



Section 1 - Source Identification

Company Name:		Facility Location:	
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Facility Name:		Facility AIRS ID:	
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Date of Construction of Storage Tank:	
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Section 2 - Certification

Certification

All information for the Storage Tank Emission Management (“STEM”) plan must be certified by a responsible official as defined in Colorado Regulation No. 3, Part A, Section I.B.38. This signed certification encompasses this STEM plan and all documents attached to this plan.

Please note that the Colorado Statutes state that any person who knowingly, as defined in § 18-1-501(6), C.R.S., makes any false material statement, representation, or certification in this document is guilty of a misdemeanor and may be punished in accordance with the provisions of § 25-7 122.1, C.R.S.

I have reviewed this STEM plan and associated documents in their entirety and, based on information and belief formed after reasonable inquiry, I certify that the statements and information contained in this STEM plan are true, accurate and complete.

- Furthermore, I hereby certify the following:
- (1) The selected technology and operational practices are designed and implemented to minimize VOC emissions from the facility’s regulated storage tanks and associated equipment during normal operation.
 - (2) The AIMM monitoring will be conducted according to the schedule identified in this STEM plan and the associated documentation.

Printed or Typed Name

Title

Signature

Date



Section 3 - Selected Strategies and Description of System and Engineering Design

Selected Strategies:

The control technologies, monitoring practices, operational practices, and/or other strategies selected in this section represent the control options that will be implemented at this facility to minimize hydrocarbon emissions by routing all hydrocarbon emissions to air pollution control equipment, and operating without venting hydrocarbon emissions from the thief hatch (or other access point to the tank) or pressure relief device during normal operation, unless venting is reasonably required for maintenance, gauging, or safety of personnel and equipment.

<input type="checkbox"/> Separation Technology	<input type="checkbox"/> Parameter Monitoring
<input type="checkbox"/> Combustion Technology	<input type="checkbox"/> Vapor Recovery Technology
<input type="checkbox"/> Safety Device Technology	<input type="checkbox"/> Piping Design
<input type="checkbox"/> Gathering Method	<input type="checkbox"/> Flash Reduction Technologies
<input type="checkbox"/> Other	

Description of System and Engineering Design

Describe system, pressures, and how system has been specifically designed or modified to handle emissions associated with pressures. Please continue on additional pages as needed and attach to this STEM plan appropriate technical documentation related to the system and engineering design of the storage tanks.



Section 4 - Monitoring Strategies

Monitoring Strategies:

AVO and visual inspections will be conducted in accordance with Section XVII.C.1.d., or more frequently. Approved instrument monitoring method (“AIMM”) monitoring will be conducted per Table 1 of Regulation No. 7, Section XVII.C.2.b.(ii)(d), or more frequently. Emissions will be calculated on a rolling 12-month basis to determine the proper frequency of required inspections for the facility.

AVO and Additional Visual Inspection Schedule	<input type="checkbox"/> At the same frequency as liquids are loaded out from the storage tanks, no more frequently than every 7 days but at least every 31 days
	<input type="checkbox"/> Other frequency. Please describe below. If needed, attach alternate schedule.
AIMM Monitoring Schedule	<input type="checkbox"/> Per Table 1 of Regulation No. 7, Section XVII.C.2.b.(ii)(d)
	<input type="checkbox"/> Other frequency. Please describe below. If needed, attach alternate schedule.

Instrument Monitoring Method

- Infra-red Camera
- EPA Method 21
- Other or additional monitoring methods. Please describe below, or if needed, attach description to this plan.



Section 4 (continued)

Monitoring Personnel and Training Practices

Calibration Methodology and Schedule



Section 5 - Capture Performance and STEM Plan Updates

Procedures for ongoing capture performance evaluation & STEM Plan updates:



Guidance for
Completing the Storage Tank Emission Management Template
Ver. November 25, 2014

The Colorado Department of Public Health and Environment, Air Pollution Control Division (“Division”) has developed a template for a Storage Tank Emission Management (“STEM”) plan in an effort to standardize the minimum requirements for STEM in Regulation No. 7, Section XVII.C.2. While use of the Division template is not required, operators are encouraged to utilize the Division STEM Plan template or use it as a “minimum requirements” checklist for developing independent case specific STEM Plans.

Below is a description of individual elements in the Division’s STEM plan template and guidance for filling out each section. For further assistance, please contact 303-692-3150 and ask to be transferred to the oil and gas unit.

STEM Plan Template Form Description and Guidance

- **Section 1 - Source Identification**

This section includes general information about the source, facility, and equipment. All information in this section is required (e.g., Company Name, Facility Location, Facility Name, AIRS Point ID (*if an AIRS has been assigned*), and Storage Tank Date of Construction).

Facility Location can be in “Section, Township, Range” form or may utilize GPS coordinates. This STEM Plan may cover more than one individual location as long as each location is similar in design and emissions are monitored and controlled in the same manner. Owners or operators have the flexibility to develop STEM plans on an individual basis for each storage tank or for multiple storage tanks. However, a single STEM Plan may not be sufficient to cover all storage tank batteries in an oil field or geographic region. Upon request, the owner or operator must be able to identify to the Division what STEM plan applies to a storage tank and make that plan available for review.

- **Section 2 - Certification**

This section must include a certification by the owner or operator that the selected STEM strategy/strategies are designed to minimize emissions from storage tanks and associated equipment at facility/facilities, including thief hatches and pressure relief devices.

- **Section 3 - Selected Strategies and Description of System and Engineering Design**

This section includes control technologies, monitoring practices, operational practices, and/or other strategies selected to control VOC emissions by routing hydrocarbons to air pollution control equipment and operating without venting hydrocarbon emissions from the thief hatch (or other access point to the tank) or pressure relief device during normal operation unless venting is reasonably required for maintenance, gauging, or safety of personnel and equipment.

Selected Strategies

The source should identify which strategies have been selected to maximize capture of emissions from the storage tank. There are several options already listed, which can be checked and then described. Multiple strategies can be selected, dependent on the system design. A description of these strategies and how they achieve emission reduction and improve capture should be included in this section.

Separation Technology

Include operational information about the separator (e.g., three-phase separation, high/low pressure, etc.).



Combustion Technology

Describe the control device(s) (e.g., enclosed-flare with make and model, open flare with make and model, thermal oxidizer with make and model, etc.).

Safety Device Technology

Include information about safety device/device(s) (e.g., pressure relief valve/valves and their location, enclosed-flare flame arrestor, auto-igniter with make and model, etc.) and operation set-points expected at the facility/ies subject to the STEM plan.

Gathering Method

Provide information about the gathering method/methods (e.g., manifolded piping, blower-assisted, presence or absence of liquid knockout vessel with capacity, etc.).

Parameter Monitoring

Outline parameters monitored (e.g., presence or absence of pilot light, data log from auto-igniter system, well bore pressure, presence or absence of smoke from the combustion device, etc.) and the system used to monitor parameters (e.g., SCADA Monitoring- Supervisory Control and Data Acquisition, etc)

Vapor Recovery Technology

Describe vapor recovery system utilized (e.g., vapor recovery tower, vapor recovery unit (compressor) with source of power, blower, etc.).

Piping Design

Detail the piping design (e.g., pipe diameter/diameters that route emissions, manifold design, and presence of liquid knock-out vessel with capacity, etc.). This section should also include information on process simulation model(s) used to proactively verify proper design.

Flash Reduction Technologies

Explain any flash reduction technologies utilized (e.g., stabilization vessel/vessels, etc.).

Other

Include information about any other emission reducing practices or technologies being utilized at the storage tank.

Description of System and Engineering Design

The source should include a complete overview of the engineering analysis and design thought process that led to the choice of the selected control technologies and operational practices, including why they have specifically been chosen to prevent venting and minimize emissions. This section should also include information on process simulation model(s) used to proactively verify proper design. Manufacturer specifications for equipment should be maintained by the operator to the extent possible.

- Section 4 - Monitoring Strategies

This section should identify monitoring methods and frequency (e.g., audio/visual/olfactory (“AVO”) inspections conducted daily, infrared (“IR”) camera inspections conducted weekly, EPA method 21 inspections conducted monthly, etc.), and at a minimum should comply with the minimum inspection requirements listed below. The method and frequency of inspection identified in the STEM plan may exceed the minimum requirements, and should be established by the owner/operator to ensure compliance with the prevention of venting standard in Section XVII.C.2.a.

Minimum inspection requirements of Section XVII.C.:

- Section XVII.C.1.d.: Conduct AVO and additional visual inspections of the storage tank and associate equipment at the same frequency as liquids are loaded out from the storage tank, no more frequently than every 7 days but at least every 31 days.



- o Section XVII.C.2.b.(ii)(d): Table 1, Storage Tank Inspections

Threshold: Storage Tank Uncontrolled Actual VOC Emissions	Approved Instrument Monitoring Method (“AIMM”) Inspection Frequency	Phase-In Schedule
≥6 and ≤12	Annually	January 1, 2016
>12 and ≤50	Quarterly	July 1, 2015
>50	Monthly	January 1, 2015

NOTE: Tanks with an increase in uncontrolled actual emissions to 6 tpy or more (after May 1, 2014) must conduct initial monitoring within 60 days and follow appropriate subsequent monitoring schedule.

The source should include the frequency (i.e. weekly, monthly, etc.) and type of inspection in this section, and should continue on additional pages and/or attach a schedule, as needed.

Instrument Monitoring Method

Describe the chosen AIMM, either IR camera or Method 21. If applicable, the source should describe the alternate AIMM if approved by the Division. The source may also elect to utilize AIMM in addition to a non-approved instrument monitoring method. If needed, the source should include a full schedule including inspection type (i.e. AVO, visual, AIMM, or other instrument monitoring) and frequency. The source should continue on additional pages as needed and attach relevant documentation.

Monitoring Personnel and Training Practices

Include information about any training activities for monitoring personnel (e.g., IR camera operators are certified by FLIR’s Infrared Training Center every five years, and they are required to attend an emissions reduction seminar/conference on annual basis, etc.). Operators are also required to identify the personnel responsible for the monitoring/inspections of the tanks. The source should continue on additional pages as needed and attach relevant documentation.

Calibration Methodology and Schedule

Include information about instrument calibration methodology and schedule (e.g., IR cameras are sent in to FLIR on an annual basis for calibration, etc.). The source should continue on additional pages as needed and attach relevant documentation.

- Section 5 - Capture Performance and STEM Plan Updates

Procedures for Ongoing Capture Performance Evaluation & STEM Plan Updates

Include information about how the operator plans to evaluate emission capture performance and the internal procedures for, and timing of, updates to STEM Plans (e.g., operator plans to use quarterly inspection data to evaluate the effectiveness of the current STEM Plan, and make recommendations to the regional HSE representative for improving the STEM Plan, etc.). The source should continue on additional pages as needed and attach relevant documentation.

Note: The STEM template is intended to address the STEM requirements of the State of Colorado for facilities utilizing storage tanks. If the source or facility is subject to other state or federal regulations with duplicative requirements then the source shall follow the most stringent regulatory requirement.