Form APCD-302

Colorado Department of Public Health and Environment
Air Pollution Control Division

Colorado Department of Public Health and Environment

Operating and Maintenance Plan Template for Glycol Dehydration Systems

Ver. September 19, 2013

The Air Pollution Control Division (Division) developed this Operating and Maintenance Plan (O&M Plan) for glycol dehydration systems that are permitted at synthetic minor facilities in the State of Colorado. An O&M Plan for each type of glycol dehydration system configuration, as described in Section 1, shall be submitted with the permit application. One O&M Plan may be used for multiple glycol dehydration systems at one facility if each are controlled and monitored in the same manner. If the O&M Plan template is completed correctly, the Division will approve the O&M Plan and a construction permit will be issued with the requirement to follow the O&M Plan as submitted. If the template is not completed correctly, the Division will work with the facility to make corrections. Once a construction permit is issued, the facility operator must comply with the requirements of the O&M Plan upon commencement of operation. Operators are not required to use this template. Independent case specific O&M Plans may be developed and submitted for approval with the permit application. However, the Division encourages the use of this template to expedite the permit application approval process.

Submittal Date: _____

Section 1 - Source Identification

For new permits some of this information (i.e. Facility AIRS ID, Facility Equipment ID, Permit Number, and AIRS Point ID) may not be known at the time of application. Please only fill out those fields that are known and leave the others blank.

Company Name: _____ Facility Location: _____
Facility Name: _____ Facility AIRS ID (for existing facilities) _____

Units Covered by this O&M form

Facility Equipment ID						
Permit Number						
AIRS Point ID						
Glycol Type Used [a]						

[a] Glycol types include Ethylene Glycol (EG), Di-Ethylene Glycol (DEG), and Tri-Ethylene Glycol (TEG)

Emission Points and Control Status: *Check the appropriate boxes indicating whether the dehydration system(s) are equipped with a flash tank and whether or not the flash tank (if present) and still vent emissions are controlled or recycled or vented to atmosphere.*

☐ Flash Tank
- ☐ Controlled/Recycled
- ☐ Vented to atmosphere

☐ Still Vent
- ☐ Controlled/Recycled
- ☐ Vented to atmosphere

Section 2 - Maintenance Schedules

Check one of the following:

☐ Facility shall follow manufacturer recommendations for the operation and maintenance of equipment and control devices. These schedules and practices, as well as any maintenance records showing compliance with these recommendations, shall be made available to the Division upon request.

☐ Facility shall follow individually developed maintenance practices and schedules for the operation and maintenance of equipment and control devices. These schedules and practices, as well as any maintenance records showing compliance with these recommendations, shall be made available to the division upon request and should be consistent with good air pollution control practices for minimizing emissions as defined in the New Source Performance Standard (NSPS) general conditions.

Section 3 - Monthly Emission Modeling or Calculations

The following box must be checked for O&M plan to be considered complete.

☐ The source will calculate emissions based on the methods and emission factors provided in the permit application and approved by the division, as reflected in the construction permit. *Please see the operation and maintenance plan guidance document for further details and examples of emission calculations.*

Section 4 – General Monitoring Requirements

Table 1 below details the schedule on which the source must monitor each of the listed operating parameters depending on the requested permitted emissions at the facility. Check the appropriate box based on facility wide permitted VOC emissions.

Table 1		
Parameter	**Monitoring Frequency**	
	☐ **Permitted Facility Emissions ≥ 80 tpy VOC**	☐ **Permitted Facility Emissions < 80 tpy VOC**
Lean Glycol Circulation Rate	Daily	Weekly
Wet Gas Inlet Temperature	Weekly	Monthly
Wet Gas Inlet Pressure	Weekly	Monthly
Volume of Gas Processed	Monthly	Monthly
Chiller (Cold Separator) Pressure (EG units only)	Weekly	Monthly
Chiller (Cold Separator) Temperature (EG units only)	Weekly	Monthly

Tables 2 and 3 outline the methods by which the source may monitor the lean glycol recirculation rate and the volume of gas processed, respectively. In Tables 2 and 3 the source must chose one primary monitoring method and, optionally, up to two backup monitoring methods. Check each box that applies.

Table 2		
Primary	**Back-up**	**Lean Glycol Recirculation Rate Monitoring Method**
☐		**Glycol flow meter(s)** – including flow from all injection points or pumps
☐	☐	**Record strokes per minute and convert to circulation rate** – pump make/model and stokes per minute/ circulation rate relationship must be made available to the division upon request
☐	☐	**Assume maximum design pump rate** [b] – pump make/model and circulation rate specifications must be made available to the division upon request

[b] Note: if you are requesting to permit at a rate lower than the maximum design pump rate then this option should not be used as it will create de facto non-compliance.

Table 3		
Primary	**Back-up**	**Volume of Gas Processed Monitoring Method**
☐		**Metered** ☐ Inlet ☐ Outlet ☐ Fuel Gas ☐ Compressor Discharge ☐ Other: _____
☐	☐	**Metered** ☐ Inlet ☐ Outlet ☐ Fuel Gas ☐ Compressor Discharge ☐ Other: _____
☐	☐	**Assume maximum design rate**[c] specifications shall be made available to the division upon request
☐	☐	**Other (to be approved by the division)**: attach method explanation and sample calculations

[c] Note: if you are requesting to permit at a rate lower than the maximum contactor design rate then this option should not be used as it will create de facto non-compliance.

Section 5 - Emission Control or Recycling Equipment Monitoring Requirements

Table 4 below details the monitoring frequency for control equipment depending on the type of control equipment used and the requested permitted emissions at the facility. Check the appropriate box for "Monitoring Frequency" based on the facility-wide permitted VOC emissions. In addition, indicate still vent and flash tank emissions controls by checking the appropriate boxes.

Table 4					
Emissions Control or Recycling Method	**Still Vent**	**Flash Tank**	**Parameter**	**Monitoring Frequency**	
				☐ **Permitted Facility Emissions ≥ 80 tpy VOC**	☐ **Permitted Facility Emissions < 80 tpy VOC**
Condenser	☐	☐	**Condenser Outlet Temperature** [d]	Weekly	Monthly
Thermal Oxidizer	☐	☐	**Combustion Chamber Temperature** [e]	Daily	Weekly
Combustor or Flare	☐	☐	**Pilot Light Monitoring** [f]	Daily	Weekly
			Method 22 Readings	Daily	Weekly
Recycled or Closed Loop System (Including Vapor Recovery Units)	☐	☐	**To be determined by the source and approved by the division** [g]		
Re-routed to Reboiler Burner	☐	☐	**To be determined by the source and approved by the division** [h]		

[d] Maximum Condenser Outlet Temperature

If the equipment is controlled with a secondary control device and no control efficiency is being claimed for the condenser then the condenser outlet temperature does not need to be monitored and there will be no maximum condenser outlet temperature. For all other equipment the maximum condenser outlet temperature shall be: *Select one of the following options from Table 5:*

Table 5		
☐	160 º F	
☐	º F	(Upon approval from the division) – attach supporting documentation if a higher limit is requested

[e] Minimum Thermal Oxidizer Combustion Chamber Temperature

If the facility uses a thermal oxidizer to control emissions then the minimum combustion chamber temperature shall be: *Select one of the following options from Table 6:*

Table 6		
☐	1400 º F	
☐	º F	Based on manufacturer specifications. Specifications must be submitted with the permit application and made available to the Division upon request
☐	Based on testing performed. The test data shall be submitted and attached to the O&M Plan	

[f] Pilot Light Monitoring Options

If the facility uses a Combustor or Flare then the source must indicate the method by which the presence of a pilot light will be monitored in Table 7. One primary method for Pilot Light Monitoring must be checked and, optionally, up to two backup methods can be checked.

Table 7		
Primary	**Back-up**	**Monitoring Method**
☐	☐	Visual Inspection
☐	☐	Optical Sensor
☐	☐	Auto-Igniter Signal
☐	☐	Thermocouple

[g] Recycled or Closed Loop System Monitoring Plan

In the space provided below please provide a brief description of the emission control or recycling system, including an explanation of how the system design ensures that emissions are being routed to the appropriate system at all times, or during all permitted runtime.

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[h] Reboiler Burner Control Monitoring Plan

In the space provided below please provide a brief description of the emission control system, including an explanation of how the system design ensures that emissions are being held or rerouted when the reboiler is not firing.

Section 6 – Recordkeeping Requirements

The following box must be checked for O&M plan to be considered complete.

☐ Synthetic minor sources are required to maintain maintenance and monitoring records for the requirements listed in sections 2, 3, 4 and 5 for a period of 5 years. If an applicable Federal NSPS, NESHAP or MACT requires a longer record retention period the operator must comply with the longest record retention requirement.

Section 7 - Additional Notes and O&M Activities

Please use this section to describe any additional notes or operation and maintenance activities.

Note: These templates are intended to address operation and maintenance requirements of the State of Colorado for equipment operated at synthetic minor facilities. If the facility or equipment is subject to other state or federal regulations with duplicative requirements, the source shall follow the most stringent regulatory requirement.