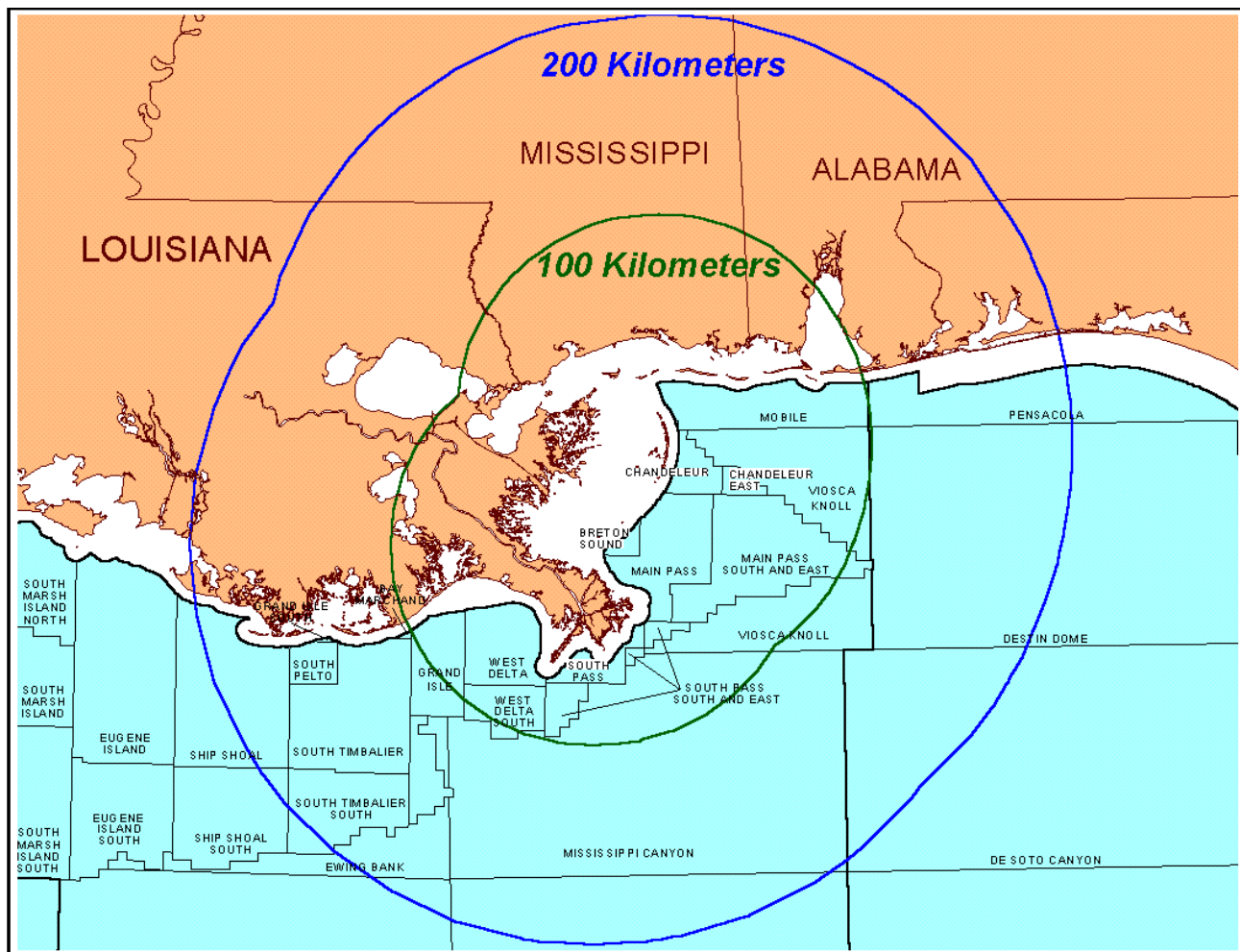




# User's Guide for the Breton Offshore Activities Data System (BOADS) for Air Quality

## Final Report



# **User's Guide for the Breton Offshore Activities Data System (BOADS) for Air Quality**

## **Final Report**

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## **DISCLAIMER**

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# 1. INTRODUCTION

The Minerals Management Service (MMS) mandated that offshore operators in the Gulf of Mexico participate in a monthly survey program for the year 2000, during which time the MMS will collect information regarding offshore operations (see Notice to Lessees # 99-G14). The purpose of these surveys is to assist the MMS in constructing an emission inventory for the Gulf of Mexico near the Breton National Wilderness Area. The MMS funded the development of the Breton Offshore Activities Data System (BOADS) software in order to assist offshore operators in complying with the MMS mandate. BOADS assists users in recording information regarding emissions-related offshore activities and generates computer data files that can be delivered to the MMS.




## 1.1 PRINCIPLES OF USE AND SYSTEM REQUIREMENTS

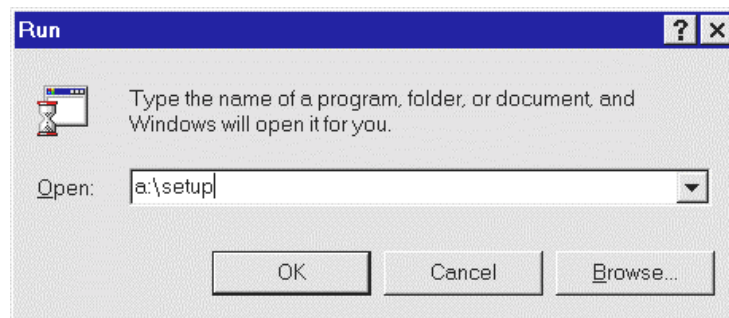
BOADS works on IBM-compatible personal computers (PCs) that are equipped with the Microsoft Windows 95™ or NT™ operating systems. (At a minimum, a 486DX2 Windows 95 platform with 16 Mbyte RAM is needed.) The user should possess a modest familiarity with the Windows operating environment and should understand a few of its common features, such as point-and-click, copy-and-paste, file management, menu-driven selection, and text boxes.

## 1.2 INSTALLATION

The BOADS distribution pack includes this User's Guide and a floppy disk or compact disk (CD) with the program installation files. The installation files are necessary to complete the installation of BOADS.

Complete the following steps to install BOADS:

1. Insert the Installation CD into the CD-ROM (assumed here to be the d:\ drive) or insert the Installation Disk into the a:\ floppy disk drive.
2. Click  from the Windows Taskbar, then select .
3. Type d:\setup (CD ROM) or type a:\setup (floppy) and click .



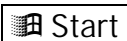
4. Follow the instructions that appear on each successive screen, and click Finish to complete the installation.
5. Remove the Installation CD or Disk.
6. The Installation CD or Disk should be stored together in a safe place.

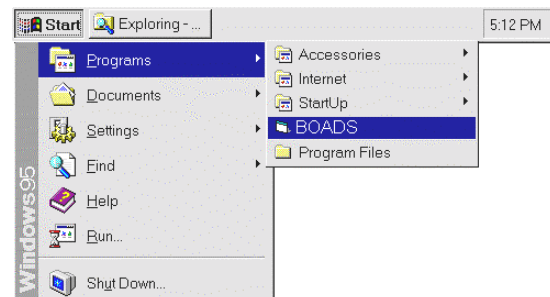
## 2. USING THE BRETON OFFSHORE ACTIVITIES DATA SYSTEM (BOADS)

The BOADS software assists users in completing monthly surveys covering air emissions-related activities that are associated with offshore facilities. BOADS queries the user regarding emissions-related operating data, saves the data on the user's PC, and guides the user to create copies of the data on floppy disks for backup or delivery to the MMS.

- Each month, the user should run BOADS in order to enter new operating data *specifically for that month*. For example, if production or throughput volumes change from month to month, this information should be re-entered every month. Parameters that remain constant may be copied from the previous month's entries. Variables that typically change from month to month are labeled with blue font.
- A saved data set corresponding to one month is called a "survey" or a "monthly survey". Upon creating a survey, the user should enter information that represents all offshore facilities belonging to his/her company and all emissions-producing equipment on those facilities. After all facilities have been identified, production/throughput relationships between facilities should be defined. BOADS provides a "fill-in-the-blank" approach in order to generate structure, equipment, and production/throughput data.
- As the user enters data, BOADS performs a number of automatic error checks. If an error is suspected, the user will be reminded and may be asked to correct the error or provide comments in a text box. After the data are submitted, the MMS will attempt to reconcile missing or unusual data by reviewing the comments or contacting the BOADS user by telephone. BOADS performs the following types of error checks:
  - ☑ Completeness – to identify missing data entries
  - ☑ Range – to determine when data entries fall outside of typical ranges
  - ☑ Consistency – to determine whether data entries are consistent with one another
  - ☑ Month-to-month – to determine whether information that typically varies by month has been reviewed and edited appropriately or to flag items that change radically from one month to the next

### 2.1 STARTING AND EXITING BOADS

To start BOADS, click  from the Windows taskbar, then select Programs ► | BOADS. Upon starting BOADS, the Main Window will appear (**Figure 2-1**).





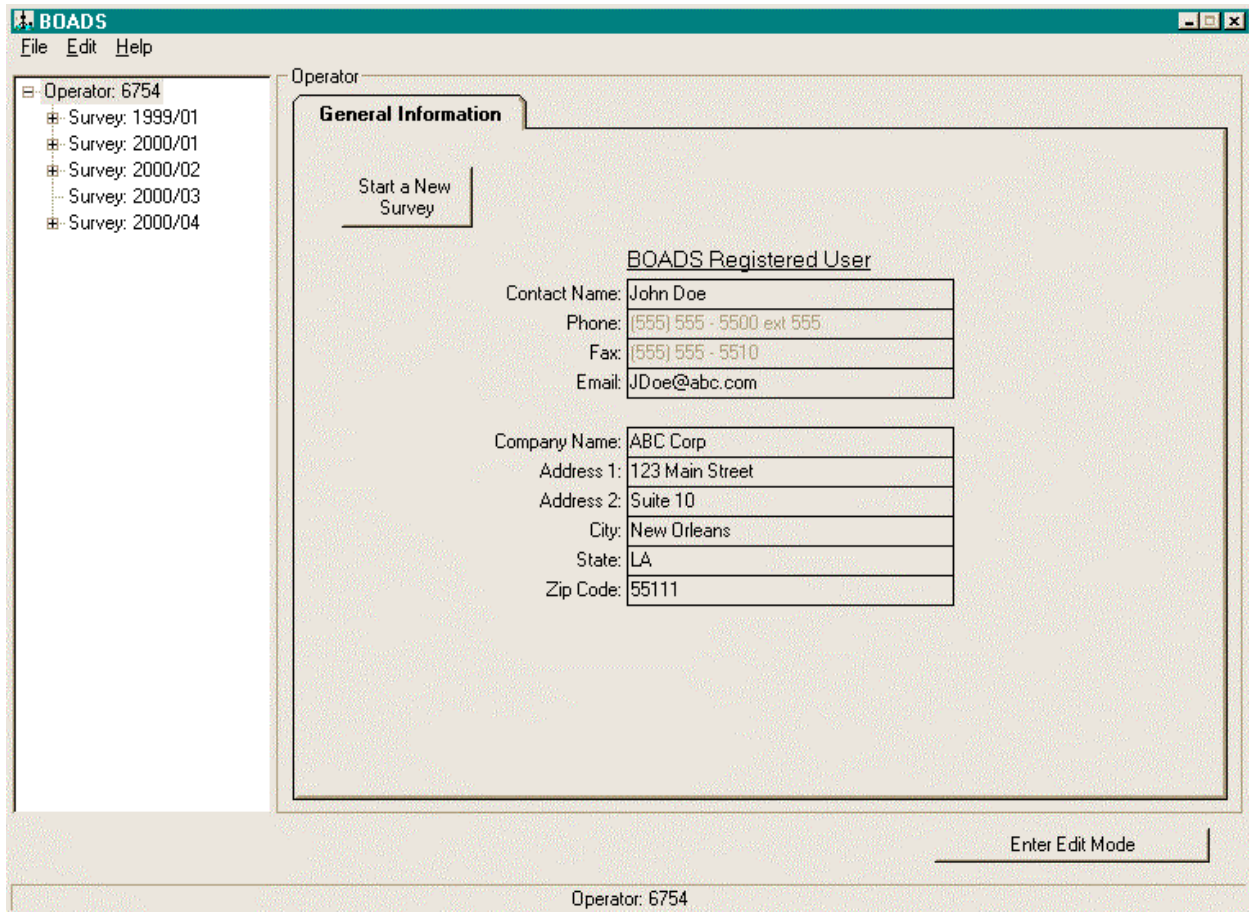


Figure 2-1. BOADS Main Window.

From the Main Window, the user may perform the following tasks:

- Edit Participant Identification information (initially entered during program installation).
- View, create new, edit, copy-and-paste, save, or delete data for monthly surveys, facilities, or equipment.
- Set the status of a structure or equipment (e.g., active, inactive, transferred ownership, etc.).
- Edit production/throughput relationships between facilities for a specific survey period.
- Export a saved survey to a floppy disk for backup or delivery to the MMS.

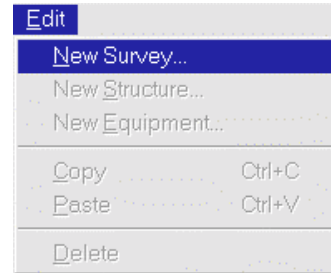
Use one of the following techniques to exit the program: (1) click File | Exit Program from the Main Window menu, or (2) click the  symbol at the upper right.

## 2.2 CREATING AND EDITING DATA

### 2.2.1 Creating and Editing Survey Data

In order to create a new survey, select Edit | New Survey from the Main Window menu.

A New Survey dialog box will appear to request the month and year of the survey period (**Figure 2-2**). Enter the month (1-12) and 4-digit year, then click **OK**. An icon for the new survey will appear in the Navigation Tree on the left side of the Main Window. Highlight the survey icon to view the Survey Screen (**Figure 2-3**). The Survey Screen contains three tabs: *General Information*, *Relationships*, and *QC Results*. *General Information* shows contact information for the current survey (which may vary from month-to-month or may remain constant). *Relationships* displays inter-structure production/throughput relationships (see Section 2.2.5). *QC Results* tabulates any quality control errors encountered during data entry (see Section 2.3).



The following buttons are available on the Survey Screen:

- **Enter Edit Mode** launches Edit Mode so that changes or new data may be entered.
- **Run QC** runs quality control checks on all data saved within the current survey.

Three additional buttons become available only in edit mode:

- **Save** (only available in Edit Mode) incrementally saves work and returns to Edit Mode.
- **Cancel** (only available in Edit Mode) discard recent changes and close Edit Mode.
- **Save & Leave Edit Mode** (only available in Edit Mode) saves changes, runs QC, and exits Edit Mode. (Skip QC by clicking “Save” then “Cancel”.)

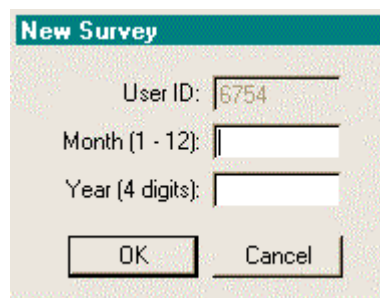
A screenshot of a dialog box titled 'New Survey'. It has a light beige background and a dark green title bar. There are three input fields: 'User ID' with the value '6754', 'Month (1 - 12):' which is empty, and 'Year (4 digits):' which is empty. At the bottom, there are two buttons: 'OK' and 'Cancel'.

Figure 2-2. New Survey Dialog Box.

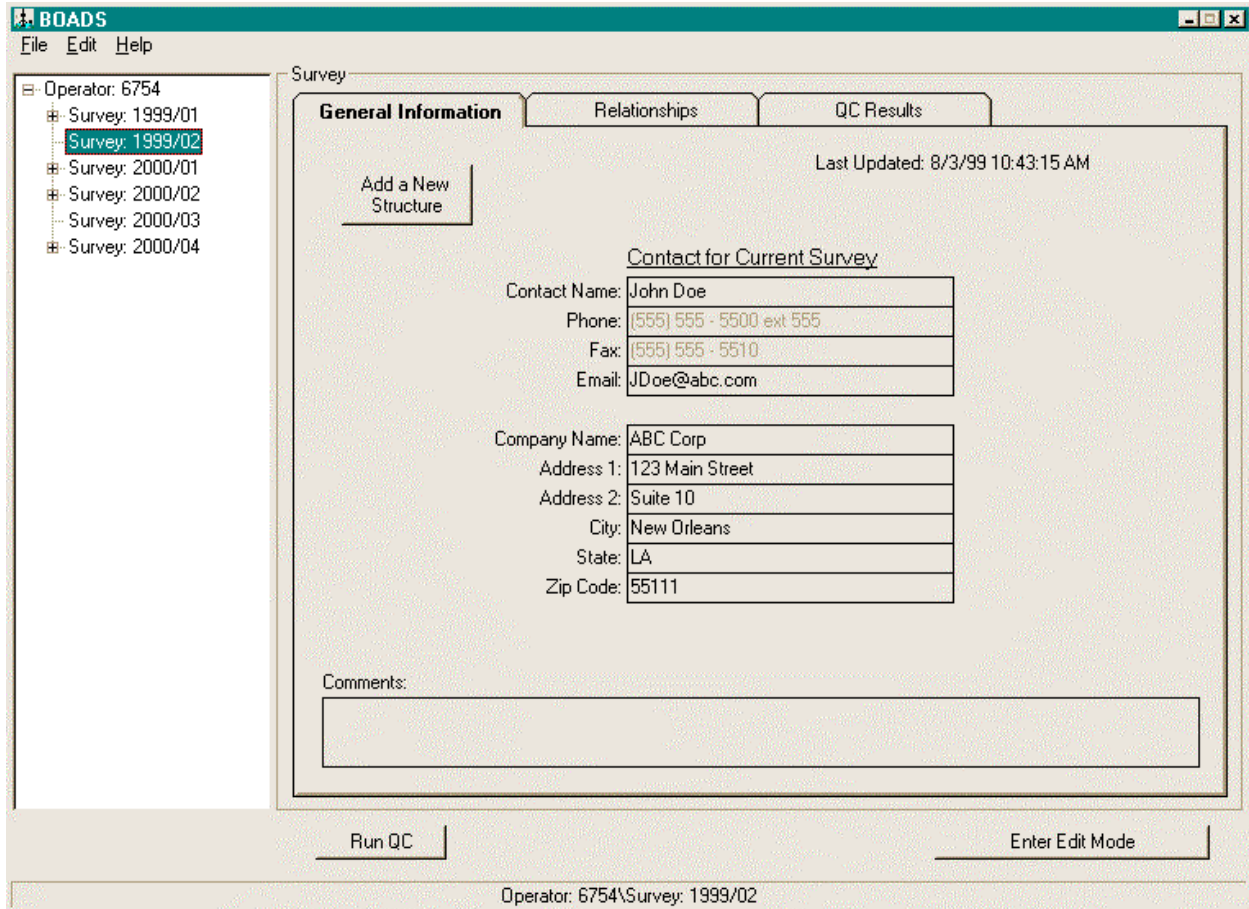
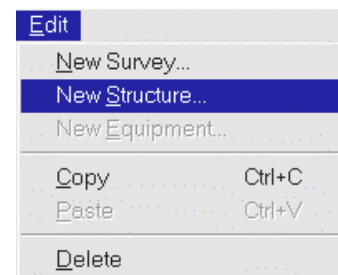


Figure 2-3. Survey Screen.

## 2.2.2 Creating and Editing Structure Data

In order to create new structure data, go to the Navigation Tree on the left side of the Main Window and select the appropriate survey (into which the new structure data will be placed). Select Edit | New Structure from the Main Window menu.

A New Structure Dialog Box will appear to request vital identification data for the structure (**Figure 2-4**). Enter the information and click . An icon for the new structure will appear in the Navigation Tree on the left side of the Main Window. Highlight the new structure icon to view the Structure Screen (**Figure 2-5**). The Structure Screen contains two tabs: *General Information* and *QC Results*. *General Information* shows contact and other general information for the current structure. *QC Results* tabulates any quality control errors that may be encountered as data are completed for the current structure and its associated equipment (see Section 2.3). (Note that production is the quantity of petroleum that was extracted from the ground *at the structure*; throughput is the total quantity of petroleum handled at the structure, including petroleum extracted at another location and transferred to the structure.)





**New Structure**

User ID:

Survey Month/Year:  Area:

MMS Complex ID (7 chars):  Block:

MMS Structure ID (2 chars):  Name:

Figure 2-4. New Structure Dialog Box.

**BOADS** File Edit Help

Operator: 6754

- Survey: 1999/01
- Survey: 1999/02
  - AreaName, Block, C2
- Survey: 2000/01
- Survey: 2000/02
- Survey: 2000/03
- Survey: 2000/04

**Structure**

**General Information** | QC Results

MMS Struct. ID:

MMS Cmplx. ID:

Area:

Block:

Structure Name:

Lease Number:

Longitude (dec. degrees):

Latitude (dec. degrees):

Distance To Shore (mi):

**Structure Contact Info.**

Name:

Phone:

Email:

**Location of Initial Crude Processing**

Facility Type:

Area, Block, Structure Name:

**Add New Equipment**

	Production	Total Throughput	Total Fuel Usage
Crude Oil (bbl):	<input type="text"/>	<input type="text"/>	Natural Gas (Mscf): <input type="text"/>
Natural Gas (MMscf):	<input type="text"/>	<input type="text"/>	Gasoline (gal): <input type="text"/>
Nat'l Gas H2S Conc (ppmv):	<input type="text"/>	<input type="text"/>	Diesel (gal): <input type="text"/>

Comments:

Status:

Effect. Date:

Operator: 6754\Survey: 1999/02\AreaName, Block, C2

Figure 2-5. Structure Screen.

The following buttons are available on the Structure Screen:

- **Enter Edit Mode** launches Edit Mode so that changes or new data may be entered.
- **Run QC** runs quality control checks on all data saved for the current structure and its associated equipment.

Three additional buttons become available only in edit mode:

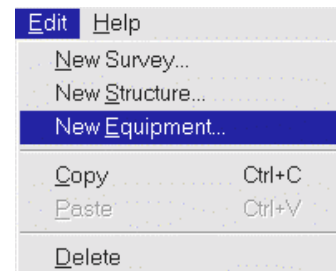
- **Save** (only available in Edit Mode) incrementally saves work and returns to Edit Mode.
- **Cancel** (only available in Edit Mode) discard recent changes and close Edit Mode.
- **Save & Leave Edit Mode** (only available in Edit Mode) saves changes, runs QC, and exits Edit Mode. (Skip QC by clicking “Save” then “Cancel”.)

### 2.2.3 Creating and Editing Equipment Data

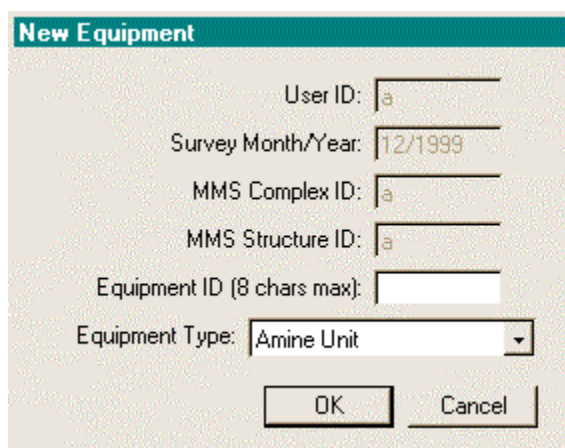
BOADS queries for information regarding the following sources of emissions:

- Amine gas sweetening unit
- Boiler/heater/burner
- Flare
- Fugitive
- Gasoline/diesel engine
- Glycol dehydrator
- Drilling rig
- Loading operation
- Natural gas engine and turbine
- Storage tank
- Vent

In order to create new equipment data, go to the Navigation Tree on the left side of the Main Window and select the appropriate structure (into which the new equipment data will be placed). Select Edit | New Equipment from the Main Window menu.



A New Equipment Dialog Box will request vital identification data for the equipment, such as equipment ID number and equipment type (e.g., flares, turbines, etc.) (**Figure 2-6**). Enter the information, then click **OK**. An icon for the new equipment will appear in the Navigation Tree on the left side of the Main Window. Highlight the equipment icon to view its Equipment Screen (**Figure 2-7**). Depending on the equipment type, the equipment screen will contain three to five tabs: *General Information*, *Flash Tank*, *Exhaust/Ventilation System*, *Other Control Equipment*, and *QC Results*. *General Information* shows operating parameters for the current equipment. *Flash Tank* displays operating parameters for flash tanks that are associated with petroleum storage tanks. *Exhaust/Ventilation System* presents variables that are related to equipment exhaust systems. *Other Control Equipment* permits users to describe installed pollution control devices that were not accounted for on the *General Information* tab. *QC Results* tabulates any quality control errors that may be encountered as data are completed for the equipment (see Section 2.3).



The image shows a dialog box titled "New Equipment". It contains the following fields and controls:

- User ID:
- Survey Month/Year:
- MMS Complex ID:
- MMS Structure ID:
- Equipment ID (8 chars max):
- Equipment Type:  (dropdown menu)
- Buttons:  and

Figure 2-6. New Equipment Dialog Box.

Amine Unit

General Information	Ventilation System	Control Equipment	QC Results																				
Processed Throughput (MMscf): <input type="text"/> Hours Operated (hrs): <input type="text"/> Amine Unit Elev. (ft above msl): <input type="text"/>			<table border="1"> <thead> <tr> <th>Unprocessed Natural Gas Concentrations (% by volume)</th> <th>Quantity Emitted When Uncontrolled (%)</th> </tr> </thead> <tbody> <tr><td>H2S:</td><td><input type="text"/></td></tr> <tr><td>Methane:</td><td><input type="text"/></td></tr> <tr><td>Ethane:</td><td><input type="text"/></td></tr> <tr><td>C3 Hydrocarbons:</td><td><input type="text"/></td></tr> <tr><td>C4 Hydrocarbons:</td><td><input type="text"/></td></tr> <tr><td>C5 Hydrocarbons:</td><td><input type="text"/></td></tr> <tr><td>C6 Hydrocarbons:</td><td><input type="text"/></td></tr> <tr><td>C7 Hydrocarbons:</td><td><input type="text"/></td></tr> <tr><td>C8+ Hydrocarbons:</td><td><input type="text"/></td></tr> </tbody> </table>	Unprocessed Natural Gas Concentrations (% by volume)	Quantity Emitted When Uncontrolled (%)	H2S:	<input type="text"/>	Methane:	<input type="text"/>	Ethane:	<input type="text"/>	C3 Hydrocarbons:	<input type="text"/>	C4 Hydrocarbons:	<input type="text"/>	C5 Hydrocarbons:	<input type="text"/>	C6 Hydrocarbons:	<input type="text"/>	C7 Hydrocarbons:	<input type="text"/>	C8+ Hydrocarbons:	<input type="text"/>
Unprocessed Natural Gas Concentrations (% by volume)	Quantity Emitted When Uncontrolled (%)																						
H2S:	<input type="text"/>																						
Methane:	<input type="text"/>																						
Ethane:	<input type="text"/>																						
C3 Hydrocarbons:	<input type="text"/>																						
C4 Hydrocarbons:	<input type="text"/>																						
C5 Hydrocarbons:	<input type="text"/>																						
C6 Hydrocarbons:	<input type="text"/>																						
C7 Hydrocarbons:	<input type="text"/>																						
C8+ Hydrocarbons:	<input type="text"/>																						
Comments: <input type="text"/>			Status: <input type="text" value="Active"/> Effect. Date: <input type="text"/>																				

Figure 2-7. Equipment Screen.

The following buttons are available on the Equipment Screen:

- launches Edit Mode so that changes or new data may be entered.
- runs quality control checks on data for the current equipment.

Three additional buttons become available only in edit mode:

- (only available in Edit Mode) incrementally saves work and returns to Edit Mode.
- (only available in Edit Mode) discard recent changes and close Edit Mode.
- (only available in Edit Mode) saves changes, runs QC, and exits Edit Mode. (Skip QC by clicking “Save” then “Cancel”.)

## 2.2.4 Copying Data

Follow these steps to copy equipment data:

1. In the Main Window, highlight an equipment icon within the Navigation Tree.
2. Select Edit | Copy from the menu.
3. Highlight the icon for the destination structure (into which the copied data will be placed).
4. Select Edit | Paste from the menu.
5. If necessary, indicate the new equipment ID when prompted.

Follow these steps to copy structure data:

1. In the Main Window, highlight the structure to be copied within the Navigation Tree.
2. Select Edit | Copy from the menu.
3. Highlight the icon for the destination survey (into which the copied data will be placed).
4. Select Edit | Paste from the menu.
5. If necessary, indicate the new structure ID when prompted.

Follow these steps to copy survey data:

1. In the Main Window, highlight the survey to be copied within the Navigation Tree.
2. Select File | Copy from the menu.
3. Indicate the month (1-12) and 4-digit year for the new survey.

## 2.2.5 Defining Production/Throughput Relationships

The last step in completing a monthly survey is to define production/throughput relationships between facilities. Production and initial processing operations may be collocated at a structure, or they may be accomplished at separate locations. The MMS will track this information to verify estimates of fugitive and other air emissions.

On an existing Survey Screen, click on the *Relationships* tab to view a matrix of production and throughput data for all existing facilities (**Figure 2-8**). Most information in the matrix is completed automatically as the user creates new structures. In order to edit and complete the matrix, click  to launch Edit Mode.



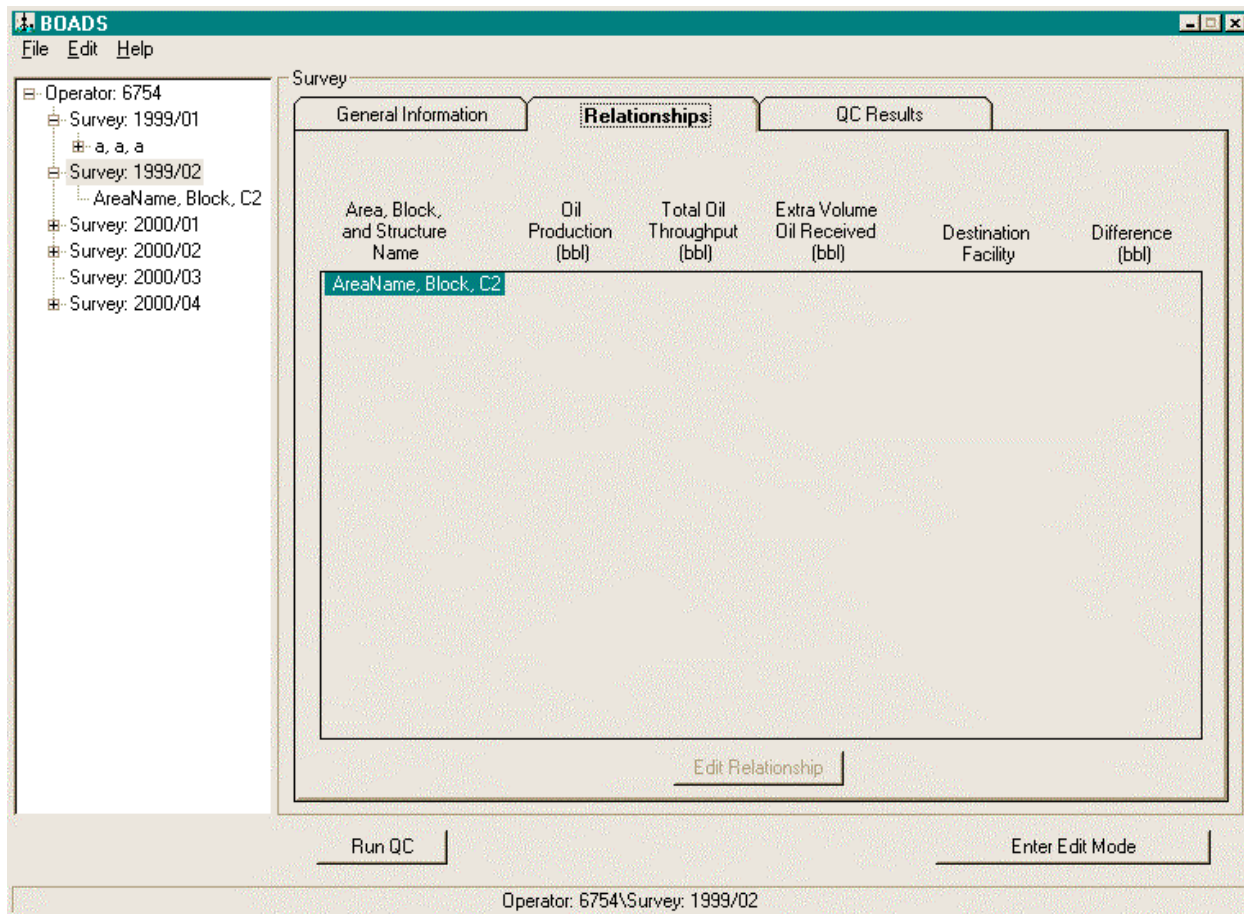


Figure 2-8. Relationships Tab.

## 2.2.6 Changing Identifier Codes

Some of the ID codes for equipment and facilities are editable and may be re-entered, such as the area, block, and name of a structure. However once created, the following ID information may not be re-entered directly: (1) the month and year of an existing survey; (2) the MMS-assigned ID numbers for an existing structure; and (3) the equipment type for an existing piece of equipment. If it is necessary to change or correct one of these parameters, one may use the “Copy” and “Paste” functions from the Edit menu in order to open the New Survey, New Structure, or New Equipment dialog boxes. Enter the updated identifier codes; then return to the Navigation Tree and delete the out-of-date survey, structure, or equipment.

## 2.3 QUALITY CONTROL TESTS

After the user completes and saves data, BOADS automatically runs a series of quality control (QC) checks before saving the data. (Skip QC by clicking “Save” then “Cancel”.) If any entries are incomplete, atypical, or suspect, a pop-up message will appear, and a list of QC errors will appear on the *QC Results* tab (**Figure 2-9**). The user may choose to return and correct the problems, to override QC check(s) (a comment is required), or to ignore message(s) and save

changes anyway. If QC problems remain uncorrected and uncommented when the data are submitted, MMS staff members will attempt to reconcile missing, atypical, or suspect data by reviewing the comments or contacting the user by telephone.

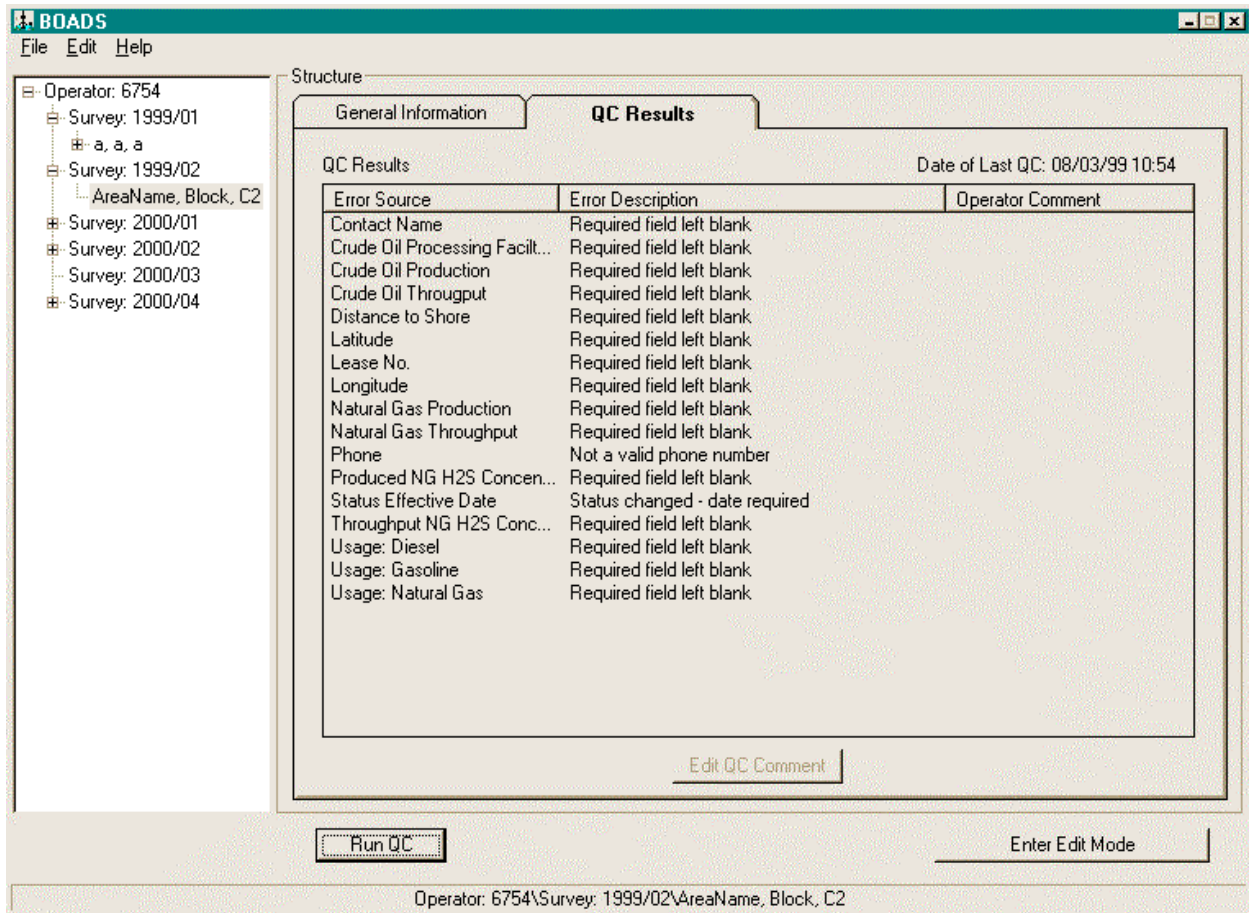
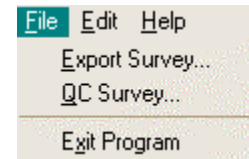


Figure 2-9. QC Results Tab.

## 2.4 SAVING AND BACKING UP WORK

**It is very important to periodically store data to a secure location other than the hard drive (such as a floppy disk). This practice minimizes data loss in the event of a computer failure or other mishap.**

After the user completes and saves data, the entries are saved to a working file on the hard drive<sup>1</sup>. (In order to discard changes, click  instead of .) In order to store data in an alternate location, return to the Main Window (Figure 2-1) and select File | Export Survey. When prompted, select the surveys to be exported. Browse to the desired directory and assign a name to the new file. If adequate disk space is available, multiple surveys may be saved on the same disk.



## 2.5 SETTING STATUS OF FACILITIES AND EQUIPMENT

If equipment or an entire structure becomes inactive for an entire survey period, the change in status should be noted, but only for the affected survey period(s). **Note that when a piece of equipment or a structure is active for any part of a monthly survey period, its status should be set to *Active*.**

Open an affected survey in the Navigation Tree on the left side of the Main Window. (Double-click the survey icon, or click the  symbol immediately to its left.) Select the affected structure or equipment, and click  in order to launch Edit Mode. Use the Set Status data entry boxes to change the status (see Figures 2-5 or 2-7). Indicate the new status and its effective date and click  in order to record the change in status.

---

<sup>1</sup> The working file is located at C:\Program Files\BOADS\BOADS.mdb. The working file should be backed up periodically by copying to a secure location.

## **2.6 FINDING HELP AND EXTRA INFORMATION**

Each screen has an associated help text file that contains technical details about the required data entries, such as definitions, quality control checks, typical values, estimation methods, etc. Access help by pressing the F1 key. Help files are reprinted in Appendix A of this User's Guide.

For technical problems or other difficulties, contact the following.

Mr. Joe Perryman  
Mapping and Automation Unit (MS 5413)  
1201 Elmwood Park Blvd.  
New Orleans, LA 70123-2395  
Phone: (504) 736-2791  
E-Mail: [joe.perryman@mms.gov](mailto:joe.perryman@mms.gov)

### **3. UPON SURVEY COMPLETION**

#### **3.1 HOW, WHEN, AND WHERE TO DELIVER DATA FILES**

As each monthly survey is completed, it should be exported to a floppy disk for delivery to the MMS. First, insert a blank floppy diskette into the a:\ drive. Then, go to the Main Window (Figure 2-1), highlight the survey(s) to be saved, and select File | Export Survey. Indicate the a:\ drive as the file destination. Prompts will appear if additional floppy diskettes are needed. When the export is complete, label and place the diskette(s) in a cardboard mailing envelope to protect from damage in the mail. Appendix B is a log provided so that BOADS users may keep internal records of submittals and backups.

The MMS anticipates receiving data files at monthly intervals from about February 2000 to March 2001 with data for January – December 2000. Floppies should be placed in cardboard mailing envelopes and mailed to the address below.

Mr. Joe Perryman  
Mapping and Automation Unit (MS 5413)  
1201 Elmwood Park Blvd.  
New Orleans, LA 70123-2395  
Phone: (504) 736-2791  
E-Mail: joe.perryman@mms.gov

#### **3.2 FAILED QUALITY CONTROL TESTS**

When saving data to the floppy drive for delivery to the MMS, BOADS stores the results of all QC tests. If the user returns to BOADS in order to address QC problems, the error messages may be reviewed from the *QC Results* tab on the Survey Screen. If the user chooses to ignore errors and submit the data anyway, MMS staff members will attempt to reconcile the problems by reviewing comments or contacting the user by telephone.

#### **3.3 HOW TO RESUBMIT MONTHLY SURVEYS**

Comparisons between monthly surveys, which are performed as part of BOADS' automated QC tests, may reveal errors in previously submitted surveys. When this occurs, users are encouraged to make corrections and resubmit their data. In order to resubmit, simply export the corrected data file to a floppy disk and deliver it to the MMS as usual. Enclose a note indicating that the file is a resubmittal of previously delivered data and a short explanation summarizing the changes made.

# **APPENDIX A**

## **HELP TEXT FILES**



## **A.1 USER INFORMATION**

### **A.1.1 General Information Tab**

BOADS Registered User – Identifies the person to whom BOADS is registered, an employee of the company that owns structures in the outer continental shelf. This should be the primary contact person who is responsible for submitting monthly surveys to the MMS. The following contact information should be provided:

- Name
- Phone number
- Fax number
- Email address (optional)
- Company name
- Street address
- City
- State
- Zip code



## **A.2 SURVEY INFORMATION**

### **A.2.1 General Information Tab**

Contact for the current survey – Identifies the person who is responsible for completing the current month’s survey. This may be the same individual as the BOADS Registered User, a subordinate, or a consultant. The following contact information should be provided:

- Name
- Phone number
- Fax number
- Email address (optional)
- Company name
- Street address
- City
- State
- Zip code

### **A.2.2 Relationships Tab**

The information on this screen tracks exchanges of crude oil between company-owned offshore structures. Its purpose is to provide a rough double-check of the estimated production and throughput volumes for all company-owned structures. Information on this screen will be filled out automatically as the BOADS user adds new structures to a monthly survey. A review of the Relationships Tab should be the final step in preparing a set of monthly survey data. Click “Edit Relationships” in order to edit or change the displayed data.

Area, Block, Name – List of area/block/name designations for all structures included in the current month’s survey.

Production (barrels) – User-input production volumes for each structure in the current month’s survey.

Additional Oil Received (barrels) – If any listed structure receives crude oil from unidentified external sources, the user should report the total volume of such oil received during the current survey period.

Total Throughput (barrels) – User-input throughput volumes for each structure in the current month’s survey.

Destination Facility – Identifies the facility that is the immediate destination of crude oil generated by each listed producing structure. If the destination facility is a company-owned

offshore structure, it is identified by an area/block/name designation. Otherwise, the facility type is listed (e.g., onshore).

Difference (barrels) – Based on the information supplied, BOADS calculates an Estimated Total Throughput volume and subtracts it from the user-input value for Total Throughput. A positive value indicates that the user-input value of Total Throughput is larger than expected (given all other data). A negative value indicates that the user-input value is smaller than expected. Due to errors that are inherent with measuring production at offshore structures, agreement within a 30 percent range passes QC checks.

### **A.2.3 QC Results Tab**

Error Source – List of input variables, structures, and/or equipment for this survey that have been flagged with QC error messages.

Error Description – List of the reasons that QC error messages were assigned.

Operator Comment – List of user's explanations for unusual or unexpected values that were flagged with QC error messages. An operator comment indicates that the user wishes to override the QC error message. (Select an error message, then click "Add QC Comment" in order to add Operator Comments.)

## **A.3 STRUCTURE INFORMATION**

### **A.3.1 General Information Tab**

MMS Structure ID - A unique identifier code that is assigned to an offshore structure prior to its construction by the MMS. This identifier code is tracked in the Minerals Management Service's records.

MMS Complex ID - A unique identifier code that is assigned to a group of related structures prior to construction by the MMS. This identifier code is tracked in the Minerals Management Service's records.

Area Name – Designated name of the geographic area in which the structure is located.

Block Number – Designated number of the geographical block in which the structure is located.

Name - A name or identifier that denotes a structure within its Area/Block.

Lease Number - The lease number issued by the Minerals Management Service for the construction and operation of an offshore structure.

Longitude (decimal degrees) – An east-west coordinate that defines the position of an offshore structure. Specify to at least four decimal places.

Latitude (decimal degrees) – An north-south coordinate that defines the position of an offshore structure. Specify to at least four decimal places.

Distance to shore (miles) - The distance to the nearest U.S. shoreline. Specify to the nearest 1/10 mile.

Structure contact information - The name, phone number, and/or email address of an individual who may be contacted with questions regarding the survey data, such as the structure's supervising engineer.

Destination facility - The facility type and, if needed, the area/block/name of the facility that is the immediate destination of crude oil that is extracted at the current structure's location. If crude is piped to another company-owned offshore structure for initial handling (e.g., water separation), then the user should select the structure's associated area/block/name from the available list. It may be necessary to first create the receiving structure (using the Edit|New Structure menu) so that it will appear in the list.

- "This structure" – Indicates that initial processing and extraction occur at the same structure.
- "Company-owned offshore" – Indicates that initial processing occurs at an offshore facility that is owned by the same company as the current structure and is (or will be) named and included in this survey response.

- "Another company's offshore" - Indicates that initial processing occurs at an offshore facility that is owned by another entity and will not be named nor included in this survey response.
- "Onshore" - Indicates that initial processing occurs at an onshore facility.
- "State waters" - Indicates that initial processing occurs at a facility located within state waters.

Production - Describes the natural gas or oil products that were extracted at this structure during the specific survey period.

- Crude Oil Production (barrels): The quantity of crude oil extracted at this structure.
- Natural Gas Production (million standard cubic feet): The quantity of natural gas extracted at this structure, volume adjusted to standard temperature and pressure (60 degrees Fahrenheit, 1 atmosphere).
- Produced Natural Gas H<sub>2</sub>S Concentration (parts per million by volume): The average concentration of hydrogen sulfide in the produced natural gas for the current survey period.

Throughput - The total volume of natural gas or oil products handled at the current structure during the survey period, including production volumes and volumes transferred via pipeline from another location.

- Crude Oil Throughput (barrels): The total quantity of crude oil handled at the current structure.
- Natural Gas Throughput (million standard cubic feet): The total quantity of natural gas handled at the current structure, volume adjusted to standard temperature and pressure (60 degrees Fahrenheit, 1 atmosphere).
- Throughput Natural Gas H<sub>2</sub>S Concentration (parts per million by volume): The average concentration of hydrogen sulfide in the throughput natural gas.

Total fuel usage - The quantity of fuel consumed at this structure during the specific survey period.

- Natural gas fuel usage (thousand standard cubic feet) - The quantity of natural gas consumed at this structure.
- Gasoline usage (gallons) - The quantity of gasoline consumed at this structure.
- Diesel fuel usage (gallons) - The quantity of diesel fuel consumed at this structure.

Status - The status of the structure for the specific survey period.

- "Active" - Indicates that the structure or any of its equipment were active at some time during the survey period. Even brief activity qualifies.
- "Inactive" - Indicates that the structure and all of its equipment were unused for the entire month-long survey period.

Effective Date - Indicates the date that the status changed from Active to Inactive or vice versa. The effective date is only required if the status for the current survey period differs from that of the last survey period, or if the current survey is the first to be completed.

Comments - A space for general user comments regarding this structure, with a maximum length of 255 characters.

### **A.3.2 QC Results Tab**

Error Source – List of input variables and/or equipment for this structure that have been flagged with QC error messages.

Error Description – List of the reasons that QC error messages were assigned.

Operator Comment – List of user's explanations for unusual or unexpected values that were flagged with QC error messages. An operator comment indicates that the user wishes to override the QC error message. (Select an error message, then click "Add QC Comment" in order to add Operator Comments.)

## A.4 AMINE GAS SWEETENING UNIT

### A.4.1 General Information Tab

Processed Throughput (million standard cubic feet) – The total volume of natural gas processed by this amine unit during the specific monthly survey period, volume adjusted to standard temperature and pressure (60 degrees Fahrenheit, 1 atmosphere).

Hours operated – The total number of hours that this amine unit was in operation during the specific monthly survey period.

Amine unit elevation (feet above mean sea level) – The elevation of the amine unit at its base above mean sea level.

Unprocessed natural gas concentrations (percent by volume) – The volumetric concentrations of constituents present in the unprocessed natural gas stream, including the following:

- Hydrogen Sulfide
- Methane (CH<sub>4</sub>)
- Ethane (C<sub>2</sub>H<sub>6</sub>)
- C3 Hydrocarbons (hydrocarbons with 3 carbon atoms in their molecular structure)
- C4 Hydrocarbons
- C5 Hydrocarbons
- C6 Hydrocarbons
- C7 Hydrocarbons
- C8+ Hydrocarbons (hydrocarbons with 8 or more carbon atoms in their molecular structure)

Quantity emitted when uncontrolled (percent) – The mass percent emitted to the atmosphere of each constituent in the unprocessed natural gas stream, without accounting for any installed control equipment. Specify to the nearest 1/100 percent, if possible.

Status - The status of the amine unit for the specific survey period.

- "Active" - Indicates that the equipment was active at some time during the survey period. Even brief activity qualifies.
- "Inactive" - Indicates that the equipment was unused for the entire month-long survey period.

Effective Date - Indicates the date that the status changed from Active to Inactive or vice versa. The effective date is only required if the status for the current survey period differs from that of the last survey period, or if the current survey is the first to be completed.

Comments - A space for general user comments regarding this structure, with a maximum length of 255 characters.

#### **A.4.2 Ventilation System Tab**

Vented into low-pressure vent/flare manifold system? (yes/no) – Indicates whether the emissions from this equipment are gathered into a low-pressure manifold system to be vented or flared at some distance from the equipment.

Low-pressure vent/flare ID – Indicates the destination vent or flare identifier code (if emissions are directed through a low-pressure vent/flare manifold system). It may be necessary to first create a vent or flare before it will appear in the list (using the Edit|New Equipment menu).

Gases vented or flared? (vented/flared) - Indicate whether emissions are vented or flared locally through a process vent/flare (if emissions are not directed through a low-pressure vent/flare manifold system).

Outlet height (feet) – The height at the outlet of a process vent/flare above the amine unit (measured from the base of the amine unit to the top of the outlet).

Outlet inner diameter (inches) – The effective diameter of a process vent/flare.

Exit velocity (feet/second) – The exit velocity of emissions through the outlet of a process vent/flare.

Exit temperature (degrees Fahrenheit) – The temperature of gaseous emissions measured at the outlet of a process vent.

Outlet orientation (degrees) – The deviation of the outlet from vertically upward. 0 indicates an upward pointing outlet; 180 indicates a downward pointing outlet.

Flare feed rate (standard cubic feet per hour) – The volumetric feed rate to a process flare.

Combustion temperature (degrees Fahrenheit) – The combustion temperature of a process flare.

Combustion efficiency (percent) – The combustion efficiency of a process flare, or the completeness of hydrocarbon conversion to carbon dioxide (as CO<sub>2</sub>).

Installed control equipment – Indicates which common types of control devices are installed for this equipment.

Condenser temperature (degrees Fahrenheit) – The operating temperature of a condenser installed as a control device.

Condenser pressure (absolute pounds per square inch) – The operating pressure of a condenser installed as a control device.

Sulfur recovery efficiency (percent) – The efficiency for a sulfur recovery unit that is installed as a control device (as a percent of total sulfur).

#### **A.4.3 Control Equipment Tab**

Other control device? (yes/no) – Indicates whether additional controls are installed, other than the common control devices listed on the Ventilation System Tab.

Description – If present, a description of other control devices is required (other than those listed on the Ventilation System Tab).

SO<sub>x</sub> efficiency (percent) – The total combined reductions in sulfur oxides emissions achieved by all other installed control devices (other than those listed on the Ventilation System Tab).

NO<sub>x</sub> efficiency (percent) – The total combined reductions in nitrogen oxides emissions achieved by all other installed control devices (other than those listed on the Ventilation System Tab).

CO efficiency (percent) – The total combined reductions in carbon monoxide emissions achieved by all other installed control devices (other than those listed on the Ventilation System Tab).

VOC efficiency (percent) – The total combined reductions in volatile organics emissions achieved by all other installed control devices (other than those listed on the Ventilation System Tab).

PM<sub>10</sub> efficiency (percent) – The total combined reductions in PM<sub>10</sub> emissions (particulate matter under 10 microns in diameter) achieved by all other installed control devices (other than those listed on the Ventilation System Tab).

#### **A.4.4 QC Results Tab**

Error Source – List of input variables for this equipment that have been flagged with QC error messages.

Error Description – List of the reasons that QC error messages were assigned.

Operator Comment – List of user's explanations for unusual or unexpected values that were flagged with QC error messages. An operator comment indicates that the user wishes to override the QC error message. (Select an error message, then click "Add QC Comment" in order to add Operator Comments.)



## **A.5 BOILER/HEATER/BURNER**

### **A.5.1 General Information Tab**

Equipment elevation (feet above mean sea level) – The elevation of a boiler/heater/burner, measured from mean sea level to its base.

Hours operated – The total number of hours that this boiler/heater/burner was in operation during the specific monthly survey period.

Fuel type – The type of fuel burned by the equipment.

Fuel H<sub>2</sub>S content (parts per million by volume) – The concentration of hydrogen sulfide in gaseous fuel types.

Fuel sulfur content (percent by mass) – The sulfur content in liquid fuel types.

Fuel heating value (British thermal units/standard cubic feet) – The energy content of gaseous fuel types.

Fuel heating value (British thermal units per pound) – The energy content of liquid fuel types.

Max rated heat input (million British thermal units per hour) – The manufacturer's maximum rated heat input rate.

Average heat input (million British thermal units per hour) – The average heat input rate during operation this survey period.

Max rated fuel usage (standard cubic feet per hour) – The maximum rate of gaseous fuel usage, volume adjusted to standard temperature and pressure (60 degrees Fahrenheit, 1 atmosphere).

Average fuel usage (standard cubic feet per hour) – The average rate of gaseous fuel usage during operation this survey period, volume adjusted to standard temperature and pressure (60 degrees Fahrenheit, 1 atmosphere).

Max rated fuel usage (pounds per hour) – The maximum rate of liquid fuel usage.

Average fuel usage (pounds per hour) – The average rate of liquid fuel usage during operation this survey period.

Total fuel used (thousand standard cubic feet) – Total gaseous fuel used during this survey period, volume adjusted to standard temperature and pressure (60 degrees Fahrenheit, 1 atmosphere).

Total fuel used (pounds) – Total liquid fuel used during this survey period.

Status - The status of the boiler/heater/burner for the specific survey period.

- "Active" - Indicates that the equipment was active at some time during the survey period. Even brief activity qualifies.
- "Inactive" - Indicates that the equipment was unused for the entire month-long survey period.

Effective Date - Indicates the date that the status changed from Active to Inactive or vice versa. The effective date is only required if the status for the current survey period differs from that of the last survey period, or if the current survey is the first to be completed.

Comments - A space for general user comments regarding this structure, with a maximum length of 255 characters.

### **A.5.2 Exhaust System Tab**

Outlet height (feet) – The height of the exhaust outlet above the boiler/heater/burner (measured from the base of the boiler/heater/burner to the top of the outlet).

Outlet inner diameter (inches) – The inner diameter of the exhaust outlet.

Exit velocity (feet/second) – The exit velocity of emissions through the exhaust outlet.

Exit temperature (degrees Fahrenheit) – The temperature of gaseous emissions measured at the exhaust outlet.

Outlet orientation (degrees) – The deviation of the exhaust outlet from vertically upward. 0 indicates an upward pointing outlet; 180 indicates a downward pointing outlet.

Emission controls – Indicates which common types of control devices are installed for this equipment.

### **A.5.3 Control Equipment Tab**

Other control device? (yes/no) – Indicates whether additional controls are installed, other than the common control devices listed on the Exhaust System Tab.

Description – If present, a description of other control devices is required (other than those listed on the Exhaust System Tab).

SO<sub>x</sub> efficiency (percent) – The total combined reductions in sulfur oxides emissions achieved by all other installed control devices (other than those listed on the Exhaust System Tab).

NO<sub>x</sub> efficiency (percent) – The total combined reductions in nitrogen oxides emissions achieved by all other installed control devices (other than those listed on the Exhaust System Tab).

CO efficiency (percent) – The total combined reductions in carbon monoxide emissions achieved by all other installed control devices (other than those listed on the Exhaust System Tab).

VOC efficiency (percent) – The total combined reductions in volatile organics emissions achieved by all other installed control devices (other than those listed on the Exhaust System Tab).

PM<sub>10</sub> efficiency (percent) – The total combined reductions in PM<sub>10</sub> emissions (particulate matter under 10 microns in diameter) achieved by all other installed control devices (other than those listed on the Exhaust System Tab).

#### **A.5.4 QC Results Tab**

Error Source – List of input variables for this equipment that have been flagged with QC error messages.

Error Description – List of the reasons that QC error messages were assigned.

Operator Comment – List of user's explanations for unusual or unexpected values that were flagged with QC error messages. An operator comment indicates that the user wishes to override the QC error message. (Select an error message, then click "Add QC Comment" in order to add Operator Comments.)

## **A.6 DIESEL OR GASOLINE ENGINE**

### **A.6.1 General Information Tab**

Engine elevation (feet above mean sea level) – The elevation of an engine, measured from mean sea level to its base.

Hours operated – The total number of hours that this engine was in operation during the specific monthly survey period.

Fuel type – The type of fuel burned by the equipment.

Fuel sulfur content (percent by mass) – The sulfur content in liquid fuel types.

Fuel heating value (British thermal units per pound) – The energy content of liquid fuel types.

Max rated horsepower (horsepower) – The manufacturer's maximum rated horsepower output.

Operating horsepower (horsepower) – The operating horsepower during operation this survey period.

Max rated fuel usage (British thermal units per horsepower-hour) – The manufacturer's maximum rate of fuel usage.

Average fuel usage (British thermal units per horsepower-hour) – The average rate of fuel usage during operation this survey period.

Total fuel used (gallons) – Total liquid fuel used during this survey period.

Status - The status of the engine for the specific survey period.

- "Active" - Indicates that the equipment was active at some time during the survey period. Even brief activity qualifies.
- "Inactive" - Indicates that the equipment was unused for the entire month-long survey period.

Effective Date - Indicates the date that the status changed from Active to Inactive or vice versa. The effective date is only required if the status for the current survey period differs from that of the last survey period, or if the current survey is the first to be completed.

Comments - A space for general user comments regarding this structure, with a maximum length of 255 characters.

### **A.6.2 Exhaust System Tab**

Outlet height (feet) – The height of the exhaust outlet above the engine (measured from the base of the engine to the top of the outlet).

Outlet inner diameter (inches) – The inner diameter of the exhaust outlet.

Exit velocity (feet/second) – The exit velocity of emissions through the exhaust outlet.

Exit temperature (degrees Fahrenheit) – The temperature of gaseous emissions measured at the exhaust outlet.

Outlet orientation (degrees) – The deviation of the exhaust outlet from vertically upward. 0 indicates an upward pointing outlet; 180 indicates a downward pointing outlet.

### **A.6.3 Control Equipment Tab**

Other control device? (yes/no) – Indicates whether additional controls are installed, other than the common control devices listed on the Exhaust System Tab.

Description – If present, a description of other control devices is required (other than those listed on the Exhaust System Tab).

SO<sub>x</sub> efficiency (percent) – The total combined reductions in sulfur oxides emissions achieved by all other installed control devices (other than those listed on the Exhaust System Tab).

NO<sub>x</sub> efficiency (percent) – The total combined reductions in nitrogen oxides emissions achieved by all other installed control devices (other than those listed on the Exhaust System Tab).

CO efficiency (percent) – The total combined reductions in carbon monoxide emissions achieved by all other installed control devices (other than those listed on the Exhaust System Tab).

VOC efficiency (percent) – The total combined reductions in volatile organics emissions achieved by all other installed control devices (other than those listed on the Exhaust System Tab).

PM<sub>10</sub> efficiency (percent) – The total combined reductions in PM<sub>10</sub> emissions (particulate matter under 10 microns in diameter) achieved by all other installed control devices (other than those listed on the Exhaust System Tab).

### **A.6.4 QC Results Tab**

Error Source – List of input variables for this equipment that have been flagged with QC error messages.

Error Description – List of the reasons that QC error messages were assigned.

Operator Comment – List of user's explanations for unusual or unexpected values that were flagged with QC error messages. An operator comment indicates that the user wishes to override the QC error message. (Select an error message, then click "Add QC Comment" in order to add Operator Comments.)

## **A.7 FLARE**

### **A.7.1 General Information Tab**

Number of upset flare occurrences – The number of incidents of continuous flaring due to plant upset conditions. An incident is a period of continuous flare operation, which may range from minutes to days.

Hours operated, excluding upsets – The total number of hours that the flare was operated during the survey period, excluding periods of upset flaring.

Volume flared (thousand standard cubic feet), excluding upsets – The total volume of gas flared during the survey period, excluding periods of upset flaring, volume adjusted to standard temperature and pressure (60 degrees Fahrenheit, 1 atmosphere).

Flare gas H<sub>2</sub>S Concentration (parts per million by volume) – The concentration of hydrogen sulfide present in the flare feed gas.

Is there a continuous pilot? (yes/no) – Indicates whether the flare stack is equipped with a continuous pilot light.

Pilot fuel feed rate (thousand standard cubic feet per day) – The feed rate of natural gas to a continuous pilot light.

Flare combustion efficiency (percent) – The flare combustion efficiency, or the completeness of hydrocarbon conversion to carbon dioxide (as CO<sub>2</sub>).

Smoking condition – A qualitative assessment of the level of smoke emitted from the flare

- None (Soot emissions are approximately 0 pounds per million British thermal units of flare gas consumed.)
- Light (Soot emissions are approximately 40 pounds per million British thermal units of flare gas consumed.)
- Medium - (Soot emissions are approximately 177 pounds per million British thermal units of flare gas consumed.)
- Heavy - (Soot emissions are approximately 274 pounds per million British thermal units of flare gas consumed.)

Stack outlet elevation (feet above mean sea level) – The elevation of the flare stack outlet above mean sea level.

Stack inner diameter (inches) – The effective diameter of the flare stack at its outlet.

Average exit velocity (feet per second), excluding upsets – The average exit velocity of flare feed gas at the flare stack outlet during the survey period, excluding periods of upset conditions.

Average combustion temperature (degrees Fahrenheit), excluding upsets – The average flare combustion temperature during the survey period, excluding periods of upset flaring.

Stack orientation (degrees) - The deviation of the stack outlet from vertically upward. 0 indicates an upward pointing outlet; 180 indicates a downward pointing outlet.

Status - The status of the flare for the specific survey period.

- "Active" - Indicates that the flare was active at some time during the survey period. Even brief activity qualifies.
- "Inactive" - Indicates that the flare was unused for the entire month-long survey period.

Effective Date - Indicates the date that the status changed from Active to Inactive or vice versa. The effective date is only required if the status for the current survey period differs from that of the last survey period, or if the current survey is the first to be completed.

Comments - A space for general user comments regarding this structure, with a maximum length of 255 characters.

### **A.7.2 Control Equipment Tab**

Other control device? (yes/no) – Indicates whether controls are installed.

Description – If present, a description of other control devices is required.

SO<sub>x</sub> efficiency (percent) – The total combined reductions in sulfur oxides emissions achieved by all other installed control devices.

NO<sub>x</sub> efficiency (percent) – The total combined reductions in nitrogen oxides emissions achieved by all other installed control devices.

CO efficiency (percent) – The total combined reductions in carbon monoxide emissions achieved by all other installed control devices.

VOC efficiency (percent) – The total combined reductions in volatile organics emissions achieved by all other installed control devices.

PM<sub>10</sub> efficiency (percent) – The total combined reductions in PM<sub>10</sub> emissions (particulate matter under 10 microns in diameter) achieved by all other installed control devices.

### **A.7.3 Upsets Tab**

Time stamp – Lists all flare upset occurrences by the date and time of the beginning of the upset. (To add a flare occurrence, click “Add Occurrence. To delete or edit, select an occurrence in the list and click “Delete Occurrence” or “Edit Occurrence”.)

Hours – The duration of each flare upset occurrence.

Average flare feed (thousand standard cubic feet per hour) – The average flare feed rate observed during the upset.

H<sub>2</sub>S concentration (parts per million by volume) – The average concentration of hydrogen sulfide in the flare feed gas.

Combustion temperature (degrees Fahrenheit) – The average combustion temperature observed during the flare upset.

Comments - A space for general user comments regarding each flare upset, with a maximum length of 255 characters.

#### **A.7.4 QC Results Tab**

Error Source – List of input variables for this equipment that have been flagged with QC error messages.

Error Description – List of the reasons that QC error messages were assigned.

Operator Comment – List of user's explanations for unusual or unexpected values that were flagged with QC error messages. An operator comment indicates that the user wishes to override the QC error message. (Select an error message, then click "Add QC Comment" in order to add Operator Comments.)



## A.8 FUGITIVES

### A.8.1 General Information Tab

Stream type – Indicates the type of process stream handled by the set of components to be inventoried. (Components for different process streams at the same structure should be inventoried separately.)

- Light oil (API gravity  $\geq 20^\circ$  API)
- Heavy oil (API gravity  $< 20^\circ$  API)
- Oil/water mixture
- Oil/water/gas mixture
- Natural gas
- Natural gas liquids

Facility Size – Indicates a rough estimate of the total count of all components at this facility that handle the selected stream type.

Average VOC weight percent of fugitives – The average VOC content of fugitive emissions for the inventoried components and the selected stream type.

Average equipment elevation (feet above mean sea level) – At approximate average elevation of the inventoried components.

Equipment inventory (number of components) – An inventory of each type of component that handles the selected process stream at this structure.

Status - The status of fugitive losses for the specific survey period.

- "Active" - Indicates that the fugitive losses may have occurred at some time during the survey period. Even brief activity qualifies.
- "Inactive" - Indicates that no activity occurred that might have resulted in fugitive losses for the entire month-long survey period.

Effective Date - Indicates the date that the status changed from Active to Inactive or vice versa. The effective date is only required if the status for the current survey period differs from that of the last survey period, or if the current survey is the first to be completed.

Comments - A space for general user comments regarding this structure, with a maximum length of 255 characters.

### **A.8.2 Ventilation System Tab**

Vented into low-pressure vent/flare manifold system? (yes/no) – Indicates whether the emissions from this equipment are gathered into a low-pressure manifold system to be vented or flared at some distance from the equipment.

Low-pressure vent/flare ID – Indicates the destination vent or flare identifier code (if emissions are directed through a low-pressure vent/flare manifold system). It may be necessary to first create a vent or flare before it will appear in the list (using the Edit|New Equipment menu).

Gases vented or flared? (vented/flared) - Indicate whether emissions are vented or flared locally through a process vent/flare (if emissions are not directed through a low-pressure vent/flare manifold system).

Outlet height (feet) – The height at the outlet of a process vent/flare above the fugitives source (measured from the fugitives source to the top of the outlet).

Outlet inner diameter (inches) – The inner diameter of a process vent/flare.

Exit velocity (feet/second) – The exit velocity of emissions through the outlet of a process vent/flare.

Exit temperature (degrees Fahrenheit) – The temperature of gaseous emissions measured at the outlet of a process vent.

Outlet orientation (degrees) – The deviation of the outlet from vertically upward. 0 indicates an upward pointing outlet; 180 indicates a downward pointing outlet.

Flare feed rate (standard cubic feet per hour) – The volumetric feed rate to a process flare.

Combustion temperature (degrees Fahrenheit) – The combustion temperature of a process flare.

Combustion efficiency (percent) – The combustion efficiency of a process flare, or the completeness of hydrocarbon conversion to carbon dioxide (as CO<sub>2</sub>).

### **A.8.3 Control Equipment Tab**

Other control device? (yes/no) – Indicates whether additional controls are installed, other than the common control devices listed on the Ventilation System Tab.

Description – If present, a description of other control devices is required (other than those listed on the Ventilation System Tab).

SO<sub>x</sub> efficiency (percent) – The total combined reductions in sulfur oxides emissions achieved by all other installed control devices (other than those listed on the Ventilation System Tab).

NO<sub>x</sub> efficiency (percent) – The total combined reductions in nitrogen oxides emissions achieved by all other installed control devices (other than those listed on the Ventilation System Tab).

CO efficiency (percent) – The total combined reductions in carbon monoxide emissions achieved by all other installed control devices (other than those listed on the Ventilation System Tab).

VOC efficiency (percent) – The total combined reductions in volatile organics emissions achieved by all other installed control devices (other than those listed on the Ventilation System Tab).

PM<sub>10</sub> efficiency (percent) – The total combined reductions in PM<sub>10</sub> emissions (particulate matter under 10 microns in diameter) achieved by all other installed control devices (other than those listed on the Ventilation System Tab).

#### **A.8.4 QC Results Tab**

Error Source – List of input variables for this equipment that have been flagged with QC error messages.

Error Description – List of the reasons that QC error messages were assigned.

Operator Comment – List of user's explanations for unusual or unexpected values that were flagged with QC error messages. An operator comment indicates that the user wishes to override the QC error message. (Select an error message, then click "Add QC Comment" in order to add Operator Comments.)

## **A.9 GLYCOL DEHYDRATOR UNIT**

### **A.9.1 General Information Tab**

Note that the fire tube is considered to be a boiler/heater/burner. Information about the fire tube should be entered on the data entry screen for boiler/heater/burner. Access the boiler/heater/burner data entry screen by selecting Edit|New Equipment from the BOADS main menu. Select "Boiler, Heater, or Burner" as the new equipment type.

Also note that recovered vapors, which are combusted elsewhere at the facility, should be accounted for by the equipment type where they are combusted. Vapors that are vented or flared locally or that are collected into the facility manifold system may be accounted for on the Ventilation System Tab.

Processed throughput (million standard cubic feet) – The total volume of natural gas processed by this glycol unit during the specific monthly survey period, volume adjusted to standard temperature and pressure (60 degrees Fahrenheit, 1 atmosphere).

Hours operated – The total number of hours that this glycol unit was in operation during the specific monthly survey period.

Glycol unit elevation (feet above mean sea level) – The elevation of the glycol unit, measured from mean sea level to its base.

Glycol type (TEG/EG) – Indicates the type of glycol used in this unit, triethylene glycol (TEG) or ethylene glycol (EG).

Glycol circulation rate (gallons per minute) – The rate of glycol circulation through the glycol unit.

Glycol pump type (electric/gas) – The type of pump that drives glycol circulation.

Lean glycol H<sub>2</sub>O content (weight percent) – The water content of the lean, or recharged, glycol.

Wet gas H<sub>2</sub>O content (pounds per million standard cubic feet) – The water content of the natural gas prior to glycol dehydration.

Dry gas H<sub>2</sub>O content (pounds per million standard cubic feet) – The water content of the natural gas following glycol dehydration.

Wet gas temperature (degrees Fahrenheit) – The temperature of the natural gas prior to glycol dehydration.

Wet gas pressure (pounds per square inch gauge) – The pressure of the natural gas prior to glycol dehydration.

Cold separator temperature (degrees Fahrenheit) – The temperature of the combined gas and glycol downstream of any refrigeration. If no refrigeration is present, then this is the temperature downstream from the separator.

Cold separator pressure (pounds per square inch gauge) – The pressure of the combined gas and glycol downstream of any refrigeration. If no refrigeration is present, then this is the pressure downstream from the separator.

Unprocessed natural gas concentrations (percent by volume) – The volumetric concentrations of constituents present in the unprocessed natural gas stream, including the following:

- Hydrogen Sulfide
- Methane (CH<sub>4</sub>)
- Ethane (C<sub>2</sub>H<sub>6</sub>)
- C3 Hydrocarbons (hydrocarbons with 3 carbon atoms in their molecular structure)
- C4 Hydrocarbons
- C5 Hydrocarbons
- C6 Hydrocarbons
- C7 Hydrocarbons
- C8+ Hydrocarbons (hydrocarbons with 8 or more carbon atoms in their molecular structure)

Equipped with a flash tank? (yes/no) – Indicates whether the system is equipped with a flash tank (or separator) that vents to the atmosphere. Respond 'no' if the flash tank does not vent to the atmosphere.

Flash tank temperature (degrees Fahrenheit) – The temperature of the flash tank.

Flash tank pressure (pounds per square inch gauge) – The pressure of the flash tank.

Uses stripping gas? – Indicates what type of stripping gas (if any) is used in the regenerator to improve water removal from the rich glycol.

- None
- Dry gas
- Flash gas – Exhaust from the flash tank
- Nitrogen – From a nitrogen supply

Stripping gas flow rate (standard cubic feet per minute) – The flow rate of stripping gas to the regenerator, volume adjusted to standard temperature and pressure (60 degrees Fahrenheit, 1 atmosphere).

Status - The status of the glycol dehydrator for the specific survey period.

- "Active" - Indicates that the equipment was active at some time during the survey period. Even brief activity qualifies.
- "Inactive" - Indicates that the equipment was unused for the entire month-long survey period.

Effective Date - Indicates the date that the status changed from Active to Inactive or vice versa. The effective date is only required if the status for the current survey period differs from that of the last survey period, or if the current survey is the first to be completed.

Comments - A space for general user comments regarding this structure, with a maximum length of 255 characters.

### **A.9.2 Ventilation System Tab**

Vented into low-pressure vent/flare manifold system? (yes/no) – Indicates whether the emissions from this equipment are gathered into a low-pressure manifold system to be vented or flared at some distance from the equipment.

Low-pressure vent/flare ID – Indicates the destination vent or flare identifier code (if emissions are directed through a low-pressure vent/flare manifold system). It may be necessary to first create a vent or flare before it will appear in the list (using the Edit|New Equipment menu).

Gases vented or flared? (vented/flared) - Indicate whether emissions are vented or flared locally through a process vent/flare (if emissions are not directed through a low-pressure vent/flare manifold system).

Outlet height (feet) – The height at the outlet of a process vent/flare above the glycol dehydrator (measured from the base of the glycol dehydrator to the top of the outlet).

Outlet inner diameter (inches) – The inner diameter of a process vent/flare.

Exit velocity (feet/second) – The exit velocity of emissions through the outlet of a process vent/flare.

Exit temperature (degrees Fahrenheit) – The temperature of gaseous emissions measured at the outlet of a process vent.

Outlet orientation (degrees) – The deviation of the outlet from vertically upward. 0 indicates an upward pointing outlet; 180 indicates a downward pointing outlet.

Flare feed rate (standard cubic feet per hour) – The volumetric feed rate to a process flare.

Combustion temperature (degrees Fahrenheit) – The combustion temperature of a process flare.

Combustion efficiency (percent) – The combustion efficiency of a process flare, or the completeness of hydrocarbon conversion to carbon dioxide (as CO<sub>2</sub>).

Installed control equipment – Indicates which common types of control devices are installed for this equipment.

Condenser temperature (degrees Fahrenheit) – The operating temperature of a condenser installed as a control device.

Condenser pressure (absolute pounds per square inch) – The operating temperature of a condenser installed as a control device.

### **A.9.3 Control Equipment Tab**

Other control device? (yes/no) – Indicates whether additional controls are installed, other than the common control devices listed on the Ventilation System Tab.

Description – If present, a description of other control devices is required (other than those listed on the Ventilation System Tab).

SO<sub>x</sub> efficiency (percent) – The total combined reductions in sulfur oxides emissions achieved by all other installed control devices (other than those listed on the Ventilation System Tab).

NO<sub>x</sub> efficiency (percent) – The total combined reductions in nitrogen oxides emissions achieved by all other installed control devices (other than those listed on the Ventilation System Tab).

CO efficiency (percent) – The total combined reductions in carbon monoxide emissions achieved by all other installed control devices (other than those listed on the Ventilation System Tab).

VOC efficiency (percent) – The total combined reductions in volatile organics emissions achieved by all other installed control devices (other than those listed on the Ventilation System Tab).

PM<sub>10</sub> efficiency (percent) – The total combined reductions in PM<sub>10</sub> emissions (particulate matter under 10 microns in diameter) achieved by all other installed control devices (other than those listed on the Ventilation System Tab).

### **A.9.4 QC Results Tab**

Error Source – List of input variables for this equipment that have been flagged with QC error messages.

Error Description – List of the reasons that QC error messages were assigned.

Operator Comment – List of user's explanations for unusual or unexpected values that were flagged with QC error messages. An operator comment indicates that the user wishes to override the QC error message. (Select an error message, then click "Add QC Comment" in order to add Operator Comments.)



## **A.10 DRILLING RIG**

### **A.10.1 General Information Tab**

Hours operated – The number of hours that a drilling rig was present and working at this structure.

Total diesel fuel usage (gallons) – The total diesel fuel used by the drilling rig during the survey period.

Total gasoline fuel usage (gallons) – The total gasoline fuel used by the drilling rig during the survey period.

Total natural gas fuel usage (thousand standard cubic feet) - The total natural gas used by the drilling rig during the survey period, volume adjusted to standard temperature and pressure (60 degrees Fahrenheit, 1 atmosphere).

Status - The status of the drilling rig for the specific survey period.

- "Active" - Indicates that the drilling rig was present at some time during the survey period. Even brief activity qualifies.
- "Inactive" - Indicates that the drilling rig was absent for the entire month-long survey period.

Effective Date - Indicates the date that the status changed from Active to Inactive or vice versa. The effective date is only required if the status for the current survey period differs from that of the last survey period, or if the current survey is the first to be completed.

Comments - A space for general user comments regarding this structure, with a maximum length of 255 characters.

### **A.10.2 Control Equipment Tab**

Other control device? (yes/no) – Indicates whether controls are installed.

Description – If present, a description of other control devices is required.

SO<sub>x</sub> efficiency (percent) – The total combined reductions in sulfur oxides emissions achieved by all other installed control devices.

NO<sub>x</sub> efficiency (percent) – The total combined reductions in nitrogen oxides emissions achieved by all other installed control devices.

CO efficiency (percent) – The total combined reductions in carbon monoxide emissions achieved by all other installed control devices.

VOC efficiency (percent) – The total combined reductions in volatile organics emissions achieved by all other installed control devices.

PM<sub>10</sub> efficiency (percent) – The total combined reductions in PM<sub>10</sub> emissions (particulate matter under 10 microns in diameter) achieved by all other installed control devices.

### **A.10.3 QC Results Tab**

Error Source – List of input variables for this equipment that have been flagged with QC error messages.

Error Description – List of the reasons that QC error messages were assigned.

Operator Comment – List of user's explanations for unusual or unexpected values that were flagged with QC error messages. An operator comment indicates that the user wishes to override the QC error message. (Select an error message, then click "Add QC Comment" in order to add Operator Comments.)

## **A.11 LOADING OPERATION**

### **A.11.1 General Information Tab**

Volume loaded (barrels) – The quantity of liquid hydrocarbon loaded into ships or barges at this structure.

Average elevation (feet above mean sea level) – The approximate elevation of loading operations, measured from mean sea level to the point of dispensing.

Storage tank paint color – The exterior paint color of the dispensing storage tank.

Storage tank paint condition – The exterior paint condition of the dispensing storage tank.

Bulk liquid temperature (degrees Fahrenheit) – The bulk temperature of the liquid contained within the dispensing storage tank.

Product Reid vapor pressure (absolute pounds per square inch) – The Reid vapor pressure of the liquid contained within the dispensing storage tank.

Average percent by weight of VOCs in tank vapor (percent) – The VOC content of vapors in the storage tank headspace, measured as weight percent.

Average molecular weight of VOCs in tank vapor (pounds per pound-mol) – The average molecular weight of VOCs present in the storage tank headspace.

Status - The status of the loading operations for the specific survey period.

- "Active" - Indicates that loading operations occurred at some time during the survey period. Even brief activity qualifies.
- "Inactive" - Indicates that no loading operations occurred for the entire month-long survey period.

Effective Date - Indicates the date that the status changed from Active to Inactive or vice versa. The effective date is only required if the status for the current survey period differs from that of the last survey period, or if the current survey is the first to be completed.

Comments - A space for general user comments regarding this structure, with a maximum length of 255 characters.

### **A.11.2 Ventilation System Tab**

Vented into low-pressure vent/flare manifold system? (yes/no) – Indicates whether the emissions from this equipment are gathered into a low-pressure manifold system to be vented or flared at some distance from the equipment.

Low-pressure vent/flare ID – Indicates the destination vent or flare identifier code (if emissions are directed through a low-pressure vent/flare manifold system). It may be necessary to first create a vent or flare before it will appear in the list (using the Edit|New Equipment menu).

Gases vented or flared? (vented/flared) - Indicate whether emissions are vented or flared locally through a process vent/flare (if emissions are not directed through a low-pressure vent/flare manifold system).

Outlet height (feet) – The height at the outlet of a process vent/flare above the loading operation (measured from the point of dispensing to the top of the outlet).

Outlet inner diameter (inches) – The inner diameter of a process vent/flare.

Exit velocity (feet/second) – The exit velocity of emissions through the outlet of a process vent/flare.

Exit temperature (degrees Fahrenheit) – The temperature of gaseous emissions measured at the outlet of a process vent.

Outlet orientation (degrees) – The deviation of the outlet from vertically upward. 0 indicates an upward pointing outlet; 180 indicates a downward pointing outlet.

Flare feed rate (standard cubic feet per hour) – The volumetric feed rate to a process flare.

Combustion temperature (degrees Fahrenheit) – The combustion temperature of a process flare.

Combustion efficiency (percent) – The combustion efficiency of a process flare, or the completeness of hydrocarbon conversion to carbon dioxide (as CO<sub>2</sub>).

Installed control equipment – Indicates which common types of control devices are installed for this equipment.

### **A.11.3 Control Equipment Tab**

Other control device? (yes/no) – Indicates whether additional controls are installed, other than the common control devices listed on the Ventilation System Tab.

Description – If present, a description of other control devices is required (other than those listed on the Ventilation System Tab).

SO<sub>x</sub> efficiency (percent) – The total combined reductions in sulfur oxides emissions achieved by all other installed control devices (other than those listed on the Ventilation System Tab).

NO<sub>x</sub> efficiency (percent) – The total combined reductions in nitrogen oxides emissions achieved by all other installed control devices (other than those listed on the Ventilation System Tab).

CO efficiency (percent) – The total combined reductions in carbon monoxide emissions achieved by all other installed control devices (other than those listed on the Ventilation System Tab).

VOC efficiency (percent) – The total combined reductions in volatile organics emissions achieved by all other installed control devices (other than those listed on the Ventilation System Tab).

PM<sub>10</sub> efficiency (percent) – The total combined reductions in PM<sub>10</sub> emissions (particulate matter under 10 microns in diameter) achieved by all other installed control devices (other than those listed on the Ventilation System Tab).

#### **A.11.4 QC Results Tab**

Error Source – List of input variables for this equipment that have been flagged with QC error messages.

Error Description – List of the reasons that QC error messages were assigned.

Operator Comment – List of user's explanations for unusual or unexpected values that were flagged with QC error messages. An operator comment indicates that the user wishes to override the QC error message. (Select an error message, then click "Add QC Comment" in order to add Operator Comments.)

## **A.12 NATURAL GAS ENGINE**

### **A.12.1 General Information Tab**

Engine elevation (feet above mean sea level) – The elevation of an engine, measured from mean sea level to its base.

Hours operated – The total number of hours that this engine was in operation during the specific monthly survey period.

Manufacturer – The company name of the engine manufacturer.

Model No. – The manufacturer's model number of the engine.

Engine stroke – Indicates whether the engine is a 2-stroke design or a 4-stroke design.

Engine burn – Indicates the fuel burn conditions (lean-burn, rich-burn, or clean-burn).

Fuel H<sub>2</sub>S content (parts per million by volume) – The concentration of hydrogen sulfide in gaseous fuel types.

Fuel heating value (British thermal units per standard cubic feet) – The energy content of gaseous fuel types.

Max rated horsepower (horsepower) – The manufacturer's maximum rated horsepower output.

Operating horsepower (horsepower) – The operating horsepower during operation this survey period.

Max rated fuel usage (British thermal units per horsepower-hour) – The manufacturer's maximum rate of fuel usage.

Average fuel usage (British thermal units per horsepower-hour) – The average rate of fuel usage during operation this survey period.

Total fuel used (thousand standard cubic feet) – Total gaseous fuel used during this survey period, volume adjusted to standard temperature and pressure (60 degrees Fahrenheit, 1 atmosphere).

Status - The status of the engine for the specific survey period.

- "Active" - Indicates that the equipment was active at some time during the survey period. Even brief activity qualifies.
- "Inactive" - Indicates that the equipment was unused for the entire month-long survey period.

Effective Date - Indicates the date that the status changed from Active to Inactive or vice versa. The effective date is only required if the status for the current survey period differs from that of the last survey period, or if the current survey is the first to be completed.

Comments - A space for general user comments regarding this structure, with a maximum length of 255 characters.

### **A.12.2 Exhaust System Tab**

Outlet height (feet) – The height of the exhaust outlet above the engine (measured from the base of the engine to the top of the outlet).

Outlet inner diameter (inches) – The inner diameter of the exhaust outlet.

Exit velocity (feet/second) – The exit velocity of emissions through the exhaust outlet.

Exit temperature (degrees Fahrenheit) – The temperature of gaseous emissions measured at the exhaust outlet.

Outlet orientation (degrees) – The deviation of the exhaust outlet from vertically upward. 0 indicates an upward pointing outlet; 180 indicates a downward pointing outlet.

### **A.12.3 Control Equipment Tab**

Other control device? (yes/no) – Indicates whether additional controls are installed.

Description – If present, a description of other control devices is required.

SO<sub>x</sub> efficiency (percent) – The total combined reductions in sulfur oxides emissions achieved by all other installed control devices (other than those listed on the Exhaust System Tab).

NO<sub>x</sub> efficiency (percent) – The total combined reductions in nitrogen oxides emissions achieved by all other installed control devices.

CO efficiency (percent) – The total combined reductions in carbon monoxide emissions achieved by all other installed control devices.

VOC efficiency (percent) – The total combined reductions in volatile organic compound emissions achieved by all other installed control devices.

PM<sub>10</sub> efficiency (percent) – The total combined reductions in PM<sub>10</sub> emissions (particulate matter under 10 microns in diameter) achieved by all other installed control devices.

#### **A.12.4 QC Results Tab**

Error Source – List of input variables for this equipment that have been flagged with QC error messages.

Error Description – List of the reasons that QC error messages were assigned.

Operator Comment – List of user's explanations for unusual or unexpected values that were flagged with QC error messages. An operator comment indicates that the user wishes to override the QC error message. (Select an error message, then click "Add QC Comment" in order to add Operator Comments.)



## **A.13 NATURAL GAS TURBINE**

### **A.13.1 General Information Tab**

Engine elevation (feet above mean sea level) – The elevation of a natural gas turbine, measured from mean sea level to its base.

Hours operated – The total number of hours that this turbine was in operation during the specific monthly survey period.

Manufacturer – The company name of the engine manufacturer.

Model No. – The manufacturer's model number of the engine.

Engine purpose of use – Engine purpose of use - The purpose for which this turbine is used.

- Electricity Generation
- Product Pressurization
- Other

Fuel H<sub>2</sub>S content (parts per million by volume) – The concentration of hydrogen sulfide in gaseous fuel types.

Fuel heating value (British thermal units per standard cubic feet) – The energy content of gaseous fuel types.

Max rated horsepower (horsepower) – The manufacturer's maximum rated horsepower output.

Operating horsepower (horsepower) – The operating horsepower during operation this survey period.

Max rated fuel usage (British thermal units per horsepower-hour) – The manufacturer's maximum rate of fuel usage.

Average fuel usage (British thermal units per horsepower-hour) – The average rate of fuel usage during operation this survey period.

Total fuel used (thousand standard cubic feet) – Total gaseous fuel used during this survey period, volume adjusted to standard temperature and pressure (60 degrees Fahrenheit, 1 atmosphere).

Status - The status of the turbine for the specific survey period.

- "Active" - Indicates that the equipment was active at some time during the survey period. Even brief activity qualifies.
- "Inactive" - Indicates that the equipment was unused for the entire month-long survey period.

Effective Date - Indicates the date that the status changed from Active to Inactive or vice versa. The effective date is only required if the status for the current survey period differs from that of the last survey period, or if the current survey is the first to be completed.

Comments - A space for general user comments regarding this structure, with a maximum length of 255 characters.

### **A.13.2 Exhaust System Tab**

Outlet height (feet) – The height of the exhaust outlet above the turbine (measured from the base of the turbine to the top of the outlet).

Outlet inner diameter (inches) – The inner diameter of the exhaust outlet.

Exit velocity (feet/second) – The exit velocity of emissions through the exhaust outlet.

Exit temperature (degrees Fahrenheit) – The temperature of gaseous emissions measured at the exhaust outlet.

Outlet orientation (degrees) – The deviation of the exhaust outlet from vertically upward. 0 indicates an upward pointing outlet; 180 indicates a downward pointing outlet.

### **A.13.3 Control Equipment Tab**

Other control device? (yes/no) – Indicates whether additional controls are installed, other than the common control devices listed on the Exhaust System Tab.

Description – If present, a description of other control devices is required (other than those listed on the Exhaust System Tab).

SO<sub>x</sub> efficiency (percent) – The total combined reductions in sulfur oxides emissions achieved by all other installed control devices (other than those listed on the Exhaust System Tab).

NO<sub>x</sub> efficiency (percent) – The total combined reductions in nitrogen oxides emissions achieved by all other installed control devices (other than those listed on the Exhaust System Tab).

CO efficiency (percent) – The total combined reductions in carbon monoxide emissions achieved by all other installed control devices (other than those listed on the Exhaust System Tab).

VOC efficiency (percent) – The total combined reductions in volatile organics emissions achieved by all other installed control devices (other than those listed on the Exhaust System Tab).

PM<sub>10</sub> efficiency (percent) – The total combined reductions in PM<sub>10</sub> emissions (particulate matter under 10 microns in diameter) achieved by all other installed control devices (other than those listed on the Exhaust System Tab).

#### **A.13.4 QC Results Tab**

Error Source – List of input variables for this equipment that have been flagged with QC error messages.

Error Description – List of the reasons that QC error messages were assigned.

Operator Comment – List of user's explanations for unusual or unexpected values that were flagged with QC error messages. An operator comment indicates that the user wishes to override the QC error message. (Select an error message, then click "Add QC Comment" in order to add Operator Comments.)

## **A.14 STORAGE TANK**

### **A.14.1 General Information Tab**

Product throughput (barrels) – The volume of liquid hydrocarbon turned over through the storage tank during the survey period.

Tank elevation (feet above mean sea level) – The elevation of a storage tank, measured from mean sea level to its base.

Tank orientation (horizontal/vertical) – Indicates whether the tank is elongated and narrow in the horizontal direction (horizontal), or otherwise (vertical).

Tank shape (cylindrical/rectangular) – Indicates whether the tank is cylindrical or rectangular in shape.

Average liquid height (feet) – The average height of stored liquid during the survey period, measured from the bottom of the storage space to the top of the liquid.

Tank shell diameter (feet) – The diameter of a cylindrical tank (either horizontal or vertical).

Tank shell height (feet) – The vertical height of a cylindrical tank (oriented vertically) or of a rectangular tank (oriented vertically or horizontally).

Tank shell length (feet) – The longest horizontal dimension of a horizontal tank.

Tank shell width (feet) – The horizontal width of a rectangular tank (oriented vertically or horizontally).

2<sup>nd</sup> Tank shell width (feet) – The 2<sup>nd</sup> horizontal width of a rectangular tank (oriented vertically).

Is the roof fixed (not floating)? (yes/no) – Indicates whether the tank has a fixed or floating roof.

Roof shape – Indicates the shape of a vertical tank's roof.

- Cone –cylindrical tanks
- Dome - cylindrical tanks
- Flat – cylindrical or rectangular
- Peaked - rectangular

Roof height above shell (feet) – The height of a fixed roof measured from the top of the tank shell to the highest point of the roof.

Breather vent pressure setting (pounds per square inch gauge) – The pressure setting of the tank breather valve.

Breather vent vacuum setting (pounds per square inch gauge) – The vacuum setting of the tank breather valve.

Paint color – The exterior paint color of the storage tank.

Paint condition – The exterior paint condition of the storage tank.

Bulk liquid temperature (degrees Fahrenheit) – The bulk temperature of the liquid contained within the storage tank.

Product type (crude/condensate) – Indicates whether the storage tank contains crude oil or condensates.

API gravity (degrees API) – The API gravity of the liquid contained within the storage tank.

Product Reid vapor pressure (absolute pounds per square inch) – The Reid vapor pressure of the liquid contained within the storage tank.

Average percent by weight of VOCs in tank vapor (percent) – The VOC content of vapors in the storage tank headspace, measured as weight percent.

Average molecular weight of VOCs in tank vapor (pounds per pound-mol) – The average molecular weight of VOCs present in the storage tank headspace.

Equipped with a flash tank? (yes/no) – Indicates whether the storage tank is equipped with an upstream flash tank.

Status - The status of the storage for the specific survey period.

- "Active" - Indicates that the tank was used at some time during the survey period. Even brief activity qualifies.
- "Inactive" - Indicates that the tank was empty and unused for the entire month-long survey period.

Effective Date - Indicates the date that the status changed from Active to Inactive or vice versa. The effective date is only required if the status for the current survey period differs from that of the last survey period, or if the current survey is the first to be completed.

Comments - A space for general user comments regarding this structure, with a maximum length of 255 characters.

#### **A.14.2 Flash Tank Tab**

Percent THC in vented gas – The total hydrocarbon content of gases vented from the flash tank, measured as a volume percent or mol percent.

Lowest separator pressure (pounds per square inch gauge) – The lowest operating pressure of the flash tank(s).

Separator fluid temperature (degrees Fahrenheit) – The temperature of liquids within the flash tank.

Separator oil specific gravity – The specific gravity of oil in the separator.

Separator oil/condensate composition (mol percent) – The speciated composition of separator oil.

- Hydrogen sulfide (H<sub>2</sub>S)
- Oxygen (O<sub>2</sub>)
- Carbon dioxide (CO<sub>2</sub>)
- Nitrogen (N<sub>2</sub>)
- Methane
- Ethane
- C<sub>3</sub> Hydrocarbons - (hydrocarbons with 3 carbon atoms in their molecular structure)
- i-C<sub>4</sub> Hydrocarbons – (branched-chain hydrocarbons with 4 carbon atoms in their molecular structure)
- n-C<sub>4</sub> Hydrocarbons – (straight-chain hydrocarbons with 4 carbon atoms in their molecular structure)
- i-C<sub>5</sub> Hydrocarbons
- n-C<sub>5</sub> Hydrocarbons
- C<sub>6</sub> Hydrocarbons
- C<sub>7</sub> Hydrocarbons
- C<sub>8</sub> Hydrocarbons
- C<sub>9</sub> Hydrocarbons
- C<sub>10</sub>+ Hydrocarbons

### **A.14.3 Ventilation System Tab**

Vented into low-pressure vent/flare manifold system? (yes/no) – Indicates whether the emissions from this equipment are gathered into a low-pressure manifold system to be vented or flared at some distance from the equipment.

Low-pressure vent/flare ID – Indicates the destination vent or flare identifier code (if emissions are directed through a low-pressure vent/flare manifold system). It may be necessary to first create a vent or flare before it will appear in the list (using the Edit|New Equipment menu).

Gases vented or flared? (vented/flared) - Indicate whether emissions are vented or flared locally through a process vent/flare (if emissions are not directed through a low-pressure vent/flare manifold system).

Outlet height (feet) – The height at the outlet of a process vent/flare above the storage tank (measured from the base of the tank to the top of the outlet).

Outlet inner diameter (inches) – The inner diameter of a process vent or the effective diameter of a flare.

Exit velocity (feet/second) – The exit velocity of emissions through the outlet of a process vent/flare.

Exit temperature (degrees Fahrenheit) – The temperature of gaseous emissions measured at the outlet of a process vent.

Outlet orientation (degrees) – The deviation of the outlet from vertically upward. 0 indicates an upward pointing outlet; 180 indicates a downward pointing outlet.

Flare feed rate (standard cubic feet per hour) – The volumetric feed rate to a process flare.

Combustion temperature (degrees Fahrenheit) – The combustion temperature of a process flare.

Combustion efficiency (percent) – The combustion efficiency of a process flare, or the completeness of hydrocarbon conversion to carbon dioxide (as CO<sub>2</sub>).

Installed control equipment – Indicates which common types of control devices are installed for this equipment.

Condenser temperature (degrees Fahrenheit) – The operating temperature of a condenser installed as a control device.

Condenser pressure (absolute pounds per square inch) – The operating pressure of a condenser installed as a control device.

#### **A.14.4 Control Equipment Tab**

Other control device? (yes/no) – Indicates whether additional controls are installed, other than the common control devices listed on the Ventilation System Tab.

Description – If present, a description of other control devices is required (other than those listed on the Ventilation System Tab).

SO<sub>x</sub> efficiency (percent) – The total combined reductions in sulfur oxides emissions achieved by all other installed control devices (other than those listed on the Ventilation System Tab).

NO<sub>x</sub> efficiency (percent) – The total combined reductions in nitrogen oxides emissions achieved by all other installed control devices (other than those listed on the Ventilation System Tab).

CO efficiency (percent) – The total combined reductions in carbon monoxide emissions achieved by all other installed control devices (other than those listed on the Ventilation System Tab).

VOC efficiency (percent) – The total combined reductions in volatile organics emissions achieved by all other installed control devices (other than those listed on the Ventilation System Tab).

PM<sub>10</sub> efficiency (percent) – The total combined reductions in PM<sub>10</sub> emissions (particulate matter under 10 microns in diameter) achieved by all other installed control devices (other than those listed on the Ventilation System Tab).

#### **A.14.5 QC Results Tab**

Error Source – List of input variables for this equipment that have been flagged with QC error messages.

Error Description – List of the reasons that QC error messages were assigned.

Operator Comment – List of user's explanations for unusual or unexpected values that were flagged with QC error messages. An operator comment indicates that the user wishes to override the QC error message. (Select an error message, then click "Add QC Comment" in order to add Operator Comments.)



## A.15 VENT

### A.15.1 General Information Tab

Number of upset vent occurrences – The number of incidents of continuous venting due to plant upset conditions. An incident is a period of continuous vent operation, which may range from minutes to days.

Hours operated, excluding upsets – The total number of hours that the vent was operated during the survey period, excluding periods of upset venting.

Volume vented (thousand standard cubic feet), excluding upsets – The total volume of gas vented during the survey period, excluding periods of upset venting, volume adjusted to standard temperature and pressure (60 degrees Fahrenheit, 1 atmosphere).

Vent type - Indicates whether vent gases are released at high pressure or low pressure.

Vent gas H<sub>2</sub>S Concentration (parts per million by volume) – The concentration of hydrogen sulfide present in the vented gas.

Vent gas VOC Concentration (parts per million by volume) – The concentration of volatile organic compounds present in the vented gas.

Average molecular weight of VOCs (lb/lb-mol) – The average molecular weight of VOCs present in the vented gas.

Stack outlet elevation (feet above mean sea level) – The elevation of the vent stack outlet above mean sea level.

Stack inner diameter (inches) – The inner diameter of the vent stack at its outlet.

Average exit velocity (feet per second), excluding upsets – The average exit velocity of vented gas at the stack outlet.

Exit temperature (degrees Fahrenheit), excluding upsets – The average temperature of vented gas at the stack outlet.

Stack orientation (degrees) - The deviation of the stack outlet from vertically upward. 0 indicates an upward pointing outlet; 180 indicates a downward pointing outlet.

Installed control equipment – Indicates which common types of control devices are installed on the vent.

Condenser temperature (degrees Fahrenheit) – The operating temperature of a condenser installed as a control device.

Condenser pressure (absolute pounds per square inch) – The operating pressure of a condenser installed as a control device.

Status - The status of the vent for the specific survey period.

- "Active" - Indicates that the vent was active at some time during the survey period. Even brief activity qualifies.
- "Inactive" - Indicates that the vent was unused for the entire month-long survey period.

Effective Date - Indicates the date that the status changed from Active to Inactive or vice versa. The effective date is only required if the status for the current survey period differs from that of the last survey period, or if the current survey is the first to be completed.

Comments - A space for general user comments regarding this structure, with a maximum length of 255 characters.

### **A.15.2 Control Equipment Tab**

Other control device? (yes/no) – Indicates whether controls are installed.

Description – If present, a description of other control devices is required.

SO<sub>x</sub> efficiency (percent) – The total combined reductions in sulfur oxides emissions achieved by all other installed control devices.

NO<sub>x</sub> efficiency (percent) – The total combined reductions in nitrogen oxides emissions achieved by all other installed control devices.

CO efficiency (percent) – The total combined reductions in carbon monoxide emissions achieved by all other installed control devices.

VOC efficiency (percent) – The total combined reductions in volatile organics emissions achieved by all other installed control devices.

PM<sub>10</sub> efficiency (percent) – The total combined reductions in PM<sub>10</sub> emissions (particulate matter under 10 microns in diameter) achieved by all other installed control devices.

### **A.15.3 Upsets Tab**

Time stamp – Lists all vent upset occurrences by the date and time of the beginning of the upset. (To add a vent occurrence, click “Add Occurrence. To delete or edit, select an occurrence in the list and click “Delete Occurrence” or “Edit Occurrence”.)

Hours – The duration of each vent upset occurrence.

Average vent feed (thousand standard cubic feet per hour) – The average vent feed rate observed during the upset.

H<sub>2</sub>S concentration (parts per million by volume) – The average concentration of hydrogen sulfide in the vent feed gas.

Exit temperature (degrees Fahrenheit) – The temperature of vented gases observed at the stack outlet during the vent upset.

Comments - A space for general user comments regarding each vent upset, with a maximum length of 255 characters.

#### **A.15.4 QC Results Tab**

Error Source – List of input variables for this equipment that have been flagged with QC error messages.

Error Description – List of the reasons that QC error messages were assigned.

Operator Comment – List of user's explanations for unusual or unexpected values that were flagged with QC error messages. An operator comment indicates that the user wishes to override the QC error message. (Select an error message, then click "Add QC Comment" in order to add Operator Comments.)

## **APPENDIX B**

### **BOADS USER'S LOG**





Notes:



### **The Department of the Interior Mission**

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.



### **The Minerals Management Service Mission**

As a bureau of the Department of the Interior, the Minerals Management Service's (MMS) primary responsibilities are to manage the mineral resources located on the Nation's Outer Continental Shelf (OCS), collect revenue from the Federal OCS and onshore Federal and Indian lands, and distribute those revenues.

Moreover, in working to meet its responsibilities, the **Offshore Minerals Management Program** administers the OCS competitive leasing program and oversees the safe and environmentally sound exploration and production of our Nation's offshore natural gas, oil and other mineral resources. The **MMS Royalty Management Program** meets its responsibilities by ensuring the efficient, timely and accurate collection and disbursement of revenue from mineral leasing and production due to Indian tribes and allottees, States and the U.S. Treasury.

The MMS strives to fulfill its responsibilities through the general guiding principles of: (1) being responsive to the public's concerns and interests by maintaining a dialogue with all potentially affected parties and (2) carrying out its programs with an emphasis on working to enhance the quality of life for all Americans by lending MMS assistance and expertise to economic development and environmental protection.