Subject: RTO Alarms / Shutdown, Start-up & Malfunction Policy	Policy Number & Revision Level: GEPL 158.14	Page: 1 of 10
Owned by: Kaitlyn Laug	Approved by:	

1.0 PURPOSE

1.1 The purpose of the MAP (Malfunction Abatement Plan/Preventive Maintenance Program) is to provide a complete preventative maintenance program, operating variables and corrective actions for each source and air cleaning device listed in MI-ROP-E5094-2018. The MAP consists of two parts:

1.1.1 The preventive maintenance program and

1.1.2 The malfunction abatement and equipment monitoring program.

1.2 The purpose of the SSMP (Startup, Shutdown and Malfunction Plan) is to address the startup, shutdown, and corrective actions in the event of a malfunction of any PeTE, non-PeTE or the RTO that would cause the emission unit(s) to exceed the applicable NESHAP emission limit. The plan must also address any coating operation equipment that may cause increased emissions or that would affect capture efficiency if the process equipment malfunctions, such as conveyors that move parts among enclosures. The MAP, described above, covers the malfunction portion of the SSMP.

1.3 The purpose of the WPP (Work Practices Plan) is to minimize organic HAP emissions from the storage, mixing, and conveying of coatings, thinners and/or other additives, and cleaning materials used in, and waste materials generated by coating operations. The WPP consists of general operational controls and housekeeping measures for management of materials containing VOC and/or HAP.

2.0 SCOPE

This procedure is applicable to the operation of all sources and emission units listed in MI-ROP-E5094-2018 located at 460 Fuller Ave. NE Grand Rapids MI 49503

3.0 RESPONSIBILITY

Application of, and adherence to, this procedure is the responsibility of all HAVS employees and contractors operating, maintaining, or supervising equipment listed as control measures or emission sources in MI-ROP-E5094-2018 .

4.0 DEFINITIONS

HAP: Hazardous Air Pollutants

HAVS: The authorized acronym for Hutchinson Antivibration Systems, Inc., the Automotive Anti-Vibration and Noise Reduction Systems division of Hutchinson North America (HNA).

MAP: Malfunction Abatement Plan/Preventive Maintenance Program; The MAP describes the methods by which anticipated malfunctions will be managed by the facility.

PeTE: Permanent Total Enclosure: a surrounding structure that allows all VOC emissions to be directed to the exhaust. Capture is listed as 100%

Non-PeTE: Non-Permanent Total Enclosure: a surrounding structure that allows all VOC emissions to be directed to the exhaust. Capture is determined by a Capture Efficiency Test.

ROP: Renewable Operating Permit; The ROP is issued by the Michigan Department of Environmental Quality and provides the facility's authority to operate the VOC / HAP source(s) in accordance with the conditions and requirements as outlined in the permit.

RTO: Regenerative Thermal Oxidizer

SSMP: Startup, Shutdown, Malfunction Plan; The SSMP describes the methodology by which the RTO system is started from a "cold" state to full treatment operation and shutdown from operational status to full cold shutdown.

VOC: Volatile Organic Compounds

WPP: Work Practices Plan; The WPP describes methods and activities which fugitive emissions of VOC and HAP are minimized during typical operations.

CPMS: Continuous Parameter Monitoring System: an integrated monitoring system that monitors and collects data from the coating operations

5.0 PROCEDURE

5.1 MAP - Preventive Maintenance Program

This program is designed to minimize equipment malfunctions by establishing a preventive maintenance schedule for all equipment and accessories associated with the air pollution control systems. The following table lists the items to be inspected, the frequency of inspections, responsibility for inspection, and replacement parts kept in inventory. During inspections the following information will be recorded:

Preventive Maintenance Program

Unit	Item inspected	Frequency	Responsibility	Replacement Parts
EURTO	Inspect RTO for any signs of damage.	Weekly	Maintenance	
	Inspect hydraulic hoses/lines for leaks.	Weekly	Maintenance	Hose/fittings/valves
	Inspect hydraulic pump/tank for level and leaks.	Weekly	Maintenance	Pump
	Inspect hydraulic cylinders for leaks.	Weekly	Maintenance	Cylinders
	Inspect poppet valve switches for tightness.	Weekly	Maintenance	Switches and cables
	Inspect primary filters.	Weekly	Maintenance	Filters
	Grease fan shaft bearings.	Weekly	Maintenance	Grease / Bearings
	Remove and clean air filters on cabinet and VFD	Weekly	Maintenance	
	Replace primary filters	As indicated	Maintenance	Filters
	Grease fresh air damper linkages.	Monthly	Maintenance	Linkage
	Grease gas valve fittings.	Monthly	Maintenance	Gas valve
	Grease low fire cam.	Monthly	Maintenance	
	Clean TSI flow meter probe	Monthly	Maintenance	
	Remove and clean draft fan filter	Monthly	Maintenance	Filter
	Verify accuracy of chamber thermocouples.	Monthly	Maintenance	Thermocouples
	Inspect wiring, connections, and relays	Semi-annual	Maintenance	Switches and relays
	Inspect ceramic media	Annual	Maintenance	
	Inspect poppet valves	Annual	Maintenance	
	Inspect gas train, burner, and burner control	Annual	Maintenance	Burner control
	Inspect UV Scanners	Annual	Maintenance	UV Scanner
	Inspect Thermocouples	Annual	Maintenance	Thermocouples

Unit	Item inspected	Frequency	Responsibility	Replacement Parts
EURTO	Monitor Average Combustion Temperature. Alarm if temperature drops below operational limit of 1475°F.	Continuous	Tridium system	Hayworth temperature sensor
EUSIL1	Monitor airflow in booth exhaust duct. Alarm/shutdown if airflow direction is not toward RTO; alarm if stack airflow drops below 3229 CFM for longer than 5 minutes.	Continuous	Tridium system	Veris PX transmitter
	Verify accuracy of each transducer and visually inspect sensing tubes for leaks, blockage, or damage.	Monthly	Technician	
	Check paint pots and associated piping for fugitive VOC emissions using olfactory/ PID meter	Weekly	Technician	
EUSIL2	Monitor airflow in booth exhaust duct. Alarm/shutdown if airflow direction is not toward RTO; alarm if face velocity drops below 200 FPM (equal to airflow drop below 236 CFM) for longer than 5 minutes.	Continuous	Tridium system	Veris PX transmitter
	Verify accuracy of each transducer and visually inspect sensing tubes for leaks, blockage, or damage.	Monthly	Technician	
	Check paint pots and associated piping for fugitive VOC emissions using olfactory/ PID meter	Weekly	Technician	
EUSIL3	Monitor airflow in booth exhaust duct. Alarm/shutdown if airflow direction is not toward RTO; alarm if face velocity drops below 200 FPM (equal to airflow drop below 554 CFM) for longer than 5 minutes.	Continuous	Tridium system	Veris PX transmitter
	Verify accuracy of each transducer and visually inspect sensing tubes for leaks, blockage, or damage.	Monthly	Technician	
	Check paint pots and associated piping for fugitive VOC emissions using olfactory/ PID meter	Weekly	Technician	
EUCOE	Monitor airflow in booth exhaust duct. Alarm/shutdown if airflow direction is not toward RTO; alarm if face velocity drops below 200 FPM (equal to airflow drop below 296 CFM) for longer than 5 minutes.		Tridium system	Veris PX transmitter
	Verify accuracy of each transducer and visually inspect sensing tubes for leaks, blockage, or damage.	Monthly	Technician	
	Check paint pots and associated piping for fugitive VOC emissions using olfactory/ PID meter	Weekly	Technician	
EUADHESIVE1 (PR1)	Monitor airflow in booth exhaust duct. Alarm/shutdown if airflow direction is not toward RTO; alarm if face velocity drops below 200 FPM (equal to airflow drop below 175 CFM) for longer than 5 minutes.	Continuous	Tridium system	Veris PX transmitter
	Verify accuracy of each transducer and visually inspect sensing tubes for leaks, blockage, or damage.	Monthly	Technician	
	Check paint pots and associated piping for fugitive VOC emissions using olfactory/ PID meter	Weekly	Technician	
EUADHESIVE2 (RC1)	Monitor airflow in booth exhaust duct. Alarm/shutdown if airflow direction is not toward RTO; alarm if face velocity drops below 200 FPM (equal to airflow drop below 175 CFM) for longer than 5 minutes.	Continuous	Tridium system	Veris PX transmitter
	Verify accuracy of each transducer and visually inspect sensing tubes for leaks, blockage, or damage.	Monthly	Technician	

Unit	Item inspected	Frequency	Responsibility	Replacement Parts
EUADHESIVE2 (RC1)	Check paint pots and associated piping for fugitive VOC emissions using olfactory/ PID meter	Weekly	Technician	
EUADHESIVE3 (RC2)	Monitor airflow in booth exhaust duct. Alarm/shutdown if airflow direction is not toward RTO; alarm if face velocity drops below 200 FPM (equal to airflow drop below 175 CFM) for longer than 5 minutes.	Continuous	Tridium system	Veris PX transmitter
	Verify accuracy of each transducer and visually inspect sensing tubes for leaks, blockage, or damage.	Monthly	Technician	
	Check paint pots and associated piping for fugitive VOC emissions using olfactory/ PID meter	Weekly	Technician	
EUADHESIVE4 (RC3)	Monitor airflow in booth exhaust duct. Alarm/shutdown if airflow direction is not toward RTO; alarm if face velocity drops below 200 FPM (equal to airflow drop below 175 CFM) for longer than 5 minutes.	Continuous	Tridium system	Veris PX transmitter
	Verify accuracy of each transducer and visually inspect sensing tubes for leaks, blockage, or damage.	Monthly	Technician	
	Check paint pots and associated piping for fugitive VOC emissions using olfactory/ PID meter	Weekly	Technician	

5.2 MAP - Malfunction Abatement and Equipment Monitoring Program

This program is intended to identify any abnormal conditions or malfunctions associated with the air pollution control systems. The following table lists the equipment that could cause the emission limits to be exceeded in the event of a malfunction, the monitored operating conditions, and the corrective actions to be taken to achieve compliance during a malfunction of the equipment.

Malfunction Abatement and Equipment Monitoring Program

Unit	Operating Condition	Operating Range	Monitoring Frequency	Corrective Action in the event of Malfunction
RTO	Temperature	Minimum 1475°F (3 hour average)	Continuous	Do not operate the coating processes unless the RTO is within the proper operating range. .
				In the event of an RTO system fault, the system will shut down and sound an alarm. The RTO temperature fault will automatically shut down cementing operations.
				The fault should be examined to determine the cause of the out of range reading and a repair determined. After the problem has been fixed, the RTO system must be restarted as per the SSMP to return the unit to operation before coating operations can resume.

Unit	Operating Condition	Operating Range	Monitoring Frequency	Corrective Action in the event of Malfunction
Non-PeTE for EUSIL1	Stack CFM	CFM greater than 3229 (CPMS trigger: 3280 CFM)	Continuous	Do not operate the coating process required to be inside the non-permanent total enclosure unless the exhaust CFM is above the operating limit noted.
				If the CFM minimum alarm is activated, the CPMS system will automatically shut down cementing operations for Silver 1. Maintenance will determine if the direction of airflow is into the enclosure using visual indicating method (i.e. streamer) or with handheld differential meter. If the direction of the airflow is into the enclosure, maintenance will audit the transducer. If airflow is determined to be out of the enclosure, the cause will identified and repaired. The transducer will be verified and the system restarted.
				In the event of a malfunction, follow procedures outlined in the Malfunction Abatement Contingency Plan.
PeTE for EUSIL2	Airflow direction Face Velocity	Toward RTO (into booth) CFM greater than 236 (equivalent to 200 FPM at NDO's) (CPMS trigger: 250 CFM)	Continuous	Do not operate the coating process required to be inside the permanent total enclosure unless the face velocity is above the operating limit noted.
				If the face velocity minimum alarm is activated, the CPMS system will automatically shut down cementing operations for Silver 2. Maintenance will determine if the direction of airflow is into the enclosure using visual indicating method (i.e. streamer) or with handheld differential meter. If the direction of the airflow is into the enclosure, maintenance will audit the transducer. If airflow is determined to be out of the enclosure, the cause will identified and repaired. The transducer will be verified and the system restarted.
				In the event of a malfunction, follow procedures outlined in the Malfunction Abatement Contingency Plan.
PeTE for EUSIL3	Airflow direction Stack CFM	Toward RTO (into booth) CFM greater than 554 (equivalent to 200 FPM at NDO's) (CPMS trigger: 580 CFM)	Continuous	Do not operate the coating process required to be inside the permanent total enclosure unless it is under negative pressure (airflow into the enclosure).
				If the face velocity minimum alarm is activated, the CPMS system will automatically shut down cementing operations for Silver 3. Maintenance will determine if the direction of airflow is into the enclosure using visual indicating method (i.e. streamer) or with handheld differential meter. If the direction of the airflow is into the enclosure, maintenance will audit the transducer. If airflow is determined to be out of the enclosure, the cause will identified and repaired. The transducer will be verified and the system restarted.
				In the event of a malfunction, follow procedures outlined in the Malfunction Abatement Contingency Plan.

Unit	Operating Condition	Operating Range	Monitoring Frequency	Corrective Action in the event of Malfunction
PeTE for EUCOE	Airflow direction Stack CFM	Toward RTO (into booth) CFM greater than 296 (equivalent to 200 FPM at NDO's) (CPMS trigger: 310 CFM)	Continuous	Do not operate the coating process required to be inside the permanent total enclosure unless it is under negative pressure (airflow into the enclosure). If the face velocity minimum alarm is activated, the CPMS system will automatically shut down cementing operations for the COE. Maintenance will determine if the direction of airflow is into the enclosure using visual indicating method (i.e. streamer) or with handheld differential meter. If the direction of the airflow is into the enclosure, maintenance will audit the transducer. If airflow is determined to be out of the enclosure, the cause will identified and repaired. The transducer will be verified and the system restarted. In the event of a malfunction, follow procedures outlined in the Malfunction Abatement Contingency Plan.
PeTE for EUADHESIVE1 (PR1)	Airflow direction Stack CFM	Toward RTO (into booth) CFM greater than 175 (equivalent to 200 FPM at NDO's) (CPMS trigger: 200 CFM)	Continuous	Do not operate the coating process required to be inside the permanent total enclosure unless it is under negative pressure (airflow into the enclosure). If the face velocity minimum alarm is activated, the CPMS system will automatically shut down cementing operations for PR1. Maintenance will determine if the direction of airflow is into the enclosure using visual indicating method (i.e. streamer) or with handheld differential meter. If the direction of the airflow is into the enclosure, maintenance will audit the transducer. If airflow is determined to be out of the enclosure, the cause will identified and repaired. The transducer will be verified and the system restarted. In the event of a malfunction, follow procedures outlined in the Malfunction Abatement Contingency Plan.
PeTE for EUADHESIVE2 (RC1)	Airflow direction Stack CFM	Toward RTO (into booth) CFM greater than 175 (equivalent to 200 FPM at NDO's) (CPMS trigger: 200 CFM)	Continuous	Do not operate the coating process required to be inside the permanent total enclosure unless it is under negative pressure (airflow into the enclosure). If the face velocity minimum alarm is activated, the CPMS system will automatically shut down cementing operations for RC1. Maintenance will determine if the direction of airflow is into the enclosure using visual indicating method (i.e. streamer) or with handheld differential meter. If the direction of the airflow is into the enclosure, maintenance will audit the transducer. If airflow is determined to be out of the enclosure, the cause will identified and repaired. The transducer will be verified and the system restarted. In the event of a malfunction, follow procedures outlined in the Malfunction Abatement Contingency Plan.

Unit	Operating Condition	Operating Range	Monitoring Frequency	Corrective Action in the event of Malfunction
PeTE for EUADHESIVE3 (RC2)	Airflow direction Stack CFM	Toward RTO (into booth) CFM greater than 175 (equivalent to 200 FPM at NDO's) (CPMS trigger: 200 CFM)	Continuous	Do not operate the coating process required to be inside the permanent total enclosure unless it is under negative pressure (airflow into the enclosure). If the face velocity minimum alarm is activated, the CPMS system will automatically shut down cementing operations for R. Maintenance will determine if the direction of airflow is into the enclosure using visual indicating method (i.e. streamer) or with handheld differential meter. If the direction of the airflow is into the enclosure, maintenance will audit the transducer. If airflow is determined to be out of the enclosure, the cause will identified and repaired. The transducer will be verified and the system restarted. In the event of a malfunction, follow procedures outlined in the Malfunction Abatement Contingency Plan.
PeTE for EUADHESIVE4 (RC3)	Airflow direction Stack CFM	Toward RTO (into booth) CFM greater than 175 (equivalent to 200 FPM at NDO's) (CPMS trigger: 200 CFM)	Continuous	Do not operate the coating process required to be inside the permanent total enclosure unless it is under negative pressure (airflow into the enclosure). If the face velocity minimum alarm is activated, the CPMS system will automatically shut down cementing operations for the AMS. Maintenance will determine if the direction of airflow is into the enclosure using visual indicating method (i.e. streamer) or with handheld differential meter. If the direction of the airflow is into the enclosure, maintenance will audit the transducer. If airflow is determined to be out of the enclosure, the cause will identified and repaired. The transducer will be verified and the system restarted. In the event of a malfunction, follow procedures outlined in the Malfunction Abatement Contingency Plan.

5.3 Startup, Shutdown, Malfunction Plan (**SSMP**)

The SSMP is intended to minimize emissions during startup, shutdown, and malfunctions of the emission control systems. The MAP, discussed above, covers the procedures and actions to minimize emissions during malfunctions.

5.3.1 In general, the RTO is not shutdown to a "cold" state, but instead put into "Standby Mode" during weekends or holidays when coating operations are suspended. Standby Mode allows the RTO to be quickly brought back to operational status prior to the resumption of coating operations.

5.3.2 If it becomes necessary to fully shutdown the RTO system, all coating operations will be stopped as quickly as possible. The facility will follow the RTO manufacturer's recommendations and procedures to facilitate the shutdown in a safe and efficient manner, while minimizing any fugitive emissions from the halted coating operations. The PeTE and non-PeTE systems will be left intact and closed to minimize residual emissions until the total shutdown of the RTO has been completed.

5.3.3 During the startup of the RTO system from a "cold" state, the facility will follow the RTO manufacturer's recommendations and procedures for the automated control sequence startup of the system. The system is started in standby mode and switched to oxidize mode when the minimum combustion temperature of 1475°F is attained. Coating operations will only commence when both the RTO, PeTE and non-PeTE operations and conditions are confirmed.

5.3.4 The RTO is equipped with Four (4) alarm systems as follows:

5.4 CPMS System

5.4.1 The temperature in the RTO burn chamber is monitored and will alarm with a red flashing light, mounted on the control panel, and yellow flashing lights at the silver spray booths anytime the temperature inside the RTO is below 1475°F. This temperature is also being recorded on a digital recorder. The thermocouples in the chamber will be checked and verified for accuracy monthly.

Action: anytime this alarm is activated, the cementing operations that are connected to the RTO are automatically shut down. Maintenance should then be notified and the temperature corrected and verified.

5.4.1 The air flow or SCFM to the RTO is also being monitored and supplies a digital readout and is monitored by the CPMS.-When the SCFM exceeds 9500, or drops below 600, the red flashing light on top of the control panel will activate, and the CPMS will automatically shut down the paint booths. This SCFM monitor must be verified every 3 months as to its accuracy.

5.4.2 The CPMS monitors individual paint booth airflow volume (SCFM), direction and intake air velocity (based on Method 204 testing) at each machine and will alarm with a red light at the CPMS panel if the SCFM drops below 3229 CFM on SILV01; a non-PeTE machine, or the airflow direction is not toward the RTO (negative); or the face velocity at any NDO is below 200 FPM velocity on the PeTE machines.

The CFM readings for 200 FPM are as follows:

5.4.2.1	Silver 2	236 CFM
5.4.2.2	Silver 3	554 CFM
5.4.2.3	COE	296 CFM
5.4.2.4	PR1	175 CFM
5.4.2.5	RC1	175 CFM
5.4.2.6	RC2	175 CFM
5.4.2.7	RC3	175 CFM

Action: anytime these alarms are activated the cementing operations are automatically shut down. Maintenance should then be notified and the air flow ~~is~~ corrected.

5.4.3 Cementing operations will also lock out if the RTO or CPMS unit loses power or does not come back on after an electrical power outage. All cementing sources are tied back into the RTO and CPMS. Interlocks on each source will prevent machine startups until power is restored to the RTO and/or CPMS unit.

NOTE: The CPMS records the status of the RTO "command" value (permission to run based on temperature) as well as the individual machine "command" values and the CPMS status.

5.5 Work Practices Plan (**WPP**)

The WPP is intended to minimize fugitive emissions of VOC and HAP during typical facility operation. The following elements are implemented under the WPP:

5.5.1 All VOC and HAP containing coatings, thinners, additives, cleaning materials, and waste materials are stored in covered containers when not in use.

5.5.2 Spills of VOC and HAP containing coatings, thinners, additives, cleaning materials, and waste materials are minimized by personnel training and implementation of procedures. Any spills that occur are cleaned up as quickly as possible, and any rags or absorbents used during the spill cleanup are placed into closed containers prior to proper disposal.

5.5.3 VOC and HAP containing coatings, thinners, additives, cleaning materials, and waste materials are conveyed from one location to another in closed containers or piping.

5.5.4 Mixing vessels which contain VOC or HAP containing coatings, thinners, additives, cleaning materials, and waste materials are kept closed except when adding, removing, or mixing the contents.

5.5.5 All spent filters are disposed of in a manner which minimizes the introduction of VOC and HAP emissions.

5.5.6 Emissions of VOC and HAP are minimized during the cleaning of storage, mixing, and conveying equipment by limiting the duration of exposure, training of personnel, and by minimizing solvent usage during these activities. Any rags or absorbents used during cleaning activities are placed into closed containers prior to proper disposal

5.6 Malfunction Abatement Contingency Plan

Malfunction Abatement Contingency Plan

Condition	Decision	Response	Condition to Response	Action
1. Malfunction discovered.	Can floor personnel repair the malfunction?	Yes	Repairs can be completed within1 hour.	Complete repairs. Notify supervisor. Review PM/MAP for updates if necessary.
			Repairs cannot be completed within1 hour.	Inform supervisor and maintenance of the malfunction immediately. Proceed to condition #2.
		No		Inform supervisor and maintenance of the malfunction immediately. Proceed to condition #2.

2. Maintenance informed of malfunction.	Can maintenance repair the malfunction?	Yes	Repairs can be completed in within 1 hour	Complete repairs. Notify supervisor. Review PM/MAP for updates if necessary.
			Repairs cannot be completed within1 hour.	Inform management of the malfunction immediately. Proceed to condition #3.
		No		Inform management of the malfunction immediately. Proceed to condition #3.

Condition	Decision	Response	Condition to Response	Action
3. Management informed of malfunction. **Estimate the malfunctions effect on capture/destruction of HAP and VOC.**	Is the malfunction likely to result in emissions that will exceed permit limits?	Yes	Repairs will exceed 2 hours.	Management must take immediate action to minimize the potential to exceed permit emission limits. Proceed to condition #4.
			Repairs will be <2 hours, but > 1 hour.	Management must take immediate action to minimize the potential to exceed permit emission limits. Proceed to condition #4.
			Repairs can be completed within1 hour.	Proceed with repairs. Monitor time to complete repairs. If repair time > 1 hour, proceed to condition #4.
		No		Proceed with repairs. Monitor emission estimates. If emission estimates exceed permit limits, proceed to condition #4.
4. Reduction of potential to exceed permit emission limits. **Management must take corrective measures to ensure that emission levels do not exceed permit conditions:** **a) Reduce production.** **b) Stop Production.**		Yes	Emission limits were exceeded for > 2 hours.	Notify MDEQ-AQD of the malfunction within 48 hours. Provide written report to the MDEQ-AQD within 10 days of the occurrence. Review PM/MAP program to prevent any reoccurrence of the malfunction.
			Emission limits were exceeded for < 2 hours, but > 1 hour.	Notify MDEQ-AQD of the malfunction within 48 hours. Review PM/MAP program to prevent any reoccurrence of the malfunction.
			Emission limits were exceeded for < 1 hour.	Review PM/MAP program to prevent any reoccurrence of the malfunction.
		No		Review PM/MAP program to prevent any reoccurrence of the malfunction.

6.0 RECORD RETENTION

Completed copies of all records will be retained for 5 years.

7.0 DISTRIBUTION

HAVS Intranet Access
H.R. Master File – Grand Rapids

8.0 ATTACHMENTS

None.

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POLICY REVISIONS (Page 1 of 2)

Policy No.	Rev. No.	By	Date	Description of Revision
GR 58	.00	Roger Bates	01-Mar-98	RTO malfunction / original
		Roger Bates	01-Nov-99	Reviewed / no changes
GR 58	.01	Richard Foerster	01-Apr-03	Added, scheduled verification of thermocouples/gauges
GR 58	.02	Chuck Klein	01-Jul-07	Updated equipment numbers and types on system
GRPOL 58	.03	Richard Foerster Tony Wolfram	05-Jun-09	Entire Document – remove reference to Lambda cells, formatted to current standard Header – changed "Written By: Roger Bates" to "Owned By: Rich Foerster"
GRPOL 58	.04	Richard Foerster	18-May-11	Entire Document – removed references to Silver 3
GRPOL 158	.05	Tony Wolfram Richard Foerster	12-Dec-11	Entire Document – changed from GRPOL 58 to GRPOL 158 due to database limitations, removed references to specific pieces of equipment, uploaded to PPD_HR_CRC Database 1.0 – remove – operation of" 3.0, 4.0, 6.0 & 8.0 – added (Responsibility, Definitions, Record Retention & Attachments) 5.1 – changed "Two (2)" to "Three (3)" 5.1.1 – changed "100" to "50"' added "recorder" & "in the chamber" & removed "gauges" 5.1.2 – added "on the circular charts.", changed "~~6800~~" to "9950", added "or drops below 600", & changed "~~6~~" to "3" 5.1.3 – added (lockout of cement machines if RTO loses power) 5.2.2 – added "M" to "DEQ"
GRPOL 158	.06	Richard Foerster Tony Wolfram	01-Mar-12	3.0 & 5.2.1 & 6.0 – change "EMS Site" to "HSE" 4.0 – added HSE definition 5.2.2 – changed "anytime" to "Before" and "within 2 business days of beginning of malfunction" to "immediately"
GEPOL 158	.07	Jim Niesen	30-Dec-14	Header – changed "Rich Foerster" to "Jim Niesen" 2.0 – changed from Paulstra CRC to HAVS
GEPOL 158	.08	Jim Niesen	10-Oct-15	4.0 – added definitions for: HAVS, °F and CPMS, "H_2O and CFM 5.1.1 – changed "outside 1550 degrees (±50 degrees)" to "below 1550°F", changed "must be" to "are automatically" 5.1.2. – changed from "9950" to "9500", changed "must be" to "are automatically" 5.1.3 – Add references to the CPMS system. 5.1.4 – Add references to the CPMS system. 5.2 – Add CPMS system.
GEPOL 158	.09	Jim Niesen	10-Mar-16	Reformat to CEP 900 base with CPMS specifics from GR
GEPOL 158	.10	Jim Niesen	22-Jul-16	Add CPMS data from DE/CE test of 7/21/16 (airflow on SIL01 as it is a non PeTE
GEPOL 158	.10	Jim Niesen	27-Mar-17	Correct RTO temperature: missed during last update
GEPOL 158	.11	Jim Niesen	15-July-17	-Update for FPM monitoring of PeTE booth instead of pressure drop - add details for CPMS alarm/shutdown functions
GEPOL 158	.12	Jim Niesen	19-Jan-18	- clarify details for CPMS alarm/shutdown functions (5.2, 5.4) - Clarify monthly chamber temperature checks
GEPOL 158	.13	Fishbeck	20-Oct-19	Updated ROP number. Updated minimum RTO temperature from 1577°F to 1475°F (5.1, 5.2, 5.3.3, and 5.4.1) Updated minimum Silver1 flow rate form 2369 CFM to 3229 CFM (5.1, 5.2, and 5.4.2)

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POLICY REVISIONS (Page 1 of 2)

Policy No.	Rev. No.	By	Date	Description of Revision
GEPL 158	.14	Jim Niesen	02-Dec-19	Added EUADHESIVE1, 2, 3, 4 (5.1, 5.2, and 5.4.2) Added CFM/face velocity values for EUADHESIVE1, 2, 3, 4 (5.4.2.1.4; 5.4.2.1.5; 5.4.2.1.6; 5.4.2.1.7)