From:	Air.Pollution Control
To:	APC Permitting
Subject:	FW: 82-0003 - MSOP-24 Application (R3-3 SM2 and CP1)
Date:	Friday, August 13, 2021 7:31:02 AM
Attachments:	MSOP-24 Application (R3-3 SM2 and CP1).zip

From: Larkey, Debra <dlarkey@eastman.com> **On Behalf Of** Eastman Corporate Environmental Affairs
Sent: Friday, August 13, 2021 7:13 AM
To: Air.Pollution Control <Air.Pollution.Control@tn.gov>
Cc: Travis Blake <Travis.Blake@tn.gov>; Matthew Hayes <Matthew.Hayes@tn.gov>; Reeder, Alex L <AlexL.Reeder@eastman.com>
Subject: [EXTERNAL] 82-0003 - MSOP-24 Application (R3-3 SM2 and CP1)

Attached: MSOP-24 Application (R3-2 SM2 and CP1)

CBI pages to be considered with this application package are being mailed separately via USPS certified mail.

Thanks,

Debra Larkey | Eastman
Environmental Operations - Kingsport
Environmental Technologist
Office: +1 423-224-0670

Eastman Chemical Company
Tennessee Operations
200 South Wilcox Dr
Kingsport, TN 37660
Telephone: (423) 229-2000

EASTMAN

Summary of Changes

MSOP-24

Submittal Number: R3-3 SM2 and CP1

Date of Submittal: **August 13, 2021**

Summary: Eastman is submitting a construction permit application for a new feed pump in the Glycol MCPU. This process modification will trigger NSPS RRR applicability due to an increase in actual emissions from the reactors to which this pump will supply material. Detailed changes that occurred on each page of the application are included below.

Old Page #	New Page #	Description of Change
General Forms		
2	2	Updated Table of Contents
9-10	9-10	APC 29: • Updated total gaseous HAP emissions from 108.65 to 108.72 tons/year • Updated methanol emissions from 67.97 to 68.04 tons/year
19	19	Request for Permit Shield: Updated language in selection box
B-221-3 Application		
47-48	47-48	APC 28: • Updated total gaseous HAP emissions from 33.89 to 33.96 tons/year • Updated methanol emissions from 12.81 to 12.88 tons/year
50	50	APC 30 Attachment: • Condition 5: Updated VOC maximum actual emissions for entire source from 55.27 to 45.56 tons/year • Condition 6: Updated VOC emissions limitation for Vents E, F, and J from 43.07 to 30.12 lb/hr, updated VOC maximum actual emissions from 43.07 to 11.66 lb/hr • Condition 9: Updated methane maximum actual emissions from 53.78 to 31.21 tons/year
-	52	APC 30 Attachment: Added Condition 16 for 40 CFR Part 60 Subpart RRR applicability
52	53	APC 30 Attachment: Added 40 CFR Part 60 Subpart RRR applicability for WE-23 Condenser (Triangle 7) Affected Facility
B-221-3 Attachments		
8	8	Updated to new Calculation Documentation form template for clarity
9-10	9-10	Updated to new Calculation Documentation form template for clarity, updated stream table based on most recent sampling
12-13	12-13	Updated to new Calculation Documentation form template for clarity
18-19	18-19	Updated to new Calculation Documentation form template for clarity, updated stream table to improve consistency in emissions calculations
20-21	20-21	Updated to new Calculation Documentation form template for clarity
23	23	Updated to new Calculation Documentation form template for clarity

End of Summary of Changes (MSOP-24)

EASTMAN
Tennessee Operations
200 South Wilcox Dr
Kingsport, TN 37660
Telephone: (423) 229-2000

Title V Operating Permit Application

General Forms

MSOP-24

Entire Source

Table of Contents

Total Pages: 471

State of Tennessee
Department of Environment and Conservation
Division of Air Pollution Control
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor
Nashville, TN 37243
Telephone: (615) 532-0554

TITLE V PERMIT APPLICATION
INDEX OF AIR POLLUTION PERMIT APPLICATION FORMS

Section 1: Identification and Diagrams		
This application contains the following forms:	APC Form 1, Facility Identification: Eastman Chemical Company, Tennessee Operations	
	APC Form 2, Operations and Flow Diagrams	
Section 2: Emission Source Description Forms		
		Total number of this form
This application contains the following forms (one form for each incinerator, printing operation, fuel burning installation, etc.):	APC Form 3, Stack Identification	50
	APC Form 4, Fuel Burning Non-Process Equipment	8
	APC Form 5, Stationary Gas Turbines or Internal Combustion Engines	0
	APC Form 6, Storage Tanks	46
	APC Form 7, Incinerators	0
	APC Form 8, Printing Operations	0
	APC Form 9, Painting and Coating Operations	0
	APC Form 10, Miscellaneous Processes	6
	APC Form 33, Stage I and Stage II Vapor Recovery Equipment	0
	APC Form 34, Open Burning	0
Section 3: Air Pollution Control System Forms		
		Total number of this form
This application contains the following forms (one form for each control system in use at the facility):	APC Form 11, Control Equipment - Miscellaneous	0
	APC Form 13, Adsorbers	0
	APC Form 14, Catalytic or Thermal Oxidation Equipment	0
	APC Form 15, Cyclones/Settling Chambers	0
	APC Form 17, Wet Collection Systems	8
	APC Form 18, Baghouse/Fabric Filters	0

(OVER)

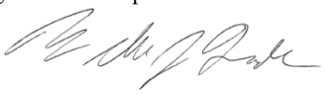
Section 4: Compliance Demonstration Forms

		Total number of this form
This application contains the following forms (one form for each incinerator, printing operation, fuel burning installation, etc.):	APC Form 19, Compliance Certification - Monitoring and Reporting - Description of Methods for Determining Compliance	6
	APC Form 20, Continuous Emissions Monitoring	0
	APC Form 21, Portable Monitors	0
	APC Form 22, Control System Parameters or Operating Parameters of a Process	7
	APC Form 23, Monitoring Maintenance Procedures	0
	APC Form 24, Stack Testing	0
	APC Form 25, Fuel Sampling and Analysis	0
	APC Form 26, Record Keeping	13
	APC Form 27, Other Methods	12
	APC Form 28, Emissions from Process Emissions Sources / Fuel Burning Installations / Incinerators	6
	APC Form 29, Emissions Summary for the Facility or for the Source Contained in This Application	1
	APC Form 30, Current Emissions Requirements and Status	7
	APC Form 31, Compliance Plan and Compliance Certification	1
	APC Form 32, Air Monitoring Network	0

Section 5: Statement of Completeness and Certification of Compliance

I have reviewed this application in its entirety and to the best of my knowledge and based on information and belief formed after reasonable inquiry, the statements and information contained in this application are true, accurate, and complete. I have provided all the information that is necessary for compliance purposes and this application consists of __‡__ pages and they are numbered from page __‡__ to __‡__. The status of this facility's compliance with all applicable air pollution control requirements, including the enhanced monitoring and compliance certification requirements of the Federal Clean Air Act, is reported in this application along with the methods to be used for compliance demonstration.

‡See Table of Contents for page counts and numbering.

Name and Title of Responsible Official	Telephone Number with Area Code
Bill Fritsch- Division Manufacturing Leader, Plastics	(423) 229 - 6860
Signature of Responsible Official	Date of ~~Application~~ Signature
	August 10, 2021

(For definition of responsible official, see instructions for APC Form 1)

State of Tennessee
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William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor
Nashville, TN 37243
Telephone: (615) 532-0554

TITLE V PERMIT APPLICATION
FACILITY IDENTIFICATION

SITE INFORMATION				
1. Organization's legal name Eastman Chemical Company			For APC Use Only	APC company point no.
2. Site name (if different from legal name) Tennessee Operations				APC Log/Permit no.
3. Site address: (St./Rd./Hwy.) 200 South Wilcox Drive			NAICS or SIC Code 325199 2869	
City or distance to nearest town Kingsport	Zip Code 37660		County name Sullivan	
4. Site location (in Lat/Long)	Latitude 36.5222318		Longitude -82.543179	
CONTACT INFORMATION (RESPONSIBLE OFFICIAL)				
5. Responsible official contact Bill Fritsch			Phone number with area code (423) 229-6860	
6. Mailing address P. O. Box 511			Fax number with area code N/A	
City Kingsport	State TN	Zip code 37662	Email address wjfritsch@eastman.com	
CONTACT INFORMATION (TECHNICAL)				
7. Principal technical contact Alex Reeder			Phone number with area code (423) 229-6817	
8. Mailing address P. O. Box 511			Fax number with area code (423) 224-7213	
City Kingsport	State TN	Zip code 37662	Email address AlexL.Reeder@eastman.com	
CONTACT INFORMATION (BILLING)				
11. Billing contact Tracy Venett			Phone number with area code (423) 229-5230	
12. Mailing address P. O. Box 511			Fax number with area code (423) 224-7213	
City Kingsport	State TN	Zip code 37662	Email address tvenett@eastman.com	

TYPE OF PERMIT REQUESTED

13. Permit requested for:

Initial application to operate:	☐	Minor permit modification:	☐
Permit renewal to operate:	☐	Significant modification:	☒
Administrative permit amendment:	☐	Construction permit:	☒

(OVER)

HAZARDOUS AIR POLLUTANTS, DESIGNATIONS, AND OTHER PERMITS ASSOCIATED WITH FACILITY

14. Is this facility subject to the provisions governing prevention of accidental releases of hazardous air contaminants contained in Chapter 1200-03-32 of the Tennessee Air Pollution Control regulations?

☒ Yes ☐ No

If the answer is Yes, are you in compliance with the provisions of Chapter 1200-03-32 of the Tennessee Air Pollution Control regulations?

☒ Yes ☐ No

15. If facility is located in an area designated as "Non-Attainment" or "Additional Control", indicate the pollutant(s) for the designation.
SO_2

16. List all valid Air Pollution permits issued to the sources contained in this application [identify all permits with most recent permit numbers and emission source reference numbers listed on the permit(s)].

Permit Number	Emission Source Reference Number	PES	Description
576162	82-0003-245	B-221-3	Glycol Plants
576162	82-0003-246	B-237A-3	Glycol Refining
576162	82-0003-247	B-238-1	Heat Transfer Fluid Furnaces
576162	82-0003-248	B-238-2	Ester Production Facility
576162	82-0003-250	B-368-1	Trans-Ester Production Facility
576162	82-0003-305	H2 Plants	Hydrogen Plants 3,4,5, and 6

State of Tennessee
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TITLE V PERMIT APPLICATION
OPERATIONS AND FLOW DIAGRAMS

1. Please list, identify, and describe briefly process emission sources, fuel burning installations, and incinerators that are contained in this application. Please attach a flow diagram for this application.

   See APC 1 Item 16 for a listing of sources and a brief description of each. See APC 2 Attachment for facility diagram.

2. List all insignificant activities which are exempted because of size or production rate and cite the applicable regulations.

   Below is a listing of all IEUs contained in this MSOP that are required to be listed in the application per 1200-3-9-.04(5)(a)4.(i).

   B-238-1

   HTM Fluid Storage Tanks: MC-01 and MF-50
   HTM Fluid Dryers: MF-51 and MC-02
   HTM Fluid Expansion Tanks: MF-52, MF-53, MH-53, MI-52, and ML-53
   HTM Non-Condensable Purges

   B-273A-3

   Dimer Storage/Loading
   Glycol Loading

3. Are there any storage piles?

   YES ☐ NO ☒

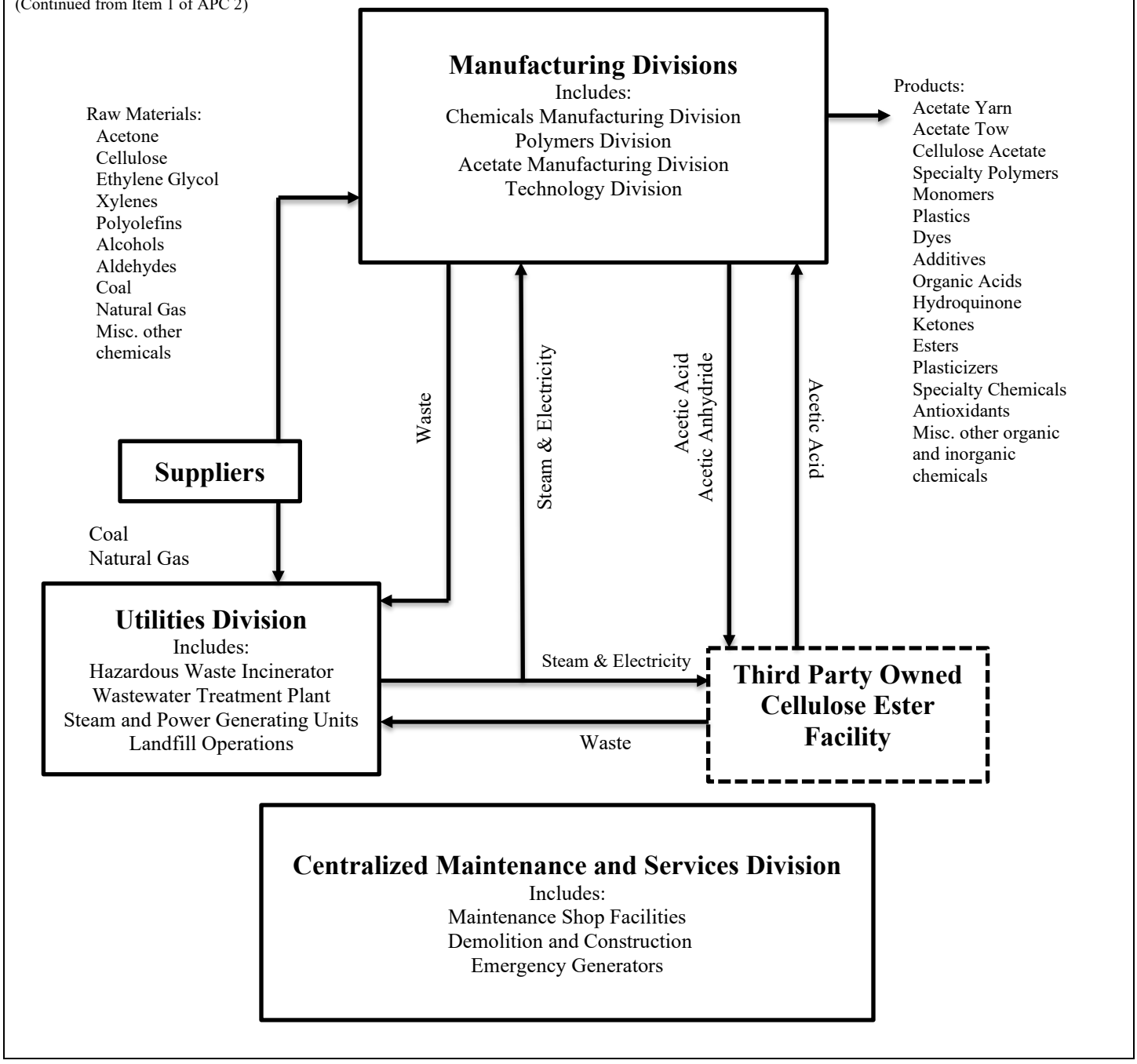
4. List the states that are within 50 miles of your facility.

   Kentucky, North Carolina, and Virginia

5. Page number:	Revision number:	Date of revision:
7 of 19	R3-3 SM2 and CP1	**August 13, 2021**

TITLE V PERMIT APPLICATION
OPERATIONS AND FLOW DIAGRAMS

(Continued from Item 1 of APC 2)



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TITLE V PERMIT APPLICATION
EMISSION SUMMARY FOR THE FACILITY OR FOR THE SOURCES CONTAINED IN THIS APPLICATION

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name: Eastman Chemical Company, Tennessee Operations

EMISSIONS SUMMARY TABLE – CRITERIA AND SELECTED POLLUTANTS

2. Complete the following emissions summary for regulated air pollutants at this facility or for the sources contained in this application.

Air Pollutant	Summary of Maximum Allowable Emissions [1]		Summary of Actual Emissions [2]	
	Tons per Year	Reserved for State use (Pounds per Hour- Item 4, APC 28)	Tons per Year	Reserved for State use (Pounds per Hour- Item 4, APC 28)
PM-2.5 [3]	19.08		N/A	
PM-10 [3]	19.08		N/A	
Particulate Matter (TSP)	6.11		N/A	
Sulfur Dioxide	1.51		N/A	
Volatile Organic Compounds	220.69		N/A	
Carbon Monoxide	318.51		N/A	
Lead	0.00		N/A	
Nitrogen Oxides	172.89		N/A	
Total Reduced Sulfur	0.00		N/A	
Mercury	0.00		N/A	
Asbestos	0.00		N/A	
Beryllium	0.00		N/A	
Vinyl Chlorides	0.00		N/A	
Fluorides	0.00		N/A	
Gaseous Fluorides	0.00		N/A	
Greenhouse Gases in CO_2 Equivalents	487,870		N/A	

(Continued on next page)

(Continued from previous page)

EMISSIONS SUMMARY TABLE – HAZARDOUS AIR POLLUTANTS

3. Complete the following emissions summary for regulated air pollutants that are hazardous air pollutant(s) at this facility or for the sources contained in this application.

Air Pollutant & CAS [4]	Summary of Maximum Allowable Emissions [1]		Summary of Actual Emissions [2]	
	Tons per Year	Reserved for State use (Pounds per Hour- Item 5, APC 28)	Tons per Year	Reserved for State use (Pounds per Hour- Item 5, APC 28)
Total Particulate Hazardous Air Pollutants*	0.00		N/A	
Total Gaseous Hazardous Air Pollutants*	108.72		N/A	
Acetaldehyde (CAS# 75-07-0)	0.94		N/A	
Biphenyl (CAS# 92-52-4)	6.40		N/A	
1,4 Dioxane (CAS# 123-91-1)	0.34		N/A	
Formaldehyde (CAS# 50-00-0)	0.09		N/A	
Hexane (CAS# 110-54-3)	2.25		N/A	
Methanol (CAS# 67-56-1)	68.04		N/A	
m-Xylene (CAS# 108-38-3)	21.66		N/A	
o-Xylene (CAS # 95-47-6)	0.39		N/A	
p-Xylene (CAS# 106-42-3)	0.46		N/A	
HAP not Subject to a Standard	8.15		N/A	

4. Page number: 10 of 19 | Revision number: R3-3 SM2 and CP1 | Date of revision: **August 13, 2021**

1. The term “maximum allowable emissions” as used here represents the “allowable emissions” as defined in subparagraph 1200-3-26-.02(2)(d). These emission rates are intended solely for the purposes of fee computation and in no way are to be considered the setting of binding emission limitations.
2. “Not applicable” (N/A) is indicated unless the responsible official chooses to pay annual emission fees based on actual emissions rather than allowable emissions pursuant to subparagraph 1200-3-26-.02(9)(b).
3. PM-2.5 and PM-10 emissions are also included in particulates (TSP) Emissions and should not be counted in annual emission fee calculations.
4. An asterisk (*) is placed next to each pollutant that is also included in the totals in Item 2

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TITLE V PERMIT APPLICATION
CURRENT EMISSIONS REQUIREMENTS AND STATUS

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:	2. Emission source number:
Eastman Chemical Company, Tennessee Operations	All sources included in this application

3. Describe the process emission source / fuel burning installation / incinerator:
All sources included in this application

EMISSIONS AND REQUIREMENTS

4. Identify if only a part of the source is subject to this requirement	5. Pollutant	6. Applicable requirement(s): TN Air Pollution Control Regulations, 40 CFR, permit restrictions, air quality based standards	7. Limitations	8. Maximum actual emissions	9. Compliance status (In/Out)
1. All emission units and activities	Visible Emissions	TAPCR 1200-03-05: Visible Emission Regulations	See APC 30 Attachment	N/A	In
2. All emission units and activities	Non-process gaseous air contaminants	TAPCR 1200-03-06-.03(2): General Non-Process Gaseous Emissions Standards	See APC 30 Attachment	N/A	In
3. All emission units and activities	Non-process particulate matter	TAPCR 1200-03-06: Non-Process Emissions Standards	See APC 30 Attachment	N/A	In
4. All emission units and activities	Process gaseous air contaminants	TAPCR 1200-03-07-.07(2): General Provisions and Applicability for Process Gaseous Emission Standards	See APC 30 Attachment	N/A	In
5. All emission units and activities	Process particulate matter	TAPCR 1200-03-07: Process Emissions Standards	See APC 30 Attachment	N/A	In
6. All emission units and activities	Sulfur Dioxide	TAPCR 1200-03-14: Control of Sulfur Dioxide Emissions	See APC 30 Attachment	N/A	In
7. All emission units and activities	Fugitive Dust	TAPCR 1200-03-08: Fugitive Dust	See APC 30 Attachment	N/A	In
8. All emission units and activities	Air Contaminants	TAPCR 1200-03-04: Open Burning	See APC 30 Attachment	N/A	In
9. All emission units and activities	Asbestos	TAPCR 1200-03-11-.02(2)(d): Asbestos standard for demolition and renovation 40 CFR Part 61 Subpart M: National Emissions Standards for Asbestos	See APC 30 Attachment	N/A	In

See APC 30 Attachment for additional Emissions and Requirements

10. Other applicable requirements (new requirements that apply to this source during the term of this permit)					

APC 30 - Emissions and Requirements Table Continued

EMISSIONS AND REQUIREMENTS					
4. Identify if only a part of the source is subject to this requirement	5. Pollutant	6. Applicable requirement(s): TN Air Pollution Control Regulations, 40 CFR, permit restrictions, air quality-based standards	7. Limitations	8. Maximum actual emissions	9. Compliance status (In/Out)
10. All emission units and activities	N/A	TAPCR 1200-03-09-.02(11)(e)1.(iii); TAPCR 1200-03-10-.04(2)(b)1: Monitoring, Recordkeeping, and Reporting Requirements TAPCR 1200-03-09-.02(11)(e)3.(i): Compliance Certification	See APC 30 Attachment	N/A	In
11. All emission units and activities	HAPs	TAPCR 0400-30-38: Emission Standards for Hazardous Air Pollutants	See APC 30 Attachment	N/A	In
12. All emission units and activities	Air Contaminants	TAPCR 0400-30-39: Standards of Performance for New Stationary Sources	See APC 30 Attachment	N/A	In
13. Gasoline Dispensing Facilities	HAPs	TAPCR 1200-03-18.24: Gasoline Dispensing Facilities	See APC 30 Attachment	N/A	In
14. Internal Combustion Engines	Air Contaminants	TAPCR 0400-30-38-.01; Stationary Reciprocating Internal Combustion Engines 0400-30-39-.01; Stationary Compression Ignition Internal Combustion Engines 0400-30-39-.02; Stationary Spark Ignition Internal Combustion Engines	See APC 30 Attachment	N/A	In

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APC 30 – Additional Language from Items 6 and/or 7

Limitation 1 (Visible Emissions): With the exception of air emission sources exempt from the requirements of TAPCR Chapter 1200-03-05 and air emission sources for which a different opacity standard is specifically provided elsewhere in this permit, the permittee shall not cause, suffer, allow or permit discharge of a visible emission from any air contaminant source with an opacity in excess of twenty (20) percent for an aggregate of more than five (5) minutes in any one (1)hour or more than twenty (20) minutes in any twenty-four (24) hour period; provided, however, that for fuel burning installations with fuel burning equipment of input capacity greater than 600 million btu per hour, the permittee shall not cause, suffer, allow, or permit discharge of a visible emission from any fuel burning installation with an opacity in excess of twenty (20) percent (6-minute average) except for one six minute period per one (1) hour of not more than forty (40) percent opacity. Sources constructed or modified after July 7, 1992 shall utilize 6-minute averaging.

Consistent with the requirements of TAPCR Chapter 1200-03-20, due allowance may be made for visible emissions in excess of that permitted under TAPCR 1200-03-05 which are necessary or unavoidable due to routine startup and shutdown conditions. The facility shall maintain a continuous, current log of all excess visible emissions showing the time at which such conditions began and ended and that such record shall be available to the Technical Secretary or his representative upon his request.

Limitation 2 (Non-process gaseous emissions): Any person constructing or otherwise establishing a non-portable air contaminant source emitting gaseous air contaminants after April 3, 1972, or relocating an air contaminant source more than 1.0 km from the previous position after November 6, 1988, shall install and utilize the best equipment and technology currently available for controlling such gaseous emissions.

Limitation 3 (Non-process particulate matter): The permittee shall not cause, suffer, allow, or permit particulate emissions from non-process sources in excess of the standards in TAPCR 1200-03-06.

Limitation 4 (Process gaseous emissions): Any person constructing or otherwise establishing an air contaminant source emitting gaseous air contaminants after April 3, 1972, or relocating an air contaminant source more than 1.0 km from the previous position after November 6, 1988, shall install and utilize equipment and technology which is deemed reasonable and proper by the Technical Secretary.

Limitation 5 (Process particulate matter): The permittee shall not cause, suffer, allow, or permit particulate emissions from process sources in excess of the standards in TAPCR 1200-03-07.

Limitation 6 (Sulfur dioxide): The permittee shall not cause, suffer, allow, or permit Sulfur dioxide emissions from process and non-process sources in excess of the standards in TAPCR 1200-03-14. Regardless of the specific emission standard, new process sources shall utilize the best available control technology as deemed appropriate by the Technical Secretary of the Tennessee Air Pollution Control Board.

Limitation 7 (Fugitive dust): The permittee shall not cause, suffer, allow, or permit any materials to be handled, transported, or stored; or a building, its appurtenances, or a road to be used, constructed, altered, repaired, or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne. Such reasonable precautions shall include, but not be limited to, the following:

1. Use, where possible, of water or chemicals for control of dust in demolition of existing buildings or structures, construction operations, grading of roads, or the clearing of land;

2. Application of asphalt, oil, water, or suitable chemicals on dirt roads, material stock piles, and other surfaces which can create airborne dusts;

3. Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials. Adequate containment methods shall be employed during sandblasting or other similar operations.

The permittee shall not cause, suffer, allow, or permit fugitive dust to be emitted in such manner to exceed five (5) minutes per hour or twenty (20) minutes per day as to produce a visible emission beyond the property line of the property on which the emission originates, excluding malfunction of equipment as provided in Chapter 1200-03-20.

Limitation 8 (Open Burning): The permittee shall comply with the TAPCR 1200-03-04 for all open burning activities at the facility.

Limitation 9 (Asbestos): Where applicable, the permittee shall comply with the requirements of 1200 03 11 .02(2)(d) when conducting any renovation or demolition activities at the facility.

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200 South Wilcox Dr
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APC 30 – Additional Language from Items 6 and/or 7

Limitation 10 (Annual certification of compliance): The generally applicable requirements set forth in Section D of this permit are intended to apply to activities and sources that are not subject to source-specific applicable requirements contained in State of Tennessee and U.S. EPA regulations. By annual certification of compliance, the permittee shall be considered to meet the monitoring and related record keeping and reporting requirements of TAPCR 1200-03-09-.02(11)(e)1.(iii) and 1200-03-10-.04(2)(b)1 and compliance requirements of TAPCR 1200-03-09-.02(11)(e)3.(i). The permittee shall submit compliance certification for these conditions annually.

Limitation 11 (Emission Standards for Hazardous Air Pollutants): Where applicable, the permittee shall comply with the Tenn. Comp. R. & Regs. 0400-30-38 for all emission sources subject to a requirement contained therein. Tenn. Comp. R. & Regs. Chapter 0400-30-38.

Limitation 12 (Standards of Performance for New Stationary Sources): Where applicable, the permittee shall comply with the Tenn. Comp. R. & Regs. 0400-30-39 for all emission sources subject to a requirement contained therein. Tenn. Comp. R. & Regs. Chapter 0400-30-39.

Limitation 13 (Gasoline Dispensing Facilities): Where applicable, the permittee shall comply with the Tenn. Comp. R. & Regs. Rule 1200-03-18-.24 for all emission sources subject to a requirement contained therein.

Limitation 14 (Internal Combustion Engines):

(a) All stationary reciprocating internal combustion engines, including engines deemed insignificant activities and insignificant emission units, shall comply with the applicable provisions of Tenn. Comp. R. & Regs. 0400-30-38-.01.

(b) All stationary compression ignition internal combustion engines, including engines deemed insignificant activities and insignificant emission units, shall comply with the applicable provisions of Tenn. Comp. R. & Regs. 0400-30-39-.01.

(c) All stationary spark ignition internal combustion engines, including engines deemed insignificant activities and insignificant emission units, shall comply with the applicable provisions of Tenn. Comp. R. & Regs. 0400-30-39-.02.
Tenn. Comp. R. & Regs. 0400-30-38 and 39

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TITLE V PERMIT APPLICATION
COMPLIANCE PLAN AND COMPLIANCE CERTIFICATION

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
Eastman Chemical Company, Tennessee Operations

2. List all the process emission source(s) or fuel burning installation(s) or incinerator(s) that are part of this application.
See APC 1 Item 16 for a listing of sources.

COMPLIANCE PLAN AND CERTIFICATION

3. Indicate that source(s) which are contained in this application are presently in compliance with all applicable requirements, by checking the following:

☒ A. Attached is a statement of identification of the source(s) currently in compliance. We will continue to operate and maintain the source(s) to assure compliance with all the applicable requirements for the duration of the permit.

☒ B APC 30 form(s) includes new requirements that apply or will apply to the source(s) during the term of the permit. We will meet such requirements on a timely basis.

4. Indicate that there are source(s) that are contained in this application which are not presently in full compliance, by checking both of the following:

☐ A. Attached is a statement of identification of the source(s) not in compliance, non-complying requirement(s), brief description of the problem, and the proposed solution.

☐ B. We will achieve compliance according to the following schedule:

Action	Deadline

Progress reports will be submitted:

Start date: ___ and every 180 days thereafter until compliance is achieved.

5. State the compliance status with any applicable compliance assurance monitoring and compliance certification requirements that have been promulgated under section 114(a)(3) of the Clean Air Act as of the date of submittal of this APC 31.

Compliance Status: IN ☒ OUT ☐ N/A ☐

6. Page number:	Revision number:	Date of revision:
15 of 19	R3-3 SM2 and CP1	**August 13, 2021**

DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF AIR POLLUTION CONTROL
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor, Nashville, TN 37243
Telephone: (615) 532-0554, Email: Air.Pollution.Control@TN.gov

TITLE V FEE SELECTION

Type or print and submit to the email address above.

FACILITY INFORMATION

1. Organization's legal name and SOS control number [as registered with the TN Secretary of State (SOS)]
Eastman Chemical Company; 000270913

2. Site name (if different from legal name)
Tennessee Operations

3. Site address (St./Rd./Hwy.)	County name
200 South Wilcox Drive	Sullivan
City	Zip code
Kingsport	37660

4. Emission source reference number	**5.** Title V permit number
82-0003 MSOP-24	576162

FEE SELECTION

This fee selection is effective beginning January 1, 2021. When approved, this selection will be effective until a new Fee Selection form is submitted. Fee Selection forms must be submitted on or before December 31 of the annual accounting period.

6. Payment Schedule (choose one):

Calendar Year Basis (January 1 – December 31) ☒ Fiscal Year Basis (July 1 – June 30) ☐

7. Payment Basis (choose one):

Actual Emissions Basis ☐ Allowable Emissions Basis ☒ Combination of Actual and Allowable Emissions Basis ☐

8. If Payment Basis is "Actual Emissions" or "Combination of Actual and Allowable Emissions", complete the following table for each permitted source and each pollutant for which fees are due for that source. See instructions for further details.

Source ID	**Pollutant**	**Allowable or Actual Emissions**	**If allowable emissions: Specify condition number and limit.** **If actual emissions: Describe calculation method and provide example. Provide condition number that specifies method, if applicable.**

8. (Continued)

Source ID	Pollutant	Allowable or Actual Emissions	If allowable emissions: Specify condition number and limit. If actual emissions: Describe calculation method and provide example. Provide condition number that specifies method, if applicable.

CONTACT INFORMATION

9. Billing contact Tracy Venett			Phone number with area code (423) 229-5230
Mailing address (St./Rd./Hwy.) P.O. Box 511			Fax number with area code (423) 224-7213
City Kingsport	State TN	Zip code 37662	**Email address** tvenett@eastman.com

SIGNATURE BY RESPONSIBLE OFFICIAL

Based upon information and belief formed after reasonable inquiry, I, as the responsible person of the above-mentioned facility, certify that the information contained in the submittal is accurate and true to the best of my knowledge. As specified in TCA Section 39-16-702(a)(4), this declaration is made under penalty ofperjury.

10. Signature See APC Index Form		Date See APC Index Form
Signer's name (type or print) Bill Fritsch	**Title** Division Manufacturing Leader, Plastics	Phone number with area code (423) 229-6860

CN-1583 (Rev. 4-19) RDA-1298

Eastman Chemical Company
Tennessee Operations
200 South Wilcox Dr
Kingsport TN, 37660
Telephone: (423) 229-2000

EASTMAN

Mutual Agreement to Establish More Restrictive Emissions Limits

TAPCR References	Rule Section
1200-03-05-.01(3)	General Visible Emission Standards
1200-03-06-.01(7)	General Non-Process Emissions Standards
1200-03-07-.01(5)	General Process Particulate Emissions Standards
1200-03-14-.01(5)	General Provisions for Control of Sulfur Dioxide Emissions
1200-03-26-.02(6)	Administrative Fees Schedule

Pursuant to the Tennessee Air Pollution Control Regulations (TAPCR) referenced above, upon mutual agreement of the owner or operator of any air contaminant source and the Technical Secretary, an emission limit more restrictive than that otherwise specified in the applicable Chapter may be established. In addition, these more restrictive regulatory requirements may be established to minimize the allowable emissions and thus the annual emission fee. The regulations require that each emission limit be stated as a special condition for any permit or order issued concerning the applicable source. They also state that a violation of this agreed to, more stringent emission standard is grounds for revocation of the issued permit and/or other enforcement measures provided for in the Tennessee Air Quality Act. Eastman would like to agree to more restrictive emissions limits being established for the PESs listed below:

PES	Pollutant(s)	Requested Limit and Compliance Method
B-221-3	Particulate Matter, Sulfur Dioxide	Limits and periodic monitoring specified in the applicable Title V applications
B-237A-3	Particulate Matter, Sulfur Dioxide	
B-238-1	Particulate Matter, Sulfur Dioxide	
B-238-2	Particulate Matter, Sulfur Dioxide	
B-368-1	Particulate Matter, Sulfur Dioxide	
H2 Plants	Particulate Matter, Sulfur Dioxide	

Eastman Chemical Company
Tennessee Operations
200 South Wilcox Dr
Kingsport, TN 37660
Telephone: (423) 229-2000

Request for Permit Shield

Choose one of the following…

☐ This submittal does not qualify for permit shield [operational flexibility; 502(b)(10); minor modification]

☒ Eastman Chemical Company requests a permit shield pursuant to TAPCR 1200-03-09-.02(11)(e)6.

TAPCR 1200-03-09-.02(11)(e)

6. Permit Shield

(i) Except as provided in paragraph 1200-03-09-.02(11), the Technical Secretary shall if requested by the applicant, expressly include in a permit issued pursuant to paragraph 1200-03-09-.02(11) a provision stating that compliance with the conditions of the permit shall be deemed compliance with any applicable requirements as of the date of permit issue, provided that:

(I) Such applicable requirements are included and are specifically identified in the permit; or

(II) The Technical Secretary, in acting on the permit application or revision, determines in writing that other requirements specifically identified are not applicable to the source, and the permit includes the determination or a concise summary thereof.

(ii) A permit issued pursuant to paragraph 1200-03-09-.02(11) that does not expressly state that a permit shield exists shall be presumed not to provide such a shield.

(iii) Nothing in this part or in any permit issued pursuant to paragraph 1200-03- 09-.02(11) shall alter or affect the following:

(I) The provisions of section 303 of the federal Act (emergency orders), including the authority of the Administrator under that section. Similarly, the provisions of T.C.A. 68-201-109 (emergency orders) including the authority of the Governor under the section;

(II) The liability of an owner or operator of a source for any violation of applicable requirements prior to or at the time of permit issuance;

(III) The applicable requirements of the acid rain program, consistent with section 408(a) of the federal Act; or

(IV) The ability of EPA to obtain information from a source pursuant to section 114 of the federal Act.

END OF GENERAL FORMS (ENTIRE SOURCE)

EASTMAN
Tennessee Operations
200 South Wilcox Dr
Kingsport, TN 37660
Telephone: (423) 229-2000

Title V Operating Permit Application

Application Forms

MSOP-24

PES B-221-3

Glycol Plants

State of Tennessee
Department of Environment and Conservation
Division of Air Pollution Control
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor
Nashville, TN 37243
Telephone: (615) 532-0554

TITLE V PERMIT APPLICATION
MISCELLANEOUS PROCESSES

1. Facility name:
   Eastman Chemical Company, Tennessee Operations

2. Process emission source (identify):
   PES B-221-3

3. Stack ID or flow diagram point identification(s):	4. Year of construction or last modification:
See APC 10 Attachment	2018

If the emissions are controlled for compliance, attach an appropriate Air Pollution Control system form.

5. Normal operating schedule: 24 Hrs./Day 7 Days/Wk. 365 Days/Yr.

6. Location of this process emission source in UTM coordinates: UTM Vertical: 4042700 N UTM Horizontal: 362300 E

7. Describe this process (Please attach a flow diagram of this process) and check one of the following:
   ☐ Batch ☒ Continuous

PROCESS MATERIAL INPUT AND OUTPUT

8. List the types and amounts of raw materials input to this process:

Material	Storage/Material handling process	Average usage (units)	Maximum usage (units)
Hydrogen (1)	Closed Pipe	CBI	CBI
Ester (2)	Closed Pipe	CBI	CBI
Additive (3)	Tanks/Closed Pipe	CBI	CBI

9. List the types and amounts of primary products produced by this process:

Material	Storage/Material handling process	Average ~~usage~~ Amount Produced (units)	Maximum ~~usage~~ Amount Produced (units)
Crude Glycol (4)	Closed Pipe	CBI	CBI

10. Process fuel usage:

Type of fuel	Max heat input (10^6 BTU/Hr.)	Average usage (units)	Maximum usage (units)
N/A	N/A	N/A	N/A

11. List any solvents, cleaners, etc., associated with this process:

    N/A

If the emissions and/or operations of this process are monitored for compliance, please attach the appropriate Compliance Demonstration form.

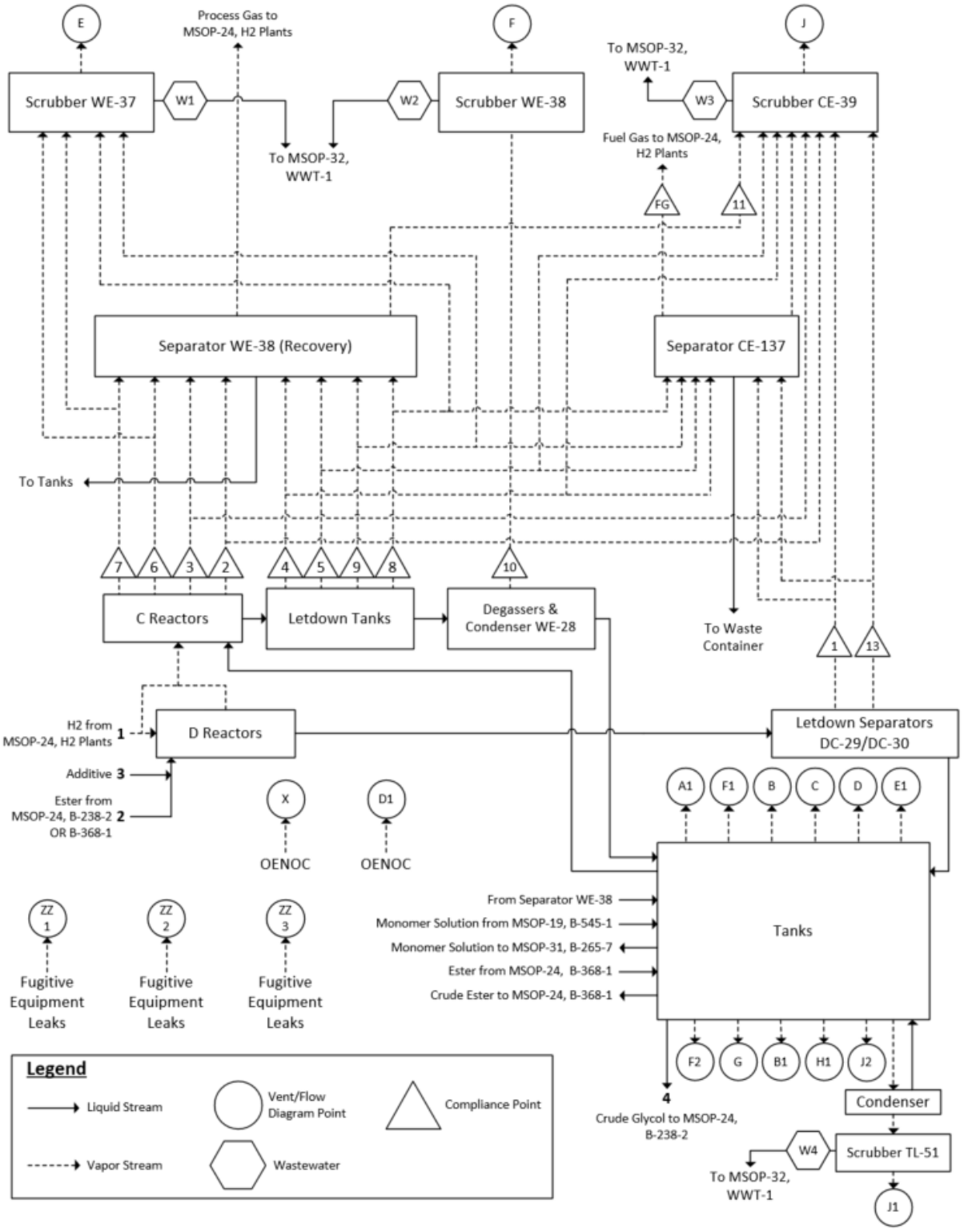
12. Describe any fugitive emissions associated with this process, such as outdoor storage piles, open conveyors, open air sand blasting, material handling operations, etc. (please attach a separate sheet if necessary).

    Equipment leaks such as pumps, valves, flanges, etc.

TITLE V PERMIT APPLICATION
MISCELLANEOUS PROCESSES

(Continued from Items 3 and 7 of APC 10)

B-221-3



State of Tennessee
Department of Environment and Conservation
Division of Air Pollution Control
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor
Nashville, TN 37243
Telephone: (615) 532-0554

TITLE V PERMIT APPLICATION
STACK IDENTIFICATION

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
   Eastman Chemical Company, Tennessee Operations

2. Emission source (identify):
   PES B-221-3

STACK DESCRIPTION

3. Stack ID (or flow diagram point identification):
   E

4. Stack height above grade in feet:
   59

5. Velocity (data at exit conditions):
   32.1 (Actual feet per second)

6. Inside dimensions at outlet in feet:
   0.665

7. Exhaust flow rate at exit conditions (ACFM):
   669

8. Flow rate at standard conditions (DSCFM):
   648

9. Exhaust temperature:
   64 Degrees Fahrenheit (°F)

10. Moisture content (data at exit conditions):
    NEG Percent
    Grains per dry standard cubic foot (gr./dscf)

11. Exhaust temperature that is equaled or exceeded during ninety (90) percent or more of the operating time (for stacks subject to diffusion equation only):
    N/A (°F)

12. If this stack is equipped with continuous pollutant monitoring equipment required for compliance, what pollutant(s) does this equipment monitor (e.g., Opacity, SO_2, NO_2, etc.)?
    N/A

Complete the appropriate APC form(s) 4, 5, 7, 8, 9, or 10 for each source exhausting through this stack.

BYPASS STACK DESCRIPTION

13 Do you have a bypass stack? ☐ Yes ☒ No

If yes, describe the conditions which require its use & complete APC form 4 for the bypass stack. Please identify the stack number(s) of flow diagram point number(s) exhausting through this bypass stack.

State of Tennessee
Department of Environment and Conservation
Division of Air Pollution Control
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor
Nashville, TN 37243
Telephone: (615) 532-0554

TITLE V PERMIT APPLICATION
STACK IDENTIFICATION

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
   Eastman Chemical Company, Tennessee Operations

2. Emission source (identify):
   PES B-221-3

STACK DESCRIPTION

3. Stack ID (or flow diagram point identification):
   F

4. Stack height above grade in feet:
   30

5. Velocity (data at exit conditions):
   17.4 (Actual feet per second)

6. Inside dimensions at outlet in feet:
   0.34

7. Exhaust flow rate at exit conditions (ACFM):
   94.9

8. Flow rate at standard conditions (DSCFM):
   85.4

9. Exhaust temperature:
   85 Degrees Fahrenheit (°F)

10. Moisture content (data at exit conditions):
    3 Percent Grains per dry standard cubic foot (gr./dscf)

11. Exhaust temperature that is equaled or exceeded during ninety (90) percent or more of the operating time (for stacks subject to diffusion equation only):
    N/A (°F)

12. If this stack is equipped with continuous pollutant monitoring equipment required for compliance, what pollutant(s) does this equipment monitor (e.g., Opacity, SO_2, NO_2, etc.)?
    N/A

Complete the appropriate APC form(s) 4, 5, 7, 8, 9, or 10 for each source exhausting through this stack.

BYPASS STACK DESCRIPTION

13 Do you have a bypass stack? ☐ Yes ☒ No

If yes, describe the conditions which require its use & complete APC form 4 for the bypass stack. Please identify the stack number(s) of flow diagram point number(s) exhausting through this bypass stack.

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TITLE V PERMIT APPLICATION
STACK IDENTIFICATION

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
   Eastman Chemical Company, Tennessee Operations

2. Emission source (identify):
   PES B-221-3

STACK DESCRIPTION

3. Stack ID (or flow diagram point identification):
   J

4. Stack height above grade in feet:
   45

5. Velocity (data at exit conditions):
   11.9 (Actual feet per second)

6. Inside dimensions at outlet in feet:
   0.5

7. Exhaust flow rate at exit conditions (ACFM):
   966.9

8. Flow rate at standard conditions (DSCFM):
   804.1

9. Exhaust temperature:
   60 Degrees Fahrenheit (°F)

10. Moisture content (data at exit conditions):
    14.4 Percent
    Grains per dry standard cubic foot (gr./dscf)

11. Exhaust temperature that is equaled or exceeded during ninety (90) percent or more of the operating time (for stacks subject to diffusion equation only):
    N/A (°F)

12. If this stack is equipped with continuous pollutant monitoring equipment required for compliance, what pollutant(s) does this equipment monitor (e.g., Opacity, SO2, NO2, etc.)?
    N/A

Complete the appropriate APC form(s) 4, 5, 7, 8, 9, or 10 for each source exhausting through this stack.

BYPASS STACK DESCRIPTION

13 Do you have a bypass stack? ☐ Yes ☒ No

If yes, describe the conditions which require its use & complete APC form 4 for the bypass stack. Please identify the stack number(s) of flow diagram point number(s) exhausting through this bypass stack.

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TITLE V PERMIT APPLICATION
STACK IDENTIFICATION

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
Eastman Chemical Company, Tennessee Operations

2. Emission source (identify):
PES B-221-3

STACK DESCRIPTION

3. Stack ID (or flow diagram point identification):
J1

4. Stack height above grade in feet:
40

5. Velocity (data at exit conditions):
1.25 (Actual feet per second)

6. Inside dimensions at outlet in feet:
0.33

7. Exhaust flow rate at exit conditions (ACFM):
26

8. Flow rate at standard conditions (DSCFM):
24

9. Exhaust temperature:
80.0 Degrees Fahrenheit (°F)

10. Moisture content (data at exit conditions):
2.2 Percent
Grains per dry standard cubic foot (gr./dscf)

11. Exhaust temperature that is equaled or exceeded during ninety (90) percent or more of the operating time (for stacks subject to diffusion equation only):
N/A (°F)

12. If this stack is equipped with continuous pollutant monitoring equipment required for compliance, what pollutant(s) does this equipment monitor (e.g., Opacity, SO_2, NO_2, etc.)?
N/A

Complete the appropriate APC form(s) 4, 5, 7, 8, 9, or 10 for each source exhausting through this stack.

BYPASS STACK DESCRIPTION

13 Do you have a bypass stack? ☐ Yes ☒ No

If yes, describe the conditions which require its use & complete APC form 4 for the bypass stack. Please identify the stack number(s) of flow diagram point number(s) exhausting through this bypass stack.

State of Tennessee
Department of Environmental and Conversation
Division of Air Pollution Control
William R. Snodgrass Tennessee Tower
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Nashville, TN 37243
Telephone: (615) 532-0554

TITLE V PERMIT APPLICATION
STORAGE TANKS

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
Eastman Chemical Company, Tennessee Operations

2. Process emission source (identify):
PES B-221-3

STORAGE TANK DESCRIPTION

3. Storage tank identification:
UD-50

3a. Vent ID:
A1

4. Location of the storage tank or tank farm in UTM coordinates: UTM Vertical: 4042800 N UTM Horizontal: 362300 E

5. Storage tank capacity:
18,050 (Gallons)

6. Year of installation:
1968

7. Tank height
12.0 (Feet)

8. Tank diameter:
16.0 (Feet)

9. Color of tank: ☐ White ☒ Other Specify Unpainted

10. Is this tank equipped with a submerged fill pipe? ☒ Yes ☐ No

11. Type of storage tank:
☐ Open top tank ☒ Fixed roof ☐ Fixed roof w/internal floating roof ☐ Other (specify)
☐ Pressurized tank ☐ External floating roof ☐ Variable vapor space

12. For fixed roof tanks:
A. Tank configuration (check one): ☒ Vertical (upright cylinder) ☐ Horizontal ☐ Sphere
B. Tank roof type: (check one):
☐ Cone roof – indicate tank roof height ___ (feet)
☒ Dome roof – indicate tank roof height 2.14 (feet)
Indicate shell radius 8.0 (feet)

The tank roof height is not relevant since the outage height is measured form the liquid surface of the tank to the top of the tank roof

FLOATING ROOF TANK DESCRIPTION

13. For floating Roof tanks (both internal and external) – shell condition (check one): Not Applicable
Light rust Dense rust Gunite lined

14. For External Floating Roof tanks: Not Applicable
A. Tank construction (check one): Welded tank Riveted tank

B. Rim Seal system description (check one):

Shoe Mounted Primary	Vapor Mounted, Primary	Liquid Mounted Primary
Shoe Primary, Rim Secondary	Vapor Primary, Rim Secondary	Liquid Primary, Rim Secondary
Liquid Primary w/Weather Shield	Shoe Primary and Secondary	Vapor Primary w/Weather Shield

C. Roof type (check one): Pontoon roof Double Deck roof

D. Roof fitting types (indicate the number of each type):

Access Hatch (24” Diameter well)	Unslotted Guide-Pole Well	Gauge-Float Well (20” Diameter)
Bolted cover, gasketed	(8” Diameter Unslotted Pole, 21” Dia. Well)	Unbolted cover, ungasketed
Unbolted cover, gasketed	Ungasketed sliding cover	Unbolted cover, gasketed
Unbolted cover, ungasketed	Gasketed sliding cover	Bolted cover, gasketed
Gauge Hatch/Sample Well (8” Dia.)	Vacuum Breaker (10” Dia. Well)	Roof Drain
Weighted Mechanical Actuation Gasketed	Weighted Mechanical Actuation Gasketed	Open
Weighted Mechanical Actuation Ungasketed	Weighted Mechanical Actuation Ungasketed	90% Closed
Slotted Guide-Pole/Sample Well	Roof Leg (3” Dia.)	Roof Leg (2 ½” Dia.)
Ungasketed Sliding Cover, without Float	Adjustable, Pontoon area	Adjustable, Pontoon area
Ungasketed Sliding Cover, with Float	Adjustable, Center area	Adjustable, Center area
Gasketed Sliding Cover, without Float	Adjustable, Double-Deck roofs	Adjustable, Double-Deck roofs
Gasketed Sliding Cover, with Float	Fixed	Fixed

15. For Internal Floating Roof tanks: Not Applicable

A. Rim Seal system description:

Liquid Mounted Primary
Vapor Mounted Primary
Liquid Mounted Primary plus Secondary Seal
Vapor Mounted Primary plus Secondary Seal

B. Number of Columns:

D. Deck Type (check one): Welded Bolted

C. Effective Column diameter: (Feet)

E. Total Deck Seam length: (Feet)

F. Deck Area: (Square Feet)

G. Deck Fitting types (indicate the number of each type):

Access Hatch (24" Dia.)
Bolted cover, gasketed
Unbolted cover, gasketed
Unbolted cover, ungasketed
Pipe Column-Sliding cover, gasketed
Pipe Column-Sliding cover, ungasketed

Automatic Gauge Float Well
Bolted cover, gasketed
Unbolted cover, gasketed
Unbolted cover, ungasketed

Column Well
Built-up Column-Sliding cover, gasketed
Built-up Column-Sliding cover, ungasketed
Pipe Column-Flexible fabric sleeve seal

Ladder well
Sliding cover, gasketed
Sliding cover, ungasketed
Sample Well-Slit fabric seal, 10% open area
Stub Drain, 1-inch diameter

Sample Pipe and Well
Slotted Pipe-Sliding cover, gasketed
Slotted Pipe-Sliding cover, ungasketed

Roof Leg or Hanger Well
Adjustable
Fixed

Vacuum Breaker
Weighted Mechanical Actuation, gasketed
Weighted Mechanical Actuation, ungasketed

16. For variable vapor space tanks: Not Applicable
Volume expansion capacity (Gallons)

TANK CONTENTS AND OPERATION DESCRIPTION

17. Complete the flowing table for materials to be stored in this tank:

Material or component stored	Wt. %	Material Annual Throughput (1000 Gal./Yr.)‡	Material stored Daily Average (Gallons)‡	Component Molecular weights (Lb./Lb. Mole)	Component Vapor Pressures (PSIA)	Material storage pressure (PSIA)‡	Material average storage temp. (Deg. F)‡
VOC	100	216	12,034	38.49	8.76	14.10	284

Multipurpose tank with variable composition: ☐ Yes ☒ No

18. Describe the operation this tank will serve:
Ester Storage Tank

‡Value shown is for the mixture.

State of Tennessee
Department of Environmental and Conversation
Division of Air Pollution Control
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor
Nashville, TN 37243
Telephone: (615) 532-0554

TITLE V PERMIT APPLICATION
STORAGE TANKS

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
Eastman Chemical Company, Tennessee Operations

2. Process emission source (identify):
PES B-221-3

STORAGE TANK DESCRIPTION

3. Storage tank identification:
JT-53

3a. Vent ID:
B

4. Location of the storage tank or tank farm in UTM coordinates: UTM Vertical: 4042710 N UTM Horizontal: 362247 E

5. Storage tank capacity:
13500 (Gallons)

6. Year of installation:
1987

7. Tank height
16.0 (Feet)

8. Tank diameter:
12.0 (Feet)

9. Color of tank: ☐ White ☒ Other Specify Insulated Tank

10. Is this tank equipped with a submerged fill pipe? ☒ Yes ☐ No

11. Type of storage tank:
☐ Open top tank ☒ Fixed roof ☐ Fixed roof w/internal floating roof ☐ Other (specify)
☐ Pressurized tank ☐ External floating roof ☐ Variable vapor space

12. For fixed roof tanks:
A. Tank configuration (check one): ☒ Vertical (upright cylinder) ☐ Horizontal ☐ Sphere
B. Tank roof type: (check one): ☐ Cone roof – indicate tank roof height ___ (feet)
☒ Dome roof – indicate tank roof height 1.61 (feet)
Indicate shell radius 6.0 (feet)

FLOATING ROOF TANK DESCRIPTION

13. For floating Roof tanks (both internal and external) – shell condition (check one): Not Applicable
Light rust Dense rust Gunite lined

14. For External Floating Roof tanks: Not Applicable

A. Tank construction (check one): Welded tank Riveted tank

B. Rim Seal system description (check one):

Shoe Mounted Primary	Vapor Mounted, Primary	Liquid Mounted Primary
Shoe Primary, Rim Secondary	Vapor Primary, Rim Secondary	Liquid Primary, Rim Secondary
Liquid Primary w/Weather Shield	Shoe Primary and Secondary	Vapor Primary w/Weather Shield

C. Roof type (check one): Pontoon roof Double Deck roof

D. Roof fitting types (indicate the number of each type):

Access Hatch (24” Diameter well)	Unslotted Guide-Pole Well	Gauge-Float Well (20” Diameter)
Bolted cover, gasketed	(8” Diameter Unslotted Pole, 21” Dia. Well)	Unbolted cover, ungasketed
Unbolted cover, gasketed	Ungasketed sliding cover	Unbolted cover, gasketed
Unbolted cover, ungasketed	Gasketed sliding cover	Bolted cover, gasketed
Gauge Hatch/Sample Well (8” Dia.)	Vacuum Breaker (10” Dia. Well)	Roof Drain
Weighted Mechanical Actuation Gasketed	Weighted Mechanical Actuation Gasketed	Open
Weighted Mechanical Actuation Ungasketed	Weighted Mechanical Actuation Ungasketed	90% Closed
Slotted Guide-Pole/Sample Well	Roof Leg (3” Dia.)	Roof Leg (2 ½” Dia.)
Ungasketed Sliding Cover, without Float	Adjustable, Pontoon area	Adjustable, Pontoon area
Ungasketed Sliding Cover, with Float	Adjustable, Center area	Adjustable, Center area
Gasketed Sliding Cover, without Float	Adjustable, Double-Deck roofs	Adjustable, Double-Deck roofs
Gasketed Sliding Cover, with Float	Fixed	Fixed

15. For Internal Floating Roof tanks: Not Applicable

A. Rim Seal system description:

Liquid Mounted Primary
Vapor Mounted Primary
Liquid Mounted Primary plus Secondary Seal
Vapor Mounted Primary plus Secondary Seal

B. Number of Columns:

D. Deck Type (check one): Welded Bolted

C. Effective Column diameter: (Feet)

E. Total Deck Seam length: (Feet)

F. Deck Area: (Square Feet)

G. Deck Fitting types (indicate the number of each type):

Access Hatch (24" Dia.)
Bolted cover, gasketed
Unbolted cover, gasketed
Unbolted cover, ungasketed
Pipe Column-Sliding cover, gasketed
Pipe Column-Sliding cover, ungasketed

Automatic Gauge Float Well
Bolted cover, gasketed
Unbolted cover, gasketed
Unbolted cover, ungasketed

Column Well
Built-up Column-Sliding cover, gasketed
Built-up Column-Sliding cover, ungasketed
Pipe Column-Flexible fabric sleeve seal

Ladder well
Sliding cover, gasketed
Sliding cover, ungasketed
Sample Well-Slit fabric seal, 10% open area
Stub Drain, 1-inch diameter

Sample Pipe and Well
Slotted Pipe-Sliding cover, gasketed
Slotted Pipe-Sliding cover, ungasketed

Roof Leg or Hanger Well
Adjustable
Fixed

Vacuum Breaker
Weighted Mechanical Actuation, gasketed
Weighted Mechanical Actuation, ungasketed

16. For variable vapor space tanks: Not Applicable
Volume expansion capacity (Gallons)

TANK CONTENTS AND OPERATION DESCRIPTION

17. Complete the flowing table for materials to be stored in this tank:

Material or component stored	Wt. %	Material Annual Throughput (1000 Gal./Yr.)‡	Material stored Daily Average (Gallons)‡	Component Molecular weights (Lb./Lb. Mole)	Component Vapor Pressures (PSIA)	Material storage pressure (PSIA)‡	Material average storage temp. (Deg. F)‡
VOC	90	4820	10116	144.21	0.01	14.10	240
Water	10			18.02	11.74		

Multipurpose tank with variable composition: ☐ Yes ☒ No

18. Describe the operation this tank will serve:
Refined Glycol Storage

‡Value shown is for the mixture.

State of Tennessee
Department of Environmental and Conversation
Division of Air Pollution Control
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Telephone: (615) 532-0554

TITLE V PERMIT APPLICATION
STORAGE TANKS

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
Eastman Chemical Company, Tennessee Operations

2. Process emission source (identify):
PES B-221-3

STORAGE TANK DESCRIPTION

3. Storage tank identification:
CG-100

3a. Vent ID:
B1

4. Location of the storage tank or tank farm in UTM coordinates: UTM Vertical: 4042800 N UTM Horizontal: 362300 E

5. Storage tank capacity:
7080 (Gallons)

6. Year of installation:
1959

7. Tank height
12.0 (Feet)

8. Tank diameter:
10.0 (Feet)

9. Color of tank: ☐ White ☒ Other Specify Unpainted Aluminum

10. Is this tank equipped with a submerged fill pipe? ☒ Yes ☐ No

11. Type of storage tank:
☐ Open top tank ☒ Fixed roof ☐ Fixed roof w/internal floating roof ☐ Other (specify)
☐ Pressurized tank ☐ External floating roof ☐ Variable vapor space

12. For fixed roof tanks:
A. Tank configuration (check one): ☒ Vertical (upright cylinder) ☐ Horizontal ☐ Sphere
B. Tank roof type: (check one): ☐ Cone roof – indicate tank roof height ___ (feet)
☒ Dome roof – indicate tank roof height 1.34 (feet)
Indicate shell radius 5.0 (feet)

FLOATING ROOF TANK DESCRIPTION

13. For floating Roof tanks (both internal and external) – shell condition (check one): Not Applicable
Light rust Dense rust Gunite lined

14. For External Floating Roof tanks: Not Applicable

A. Tank construction (check one): Welded tank Riveted tank

B. Rim Seal system description (check one):

Shoe Mounted Primary	Vapor Mounted, Primary	Liquid Mounted Primary
Shoe Primary, Rim Secondary	Vapor Primary, Rim Secondary	Liquid Primary, Rim Secondary
Liquid Primary w/Weather Shield	Shoe Primary and Secondary	Vapor Primary w/Weather Shield

C. Roof type (check one): Pontoon roof Double Deck roof

D. Roof fitting types (indicate the number of each type):

Access Hatch (24” Diameter well)	Unslotted Guide-Pole Well	Gauge-Float Well (20” Diameter)
Bolted cover, gasketed	(8” Diameter Unslotted Pole, 21” Dia. Well)	Unbolted cover, ungasketed
Unbolted cover, gasketed	Ungasketed sliding cover	Unbolted cover, gasketed
Unbolted cover, ungasketed	Gasketed sliding cover	Bolted cover, gasketed
Gauge Hatch/Sample Well (8” Dia.)	Vacuum Breaker (10” Dia. Well)	Roof Drain
Weighted Mechanical Actuation Gasketed	Weighted Mechanical Actuation Gasketed	Open
Weighted Mechanical Actuation Ungasketed	Weighted Mechanical Actuation Ungasketed	90% Closed
Slotted Guide-Pole/Sample Well	Roof Leg (3” Dia.)	Roof Leg (2 ½” Dia.)
Ungasketed Sliding Cover, without Float	Adjustable, Pontoon area	Adjustable, Pontoon area
Ungasketed Sliding Cover, with Float	Adjustable, Center area	Adjustable, Center area
Gasketed Sliding Cover, without Float	Adjustable, Double-Deck roofs	Adjustable, Double-Deck roofs
Gasketed Sliding Cover, with Float	Fixed	Fixed

15. For Internal Floating Roof tanks: Not Applicable

A. Rim Seal system description:

Liquid Mounted Primary
Vapor Mounted Primary
Liquid Mounted Primary plus Secondary Seal
Vapor Mounted Primary plus Secondary Seal

B. Number of Columns:

D. Deck Type (check one): Welded Bolted

C. Effective Column diameter: (Feet)

E. Total Deck Seam length: (Feet)

F. Deck Area: (Square Feet)

G. Deck Fitting types (indicate the number of each type):

Access Hatch (24" Dia.)
Bolted cover, gasketed
Unbolted cover, gasketed
Unbolted cover, ungasketed
Pipe Column-Sliding cover, gasketed
Pipe Column-Sliding cover, ungasketed

Automatic Gauge Float Well
Bolted cover, gasketed
Unbolted cover, gasketed
Unbolted cover, ungasketed

Column Well
Built-up Column-Sliding cover, gasketed
Built-up Column-Sliding cover, ungasketed
Pipe Column-Flexible fabric sleeve seal

Ladder well
Sliding cover, gasketed
Sliding cover, ungasketed
Sample Well-Slit fabric seal, 10% open area
Stub Drain, 1-inch diameter

Sample Pipe and Well
Slotted Pipe-Sliding cover, gasketed
Slotted Pipe-Sliding cover, ungasketed

Roof Leg or Hanger Well
Adjustable
Fixed

Vacuum Breaker
Weighted Mechanical Actuation, gasketed
Weighted Mechanical Actuation, ungasketed

16. For variable vapor space tanks: Not Applicable
Volume expansion capacity (Gallons)

TANK CONTENTS AND OPERATION DESCRIPTION

17. Complete the flowing table for materials to be stored in this tank:

Material or component stored	Wt. %	Material Annual Throughput (1000 Gal./Yr.)‡	Material stored Daily Average (Gallons)‡	Component Molecular weights (Lb./Lb. Mole)	Component Vapor Pressures (PSIA)	Material storage pressure (PSIA)‡	Material average storage temp. (Deg. F)‡
VOC	100	184	3555	32.04	7.86	14.10	140

Multipurpose tank with variable composition: ☐ Yes ☒ No

18. Describe the operation this tank will serve:
Crude Glycol Storage

‡Value shown is for the mixture.

State of Tennessee
Department of Environmental and Conversation
Division of Air Pollution Control
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor
Nashville, TN 37243
Telephone: (615) 532-0554

TITLE V PERMIT APPLICATION
STORAGE TANKS

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
Eastman Chemical Company, Tennessee Operations

2. Process emission source (identify):
PES B-221-3

STORAGE TANK DESCRIPTION

3. Storage tank identification:
CG-101

3a. Vent ID:
C

4. Location of the storage tank or tank farm in UTM coordinates: UTM Vertical: 4042800 N UTM Horizontal: 362300 E

5. Storage tank capacity:
7080 (Gallons)

6. Year of installation:
1959

7. Tank height
12.0 (Feet)

8. Tank diameter:
10.0 (Feet)

9. Color of tank: ☐ White ☒ Other Specify Unpainted Aluminum

10. Is this tank equipped with a submerged fill pipe? ☒ Yes ☐ No

11. Type of storage tank:
☐ Open top tank ☒ Fixed roof ☐ Fixed roof w/internal floating roof ☐ Other (specify)
☐ Pressurized tank ☐ External floating roof ☐ Variable vapor space

12. For fixed roof tanks:
A. Tank configuration (check one): ☒ Vertical (upright cylinder) ☐ Horizontal ☐ Sphere
B. Tank roof type: (check one): ☐ Cone roof – indicate tank roof height ___ (feet)
☒ Dome roof – indicate tank roof height 1.34 (feet)
Indicate shell radius 5.0 (feet)

FLOATING ROOF TANK DESCRIPTION

13. For floating Roof tanks (both internal and external) – shell condition (check one): Not Applicable
Light rust Dense rust Gunite lined

14. For External Floating Roof tanks: Not Applicable

A. Tank construction (check one): Welded tank Riveted tank

B. Rim Seal system description (check one):

Shoe Mounted Primary	Vapor Mounted, Primary	Liquid Mounted Primary
Shoe Primary, Rim Secondary	Vapor Primary, Rim Secondary	Liquid Primary, Rim Secondary
Liquid Primary w/Weather Shield	Shoe Primary and Secondary	Vapor Primary w/Weather Shield

C. Roof type (check one): Pontoon roof Double Deck roof

D. Roof fitting types (indicate the number of each type):

Access Hatch (24” Diameter well)	Unslotted Guide-Pole Well	Gauge-Float Well (20” Diameter)
Bolted cover, gasketed	(8” Diameter Unslotted Pole, 21” Dia. Well)	Unbolted cover, ungasketed
Unbolted cover, gasketed	Ungasketed sliding cover	Unbolted cover, gasketed
Unbolted cover, ungasketed	Gasketed sliding cover	Bolted cover, gasketed
Gauge Hatch/Sample Well (8” Dia.)	Vacuum Breaker (10” Dia. Well)	Roof Drain
Weighted Mechanical Actuation Gasketed	Weighted Mechanical Actuation Gasketed	Open
Weighted Mechanical Actuation Ungasketed	Weighted Mechanical Actuation Ungasketed	90% Closed
Slotted Guide-Pole/Sample Well	Roof Leg (3” Dia.)	Roof Leg (2 ½” Dia.)
Ungasketed Sliding Cover, without Float	Adjustable, Pontoon area	Adjustable, Pontoon area
Ungasketed Sliding Cover, with Float	Adjustable, Center area	Adjustable, Center area
Gasketed Sliding Cover, without Float	Adjustable, Double-Deck roofs	Adjustable, Double-Deck roofs
Gasketed Sliding Cover, with Float	Fixed	Fixed

15. For Internal Floating Roof tanks: Not Applicable

A. Rim Seal system description:

Liquid Mounted Primary
Vapor Mounted Primary
Liquid Mounted Primary plus Secondary Seal
Vapor Mounted Primary plus Secondary Seal

B. Number of Columns:

D. Deck Type (check one): Welded Bolted

C. Effective Column diameter: (Feet)

E. Total Deck Seam length: (Feet)

F. Deck Area: (Square Feet)

G. Deck Fitting types (indicate the number of each type):

Access Hatch (24" Dia.)
Bolted cover, gasketed
Unbolted cover, gasketed
Unbolted cover, ungasketed
Pipe Column-Sliding cover, gasketed
Pipe Column-Sliding cover, ungasketed

Automatic Gauge Float Well
Bolted cover, gasketed
Unbolted cover, gasketed
Unbolted cover, ungasketed

Column Well
Built-up Column-Sliding cover, gasketed
Built-up Column-Sliding cover, ungasketed
Pipe Column-Flexible fabric sleeve seal

Ladder well
Sliding cover, gasketed
Sliding cover, ungasketed
Sample Well-Slit fabric seal, 10% open area
Stub Drain, 1-inch diameter

Sample Pipe and Well
Slotted Pipe-Sliding cover, gasketed
Slotted Pipe-Sliding cover, ungasketed

Roof Leg or Hanger Well
Adjustable
Fixed

Vacuum Breaker
Weighted Mechanical Actuation, gasketed
Weighted Mechanical Actuation, ungasketed

16. For variable vapor space tanks: Not Applicable
Volume expansion capacity (Gallons)

TANK CONTENTS AND OPERATION DESCRIPTION

17. Complete the flowing table for materials to be stored in this tank:

Material or component stored	Wt. %	Material Annual Throughput (1000 Gal./Yr.)‡	Material stored Daily Average (Gallons)‡	Component Molecular weights (Lb./Lb. Mole)	Component Vapor Pressures (PSIA)	Material storage pressure (PSIA)‡	Material average storage temp. (Deg. F)‡
VOC	100	184	3555	32.04	7.86	14.10	140

Multipurpose tank with variable composition: ☐ Yes ☒ No

18. Describe the operation this tank will serve:
Crude Glycol Storage

‡Value shown is for the mixture.

State of Tennessee
Department of Environmental and Conversation
Division of Air Pollution Control
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor
Nashville, TN 37243
Telephone: (615) 532-0554

TITLE V PERMIT APPLICATION
STORAGE TANKS

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
Eastman Chemical Company, Tennessee Operations

2. Process emission source (identify):
PES B-221-3

STORAGE TANK DESCRIPTION

3. Storage tank identification:
WE-50

3a. Vent ID:
D

4. Location of the storage tank or tank farm in UTM coordinates: UTM Vertical: 4042800 N UTM Horizontal: 362300 E

5. Storage tank capacity:
1275 (Gallons)

6. Year of installation:
1959

7. Tank height
6.0 (Feet)

8. Tank diameter:
6.0 (Feet)

9. Color of tank: ☐ White ☒ Other Specify Unpainted Stainless Steel

10. Is this tank equipped with a submerged fill pipe? ☒ Yes ☐ No

11. Type of storage tank:
☐ Open top tank ☒ Fixed roof ☐ Fixed roof w/internal floating roof ☐ Other (specify)
☐ Pressurized tank ☐ External floating roof ☐ Variable vapor space

12. For fixed roof tanks:
A. Tank configuration (check one): ☒ Vertical (upright cylinder) ☐ Horizontal ☐ Sphere
B. Tank roof type: (check one): ☐ Cone roof – indicate tank roof height ___ (feet)
☒ Dome roof – indicate tank roof height 0.8 (feet)
Indicate shell radius 3.0 (feet)

FLOATING ROOF TANK DESCRIPTION

13. For floating Roof tanks (both internal and external) – shell condition (check one): Not Applicable
Light rust Dense rust Gunite lined

14. For External Floating Roof tanks: Not Applicable

A. Tank construction (check one): Welded tank Riveted tank

B. Rim Seal system description (check one):

Shoe Mounted Primary	Vapor Mounted, Primary	Liquid Mounted Primary
Shoe Primary, Rim Secondary	Vapor Primary, Rim Secondary	Liquid Primary, Rim Secondary
Liquid Primary w/Weather Shield	Shoe Primary and Secondary	Vapor Primary w/Weather Shield

C. Roof type (check one): Pontoon roof Double Deck roof

D. Roof fitting types (indicate the number of each type):

Access Hatch (24” Diameter well) Bolted cover, gasketed Unbolted cover, gasketed Unbolted cover, ungasketed	Unslotted Guide-Pole Well (8” Diameter Unslotted Pole, 21” Dia. Well) Ungasketed sliding cover Gasketed sliding cover	Gauge-Float Well (20” Diameter) Unbolted cover, ungasketed Unbolted cover, gasketed Bolted cover, gasketed
Gauge Hatch/Sample Well (8” Dia.) Weighted Mechanical Actuation Gasketed Weighted Mechanical Actuation Ungasketed	Vacuum Breaker (10” Dia. Well) Weighted Mechanical Actuation Gasketed Weighted Mechanical Actuation Ungasketed	Roof Drain Open 90% Closed
Slotted Guide-Pole/Sample Well Ungasketed Sliding Cover, without Float Ungasketed Sliding Cover, with Float Gasketed Sliding Cover, without Float Gasketed Sliding Cover, with Float	Roof Leg (3” Dia.) Adjustable, Pontoon area Adjustable, Center area Adjustable, Double-Deck roofs Fixed	Roof Leg (2 ½” Dia.) Adjustable, Pontoon area Adjustable, Center area Adjustable, Double-Deck roofs Fixed

15. For Internal Floating Roof tanks: Not Applicable

A. Rim Seal system description:

Liquid Mounted Primary
Vapor Mounted Primary
Liquid Mounted Primary plus Secondary Seal
Vapor Mounted Primary plus Secondary Seal

B. Number of Columns:

D. Deck Type (check one): Welded Bolted

C. Effective Column diameter: (Feet)

E. Total Deck Seam length: (Feet)

F. Deck Area: (Square Feet)

G. Deck Fitting types (indicate the number of each type):

Access Hatch (24" Dia.)
Bolted cover, gasketed
Unbolted cover, gasketed
Unbolted cover, ungasketed
Pipe Column-Sliding cover, gasketed
Pipe Column-Sliding cover, ungasketed

Automatic Gauge Float Well
Bolted cover, gasketed
Unbolted cover, gasketed
Unbolted cover, ungasketed

Column Well
Built-up Column-Sliding cover, gasketed
Built-up Column-Sliding cover, ungasketed
Pipe Column-Flexible fabric sleeve seal

Ladder well
Sliding cover, gasketed
Sliding cover, ungasketed
Sample Well-Slit fabric seal, 10% open area
Stub Drain, 1-inch diameter

Sample Pipe and Well
Slotted Pipe-Sliding cover, gasketed
Slotted Pipe-Sliding cover, ungasketed

Roof Leg or Hanger Well
Adjustable
Fixed

Vacuum Breaker
Weighted Mechanical Actuation, gasketed
Weighted Mechanical Actuation, ungasketed

16. For variable vapor space tanks: Not Applicable
Volume expansion capacity (Gallons)

TANK CONTENTS AND OPERATION DESCRIPTION

17. Complete the flowing table for materials to be stored in this tank:

Material or component stored	Wt. %	Material Annual Throughput (1000 Gal./Yr.)‡	Material stored Daily Average (Gallons)‡	Component Molecular weights (Lb./Lb. Mole)	Component Vapor Pressures (PSIA)	Material storage pressure (PSIA)‡	Material average storage temp. (Deg. F)‡
VOC	100	46	260	32.04	2.44	14.10	77

Multipurpose tank with variable composition: ☐ Yes ☒ No

18. Describe the operation this tank will serve:
Methanol Storage Tank

‡Value shown is for the mixture.

State of Tennessee
Department of Environmental and Conversation
Division of Air Pollution Control
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor
Nashville, TN 37243
Telephone: (615) 532-0554

TITLE V PERMIT APPLICATION
STORAGE TANKS

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
Eastman Chemical Company, Tennessee Operations

2. Process emission source (identify):
PES B-221-3

STORAGE TANK DESCRIPTION

3. Storage tank identification:
XF-50

3a. Vent ID:
E1

4. Location of the storage tank or tank farm in UTM coordinates: UTM Vertical: 4042800 N UTM Horizontal: 362300 E

5. Storage tank capacity:
3020 (Gallons)

6. Year of installation:
1966

7. Tank height
8.0 (Feet)

8. Tank diameter:
8.0 (Feet)

9. Color of tank: ☐ White ☒ Other Specify Unpainted Stainless Steel

10. Is this tank equipped with a submerged fill pipe? ☒ Yes ☐ No

11. Type of storage tank:
☐ Open top tank ☒ Fixed roof ☐ Fixed roof w/internal floating roof ☐ Other (specify)
☐ Pressurized tank ☐ External floating roof ☐ Variable vapor space

12. For fixed roof tanks:
A. Tank configuration (check one): ☒ Vertical (upright cylinder) ☐ Horizontal ☐ Sphere
B. Tank roof type: (check one): ☐ Cone roof – indicate tank roof height ___ (feet)
☒ Dome roof – indicate tank roof height 1.07 (feet)
Indicate shell radius 4.0 (feet)

FLOATING ROOF TANK DESCRIPTION

13. For floating Roof tanks (both internal and external) – shell condition (check one): Not Applicable
Light rust Dense rust Gunite lined

14. For External Floating Roof tanks: Not Applicable

A. Tank construction (check one): Welded tank Riveted tank

B. Rim Seal system description (check one):

Shoe Mounted Primary	Vapor Mounted, Primary	Liquid Mounted Primary
Shoe Primary, Rim Secondary	Vapor Primary, Rim Secondary	Liquid Primary, Rim Secondary
Liquid Primary w/Weather Shield	Shoe Primary and Secondary	Vapor Primary w/Weather Shield

C. Roof type (check one): Pontoon roof Double Deck roof

D. Roof fitting types (indicate the number of each type):

Access Hatch (24” Diameter well) Bolted cover, gasketed Unbolted cover, gasketed Unbolted cover, ungasketed	Unslotted Guide-Pole Well (8” Diameter Unslotted Pole, 21” Dia. Well) Ungasketed sliding cover Gasketed sliding cover	Gauge-Float Well (20” Diameter) Unbolted cover, ungasketed Unbolted cover, gasketed Bolted cover, gasketed
Gauge Hatch/Sample Well (8” Dia.) Weighted Mechanical Actuation Gasketed Weighted Mechanical Actuation Ungasketed	Vacuum Breaker (10” Dia. Well) Weighted Mechanical Actuation Gasketed Weighted Mechanical Actuation Ungasketed	Roof Drain Open 90% Closed
Slotted Guide-Pole/Sample Well Ungasketed Sliding Cover, without Float Ungasketed Sliding Cover, with Float Gasketed Sliding Cover, without Float Gasketed Sliding Cover, with Float	Roof Leg (3” Dia.) Adjustable, Pontoon area Adjustable, Center area Adjustable, Double-Deck roofs Fixed	Roof Leg (2 ½” Dia.) Adjustable, Pontoon area Adjustable, Center area Adjustable, Double-Deck roofs Fixed

15. For Internal Floating Roof tanks: Not Applicable

A. Rim Seal system description:

Liquid Mounted Primary
Vapor Mounted Primary
Liquid Mounted Primary plus Secondary Seal
Vapor Mounted Primary plus Secondary Seal

B. Number of Columns:

D. Deck Type (check one): Welded Bolted

C. Effective Column diameter: (Feet)

E. Total Deck Seam length: (Feet)

F. Deck Area: (Square Feet)

G. Deck Fitting types (indicate the number of each type):

Access Hatch (24" Dia.)
Bolted cover, gasketed
Unbolted cover, gasketed
Unbolted cover, ungasketed
Pipe Column-Sliding cover, gasketed
Pipe Column-Sliding cover, ungasketed

Automatic Gauge Float Well
Bolted cover, gasketed
Unbolted cover, gasketed
Unbolted cover, ungasketed

Column Well
Built-up Column-Sliding cover, gasketed
Built-up Column-Sliding cover, ungasketed
Pipe Column-Flexible fabric sleeve seal

Ladder well
Sliding cover, gasketed
Sliding cover, ungasketed
Sample Well-Slit fabric seal, 10% open area
Stub Drain, 1-inch diameter

Sample Pipe and Well
Slotted Pipe-Sliding cover, gasketed
Slotted Pipe-Sliding cover, ungasketed

Roof Leg or Hanger Well
Adjustable
Fixed

Vacuum Breaker
Weighted Mechanical Actuation, gasketed
Weighted Mechanical Actuation, ungasketed

16. For variable vapor space tanks: Not Applicable
Volume expansion capacity (Gallons)

TANK CONTENTS AND OPERATION DESCRIPTION

17. Complete the flowing table for materials to be stored in this tank:

Material or component stored	Wt. %	Material Annual Throughput (1000 Gal./Yr.)‡	Material stored Daily Average (Gallons)‡	Component Molecular weights (Lb./Lb. Mole)	Component Vapor Pressures (PSIA)	Material storage pressure (PSIA)‡	Material average storage temp. (Deg. F)‡
VOC	100	38.24	15	1516	2.89	14.10	250

Multipurpose tank with variable composition: ☐ Yes ☒ No

18. Describe the operation this tank will serve:

‡Value shown is for the mixture.

State of Tennessee
Department of Environmental and Conversation
Division of Air Pollution Control
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor
Nashville, TN 37243
Telephone: (615) 532-0554

TITLE V PERMIT APPLICATION
STORAGE TANKS

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
Eastman Chemical Company, Tennessee Operations

2. Process emission source (identify):
PES B-221-3

STORAGE TANK DESCRIPTION

3. Storage tank identification:
WH-50

3a. Vent ID:
F1

4. Location of the storage tank or tank farm in UTM coordinates: UTM Vertical: 4042700 N UTM Horizontal: 362200 E

5. Storage tank capacity:
105,000 (Gallons)

6. Year of installation:
1967

7. Tank height
20.0 (Feet)

8. Tank diameter:
30.0 (Feet)

9. Color of tank: ☐ White ☒ Other Specify Insulated Tank

10. Is this tank equipped with a submerged fill pipe? ☒ Yes ☐ No

11. Type of storage tank:
☐ Open top tank ☒ Fixed roof ☐ Fixed roof w/internal floating roof ☐ Other (specify)
☐ Pressurized tank ☐ External floating roof ☐ Variable vapor space

12. For fixed roof tanks:
A. Tank configuration (check one): ☒ Vertical (upright cylinder) ☐ Horizontal ☐ Sphere
B. Tank roof type: (check one):
☐ Cone roof – indicate tank roof height ___ (feet)
☒ Dome roof – indicate tank roof height 4.02 (feet)
Indicate shell radius 15.0 (feet)

The tank roof height is not relevant since the outage height is measured form the liquid surface of the tank to the top of the tank roof

FLOATING ROOF TANK DESCRIPTION

13. For floating Roof tanks (both internal and external) – shell condition (check one): Not Applicable
Light rust Dense rust Gunite lined

14. For External Floating Roof tanks: Not Applicable

A. Tank construction (check one): Welded tank Riveted tank

B. Rim Seal system description (check one):

Shoe Mounted Primary	Vapor Mounted, Primary	Liquid Mounted Primary
Shoe Primary, Rim Secondary	Vapor Primary, Rim Secondary	Liquid Primary, Rim Secondary
Liquid Primary w/Weather Shield	Shoe Primary and Secondary	Vapor Primary w/Weather Shield

C. Roof type (check one): Pontoon roof Double Deck roof

D. Roof fitting types (indicate the number of each type):

Access Hatch (24” Diameter well)	Unslotted Guide-Pole Well	Gauge-Float Well (20” Diameter)
Bolted cover, gasketed	(8” Diameter Unslotted Pole, 21” Dia. Well)	Unbolted cover, ungasketed
Unbolted cover, gasketed	Ungasketed sliding cover	Unbolted cover, gasketed
Unbolted cover, ungasketed	Gasketed sliding cover	Bolted cover, gasketed
Gauge Hatch/Sample Well (8” Dia.)	Vacuum Breaker (10” Dia. Well)	Roof Drain
Weighted Mechanical Actuation Gasketed	Weighted Mechanical Actuation Gasketed	Open
Weighted Mechanical Actuation Ungasketed	Weighted Mechanical Actuation Ungasketed	90% Closed
Slotted Guide-Pole/Sample Well	Roof Leg (3” Dia.)	Roof Leg (2 ½” Dia.)
Ungasketed Sliding Cover, without Float	Adjustable, Pontoon area	Adjustable, Pontoon area
Ungasketed Sliding Cover, with Float	Adjustable, Center area	Adjustable, Center area
Gasketed Sliding Cover, without Float	Adjustable, Double-Deck roofs	Adjustable, Double-Deck roofs
Gasketed Sliding Cover, with Float	Fixed	Fixed

15. For Internal Floating Roof tanks: Not Applicable

A. Rim Seal system description:

Liquid Mounted Primary
Vapor Mounted Primary
Liquid Mounted Primary plus Secondary Seal
Vapor Mounted Primary plus Secondary Seal

B. Number of Columns:

D. Deck Type (check one): Welded Bolted

C. Effective Column diameter: (Feet)

E. Total Deck Seam length: (Feet)

F. Deck Area: (Square Feet)

G. Deck Fitting types (indicate the number of each type):

Access Hatch (24" Dia.)
Bolted cover, gasketed
Unbolted cover, gasketed
Unbolted cover, ungasketed
Pipe Column-Sliding cover, gasketed
Pipe Column-Sliding cover, ungasketed

Automatic Gauge Float Well
Bolted cover, gasketed
Unbolted cover, gasketed
Unbolted cover, ungasketed

Column Well
Built-up Column-Sliding cover, gasketed
Built-up Column-Sliding cover, ungasketed
Pipe Column-Flexible fabric sleeve seal

Ladder well
Sliding cover, gasketed
Sliding cover, ungasketed
Sample Well-Slit fabric seal, 10% open area
Stub Drain, 1-inch diameter

Sample Pipe and Well
Slotted Pipe-Sliding cover, gasketed
Slotted Pipe-Sliding cover, ungasketed

Roof Leg or Hanger Well
Adjustable
Fixed

Vacuum Breaker
Weighted Mechanical Actuation, gasketed
Weighted Mechanical Actuation, ungasketed

16. For variable vapor space tanks: Not Applicable
Volume expansion capacity (Gallons)

TANK CONTENTS AND OPERATION DESCRIPTION

17. Complete the flowing table for materials to be stored in this tank:

Material or component stored	Wt. %	Material Annual Throughput (1000 Gal./Yr.)‡	Material stored Daily Average (Gallons)‡	Component Molecular weights (Lb./Lb. Mole)	Component Vapor Pressures (PSIA)	Material storage pressure (PSIA)‡	Material average storage temp. (Deg. F)‡
VOC	100	52,500	25,685	37.34	2.32	14.10	212

Multipurpose tank with variable composition: ☐ Yes ☒ No

18. Describe the operation this tank will serve:
Ester Process Tank

‡Value shown is for the mixture

State of Tennessee
Department of Environmental and Conversation
Division of Air Pollution Control
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor
Nashville, TN 37243
Telephone: (615) 532-0554

TITLE V PERMIT APPLICATION
STORAGE TANKS

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
Eastman Chemical Company, Tennessee Operations

2. Process emission source (identify):
PES B-221-3

STORAGE TANK DESCRIPTION

3. Storage tank identification:
XG-50

3a. Vent ID:
F2

4. Location of the storage tank or tank farm in UTM coordinates: UTM Vertical: 4042800 N UTM Horizontal: 362300 E

5. Storage tank capacity:
7080 (Gallons)

6. Year of installation:
1966

7. Tank height
12.0 (Feet)

8. Tank diameter:
10.0 (Feet)

9. Color of tank: ☐ White ☒ Other Specify Unpainted Aluminum

10. Is this tank equipped with a submerged fill pipe? ☒ Yes ☐ No

11. Type of storage tank:
☐ Open top tank ☒ Fixed roof ☐ Fixed roof w/internal floating roof ☐ Other (specify)
☐ Pressurized tank ☐ External floating roof ☐ Variable vapor space

12. For fixed roof tanks:
A. Tank configuration (check one): ☒ Vertical (upright cylinder) ☐ Horizontal ☐ Sphere
B. Tank roof type: (check one): ☐ Cone roof – indicate tank roof height ___ (feet)
☒ Dome roof – indicate tank roof height 1.34 (feet)
Indicate shell radius 5.0 (feet)

FLOATING ROOF TANK DESCRIPTION

13. For floating Roof tanks (both internal and external) – shell condition (check one): Not Applicable
Light rust Dense rust Gunite lined

14. For External Floating Roof tanks: Not Applicable

A. Tank construction (check one): Welded tank Riveted tank

B. Rim Seal system description (check one):

Shoe Mounted Primary	Vapor Mounted, Primary	Liquid Mounted Primary
Shoe Primary, Rim Secondary	Vapor Primary, Rim Secondary	Liquid Primary, Rim Secondary
Liquid Primary w/Weather Shield	Shoe Primary and Secondary	Vapor Primary w/Weather Shield

C. Roof type (check one): Pontoon roof Double Deck roof

D. Roof fitting types (indicate the number of each type):

Access Hatch (24” Diameter well)	Unslotted Guide-Pole Well	Gauge-Float Well (20” Diameter)
Bolted cover, gasketed	(8” Diameter Unslotted Pole, 21” Dia. Well)	Unbolted cover, ungasketed
Unbolted cover, gasketed	Ungasketed sliding cover	Unbolted cover, gasketed
Unbolted cover, ungasketed	Gasketed sliding cover	Bolted cover, gasketed
Gauge Hatch/Sample Well (8” Dia.)	Vacuum Breaker (10” Dia. Well)	Roof Drain
Weighted Mechanical Actuation Gasketed	Weighted Mechanical Actuation Gasketed	Open
Weighted Mechanical Actuation Ungasketed	Weighted Mechanical Actuation Ungasketed	90% Closed
Slotted Guide-Pole/Sample Well	Roof Leg (3” Dia.)	Roof Leg (2 ½” Dia.)
Ungasketed Sliding Cover, without Float	Adjustable, Pontoon area	Adjustable, Pontoon area
Ungasketed Sliding Cover, with Float	Adjustable, Center area	Adjustable, Center area
Gasketed Sliding Cover, without Float	Adjustable, Double-Deck roofs	Adjustable, Double-Deck roofs
Gasketed Sliding Cover, with Float	Fixed	Fixed

15. For Internal Floating Roof tanks: Not Applicable

A. Rim Seal system description:

Liquid Mounted Primary
Vapor Mounted Primary
Liquid Mounted Primary plus Secondary Seal
Vapor Mounted Primary plus Secondary Seal

B. Number of Columns:

D. Deck Type (check one): Welded Bolted

C. Effective Column diameter: (Feet)

E. Total Deck Seam length: (Feet)

F. Deck Area: (Square Feet)

G. Deck Fitting types (indicate the number of each type):

Access Hatch (24" Dia.)
Bolted cover, gasketed
Unbolted cover, gasketed
Unbolted cover, ungasketed
Pipe Column-Sliding cover, gasketed
Pipe Column-Sliding cover, ungasketed

Automatic Gauge Float Well
Bolted cover, gasketed
Unbolted cover, gasketed
Unbolted cover, ungasketed

Column Well
Built-up Column-Sliding cover, gasketed
Built-up Column-Sliding cover, ungasketed
Pipe Column-Flexible fabric sleeve seal

Ladder well
Sliding cover, gasketed
Sliding cover, ungasketed
Sample Well-Slit fabric seal, 10% open area
Stub Drain, 1-inch diameter

Sample Pipe and Well
Slotted Pipe-Sliding cover, gasketed
Slotted Pipe-Sliding cover, ungasketed

Roof Leg or Hanger Well
Adjustable
Fixed

Vacuum Breaker
Weighted Mechanical Actuation, gasketed
Weighted Mechanical Actuation, ungasketed

16. For variable vapor space tanks: Not Applicable
Volume expansion capacity (Gallons)

TANK CONTENTS AND OPERATION DESCRIPTION

17. Complete the flowing table for materials to be stored in this tank:

Material or component stored	Wt. %	Material Annual Throughput (1000 Gal./Yr.)‡	Material stored Daily Average (Gallons)‡	Component Molecular weights (Lb./Lb. Mole)	Component Vapor Pressures (PSIA)	Material storage pressure (PSIA)‡	Material average storage temp. (Deg. F)‡
VOC	100	184	3555	32.04	7.86	14.10	140

Multipurpose tank with variable composition: ☐ Yes ☒ No

18. Describe the operation this tank will serve:
Crude Glycol Process Tank

‡Value shown is for the mixture.

State of Tennessee
Department of Environmental and Conversation
Division of Air Pollution Control
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 15th Floor
Nashville, TN 37243
Telephone: (615) 532-0554

TITLE V PERMIT APPLICATION
STORAGE TANKS

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
Eastman Chemical Company, Tennessee Operations

2. Process emission source (identify):
PES B-221-3

STORAGE TANK DESCRIPTION

3. Storage tank identification:
XG-51

3a. Vent ID:
G

4. Location of the storage tank or tank farm in UTM coordinates: UTM Vertical: 4042800 N UTM Horizontal: 362300 E

5. Storage tank capacity:
7080 (Gallons)

6. Year of installation:
1966

7. Tank height
12.0 (Feet)

8. Tank diameter:
10.0 (Feet)

9. Color of tank: ☐ White ☒ Other Specify Unpainted Aluminum

10. Is this tank equipped with a submerged fill pipe? ☒ Yes ☐ No

11. Type of storage tank:
☐ Open top tank ☒ Fixed roof ☐ Fixed roof w/internal floating roof ☐ Other (specify)
☐ Pressurized tank ☐ External floating roof ☐ Variable vapor space

12. For fixed roof tanks:
A. Tank configuration (check one): ☒ Vertical (upright cylinder) ☐ Horizontal ☐ Sphere
B. Tank roof type: (check one): ☐ Cone roof – indicate tank roof height ___ (feet)
☒ Dome roof – indicate tank roof height 1.34 (feet)
Indicate shell radius 5.0 (feet)

FLOATING ROOF TANK DESCRIPTION

13. For floating Roof tanks (both internal and external) – shell condition (check one): Not Applicable
Light rust | Dense rust | Gunite lined

14. For External Floating Roof tanks: Not Applicable

A. Tank construction (check one): Welded tank | Riveted tank

B. Rim Seal system description (check one):

Shoe Mounted Primary	Vapor Mounted, Primary	Liquid Mounted Primary
Shoe Primary, Rim Secondary	Vapor Primary, Rim Secondary	Liquid Primary, Rim Secondary
Liquid Primary w/Weather Shield	Shoe Primary and Secondary	Vapor Primary w/Weather Shield

C. Roof type (check one): Pontoon roof | Double Deck roof

D. Roof fitting types (indicate the number of each type):

Access Hatch (24” Diameter well)	Unslotted Guide-Pole Well	Gauge-Float Well (20” Diameter)
Bolted cover, gasketed	(8” Diameter Unslotted Pole, 21” Dia. Well)	Unbolted cover, ungasketed
Unbolted cover, gasketed	Ungasketed sliding cover	Unbolted cover, gasketed
Unbolted cover, ungasketed	Gasketed sliding cover	Bolted cover, gasketed
Gauge Hatch/Sample Well (8” Dia.)	Vacuum Breaker (10” Dia. Well)	Roof Drain
Weighted Mechanical Actuation Gasketed	Weighted Mechanical Actuation Gasketed	Open
Weighted Mechanical Actuation Ungasketed	Weighted Mechanical Actuation Ungasketed	90% Closed
Slotted Guide-Pole/Sample Well	Roof Leg (3” Dia.)	Roof Leg (2 ½” Dia.)
Ungasketed Sliding Cover, without Float	Adjustable, Pontoon area	Adjustable, Pontoon area
Ungasketed Sliding Cover, with Float	Adjustable, Center area	Adjustable, Center area
Gasketed Sliding Cover, without Float	Adjustable, Double-Deck roofs	Adjustable, Double-Deck roofs
Gasketed Sliding Cover, with Float	Fixed	Fixed

15. For Internal Floating Roof tanks: Not Applicable

A. Rim Seal system description:

Liquid Mounted Primary
Vapor Mounted Primary
Liquid Mounted Primary plus Secondary Seal
Vapor Mounted Primary plus Secondary Seal

B. Number of Columns:

D. Deck Type (check one): Welded Bolted

C. Effective Column diameter: (Feet)

E. Total Deck Seam length: (Feet)

F. Deck Area: (Square Feet)

G. Deck Fitting types (indicate the number of each type):

Access Hatch (24" Dia.)
Bolted cover, gasketed
Unbolted cover, gasketed
Unbolted cover, ungasketed
Pipe Column-Sliding cover, gasketed
Pipe Column-Sliding cover, ungasketed

Automatic Gauge Float Well
Bolted cover, gasketed
Unbolted cover, gasketed
Unbolted cover, ungasketed

Column Well
Built-up Column-Sliding cover, gasketed
Built-up Column-Sliding cover, ungasketed
Pipe Column-Flexible fabric sleeve seal

Ladder well
Sliding cover, gasketed
Sliding cover, ungasketed
Sample Well-Slit fabric seal, 10% open area
Stub Drain, 1-inch diameter

Sample Pipe and Well
Slotted Pipe-Sliding cover, gasketed
Slotted Pipe-Sliding cover, ungasketed

Roof Leg or Hanger Well
Adjustable
Fixed

Vacuum Breaker
Weighted Mechanical Actuation, gasketed
Weighted Mechanical Actuation, ungasketed

16. For variable vapor space tanks: Not Applicable
Volume expansion capacity (Gallons)

TANK CONTENTS AND OPERATION DESCRIPTION

17. Complete the flowing table for materials to be stored in this tank:

Material or component stored	Wt. %	Material Annual Throughput (1000 Gal./Yr.)‡	Material stored Daily Average (Gallons)‡	Component Molecular weights (Lb./Lb. Mole)	Component Vapor Pressures (PSIA)	Material storage pressure (PSIA)‡	Material average storage temp. (Deg. F)‡
VOC	100	184	3555	32.04	7.86	14.10	140

Multipurpose tank with variable composition: ☐ Yes ☒ No

18. Describe the operation this tank will serve:
Crude Glycol Process Tank

‡Value shown is for the mixture.

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TITLE V PERMIT APPLICATION
STORAGE TANKS

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
Eastman Chemical Company, Tennessee Operations

2. Process emission source (identify):
PES B-221-3

STORAGE TANK DESCRIPTION

3. Storage tank identification:
CB-102

3a. Vent ID:
H1

4. Location of the storage tank or tank farm in UTM coordinates: UTM Vertical: 4042710 N UTM Horizontal: 362247 E

5. Storage tank capacity:
38071 (Gallons)

6. Year of installation:
1988

7. Tank height
20.0 (Feet)

8. Tank diameter:
18.0 (Feet)

9. Color of tank: ☐ White ☒ Other Specify Insulated Tank

10. Is this tank equipped with a submerged fill pipe? ☒ Yes ☐ No

11. Type of storage tank:
☐ Open top tank ☒ Fixed roof ☐ Fixed roof w/internal floating roof ☐ Other (specify)
☐ Pressurized tank ☐ External floating roof ☐ Variable vapor space

12. For fixed roof tanks:
A. Tank configuration (check one): ☒ Vertical (upright cylinder) ☐ Horizontal ☐ Sphere
B. Tank roof type: (check one): ☐ Cone roof – indicate tank roof height ___ (feet)
☒ Dome roof – indicate tank roof height 2.41 (feet)
Indicate shell radius 9.0 (feet)

FLOATING ROOF TANK DESCRIPTION

13. For floating Roof tanks (both internal and external) – shell condition (check one): Not Applicable
Light rust Dense rust Gunite lined

14. For External Floating Roof tanks: Not Applicable

A. Tank construction (check one): Welded tank Riveted tank

B. Rim Seal system description (check one):

Shoe Mounted Primary	Vapor Mounted, Primary	Liquid Mounted Primary
Shoe Primary, Rim Secondary	Vapor Primary, Rim Secondary	Liquid Primary, Rim Secondary
Liquid Primary w/Weather Shield	Shoe Primary and Secondary	Vapor Primary w/Weather Shield

C. Roof type (check one): Pontoon roof Double Deck roof

D. Roof fitting types (indicate the number of each type):

Access Hatch (24” Diameter well)	Unslotted Guide-Pole Well	Gauge-Float Well (20” Diameter)
Bolted cover, gasketed	(8” Diameter Unslotted Pole, 21” Dia. Well)	Unbolted cover, ungasketed
Unbolted cover, gasketed	Ungasketed sliding cover	Unbolted cover, gasketed
Unbolted cover, ungasketed	Gasketed sliding cover	Bolted cover, gasketed
Gauge Hatch/Sample Well (8” Dia.)	Vacuum Breaker (10” Dia. Well)	Roof Drain
Weighted Mechanical Actuation Gasketed	Weighted Mechanical Actuation Gasketed	Open
Weighted Mechanical Actuation Ungasketed	Weighted Mechanical Actuation Ungasketed	90% Closed
Slotted Guide-Pole/Sample Well	Roof Leg (3” Dia.)	Roof Leg (2 ½” Dia.)
Ungasketed Sliding Cover, without Float	Adjustable, Pontoon area	Adjustable, Pontoon area
Ungasketed Sliding Cover, with Float	Adjustable, Center area	Adjustable, Center area
Gasketed Sliding Cover, without Float	Adjustable, Double-Deck roofs	Adjustable, Double-Deck roofs
Gasketed Sliding Cover, with Float	Fixed	Fixed

15. For Internal Floating Roof tanks: Not Applicable

A. Rim Seal system description:

Liquid Mounted Primary
Vapor Mounted Primary
Liquid Mounted Primary plus Secondary Seal
Vapor Mounted Primary plus Secondary Seal

B. Number of Columns:

D. Deck Type (check one): Welded Bolted

C. Effective Column diameter: (Feet)

E. Total Deck Seam length: (Feet)

F. Deck Area: (Square Feet)

G. Deck Fitting types (indicate the number of each type):

Access Hatch (24" Dia.)
Bolted cover, gasketed
Unbolted cover, gasketed
Unbolted cover, ungasketed
Pipe Column-Sliding cover, gasketed
Pipe Column-Sliding cover, ungasketed

Automatic Gauge Float Well
Bolted cover, gasketed
Unbolted cover, gasketed
Unbolted cover, ungasketed

Column Well
Built-up Column-Sliding cover, gasketed
Built-up Column-Sliding cover, ungasketed
Pipe Column-Flexible fabric sleeve seal

Ladder well
Sliding cover, gasketed
Sliding cover, ungasketed
Sample Well-Slit fabric seal, 10% open area
Stub Drain, 1-inch diameter

Sample Pipe and Well
Slotted Pipe-Sliding cover, gasketed
Slotted Pipe-Sliding cover, ungasketed

Roof Leg or Hanger Well
Adjustable
Fixed

Vacuum Breaker
Weighted Mechanical Actuation, gasketed
Weighted Mechanical Actuation, ungasketed

16. For variable vapor space tanks: Not Applicable
Volume expansion capacity (Gallons)

TANK CONTENTS AND OPERATION DESCRIPTION

17. Complete the flowing table for materials to be stored in this tank:

Material or component stored	Wt. %	Material Annual Throughput (1000 Gal./Yr.)‡	Material stored Daily Average (Gallons)‡	Component Molecular weights (Lb./Lb. Mole)	Component Vapor Pressures (PSIA)	Material storage pressure (PSIA)‡	Material average storage temp. (Deg. F)‡
VOC	100	8363	19035	144.29	0.10	14.10	300

Multipurpose tank with variable composition: ☐ Yes ☒ No

18. Describe the operation this tank will serve:
Refined Glycol Storage

‡Value shown is for the mixture.

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Department of Environmental and Conversation
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William R. Snodgrass Tennessee Tower
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Telephone: (615) 532-0554

TITLE V PERMIT APPLICATION
STORAGE TANKS

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
Eastman Chemical Company, Tennessee Operations

2. Process emission source (identify):
PES B-221-3

STORAGE TANK DESCRIPTION

3. Storage tank identification:
WH-51

3a. Vent ID:
J2

4. Location of the storage tank or tank farm in UTM coordinates: UTM Vertical: 4042700 N UTM Horizontal: 362200 E

5. Storage tank capacity:
519,130 (Gallons)

6. Year of installation:
2021

7. Tank height
40.0 (Feet)

8. Tank diameter:
47.0 (Feet)

9. Color of tank: ☐ White ☒ Other Specify Insulated Tank

10. Is this tank equipped with a submerged fill pipe? ☒ Yes ☐ No

11. Type of storage tank:
☐ Open top tank ☒ Fixed roof ☐ Fixed roof w/internal floating roof ☐ Other (specify)
☐ Pressurized tank ☐ External floating roof ☐ Variable vapor space

12. For fixed roof tanks:
A. Tank configuration (check one): ☒ Vertical (upright cylinder) ☐ Horizontal ☐ Sphere
B. Tank roof type: (check one):
☐ Cone roof – indicate tank roof height ___ (feet)
☒ Dome roof – indicate tank roof height 6.30 (feet)
Indicate shell radius 23.5 (feet)

The tank roof height is not relevant since the outage height is measured form the liquid surface of the tank to the top of the tank roof

FLOATING ROOF TANK DESCRIPTION

13. For floating Roof tanks (both internal and external) – shell condition (check one): Not Applicable
Light rust Dense rust Gunite lined

14. For External Floating Roof tanks: Not Applicable
A. Tank construction (check one): Welded tank Riveted tank

B. Rim Seal system description (check one):

Shoe Mounted Primary	Vapor Mounted, Primary	Liquid Mounted Primary
Shoe Primary, Rim Secondary	Vapor Primary, Rim Secondary	Liquid Primary, Rim Secondary
Liquid Primary w/Weather Shield	Shoe Primary and Secondary	Vapor Primary w/Weather Shield

C. Roof type (check one): Pontoon roof Double Deck roof

D. Roof fitting types (indicate the number of each type):

Access Hatch (24” Diameter well) Bolted cover, gasketed Unbolted cover, gasketed Unbolted cover, ungasketed	Unslotted Guide-Pole Well (8” Diameter Unslotted Pole, 21” Dia. Well) Ungasketed sliding cover Gasketed sliding cover	Gauge-Float Well (20” Diameter) Unbolted cover, ungasketed Unbolted cover, gasketed Bolted cover, gasketed
Gauge Hatch/Sample Well (8” Dia.) Weighted Mechanical Actuation Gasketed Weighted Mechanical Actuation Ungasketed	Vacuum Breaker (10” Dia. Well) Weighted Mechanical Actuation Gasketed Weighted Mechanical Actuation Ungasketed	Roof Drain Open 90% Closed
Slotted Guide-Pole/Sample Well Ungasketed Sliding Cover, without Float Ungasketed Sliding Cover, with Float Gasketed Sliding Cover, without Float Gasketed Sliding Cover, with Float	Roof Leg (3” Dia.) Adjustable, Pontoon area Adjustable, Center area Adjustable, Double-Deck roofs Fixed	Roof Leg (2 ½” Dia.) Adjustable, Pontoon area Adjustable, Center area Adjustable, Double-Deck roofs Fixed

15. For Internal Floating Roof tanks: Not Applicable

A. Rim Seal system description:

Liquid Mounted Primary
Vapor Mounted Primary
Liquid Mounted Primary plus Secondary Seal
Vapor Mounted Primary plus Secondary Seal

B. Number of Columns:

D. Deck Type (check one): Welded Bolted

C. Effective Column diameter: (Feet)

E. Total Deck Seam length: (Feet)

F. Deck Area: (Square Feet)

G. Deck Fitting types (indicate the number of each type):

Access Hatch (24" Dia.)
Bolted cover, gasketed
Unbolted cover, gasketed
Unbolted cover, ungasketed
Pipe Column-Sliding cover, gasketed
Pipe Column-Sliding cover, ungasketed

Automatic Gauge Float Well
Bolted cover, gasketed
Unbolted cover, gasketed
Unbolted cover, ungasketed

Column Well
Built-up Column-Sliding cover, gasketed
Built-up Column-Sliding cover, ungasketed
Pipe Column-Flexible fabric sleeve seal

Ladder well
Sliding cover, gasketed
Sliding cover, ungasketed
Sample Well-Slit fabric seal, 10% open area
Stub Drain, 1-inch diameter

Sample Pipe and Well
Slotted Pipe-Sliding cover, gasketed
Slotted Pipe-Sliding cover, ungasketed

Roof Leg or Hanger Well
Adjustable
Fixed

Vacuum Breaker
Weighted Mechanical Actuation, gasketed
Weighted Mechanical Actuation, ungasketed

16. For variable vapor space tanks: Not Applicable
Volume expansion capacity (Gallons)

TANK CONTENTS AND OPERATION DESCRIPTION

17. Complete the flowing table for materials to be stored in this tank:

Material or component stored	Wt. %	Material Annual Throughput (1000 Gal./Yr)‡	Material stored Daily Average (Gallons)‡	Component Molecular weights (Lb./Lb. Mole)	Component Vapor Pressures (PSIA)	Material storage pressure (PSIA)‡	Material average storage temp. (Deg. F)‡
VOC	99.4	52,925	145,000	200.23	0.00	14.10	140
Methanol	0.6			32.04	0.47		

Multipurpose tank with variable composition: ☐ Yes ☒ No

18. Describe the operation this tank will serve:
Ester Process Tank

‡Value shown is for the mixture

State of Tennessee
Department of Environment and Conservation
Division of Air Pollution Control
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Nashville, TN 37243
Telephone: (615) 532-0554

TITLE V PERMIT APPLICATION
CONTROL EQUIPMENT – WET COLLECTION SYSTEMS

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
Eastman Chemical Company, Tennessee Operations

2. Emission source (identify):
PES B-221-3

3. Stack ID or flow diagram point identification(s):
E

WET COLLECTION DESCRIPTION

4. Describe the device in use. List the key operating parameters of this device and their normal operating range.

Device Description:	WE-37 Scrubber is a single-pass water scrubber with a packed bed.
Key Operating Parameter(s):	Inlet water flow rate
Normal Operating Range(s):	Greater than or equal to 4.7 gpm

5. Manufacturer and model number (if available):
Superior Welding Company or equivalent

6. Year of installation:
1987 or later

7. List of pollutant(s) to be controlled and the expected control efficiency for each pollutant.

Pollutant	Efficiency (%)	Source of data
VOC	70	Performance Test

8. Discuss how collected material and effluent is handled for reuse or disposal.
Liquid effluent is sent by closed pipe to the on-site wastewater treatement facility.

9. Scrubbing medium (water, sodium hydroxide slurry, etc.):
Water

10. If this control equipment is in series with some other control equipment, state and specify the overall efficiency.

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TITLE V PERMIT APPLICATION
CONTROL EQUIPMENT – WET COLLECTION SYSTEMS

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
Eastman Chemical Company, Tennessee Operations

2. Emission source (identify):
PES B-221-3

3. Stack ID or flow diagram point identification(s):
F

WET COLLECTION DESCRIPTION

4. Describe the device in use. List the key operating parameters of this device and their normal operating range.

Device Description:	WE-38 Scrubber is a single-pass water scrubber with a packed bed.
Key Operating Parameter(s):	Inlet water flow rate
Normal Operating Range(s):	Greater than or equal to 1.3 gpm

5. Manufacturer and model number (if available):
Superior Welding Company or equivalent

6. Year of installation:
1987 or later

7. List of pollutant(s) to be controlled and the expected control efficiency for each pollutant.

Pollutant	Efficiency (%)	Source of data
VOC	78	Performance Test

8. Discuss how collected material and effluent is handled for reuse or disposal.
Liquid effluent is sent by closed pipe to the on-site wastewater treatment facility.

9. Scrubbing medium (water, sodium hydroxide slurry, etc.):
Water

10. If this control equipment is in series with some other control equipment, state and specify the overall efficiency.

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TITLE V PERMIT APPLICATION
CONTROL EQUIPMENT – WET COLLECTION SYSTEMS

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
Eastman Chemical Company, Tennessee Operations

2. Emission source (identify):
PES B-221-3

3. Stack ID or flow diagram point identification(s):
J

WET COLLECTION DESCRIPTION

4. Describe the device in use. List the key operating parameters of this device and their normal operating range.

Device Description:	CE-39 Scrubber is a single-pass water scrubber with a packed bed.
Key Operating Parameter(s):	Inlet water flow rate
Normal Operating Range(s):	Greater than or equal to 4.0 gpm

5. Manufacturer and model number (if available):
Eastman Item CE-C-39 or equivalent

6. Year of installation:
2005 or later

7. List of pollutant(s) to be controlled and the expected control efficiency for each pollutant.

Pollutant	Efficiency (%)	Source of data
VOC	99	Performance Test

8. Discuss how collected material and effluent is handled for reuse or disposal.
Liquid effluent is sent by closed pipe to the on-site wastewater treatment facility.

9. Scrubbing medium (water, sodium hydroxide slurry, etc.):
Water

10. If this control equipment is in series with some other control equipment, state and specify the overall efficiency.

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TITLE V PERMIT APPLICATION
CONTROL EQUIPMENT – WET COLLECTION SYSTEMS

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
Eastman Chemical Company, Tennessee Operations

2. Emission source (identify):
PES B-221-3

3. Stack ID or flow diagram point identification(s):
J1

WET COLLECTION DESCRIPTION

4. Describe the device in use. List the key operating parameters of this device and their normal operating range.

Device Description:	TL-51 Scrubber is a single-pass water scrubber with a packed bed.
Key Operating Parameter(s):	Inlet water flow rate
Normal Operating Range(s):	Greater than or equal to 1.5 gpm

5. Manufacturer and model number (if available):
Eastman

6. Year of installation:
2005 or later

7. List of pollutant(s) to be controlled and the expected control efficiency for each pollutant.

Pollutant	Efficiency (%)	Source of data
VOC	99	ASPEN Model

8. Discuss how collected material and effluent is handled for reuse or disposal.
Water from the scrubber is managed at the on-site wastewater treatment facility.

9. Scrubbing medium (water, sodium hydroxide slurry, etc.):
Water

10. If this control equipment is in series with some other control equipment, state and specify the overall efficiency.

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TITLE V PERMIT APPLICATION
COMPLIANCE CERTIFICATION - MONITORING AND REPORTING
DESCRIPTION OF METHODS USED FOR DETERMINING COMPLIANCE

All sources that are subject to 1200-03-09-.02(11) of the Tennessee Air Pollution Control Regulations are required to certify compliance with all applicable requirements by including a statement within the permit application of the methods used for determining compliance. This statement must include a description of the monitoring, recordkeeping, and reporting requirements and test methods. In addition, the application must include a schedule for compliance certification submittals during the permit term. These submittals must be no less frequent than annually and may need to be more frequent if specified by the underlying applicable requirement or the Technical Secretary.

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name: Eastman Chemical Company, Tennessee Operations
2. Process emission source, fuel burning installation, or incinerator (identify): PES B-221-3
3. Stack ID or flow diagram point identification(s): See APC 10 Attachment

METHODS OF DETERMINING COMPLIANCE

4. This source as described under Item #2 of this application will use the following method(s) for determining compliance with applicable requirements (and special operating conditions from an existing permit). Check all that apply and attach the appropriate form(s)

☐ Continuous Emission Monitoring (CEM) - APC 20
Pollutant(s):

☐ Emission Monitoring Using Portable Monitors - APC 21
Pollutant(s):

☒ Monitoring Control System Parameters or Operating Parameters of a Process - APC 22
Pollutant(s):
VOC

☐ Monitoring Maintenance Procedures - APC 23
Pollutant(s):

☐ Stack Testing - APC 24
Pollutant(s):

☐ Fuel Sampling & Analysis (FSA) - APC 25
Pollutant(s):

☒ Recordkeeping - APC 26
Pollutant(s):
VOC

☒ Other (please describe) - APC 27
Pollutant(s):
Visible Emissions, VOC, CO

5. Compliance certification reports will be submitted to the Division according to the following schedule:

Start date: Within 60 days of each 12-month period ending September 30

And every ~ 365 days thereafter.

6. Compliance monitoring reports will be submitted to the Division according to the following schedule:

Start date: Within 60 days of each six-month period ending March 31 and September 30

And every ~ 180 days thereafter.

State of Tennessee
Department of Environment and Conservation
Division of Air Pollution Control
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Nashville, TN 37243
Telephone: (615) 532-0554

TITLE V PERMIT APPLICATION – COMPLIANCE DEMONSTRATION BY MONITORING CONTROL SYSTEM PARAMETERS OR OPERATING PARAMETERS OF A PROCESS

The monitoring of a control system parameter or a process parameter shall be acceptable as a compliance demonstration method provided that a correlation between the parameter value and the emission rate of a particular pollutant is established.

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
   Eastman Chemical Company, Tennessee Operations

2. Stack ID or flow diagram point identification(s):
   E

3. Emission source:
   PES B-221-3

MONITORING DESCRIPTION

4. Pollutant(s) being monitored:
   VOC

5. Description of the method of monitoring and establishment of correlation between the parameter value and the emission rate of a particular pollutant:

   Requirements listed in 40 CFR Part 63 Subpart FFFF (see Eastman Form APC 30 Attachment) will ensure proper operation of the scrubber associated with Vent E.

6. Compliance demonstration frequency (specify the frequency with which compliance will be demonstrated):

   As specified in Subpart FFFF

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TITLE V PERMIT APPLICATION – COMPLIANCE DEMONSTRATION BY MONITORING CONTROL SYSTEM PARAMETERS OR OPERATING PARAMETERS OF A PROCESS

The monitoring of a control system parameter or a process parameter shall be acceptable as a compliance demonstration method provided that a correlation between the parameter value and the emission rate of a particular pollutant is established.

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
   Eastman Chemical Company, Tennessee Operations

2. Stack ID or flow diagram point identification(s):
   F

3. Emission source:
   PES B-221-3

MONITORING DESCRIPTION

4. Pollutant(s) being monitored:
   VOC

5. Description of the method of monitoring and establishment of correlation between the parameter value and the emission rate of a particular pollutant:

   Requirements listed in 40 CFR Part 63 Subpart FFFF (see Eastman Form APC 30 Attachment) will ensure proper operation of the scrubber associated with Vent F.

6. Compliance demonstration frequency (specify the frequency with which compliance will be demonstrated):

   As specified in Subpart FFFF

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TITLE V PERMIT APPLICATION – COMPLIANCE DEMONSTRATION BY MONITORING CONTROL SYSTEM PARAMETERS OR OPERATING PARAMETERS OF A PROCESS

The monitoring of a control system parameter or a process parameter shall be acceptable as a compliance demonstration method provided that a correlation between the parameter value and the emission rate of a particular pollutant is established.

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
   Eastman Chemical Company, Tennessee Operations

2. Stack ID or flow diagram point identification(s):
   J

3. Emission source:
   PES B-221-3

MONITORING DESCRIPTION

4. Pollutant(s) being monitored:
   VOC

5. Description of the method of monitoring and establishment of correlation between the parameter value and the emission rate of a particular pollutant:

   Requirements listed in 40 CFR Part 63 Subpart FFFF (see Eastman Form APC 30 Attachment) will ensure proper operation of the scrubber associated with Vent J.

6. Compliance demonstration frequency (specify the frequency with which compliance will be demonstrated):

   As specified in Subpart FFFF

State of Tennessee
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TITLE V PERMIT APPLICATION – COMPLIANCE DEMONSTRATION BY MONITORING CONTROL SYSTEM PARAMETERS OR OPERATING PARAMETERS OF A PROCESS

The monitoring of a control system parameter or a process parameter shall be acceptable as a compliance demonstration method provided that a correlation between the parameter value and the emission rate of a particular pollutant is established.

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
   Eastman Chemical Company, Tennessee Operations
2. Stack ID or flow diagram point identification(s):
   J1
3. Emission source:
   PES B-221-3

MONITORING DESCRIPTION

4. Pollutant(s) being monitored:
   VOC
5. Description of the method of monitoring and establishment of correlation between the parameter value and the emission rate of a particular pollutant:

   Requirements listed in 40 CFR Part 63 Subpart FFFF (see Eastman Form APC 30 attachment) will ensure proper operation of the scrubber associated with Vent J1.

6. Compliance demonstration frequency (specify the frequency with which compliance will be demonstrated):

   As specified in Subpart FFFF

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TITLE V PERMIT APPLICATION
COMPLIANCE DEMONSTRATION BY RECORDKEEPING

The monitoring of a maintenance procedure shall be acceptable as a compliance demonstration method provided that a correlation between the parameter value recorded and the applicable requirement is established.

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
   Eastman Chemical Company, Tennessee Operations

2. Stack ID or flow diagram point identification(s):
   E, F, J, J1

3. Emission source (identify):
   PES B-221-3

MONITORING DESCRIPTION

4. Pollutant(s) being monitored:
   VOC

5. Material or parameter being monitored:

   Crude Glycol Production Rate

6. Method of monitoring and recording:

   Recordkeeping: Maintain a log of the daily crude glycol production rate.
   Limitation: Less than or equal to CBI.

7. Compliance demonstration frequency (specify the frequency with which compliance will be demonstrated):
   Daily

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TITLE V PERMIT APPLICATION
COMPLIANCE DEMONSTRATION BY RECORDKEEPING

The monitoring of a maintenance procedure shall be acceptable as a compliance demonstration method provided that a correlation between the parameter value recorded and the applicable requirement is established.

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
   Eastman Chemical Company, Tennessee Operations

2. Stack ID or flow diagram point identification(s):
   E

3. Emission source (identify):
   PES B-221-3

MONITORING DESCRIPTION

4. Pollutant(s) being monitored:
   VOC

5. Material or parameter being monitored:

   Operating Hours

6. Method of monitoring and recording:

   Recordkeeping: Maintain a log of the 12-month rolling total operating hours for Vent E.
   Limitation: Less than or equal to 1,030 hours.

7. Compliance demonstration frequency (specify the frequency with which compliance will be demonstrated):
   Monthly

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TITLE V PERMIT APPLICATION
COMPLIANCE DEMONSTRATION BY RECORDKEEPING

The monitoring of a maintenance procedure shall be acceptable as a compliance demonstration method provided that a correlation between the parameter value recorded and the applicable requirement is established.

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
   Eastman Chemical Company, Tennessee Operations

2. Stack ID or flow diagram point identification(s):
   ZZ1

3. Emission source (identify):
   B-221-3

MONITORING DESCRIPTION

4. Pollutant(s) being monitored:
   VOC

5. Material or parameter being monitored:
   Equipment leak detection and repair

6. Method of monitoring and recording:
   See APC 26 Attachment

7. Compliance demonstration frequency (specify the frequency with which compliance will be demonstrated):
   Quarterly

Fugitive Equipment Leak Detection and Repair

Quarterly Monitoring Protocol

A leak inspection of all equipment in air contaminant service (contains or contacts a process fluid that is at least 10% air contaminant by weight) that is not "in heavy liquid service" or "in vacuum service" shall be performed once per calendar quarter. For this inspection, detection methods incorporating sight (e.g., looking for drips), sound (e.g., hissing sounds indicative of a leak), or smell (e.g., strong odors traceable to piping leaks) shall be used as appropriate. "Equipment" includes piping, pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, flanges, and equipment closures including manways, body flanges, and blind flanges. "In heavy liquid service" means when less than 20 weight percent of the process fluid consists of air contaminants having pure component vapor pressures greater than 0.044 psia at 68 degrees F, and the process fluid is not in the gaseous state at operating conditions. "In vacuum service" means equipment that is operating at an internal pressure which is at least 0.7 psia below ambient pressure. Equipment that is covered by insulation or obstructed from sight when standing on existing floors or walkways is exempt from this inspection. Equipment that is subject to a federally required work practice standard (e.g., 40 CFR Part 60, Subpart VV, 40 CFR Part 63, Subpart H, 40 CFR Part 265, Subpart BB) is exempt from this inspection. Equipment that is in air contaminant service less than 300 hours in a calendar quarter is exempt from this inspection for that quarter.

Annual Monitoring Protocol

A leak inspection of all equipment in air contaminant service (contains or contacts a process fluid that is at least 10% air contaminant by weight) that is not "in heavy liquid service" or "in vacuum service" shall be performed once per calendar year. For this inspection, detection methods incorporating sight (e.g., looking for drips), sound (e.g., hissing sounds indicative of a leak), or smell (e.g., strong odors traceable to piping leaks) shall be used as appropriate. "Equipment" includes piping, pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, flanges, and equipment closures including manways, body flanges, and blind flanges. "In heavy liquid service" means when less than 20 weight percent of the process fluid consists of air contaminants having pure component vapor pressures greater than 0.044 psia at 68 degrees F, and the process fluid is not in the gaseous state at operating conditions. "In vacuum service" means equipment that is operating at an internal pressure which is at least 0.7 psia below ambient pressure. Equipment that is covered by insulation or obstructed from sight when standing on existing floors or walkways is exempt from this inspection. Equipment that is subject to a federally required work practice standard (e.g., 40 CFR Part 60, Subpart VV, 40 CFR Part 63, Subpart H, 40 CFR Part 265, Subpart BB) is exempt from this inspection. Equipment that is in air contaminant service less than 720 hours in a calendar year is exempt from this inspection for that year.

Leak Repair Requirements

When a leak is detected, an initial attempt at repair shall be made no later than 10 calendar days after the leak is detected. Repair or replacement of leaking equipment shall be completed within 30 calendar days after detection of each leak, except as provided below.

Delay of repair of leaking equipment will be allowed if the repair is technically infeasible without a process unit shutdown or if repair personnel would be exposed to an immediate danger if attempting a repair without a process shutdown. Repair of this equipment shall occur by the end of the next process unit shutdown. Delay of repair of equipment for which leaks have been detected is allowed for equipment that is isolated from the process and that does not remain in air contaminant service. Delay of repair for valves, connectors, and agitators is also allowed if the owner or operator determines that emissions of purged material resulting from immediate repair would be greater than the fugitive emissions likely to result from delay of repair. Delay of repair beyond a process unit shutdown will be allowed for a valve if valve assembly replacement is necessary during the process unit shutdown, valve assembly supplies have been depleted, and valve assembly supplies had been sufficiently stocked before the supplies were depleted. Delay of repair beyond the second process unit shutdown will not be allowed unless the third process unit shutdown occurs sooner than 6 months after the first process unit shutdown. Delay of repair of pumps for up to 6 months after leak detection is allowed if the pump is replaced with a dual mechanical seal system, a pump with no externally actuated shaft penetrating the pump housing, or a new system that the permittee has determined will provide better performance.

Recordkeeping Requirements

Records must be maintained that identify piping systems or process areas subject to this plan. Records of all inspections must be kept documenting the inspection was conducted and the date of the inspection. If no leaks are detected during the inspection, the record must indicate this result.

When a leak is detected during the quarterly inspection, the following information shall be recorded:

a) Component identifier or description of location and operator name, initials, or identification number.
b) The date the leak was detected.
c) The date the initial attempt at repair is made.
d) The date of successful repair of the leak. "Successful repair" means the leak is no longer detected using the inspection procedure outlined in item 6(a).
e) "Repair delayed" and the reason for the delay if a leak is not repaired within 30 days after discovery of the leak.

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TITLE V PERMIT APPLICATION
COMPLIANCE DEMONSTRATION BY RECORDKEEPING

The monitoring of a maintenance procedure shall be acceptable as a compliance demonstration method provided that a correlation between the parameter value recorded and the applicable requirement is established.

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
Eastman Chemical Company, Tennessee Operations

3. Stack ID or flow diagram point identification(s):
ZZ2, ZZ3

3. Emission source (identify):
B-221-3

MONITORING DESCRIPTION

4. Pollutant(s) being monitored:
VOC

5. Material or parameter being monitored:
Equipment leak detection and repair

6. Method of monitoring and recording:
See APC 26 Attachment

7. Compliance demonstration frequency (specify the frequency with which compliance will be demonstrated):
Annually

Fugitive Equipment Leak Detection and Repair

Quarterly Monitoring Protocol

A leak inspection of all equipment in air contaminant service (contains or contacts a process fluid that is at least 10% air contaminant by weight) that is not "in heavy liquid service" or "in vacuum service" shall be performed once per calendar quarter. For this inspection, detection methods incorporating sight (e.g., looking for drips), sound (e.g., hissing sounds indicative of a leak), or smell (e.g., strong odors traceable to piping leaks) shall be used as appropriate. "Equipment" includes piping, pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, flanges, and equipment closures including manways, body flanges, and blind flanges. "In heavy liquid service" means when less than 20 weight percent of the process fluid consists of air contaminants having pure component vapor pressures greater than 0.044 psia at 68 degrees F, and the process fluid is not in the gaseous state at operating conditions. "In vacuum service" means equipment that is operating at an internal pressure which is at least 0.7 psia below ambient pressure. Equipment that is covered by insulation or obstructed from sight when standing on existing floors or walkways is exempt from this inspection. Equipment that is subject to a federally required work practice standard (e.g., 40 CFR Part 60, Subpart VV, 40 CFR Part 63, Subpart H, 40 CFR Part 265, Subpart BB) is exempt from this inspection. Equipment that is in air contaminant service less than 300 hours in a calendar quarter is exempt from this inspection for that quarter.

Annual Monitoring Protocol

A leak inspection of all equipment in air contaminant service (contains or contacts a process fluid that is at least 10% air contaminant by weight) that is not "in heavy liquid service" or "in vacuum service" shall be performed once per calendar year. For this inspection, detection methods incorporating sight (e.g., looking for drips), sound (e.g., hissing sounds indicative of a leak), or smell (e.g., strong odors traceable to piping leaks) shall be used as appropriate. "Equipment" includes piping, pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, flanges, and equipment closures including manways, body flanges, and blind flanges. "In heavy liquid service" means when less than 20 weight percent of the process fluid consists of air contaminants having pure component vapor pressures greater than 0.044 psia at 68 degrees F, and the process fluid is not in the gaseous state at operating conditions. "In vacuum service" means equipment that is operating at an internal pressure which is at least 0.7 psia below ambient pressure. Equipment that is covered by insulation or obstructed from sight when standing on existing floors or walkways is exempt from this inspection. Equipment that is subject to a federally required work practice standard (e.g., 40 CFR Part 60, Subpart VV, 40 CFR Part 63, Subpart H, 40 CFR Part 265, Subpart BB) is exempt from this inspection. Equipment that is in air contaminant service less than 720 hours in a calendar year is exempt from this inspection for that year.

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Delay of repair of leaking equipment will be allowed if the repair is technically infeasible without a process unit shutdown or if repair personnel would be exposed to an immediate danger if attempting a repair without a process shutdown. Repair of this equipment shall occur by the end of the next process unit shutdown. Delay of repair of equipment for which leaks have been detected is allowed for equipment that is isolated from the process and that does not remain in air contaminant service. Delay of repair for valves, connectors, and agitators is also allowed if the owner or operator determines that emissions of purged material resulting from immediate repair would be greater than the fugitive emissions likely to result from delay of repair. Delay of repair beyond a process unit shutdown will be allowed for a valve if valve assembly replacement is necessary during the process unit shutdown, valve assembly supplies have been depleted, and valve assembly supplies had been sufficiently stocked before the supplies were depleted. Delay of repair beyond the second process unit shutdown will not be allowed unless the third process unit shutdown occurs sooner than 6 months after the first process unit shutdown. Delay of repair of pumps for up to 6 months after leak detection is allowed if the pump is replaced with a dual mechanical seal system, a pump with no externally actuated shaft penetrating the pump housing, or a new system that the permittee has determined will provide better performance.

Recordkeeping Requirements

Records must be maintained that identify piping systems or process areas subject to this plan. Records of all inspections must be kept documenting the inspection was conducted and the date of the inspection. If no leaks are detected during the inspection, the record must indicate this result.

When a leak is detected during the quarterly inspection, the following information shall be recorded:

a) Component identifier or description of location and operator name, initials, or identification number.
b) The date the leak was detected.
c) The date the initial attempt at repair is made.
d) The date of successful repair of the leak. "Successful repair" means the leak is no longer detected using the inspection procedure outlined in item 6(a).
e) "Repair delayed" and the reason for the delay if a leak is not repaired within 30 days after discovery of the leak.

State of Tennessee
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TITLE V PERMIT APPLICATION
COMPLIANCE DEMONSTRATION BY OTHER METHODS

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
Eastman Chemical Company, Tennessee Operations

2. Stack ID or flow diagram point identification(s):
Entire Source

3. Emission source (identify):
PES B-221-3

MONITORING DESCRIPTION

4. Pollutant(s) being monitored:
Visible Emissions

5. Description of the method of monitoring:

Opacity will be determined by EPA Method 9, as published in the Federal Register, Volume 39, No. 219 on September 11, 2013.

6. Compliance demonstration frequency (specify the frequency with which compliance will be demonstrated):

The opacity matrix decision tree for visible emission evaluation EPA Method 9, dated September 11, 2013, was used to determine the frequency of visible emissions evaluations (VEEs) for each emission unit within the source.

The following emissions units within the source **do** require an initial or periodic VEEs:

Emissions Unit	Vent ID / Flow Diagram Point	Frequency of VEEs
N/A	N/A	N/A

The following emissions units within the source **do not** require initial or periodic VEEs:

Emissions Unit	Vent ID / Flow Diagram Point	Justification
Entire Source	Entire Source	Each allowable emission greater than 10 TPY is from a colorless pollutant

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TITLE V PERMIT APPLICATION
COMPLIANCE DEMONSTRATION BY OTHER METHODS

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
Eastman Chemical Company, Tennessee Operations

2. Stack ID or flow diagram point identification(s):
See table below

3. Emission source (identify):
PES B-221-3

MONITORING DESCRIPTION

4. Pollutant(s) being monitored:
See table below

5. Description of the method of monitoring:

Periodic monitoring by certification: As provided for in 1200-3-9-.04(5)(c)3. Any emission unit or activity which is a subset of a process emission source, fuel burning installation, or incinerator, and which has a potential to emit less than 5 tons per year of a regulated air pollutant , by annual certification of compliance as required in item 1200-03-09-.02(11)(d)1.(ii)(I), may, at the discretion of the Technical Secretary, be considered to meet the monitoring and related recordkeeping and reporting requirements of subpart 1200-03-09-.02(11)(e)1.(iii) and 1200-03-10-.04(2)(b)(1), and the compliance requirements of subpart 1200-03-09-.02(11)(e)3.(i) for that regulated air pollutant except where generally applicable requirements of the state implementation plan specifically impose monitoring and related record keeping and reporting requirements, or except where any applicable procedures and methods are required pursuant to rule 1200-03-10-.04. This provision shall not relieve any emissions unit or activity from any applicable standard or requirement under Chapters 1200-03-11 and 1200-03-31, and subparagraph 1200-03-02-.01(1)(dd).

Pollutant	Vent ID or Flow Diagram Point
CO	E
VOC	A1, B, B1, C, D, D1, E1, F1, F2, G, H1, J2, X

6. Compliance demonstration frequency (specify the frequency with which compliance will be demonstrated):

Annually

State of Tennessee
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Division of Air Pollution Control
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TITLE V PERMIT APPLICATION
EMISSIONS FROM PROCESS EMISSION SOURCE / FUEL BURNING INSTALLATION / INCINERATOR

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:
Eastman Chemical Company, Tennessee Operations

2. Stack ID or flow diagram point identification(s):
See APC 10 Attachment

3. Process emission source / Fuel burning installation / Incinerator (identify):
PES B-221-3

EMISSIONS SUMMARY TABLE – CRITERIA AND ~~FUGITIVE EMISSIONS~~ SELECTED POLLUTANTS

4. Complete the following emissions summary for regulated air pollutants. Fugitive emissions shall be included. Attach calculations and emission factor references.

Air Pollutant	Maximum Allowable Emissions [1]		Actual Emissions [2]	
	Tons per Year	Reserved for State use (Pounds per Hour - Item 7, APC 30)	Tons per Year	Reserved for State use (Pounds per Hour- Item 8, APC 30)
PM-2.5 [3]	0.00		N/A	
(Fugitive Emissions)	0.00		N/A	
PM-10 [3]	0.00		N/A	
(Fugitive Emissions)	0.00		N/A	
Particulate Matter (TSP)	0.00		N/A	
(Fugitive Emissions	0.00		N/A	
Sulfur Dioxide	0.00		N/A	
(Fugitive Emissions)	0.00		N/A	
Volatile Organic Compounds	55.27		N/A	
(Fugitive Emissions)	21.08		N/A	
Carbon Monoxide	0.24		N/A	
(Fugitive Emissions)	0.00		N/A	
Lead	0.00		N/A	
(Fugitive Emissions)	0.00		N/A	
Nitrogen Oxides	0.00		N/A	
(Fugitive Emissions)	0.00		N/A	
Total Reduced Sulfur	0.00		N/A	
(Fugitive Emissions)	0.00		N/A	
Mercury	0.00		N/A	
(Fugitive Emissions)	0.00		N/A	

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AIR POLLUTANT	Maximum Allowable Emissions [1]		Actual Emissions [2]	
	Tons per Year	Reserved for State use (Pounds per Hour - Item 7, APC 30)	Tons per Year	Reserved for State use (Pounds per Hour- Item 8, APC 30)
Asbestos	0.00		N/A	
(Fugitive Emissions)	0.00		N/A	
Beryllium	0.00		N/A	
(Fugitive Emissions)	0.00		N/A	
Vinyl Chloride	0.00		N/A	
(Fugitive Emissions)	0.00		N/A	
Fluorides	0.00		N/A	
(Fugitive Emissions)	0.00		N/A	
Gaseous Fluorides	0.00		N/A	
(Fugitive Emissions)	0.00		N/A	
Greenhouse Gases in CO_2 Equivalents	1,129		N/A	

EMISSIONS SUMMARY TABLE – ~~FUGITIVE~~ HAZARDOUS AIR POLLUTANTS

5. Complete the following emissions summary for regulated air pollutants that are hazardous air pollutant(s). Fugitive emissions shall be included. Attach calculations and emission factor references.

Air Pollutant & CAS [4]	Maximum Allowable Emissions [1]		Actual Emissions [2]	
	Tons per Year	Reserved for State use (Pounds per Hour - Item 7, APC 30)	Tons per Year	Reserved for State use (Pounds per Hour- Item 8, APC 30)
Total Particulate Hazardous Air Pollutants*	0.00		N/A	
Total Gaseous Hazardous Air Pollutants*	33.96		N/A	
Methanol (CAS# 67-56-1)	12.88		N/A	
(Fugitive Emissions)	21.08		N/A	

6. Page number: 48 of 56 | Revision Number: R3-3 SM2 and CP1 | Date of Revision: **August 13, 2021**

1. The term "maximum allowable emissions" as used here represents the "allowable emissions" as defined in subparagraph 1200-3-26-.02(2)(d). These emission rates are intended solely for the purposes of fee computation and in no way are to be considered the setting of binding emission limitations.
2. "Not applicable" (N/A) is indicated unless the responsible official chooses to pay annual emission fees based on actual emissions rather than allowable emissions pursuant to subparagraph 1200-3-26-.02(9)(b).
3. PM-2.5 and PM-10 emissions are also included in particulates (TSP) Emissions and should not be counted in annual emission fee calculations.
4. An asterisk (*) is placed next to each pollutant that is also included in the totals in Item 4.

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TITLE V PERMIT APPLICATION
CURRENT EMISSIONS REQUIREMENTS AND STATUS

GENERAL IDENTIFICATION AND DESCRIPTION

1. Facility name:	2. Emission source number:
Eastman Chemical Company, Tennessee Operations	PES B-221-3

3. Describe the process emission source / fuel burning installation / incinerator:
Glycol Plants

EMISSIONS AND REQUIREMENTS

4. Identify if only a part of the source is subject to this requirement	5. Pollutant	6. Applicable requirement(s): TN Air Pollution Control Regulations, 40 CFR, permit restrictions, air quality based standards	7. Limitations	8. Maximum actual emissions	9. Compliance status (In/Out)
1. Entire Source	Visible Emissions	TAPCR 1200-03-05-.01: General Visual Emissions Standards Condition E4-1 of construction permit 968220P	20% Opacity	N/A	In
2. Flow Diagram Point ZZ1 (Equipment Leaks)	Air Contaminants	TAPCR 1200-3-7-.07(2): Process Gaseous Emission Standard for sources constructed or modified after April 3, 1972 - Reasonable and proper control equipment and technology. Condition E4-2 of construction permit 968220P	Quarterly Leak Inspection and Repair Fugitive emissions from equipment leaks are estimated at: VOC – 11.23 tons/yr	N/A	In
3. Flow Diagram Point ZZ2 (Equipment Leaks)	Air Contaminants	TAPCR 1200-3-7-.07(2): Process Gaseous Emission Standard for sources constructed or modified after April 3, 1972 - Reasonable and proper control equipment and technology.	Annual Leak Inspection and Repair Fugitive emissions from equipment leaks are estimated at: VOC – 3.83 tons/yr	N/A	In

See APC 30 Attachment for additional Emissions and Requirements

10. Other applicable requirements (new requirements that apply to this source during the term of this permit)

11. Page number:	Revision number:	Date of revision:
49 of 56	R3-3 SM2 and CP1	**August 13, 2021**

APC 30 - Emissions and Requirements Table Continued

EMISSIONS AND REQUIREMENTS					
4. Identify if only a part of the source is subject to this requirement	5. Pollutant	6. Applicable requirement(s): TN Air Pollution Control Regulations, 40 CFR, permit restrictions, air quality based standards	7. Limitations	8. Maximum actual emissions	9. Compliance status (In/Out)
4. Flow Diagram Point ZZ3 (Equipment Leaks)	Air Contaminants	TAPCR 1200-3-7-.07(2): Process Gaseous Emission Standard for sources constructed or modified after April 3, 1972 - Reasonable and proper control equipment and technology.	Quarterly Leak Inspection and Repair Fugitive emissions from equipment leaks are estimated at: VOC – 6.02 tons/yr	N/A	In
5. Entire Source, excluding fugitive equipment leaks from pumps, valves, flanges, etc.	VOC	TAPCR 1200-3-7-.07(2): Process Gaseous Emission Standard for sources constructed or modified after April 3, 1972 - Reasonable and proper control equipment and technology. Condition E4-1 of construction permit 968220P	55.27 tons/yr (12-month moving total)	45.56 tons/yr (12-month moving total)	In
6. Vents E, F, and J	VOC	TAPCR 1200-3-7-.07(2): Process Gaseous Emission Standard for sources constructed or modified after April 3, 1972 - Reasonable and proper control equipment and technology. Condition E4-7 of construction permit 968220P	30.12 lb/hr (24-hr avgerage)	11.66 lb/hr (24-hr average)	In
7. J1	VOC	TAPCR 1200-03-07-.07(2): Process Gaseous Emission Standard for sources constructed or modified after April 3, 1972 - Reasonable and proper control equipment and technology	95% control efficiency at design rating	N/A	In
8. Entire Source, excluding fugitive equipment leaks from pumps, valves, flanges, etc.	CO	TAPCR 1200-3-7-.07(2): Process Gaseous Emission Standard for sources constructed or modified after April 3, 1972 - Reasonable and proper control equipment and technology. Condition E4-3 of construction permit 968220P	0.24 tons/yr (12-month moving total)	0.24 tons/yr (12-month moving total)	In
9 Entire Source, excluding fugitive equipment leaks from pumps, valves, flanges, etc.	Methane	TAPCR 1200-3-7-.07(2): Process Gaseous Emission Standard for sources constructed or modified after April 3, 1972 - Reasonable and proper control equipment and technology. Condition E4-5 of construction permit 968220P	53.78 tons/yr (12-month moving total)	31.21 tons/yr (12-month moving total)	In
10. Portion of Source Subject to NSPS	VOC	40 CFR 60 Subpart A – General Provisions	See Item 6	N/A	In

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200 South Wilcox Dr
Kingsport, TN 37660
Telephone: (423) 229-2000

APC 30 - Emissions and Requirements Table Continued

EMISSIONS AND REQUIREMENTS					
4. Identify if only a part of the source is subject to this requirement	5. Pollutant	6. Applicable requirement(s): TN Air Pollution Control Regulations, 40 CFR, permit restrictions, air quality based standards	7. Limitations	8. Maximum actual emissions	9. Compliance status (In/Out)
11. Portion of Source Subject to VVa	VOC	40 CFR 60 Subpart VVa – Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for which Construction, Reconstruction, or Modification Commenced After November 7, 2006. A listing of specific applicability determinations for 40 CFR Parts 60 and 63 in effect as of the issuance date of this permit is attached to this form. Changes that result in a change of applicability shall follow the applicable procedures in Section C of the Title V permit and include an update to the APC 30 Attachment.	See Item 6	N/A	In
12. Portion of Source Subject to NNN	VOC	40 CFR 60 Subpart NNN – Standards of Performance for Volatile Organic Compound Emissions from Synthetic Organic Chemical Manufacturing Industry Distillation Columns A listing of specific applicability determinations for 40 CFR Parts 60 and 63 in effect as of the issuance date of this permit is attached to this form. Changes that result in a change of applicability shall follow the applicable procedures in Section C of the Title V permit and include an update to the APC 30 attachment.	See Item 6	N/A	In
13. Vents J and J1	VOC	40 CFR Part 64 – Compliance Assurance Monitoring 40 CFR 64.2(b)(1)(i) – Exempt emission limitations or standards proposed by the Administrator after November 15, 1990 – Vent Subject to Group 1 MACT control device requirements.	See Item 6	N/A	In
14. Miscellaneous Organic Manufacturing Chemical Process Units	HAPs	40 CFR 63 Subpart A - General Provisions	See Item 6	N/A	In
15. Miscellaneous Organic Manufacturing Chemical Process Units: Glycol	HAPs	40 CFR Part 63 Subpart FFFF - National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing A listing of specific applicability determinations for 40 CFR Parts 60 and 63 in effect as of the submittal date of this permit application is attached to this APC 30 form. Changes that result in a change of applicability shall follow the applicable procedures in Section C of this permit and include an update to the APC 30 Attachment.	See Item 6	N/A	In

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APC 30 - Emissions and Requirements Table Continued

EMISSIONS AND REQUIREMENTS					
4. Identify if only a part of the source is subject to this requirement	5. Pollutant	6. Applicable requirement(s): TN Air Pollution Control Regulations, 40 CFR, permit restrictions, air quality based standards	7. Limitations	8. Maximum actual emissions	9. Compliance status (In/Out)
16. Portions of Source Subject to Subpart RRR	VOC	40 CFR 60 Subpart RRR – Standards of Performance for Volatile Organic Compound Emissions from Synthetic Organic Chemical Manufacturing Industry Reactor Processes A listing of specific applicability determinations for 40 CFR Parts 60 and 63 in effect as of the issuance date of this permit is attached to this form. Changes that result in a change of applicability shall follow the applicable procedures in Section C of the Title V permit and include an update to the APC 30 attachment.	See Item 6	N/A	In

Specific Applicability Determinations
B-221-3

40 CFR Part 60 Subpart VVa (Form Version 1)		
Identification	**Category**	**Rule Citation**
Glycol Methanol Production Process Unit – Applicable portions of Flow Diagram Point ZZ1, ZZ2, and ZZ3 in VOC service	**Sources Complying with Subpart H** Each affected facility that commences construction, reconstruction, or modification after November 7, 2006, and complies with 40 CFR part 63 subpart H to comply.	**Applicability:** §60.480a(a), (b), (e)(2), and (f) **Standards:** N/A **Test Methods and Procedures:** §60.485a(d), (e), (f) **Recordkeeping Requirements:** §60.486a(i) and (j) **Reporting Requirements:** N/A

40 CFR Part 60 Subpart NNN (Form Version 2)		
Identification	**Category**	**Rule Citation**
DC-29 Degasser (Triangle 1) DC-30 Degasser (Triangle 13)	**TRE between 1.0 and 8.0; No Recovery Device** Each affected facility that is part of a process unit that produces any of the chemicals listed in §60.667 as a product, co-product, by-product, or intermediate, for which construction, modification, or reconstruction commenced after December 30, 1983, has a TRE index value greater than 1.0 but less than or equal to 8.0, and does not use a recovery device to maintain the TRE above 1.0.	**Applicability:** §60.660(a) and (b) **Standards:** §60.662(c) **Monitoring of Emissions & Operations:** N/A **Test Methods & Procedures:** §60.664(a), (e), (f), and (g) **Reporting & Recordkeeping:** §60.665(a), (h), (k), (l), and (p)

40 CFR Part 60 Subpart RRR (Form Version 2)		
Identification	**Category**	**Rule Citation**
WE-23 Condenser (Triangle 7) Affected Facility[1]	**TRE between 1.0 and 8.0; Condenser** Each affected facility that is part of a process unit that produces any of the chemicals listed in §60.707 as a product, co-product, by-product, or intermediate, for which construction, modification, or reconstruction commenced after June 29, 1990, has a TRE index value greater than 1.0 but less than or equal to 8.0, and uses a condenser to comply with §60.702(c).	**Applicability:** §60.700(a), (b) **Standards:** §60.702(c) **Monitoring of Emissions & Operations:** §60.703(d)(2)(i) **Test Methods & Procedures:** §60.704(a), (e), (f) **Reporting & Recordkeeping:** §60.705(a), (b)(4)(ii), (b)(4)(v), (f)(2), (g), (k), (l)

[1]Inlcudes the WE-23 Condenser and all reactors routed to the condenser.

Specific Applicability Determinations
B-221-3

All MCPUs

40 CFR Part 63 Subpart FFFF (MON) (Form Version 2)		
Identification	**Category**	**Rule Citations**
What This Subpart Covers		
Affected Source	Purpose of this subpart	§63.2430
Affected Source	Applicability	§63.2435
Affected Source	Definition of affected source	§63.2440(a) and (b)
Emission Limits, Work Practice Standards, and Compliance Requirements: General Requirements		
MON subject points, as applicable	Sources subject to any emission limits and work practice standards in tables 1 through 7 or any requirements specified in §63.2455 through §63.2490 (or the alternative means of compliance in §63.2495, §63.2500, or §63.2505)	§63.2450(a)
Emission Limits, Work Practice Standards, and Compliance Requirements: Wastewater Streams and Liquid Streams in Open Systems		
Affected Source	Liquid or solid organic materials discarded from an MCPU to water or wastewater, except materials from equipment leaks, activities included in maintenance or SSM plans, spills, or samples of a size necessary for the method of analysis.	§63.2485(a), (m) Table 7: Item 1
Notifications, Reports, and Records		
MON subject points, as applicable	Notifications	§63.2445(c), §63.2515
MON subject points, as applicable	Reporting	§63.2450(l), §63.2520
MON subject points, as applicable	Recordkeeping	§63.2525
Other Requirements and Information		
MON subject points, as applicable	General Provisions Applicability	§63.2540 Table 12
Affected Source	Implementation and Enforcement	§63.2545
Affected Source	Definitions	§63.2550

Specific Applicability Determinations
B-221-3

Glycol MCPU

40 CFR Part 63 Subpart FFFF (MON) (Form Version 2)		
Identification	**Category**	**Rule Citations**
Compliance Dates		
Glycol MCPU	Existing sources	§63.2445(b)
Emission Limits, Work Practice Standards, and Compliance Requirements: General Requirements		
Triangles 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13 (Vents E, F, J) Group 1 Tanks associated with J1	Emission stream using a control device (other than a flare) for compliance	§63.2450(e)
Triangles 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13 (Vents E, F, J) Group 1 Tanks associated with J1	Emission stream with continuous parameter monitoring	§63.2450(k), §63.2450(l)
Triangles 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13 (Vents E, F, J)	Emission stream using a performance test for compliance demonstrations	§63.2450(g)
WE-50 (Vent D) XG-51 (Vent G) XF-50 (Vent E1) CG-100 (Vent J) WH-50 (Vent F1) CG-101 (Vent XG-50 (Vent F2) J1)	Surge control vessel or bottoms receiver that does not meets the capacity and vapor pressure thresholds for a Group 1 storage tank	§63.2450(r)
Emission Limits, Work Practice Standards, and Compliance Requirements: Continuous Process Vents		
Triangles 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13 (Vents E, F, J)	Group 1 continuous process vent that reduces HAP emissions by ≥98 wt% or to an outlet concentration of ≤20 ppmv (as HAP or TOC) by venting emissions through a closed-vent system to any combination of control devices (except a flare).	§63.2455(a), (b) Table 1: Item 1(a)(i)
Triangle FG	Gas stream that is not continuous process vent: Gas stream routed to a fuel gas system	§63.2550
Emission Limits, Work Practice Standards, and Compliance Requirements: Storage Tanks		
XH-50 (Vent J1) XH-51 (Vent J1) CH-100 (Vent J1) CH-101 (Vent J1)	Group 1 storage tank with a maximum true vapor pressure of total HAP at the storage temperature less than 76.6 kPa (11.1 psi) and complies with the requirements of 40 CFR 63 Subpart WW, except as specified in §63.2470	§63.2470(a), (c), (d) Table 4: Item 1(b)(i)
SM1 (Vent X) SM2 (Vent X)	Group 2 storage tank	§63.2470(a)
Emission Limits, Work Practice Standards, and Compliance Requirements: Transfer Racks		
UD-50 Loading Station (Vent A1)	Group 2 transfer rack	§63.2475(a)
Emission Limits, Work Practice Standards, and Compliance Requirements: Equipment Leaks		
Applicable portions of Flow Diagram Point ZZ1, ZZ2, and ZZ3 in HAP service	Equipment that is in HAP service at an existing source and complying with the requirements of 40 CFR 63 Subpart H, except as specified in §63.2480(b) and (d)	§63.2480(a), (b), (d) Table 6: Item 1(b)
Emission Limits, Work Practice Standards, and Compliance Requirements: Wastewater Streams and Liquid Streams in Open Systems		
Hexagons W1, W2, W3, and W4	Group 2 wastewater stream	§63.2485(a), (b), (c), (j) Table 7: Item 1
MON maintenance wastewater streams as applicable	Maintenance wastewater stream	§63.2485(a) Table 7: Item 2
Emission Limits, Work Practice Standards, and Compliance Requirements: Heat Exchange Systems		
Applicable heat exchange systems in the Glycol MCPU	Heat exchange system, as defined in §63.101	§63.2490(a), (b), (c) Table 10

Specific Applicability Determinations
B-221-3

Tritan™ MCPU

40 CFR Part 63 Subpart FFFF (MON) (Form Version 2)		
Identification	**Category**	**Rule Citations**
Compliance Dates		
Tritan™ MCPU	Existing sources	§63.2445(b)
Emission Limits, Work Practice Standards, and Compliance Requirements: General Requirements		
Group 1 Tanks associated with J1	Emission stream using a control device (other than a flare) for compliance	§63.2450(e)
Group 1 Tanks associated with J1	Emission stream with continuous parameter monitoring	§63.2450(k), §63.2450(l)
Emission Limits, Work Practice Standards, and Compliance Requirements: Storage Tanks		
TB-50 (Vent J1) TL-50 (Vent J1) TZ-50 (Vent J1)	Group 1 storage tank with a maximum true vapor pressure of total HAP at the storage temperature less than 76.6 kPa (11.1 psi) and complies with the requirements of 40 CFR 63 Subpart WW, except as specified in §63.2470	§63.2470(a), (c), (d) Table 4: Item 1(b)(i)

END OF APPLICATION FORMS (B-221-3)

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Title V Operating Permit Application

Application Attachment(s)

MSOP-24
PES B-221-3
Glycol Plants

Application Attachment

Calculations

Site TED
PES# B-221-3
Tank UD-50
Em Pt A1

Tank Emission Calculation Sheet

COMPONENT	Component Weight Percent	Component Molecular Weight (LB/LBMOL)	Component Partial Pressure (PSIA)	Emissions (TPY)
VOC	100.00	38.29	8.28	1.82
HAPs (Included With VOCs Above)				
METHANOL	0.75	32.04	7.94	1.46
Total HAP	0.75		7.94	1.46

Inputs:

Operating Hours/Year: 8760 Operating Days/Year: 365
Batch Filling: 9000 Avg Gal/Fill 24.00 Avg Fill/Year
Continuous Inert Gas or Nitrogen Flow: 0.0330 SCFM
Saturation of Gas: 100.0 %
Average Distance From Liquid To Top of Tank: 4.0 Feet
This Tank is FULLY INSULATED S&R
Vapor Control/Recovery Device: NONE

Results of AP-42 (5th Edition,1997) Emissions Estimation Method:

Total Inerts Rate in Moles/Hour = 0.12 If N2, Inerts = 3.36 Pounds/Hour
VOC Emission Estimates From Continuous Inert Gas Flow: 1.22 Tons/Year
VOC Emission Estimates From Breathing: 0.30 Tons/Year
VOC Emission Estimates From Working: 0.30 Tons/Year

Site TED
PES# B-221-3
Tank JT-53
Em Pt B

Tank Emission Calculation Sheet

COMPONENT	Component Weight Percent	Component Molecular Weight (LB/LBMOL)	Component Partial Pressure (PSIA)	Emissions (TPY)
VOC	90.00	144.21	0.01	0.07
WATER	10.00	18.02	11.74	11.59

HAPs (Included With VOCs Above)

Total HAP

Inputs:

Operating Hours/Year: 8760 Operating Days/Year: 365
Batch Filling: 12000 Avg Gal/Fill 402.00 Avg Fill/Year
Continuous Inert Gas or Nitrogen Flow: 0.1333 SCFM
Saturation of Gas: 100.0 %
Average Distance From Liquid To Top of Tank: 4.0 Feet
This Tank is FULLY INSULATED S&R
Vapor Control/Recovery Device:

Results of AP-42 (5th Edition,1997) Emissions Estimation Method:

Total Inerts Rate in Moles/Hour = 0.22 If N2, Inerts = 6.06 Pounds/Hour
VOC Emission Estimates From Continuous Inert Gas Flow: 0.05 Tons/Year
VOC Emission Estimates From Breathing: 0.00 Tons/Year
VOC Emission Estimates From Working: 0.02 Tons/Year

Site TED
PES# B-221-3
Tank CG-100
Em Pt B1

Tank Emission Calculation Sheet

COMPONENT	Component Weight Percent	Component Molecular Weight (LB/LBMOL)	Component Partial Pressure (PSIA)	Emissions (TPY)
VOC	100.00	32.04	8.08	1.02
HAPs (Included With VOCs Above)				
METHANOL	30.00	32.04	8.08	1.02
Total HAP	30.00		8.08	1.02

Inputs:

Operating Hours/Year: 8760 Operating Days/Year: 365
Continuous Filling: 515 Average Gallons Withdrawn/24 Hours
Continuous Inert Gas or Nitrogen Flow: 0.0000 SCFM
Saturation of Gas: 0.0 %
Average Distance From Liquid To Top of Tank: 5.0 Feet
This Tank is FULLY INSULATED S&R
Vapor Control/Recovery Device: NONE
Average Daily Level Fluctuation of Tank: 15.00 Inches

Results of AP-42 (5th Edition,1997) Emissions Estimation Method:

Total Inerts Rate in Moles/Hour = 0.01 If N2, Inerts = 0.18 Pounds/Hour
VOC Emission Estimates From Continuous Inert Gas Flow: 0.00 Tons/Year
VOC Emission Estimates From Breathing: 0.18 Tons/Year
VOC Emission Estimates From Working: 0.84 Tons/Year

Site TED
PES# B-221-3
Tank CG-101
Em Pt C

Tank Emission Calculation Sheet

COMPONENT	Component Weight Percent	Component Molecular Weight (LB/LBMOL)	Component Partial Pressure (PSIA)	Emissions (TPY)
VOC	100.00	32.04	8.08	1.02
HAPs (Included With VOCs Above)				
METHANOL	30.00	32.04	8.08	1.02
Total HAP	30.00		8.08	1.02

Inputs:

Operating Hours/Year: 8760 Operating Days/Year: 365
Continuous Filling: 515 Average Gallons Withdrawn/24 Hours
Continuous Inert Gas or Nitrogen Flow: 0.0000 SCFM
Saturation of Gas: 0.0 %
Average Distance From Liquid To Top of Tank: 6.0 Feet
This Tank is FULLY INSULATED S&R
Vapor Control/Recovery Device: NONE
Average Daily Level Fluctuation of Tank: 15.00 Inches

Results of AP-42 (5th Edition,1997) Emissions Estimation Method:

Total Inerts Rate in Moles/Hour = 0.01 If N2, Inerts = 0.18 Pounds/Hour
VOC Emission Estimates From Continuous Inert Gas Flow: 0.00 Tons/Year
VOC Emission Estimates From Breathing: 0.18 Tons/Year
VOC Emission Estimates From Working: 0.84 Tons/Year

Site TED
PES# B-221-3
Tank WE-50
Em Pt D

Tank Emission Calculation Sheet

COMPONENT	Component Weight Percent	Component Molecular Weight (LB/LBMOL)	Component Partial Pressure (PSIA)	Emissions (TPY)
VOC	100.00	32.04	2.44	0.05
HAPs (Included With VOCs Above)				
METHANOL	100.00	32.04	2.44	0.05
Total HAP	100.00		2.44	0.05

Inputs:

Operating Hours/Year: 8760 Operating Days/Year: 365
Batch Filling: 640 Avg Gal/Fill 72.00 Avg Fill/Year
Continuous Inert Gas or Nitrogen Flow: 0.0000 SCFM
Saturation of Gas: 0.0 %
Average Distance From Liquid To Top of Tank: 4.8 Feet
This Tank is FULLY INSULATED S&R
Vapor Control/Recovery Device: NONE

Results of AP-42 (5th Edition,1997) Emissions Estimation Method:

Total Inerts Rate in Moles/Hour = 0.00 If N2, Inerts = 0.06 Pounds/Hour
VOC Emission Estimates From Continuous Inert Gas Flow: 0.00 Tons/Year
VOC Emission Estimates From Breathing: 0.01 Tons/Year
VOC Emission Estimates From Working: 0.04 Tons/Year

PES # B-221-3 Vent ID D1

Emissions Unit Description:	Other Emission Not Otherwise Captured (such as emissions not captured from open vessels, filters, conveyors, and material handling operations)
Scheduling Basis for Emissions:	8760 hrs/yr
Conditions Shown:	Maximum

Special Physical Property Notes:
N/A

Assumptions Used:
Forecasted trailer and drum fillings for various products loaded in area. Air displaced from filling containers is at saturated conditions. Displaced air temperature at liquid loading temperature.

Describe the method used to calculate emissions:
Determined emissions from open dome loading of trailers and drum filling based on air displacement from the containers at saturated conditions. A total volume displacement of air was calculated from each loading scenario. The emissions were calculated from total volume of air displaced at saturated conditions. A physical property database was used for determining vapor pressures at loading temperature conditions.

Component	Total Emissions (tons/yr)
VOC	2.05
Methanol*	0.10

*Methanol included in VOC

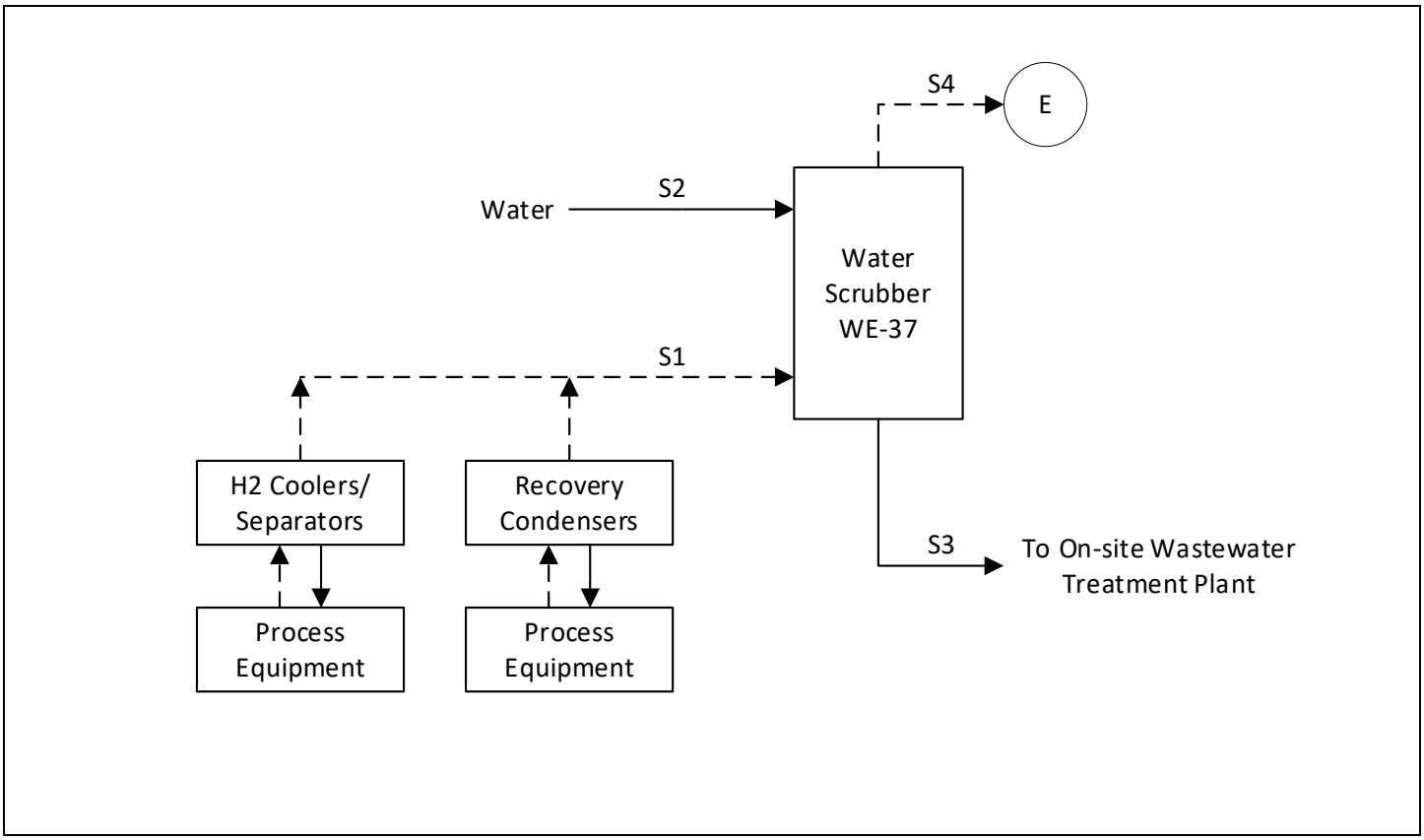
PES # B-221-3 Vent ID E

Emissions Unit Description: Process equipment shown in the diagram below

Scheduling Basis for Emissions: 1030 hrs/yr

Conditions Shown: Maximum

Inherent Process Equipment? No



Component	S1 (lb/hr)	S2 (lb/hr)	S3 (lb/hr)	S4 (lb/hr)	Emissions (tons/yr)
VOC	41.25	0.00	36.68	4.57	2.35
Methanol*	34.25	0.00	33.57	0.68	0.35
CO	0.47	0.00	0.00	0.47	0.24
CO2e	-	-	-	-	795.4
Methane	30.33	0.00	0.59	29.73	15.31
Water	0.0	2350	2348.9	1.1	-

*HAP is included with total VOC

Additional control device data:
WE-37 scrubber is 10.75 inches in diameter and has 6 cubic feet of packing.

Describe the method used to estimate control efficiency:
Assumed that WE-37 scrubber achieves 98% control efficiency for methanol and methane, ~45% control efficiency for non-HAP VOC based on process model (ASPEN©) of the scrubber and data from MON Performance Test (2/1/2008).

Describe the method used to calculate emissions:
Took grab sample of inlet to determine component concentrations and used handheld device to determine flow rate (both measurements taken on 7/21/2021). Test results extrapolated for maximum production.

Site TED
PES# B-221-3
Tank XF-50
Em Pt E1

Tank Emission Calculation Sheet

COMPONENT	Component Weight Percent	Component Molecular Weight (LB/LBMOL)	Component Partial Pressure (PSIA)	Emissions (TPY)
VOC	100.00	36.64	2.48	0.02
HAPs (Included With VOCs Above)				
METHANOL	0.50	32.04	2.41	0.02
Total HAP	0.50		2.41	0.02

Inputs:

Operating Hours/Year: 8760 Operating Days/Year: 365
Batch Filling: 1500 Avg Gal/Fill 10.00 Avg Fill/Year
Continuous Inert Gas or Nitrogen Flow: 0.0000 SCFM
Saturation of Gas: 0.0 %
Average Distance From Liquid To Top of Tank: 4.0 Feet
This Tank is FULLY INSULATED S&R
Vapor Control/Recovery Device: NONE

Results of AP-42 (5th Edition,1997) Emissions Estimation Method:

Total Inerts Rate in Moles/Hour = 0.00 If N2, Inerts = 0.03 Pounds/Hour
VOC Emission Estimates From Continuous Inert Gas Flow: 0.00 Tons/Year
VOC Emission Estimates From Breathing: 0.01 Tons/Year
VOC Emission Estimates From Working: 0.01 Tons/Year

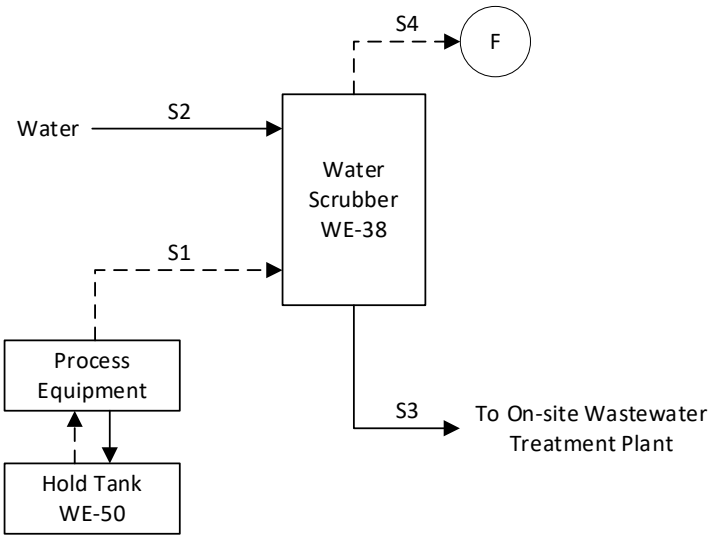
PES # B-221-3 Vent ID F

Emissions Unit Description: Process equipment and tank shown in the diagram below

Scheduling Basis for Emissions: 8760 hrs/yr

Conditions Shown: Maximum

Inherent Process Equipment? No



Component	S1 (lb/hr)	S2 (lb/hr)	S3 (lb/hr)	S4 (lb/hr)	Emissions (tons/yr)
VOC	23.34	0.00	18.15	6.19	27.11
Methanol*	14.65	0.00	14.50	0.15	0.66
CO2e	-	-	-	-	333.9
Methane	3.63	0.00	0.00	3.63	15.90
Water	0.0	625	618.4	6.6	-

*HAP is included with total VOC

Additional control device data:
WE-38 scrubber is 6.625 inches in diameter and has 2.2 cubic feet of packing.

Describe the method used to estimate control efficiency:
MON Performance Test on 3/14/2008 used to confirm control efficiency greater than or equal to 98%.

Describe the method used to calculate emissions:
Process model (ASPEN©) used to calculate VOC loading to the scrubber. Test results extrapolated for maximum production.

Site TED
PES# B-221-3
Tank WH-50
Em Pt F1

Tank Emission Calculation Sheet

COMPONENT	Component Weight Percent	Component Molecular Weight (LB/LBMOL)	Component Partial Pressure (PSIA)	Emissions (TPY)
VOC	100.00	37.24	2.36	2.37
HAPs (Included With VOCs Above)				
METHANOL	0.75	32.04	2.27	1.97
Total HAP	0.75		2.27	1.97

Inputs:

Operating Hours/Year: 8760 Operating Days/Year: 365
Continuous Filling: 144000 Average Gallons Withdrawn/24 Hours
Continuous Inert Gas or Nitrogen Flow: 0.0330 SCFM
Saturation of Gas: 100.0 %
Average Distance From Liquid To Top of Tank: 15.0 Feet
This Tank is FULLY INSULATED S&R
Vapor Control/Recovery Device: NONE
Average Daily Level Fluctuation of Tank: 24.00 Inches

Results of AP-42 (5th Edition,1997) Emissions Estimation Method:

Total Inerts Rate in Moles/Hour = 0.10 If N2, Inerts = 2.94 Pounds/Hour
VOC Emission Estimates From Continuous Inert Gas Flow: 0.16 Tons/Year
VOC Emission Estimates From Breathing: 0.32 Tons/Year
VOC Emission Estimates From Working: 1.89 Tons/Year

Site TED
PES# B-221-3
Tank XG-50
Em Pt F2

Tank Emission Calculation Sheet

COMPONENT	Component Weight Percent	Component Molecular Weight (LB/LBMOL)	Component Partial Pressure (PSIA)	Emissions (TPY)
VOC	100.00	32.04	8.08	1.02
HAPs (Included With VOCs Above)				
METHANOL	30.00	32.04	8.08	1.02
Total HAP	30.00		8.08	1.02

Inputs:

Operating Hours/Year: 8760 Operating Days/Year: 365
Continuous Filling: 515 Average Gallons Withdrawn/24 Hours
Continuous Inert Gas or Nitrogen Flow: 0.0000 SCFM
Saturation of Gas: 0.0 %
Average Distance From Liquid To Top of Tank: 6.0 Feet
This Tank is FULLY INSULATED S&R
Vapor Control/Recovery Device: NONE
Average Daily Level Fluctuation of Tank: 15.00 Inches

Results of AP-42 (5th Edition,1997) Emissions Estimation Method:

Total Inerts Rate in Moles/Hour = 0.01 If N2, Inerts = 0.18 Pounds/Hour
VOC Emission Estimates From Continuous Inert Gas Flow: 0.00 Tons/Year
VOC Emission Estimates From Breathing: 0.18 Tons/Year
VOC Emission Estimates From Working: 0.84 Tons/Year

Site TED
PES# B-221-3
Tank XG-51
Em Pt G

Tank Emission Calculation Sheet

COMPONENT	Component Weight Percent	Component Molecular Weight (LB/LBMOL)	Component Partial Pressure (PSIA)	Emissions (TPY)
VOC	100.00	32.04	8.08	1.02
HAPs (Included With VOCs Above)				
METHANOL	30.00	32.04	8.08	1.02
Total HAP	30.00		8.08	1.02

Inputs:

Operating Hours/Year: 8760 Operating Days/Year: 365
Continuous Filling: 515 Average Gallons Withdrawn/24 Hours
Continuous Inert Gas or Nitrogen Flow: 0.0000 SCFM
Saturation of Gas: 0.0 %
Average Distance From Liquid To Top of Tank: 6.0 Feet
This Tank is FULLY INSULATED S&R
Vapor Control/Recovery Device: NONE
Average Daily Level Fluctuation of Tank: 15.00 Inches

Results of AP-42 (5th Edition,1997) Emissions Estimation Method:

Total Inerts Rate in Moles/Hour = 0.01 If N2, Inerts = 0.18 Pounds/Hour
VOC Emission Estimates From Continuous Inert Gas Flow: 0.00 Tons/Year
VOC Emission Estimates From Breathing: 0.18 Tons/Year
VOC Emission Estimates From Working: 0.84 Tons/Year

Site TED
PES# B-221-3
Tank CB-102
Em Pt H1

Tank Emission Calculation Sheet

COMPONENT	Component Weight Percent	Component Molecular Weight (LB/LBMOL)	Component Partial Pressure (PSIA)	Emissions (TPY)
VOC	100.00	144.29	0.10	0.46

HAPs (Included With VOCs Above)

Total HAP

Inputs:

Operating Hours/Year: 8760 Operating Days/Year: 365
Batch Filling: 13100 Avg Gal/Fill 638.00 Avg Fill/Year
Continuous Inert Gas or Nitrogen Flow: 0.0000 SCFM
Saturation of Gas: 100.0 %
Average Distance From Liquid To Top of Tank: 10.0 Feet
This Tank is FULLY INSULATED S&R
Vapor Control/Recovery Device: NONE

Results of AP-42 (5th Edition,1997) Emissions Estimation Method:

Total Inerts Rate in Moles/Hour = 0.34 If N2, Inerts = 9.61 Pounds/Hour
VOC Emission Estimates From Continuous Inert Gas Flow: 0.00 Tons/Year
VOC Emission Estimates From Breathing: 0.01 Tons/Year
VOC Emission Estimates From Working: 0.45 Tons/Year

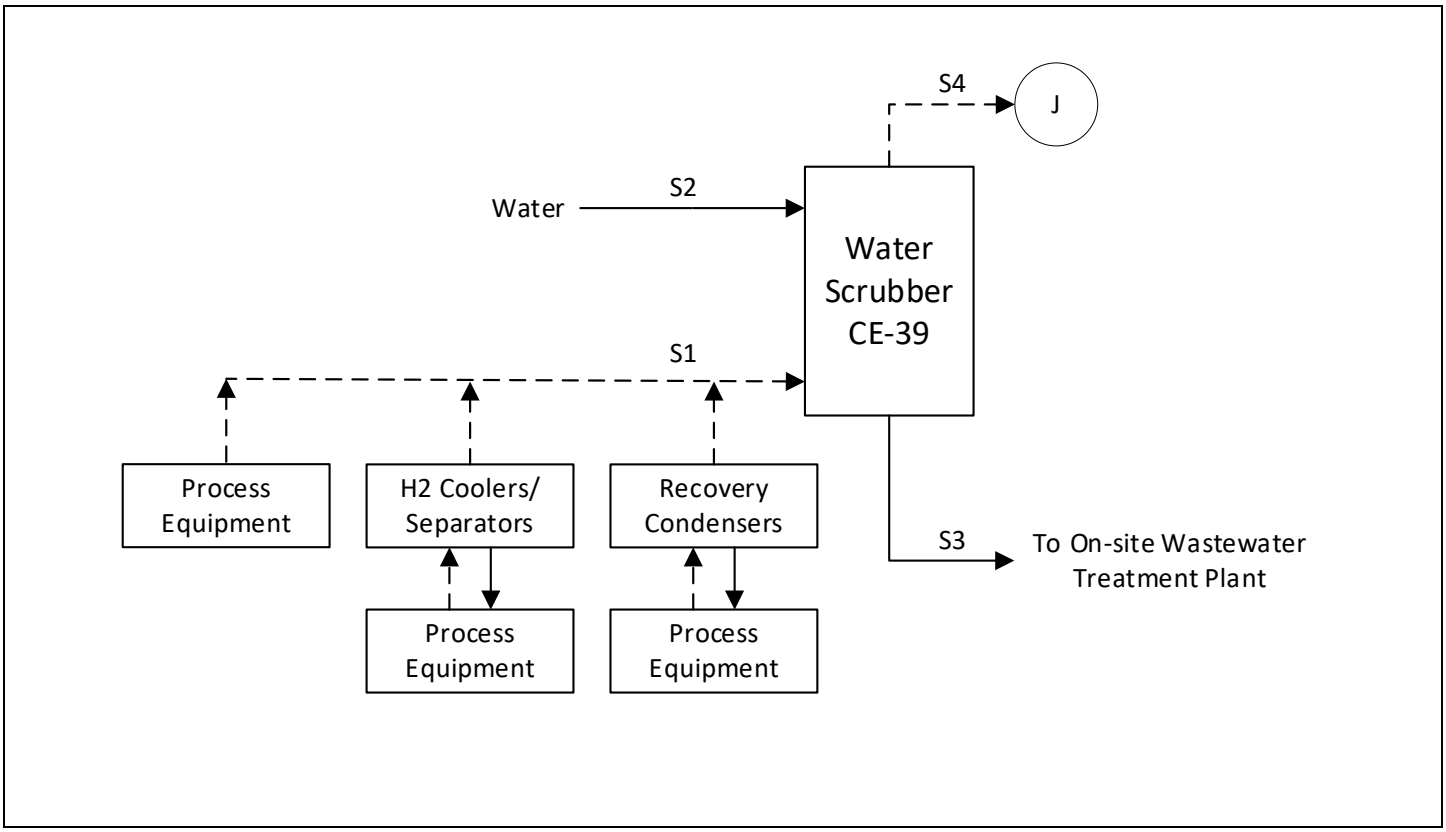
PES # B-221-3 Vent ID J

Emissions Unit Description: Process equipment and tank shown in the diagram below

Scheduling Basis for Emissions: 8760 hrs/yr

Conditions Shown: Maximum

Inherent Process Equipment? No



Component	S1 (lb/hr)	S2 (lb/hr)	S3 (lb/hr)	S4 (lb/hr)	Emissions (tons/yr)
VOC	87.3	0.00	86.4	0.9	3.9
Methanol*	85.1	0.00	84.4	0.7	3.1
Water	7.7	2000	1977.8	14.5	-

*HAP is included with total VOC

Additional control device data:
CE-39 scrubber is 14 inches in diameter and has a 15-foot packed bed.

Assumptions Used:
HMB for SER 4028 used as basis for scrubber input.

Describe the method used to estimate control efficiency:
Control efficiency of 99% is based on process model (ASPEN©) using water as scrubber medium for removing methanol.

Describe the method used to calculate emissions:
An in-house software program was used to estimate tank emissions using AP-42 method to determine input to condenser/scrubber.

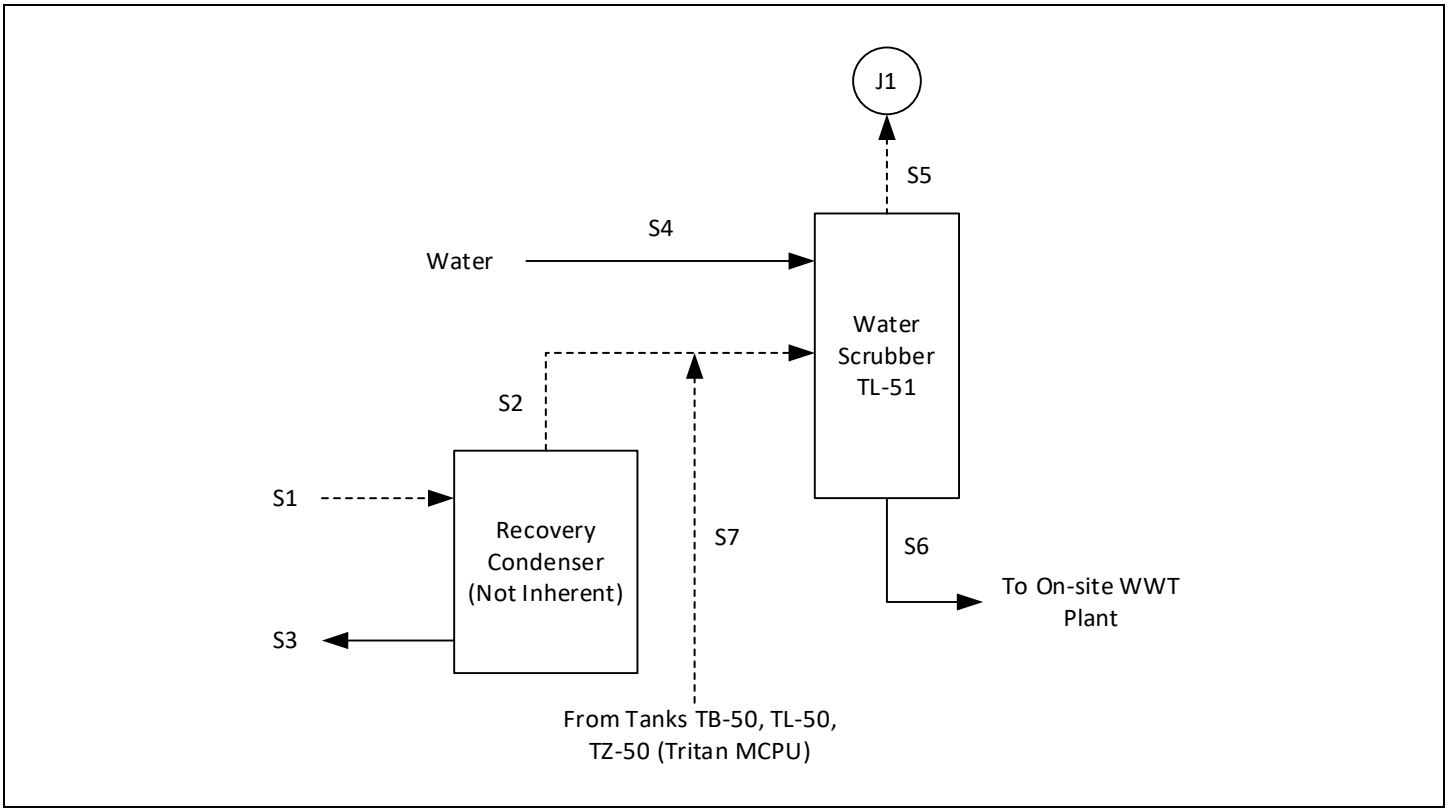
PES # B-221-3 Vent ID J1

Emissions Unit Description: Process equipment and tank shown in the diagram below

Scheduling Basis for Emissions: 8760 hrs/yr

Conditions Shown: Maximum

Inherent Process Equipment? No



Component	S1 (lb/hr)	S2 (lb/hr)	S3 (lb/hr)	S4 (lb/hr)	S5 (lb/hr)	S6 (lb/hr)	S7 (lb/hr)	Emissions (tons/yr)
VOC	9.95	2.10	7.85	0.00	0.03	2.82	0.75	0.13
Methanol*	9.92	2.10	7.82	0.00	0.03	2.82	0.75	0.13
Water	0.2	0.00	0.2	848	2.5	845.5	0.0	-

*HAP is included with total VOC

Additional control device data:
TL-51 scrubber is 6 inches in diameter and has a 10-foot packed bed.

Assumptions Used:
Operating conditions (including temperature, throughput, etc.) for tanks CH-100, CH-101, XH-50, XH-51, TB-50, TL-50, and TZ-50.

Describe the method used to estimate control efficiency:
Control efficiency of 99% is based on process model (ASPEN©) using water as scrubber medium for removing methanol.

Describe the method used to calculate emissions:
An in-house software program was used to estimate tank emissions using AP-42 method to determine input to condenser/scrubber.

Site: TED
Source/PES: B-221-3
Tank: WH-51
Emission Point: J2
Rev Level: OPA

General Information

Description: ESTER STORAGE TANK

Temperature:	140 °F	Shape:	Vertical
Annual Throughput:	52,925,000 gal/yr	Material:	Stainless Steel
Fill Mode:	Continuous	Capacity:	519,130 gal

Material Stored

Component	Weight %	Molecular Weight (lb/lbMol)	Partial Pressure (psia)	Emissions (tpy)
METHANOL	0.56	32.04	0.47	0.54
VOC	99.44	200.23	0.003	0.02
Total	100.00			0.56

Estimated Emissions / Losses

VOC from Purge Rate	0.1449 ton/yr
VOC from Breathing	0.0000 ton/yr
VOC from Working	0.4210 ton/yr
Total VOC Emissions	0.5659 ton/yr
Version	AP-42, Fifth Edition, Jun. 2020

Emissions Unit Description:	Other Emission Not Otherwise Captured (such as emissions not captured from open vessels, filters, conveyors, and material handling operations)
Scheduling Basis for Emissions:	8760 hrs/yr
Conditions Shown:	Maximum

Special Physical Property Notes:
Only one data point for vapor pressure was found for additive (50 mmHg at 70 °F). This was used as the vapor pressure.

Assumptions Used:
- ASPEN predicted activity coefficients of ~1 for both components at the given concentrations (using UNIFAQ estimations)
- Assumed very little pressure drop through flame arrester (0.1 psi)
- Assumed complete saturation of nitrogen
- 32 °F and 1 atm were taken as the basis for standard conditions
- Assumes 365 days of operation
- Emission are for both SM1 and SM2 combined

Describe the method used to calculate emissions:
Aspen modeling using assumptions noted above.

Component	Total Emissions (tons/yr)
VOC	0.48
Methanol*	0.10

*Methanol included in VOC

PES # B-221-3 Flow Diagram Point : ZZ1

Process Unit Description (if subset of PES): Glycol Plants

Date of Last Revision: 7/30/2021 Air Pollutant(s): VOC

Equipment Leak Estimation Worksheet

Equipment Type	Service	Count (# of Points)	Factor (TPY/Point)	Factor Basis	Emission Rate (TPY)
Pumps	LLS	16	0.15000	TNO	2.40
	HLS	6	0.00230	TNO	0.02
Valves	G/V	136	0.00410	TNO	0.56
	LLS	178	0.00160	TNO	0.29
	HLS	192	0.00051	TNO	0.10
Connectors	G/V or LLS	838	0.00140	TNO	1.18
	HLS	513	0.00021	TNO	0.11
PRVs	All	24	0.12000	TNO	2.88
Sampling Connections	All	11	0.01100	TNO	0.18
				Total Annual Emissions (at 100% VOC)	**7.72**
				Other Fugitive Emissions*	**0.77**
				Total Annual Emissions	**8.49**

G/V Gas/vapor service: process material in gaseous state at operating conditions

LLS Light liquid service: fluid vapor pressure greater than 0.044 psi (2.25 torr) @ 20ºC.

HLS Heavy liquid service: fluid vapor pressure less than or equal to 0.044 psi (2.25 torr) @ 20ºC

TNO Factors for use at TNO developed from a 1994/1995 screening study based on EPA Method 21 screening and correlation equation methodology (EPA-453/R-93-026, "Protocol for Equipment Leak Emission Estimates", June 1993)

SOCMI Emission factors taken from EPA guidance document "Protocol for Equipment Leak Emission Estimates" (EPA-453/R-95-017, November 1995)

Subpart ** Factors taken from EPA "Protocol for Equipment Leak Emission Estimates" (EPA-453/R-95-0176, November 1995) for equipment subject to 40 CFR ** Subpart **

*Other fugitive emissions includes non-traditional fugitive emissions, e.g. equipment closures including manways, body flanges, and blind flanges, etc.. These are estimated at 10% of the traditional fugitive equipment leak emissions.

Assumptions/Conditions:

1. Numbers of valves and connectors based on non-spare pumps only.
2. Numbers of G/V valves and connectors assumed to be 25% of respective LLS equipment.
3. HAP emissions assumed to be 100% of total annual fugitive emissions.

VOC Breakdown by Hazardous Air Pollutant (if applicable):

HAP	Emission Rate (TPY)
Methanol	8.49

PES # B-221-3 Flow Diagram Point : ZZ2

Process Unit Description (if subset of PES): B-220 Tank Farm

Date of Last Revision: 7/30/2021 Air Pollutant(s): VOC

Equipment Leak Estimation Worksheet

Equipment Type	Service	Count (# of Points)	Factor (TPY/Point)	Factor Basis	Emission Rate (TPY)
Pumps	LLS	5	0.15000	TNO	0.75
	HLS	8	0.00230	TNO	0.02
Valves	G/V	2	0.00410	TNO	0.01
	LLS	96	0.00160	TNO	0.16
	HLS	256	0.00051	TNO	0.14
Connectors	G/V or LLS	405	0.00140	TNO	0.57
	HLS	1080	0.00021	TNO	0.23
PRVs	All	11	0.12000	TNO	1.32
Sampling Connections	All	15	0.01100	TNO	0.17
				Total Annual Emissions (at 100% VOC)	**3.37**
				Other Fugitive Emissions*	**0.34**
				Total Annual Emissions	**3.71**

G/V Gas/vapor service: process material in gaseous state at operating conditions

LLS Light liquid service: fluid vapor pressure greater than 0.044 psi (2.25 torr) @ 20ºC.

HLS Heavy liquid service: fluid vapor pressure less than or equal to 0.044 psi (2.25 torr) @ 20ºC

TNO Factors for use at TNO developed from a 1994/1995 screening study based on EPA Method 21 screening and correlation equation methodology (EPA-453/R-93-026, "Protocol for Equipment Leak Emission Estimates", June 1993)

SOCMI Emission factors taken from EPA guidance document "Protocol for Equipment Leak Emission Estimates" (EPA-453/R-95-017, November 1995)

Subpart ** Factors taken from EPA "Protocol for Equipment Leak Emission Estimates" (EPA-453/R-95-0176, November 1995) for equipment subject to 40 CFR ** Subpart **

*Other fugitive emissions includes non-traditional fugitive emissions, e.g. equipment closures including manways, body flanges, and blind flanges, etc.. These are estimated at 10% of the traditional fugitive equipment leak emissions.

Assumptions/Conditions:

1. Numbers of valves and connectors based on non-spare pumps only.
2. Numbers of G/V valves and connectors assumed to be 25% of respective LLS equipment.
3. HAP emissions assumed to be 100% of total annual fugitive emissions.

VOC Breakdown by Hazardous Air Pollutant (if applicable):

HAP	Emission Rate (TPY)
Methanol	3.71

PES # B-221-3 Flow Diagram Point : ZZ3

Process Unit Description (if subset of PES): B-221 Tank Farm

Date of Last Revision: 7/30/2021 Air Pollutant(s): VOC

Equipment Leak Estimation Worksheet

Equipment Type	Service	Count (# of Points)	Factor (TPY/Point)	Factor Basis	Emission Rate (TPY)
Pumps	LLS	4	0.15000	TNO	0.60
	HLS	7	0.00230	TNO	0.02
Valves	G/V	26	0.00410	TNO	0.11
	LLS	246	0.00160	TNO	0.40
	HLS	224	0.00051	TNO	0.12
Connectors	G/V or LLS	540	0.00140	TNO	0.76
	HLS	598	0.00021	TNO	0.13
PRVs	All	11	0.12000	TNO	1.32
Sampling Connections	All	8	0.01100	TNO	0.09
				Total Annual Emissions (at 100% VOC)	**3.55**
				Other Fugitive Emissions*	**0.36**
				Total Annual Emissions	**3.91**

G/V Gas/vapor service: process material in gaseous state at operating conditions

LLS Light liquid service: fluid vapor pressure greater than 0.044 psi (2.25 torr) @ 20ºC.

HLS Heavy liquid service: fluid vapor pressure less than or equal to 0.044 psi (2.25 torr) @ 20ºC

TNO Factors for use at TNO developed from a 1994/1995 screening study based on EPA Method 21 screening and correlation equation methodology (EPA-453/R-93-026, "Protocol for Equipment Leak Emission Estimates", June 1993)

SOCMI Emission factors taken from EPA guidance document "Protocol for Equipment Leak Emission Estimates" (EPA-453/R-95-017, November 1995)

Subpart ** Factors taken from EPA "Protocol for Equipment Leak Emission Estimates" (EPA-453/R-95-0176, November 1995) for equipment subject to 40 CFR ** Subpart **

*Other fugitive emissions includes non-traditional fugitive emissions, e.g. equipment closures including manways, body flanges, and blind flanges, etc.. These are estimated at 10% of the traditional fugitive equipment leak emissions.

Assumptions/Conditions:

1. Numbers of valves and connectors based on non-spare pumps only.
2. Numbers of G/V valves and connectors assumed to be 25% of respective LLS equipment.
3. HAP emissions assumed to be 100% of total annual fugitive emissions.

VOC Breakdown by Hazardous Air Pollutant (if applicable):

HAP	Emission Rate (TPY)
Methanol	3.91

Application Attachment

Supplemental Tank Information

The following table lists tanks that are vented through a control or recovery device and, consequently, an APC 6 form is not included with this application.

Tank ID	Vent ID	Year of Construction	Capacity (gal)	Process/ Storage?	Contents[1]	Total VOC Vapor Pressure (psia)	Total HAP Vapor Pressure (psia)
CH-100	J1	<1969	47000	Storage	VOC (Methanol)	10.52	10.52
CH-101	J1	<1969	47000	Storage	VOC (Methanol)	10.52	10.52
TB-50	J1	1978	18425	Storage	VOC (Methanol)	3.10	3.10
TL-50	J1	1978	18425	Storage	VOC (Methanol)	3.10	3.10
TZ-50	J1	1978	18425	Storage	VOC (Methanol)	3.10	3.10
XH-50	J1	<1969	47000	Storage	VOC (Methanol)	10.52	10.52
XH-51	J1	<1969	47000	Storage	VOC (Methanol)	10.52	10.52

[1]HAPs, where present, are included in parentheses following VOC designation.

Application Attachment

Design Evaluation and Monitoring Plan – Condenser CH-E-30 and Scrubber TL-C-51

40 CFR Part 63 Subpart FFFF (MON MACT)
Design Evaluation and Monitoring Plan – Condenser CH-E-30 and Scrubber TL-C
MSOP-24; PES B-221-3; Vent J1

The following vessels in the Glycol MCPU vent through a closed vent system to Scrubber TL-C-51.

- Group 1 Storage Tanks CH-100, CH-101, XH-50, and XH-51 vent through a closed vent system to Condenser CH-E-30 and then to Scrubber TL-C-51. These three tanks are identical and have identical contents

The following vessels in the Tritan™ MCPU vent through a closed vent system to Scrubber TL-C-51.

- Group 1 Storage Tanks TB-50, TL-50, and TZ-50 vent through a closed vent system to Scrubber TL-C-51. These three tanks are identical and have identical contents.

1. Design Evaluations [40 CFR §63.985(b)(1)(i)]

A. Condenser CH-E-30 [40 CFR §63.985(b)(1)(i)(E)]

Though condenser CH-E-30 serves four tanks, only one tank of the four is filled at a time. The gas stream entering the condenser at maximum fill conditions is:

9.92 lb/hr HAP	35.5%
10.99 lb/hr N2	62.9%
0.20 lb/hr H2O	1.4%
0.03 lb/hr MCHM	0.2%
21.14 lb/hr Total	

Emissions were calculated at maximum expected fill rate and permitted tank temperature, based on the one tank fill at a time operating scenario for the condenser. For this case, calculated emissions also include expected emissions due to instrument purges on the three non-fill tanks, and purge emissions were assumed to be at 100% saturation regardless of tank level. The maximum flow rate from Condenser CH-E-30 under fill conditions is 13.09 lb/hr (2.1 lb/hr MeOH).

Condenser CH-E-30 is a shell and tube condenser with a design effective surface area of 31 ft^2, and it receives no vapors, gases, or liquids other than the vent streams from tanks CH-100, CH-101, XH-50 and XH-51. Engineering calculations were performed using an engineering model known as ASPEN©, and Condenser CH-E-30 was modeled as a one-stage flash.

B. Scrubber TL-C-51 [40 CFR §63.985(b)(1)(i) and 40 CFR §63.2470(c)(1)]

Only one tank in each tank group (tanks venting to Condenser CH-E-30 and tanks venting directly to Scrubber TL-C-51) is filled at a time. The vapor inlet stream to Scrubber TL-C-51 under maximum fill conditions and maximum condenser outlet temperature is 277 lb/hr.

The maximum fill gas stream from condenser CH-E-30 (Tanks CH-100, CH-101, XH-50, and XH-51):

2.10 lb/hr HAP	16.0%
10.99 lb/hr N2	84.0%
13.09 lb/hr Total	

The maximum fill gas stream from tanks TB-50, TL-50, and TZ-50 is:

0.75 lb/hr HAP	6.8%
4.53 lb/hr N2	93.2%
5.82 lb/hr Total	

The combined scrubber inlet stream for the maximum fill case is:

2.85 lb/hr HAP	18.4%
13.32 lb/hr N2	81.6%
13.09 lb/hr Total	

Emissions were calculated for the operating scenario consisting of the simultaneous fill, at maximum expected fill rates and tank temperatures, of one tank from each tank group. For this case, calculated emissions also include expected emissions due to instrument purges on the non-fill tanks, and purge emissions were assumed to be at 100% saturation regardless of tank level. Engineering calculations were performed using an engineering model known as ASPEN©.

Scrubber TL-C-51 contains 10 ft of packing and was modeled using two ideal stages. Engineering calculations were performed using an engineering model known as ASPEN©. The series of control devices Condenser CH-E-30 and Scrubber TL-C-51 achieves greater than 95% HAP removal efficiency.

2. Monitoring Plans [40 CFR §63.996(c)]

The parameters to be monitored are condenser outlet temperature and scrubber water flow rate.

Condenser Outlet Temperature	Scrubber Water Flow Rate
≥ 50 °C	≥ 1.5 gpm

The outlet temperature of Condenser CH-E-30 will be maintained at or below 50 °C, which is a conservative estimate of the attainable outlet vent temperature of Condenser CH-E-30 based on engineering knowledge of local river water temperatures.

The minimum design water flow for adequate packing wetting in a 6” scrubber is 0.5 gpm. The lowest modeled scrubber water flow of 1.5 gpm is based on the minimum flow for packing wetting with the addition of a safety factor. The model described above predicts a HAP removal efficiency greater than 95% at a water flow of 1.5 gpm.

For convenience, the gas flow to the scrubber will always be assumed to be equal to the maximum gas flow, and scrubber water flow will be monitored in lieu of liquid to gas ratio. The maximum flow gas stream was during tank fill conditions was determined to be equal to the vapor displacement created by the volume of liquid fill, assuming no change in tank pressure. This volume of nitrogen was then assumed to be 100% saturated with the tank contents at maximum expected tank temperatures. The average flow gas stream was determined using an in-house program based on AP-42 which accounts for working, breathing and purge losses under varying level and fill conditions.

Both monitored parameters described above are measured and recorded by the DCS at frequencies much greater than every 15 minutes. The data is maintained for five years. 24-hour block averages are calculated and maintained for five years. The 24-hour block averages do not include periods of monitoring system breakdowns, repairs, calibration checks, zero and high-level checks, startups, shutdowns, malfunctions, and periods where the process is not in operation. Records of the excluded periods are also maintained for five years.

The operating day is defined as midnight to midnight.