

PERMIT TO INSTALL

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COMMON ACRONYMS

AQD	Air Quality Division
BACT	Best Available Control Technology
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CEMS	Continuous Emission Monitoring System
CFR	Code of Federal Regulations
COMS	Continuous Opacity Monitoring System
Department/department/EGLE	Michigan Department of Environment, Great Lakes, and Energy
EU	Emission Unit
FG	Flexible Group
GACS	Gallons of Applied Coating Solids
GC	General Condition
GHGs	Greenhouse Gases
HVLP	High Volume Low Pressure*
ID	Identification
IRSL	Initial Risk Screening Level
ITSL	Initial Threshold Screening Level
LAER	Lowest Achievable Emission Rate
MACT	Maximum Achievable Control Technology
MAERS	Michigan Air Emissions Reporting System
MAP	Malfunction Abatement Plan
MSDS	Material Safety Data Sheet
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standard for Hazardous Air Pollutants
NSPS	New Source Performance Standards
NSR	New Source Review
PS	Performance Specification
PSD	Prevention of Significant Deterioration
PTE	Permanent Total Enclosure
PTI	Permit to Install
RACT	Reasonable Available Control Technology
ROP	Renewable Operating Permit
SC	Special Condition
SCR	Selective Catalytic Reduction
SNCR	Selective Non-Catalytic Reduction
SRN	State Registration Number
TBD	To Be Determined
TEQ	Toxicity Equivalence Quotient
USEPA/EPA	United States Environmental Protection Agency
VE	Visible Emissions

*For HVLP applicators, the pressure measured at the gun air cap shall not exceed 10 psig.

POLLUTANT / MEASUREMENT ABBREVIATIONS

acfm	Actual cubic feet per minute
BTU	British Thermal Unit
°C	Degrees Celsius
CO	Carbon Monoxide
CO ₂ e	Carbon Dioxide Equivalent
dscf	Dry standard cubic foot
dscm	Dry standard cubic meter
°F	Degrees Fahrenheit
gr	Grains
HAP	Hazardous Air Pollutant
Hg	Mercury
hr	Hour
HP	Horsepower
H ₂ S	Hydrogen Sulfide
kW	Kilowatt
lb	Pound
m	Meter
mg	Milligram
mm	Millimeter
MM	Million
MW	Megawatts
NMOC	Non-Methane Organic Compounds
NO _x	Oxides of Nitrogen
ng	Nanogram
PM	Particulate Matter
PM10	Particulate Matter equal to or less than 10 microns in diameter
PM2.5	Particulate Matter equal to or less than 2.5 microns in diameter
pph	Pounds per hour
ppm	Parts per million
ppmv	Parts per million by volume
ppmw	Parts per million by weight
psia	Pounds per square inch absolute
psig	Pounds per square inch gauge
scf	Standard cubic feet
sec	Seconds
SO ₂	Sulfur Dioxide
TAC	Toxic Air Contaminant
Temp	Temperature
THC	Total Hydrocarbons
tpy	Tons per year
µg	Microgram
µm	Micrometer or Micron
VOC	Volatile Organic Compounds
yr	Year

GENERAL CONDITIONS

1. The process or process equipment covered by this permit shall not be reconstructed, relocated, or modified, unless a Permit to Install authorizing such action is issued by the Department, except to the extent such action is exempt from the Permit to Install requirements by any applicable rule. **(R 336.1201(1))**
2. If the installation, construction, reconstruction, relocation, or modification of the equipment for which this permit has been approved has not commenced within 18 months, or has been interrupted for 18 months, this permit shall become void unless otherwise authorized by the Department. Furthermore, the permittee or the designated authorized agent shall notify the Department via the Supervisor, Permit Section, Air Quality Division, Michigan Department of Environment, Great Lakes, and Energy, P.O. Box 30260, Lansing, Michigan 48909-7760, if it is decided not to pursue the installation, construction, reconstruction, relocation, or modification of the equipment allowed by this Permit to Install. **(R 336.1201(4))**
3. If this Permit to Install is issued for a process or process equipment located at a stationary source that is not subject to the Renewable Operating Permit program requirements pursuant to Rule 210 (R 336.1210), operation of the process or process equipment is allowed by this permit if the equipment performs in accordance with the terms and conditions of this Permit to Install. **(R 336.1201(6)(b))**
4. The Department may, after notice and opportunity for a hearing, revoke this Permit to Install if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of this permit or is violating the Department's rules or the Clean Air Act. **(R 336.1201(8), Section 5510 of Act 451, PA 1994)**
5. The terms and conditions of this Permit to Install shall apply to any person or legal entity that now or hereafter owns or operates the process or process equipment at the location authorized by this Permit to Install. If the new owner or operator submits a written request to the Department pursuant to Rule 219 and the Department approves the request, this permit will be amended to reflect the change of ownership or operational control. The request must include all of the information required by subrules (1)(a), (b), and (c) of Rule 219 and shall be sent to the District Supervisor, Air Quality Division, Michigan Department of Environment, Great Lakes, and Energy. **(R 336.1219)**
6. Operation of this equipment shall not result in the emission of an air contaminant which causes injurious effects to human health or safety, animal life, plant life of significant economic value, or property, or which causes unreasonable interference with the comfortable enjoyment of life and property. **(R 336.1901)**
7. The permittee shall provide notice of an abnormal condition, start-up, shutdown, or malfunction that results in emissions of a hazardous or toxic air pollutant which continue for more than one hour in excess of any applicable standard or limitation, or emissions of any air contaminant continuing for more than two hours in excess of an applicable standard or limitation, as required in Rule 912, to the Department. The notice shall be provided not later than two business days after start-up, shutdown, or discovery of the abnormal condition or malfunction. Written reports, if required, must be filed with the Department within 10 days after the start-up or shutdown occurred, within 10 days after the abnormal condition or malfunction has been corrected, or within 30 days of discovery of the abnormal condition or malfunction, whichever is first. The written reports shall include all of the information required in Rule 912(5). **(R 336.1912)**
8. Approval of this permit does not exempt the permittee from complying with any future applicable requirements which may be promulgated under Part 55 of 1994 PA 451, as amended or the Federal Clean Air Act.
9. Approval of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.
10. Operation of this equipment may be subject to other requirements of Part 55 of 1994 PA 451, as amended and the rules promulgated thereunder.

11. Except as provided in subrules (2) and (3) or unless the special conditions of the Permit to Install include an alternate opacity limit established pursuant to subrule (4) of Rule 301, the permittee shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of density greater than the most stringent of the following. The grading of visible emissions shall be determined in accordance with Rule 303 (R 336.1303). **(R 336.1301)**
 - a) A six-minute average of 20 percent opacity, except for one six-minute average per hour of not more than 27 percent opacity.
 - b) A visible emission limit specified by an applicable federal new source performance standard.
 - c) A visible emission limit specified as a condition of this Permit to Install.
12. Collected air contaminants shall be removed as necessary to maintain the equipment at the required operating efficiency. The collection and disposal of air contaminants shall be performed in a manner so as to minimize the introduction of contaminants to the outer air. Transport of collected air contaminants in Priority I and II areas requires the use of material handling methods specified in Rule 370(2). **(R 336.1370)**
13. The Department may require the permittee to conduct acceptable performance tests, at the permittee's expense, in accordance with Rule 1001 and Rule 1003, under any of the conditions listed in Rule 1001. **(R 336.2001)**

EMISSION UNIT SPECIAL CONDITIONS

EMISSION UNIT SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date / Modification Date	Flexible Group ID
EU42-43SULRECOV-S1	Sulfur Plant. Area 42 and 43. The Sulfur Recovery Plant removes hydrogen sulfide from acid gas and converts it to elemental sulfur using Claus Process (Trains A, B and C) and the SCOT Tail Gas Treating Unit process (Trains No. 1 and No. 2). The exhaust tail gas is routed to the thermal oxidizer. This emission group consists of process vessels (including thermal reactors, an absorbing tower, and a stripping tower), heaters, tanks, containers, compressors, seals, process valves, flanges, connectors, etc.). Other EU's have been created to address individual units which have specific applicable requirements. Permit: C-9603, 9604, 9605, 262-02, 81-12, 63-08E, NEW PTI	11/09/2005 11/05/2012	FGPROCUNITS-S1 FGDHOU PANNUAL-S1
EU72-SULRBLOCK2-S1	Sulfur Block 2. Area 72. The Sulfur Block removes hydrogen sulfide from acid gas and converts it to elemental sulfur using Claus Process (Trains A and B), the SCOT Tail Gas Treating Unit process (Trains No. 1 and No. 2), and associated amine treating equipment. The exhaust tail gas is routed to a thermal oxidizer. This emission group consists of process vessels (including thermal reactors, an absorbing tower, and a stripping tower), heaters, tanks, containers, compressors, seals, process valves, flanges, connectors, etc.). Other EU's have been created to address individual units which have specific applicable requirements. Permit: 63-08E, NEW PTI	11/05/2012 Date of PTI	FGPROCUNITS-S1 FGDHOU PANNUAL-S1

Changes to the equipment described in this table are subject to the requirements of R 336.1201, except as allowed by R 336.1278 to R 336.1291.

**EU42-43SULRECOV-S1
EMISSION UNIT CONDITIONS**

DESCRIPTION

Three Claus Sulfur Recovery Trains and two SCOT Tailgas Treating Units (subject to 40 CFR Part 60, Subpart Ja). Permit 63-08E, NEW PTI

Flexible Group ID: FGPROCUNITS-S1, FGDHOUPANNUAL-S1, FGSULFURPROD-S1

POLLUTION CONTROL EQUIPMENT

Thermal Oxidizer (Incinerator)

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. SO ₂ emissions from the thermal oxidizer that controls the tail gas treatment units, No. 1 and No. 2	250 ppm by volume	Based upon a 12 hour average at zero % oxygen on a dry basis	EU42-43-SULRECOV-S1*	SC VI.1	40 CFR 60.102a(f)(1)(i)
2. SO ₂ emissions from the thermal oxidizer that controls the tail gas treatment units, No. 1 and No. 2	175 ppm by volume ³	At zero % oxygen on a dry basis on an annual rolling average, as determined at the end of each calendar month	EU42-43-SULRECOV-S1	SC VI.1	R 336.1201(3)
3. NO _x emission rate from the thermal oxidizer	7.5 lb/hr	Three hour average	EU42-43SULRECOV-S1	SC V.1	R 336.1205, R 336.2802, 40 CFR 52.21
4. Carbon Monoxide emission rate from the thermal oxidizer	0.04 lb/MMBTU	Three hour average	EU42-43SULRECOV-S1	SC V.2	R 336.2802, 40 CFR 52.21
5. Particulate Matter emission rate from the thermal oxidizer	1.75 lb/hr	Three hour average	EU42-43SULRECOV-S1	SC V.4	R 336.1205, R 336.2802, 40 CFR 52.21
6. PM10 emission rate from the thermal oxidizer	1.75 lb/hr	Three hour average	EU42-43SULRECOV-S1	SC V.3	R 336.2802, 40 CFR 52.21
7. Volatile Organic Compound emission rate from the thermal oxidizer	0.0055 lb/MMBTU	Three hour average	EU42-43SULRECOV-S1	SC V.5	R 336.1205, R 336.1702(a), R 336.2802, 40 CFR 52.21

*Sulfur recovery plant affected equipment includes the pits used to store recovered sulfur, but does not include secondary sulfur storage vessels or loading facilities downstream of the sulfur pits. (40 CFR 60.101a)

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Elemental sulfur produced	145 long tons per day	Monthly average	EU42-43SULRECOV-S1	SC VI.2	R 336.1201(3)
2. Elemental sulfur produced	130 long tons per day	Based upon a 12 month rolling time period as determined at the end of each calendar month	EU42-43SULRECOV-S1	SC VI.3	R 336.1201(3)

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall manage all EU42-43SULRECOV-S1 sulfur pit emissions so that sulfur pit emissions to the atmosphere are eliminated or included and monitored as part of the applicable EU42-43SULRECOV-S1 tail gas emission limits. Periods of maintenance of the sulfur pit, during which the emission limits do not apply, shall not exceed 240 hours per year. The permittee shall document the time periods during which the sulfur pit vents were not controlled and measures taken to minimize emissions during these periods. Examples of these measures include not adding fresh sulfur or shutting off vent fans or eductors. **(40 CFR 60.102a(f)(1) and (3))**
2. The maximum heat input in the thermal oxidizer of EU42-43SULRECOV-S1 shall not exceed a maximum of 25 million BTUs per hour, on a daily average. **(R 336.1205, R 336.1702, R 336.2802, 40 CFR 52.21)**
3. The natural gas usage in the thermal oxidizer of EU42-43SULRECOV-S1 shall not exceed a maximum of 25,000 cubic feet per hour, on a daily average, based on 1,000 BTU/scf. **(R 336.1225, 40 CFR 52.21)**
4. The permittee shall not operate the sulfur recovery units A, B, and C and the tail gas treatment units No. 1 and No. 2 in EU42-43SULRECOV-S1 unless the thermal oxidizer is installed, maintained and operated in a satisfactory manner. Satisfactory operation of the thermal oxidizer includes operating the thermal oxidizer as described in the startup, shutdown, and malfunction plan required by 40 CFR Part 63, Subparts A and UUU. **(R 336.1205, R 336.1224, R 336.1225, R 336.1702, R 336.1901, R 336.1910, R 336.2802, 40 CFR 52.21, 40 CFR Part 60, Subparts A and Ja)**
5. The permittee shall not operate the sulfur recovery units A, B, and C and the tail gas treatment units No. 1 and No. 2 in EU42-43SULRECOV-S1 unless a minimum temperature of 1200 °F on an hourly average and minimum retention time of 1.0 second in the thermal oxidizer is maintained. **(R 336.1205, R 336.1224, R 336.1225, R 336.1702, R 336.1901, R 336.1910, R 336.2802, 40 CFR 52.21)**
6. The permittee shall not operate the sulfur recovery units A, B, and C and the tail gas treatment units No. 1 and No. 2, unless provisions of the Federal Standards of Performance for New Source Stationary Sources, 40 CFR Part 60, Subparts A and Ja-Standards of Performance for Petroleum Refineries, are met. **(40 CFR Part 60, Subparts A and Ja)**
7. The permittee shall not operate EU42-43SULRECOV-S1 unless an approved Startup, Shutdown and Malfunction Plan (SSMP), or an alternate plan approved by the AQD District Supervisor, is implemented and maintained. The plan shall include procedures for maintaining and operating in a satisfactory manner, EU42-43SULRECOV-S1, add-on air pollution control device, or monitoring equipment during malfunction events, and a program for corrective action for such events. If the SSMP fails to address or inadequately addresses an event that meets the characteristics of a malfunction at the time the plan is initially developed, the owner or operator shall revise the malfunction abatement plan within 45 days after such an event occurs. **(40 CFR Part 63, Subparts A and UUU)**
8. The permittee shall not operate EU42-43SULRECOV-S1 unless an approved Operation, Maintenance and Monitoring Plan (OMMP), or an alternate plan approved by the AQD District Supervisor, is implemented and maintained. **(40 CFR 63.1564(a)(3))**
9. The permittee shall maintain a summary of a plan, implemented for enhanced maintenance and operation of its EU42-43SULRECOV-S1, including the TGTUs, any supplemental control devices, and the appropriate

upstream process units ("Sulfur Shedding Plan"). The Sulfur Shedding Plan shall be a compilation of the permittee's approaches for exercising good air pollution control practices for minimizing SO₂ emissions. The Sulfur Shedding Plan shall provide for continuous operation of the EU42-43SULRECOV-S1 between scheduled maintenance turnarounds with minimization of emissions from each EU42-43SULRECOV-S1. The Sulfur Shedding Plan shall include, but not be limited to, sulfur shedding procedures, new startup and shutdown procedures, emergency procedures and schedules to coordinate maintenance turnarounds of its Sulfur Recovery Plant Claus Trains, TGTUs, and any supplemental control device to coincide with scheduled turnarounds of major upstream process units. The Sulfur Shedding Plan shall have as a goal the elimination of acid gas flaring. The permittee shall comply with the Sulfur Shedding Plan at all times, including periods of startup, shut down, and malfunction of the EU42-43SULRECOV-S1.³ **(40 CFR 60.11(d))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. Once during the five year term of ROP No. MI-ROP-A9831-2012c and every five years thereafter, the permittee shall verify NO_x emission rates from EU42-43SULRECOV-S1 by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. **(R 336.1205, R 336.2001, R 336.2003, R 336.2004, R 336.2802, 40 CFR 52.21)**
2. Once during the five year term of ROP No. MI-ROP-A9831-2012c and every five years thereafter, the permittee shall verify CO emission rates from EU42-43SULRECOV-S1 by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. **(R 336.2001, R 336.2003, R 336.2004, R 336.2802, 40 CFR 52.21)**
3. Once during the five year term of ROP No. MI-ROP-A9831-2012c and every five years thereafter, the permittee shall verify PM₁₀ emission rates from EU42-43SULRECOV-S1 by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. For verification of PM₁₀ emissions, testing shall include both the filterable and condensable fractions. **(R 336.2001, R 336.2003, R 336.2004, R 336.2802, 40 CFR 52.21)**
4. Once during the five year term of ROP No. MI-ROP-A9831-2012c and every five years thereafter, the permittee shall verify PM emission rates from EU42-43SULRECOV-S1 by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. **(R 336.1205, R 336.2001, R 336.2003, R 336.2004, R 336.2802, 40 CFR 52.21)**
5. Once during the five year term of ROP No. MI-ROP-A9831-2012c and every five years thereafter, the permittee shall verify VOC emission rates from EU42-43SULRECOV-S1 by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. **(R 336.1205, R 336.1702, R 336.2001, R 336.2003, R 336.2004, R 336.2802, 40 CFR 52.21)**
6. Within every three years of the most current stack test, and every three years thereafter, the permittee shall verify sulfuric acid mist emission rates from EU42-43SULRECOV-S1 by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission

rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test.³ **(R 336.1201(3))**

7. For tests required by SC V.1 through SC V.6, the following applies for valid, regularly scheduled tests, conducted during normal operations:³ **(R 336.1201(3))**
- a) If a test indicates non-compliance with a permitted emission rate, and the test is required to be conducted on either a three or five year cycle, the frequency of such tests shall be annual for two consecutive years. Following two consecutive years of compliance, the frequency of testing shall return to the original three or five year cycle.

See Appendix 5-S1 of ROP No. MI-ROP-A9831-2012c

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. Monitoring and recording of sulfur dioxide concentration, oxygen concentration, and operating information is required to comply with the Federal Standards of Performance for New Stationary Sources as specified in 40 CFR, Part 60, Subparts A and Ja. All source emissions data and operating data shall be submitted to the Division in an acceptable format within 30 days following the end of the quarter in which data were collected. **(R 336.1205, R 336.2802, 40 CFR 52.21, 40 CFR 60.106a(a)(1))**
2. The permittee shall keep daily records of the long tons of elemental sulfur produced in EU42-43SULRECOV-S1. **(R 336.1201(3))**
3. The permittee shall keep records of the long tons of elemental sulfur produced per day, on a 12-month rolling average, in EU42-43SULRECOV-S1. **(R 336.1201(3))**
4. The permittee shall monitor and record the temperature from the thermal oxidizer on a continuous basis with instrumentation acceptable to AQD. **(R336.1201(3))**
5. The permittee shall monitor the amount of natural gas used in the thermal oxidizer on a daily average basis.¹ **(R 336.1225)**
6. The permittee shall keep records of emissions and operating information to comply with the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60, Subparts A and Ja. The permittee shall keep all source emissions data and operating information on file at the facility for a period of at least five years and make them available to the Department upon request. **(40 CFR Part 60, Subparts A and Ja)**

VII. REPORTING

NA

See Appendix 8-S1 of ROP No. MI-ROP-A9831-2012c

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SV43-H2	42.5	199.5	R 336.1225, R 336.1226(d), 40 CFR 52.21 (c) & (d)

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all provision of the federal Standards of Performance of New Stationary Sources as specified in 40 CFR Part 60, Subparts A, and Ja, as they apply to EU42-43SULRECOV-S1.
(40 CFR Part 60, Subparts A and Ja)
2. The permittee comply with all provisions of the National Emission Standards for Hazardous Air Pollutants as specified in 40 CFR Part 63, Subparts A and Subpart UUU, as they apply to EU42-43SULRECOV-S1.
(40 CFR Part 63, Subparts A and UUU)

Footnotes:

¹This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

³This condition is included at the request of the permittee.

**EU72-SULRBLOCK2-S1
 EMISSION UNIT CONDITIONS**

DESCRIPTION

Sulfur Block 2. Area 72. The Sulfur Block removes hydrogen sulfide from acid gas and converts it to elemental sulfur using Claus Process (Trains A and B), the SCOT Tail Gas Treating Unit process (Trains No. 1 and No. 2), and associated amine treating equipment. The exhaust tail gas is routed to a thermal oxidizer. This emission group consists of process vessels (including thermal reactors, an absorbing tower, and a stripping tower), heaters, tanks, containers, compressors, seals, process valves, flanges, connectors, etc.). Other EU's have been created to address individual units which have specific applicable requirements. Permit: 63-08E, NEW PTI

Flexible Group ID: FGPROCUNITS-S1, FGDHOUPANNUAL-S1, FGSULFURPROD-S1

POLLUTION CONTROL EQUIPMENT

Thermal oxidizer

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. NO _x	0.2 lb/MMBTU	Three hour average	EU72-SULRBLOCK2-S1	SC V.1	R 336.1205, R 336.2802, 40 CFR 52.21
2. SO ₂	250 ppmv at 0% oxygen	12-hour average, dry gas basis	EU72-SULRBLOCK2-S1*	SC VI.1	40 CFR 60.102a(f)(1)(i)
3. SO ₂	100 ppmv at 0% oxygen ³	Annual rolling average	EU72-SULRBLOCK2-S1	SC VI.1	R 336.1201(3)
4. CO	0.04 lb/MMBTU	Three hour average	EU72-SULRBLOCK2-S1	SC V.2	R 336.1205, R 336.2802, 40 CFR 52.21
5. PM	2.85 lb/hr	Three hour average	EU72-SULRBLOCK2-S1	SC V.4	R 336.1205, R 336.2802, 40 CFR 52.21
6. PM ₁₀	2.85 lb/hr	Three hour average	EU72-SULRBLOCK2-S1	SC V.3	R 336.1205, R 336.2802, 40 CFR 52.21
7. VOC	0.0055 lb/MMBTU	Three hour average	EU72-SULRBLOCK2-S1	SC V.5	R 336.1205, R 336.1702(a), R 336.2802, 40 CFR 52.21

* Sulfur Block plant affected equipment includes the pits used to store recovered sulfur, but does not include secondary sulfur storage vessels or loading facilities downstream of the sulfur pits. (40 CFR 60.101a)

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

- The heat input capacity of auxiliary fuel in the thermal oxidizer of EU72-SULRBLOCK2-S1 shall not exceed a maximum of 38 MM Btu per hour, on a daily average. (R 336.1205, R 336.1702, R 336.2802, 40 CFR 52.21)

2. The permittee shall comply with all provisions of the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60, Subparts A and Ja, as they apply to EU72-SULRBLOCK2-S1. **(40 CFR Part 60, Subparts A and Ja)**
3. The permittee shall comply with all provisions of the National Emission Standards for Hazardous Air Pollutants as specified in 40 CFR Part 63, Subparts A and UUU, as they apply to EU72-SULRBLOCK2-S1. **(40 CFR Part 63, Subparts A and UUU)**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall not operate EU72-SULRBLOCK2-S1 unless the thermal oxidizer is installed, maintained and operated in a satisfactory manner. Satisfactory operation of the thermal oxidizer includes operating the thermal oxidizer as described in the startup, shutdown, and malfunction plan required by 40 CFR Part 63, Subparts A and UUU. **(R 336.1205, R 336.1224, R 336.1225, R 336.1702, R 336.2802, R 336.1901, R 336.1910, 40 CFR 52.21, 40 CFR 60.102a(f)(1)(i))**
2. The permittee shall equip and maintain the EU72-SULRBLOCK2-S1 sulfur pits with a properly operating degassing system to remove and capture H₂S and TRS from the sulfur in the sulfur pits prior to transfer to the sulfur storage tanks. Gases removed and captured by the degassing system shall be routed to the thermal oxidizer or returned to the inlet of EU72-SULRBLOCK2-S1. **(R 336.1205, R 336.2802, 40 CFR 52.21)**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. Once during the five year term of ROP No. MI-ROP-A9831-2012cand every five years thereafter, the permittee shall verify NO_x emission rates from EU72-SULRBLOCK2-S1 by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. **(R 336.1205, R 336.2001, R 336.2003, R 336.2004, R 336.2803, R 336.2804, 40 CFR 52.21, 40 CFR Part 60, Subparts A and Ja)**
2. Once during the five year term of ROP No. MI-ROP-A9831-2012cand every five years thereafter, the permittee shall verify CO emission rates from EU72-SULRBLOCK2-S1 by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. **(R 336.2001, R 336.2003, R 336.2004, R 336.2802, 40 CFR 52.21)**
3. Once during the five year term of ROP No. MI-ROP-A9831-2012cand every five years thereafter, the permittee shall verify PM₁₀ emission rates from EU72-SULRBLOCK2-S1 by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. For verification of PM₁₀ emissions, testing shall include both the filterable and condensable fractions. **(R 336.2001, R 336.2003, R 336.2004, R 336.2802, 40 CFR 52.21)**
4. Once during the five year term of ROP No. MI-ROP-A9831-2012cand every five years thereafter, the permittee shall verify PM emission rates from EU72-SULRBLOCK2-S1 by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. **(R 336.1205, R 336.2001, R 336.2003, R 336.2004)**
5. Once during the five year term of ROP No. MI-ROP-A9831-2012cand every five years thereafter, the permittee shall verify VOC emission rates from EU72-SULRBLOCK2-S1 by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete

test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. **(R 336.1205, R 336.1702, R 336.2001, R 336.2003, R 336.2004, R 336.2802, 40 CFR 52.21)**

6. Within every three years of the most current stack test, and every three years thereafter, the permittee shall verify sulfuric acid mist emission rates from EU72-SULRBLOCK2-S1 by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test.³ **(R 336.1201(3))**
7. For tests required by SC V.1 through SC V.6, the following applies for valid, regularly scheduled tests, conducted during normal operations³: **(R 336.1201(3))**
 - a. If a test indicates non-compliance with a permitted emission rate, and the test is required to be conducted on either a three or five year cycle, the frequency of such tests shall be annual for two consecutive years. Following two consecutive years of compliance, the frequency of testing shall return to the original three or five year cycle.

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall install, calibrate, maintain and operate in a satisfactory manner a device to monitor and record the SO₂ and oxygen emissions from EU72-SULRBLOCK2-S1 on a continuous basis. The permittee shall install and operate the Continuous Emission Monitoring System (CEMS) to meet the timelines, requirements and reporting detailed in Appendix 3-S1 to ROP No. MI-ROP-A9831-2012 and shall use the CEMS data for determining compliance with SC I.2. **(R 336.1205, R 336.2802, 40 CFR 52.21, 40 CFR Part 60, Subparts A and Ja)**
2. The permittee shall monitor the amount of natural gas used in the thermal oxidizer on a daily average basis. **(R 336.1205, R 336.1702, R 336.2802, 40 CFR 52.21)**
3. On a daily basis, the permittee shall calculate the heat input of natural gas used in the thermal oxidizer and keep records of the fuel usage and heat input to the thermal oxidizer. **(R 336.1205, R 336.1702, R 336.2802, 40 CFR 52.21)**
4. The permittee shall monitor emissions and operating information for EU72-SULRBLOCK2-S1 in accordance with the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60 Subparts A and Ja. **(R 336.1205, R 336.1225, R 336.1901, 40 CFR Part 60 Subparts A and Ja)**
5. The permittee shall monitor emissions and operating and maintenance information for EU72-SULRBLOCK2-S1 in accordance with the National Emission Standards for Hazardous Air Pollutants as specified in 40 CFR Part 63 Subparts A and UUU. **(40 CFR Part 63, Subparts A and UUU)**
6. The permittee shall keep records of emissions and operating information to comply with the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60, Subparts A and Ja. The permittee shall keep all source emissions data and operating information on file at the facility for a period of at least five years and make them available to the Department upon request. **(R 336.1205, 40 CFR Part 60 Subparts A and Ja)**
7. The permittee shall keep records of emission information and operating and maintenance information to comply with the National Emission Standards for Hazardous Air Pollutants as specified in 40 CFR Part 63, Subparts A and UUU. The permittee shall keep all source emissions and operating and maintenance information on file at the facility for a period of at least five years and make them available to the Department upon request. **(40 CFR Part 63, Subparts A and UUU)**
8. The permittee shall keep records of the long tons of elemental sulfur produced per day, on a 12-month rolling average, in EU72-SULRBLOCK2-S1. **(R 336.1205, R 336.2802, 40 CFR 52.21)**

9. The permittee shall keep records of the hours per month and 12-month rolling time period, as determined at the end of each calendar month, that the sulfur pit degassing system did not operate while EU72-SULRBLOCK2-S1 was operating. (R 336.1205, R 336.2802, 40 CFR 52.21)

VII. REPORTING

NA

See Appendix 8-S1 of ROP No. MI-ROP-A9831-2012c

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SV72-V22	96	195	R 336.1225, 40 CFR 52.21 (c) & (d)

IX. OTHER REQUIREMENT(S)

NA

Footnotes:

¹ This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

³ This condition is included at the request of the permittee.

FLEXIBLE GROUP SPECIAL CONDITIONS

FLEXIBLE GROUP SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FGSULFURPROD-S1	All elemental sulfur production at the East Plant Sulfur Recovery Unit and the North Plant Sulfur Recovery Unit.	EU42-43SULRECOV-S1, EU72-SULRBLOCK2-S1

**FGSULFURPROD-S1
FLEXIBLE GROUP CONDITIONS**

DESCRIPTION

All elemental sulfur production at the East Plant Sulfur Recovery Unit and the North Plant Sulfur Recovery Unit.
Permit NEW PTI

Emission Unit: EU42-43SULRECOV-S1, EU72-SULRBLOCK2-S1

POLLUTION CONTROL EQUIPMENT

Each emission unit is equipped with a thermal oxidizer.

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Elemental sulfur produced	390 long tons per day	12-month rolling average	FGSULFURPROD-S1	SC VI.2	R 336.1205, R 336.2802, 40 CFR 52.21

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor by the last day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. **(R 336.1205, R 336.2802, 40 CFR 52.21)**
2. The permittee shall keep records of the long tons of elemental sulfur produced per day, on a 12-month rolling average, in FGSULFURPROD-S1. The permittee shall keep all records on file at the facility and make them available to the AQD District Supervisor upon request. **(R 336.1205, R 336.2802, 40 CFR 52.21)**
3. The permittee shall calculate and keep records of the annual emissions of SO₂, VOC, and NO_x from FGSULFURPROD-S1 described in Appendix A, in tons per calendar year. Calculations and recordkeeping shall begin following the resumption of regular operations after the change and shall continue for five (5) years. Resumption of regular operations is the issuance date of this PTI. **(R 336.2902(6)(c))**

VII. REPORTING

1. The permittee shall submit records of the annual emissions of SO₂, VOC, and NO_x from FGSULFURPROD-S1 described in Appendix A, in tons per calendar year, to the AQD District Supervisor and Permit Section Manager within 60 days following the end of each reporting year if both the following occur:
 - a) The calendar year actual emission of SO₂, VOC, and/or NO_x exceed the baseline actual emissions (BAE) for that pollutant by a significant amount, and
 - b) The calendar year actual emissions differ from the pre-construction projection. (The pre-construction projection is the sum of the projected actual emissions from each existing emission unit included in the Actual to Projected Actual Applicability Test used for FGSULFURPROD-S1.)

The report shall contain the name, address, and telephone number of the facility; the annual emissions as calculated pursuant to SC VI.3, and any other information the owner or operator wishes to include (i.e., an explanation why emissions differ from the pre-construction projection). **(R 336.2902(6)(e))**

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

NA

Footnotes:

¹ This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

**APPENDIX A. Recordkeeping Provisions
 Recordkeeping Provisions for Source Using
 Actual to Projected-Actual Applicability Test**

All information in this Appendix shall be maintained pursuant to R 336.2902(6) for five years following the resumption of regular operations after the change. Resumption of regular operations is the issuance date of this PTI. The monitoring, recordkeeping, and reporting requirements for the pollutants listed below are listed in FGSULFURPROD-S1, SC VI.3 and SC VII.1.

A. Project Description: Remove the 260 long ton per day limit on the amount of elemental sulfur allowed to be produced in EU72-SULRBLOCK2-S1 and replace it with a 390 long ton per day limit on the amount of elemental sulfur allowed to be produced in EU72-SULRBLOCK2-S1 and EU42-43SULRECOV-S1.

B. Applicability Test Description: Actual to Projected Actual Test

C. Emission Limitations:

Table C

Emission Unit/Flexible Group ID	Pollutant	Emissions (tpy)			Reason for Exclusion
		Baseline Actual	Projected Actual	Excluded	
FGSULFURPROD-S1	SO ₂	74.9	32.6	--	No emissions were excluded in the analysis
FGSULFURPROD-S1	VOC	0.57	0.39	--	No emissions were excluded in the analysis
FGSULFURPROD-S1	NO _x	21.0	10.6	--	No emissions were excluded in the analysis