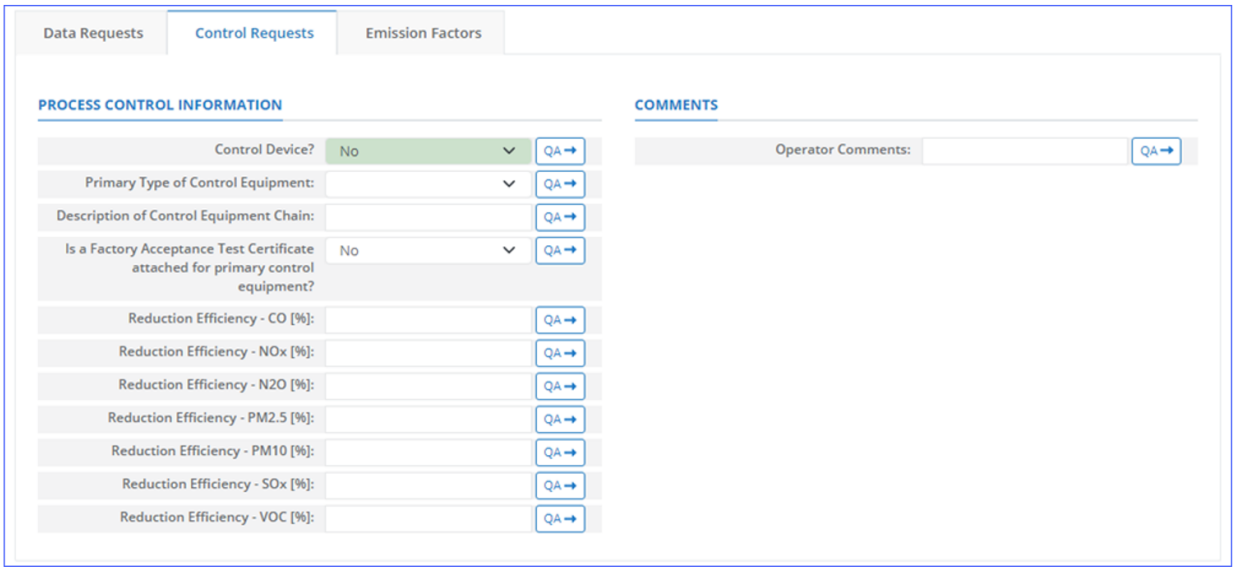


Figure 54. Control Requests tab

Control Request tab input fields include the following:

- **Control Device?**: Is a control device or end of pipe treatment included in the process? This is a Yes/No question.
- **Primary Type of Control Equipment:** If a control device is part of the process, what kind of device or technology is it? A drop-down menu is provided for most processes to select the primary type of equipment. If the equipment is not on the list, select **Other (Explain in Comments)** and describe it in the **Operator Comments** field (Figure 55).

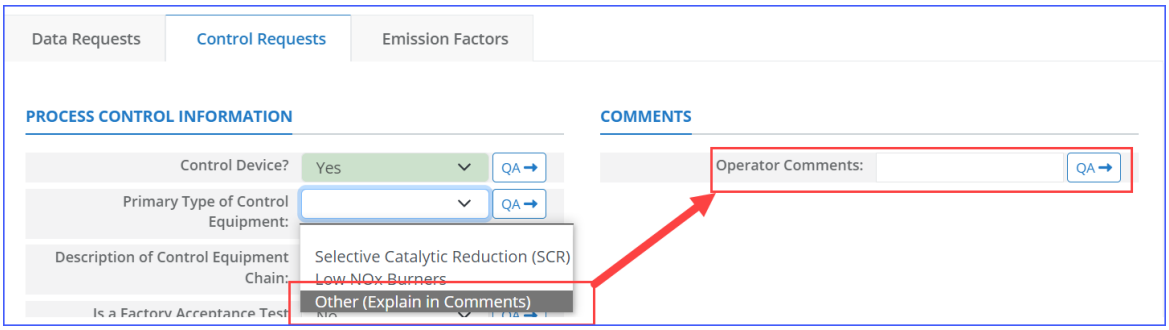


Figure 55. Describe "Other" type of control equipment

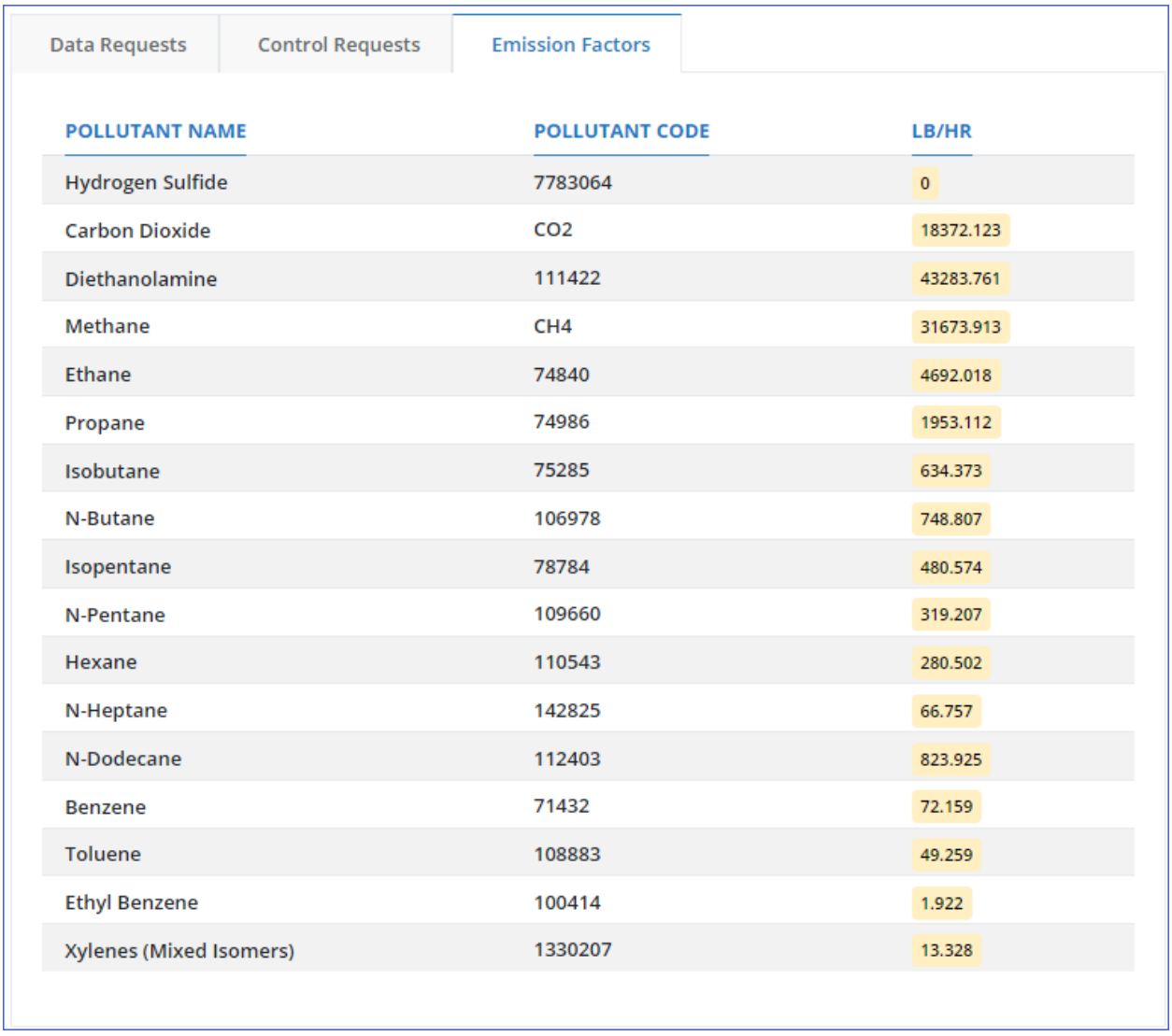
- **Description of Control Equipment Chain:** This field allows you to describe the control equipment chain if more than one type of technology is used.
- **Is a Factory Acceptance Test Certificate attached for primary control equipment?:** This field allows you to specify if functionality certification paperwork is available for the control equipment. You can attach the supporting documentation under the facility in the AEM using the **Supporting Documents** function (see Section 3.2.16 for more details).
- **Reduction Efficiency – pollutant [%]:** This describes the average reduction of emitted pollutant using the control technology. If the total reduction of VOCs using a vapor recovery unit is 65%, enter “65” in the field.

***IMPORTANT*:** Supporting equipment documentation may be required by BOEM/BSEE to verify specified control efficiency.

3.2.9.3 Emission Factors

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility > Click Emission Factors tab

Emission factors are assigned to each calculator based on published values from USEPA AP-42 or other BOEM approved references. The values cannot be updated by operators. An example is shown in Figure 56.



POLLUTANT NAME	POLLUTANT CODE	LB/HR
Hydrogen Sulfide	7783064	0
Carbon Dioxide	CO2	18372.123
Diethanolamine	111422	43283.761
Methane	CH4	31673.913
Ethane	74840	4692.018
Propane	74986	1953.112
Isobutane	75285	634.373
N-Butane	106978	748.807
Isopentane	78784	480.574
N-Pentane	109660	319.207
Hexane	110543	280.502
N-Heptane	142825	66.757
N-Dodecane	112403	823.925
Benzene	71432	72.159
Toluene	108883	49.259
Ethyl Benzene	100414	1.922
Xylenes (Mixed Isomers)	1330207	13.328

Figure 56. Emission Factors tab

A pollutant can have one of the following values:

- **Numeric value**:
  - **For Amine and Glycol units:** This value has been imported from an external source and cannot be changed inside the system. Imported values are highlighted in yellow (see Figure 56).

- **For all other units:** This value has been specified by BOEM and cannot be changed.

- **Implicit**: This code is displayed when the value has been incorporated into the calculator equation. This usually takes place if there is a conditional statement in the algorithm that uses two or more emission factors, depending on the process condition.

3.2.10 Updating Monthly Data

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility

Input parameters can be updated for each emission source on a month-by-month basis. OCS AQS provides two different ways to update data:

- Batch updates using the **Activity Data Options Import/Export** tool
- Manual updates using the **Calculator Parameter & Requests** feature described above

3.2.10.1 Download Monthly Data Using the Import/Export Tool

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility

To use the import/export tool, it is advisable to **export** the existing parameters first:

1. After selecting the facility and arriving at the **AEM Details** page, click **Activity Data Options** in the above the **Emission Units & Processes** table as shown in Figure 57.

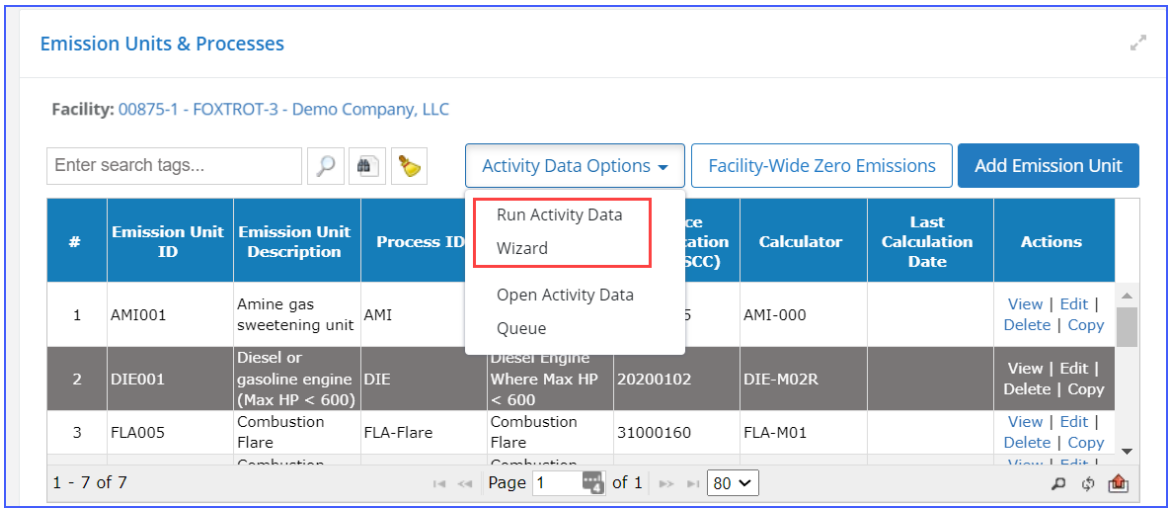


Figure 57. Import/Export Activity Data selection

2. Select **Run Activity Data Wizard** from the drop-down box.
3. Select **Export** from the **Import/Export Activity Data** wizard mode selection. Click **Next** in the bottom right corner of the wizard window.
4. Select the emission sources to be exported by checking the square for each source or select all sources available at the facility by clicking on the box near the search bar. When completed, select **Finish** on the bottom right corner to process the request, **Previous** to go to the previous step, or **Cancel** to abort the operation.
5. Select the processed request from the **Job Queue** – **Activity Data** page by selecting the **Files** hyperlink under the **Actions** column as shown in Figure 58. The most recent request will be at the top of the table, but the table can be sorted or searched to find a specific request.

IMPORTANT: To come back to the **Job Queue**, select **Open Activity Data Queue** from the drop-down box shown previously in Figure 57.

6. To save the processed Excel file to your computer, click **Files** in the **Actions** column. The link will take you to a **Job Files** page.
7. Click **Download** and save the file to your computer. Please note that most browsers support file renaming, so users can enter the specific file name they want to use. If the browser does not allow changing file names, save using the default name and rename using the **File Explorer**; click twice (not double-click) and rename the file.

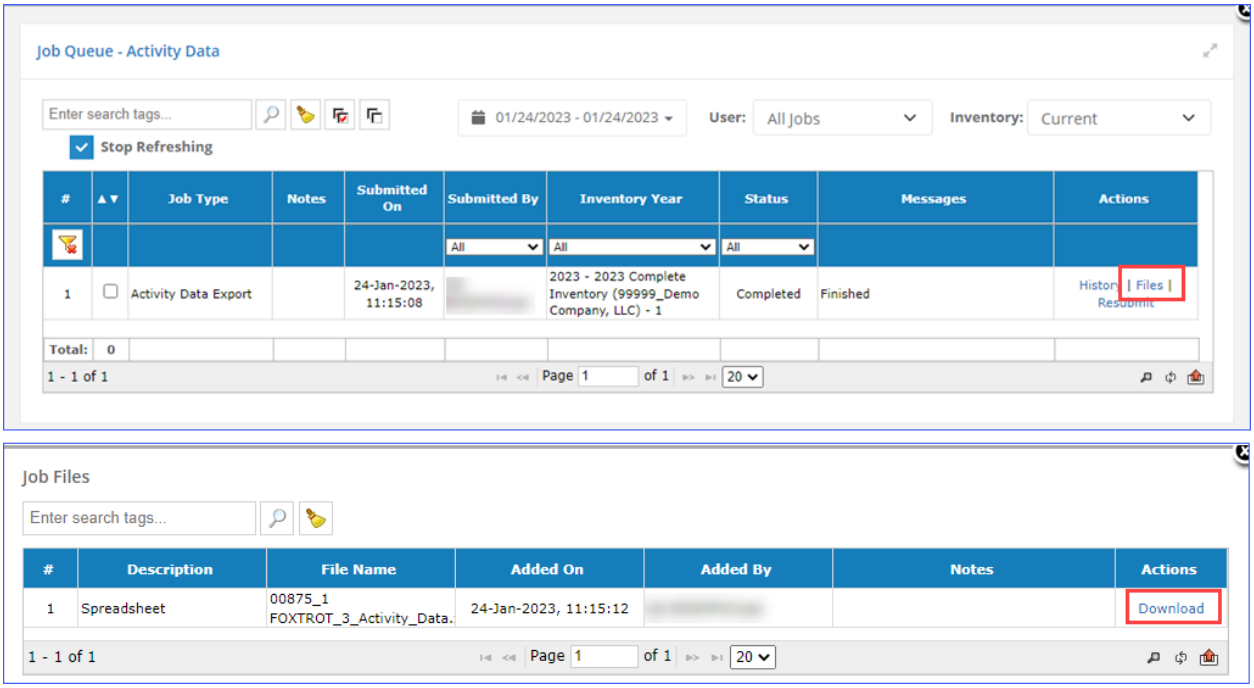


Figure 58. Export Activity Data – Queue and Download pages

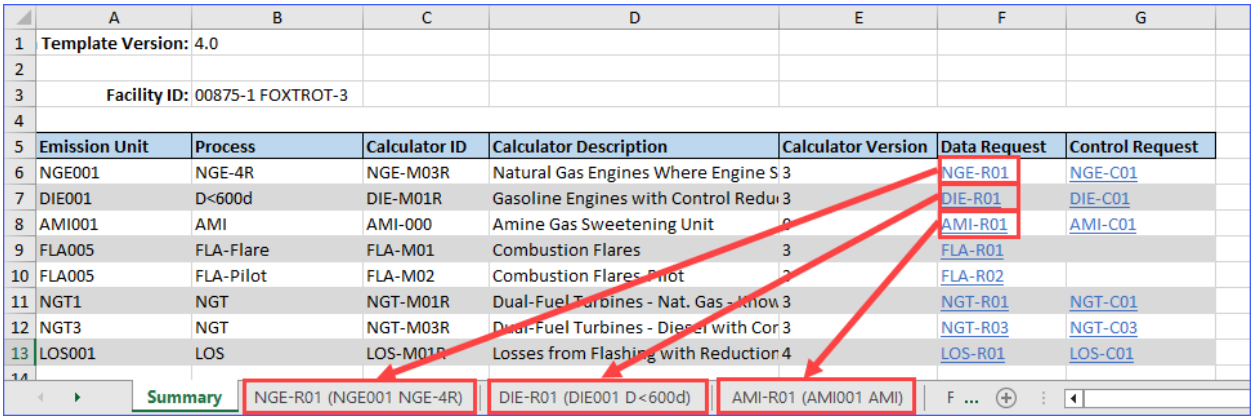
3.2.10.2 Update Monthly Activity Data Using the Import/Export Template

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility > Export Activity Data

After you have downloaded the Excel sheet with your facility's emission sources, update the monthly activity data with the following steps:

1. Open the Excel file for the emission source you want to update. The file has individual data tabs for each source data request and a tab for each control request that is used by at least one source. The **Summary** sheet provides hyperlinks to go to the individual emission source data and control requests (Figure 59).

   IMPORTANT: Do not change the data on the **Summary** sheet. Changing the **Summary** sheet may cause import errors.



	A	B	C	D	E	F	G
1	**Template Version:**	4.0					
2							
3	**Facility ID:**	00875-1 FOXTROT-3					
4							
5	**Emission Unit**	**Process**	**Calculator ID**	**Calculator Description**	**Calculator Version**	**Data Request**	**Control Request**
6	NGE001	NGE-4R	NGE-M03R	Natural Gas Engines Where Engine S	3	NGE-R01	NGE-C01
7	DIE001	D<600d	DIE-M01R	Gasoline Engines with Control Redu	3	DIE-R01	DIE-C01
8	AMI001	AMI	AMI-000	Amine Gas Sweetening Unit	0	AMI-R01	AMI-C01
9	FLA005	FLA-Flare	FLA-M01	Combustion Flares	3	FLA-R01	
10	FLA005	FLA-Pilot	FLA-M02	Combustion Flares Pilot	3	FLA-R02	
11	NGT1	NGT	NGT-M01R	Dual-Fuel Turbines - Nat. Gas - Know	3	NGT-R01	NGT-C01
12	NGT3	NGT	NGT-M03R	Dual-Fuel Turbines - Diesel with Cor	3	NGT-R03	NGT-C03
13	LOS001	LOS	LOS-M01R	Losses from Flashing with Reduction	4	LOS-R01	LOS-C01

Summary | NGE-R01 (NGE001 NGE-4R) | DIE-R01 (DIE001 D<600d) | AMI-R01 (AMI001 AMI)

Figure 59. Export summary sheet

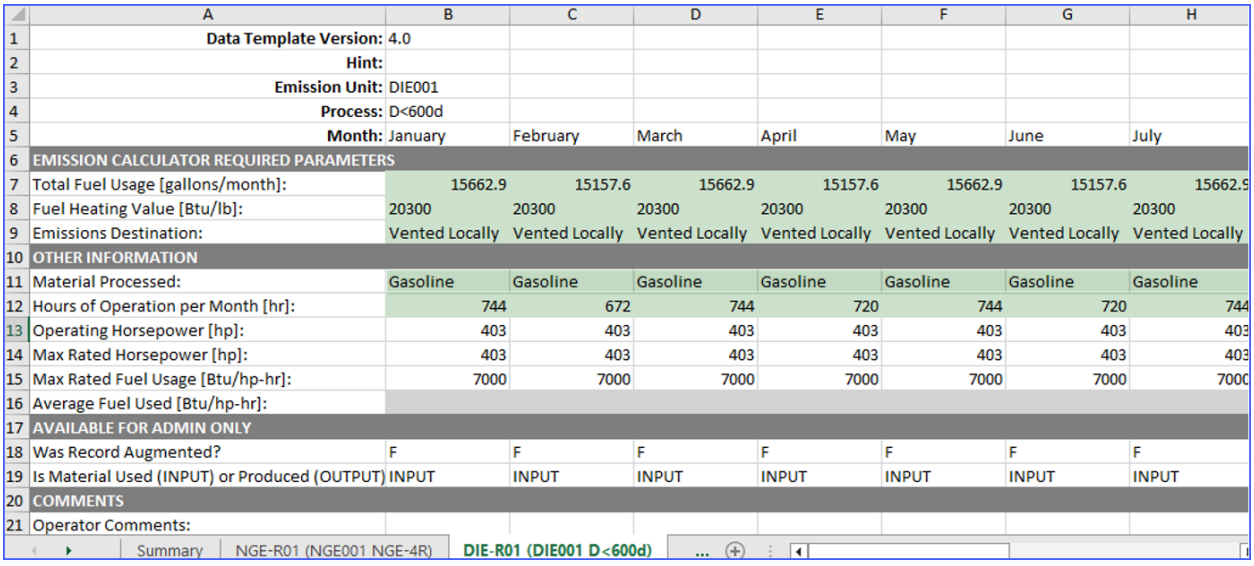
2. Update parameters by month as shown in Figure 60. Note that the required fields for the emission calculators are listed in the top rows between **EMISSION CALCULATOR REQUIRED PARAMETERS** and **OTHER INFORMATION** in column A. The cells for the monthly values for these parameters are colored in green and must be filled.

   IMPORTANT: Match input values to the units of measure shown in the description column of the spreadsheet. For example, input parameters for percentages [%] mean that a value of 0.05% should be entered as "0.05".

   IMPORTANT: For Yes/No responses, the template uses "T" for Yes (True) and "F" for No (False).

   IMPORTANT: The fields colored in light grey are auto-calculated. Regardless of the value in these fields at the time of import, it will be replaced by a calculated value based on the formula specified in the application.

   TIP: The last two columns in each spreadsheet are **Value Range** and **Lookup Values** and display information that will allow you to properly fill in the data. For the lookup values, make sure that you copy and paste the appropriate selection to avoid typos that would prevent you from importing the file.



	A	B	C	D	E	F	G	H
1	**Data Template Version:**	4.0						
2	**Hint:**							
3	**Emission Unit:**	DIE001						
4	**Process:**	D<600d						
5	**Month:**	January	February	March	April	May	June	July
6	EMISSION CALCULATOR REQUIRED PARAMETERS							
7	Total Fuel Usage [gallons/month]:	15662.9	15157.6	15662.9	15157.6	15662.9	15157.6	15662.9
8	Fuel Heating Value [Btu/lb]:	20300	20300	20300	20300	20300	20300	20300
9	Emissions Destination:	Vented Locally	Vented Locally	Vented Locally	Vented Locally	Vented Locally	Vented Locally	Vented Locally
10	OTHER INFORMATION							
11	Material Processed:	Gasoline	Gasoline	Gasoline	Gasoline	Gasoline	Gasoline	Gasoline
12	Hours of Operation per Month [hr]:	744	672	744	720	744	720	744
13	Operating Horsepower [hp]:	403	403	403	403	403	403	403
14	Max Rated Horsepower [hp]:	403	403	403	403	403	403	403
15	Max Rated Fuel Usage [Btu/hp-hr]:	7000	7000	7000	7000	7000	7000	7000
16	Average Fuel Used [Btu/hp-hr]:							
17	AVAILABLE FOR ADMIN ONLY							
18	Was Record Augmented?	F	F	F	F	F	F	F
19	Is Material Used (INPUT) or Produced (OUTPUT)	INPUT	INPUT	INPUT	INPUT	INPUT	INPUT	INPUT
20	COMMENTS							
21	Operator Comments:							

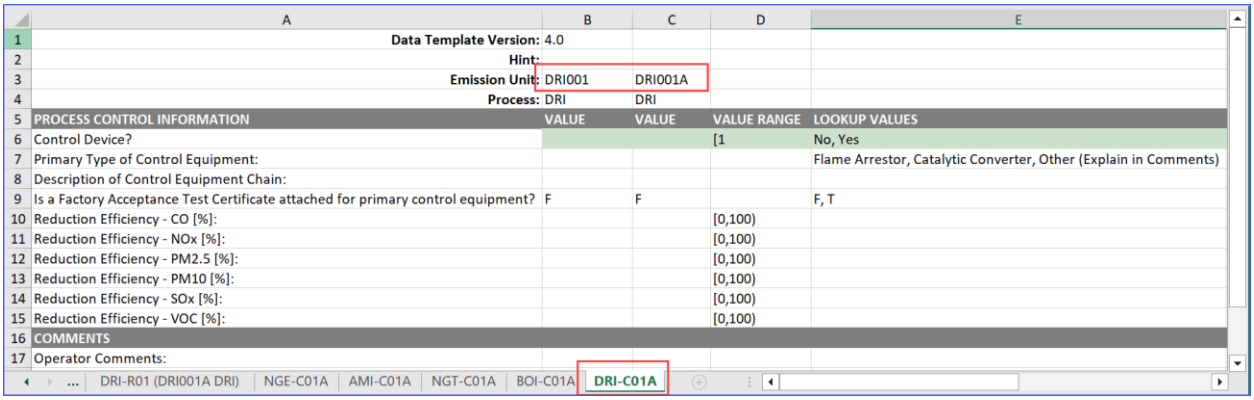
Summary | NGE-R01 (NGE001 NGE-4R) | DIE-R01 (DIE001 D<600d)

Figure 60. Data request sheet

3.2.10.3 Updating Control Data Using the Import/Export Tool

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility > Export Activity Data

The **Control Request** sheets do not have monthly columns like the **Data Request** sheets because it is assumed that conditions will not change significantly over the inventory reporting period. An example **Control Data** sheet is shown in Figure 61.



	A	B	C	D	E
1	Data Template Version:	4.0			
2	Hint:				
3	Emission Unit:	DRI001	DRI001A		
4	Process:	DRI	DRI		
5	PROCESS CONTROL INFORMATION	VALUE	VALUE	VALUE RANGE	LOOKUP VALUES
6	Control Device?			[1	No, Yes
7	Primary Type of Control Equipment:				Flame Arrestor, Catalytic Converter, Other (Explain in Comments)
8	Description of Control Equipment Chain:				
9	Is a Factory Acceptance Test Certificate attached for primary control equipment?	F	F		F, T
10	Reduction Efficiency - CO [%]:			[0,100)	
11	Reduction Efficiency - NOx [%]:			[0,100)	
12	Reduction Efficiency - PM2.5 [%]:			[0,100)	
13	Reduction Efficiency - PM10 [%]:			[0,100)	
14	Reduction Efficiency - SOx [%]:			[0,100)	
15	Reduction Efficiency - VOC [%]:			[0,100)	
16	COMMENTS				
17	Operator Comments:				

DRI-R01 (DRI001A DRI) | NGE-C01A | AMI-C01A | NGT-C01A | BOI-C01A | DRI-C01A

Figure 61. Control request sheet

The assigned calculator shown on the **Summary** sheet will show which control is assigned to each emission unit. The calculator ID is similar to the Control ID, except the calculator has an M while the Control has a C (for example: BOI-M01 is the calculator, and BOI-C01 is the Control).

Like the Data Request fields, Yes/No fields should be entered as “T” for Yes and “F” for No. Percentages should be entered as written without the percent symbol (e.g., “98.5” for 98.5%).

3.2.10.4 Importing Monthly Data Using the Import/Export Tool

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility > Export Activity Data > Update Activity Data Spreadsheet

After updating the parameters in the exported file, you will need to import it back into OCS AQS (Figure 62):

1. Save the updated file with your revised parameters.
2. Click **Activity Data Options** in the above the **Emission Units & Processes** table as shown in Figure 57 and select **Run Activity Data Wizard**.
3. Select **Import** in the **Import/Export Activity Data** wizard mode selection. Click **Next** on the bottom right corner of the wizard window.
4. Click **Select file**, then navigate to and select the Excel file to upload from your computer. To upload multiple facilities, select the corresponding facility files. The files should be in the same directory. Click **Finish** to import.
5. In the **Job Queue – Activity Data**, click **OK** to close it or check the uploaded job files by clicking on **Files** in the **Action** column.
6. If you click on **Files**, you will open a **Job Files** window that shows the files imported, as well as an **Import log** spreadsheet. Download any of the files by clicking on **Download** next to the file in the **Download** column.

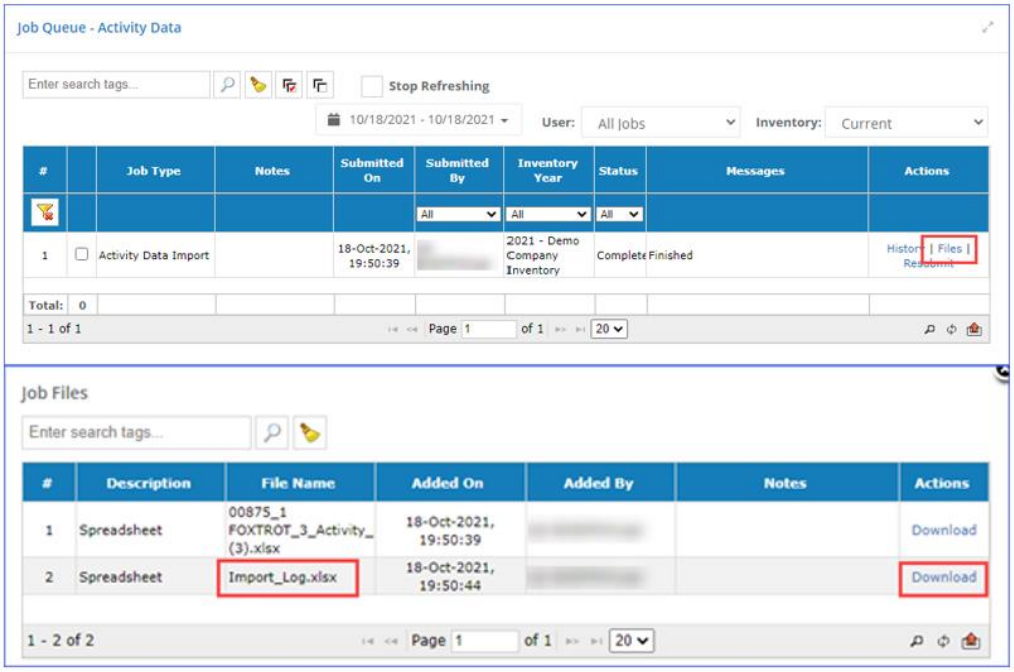


Figure 62. Import Activity Data – Queue and Download pages

7. The import log file, **Import_Log.xlsx**, will show the status of each imported source and the results of the QA/QC check. A summary of errors will be identified for the source and section (Summary, Data Requests, and/or Control Requests) on the Summary sheet as shown in Figure 63. Individual errors and location in the source worksheet are shown in the **Errors** sheet.

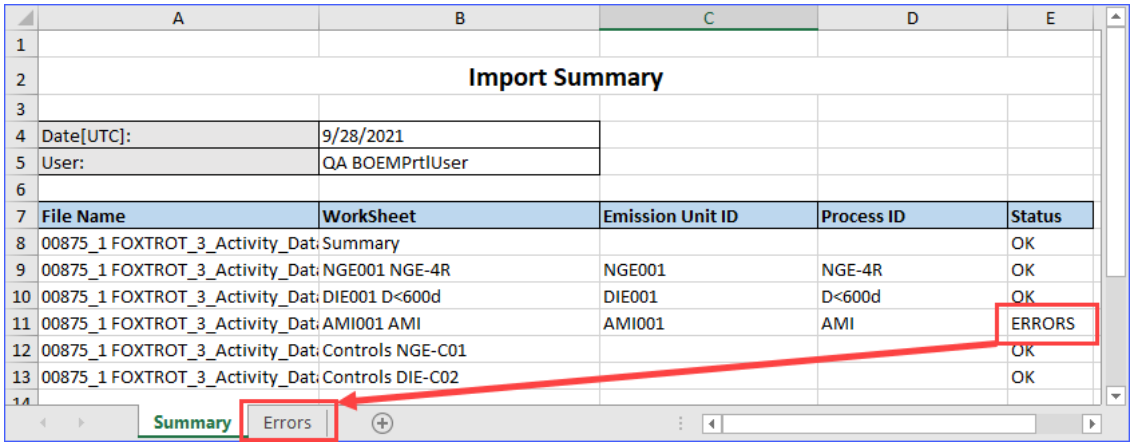


Figure 63. Example of import log with errors

It is highly recommended to fix errors and re-import before trying to calculate emissions. Comment on errors in the AEM by clicking QA→ by the parameter in question.

3.2.10.5 Updating Using the Calculator Parameters & Requests Feature

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility

For individual emission sources or small updates, **Calculator Parameters & Requests** allows fast and easy editing.

1. On the **AEM Details** page, select the emission source for editing and scroll down to the **Calculator Parameters & Requests** feature. The data is already in **Edit** mode and available for updating.
2. Select the month you want to update using the drop-down menu or the control arrows as shown in Figure 64.

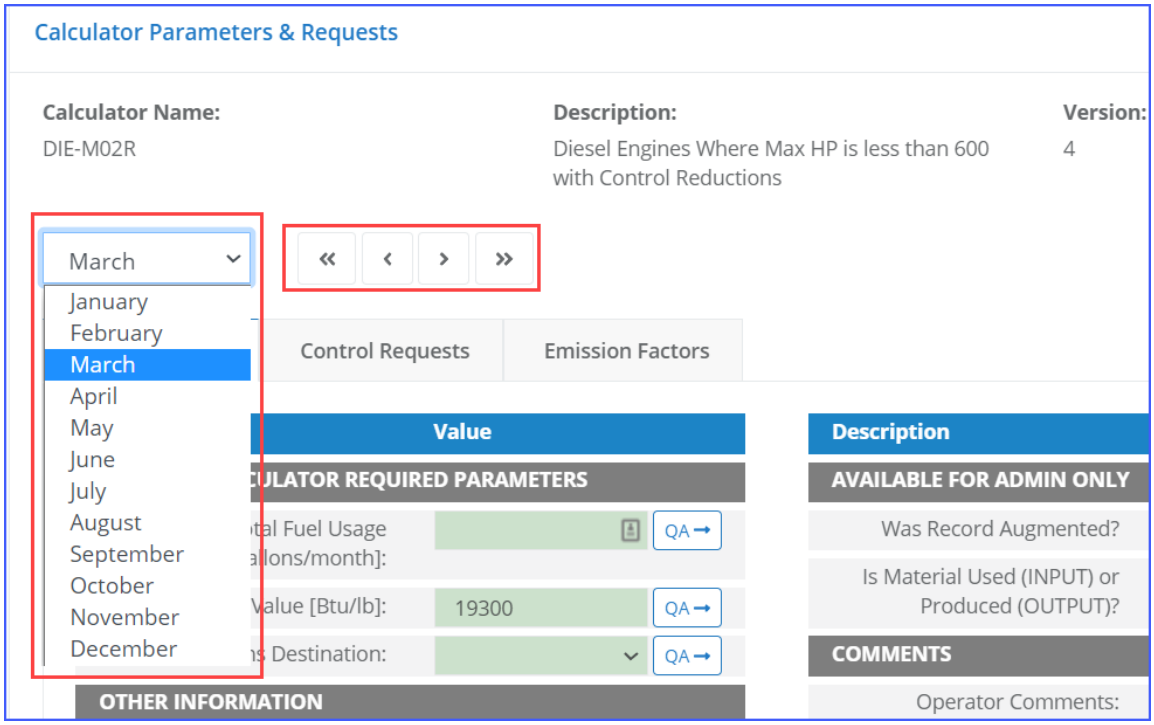


Figure 64. Month selection controls

3. For the selected month, update the parameters by completing the data fields. Green fields indicate required data and must be filled in. White fields are optional data. A QA button is available to the right of each field to add optional notes and comments regarding the specified value for each field.
4. Confirm the input parameters meet range and input requirements by clicking on the red **QA/QC** button, as shown in Figure 65. If there are no issues, a blue message will appear stating that there are no QA/QC issues for the emission source under edit. If there are errors, the specific field and month for the error will be identified similar to the example shown in Figure 65. In this example, a required field (**Total Fuel Usage**) is out of range in the **Data Requests** tab, and the **Average Fuel Used** value (which is calculated using **Total Fuel Usage**) is invalid.

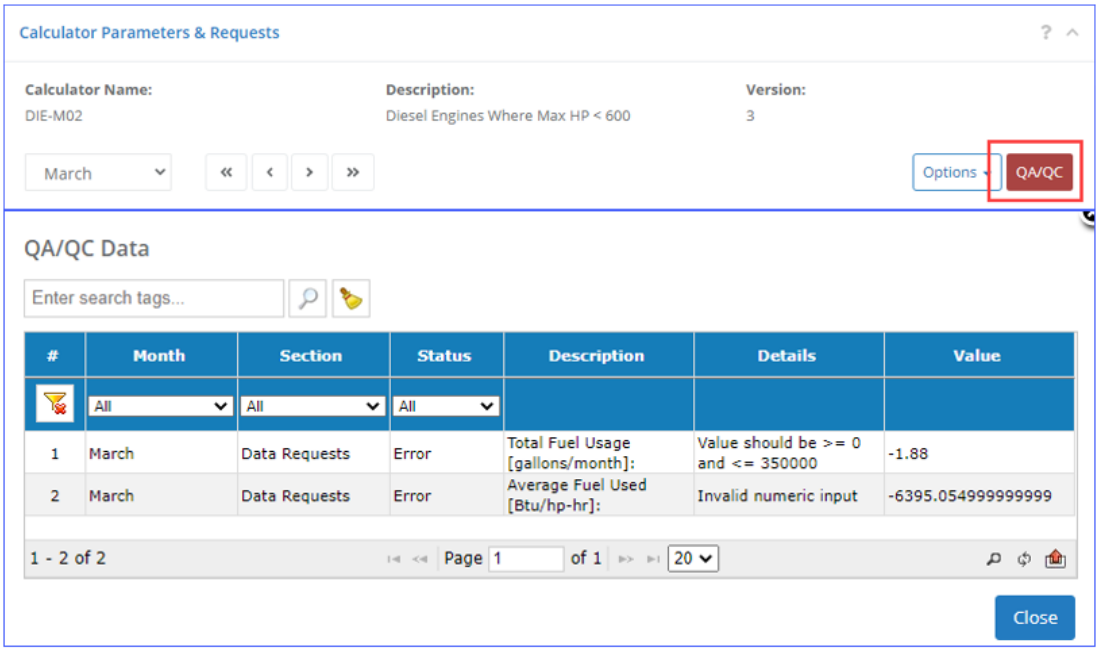


Figure 65. Example QA/QC report for emission source

5. Save the updated values by clicking **Save**. To return to Edit mode, click **Edit**.

3.2.11 Zero Emissions

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility

This section describes how to specify that a certain emission unit did not produce emissions during specific months in the inventory year. If you wish to indicate that the entire facility did not produce emissions, see section 3.2.6.7.

To report zero emissions from an emission source for a month (or months):

1. On the **AEM Details** page, select the emission unit for editing and scroll down to the **Calculator Parameters & Requests** feature.
2. Select the **Options** pull-down menu next to the QA/QC button as shown in Figure 66 and select **Zero Emissions**.

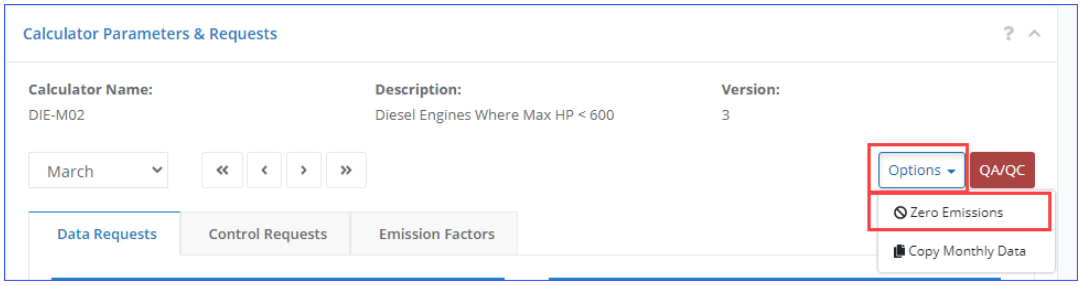


Figure 66. Options selection for Zero Emissions

3. Check the box for each month you want to declare as zero emissions.
4. After a month is selected, the corresponding **Select Reason** box will be activated. Click on **[…]** (extra options) on the right of the box to open a list of possible reasons why the month has zero

emissions. Select the most appropriate reason from the available choices for all months that have been marked as “zero emissions” (Figure 67).

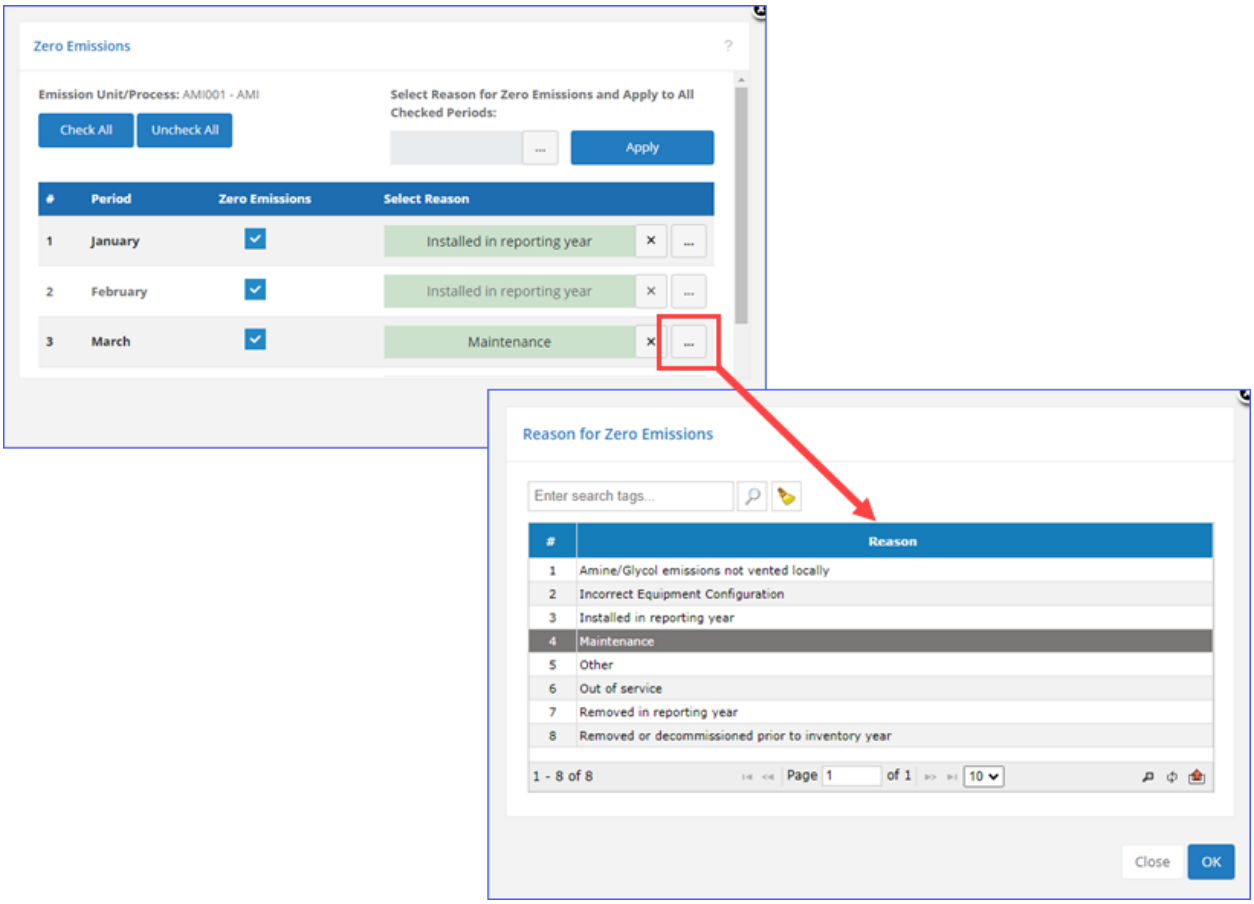


Figure 67. Emission Unit Zero Emissions

5. Click **Save** to save changes. A confirmation message will be displayed to ensure that appropriate number of months are zeroed for the specified process.
6. After selecting the months that should be zeroed out and closing the **Zero Emissions** dialog, all calculated emissions will be set to 0 for the selected months.

3.2.12 Copying Months

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility

Emission source parameters from one month can be quickly copied to all months or any individual month. This tool copies all parameters.

1. On the **Activity & Emissions Manager Details** page, select the emission source for editing in the **Emission Units & Processes** table and scroll down to the **Calculator Parameters & Requests** section.
2. Select the **Options** pull-down menu next to the **QA/QC** button as shown in Figure 68 and select **Copy Monthly Data**.

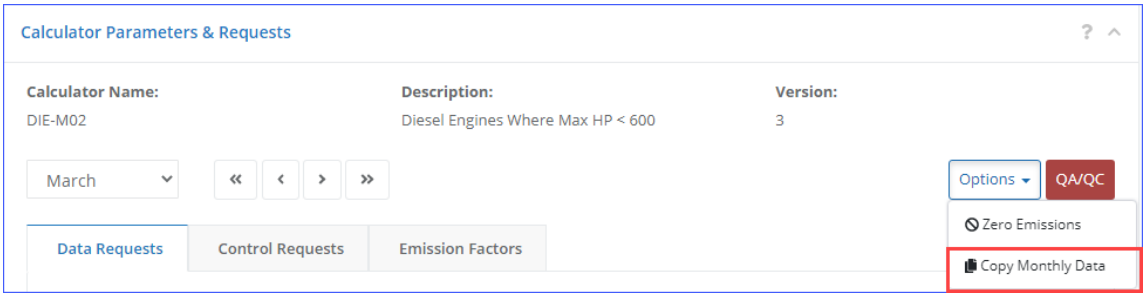


Figure 68. Options selection for Copy Monthly Data

3. The **Copy Monthly Data** window will open. Select the month to copy activity data parameters FROM (you can choose only one).
4. Select the months or months to copy data TO. A **Select All** button is available to copy to all months. Click **Copy** to complete the action. An example is shown in Figure 69. In the example, the month of January is copied to February and March.

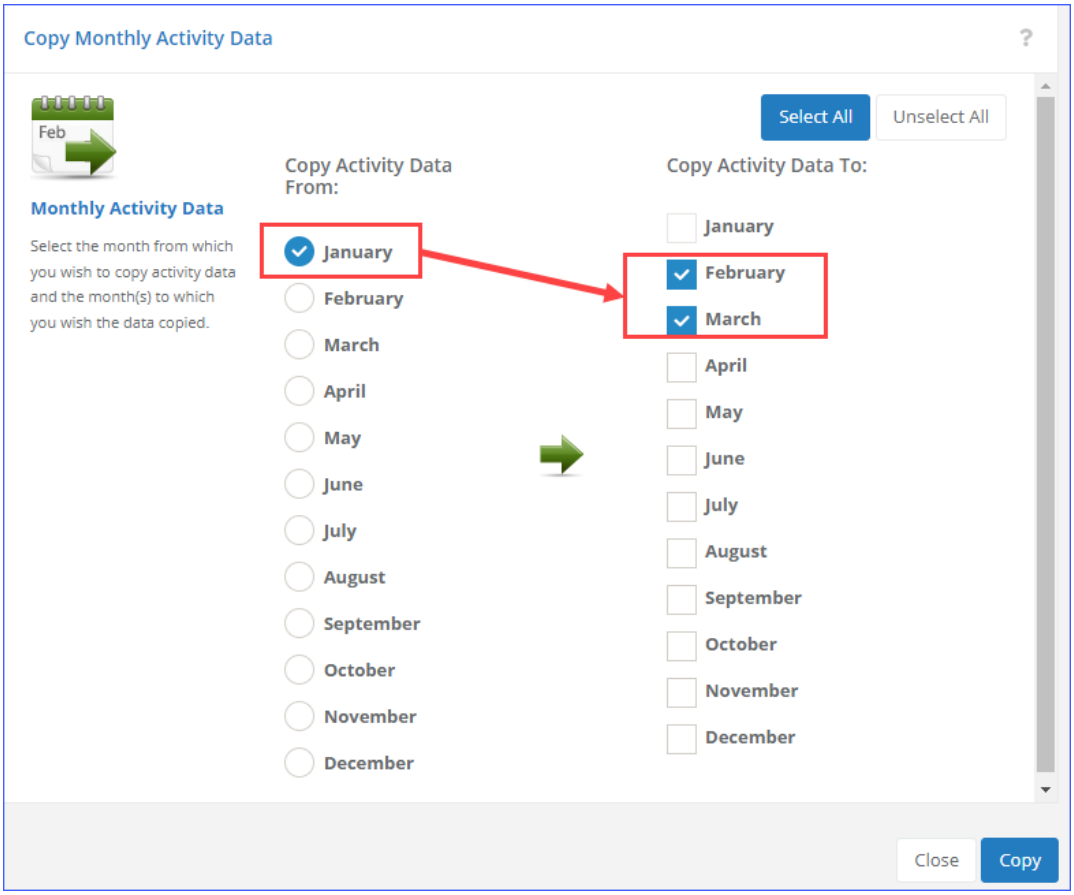


Figure 69. Example to copy data to months

IMPORTANT: The values for the **Hours in a Month** and **Days in a Month** parameters will not be copied and will need to be entered manually.

3.2.13 Calculate Emissions

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility

Emissions from a source can be calculated within the **Activity & Emission Manager** by month using the input parameters from the assigned calculators and the information provided in the **Data Requests**, **Control Requests**, and **Emission Factors** tabs.

The assigned calculator is shown at the top of the **Calculator Parameters & Requests** section. More information about the individual calculator used, such as the actual equations and input variables used, can be found by running an **Emissions Equation Description** report under the **Calculators** section in the **Reports** module.

> ***IMPORTANT:*** You will only be able to calculate emissions if you have filled in all required parameters and specified a release point for the emission unit/process.

To calculate emissions with an existing calculator:

1. On the **Activity & Emissions Manager Details** page, select the emission source for which you wish to calculate emissions and scroll down to the **Calculated Emissions** section near the bottom of the page.
2. If emissions have never been calculated, you will see a **Calculate** button. If emissions have been previously calculated, you will see a **Re-Calculate** button. Selecting either **Calculate** or **Re-Calculate** will give you two options as shown in Figure 70.

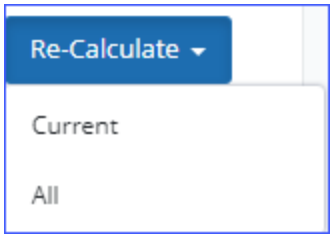


Figure 70. Calculate/Re-Calculate options

   a. **Current**: This option allows operators to calculate only the active source you are working on. It is recommended when making updates only to a specific emission source.
   b. **All**: This option allows operators to calculate emissions for all sources assigned to the facility/platform.

   IMPORTANT: If either **Current** or **All** is not available, it means that the months for which you are trying to calculate emissions are set to zero emissions.

   WARNING: Previous emission values will be lost and overwritten when the selection is made. For **Current** calculations, only the emissions for the active month will be overwritten.

   IMPORTANT: You can only calculate emissions when in the **Edit** mode.

3. The calculations may take several seconds to process depending on the number of pollutants reported for the emission source.
4. A table will appear with calculated monthly emissions as shown in Figure 71.

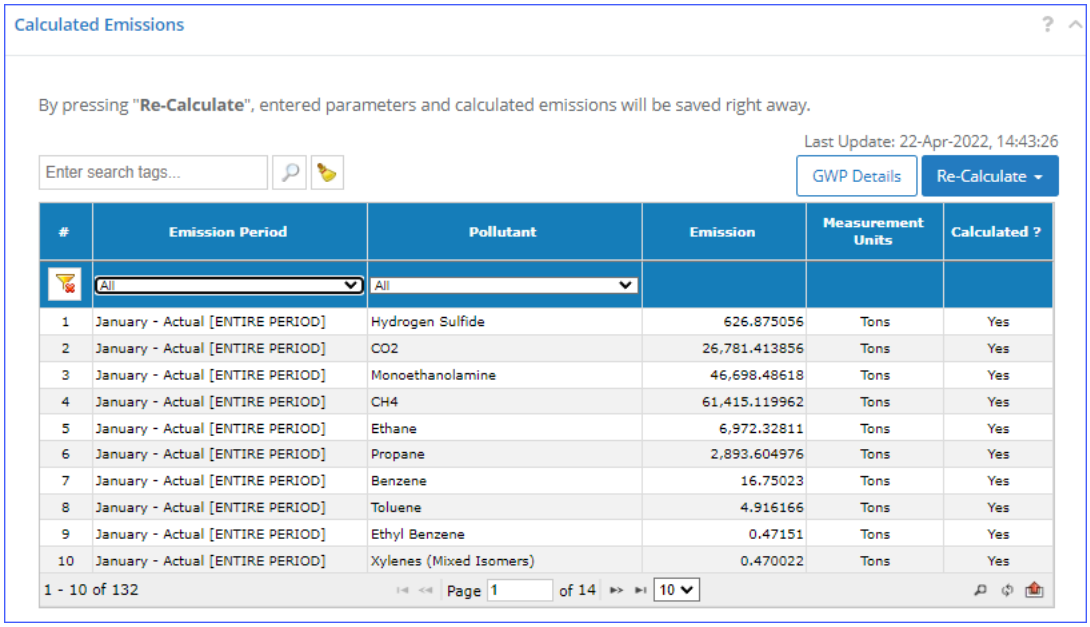


Figure 71. Table showing calculated monthly emissions

3.2.14 Global Warming Potential Details

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM) > Select Facility

Global Warming Potential (GWP) values are a measure of how much energy the emissions of 1 ton of gas will absorb over a given period of time, relative to the emissions of 1 ton of carbon dioxide (CO_2). The GWPs used in the application were acquired from Second, Fourth, and Fifth IPCC Assessment Reports.

OCS AQS allows BOEM to create sets of GWP values that can then be assigned to operator inventories and used to calculate carbon dioxide equivalent (CO_2e) values.

> ***IMPORTANT:*** Operators cannot create or edit GWP values, sets, or assign these sets to inventories.

You can view the set of GWP values assigned to the inventory by clicking **GWP Details** in the **Calculated Emissions** section, as shown in Figure 72.

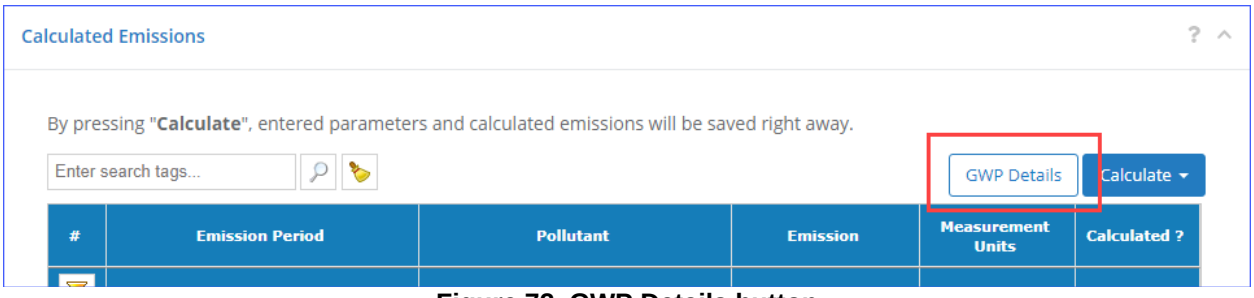


Figure 72. GWP Details button

Doing so will load the details of the GWP set used for calculations in the current inventory (Figure 73).

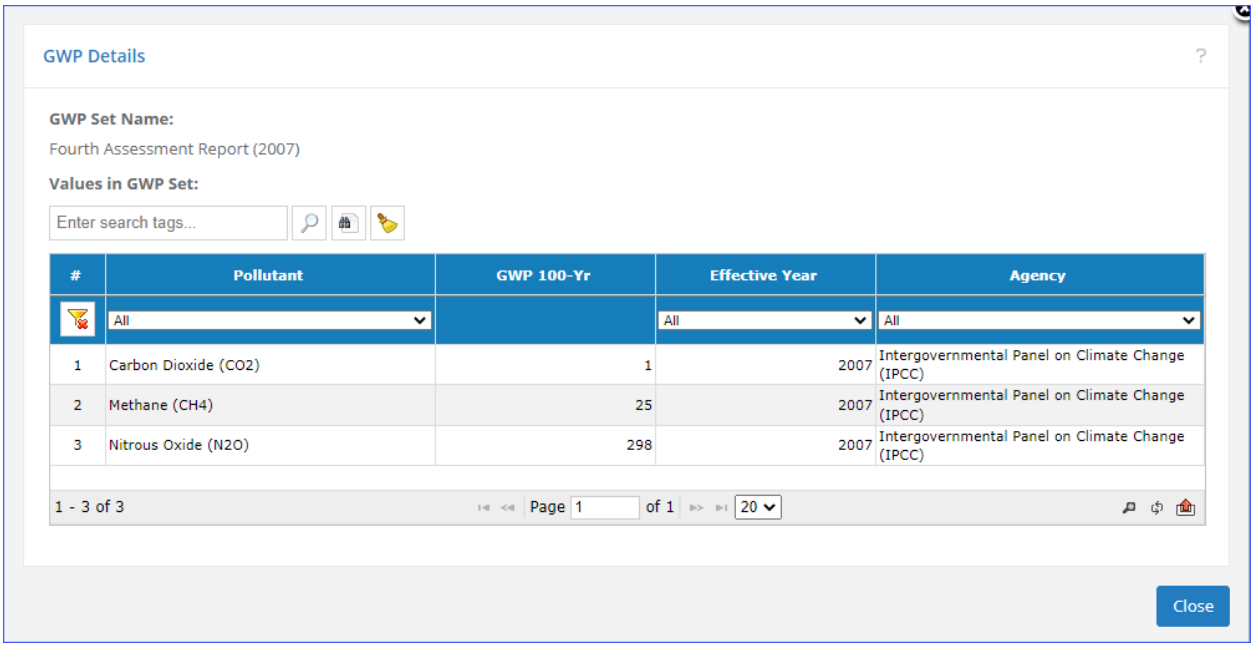


Figure 73. GWP Set Details

For each standard in the set the table displays the following information:

- **Pollutant**: The pollutant with which the standard value is associated
- **GWP 100-Yr**: Standard value used to calculate CO_2e
- **Effective Year**: Year the standard was implemented
- **Agency**: Name of the agency that established the standard

3.2.15 Combustion Flares

OCS AQS breaks down each stationary emission source into a release point and an emission unit. The release point is the physical transfer location of emissions from a process to the atmosphere. For most processes, the release point is the top of a smokestack. For flares and open flames, it is the exterior surface of the flame as shown in Figure 74. Estimation of the flame height and diameter can be done using pseudo-parameter calculations.

However, for OCS AQS reporting purposes, only the physical flare stack height and tip diameter are required. If the flare has multiple tips or nozzles, the combined diameters should be used.

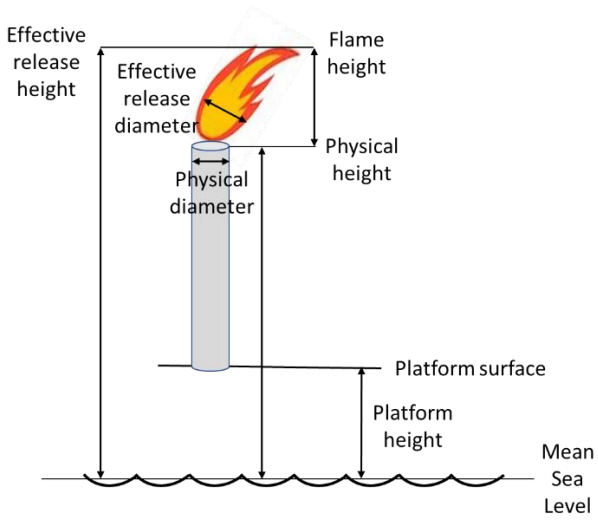


Figure 74. Flare release point parameters

For flares on platforms, the physical height assumes the height of the flare stack above mean sea level. This information was obtained from the **Summary of Platform BOEM Records**[4].

Users should create flares based on flare design specifications as listed in the manufacturer's information and use the total volume (including pilots under the FLA-pilot process).

3.2.16 Adding Supporting Documentation

Pathway: Emissions > Platform Sources > Activity & Emissions Manager (AEM)

On the occasions when documentation supporting certain claims (e.g., emission control reduction efficiency) is required, there are two places where you can upload these documents:

- In the **AEM** (described below)
- In the **Companies & Complexes** (described in sections 3.5.1.1 and 3.5.4)

IMPORTANT: Each **Supporting Documentation** entry is a set, which may contain multiple documents.

To upload supporting documentation in AEM:

1. Go to the main list of facilities in the **AEM**.
   - Either go to the **Emissions** module and click the **Activity & Emissions Manager (AEM)** navicon, or
   - Click < **Facilities** in the top left corner of the AEM interface
2. Click **Supporting Documents** section in the navigation panel on the left. Depending on your previous activities, the OCS AQS may remember the last facility you worked with and filter the list of supporting documentation entries to show only documentation uploaded for this facility. In this case you will see the name of the facility above the table as shown in Figure 75.

[4] https://www.boem.gov/sites/default/files/environmental-stewardship/Environmental-Studies/Gulf-of-Mexico-Region/Air-Quality/Readme-2011-Gulfwide-Platform-file.doc

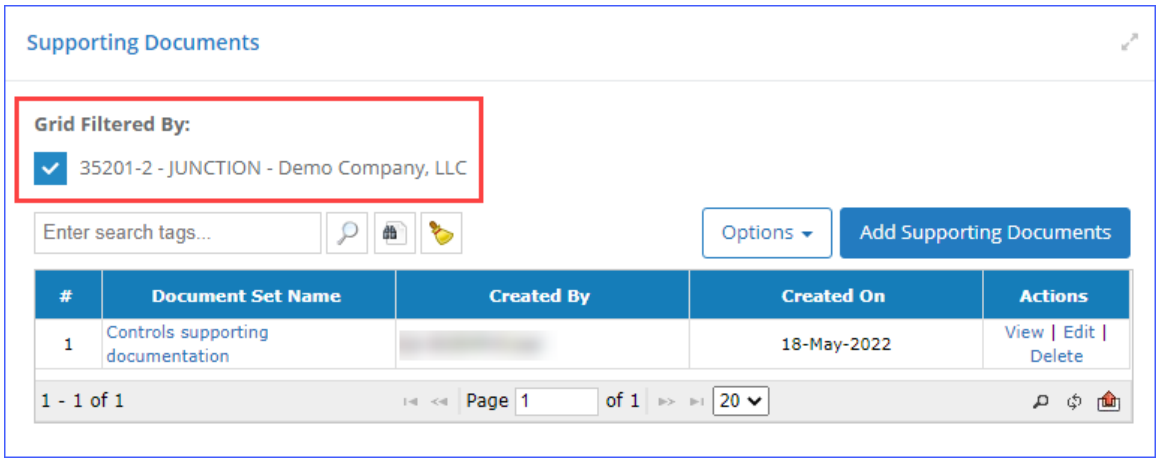


Figure 75. Documentation filtered by facility

If the filter is reset, a full list of available documentation entries grouped by facility will be shown. You can also filter this list to display a list of facilities that do not have any documents uploaded (Figure 76).

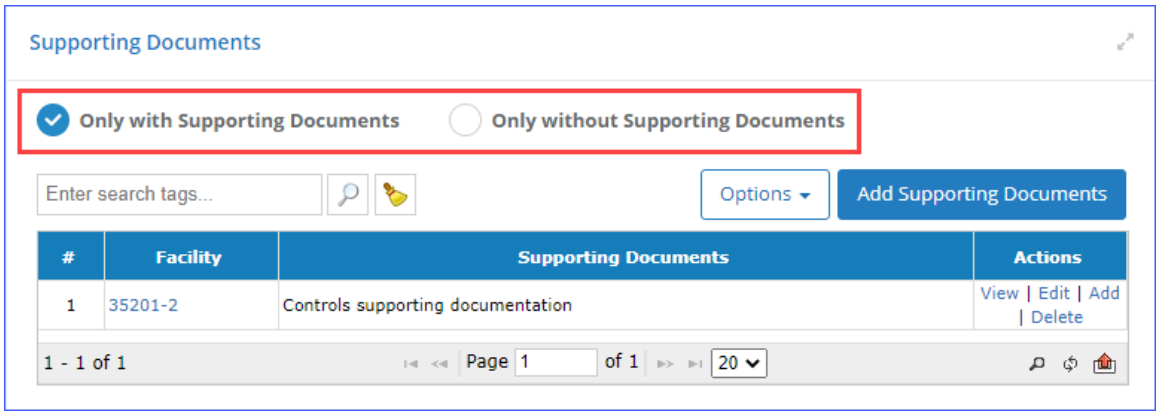


Figure 76: Unfiltered documentation list

3. Click **Add Supporting Documents** to load a wizard that will help you upload the documentation files.
4. If you are starting from a filtered list, go to step 6. If starting from an unfiltered list, the first step allows you to select the facility for which you wish to upload documentation.
5. Select a facility and click **Next**.
6. In the **Document Set Info** step, specify the **Document Set Name** (required) and a brief **Description** of the document (optional), and click **Next**.
7. In the **Specify Document Info** step, upload the files that will be included in the set as follows:
    a. Click **Select file**.
    b. Navigate to and select a documentation file you wish to include in the set.
    c. Select the file type based on the document you specified.
    d. Enter any notes associated with the file to distinguish it from others in the set.
    e. Click **Upload** to add the document to the set.
    f. Repeat with remaining documents.
8. After all documents have been specified, click **Finish**.

The specified files will be grouped under a single document set entry.

3.3 Review Activity Data

Pathway: Emissions > Platform Sources > Review Activity Data

Section 3.2 demonstrated how to enter the activity data for the processes using the **Activity & Emissions Manager (AEM)**, as well as use various time saving features such as bulk importing activity data (section 3.2.6.6), setting processes to zero emissions (section 3.2.11), and copying activity data from one month to others (section 3.2.12). However, using these features without proper review may introduce data entry errors that would affect the resulting emissions calculations. The **Review Activity Data** tool allows you to screen for certain data entry issues.

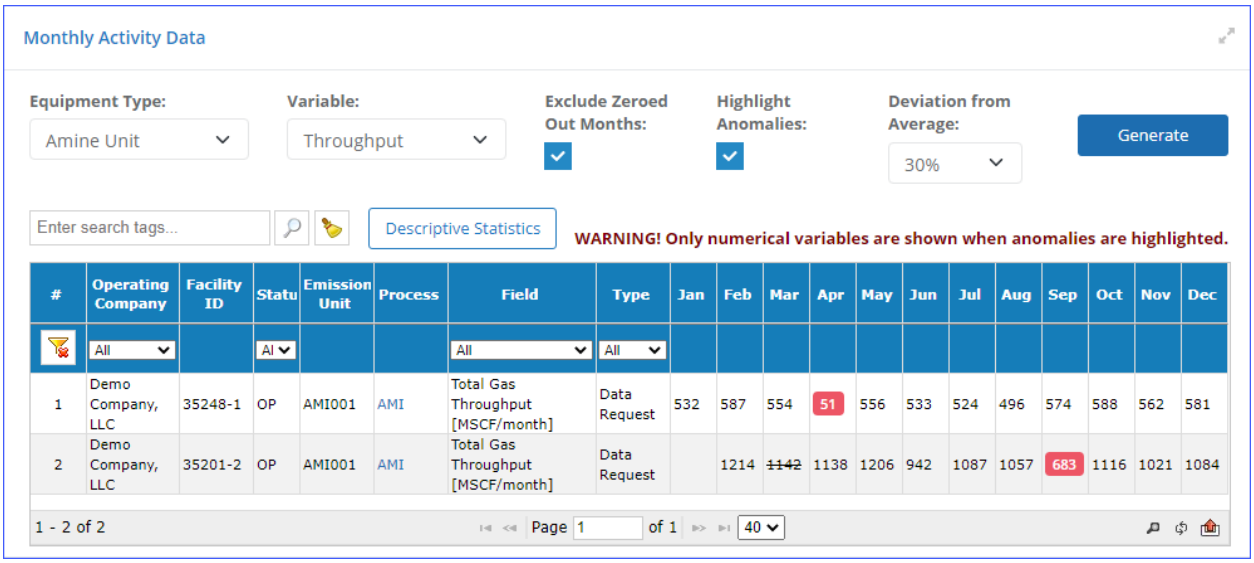


Figure 77: Review Activity Data tool

Using the **Review Activity Data** tool, you can perform the following QA/QC analysis

1. Screen for missing values (section 3.3.1)
2. View for which months the emissions have been zeroed out (section 3.3.2)
3. Screen for anomalous activity values (section 3.3.3)
4. View descriptive parameter statistics (section 3.3.4)

3.3.1 General Data Overview

Pathway: Emissions > Platform Sources > Review Activity Data

The top portion of the screen contains the following controls:

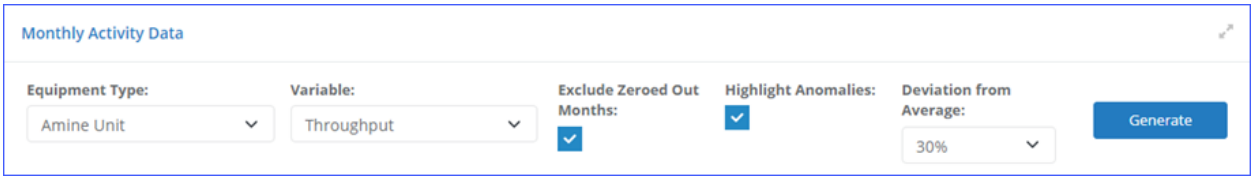


Figure 78: Review Activity Data Controls

- **Equipment Type:** Filter the list to show only activity data for emission units of a specific type.
- **Variable:** Select **All** or **Throughput**. **All** setting will display all activity data parameters and **Throughput** will only display the throughput activity for the selected equipment type.

- **Exclude Zeroed Out Months:** Checking this box will put a ~~strikethrough~~ the activity value entered for any month that has been set to "zero emissions". Example is the throughput value for the month of March for the amine unit at facility 35201-2 (Figure 77).
- **Highlight Anomalies:** Checking this box will highlight in red any values that fall outside the range defined by **Deviation from Average** (Figure 77).
- **Deviation from Average:** Percent value by which the activity value can deviate from the average of the monthly values before being considered anomalous. This selection box only becomes available when the **Highlight Anomalies** option is checked.
- **Generate:** Once all the settings have been configured, click this button to generate the table.

Even before using the any of the special features in this tool, the table can show you gaps in the activity data. For example, the cell for January throughput for the amine unit at the facility 35201-1 in Figure 77 is blank, which means that this value was not entered.

3.3.2 View Months with Zero Emissions

Pathway: Emissions > Platform Sources > Review Activity Data

You can highlight the months that were set to "zero emissions" by checking the **Exclude Zeroed Out Months** option in the controls. This will put a strikethrough the activity value, as shown in Figure 79. No emissions are calculated using these activity values.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	532	587	554	51	556	533	524	496	574	588	562	581
		1214	~~1142~~	1138	1206	942	1087	1057	683	1116	1021	1084

Figure 79: Activity for Months with Zero Emissions

3.3.3 Highlight Anomalous Activity Values

Pathway: Emissions > Platform Sources > Review Activity Data

You can highlight the values that do no fall withing a certain range around the average. In the example shown in Figure 80 below, the average over the monthly values is 511.5. A 30% of 511.5 is 153.45. Based on these settings, the acceptable range is between 358.05 and 664.95. The highlighted number – 51 – falls outside this range.

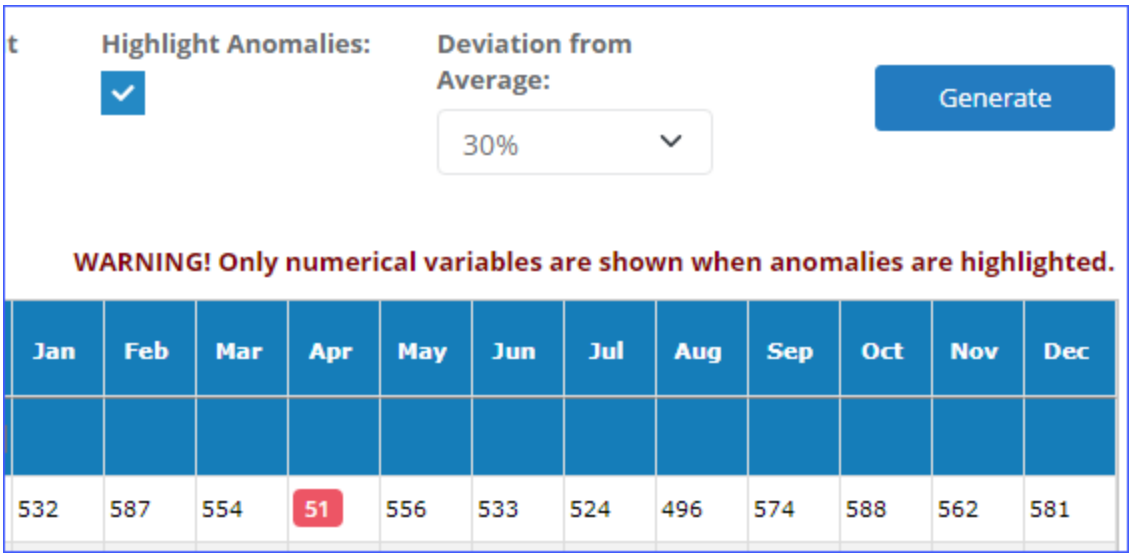


Figure 80: Highlighted Anomalous Activity Value

3.3.4 View Descriptive Statistics

Pathway: Emissions > Platform Sources > Review Activity Data

The descriptive statistics, including **Mean**, **Max**, **Min**, and **Total**, are only available when a single **Variable** is selected. Therefore, they will not be available if **All** option is selected under **Variable**.

To view descriptive statistics, click **Descriptive Statistics** button above the table.

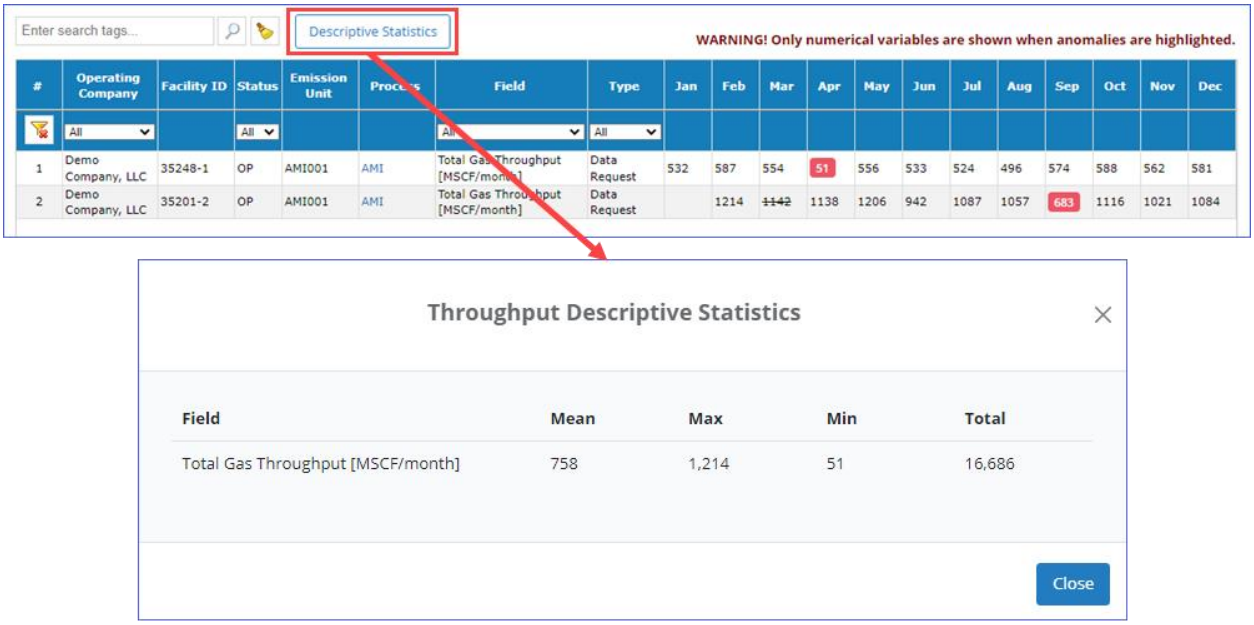


Figure 81: Activity Data Descriptive Statistics

3.4 Batch Emissions Calculator (BEC) – Platform Sources

Section 3.2.13 showed how to calculate emissions for a single emission unit over the reporting period. The BEC allows for the emissions from all emission units within a facility (or a collection of facilities) to be calculated together.

3.4.1 View Previous Facility Calculations

Pathway: Emissions > Platform Sources > BEC - Platform Sources

The **Summary List** shown in Figure 82 shows all previously run calculations. Historical results can be viewed by selecting **View Files** under the **Actions** column. If there is no link, that means a calculation is taking place.

> ***IMPORTANT:*** If the link does not appear after several minutes, refresh the screen.

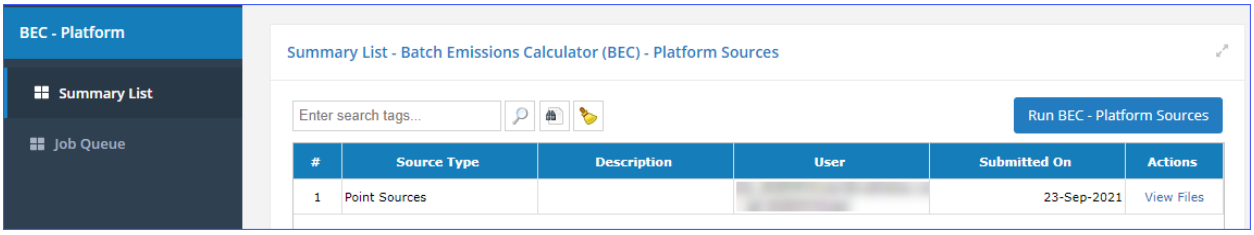


Figure 82. Batch Emissions Calculator (BEC) summary page

Downloaded files include the following:

- **Emission calculations tabs**: Tab for each emission period (JAN, FEB, MAR, etc.) that contains parameters used to calculate the emissions for each process and the calculated total
- **BEC Calculation Status tab**: A list of individual steps in the BEC run
- **ERRORS:** List of errors encountered during calculations
- **CloudJobLog:** Log of details of the processing job

3.4.2 Run New Facility-Wide Calculations

Pathway: Emissions > Platform Sources > BEC – Platform Sources

To run a new calculation, click **Run BEC – Platform Sources** above the **Summary List** table. This will take you to a wizard that will guide your selections.

1. Check the box for each facility for which you want to calculate.
2. Click **Next** to continue.
3. Select the time periods for which you wish to calculate the emissions. You can either check individual months or check the **Select All** option.
4. Add any notes related to the calculation run.
5. Click **Next** to continue.
6. Review your input selection.
   IMPORTANT: The **Create Missing Emission Period** option allows you to indicate that you want to calculate emissions for all time periods, even if emission periods are not defined for some months. This option is enabled by default.
7. Click **Finish** to begin the calculation process.

3.4.3 BEC Job Queue

Pathway: Emissions > Platform Sources > BEC – Platform Sources > Job Queue

You can follow the status of the calculations by going to the **Job Queue – Batch Emission Calculation** page (Figure 83). Select **Job Queue** in the Navigation Panel.

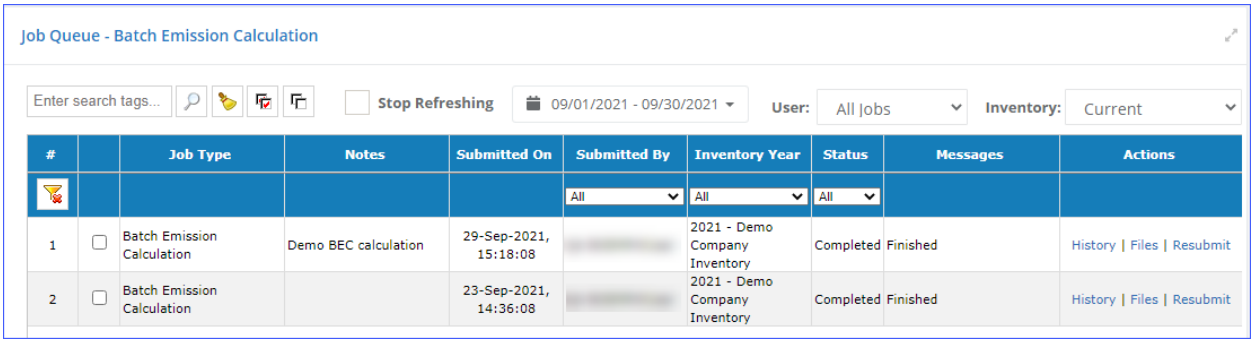


Figure 83. BEC Job Queue

3.5 Companies & Complexes

Pathway: Emissions > Platform Sources > Companies & Complexes

Selecting the **Companies & Complexes** navicon under the **Emissions** module allows you to view and manage operating companies and complexes.

3.5.1 Companies

Pathway: Emissions > Platform Sources > Companies & Complexes

After you click on the **Companies & Complexes** navicon, you are taken to the page that displays the active company in your current inventory.

- View the company details by clicking either the link in the **Company Name** column or the **View** option in the **Actions** column.
- View the list of complexes that belong to the company by clicking **Complexes** in the Navigation Panel. An operator will only see complexes that belong to their company, while an administrative-level user will see all complexes in the database.
- View the list of facilities operated by the company by clicking **Facilities** in the Navigation Panel. An operator will see all facilities that belong to their company (not filtered by a specific complex), while an administrative-level user will see all facilities in the database.
- View the list of supporting documentation entries by clicking **Supporting Documentation** in the Navigation Panel. You can filter this list to view all **Supporting Documentation** entries or a list of facilities that do not have any documentation uploaded.

3.5.1.1 Company Details

Pathway: Emissions > Platform Sources > Companies & Complexes > Select Company

Selecting a company from the list (or clicking on the **View** option) will open the detailed editor page that provides information related to the company, including the list complexes and associated facilities. From this page, you can edit the information and add contacts by clicking **Edit**. Figure 84 shows an example of the detailed editor.

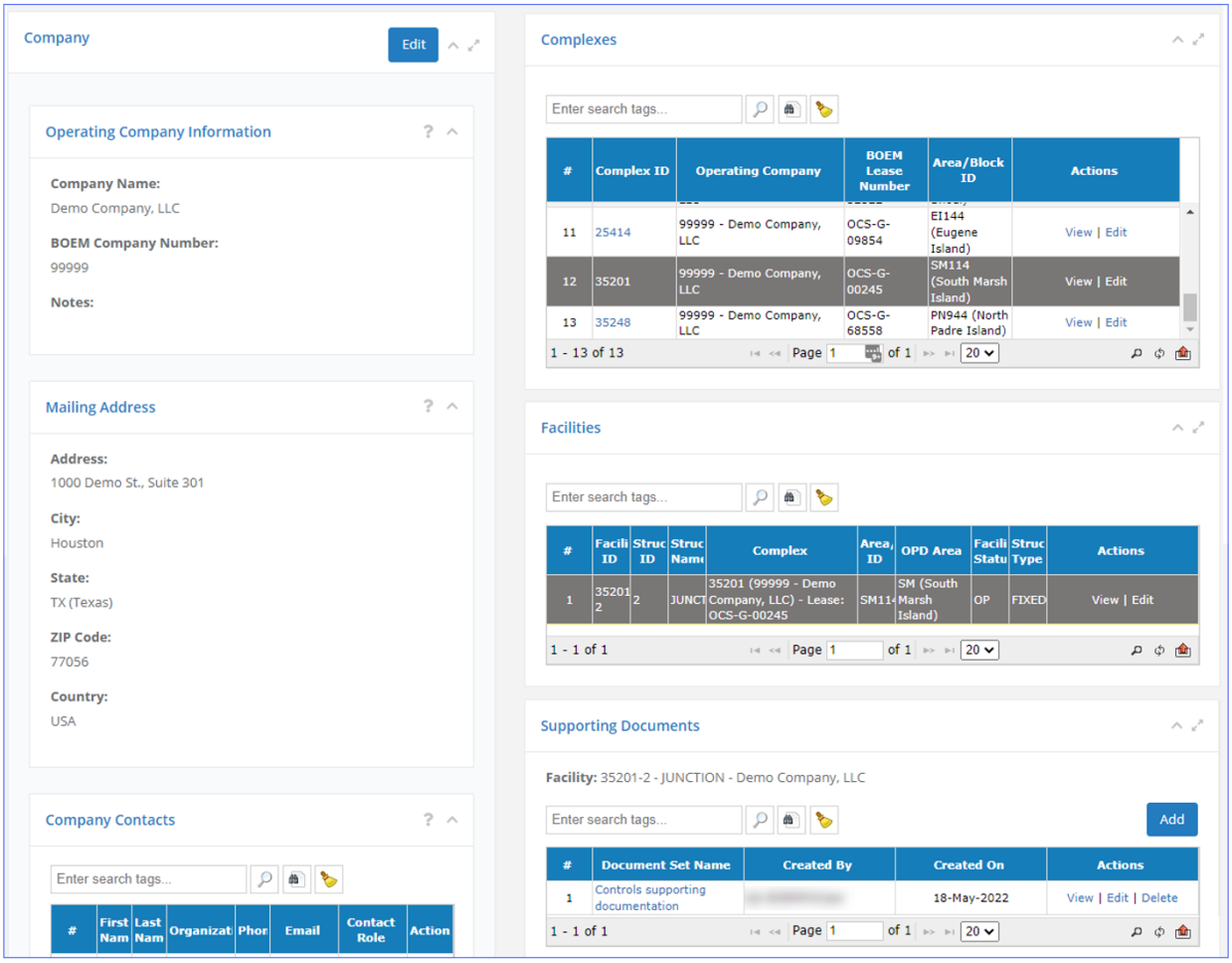


Figure 84. Company information page

In the detailed editor you can perform the following functions shown in Table 2.

Table 2. Edit company details

Detail	Action	Directions
Company	Edit Details	Edit company details (including adding Company Contacts; see Section 3.5.1.2) by clicking Edit in the Company panel. *IMPORTANT:* The BOEM Company Number parameter must be a five-digit number. If the number is less than five digits, it must be padded with leading zeroes (e.g., 00123).
Complexes	View Details	View the details of an existing complex by clicking the link in the Complex ID column or the View link in the Actions column.
Complexes	Edit Details	Edit the details of an existing complex by clicking Edit in the Actions column.
Complexes	View Associated Facilities	View facilities located within the complex by selecting (highlighting) the complex in the table.
Facilities	View Details	View the details of an existing facility by clicking the link in the Facility ID column or the View link in the Actions column.
Facilities	Edit Details	Edit the details of an existing facility by clicking Edit in the Actions column.
Support Documentation	Upload New	Upload a new set of documents for the facility highlighted in the Facilities table by clicking Add above the list of documents. See detailed upload instructions below.
Support Documentation	View Details	View the details of an existing document set by clicking the link in the Document Set Name column or the View link in the Actions column.
Support Documentation	Edit Details	Edit the details of an existing document set by clicking Edit in the Actions column.

To upload a new document set:

1. Select the facility for which you wish to upload the documents in the **Facilities** table.
2. Click **Add** in the **Supporting Documentation** table.
3. In the **Document Set Info** step, specify the **Document Set Name** (required) and a brief **Description** of the document (optional) and click **Next**.
4. In the **Specify Document Info** step, upload the files that will be included in the set as follows:
    a. Click **Select file**.
    b. Navigate to and select a documentation file you wish to include in the set.
    c. Select the file type based on the document you specified.
    d. Enter any notes associated with the file to distinguish it from others in the set.
    e. Click **Upload** to add the document to the set.
    f. Repeat with remaining documents.
5. After all documents have been specified, click **Finish**.

3.5.1.2 Add Company Contacts

Pathway: Emissions > Platform Sources > Companies & Complexes > Select Company

To add (or delete) contacts, click **Edit** in the top right corner of the **Company** details panel to go into edit mode and scroll down to and click **Add Contact** in the **Company Contacts** panel as shown in Figure 85.

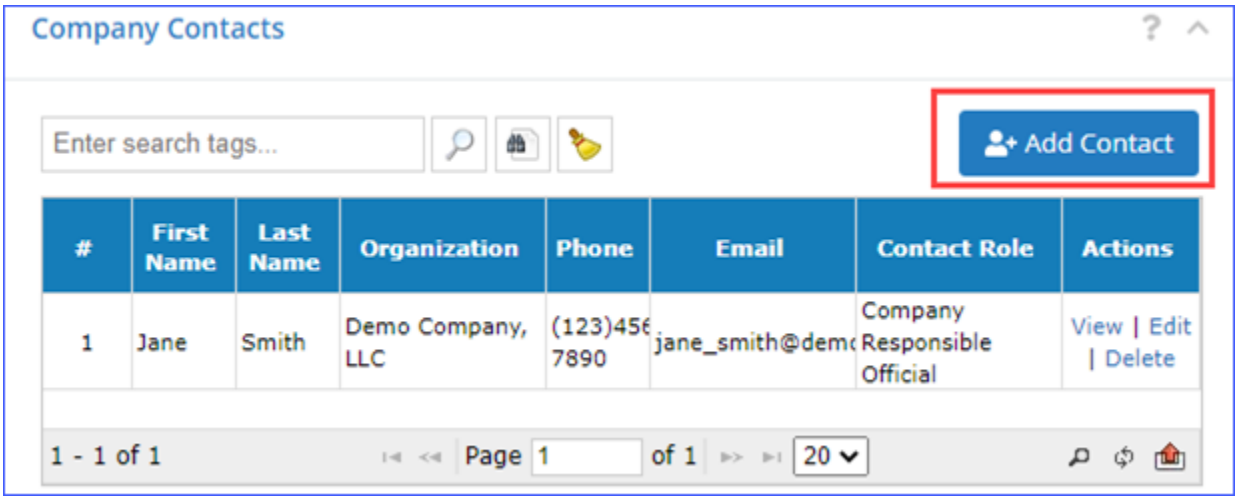


Figure 85. Company Contacts panel

The **Add Contact** data entry form will load the following:

1. **Existing Contact**: Select the name from the **Contact** list by clicking **[…]** and opening the option table. Select the **Contact Role**.
   TIP: One person can have multiple roles, but you must create a separate **Company Contact** record for each role for that person.
2. **New Contact**: Complete the contact information and assign a **Contact Role**.
3. Click **Save** to save entry.

Available **Contact Roles** are:

- Company Responsible Official
- Complex Responsible Official
- Contractors
- Facility Responsible Official
- Inventory Preparer
- Inventory Reviewer
- BOEM Representative
- BSEE Representative

IMPORTANT: **Contact Roles** refer only to the person's involvement with the OCS Emissions Inventory and should not be confused with the actual job or job title of the person.

3.5.1.3 Edit/Delete Company Contacts

Pathway: Emissions > Platform Sources > Companies & Complexes > Select Company

To edit or delete contacts, go into Edit mode for the company and select **Edit** or **Delete** under the **Actions** column for the contact you want.

If you are editing the contact, the contact details data entry form will load. Make edits and click **Save** to commit your changes.

3.5.2 Complexes

Pathway: Emissions > Platform Sources > Companies & Complexes > Complexes > Select Complex

In the **Companies & Complexes** Navigation Panel, click on the **Complexes** option. The page will display a list of complexes that belong to the operating company. Select the complex you want to view from the list. This will take you to the **Complex Details** editor page similar the one shown below in Figure 86.

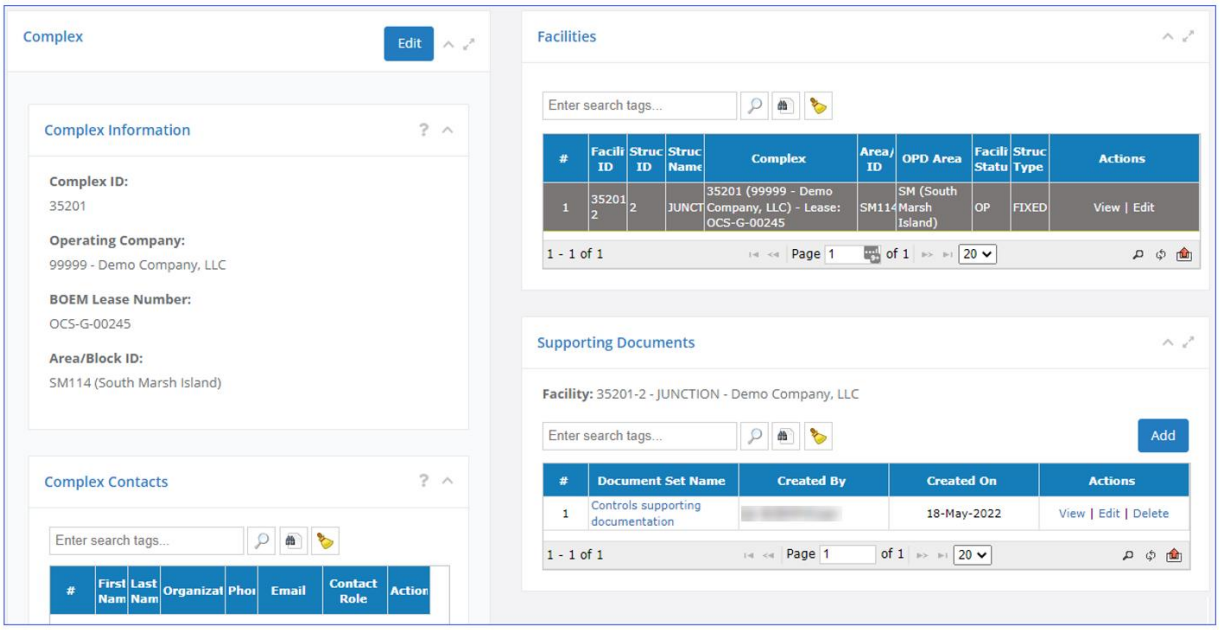


Figure 86. Complex Details page

This page functions in a similar way to the **Company Details** page described in Section 3.5.1.1.

In this detailed editor, you can perform the following functions shown in Table 3.

Table 3. Edit complex details

Detail	Action	Directions
Complex	Edit Details	Edit complex details (including adding **Complex Contacts**, see Section 3.5.1.2) by clicking **Edit** in the **Complex** panel.
Facilities	View Details	View the details of an existing facility by clicking the link in the Facility ID column or the View link in the Actions column.
Facilities	View Associated Facilities	View facilities located within the complex by selecting (highlighting) the complex in the table.
Support Documentation	Upload New	Upload a new set of documents for the facility highlighted in the Facilities table by clicking Add above the list of documents. See detailed upload instructions below.
Support Documentation	View Details	View the details of an existing document set by clicking the link in the Summary column or the View link in the Actions column.
Support Documentation	Edit Details	Edit the details of an existing document set by clicking Edit in the Actions column.

For more information on how to upload supporting documentation, see Section 3.5.1.1.

IMPORTANT: Please make sure that each facility has a **Company Responsible Official** contact.

3.5.3 Facilities

Pathway: Emissions > Platform Sources > Companies & Complexes > Facilities

In the **Companies & Complexes** Navigation Panel, click on the **Facilities** option. The page will display a list of facilities that belong to the operating company. This list is not filtered by complex in which the facilities are located, but this information is available in the table, in the **Complex** column.

From this table, you can

- View facility details by clicking either **Facility ID** or **View** in the **Actions** column for the facility in question.
- Open facility details in edit mode by clicking **Edit** in the **Actions** column.

3.5.4 Supporting Documentation

Pathway: Emissions > Platform Sources > Companies & Complexes > Supporting Documentation

In the **Companies & Complexes** Navigation Panel, click on the **Supporting Navigation** option. The page will display a list of document sets that have been uploaded for the company's facilities. This list can be filtered by a specific facility, in which case the facility name and ID will be displayed above the table, or the list can be unfiltered. In an unfiltered list, you can either display all document sets in the inventory or display all facilities that have no documentation uploaded.

From this table, you can

- View document set details by clicking either the document set name or **View** in the **Actions** column for that entry.
- Open document set details in edit mode by clicking **Edit** in the **Actions** column.
- Delete a document set by clicking **Delete** in the **Actions** column.
  WARNING: Deleting a document set will delete all documents in that set.
- Upload additional documents by clicking **Add Supporting Documentation**. The procedure is the same as in **Activity & Emissions Manager** (see Section 3.2.16 for more details).

3.6 Remove Unassigned Release Points

Pathway: Emissions > Platform Sources > Remove Unassigned Release Points

The **Remove Unassigned Release Points** tool (Figure 87) allows you to bulk-delete release points that have been defined in the system but are no longer used and are not attached to a specific emission unit/process.

To access this wizard, click on the **Remove Unassigned Release Points** navicon. This will display a table of all release points that are currently not assigned to any emission unit/process.

Do the following to remove unassigned release points:

1. Check the box for every release point you wish to delete. Use the **Search** bar above the table and the filter in the **Facility** column to narrow down the available release points.
2. Click **Finish** to delete the release points.

A confirmation message will display the final number of selected release points.

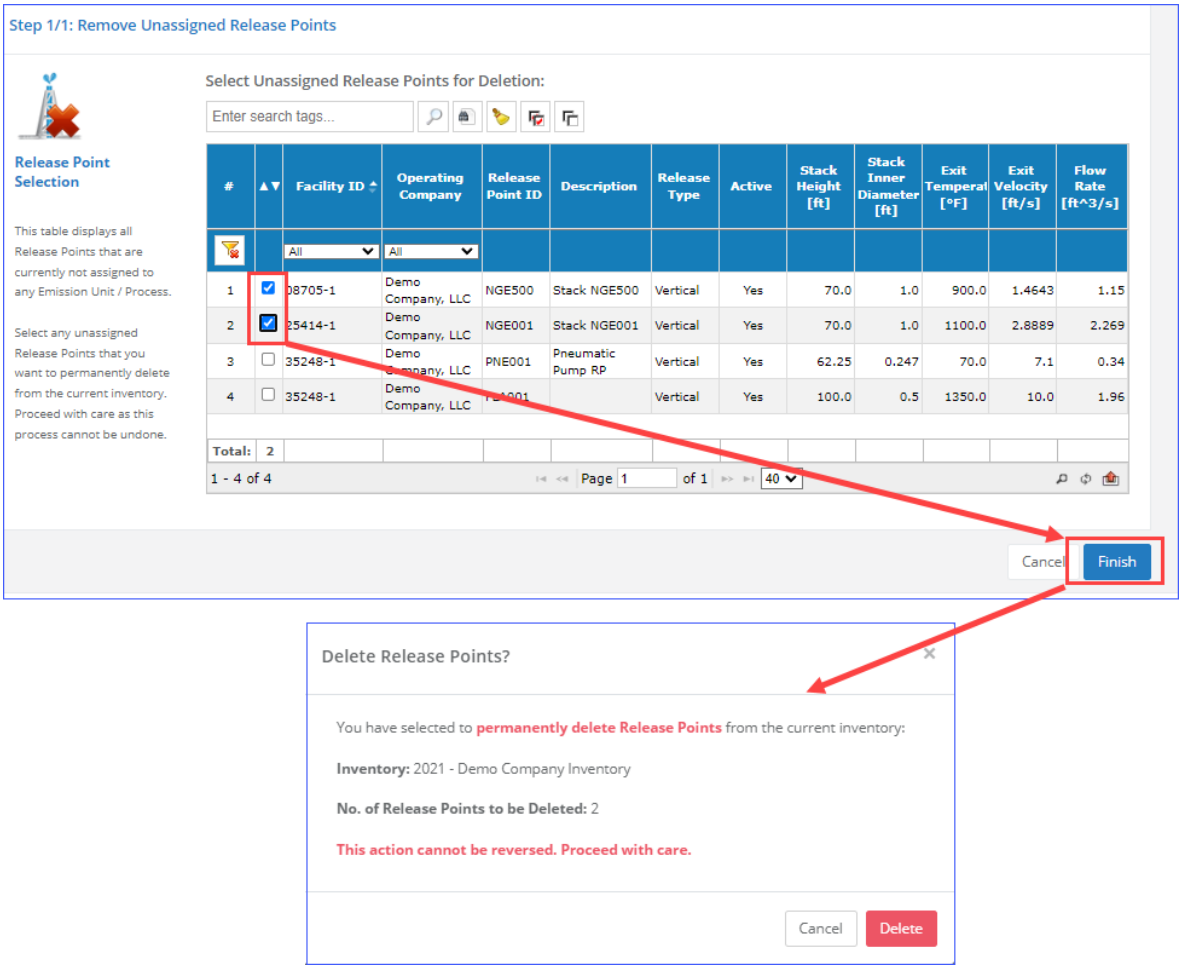


Figure 87. Remove unassigned release points

IMPORTANT: Deleting release points will permanently remove them from the inventory. This action cannot be reversed.

4 Emissions: Lease Operations

Pathway: Emissions > Lease Operations

Operators are required to account for emissions from non-platforms operation if they any the following:

- Drilling rigs for crude oil exploration / production wells
- Drilling rigs for natural gas exploration / production wells
- Domestic and foreign self-propelled drilling rigs
- Installation support vessels (CSV)
- Well stimulation vessels (WSV)

IMPORTANT: Decommissioning activities do not have to be reported.

All drilling rig types listed below must be reported (except PA operations, which is used for decommissioning), including:

- BG – Barge
- BR – Barge Rig
- CT – Coil Tubing Unit
- DS – Drillship
- HW – Hydraulic Workover Unit
- JU – Jackup
- LB – Lift Boat
- PF – Platform Rig
- PL – Pipeline Lay
- SB – Snubbing Unit
- SD – DP Semisubmersible
- WI – Well Intervention
- WL – Wireline

All rig modes listed below must be reported, including:

- CHZ – Change Zone
- DRL – Drilling
- Other – Other Operation
- WO – Workover

Examples:

- A DS rig with CHZ rig mode **MUST** be reported
- A DS rig with PA rig mode **DOES NOT** need to be reported

To aid operators in identifying qualifying drilling rig activities, it is recommended that users visit the BOEM eWell website at https://www.data.boem.gov/Main/Well.aspx.

The online eWell database contains the official records for drilling rig activities and enables operators to query various drilling rig activities including:

1. Application for Permit to Drill (APD)
2. Application for Permit to Modify (APM)
3. End of Operations Report (EOR)
4. Well Activity Report (WAR)

Users can query the various databases by activity, company name, lease etc., to identify operations that must report NPLO emissions. It is the responsibility of the user to determine which activities must be reported.

> ***IMPORTANT:*** The start and end dates reported in eWell reflect the time period in which drilling rig activities are permitted to occur. The actual move on and move off dates may be different; therefore, users are cautioned to enter the actual dates drilling rig activities and resulting emissions occurred.

The functions available to operators for lease operations are shown in Figure 88 and can be accessed by first clicking on the **Lease Operations** section in the **Emissions** module Navigation Panel.

Figure 88. Lease Operations map

4.1 Managing Lease Operations

OCS AQS has imported all the known leases available on the BOEM Data Center website (https://www.data.boem.gov/). If new leases are required for the company, they can be added.

Lease operations can be managed using a process summarized in Figure 89.

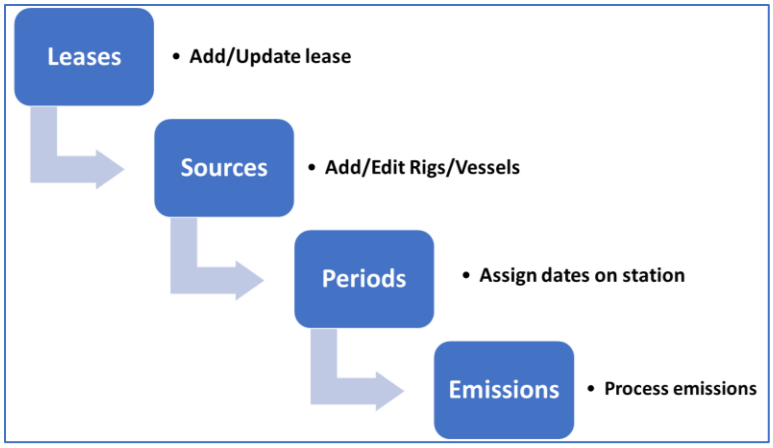


Figure 89. Summary of lease operations emissions

4.2 Lease Operation Emissions Manager

Pathway: Emissions > Lease Operations > Lease Operation Emissions Manager > Select Lease

The **Lease Operation Emissions Manager** is similar to the **Activities & Emissions Manager (AEM)** used in **Platform Sources**. However, this tool is specifically used to calculate emissions for non-platform sources such as drilling rigs connected to the seabed and installation support vessels when performing installation activities. You can create a lease operation process based on existing templates and enter parameters that describe the process activity. Then you can calculate the emissions generated by these non-point processes.

To use the **Lease Operation Emissions Manager**, select the **Lease Operations** option from the Navigation Panel of the **Emissions** module and then click on the **Lease Operation Emissions Manager** navicon. This will take you to the **Leases** page, similar to what is shown in Figure 90.

Click on the lease number in the **BOEM Lease Number** column of the Leases table or **View** in the **Actions** column to view the details of the lease and associated sources.

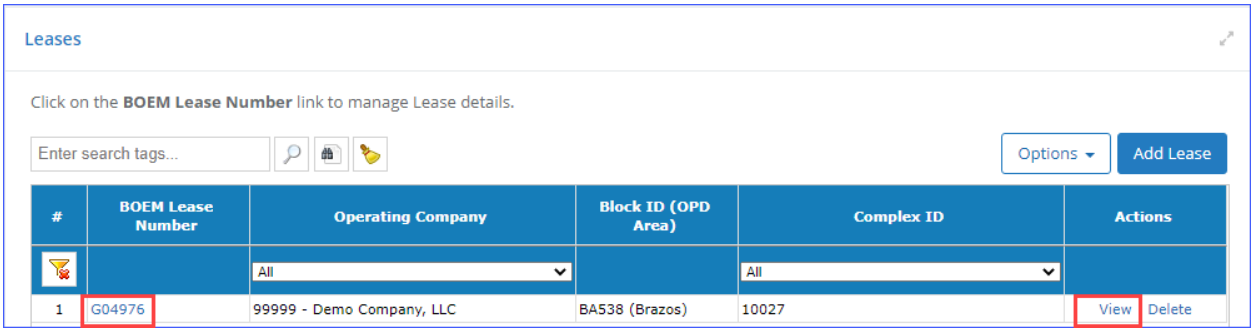


Figure 90. Leases page and selecting BOEM lease number

4.2.1 Add a Lease

Pathway: Emissions > Lease Operations > Lease Operation Emissions Manager

If a lease is not shown, it must be added using the **Add Lease** button. Only official BOEM leases can be added.

In the Leases page, select **Add Lease**, which is located in the upper right corner of the page shown in Figure 90. This will take you to the **Add Lease** page as shown in Figure 91.

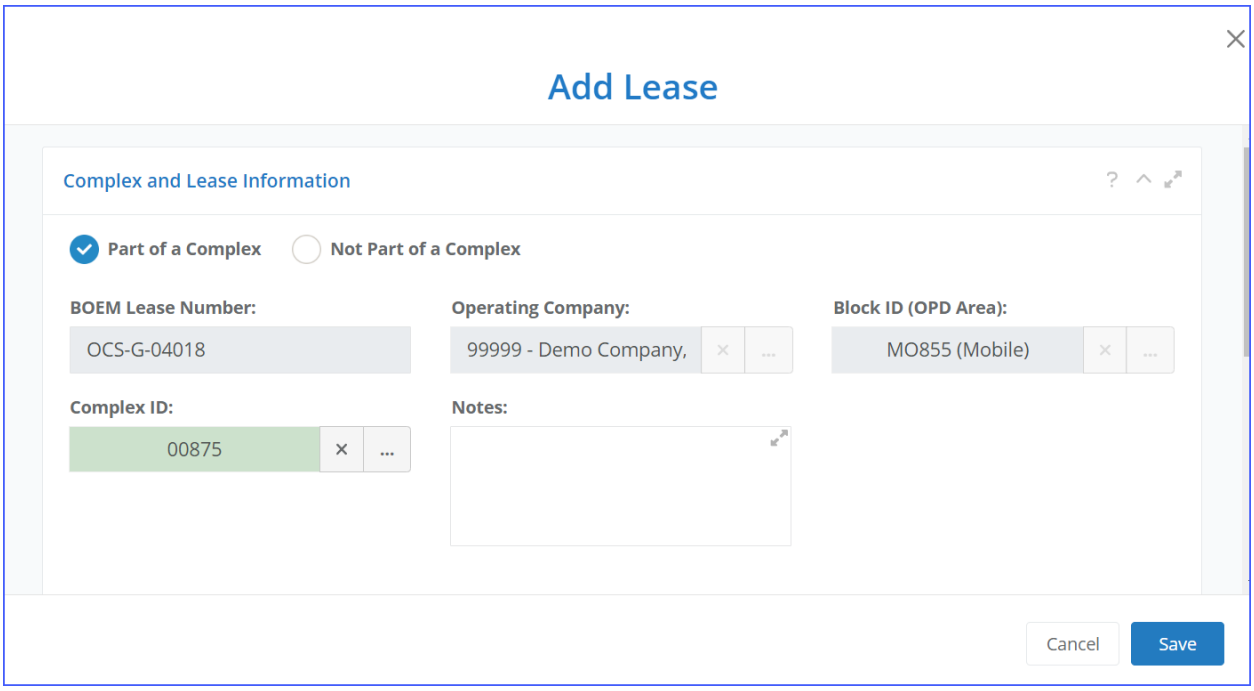


Figure 91. Add Lease page

If you wish to specify sources under an existing lease associated with a complex, check the **Part of a Complex** option, and select the appropriate complex by clicking **[…]** for the **Complex ID**. All associated fields will then be automatically filled with the appropriate information.

If you wish to define a brand-new lease, check the **Not Part of a Complex** option and fill in the required information manually.

Save the new lease by clicking **Save**, and the new lease will appear in the list of available leases.

4.2.2 Lease Source vs Emission Process

The **Lease Sources & Processes** table displays information for two types of elements in the database—lease operation sources and their associated processes.

A **Lease Source** is a preconfigured source for a particular type of operation. In OCS AQS, there are eight main types of lease operations sources:

- Installation Support Vessel
- Drilling Rig for Crude Oil Exploration / Production Wells
- Drilling Rig for Natural Gas Exploration / Production Wells
- Self-Propelled Drill Rig - US Flagged (Domestic)
- Self-Propelled Drill Rig - Foreign Flagged

- Well Stimulation Vessel
- Combustion Flare
- Mud Degassing

There are processes associated with each source type, as described in Table 4 below.

Table 4. Processes created based on operation source type

Operation Type	Process ID	Process Description	SCC
Installation Support Vessel	DIE-M02R-LO	Diesel Engine Where Max HP less than 600	2280002201
Installation Support Vessel	DIE-M03R-LO	Diesel Engine Where Max HP greater than or equal to 600	2280002201
Drilling Rig - Crude Oil	DIE-M03R-DO	Crude Oil Production Well Drilling - Diesel Engine	2280002201
Drilling Rig - Natural Gas	DIE-M03R-DG	Natural Gas Production Well Drilling - Diesel Engine	2280002201
Self-Propelled Drill Rig - US Flagged	C1C2-DRILL-LO	Drilling from C1/C2 Vessels (U.S. Flagged)	2280002201
Self-Propelled Drill Rig - Foreign Flagged	C1C2-DRILL-LO-F	Drilling from C1/C2 Vessels (Foreign Flagged)	2280002201
Well Stimulation Vessel	DIE-M02R-LO	Diesel Engine Where Max HP less than 600	2280002201
Well Stimulation Vessel	DIE-M03R-LO	Diesel Engine Where Max HP greater or equal to 600	2280002201
Combustion Flare	FLA-Flare-LO	Combustion Flare	31000160
Combustion Flare	FLA-Pilot-LO	Combustion Flare - Pilot	31000160
Mud Degassing	MUD-M01-LO	Mud Degassing	31000101

The **Non-Point Lease Operations (NPLO) Process** (also known as **Lease Source Process**) allows you to add an additional activity type not accounted for by the basic source. For example, in a CSV, if you have additional diesel engines operating independent of the main shipboard engines, you can add them to the source using this mechanism.

Each line in the **Lease Sources & Processes** table displays a specific process AND the source to which it belongs, as shown in Figure 92.

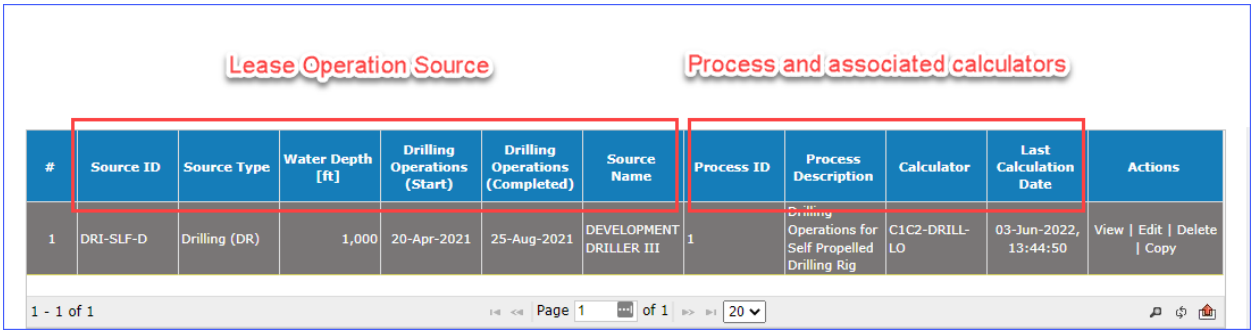


Figure 92. Lease operations and processes

In the **Actions** column, the actions apply as follows:

- **View/Edit/Copy:** Lease operation source only
- **Delete:** Process and/or lease operations source (deleting a process will NOT delete the lease source as long as there are other processes under it)

4.2.3 Edit Existing Lease Operation Sources

Pathway: Emissions > Lease Operations > Lease Operation Emissions Manager > Select Lease

A lease covers one or more emissions source. To edit an existing lease operation source, first select an existing BOEM lease number as previously demonstrated in Section 4.2.

Then, from the **Lease Sources & Processes** table, select the source you wish to edit. After that, click **Edit** under the **Actions** column. Figure 93 shows the source selection and the edit button.

Figure 93. Source selection

The **Edit Lease Source** dialog will load allowing you to make the necessary changes. You may need to scroll down to reach all available panels. When finished, click **Save** as shown in Figure 94.

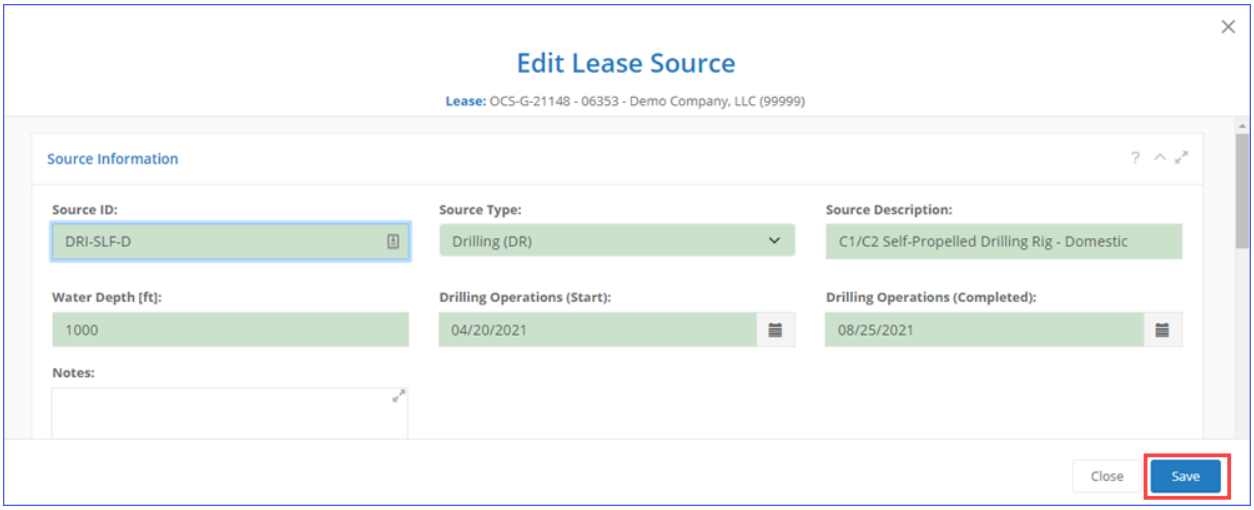


Figure 94. Edit Lease Source

4.2.4 Add Lease Operation Source

Pathway: Emissions > Lease Operations > Lease Operation Emissions Manager > Select Lease

To add a lease operation source, click **Add Lease Source** above the **Lease Sources & Processes** table.

Follow the steps below to set up your new lease operations source.

1. Select the applicable **Lease Source Template**. The following equipment sources are provided for lease operations in Table 5.

Table 5. Sources for lease operations

Source ID	Source Type
CSV-PC	Platform Construction (PC)
DRI-Crude	Drilling (DR)
DRI-NG	Drilling (DR)
DRI-SP-DOM	Drilling (DR)
DRI-SP-4N	Drilling (DR)
CSV-WS	Well Stimulation Vessel (WS)
FLA-LO	Platform Construction (PC)
MUD-LO	Platform Construction/Removal (PC)

2. The following step allows you to specify required information regarding the drilling rig, support vessel, or well stimulation vessel based on the type of operation you selected as shown in Figure 95.
   - For **Drilling Rigs:** In the **Drilling Rig Information** panel, click **[…]** and select a rig from the list of existing ones. The list displays the general configuration and specifications of the rig. More specific information is provided in the **Process** details after the source and associated

processes have been created. If the rig you wish to add is not on the list, contact OSC AQS support team and request that it be added.

- For **Support Vessels:** In the **Construction Support Vessel Information** panel, type in the name of the vessel. There is no list to select from.
- For **Well Stimulation Vessels**: In the **Construction Support Vessel Information** panel, type in the name of the vessel. There is no list to select from.

If the georeferenced location of the source is unknown, an estimate can be generated by clicking **From Area Block Location** (highlighted in red in Figure 95). This provides the center point of the block the lease is assigned to.

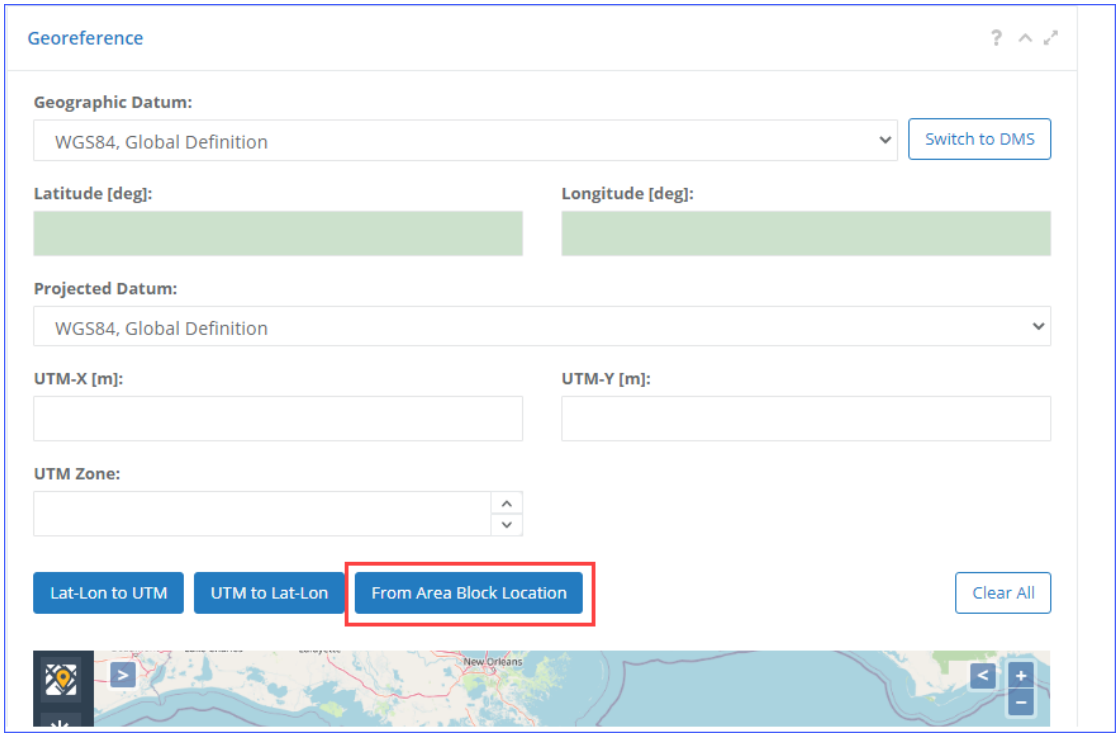


Figure 95. Lease Source location

3. Click **Finish** to save changes. OCS AQS will automatically generate processes associated with the operation you selected as shown in Table 5.
   IMPORTANT: The processes that are automatically generated are default processes that each operation source type should have. You can add or remove processes as needed.

After the sources and processes are in place, you can specify the activity data in the **Data Request** tab of the **Calculator Parameters & Requests** panel, as described in Section 4.2.6.

4.2.5 Add/Delete Lease Operation Processes

Pathway: Emissions > Lease Operations > Lease Operation Emissions Manager > Select Lease

To **Add** an NPLO process associated with an existing lease operation source, click **Add NPLO Process**, as shown in Figure 96.

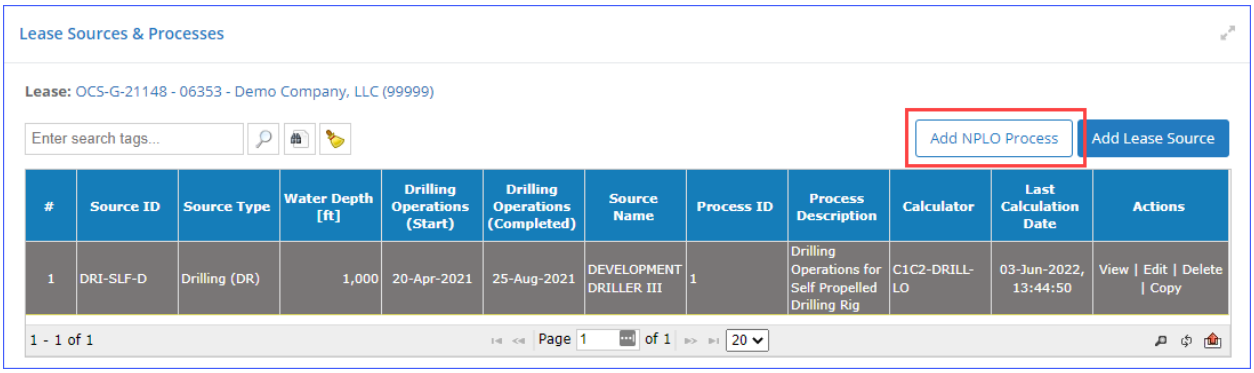


Figure 96. Add NPLO Process button

A one-step wizard (Figure 97) allows you to specify all the information required to create the process:

1. Select the **Source** for which you wish to create the process.
2. From the table of available calculation methods, select the one that will be used to calculate emissions for this process.
3. The **Process ID** will be updated to match the **Name** of the estimation method, and the **Process Description** will be updated to match the **Description** of the same method.
4. Click **Finish**.

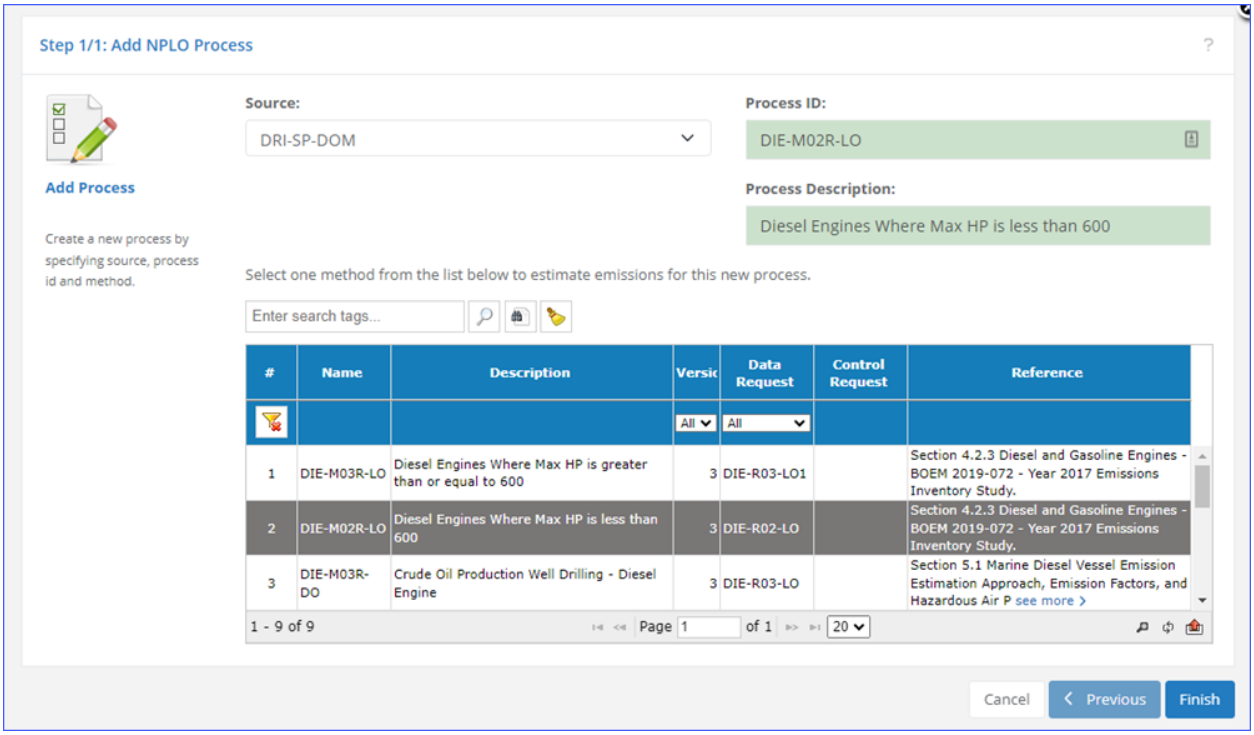


Figure 97. Add lease operation process

To delete an individual process (Figure 98), select **Delete** under the **Actions** column of the process you want to remove. On the confirmation window, click **Delete** to remove the process from the source.

> ***IMPORTANT:*** Deleting a process will NOT delete the lease source, as long as there are other processes under it.

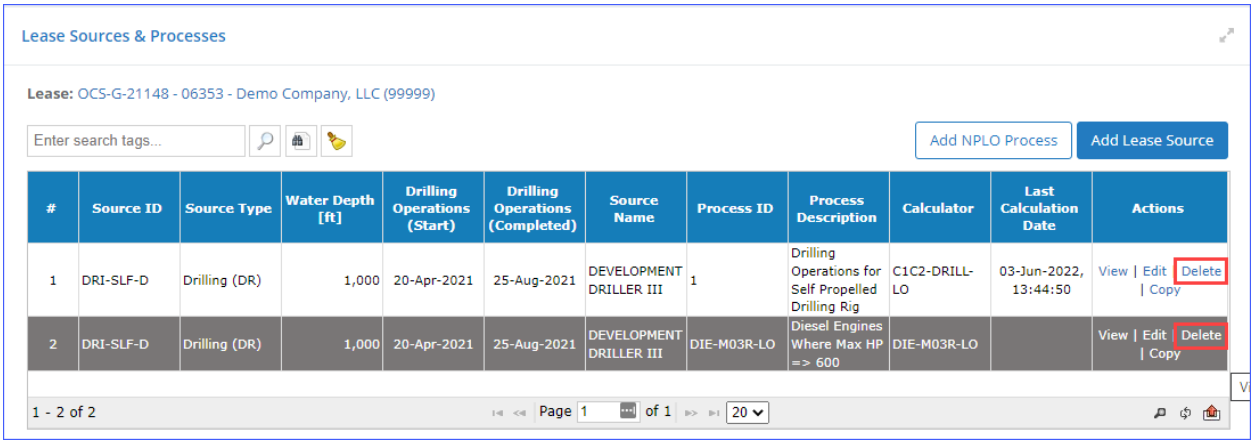


Figure 98. Delete lease operation process

4.2.6 Calculator Parameters & Requests

Pathway: Emissions > Lease Operations > Lease Operation Emissions Manager > Select Lease

In the **Process** section, the **Calculator Parameters & Requests** panel contains the main functionality of the **Lease Operation Emissions Manager**. It allows you to set the following parameters for each process by period (time between **Drilling Operations (Start)** and **Drilling Operations (Completed)**):

- Select input and physical parameters
- Enter required calculation parameters in required fields (green boxes) and optional fields (white boxes)
- View emission factors for each pollutant
- Perform range checks and other QA checks for input parameters

Each process has different input parameters based on the assigned calculator. For example, the input parameters for a diesel engine will differ from those used in a propelled drill rig process.

Input parameters used for emission calculations and process descriptions are called **Data Requests**. Each field allows annotation and comments with the **QA** button to the right of the field as shown in Figure 99.

A description of lease operation calculator and **Data Request** input fields is provided in Appendix B.

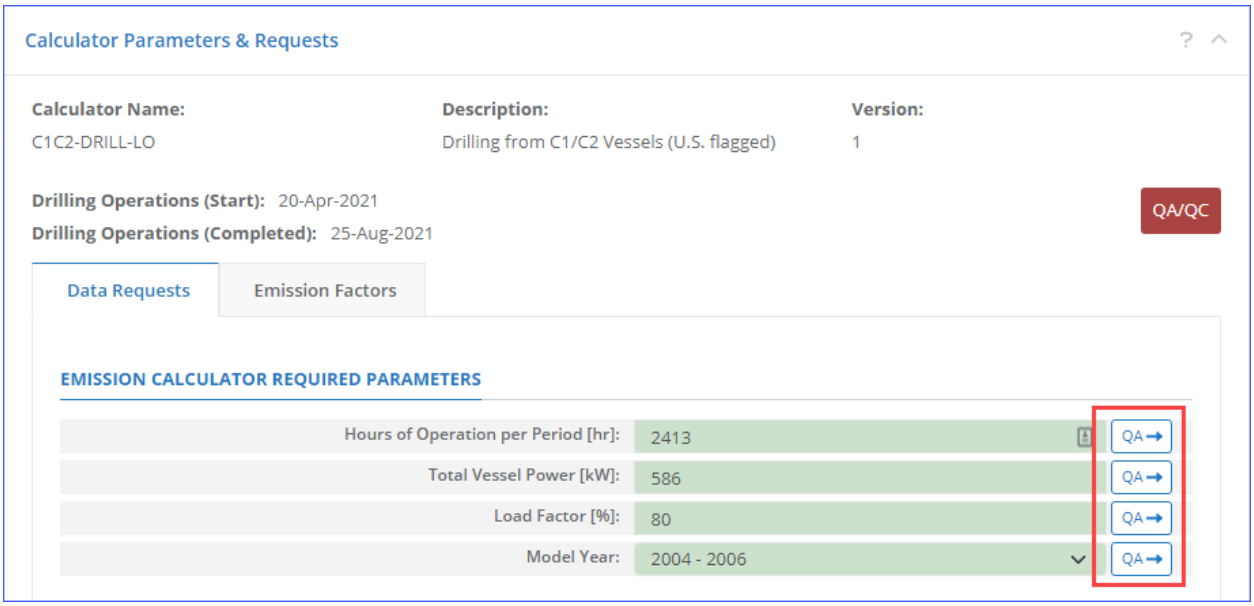


Figure 99. Lease Operations Data Request tab

The following tabs are available:

- **Data Requests** allow input of required and optional data used for emissions calculations (for more information see Section 3.2.9.1).
- **Emission Factors** provide engineering parameters to calculate individual pollutant emissions (for more information see Section 3.2.9.3).

4.2.7 Calculate Lease Operation Emissions

Pathway: Emissions > Lease Operations > Lease Operation Emissions Manager > Select Lease

Emissions can be calculated for the reporting periods (Figure 100) after all required data request fields are filled in. Check completeness and input ranges by clicking on the red **QA/QC** button. If input data is filled and within range expectations, a blue status message will be displayed. Erroneous/incomplete data fields will be highlighted with a red border and a pop-up window will load with the list of errors.

Click **Calculate** (or **Re-Calculate**, if emissions had been previously calculated) when all input parameters are error-free. Depending on the calculator and the number of months in the period, the processing may take several minutes. Calculated emissions will appear in the table under the button.

Click **GWP Details** to review the global warming potential standards used to calculate the CO_2e values. For more information on **GWP Details** see Section 3.2.14.

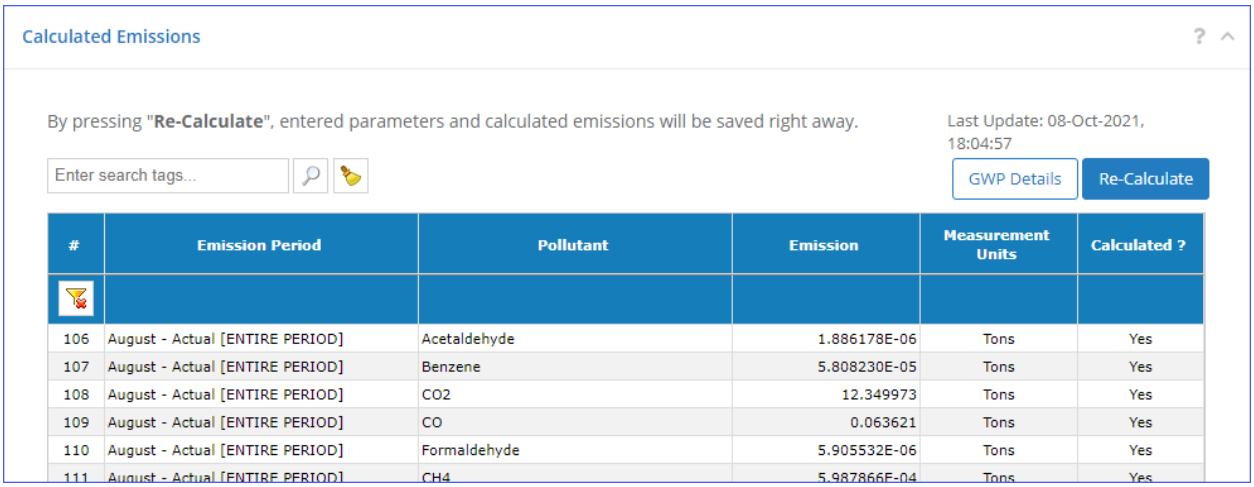
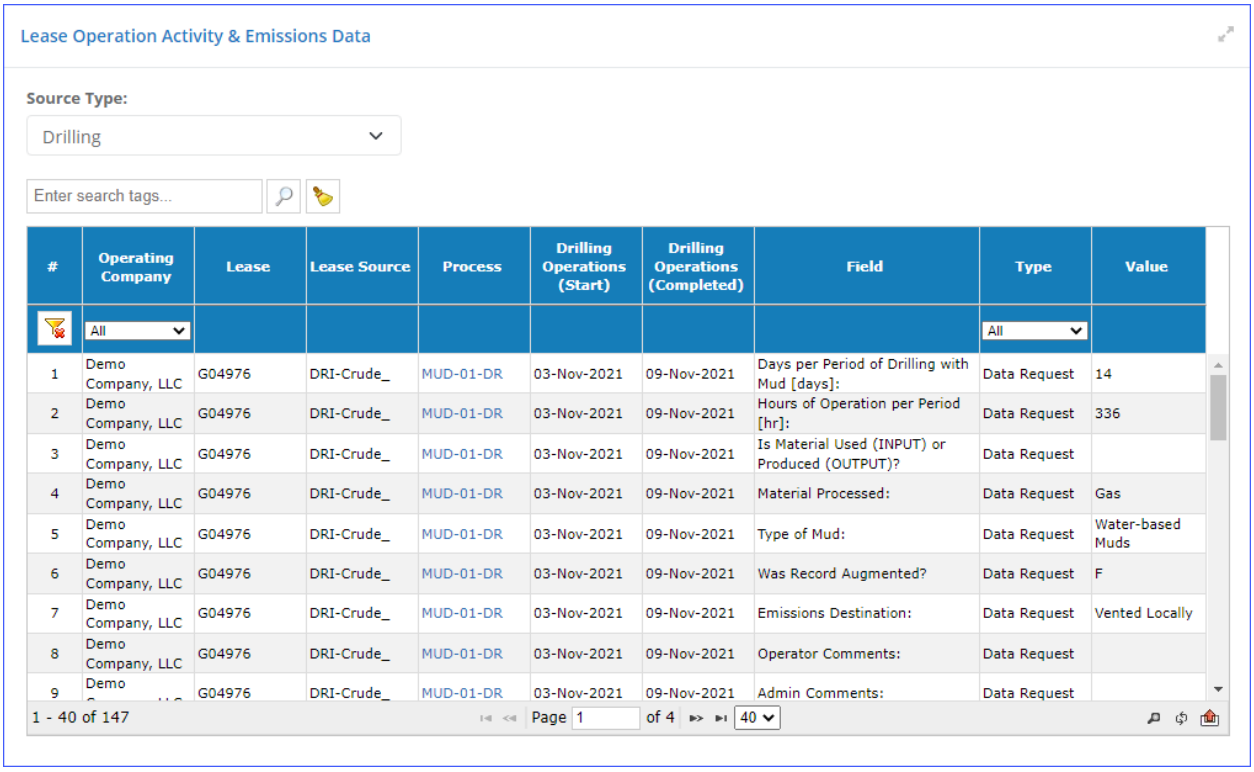


Figure 100. Lease Sources Calculated Emissions

4.3 Review Lease Operation Activity Data

Pathway: Emissions > Lease Operations > Review Lease Operation Activity data

Section 4.2 demonstrated how to enter the activity data for the lease operations using the **Lease Operation Emissions Manager**. The **Review Lease Operation Activity Data** allows you to review the entered data.



#	Operating Company	Lease	Lease Source	Process	Drilling Operations (Start)	Drilling Operations (Completed)	Field	Type	Value
	All							All	
1	Demo Company, LLC	G04976	DRI-Crude_	MUD-01-DR	03-Nov-2021	09-Nov-2021	Days per Period of Drilling with Mud [days]:	Data Request	14
2	Demo Company, LLC	G04976	DRI-Crude_	MUD-01-DR	03-Nov-2021	09-Nov-2021	Hours of Operation per Period [hr]:	Data Request	336
3	Demo Company, LLC	G04976	DRI-Crude_	MUD-01-DR	03-Nov-2021	09-Nov-2021	Is Material Used (INPUT) or Produced (OUTPUT)?	Data Request	
4	Demo Company, LLC	G04976	DRI-Crude_	MUD-01-DR	03-Nov-2021	09-Nov-2021	Material Processed:	Data Request	Gas
5	Demo Company, LLC	G04976	DRI-Crude_	MUD-01-DR	03-Nov-2021	09-Nov-2021	Type of Mud:	Data Request	Water-based Muds
6	Demo Company, LLC	G04976	DRI-Crude_	MUD-01-DR	03-Nov-2021	09-Nov-2021	Was Record Augmented?	Data Request	F
7	Demo Company, LLC	G04976	DRI-Crude_	MUD-01-DR	03-Nov-2021	09-Nov-2021	Emissions Destination:	Data Request	Vented Locally
8	Demo Company, LLC	G04976	DRI-Crude_	MUD-01-DR	03-Nov-2021	09-Nov-2021	Operator Comments:	Data Request	
9	Demo	G04976	DRI-Crude_	MUD-01-DR	03-Nov-2021	09-Nov-2021	Admin Comments:	Data Request	

1 - 40 of 147 Page 1 of 4 40

Figure 101: Review Lease Operations Activity tool

The **Source Type** drop-down box above the table allows you to select the type of the source for which you wish to review data. Only one source type can be selected at a time.

Once you have selected the source type, the activity data for all processes of that type will be displayed in the table.

If any issues are detected, clicking the process ID link in the **Process** column will open the details of that process in **Lease Operations Activity Manager** in a new tab, allowing you to make changes.

5 Emissions: Tools

The **Tools** section of the **Emissions** module provides a number of different tools that help manage emission sources. Figure 102 shows the options available in this section.

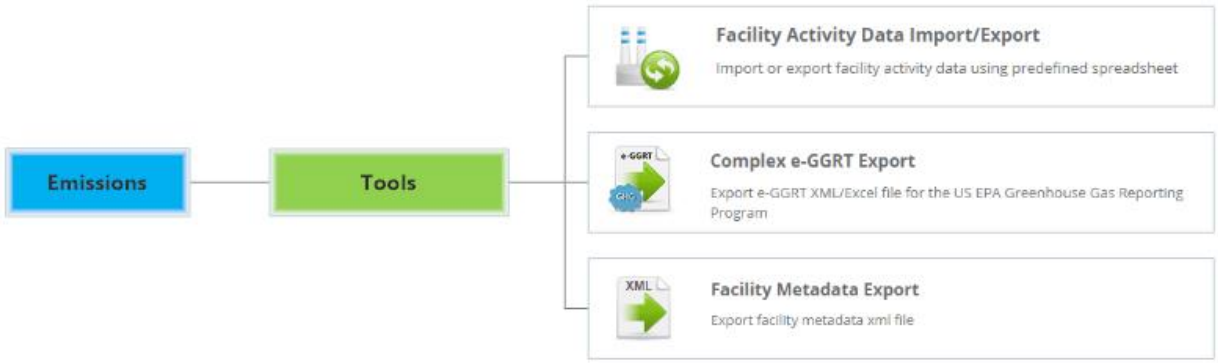


Figure 102. Other Emissions module functions

5.1 Facility Activity Data Import/Export

Pathway: Emissions > Tools

While you can import and export activity data for a specific emission unit directly in **AEM** (see Section 3.2.10.1), you can also perform a batch import or export of activity data for all processes for multiple existing facilities.

To export activity data:

1. Click the **Facility Activity Data Import/Export** navicon.
2. Click **Import/Export Facility Activity Data**.
3. Check the **Export** option and click **Next**.
4. Check the box for each facility for which you wish to export activity data. The activity data for all processes at those facilities will be included.
5. Click **Finish** to complete the wizard and generate the data file.
6. You will be taken to the **Job Queue – Activity Data** page, which shows the progress of you export, as shown on Figure 103. When the export is completed, the **Status** of the export is updated to **Complete**, and the generated files can be downloaded.

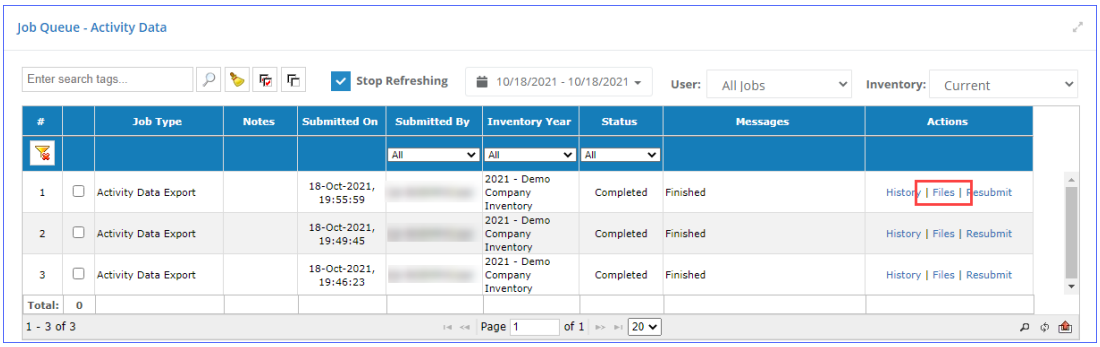


Figure 103. Facility Activity Data queue

7. In the **Actions** column of the table, click **Files** to view the exported file(s).

8. The **Job Files** dialog is shown. Click **Download** as shown in Figure 104 to save the file to your computer.

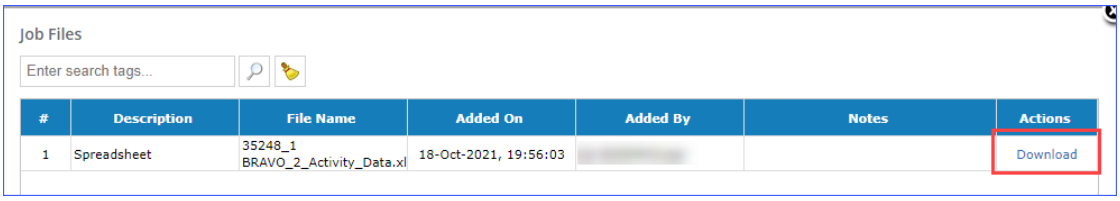


Figure 104. Activity Data download link

After the file is on your hard drive, you can open it and edit the values as needed. When finished, you can import the file to update the activity data.

To import activity data:

1. Click the **Facility Activity Data Import/Export** navicon.
2. Check the **Import** option and click **Next**.
3. Click **Select file**, then navigate to and select the file that contains activity data.
4. If multiple files are being imported, repeat step 3 until all files have been specified.
5. Click **Finish** to complete the wizard and upload the activity data.

5.2 Complex e-GGRT Export

Pathway: Emissions > Tools

The USEPA's electronic Greenhouse Gas Reporting Tool (e-GGRT) supports complex and supplier reporting for the USEPA Greenhouse Gas Reporting Program (GHGRP). OCS AQS contains a tool capable of generating an e-GGRT file in the appropriate XML format for submission to USEPA for a single any complex that exceeds 25,000 metric tons per year of CO_2e combined emissions from all facilities in the complex.

> ***IMPORTANT:*** An e-GGRT report can only be generated if all sources in the complex have passed the submittal QA/QC (see section 2.2.1).

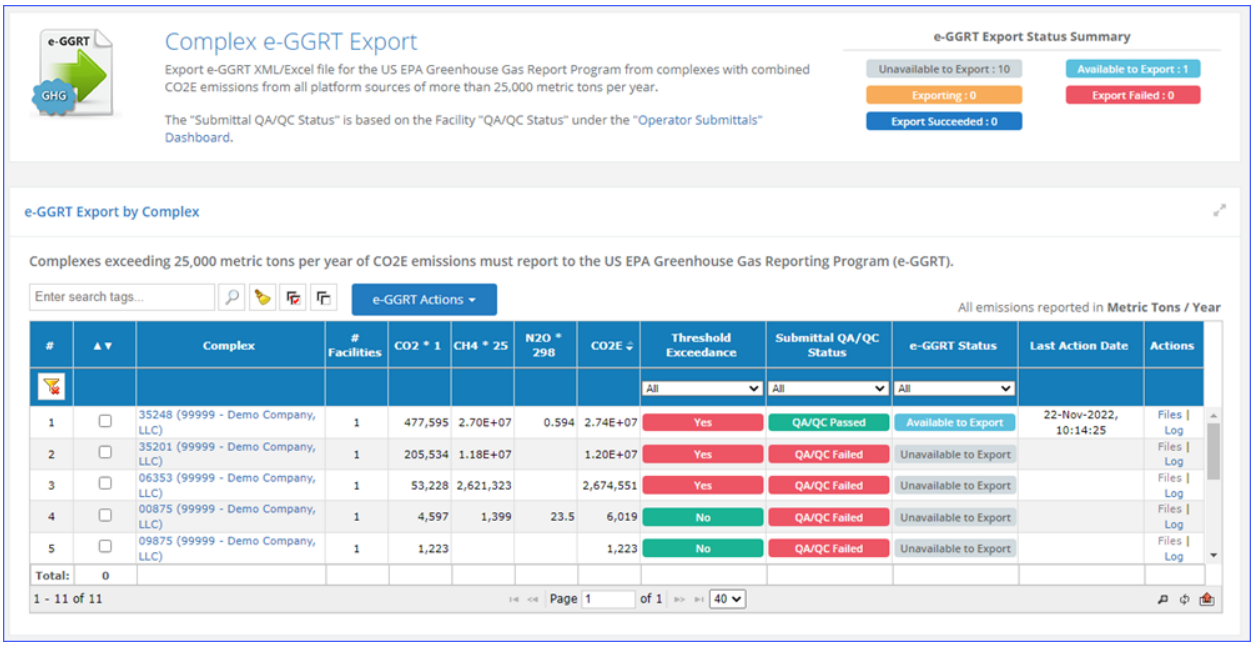


Figure 105. Complex e-GGRT Export

The summary above the table displays the number of the e-GGRT jobs in each status.

- **Unavailable to Export:** The e-GGRT for the complex cannot be exported at this moment. This is likely due to the fact that the QA/QC has not been run or has failed.
- **Exporting:** This is a temporary status while the export job is being processed.
- **Export Succeeded:** Export job has completed successfully and you can download the generated files.
- **Available to Export:** Indicates that the complex data is ready for export.
- **Export Failed:** Export job did not complete successfully. This is most likely due to an issue with the export process – please try again in a few minutes. If the export continues to fail, contact the OCS AQS support team.

The table displays the following information for each complex in the inventory:

- **Complex:** Complex ID. Clicking the link in this column will open the QA/QC status breakdown for the facilities at this complex. All facilities at the complex must pass the QA/QC check before e-GGRT can be exported.
- **# Facilities:** Number of facilities at the complex.
- **CO2 * 1:** CO_2e contribution from CO2 emissions from all sources at the complex.
- **CH4 * 25:** CO_2e contribution from methane emissions from all sources at the complex.
- **N2O * 298:** CO_2e contribution from nitrous oxide emissions from all sources at the complex.
- **CO2E:** Combine CO_2e for the complex.
- **Threshold Exceedance:** Flag that indicates if the complex has generated over the 25,000 metric tons of CO_2e during the inventory year.
- **Submittal QA/QC Status:** Flag indicating if <u>all</u> facilities at the complex have passed the submittal QA/QC check. If at least one facility has failed the check or the check has not been run, the status will be set to **QA/QC Failed**.
- **e-GGRT Status:** Status of the e-GGRT export job (refer to the list above).
- **Last Action Date:** Last time an e-GGRT export job was started.
- **Actions:**
  - **Files:** Click to load the list of files ready to download.

- **Log:** Click to load the list of previous export jobs. This list shows when the export was previously run, the status of the previous export jobs, and the user who ran it.

To export a single or multiple e-GGRT file(s), follow the steps below:

1. Click **Complex e-GGRT Export** navicon
2. Check the box for each complex for which you wish to export e-GGRT.
3. Click **e-GGRT Actions** button above the table and select **Generate Report**.
4. The dialog that loads displays a list of all selected complexes. If you selected any invalid complexes, these complexes will be marked as **Unavailable to Export** in the **Validation Message** column. The e-GGRT for these complexes will not be exported.
5. Click **Finish**.
6. Once the **e-GGRT Status** reads **Export Succeeded**, click the **Files** link in the **Actions** column.
7. Click the link in the **Download** column for the most recent archive.

The downloaded file is in a .zip format with an Excel spreadsheet that contains a summary of the export report and an XML file that that can be submitted to the US EPA.

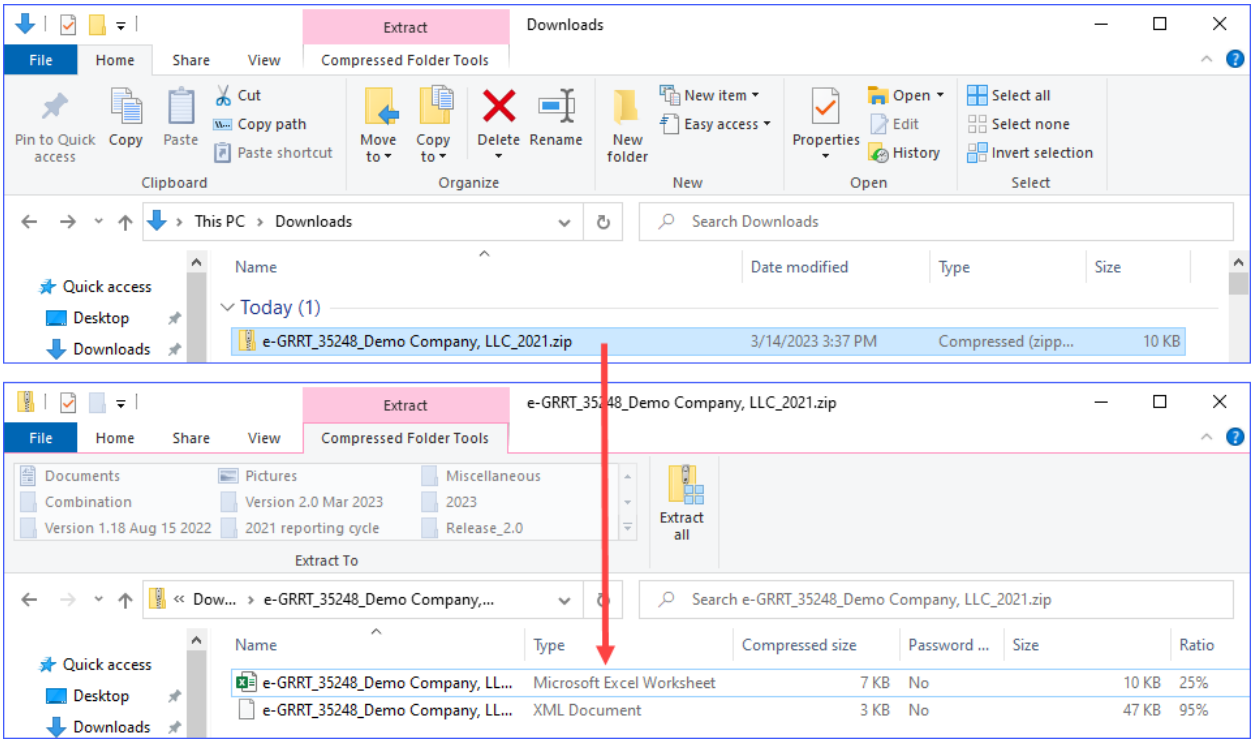
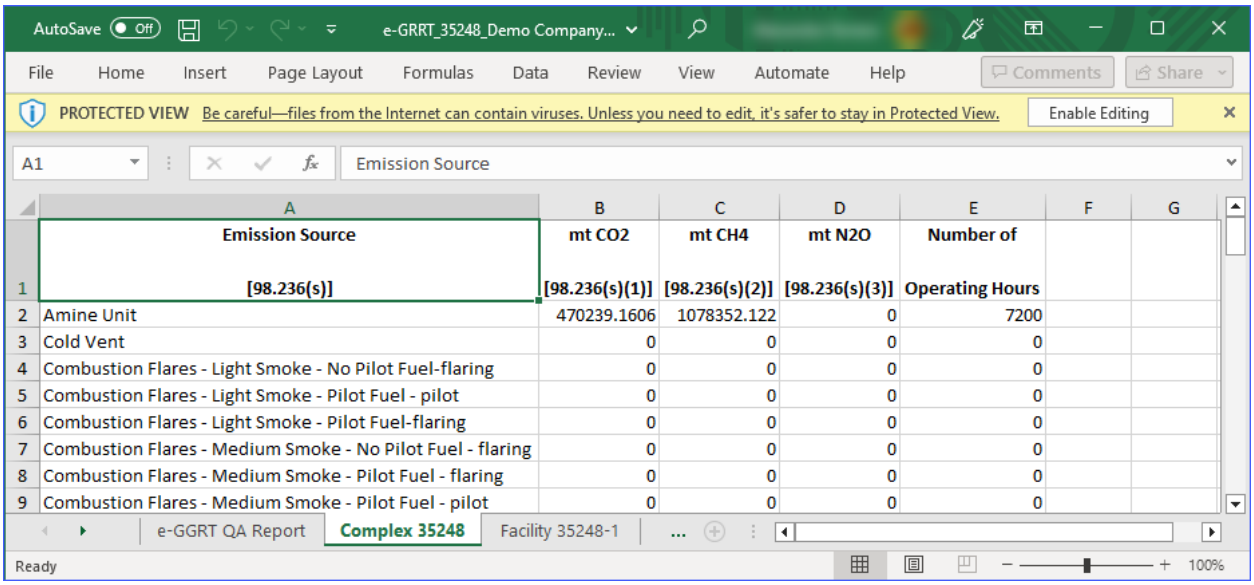


Figure 106. Generated e-GGRT .ZIP file and its contents

The Excel file is made up of three major parts:

- **e-GGRT QA Report:** List of any issues encountered when generating the report.
- **Complex ID:** Summary of the relative contributions from CO_2, CH_4, and N_2O to the overall calculated CO_2e emissions and operating hours broken down by equipment type.
  IMPORTANT: There may be a discrepancy between the total emissions displayed in the OCS AQS table (Figure 105) and the Excel worksheet. This happens because the OCS AQS table displays the total emissions from all emission units in the complex, whereas the complex worksheet displays only emissions from the emission units that are required to be exported to the e-GGRT report.

- **Facility ID:** All subsequent worksheets represent the emission contributions by each facility in the complex.



	A	B	C	D	E	F	G
1	Emission Source [98.236(s)]	mt CO2 [98.236(s)(1)]	mt CH4 [98.236(s)(2)]	mt N2O [98.236(s)(3)]	Number of Operating Hours		
2	Amine Unit	470239.1606	1078352.122	0	7200		
3	Cold Vent	0	0	0	0		
4	Combustion Flares - Light Smoke - No Pilot Fuel-flaring	0	0	0	0		
5	Combustion Flares - Light Smoke - Pilot Fuel - pilot	0	0	0	0		
6	Combustion Flares - Light Smoke - Pilot Fuel-flaring	0	0	0	0		
7	Combustion Flares - Medium Smoke - No Pilot Fuel - flaring	0	0	0	0		
8	Combustion Flares - Medium Smoke - Pilot Fuel - flaring	0	0	0	0		
9	Combustion Flares - Medium Smoke - Pilot Fuel - pilot	0	0	0	0		

e-GGRT QA Report | Complex 35248 | Facility 35248-1

Figure 107. e-GGRT Excel summary file

5.3 Facility Metadata Export

Pathway: Emissions > Tools

OCS AQS contains a tool capable of generating an XML file containing metadata for emissions inventory submissions to BOEM.

> ***IMPORTANT:*** The facility metadata report is required for submittal and will be included with the QA/QC files during the submittal procedure.

To export a metadata report for a particular facility:

1. Click the **Facility Metadata Export** navicon.
2. In the **Summary List – Facility Metadata Export** screen (shown in Figure 108), click **Export Facility Metadata**.

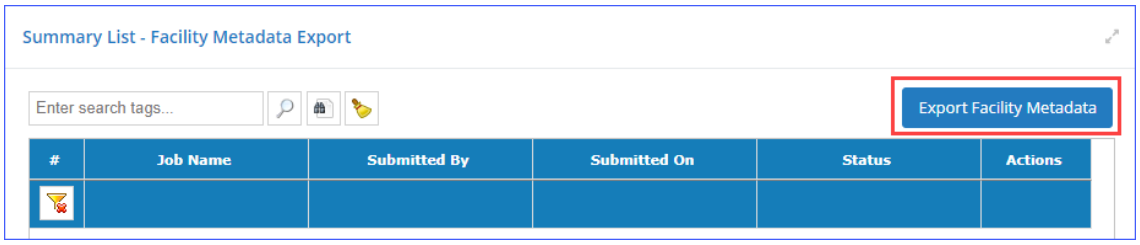


Figure 108. Metadata report page

3. Check the box for each facility (or facilities) for which you wish to generate a report. Individual reports will be generated for each facility.
4. Click **Next**.
5. In the **Summary** page, confirm that the correct number of facilities is displayed and click **Finish** to complete the wizard and begin export.

6. You will be taken to the **Job Queue – Facility Metadata Export,** which shows the progress of your export, as shown in Figure 109. When the export is completed, the **Status** of the export is updated to **Completed**, and the generated files can be downloaded.

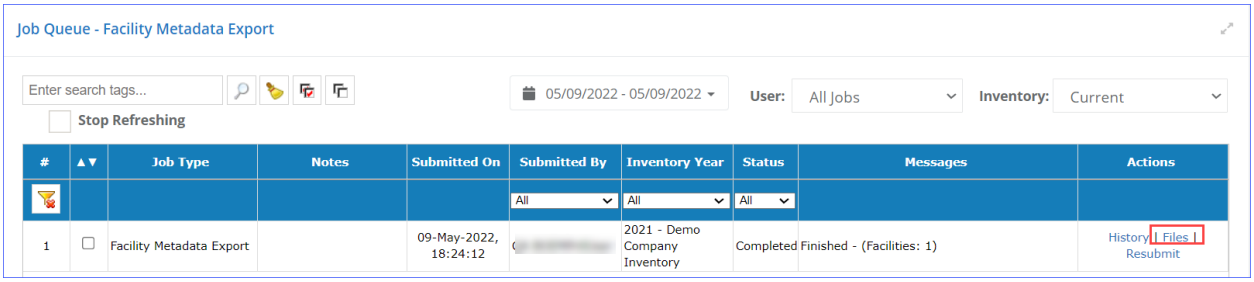


Figure 109. Metadata export queue

7. In the **Actions** column of the table, you can click **Files** to view the exported file(s).
8. Click **Download** in the Job Queue to save the file to your computer.

The downloaded file is in a .zip format with an Excel spreadsheet that contains an export report and individual XML files for each facility.

6 Documents

The **Documents** module allows you to access supplementary documentation, as well as any files uploaded into, downloaded from, or generated by the application.

6.1 Documents

Pathway: Documents > General

Click the **Documents** navicon to access the following features available in this section:

- **Public Documents:** Supplementary documentation uploaded by BOEM, such as the user guide. As an operator, you will not be able to manage files in this section, only view/download them.
- **My Documents:** Files imported into, exported from, or generated by the system.

6.1.1 Public Documents

Pathway: Documents > General > Documents > Public Documents

On the **Public Documents** page, you will see a list of available supporting documentation (Figure 110).

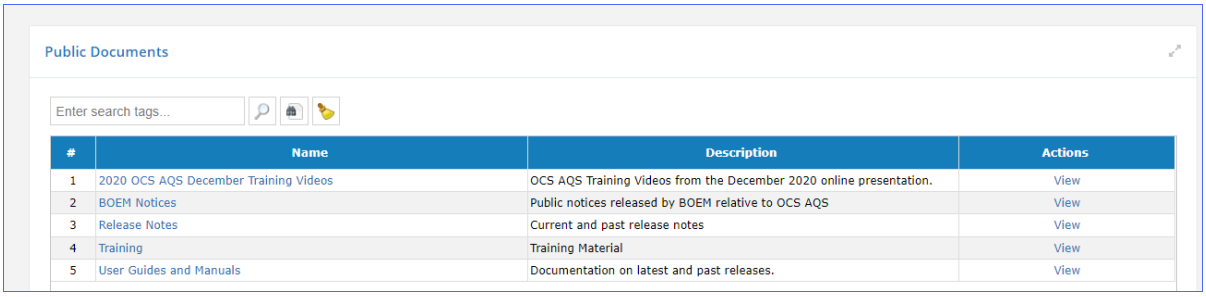


Figure 110. Public Documents list

To view a document in the **Public Documents** section, click **View** in the **Actions** column (Figure 111).

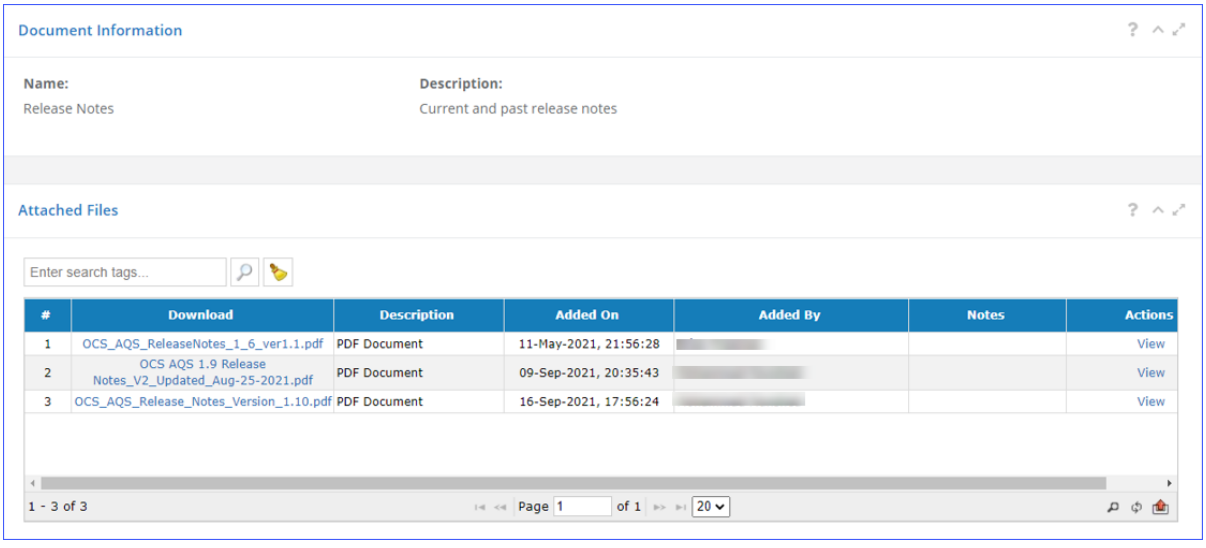


Figure 111. Documents in a set

Click on the link in the **Download** column to access the individual documents within the group. In some cases, there may be only one document in the group.

The PDF files will be loaded into a viewer. Use the toolbar above the document to navigate between the pages. To download the document, select the download icon in the document viewer as shown in Figure 112.

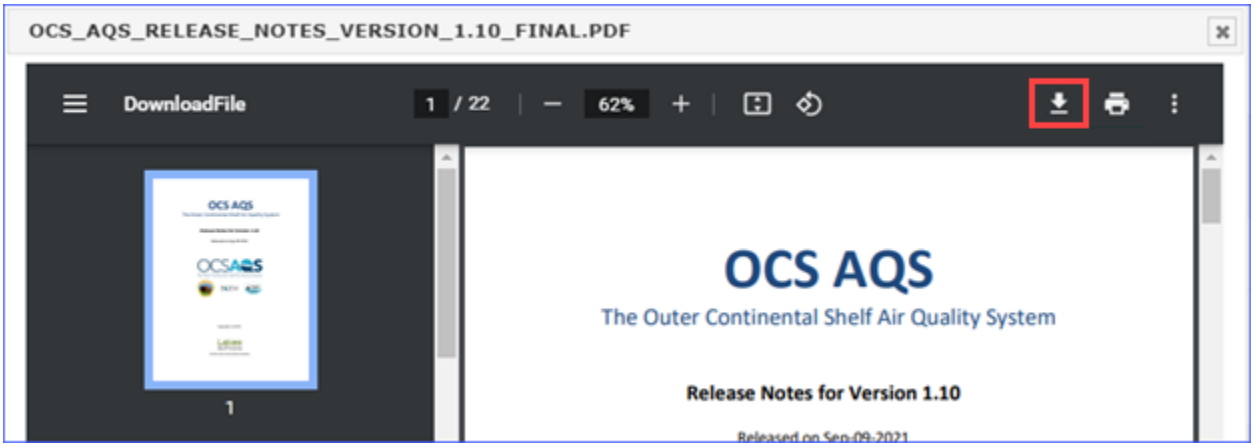


Figure 112. Document viewer

6.1.2 My Documents

Pathway: Documents > General > Documents > My Documents

OCS AQS keeps copies of all files imported, exported, and generated by the system. These files can be downloaded and reviewed at any time by going to the **My Documents** section of the **Documents** module (Figure 113).

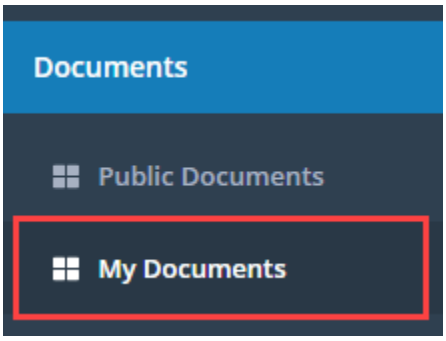
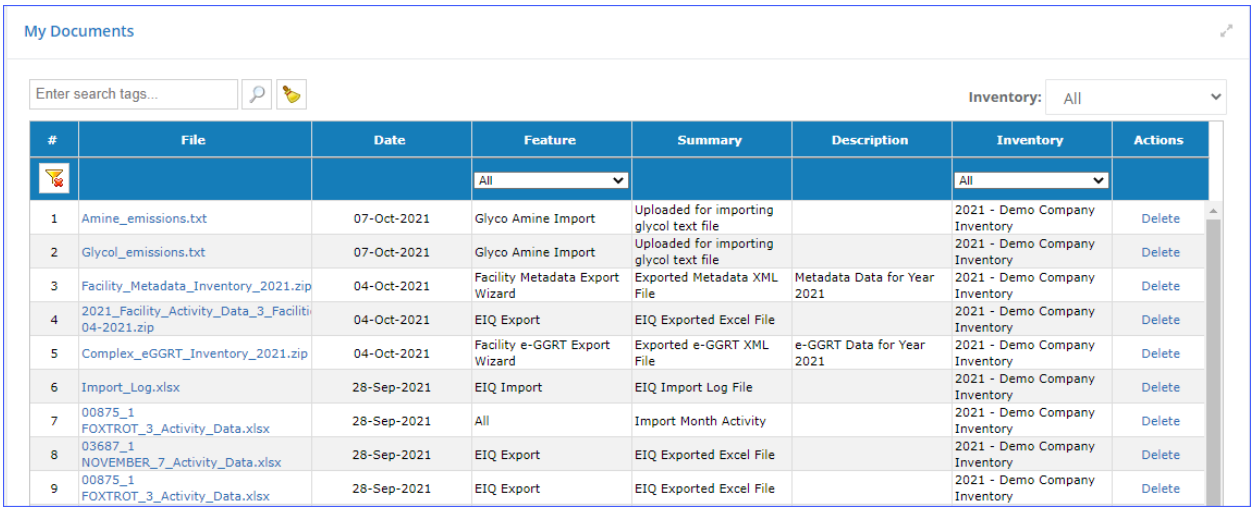


Figure 113. Documents – My Documents

The **My Documents** list displays all files that have been uploaded into the system, exported from the system, or generated by the system (Figure 114).

IMPORTANT: The documents in this section are user-specific and are not visible to other users.



#	File	Date	Feature	Summary	Description	Inventory	Actions
			All			All	
1	Amine_emissions.txt	07-Oct-2021	Glyco Amine Import	Uploaded for importing glycol text file		2021 - Demo Company Inventory	Delete
2	Glycol_emissions.txt	07-Oct-2021	Glyco Amine Import	Uploaded for importing glycol text file		2021 - Demo Company Inventory	Delete
3	Facility_Metadata_Inventory_2021.zip	04-Oct-2021	Facility Metadata Export Wizard	Exported Metadata XML File	Metadata Data for Year 2021	2021 - Demo Company Inventory	Delete
4	2021_Facility_Activity_Data_3_Faciliti 04-2021.zip	04-Oct-2021	EIQ Export	EIQ Exported Excel File		2021 - Demo Company Inventory	Delete
5	Complex_eGGRT_Inventory_2021.zip	04-Oct-2021	Facility e-GGRT Export Wizard	Exported e-GGRT XML File	e-GGRT Data for Year 2021	2021 - Demo Company Inventory	Delete
6	Import_Log.xlsx	28-Sep-2021	EIQ Import	EIQ Import Log File		2021 - Demo Company Inventory	Delete
7	00875_1 FOXTROT_3_Activity_Data.xlsx	28-Sep-2021	All	Import Month Activity		2021 - Demo Company Inventory	Delete
8	03687_1 NOVEMBER_7_Activity_Data.xlsx	28-Sep-2021	EIQ Export	EIQ Exported Excel File		2021 - Demo Company Inventory	Delete
9	00875_1 FOXTROT_3_Activity_Data.xlsx	28-Sep-2021	EIQ Export	EIQ Exported Excel File		2021 - Demo Company Inventory	Delete

Figure 114. My Documents list

Click the name link in the **File** column to download the file for review or click **Delete** in the **Actions** column to remove the file from the records.

IMPORTANT: The file cannot be recovered after it has been deleted.

7 Map

Pathway: Maps

The OCS AQS **Map** module provides a graphical display of all georeferenced objects, such as platforms, on a map of the Gulf of Mexico or Alaska regions for the inventory selected. It also allows you to display gridded emissions, custom shapefiles, and query the database to locate and display specific objects. When the **Map** module is first loaded, it will display a default view showing all facilities and release point available in the current inventory.

An overview of features is shown in Figure 115.

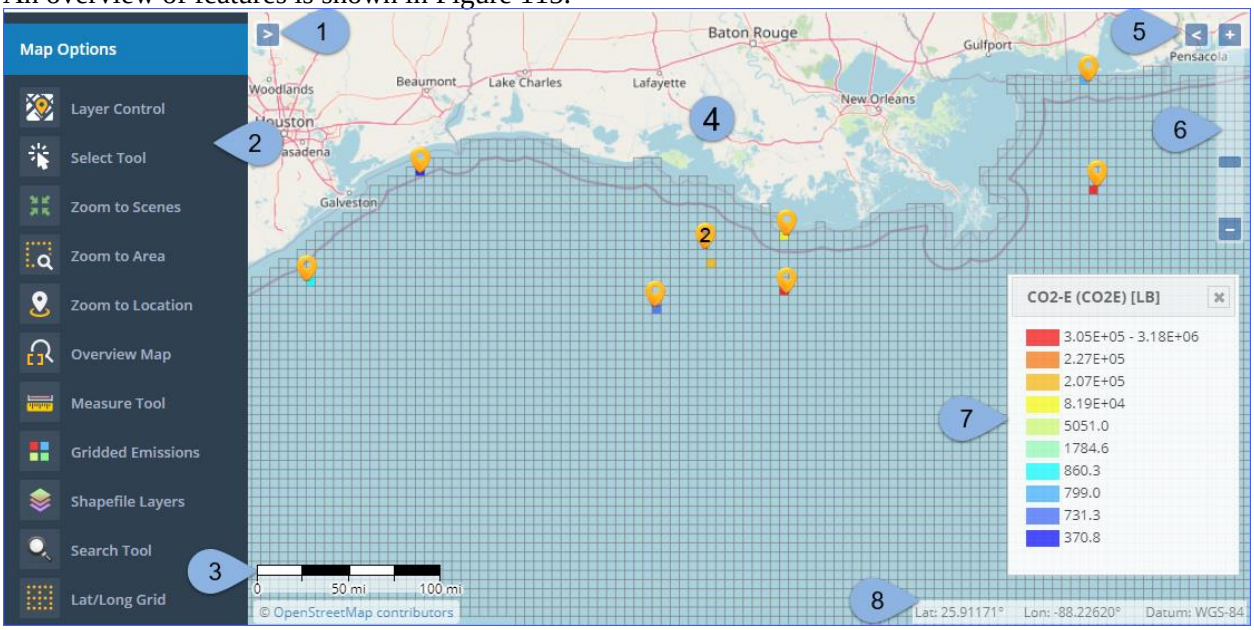


Figure 115. Map features

The map includes the following elements:

1. **Select Base Map:** Expand to specify what background map overlay will be used.
2. **Map Options:** A collection of tools that allows you to navigate through various elements on the map and customize the map view. See below for the full list of available tools.
3. **Scale Bar:** Bar that displays relative scale of the map.
4. **Main Map Window:** Main map display.
5. **Overview Map:** Activates a minimap that shows the location currently displayed in the main window.
6. **Zoom Controls:** Slider that allows you to control the zoom level of the map.
7. **Color Legend:** Legend of the colors used by various elements displayed on the map.
   IMPORTANT: The legend does not include colors of the base map or the location markers.
8. **Location:** Current coordinates of the tip of the mouse pointer.

You can move the map area by holding the cursor over the map and dragging it with the left mouse button. You can also zoom in and out using the mouse wheel.

The **Map** module also provides a number of useful tools that are accessed from the **Viewer Toolbar**. These options are summarized below, and their use is illustrated in the sections that follows in Table 6.

Table 6. Viewer Toolbar tools

Icon	Tool	Description/Instructions
	**Layer Control**	Access different layers by selecting or de-selecting layer boxes.
	**Select Tool**	Pick a feature by clicking on it.
	**Zoom to Layers**	Zoom to the extents of the layers currently selected (checked) in the **Layer Control**.
	**Zoom to Area**	Click and draw a rectangle on the map to set it as zoom extents.
	**Zoom to Location**	Click this tool and then click on the map where you wish to center the zoom area to load the **Zoom to Location** dialog, where you can specify the exact location coordinates and the **Zoom Radius**.
	**Overview Map**	Click to activate a display of a map overview with a red rectangle delineating the area currently being displayed on the map.
	**Measure Tool**	Measure the distance between two points by clicking on the points or measure the area by defining a polygon.
	**Gridded Emissions**	Configure display of gridded emissions on the map (see Section 7.2)
	**Shapefile Layers**	Select a shapefile and an associated attribute to display it on the map.
	**Search Tool**	Search the map for objects containing a specified search string.
	**Lat/Long Grid**	Toggle display of meridians and parallels on and off.

7.1 Using the Map Module

The steps below will help illustrate the map functionalities summarized above:

IMPORTANT: The images displayed in this walkthrough will look different from the ones you see, because the displayed data is inventory specific.

1. Click the **Map** module (Figure 116).
2. The map display appears automatically centered on the Gulf of Mexico. You can zoom and pan using the method described in the previous section. You can also use the various **Zoom** tools available in the **Map Options**.

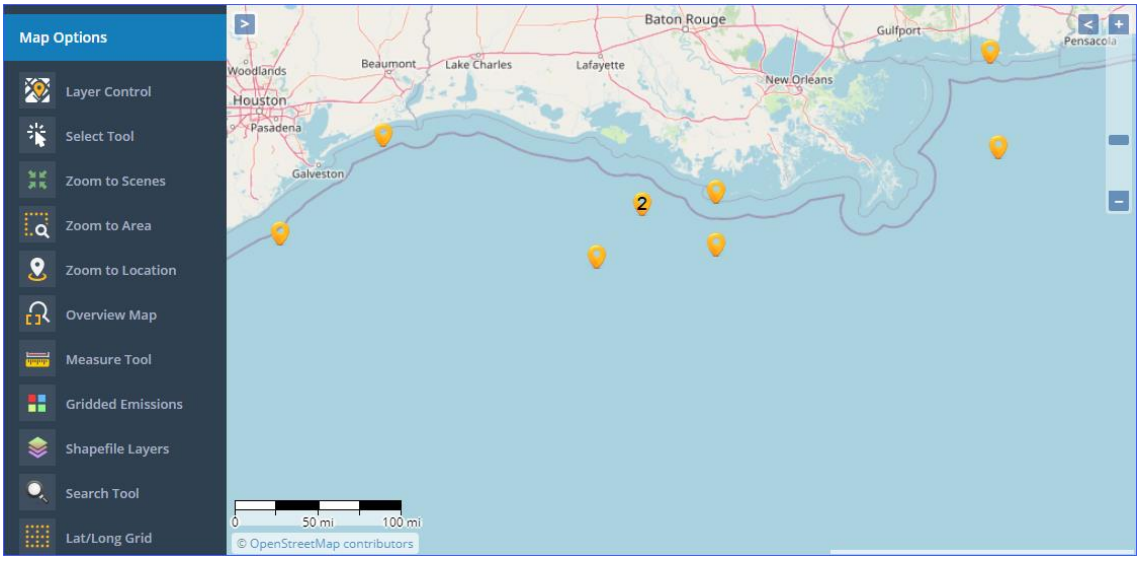


Figure 116. Map general view

3. In the **Map Options** panel to the left of the map, click the **Layer Control**. This opens a dialog that shows a list of layers available in the map. Turn off all layers except the *Facility* layer and the *Base Layers*. For the *Base Layers*, you can click the + in the left-hand side to turn layers on and off, similar to what is shown in Figure 117.

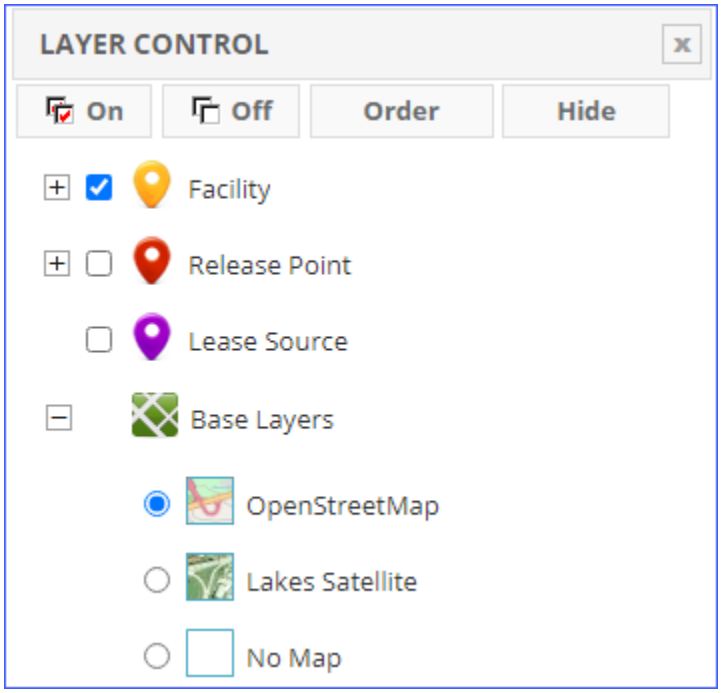


Figure 117. Layer Control

4. You can switch between **Lakes Satellite** and **Open Street Map** views here, but also by clicking on the > button (1 in Figure 115) in the upper left-hand.
5. Take a moment to experiment with some of the other graphical tools in the **Map Options** such as the **Select Tool**, **Zoom to Scenes**, **Zoom to Area**, **Measure Tool.**
6. Under the **Map Options**, click **Shapefile Layers**.

7. The **Shapefile Layers** dialog is displayed. This dialog lists shapefiles which have been imported into OCS AQS, as well as the corresponding map **Layer Name**.
8. Within the dialog, click on the *OPD Area* shapefile layer and then click **Apply** as shown on Figure 118. When finished, close the dialog.

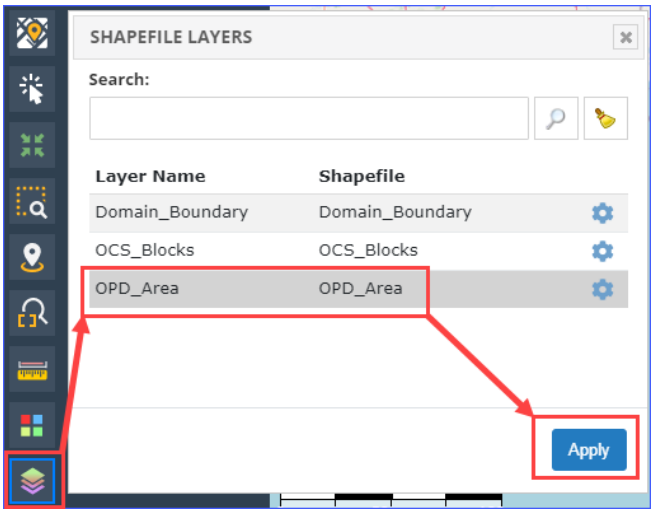


Figure 118. Display shapefile

9. The OPD areas are now visible on the map display. Additionally, the **OPD Area** map layer is now available in the **Layer Control** dialog (Figure 119). Move the cursor over **OPD Area** in the list of layers and several options are available to you to the right of the layer name in the list, including the **Zoom to Scene** option, which adjusts the zoom level of the map to fit the **OPD Area** shapefile comfortably into the map display area.

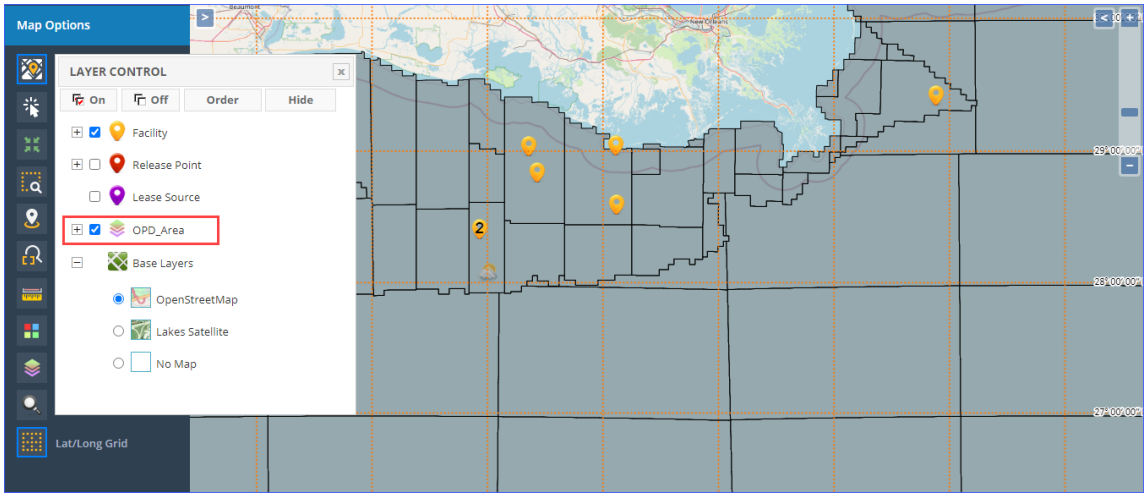


Figure 119. OPD Area shapefile displayed

10. Close the **Layer Control** and **Shapefile Layers** dialogs if they are still open.
11. Under the **Map Options**, click the **Search Tool**.
12. The **Search Tool** dialog is displayed. Enter the name of a facility you know is in your inventory. The search tool will list all available facilities with that term in the name.
13. Highlight a facility entry in the list and click the button to zoom in to it as shown in Figure 120.

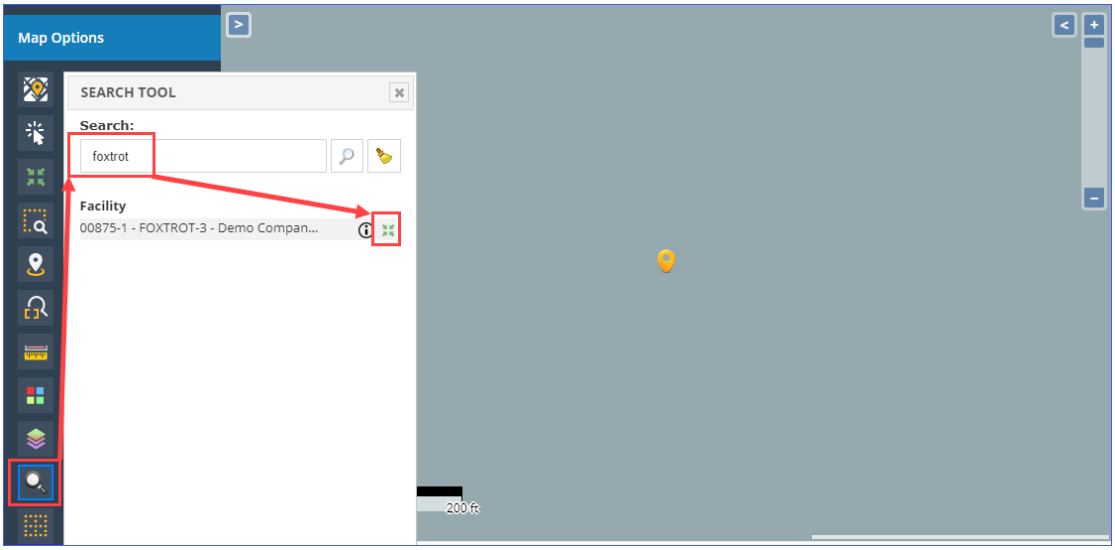


Figure 120. Using the Search Tool in Maps

7.2 Gridded Emissions

The **Map** module allows you to display gridded emissions based on the monthly reported values for all pollutants in the inventory.

1. Under the **Map Options**, select **Gridded Emissions.**
2. The **Gridded Emissions** dialog contains many different options and selections to allow you to graphically represent your emissions. These options are reviewed below:
    a. **Emissions**: Allows you to select the type of source that produced the emissions that will be displayed.
    b. **Grid Type**: Gridded emissions can be graphed by **Uniform Cells**, **OPD Area**, or **OCS Blocks**. Select **OCS Blocks**.
    c. **Cell Size** (and **Units**): This allows you to determine the size of each cell if you selected **Uniform Cells**; otherwise, this field is disabled.
    d. **Emission Units**: Unit of measure to use for graphing the emissions. Select **TONS**.
    e. **Pollutant Group**: This option allows you to narrow down the list of pollutants to choose from.
    f. **Period Class**: The period for which emissions are displayed. Select **January**. Note that this applies to active inventory year; since our example is an inventory in 2021, this means we will show emissions for January 2021. For an entire year, select **January–December**.
    g. **Method**: Determines if emissions are displayed on the map based on the facility location or the release point. This will often have little impact on results, but for some cases it can make a difference, especially when zoomed out. The recommended method is by **Point of Release**, as it attributes emissions produced by processes associated with a specific release point (source) as being emitted from the location of that source. Aggregating emissions by **Facility** will combine emissions from all sources at that facility at the coordinates assigned to that facility in the database.
    h. **# of Levels**: Number of value ranges the emissions will be split into.
    i. **Equipment Type**: Allows you to display/export gridded emissions produced by a specific type of equipment for example, by **Combustion Flares**.

3. The bottom of the **Gridded Emissions** dialog shows a list of all available pollutants in the emissions inventory. For this exercise, select **Carbon Monoxide (CO)** in the table. You can only display gridded emissions for one pollutant at a time.
   IMPORTANT: Depending on screen resolution, you might not see the table with pollutants. Scroll down in the **Gridded Emissions** dialog until you reach the table of pollutants.
   IMPORTANT: If you do not see any pollutants in the table, check to see that the emissions have been calculated in the **AEM**.
4. Now that you have made your selections, click **Apply** above the table of pollutants and close the **Gridded Emissions** dialog by clicking **[x]** in the top right corner. While you do not have to close the dialog, it is big and obscures a large portion of the map.
5. The steps described above and the gridded emissions displayed as a result are shown in Figure 121. At first the details can be hard to see; it will help to zoom in on the facility locations.
6. After zooming in, it is easier to see the individual cells. Cells with no emissions have no coloring and simply show the base map (satellite or OpenStreetMaps). Cells with emissions are colored according to the color ramp at the bottom right of the map display. Notice that the cells which are colored correspond to the locations of facilities on the map (yellow markers), as would be expected.

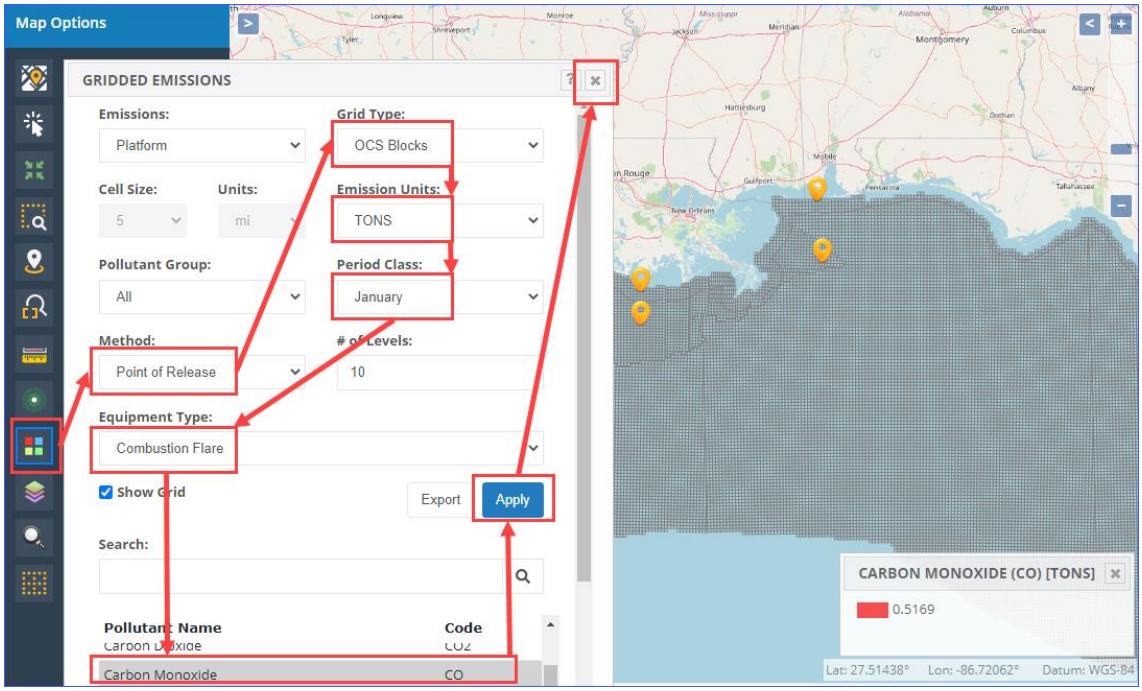


Figure 121. Map with gridded emissions

7. Take a moment to open the **Gridded Emissions** dialog and try out some of the other options available to you.
8. To get the numerical values of the emissions on each grid cell, open the **Gridded Emissions** dialog box and select **Export** (next to **Apply**). A Microsoft Excel file with the values will be downloaded automatically to your **Download** folder. The spreadsheet columns include the cell center coordinates in Latitude and Longitude and the cell grid emission value in the units selected.

7.3 Displayed Feature Information

To get information on a facility, release point, or any displayed map feature, click on the **Select Tool** in the **Map Options** panel. After selection, click the feature you wish to examine. A box will appear with a list of items under the pointer as shown in Figure 122. Clicking ⓘ will load the **Details** page for the selected item.

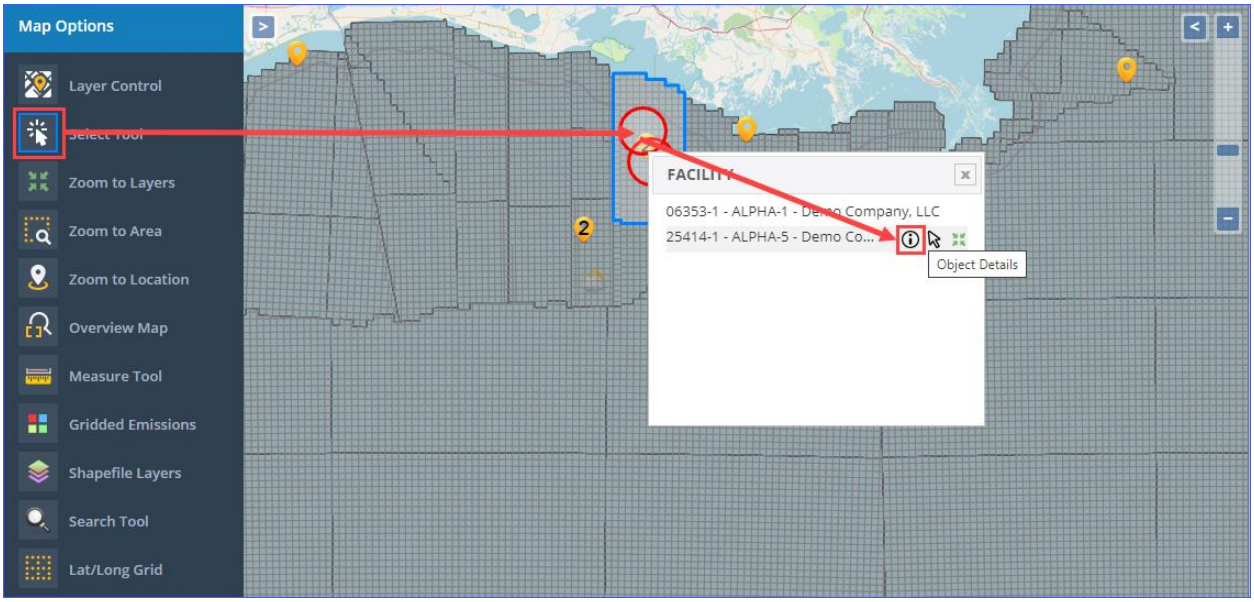


Figure 122. Select tool information

7.4 Additional Map Layers

Additional map layers can be added to the Map module by sending the appropriate SHP and SHX files to the BOEM OCS AQS administrator. Uploaded maps layers will be located under the **Shapefile Layers** option of the map.

8 Analytics

Pathway: Analytics

The analytics module contains a collection of graphical and tabular analysis tools. These tools allow you to review data across the entire inventory, while still being able to filter it based on specific elements – pollutants, equipment type, or parameter type.

8.1.1 Search Analytics Tools

You can find any tool available in the **Analytics** module by using the search bar at the top of the list. Simply start typing a search term and the list of possibilities will be progressively refined as you type. The search function considers both – the title and description of the tool.

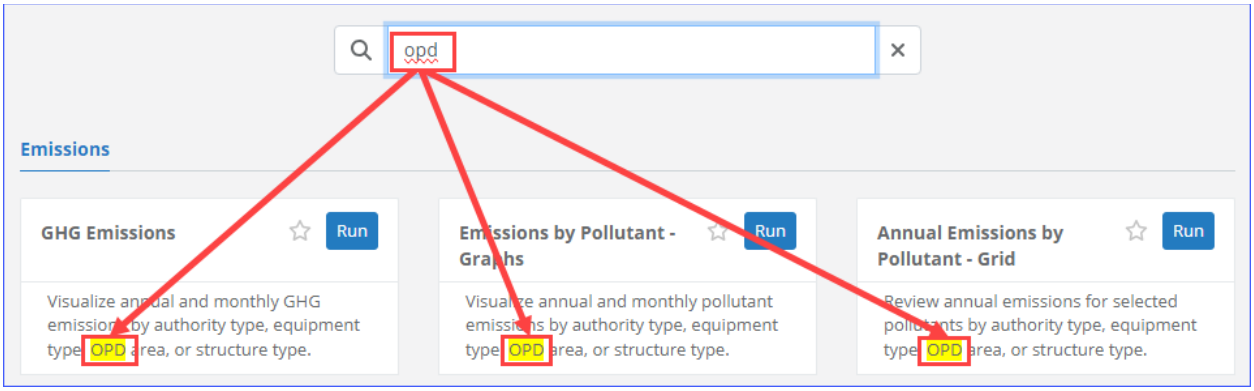


Figure 123: Search Analytics tools

IMPORTANT: The search feature is available in every section of the **Analytics** module. While in any specific section, the search feature will only search the tools in that section. To include all tools in the search you must be in the **Search All** section.

8.1.2 Favorites

The **Favorites** section provides convenient access to the tools that you use on regular basis. This section only becomes available once at least one tool has been marked as "favorite".

To add a tool to the list of favorites, simply click the white "star" (☆) icon.

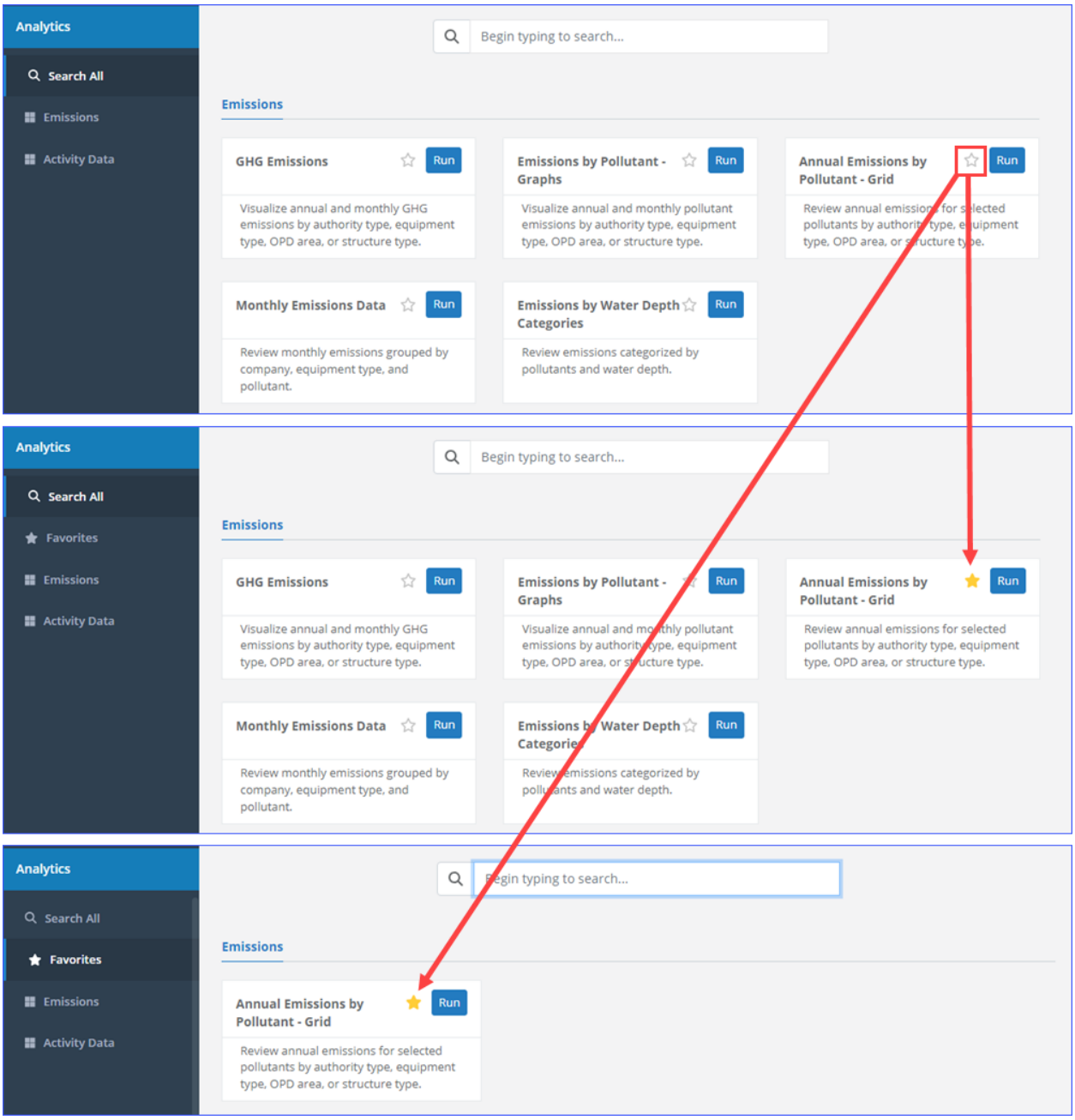


Figure 124: Favorite tools

To “unfavorite” a tool, click the star icon again.

Once there is at least one tool in the **Favorites** section, this section will be the one loaded when you navigate to the **Analytics** module.

8.1.3 Chart Customization and Export

Any bar chart or time series in the system can be exported as an image. The datasets used to create these charts can also be exported as an Excel file. Prior to exporting the chart images, the appearance of certain elements, such as main title and axis titles, can be customized.

8.1.3.1 Chart Customization

To customize the appearance of the chart, click the icon in the top right corner of the chart. The **Chart Customization** dialog will load, as shown in Figure 125.

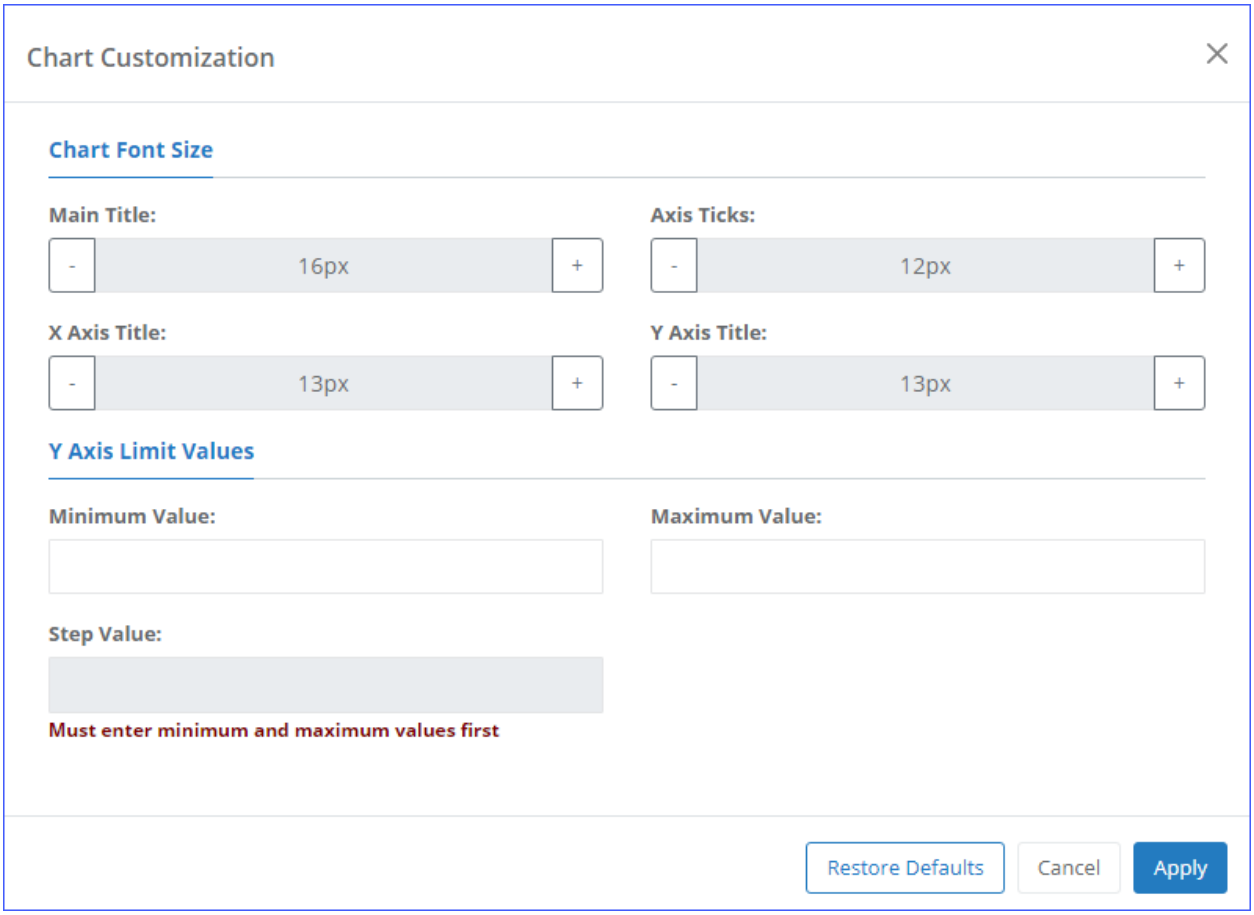


Figure 125: Chart Customization dialog

The top half of the dialog allows you to customize the font size for the main chart title, the X- and Y-axis titles, and the axis "ticks" (the numbers on the axis). Use the [+] and [-] buttons to increase or decrease the font size.

The bottom half of the chart allows you to customize the scale and interval of the Y-axis using the following parameters:

- **Minimum Value:** Smallest number that appears on the Y-axis. This value will be placed at the X-axis level.
- **Maximum Value:** Largest number that appears on the Y-axis.
- **Step Value:** Interval between numbers on the Y-axis. This parameter cannot be specified until you have entered the **Minimum** and **Maximum Value** first.

The buttons at the bottom allow you to:

- **Restore Defaults:** Restore all parameters in the dialog to their default values without closing the dialog.
- **Cancel:** Close the dialog without applying or saving the customized values.
- **Apply:** Apply the customized values and close the dialog.

8.1.3.2 Export Charts

You can export any chart by clicking the ☰ icon in the top right corner of the chart. The resulting menu allows you to select if you wish to export the chart as an .SVG, .PNG, or .JPG image, or as an Excel worksheet.

8.2 Emissions

The emissions tools allow you to review calculated emissions in the inventory.

8.2.1 GHG Emissions

Pathway: Analytics > Emissions > GHG Emissions

This tool allows you to visualize the total annual greenhouse gas emissions as a bar chart as well as a monthly time series.

Figure 126: Analytics - GHG Emissions

The following options are available:

- **Emissions Group:** Select the attribute you wish to use to group the emissions.

The following graphs are displayed:

- **GHG Annual Emissions by *Attribute*:** A stacked bar chart showing annual emissions grouped by the attributed selected on the **Emissions Group** field.
- **GHG Monthly Emissions by *Attribute*:** A time series showing total emissions from all sources grouped by the selected attribute for each month.

8.2.2 Emissions by Pollutant – Graphs

Pathway: Analytics > Emissions > Emissions by Pollutant – Graphs > Detailed Charts

This tool allows you to visualize emissions for individual pollutants. There are two types of charts – the **Detailed** and **Pie Chart**.

8.2.2.1 Detailed Charts

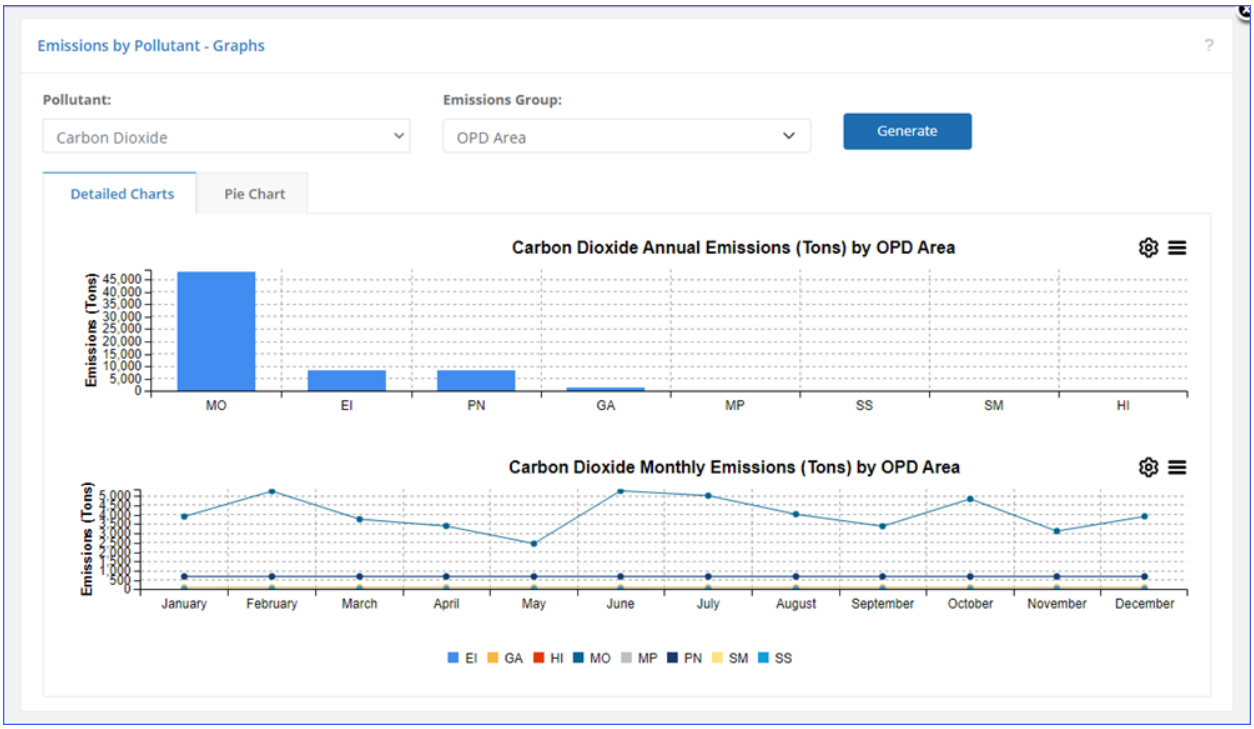


Figure 127: Analytics - Emissions by Pollutant - Detailed Charts

The following options are available:

- **Pollutant:** Select the pollutant you wish to plot.
- **Emissions Group:** Select the attribute you wish to use to group the emissions.

Click **Generate** to apply the selected options.

The following graphs are displayed:

- ***Pollutant* Annual Emissions by *Attribute*:** A bar chart showing annual emissions grouped by the attributed selected on the **Emissions Group** field.
- ***Pollutant* Monthly Emissions by *Attribute*:** A time series showing total emissions from all sources grouped by the selected attribute for each month.

8.2.2.2 Pie Chart

Pathway: Analytics > Emissions > Emissions by Pollutant – Graphs > Pie Chart

The pie chart has the same data selection options as the annual emissions/time series chart and displays the total annual emissions grouped by attribute represented by color wedges of the chart.

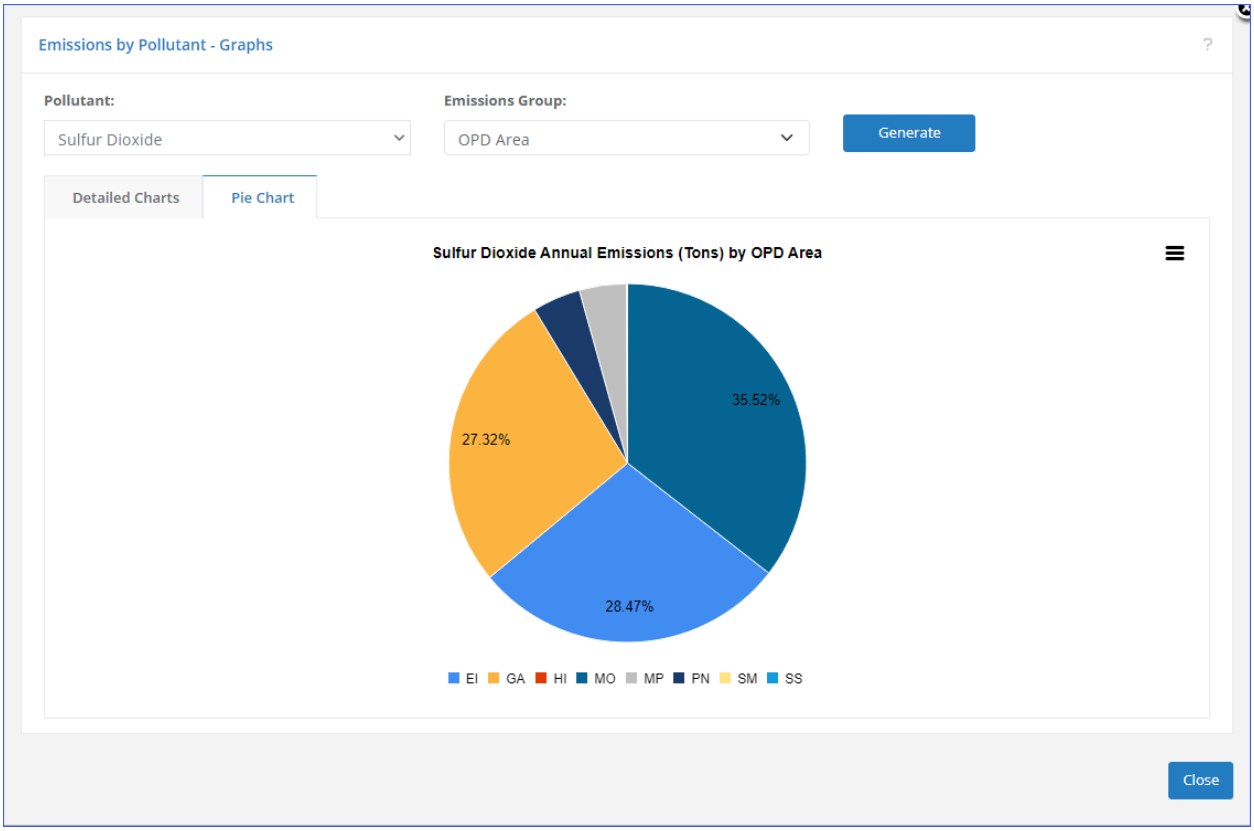


Figure 128: Analytics - Emissions by Pollutant - Pie Chart

8.2.3 Annual Emissions by Pollutant – Grid

Pathway: Analytics > Emissions > Annual Emissions by Pollutant - Grid

This tool allows you to generate a table of annual emissions for multiple pollutants.

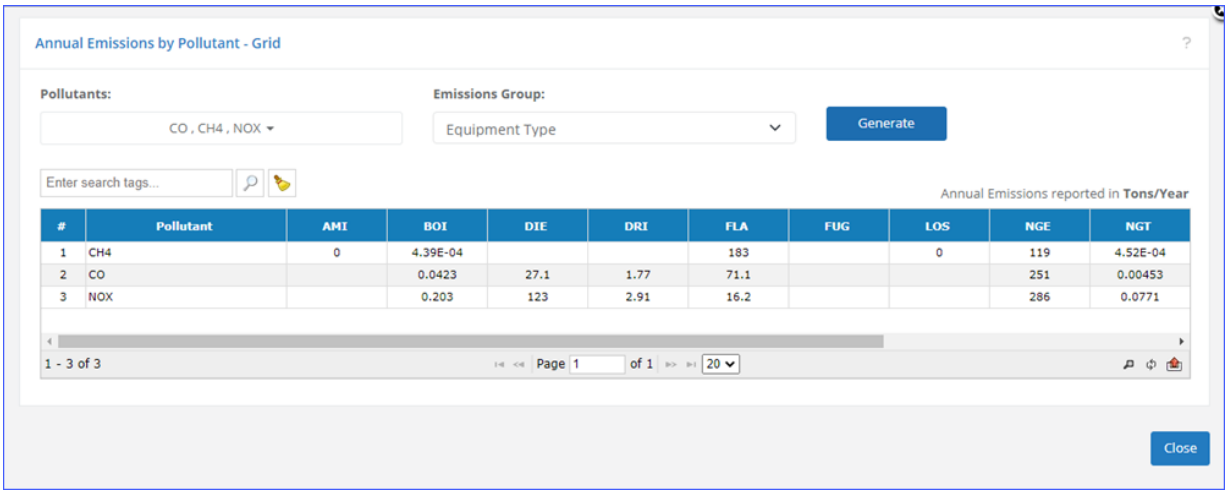


Figure 129: Analytics - Annual Emissions by Pollutant - Grid

The following options are available:

- **Pollutants:** Select the pollutants you wish to display. You can select multiple pollutants by checking the box for each one.
- **Emissions Group:** Select the attribute you wish to use to group the emissions.

Click **Generate** to apply the selected options.

8.2.4 Monthly Emissions Data

Pathway: Analytics > Emissions > Monthly Emissions Data

This tool allows you to generate a table of combined monthly emissions for any equipment type/pollutant combination.

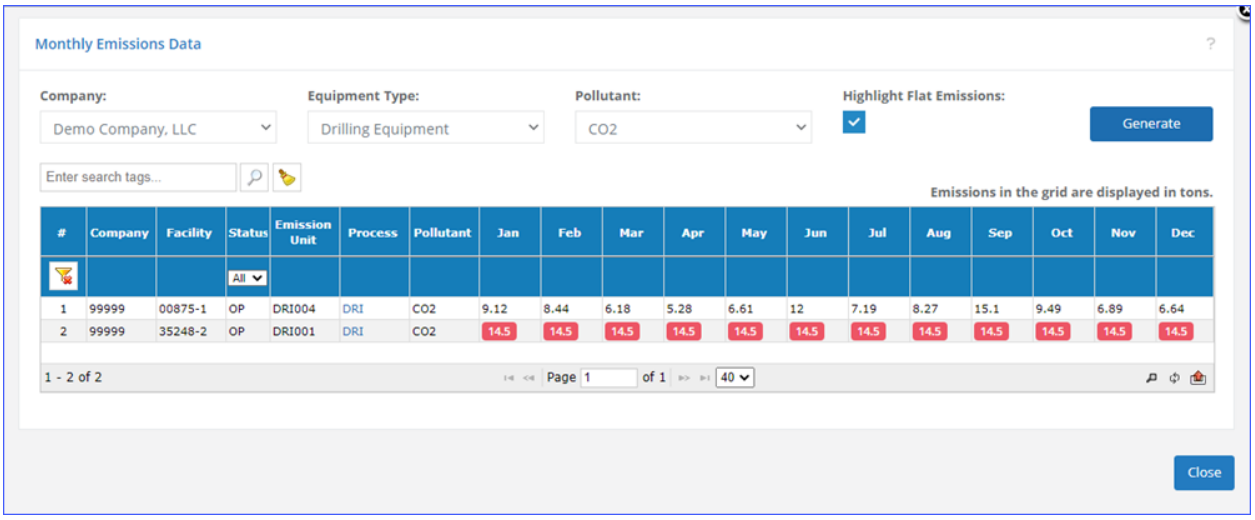


Figure 130: Analytics - Monthly Emissions Data

The following options are available:

- **Company:** Displays the company name for the current inventory.
- **Equipment Type:** Select the type of equipment for which you wish to see the emissions.
- **Pollutant:** Select the pollutant you wish to display.
- **Highlight Flat Emissions:** Highlight non-zero emission values that remain the same month-to-month. This indicates that the activity data has been copied in the Activity & Emissions Manager (see section 3.2.12), but not adjusted to include the month-to-month variations.

Click **Generate** to apply the selected options.

8.2.5 Emissions by Water Depth Categories

Pathway: Analytics > Emissions > Emissions by Water Depth Categories

This tool allows you to view annual emissions produced by the structures based at different depths.

8.2.5.1 Summary

Pathway: Analytics > Emissions > Emissions by Water Depth Categories > Summary

This table displays the combined annual emissions produced by the structures in each depth range.

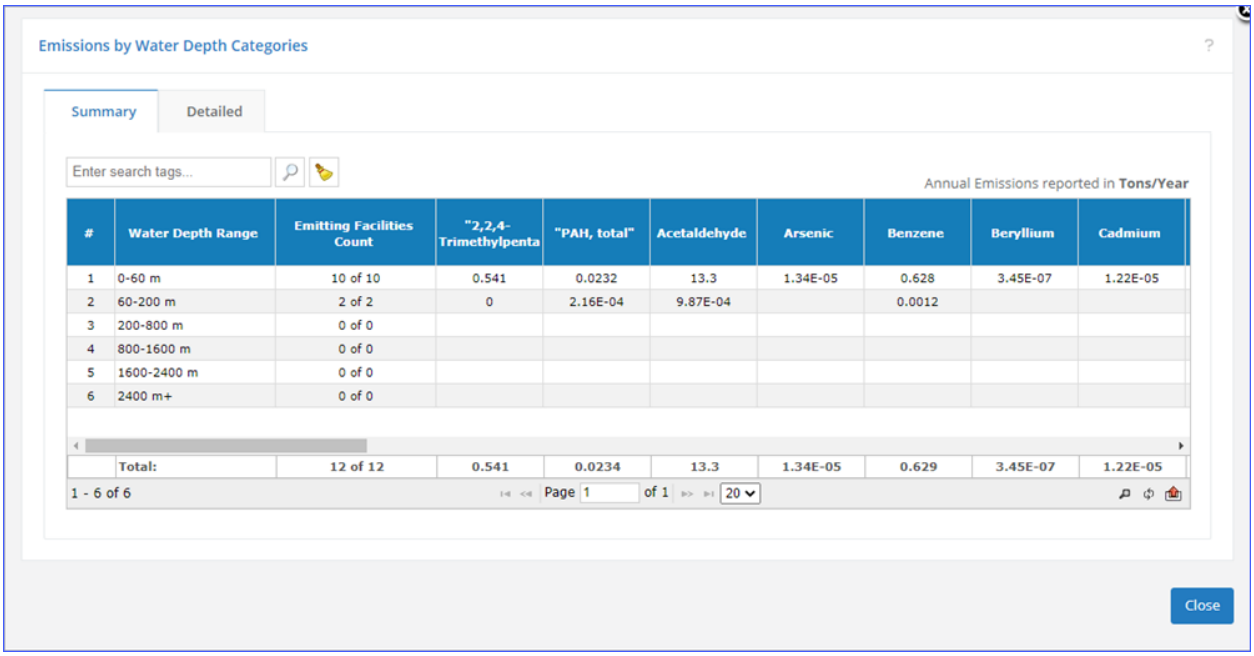


Figure 131: Analytics - Emissions by Water Depth Categories – Summary

8.2.5.2 Detailed

Pathway: Analytics > Emissions > Emissions by Water Depth Categories > Detailed

This table displays annual emissions for each selected pollutant produced by the combined structures in the selected depth range.

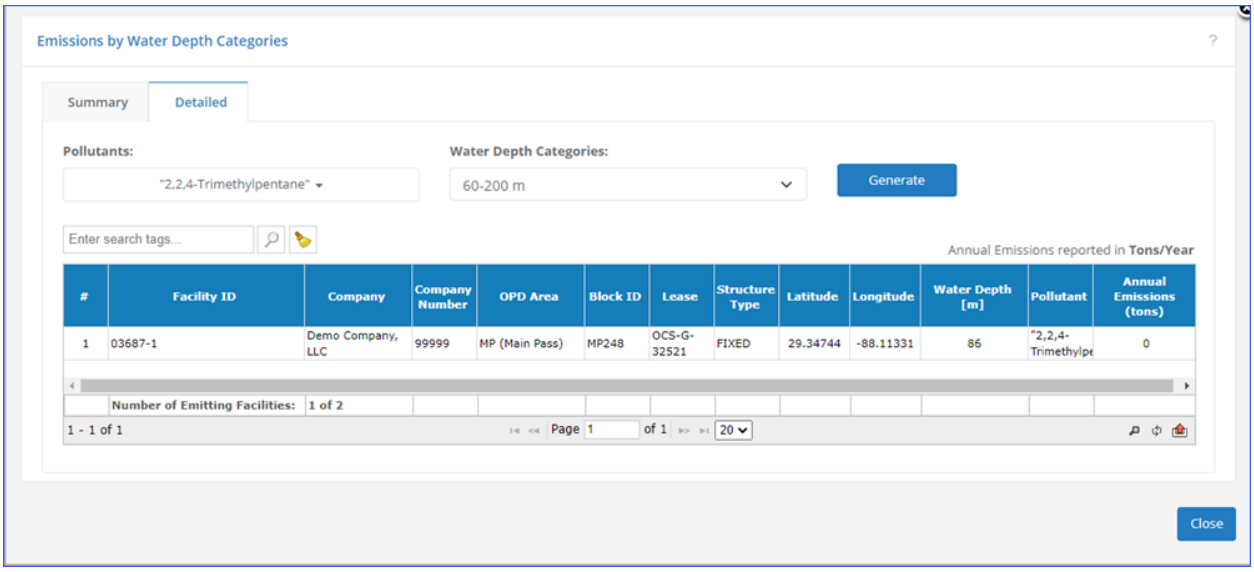


Figure 132: Analytics - Emissions by Water Depth Categories - Detailed

The following options are available:

- **Pollutants:** Select the pollutants you wish to display. You can select multiple pollutants by checking the box for each one.
- **Water Depth Categories:** Select the depth range from which you wish to include structures.

Click **Generate** to update the table.

8.3 Activity Data

Pathway: Analytics > Activity Data

The activity data tools allow you to review operator-specified activity data in the inventory.

8.3.1 Aggregated Activity Data

Pathway: Analytics > Activity Data > Aggregated Activity Data

This tool allows you to see the overview of the aggregated activity data. In the example shown in Figure 133, the **Total Fuel Usage** values from all non-zero-emissions months to obtain an annual value for each emission unit. These values are then plotted on the chart from highest to lowest.

IMPORTANT: Only the highest 25 values will be displayed.

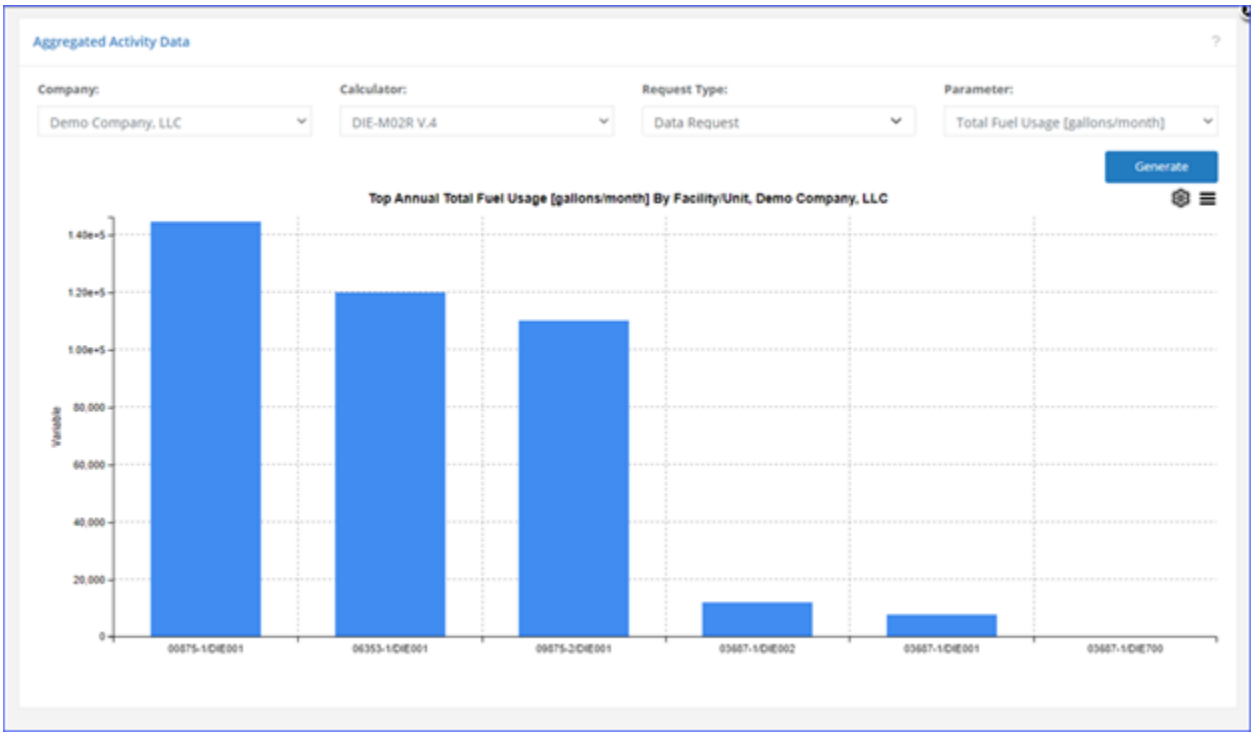


Figure 133: Analytics - Aggregated Activity Data

The following options are available:

- **Company:** Displays the company name for the current inventory.
- **Calculator:** Select the calculator used by the desired equipment type.
- **Request Type:** Select if you wish to see activity data parameter for the **Data Request** or the **Control Request**.
- **Parameter:** Select the parameter for which you wish to review data.

Click **Generate** to update the chart.

8.3.2 Review Monthly Activity Data

Pathway: Analytics > Activity Data > Review Monthly Activity Data

This tool is the same as the one available in and described under **Emissions | Point Sources | Review Activity Data** (section 3.3)

8.3.3 Review lease Operation Activity Data

Pathway: Analytics > Activity Data > Review Lease Operations Data

This tool is the same as the one available in and described under **Emissions | Lease Operations | Review Lease Operation Activity Data** (section 4.3)

9 Reports

Pathway: Reports

OCS AQS comes with a set of report functions that can be customized by the operator using OCS AQS Reports wizards to produce a variety of summary and analysis reports. These reports can then be printed or exported into an external format for ease of distribution.

9.1 Reports Overview

To generate a report, locate the report you would like to create using the search bar, click on it, and complete the wizard steps by selecting individual search criteria or all options. Run the report by clicking **Finish** and wait for the results; this may take a few seconds to a minute base on the amount of data in your inventory.

All reports can be downloaded in a number of formats including:

- XML
- Comma separated values (ASCII text)
- PDF
- MHTML
- MS Excel
- TIFF
- MS Word

A typical report showing the download icon is shown in Figure 134.

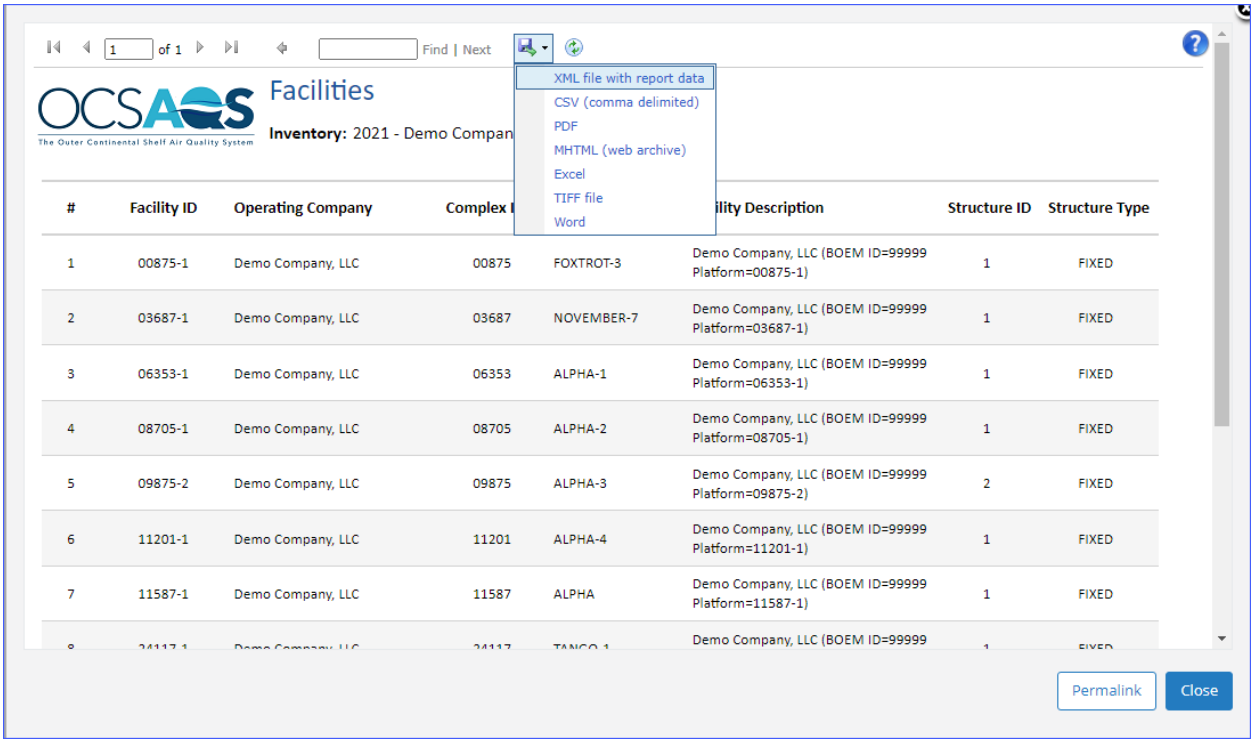


Figure 134. Report with download formats options

9.1.1 Search Reports

You can find any report available in OCS AQS by using the search bar at the top of the report list. Simply start typing a search term and the list of possibilities will be progressively refined as you type. The search function considers both – the title and description of the report.

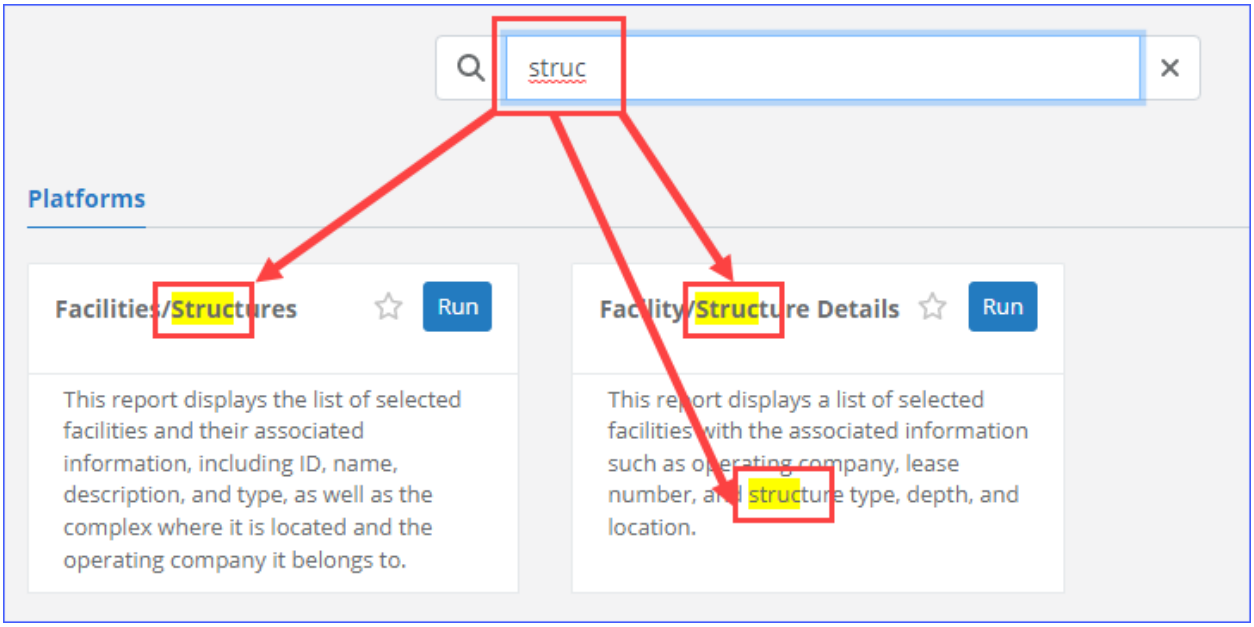


Figure 135: Search reports

IMPORTANT: The search feature is available in every section of the **Reports** module. While in any specific section, the search feature will only search the reports in that section. To include all reports in the search you must be in the **Search All** section.

9.1.2 Favorites

The **Favorites** section provides convenient access to reports that you use on regular basis. This section only becomes available once at least one report has been marked as "favorite".

To add report to the list of favorites, simply click the white "star" (☆) icon.

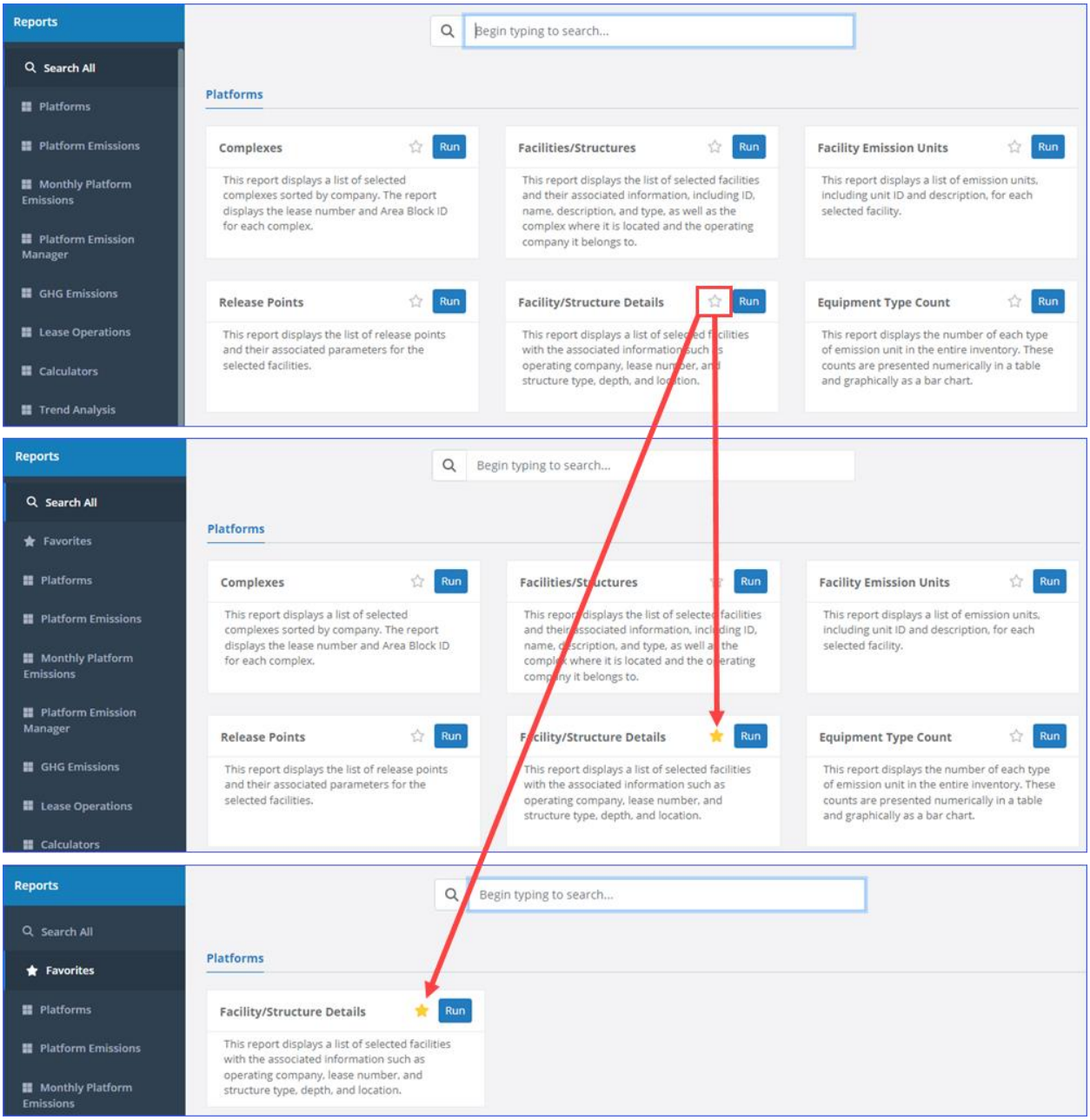


Figure 136: Favorite reports

To “unfavorite” a report, click the star icon again.

Once there is at least one report in the **Favorites** section, this section will be the one loaded when you navigate to the **Reports** module.

9.2 Report Categories

The following sections describe the types of reports available in each category listed in the Navigation Panel. Each report in OCS AQS displays a brief description of its purpose.

9.2.1 Platforms

Pathway: Reports > Platforms

Platforms reports section contains reports that provide non-emissions information regarding the sources. These include the facility structure and composition, complexes where they are located, and operating companies.

9.2.2 Platform Emissions

Pathway: Reports > Platforms Emissions

Platform Emissions reports section contain reports that allow you to present emissions information in various ways. These reports allow you view results as overall totals, totals grouped by complex or facility, monthly totals, annual totals, totals grouped by equipment type, as well as a report listing all facilities that were set to "zero emissions" for at least part of the year.

9.2.3 Monthly Platform Emissions

Pathway: Reports > Monthly Platforms Emissions

Monthly Platform Emissions reports section contains only reports pertaining to emissions generated by the facilities. Grouped by facility, complex, emission unit, or equipment type, this data can be presented in tabular or graph format.

9.2.4 Platform Emission Manager

Pathway: Reports > Platforms Emission Manager

Platform Emission Manager reports allow you generate reports regarding non-emissions information related to the **AEM** for platform sources. This information includes the QA/QC comments entered for any parameters, any facilities or emission units set to "zero emissions" for at least part of the year, value ranges for parameter, comparison of calculator parameters month-to-month, and the flare gas volume emitted grouped by structure.

9.2.5 GHG Emissions

Pathway: Reports > GHG Emissions

GHG Emissions reports allow you to view amounts of greenhouse gas emissions produced grouped by OPD area, structure, emission unit, and equipment type.

> ***TIP:*** If the wizard asks to select an OPD, and you do not know which one to choose, select all and move to the next step. Sometimes it is easier to select by facility than OPD.
>
> ***IMPORTANT:*** The GWP used to calculate the CO_2e values are listed for each pollutant at the top of the table.

9.2.6 Lease Operations

Pathway: Reports > Lease Operations

Lease Operation reports summarize emissions generated during lease operation activities.

9.2.7 Calculators

Pathway: Reports > Calculators

Calculators reports describe the different calculation methods and input parameters used to calculate emissions.

9.2.8 Trend Analysis

Pathway: Reports > Tren Analysis

Trend Analysis reports allow you to observe emission trends over multiple inventory years in tabular or graphical format.

9.2.9 Other

Pathway: Reports > Other

Other reports refer to miscellaneous reports that did not fall into any specific category.

9.2.10 Using Permalinks

OCS AQS allows the user to save a report query that can be used over or sent to a colleague (who has an OCS AQS account). After running the report, click on the Permalink shown in Figure 137.

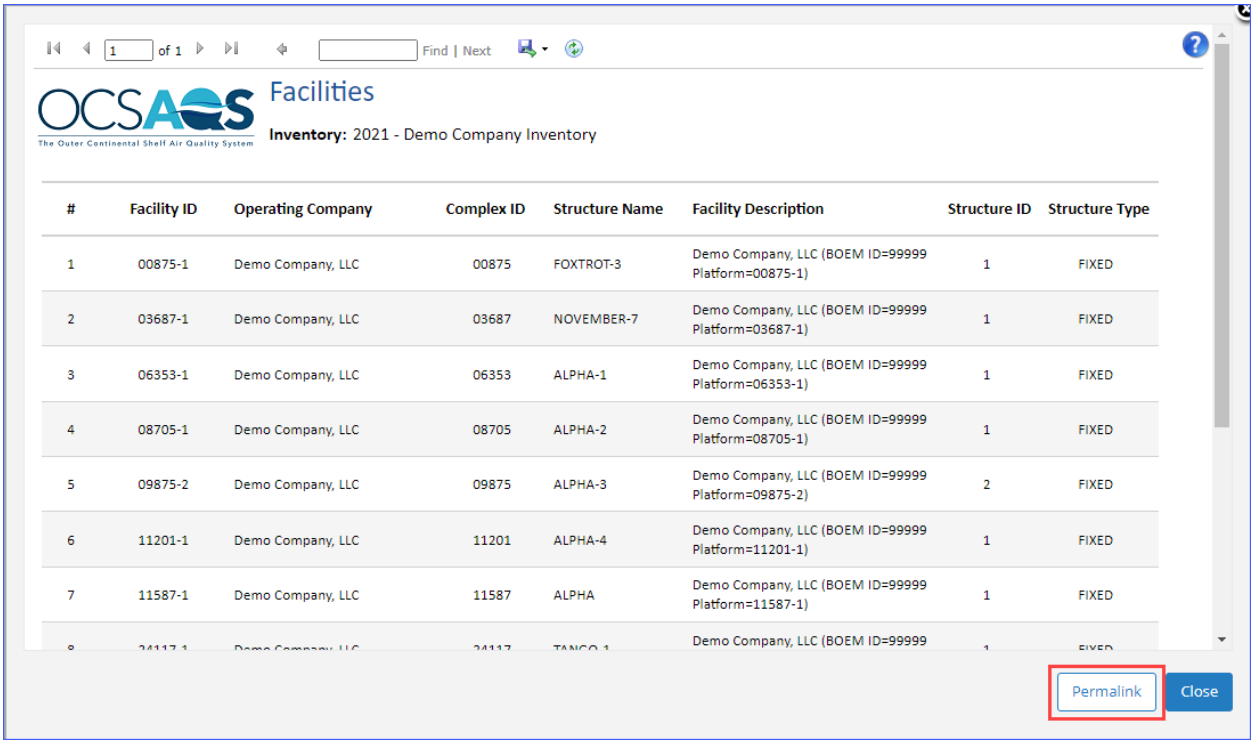


Figure 137. Permalink location

Clicking on the **Permalink** will open a window with the URL of the report as shown in Figure 138. Copy the link and use it any time you want to re-run the report with the same parameters.

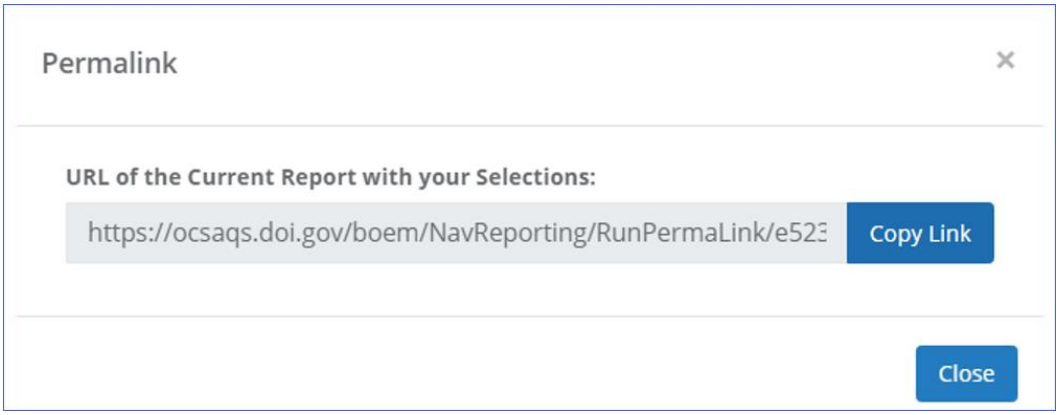


Figure 138. Permalink window

10 Settings

The **Settings** module allows you to update system configuration for yourself as well as review activities under your account. The Navigation Panel provides links for **User Options** and **Auditing** sections.

10.1 User Options

Pathway: Settings > User Options

User Options section includes the ability to change the active inventory you are working in and manage system notifications as shown in Figure 139.

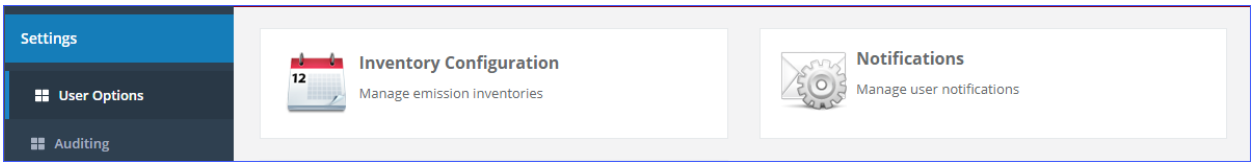


Figure 139. User Options page

10.1.1 Inventory Configuration

Pathway: Settings > User Options > Inventory Configuration

The **Inventory Configuration** page lists all inventories you have access to (Figure 140).

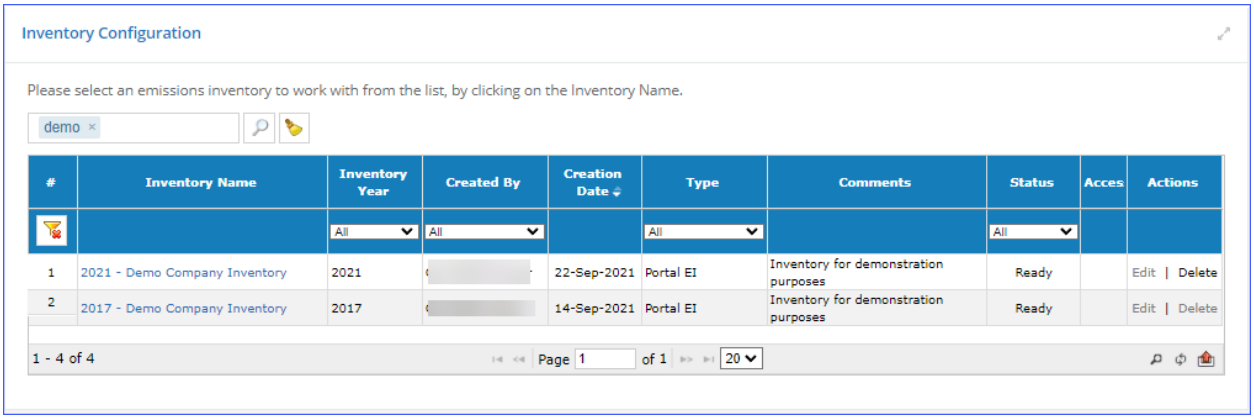


Figure 140. Inventory Configuration

IMPORTANT: The icon in the **Access** column means that the inventory is locked for editing. You can load this inventory and view its contents, but you will not be able to edit content, import new data, or run calculations.

From this screen you can:

- Click the link in the **Inventory Name** to load the inventory for viewing or editing, based on the access level.

  NOTE: Operators are given exclusive access to the inventory allocated to their specific company, while accessing inventories of other companies is not attainable.

10.1.2 Notifications

Pathway: Settings > User Options > Notifications

The **Notifications** page lists results of a variety of cloud processes you initiated (Figure 141).

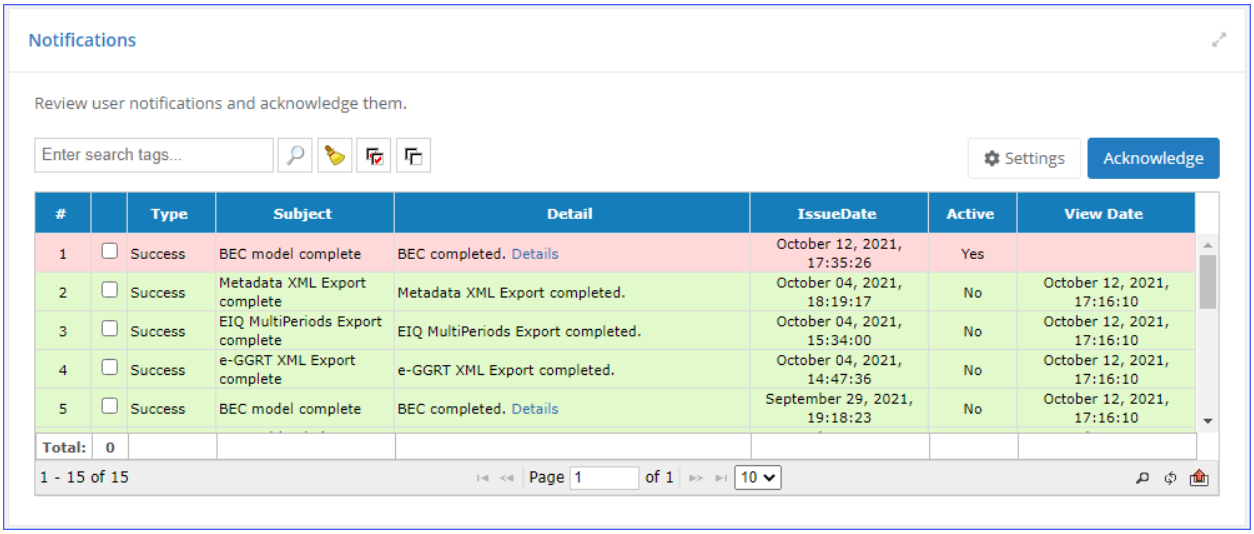


Figure 141. User Notifications

The green notifications have been acknowledged, while pink notifications are new. New notifications are also shown as a number on the envelope notifications icon to the left of the user name –  . To acknowledge notifications and marked them as "read", check the box for each notification and click **Acknowledge**.

Here you can also specify how many notifications are shown when you click on the envelope button. To do so, click **Settings**, enter the desired number, and click **Save (**Figure 142).

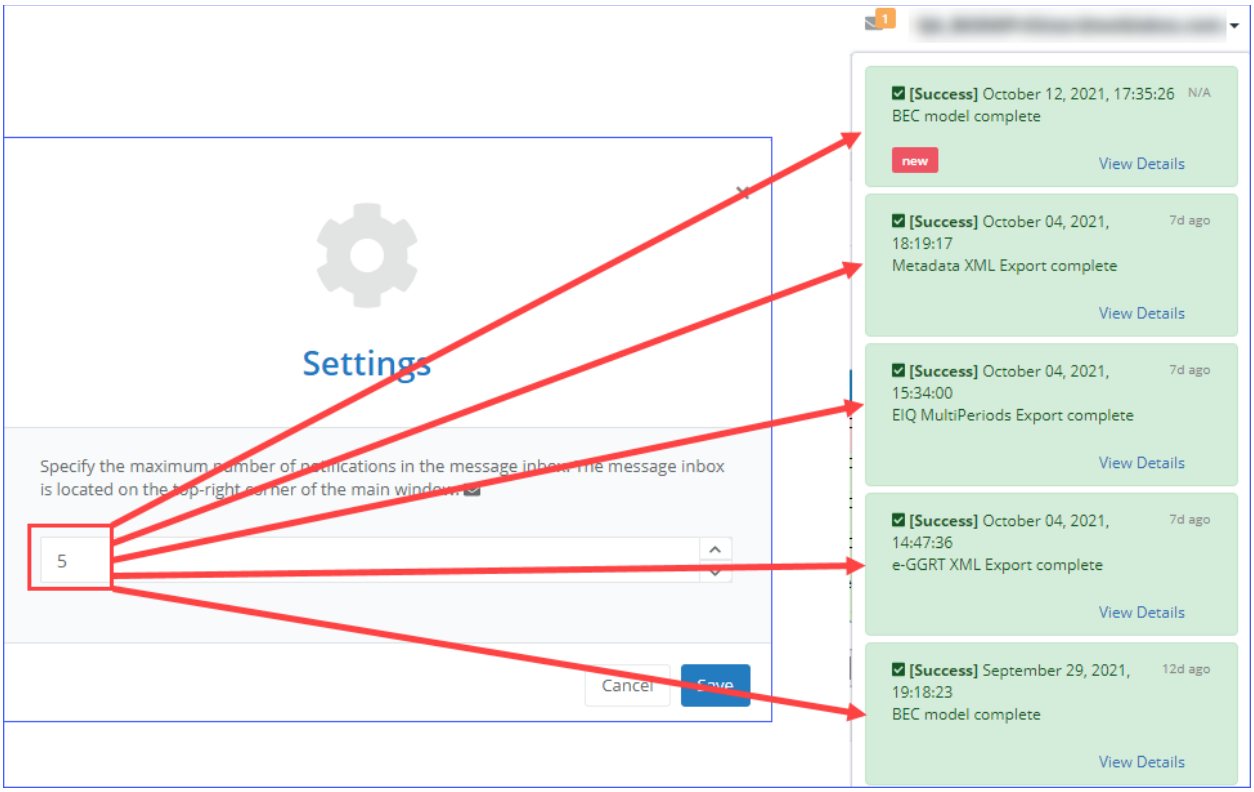


Figure 142. Notification Settings

10.2 Auditing

Pathway: Settings > Auditing

The **Auditing** section allows you to review the activities and change log that took place during login. The two available navicons are shown in Figure 143.

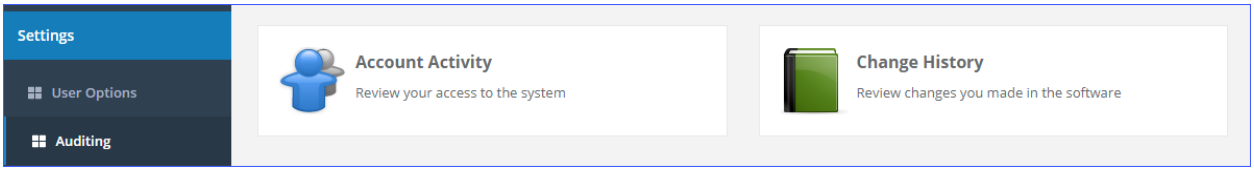


Figure 143. Auditing navicons

10.2.1 Account Activity

Pathway: Settings > Auditing > Account Activity

Account Activity displays a list of actions taken by you in the system.

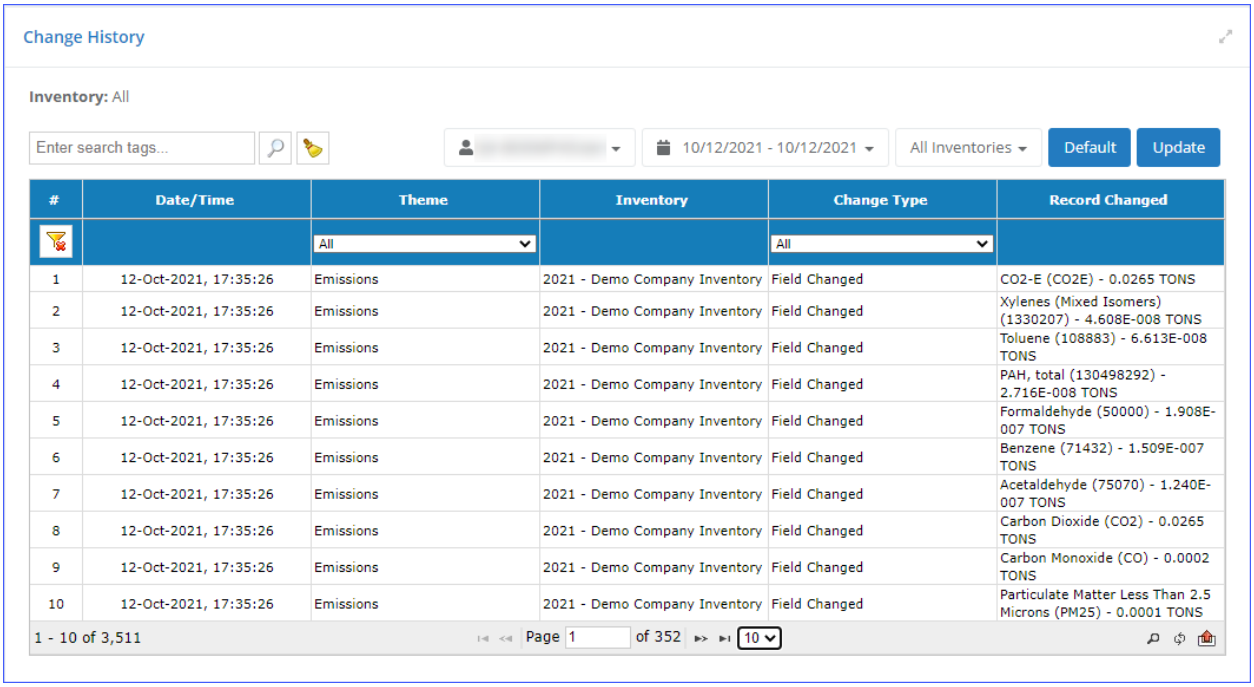
Above the table you can find the following controls:

- **Time Period:** Set the time period for which you wish to view the activity. The default is **Today**.
- **Default:** This button resets the time period to the default setting.
- **Update:** This button refreshes the view.

10.2.2 Change History Report

Pathway: Settings > Auditing > Change History Report

Change History report allows you to review any changes made to the data in any inventory accessible to you (Figure 144).

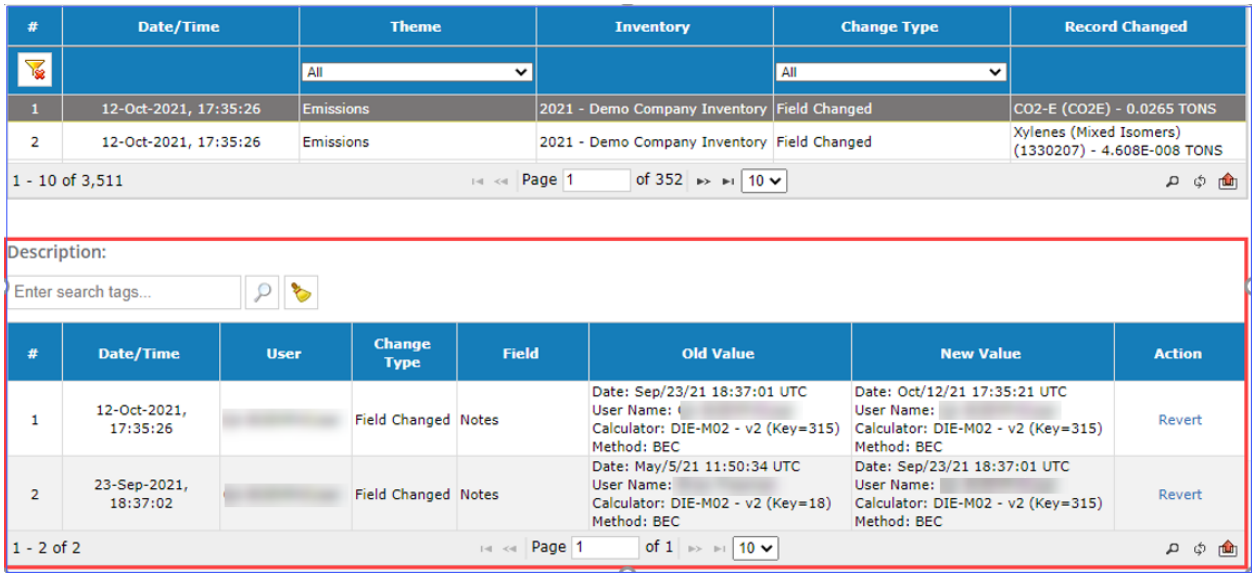


#	Date/Time	Theme	Inventory	Change Type	Record Changed
		All		All	
1	12-Oct-2021, 17:35:26	Emissions	2021 - Demo Company Inventory	Field Changed	CO2-E (CO2E) - 0.0265 TONS
2	12-Oct-2021, 17:35:26	Emissions	2021 - Demo Company Inventory	Field Changed	Xylenes (Mixed Isomers) (1330207) - 4.608E-008 TONS
3	12-Oct-2021, 17:35:26	Emissions	2021 - Demo Company Inventory	Field Changed	Toluene (108883) - 6.613E-008 TONS
4	12-Oct-2021, 17:35:26	Emissions	2021 - Demo Company Inventory	Field Changed	PAH, total (130498292) - 2.716E-008 TONS
5	12-Oct-2021, 17:35:26	Emissions	2021 - Demo Company Inventory	Field Changed	Formaldehyde (50000) - 1.908E-007 TONS
6	12-Oct-2021, 17:35:26	Emissions	2021 - Demo Company Inventory	Field Changed	Benzene (71432) - 1.509E-007 TONS
7	12-Oct-2021, 17:35:26	Emissions	2021 - Demo Company Inventory	Field Changed	Acetaldehyde (75070) - 1.240E-007 TONS
8	12-Oct-2021, 17:35:26	Emissions	2021 - Demo Company Inventory	Field Changed	Carbon Dioxide (CO2) - 0.0265 TONS
9	12-Oct-2021, 17:35:26	Emissions	2021 - Demo Company Inventory	Field Changed	Carbon Monoxide (CO) - 0.0002 TONS
10	12-Oct-2021, 17:35:26	Emissions	2021 - Demo Company Inventory	Field Changed	Particulate Matter Less Than 2.5 Microns (PM25) - 0.0001 TONS

Figure 144. Change History report

Above the table you will find the following controls (Figure 145):

- **Search:** Search tool available for every list.
- **User:** Displays your user ID.
- **Time Period:** Set the time period for which you wish to view the change history. The default is **Today**.
- **Default:** This button resets the time period to the default setting.
- **Update:** This button refreshes the view.



#	Date/Time	Theme	Inventory	Change Type	Record Changed
		All		All	
1	12-Oct-2021, 17:35:26	Emissions	2021 - Demo Company Inventory	Field Changed	CO2-E (CO2E) - 0.0265 TONS
2	12-Oct-2021, 17:35:26	Emissions	2021 - Demo Company Inventory	Field Changed	Xylenes (Mixed Isomers) (1330207) - 4.608E-008 TONS

1 - 10 of 3,511 Page 1 of 352 10

Description:

Enter search tags...

#	Date/Time	User	Change Type	Field	Old Value	New Value	Action
1	12-Oct-2021, 17:35:26	[redacted]	Field Changed	Notes	Date: Sep/23/21 18:37:01 UTC User Name: [redacted] Calculator: DIE-M02 - v2 (Key=315) Method: BEC	Date: Oct/12/21 17:35:21 UTC User Name: [redacted] Calculator: DIE-M02 - v2 (Key=315) Method: BEC	Revert
2	23-Sep-2021, 18:37:02	[redacted]	Field Changed	Notes	Date: May/5/21 11:50:34 UTC User Name: [redacted] Calculator: DIE-M02 - v2 (Key=18) Method: BEC	Date: Sep/23/21 18:37:01 UTC User Name: [redacted] Calculator: DIE-M02 - v2 (Key=315) Method: BEC	Revert

1 - 2 of 2 Page 1 of 1 10

Figure 145. Change details

Appendix A – Calculator Descriptions

A.1 AMI-000 (Amine Gas Sweetening Unit)

The hourly emission rates from the amine gas sweetening unit are calculated externally using the AMINECalc calculator Version 1.0, and these emission rates are then imported into OCS AQS using the Amine Emission Rates Import tool located in AEM section of the Emissions module. The calculator AMI-000 Version 0 in OCS AQS calculates the monthly emissions from the amine gas sweetening unit using the imported hourly emission rates and the following **Data Request** fields in Figure A - 1**Error! Reference source not found.**.

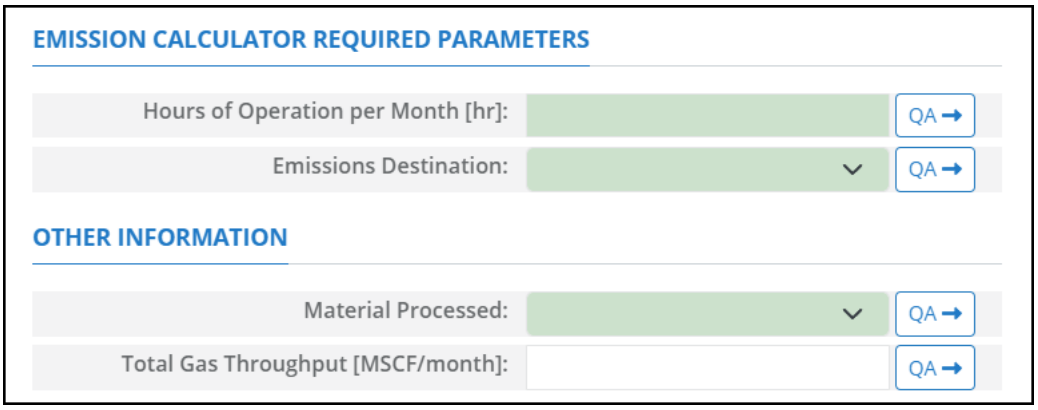


Figure A - 1. AMI-000 Data Request tab

1. Hours of Operation per Month [hr]: The total monthly hours of operation of the amine gas sweetening unit during this survey period.
2. Emissions Destination: A drop-down list field to specify the emissions destination – whether they are vented locally, flared locally, vented remotely, flared remotely, or routed to system. Vented locally selection will compute the emissions vented from this unit. Whereas, flared locally, vented remotely, flared remotely, and routed to system selections will zero out emissions from this unit.
3. Material Processed: A drop-down list field to specify the processed material: Natural Gas / Process Gas.
4. Total Gas Throughput [MSCF/month]: The total volume of gas processed in this amine unit during the specific monthly survey period, volume adjusted to standard temperature and pressure.

A.2 BOI-M01R (Boilers, Heaters, and Burners – Diesel)

The calculator BOI-M01R Version 5 in OCS AQS calculates the monthly emissions from a liquid-fueled unit powered by diesel using the following **Data Request** fields in Figure A - 2**Error! Reference source not found.**.

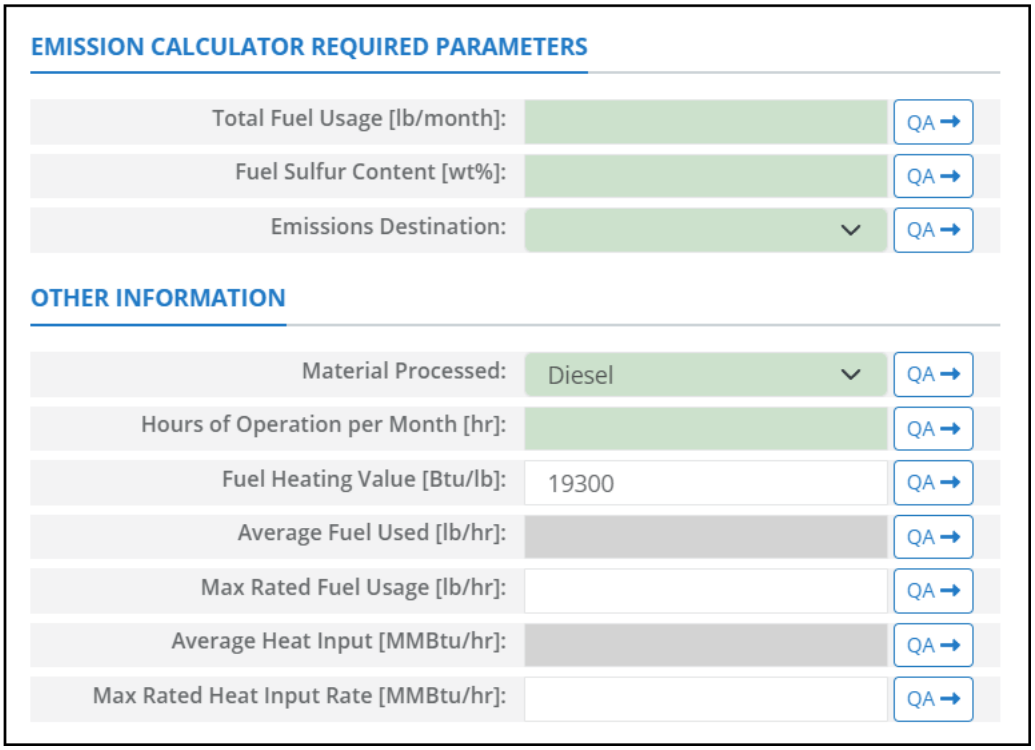


Figure A - 2. BOI-M01R Data Request tab

1. Total Fuel Usage [lb/month]: Total monthly rate of the liquid fuel used during the survey period.
2. Fuel Sulfur Content [wt%]: The weight percentage concentration of the sulfur content in the used liquid fuel. For example, if the fuel is 1.0% sulfur, then user enters 1 and not 0.01.
3. Emissions Destination: A drop-down list field to specify the emissions destination – whether they are vented locally, flared locally, vented remotely, flared remotely, or routed to the system. Vented locally selection will compute the emissions vented from this unit. Whereas, flared locally, vented remotely, flared remotely, and routed to system selections will zero out emissions from this unit.
4. Material Processed: A drop-down list field to specify the processed material: Diesel / Distillate Oil. Default selection is Diesel.
5. Hours of Operation per Month [hr]: The total monthly hours of operation of the liquid-fueled unit during the survey period.
6. Fuel Heating Value [Btu/lb]: The amount of heat released during the combustion of a specified amount of the liquid fuel. Default value is 19,300 Btu/lb.
7. Average Fuel Used [lb/hr]: The average hourly rate of the used liquid fuel during the survey period. This field is auto-calculated.
8. Max Rated Fuel Usage [lb/hr]: The maximum hourly usage rate of the liquid fuel.
9. Average Heat Input [MMBtu/hr]: The average hourly heat input rate of liquid fuel. This field is auto-calculated.
10. Max Rated Heat Input Rate [MMBtu/hr]: The manufacturer's maximum rated heat input rate of the liquid fuel.

The calculator BOI-M01R Version 5 in OCS AQS calculates the monthly emissions with pollution control from a liquid-fueled unit powered by diesel using the following **Control Request** fields in Figure A - 3:

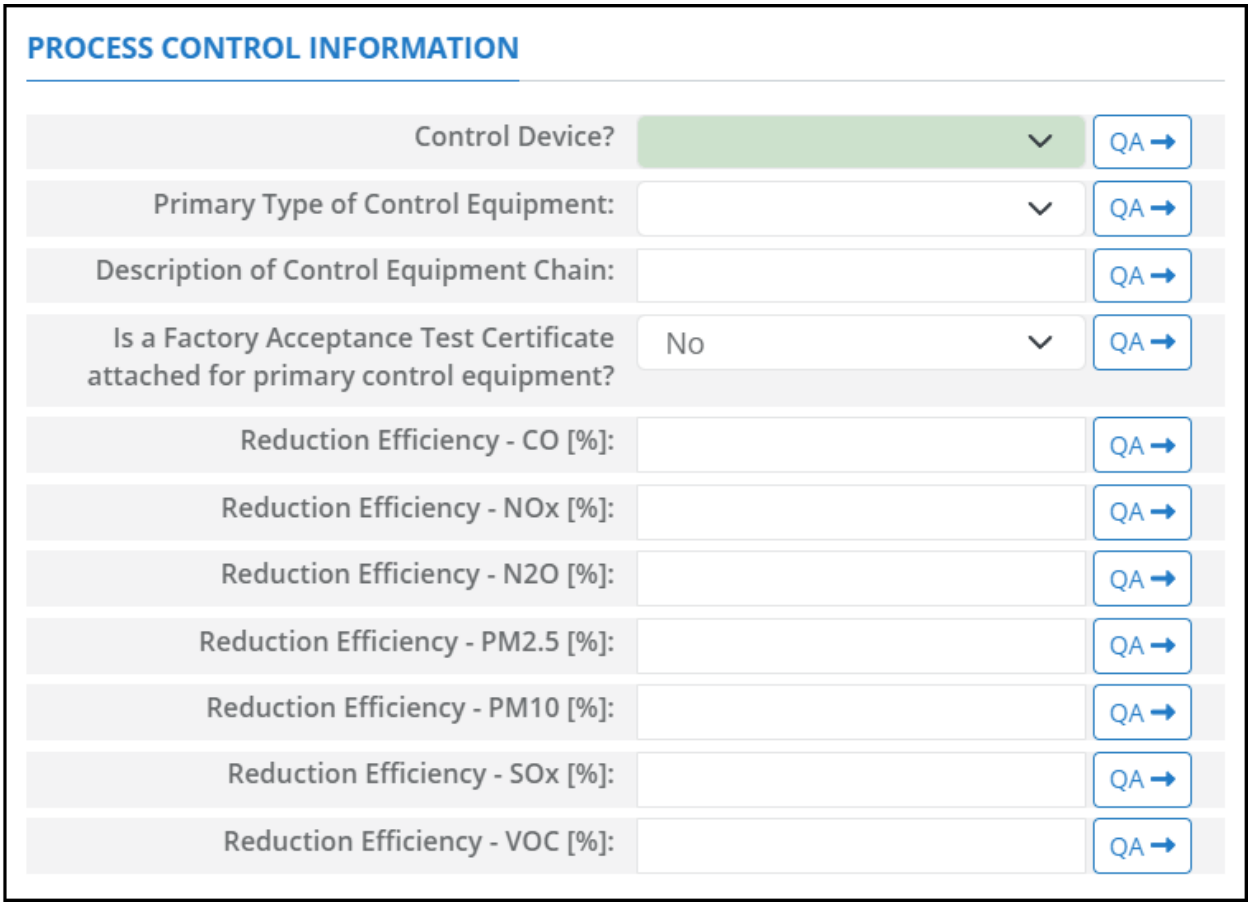


Figure A - 3. BOI-M01R Control Request tab

1. Control Device?: Is a control device or end of pipe treatment included in the process? This is a Yes/No question
2. Primary Type of Control Equipment: A drop-down list field to specify the primary type of the used control equipment. If the type of is not listed, user can select Other to describe the type in the comments field.
3. Description of Control Equipment Chain: This field allows you to describe the control equipment chain if more than one type of technology is used.
4. Is a Factory Acceptance Test Certificate attached for primary control equipment?: A drop-down [Yes/No] list to specify if functionality certification paperwork is available for the control equipment.
5. Reduction Efficiency – CO [%]: This describes the average reduction of emitted CO using the control technology. If the total reduction of CO using a vapor recovery unit is 65%, enter “65” in the field.
6. Reduction Efficiency – NO_x [%]: This describes the average reduction of emitted NO_x using the control technology. If the total reduction of NO_x using a vapor recovery unit is 65%, enter “65” in the field.
7. Reduction Efficiency – N_2O [%]: This describes the average reduction of emitted N_2O using the control technology. If the total reduction of N_2O using a vapor recovery unit is 65%, enter “65” in the field

8. Reduction Efficiency –$PM_{2.5}$ [%]: This describes the average reduction of emitted $PM_{2.5}$ using the control technology. If the total reduction of $PM_{2.5}$ using a vapor recovery unit is 65%, enter “65” in the field.
9. Reduction Efficiency – PM_{10} [%]: This describes the average reduction of emitted PM_{10} using the control technology. If the total reduction of PM_{10} using a vapor recovery unit is 65%, enter “65” in the field.
10. Reduction Efficiency – SO_x [%]: This describes the average reduction of emitted SO_x using the control technology. If the total reduction of SO_x using a vapor recovery unit is 65%, enter “65” in the field.
11. Reduction Efficiency – VOC [%]: This describes the average reduction of emitted VOC using the control technology. If the total reduction of VOC using a vapor recovery unit is 65%, enter “65” in the field.

***IMPORTANT*:** Supporting equipment documentation may be required by BOEM/BSEE to verify specified control efficiency.

A.3 BOI-M02R (Boilers, Heaters, and Burners – Waste Oil)

The calculator BOI-M02R Version 4 in OCS AQS calculates the monthly emissions from a liquid-fueled unit powered by waste oil using the following **Data Request** fields in Figure A - 4**Error! Reference source not found.**:

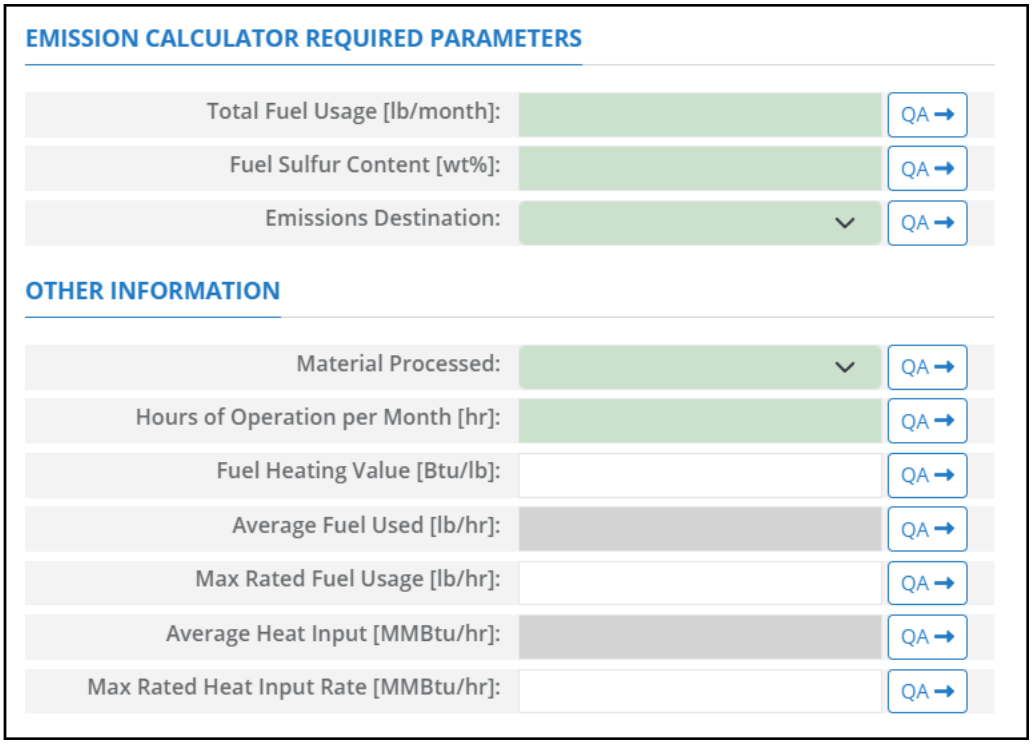


Figure A - 4. BOI-M02R Data Request tab

1. Total Fuel Usage [lb/month]: Total monthly rate of the liquid fuel used during the survey period.
2. Fuel Sulfur Content [wt%]: The weight percentage concentration of the sulfur content in the used liquid fuel. For example, if the fuel is 1.0% sulfur, then user enters 1 and not 0.01.
3. Emissions Destination: A drop-down list field to specify the emissions destination – whether they are vented locally, flared locally, vented remotely, flared remotely, or routed to the system. Vented locally selection will compute the emissions vented from this unit. Whereas, flared locally, vented remotely, flared remotely, and routed to system selections will zero out emissions from this unit.
4. Material Processed: A drop-down list field to specify the processed material: Crude Oil.
5. Fuel Heating Value [Btu/lb]: The amount of heat released during the combustion of a specified amount of the liquid fuel.
6. Hours of Operation per Month [hr]: The total monthly hours of operation of the liquid-fueled unit during the survey period.
7. Average Fuel Used [lb/hr]: The average hourly rate of liquid fuel used during the survey period. This field is auto-calculated.
8. Max Rated Fuel Usage [lb/hr]: The maximum hourly usage rate of the liquid fuel.
9. Average Heat Input [MMBtu/hr]: The average hourly heat input rate of liquid fuel. This field is auto-calculated.
10. Max Rated Heat Input Rate [MMBtu/hr]: The manufacturer's maximum rated heat input rate of the liquid fuel.

The calculator BOI-M02R Version 4 in OCS AQS calculates the monthly emissions with pollution control from a liquid-fueled unit powered by waste oil using the following **Control Request** fields in Figure A - 5**Error! Reference source not found.**:

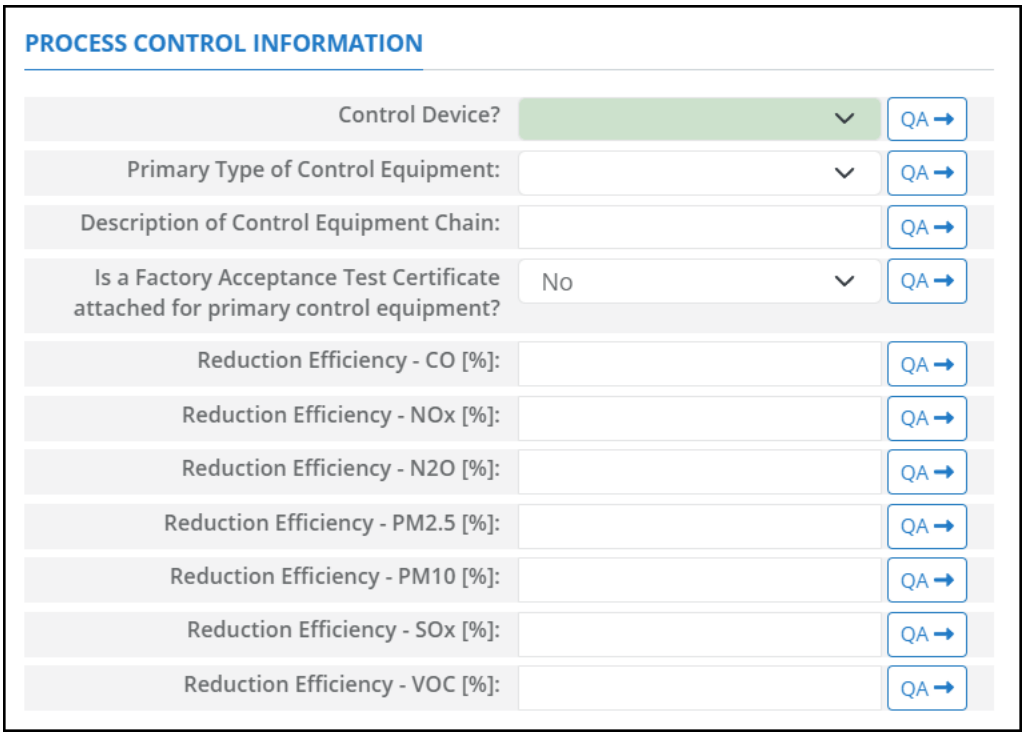


Figure A - 5. BOI-M02R Control Request tab

1. Control Device?: Is a control device or end of pipe treatment included in the process? This is a Yes/No question
2. Primary Type of Control Equipment: A drop-down list field to specify the primary type of the used control equipment. If the type of is not listed, user can select Other to describe the type in the comments field.
3. Description of Control Equipment Chain: This field allows you to describe the control equipment chain if more than one type of technology is used.
4. Is a Factory Acceptance Test Certificate attached for primary control equipment?: A drop-down [Yes/No] list to specify if functionality certification paperwork is available for the control equipment.
5. Reduction Efficiency – CO [%]: This describes the average reduction of emitted CO using the control technology. If the total reduction of CO using a vapor recovery unit is 65%, enter “65” in the field.
6. Reduction Efficiency – NO_x [%]: This describes the average reduction of emitted NO_x using the control technology. If the total reduction of NO_x using a vapor recovery unit is 65%, enter “65” in the field.
7. Reduction Efficiency – N_2O [%]: This describes the average reduction of emitted N_2O using the control technology. If the total reduction of N_2O using a vapor recovery unit is 65%, enter “65” in the field
8. Reduction Efficiency –$PM_{2.5}$ [%]: This describes the average reduction of emitted $PM_{2.5}$ using the control technology. If the total reduction of $PM_{2.5}$ using a vapor recovery unit is 65%, enter “65” in the field.
9. Reduction Efficiency – PM_{10} [%]: This describes the average reduction of emitted PM_{10} using the control technology. If the total reduction of PM_{10} using a vapor recovery unit is 65%, enter “65” in the field.

10. Reduction Efficiency – SO_x [%]: This describes the average reduction of emitted SO_x using the control technology. If the total reduction of SO_x using a vapor recovery unit is 65%, enter “65” in the field.
11. Reduction Efficiency – VOC [%]: This describes the average reduction of emitted VOC using the control technology. If the total reduction of VOC using a vapor recovery unit is 65%, enter “65” in the field.

    ***IMPORTANT*:** Supporting equipment documentation may be required by BOEM/BSEE to verify specified control efficiency.

A.4 BOI-M03R (Boilers, Heaters, and Burners – Natural Gas, Process Gas, or Waste Gas)

The calculator BOI-M03R Version 4 in OCS AQS calculates the monthly emissions from a gas-fueled unit powered by natural gas, process gas, or waste gas using the following **Data Request** fields in Figure A - 6:

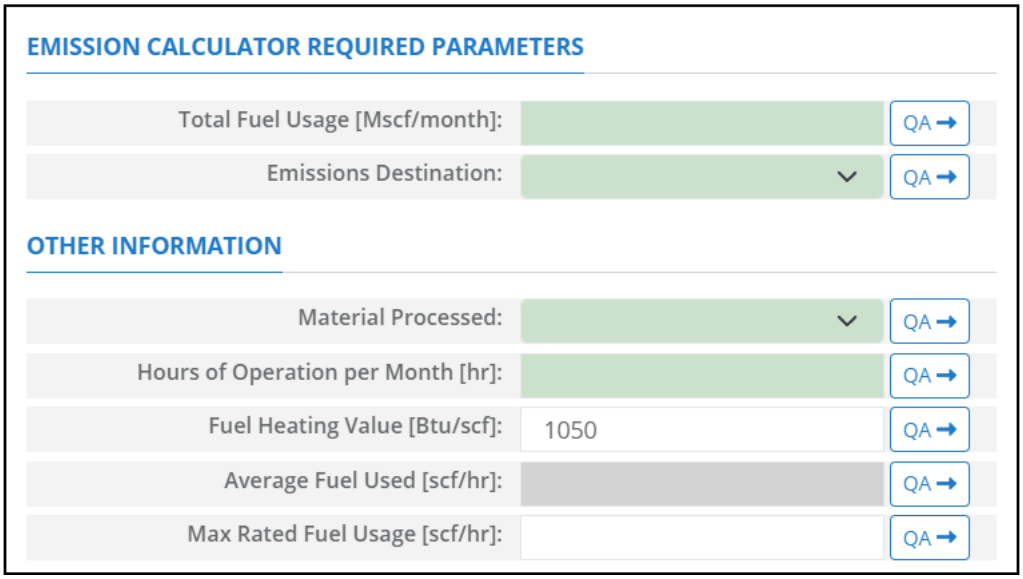


Figure A - 6. BOI-M03R Data Request tab

1. Total Fuel Usage [Mscf/month]: Total monthly rate of the gas fuel used during the survey period.
2. Emissions Destination: A drop-down list field to specify the emissions destination – whether they are vented locally, flared locally, vented remotely, flared remotely, or routed to the system. Vented locally selection will compute the emissions vented from this unit. Whereas, flared locally, vented remotely, flared remotely, and routed to system selections will zero out emissions from this unit.
3. Material Processed: A drop-down list field to specify the processed material: Natural Gas / Process Gas / Exhaust Gas.
4. Hours of Operation per Month [hr]: The total monthly hours of operation of the gas-fueled unit during the survey period.
5. Fuel Heating Value [Btu/scf]: The amount of heat released during the combustion of a specified amount of the gas fuel. Default value is 1050 Btu/scf.
6. Average Fuel Used [scf/hr]: The average hourly rate of gas fuel used during the survey period. This field is auto-calculated.
7. Max Rated Fuel Usage [scf/hr]: The maximum hourly usage rate of the gas fuel.

The calculator BOI-M03R Version 4 in OCS AQS calculates the monthly emissions with pollution control from a gas-fueled unit powered by natural gas, process gas, or waste gas using the following **Control Request** fields in Figure A - 7**Error! Reference source not found.**:

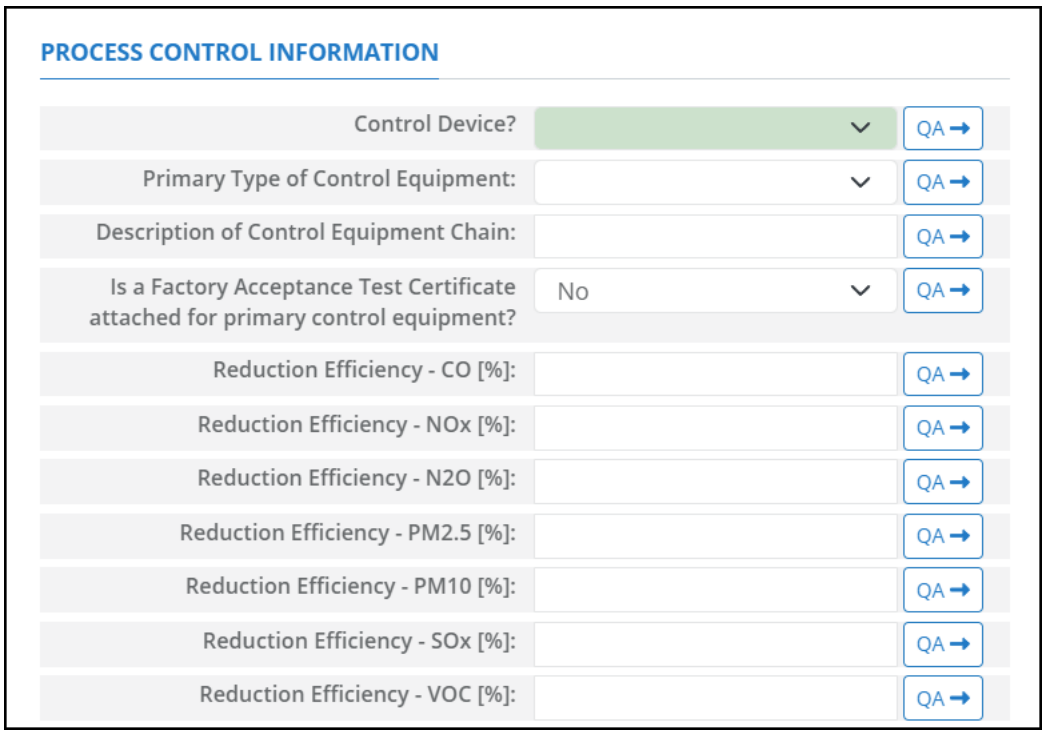


Figure A - 7. BOI-M03R Control Request tab

1. Control Device?: Is a control device or end of pipe treatment included in the process? This is a Yes/No question
2. Primary Type of Control Equipment: A drop-down list field to specify the primary type of the used control equipment. If the type of is not listed, user can select Other to describe the type in the comments field.
3. Description of Control Equipment Chain: This field allows you to describe the control equipment chain if more than one type of technology is used.
4. Is a Factory Acceptance Test Certificate attached for primary control equipment?: A drop-down [Yes/No] list to specify if functionality certification paperwork is available for the control equipment.
5. Reduction Efficiency – CO [%]: This describes the average reduction of emitted CO using the control technology. If the total reduction of CO using a vapor recovery unit is 65%, enter “65” in the field.
6. Reduction Efficiency – NO_x [%]: This describes the average reduction of emitted NO_x using the control technology. If the total reduction of NO_x using a vapor recovery unit is 65%, enter “65” in the field.
7. Reduction Efficiency – N_2O [%]: This describes the average reduction of emitted N_2O using the control technology. If the total reduction of N_2O using a vapor recovery unit is 65%, enter “65” in the field
8. Reduction Efficiency –$PM_{2.5}$ [%]: This describes the average reduction of emitted $PM_{2.5}$ using the control technology. If the total reduction of $PM_{2.5}$ using a vapor recovery unit is 65%, enter “65” in the field.
9. Reduction Efficiency – PM_{10} [%]: This describes the average reduction of emitted PM_{10} using the control technology. If the total reduction of PM_{10} using a vapor recovery unit is 65%, enter “65” in the field.
10. Reduction Efficiency – SO_x [%]: This describes the average reduction of emitted SO_x using the control technology. If the total reduction of SO_x using a vapor recovery unit is 65%, enter “65” in the field.

11. Reduction Efficiency – VOC [%]: This describes the average reduction of emitted VOC using the control technology. If the total reduction of VOC using a vapor recovery unit is 65%, enter “65” in the field.

    ***IMPORTANT*:** Supporting equipment documentation may be required by BOEM/BSEE to verify specified control efficiency.

A.5 DIE-M01R (Gasoline Engines)

The calculator DIE-M01R Version 4 in OCS AQS calculates the monthly emissions from a gasoline engine using the following **Data Request** fields in Figure A - 8**Error! Reference source not found.**:

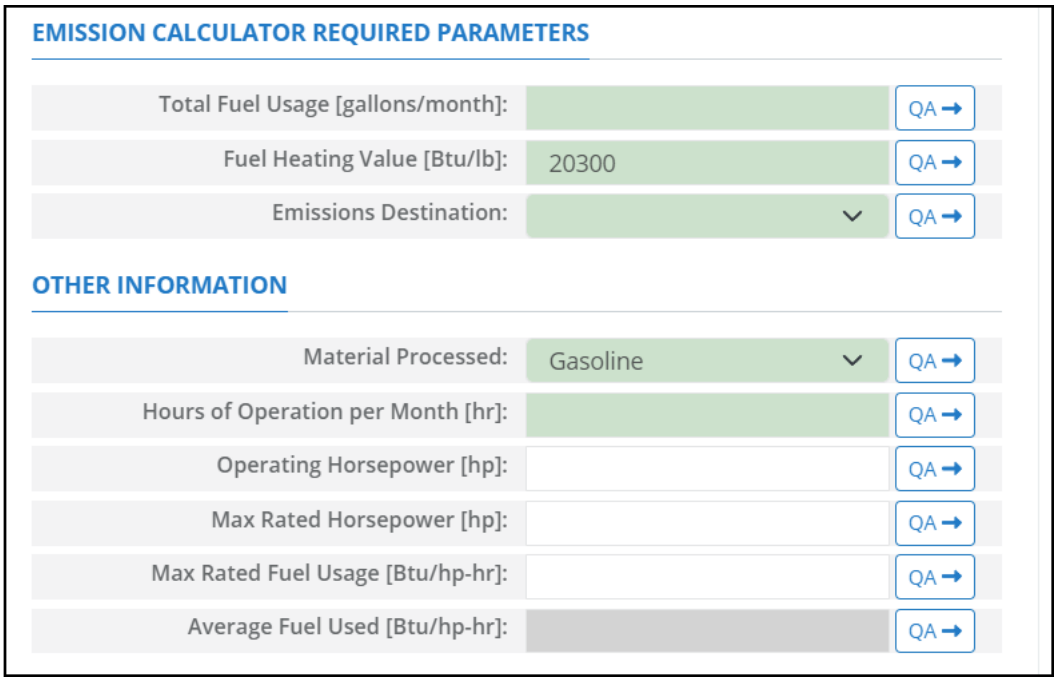


Figure A - 8. DIE-M01R Data Request tab

1. Total Fuel Usage [gallons/month]: Total monthly rate of the gasoline fuel used during the survey period.
2. Fuel Heating Value [Btu/lb]: The amount of heat released during the combustion of a specified amount of the gasoline fuel. Default value is 20300 Btu/lb.
3. Emissions Destination: A drop-down list field to specify the emissions destination – whether they are vented locally, flared locally, vented remotely, flared remotely, or routed to the system. Vented locally selection will compute the emissions vented from this unit. Whereas, flared locally, vented remotely, flared remotely, and routed to system selections will zero out emissions from this unit.
4. Material Processed: A drop-down list field to specify the processed material: Gasoline.
5. Hours of Operation per Month [hr]: The total monthly hours of operation of the unit during the survey period.
6. Operating Horsepower [hp]: The operating horsepower of the gasoline engine.
7. Max Rated Horsepower [hp]: The manufacturer's maximum rated horsepower of the gasoline engine.
8. Max Rated Fuel Usage [Btu/hp-hr]: The maximum hourly usage rate of the gasoline fuel.
9. Average Fuel Used [Btu/hp-hr]: The average hourly rate of gasoline fuel used during the survey period. This field is auto-calculated.

The calculator DIE-M01R Version 4 in OCS AQS calculates the monthly emissions with pollution control from a gasoline engine using the following **Control Request** fields in Figure A - 9**Error! Reference source not found.**:

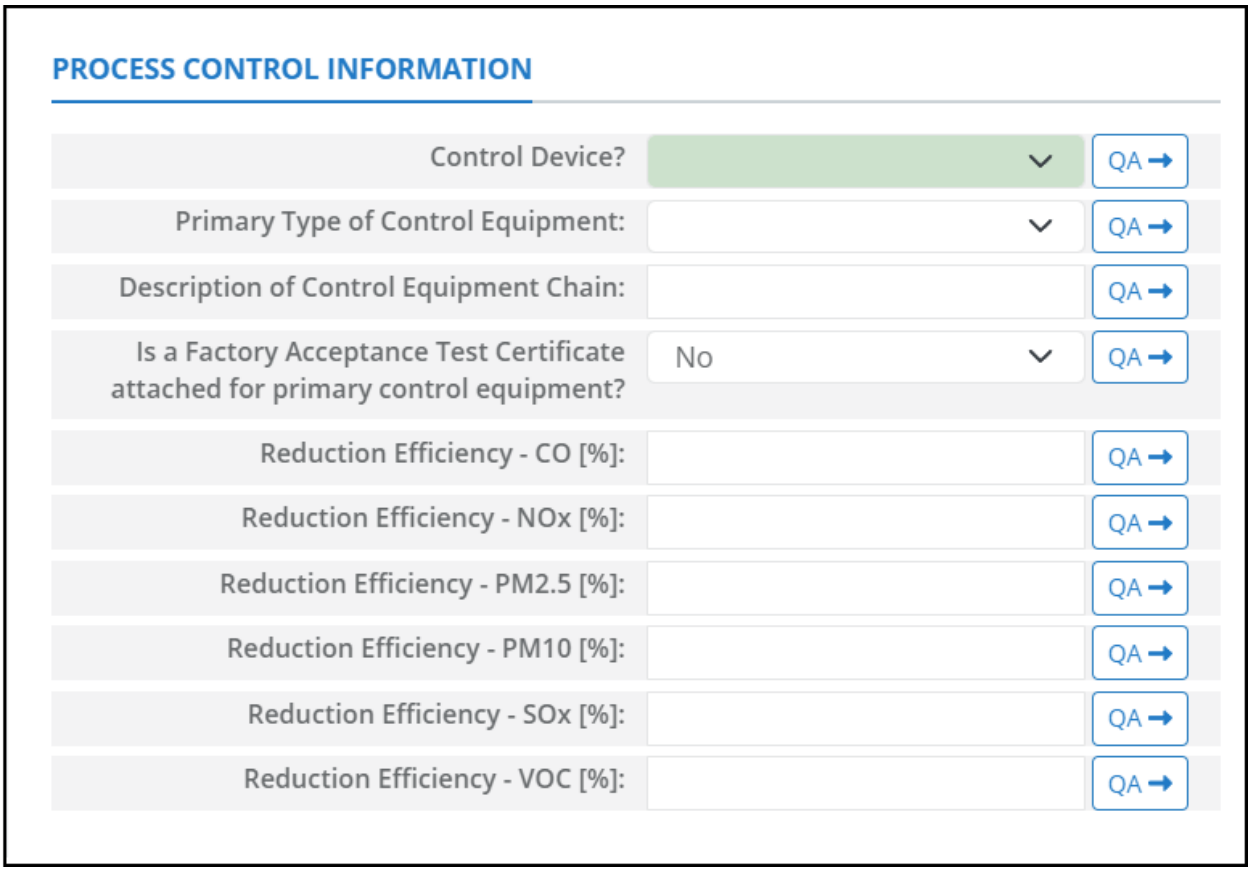


Figure A - 9. DIE-M01R Control Request tab

1. Control Device?: Is end of pipe control technology used with this source? A drop-down [Yes/No] list.
2. Primary Type of Control Equipment: A drop-down list field to specify the primary type of the used control equipment. If the type of is not listed, user can select Other to describe the type in the comments field.
3. Description of Control Equipment Chain: This field allows you to describe the control equipment chain if more than one type of technology is used.
4. Is a Factory Acceptance Test Certificate attached for primary control equipment?: A drop-down [Yes/No] list to specify if functionality certification paperwork is available for the control equipment.
5. Reduction Efficiency – CO [%]: This describes the average reduction of emitted CO using the control technology. If the total reduction of CO using a vapor recovery unit is 65%, enter “65” in the field.
6. Reduction Efficiency – NOx [%]: This describes the average reduction of emitted NOx using the control technology. If the total reduction of NOx using a vapor recovery unit is 65%, enter “65” in the field.
7. Reduction Efficiency – $PM_{2.5}$ [%]: This describes the average reduction of emitted $PM_{2.5}$ using the control technology. If the total reduction of $PM_{2.5}$ using a vapor recovery unit is 65%, enter “65” in the field.
8. Reduction Efficiency – PM_{10} [%]: This describes the average reduction of emitted PM_{10} using the control technology. If the total reduction of PM_{10} using a vapor recovery unit is 65%, enter “65” in the field.

9. Reduction Efficiency – SO_x [%]: This describes the average reduction of emitted SO_x using the control technology. If the total reduction of SO_x using a vapor recovery unit is 65%, enter "65" in the field.
10. Reduction Efficiency – VOC [%]: This describes the average reduction of emitted VOC using the control technology. If the total reduction of VOC using a vapor recovery unit is 65%, enter "65" in the field.

***IMPORTANT*:** Supporting equipment documentation may be required by BOEM/BSEE to verify specified control efficiency.

A.6 DIE-M02R (Diesel Engines, Max HP < 600)

The calculator DIE-M02R Version 5 in OCS AQS calculates the monthly emissions from a diesel engine where Max HP < 600 using the following **Data Request** fields in Figure A - 10**Error! Reference source not found.**:

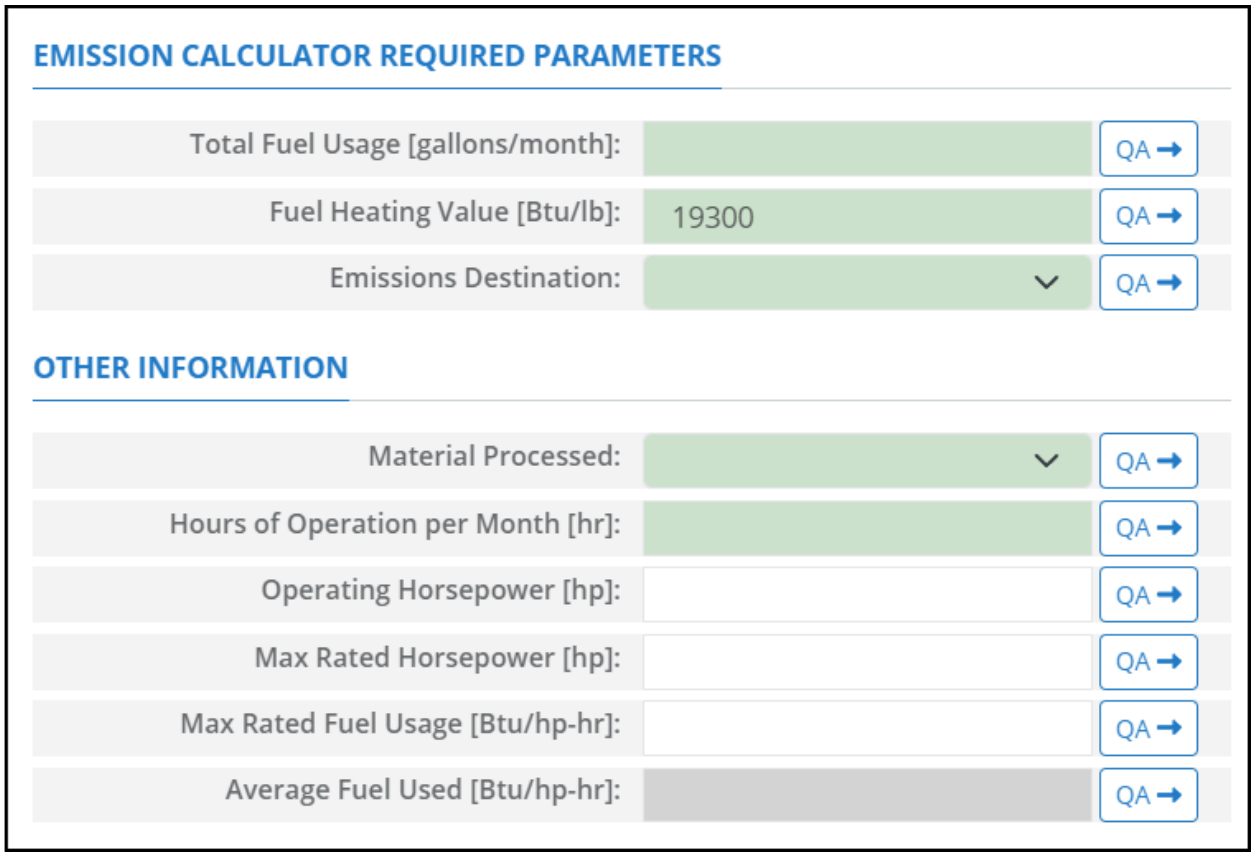


Figure A - 10. DIE-M02R Data Request tab

1. Total Fuel Usage [gallons/month]: Total monthly rate of the diesel fuel used during the survey period.
2. Fuel Heating Value [Btu/lb]: The amount of heat released during the combustion of a specified amount of the diesel fuel. Default value is 19300 Btu/lb.
3. Emissions Destination: A drop-down list field to specify the emissions destination – whether they are vented locally, flared locally, vented remotely, flared remotely, or routed to the system. Vented locally selection will compute the emissions vented from this unit. Whereas, flared locally, vented remotely, flared remotely, and routed to system selections will zero out emissions from this unit.
4. Material Processed: A drop-down list field to specify the processed material: Diesel / Distillate Oil.
5. Hours of Operation per Month [hr]: The total monthly hours of operation of the unit during the survey period.
6. Operating Horsepower [hp]: The operating horsepower of the diesel engine.
7. Max Rated Horsepower [hp]: The manufacturer's maximum rated horsepower of the diesel engine.
8. Max Rated Fuel Usage [Btu/hp-hr]: The maximum hourly usage rate of the diesel fuel.
9. Average Fuel Used [Btu/hp-hr]: The average hourly rate of diesel fuel used during the survey period. This field is auto-calculated.

The calculator DIE-M02R Version 5 in OCS AQS calculates the monthly emissions with pollution control from a diesel engine where Max HP < 600 using the following **Control Request** fields in Figure A - 11**Error! Reference source not found.**:

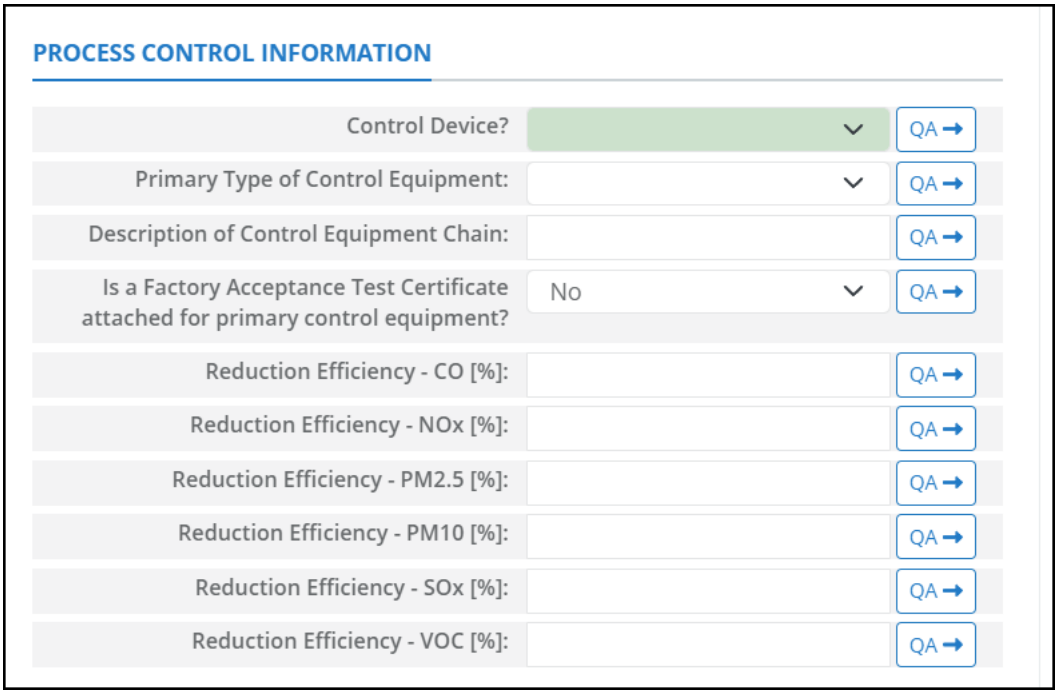


Figure A - 11. DIE-M02R Control Request tab.

1. Control Device?: Is end of pipe control technology used with this source? A drop-down [Yes/No] list.
2. Primary Type of Control Equipment: A drop-down list field to specify the primary type of the used control equipment. If the type of is not listed, user can select Other to describe the type in the comments field.
3. Description of Control Equipment Chain: This field allows you to describe the control equipment chain if more than one type of technology is used.
4. Is a Factory Acceptance Test Certificate attached for primary control equipment?: A drop-down [Yes/No] list to specify if functionality certification paperwork is available for the control equipment.
5. Reduction Efficiency – CO [%]: This describes the average reduction of emitted CO using the control technology. If the total reduction of CO using a vapor recovery unit is 65%, enter “65” in the field.
6. Reduction Efficiency – NOx [%]: This describes the average reduction of emitted NOx using the control technology. If the total reduction of NOx using a vapor recovery unit is 65%, enter “65” in the field.
7. Reduction Efficiency – $PM_{2.5}$ [%]: This describes the average reduction of emitted $PM_{2.5}$ using the control technology. If the total reduction of $PM_{2.5}$ using a vapor recovery unit is 65%, enter “65” in the field.
8. Reduction Efficiency – PM_{10} [%]: This describes the average reduction of emitted PM_{10} using the control technology. If the total reduction of PM_{10} using a vapor recovery unit is 65%, enter “65” in the field.
9. Reduction Efficiency – SO_x [%]: This describes the average reduction of emitted SO_x using the control technology. If the total reduction of SO_x using a vapor recovery unit is 65%, enter “65” in the field.

10. Reduction Efficiency – VOC [%]: This describes the average reduction of emitted VOC using the control technology. If the total reduction of VOC using a vapor recovery unit is 65%, enter “65” in the field.

    ***IMPORTANT*:** Supporting equipment documentation may be required by BOEM/BSEE to verify specified control efficiency.

A.7 DIE-M03R (Diesel Engines, Max HP >= 600)

The calculator DIE-M03R Version 5 in OCS AQS calculates the monthly emissions from a diesel engine where Max HP >= 600 using the following **Data Request** fields in Figure A - 12**Error! Reference source not found.**:

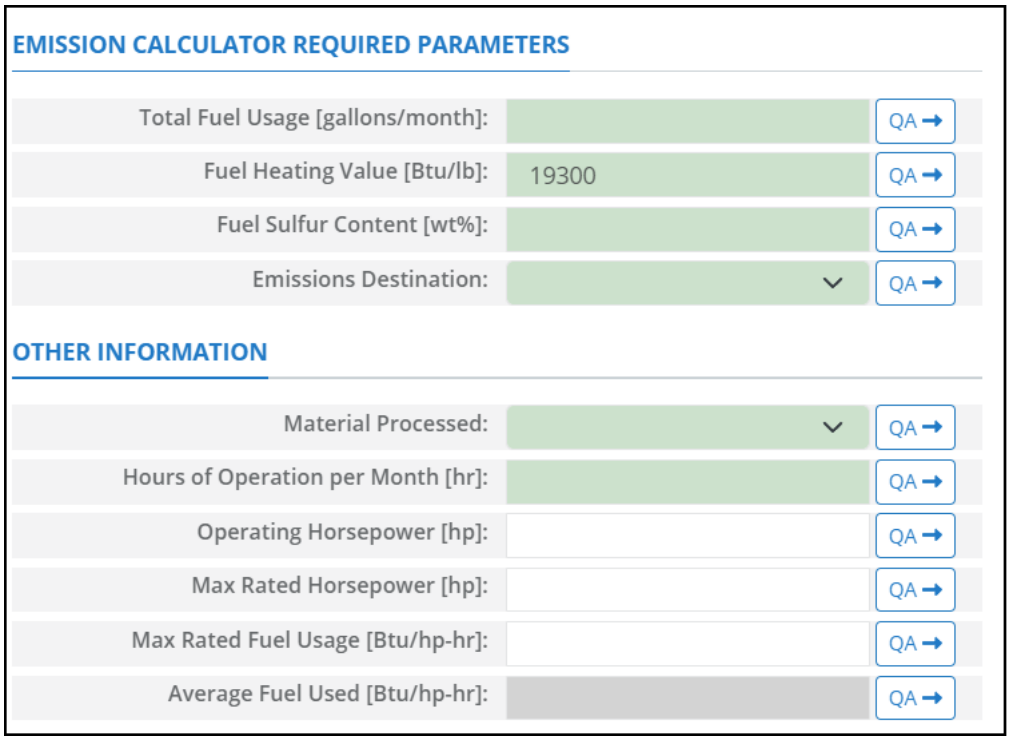


Figure A - 12. DIE-M03R Data Request tab

1. Total Fuel Usage [gallons/month]: Total monthly rate of the diesel fuel used during the survey period.
2. Fuel Heating Value [Btu/lb]: The amount of heat released during the combustion of a specified amount of the diesel fuel. Default value is 19300 Btu/lb.
3. Fuel Sulfur Content [wt%]: The weight percentage concentration of the sulfur content in the used diesel fuel. For example, if the fuel is 1.0% sulfur, then user enters 1 and not 0.01.
4. Emissions Destination: A drop-down list field to specify the emissions destination – whether they are vented locally, flared locally, vented remotely, flared remotely, or routed to the system. Vented locally selection will compute the emissions vented from this unit. Whereas, flared locally, vented remotely, flared remotely, and routed to system selections will zero out emissions from this unit.
5. Material Processed: A drop-down list field to specify the processed material: Diesel / Distillate Oil.
6. Hours of Operation per Month [hr]: The total monthly hours of operation of the unit during the survey period.
7. Operating Horsepower [hp]: The operating horsepower of the diesel engine.
8. Max Rated Horsepower [hp]: The manufacturer's maximum rated horsepower of the diesel engine.
9. Max Rated Fuel Usage [Btu/hp-hr]: The maximum hourly usage rate of the diesel fuel.
10. Average Fuel Used [Btu/hp-hr]: The average hourly rate of diesel fuel used during the survey period. This field is auto-calculated.

The calculator DIE-M03R Version 5 in OCS AQS calculates the monthly emissions with pollution control from a diesel engine where Max HP >= 600 using the following **Control Request** fields in Figure A - 13**Error! Reference source not found.**:

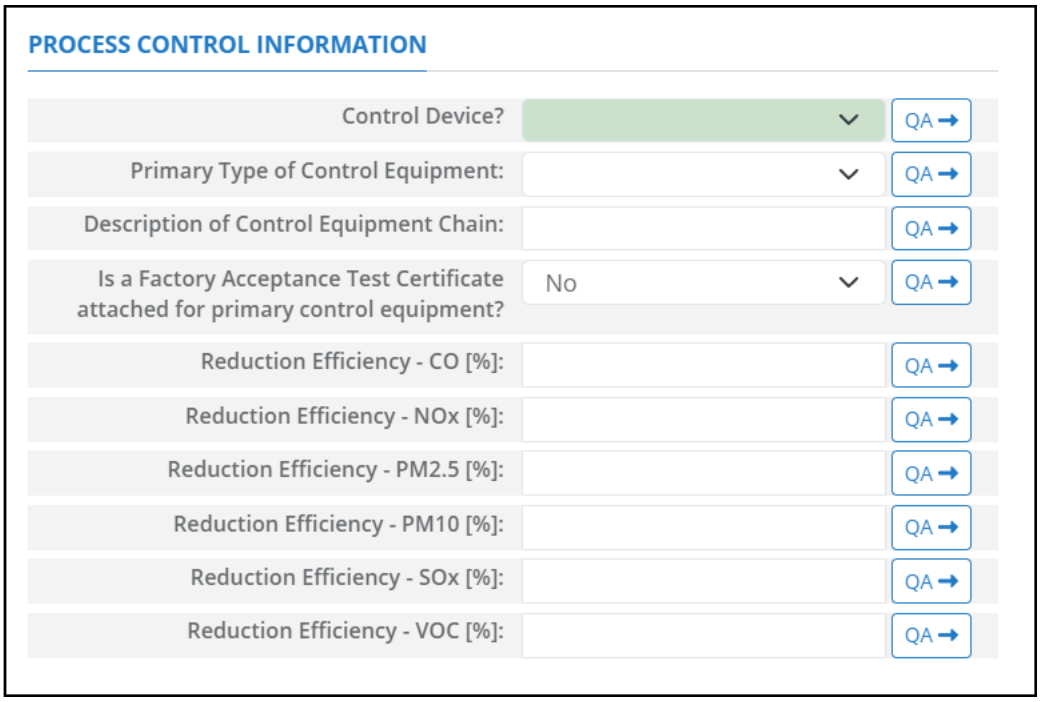


Figure A - 13. DIE-M03R Control Request tab

1. Control Device?: Is end of pipe control technology used with this source? A drop-down [Yes/No] list.
2. Primary Type of Control Equipment: A drop-down list field to specify the primary type of the used control equipment. If the type of is not listed, user can select Other to describe the type in the comments field.
3. Description of Control Equipment Chain: This field allows you to describe the control equipment chain if more than one type of technology is used.
4. Is a Factory Acceptance Test Certificate attached for primary control equipment?: A drop-down [Yes/No] list to specify if functionality certification paperwork is available for the control equipment.
5. Reduction Efficiency – CO [%]: This describes the average reduction of emitted CO using the control technology. If the total reduction of CO using a vapor recovery unit is 65%, enter “65” in the field.
6. Reduction Efficiency – NOx [%]: This describes the average reduction of emitted NOx using the control technology. If the total reduction of NOx using a vapor recovery unit is 65%, enter “65” in the field.
7. Reduction Efficiency – $PM_{2.5}$ [%]: This describes the average reduction of emitted $PM_{2.5}$ using the control technology. If the total reduction of $PM_{2.5}$ using a vapor recovery unit is 65%, enter “65” in the field.
8. Reduction Efficiency – PM_{10} [%]: This describes the average reduction of emitted PM_{10} using the control technology. If the total reduction of PM_{10} using a vapor recovery unit is 65%, enter “65” in the field.
9. Reduction Efficiency – SO_x [%]: This describes the average reduction of emitted SO_x using the control technology. If the total reduction of SO_x using a vapor recovery unit is 65%, enter “65” in the field.
10. Reduction Efficiency – VOC [%]: This describes the average reduction of emitted VOC using the control technology. If the total reduction of VOC using a vapor recovery unit is 65%, enter “65” in the field.

***IMPORTANT*:** Supporting equipment documentation may be required by BOEM/BSEE to verify specified control efficiency.

A.8 DRI-M01R (Drilling Equipment – Gasoline Fuel)

The calculator DRI-M01R Version 4 in OCS AQS calculates the monthly emissions from a drilling equipment powered by gasoline fuel using the following **Data Request** fields in Figure A - 14**Error! Reference source not found.**:

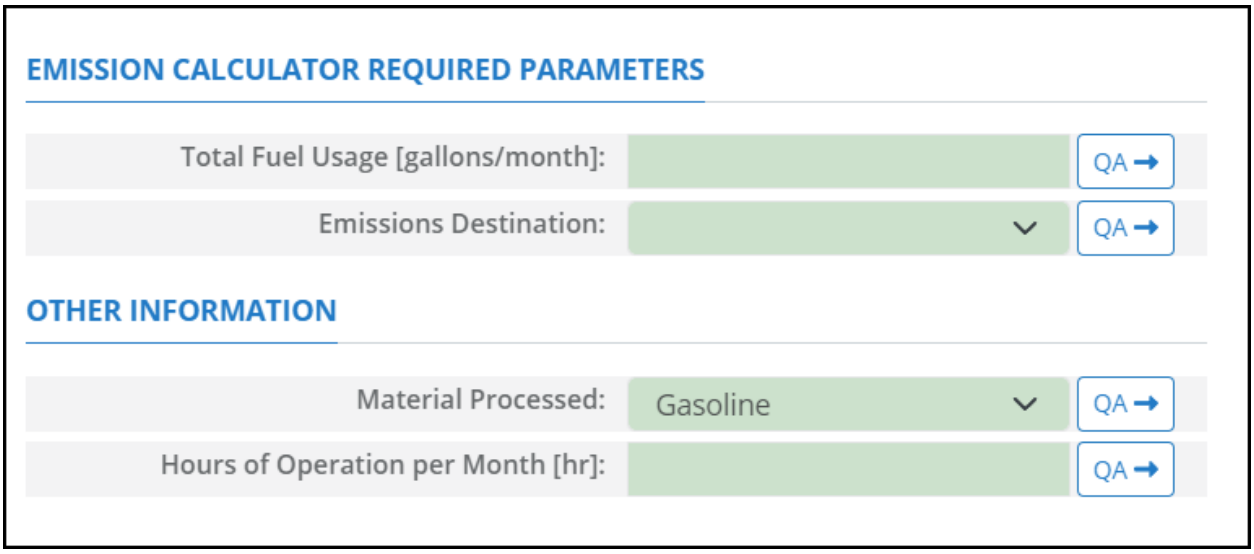


Figure A - 14. DRI-M01R Data Request tab

1. Total Fuel Usage [gallons/month]: Total monthly rate of the gasoline fuel used during the survey period.
2. Emissions Destination: A drop-down list field to specify the emissions destination – whether they are vented locally, flared locally, vented remotely, flared remotely, or routed to the system. Vented locally selection will compute the emissions vented from this unit. Whereas, flared locally, vented remotely, flared remotely, and routed to system selections will zero out emissions from this unit.
3. Material processed: A drop-down list field to specify the processed material: Gasoline.
4. Hours of Operation per Month [hr]: The total monthly hours of operation of the unit during the survey period.

The calculator DRI-M01R Version 4 in OCS AQS calculates the monthly emissions with pollution control from a drilling equipment powered by gasoline fuel using the following **Control Request** fields in Figure A - 15**Error! Reference source not found.**:

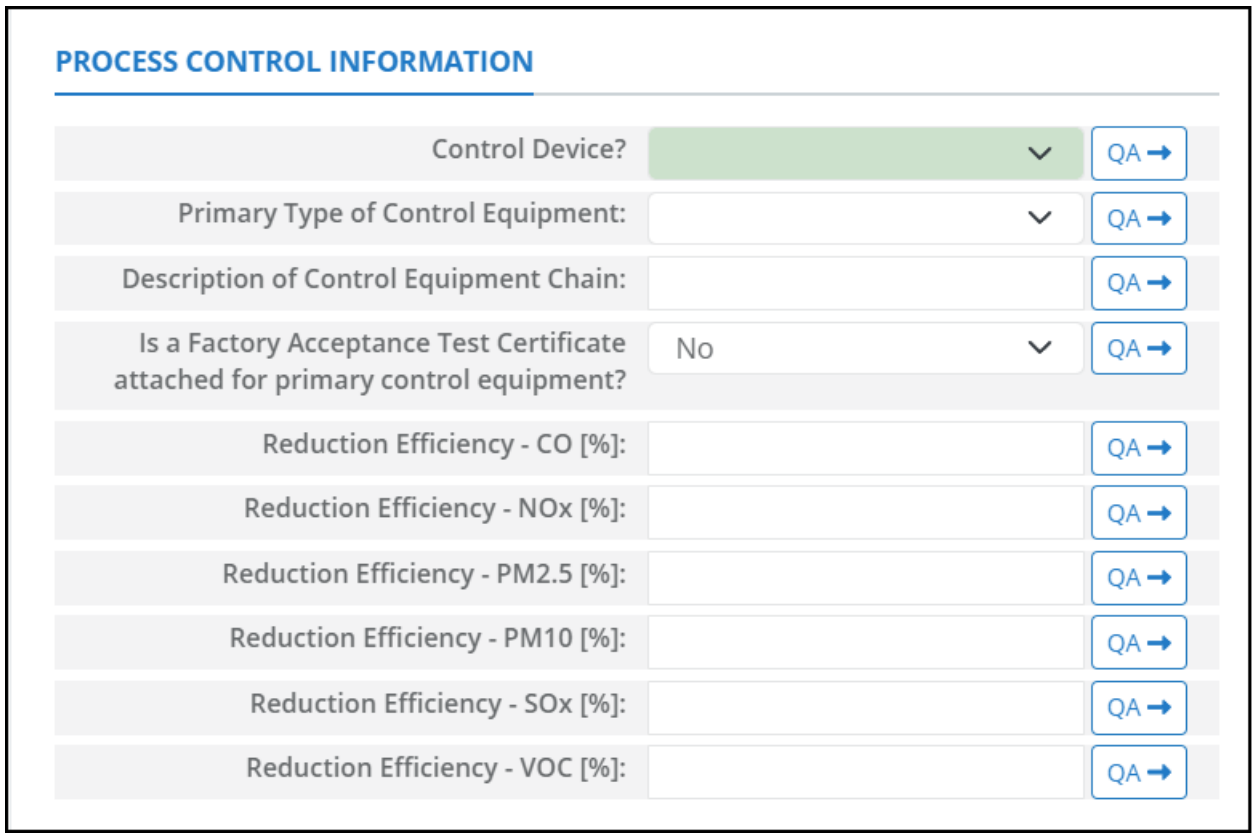


Figure A - 15. DRI-M01R Control Request tab

1. Control Device?: Is end of pipe control technology used with this source? A drop-down [Yes/No] list.
2. Primary Type of Control Equipment: A drop-down list field to specify the primary type of the used control equipment. If the type of is not listed, user can select Other to describe the type in the comments field.
3. Description of Control Equipment Chain: This field allows you to describe the control equipment chain if more than one type of technology is used.
4. Is a Factory Acceptance Test Certificate attached for primary control equipment?: A drop-down [Yes/No] list to specify if functionality certification paperwork is available for the control equipment.
5. Reduction Efficiency – CO [%]: This describes the average reduction of emitted CO using the control technology. If the total reduction of CO using a vapor recovery unit is 65%, enter “65” in the field.
6. Reduction Efficiency – NOx [%]: This describes the average reduction of emitted NOx using the control technology. If the total reduction of NOx using a vapor recovery unit is 65%, enter “65” in the field.
7. Reduction Efficiency – $PM_{2.5}$ [%]: This describes the average reduction of emitted $PM_{2.5}$ using the control technology. If the total reduction of $PM_{2.5}$ using a vapor recovery unit is 65%, enter “65” in the field.
8. Reduction Efficiency – PM_{10} [%]: This describes the average reduction of emitted PM_{10} using the control technology. If the total reduction of PM_{10} using a vapor recovery unit is 65%, enter “65” in the field.

9. Reduction Efficiency – SO_x [%]: This describes the average reduction of emitted SO_x using the control technology. If the total reduction of SO_x using a vapor recovery unit is 65%, enter "65" in the field.
10. Reduction Efficiency – VOC [%]: This describes the average reduction of emitted VOC using the control technology. If the total reduction of VOC using a vapor recovery unit is 65%, enter "65" in the field.

***IMPORTANT*:** Supporting equipment documentation may be required by BOEM/BSEE to verify specified control efficiency.

A.9 DRI-M02R (Drilling Equipment – Diesel Fuel)

The calculator DRI-M02R Version 5 in OCS AQS calculates the monthly emissions from a drilling equipment powered by diesel fuel using the following **Data Request** fields in Figure A - 16**Error! Reference source not found.**:

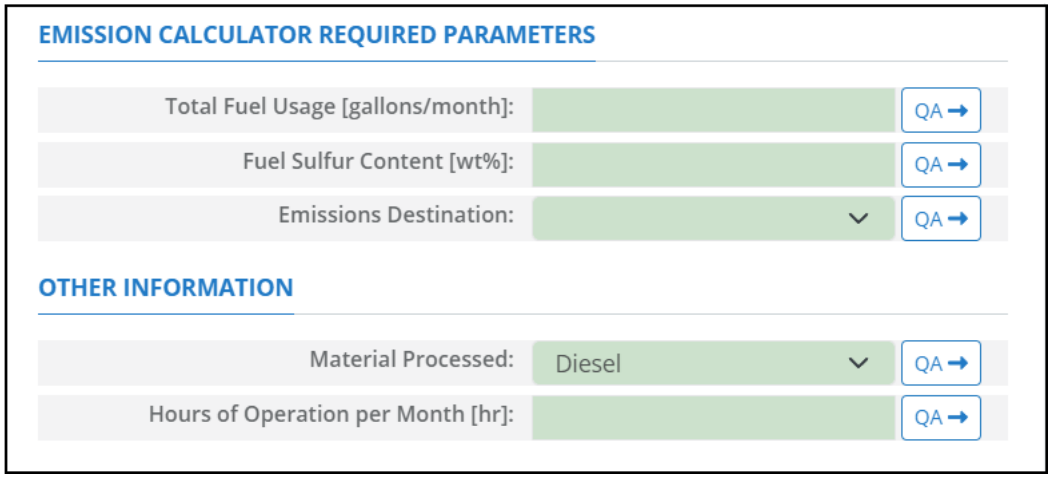


Figure A - 16. DRI-M02R Data Request tab

1. Total Fuel Usage [gallons/month]: Total monthly rate of the diesel fuel used during the survey period.
2. Fuel Sulfur Content [wt%]: The weight percentage concentration of the sulfur content in the used diesel fuel. For example, if the fuel is 1.0% sulfur, then user enters 1 and not 0.01.
3. Emissions Destination: A drop-down list field to specify the emissions destination – whether they are vented locally, flared locally, vented remotely, flared remotely, or routed to the system. Vented locally selection will compute the emissions vented from this unit. Whereas, flared locally, vented remotely, flared remotely, and routed to system selections will zero out emissions from this unit.
4. Material Processed: A drop-down list field to specify the processed material: Diesel / Distillate Oil.
5. Hours of Operation per Month [hr]: The total monthly hours of operation of the unit during the survey period.

The calculator DRI-M02R Version 5 in OCS AQS calculates the monthly emissions with pollution control from a drilling equipment powered by diesel fuel using the following **Control Request** fields in Figure A - 17**Error! Reference source not found.**:

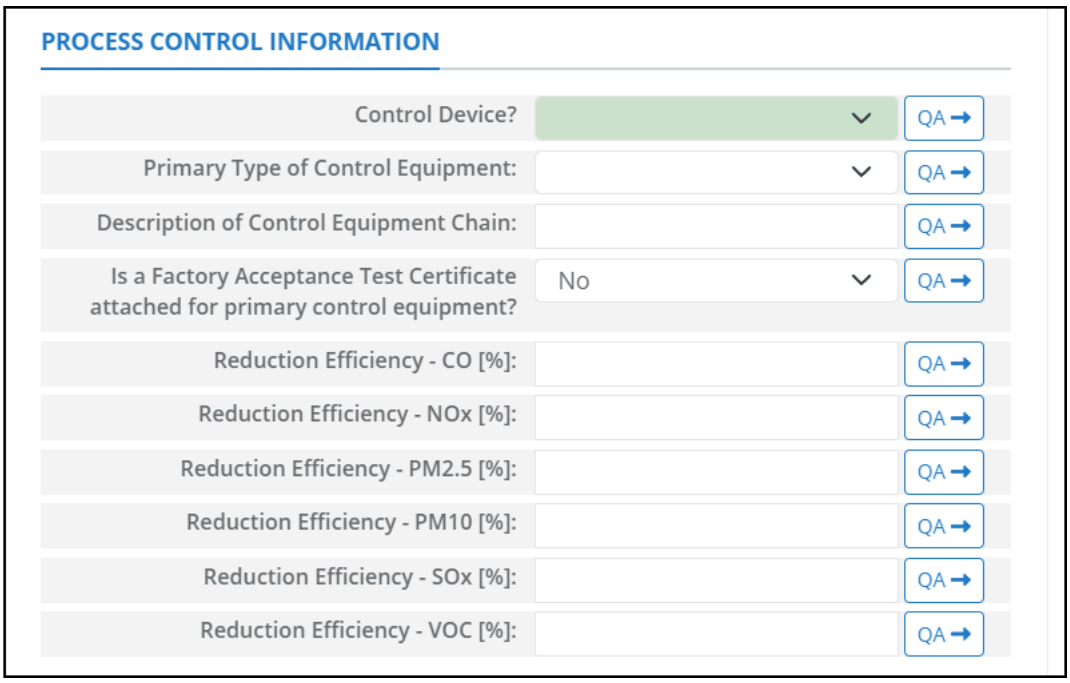


Figure A - 17. DRI-M02R Control Request tab

1. Control Device?: Is end of pipe control technology used with this source? A drop-down [Yes/No] list.
2. Primary Type of Control Equipment: A drop-down list field to specify the primary type of the used control equipment. If the type of is not listed, user can select Other to describe the type in the comments field.
3. Description of Control Equipment Chain: This field allows you to describe the control equipment chain if more than one type of technology is used.
4. Is a Factory Acceptance Test Certificate attached for primary control equipment?: A drop-down [Yes/No] list to specify if functionality certification paperwork is available for the control equipment.
5. Reduction Efficiency – CO [%]: This describes the average reduction of emitted CO using the control technology. If the total reduction of CO using a vapor recovery unit is 65%, enter “65” in the field.
6. Reduction Efficiency – NOx [%]: This describes the average reduction of emitted NOx using the control technology. If the total reduction of NOx using a vapor recovery unit is 65%, enter “65” in the field.
7. Reduction Efficiency – $PM_{2.5}$ [%]: This describes the average reduction of emitted $PM_{2.5}$ using the control technology. If the total reduction of $PM_{2.5}$ using a vapor recovery unit is 65%, enter “65” in the field.
8. Reduction Efficiency – PM_{10} [%]: This describes the average reduction of emitted PM_{10} using the control technology. If the total reduction of PM_{10} using a vapor recovery unit is 65%, enter “65” in the field.
9. Reduction Efficiency – SO_x [%]: This describes the average reduction of emitted SO_x using the control technology. If the total reduction of SO_x using a vapor recovery unit is 65%, enter “65” in the field.
10. Reduction Efficiency – VOC [%]: This describes the average reduction of emitted VOC using the control technology. If the total reduction of VOC using a vapor recovery unit is 65%, enter “65” in the field.

***IMPORTANT*:** Supporting equipment documentation may be required by BOEM/BSEE to verify specified control efficiency.

A.10 DRI-M03R (Drilling Equipment – Natural Gas Fuel)

The calculator DRI-M03R Version 4 in OCS AQS calculates the monthly emissions from a drilling equipment powered by natural gas fuel using the following **Data Request** fields in Figure A - 18**Error! Reference source not found.**:

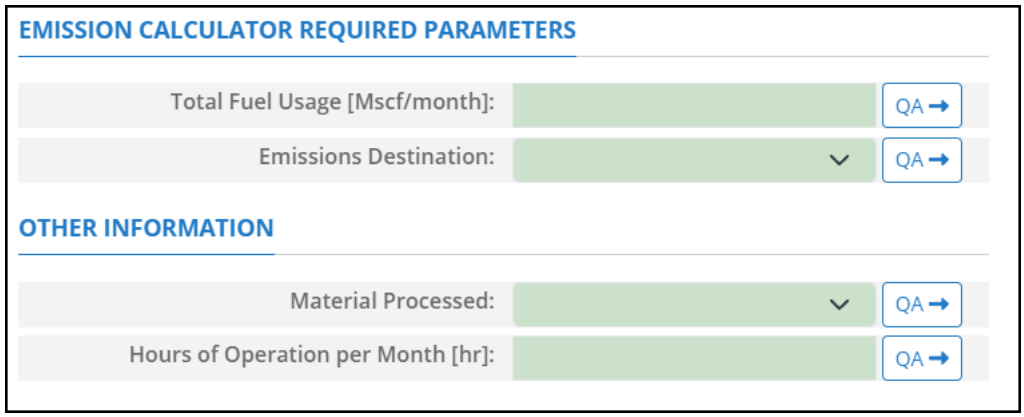


Figure A - 18. DRI-M03R Data Request tab

1. Total Fuel Usage [Mscf/month]: Total monthly rate of the natural gas fuel used during the survey period.
2. Emissions Destination: A drop-down list field to specify the emissions destination – whether they are vented locally, flared locally, vented remotely, flared remotely, or routed to the system. Vented locally selection will compute the emissions vented from this unit. Whereas, flared locally, vented remotely, flared remotely, and routed to system selections will zero out emissions from this unit.
3. Material Processed: A drop-down list field to specify the processed material: Natural Gas/ Process Gas.
4. Hours of Operation per Month [hr]: The total monthly hours of operation of the unit during the survey period.

The calculator DRI-M03R Version 4 in OCS AQS calculates the monthly emissions with pollution control from a drilling equipment powered by natural gas fuel using the following **Control Request** fields in Figure A - 19**Error! Reference source not found.**:

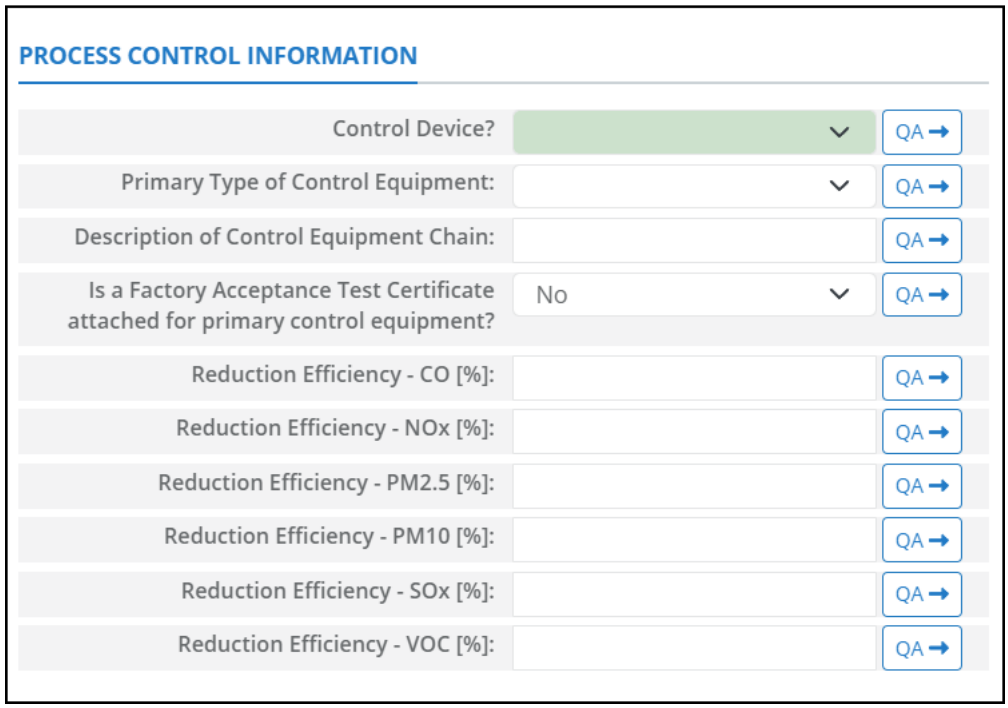


Figure A - 19. DRI-M03R Control Request tab

1. Control Device?: Is end of pipe control technology used with this source? A drop-down [Yes/No] list.
2. Primary Type of Control Equipment: A drop-down list field to specify the primary type of the used control equipment. If the type of is not listed, user can select Other to describe the type in the comments field.
3. Description of Control Equipment Chain: This field allows you to describe the control equipment chain if more than one type of technology is used.
4. Is a Factory Acceptance Test Certificate attached for primary control equipment?: A drop-down [Yes/No] list to specify if functionality certification paperwork is available for the control equipment.
5. Reduction Efficiency – CO [%]: This describes the average reduction of emitted CO using the control technology. If the total reduction of CO using a vapor recovery unit is 65%, enter “65” in the field.
6. Reduction Efficiency – NOx [%]: This describes the average reduction of emitted NOx using the control technology. If the total reduction of NOx using a vapor recovery unit is 65%, enter “65” in the field.
7. Reduction Efficiency – $PM_{2.5}$ [%]: This describes the average reduction of emitted $PM_{2.5}$ using the control technology. If the total reduction of $PM_{2.5}$ using a vapor recovery unit is 65%, enter “65” in the field.
8. Reduction Efficiency – PM_{10} [%]: This describes the average reduction of emitted PM_{10} using the control technology. If the total reduction of PM_{10} using a vapor recovery unit is 65%, enter “65” in the field.
9. Reduction Efficiency – SO_x [%]: This describes the average reduction of emitted SO_x using the control technology. If the total reduction of SO_x using a vapor recovery unit is 65%, enter “65” in the field.
10. Reduction Efficiency – VOC [%]: This describes the average reduction of emitted VOC using the control technology. If the total reduction of VOC using a vapor recovery unit is 65%, enter “65” in the field.

***IMPORTANT*:** Supporting equipment documentation may be required by BOEM/BSEE to verify specified control efficiency.

A.11 FLA-M01 (Combustion Flare)

The calculator FLA-M01 Version 4 in OCS AQS calculates the monthly emissions from a combustion flare using the following **Data Request** fields in Figure A - 20**Error! Reference source not found.**:

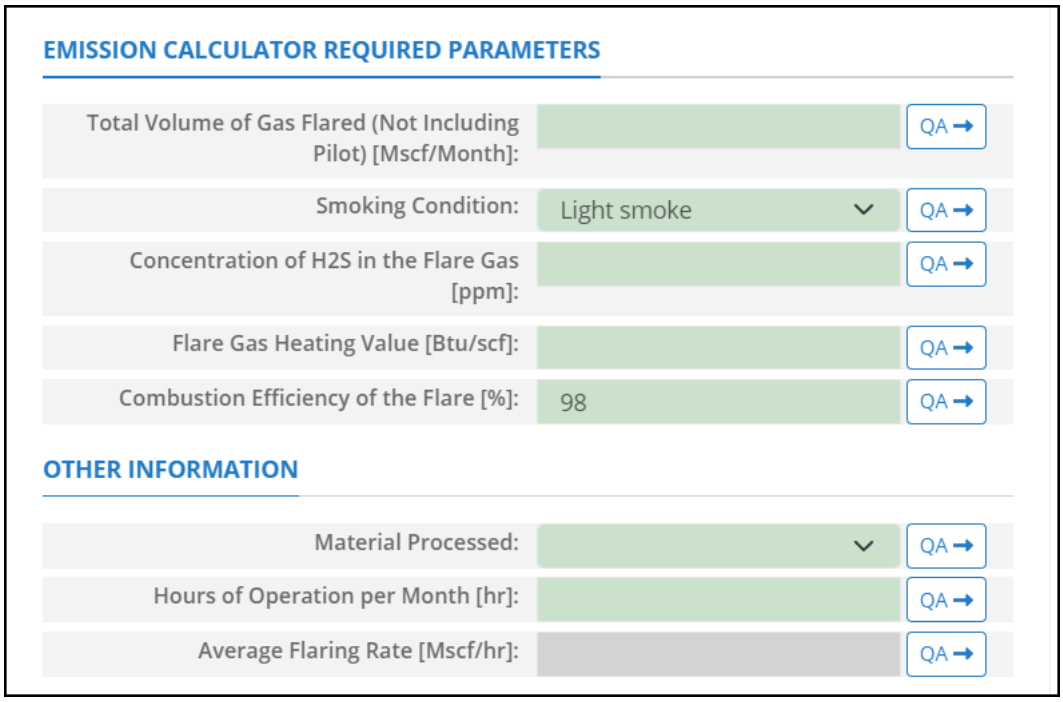


Figure A - 20. FLA-M01 Data Request tab

1. Total Volume of Gas Flared (Not Including Pilot) [Mscf]: The total volume of flare gas during the survey period, without the pilot flared gas.
2. Smoking Condition: A drop-down list field to specify the condition of the flare emitted smoke: No Smoke / Light Smoke / Medium Smoke / Heavy Smoke. Smoking condition determines the PM10 emission factors used in the calculations (Year 2017 Emissions Inventory Study, BOEM_2019-072).
3. Concentration of H_2S in the Flare Gas [ppm]: The ppm concentration of hydrogen sulfide present in the flare gas.
4. Flare Gas Heating Value [Btu/scf]: The amount of heat released during the combustion of a specified amount of the flare gas.
5. Combustion Efficiency of the Flare [%]: The percentage efficiency of complete combustion, or the percentage of hydrocarbon conversion to carbon dioxide (CO_2).
6. Material Processed: A drop-down list field to specify the processed material: Gas/ Natural Gas / Process Gas / Exhaust gas.
7. Hours of Operation per Month [hr]: The total monthly hours of operation of the unit during the survey period.
8. Hours of Operation per Month [hr]: The total monthly hours of operation of the unit during the survey period.
9. Average flaring rate [Mscf/hr]. The flaring hourly volumetric rate. This field is auto-calculated.

A.12 FLA-M02 (Combustion Flares – Pilot)

The calculator FLA-M02 Version 4 in OCS AQS calculates the monthly emissions from a pilot combustion flare using the following **Data Request** fields in Figure A - 21**Error! Reference source not found.**:

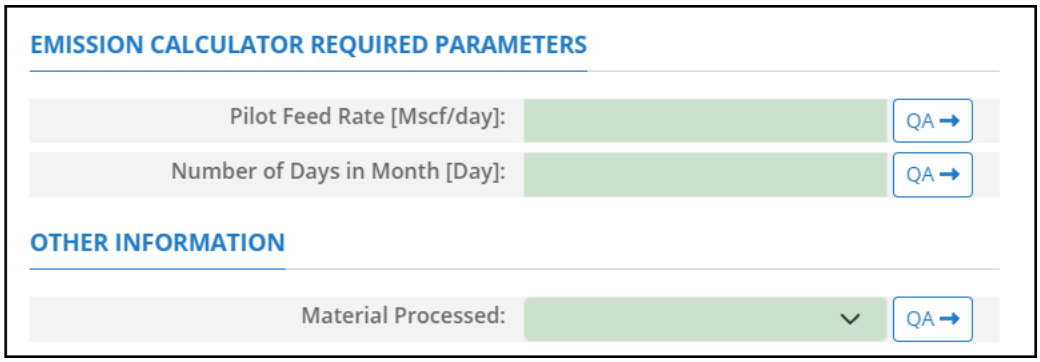


Figure A - 21. FLA-M02 Data Request tab

1. Pilot Feed Rate [Mscf/day]: Daily volumetric flowrate of gas fed to the pilot.
2. Number of Days in Month [Day]: The number of days in the month of the survey period.
3. Material Processed: A drop-down list field to specify the processed material: Gas / Natural Gas / Process Gas / Exhaust gas.

A.13 FUG-I01 (Fugitive Sources)

The calculator FUG-I01 Version 1 in OCS AQS utilizes the following **Data Request** fields in Figure A - 22**Error! Reference source not found.**:

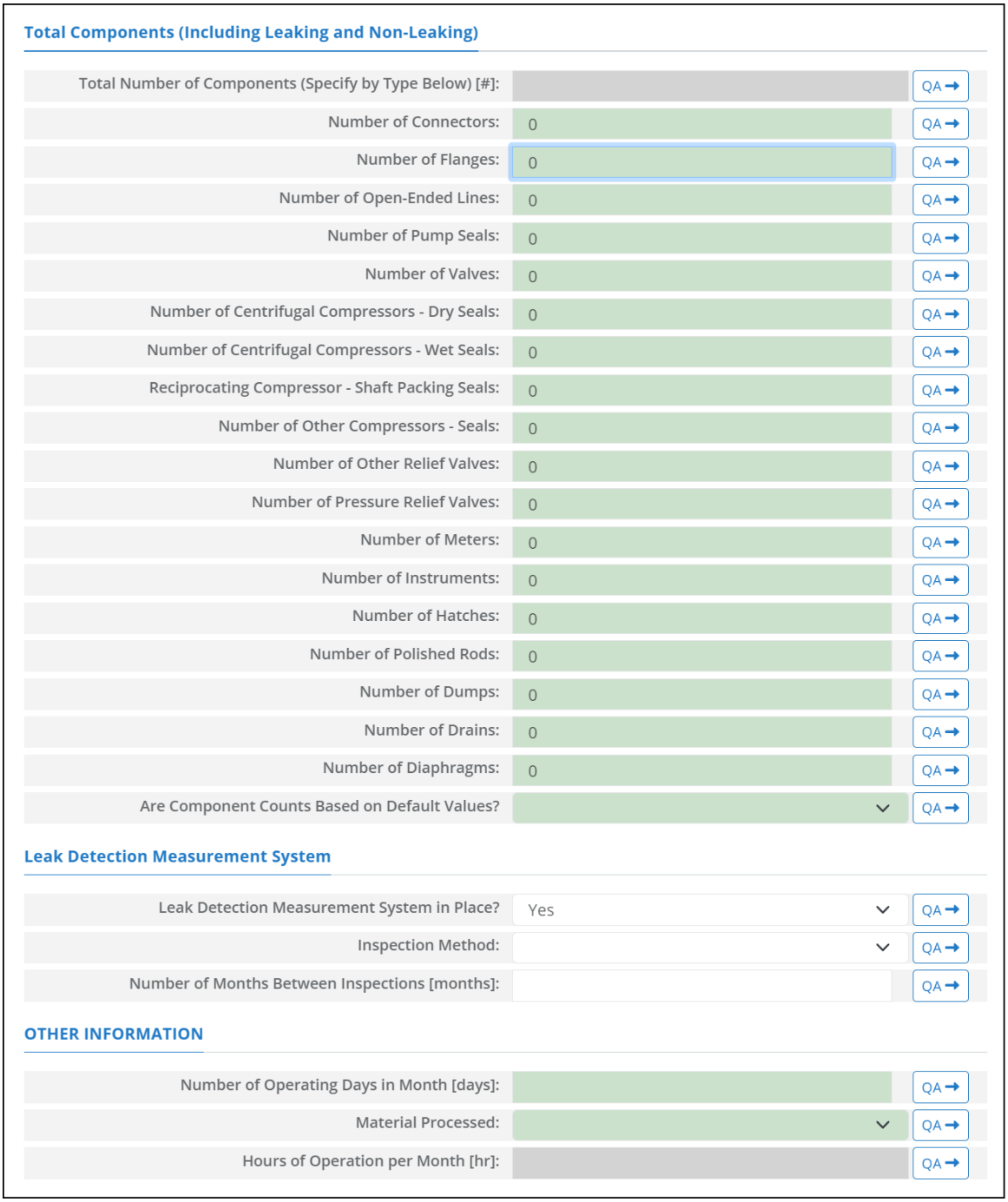


Figure A - 22. FUG-I01 Data Request tab

1. Total Number of Components (Specify by Type Below): The summation of the number of components. This field is auto-calculated based on the number of components provided in the subsequent fields.
2. Number of Connectors: Total number of connectors in the structure.

3. Number of Flanges: Total number of flanges in this structure.
4. Number of Open-Ended Lines: Total number of open-ended lines in the structure.
5. Number of Pump Seals: Total number of pump seals in this structure.
6. Number of Valves: Total number of valves in this structure.
7. Number of Centrifugal Compressors – Dry Seals: Total number of dry seals centrifugal compressors the structure.
8. Number of Centrifugal Compressors – Wet Seals: Total number of wet seals centrifugal compressors the structure.
9. Reciprocating Compressor – Shaft Packing Seals: Total number of shaft packing seals reciprocating compressors.
10. Number of Other Compressors – Seals: Total number of other compressors in the structure.
11. Number of Other Relief Valves: Total number of other relief valves in the structure.
12. Number of Pressure Relief Valves: Total number of pressure relief valves in the structure.
13. Number of Meters: Total number of meters in the structure.
14. Number of Instruments: Total number of instruments in the structure.
15. Number of Hatches: Total number of hatches in the structure.
16. Number of Polished Rods: Total number of polished rods in the structure.
17. Number of Dumps: Total number of dumps in the structure.
18. Number of Drains: Total number of drains in the structure.
19. Number of Diaphragms: Total number of diaphragms in the structure.
20. Are Component Counts Based on Default Values? [Default/Actual]: Identifies whether a facility-specific component count is provided, or default values provided by BOEM are used Default components are given as:
    Connectors: 9,194
    Valves: 1,713
    Open-Ends: 285
    Others: 228
21. Leak Detection Measurement System in Place?: A Yes/No drop-down list field to indicate whether the facility routinely assesses leaking fugitive components or not. Default selection is Yes.
22. Inspection Method: A drop-down list field to specify the employed inspection method: Optical Instrumentation / Visual Inspection / Vapor Analyzer.
23. Number of Months Between Inspections [Months]: The inspection frequency of the leak detection program
24. Material Processed: A drop-down list field to specify the processed material: Gas / Natural Gas Liquid / Heavy Oil / Light Oil / Water, Oil / Oil, Water, Gas.
25. Number of Operating Days in Month [Days]: The total number of days that the fugitive source operated during the survey period.
26. Hours of Operation per Month [hr]: The total monthly hours of operation of the fugitive sources during this survey period. This field is auto-calculated.

***IMPORTANT*:** When utilizing this calculator, the component counts you provide are important for the purposes of data quality assurance and control. However, these component counts will not impact the emissions data you import.

A.14 FUG-M01 (Fugitive Sources – Gas – Average Emission Factor Approach)

Fugitive sources have different calculators depending on the stream type. Each calculator requires component counts of different equipment. Additional information provided by the Offshore Operators Committee may also be helpful as a starting point in compiling a component count (Table A - 1).

Table A - 1: Summary of equipment inventory data (number of components) by skid type

Skid Type	Valves	Pump Seals	Threaded Connections	Flanges	Open Ended Lines	Compressor Seals	Diaphragms	Drains	Dump Arms	Hatches	Instruments	Meters	Pressure Relief Valves	Polished Rods	Other Relief Valves
Separator Skid	34	0	13	73	0	0	0	2	0	0	15	1	1	0	0
Heater Treater Skid	98	0	70	114	0	0	0	3	0	0	25	0	3	0	0
LACT Charge Pump Skid	21	3	6	47	0	0	0	1	0	0	9	0	0	0	0
LACT Skid	62	1	75	69	0	0	0	1	0	0	34	4	6	0	0
Pipeline Pumps Skid	39	3	12	78	0	0	0	2	0	0	70	0	3	0	0
Pig Launcher/Receiver Skid	13	0	14	16	0	0	0	0	0	0	9	0	1	0	0
Compressor Skid	119	0	113	138	0	4	0	1	0	0	69	0	9	4	0
Filter/Separator Skid	30	0	25	37	0	0	0	1	0	0	9	0	1	0	0
Gas Dehydration Skid	23	0	14	40	0	0	0	1	0	0	12	0	1	0	0
Glycol Regeneration Skid	134	0	110	194	0	0	0	4	0	0	45	1	7	6	1
Gas Meter	10	0	11	26	0	0	0	1	0	0	21	2	0	0	0
Fuel Gas Skid	62	0	47	85	0	0	0	1	0	0	32	1	4	0	0
Floatation Cell Skid	41	1	34	70	0	0	1	1	0	15	8	0	2	0	2
Scrubber	13	0	13	18	0	0	0	1	0	0	9	0	1	0	0
Amine Unit	226	8	166	391	0	0	1	5	0	0	121	2	12	0	1
Line Heater	30	0	46	18	0	0	0	1	0	0	10	0	0	0	1

Skid Type	Valves	Pump Seals	Threaded Connections	Flanges	Open Ended Lines	Compressor Seals	Diaphragms	Drains	Dump Arms	Hatches	Instruments	Meters	Pressure Relief Valves	Polished Rods	Other Relief Valves
Production Manifold	108	0	31	148	0	0	0	1	0	0	43	0	0	7	0
Wellhead	15	0	6	19	0	0	0	0	0	0	11	0	0	0	0
Import or Export Pipeline	3	0	0	9	0	0	0	0	0	0	0	0	0	0	0

Because there is a large variation in emissions for compressor seals, you are asked to specify the compressor and seal type:

- Centrifugal: wet seal
- Centrifugal: dry seal
- Reciprocating: shaft packing
- Other (specify in comments)

***IMPORTANT*:** If you are using the values from the table above, you must select the **Default** option. If you are using actual counts, select the **Actual** option.

***IMPORTANT*:** The values in Table A - 1 above are provided for reference purposes only and are not coded into OCS AQS. Regardless of whether you select **Default** or **Actual** option, you must specify all values manually.

The total number of components will automatically be calculated for you in the top field under Emission Calculator Required Parameters.

The calculator FUG-M01 Version 2 in OCS AQS calculates the monthly emissions from the gas fugitive sources using the following **Data Request** fields in Figure A - 23**Error! Reference source not found.**:

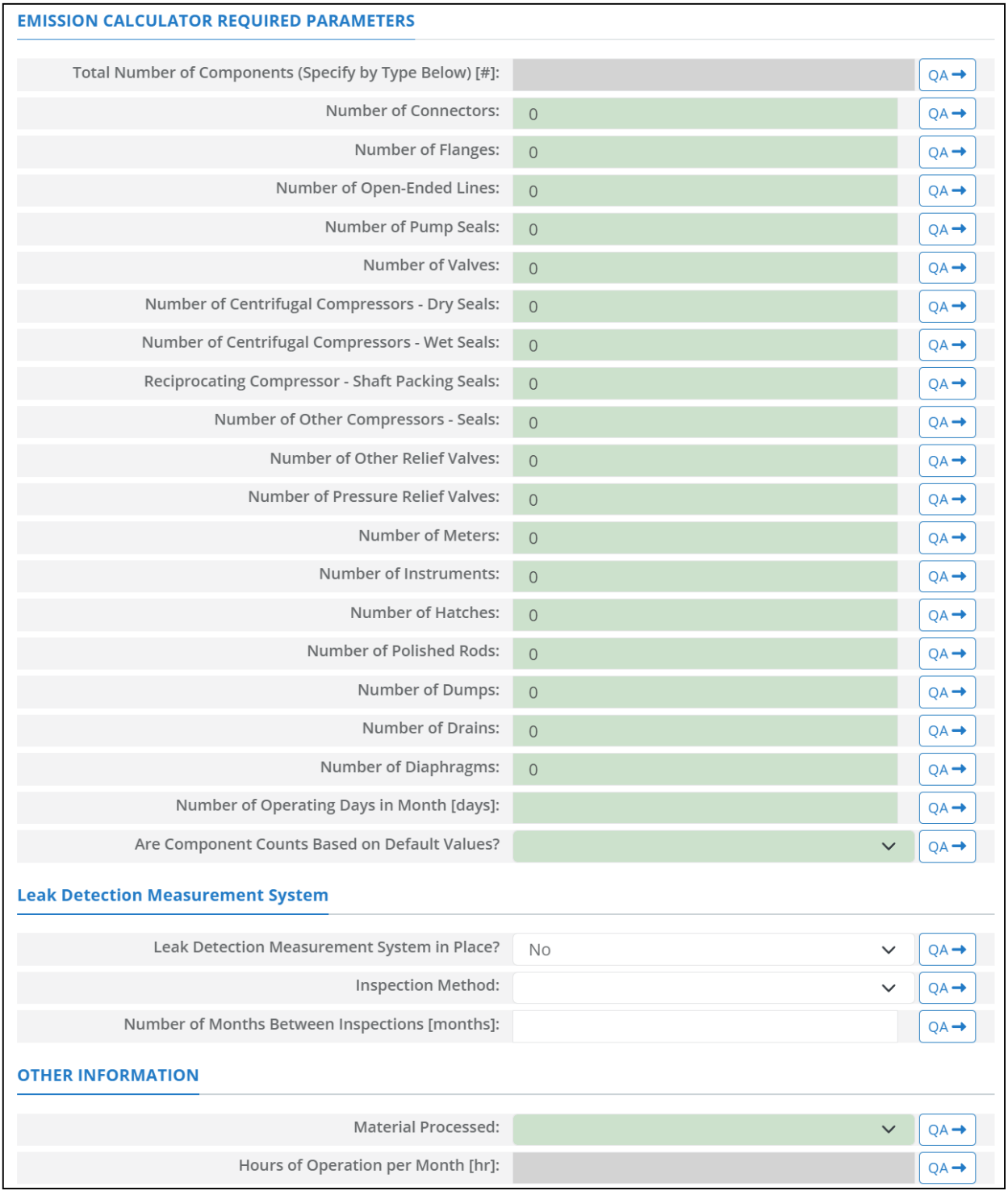


Figure A - 23. FUG-M01 Data Request tab

1. Total Number of Components (Specify by Type Below) [#]: The summation of the number of components. This field is auto-calculated based on the number of components provided in the subsequent fields.
2. Number of Connectors: Total number of connectors in the structure.

3. Number of Flanges: Total number of flanges in this structure.
4. Number of Open-Ended Lines: Total number of open-ended lines in the structure.
5. Number of Pump Seals: Total number of pump seals in this structure.
6. Number of Valves: Total number of valves in this structure.
7. Number of Centrifugal Compressors – Dry Seals: Total number of dry seals centrifugal compressors the structure.
8. Number of Centrifugal Compressors – Wet Seals: Total number of wet seals centrifugal compressors the structure.
9. Reciprocating Compressor – Shaft Packing Seals: Total number of shaft packing seals reciprocating compressors.
10. Number of Other Compressors – Seals: Total number of other compressors in the structure.
11. Number of Other Relief Valves: Total number of other relief valves in the structure.
12. Number of Pressure Relief Valves: Total number of pressure relief valves in the structure.
13. Number of Meters: Total number of meters in the structure.
14. Number of Instruments: Total number of instruments in the structure.
15. Number of Hatches: Total number of hatches in the structure.
16. Number of Polished Rods: Total number of polished rods in the structure.
17. Number of Dumps: Total number of dumps in the structure.
18. Number of Drains: Total number of drains in the structure.
19. Number of Diaphragms: Total number of diaphragms in the structure.
20. Number of Operating Days in Month [Days]: The total number of days that the fugitive source operated during the survey period.
21. Are Component Counts Based on Default Values? [Default/Actual]: Identifies whether a facility-specific component count is provided, or default values provided by BOEM are used Default components are given as:
    Connectors: 9,194
    Valves: 1,713
    Open-Ends: 285
    Others: 228
22. Leak Detection Measurement System in Place?: A Yes/No drop-down list field to indicate whether the facility routinely assesses and repairs leaking fugitive components or not. Default selection is No.
23. Inspection Method: A drop-down list field to specify the employed inspection method: Optical Instrumentation / Visual Inspection / Vapor Analyzer.
27. Number of Months Between Inspections [Months]: The inspection frequency of the leak detection program.
24. Material Processed: A drop-down list field to specify the processed material: Gas / Natural Gas Liquid / Heavy Oil / Light Oil / Water, Oil / Oil, Water, Gas.
25. Hours of Operation per Month [hr]: The total monthly hours of operation of the fugitive sources during this survey period. This field is auto-calculated.

A.15 FUG-M02 (Fugitive Sources – Liquid Natural Gas – Average Emission Factor Approach)

The calculator FUG-M02 Version 2 in OCS AQS calculates the monthly emissions from the liquid natural gas fugitive sources using the following **Data Request** fields in Figure A - 24**Error! Reference source not found.**:

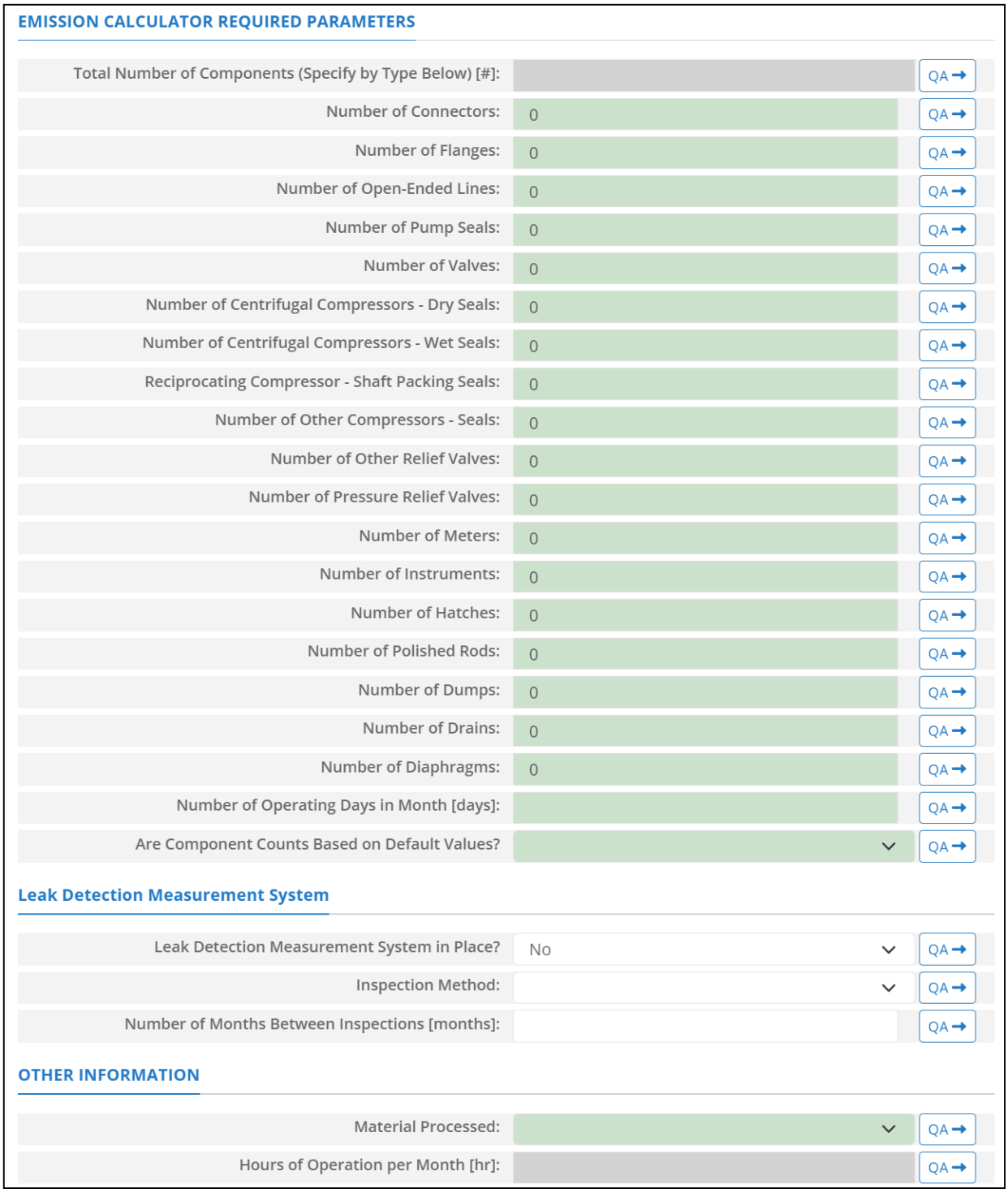


Figure A - 24. FUG-M02 Data Request tab

1. Total Number of Components (Specify by Type Below) [#]: The summation of the number of components. This field is auto-calculated based on the number of components provided in the subsequent fields.
2. Number of Connectors: Total number of connectors in the structure.
3. Number of Flanges: Total number of flanges in this structure.

4. Number of Open-Ended Lines: Total number of open-ended lines in the structure.
5. Number of Pump Seals: Total number of pump seals in this structure.
6. Number of Valves: Total number of valves in this structure.
7. Number of Centrifugal Compressors – Dry Seals: Total number of dry seals centrifugal compressors the structure.
8. Number of Centrifugal Compressors – Wet Seals: Total number of wet seals centrifugal compressors the structure.
9. Reciprocating Compressor – Shaft Packing Seals: Total number of shaft packing seals reciprocating compressors.
10. Number of Other Compressors – Seals: Total number of other compressors in the structure.
11. Number of Other Relief Valves: Total number of other relief valves in the structure.
12. Number of Pressure Relief Valves: Total number of pressure relief valves in the structure.
13. Number of Meters: Total number of meters in the structure.
14. Number of Instruments: Total number of instruments in the structure.
15. Number of Hatches: Total number of hatches in the structure.
16. Number of Polished Rods: Total number of polished rods in the structure.
17. Number of Dumps: Total number of dumps in the structure.
18. Number of Drains: Total number of drains in the structure.
19. Number of Diaphragms: Total number of diaphragms in the structure.
20. Number of Operating Days in Month [Days]: The total number of days that the fugitive source operated during the survey period.
21. Are Component Counts Based on Default Values? [Default/Actual]: Identifies whether a facility-specific component count is provided, or default values provided by BOEM are used Default components are given as:
    Connectors: 9,194
    Valves: 1,713
    Open-Ends: 285
    Others: 228
22. Leak Detection Measurement System in Place?: A Yes/No drop-down list field to indicate whether the facility routinely assesses and repairs leaking fugitive components or not. Default selection is No.
23. Inspection Method: A drop-down list field to specify the employed inspection method: Optical Instrumentation / Visual Inspection / Vapor Analyzer.
28. Number of Months Between Inspections [Months]: The inspection frequency of the leak detection program.
24. Material Processed: A drop-down list field to specify the processed material: Gas / Natural Gas Liquid / Heavy Oil / Light Oil / Water, Oil / Oil, Water, Gas.
25. Hours of Operation per Month [hr]: The total monthly hours of operation of the fugitive sources during this survey period. This field is auto-calculated.

A.16 FUG-M03 (Fugitive Sources – Heavy Oil – Average Emission Factor Approach)

The calculator FUG-M03 Version 2 in OCS AQS calculates the monthly emissions from the heavy oil fugitive sources using the following **Data Request** fields in Figure A - 25**Error! Reference source not found.**:

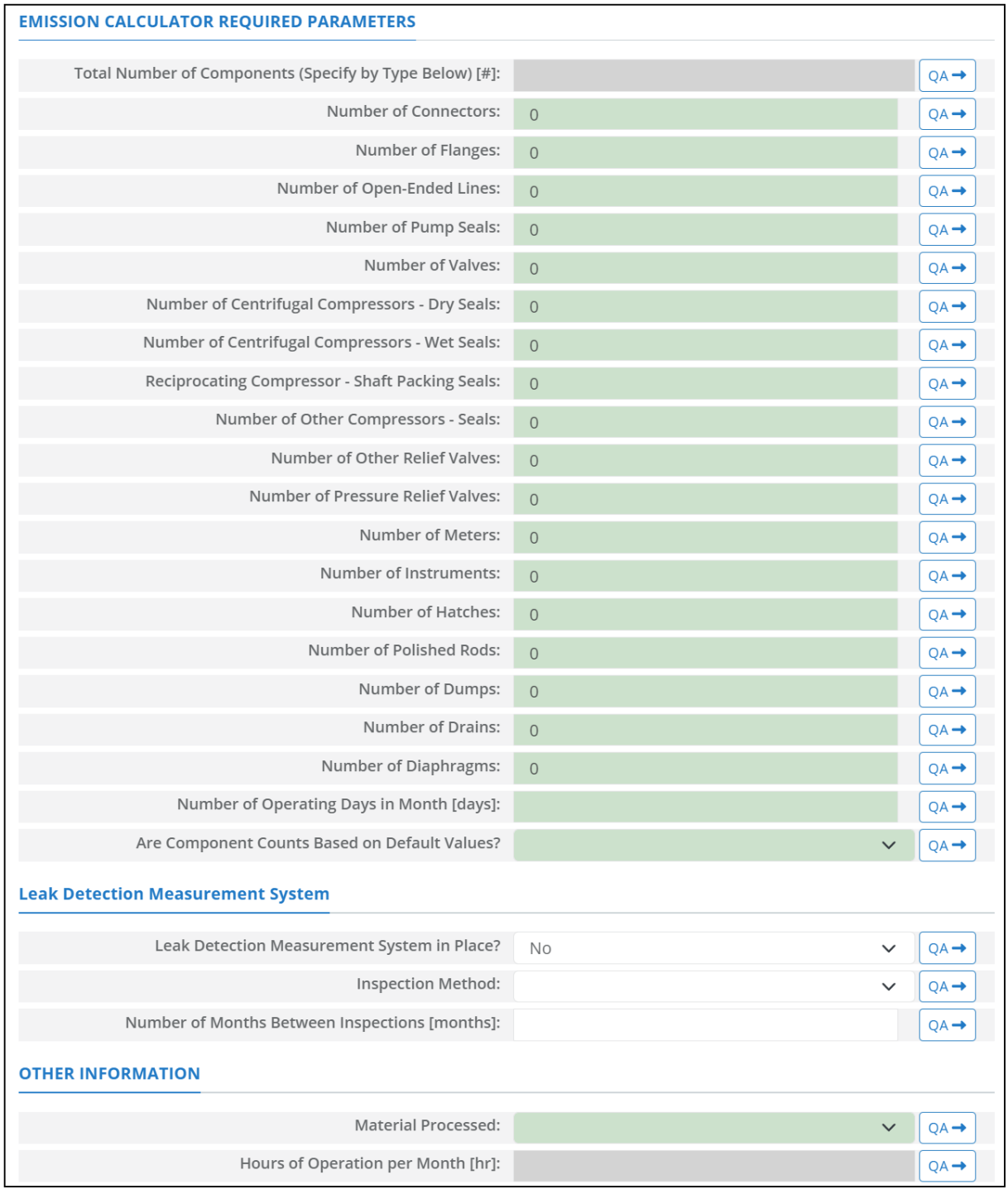


Figure A - 25. FUG-M03 Data Request tab

1. Total Number of Components (Specify by Type Below) [#]: The summation of the number of components. This field is auto-calculated based on the number of components provided in the subsequent fields.
2. Number of Connectors: Total number of connectors in the structure.
3. Number of Flanges: Total number of flanges in this structure.
4. Number of Open-Ended Lines: Total number of open-ended lines in the structure.
5. Number of Pump Seals: Total number of pump seals in this structure.
6. Number of Valves: Total number of valves in this structure.
7. Number of Centrifugal Compressors – Dry Seals: Total number of dry seals centrifugal compressors the structure.
8. Number of Centrifugal Compressors – Wet Seals: Total number of wet seals centrifugal compressors the structure.
9. Reciprocating Compressor – Shaft Packing Seals: Total number of shaft packing seals reciprocating compressors.
10. Number of Other Compressors – Seals: Total number of other compressors in the structure.
11. Number of Other Relief Valves: Total number of other relief valves in the structure.
12. Number of Pressure Relief Valves: Total number of pressure relief valves in the structure.
13. Number of Meters: Total number of meters in the structure.
14. Number of Instruments: Total number of instruments in the structure.
15. Number of Hatches: Total number of hatches in the structure.
16. Number of Polished Rods: Total number of polished rods in the structure.
17. Number of Dumps: Total number of dumps in the structure.
18. Number of Drains: Total number of drains in the structure.
19. Number of Diaphragms: Total number of diaphragms in the structure.
20. Number of Operating Days in Month [Days]: The total number of days that the fugitive source operated during the survey period.
21. Are Component Counts Based on Default Values? [Default/Actual]: Identifies whether a facility-specific component count is provided, or default values provided by BOEM are used Default components are given as:
    Connectors: 9,194
    Valves: 1,713
    Open-Ends: 285
    Others: 228
22. Leak Detection Measurement System in Place?: A Yes/No drop-down list field to indicate whether the facility routinely assesses and repairs leaking fugitive components or not. Default selection is No.
23. Inspection Method: A drop-down list field to specify the employed inspection method: Optical Instrumentation / Visual Inspection / Vapor Analyzer.
24. Number of Months Between Inspections [Months]: The inspection frequency of the leak detection program.
25. Material Processed: A drop-down list field to specify the processed material: Gas / Natural Gas Liquid / Heavy Oil / Light Oil / Water, Oil / Oil, Water, Gas.
26. Hours of Operation per Month [hr]: The total monthly hours of operation of the fugitive sources during this survey period. This field is auto-calculated.

A.17 FUG-M04 (Fugitive Sources – Light Oil – Average Emission Factor Approach)

The calculator FUG-M04 Version 2 in OCS AQS calculates the monthly emissions from the light oil fugitive sources using the following **Data Request** fields in Figure A - 26**Error! Reference source not found.**:

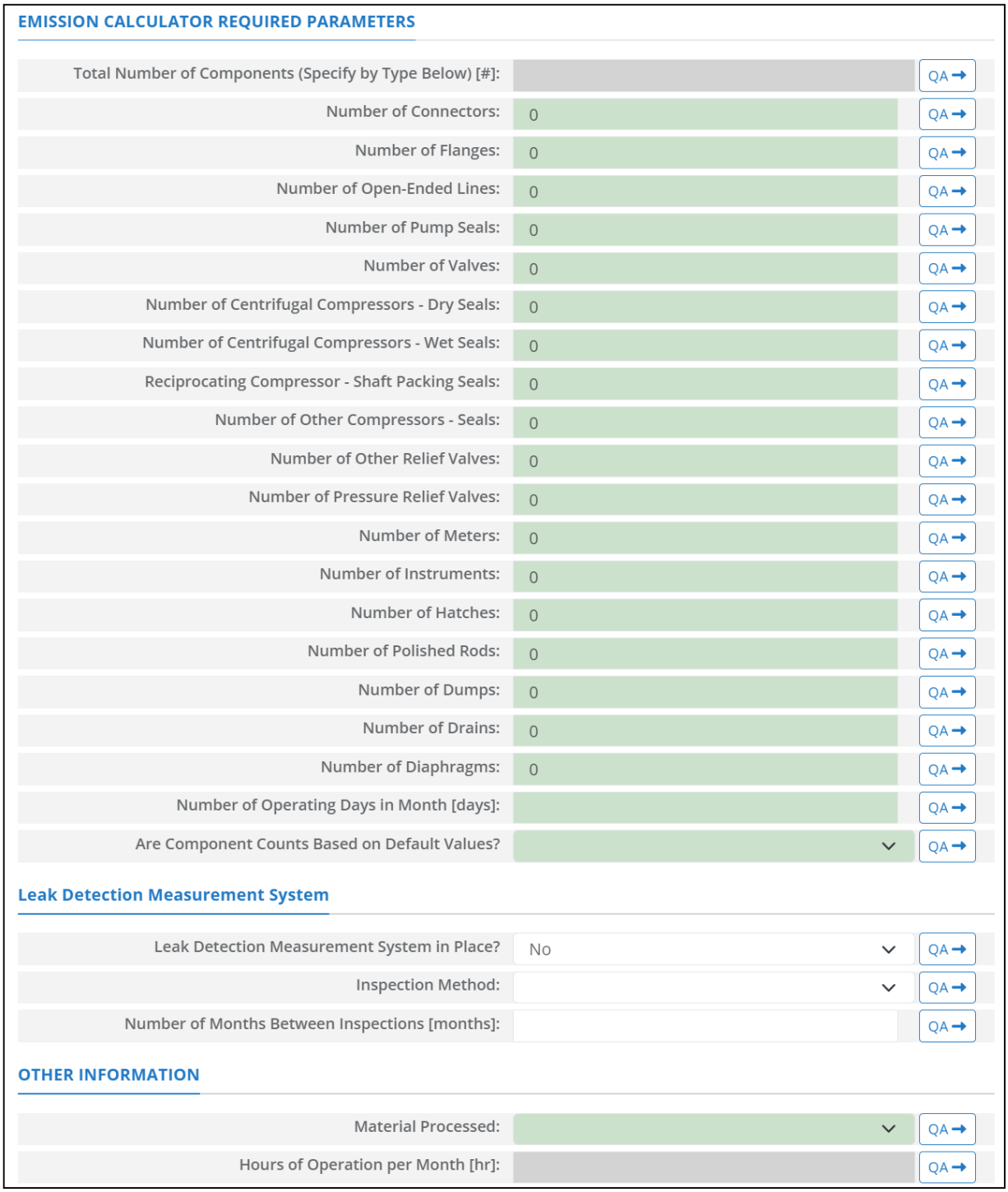


Figure A - 26. FUG-M04 Data Request tab

1. Total Number of Components (Specify by Type Below) [#]: The summation of the number of components. This field is auto-calculated based on the number of components provided in the subsequent fields.
2. Number of Connectors: Total number of connectors in the structure.
3. Number of Flanges: Total number of flanges in this structure.
4. Number of Open-Ended Lines: Total number of open-ended lines in the structure.
5. Number of Pump Seals: Total number of pump seals in this structure.
6. Number of Valves: Total number of valves in this structure.
7. Number of Centrifugal Compressors – Dry Seals: Total number of dry seals centrifugal compressors the structure.
8. Number of Centrifugal Compressors – Wet Seals: Total number of wet seals centrifugal compressors the structure.
9. Reciprocating Compressor – Shaft Packing Seals: Total number of shaft packing seals reciprocating compressors.
10. Number of Other Compressors – Seals: Total number of other compressors in the structure.
11. Number of Other Relief Valves: Total number of other relief valves in the structure.
12. Number of Pressure Relief Valves: Total number of pressure relief valves in the structure.
13. Number of Meters: Total number of meters in the structure.
14. Number of Instruments: Total number of instruments in the structure.
15. Number of Hatches: Total number of hatches in the structure.
16. Number of Polished Rods: Total number of polished rods in the structure.
17. Number of Dumps: Total number of dumps in the structure.
18. Number of Drains: Total number of drains in the structure.
19. Number of Diaphragms: Total number of diaphragms in the structure.
20. Number of Operating Days in Month [Days]: The total number of days that the fugitive source operated during the survey period.
21. Are Component Counts Based on Default Values? [Default/Actual]: Identifies whether a facility-specific component count is provided, or default values provided by BOEM are used Default components are given as:
    Connectors: 9,194
    Valves: 1,713
    Open-Ends: 285
    Others: 228
22. Leak Detection Measurement System in Place?: A Yes/No drop-down list field to indicate whether the facility routinely assesses and repairs leaking fugitive components or not. Default selection is No.
23. Inspection Method: A drop-down list field to specify the employed inspection method: Optical Instrumentation / Visual Inspection / Vapor Analyzer.
24. Number of Months Between Inspections [Months]: The inspection frequency of the leak detection program.
25. Material Processed: A drop-down list field to specify the processed material: Gas / Natural Gas Liquid / Heavy Oil / Light Oil / Water, Oil / Oil, Water, Gas.
26. Hours of Operation per Month [hr]: The total monthly hours of operation of the fugitive sources during this survey period. This field is auto-calculated.

A.18 FUG-M05 (Fugitive Sources – Water / Oil – Average Emission Factor Approach)

The calculator FUG-M05 Version 2 in OCS AQS calculates the monthly emissions from the water / oil fugitive sources using the following **Data Request** fields in Figure A - 27**Error! Reference source not found.**:

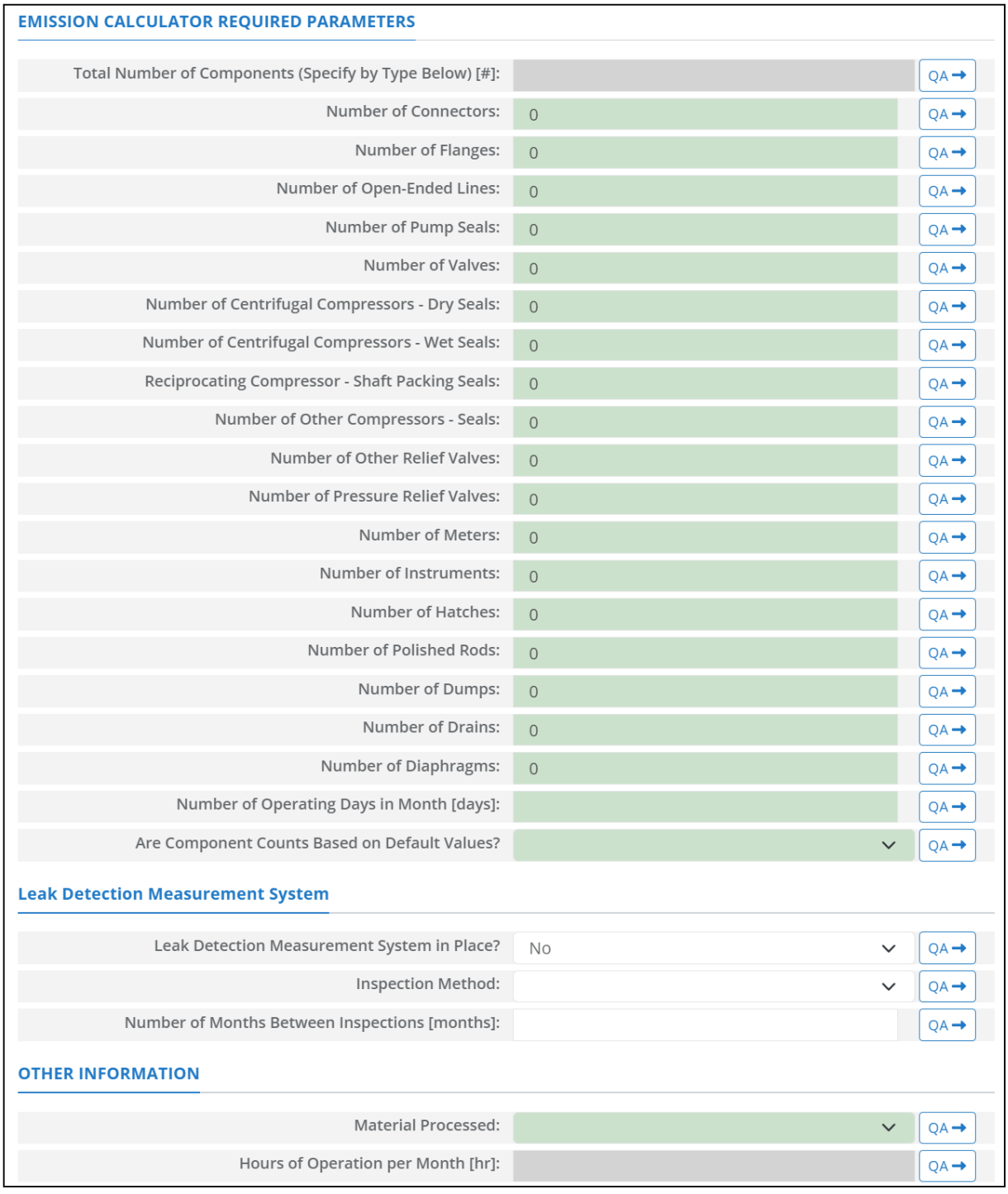


Figure A - 27. FUG-M05 Data Request tab

1. Total Number of Components (Specify by Type Below) [#]: The summation of the number of components. This field is auto-calculated based on the number of components provided in the subsequent fields.
2. Number of Connectors: Total number of connectors in the structure.
3. Number of Flanges: Total number of flanges in this structure.
4. Number of Open-Ended Lines: Total number of open-ended lines in the structure.
5. Number of Pump Seals: Total number of pump seals in this structure.
6. Number of Valves: Total number of valves in this structure.
7. Number of Centrifugal Compressors – Dry Seals: Total number of dry seals centrifugal compressors the structure.
8. Number of Centrifugal Compressors – Wet Seals: Total number of wet seals centrifugal compressors the structure.
9. Reciprocating Compressor – Shaft Packing Seals: Total number of shaft packing seals reciprocating compressors.
10. Number of Other Compressors – Seals: Total number of other compressors in the structure.
11. Number of Other Relief Valves: Total number of other relief valves in the structure.
12. Number of Pressure Relief Valves: Total number of pressure relief valves in the structure.
13. Number of Meters: Total number of meters in the structure.
14. Number of Instruments: Total number of instruments in the structure.
15. Number of Hatches: Total number of hatches in the structure.
16. Number of Polished Rods: Total number of polished rods in the structure.
17. Number of Dumps: Total number of dumps in the structure.
18. Number of Drains: Total number of drains in the structure.
19. Number of Diaphragms: Total number of diaphragms in the structure.
20. Number of Operating Days in Month [Days]: The total number of days that the fugitive source operated during the survey period.
21. Are Component Counts Based on Default Values? [Default/Actual]: Identifies whether a facility-specific component count is provided, or default values provided by BOEM are used Default components are given as:
    Connectors: 9,194
    Valves: 1,713
    Open-Ends: 285
    Others: 228
22. Leak Detection Measurement System in Place?: A Yes/No drop-down list field to indicate whether the facility routinely assesses and repairs leaking fugitive components or not. Default selection is No.
23. Inspection Method: A drop-down list field to specify the employed inspection method: Optical Instrumentation / Visual Inspection / Vapor Analyzer.
24. Number of Months Between Inspections [Months]: The inspection frequency of the leak detection program.
25. Material Processed: A drop-down list field to specify the processed material: Gas / Natural Gas Liquid / Heavy Oil / Light Oil / Water, Oil / Oil, Water, Gas.
26. Hours of Operation per Month [hr]: The total monthly hours of operation of the fugitive sources during this survey period. This field is auto-calculated.

A.19 FUG-M06 (Fugitive Sources – Water / Oil / Gas – Average Emission Factor Approach)

The calculator FUG-M06 Version 2 in OCS AQS calculates the monthly emissions from the water / oil / gas fugitive sources using the following **Data Request** fields in Figure A - 28**Error! Reference source not found.**:

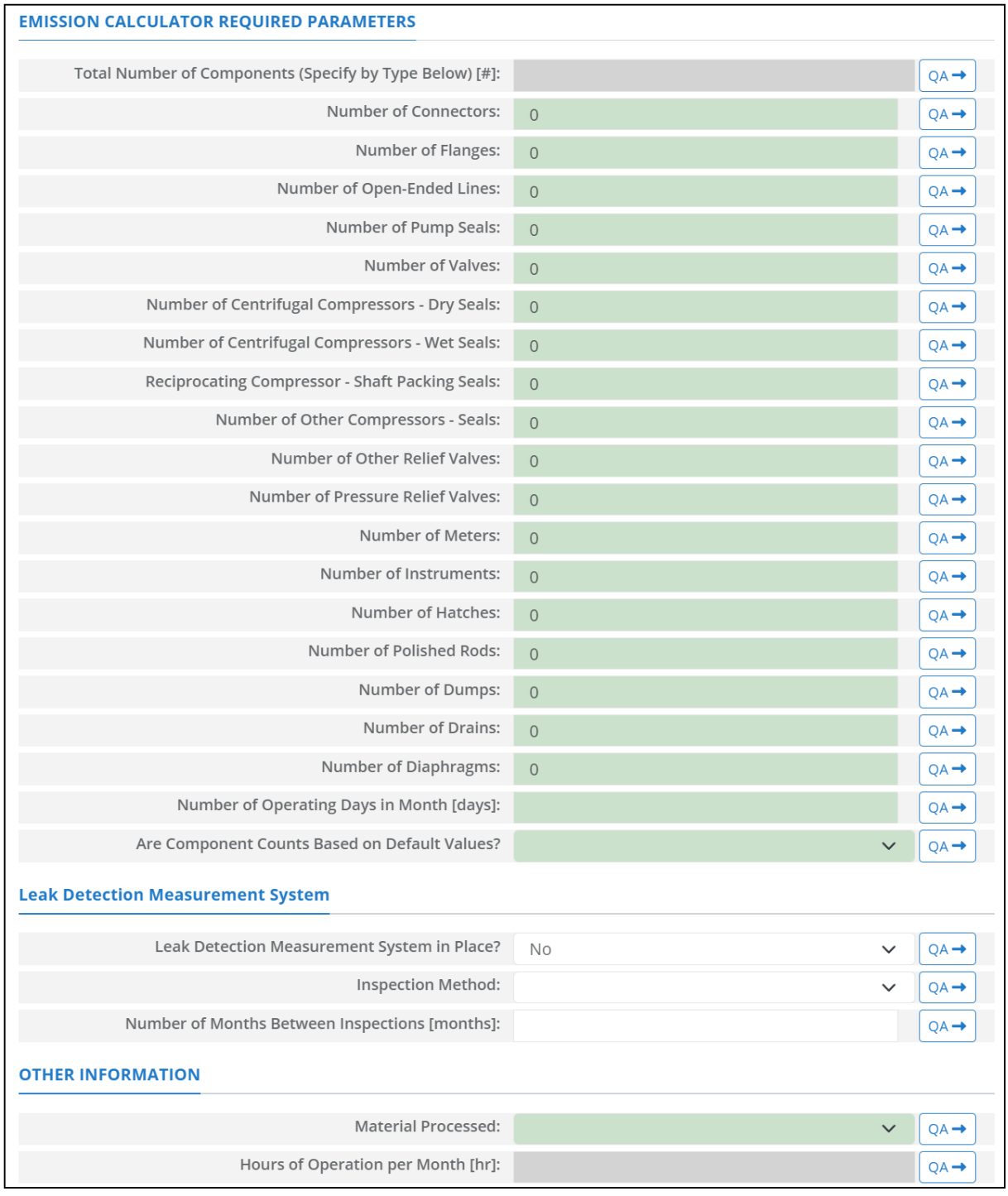


Figure A - 28. FUG-M06 Data Request tab

1. Total Number of Components (Specify by Type Below) [#]: The summation of the number of components. This field is auto-calculated based on the number of components provided in the subsequent fields.
2. Number of Connectors: Total number of connectors in the structure.
3. Number of Flanges: Total number of flanges in this structure.
4. Number of Open-Ended Lines: Total number of open-ended lines in the structure.
5. Number of Pump Seals: Total number of pump seals in this structure.
6. Number of Valves: Total number of valves in this structure.
7. Number of Centrifugal Compressors – Dry Seals: Total number of dry seals centrifugal compressors the structure.
8. Number of Centrifugal Compressors – Wet Seals: Total number of wet seals centrifugal compressors the structure.
9. Reciprocating Compressor – Shaft Packing Seals: Total number of shaft packing seals reciprocating compressors.
10. Number of Other Compressors – Seals: Total number of other compressors in the structure.
11. Number of Other Relief Valves: Total number of other relief valves in the structure.
12. Number of Pressure Relief Valves: Total number of pressure relief valves in the structure.
13. Number of Meters: Total number of meters in the structure.
14. Number of Instruments: Total number of instruments in the structure.
15. Number of Hatches: Total number of hatches in the structure.
16. Number of Polished Rods: Total number of polished rods in the structure.
17. Number of Dumps: Total number of dumps in the structure.
18. Number of Drains: Total number of drains in the structure.
19. Number of Diaphragms: Total number of diaphragms in the structure.
20. Number of Operating Days in Month [Days]: The total number of days that the fugitive source operated during the survey period.
21. Are Component Counts Based on Default Values? [Default/Actual]: Identifies whether a facility-specific component count is provided, or default values provided by BOEM are used Default components are given as:
    Connectors: 9,194
    Valves: 1,713
    Open-Ends: 285
    Others: 228
22. Leak Detection Measurement System in Place?: A Yes/No drop-down list field to indicate whether the facility routinely assesses and repairs leaking fugitive components or not. Default selection is No.
23. Inspection Method: A drop-down list field to specify the employed inspection method: Optical Instrumentation / Visual Inspection / Vapor Analyzer.
24. Number of Months Between Inspections [Months]: The inspection frequency of the leak detection program.
25. Material Processed: A drop-down list field to specify the processed material: Gas / Natural Gas Liquid / Heavy Oil / Light Oil / Water, Oil / Oil, Water, Gas.
26. Hours of Operation per Month [hr]: The total monthly hours of operation of the fugitive sources during this survey period. This field is auto-calculated.

A.20 FUG-S01 (Fugitive Sources – Gas – Screening Ranges Approach)

The calculator FUG-S01 Version 1 in OCS AQS calculates the monthly emissions from the gas fugitive sources using the following **Data Request** fields in **Error! Reference source not found.Error! Reference source not found.**:

1. Total Number of Components (Specify by Type Below) [#]: The summation of the number of the total components. This field is auto-calculated based on the number of total components provided in the subsequent fields.
2. Number of Connectors - Total: Total number of connectors in the structure.
3. Number of Flanges - Total : Total number of flanges in this structure.
4. Number of Open-Ended Lines - Total : Total number of open-ended lines in the structure.
5. Number of Pump Seals - Total: Total number of pump seals in this structure.
6. Number of Valves - Total: Total number of valves in this structure.
7. Number of Centrifugal Compressors – Dry Seals - Total: Total number of dry seals centrifugal compressors the structure.
8. Number of Centrifugal Compressors – Wet Seals – Total: Total number of wet seals centrifugal compressors the structure.
9. Reciprocating Compressor – Shaft Packing Seals - Total: Total number of shaft packing seals reciprocating compressors.
10. Number of Other Compressors – Seals - Total: Total number of other compressors in the structure.
11. Number of Other Relief Valves - Total: Total number of other relief valves in the structure.
12. Number of Pressure Relief Valves - Total: Total number of pressure relief valves in the structure.
13. Number of Meters - Total: Total number of meters in the structure.
14. Number of Instruments - Total: Total number of instruments in the structure.
15. Number of Hatches - Total: Total number of hatches in the structure.
16. Number of Polished Rods - Total: Total number of polished rods in the structure.
17. Number of Dumps - Total: Total number of dumps in the structure.
18. Number of Drains - Total: Total number of drains in the structure.
19. Number of Diaphragms - Total: Total number of diaphragms in the structure.
20. Total Number of Leaking Components (Specify by Type Below) [#]: The summation of the number of the leaking components. This field is auto-calculated based on the number of the leaking components provided in the subsequent fields.
21. Number of Connectors - Leaking: The number of the leaking connectors in the structure.
22. Number of Flanges - Leaking: The number of leaking flanges in this structure.
23. Number of Open-Ended Lines - Leaking: The number of leaking open-ended lines in the structure.
24. Number of Pump Seals - Leaking: The number of leaking pump seals in this structure.
25. Number of Valves - Leaking: The number of leaking valves in this structure.
26. Number of Centrifugal Compressors – Dry Seals - Leaking: The number of leaking dry seals centrifugal compressors the structure.
27. Number of Centrifugal Compressors – Wet Seals - Leaking: The number of leaking wet seals centrifugal compressors the structure.
28. Reciprocating Compressor – Shaft Packing Seals - Leaking: The number of leaking shaft packing seals reciprocating compressors.
29. Number of Other Compressors – Seals - Leaking: The number of other leaking compressors in the structure.
30. Number of Other Relief Valves - Leaking: The number of other leaking relief valves in the structure.

31. Number of Pressure Relief Valves - Leaking: The number of leaking pressure relief valves in the structure.
32. Number of Meters - Leaking: The number of leaking meters in the structure.
33. Number of Instruments - Leaking: The number of leaking instruments in the structure.
34. Number of Hatches - Leaking: The number of leaking hatches in the structure.
35. Number of Polished Rods - Leaking: The number of leaking polished rods in the structure.
36. Number of Dumps - Leaking: The number of leaking dumps in the structure.
37. Number of Drains - Leaking: The number of leaking drains in the structure.
38. Number of Diaphragms - Leaking: The number of leaking diaphragms in the structure.
39. Days in Month [days]: The total number of days that the fugitive source operated during the survey period.
40. Leak Detection Measurement System in Place?: A Yes/No drop-down list field to indicate whether the facility routinely assesses and repairs leaking fugitive components or not. Default selection is Yes.
41. Inspection Method: A drop-down list field to specify the employed inspection method: Optical Instrumentation / Visual Inspection / Vapor Analyzer.
42. Number of Months Between Inspections [Months]: The inspection frequency of the leak detection program.
43. Material Processed: A drop-down list field to specify the processed material: Gas / Natural Gas Liquid / Heavy Oil / Light Oil / Water, Oil / Oil, Water, Gas.
44. Are Component Counts Based on Default Values? [Default/Actual]: Identifies whether a facility-specific component count is provided, or default values provided by BOEM are used Default components are given as:
    Connectors: 9,194
    Valves: 1,713
    Open-Ends: 285
    Others: 228
45. Hours of Operation per Month [hr]: The total monthly hours of operation of the fugitive sources during this survey period. This field is auto-calculated.

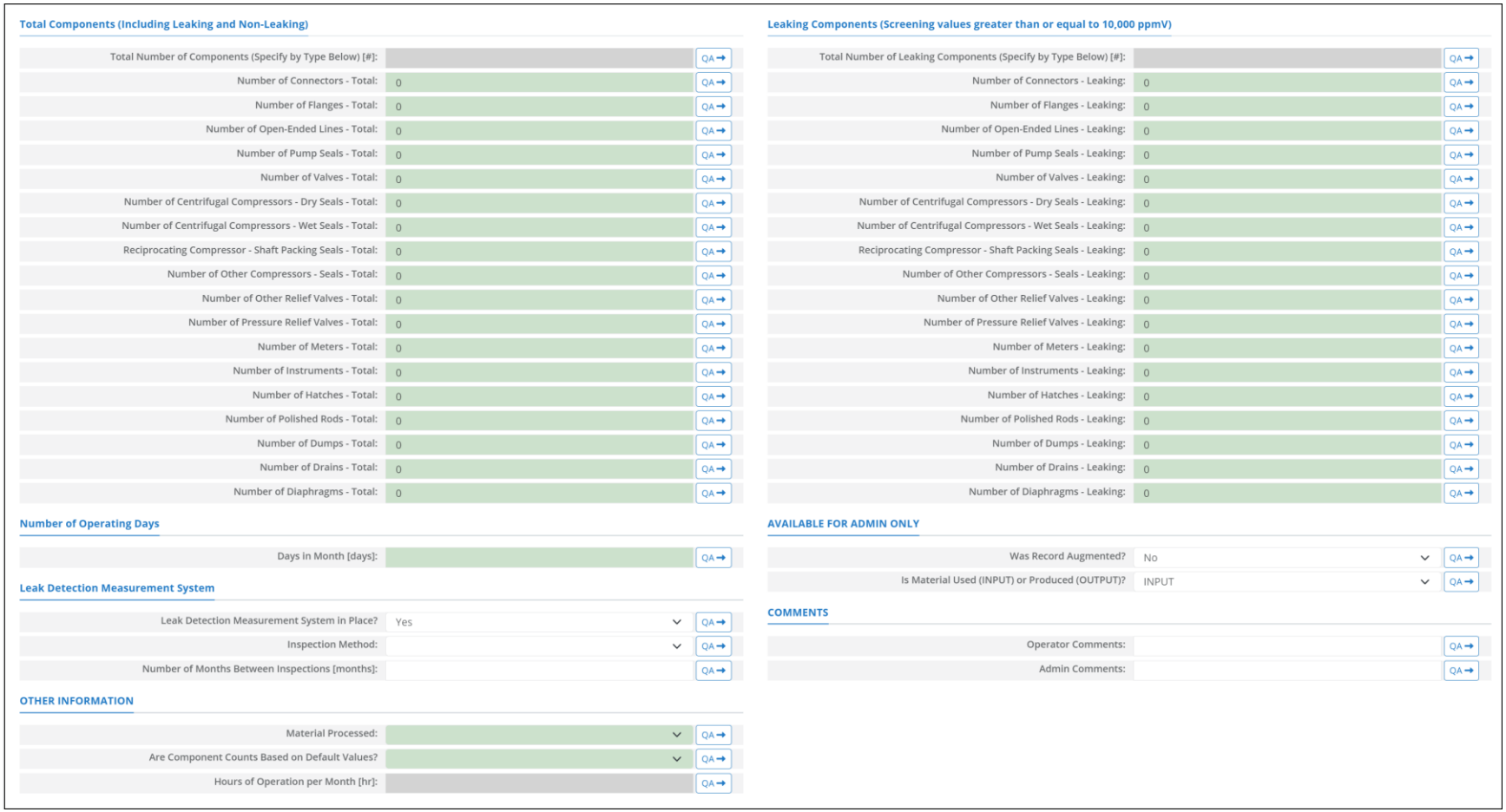


Figure A - 29. FUG-S01 Data Request tab

A.21 FUG-S02 (Fugitive Sources – Natural Gas Liquid – Screening Ranges Approach)

The calculator FUG-S02 Version 1 in OCS AQS calculates the monthly emissions from the natural gas liquid fugitive sources using the following **Data Request** fields in **Figure A - *30*Error! Reference source not found.**:

1. Total Number of Components (Specify by Type Below) [#]: The summation of the number of the total components. This field is auto-calculated based on the number of total components provided in the subsequent fields.
2. Number of Connectors - Total: Total number of connectors in the structure.
3. Number of Flanges - Total : Total number of flanges in this structure.
4. Number of Open-Ended Lines - Total : Total number of open-ended lines in the structure.
5. Number of Pump Seals - Total: Total number of pump seals in this structure.
6. Number of Valves - Total: Total number of valves in this structure.
7. Number of Centrifugal Compressors – Dry Seals - Total: Total number of dry seals centrifugal compressors the structure.
8. Number of Centrifugal Compressors – Wet Seals – Total: Total number of wet seals centrifugal compressors the structure.
9. Reciprocating Compressor – Shaft Packing Seals - Total: Total number of shaft packing seals reciprocating compressors.
10. Number of Other Compressors – Seals - Total: Total number of other compressors in the structure.
11. Number of Other Relief Valves - Total: Total number of other relief valves in the structure.
12. Number of Pressure Relief Valves - Total: Total number of pressure relief valves in the structure.
13. Number of Meters - Total: Total number of meters in the structure.
14. Number of Instruments - Total: Total number of instruments in the structure.
15. Number of Hatches - Total: Total number of hatches in the structure.
16. Number of Polished Rods - Total: Total number of polished rods in the structure.
17. Number of Dumps - Total: Total number of dumps in the structure.
18. Number of Drains - Total: Total number of drains in the structure.
19. Number of Diaphragms - Total: Total number of diaphragms in the structure.
20. Total Number of Leaking Components (Specify by Type Below) [#]: The summation of the number of the leaking components. This field is auto-calculated based on the number of leaking components provided in the subsequent fields.
21. Number of Connectors - Leaking: The number of the leaking connectors in the structure.
22. Number of Flanges - Leaking: The number of leaking flanges in this structure.
23. Number of Open-Ended Lines - Leaking: The number of leaking open-ended lines in the structure.
24. Number of Pump Seals - Leaking: The number of leaking pump seals in this structure.
25. Number of Valves - Leaking: The number of leaking valves in this structure.
26. Number of Centrifugal Compressors – Dry Seals - Leaking: The number of leaking dry seals centrifugal compressors the structure.
27. Number of Centrifugal Compressors – Wet Seals - Leaking: The number of leaking wet seals centrifugal compressors the structure.
28. Reciprocating Compressor – Shaft Packing Seals - Leaking: The number of leaking shaft packing seals reciprocating compressors.
29. Number of Other Compressors – Seals - Leaking: The number of other leaking compressors in the structure.

30. Number of Other Relief Valves - Leaking: The number of other leaking relief valves in the structure.
31. Number of Pressure Relief Valves - Leaking: The number of leaking pressure relief valves in the structure.
32. Number of Meters - Leaking: The number of leaking meters in the structure.
33. Number of Instruments - Leaking: The number of leaking instruments in the structure.
34. Number of Hatches - Leaking: The number of leaking hatches in the structure.
35. Number of Polished Rods - Leaking: The number of leaking polished rods in the structure.
36. Number of Dumps - Leaking: The number of leaking dumps in the structure.
37. Number of Drains - Leaking: The number of leaking drains in the structure.
38. Number of Diaphragms - Leaking: The number of leaking diaphragms in the structure.
39. Days in Month [days]: The total number of days that the fugitive source operated during the survey period.
40. Leak Detection Measurement System in Place?: A Yes/No drop-down list field to indicate whether the facility routinely assesses and repairs leaking fugitive components or not. Default selection is Yes.
41. Inspection Method: A drop-down list field to specify the employed inspection method: Optical Instrumentation / Visual Inspection / Vapor Analyzer.
42. Number of Months Between Inspections [Months]: The inspection frequency of the leak detection program.
43. Material Processed: A drop-down list field to specify the processed material: Gas / Natural Gas Liquid / Heavy Oil / Light Oil / Water, Oil / Oil, Water, Gas.
44. Are Component Counts Based on Default Values? [Default/Actual]: Identifies whether a facility-specific component count is provided, or default values provided by BOEM are used Default components are given as:
    Connectors: 9,194
    Valves: 1,713
    Open-Ends: 285
    Others: 228
45. Hours of Operation per Month [hr]: The total monthly hours of operation of the fugitive sources during this survey period. This field is auto-calculated.

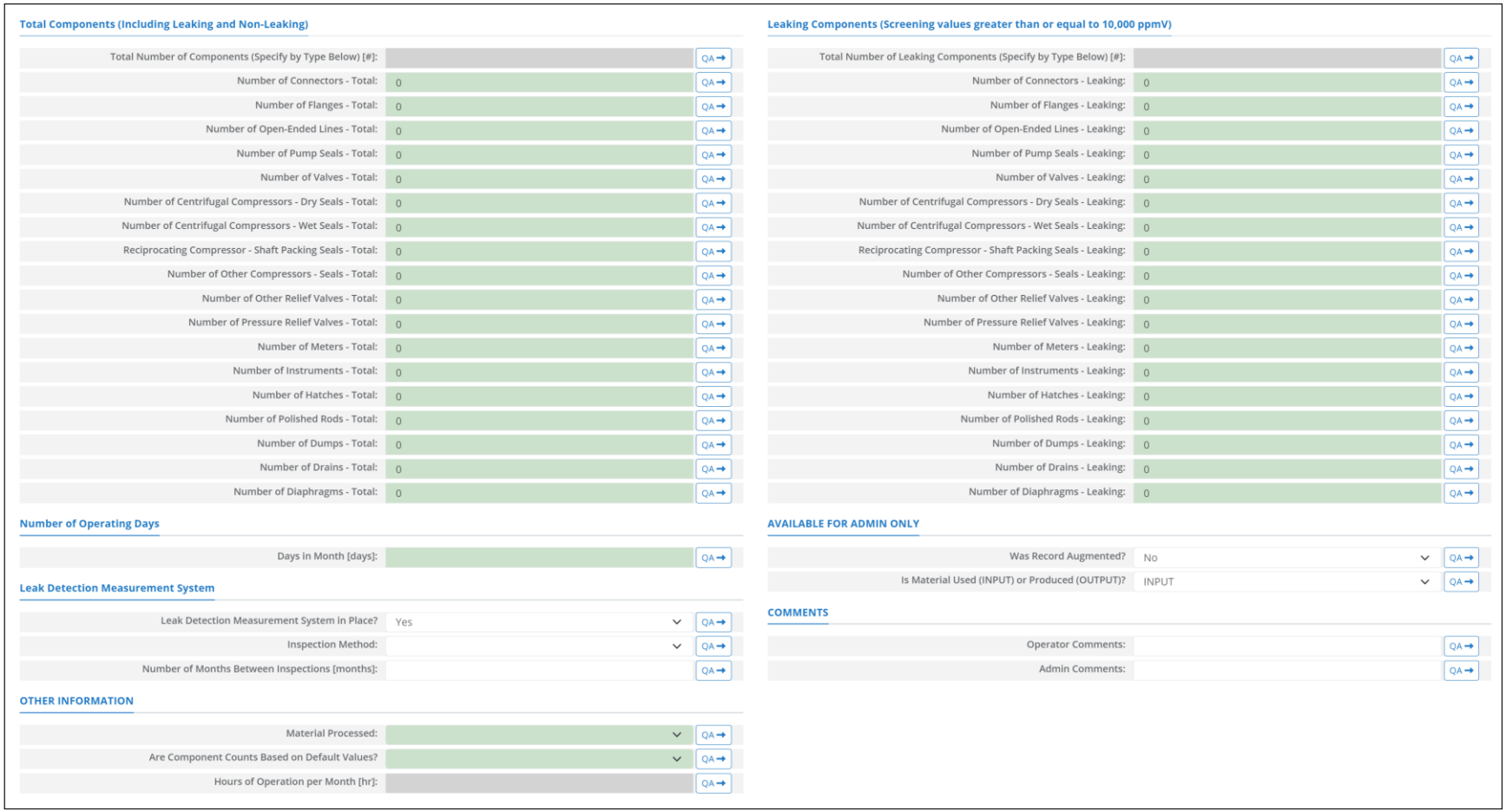


Figure A - 30. FUG-S02 Data Request tab

A.22 FUG-S03 (Fugitive Sources – Heavy Oil – Screening Ranges Approach)

The calculator FUG-S03 Version 1 in OCS AQS calculates the monthly emissions from the heavy oil fugitive sources using the following **Data Request** fields in **Figure A - *31*Error! Reference source not found.**:

1. Total Number of Components (Specify by Type Below) [#]: The summation of the number of the total components. This field is auto-calculated based on the number of total components provided in the subsequent fields.
2. Number of Connectors - Total: Total number of connectors in the structure.
3. Number of Flanges - Total : Total number of flanges in this structure.
4. Number of Open-Ended Lines - Total : Total number of open-ended lines in the structure.
5. Number of Pump Seals - Total: Total number of pump seals in this structure.
6. Number of Valves - Total: Total number of valves in this structure.
7. Number of Centrifugal Compressors – Dry Seals - Total: Total number of dry seals centrifugal compressors the structure.
8. Number of Centrifugal Compressors – Wet Seals – Total: Total number of wet seals centrifugal compressors the structure.
9. Reciprocating Compressor – Shaft Packing Seals - Total: Total number of shaft packing seals reciprocating compressors.
10. Number of Other Compressors – Seals - Total: Total number of other compressors in the structure.
11. Number of Other Relief Valves - Total: Total number of other relief valves in the structure.
12. Number of Pressure Relief Valves - Total: Total number of pressure relief valves in the structure.
13. Number of Meters - Total: Total number of meters in the structure.
14. Number of Instruments - Total: Total number of instruments in the structure.
15. Number of Hatches - Total: Total number of hatches in the structure.
16. Number of Polished Rods - Total: Total number of polished rods in the structure.
17. Number of Dumps - Total: Total number of dumps in the structure.
18. Number of Drains - Total: Total number of drains in the structure.
19. Number of Diaphragms - Total: Total number of diaphragms in the structure.
20. Total Number of Leaking Components (Specify by Type Below) [#]: The summation of the number of the leaking components. This field is auto-calculated based on the number of the leaking components provided in the subsequent fields.
21. Number of Connectors - Leaking: The number of the leaking connectors in the structure.
22. Number of Flanges - Leaking: The number of leaking flanges in this structure.
23. Number of Open-Ended Lines - Leaking: The number of leaking open-ended lines in the structure.
24. Number of Pump Seals - Leaking: The number of leaking pump seals in this structure.
25. Number of Valves - Leaking: The number of leaking valves in this structure.
26. Number of Centrifugal Compressors – Dry Seals - Leaking: The number of leaking dry seals centrifugal compressors the structure.
27. Number of Centrifugal Compressors – Wet Seals - Leaking: The number of leaking wet seals centrifugal compressors the structure.
28. Reciprocating Compressor – Shaft Packing Seals - Leaking: The number of leaking shaft packing seals reciprocating compressors.
29. Number of Other Compressors – Seals - Leaking: The number of other leaking compressors in the structure.
30. Number of Other Relief Valves - Leaking: The number of other leaking relief valves in the structure.

31. Number of Pressure Relief Valves - Leaking: The number of leaking pressure relief valves in the structure.
32. Number of Meters - Leaking: The number of leaking meters in the structure.
33. Number of Instruments - Leaking: The number of leaking instruments in the structure.
34. Number of Hatches - Leaking: The number of leaking hatches in the structure.
35. Number of Polished Rods - Leaking: The number of leaking polished rods in the structure.
36. Number of Dumps - Leaking: The number of leaking dumps in the structure.
37. Number of Drains - Leaking: The number of leaking drains in the structure.
38. Number of Diaphragms - Leaking: The number of leaking diaphragms in the structure.
39. Days in Month [days]: The total number of days that the fugitive source operated during the survey period.
40. Leak Detection Measurement System in Place?: A Yes/No drop-down list field to indicate whether the facility routinely assesses and repairs leaking fugitive components or not. Default selection is Yes.
41. Inspection Method: A drop-down list field to specify the employed inspection method: Optical Instrumentation / Visual Inspection / Vapor Analyzer.
42. Number of Months Between Inspections [Months]: The inspection frequency of the leak detection program.
43. Material Processed: A drop-down list field to specify the processed material: Gas / Natural Gas Liquid / Heavy Oil / Light Oil / Water, Oil / Oil, Water, Gas.
44. Are Component Counts Based on Default Values? [Default/Actual]: Identifies whether a facility-specific component count is provided, or default values provided by BOEM are used Default components are given as:
    Connectors: 9,194
    Valves: 1,713
    Open-Ends: 285
    Others: 228
45. Hours of Operation per Month [hr]: The total monthly hours of operation of the fugitive sources during this survey period. This field is auto-calculated.

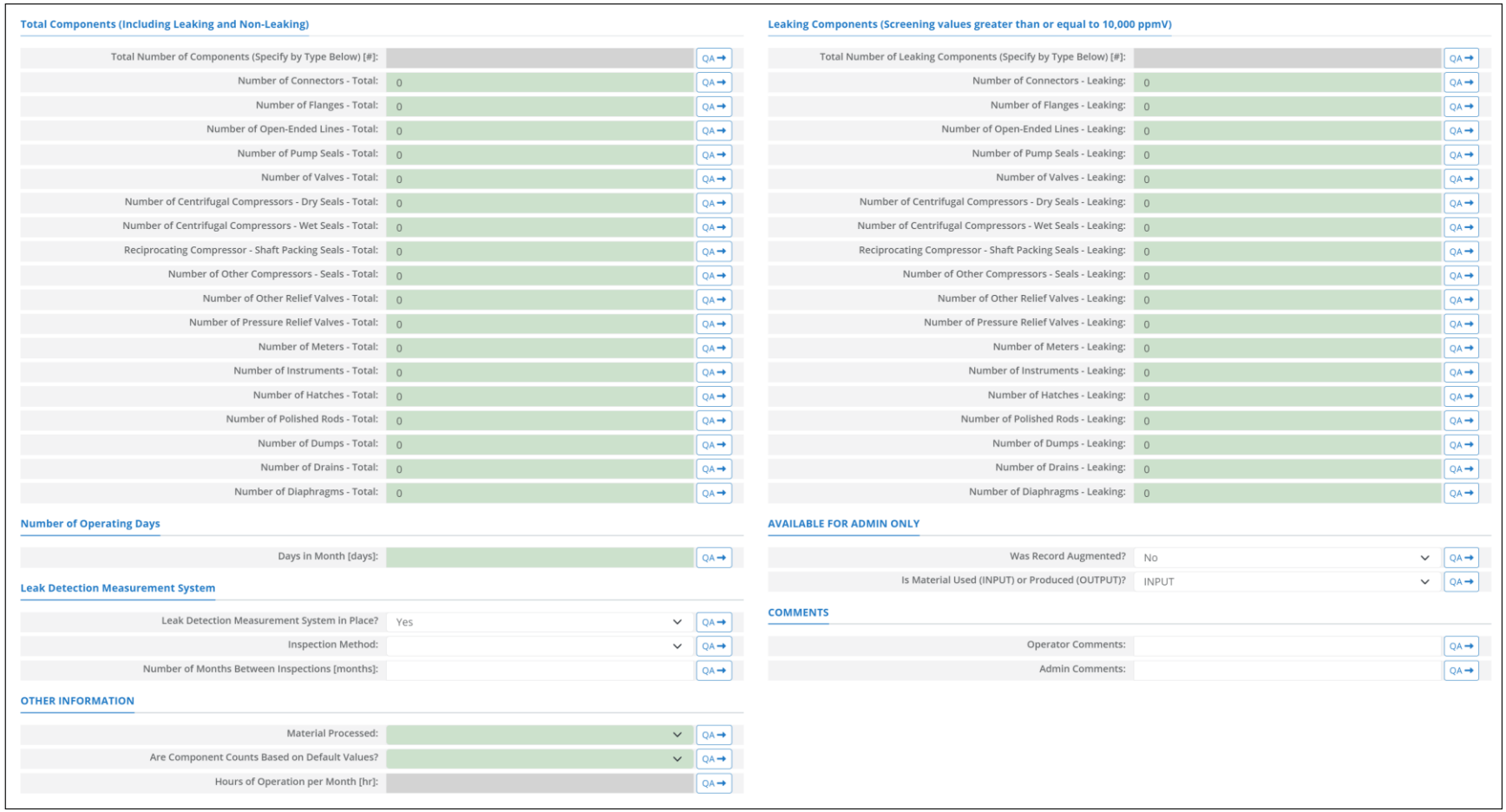


Figure A - 31. FUG-S03 Data Request tab

A.23 FUG-S04 (Fugitive Sources – Light Oil – Screening Ranges Approach)

The calculator FUG-S04 Version 1 in OCS AQS calculates the monthly emissions from the light oil fugitive sources using the following **Data Request** fields in **Figure A - *32*Error! Reference source not found.**:

1. Total Number of Components (Specify by Type Below) [#]: The summation of the number of the total components. This field is auto-calculated based on the number of total components provided in the subsequent fields.
2. Number of Connectors - Total: Total number of connectors in the structure.
3. Number of Flanges - Total : Total number of flanges in this structure.
4. Number of Open-Ended Lines - Total : Total number of open-ended lines in the structure.
5. Number of Pump Seals - Total: Total number of pump seals in this structure.
6. Number of Valves - Total: Total number of valves in this structure.
7. Number of Centrifugal Compressors – Dry Seals - Total: Total number of dry seals centrifugal compressors the structure.
8. Number of Centrifugal Compressors – Wet Seals – Total: Total number of wet seals centrifugal compressors the structure.
9. Reciprocating Compressor – Shaft Packing Seals - Total: Total number of shaft packing seals reciprocating compressors.
10. Number of Other Compressors – Seals - Total: Total number of other compressors in the structure.
11. Number of Other Relief Valves - Total: Total number of other relief valves in the structure.
12. Number of Pressure Relief Valves - Total: Total number of pressure relief valves in the structure.
13. Number of Meters - Total: Total number of meters in the structure.
14. Number of Instruments - Total: Total number of instruments in the structure.
15. Number of Hatches - Total: Total number of hatches in the structure.
16. Number of Polished Rods - Total: Total number of polished rods in the structure.
17. Number of Dumps - Total: Total number of dumps in the structure.
18. Number of Drains - Total: Total number of drains in the structure.
19. Number of Diaphragms - Total: Total number of diaphragms in the structure.
20. Total Number of Leaking Components (Specify by Type Below) [#]: The summation of the number of the leaking components. This field is auto-calculated based on the number of leaking components provided in the subsequent fields.
21. Number of Connectors - Leaking: The number of the leaking connectors in the structure.
22. Number of Flanges - Leaking: The number of leaking flanges in this structure.
23. Number of Open-Ended Lines - Leaking: The number of leaking open-ended lines in the structure.
24. Number of Pump Seals - Leaking: The number of leaking pump seals in this structure.
25. Number of Valves - Leaking: The number of leaking valves in this structure.
26. Number of Centrifugal Compressors – Dry Seals - Leaking: The number of leaking dry seals centrifugal compressors the structure.
27. Number of Centrifugal Compressors – Wet Seals - Leaking: The number of leaking wet seals centrifugal compressors the structure.
28. Reciprocating Compressor – Shaft Packing Seals - Leaking: The number of leaking shaft packing seals reciprocating compressors.
29. Number of Other Compressors – Seals - Leaking: The number of other leaking compressors in the structure.
30. Number of Other Relief Valves - Leaking: The number of other leaking relief valves in the structure.

31. Number of Pressure Relief Valves - Leaking: The number of leaking pressure relief valves in the structure.
32. Number of Meters - Leaking: The number of leaking meters in the structure.
33. Number of Instruments - Leaking: The number of leaking instruments in the structure.
34. Number of Hatches - Leaking: The number of leaking hatches in the structure.
35. Number of Polished Rods - Leaking: The number of leaking polished rods in the structure.
36. Number of Dumps - Leaking: The number of leaking dumps in the structure.
37. Number of Drains - Leaking: The number of leaking drains in the structure.
38. Number of Diaphragms - Leaking: The number of leaking diaphragms in the structure.
39. Days in Month [days]: The total number of days that the fugitive source operated during the survey period.
40. Leak Detection Measurement System in Place?: A Yes/No drop-down list field to indicate whether the facility routinely assesses and repairs leaking fugitive components or not. Default selection is Yes.
41. Inspection Method: A drop-down list field to specify the employed inspection method: Optical Instrumentation / Visual Inspection / Vapor Analyzer.
42. Number of Months Between Inspections [Months]: The inspection frequency of the leak detection program.
43. Material Processed: A drop-down list field to specify the processed material: Gas / Natural Gas Liquid / Heavy Oil / Light Oil / Water, Oil / Oil, Water, Gas.
44. Are Component Counts Based on Default Values? [Default/Actual]: Identifies whether a facility-specific component count is provided, or default values provided by BOEM are used Default components are given as:
    Connectors: 9,194
    Valves: 1,713
    Open-Ends: 285
    Others: 228
45. Hours of Operation per Month [hr]: The total monthly hours of operation of the fugitive sources during this survey period. This field is auto-calculated.

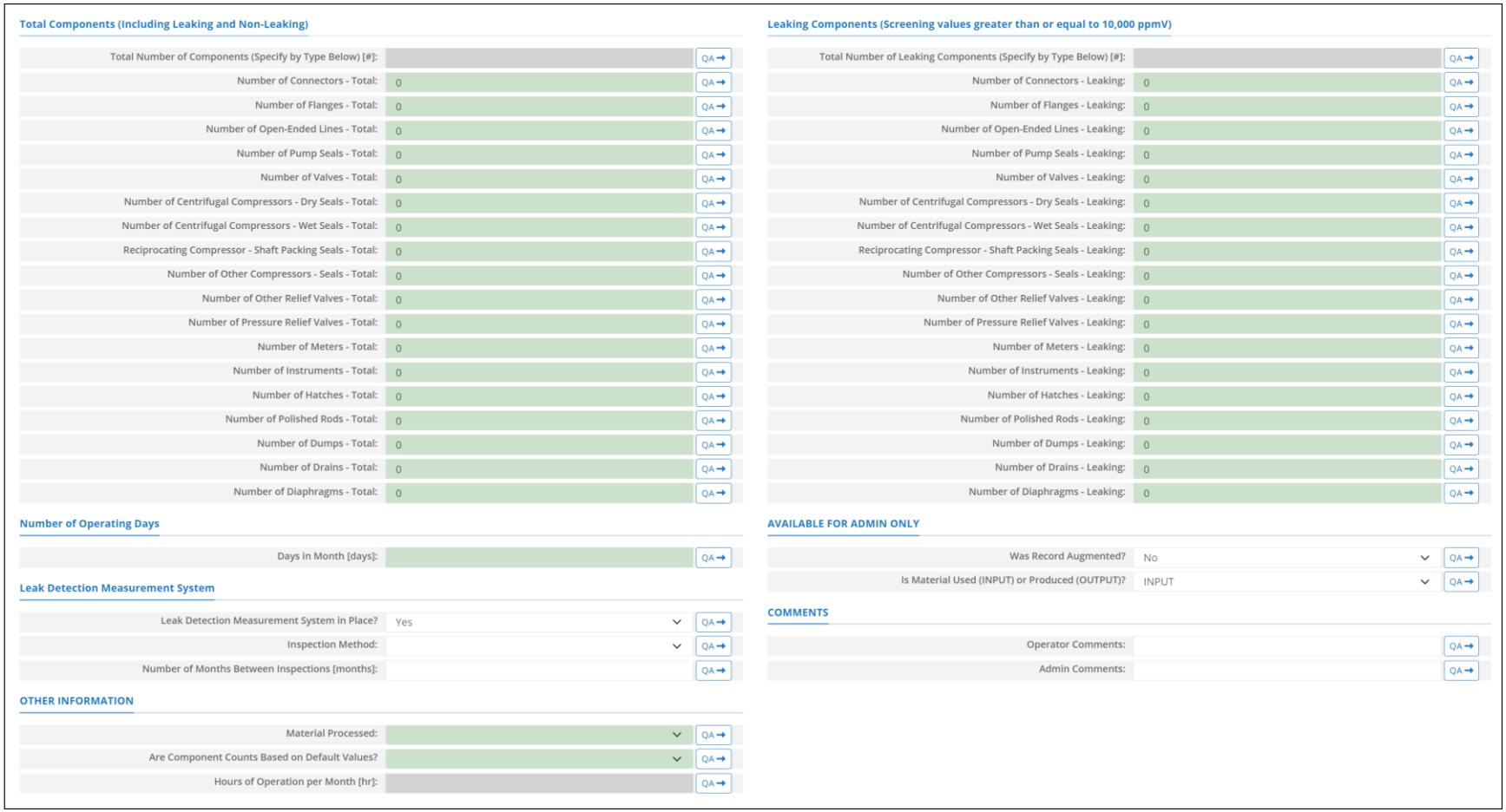


Figure A - 32. FUG-S04 Data Request tab

A.24 FUG-S05 (Fugitive Sources – Water, Oil – Screening Ranges Approach)

The calculator FUG-S05 Version 1 in OCS AQS calculates the monthly emissions from the water, oil fugitive sources using the following **Data Request** fields in **Figure A - *33*Error! Reference source not found.**:

1. Total Number of Components (Specify by Type Below) [#]: The summation of the number of the total components. This field is auto-calculated based on the number of total components provided in the subsequent fields.
2. Number of Connectors - Total: Total number of connectors in the structure.
3. Number of Flanges - Total : Total number of flanges in this structure.
4. Number of Open-Ended Lines - Total : Total number of open-ended lines in the structure.
5. Number of Pump Seals - Total: Total number of pump seals in this structure.
6. Number of Valves - Total: Total number of valves in this structure.
7. Number of Centrifugal Compressors – Dry Seals - Total: Total number of dry seals centrifugal compressors the structure.
8. Number of Centrifugal Compressors – Wet Seals – Total: Total number of wet seals centrifugal compressors the structure.
9. Reciprocating Compressor – Shaft Packing Seals - Total: Total number of shaft packing seals reciprocating compressors.
10. Number of Other Compressors – Seals - Total: Total number of other compressors in the structure.
11. Number of Other Relief Valves - Total: Total number of other relief valves in the structure.
12. Number of Pressure Relief Valves - Total: Total number of pressure relief valves in the structure.
13. Number of Meters - Total: Total number of meters in the structure.
14. Number of Instruments - Total: Total number of instruments in the structure.
15. Number of Hatches - Total: Total number of hatches in the structure.
16. Number of Polished Rods - Total: Total number of polished rods in the structure.
17. Number of Dumps - Total: Total number of dumps in the structure.
18. Number of Drains - Total: Total number of drains in the structure.
19. Number of Diaphragms - Total: Total number of diaphragms in the structure.
20. Total Number of Leaking Components (Specify by Type Below) [#]: The summation of the number of the leaking components. This field is auto-calculated based on the number of leaking components provided in the subsequent fields.
21. Number of Connectors - Leaking: The number of the leaking connectors in the structure.
22. Number of Flanges - Leaking: The number of leaking flanges in this structure.
23. Number of Open-Ended Lines - Leaking: The number of leaking open-ended lines in the structure.
24. Number of Pump Seals - Leaking: The number of leaking pump seals in this structure.
25. Number of Valves - Leaking: The number of leaking valves in this structure.
26. Number of Centrifugal Compressors – Dry Seals - Leaking: The number of leaking dry seals centrifugal compressors the structure.
27. Number of Centrifugal Compressors – Wet Seals - Leaking: The number of leaking wet seals centrifugal compressors the structure.
28. Reciprocating Compressor – Shaft Packing Seals - Leaking: The number of leaking shaft packing seals reciprocating compressors.
29. Number of Other Compressors – Seals - Leaking: The number of other leaking compressors in the structure.

30. Number of Other Relief Valves - Leaking: The number of other leaking relief valves in the structure.
31. Number of Pressure Relief Valves - Leaking: The number of leaking pressure relief valves in the structure.
32. Number of Meters - Leaking: The number of leaking meters in the structure.
33. Number of Instruments - Leaking: The number of leaking instruments in the structure.
34. Number of Hatches - Leaking: The number of leaking hatches in the structure.
35. Number of Polished Rods - Leaking: The number of leaking polished rods in the structure.
36. Number of Dumps - Leaking: The number of leaking dumps in the structure.
37. Number of Drains - Leaking: The number of leaking drains in the structure.
38. Number of Diaphragms - Leaking: The number of leaking diaphragms in the structure.
39. Days in Month [days]: The total number of days that the fugitive source operated during the survey period.
40. Leak Detection Measurement System in Place?: A Yes/No drop-down list field to indicate whether the facility routinely assesses and repairs leaking fugitive components or not. Default selection is Yes.
41. Inspection Method: A drop-down list field to specify the employed inspection method: Optical Instrumentation / Visual Inspection / Vapor Analyzer.
42. Number of Months Between Inspections [Months]: The inspection frequency of the leak detection program.
43. Material Processed: A drop-down list field to specify the processed material: Gas / Natural Gas Liquid / Heavy Oil / Light Oil / Water, Oil / Oil, Water, Gas.
44. Are Component Counts Based on Default Values? [Default/Actual]: Identifies whether a facility-specific component count is provided, or default values provided by BOEM are used Default components are given as:
    Connectors: 9,194
    Valves: 1,713
    Open-Ends: 285
    Others: 228
45. Hours of Operation per Month [hr]: The total monthly hours of operation of the fugitive sources during this survey period. This field is auto-calculated.

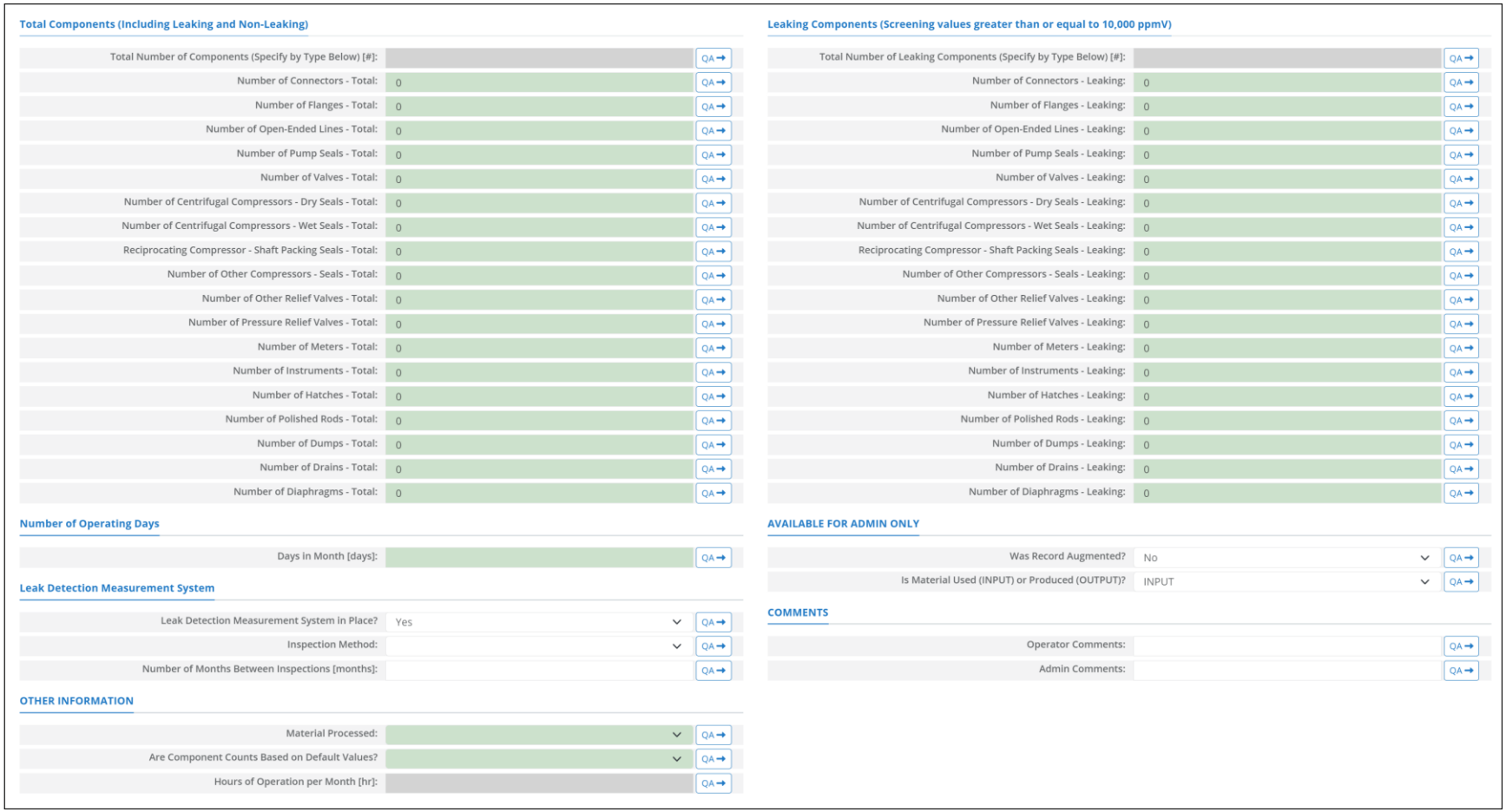


Figure A - 33. FUG-S05 Data Request tab

A.25 FUG-S06 (Fugitive Sources – Oil, Water, Gas– Screening Ranges Approach)

The calculator FUG-S06 Version 1 in OCS AQS calculates the monthly emissions from the oil, water, gas fugitive sources using the following **Data Request** fields in **Figure A - *34*Error! Reference source not found.**:

1. Total Number of Components (Specify by Type Below) [#]: The summation of the number of the total components. This field is auto-calculated based on the number of total components provided in the subsequent fields.
2. Number of Connectors - Total: Total number of connectors in the structure.
3. Number of Flanges - Total : Total number of flanges in this structure.
4. Number of Open-Ended Lines - Total : Total number of open-ended lines in the structure.
5. Number of Pump Seals - Total: Total number of pump seals in this structure.
6. Number of Valves - Total: Total number of valves in this structure.
7. Number of Centrifugal Compressors – Dry Seals - Total: Total number of dry seals centrifugal compressors the structure.
8. Number of Centrifugal Compressors – Wet Seals – Total: Total number of wet seals centrifugal compressors the structure.
9. Reciprocating Compressor – Shaft Packing Seals - Total: Total number of shaft packing seals reciprocating compressors.
10. Number of Other Compressors – Seals - Total: Total number of other compressors in the structure.
11. Number of Other Relief Valves - Total: Total number of other relief valves in the structure.
12. Number of Pressure Relief Valves - Total: Total number of pressure relief valves in the structure.
13. Number of Meters - Total: Total number of meters in the structure.
14. Number of Instruments - Total: Total number of instruments in the structure.
15. Number of Hatches - Total: Total number of hatches in the structure.
16. Number of Polished Rods - Total: Total number of polished rods in the structure.
17. Number of Dumps - Total: Total number of dumps in the structure.
18. Number of Drains - Total: Total number of drains in the structure.
19. Number of Diaphragms - Total: Total number of diaphragms in the structure.
20. Total Number of Leaking Components (Specify by Type Below) [#]: The summation of the number of the leaking components. This field is auto-calculated based on the number of leaking components provided in the subsequent fields.
21. Number of Connectors - Leaking: The number of the leaking connectors in the structure.
22. Number of Flanges - Leaking: The number of leaking flanges in this structure.
23. Number of Open-Ended Lines - Leaking: The number of leaking open-ended lines in the structure.
24. Number of Pump Seals - Leaking: The number of leaking pump seals in this structure.
25. Number of Valves - Leaking: The number of leaking valves in this structure.
26. Number of Centrifugal Compressors – Dry Seals - Leaking: The number of leaking dry seals centrifugal compressors the structure.
27. Number of Centrifugal Compressors – Wet Seals - Leaking: The number of leaking wet seals centrifugal compressors the structure.
28. Reciprocating Compressor – Shaft Packing Seals - Leaking: The number of leaking shaft packing seals reciprocating compressors.
29. Number of Other Compressors – Seals - Leaking: The number of other leaking compressors in the structure.

30. Number of Other Relief Valves - Leaking: The number of other leaking relief valves in the structure.
31. Number of Pressure Relief Valves - Leaking: The number of leaking pressure relief valves in the structure.
32. Number of Meters - Leaking: The number of leaking meters in the structure.
33. Number of Instruments - Leaking: The number of leaking instruments in the structure.
34. Number of Hatches - Leaking: The number of leaking hatches in the structure.
35. Number of Polished Rods - Leaking: The number of leaking polished rods in the structure.
36. Number of Dumps - Leaking: The number of leaking dumps in the structure.
37. Number of Drains - Leaking: The number of leaking drains in the structure.
38. Number of Diaphragms - Leaking: The number of leaking diaphragms in the structure.
39. Days in Month [days]: The total number of days that the fugitive source operated during the survey period.
40. Leak Detection Measurement System in Place?: A Yes/No drop-down list field to indicate whether the facility routinely assesses and repairs leaking fugitive components or not. Default selection is Yes.
41. Inspection Method: A drop-down list field to specify the employed inspection method: Optical Instrumentation / Visual Inspection / Vapor Analyzer.
42. Number of Months Between Inspections [Months]: The inspection frequency of the leak detection program.
43. Material Processed: A drop-down list field to specify the processed material: Gas / Natural Gas Liquid / Heavy Oil / Light Oil / Water, Oil / Oil, Water, Gas.
44. Are Component Counts Based on Default Values? [Default/Actual]: Identifies whether a facility-specific component count is provided, or default values provided by BOEM are used Default components are given as:
    Connectors: 9,194
    Valves: 1,713
    Open-Ends: 285
    Others: 228
45. Hours of Operation per Month [hr]: The total monthly hours of operation of the fugitive sources during this survey period. This field is auto-calculated.

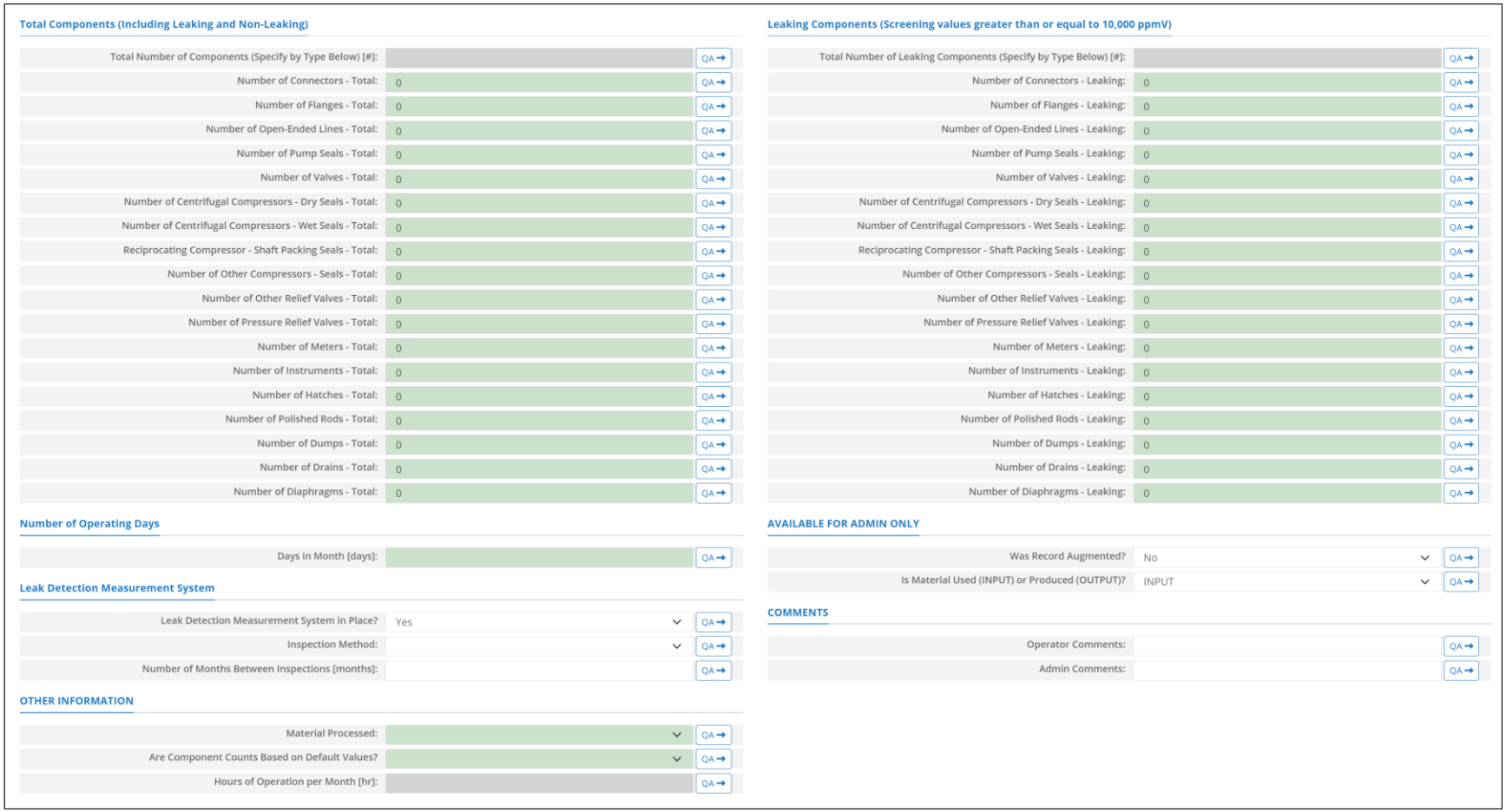


Figure A - 34. FUG-S06 Data Request tab

A.26 GLY-000 (Glycol Dehydrator Unit)

The hourly emission rates from the glycol dehydrator unit are calculated externally using GRI-GLYCalc Version 4.0. These emission rates are then imported into OCS AQS using the Glycol Emission Rates Import tool located in the AEM section of the Emissions module. The calculator GLY-000 Version 0 in OCS AQS calculates the monthly emissions from the glycol dehydrator unit using the imported emission rates and the following **Data Request** fields in Figure A - 35**Error! Reference source not found.**:

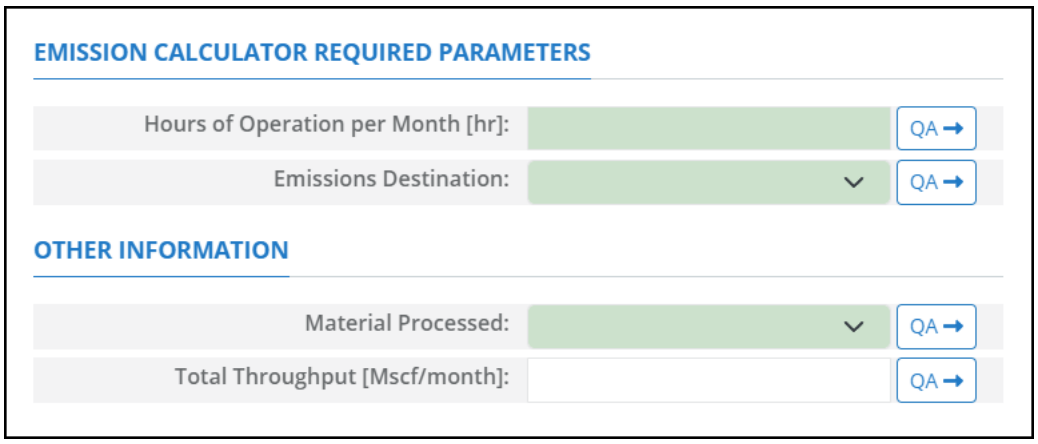


Figure A - 35. GLY-000 Data Request tab

1. Hours of Operation per Month [hr]: The total monthly hours of operation of the glycol dehydrator unit during this survey period.
2. Emissions Destination: A drop-down list field to specify the emissions destination – whether they are vented locally, flared locally, vented remotely, flared remotely, or routed to system. Vented locally selection will compute the emissions vented from this unit. Whereas, flared locally, vented remotely, flared remotely, and routed to system selections will zero out emissions from this unit.
3. Material Processed: A drop-down list field to specify the processed material: Natural Gas.
4. Total Throughput [Mscf/month]: The total volume of gas processed in this glycol dehydrator unit during the specific monthly survey period, volume adjusted to standard temperature and pressure (60 degrees Fahrenheit, 1 atmosphere).

A.27 LOA-M01R (Loading Operations)

The calculator LOA-M01R Version 3 in OCS AQS calculates the monthly emissions from the loading operations using the following **Data Request** fields in Figure A - 36**Error! Reference source not found.**:

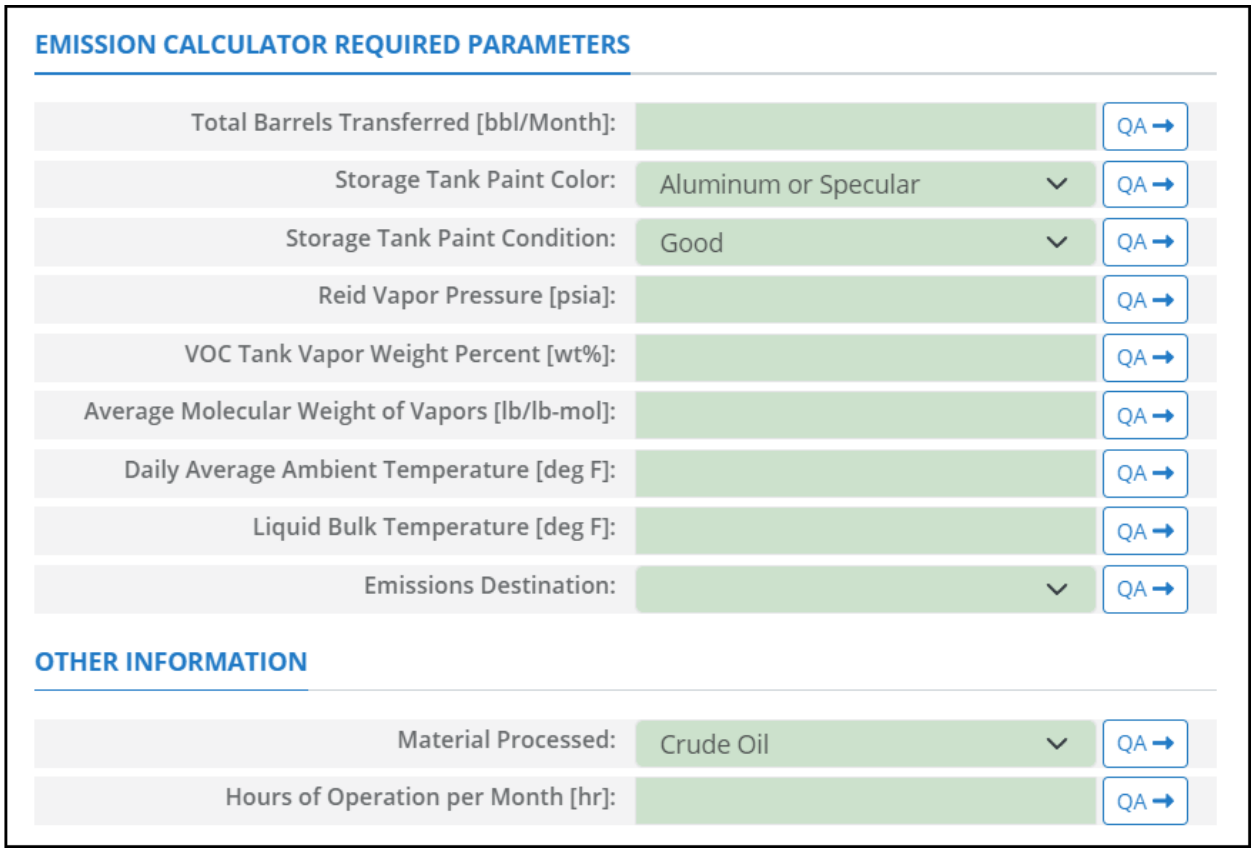


Figure A - 36. LOA-M01R Data Request tab

1. Total Barrels Transferred per Month [bbl]: The number of barrels of liquid hydrocarbons transferred / loaded per month.
2. Storage Tank Paint Color: A drop-down list field to specify the exterior paint color of the dispensing storage tank: Aluminum or Specular / Aluminum or Diffuse / Grey or Light / Grey or Medium / Red or Primer / White.
3. Storage Tank Paint Condition: A drop-down list field to specify the exterior paint condition of the dispensing storage tank: Good / Poor / Average.
4. Reid Vapor Pressure [psia]: The Reid vapor pressure of the liquid in the dispensing storage tank.
5. VOC Tank Vapor Weight Percent [wt%]: The weight percentage concentration of the vapor VOC in the dispensing storage tank.
6. Average Molecular Weight of Vapors [lb/lb-mol]: The average molecular weight of the vapor VOC present in the dispensing storage tank.
7. Daily Average Ambient Temperature [deg F]: The daily average ambient temperature.
8. Liquid Bulk Temperature [deg F]: The bulk temperature of the liquid in the dispensing storage tank.

9. Emissions Destination: A drop-down list field to specify the emissions destination – whether they are vented locally, flared locally, vented remotely, flared remotely, or routed to system. Vented locally selection will compute the emissions vented from this unit. Whereas, flared locally, vented remotely, flared remotely, and routed to system selections will zero out emissions from this unit.
10. Material Processed: A drop-down list field to specify the processed material: Crude Oil.
11. Hours of Operation per Month [hr]: The total monthly hours of loading operations during this survey period.

The calculator LOA-M01R Version 3 in OCS AQS calculates the monthly emissions with pollution control from the loading operations using the following **Control Request** fields in Figure A - 37**Error! Reference source not found.**:

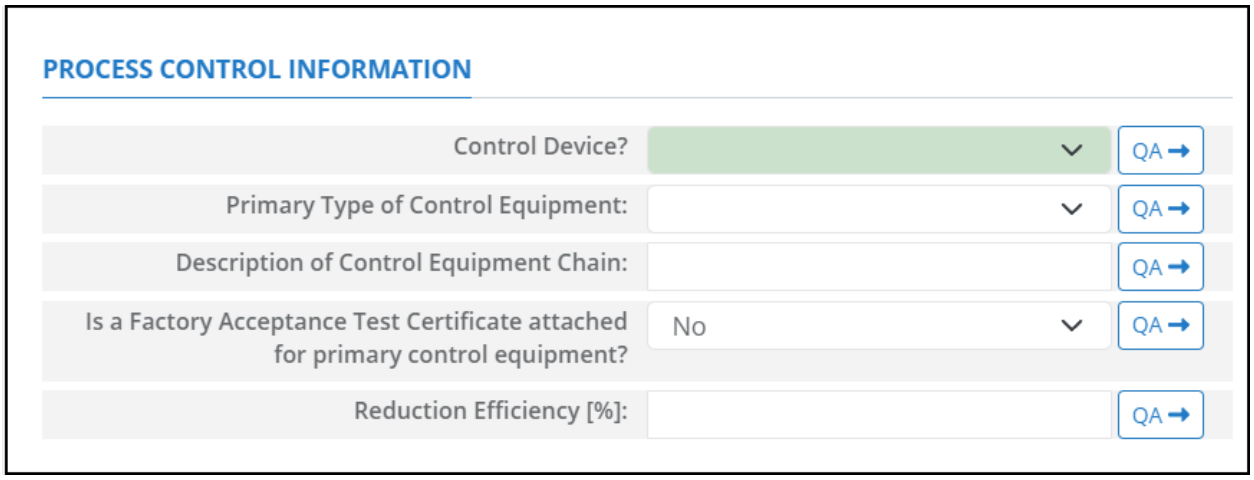


Figure A - 37. LOA-M01R Control Request tab

1. Control Device?: Is end of pipe control technology used with this source? A drop-down [Yes/No] list.
2. Primary Type of Control Equipment: A drop-down list field to specify the primary type of the used control equipment. If the type of is not listed, user can select Other and explain in the comments field.
3. Description of Control Equipment Chain: If more than one type of control technology is used, user can describe the sequence of processing in this field.
4. Is a Factory Acceptance Test Certificate attached for primary control equipment?: A drop-down [Yes/No] list to specify if functionality certification paperwork is available for the control equipment.
5. Reduction Efficiency [%]: This term describes the reduction of all emitted constituents of the emission stream using the control technology. For example, if a Vapor Unit Recovery is employed with a 90% reduction efficiency, the user enters “90” in the “Reduction Efficiency [%]” field. After the calculation is executed, all the emitted constituents will be reduced uniformly by 90%.

***IMPORTANT*:** Supporting equipment documentation may be required by BOEM/BSEE to verify specified control efficiency.

A.28 LOS-M01R (Losses from Flashing)

The calculator LOS-M01R Version 4 in OCS AQS calculates the monthly emitted losses from flashing using the following **Data Request** fields in Figure A - 38**Error! Reference source not found.**:

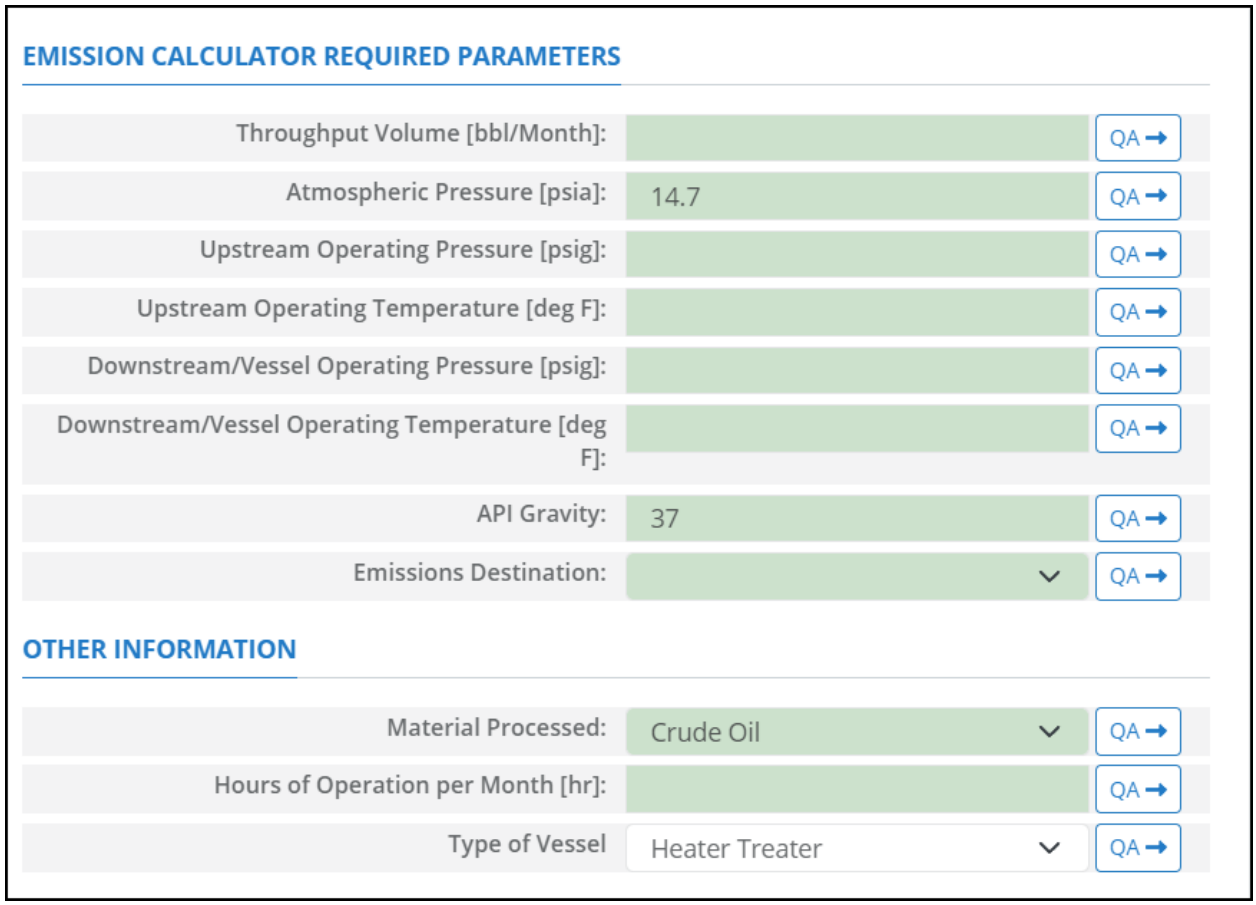


Figure A - 38. LOS-M01R Data Request tab

1. Throughput Volume per Month [bbl]: The total volume of the material processed in the vessel during the specific monthly survey period.
2. Atmospheric Pressure [psia]: The atmospheric pressure. Default value is 14.7 pisa.
3. Upstream Operating Pressure [psig]: Operating pressure of the upstream vessel.
4. Upstream Operating Temperature [deg F]: Operating temperature of the upstream vessel.
5. Downstream / Vessel Operating Pressure [psig]: Operating pressure of the downstream / vessel where the flashing takes place.
6. Downstream /Vessel Operating Temperature [deg F]: Operating temperature of the downstream / vessel where the flashing takes place.
7. API Gravity: The API gravity of the oil/condensate in the vessel where the flashing takes place.
8. Emissions Destination: A drop-down list field to specify the emissions destination – whether they are vented locally, flared locally, vented remotely, flared remotely, or routed to system. Vented locally selection will compute the emissions vented from this unit. Whereas, flared locally, vented remotely, flared remotely, and routed to system selections will zero out emissions from this unit.
9. Material Processed: A drop-down list field to specify the processed material: Crude Oil / Condensate.

10. Hours of Operation per Month [hr]: The total monthly hours of flashing operations during this survey period.
11. Type of Vessel: A drop-down list field to specify the type of vessel: Heater Treater / Separator / Storage Tank / Surge Tank / Other.

The calculator LOS-M01R Version 4 in OCS AQS the monthly losses emitted from flashing with pollution control using the following **Control Request** fields in Figure A - 39**Error! Reference source not found.**:

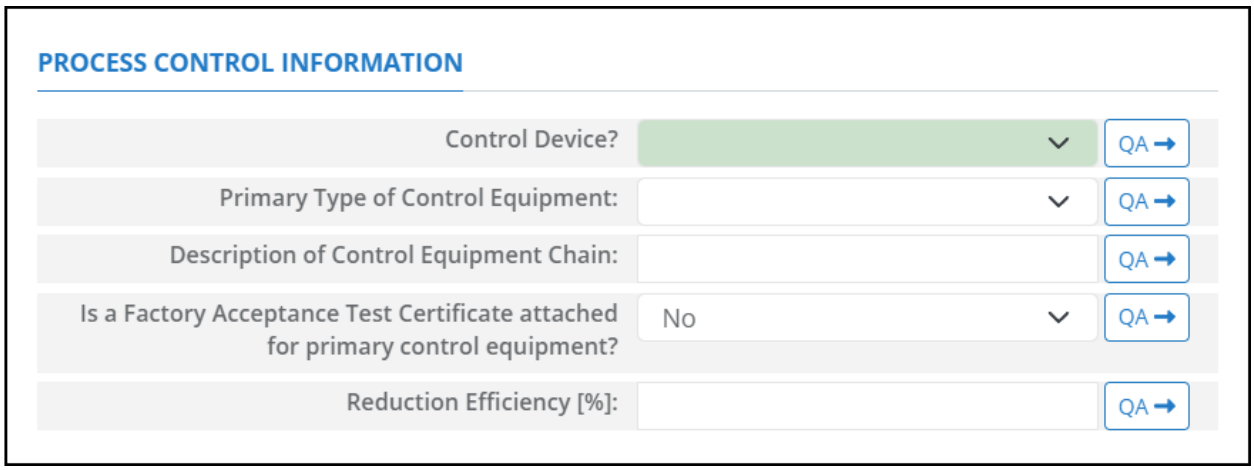


Figure A - 39. LOS-M01R Control Request tab

1. Control Device?: Is end of pipe control technology used with this source? A drop-down [Yes/No] list.
2. Primary Type of Control Equipment: A drop-down list field to specify the primary type of the used control equipment. If the type of is not listed, user can select Other and explain in the comments field.
3. Description of Control Equipment Chain: If more than one type of control technology is used, user can describe the sequence of processing in this field.
4. Is a Factory Acceptance Test Certificate attached for primary control equipment?: A drop-down [Yes/No] list to specify if functionality certification paperwork is available for the control equipment.
5. Reduction Efficiency [%]: This term describes the reduction of all emitted constituents of the emission stream using the control technology. For example, if a Vapor Unit Recovery is employed with a 90% reduction efficiency, the user enters “90” in the “Reduction Efficiency [%]” field. After the calculation is executed, all the emitted constituents will be reduced uniformly by 90%.

   ***IMPORTANT*:** Supporting equipment documentation may be required by BOEM/BSEE to verify specified control efficiency.

A.29 MUD-M01 (Mud Degassing)

The calculator MUD-M01 Version 2 in OCS AQS calculates the monthly emissions from the mud degassing operation using the following **Data Request** fields in Figure A - 40**Error! Reference source not found.**:

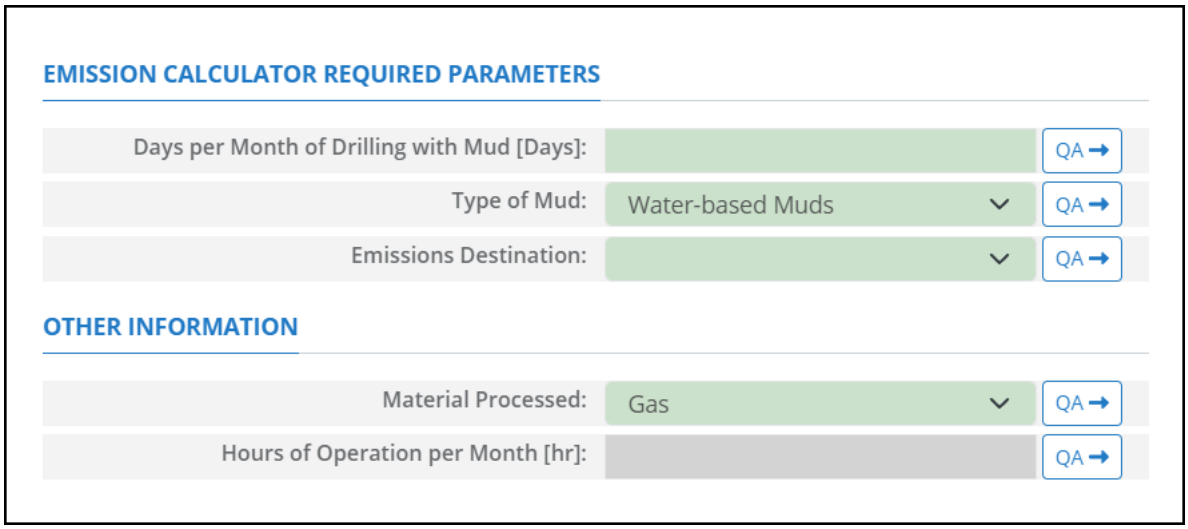


Figure A - 40. MUD-M01 Data Request tab

1. Days per Month of Drilling with Mud [Days]: The total number of 24-hour days of drilling with mud during the specific monthly survey period.
2. Type of Mud: A drop-down list field to specify the type of drilling mud: Water-based Mud / Oil-based Mud / Synthetic.
3. Emissions Destination: A drop-down list field to specify the emissions destination – whether they are vented locally, flared locally, vented remotely, flared remotely, or routed to system. Vented locally selection will compute the emissions vented from this unit. Whereas, flared locally, vented remotely, flared remotely, and routed to system selections will zero out emissions from this unit.
4. Material Processed: The type of fuel burned in the equipment: Gas / Natural Gas.
5. Hours of Operation per Month [hr]: The total monthly hours of mud degassing operations during this survey period. This field is auto-calculated.

A.30 NGE-M01R (Natural Gas Engine – Engine Stroke Cycle = 2-Cycle and Engine Burn = Lean)

The calculator NGE-M01R Version 4 in OCS AQS calculates the monthly emissions from a natural gas engine with two engine cycle stroke and lean engine burn using the following **Data Request** fields in Figure A - 41**Error! Reference source not found.**:

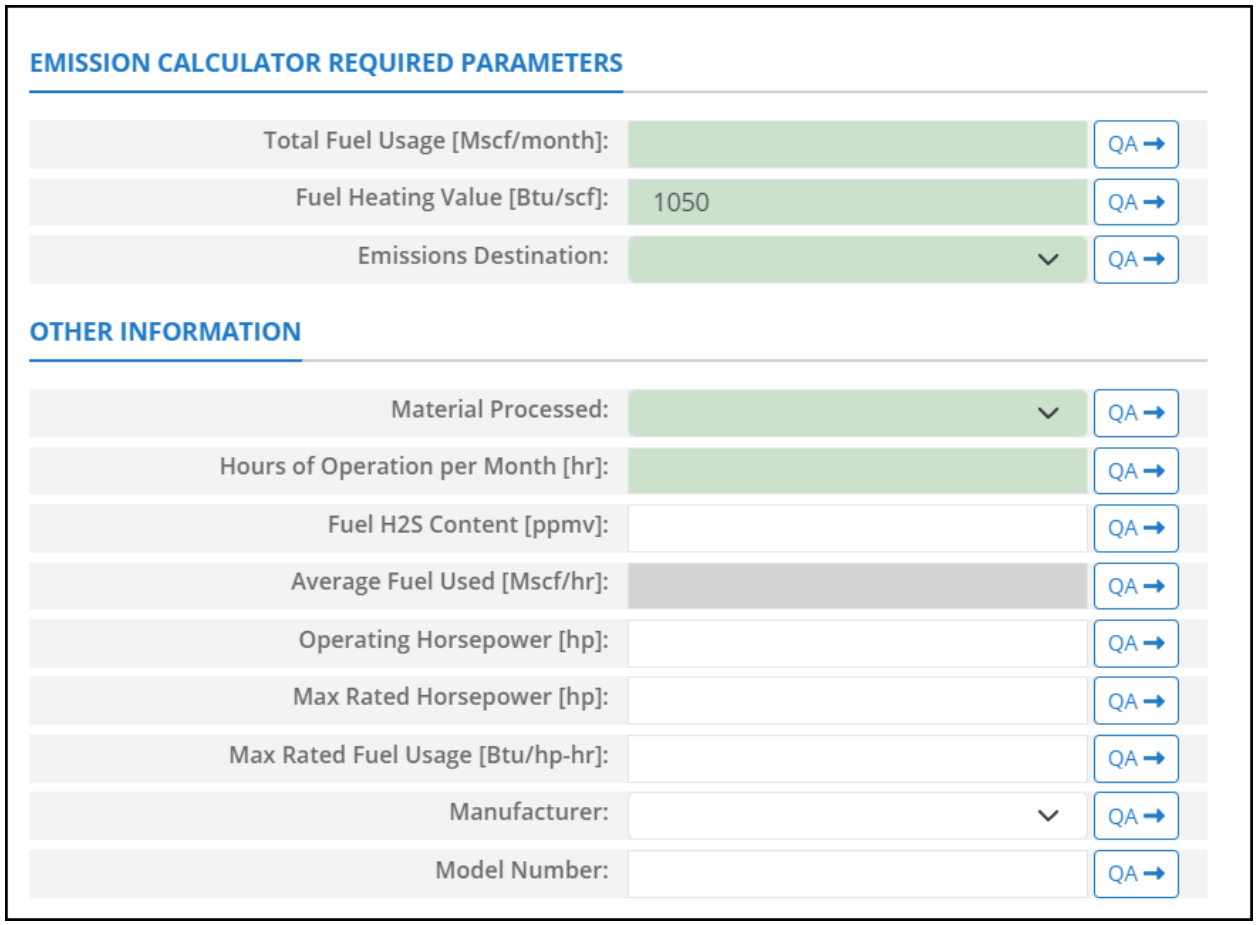


Figure A - 41. NGE-M01R Data Request tab

1. Total Fuel Usage [Mscf/month]: Total monthly rate of the gas fuel used during the survey period.
2. Fuel Heating Value [Btu/scf]: The amount of heat released during the combustion of a specified amount of the natural gas fuel. Default value is 1050 Btu/scf.
3. Emissions Destination: A drop-down list field to specify the emissions destination – whether they are vented locally, flared locally, vented remotely, flared remotely, or routed to system. Vented locally selection will compute the emissions vented from this unit. Whereas, flared locally, vented remotely, flared remotely, and routed to system selections will zero out emissions from this unit.
4. Material Processed: A drop-down list field to specify the processed material: Natural Gas / Process Gas.
5. Hours of Operation per Month [hr]: The total monthly hours of operation of the engine during the survey period.
6. Fuel H_2S Content [ppmv]: The ppmv concentration of hydrogen sulfide present in natural gas fuel.
7. Average Fuel Used [Mscf/hr]: The average hourly rate of natural gas fuel used during the survey period. This field is auto-calculated.

8. Operating Horsepower [hp]: The operating horsepower of the natural gas engine.
9. Max Rated Horsepower [hp]: The manufacturer's maximum rated horsepower the natural gas engine.
10. Max Rated Fuel Usage [Btu/hp-hr]: The maximum hourly usage rate of the gas fuel.
11. Manufacturer: A drop-down list field to specify the engines' manufacturer name.
12. Model Number: The model number of the engine.

The calculator NGE-M01R Version 4 in OCS AQS calculates the monthly emissions with pollution control from a natural gas engine with two engine cycle stroke and lean engine burn using the following **Control Request** fields in Figure A - 42**Error! Reference source not found.**:

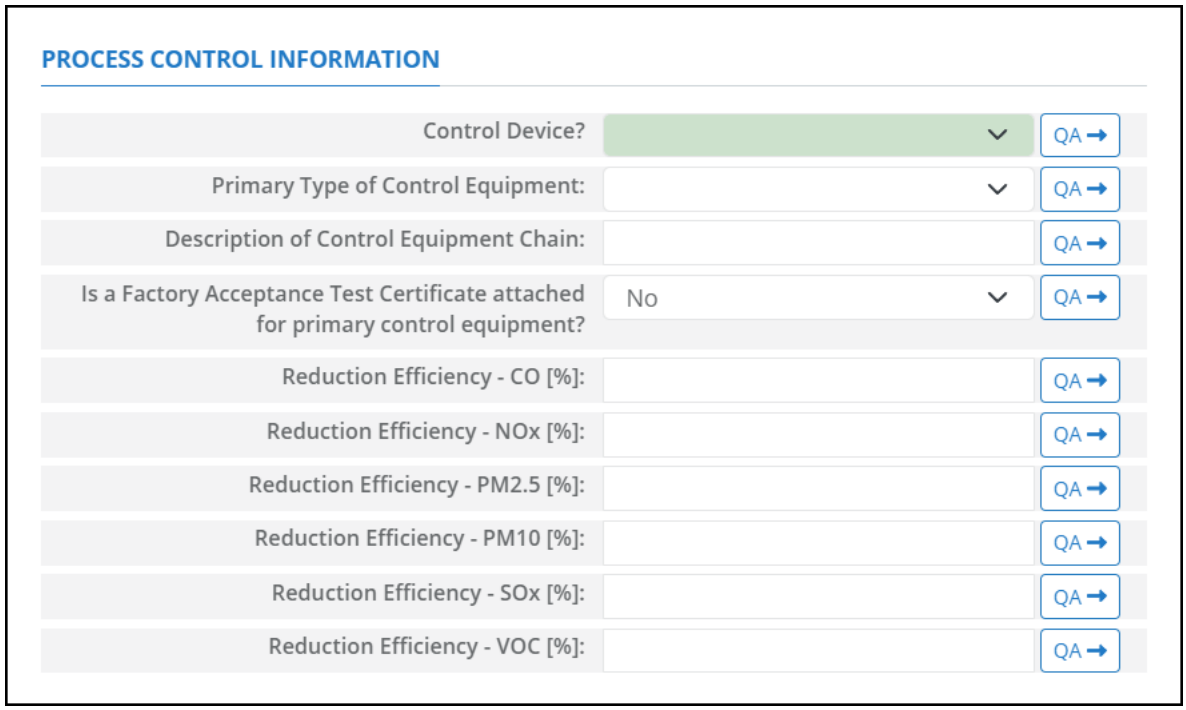


Figure A - 42. NGE-M01R Control Request tab

1. Control Device?: Is end of pipe control technology used with this source? A drop-down [Yes/No] list.
2. Primary Type of Control Equipment: A drop-down list field to specify the primary type of the used control equipment. If the type of is not listed, user can select Other to describe the type in the comments field.
3. Description of Control Equipment Chain: This field allows you to describe the control equipment chain if more than one type of technology is used.
4. Is a Factory Acceptance Test Certificate attached for primary control equipment?: A drop-down [Yes/No] list to specify if functionality certification paperwork is available for the control equipment.
5. Reduction Efficiency – CO [%]: This describes the average reduction of emitted CO using the control technology. If the total reduction of CO using a vapor recovery unit is 65%, enter "65" in the field.
6. Reduction Efficiency – NO_x [%]: This describes the average reduction of emitted NO_x using the control technology. If the total reduction of NO_x using a vapor recovery unit is 65%, enter "65" in the field.
7. Reduction Efficiency – $PM_{2.5}$ [%]: This describes the average reduction of emitted $PM_{2.5}$ using the control technology. If the total reduction of $PM_{2.5}$ using a vapor recovery unit is 65%, enter "65" in the field.
8. Reduction Efficiency – PM_{10} [%]: This describes the average reduction of emitted PM_{10} using the control technology. If the total reduction of PM_{10} using a vapor recovery unit is 65%, enter "65" in the field.

9. Reduction Efficiency – SO_x [%]: This describes the average reduction of emitted SO_x using the control technology. If the total reduction of SO_x using a vapor recovery unit is 65%, enter "65" in the field.
10. Reduction Efficiency – VOC [%]: This describes the average reduction of emitted VOC using the control technology. If the total reduction of VOC using a vapor recovery unit is 65%, enter "65" in the field.

***IMPORTANT*:** Supporting equipment documentation may be required by BOEM/BSEE to verify specified control efficiency.

A.31 NGE-M02R (Natural Gas Engine – Engine Stroke Cycle = 4-Cycle and Engine Burn = Lean)

The calculator NGE-M02R Version 5 in OCS AQS calculates the monthly emissions from a natural gas engine with four engine cycle stroke and lean engine burn using the following **Data Request** fields in Figure A - 43**Error! Reference source not found.**:

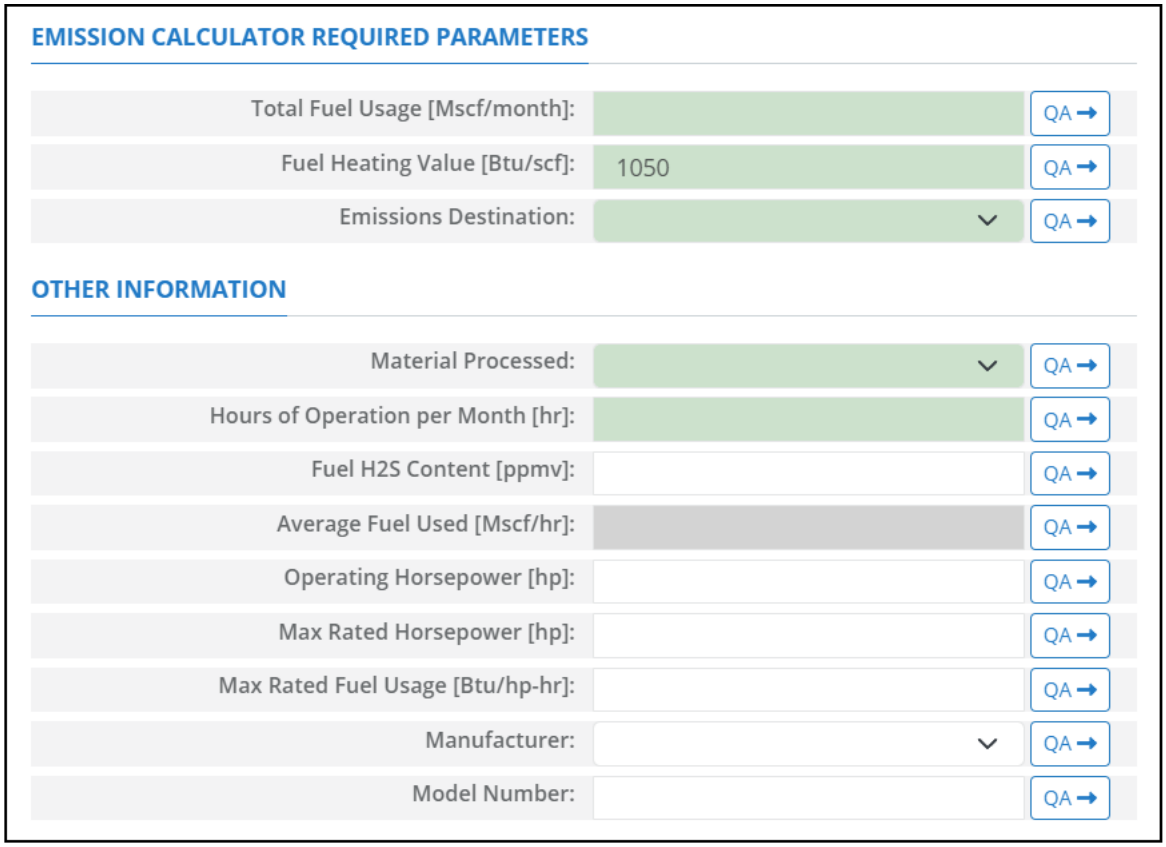


Figure A - 43. NGE-M02R Data Request tab

1. Total Fuel Usage [Mscf/month]: Total monthly rate of the gas fuel used during the survey period.
2. Fuel Heating Value [Btu/scf]: The amount of heat released during the combustion of a specified amount of the natural gas fuel. Default value is 1050 Btu/scf.

3. Emissions Destination: A drop-down list field to specify the emissions destination – whether they are vented locally, flared locally, vented remotely, flared remotely, or routed to system. Vented locally selection will compute the emissions vented from this unit. Whereas, flared locally, vented remotely, flared remotely, and routed to system selections will zero out emissions from this unit.
4. Material Processed: A drop-down list field to specify the processed material: Natural Gas / Process Gas.
5. Hours of Operation per Month [hr]: The total monthly hours of operation of the engine during the survey period
6. Fuel H_2S Content [ppmv]: The ppmv concentration of hydrogen sulfide present in natural gas fuel.
7. Average Fuel Used [Mscf/hr]: The average hourly rate of natural gas fuel used during the survey period. This field is auto-calculated.
8. Operating Horsepower [hp]: The operating horsepower of the natural gas engine.
9. Max Rated Horsepower [hp]: The manufacturer's maximum rated horsepower of the natural gas engine.
10. Max Rated Fuel Usage [Btu/hp-hr]: The maximum hourly usage rate of the gas fuel.
11. Manufacturer: A drop-down list field to specify the engines' manufacturer name.
12. Model Number: The model number of the engine.

The calculator NGE-M02R Version 5 in OCS AQS calculates the monthly emissions with pollution control from a natural gas engine with four engine cycle stroke and lean engine burn using the following **Control Request** fields in Figure A - 44**Error! Reference source not found.**:

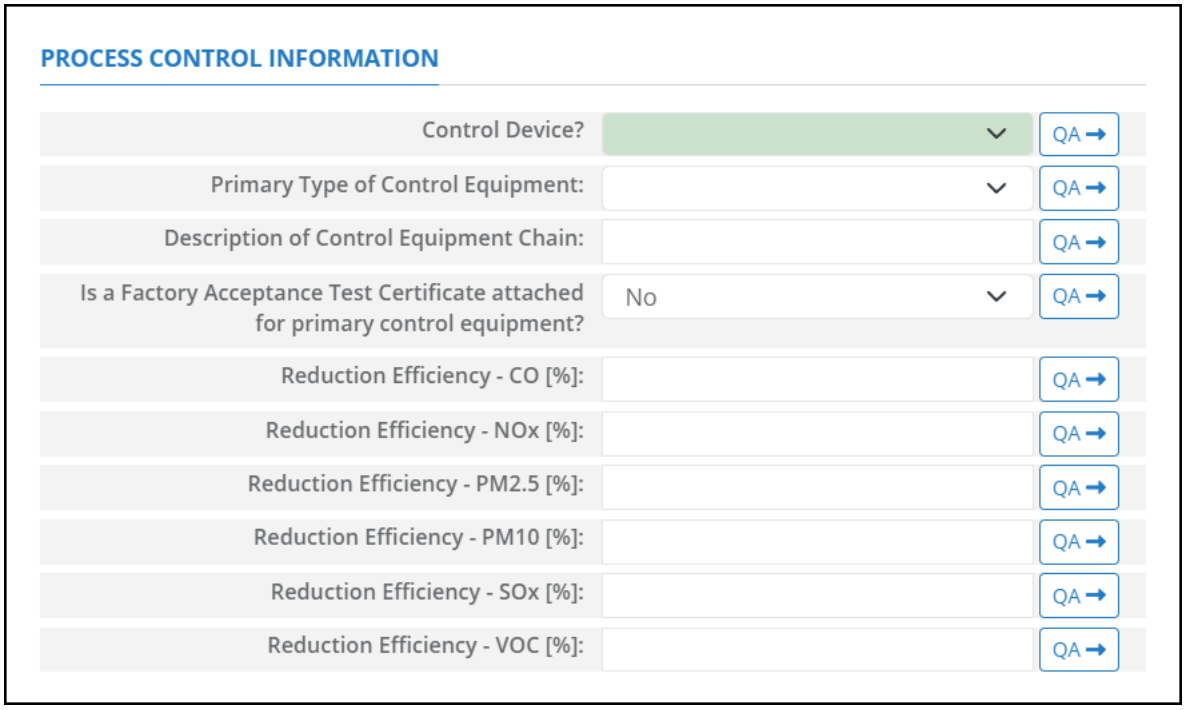


Figure A - 44. NGE-M02R Control Request tab

1. Control Device?: Is end of pipe control technology used with this source? A drop-down [Yes/No] list.
2. Primary Type of Control Equipment: A drop-down list field to specify the primary type of the used control equipment. If the type of is not listed, user can select Other to describe the type in the comments field.
3. Description of Control Equipment Chain: This field allows you to describe the control equipment chain if more than one type of technology is used.

4. Is a Factory Acceptance Test Certificate attached for primary control equipment?: A drop-down [Yes/No] list to specify if functionality certification paperwork is available for the control equipment.
5. Reduction Efficiency – CO [%]: This describes the average reduction of emitted CO using the control technology. If the total reduction of CO using a vapor recovery unit is 65%, enter "65" in the field.
6. Reduction Efficiency – NO_x [%]: This describes the average reduction of emitted NO_x using the control technology. If the total reduction of NO_x using a vapor recovery unit is 65%, enter "65" in the field.
7. Reduction Efficiency – $PM_{2.5}$ [%]: This describes the average reduction of emitted $PM_{2.5}$ using the control technology. If the total reduction of $PM_{2.5}$ using a vapor recovery unit is 65%, enter "65" in the field.
8. Reduction Efficiency – PM_{10} [%]: This describes the average reduction of emitted PM_{10} using the control technology. If the total reduction of PM_{10} using a vapor recovery unit is 65%, enter "65" in the field.
9. Reduction Efficiency – SO_x [%]: This describes the average reduction of emitted SO_x using the control technology. If the total reduction of SO_x using a vapor recovery unit is 65%, enter "65" in the field.
10. Reduction Efficiency – VOC [%]: This describes the average reduction of emitted VOC using the control technology. If the total reduction of VOC using a vapor recovery unit is 65%, enter "65" in the field.

***IMPORTANT*:** Supporting equipment documentation may be required by BOEM/BSEE to verify specified control efficiency.

A.32 NGE-M03R (Natural Gas Engine – Engine Stroke Cycle = 4-Cycle and Engine Burn = Rich)

The calculator NGE-M03R Version 4 in OCS AQS calculates the monthly emissions from a natural gas engine with four engine cycle stroke and rich engine burn using the following **Data Request** fields in Figure A - 45**Error! Reference source not found.**:

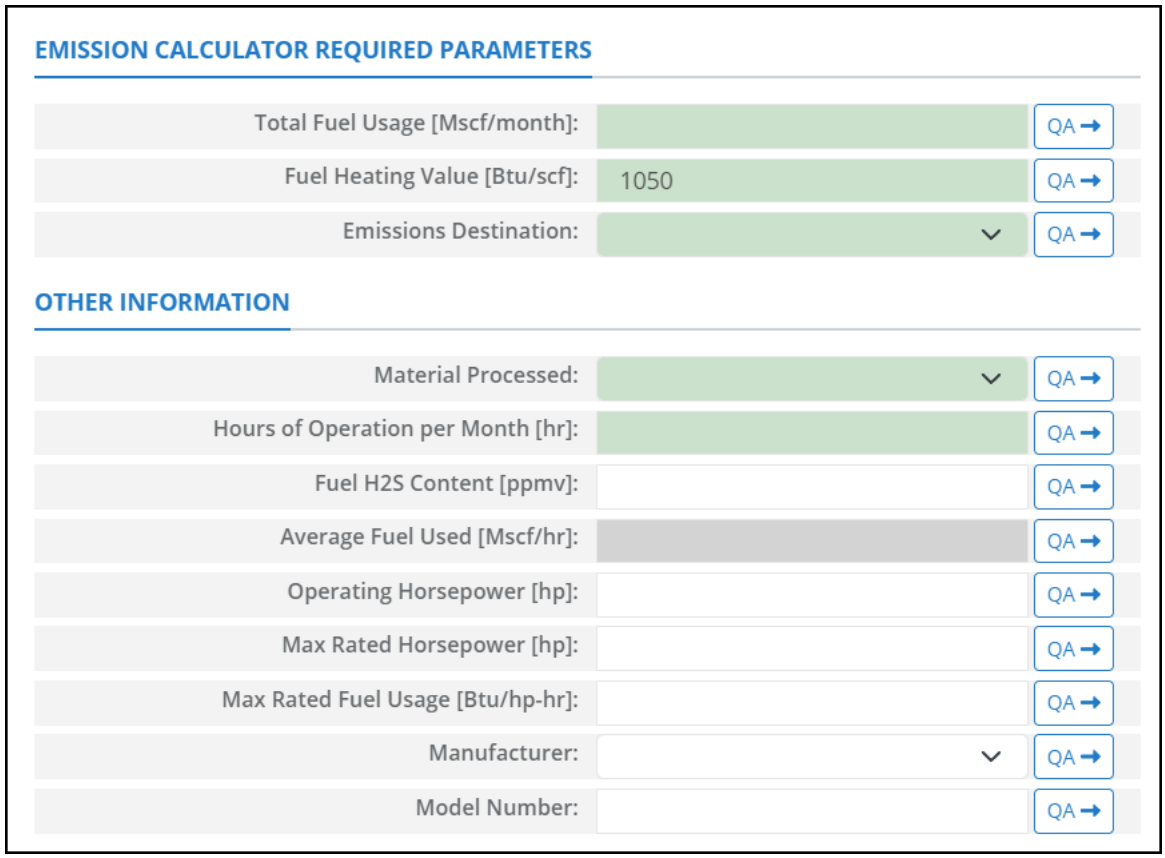


Figure A - 45. NGE-M03R Data Request tab

1. Total Fuel Usage [Mscf/month]: Total monthly rate of the gas fuel used during the survey period.
2. Fuel Heating Value [Btu/scf]: The amount of heat released during the combustion of a specified amount of the natural gas fuel. Default value is 1050 Btu/scf.
3. Emissions Destination: A drop-down list field to specify the emissions destination – whether they are vented locally, flared locally, vented remotely, flared remotely, or routed to system. Vented locally selection will compute the emissions vented from this unit. Whereas, flared locally, vented remotely, flared remotely, and routed to system selections will zero out emissions from this unit.
4. Material Processed: A drop-down list field to specify the processed material: Natural Gas / Process Gas.
5. Hours of Operation per Month [hr]: The total monthly hours of operation of the engine during the survey period.
6. Fuel H_2S Content [ppmv]: The ppmv concentration of hydrogen sulfide present in natural gas fuel.
7. Average Fuel Used [Mscf/hr]: The average hourly rate of natural gas fuel used during the survey period. This field is auto-calculated.
8. Operating Horsepower [hp]: The operating horsepower of the engine.
9. Max rated horsepower [hp]: The manufacturer's maximum rated horsepower of the engine.
10. Max Rated Fuel Usage [Btu/hp-hr]: The maximum hourly usage rate of the gas fuel.

11. Manufacturer: A drop-down list field to specify the engines' manufacturer name.
12. Model Number: The model number of the engine.

The calculator NGE-M03R Version 4 in OCS AQS calculates the monthly emissions with pollution control from a natural gas engine with four engine cycle stroke and rich engine burn using the following **Control Request** fields in Figure A - 46**Error! Reference source not found.**:

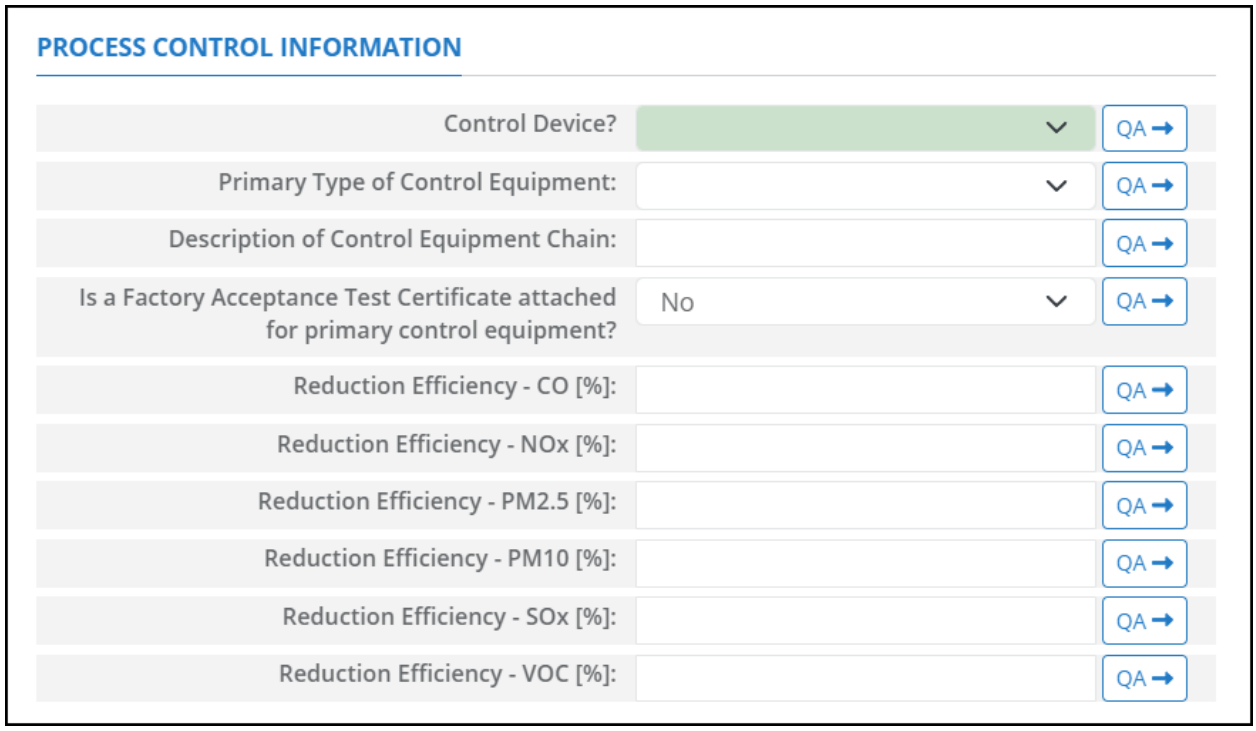


Figure A - 46. NGE-M03R Control Request tab

1. Control Device?: Is end of pipe control technology used with this source? A drop-down [Yes/No] list.
2. Primary Type of Control Equipment: A drop-down list field to specify the primary type of the used control equipment. If the type of is not listed, user can select Other to describe the type in the comments field.
3. Description of Control Equipment Chain: This field allows you to describe the control equipment chain if more than one type of technology is used.
4. Is a Factory Acceptance Test Certificate attached for primary control equipment?: A drop-down [Yes/No] list to specify if functionality certification paperwork is available for the control equipment.
5. Reduction Efficiency – CO [%]: This describes the average reduction of emitted CO using the control technology. If the total reduction of CO using a vapor recovery unit is 65%, enter “65” in the field.
6. Reduction Efficiency – NO_x [%]: This describes the average reduction of emitted NO_x using the control technology. If the total reduction of NO_x using a vapor recovery unit is 65%, enter “65” in the field.
7. Reduction Efficiency – $PM_{2.5}$ [%]: This describes the average reduction of emitted $PM_{2.5}$ using the control technology. If the total reduction of $PM_{2.5}$ using a vapor recovery unit is 65%, enter “65” in the field.
8. Reduction Efficiency – PM_{10} [%]: This describes the average reduction of emitted PM_{10} using the control technology. If the total reduction of PM_{10} using a vapor recovery unit is 65%, enter “65” in the field.

9. Reduction Efficiency – SO_x [%]: This describes the average reduction of emitted SO_x using the control technology. If the total reduction of SO_x using a vapor recovery unit is 65%, enter "65" in the field.
10. Reduction Efficiency – VOC [%]: This describes the average reduction of emitted VOC using the control technology. If the total reduction of VOC using a vapor recovery unit is 65%, enter "65" in the field.

    ***IMPORTANT*:** Supporting equipment documentation may be required by BOEM/BSEE to verify specified control efficiency.

A.33 NGE-M04R (Natural Gas Engine – Engine Burn =clean)

The calculator NGE-M04R Version 4 in OCS AQS calculates the monthly emissions from a natural gas engine with clean engine burn using the following **Data Request** fields in Figure A - 47**Error! Reference source not found.**:

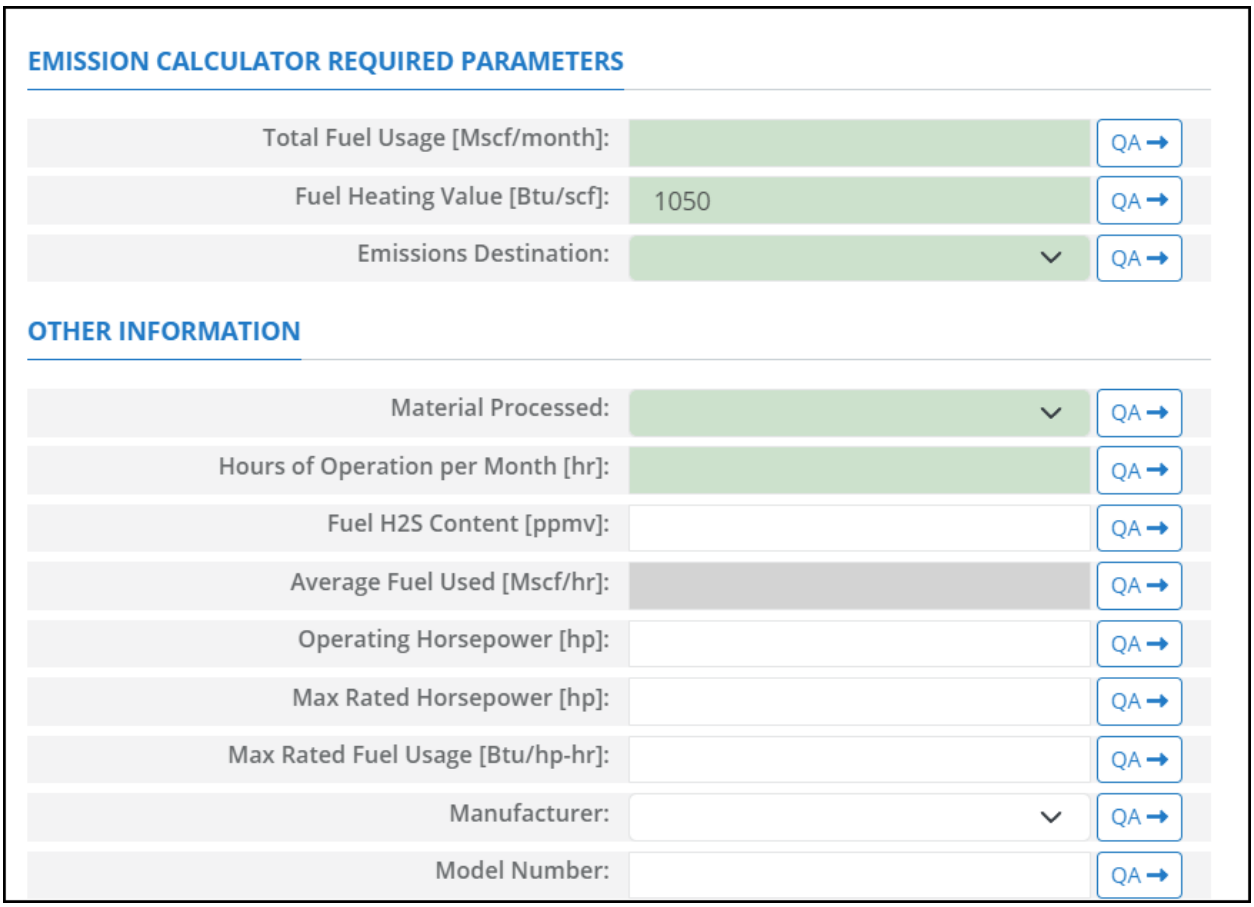


Figure A - 47. NGE-M04R Data Request tab

1. Total Fuel Usage [Mscf/month]: Total monthly rate of the gas fuel used during the survey period.
2. Fuel Heating Value [Btu/scf]: The amount of heat released during the combustion of a specified amount of the natural gas fuel. Default value is 1050 Btu/scf.
3. Emissions Destination: A drop-down list field to specify the emissions destination – whether they are vented locally, flared locally, vented remotely, flared remotely, or routed to system. Vented locally

selection will compute the emissions vented from this unit. Whereas, flared locally, vented remotely, flared remotely, and routed to system selections will zero out emissions from this unit.

4. Material Processed: A drop-down list field to specify the processed material: Natural Gas / Process Gas.
5. Hours of Operation per Month [hr]: The total monthly hours of operation of the engine during the survey period.
6. Fuel H_2S Content [ppmv]: The ppmv concentration of hydrogen sulfide present in natural gas fuel.
7. Average Fuel Used [Mscf/hr]: The average hourly rate of natural gas fuel used during the survey period. This field is auto-calculated.
8. Operating Horsepower [hp]: The operating horsepower of the engine.
9. Max Rated Horsepower [hp]: The manufacturer's maximum rated horsepower of the engine.
10. Max Rated Fuel Usage [Btu/hp-hr]: The maximum hourly usage rate of the gas fuel.
11. Manufacturer: A drop-down list field to specify the engines' manufacturer name.
12. Model Number: The model number of the engine.

The calculator NGE-M04R Version 4 in OCS AQS calculates the monthly emissions with pollution control from a natural gas engine with clean engine burn using the following **Control Request** fields in Figure A - 48**Error! Reference source not found.**:

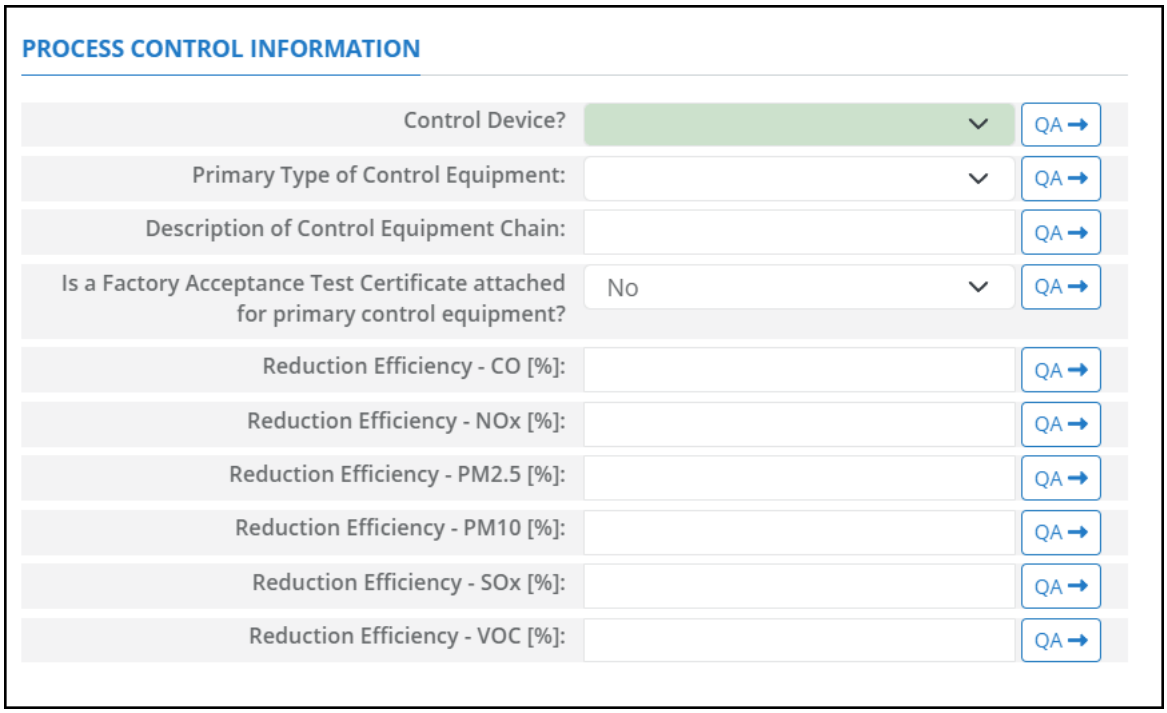


Figure A - 48. NGE-M04R Control Request tab

1. Control Device?: Is end of pipe control technology used with this source? A drop-down [Yes/No] list.
2. Primary Type of Control Equipment: A drop-down list field to specify the primary type of the used control equipment. If the type of is not listed, user can select Other to describe the type in the comments field.
3. Description of Control Equipment Chain: This field allows you to describe the control equipment chain if more than one type of technology is used.
4. Is a Factory Acceptance Test Certificate attached for primary control equipment?: A drop-down [Yes/No] list to specify if functionality certification paperwork is available for the control equipment.
5. Reduction Efficiency – CO [%]: This describes the average reduction of emitted CO using the control technology. If the total reduction of CO using a vapor recovery unit is 65%, enter "65" in the field.

6. Reduction Efficiency – NO_x [%]: This describes the average reduction of emitted NO_x using the control technology. If the total reduction of NO_x using a vapor recovery unit is 65%, enter “65” in the field.
7. Reduction Efficiency – $PM_{2.5}$ [%]: This describes the average reduction of emitted $PM_{2.5}$ using the control technology. If the total reduction of $PM_{2.5}$ using a vapor recovery unit is 65%, enter “65” in the field.
8. Reduction Efficiency – PM_{10} [%]: This describes the average reduction of emitted PM_{10} using the control technology. If the total reduction of PM_{10} using a vapor recovery unit is 65%, enter “65” in the field.
9. Reduction Efficiency – SO_x [%]: This describes the average reduction of emitted SO_x using the control technology. If the total reduction of SO_x using a vapor recovery unit is 65%, enter “65” in the field.
10. Reduction Efficiency – VOC [%]: This describes the average reduction of emitted VOC using the control technology. If the total reduction of VOC using a vapor recovery unit is 65%, enter “65” in the field.

    ***IMPORTANT*:** Supporting equipment documentation may be required by BOEM/BSEE to verify specified control efficiency.

A.34 NGT-M01R (Dual-Fuel Turbines – Nat. Gas – Known Sulfur)

The calculator NGT-M01R Version 4 in OCS AQS calculates the monthly emissions from a dual-fuel turbine powered by natural gas with known sulfur content using the following **Data Request** fields in Figure A - 49**Error! Reference source not found.**:

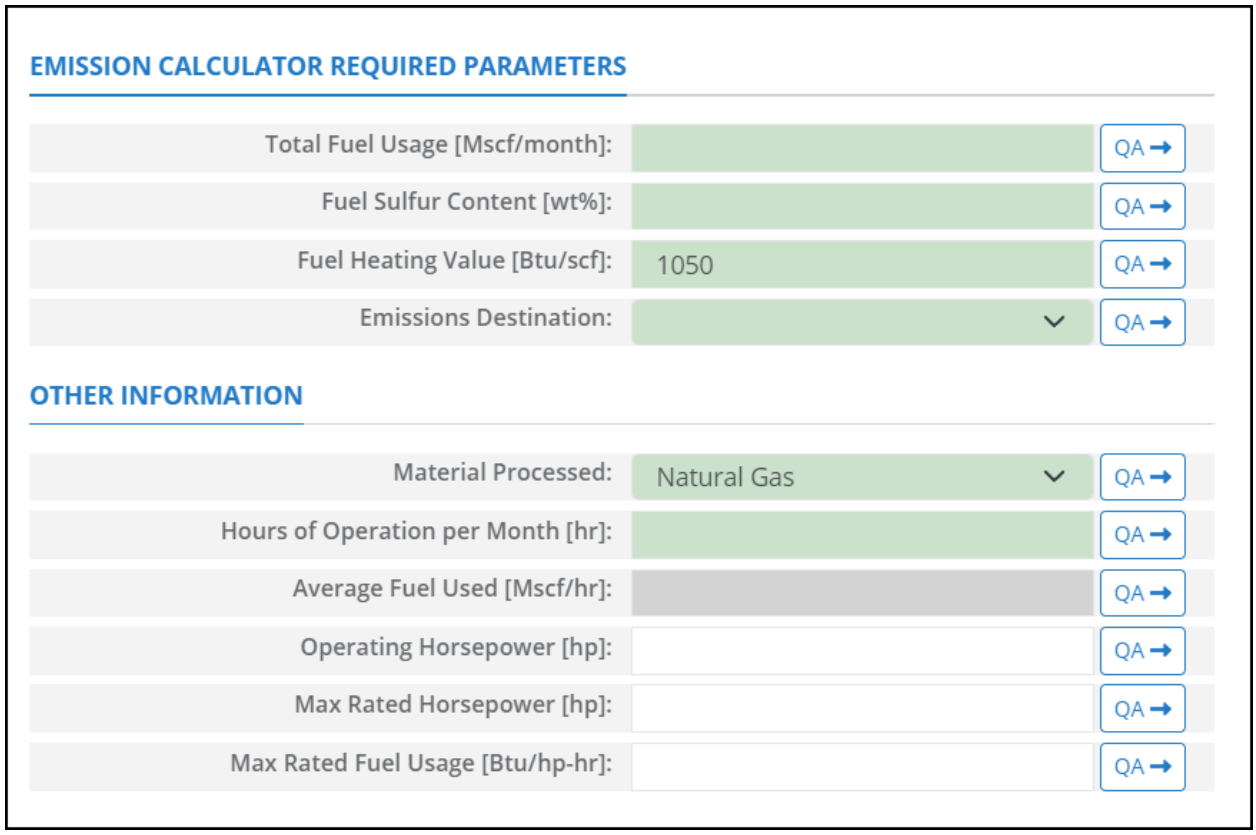


Figure A - 49. NGT-M01R Data Request tab

1. Total Fuel Usage [Mscf/month]: Total monthly rate of the natural gas fuel used during the survey period.
2. Fuel Sulfur Content [wt%]: The weight percentage of the sulfur content in the used natural gas fuel. For example, if the fuel is 1.0% sulfur, then user enters 1 and not 0.01.
3. Fuel Heating Value [Btu/scf]: The amount of heat released during the combustion of a specified amount of the natural gas fuel. Default value is 1050 Btu/scf.
4. Emissions Destination: A drop-down list field to specify the emissions destination – whether they are vented locally, flared locally, vented remotely, flared remotely, or routed to system. Vented locally selection will compute the emissions vented from this unit. Whereas, flared locally, vented remotely, flared remotely, and routed to system selections will zero out emissions from this unit.
5. Material Processed: A drop-down list field to specify the processed material: Natural Gas / Process Gas.
6. Hours of Operation per Month [hr]: The total monthly hours of operation of the turbine during the survey period.
7. Average Fuel Used [Mscf/hr]: The average hourly rate of natural gas fuel used during the survey period. This field is auto-calculated.
8. Operating Horsepower [hp]: The operating horsepower of the turbine.
9. Max Rated Horsepower [hp]: The manufacturer's maximum rated horsepower of the turbine.
10. Max Rated Fuel Usage [Btu/hp-hr]: The maximum hourly usage rate of the gas fuel.

The calculator NGT-M01R Version 4 in OCS AQS calculates the monthly emissions with pollution control from a dual-fuel turbine powered by natural gas with known sulfur content using the following **Control Request** fields in Figure A - 50**Error! Reference source not found.**:

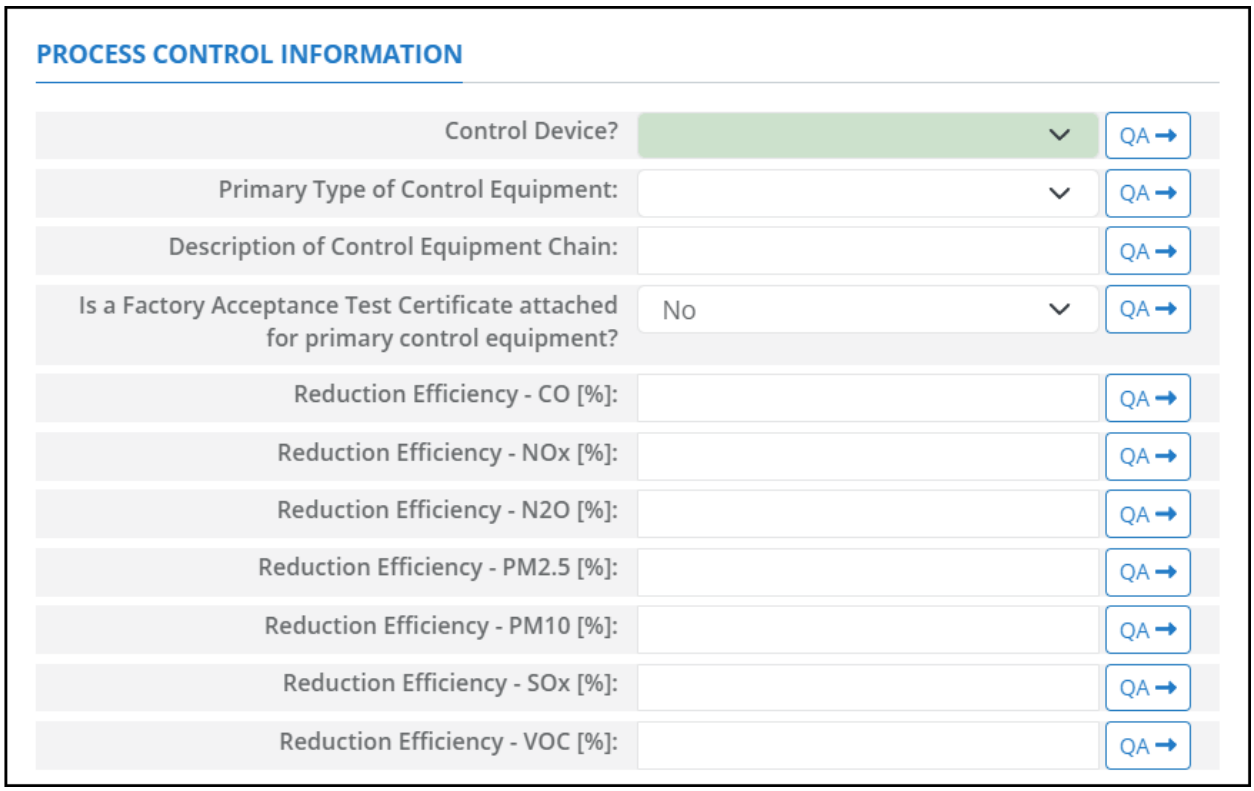


Figure A - 50. NGT-M01R Control Request tab

1. Control Device? – Is end of pipe control technology used with this source? A drop-down [Yes/No] list.
2. Primary Type of Control Equipment: A drop-down list field to specify the primary type of the used control equipment. If the type of is not listed, user can select Other and explain and describe the type in the comments field.
3. Description of Control Equipment Chain: This field allows you to describe the control equipment chain if more than one type of technology is used.
4. Is a Factory Acceptance Test Certificate attached for primary control equipment?: A drop-down [Yes/No] list to specify if functionality certification paperwork is available for the control equipment.
5. Reduction Efficiency – CO [%]: This describes the average reduction of emitted CO using the control technology. If the total reduction of CO using a vapor recovery unit is 65%, enter “65” in the field.
6. Reduction Efficiency – NO_x [%]: This describes the average reduction of emitted NO_x using the control technology. If the total reduction of NO_x using a vapor recovery unit is 65%, enter “65” in the field.
7. Reduction Efficiency – N_2O [%]: This describes the average reduction of emitted N_2O using the control technology. If the total reduction of N_2O using a vapor recovery unit is 65%, enter “65” in the field.
8. Reduction Efficiency – $PM_{2.5}$ [%]: This describes the average reduction of emitted $PM_{2.5}$ using the control technology. If the total reduction of $PM_{2.5}$ using a vapor recovery unit is 65%, enter “65” in the field.

9. Reduction Efficiency – PM_{10} [%]: This describes the average reduction of emitted PM_{10} using the control technology. If the total reduction of PM_{10} using a vapor recovery unit is 65%, enter "65" in the field.
10. Reduction Efficiency – SO_x [%]: This describes the average reduction of emitted SO_x using the control technology. If the total reduction of SO_x using a vapor recovery unit is 65%, enter "65" in the field.
11. Reduction Efficiency – VOC [%]: This describes the average reduction of emitted VOC using the control technology. If the total reduction of VOC using a vapor recovery unit is 65%, enter "65" in the field.

> ***IMPORTANT*:** Supporting equipment documentation may be required by BOEM/BSEE to verify specified control efficiency.

A.35 NGT-M02R (Dual-Fuel Turbines – Nat. Gas – Unknown Sulfur)

The calculator NGT-M02R Version 4 in OCS AQS calculates the monthly emissions from a dual-fuel turbine powered by natural gas with unknown sulfur content using the following **Data Request** fields in Figure A - 51**Error! Reference source not found.**:

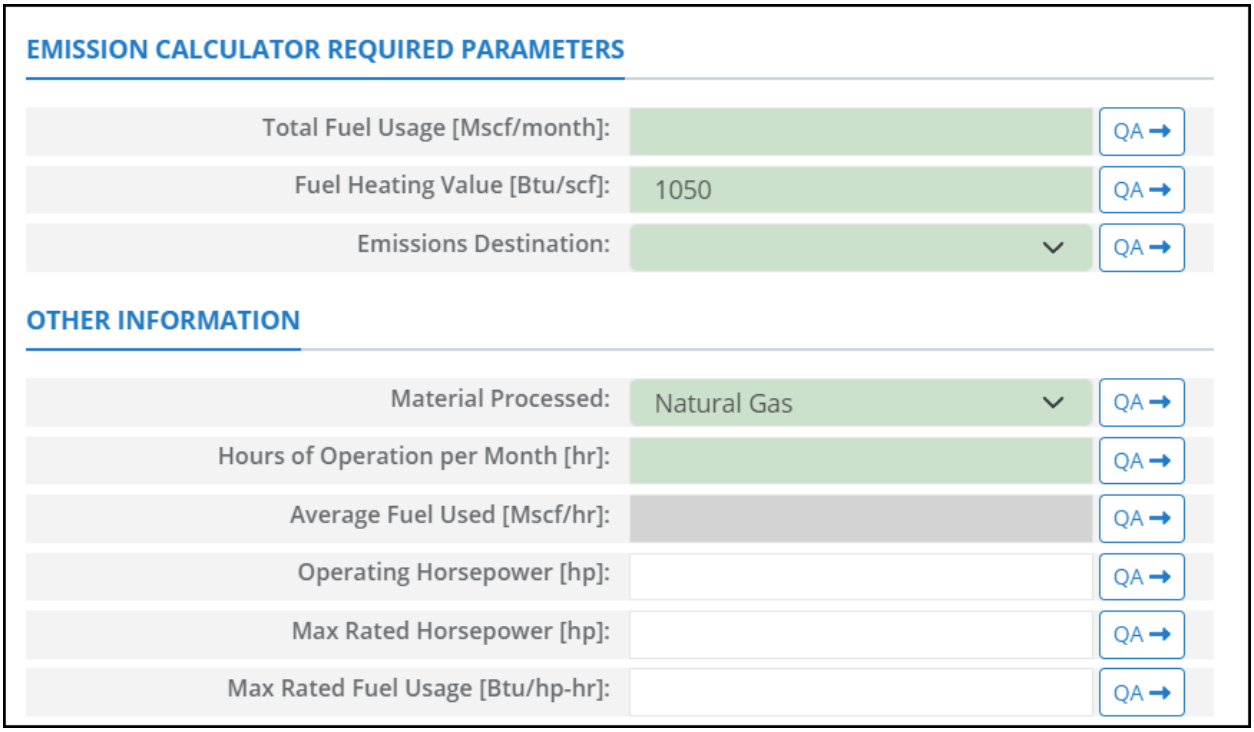


Figure A - 51. NGT-M02R Data Request tab

1. Total Fuel Usage [Mscf/month]: Total monthly rate of the gas fuel used during the survey period.
2. Fuel Heating Value [Btu/scf]: The amount of heat released during the combustion of a specified amount of the natural gas fuel. Default value is 1050 Btu/scf.
3. Emissions Destination: A drop-down list field to specify the emissions destination – whether they are vented locally, flared locally, vented remotely, flared remotely, or routed to system. Vented locally

selection will compute the emissions vented from this unit. Whereas, flared locally, vented remotely, flared remotely, and routed to system selections will zero out emissions from this unit.

4. Material Processed: A drop-down list field to specify the processed material: Natural Gas / Process Gas.
5. Hours of Operation per Month [hr]: The total monthly hours of operation of the turbine during the survey period.
6. Average Fuel Used [Mscf/hr]: The average hourly rate of natural gas fuel used during the survey period. This field is auto-calculated.
7. Operating Horsepower [hp]: The operating horsepower of the turbine.
8. Max Rated Horsepower [hp]: The manufacturer's maximum rated horsepower of the turbine.
9. Max Rated Fuel Usage [Btu/hp-hr]: The maximum hourly usage rate of the gas fuel.

The calculator NGT-M02R Version 4 in OCS AQS calculates the monthly emissions with pollution control from a dual-fuel turbine powered by natural gas with unknown sulfur content using the following **Control Request** fields in Figure A - 52**Error! Reference source not found.**:

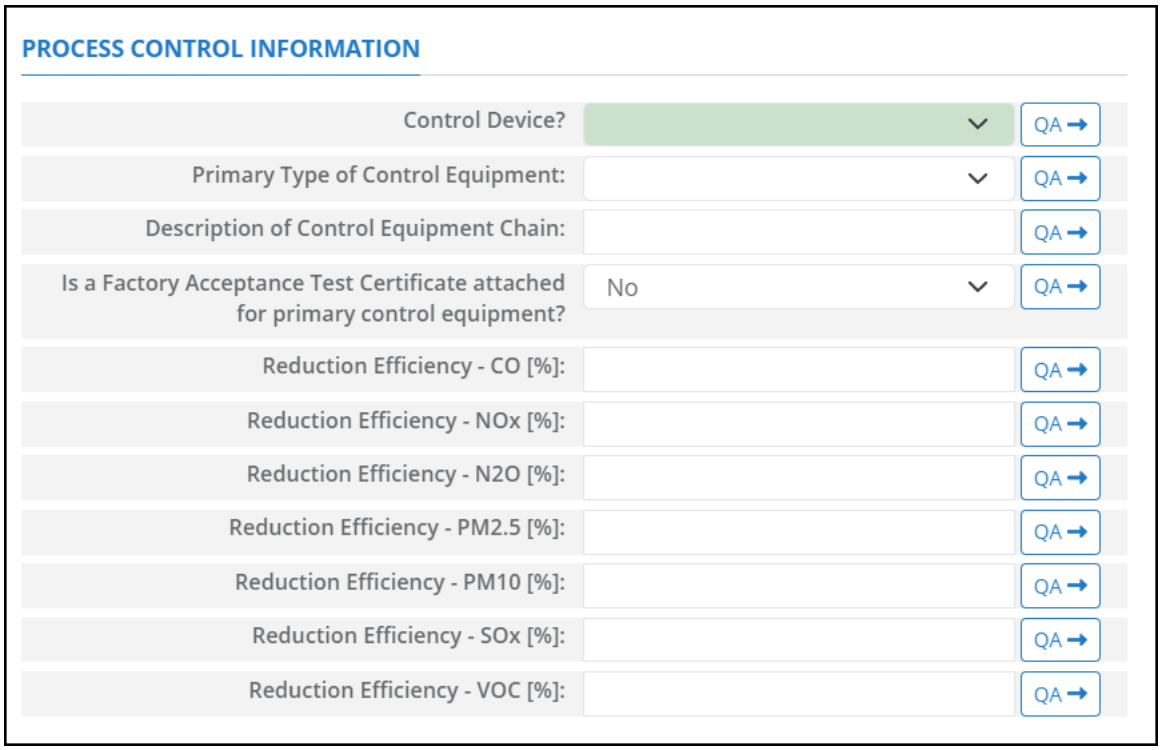


Figure A - 52. NGT-M02R Control Request tab

1. Control Device? – Is end of pipe control technology used with this source? A drop-down [Yes/No] list.
2. Primary Type of Control Equipment: A drop-down list field to specify the primary type of the used control equipment. If the type of is not listed, user can select Other and explain and describe the type in the comments field.
3. Description of Control Equipment Chain: This field allows you to describe the control equipment chain if more than one type of technology is used.
4. Is a Factory Acceptance Test Certificate attached for primary control equipment?: A drop-down [Yes/No] list to specify if functionality certification paperwork is available for the control equipment.
5. Reduction Efficiency – CO [%]: This describes the average reduction of emitted CO using the control technology. If the total reduction of CO using a vapor recovery unit is 65%, enter "65" in the field.

6. Reduction Efficiency – NO_x [%]: This describes the average reduction of emitted NO_x using the control technology. If the total reduction of NO_x using a vapor recovery unit is 65%, enter "65" in the field.
7. Reduction Efficiency – N_2O [%]: This describes the average reduction of emitted N_2O using the control technology. If the total reduction of N_2O using a vapor recovery unit is 65%, enter "65" in the field.
8. Reduction Efficiency – $PM_{2.5}$ [%]: This describes the average reduction of emitted $PM_{2.5}$ using the control technology. If the total reduction of $PM_{2.5}$ using a vapor recovery unit is 65%, enter "65" in the field.
9. Reduction Efficiency – PM_{10} [%]: This describes the average reduction of emitted PM_{10} using the control technology. If the total reduction of PM_{10} using a vapor recovery unit is 65%, enter "65" in the field.
10. Reduction Efficiency – SO_x [%]: This describes the average reduction of emitted SO_x using the control technology. If the total reduction of SO_x using a vapor recovery unit is 65%, enter "65" in the field.
11. Reduction Efficiency – VOC [%]: This describes the average reduction of emitted VOC using the control technology. If the total reduction of VOC using a vapor recovery unit is 65%, enter "65" in the field.

***IMPORTANT*:** Supporting equipment documentation may be required by BOEM/BSEE to verify specified control efficiency.

A.36 NGT-M03R (Dual-Fuel Turbines – Diesel)

The calculator NGT-M03R Version 4 in OCS AQS calculates the monthly emissions from a dual turbine powered by diesel using the following **Data Request** fields in Figure A - 53**Error! Reference source not found.**:

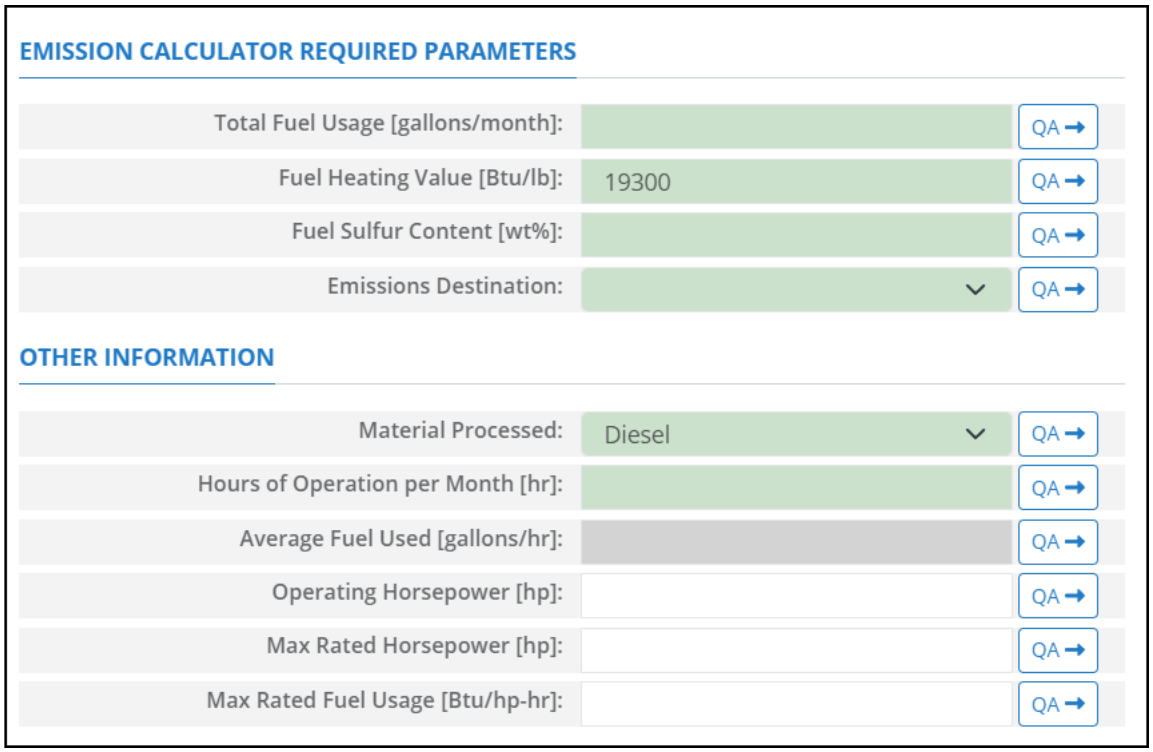


Figure A - 53. NGT-M03R Data Request tab

1. Total Fuel Usage [gallons/month]: Total monthly rate of the diesel fuel used during the survey period.
2. Fuel Sulfur Content [wt%]: The weight percentage of the sulfur content in the used diesel fuel. For example, if the fuel is 1.0% sulfur, then user enters 1 and not 0.01.
3. Emissions Destination: A drop-down list field to specify the emissions destination – whether they are vented locally, flared locally, vented remotely, flared remotely, or routed to system. Vented locally selection will compute the emissions vented from this unit. Whereas, flared locally, vented remotely, flared remotely, and routed to system selections will zero out emissions from this unit.
4. Material Processed: A drop-down list field to specify the processed material: Diesel / Distillate Oil.
5. Hours of Operation per Month [hr]: The total monthly hours of operation of the turbine during the survey period.
6. Average Fuel Used [gallons/hr]: The average hourly rate of diesel fuel used during the survey period. This field is auto-calculated.
7. Operating Horsepower [hp]: The operating horsepower of the turbine.
8. Max Rated Horsepower [hp]: The manufacturer's maximum rated horsepower of the turbine.
9. Max Rated Fuel Usage [Btu/hp-hr]: The maximum hourly usage rate of the diesel fuel.

The calculator NGT-M03R Version 4 in OCS AQS calculates the monthly emissions with pollution control from a dual turbine powered by diesel using the following **Control Request** fields in Figure A - 54**Error! Reference source not found.**:

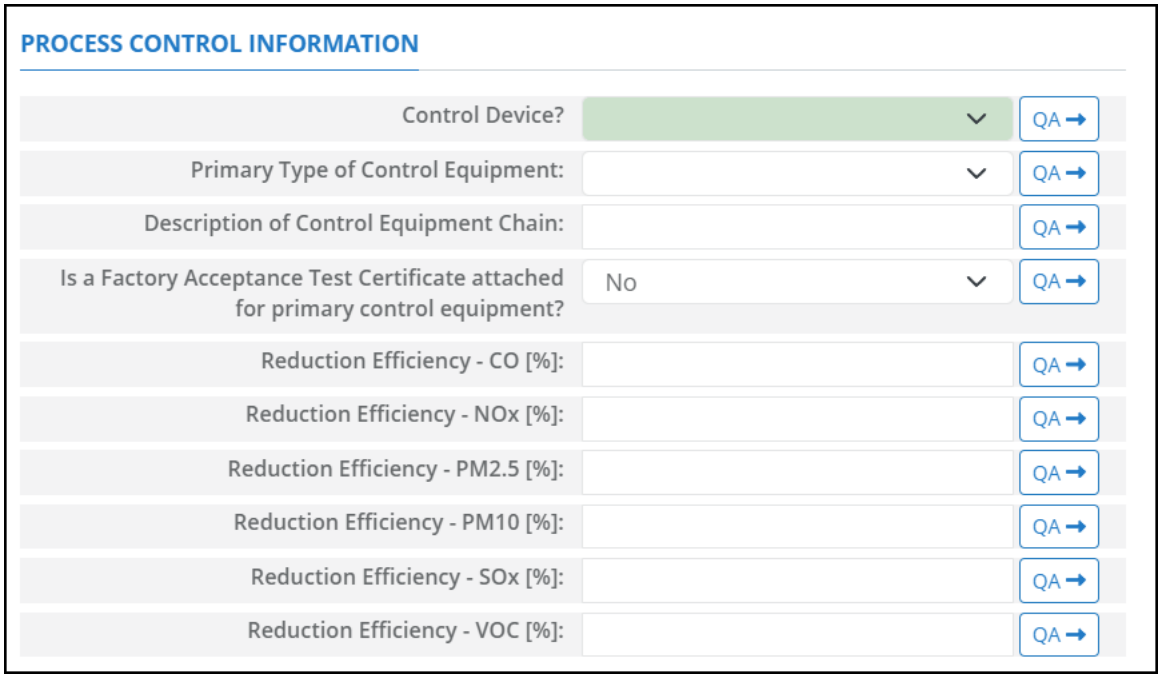


Figure A - 54. NGT-M03R Control Request tab

1. Control Device? – Is end of pipe control technology used with this source? A drop-down [Yes/No] list.
2. Primary Type of Control Equipment: A drop-down list field to specify the primary type of the used control equipment. If the type of is not listed, user can select Other and explain and describe the type in the comments field.
3. Description of Control Equipment Chain: This field allows you to describe the control equipment chain if more than one type of technology is used.
4. Is a Factory Acceptance Test Certificate attached for primary control equipment?: A drop-down [Yes/No] list to specify if functionality certification paperwork is available for the control equipment.
5. Reduction Efficiency – CO [%]: This describes the average reduction of emitted CO using the control technology. If the total reduction of CO using a vapor recovery unit is 65%, enter “65” in the field.
6. Reduction Efficiency – NO_x [%]: This describes the average reduction of emitted NO_x using the control technology. If the total reduction of NO_x using a vapor recovery unit is 65%, enter “65” in the field.
7. Reduction Efficiency – $PM_{2.5}$ [%]: This describes the average reduction of emitted $PM_{2.5}$ using the control technology. If the total reduction of $PM_{2.5}$ using a vapor recovery unit is 65%, enter “65” in the field.
8. Reduction Efficiency – PM_{10} [%]: This describes the average reduction of emitted PM_{10} using the control technology. If the total reduction of PM_{10} using a vapor recovery unit is 65%, enter “65” in the field.
9. Reduction Efficiency – SO_x [%]: This describes the average reduction of emitted SO_x using the control technology. If the total reduction of SO_x using a vapor recovery unit is 65%, enter “65” in the field.

10. Reduction Efficiency – VOC [%]: This describes the average reduction of emitted VOC using the control technology. If the total reduction of VOC using a vapor recovery unit is 65%, enter “65” in the field.

    ***IMPORTANT*:** Supporting equipment documentation may be required by BOEM/BSEE to verify specified control efficiency.

A.37 PNE-M01R (Pneumatic Pumps)

The calculator PNE-M01R Version 3 in OCS AQS calculates the monthly emissions from a pneumatic pump using the following **Data Request** fields in Figure A - 55**Error! Reference source not found.**:

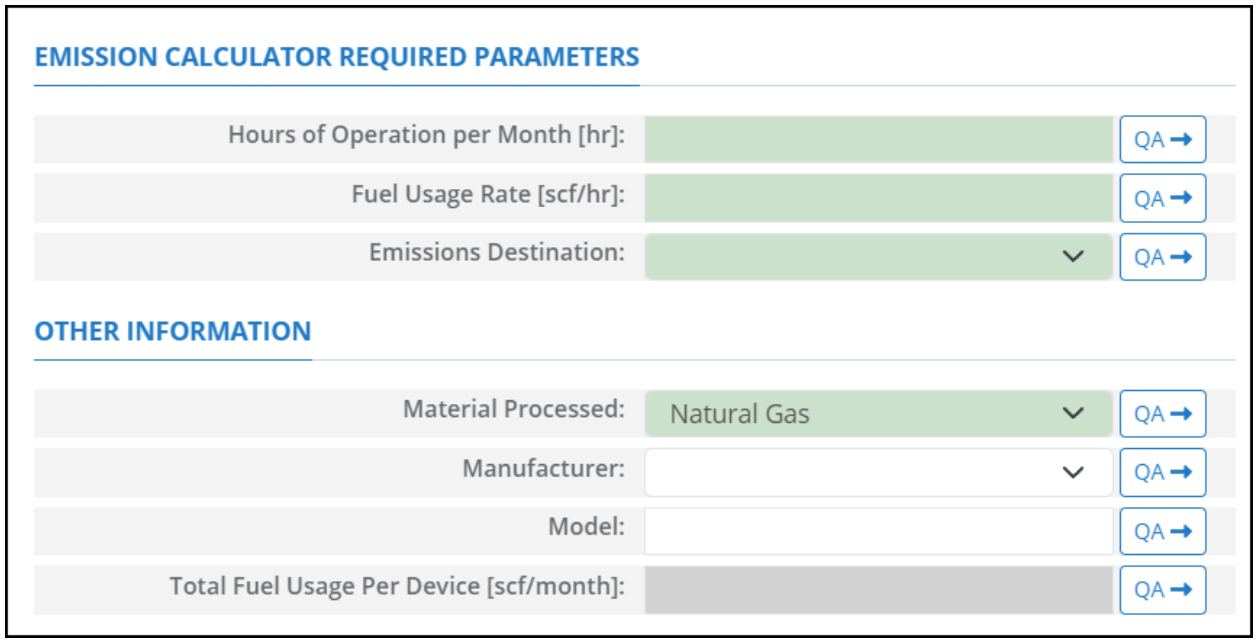


Figure A - 55. PNE-M01R Data Request tab

1. Hours of Operation per Month [hr]: The total monthly hours of operation of the pneumatic pump during the survey period.
2. Fuel Usage Rate [scf/hr]: Average hourly rate of the fuel used during the survey period.
3. Emissions Destination: A drop-down list field to specify the emissions destination – whether they are vented locally, flared locally, vented remotely, flared remotely, or routed to system. Vented locally selection will compute the emissions vented from this unit. Whereas, flared locally, vented remotely, flared remotely, and routed to system selections will zero out emissions from this unit.
4. Material Processed: A drop-down list field to specify the processed material: Natural Gas / Process Gas.
5. Manufacturer: A drop-down list field to specify the pump's manufacturer name.
6. Model: The model of the pump.
7. Total Fuel Usage Per Device [scf/month]: Total gaseous fuel used per device during this survey period. This field is auto-calculated.

The calculator PNE-M01R Version 3 in OCS AQS calculates the monthly emissions with pollution control from a pneumatic pump using the following **Control Request** fields in Figure A - 56**Error! Reference source not found.**:

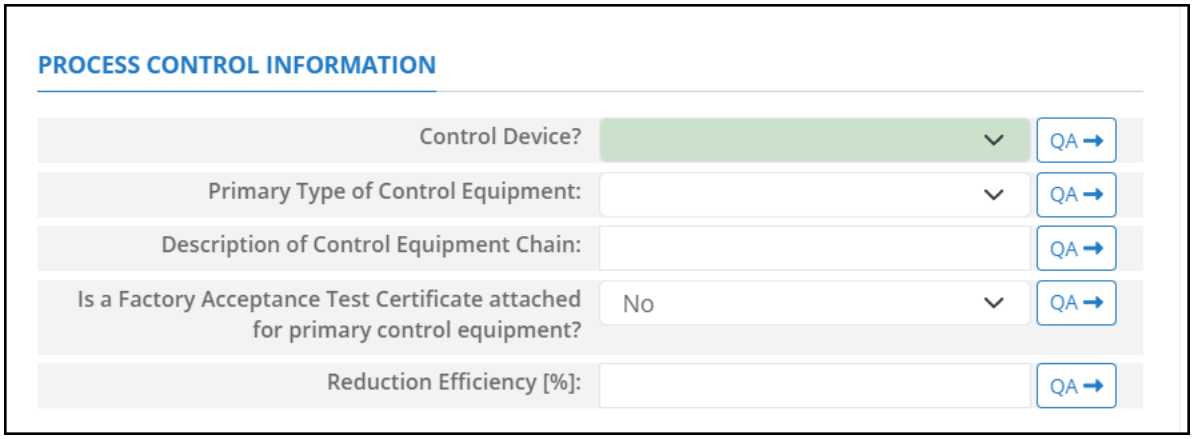


Figure A - 56. PNE-M01R Control Request tab

1. Control Device? – Is end of pipe control technology used with this source? A drop-down [Yes/No] list.
2. Primary Type of Control Equipment: A drop-down list field to specify the primary type of the used control equipment. If the type of is not listed, user can select Other and explain in the comments field.
3. Description of Control Equipment Chain: If more than one type of control technology is used, user can describe the sequence of processing in this field.
4. Is a Factory Acceptance Test Certificate attached for primary control equipment? – A drop-down [Yes/No] list to specify if functionality certification paperwork is available for the control equipment.
5. Reduction Efficiency [%]: This term describes the reduction of all emitted constituents of the emission stream using the control technology. For example, if a Vapor Unit Recovery is employed with a 90% reduction efficiency, the user enters “90” in the “Reduction Efficiency [%]” field. After the calculation is executed, all the emitted constituents will be reduced uniformly by 90%.

***IMPORTANT*:** Supporting equipment documentation may be required by BOEM/BSEE to verify specified control efficiency.

A.38 PRE-M01R (Pneumatic Controllers)

The calculator PRE-M01R Version 3 in OCS AQS calculates the monthly emissions from a pneumatic controller using the following **Data Request** fields in Figure A - 57**Error! Reference source not found.**:

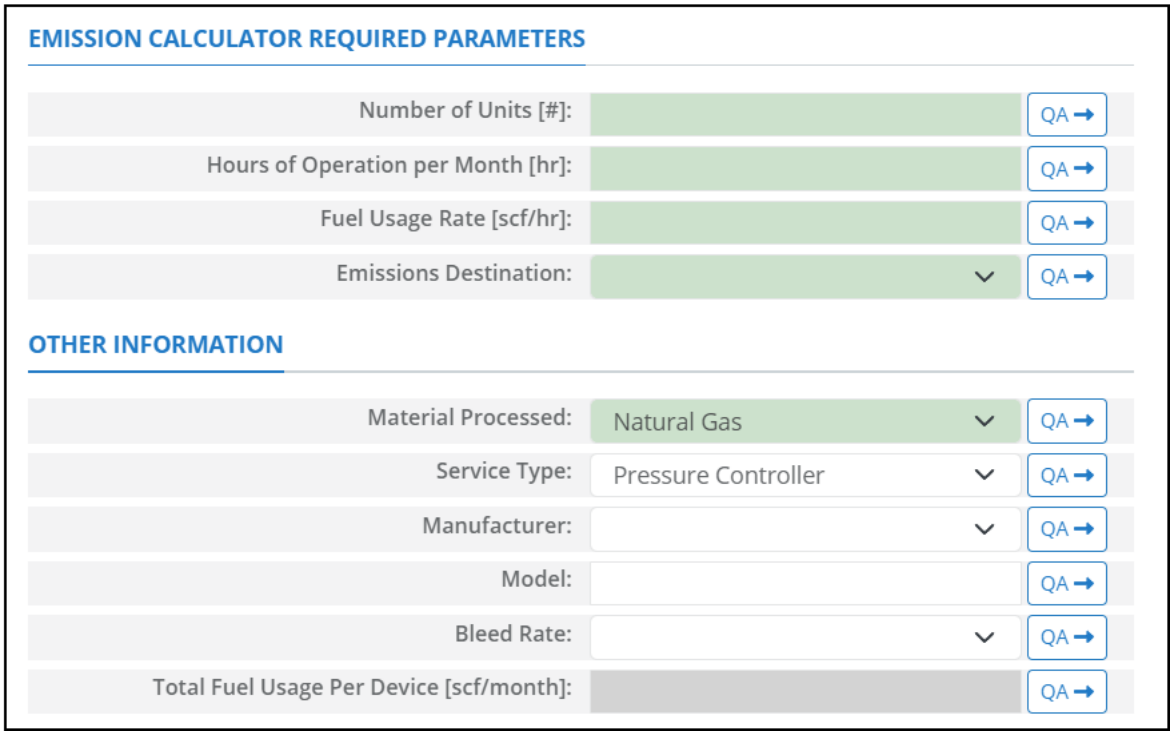


Figure A - 57. PRE-M01R Data Request tab

1. Number of Units [#]: Number of pneumatic controllers in the structure.
2. Hours of Operation per Month [hr]: The total monthly hours of operation of the controller during the survey period.
3. Fuel Usage Rate [scf/hr]: Average hourly rate of the fuel used during the survey period.
4. Emissions Destination: A drop-down list field to specify the emissions destination – whether they are vented locally, flared locally, vented remotely, flared remotely, or routed to system. Vented locally selection will compute the emissions vented from this unit. Whereas, flared locally, vented remotely, flared remotely, and routed to system selections will zero out emissions from this unit.
5. Material Processed: A drop-down list field to specify the processed material: Natural Gas / Process Gas.
6. Service Type: A drop-down list field to specify the service type of the controller: Pressure Controller / Level Controller / Flow Controller / Other.
7. Manufacturer: A drop-down list field to specify the controllers' manufacturer name.
8. Model: The model of the controller.
9. Bleed Rate: A drop-down list field to specify the bleed rate type of the controller: High-bleed (>6scfh) / Intermittent / Low-bleed (<6scfh) / Zero-bleed.
10. Total Fuel Usage Per Device [scf/month]: Total gaseous fuel per device used during this survey period. This field is auto-calculated.

The calculator PRE-M01R Version 3 in OCS AQS calculates the monthly emissions with pollution control from a pneumatic controller using the following **Control Request** fields in Figure A - 58**Error! Reference source not found.**:

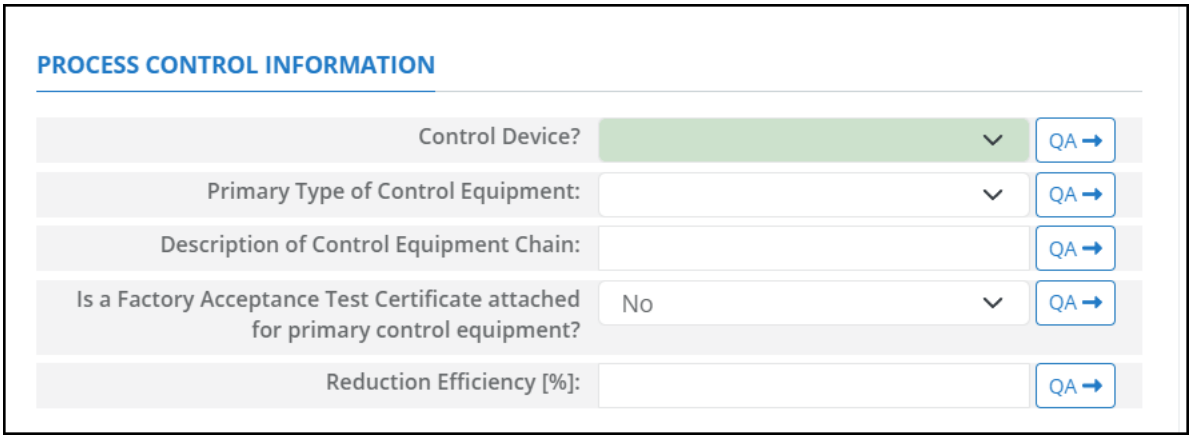


Figure A - 58. PRE-M01R Control Request tab

1. Control Device? – Is end of pipe control technology used with this source? A drop-down [Yes/No] list.
2. Primary Type of Control Equipment: A drop-down list field to specify the primary type of the used control equipment. If the type of is not listed, user can select Other and explain in the comments field.
3. Description of Control Equipment Chain: If more than one type of control technology is used, user can describe the sequence of processing in this field.
4. Is a Factory Acceptance Test Certificate attached for primary control equipment? – A drop-down [Yes/No] list to specify if functionality certification paperwork is available for the control equipment.
5. Reduction Efficiency [%]: This term describes the reduction of all emitted constituents of the emission stream using the control technology. For example, if a Vapor Unit Recovery is employed with a 90% reduction efficiency, the user enters “90” in the “Reduction Efficiency [%]” field. After the calculation is executed, all the emitted constituents will be reduced uniformly by 90%.

   ***IMPORTANT*:** Supporting equipment documentation may be required by BOEM/BSEE to verify specified control efficiency.

A.39 STO-M01R (Storage Tank – Horizontal, Rectangular Tank)

The calculator STO-M01R Version 3 in OCS AQS calculates the monthly emissions from an uninsulated horizontal rectangular storage tank using the following **Data Request** fields in Figure A - 59**Error! Reference source not found.**:

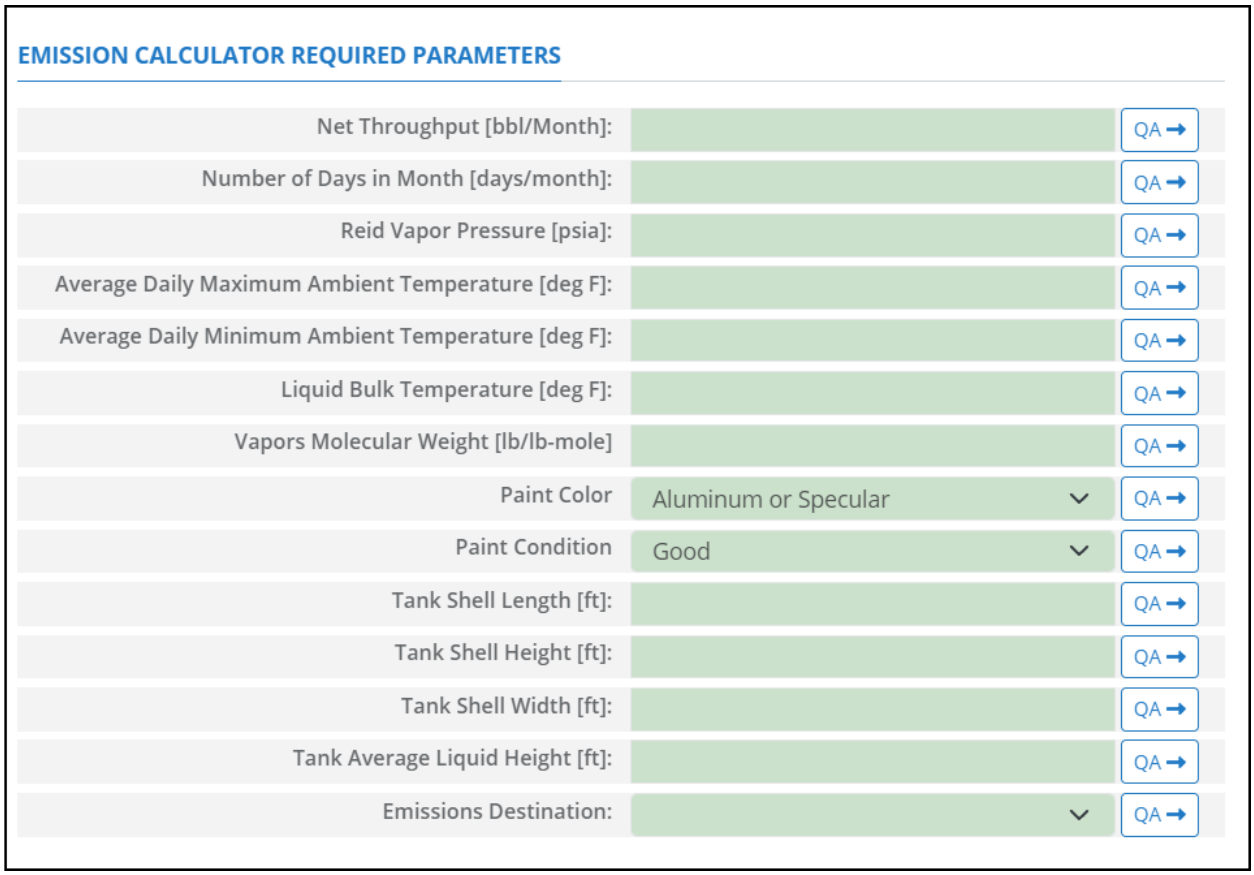


Figure A - 59. STO-M01R Data Request tab

1. Net Throughput [bbl/Month]: The total monthly throughput volumetric flow rate fed to the storage tank during the survey period.
2. Number of Days in Month [days/month]: Number of days in the month of the survey period.
3. Reid Vapor Pressure [psia]: The Reid vapor pressure of the liquid mixture in the storage tank.
4. Average Daily Maximum Ambient Temperature [deg F]: The average daily maximum ambient temperature.
5. Average Daily Minimum Ambient Temperature [deg F]: The average daily minimum ambient temperature.
6. Liquid Bulk Temperature [deg F]: The bulk temperature of the liquid mixture in the storage tank.
7. Vapors Molecular Weight [lb/lb-mol]: The average molecular weight of the vapor phase VOCs mixture in the storage tank.
8. Paint Color: A drop-down list field to specify the exterior paint color of the storage tank: Aluminum or Specular / Aluminum or Diffuse / Grey or Light / Grey or Medium / Red or Primer / White.
9. Paint Condition: A drop-down list field to specify the exterior paint condition of the storage tank: Good / Poor / Average.
10. Tank Shell Length [ft]: The longest horizontal dimension of a horizontal rectangular storage tank.

11. Tank Shell Height [ft]: The vertical height of the rectangular tank.
12. Tank Shell Width [ft]: The horizontal width of a rectangular tank.
13. Tank Average Liquid Height [ft]: The average height of stored liquid during the survey period, measured from the bottom of the storage space to the top of the liquid.
14. Emissions Destination: A drop-down list field to specify the emissions destination – whether they are vented locally, flared locally, vented remotely, flared remotely, or routed to system. Vented locally selection will compute the emissions vented from this unit. Whereas, flared locally, vented remotely, flared remotely, and routed to system selections will zero out emissions from this unit.
15. Material Processed: A drop-down list field to specify the processed material: Distillate Oil / Crude Oil / Condensate / Other.

The calculator STO-M01R Version 3 in OCS AQS calculates the monthly emissions with pollution control from an uninsulated horizontal rectangular storage tank using the following **Control Request** fields in Figure A - 60**Error! Reference source not found.**:

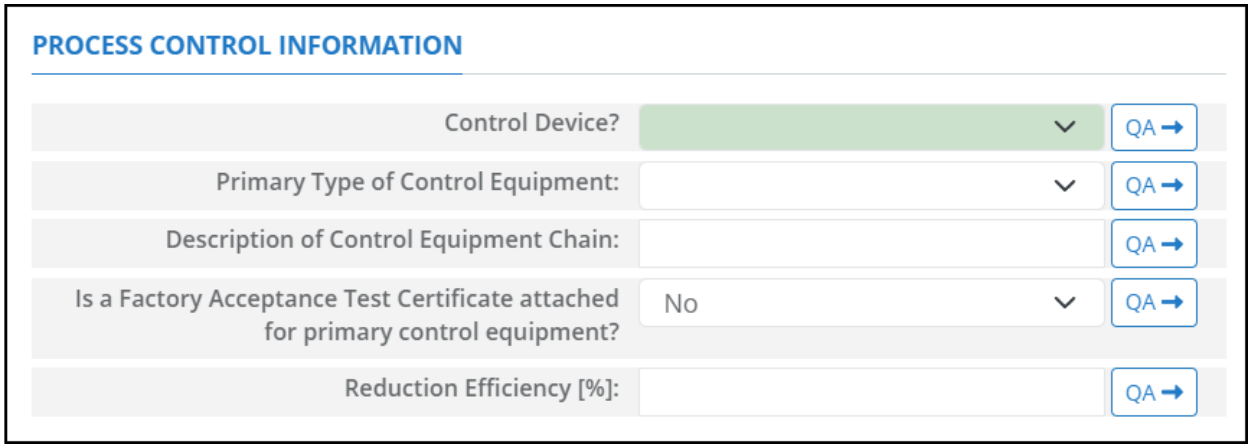


Figure A - 60. STO-M01R Control Request tab

1. Control Device? – Is end of pipe control technology used with this source? A drop-down [Yes/No] list.
2. Primary Type of Control Equipment: A drop-down list field to specify the primary type of the used control equipment. If the type of is not listed, user can select Other and explain in the comments field.
3. Description of Control Equipment Chain: If more than one type of control technology is used, user can describe the sequence of processing in this field.
4. Is a Factory Acceptance Test Certificate attached for primary control equipment? – A drop-down [Yes/No] list to specify if functionality certification paperwork is available for the control equipment.
5. Reduction Efficiency [%]: This term describes the reduction of all emitted constituents of the emission stream using the control technology. For example, if a Vapor Unit Recovery is employed with a 90% reduction efficiency, the user enters “90” in the “Reduction Efficiency [%]” field. After the calculation is executed, all the emitted constituents will be reduced uniformly by 90%.

***IMPORTANT*:** Supporting equipment documentation may be required by BOEM/BSEE to verify specified control efficiency.

A.40 STO-M02R (Storage Tank – Vertical, Rectangular Tank)

The calculator STO-M02R Version 3 in OCS AQS calculates the monthly emissions from uninsulated vertical rectangular storage tank using the following **Data Request** fields in Figure A - 61**Error! Reference source not found.**:

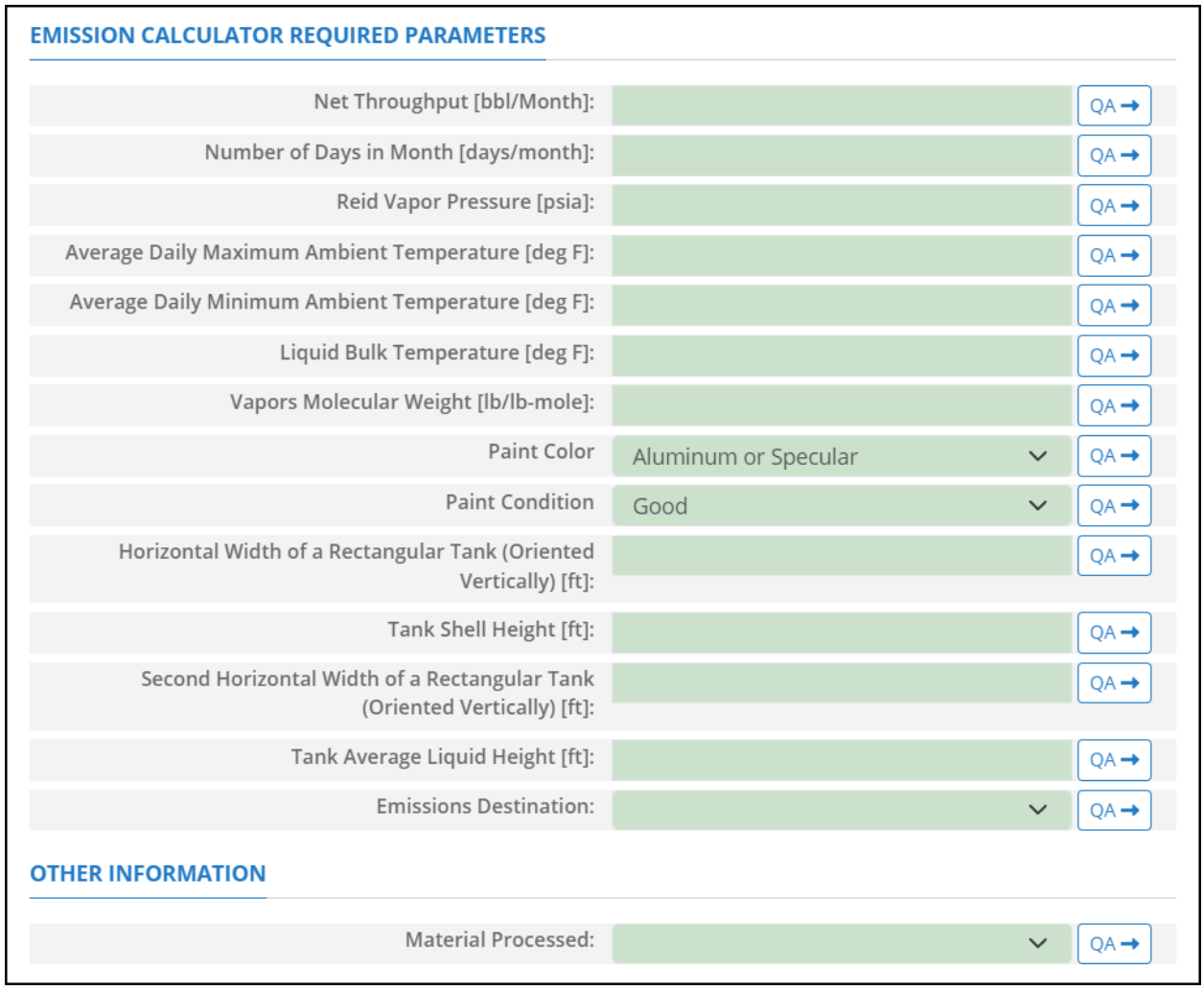


Figure A - 61. STO-M02R Data Request tab

1. Monthly Net Throughput [bbl]: The total monthly throughput volumetric flow rate in the storage tank during the survey period.
2. Number of Days in Month [days/month]: Number of days in the month of the survey period.
3. Reid Vapor Pressure [psia]: The Reid vapor pressure of the liquid mixture in the storage tank.
4. Average Daily Maximum Ambient Temperature [deg F]: The average daily maximum ambient temperature.
5. Average Daily Minimum Ambient Temperature [deg F]: The average daily minimum ambient temperature.
6. Liquid Bulk Temperature [deg F]: The bulk temperature of the liquid mixture in the storage tank.
7. Vapors Molecular Weight [lb/lb-mol]: The average molecular weight of the vapor phase of the VOCs mixture in the storage tank.

8. Paint Color: A drop-down list field to specify the exterior paint color of the storage tank: Aluminum or Specular / Aluminum or Diffuse / Grey or Light / Grey or Medium / Red or Primer / White.
9. Paint Condition: A drop-down list field to specify the exterior paint condition of the storage tank: Good / Poor / Average.
10. Horizontal Width of a Rectangular Tank (Oriented Vertically) [ft]: The first horizontal width of a rectangular tank.
11. Tank Shell Height [ft]: The vertical height of the rectangular tank.
12. Second Horizontal Width of a Rectangular Tank (Oriented Vertically) [ft]: The second horizontal width of a rectangular tank.
13. Tank Average Liquid Height [ft]: The average height of stored liquid during the survey period, measured from the bottom of the storage space to the top of the liquid.
14. Emissions Destination: A drop-down list field to specify the emissions destination – whether they are vented locally, flared locally, vented remotely, flared remotely, or routed to system. Vented locally selection will compute the emissions vented from this unit. Whereas, flared locally, vented remotely, flared remotely, and routed to system selections will zero out emissions from this unit.
15. Material Processed: A drop-down list field to specify the processed material: Distillate Oil (Diesel) / Crude Oil / Condensate / Other.

The calculator STO-M02R Version 3 in OCS AQS calculates the monthly emissions with pollution control from an uninsulated vertical rectangular storage tank using the following **Control Request** fields in Figure A - 62**Error! Reference source not found.**:

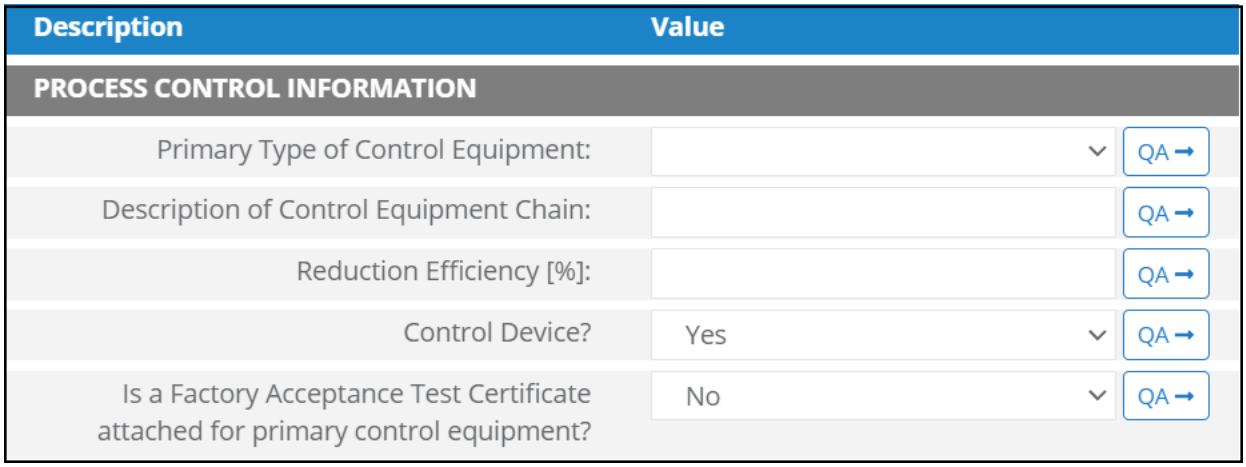


Figure A - 62. STO-M02R Control Request tab

1. Control Device? – Is end of pipe control technology used with this source? A drop-down [Yes/No] list.
2. Primary Type of Control Equipment: A drop-down list field to specify the primary type of the used control equipment. If the type of is not listed, user can select Other and explain in the comments field.
3. Description of Control Equipment Chain: If more than one type of control technology is used, user can describe the sequence of processing in this field.
4. Is a Factory Acceptance Test Certificate attached for primary control equipment? – A drop-down [Yes/No] list to specify if functionality certification paperwork is available for the control equipment.
5. Reduction Efficiency [%]: This term describes the reduction of all emitted constituents of the emission stream using the control technology. For example, if a Vapor Unit Recovery is employed with a 90% reduction efficiency, the user enters “90” in the “Reduction Efficiency [%]” field. After the calculation is executed, all the emitted constituents will be reduced uniformly by 90%.

   ***IMPORTANT*:** Supporting equipment documentation may be required by BOEM/BSEE to verify specified control efficiency.

A.41 STO-M03R (Storage Tank – Horizontal, Cylindrical Tank)

The calculator STO-M03R Version 3 in OCS AQS calculates the monthly emissions from an uninsulated horizontal cylindrical storage tank using the following **Data Request** fields in Figure A - 63**Error! Reference source not found.**:

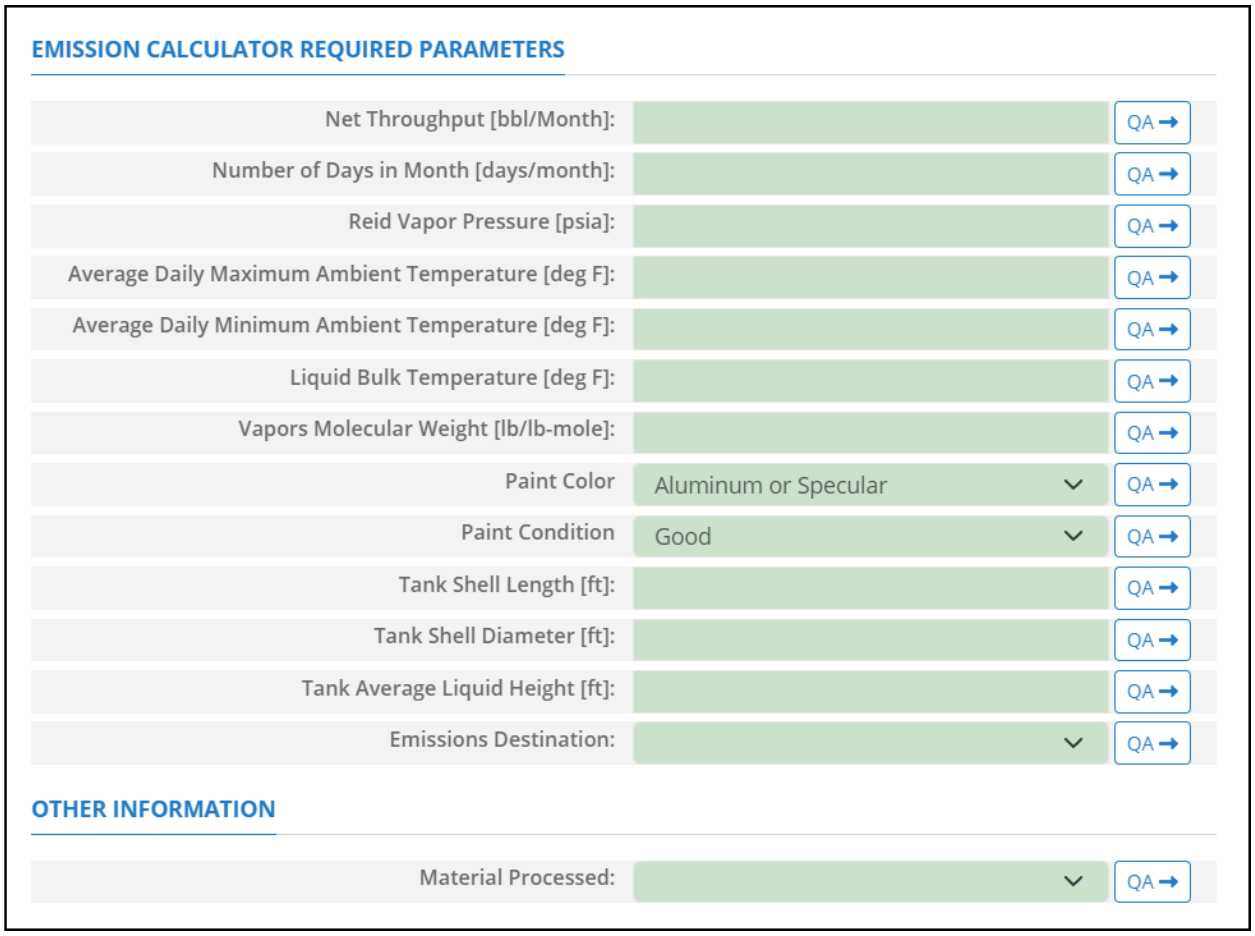


Figure A - 63. STO-M03R Data Request tab

1. Net Throughput [bbl/Month]: The total monthly throughput volumetric flow rate fed to the storage tank during the survey period.
2. Number of Days in Month [days/month]: Number of days in the month of the survey period.
3. Reid Vapor Pressure [psia]: The Reid vapor pressure of the liquid mixture in the storage tank.
4. Average Daily Maximum Ambient Temperature [deg F]: The average daily maximum ambient temperature.
5. Average Daily Minimum Ambient Temperature [deg F]: The average daily minimum ambient temperature.
6. Liquid Bulk Temperature [deg F]: The bulk temperature of the liquid mixture in the storage tank.
7. Vapors Molecular Weight [lb/lb-mol]: The average molecular weight of the vapor phase of the VOCs mixture in the storage tank.
8. Paint Color: A drop-down list field to specify the exterior paint color of the storage tank: Aluminum or Specular / Aluminum or Diffuse / Grey or Light / Grey or Medium / Red or Primer / White.
9. Paint Condition: A drop-down list field to specify the exterior paint condition of the storage tank: Good / Poor / Average.

10. Tank Shell Length [ft]: The shell horizontal length of the horizontal cylindrical storage tank.
11. Tank Shell Diameter [ft]: The shell diameter of the cylindrical storage tank.
12. Tank Average Liquid Height [ft]: The average height of stored liquid during the survey period, measured from the bottom of the storage space to the top of the liquid.
13. Emissions Destination: A drop-down list field to specify the emissions destination – whether they are vented locally, flared locally, vented remotely, flared remotely, or routed to system. Vented locally selection will compute the emissions vented from this unit. Whereas, flared locally, vented remotely, flared remotely, and routed to system selections will zero out emissions from this unit.
16. Material Processed: A drop-down list field to specify the processed material: Distillate Oil (Diesel) /Crude Oil / Condensate / Other.

The calculator STO-M03R Version 3 in OCS AQS calculates the monthly emissions with pollution control from an uninsulated horizonal cylindrical storage tank using the following **Control Request** fields in Figure A - 64**Error! Reference source not found.**:

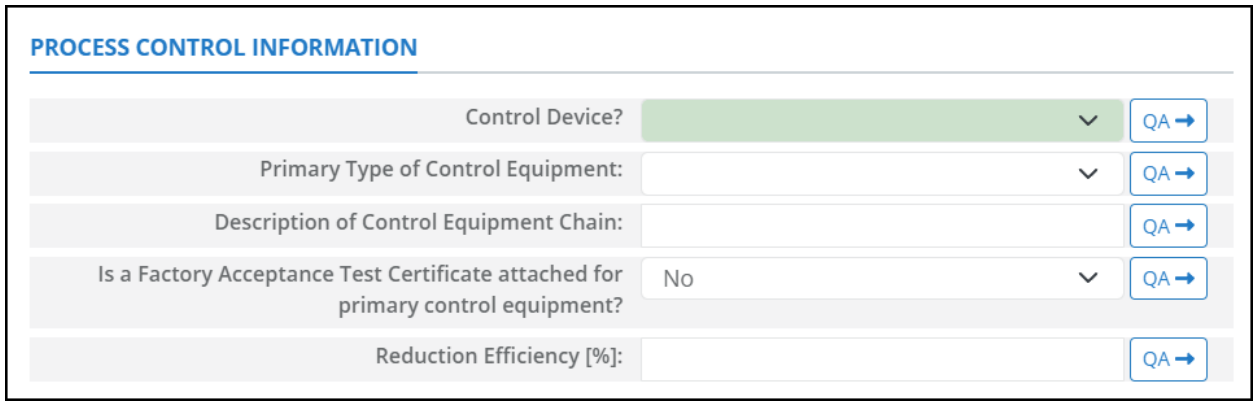


Figure A - 64. STO-M03R Control Request tab

1. Control Device? – Is end of pipe control technology used with this source? A drop-down [Yes/No] list.
2. Primary Type of Control Equipment: A drop-down list field to specify the primary type of the used control equipment. If the type of is not listed, user can select Other and explain in the comments field.
3. Description of Control Equipment Chain: If more than one type of control technology is used, user can describe the sequence of processing in this field.
4. Is a Factory Acceptance Test Certificate attached for primary control equipment? – A drop-down [Yes/No] list to specify if functionality certification paperwork is available for the control equipment.
5. Reduction Efficiency [%]: This term describes the reduction of all emitted constituents of the emission stream using the control technology. For example, if a Vapor Unit Recovery is employed with a 90% reduction efficiency, the user enters “90” in the “Reduction Efficiency [%]” field. After the calculation is executed, all the emitted constituents will be reduced uniformly by 90%.

***IMPORTANT*:** Supporting equipment documentation may be required by BOEM/BSEE to verify specified control efficiency.

A.42 STO-M04R (Storage Tank – Vertical, Cylindrical Tank)

The calculator STO-M04R Version 3 in OCS AQS calculates the monthly emissions from an uninsulated vertical cylindrical storage tank using the following **Data Request** fields in Figure A - 65**Error! Reference source not found.**:

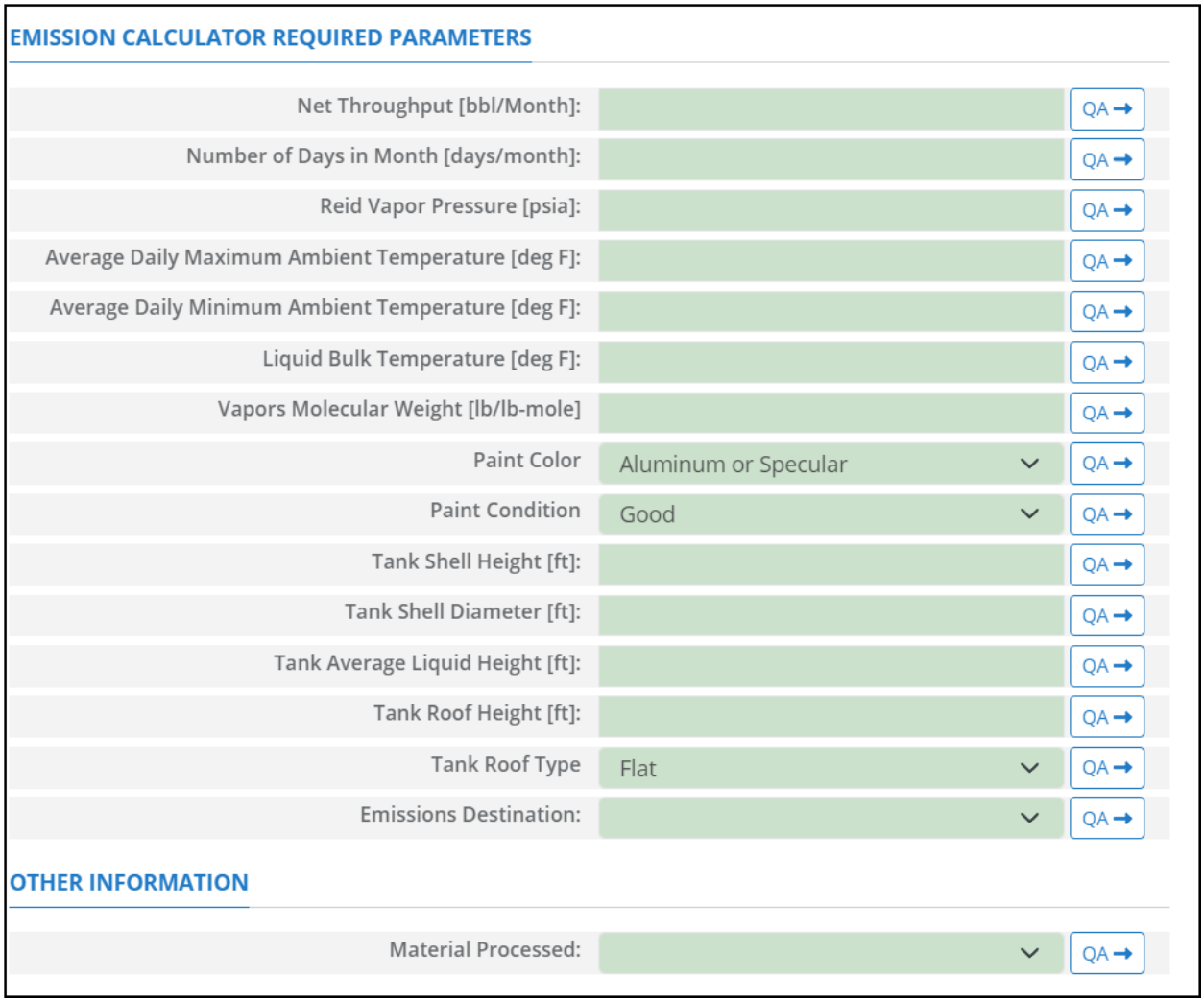


Figure A - 65. STO-M04R Data Request tab

1. Net Throughput [bbl/Month]: The total monthly throughput volumetric flow rate fed to the storage tank during the survey period.
2. Number of Days in Month [days/month]: Number of days in the month of the survey period.
3. Reid Vapor Pressure [psia]: The Reid vapor pressure of the liquid mixture in the storage tank.
4. Average Daily Maximum Ambient Temperature [deg F]: The average daily maximum ambient temperature.
5. Average Daily Minimum Ambient Temperature [deg F]: The average daily minimum ambient temperature.
6. Liquid Bulk Temperature [deg F]: The bulk temperature of the liquid mixture in the storage tank.
7. Vapors Molecular Weight [lb/lb-mol]: The average molecular weight of the vapor phase of the VOCs mixture in the storage tank.

8. Paint Color: A drop-down list field to specify the exterior paint color of the storage tank: Aluminum or Specular / Aluminum or Diffuse / Grey or Light / Grey or Medium / Red or Primer / White.
9. Paint Condition: A drop-down list field to specify the exterior paint condition of the storage tank: Good / Poor / Average.
10. Tank Shell Height [ft]: The shell vertical height of the vertical cylindrical storage tank.
11. Tank Shell Diameter [ft]: The shell diameter of the cylindrical storage tank.
12. Tank Average Liquid Height [ft]: The average height of stored liquid during the survey period, measured from the bottom of the storage space to the top of the liquid.
13. Tank Roof Height [ft]: The height of the tank fixed roof measured from the top of the tank shell to the highest point of the roof.
14. Tank Roof Type: A drop-down list field to specify the tank roof type: Cone or Peaked / Dome / Flat.
15. Emissions Destination: A drop-down list field to specify the emissions destination – whether they are vented locally, flared locally, vented remotely, flared remotely, or routed to system. Vented locally selection will compute the emissions vented from this unit. Whereas, flared locally, vented remotely, flared remotely, and routed to system selections will zero out emissions from this unit.
16. Material Processed: A drop-down list field to specify the processed material: Distillate Oil (Diesel) / Crude Oil / Condensate / Other.

The calculator STO-M04R Version 3 in OCS AQS calculates the monthly emissions with pollution control from an uninsulated vertical cylindrical storage tank using the following **Control Request** fields in Figure A - 66**Error! Reference source not found.**:

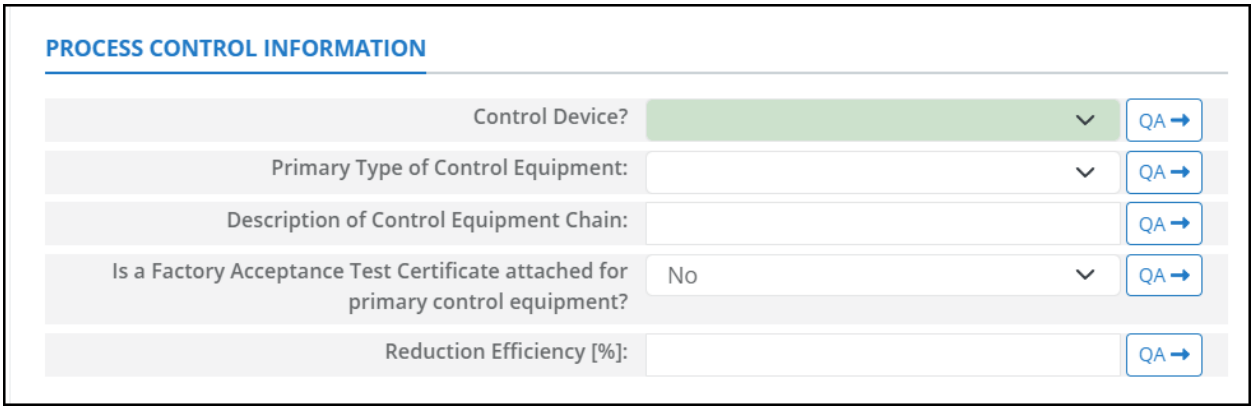


Figure A - 66. STO-M04R Control Request tab

1. Control Device? – Is end of pipe control technology used with this source? A drop-down [Yes/No] list.
2. Primary Type of Control Equipment: A drop-down list field to specify the primary type of the used control equipment. If the type of is not listed, user can select Other and explain in the comments field.
3. Description of Control Equipment Chain: If more than one type of control technology is used, user can describe the sequence of processing in this field.
4. Is a Factory Acceptance Test Certificate attached for primary control equipment? – A drop-down [Yes/No] list to specify if functionality certification paperwork is available for the control equipment.
5. Reduction Efficiency [%]: This term describes the reduction of all emitted constituents of the emission stream using the control technology. For example, if a Vapor Unit Recovery is employed with a 90% reduction efficiency, the user enters “90” in the “Reduction Efficiency [%]” field. After the calculation is executed, all the emitted constituents will be reduced uniformly by 90%.

   ***IMPORTANT*:** Supporting equipment documentation may be required by BOEM/BSEE to verify specified control efficiency.

A.43 VEN-M01R (Cold Vent)

The calculator VEN-M01R Version 5 in OCS AQS calculates the monthly emissions from a cold vent using the following **Data Request** fields in Figure A - 67**Error! Reference source not found.**:

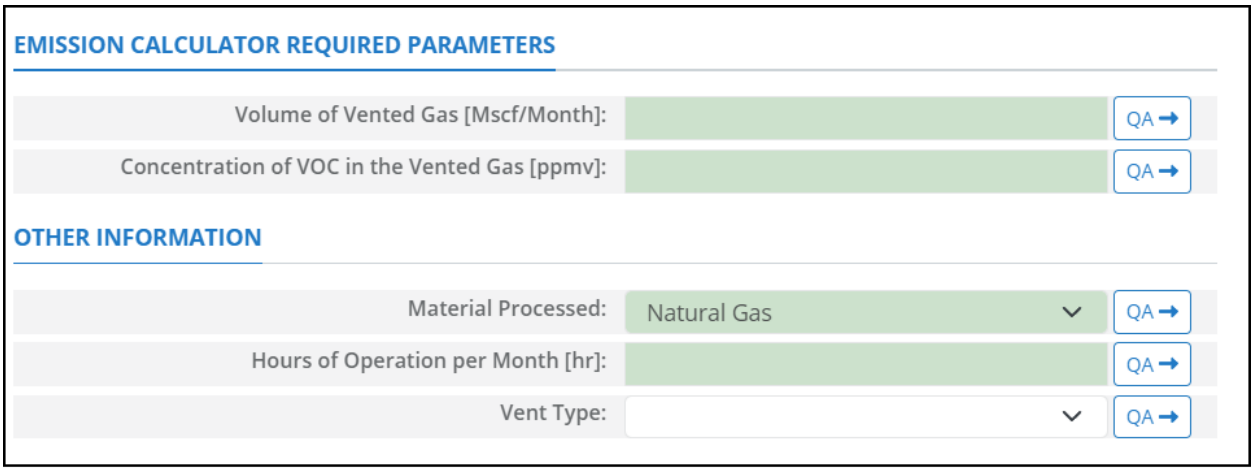


Figure A - 67. VEN-M01R Data Request tab

1. Volume of vented Gas [Mscf/Month]: The total volume of gas vented during the survey period, including periods of upset venting, volume adjusted to standard temperature and pressure). The GOADS volume vented should match the Office of Natural Resources Revenue (ONRR)'s volume vented reported on the Oil and Gas Operations Report (OGOR).
2. Concentration of VOC in the Vented Gas [ppmv]: The concentration of volatile organic compounds (VOC) in the vented gas.
3. Emissions Destination: A drop-down list field to specify the emissions destination – whether they are vented locally, flared locally, vented remotely, flared remotely, or routed to system. Vented locally selection will compute the emissions vented from this unit. Whereas, flared locally, vented remotely, flared remotely, and routed to system selections will zero out emissions from this unit.
4. Material Processed: A drop-down list field to specify the processed material: Gas/ Natural Gas / Process Gas / Exhaust gas.
5. Hours of Operation per Month [hr]: The total monthly hours of operation of the cold vent during the survey period.
6. Vent Type: A drop-down list field to specify the type of venting pressure: High Pressure / Low Pressure.

Appendix B – Lease Operation Calculator Descriptions

B.1 C1C2-DRILL-LO (Self-Propelled C1/C2 Vessel – US Flagged)

The calculator C1C2-DRILL-LO Version 2 in OCS AQS calculates the emissions from a US flagged self-propelled C1/C2 vessel using the following **Data Request** fields in Figure B - 1 **Error! Reference source not found.**:

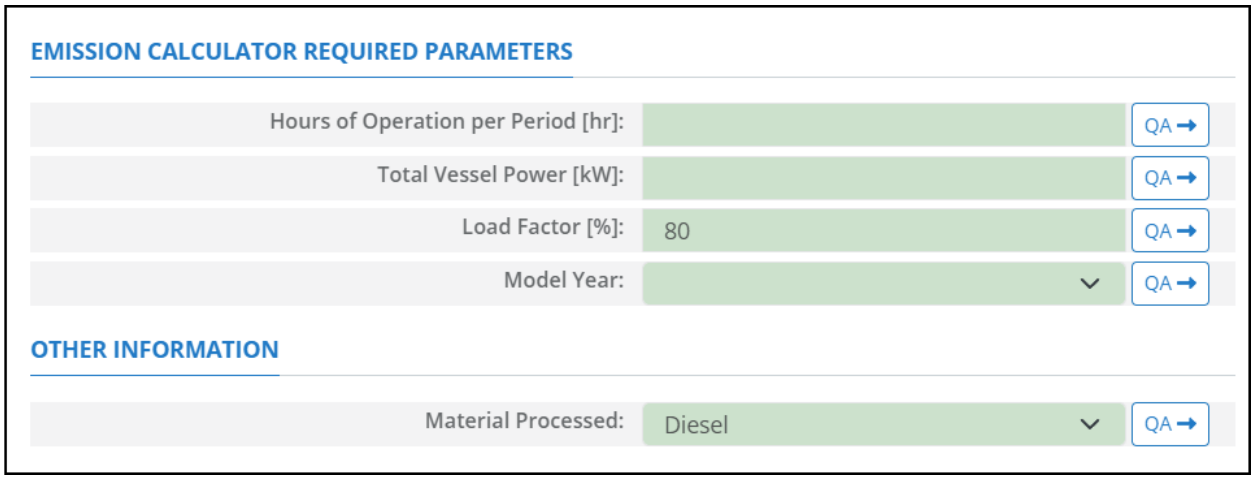


Figure B - 1. C1C2-DRILL-LO Data Request tab

1. Hours of Operation per Period [hr]: The total hours of operation of the self-propelled vessel during the survey period.
2. Total Vessel Power[kW]: The total operating vessel power (totaling individual propulsion engines).
3. Load Factor [%]: The total load factor percentage of the vessel's engine. Default value is 80 %.
4. Model Year: The engine's manufacture year.
5. Material Processed: A drop-down list field to specify the processed material: Diesel / Distillate Oil. Default selection is Diesel.

B.2 C1C2-DRILL-LO-F (Self-Propelled C1/C2 Vessel – Foreign Flagged)

The calculator C1C2-DRILL-LO Version 2 in OCS AQS calculates the emissions from a foreign-flagged, self-propelled C1/C2 vessel using the following **Data Request** fields in Figure B - 2**Error! Reference source not found.**:

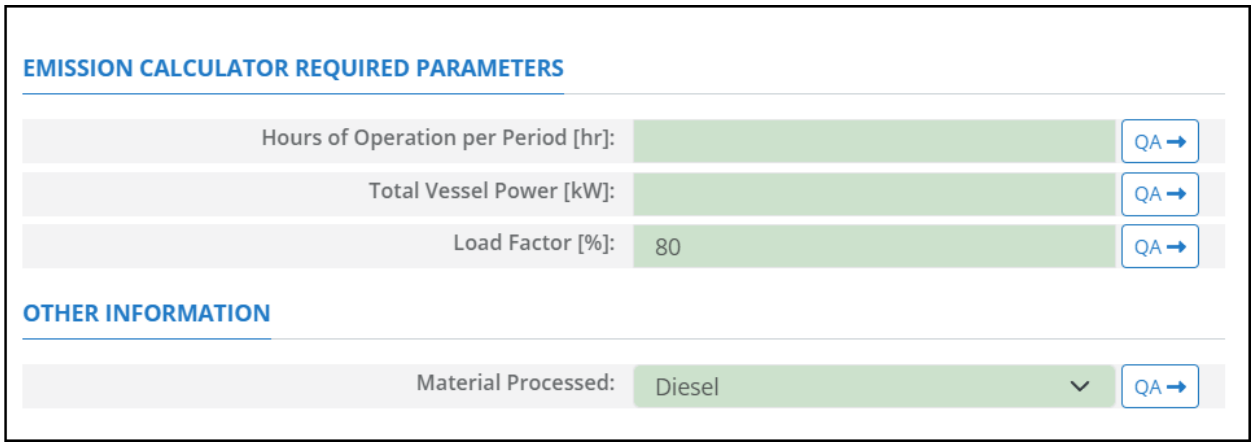


Figure B - 2. C1C2-DRILL-LO-F Data Request tab

1. Hours of Operation per Period [hr]: The total hours of operation of the self-propelled vessel during the survey period.
2. Total Vessel Power[kW]: The total operating vessel power (totaling individual propulsion engines).
3. Load Factor [%]: The total load factor percentage of the vessel's engine. Default value is 80 %.
4. Material Processed: A drop-down list field to specify the processed material: Diesel / Distillate Oil. Default selection is Diesel.

B.3 DIE-M02R-LO (Diesel Engines Where Max HP < 600)

The calculator DIE-M02R-LO Version 3 in OCS AQS calculates the emissions from a diesel engine where Max HP < 600 using the following **Data Request** fields in Figure B - 3:

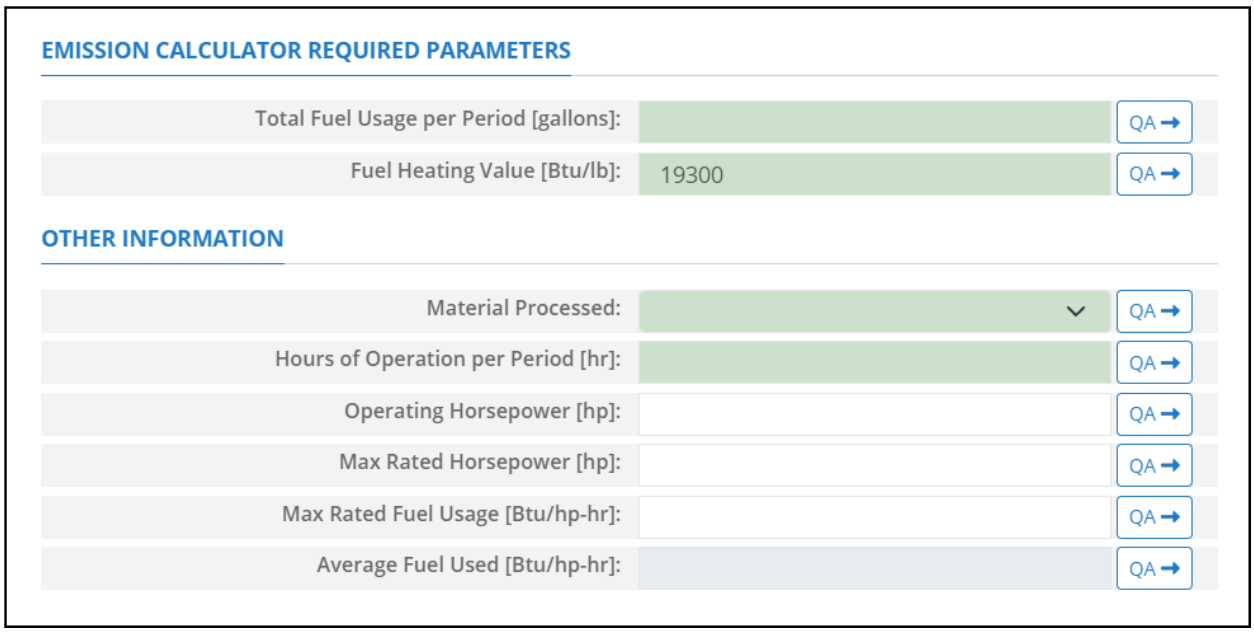


Figure B - 3. DIE-M02R-LO Data Request tab

1. Total Fuel Usage [gallons]: Total rate of the diesel fuel used during the survey period.
2. Fuel Heating Value [Btu/lb]: The amount of heat released during the combustion of a specified amount of diesel fuel. Default value is 19300 Btu/lb.
3. Material Processed: A drop-down list field to specify the processed material: Diesel / Distillate Oil.
4. Hours of Operation per Period [hr]: The total hours of operation of the diesel engine during the survey period.
5. Operating Horsepower [hp]: The operating horsepower of the diesel engine.
6. Max Rated Horsepower [hp]: The manufacturer's maximum rated horsepower of the diesel engine.
7. Max Rated Fuel Usage [Btu/hp-hr]: The maximum hourly usage rate of the diesel fuel.
8. Average Fuel Used [Btu/hp-hr]: The average hourly rate of diesel fuel used during the survey period. This field is auto-calculated.

B.4 DIE-M03R-DG (Natural Gas Production Well Drilling – Diesel Engine)

The calculator DIE-M03R-DG Version 3 in OCS AQS calculates the emissions from a diesel engine used for natural gas production well drilling using the following **Data Request** fields in Figure B - 4**Error! Reference source not found.**:

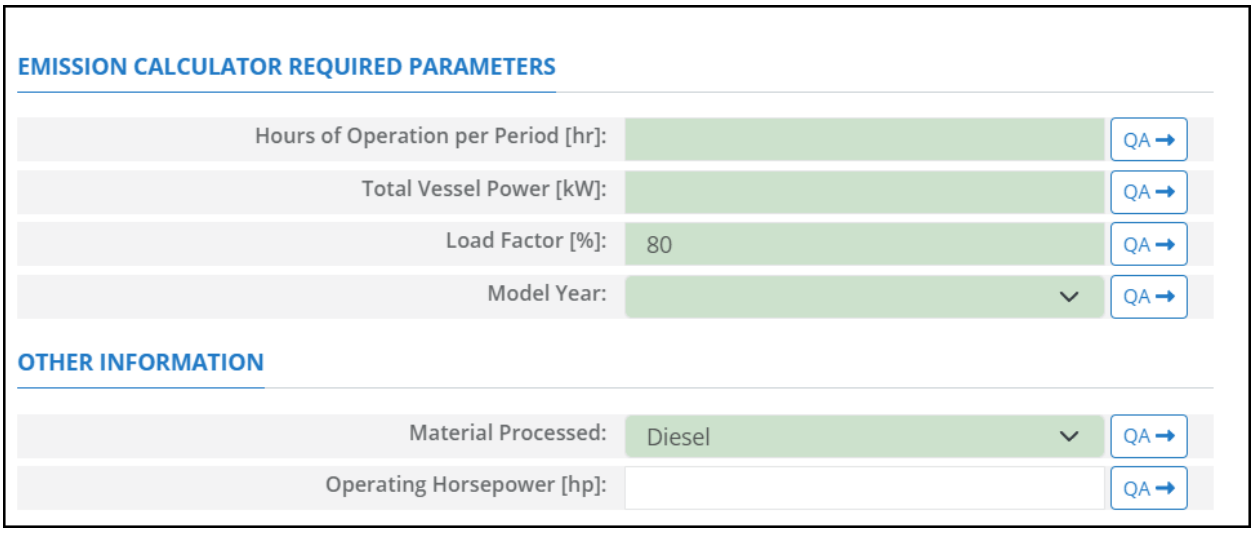


Figure B - 4. DIE-M03R-DG Data Request tab

1. Hours of Operation per Period [hr]: The total hours of operation of the well drilling rig during the survey period.
2. Total Vessel Power[kW]: The total operating vessel power (totaling individual propulsion engines).
3. Load Factor [%]: The total load factor percentage of the drilling rig's engine. Default value is 80 %.
4. Model Year: The engine's manufacture year.
5. Material Processed: A drop-down list field to specify the processed material: Diesel / Distillate Oil. Default selection is Diesel.
6. Operating Horsepower [hp]: The operation horsepower of the drilling rig's engine.

B.5 DIE-M03R-DO (Crude Oil Production Well Drilling – Diesel Engine)

The calculator DIE-M03R-DO Version 3 in OCS AQS calculates the emissions from a diesel engine used for crude oil production well drilling using the following **Data Request** fields in Figure B - 5**Error! Reference source not found.**:

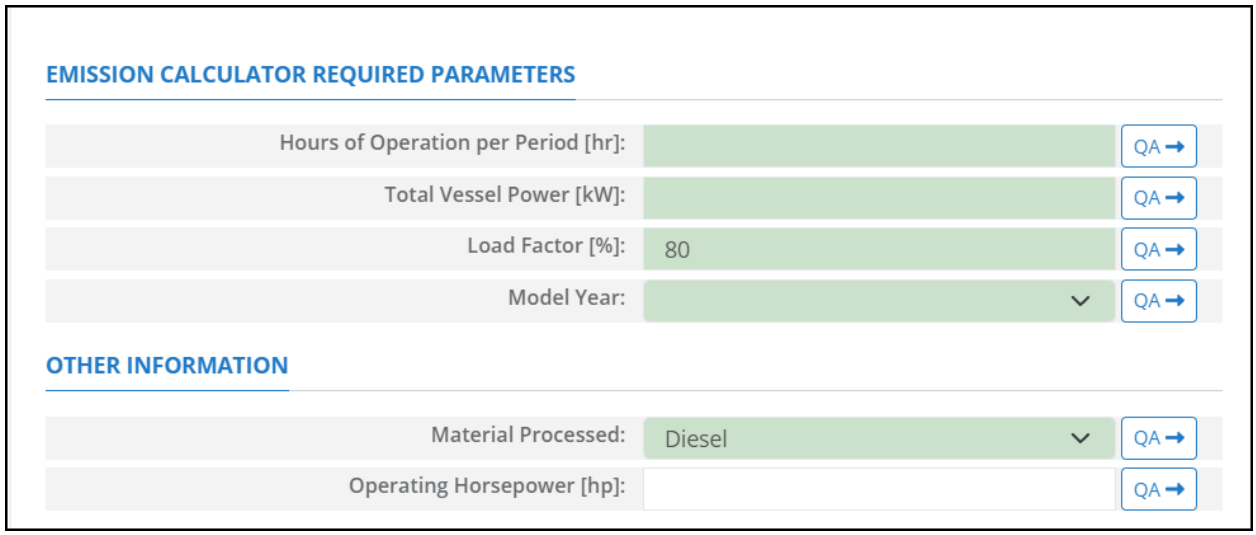


Figure B - 5. DIE-M03R-DO Data Request tab

1. Hours of Operation per Period [hr]: The total hours of operation of the well drilling rig during the survey period.
2. Total Vessel Power[kW]: The total operating vessel power (totaling individual propulsion engines).
3. Load Factor [%]: The total load factor percentage of the drilling rig's engine. Default value is 80 %.
4. Model Year: The engine's manufacture year.
5. Material Processed: A drop-down list field to specify the processed material: Diesel / Distillate Oil. Default selection is Diesel.
6. Operating Horsepower [hp]: The operation horsepower of the drilling rig's engine

B.6 DIE-M03R-LO (Diesel Engines Where Max HP >= 600)

The calculator DIE-M03R-LO Version 3 in OCS AQS calculates the emissions from a diesel engine where Max HP >= 600 using the following **Data Request** fields in Figure B - 6:

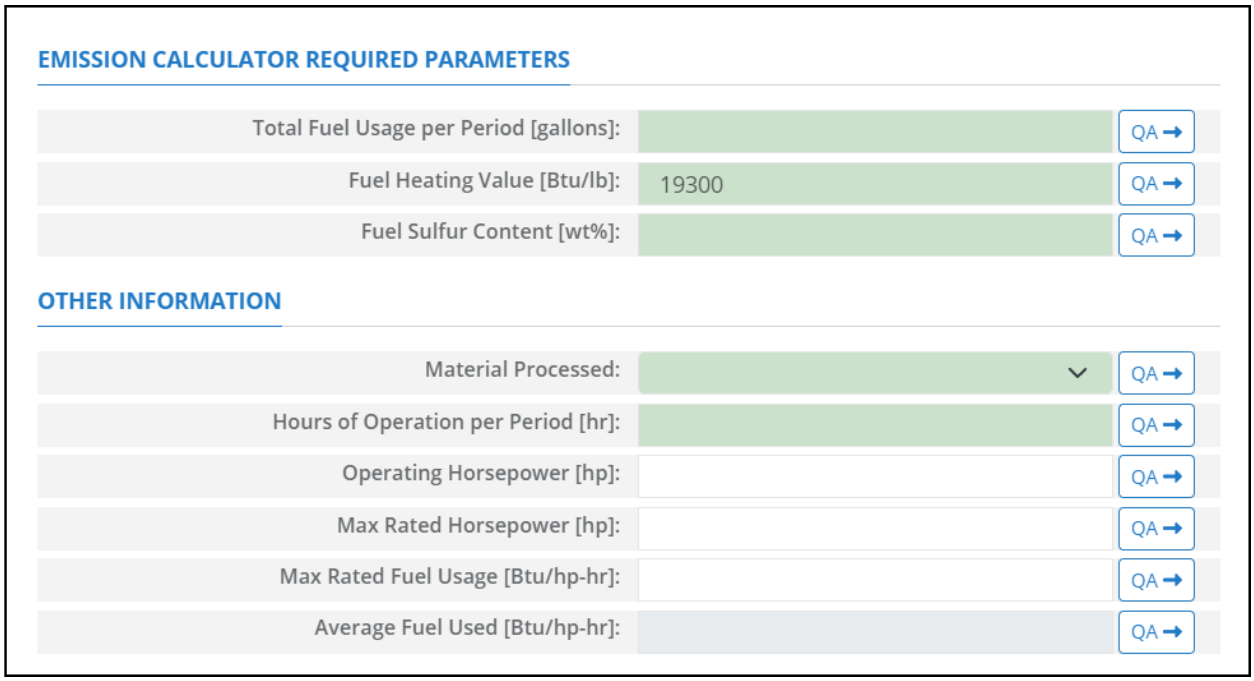


Figure B - 6. DIE-M03R-LO Data Request tab

1. Total Fuel Usage [gallons]: Total rate of the diesel fuel used during the survey period.
2. Fuel Heating Value [Btu/lb]: The amount of heat released during the combustion of a specified amount of diesel fuel. Default value is 19300 Btu/lb.
3. Fuel Sulfur Content [wt%]: The weight percentage concentration of the sulfur content in the used diesel fuel. For example, if the fuel is 1.0% sulfur, then user enters 1 and not 0.01.
4. Material Processed: A drop-down list field to specify the processed material: Diesel / Distillate Oil.
5. Hours of Operation per Period [hr]: The total hours of operation of the diesel engine during the survey period.
6. Operating Horsepower [hp]: The operating horsepower of the diesel engine.
7. Max Rated Horsepower [hp]: The manufacturer's maximum rated horsepower of the diesel engine.
8. Max Rated Fuel Usage [Btu/hp-hr]: The maximum hourly usage rate of the diesel fuel.
9. Average Fuel Used [Btu/hp-hr]: The average hourly rate of diesel fuel used during the survey period. This field is auto-calculated.

B.7 FLA-M01-LO (Combustion Flare)

The calculator FLA-M01-LO Version 1 in OCS AQS calculates the monthly emissions from a lease operation combustion flare using the following **Data Request** fields in **Error! Reference source not**

found.:

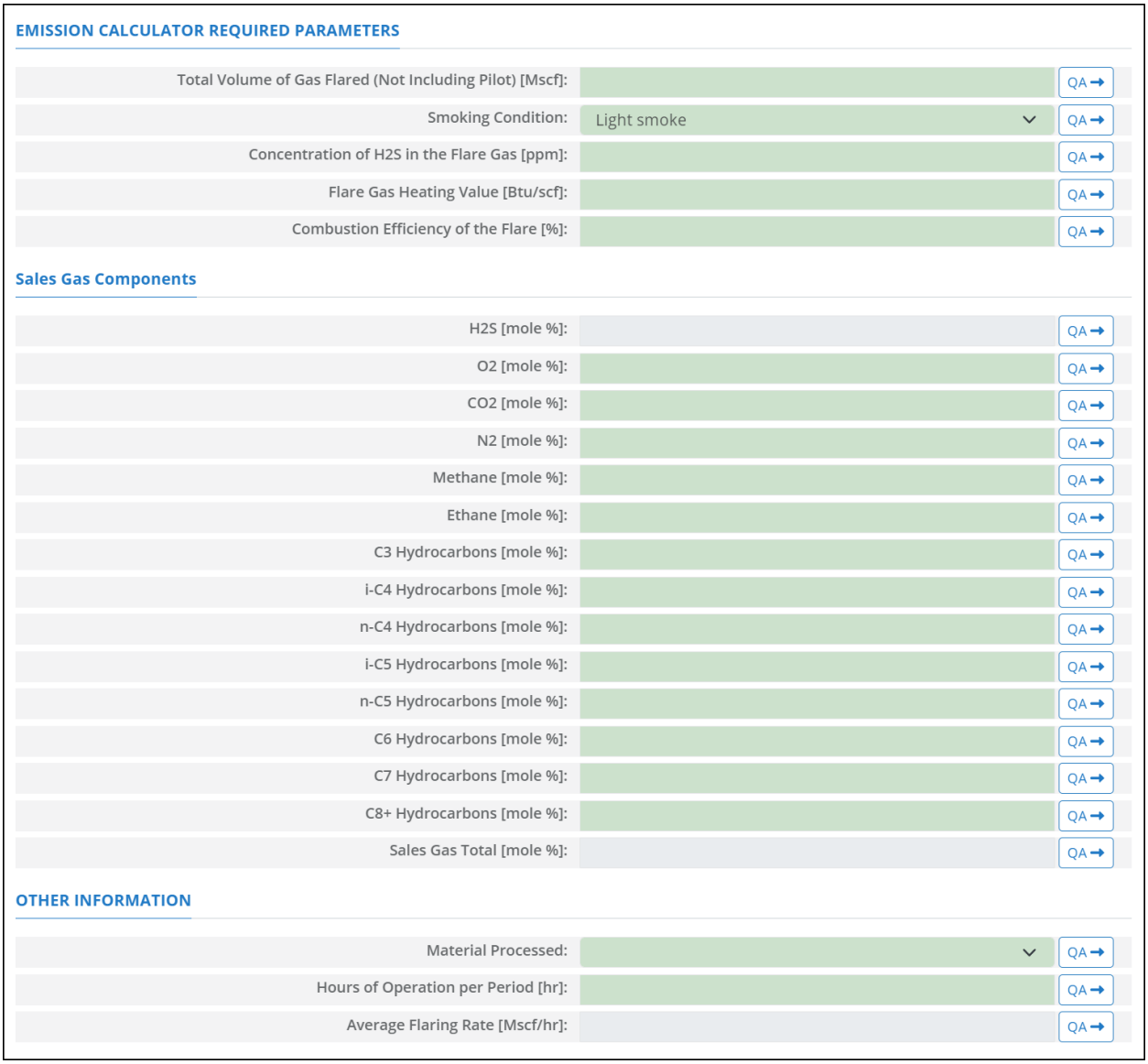


Figure B - 7. FLA-M01-LO Data Request tab

1. Total Volume of Gas Flared (Not Including Pilot) [Mscf]: The total volume of flare gas during the survey period, without the pilot flared gas.
2. Smoking Condition: A drop-down list field to specify the condition of the flare emitted smoke: No Smoke / Light Smoke / Medium Smoke / Heavy Smoke. Light Smoke is the default section.
3. Concentration of H_2S in the Flare Gas [ppm]: The ppm concentration of hydrogen sulfide present in the flare gas.
4. Flare Gas Heating Value [Btu/scf]: The amount of heat released during the combustion of a specified amount of the flare gas.
5. Combustion Efficiency of the Flare [%]: The percentage efficiency of complete combustion, or the percentage of hydrocarbon conversion to carbon dioxide (CO_2).
6. H2S [mole %]: H2S mole percentage composition of the extracted sales gas.
7. O2 [mole %]: O2 mole percentage composition of the extracted sales gas.
8. CO2 [mole %]: CO2 mole percentage composition of the extracted sales gas.
9. Methane [mole %]: Methane composition of the extracted sales gas.

10. Ethane [mole %]: Ethane composition of the extracted sales gas.
11. C3 Hydrocarbons [mole %]: C3 Hydrocarbons mole percentage composition of the extracted sales gas.
12. i-C4 Hydrocarbons [mole %]: i-C4 Hydrocarbons mole percentage composition of the extracted sales gas.
13. n-C4 Hydrocarbons [mole %]: n-C4 Hydrocarbons mole percentage composition of the extracted sales gas.
14. i-C5 Hydrocarbons [mole %]: i-C5 Hydrocarbons mole percentage composition of the extracted sales gas.
15. n-C5 Hydrocarbons [mole %]: n-C5 Hydrocarbons mole percentage composition of the extracted sales gas.
16. C6 Hydrocarbons [mole %]: C6 Hydrocarbons mole percentage composition of the extracted sales gas.
17. C7 Hydrocarbons [mole %]: C7 Hydrocarbons mole percentage composition of the extracted sales gas.
18. C8+ Hydrocarbons [mole %]: C8+ Hydrocarbons (hydrocarbons with 8 or more carbon atoms in their molecular structure) mole percentage composition of the extracted sales gas.
19. Sales Gas Total [mole %]: The aggregate mole percent composition of the extracted sales gas. This field is auto-calculated using the provided mole percentages for all components listed above.
20. Material Processed: A drop-down list field to specify the processed material: Gas/ Natural Gas / Process Gas / Exhaust gas.
21. Hours of Operation per Month [hr]: The total monthly hours of operation of the unit during the survey period.
22. Average flaring rate [Mscf/hr]. The flaring hourly volumetric rate. This field is auto-calculated.

B.8 FLA-M02-LO (Combustion Flare – Pilot)

The calculator FLA-M02-LO Version 1 in OCS AQS calculates the monthly emissions from a lease operation pilot combustion flare using the following **Data Request** fields in Figure B - 8**Error! Reference source not found.**:

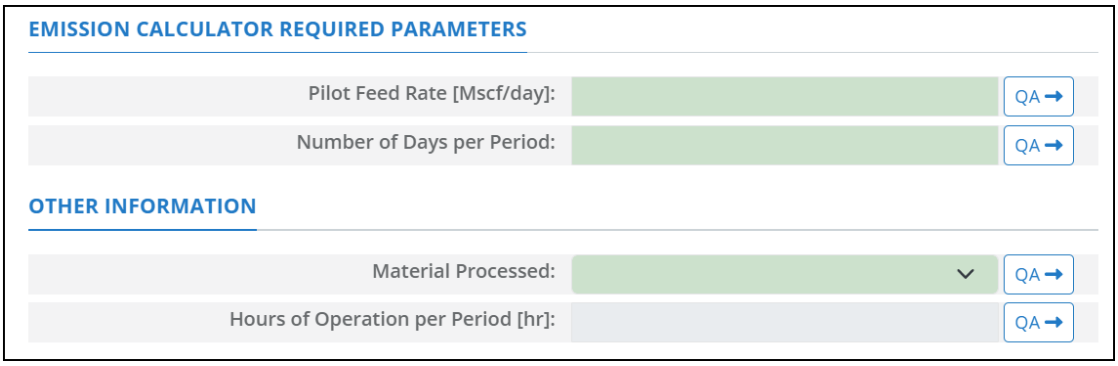


Figure B - 8. FLA-M02-LO Data Request tab

1. Pilot Feed Rate [Mscf/day]: Daily volumetric flowrate of gas fed to the pilot.
2. Number of Days in Month [Day]: The number of days in the month of the survey period.
3. Material Processed: A drop-down list field to specify the processed material: Gas / Natural Gas / Process Gas / Exhaust gas.
4. Hours of Operation per Month [hr]: The total monthly hours of operation of the pilot flare source during this survey period. This field is auto-calculated.

B.9 MUD-M01-LO (Mud Degassing)

The calculator MUD-M01-LO Version 2 in OCS AQS calculates the monthly emissions from the mud degassing lease operation using the following Data Request fields in Figure B - 9 **Error! Reference source not found.**:

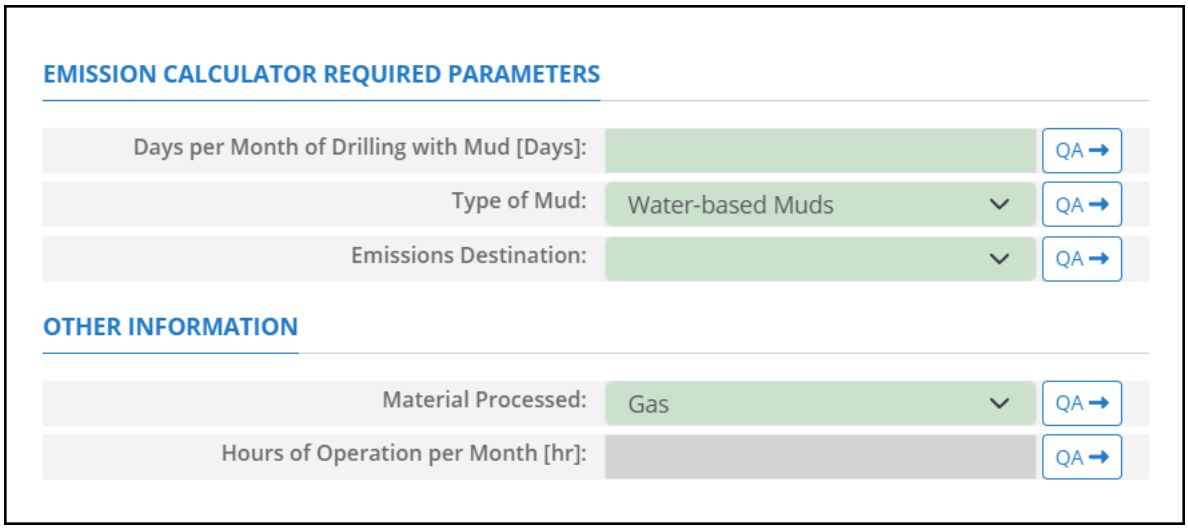


Figure B - 9. MUD-M01-LO Data Request tab

1. Days per Month of Drilling with Mud [Days]: The total number of 24-hour days of drilling with mud during the specific monthly survey period.
2. Type of Mud: A drop-down list field to specify the type of drilling mud: Water-based Mud / Oil-based Mud / Synthetic.
3. Material Processed: The type of fuel burned in the equipment: Gas / Natural Gas.
4. Hours of Operation per Month [hr]: The total monthly hours of mud degassing operations during this survey period. This field is auto-calculated.

Appendix C – Revision History

Table C-1. Revision history

Date	Document Version	Software Version	Changes
1/19/2024	1.13	2.5	• Added Selecting Fugitives Leak Detection Approach (section 3.2.4) • Updated sections 4.2.2 and 4.2.4 to include flare and mud degassing • Enhanced section 8.1.3 with additional content on chart customization • Minor updates in Analytics (section 8) and Reports (section 9) to reflect software updates • Updated Appendix A to include new fugitive calculators with leak detection • Updated Appendix B to include flare and mud degassing lease operations calculators
6/16/2023	1.12	2.1	• Added a clarification note at the end of section 1.6.1 • Updated pathways • Updated Platform Building Downwash Parameters (section 3.2.5.2) • Added a clarification note at the end of section 10.1.1 • Updated figures and descriptions throughout to reflect OCS AQS software updates
5/2/2023	1.11	2.1	• Updated the Authors list • Updated the Disclaimer page • Updated Dashboards chapter (section 2) to account for the new features in the Main dashboard and the Operator Submittals dashboard • Added a note regarding sales gas composition default values being available in the FAQ • Updated AEM section to reflect the tab and field hints (section 3.2) • Updated AEM section to reflect that the emission units cannot be deleted by the operator (sections 3.2 and 3.2.6.3) and added instructions for the alternative method of removal (section 3.2.6.5) • Updated AEM section to reflect that the release points cannot be deleted by the operator (section 3.2.8) • Added Water Depth feature for Platforms and Lease Operations • Added section regarding Platform Building Downwash (section 3.2.5.2) • Added section regarding zero emissions during facility transfer (section 3.2.6.7.1) • Added Review Activity Data tool (section 3.3)

Date	Document Version	Software Version	Changes
			• Added Review Lease Operation Activity Data tool (section 4.3) • Updated Complex e-GGRT Export section (section 5.2) • Added Analytics module (section 8) • Updated Reports module to reflect the new interface (section 9) • Updated Appendix A – Calculator Descriptions and Appendix B – Lease Operation Calculator Descriptions to reflect updated calculators • Added alt-text to all figures
01/31/2023	1.10	1.23	• Updated 4 (Emissions: Lease Operations): Added additional details regarding the reporting of drilling rig activity emissions including which types must report and where to find information on permitted drilling rig activities. • Updated A.13 (FUG-M01 (Fugitive Sources – Gas)): Added notes to clarify Default vs. Actual component counts for fugitives. • Updated figures and descriptions throughout to reflect OCS AQS software updates.
7/26/22	1.9	1.17	• Reformatted the manual into BOEM's Environmental Studies Program format for publication • Reorganized 1.2, 1.3, and 1.4 for better flow • Updated 3.2.3 Importing Amine & Glycol Emissions • Completed technical editing on the document • Moved Revision History to Appendix C • AT – Accepted reviewer changes • AT – Corrected author names • AT – Updated OCS AQS function map • AT – Added the "Pathway" for each applicable section • AT – De-capitalized regular instances of software terms • AT – Added "LDAR" to the list of acronyms • AT – Updated figure caption format in the appendices and created cross-references in the text • AT – Added reference description in section 3.2.15
6/8/22	1.8	1.17	• Updated 2.2 Operator Submittals Dashboard • Updated 3.2.7.5 Delete Release Point • Removed 3.2.12 Importing Amine and Glycol Emissions (see 3.2.3) • Added 3.2.15 and 3.4.4 Adding Supporting Documentation • Added 3.5 Remove Unassigned Release Points • Updated 4 Emissions: Lease Operations • Added user-specified text to section 4.2.2: Lease Source vs Emission Process • Updated 7.2 Gridded Emissions to include Equipment Type • Removed 9.1.1.1 Create New Inventory

Date	Document Version	Software Version	Changes
			• Added Appendix B – Lease Operation Calculator Descriptions • Minor updates to reflect the current and most recent operator version of the application
2/25/22	1.7	1.13	• Minor updates, typo fixes
1/27/22	1.6	1.13	• Appendix A – Updated descriptions and screenshots • Appendix A – Updated control approach descriptions for select calculators • Appendix A – Added Appendix A – List of Figures
1/14/22	1.5	1.12	• Appendix A – Calculator Descriptions has been updated to reflect the revisions done to the calculators
11/3/21	1.4	1.12	• Reviewed and expanded all sections as it pertains to the operator version of the application • Submitting Inventories has been moved and expanded under 2 (Dashboards) • Updated most screenshots
9/14/21	1.3	1.10	• Added 3.2.3 Importing Amine & Glycol Emissions • Removed Delete Release Point section • Updated QA/QC functionality during data entry and saving • Updated 3.2.13 Calculate Emissions • Added 3.2.14 Global Warming Potential Details • Updated 4.2.5 Add/Delete Lease Operation Processes • Updated Calculator Appendix • Removed GHG – Global Warming Potential section from GHG chapter • Removed Facility Transfer from Tools chapter • Updated Documents Section • Updated Reports Section • Updated Settings Section • Updated Acronyms section
5/24/21	1.2	1.7	• Updated 3.2.4 Emission Units Add Sources • Updated 3.2.11 Calculate Emissions • Update 6.1.1 Documents Viewing • Updated calculators in Appendix A with new Data Request Fields
3/23/21	1.1	1.6	• New Login page • Updated Flare release point guidance • Moved Release Point access in AEM • Updated Calculator Report • Expanded GWP description • Revised Documents module • Improved Map Overview feature • Revised Lease Operation edits for processes

Date	Document Version	Software Version	Changes
2/4/21	1.0	1.5	• New facility structure fields to describe platform parameters • "From Facility Location" button in Georeference Panel • Orphan Release Points Report • QA/QC link in inventory submittal feature To reflect these changes and also provide enhanced descriptions/clarifications for existing features, the following sections have been added or modified: • 3.2.4.1 (Structure Details) – new • 3.2.6 (Decommissioned Facilities) – new • 3.2.7.4 (Create New Release Point) – updated • 4.2.4 (Add Lease Operation Source) – updated • 7.1 (Using the Map Module) – updated • 7.2 (Gridded Emissions) – updated • 7.3 (Displayed Feature Information) – new • 8.2.10 (Other Reports) – updated • 9 (Submitting Inventories) – new • App A Calculator updates
12/30/20	0.2	1.4.26	Updated OCS AQS URL information (Section 1.2).
12/17/20	0.1	1.4.26	The following sections have been revised to reflect OCS AQS v. 1.4 release: • Section 1.8 (removed reference to the Admin module) • Section 2.1 (added a description for the new Operator Submittal dashboard) • Section 2.2 (new section describing the updated inventory submission functionality) • Section 5 (removed submittal description, now given in Section 2) • Section 8 (additional and updated information on various report features) • Appendix A – Calculator Descriptions (updated descriptions)
12/1/20	0	1.3	Original Version

U.S. Department of the Interior (DOI)
DOI protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors the Nation’s trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

Bureau of Ocean Energy Management (BOEM)
BOEM’s mission is to manage development of U.S. Outer Continental Shelf energy and mineral resources in an environmentally and economically responsible way.

BOEM Environmental Studies Program
The mission of the Environmental Studies Program is to provide the information needed to predict, assess, and manage impacts from offshore energy and marine mineral exploration, development, and production activities on human, marine, and coastal environments. The proposal, selection, research, review, collaboration, production, and dissemination of each of BOEM’s Environmental Studies follows the DOI Code of Scientific and Scholarly Conduct, in support of a culture of scientific and professional integrity, as set out in the DOI Departmental Manual (305 DM 3).