MALFUNCTION ABATEMENT PLAN (MAP)

for

Solvent Recovery System (SRS)

(ROP No. A6220-2015a)

and

Regenerative Thermal Oxidizer (RTO)

(ROP No. A6220-2015a)

Intertape Polymer Group
317 Kendall Avenue
Marysville, MI 48040

Issued: May 21, 1999

Revised: September 29, 2004
February 23, 2005
April 7, 2006
July 6, 2017
July 10, 2019

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Attachments

PURPOSE

Intertape Polymer Group (IPG) was issued Renewable Operating Permit (ROP) No. A6220-2015a by the Michigan Department of Environmental Quality (MDEQ) for the Marysville, Michigan, facility. The ROP requires IPG to implement and maintain a Malfunction Abatement Plan (MAP) for the equipment identified in the permit as FGCOATINGPROCESS, which includes the three coating lines, regenerative thermal oxidizer (RTO), and the solvent recovery system (SRS).

Modifications to this MAP must be submitted to the MDEQ – Air Quality Division (MDEQ—AQD) District Supervisor for approval. This MAP is subject to review by MDEQ—AQD, and must be made available upon inspection of the facility, or as requested by MDEQ—AQD.

INTRODUCTION

This MAP has been implemented and maintained as required by the ROP for the purpose of preventing, detecting, and correcting SRS or RTO malfunctions and/or failures which could result in air emissions in excess of the applicable emission limits associated with the pressure sensitive tape manufacturing operation.

Please refer to Attachment 1 for a plant layout, Attachment 2 for the related SRS layout and Attachment 4 for RTO system layout.

The MAP includes a preventative maintenance program incorporating maintenance and inspection schedules of air pollution control systems, and the names of supervisory and maintenance personnel responsible for equipment inspections. In addition, the MAP includes a monitoring program incorporating a list of operating variables to be monitored for equipment malfunction/failure detection, acceptable (normal) operating ranges of the operating variables, and the procedures and schedules of the monitoring efforts. Finally, the MAP includes a corrective action program incorporating procedures for minimization of ambient air contaminant emissions during equipment malfunction/failure and measures applied to minimize future equipment malfunctions and failures.

All process and instrumentation diagrams associated with the MAP are included as an attachment in Attachments 2 & 3 for solvent recovery and Attachments 4 & 5 for RTO.

BACKGROUND FACILITY & EMISSION CONTROL INFORMATION

IPG's Marysville, Michigan facility produces pressure-sensitive adhesive tape products. Operations performed at the facility, for the most part, fall under the standard industrial classification (SIC) code 2671 for the paper coating industry. In general, the production of tape involves preparation and application of an adhesive coating and a release coating to the paper or film backing of the tape, and drying and curing of the tape. The adhesive manufacturing steps are batch operations while the coating application and drying operations are continuous. The facility currently has three coating lines; Line 1, Line 3, and Line 4. Volatile organic compounds (VOCs) from the adhesive production and coating operations are the chief contributors to the facility emissions. The facility currently operates in accordance with the facilities Renewable Operating Permit.

Solvent Recovery System

The facility installed a carbon adsorption solvent recovery system (SRS) in 1982 to recover toluene, the primary constituent of the majority of coatings used at the facility, and has been operating in compliance with the MDEQ's reasonably available control technology (RACT) requirements since that time. The solvent recovery operation provides overall pollution prevention by allowing the facility to recycle and reuse approximately 80 to 85 percent of the solvent applied.

The solvent recovery system treats toluene-laden vapors from the facility's three coating lines by adsorption on activated carbon. The solvent recovery system includes four (4) 43,000-pound carbon adsorption beds operating in parallel. As the carbon beds become saturated with toluene and removal efficiency diminishes, the activated carbon beds are regenerated with steam. The system is designed to allow for periodic regeneration of one bed while the other three treat the toluene-laden air. The steam volatilizes the contaminants and desorbs them off the carbon. The solvent-laden steam is condensed, and the water and solvent phases are separated by gravity in a decanter by using density differences between toluene and water. The light phase, toluene, is decanted into a transfer tank and pumped into underground storage tanks (USTs) for reuse.

The SRS recovers solvent from the most solvent laden air streams from the coating lines, which are the B-Unit Oven Exhausts on Lines 1 and 4, and the A-, B-, and C-Unit Ovens Exhausts on Line 3.

Please refer to Attachment 2 & 3 for review of the solvent recovery system process flow diagram and equipment layout diagrams.

Regenerative Thermal Oxidizer

As of March 1998, IPG operates a regenerative thermal oxidizer (RTO) for controlling adhesive coating emissions and odor from its production operations. IPG principally installed the RTO emission control system to reduce emissions and control odors from the cure zone oven exhaust stacks (C1 and C2 ovens on Lines 1 and 4, and Line 3 Dryer 5 Zones 1 through 4) to resolve the odor complaints. IPG volunteered to tie in the A-Unit Oven exhausts from Lines 1 and 4 and the Exit Hood from Line 1 following the C-Oven to further reduce odor and facility emissions.

Thermal oxidation is a conventional treatment technology for treatment of VOC-laden vapors similar to those emitted from IPG's coating lines. Thermal oxidation is a process in which the VOC contaminants are oxidized via high temperature to stable compounds (i.e., carbon dioxide and water). Thermal oxidation requires relatively high temperatures (1,400°F to 2,200°F) for conversion of the VOC's. Heat recovery devices (exchangers) are used to minimize the fuel consumption to run the oxidizer. Thermal oxidizers are classified into two groups, recuperative and regenerative, depending on the type of heat recovery used.

A regenerative thermal oxidizer recovers heat from the exhaust gases exiting the combustion chamber by storing it in a series of large, packed ceramic beds. The incoming VOC-laden air stream enters the system and passes through a "hot" bed where it is preheated. The heated inlet stream enters the combustion chamber where it is heated to the combustion temperature. The hot exhaust is directed through the ceramic bed where its heat is transferred for storage.

IPG tested the performance of the RTO in 2017 and determined that its destruction efficiency exceeds 98%. The combustion chamber temperature required to obtain this efficiency is approximately 1400°F. Please refer to Attachment 4 & 5 for review of the RTO process flow diagram and equipment layout diagrams.

PREVENTATIVE MAINTENANCE & MONITORING PROGRAM

IPG currently has a comprehensive preventative maintenance program for its adhesive and pressure-sensitive tape manufacturing operation, which will ensure that potential equipment malfunctions/failures associated with the operations are minimized. The preventative maintenance program also incorporates maintenance and inspection schedules of the SRS and RTO.

Supervisors responsible for the implementation of the preventative maintenance, monitoring and inspection program include the following:

Mark St. Pierre	Maintenance Manager
Brian Newman	Operations Manager
Melissa Oakley	EHS Manager

The names of maintenance personnel responsible for equipment inspections, replacement or repair are included within Attachment 10.

Equipment Inspection & Monitoring Procedures

IPG currently utilizes inspection and monitoring procedures for the solvent recovery and RTO system. The procedures help to minimize potential equipment malfunctions/failure associated with day to day operation.

Solvent Recovery System

Daily inspections are conducted on the solvent recovery system to monitor the system, and minimize potential malfunctions. The inspections are conducted three times per day (once per shift) at a minimum. Some components of the solvent recovery system are inspected six times daily.

The inspections are documented on a Solvent Recovery Log. Within the log are all the necessary inspection points, and applicable operating range/specification, to monitor the systems operations to detect faulty operation or a malfunction. Upon completion and review, the Logs are maintained within the maintenance department. Please refer to Attachment 6 for a copy of the daily inspection log.

Regenerative Thermal Oxidizer

Daily, weekly, and annual inspections are conducted on the RTO system to monitor the system, and minimize potential malfunctions. The daily inspections are conducted three times per day (once per shift) at a minimum.

The inspections are documented on a RTO Daily Rounds Sheet and RTO Weekly and Annual Checks. Within the inspections sheets are all the necessary inspection points to monitor the systems operations to detect faulty operation or a malfunction. Upon completion and review, the Logs are maintained within the maintenance department. Please refer to Attachment 7 for a copy of the daily, weekly, and annual inspection forms.

Equipment Preventative Maintenance Procedures

The facility preventative maintenance program is done on a monthly, semi-annual, or annual basis. All equipment, tasks, and frequencies are on file on a computer program called Maintimizer. Access to this preventative maintenance program can be obtained within the engineering and maintenance departments.

Solvent Recovery System

Since the Solvent Recovery System has been in operation since approximately 1982 a significant amount of preventative maintenance items have been generated and performed on the system. A detailed list of historic preventative maintenance items is provided within Attachment 8 for review. Please note that this list may change annually depending on preventative maintenance items identified throughout the year. Included within this list is a complete listing of maintenance frequency, part or component description, maintenance instructions, and maintenance personnel responsible for the procedure. Records of preventative maintenance histories are maintained within the maintenance department.

Regenerative Thermal Oxidizer

The RTO has been in operation since approximately March of 1998. A detailed list of the preventative maintenance items are provided within Attachment 9 for review. Please note that this list may change annually depending on preventative maintenance items identified throughout the year. Included within this list is a complete listing of maintenance frequency, part or component description, and instructions.

Detection and Documentation of Abnormal Conditions

In addition to the periodic monitoring of the process operating variables and the corresponding indicating parameters for its process equipment, and maintaining daily logs

identified in Attachments 6 & 7, production operators and maintenance personnel use additional indicators such as continuous monitoring data displays from process data computer control systems, and process alarms.

Solvent Recovery System

The detection of solvent recovery system malfunction can be done with the maintenance department alarm/light/radio system. If a malfunction or operation error of the solvent recovery system occurs, an alarm will sound in the solvent recovery area and the maintenance department. Along with the alarm, a light will activate in the maintenance department indicating the solvent recovery is experiencing trouble with its operation. In addition to this, a warning is advertised over the communication radios of maintenance personnel. To improve response time, the radio warning is available in the event maintenance personnel are working out of the maintenance and solvent recovery areas.

In addition to the above noted malfunction notification controls, Line 3 dryer 2, 3, and 4 is equipped with a warning light at the operator's station if a fault in the blowers leading to the solvent recovery system were to occur.

The operation of the solvent recovery system can also be monitored with the solvent laden air (SLA) pressure recorder located on the control panel of the solvent recovery system. The SLA pressure recorder can reflect the pressure of solvent laden air going to the system, and whether the system is in operation. This recorder can also be utilized to document a shutdown or malfunction of the solvent recovery system.

The coating unit prior to the B-oven of Line 4 is capable of coating with solvent or water-based adhesives, therefore, the oven can be either collected by solvent recovery or vented to atmosphere. To ensure that the oven is not accidentally set to the "vent" setting during the application of a solvent-based adhesive, additional controls were implemented to include auto collect ready lights and alarm for the B-oven on Line 4. The B-oven defaults to the "collect" setting. However, if the operator sets the oven into "vent" during the coating of a water-based adhesive, an alarm and light will be activated at the operator's station requesting that the operator confirm the "vent" setting. After the production of that particular product, the B-oven defaults back to "collect".

ROP Appendix 3.I details an SRS Monitoring Program that requires daily calculation of the SRS overall collection and recovery efficiency, based on a 30-day rolling period, and establishes a Corrective Action Trigger and QA/QC Procedures for SRS efficiency monitoring. In order to monitor the SRS overall collection and recovery efficiency, a solvent recovery meter was installed to measure the volume of toluene recovered by the SRS. Data from the solvent recovery meter is collected daily and the solvent recovery efficiency is determined daily using a 30-day rolling average in accordance with ROP

Appendix 3. If the 30-day SRS efficiency drops below the Corrective Action Trigger of 75.2%, then Corrective Action is required, as this indicates that the SRS may not be operating properly. IPG must inspect and isolate the problem within 24 hours of discovery, and implement a solution within seven days. Specific SRS efficiency monitoring requirements and calculation methods are contained in ROP Appendix 3, included as Attachment 11 in this MAP.

Regenerative Thermal Oxidizer

The process data computer control systems includes a Total Control Products (TCP) display. The TCP's are located at the operator's station of each coating line and are utilized for the operation and monitoring of the RTO system. The TCP indicates each oven and applicable exhaust directed to the RTO, and whether the RTO is in operation and collecting the exhaust or venting to atmosphere.

Currently, the A-ovens of Line 1 and 4 are controlled by RTO. The coating units prior to the A-oven of these coating lines are capable of coating with solvent or water-based basecoats, therefore, the oven can be either controlled by RTO or vented to atmosphere. To ensure that the ovens are not accidentally set to the "vent" setting during the application of a solvent-based basecoats, additional controls were implemented to include auto collect ready lights and alarm for these ovens. The-ovens automatically default to the "collect" setting. However, if the operator sets the oven into "vent", an alarm and light will be activated at the operator's station requesting that the operator confirm the "vent" setting. After the production of that particular product, these ovens default back to "collect".

The operation of the RTO can also be monitored within the RTO control room via an alarm system, monitor and chart recorder. These three controls will detect and alarm a malfunction or potential problem with the RTO system. Corrective action can be conducted based on the information provided by these controls. The recorder can also be utilized to document a shutdown or malfunction of the RTO.

The detection of an RTO system malfunction can also be done with the maintenance department alarm/light/radio system. These are tied into the control mechanisms or the RTO control room. If a malfunction or operation error of the RTO system occurs, an alarm will sound in the RTO control room and the maintenance department. Along with the alarm, a light will activate in the maintenance department indicating the RTO is experiencing trouble with its operation. In addition to this, a warning is advertised over the communication radios of maintenance personnel. To improve response time, the radio warning is available in the event maintenance personnel are working out of the maintenance and RTO control room areas.

ROP Appendix 3.II details an RTO Monitoring Program requiring continuous monitoring of the combustion chamber temperature, and establishes a Corrective Action Trigger and QA/QC Procedures for SRS efficiency monitoring. If the RTO combustion chamber temperature drops below the Corrective Action Trigger of 1444 degrees Fahrenheit, then Corrective Action is required, as this indicates that the RTO might not be achieving adequate destruction efficiency. IPG must inspect and isolate the problem within 24 hours of discovery, and implement a solution within seven days. Specific SRS efficiency monitoring requirements and calculation methods are contained in ROP Appendix 3, included as Attachment 11 in this MAP.

CORRECTIVE ACTION PROCEDURES

IPG currently utilizes corrective action procedures which ensures that potential air contaminate emissions exceeding acceptable limits will be minimized and/or eliminated in the event of equipment malfunction/failure. The corrective action procedures incorporate steps for minimization of ambient air contaminant emissions during equipment malfunction/failure and associated corrective action procedures for equipment and measures applied to minimize future equipment malfunctions/failures.

SRS Efficiency Below Low Corrective Action Trigger

If SRS efficiency is below Corrective Action Trigger of 75.2%, IPG will take the following corrective action in accordance with ROP Appendix 3 (MAP Attachment 11):

- Make the necessary adjustments to bring the system into normal operating parameters.
- Within 24 hours of discovery, isolate and inspect problem
- If SRS is not operating properly, implement a solution within seven days
- Document the Corrective Action taken
-

SRS Efficiency Above High Corrective Action Trigger

If SRS efficiency is above the High Corrective Action Trigger of 100%, IPG will take appropriate steps in order to check the system for potential operating malfunctions. The steps taken to investigate any efficiency over the High Corrective Action Trigger of 100% may include:

- Making adjustments to bring the system into normal operation parameters, if necessary.
- Within 24 hours of discovery, isolate and inspect the problem
- If SRS is not operating properly, implement a solution within seven days
- Document the Corrective Action.

RTO Combustion Chamber Temperature Below Corrective Action Trigger

If RTO combustion chamber temperature is below Corrective Action Trigger of 1444°F, IPG will take the following corrective action in accordance with ROP Appendix 3 (MAP Attachment 11):

- Make the necessary adjustments to bring the system into normal operating parameters.
- Within 24 hours of discovery, determine if RTO is operating properly

- If RTO is not operating properly, implement a solution within seven days
- Document the Corrective Action taken

Equipment Inspections

If faulty operating parameters or malfunction are detected during the daily inspection, maintenance personnel will do one of the following for corrective action:

- Make the necessary adjustments to bring the system into normal operating parameters.
- Determine root cause, assess whether the faulty operating parameters will cause a malfunction/shutdown, and coordinate with maintenance supervisor an appropriate time to make repairs or adjustments.

Preventative Maintenance

If part repair or replacement is necessary during preventative maintenance on pollution control equipment, maintenance personnel will do one of the following corrective action measures:

- Determine the severity of the problem, and if it could possibly lead to system failure.
- If warranted, and parts are available, corrective action will occur immediately.
- Or if necessary, the parts will be ordered, and a maintenance department work order will be issued for the warranted corrective action.

MALFUNCTION / FAILURE / SHUTDOWN PROCEDURES

System Malfunction

If an unlikely malfunction/failure were to occur with the solvent recovery system or regenerative thermal oxidizer, IPG's corrective action procedures incorporate steps for minimization of ambient air contaminant emissions during equipment malfunction/failure/shutdown. Furthermore, IPG operates in compliance with "Rule 912" by providing appropriate notification and a written report of any abnormal conditions, start-up, shutdown, or malfunction that may have caused an emission exceedance.

The following are procedures to be utilized by IPG Production Supervisors and Management, Maintenance Supervisors and Management, and Environmental Personnel to assist in minimizing the release of air contaminant emissions during equipment malfunction/failure/shutdown.

Solvent Recovery System

Notification

In the event of a malfunction, failure or shutdown of the solvent recovery system, the coating lines will go into an automatic shutdown sequence. Operators are given 15 minutes to conduct a controlled shut down before the machine shuts down automatically. When this occurs, please utilize the following steps to minimize potential impact from production operations, and to communicate and document the response and corrective action:

- If a malfunction/failure has occurred which resulted in a shutdown, or potential shutdown of the solvent recovery system, please notify maintenance personnel and the shift supervisor.
- Determine if the shutdown is anticipated to be longer that one hour in duration. If the shutdown duration is less than one hour, please report the malfunction/failure/shutdown details to the Environmental Affairs Coordinator, Engineering Manager, and Production Manager. If the shutdown is anticipated to be longer than one hour in duration, please communicate the impact to production to the Operations Manager.

Permit Limit Evaluation

If there is an unforeseen circumstance that allows the coating process to continue running during a failure or malfunction, it may be necessary to complete a permit limit evaluation.

To determine if a situation will result in an increase of emissions above the facility's current permit limit, please follow these procedures:

- Determine the duration of the shutdown of the solvent recovery system. Please note that running the coating lines without solvent recovery may lead into an emission and permit exceedance. However, production may be able to continue for a determined period of time without violating current permit limits.
- Facility emissions are calculated within a midnight to midnight 24-hour averaging period. Compliance is demonstrated coating line by coating line.
- Determine all products coated until the malfunction, and the duration each product was coated on the three lines since midnight.
- Forecast the products scheduled to be coated, and duration of each, on all three lines up to midnight of the current day.
- With the above noted production data, access the Excel spreadsheet "MalfunctionCalc" in the Application Launcher in Windows. Make sure you ENABLE MACROS when the screen comes up, and open as a READ ONLY document when the password screen comes up. Click on the "Line1" tab on the lower left, towards the bottom. With production data for Line 1, and an estimated time solvent recovery will be shutdown, this spreadsheet will indicate whether the current production schedule will remain in compliance with the current permit limits while solvent recovery is shutdown. The spreadsheet is also capable of reflecting how long production can continue without the operation of solvent recovery and remain within compliance with the permit. Use "Line3" for Line 3 and "Line4" for Line 4.
    - On the spreadsheet, only the areas in blue need to be entered.
    - Enter the MFG Code, Line Speed, and number of hours run and anticipated to be run for that 24-hour period (midnight to midnight).
    - Place a **y** or **n** to indicate whether *Adsorb* (solvent recovery) or *RTO* is in operation. If solvent recovery is shutdown in the middle of a coating run, enter the number of hours with solvent recovery in operation on one data line of the spreadsheet, and place a **y** under *Adsorb*. And for the remaining time of the coating run with solvent recovery **not** in operation, enter the same MFG Code, line speed, and duration on another line and place an **n** under *Adsorb*. Please note that the total hours of production do not have to equal 24.
- After entering all the above noted information, the spreadsheet will calculate whether the coating run is "**COMPLIANT**" (less than 4.79 lb VOC/gal solids) or "**NON-COMPLIANT!**" (greater than 4.79 lb VOC/gal solids). The result is reported at the top of the spreadsheet.
- Please note that data must be entered separately for each line, and Line 1, Line 3, and Line 4 must result in a **COMPLIANT** answer to proceed with operation.
- If the computation result is **COMPLIANT**, then proceed with production as reported/entered into the spreadsheet and **report the malfunction/failure/shutdown as prescribed below in the *Report* section.**

- If the computation result is NON-COMPLIANT, then reduce the number of production hours, by coating line, without solvent recovery. **If a COMPLIANT result cannot be obtained with the production schedule then proceed to shutdown coating lines as detailed below to limit emission exceedances. Report the malfunction/failure/shutdown as prescribed below in the *Report* section.**

Coating Line Shutdown Procedures

In the event of a solvent recovery malfunction, the coating lines may have to be shutdown to prevent an emission exceedance above the facility's current permit limits. The following guidelines should be followed:

- The "Daily" emission calculation spreadsheet will prescribe in what order the coating lines should be shut down if solvent recovery is not corrected in a sufficient amount of time.
- If the "Daily" spreadsheet prescribes a limited allowable production period for any of the three coating lines, evaluate which lines needs to be prepared for shutdown.

  For example, if Line 1 can be run for approximately 4 hours without solvent recovery according to the spreadsheet, and there is enough adhesive whipped for approximately 3 hours of production. Coat the whipped "work-in-process", then shutdown the coating line, and hold off from whipping any more cure into adhesive until the solvent recovery system is back on-line. Or, a situation may arise where a coating line can only run for 3 hours and there is approximately 4 hours worth of whipped adhesive. In this situation, halt all cure whipping, run the "work in process" to avoid generation of hazardous waste, and then immediately shutdown the coating line if solvent recovery is not back on-line. Please note that every scenario will be different. Use your professional opinion and judgment. This process is applicable to all three coating lines.

Report

If a malfunction/failure/shutdown were to occur, IPG Environmental Personnel must submit notification to the Michigan Department of Environmental Quality-Air Quality Division (MDEQ-AQD) within 24 hours of the incident. Therefore a detailed report of the malfunction event must be personally delivered (voicemail, pager, email) to the Environmental Coordinator, Engineering Manager, or Production Manager as soon as feasible within a 24 hour period. Notification to the MDEQ-AQD will be made by one of the three above noted contacts. Information that must be gathered for the report include:

- Cause of the malfunction
- Corrective action performed to cure the problem
- How it may be prevented in the future

- Time & date malfunction occurred, and time & duration of shutdown
- Production data: Products run, line speed, duration of each coating run
- A copy of the "Daily" spreadsheet for all three lines.
- The coating lines shut down, and at the time & duration

A malfunction report form can be found in the Application Launcher under "MalfunctionReport". This form can be printed, completed and put in the Environmental Coordinators mailbox. Or, completed and forwarded via email to the Env. Coordinator.

Regenerative Thermal Oxidizer

Notification

In the event of a malfunction, failure or shutdown of regenerative thermal oxidizer (RTO), please utilize the following steps to minimize potential emissions from production operations, and to document the response and corrective action:

- If a malfunction/failure has occurred which resulted in a shutdown, or potential shutdown of the RTO, please notify maintenance personnel and the shift supervisor.
- Determine if the shutdown is anticipated to be longer that one hour in duration. If the shutdown duration is less than one hour, please report the malfunction/failure/shutdown details to the Environmental Affairs Coordinator, Engineering Manager, and Production Manager in accordance to the *Report* procedures below. If the shutdown is anticipated to be longer than one hour in duration, please proceed with the following steps within the *Coating Line Shutdown*.

Coating Line Shutdown Procedures

In the event of a RTO malfunction and shutdown of greater than one hour, the coating lines **will** have to be shutdown to prevent a violation of the facility's MDEQ-AQD Consent Order No. 10-1997, and emission exceedance. The following guidelines should be followed:

- When it has been determined that RTO will be shutdown for greater than 1 hour, the process of shutting down the coating lines should be done **immediately**. The following procedures should be followed.
    - If the coating lines can be shutdown without the chance of "work-in-process" curing and rendered hazardous waste, then those lines should be shutdown immediately until RTO is in operation.
    - If running the line to eliminate the possibility of wasted adhesive, and generation of hazardous waste, then operate the coating line until the work-in-

process has been utilized. Then subsequently shutdown the coating line until RTO is in operation.

- Please note that every scenario will be different. Use your professional opinion and judgment. This process is applicable to all three lines.
- If work-in-process is utilized while RTO is shutdown, please provide a detailed report in accordance to the below noted *Report* procedures.

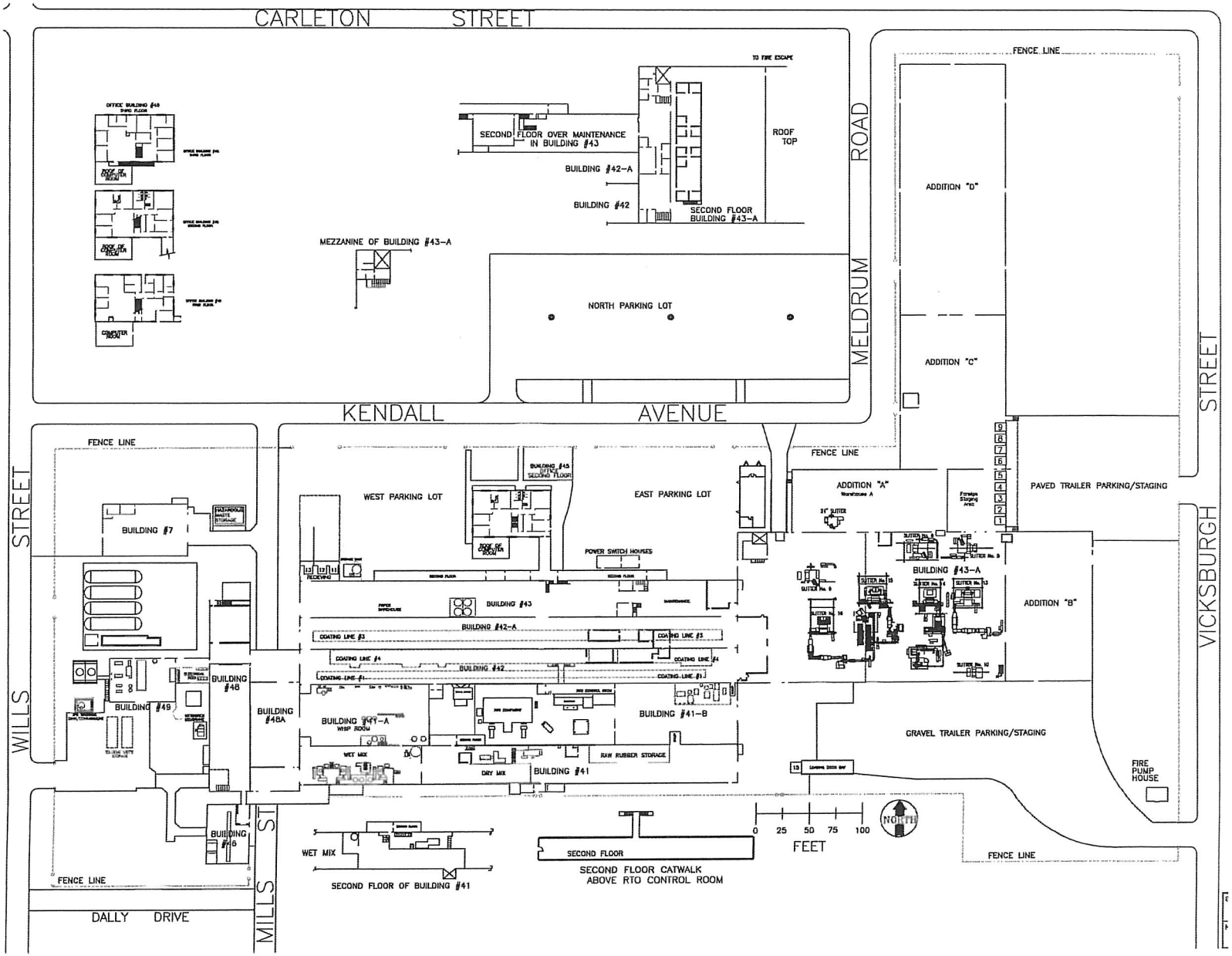
Report

If a malfunction/failure/shutdown were to occur, IPG Environmental Personnel must submit notification to the Michigan Department of Environmental Quality-Air Quality Division (MDEQ-AQD) within 24 hours of the incident. Therefore a detailed report of the malfunction event must be personally delivered (voicemail, pager, email) to the Environmental Coordinator, Engineering Manager, or Production Manager as soon as feasible within a 24 hour period. Notification to the MDEQ-AQD will be made by one of the three above noted contacts. Information that must be gathered for the report include:

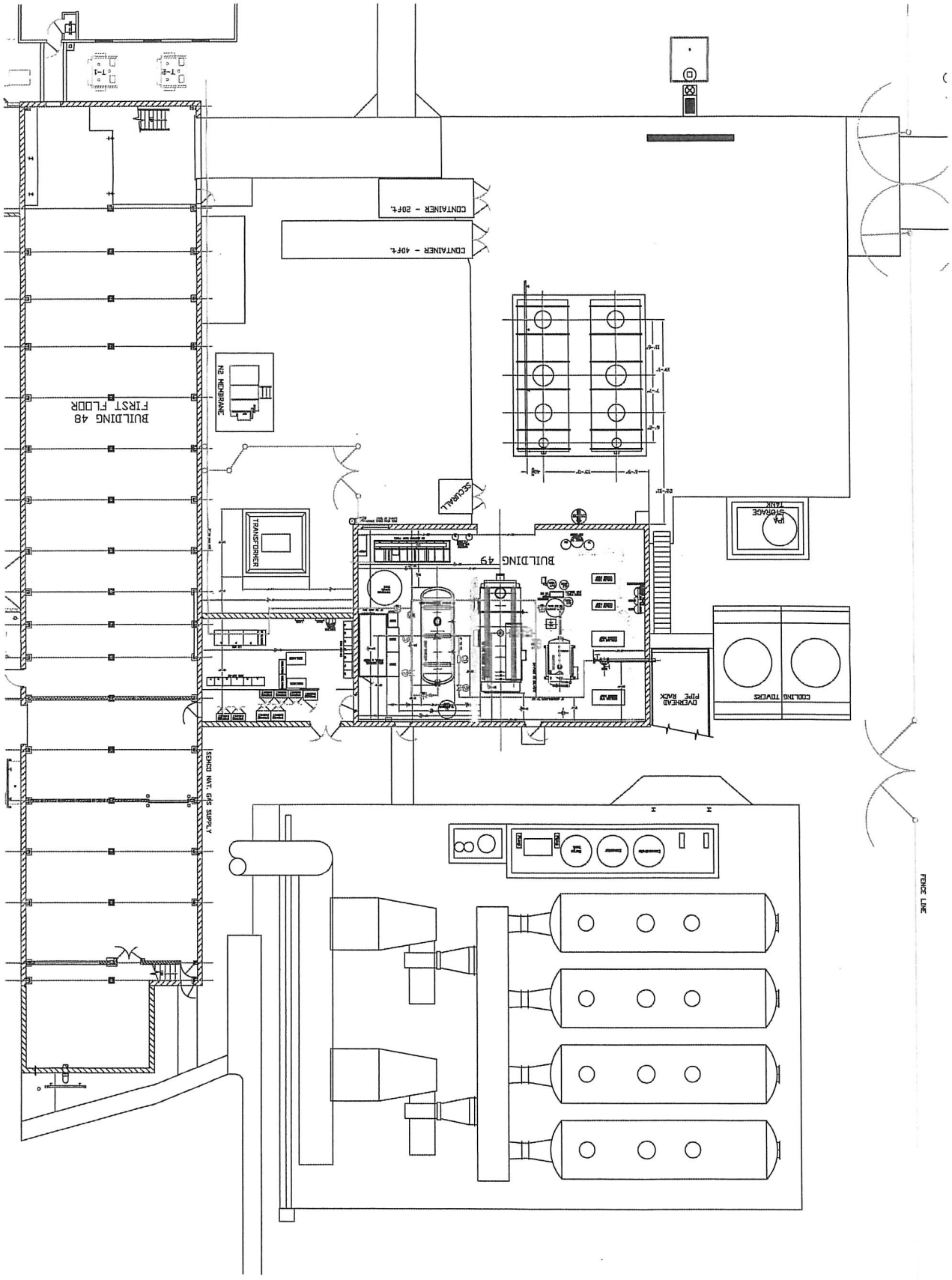
- Cause of the malfunction
- Corrective action performed to cure the problem
- How it may be prevented in the future
- Time & date malfunction occurred, and time & duration of shutdown
- Production data: Products run, line speed, duration of each coating run
- The coating lines shutdown, and at the time & duration

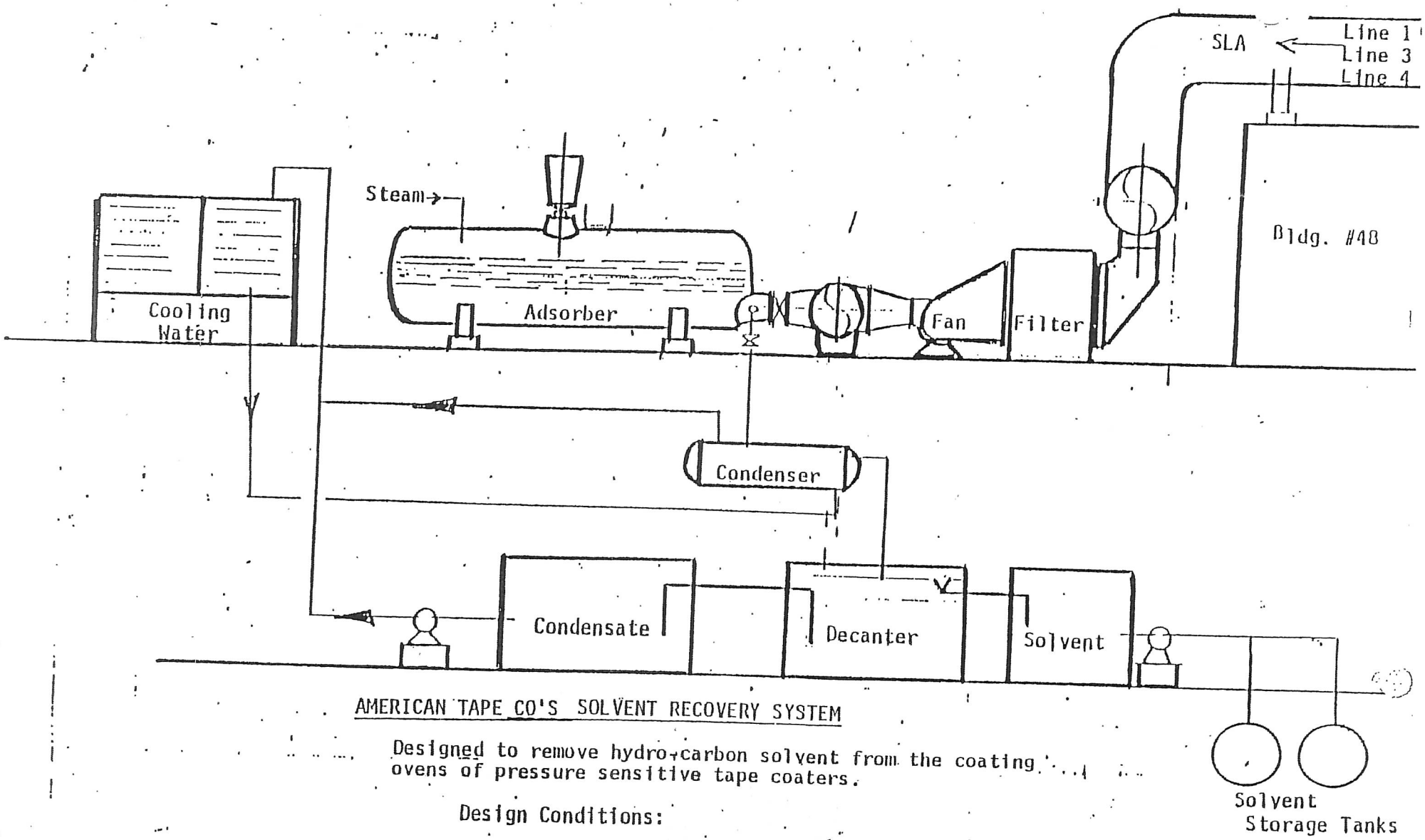
A malfunction report form can be found in the Application Launcher under "MalfunctionReport". This form can be printed, completed and put in the Environmental Coordinators mailbox. Or, completed and forwarded via email to the Env. Coordinator.

Attachment 1
Plant Layout


CARLETON STREET
KENDALL AVENUE
MELDRUM ROAD
VICKSBURGH STREET
WILLS STREET
MILLS ST
DALLY DRIVE
FENCE LINE
TO FIRE ESCAPE
SECOND FLOOR OVER MAINTENANCE IN BUILDING #43
ROOF TOP
BUILDING #42-A
BUILDING #42
SECOND FLOOR BUILDING #43-A
MEZZANINE OF BUILDING #43-A
NORTH PARKING LOT
ADDITION "D"
ADDITION "C"
ADDITION "A"
ADDITION "B"
PAVED TRAILER PARKING/STAGING
GRAVEL TRAILER PARKING/STAGING
WEST PARKING LOT
EAST PARKING LOT
BUILDING #7
BUILDING #48
BUILDING #49
BUILDING #48A
BUILDING #46
BUILDING #43
BUILDING #43-A
BUILDING #41
BUILDING #41-A
BUILDING #41-B
POWER SWITCH HOUSES
COATING LINE #3
COATING LINE #4
COATING LINE #1
RAW RUBBER STORAGE
WET MIX
DRY MIX
FIRE PUMP HOUSE
SECOND FLOOR OF BUILDING #41
SECOND FLOOR
SECOND FLOOR CATWALK ABOVE RTO CONTROL ROOM
0 25 50 75 100
FEET
NORTH

Attachment 2
Solvent Recovery System Layout


CONTAINER - 20FT.
CONTAINER - 40FT.
N2 MEMBRANE
BUILDING 48
FIRST FLOOR
TRANSFORMER
BUILDING 49
IPA STORAGE TANK
COOLING TOWERS
OVERHEAD PIPE RACK
KEMCO NAT. GAS SUPPLY
FENCE LINE

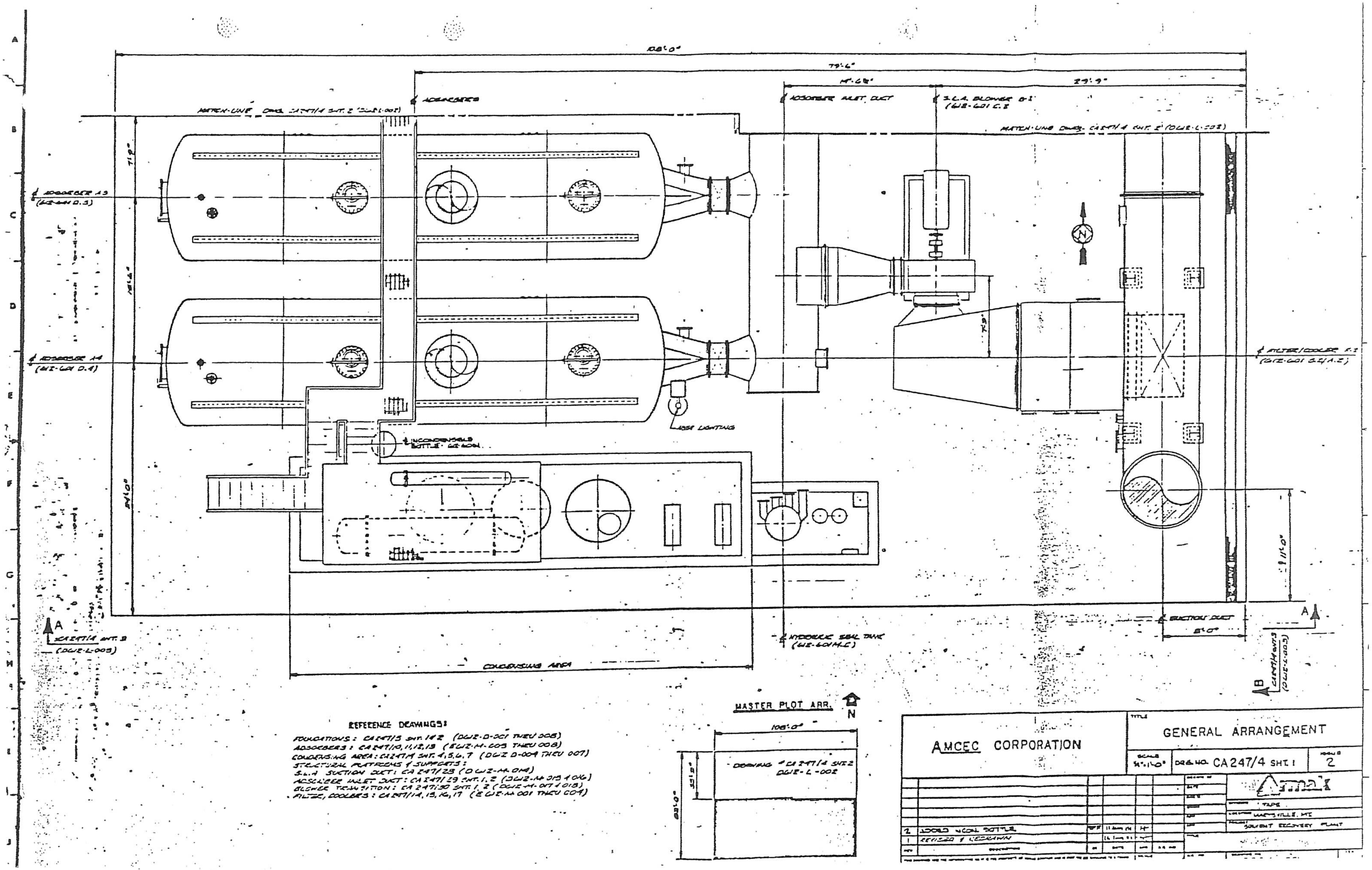


AMERICAN TAPE CO'S SOLVENT RECOVERY SYSTEM

Designed to remove hydro-carbon solvent from the coating ovens of pressure sensitive tape coaters.

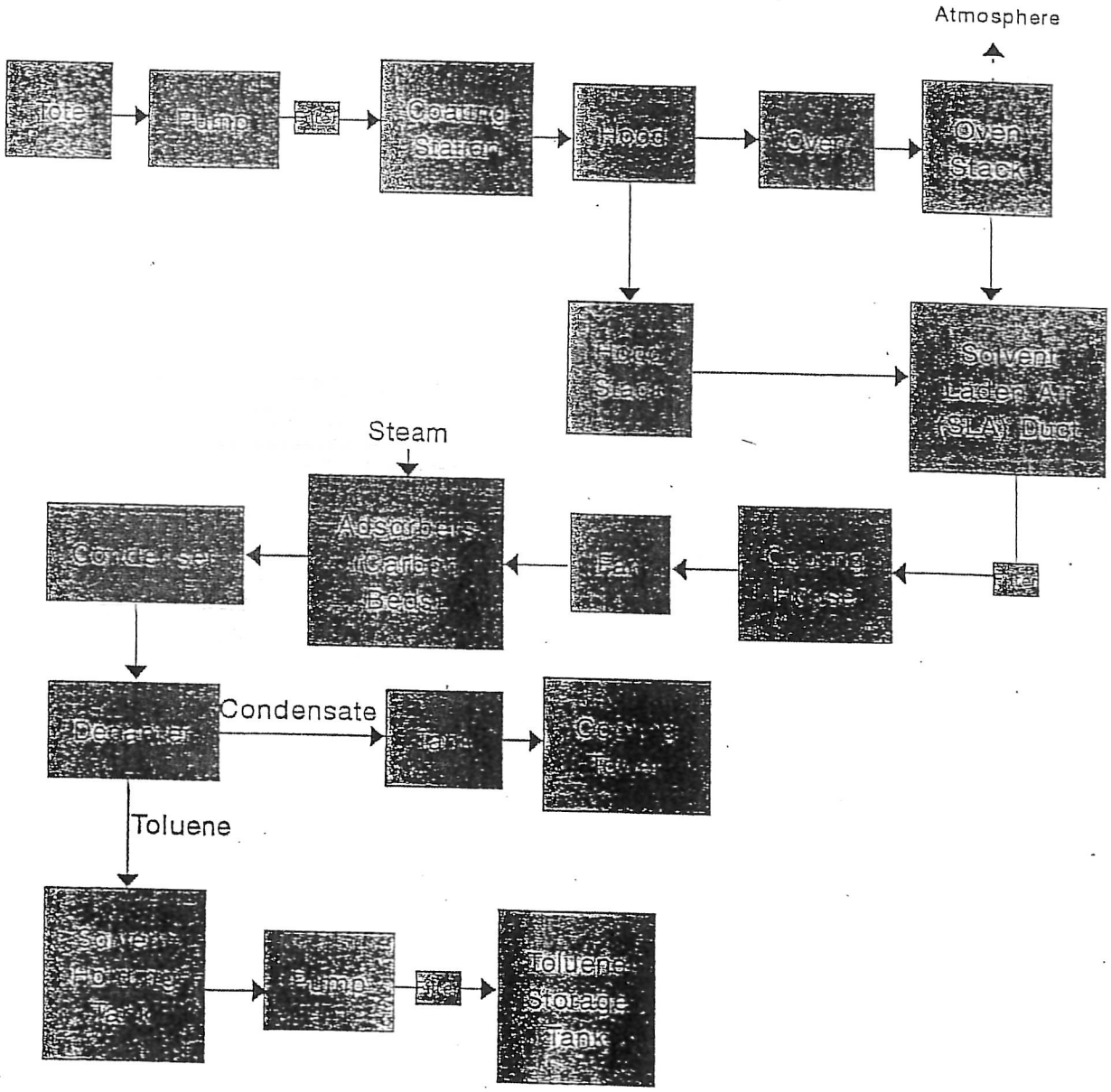
Design Conditions:

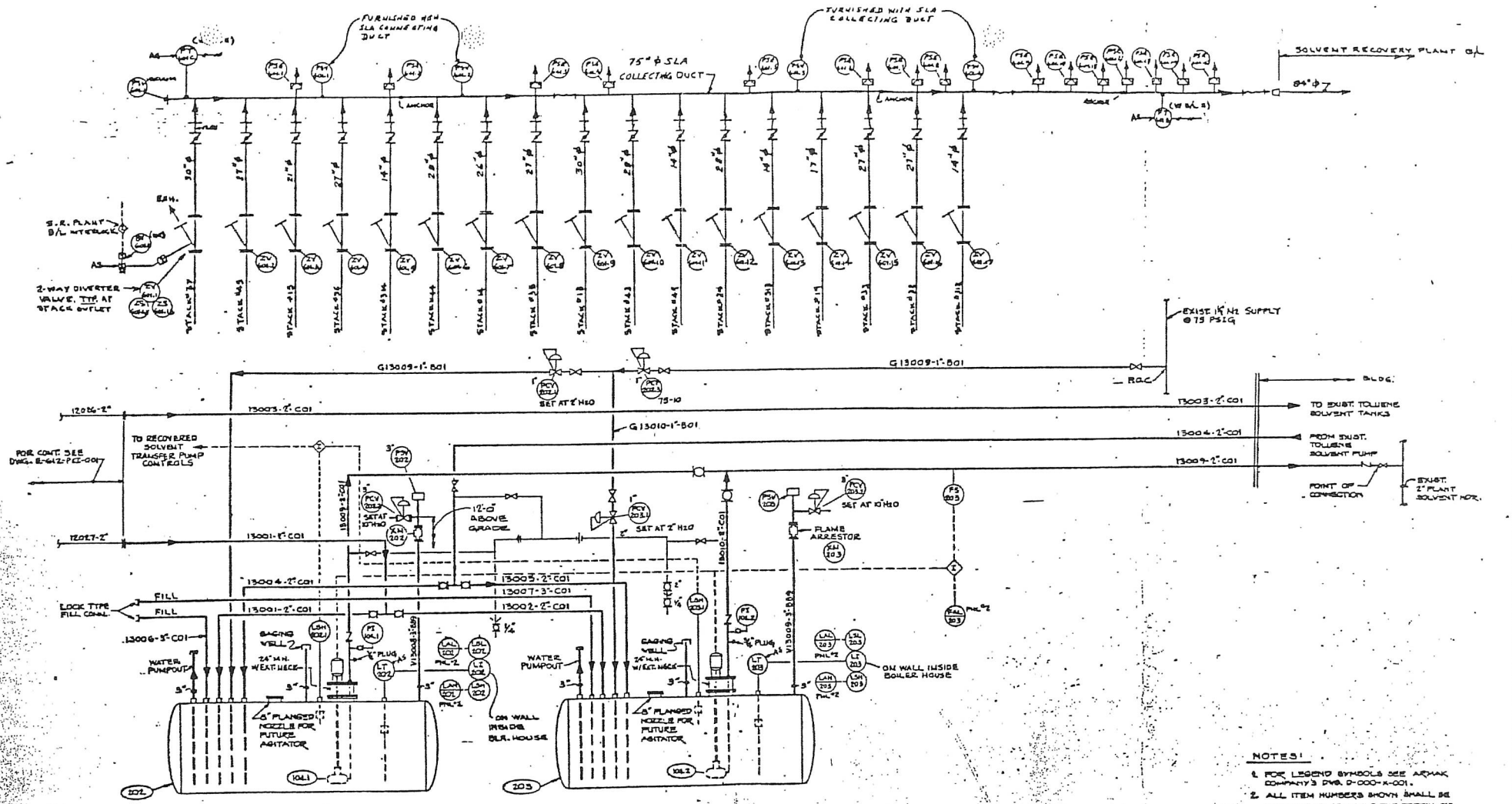
Flow 125,000 scfm
Temperature 200°F.
Solvent Loading 3,750 lbs/hour
Steam Rate 17,500 lbs/hour
Cooling Water 1,800 gpm.


108'-0"
79'-6"
29'-9"
ADSORBERS
ADSORBER INLET DUCT
ADSORBER 1-3
ADSORBER 1-4
INCONDENSABLE BOTTLE
LASER LIGHTING
FILTER/COOLER
SUCTION DUCT
HYDRAULIC SEAL TANK
CONDENSING AREA
MASTER PLOT ARR.
N
108'-0"
REFERENCE DRAWINGS:
FOUNDATIONS: CA247/5 SHT. 1 & 2 (DWG-D-001 THRU 008)
ADSORBERS: CA247/10,11,12,13 (DWG-M-005 THRU 008)
CONDENSING AREA: CA247/4 SHT. 4,5,6,7 (DWG D-004 THRU 007)
STRUCTURAL PLATFORMS & SUPPORTS:
BLOWER TRANSITION: CA 247/30 SHT. 1, 2
AMCEC CORPORATION
GENERAL ARRANGEMENT
CA 247/4 SHT 1
2
SOLVENT RECOVERY PLANT

Attachment 3
Solvent Recovery System Process Flow Diagrams/Coating Line Air Flow Schematics

SOLVENT RECOVERY





104.1
RECOVERED SOLVENT SUPPLY PUMP
80 GPM @ 302' T.H. OF R.S.
MOTOR: 20 HP @ 3600 RPM

202
RECOVERED SOLVENT STORAGE TANK
20,000 GAL., 10'-6" ϕ x 31'-0" LG.

104.2
RECOVERED SOLVENT SUPPLY PUMP
80 GPM @ 302' T.H. OF R.S.
MOTOR: 20 HP @ 3600 RPM

203
RECOVERED SOLVENT STORAGE TANK
20,000 GAL., 10'-6" ϕ x 31'-0" LG.

NOTES:
1. FOR LEGEND SYMBOLS SEE ARMAK COMPANY'S DWG. D-000-X-001.
2. ALL ITEM NUMBERS SHOWN SHALL BE CONSIDERED AS HAVING THE PREFIX 613.
3. (W/E) = FURNISHED WITH ASSOCIATED EQUIPMENT.
4. (W B/L E) = FURNISHED WITH S.R. PLANT B/L EQUIPMENT.

3	AS BUILT	CWK	11-6-81	
2	REVISED AS NOTED	T-A	10-11-81	
1	ISSUED FOR BIDS	EWP	9-10-81	
0	ISSUED FOR ARMAK'S COMMENTS	EWP	5-4-81	
REV	DESCRIPTION	BY	DATE	APP'D

MAE 8073-01
MID-AMERICA ENGINEERS, INC.
CONSULTANTS

Armak Company
DESIGNED
DRAWN TAPE
CHECKED
TRACED
DATE 5-4-81
LOCATION MARYSVILLE, MI
SCALE
SOLVENT RECOVERY PLANT
SLA, RECLAIMED SOLVENT STORAGE AND TRANSFER SYSTEMS P&I DIAGRAM

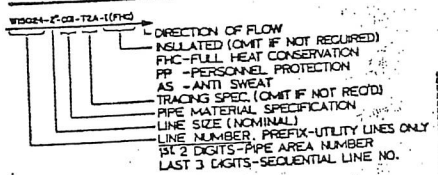
PIPING SYMBOLS

- MAIN PROCESS LINE
- AUXILIARY PROCESS OR SERVICE LINE
- FLEXIBLE CONNECTION
- LINE SIZE REDUCTION
- CHANGE IN LINE DESIGNATION (TYPICAL)
- FLANGED JOINT
- UNION JOINT
- BLIND FLANGE
- PIPE CAP
- THREADED PIPE CAP
- HOSE CONNECTION-MALE ON FIXED PIPE
- QUICK DISCONNECT FEMALE
- PLUGGED CONNECTION
- TEMPORARY STRAINER
- STRAINER Y-TYPE
- HAMER BLIND
- PADDLE BLIND
- SPECTACLE BLIND (NORMALLY OPEN)
- GATE VALVE IN PIPING DIAGRAMS OR BLOCK VALVE IN FLOW DIAGRAMS
- ANGLE VALVE
- THREE-WAY VALVE
- THROTTLE VALVE HAND OPERATED
- GLOBE VALVE
- CHECK VALVE
- ROTARY PLUG OR BALL VALVE
- BUTTERFLY VALVE
- UNCLASSIFIED VALVE TYPE
- VALVE NORMALLY CLOSED
- DAMPER
- SLIDE GATE
- PRESSURE RELIEF RUPTURE DISC (INVERT SYMBOL IN BOX FOR VACUUM)
- PRESSURE RELIEF VALVE
- PRESSURE/VACUUM RELIEF VALVE
- DIAPHRAGM OPERATED CONTROL VALVE (HAND WHEEL INDICTD. WHEN REQ'D.) FO=FAIL OPEN
- PISTON OPERATED VALVE (PNEUM. OR HYDRAUL.)
- SELF CONTAINED PRESSURE REDUCING REGUL. OR BACK PRESSURE CONTROL VALVE
- S-SOLENOID, M-MOTOR OPERATED VALVE
- SAMPLE CONNECTIONS
- STEAM TRAP ASSEMBLY
- EXPANSION JOINT

ABBREVIATIONS

AS	AIR SUPPLY
BD	BLOW DOWN
CCR	CLEAN CONDENSATE RETURN
CR	CONDENSATE RETURN
CSC	CAR SEAL CLOSED
CSO	CAR SEAL OPEN
CW	COOLING WATER
CWR	COOLING WATER RETURN
CWS	COOLING WATER SUPPLY
DCR	DIRTY CONDENSATE RETURN
FA	FLAME ARRESTER
FC	FAIL CLOSED
FL	FAIL LOCKED
FO	FAIL OPEN
GH	GAGING HATCH
HLL	HIGH LIQUID LEVEL
LKC	LOCKED CLOSED
LKO	LOCKED OPEN
LLL	LOW LIQUID LEVEL
NLL	NORMAL LIQUID LEVEL
NS	NITROGEN SUPPLY
PW	PROCESS WATER
RC	RODDING CONNECTION
RSP	REMOVABLE SPOOL PIECE
SC	SAMPLE CONNECTION
SH	SUPERHEATED (STEAM)
SO	STEAM OUT (CONNECTION)
SP	SET POINT (INSTRUMENT)
SS	STEAM SUPPLY OR SERVICE STATION (UTILITIES)
TW	TEMPERED WATER
TWR	TEMPERED WATER RETURN
TWS	TEMPERED WATER SUPPLY
WE	WITH EQUIPMENT (OMIT IF ENCLOSED IN BOX FOR PACKAGE UNIT)

PIPE LINE DESIGNATION



UTILITY PREFIX: A-AIR; B-HEAT TRANSF. FLUID; C-STM. COND.; G-NITROGEN, FUEL GAS; H-HYDROGEN; K-CHEMICALS; L-SEAL OIL; P-SEWAGE, WASTE WATER, CONTAMINATED WATER, LIQUID WASTE, RESIDUE, LIQUID FUEL; S-STEAM; V-VENT GAS; W-WATER OR GLYCOL

NOTE: FOR EQUIPMENT TRACING OR INSULATION, USE LATTER PORTION OF PIPE LINE DESIGNATION.
EXAMPLE: <T2A-I(FHC)> OR <I(FHC)> (NOT TRACED)

INSTRUMENT SYMBOLS

- LOCALLY MOUNTED INSTRUMENT
- LOCAL PANEL MOUNTED INSTRUMENT
- MAIN PANEL MOUNTED INSTRUMENT
- REAR PANEL MOUNTED INSTRUMENT
- TWO INSTRUMENT SYSTEMS IN ONE CASE
- DIAPHRAGM SEAL
- FLOW ELEMENT, ORIFICE
- ALL OTHER PRIMARY FLOW ELEMENTS
- PILOT LIGHT
- INSTRUMENT HEAT TRACING
- RELAY (CURRENT/PNEUM) FOR INPUT/OUTPUT SEQUENCE. I-CURRENT; P-PNEUMATIC
- INTERLOCK(I); LOGGER(L); COMPUTER(C)
- ELECTRICAL SIGNAL
- INSTRUMENT CAPILLARY TUBING
- INSTRUMENT PNEUMATIC SIGNAL
- INSTRUMENT PROCESS CONNECTION, MECHANICAL LINK, OR SUPPLY

NOTE: OTHER SYMBOLS PER ISA STANDARD S5.1 (SEE REFERENCE UNDER INSTRUMENT IDENTIFICATION)

PROCESS IDENTIFICATION

- PRESSURE, PSIG OR kg/cm² (GAGE)
- PRESSURE, mmHg ABSOLUTE
- TEMPERATURE, °C
- TEMPERATURE, °F
- FLOW RATE, Lb/h OR kg/h
- FLOW RATE, mol/h
- FLOW RATE, GPM OR liter/h
- FLOW RATE, SCFH (60°F) OR Nm³/h (0°C)
- HEAT DUTY, NORMAL, MBTU/h OR kcal/h
- STREAM NUMBER
- STREAM LEAVING OR ENTERING PROCESS
- INDICATES PACKAGE UNIT
- FUTURE — INDICATES FUTURE EQUIPMENT

NOTE: EXISTING EQUIPMENT IS TO BE DRAWN AS DASHED LINES

MEANINGS OF IDENTIFICATION LETTERS

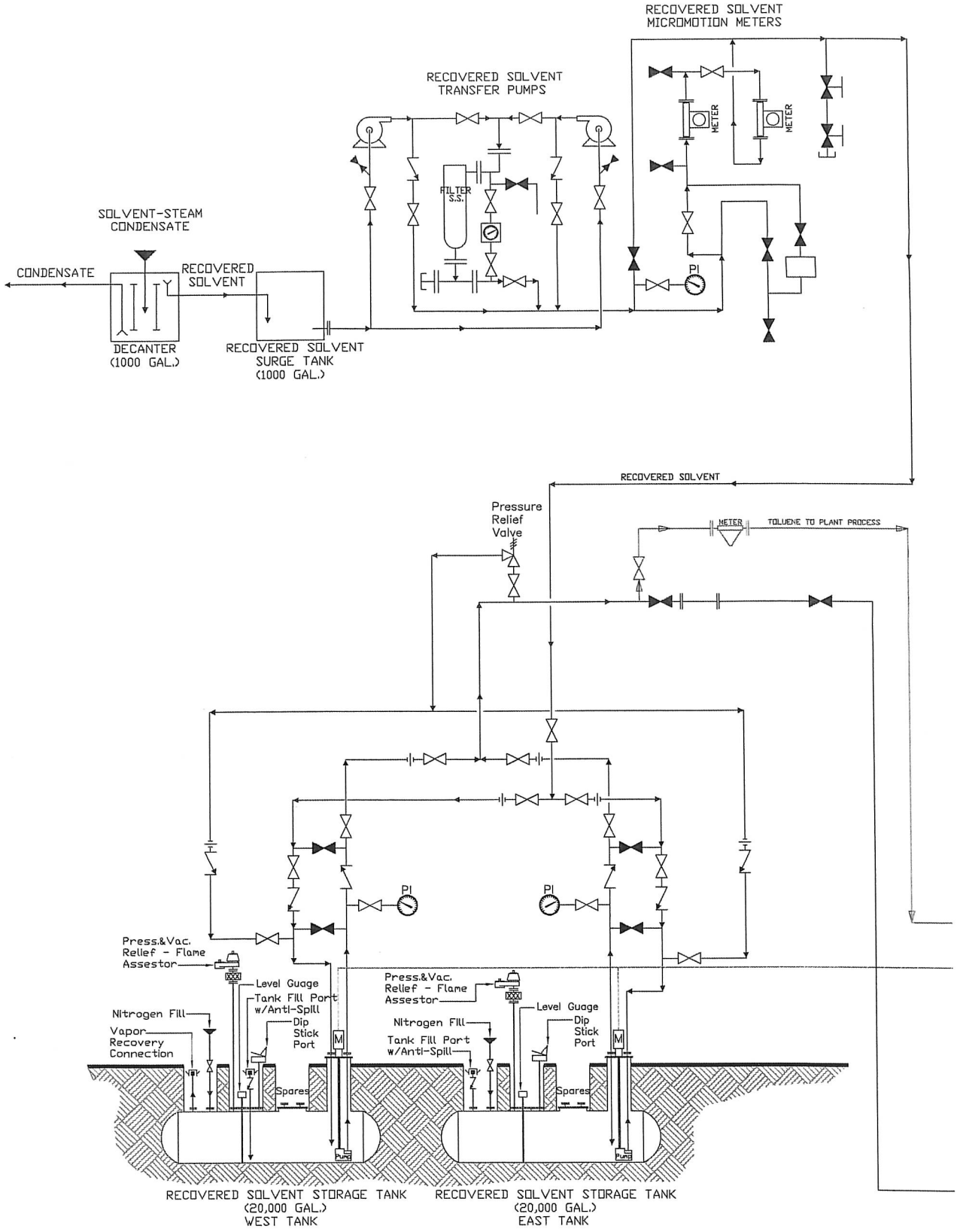
	FIRST LETTER		SUCCEEDING LETTERS (3)		
	MEASURED OR INITIATING VARIABLE (4)	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS (5)		ALARM		
B	BURNER FLAME		USER'S CHOICE (1)	USER'S CHOICE (1)	USER'S CHOICE (1)
C	CONDUCTIVITY (ELECTRICAL)			CONTROL (13)	
D	DENSITY (MASS) OR SP. GR.	DIFFERENTIAL (4)			
E	VOLTAGE (EMF)		PRIMARY ELEMENT		
F	FLOW RATE	RATIO (FRACTION) (4)			
G	GAGING (DIMENSIONAL)		GLASS (9)		
H	HAND-MANUALLY INITIATED				HIGH (7, 15, 16)
I	CURRENT (ELECTRICAL)		INDICATE (10)		
J	POWER	SCAN (7)			
K	TIME OR TIME SCHEDULE			CONTROL STATION	
L	LEVEL		LIGHT (PILOT) (11)		LOW (7, 15, 16)
M	MOISTURE OR HUMIDITY				MIDDLE OR INTERMEDIATE (7, 15)
N(11)	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE (1)		ORIFICE (RESTRICTION)		
P	PRESSURE OR VACUUM		POINT (TEST CONNECTION)		
Q	QUANTITY OR EVENT	INTEGRATE OR TOTALIZE (4)			
R	RADIO-ACTIVITY		RECORD OR PRINT		
S	SPEED OR FREQUENCY	SAFETY (8)		SWITCH (13)	
T	TEMPERATURE			TRANSMIT	
U	MULTI-VARIABLE (6)		MULTI-FUNCTION (12)	MULTI-FUNCTION (12)	MULTI-FUNCTION (12)
V	VISCOSITY			VALVE, DAMPER OR LOUVER (13)	
W	WEIGHT OR FORCE		WELL		
X(2)	UNCLASSIFIED		UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	USER'S CHOICE (1)			RELAY OR COMPUTE (13,14)	
Z	POSITION			DRIVE, ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT	

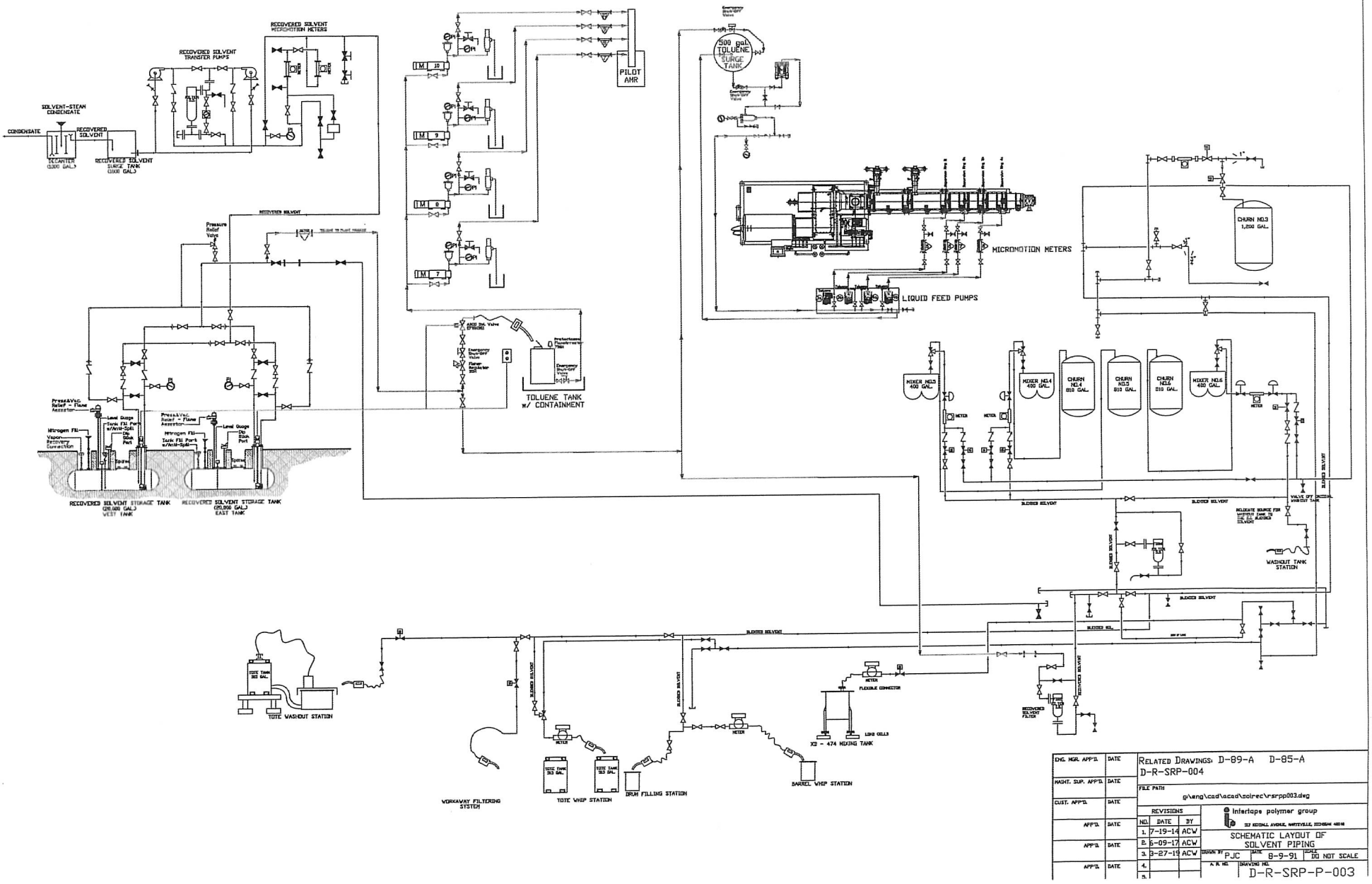
NOTE: NUMBERS IN PARENTHESES REFER TO SPECIFIC EXPLANATORY NOTES ON PAGES 13 AND 14 OF ISA STANDARD S5.1 — INSTRUMENTATION SYMBOLS AND IDENTIFICATION, ISA, 1973 (ANSI Y32.20-1975)

			ES	Armak COMPANY
			12-28-78	
2				
1	GEN. REVISION	12-14-77		
NO.	DESCRIPTION	DATE		

LEGEND - SYMBOLS

D-000-X-001


RECOVERED SOLVENT
MICROMOTION METERS
RECOVERED SOLVENT
TRANSFER PUMPS
METER
METER
FILTER
S.S.
PI
SOLVENT-STEAM
CONDENSATE
CONDENSATE
RECOVERED
SOLVENT
DECANTER
(1000 GAL.)
RECOVERED SOLVENT
SURGE TANK
(1000 GAL.)
RECOVERED SOLVENT
Pressure
Relief
Valve
METER
TOLUENE TO PLANT PROCESS
PI
PI
Press.&Vac.
Relief - Flame
Assestor
Level Guage
Tank Fill Port
w/Anti-Spill
Nitrogen Fill
Vapor
Recovery
Connection
Dip
Stick
Port
M
Spares
Pump
Press.&Vac.
Relief - Flame
Assestor
Level Guage
Nitrogen Fill
Tank Fill Port
w/Anti-Spill
Dip
Stick
Port
M
Spares
Pump
RECOVERED SOLVENT STORAGE TANK
(20,000 GAL.)
WEST TANK
RECOVERED SOLVENT STORAGE TANK
(20,000 GAL.)
EAST TANK



ENG. MGR. APP'D.	DATE	
MAINT. SUP. APP'D.	DATE	
CUST. APP'D.	DATE	
APP'D.	DATE	
APP'D.	DATE	
APP'D.	DATE	

RELATED DRAWINGS: D-89-A D-85-A D-R-SRP-004

FILE PATH: g:\eng\cad\acad\solrec\rsrpp003.dwg

REVISIONS		
NO.	DATE	BY
1.	7-19-14	ACW
2.	6-09-17	ACW
3.	3-27-19	ACW
4.		
5.		

interlape polymer group
321 KENDALL AVENUE, WATTSVILLE, MICHIGAN 49218

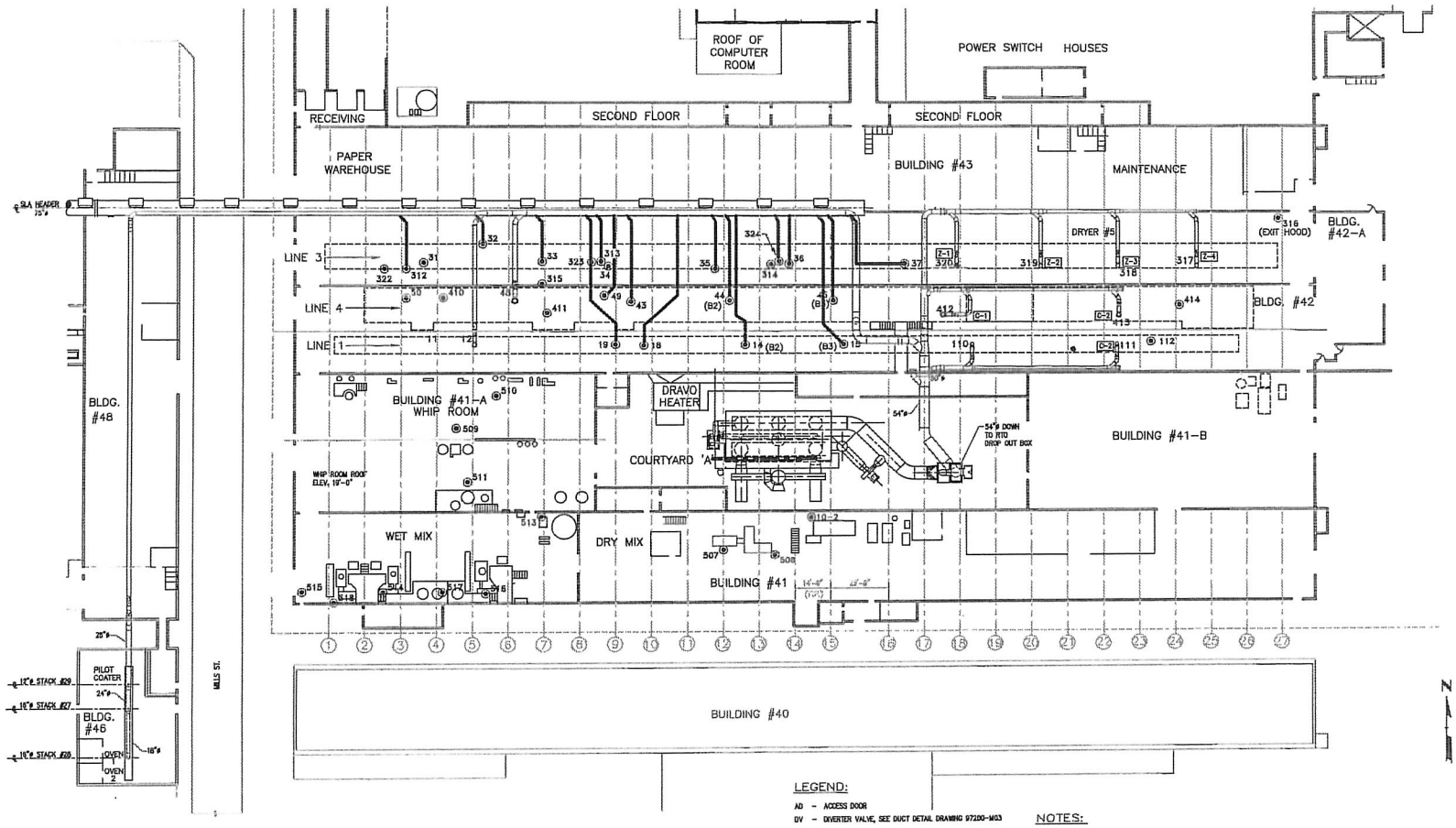
SCHEMATIC LAYOUT OF SOLVENT PIPING

DRAWN BY: PJC DATE: 8-9-91 SCALE: DO NOT SCALE

A.R. NO.

DRAWING NO. D-R-SRP-P-003

Attachment 4
Regenerative Thermal Oxidizer Process System Layouts



LEGEND:

AD – ACCESS DOOR
DV – DIVERTER VALVE, SEE DUCT DETAIL DRAWING 97200-M03
DS – DUCT STAND, SEE STRUCTURAL DRAWINGS
E-3 – DUCT EXPANSION JOINT WITH 3" COMPRESSION CAPABILITY, SEE SPECIFICATIONS
E-2 – DUCT EXPANSION JOINT WITH 2" COMPRESSION CAPABILITY, SEE SPECIFICATIONS
⊕ – EXISTING STACK
PT – PRESSURE TRANSMITTER

NOTES:

1. ROOF ELEVATIONS ARE APPROXIMATE. REFERENCED TO GRADE AT MILLS ST.

NO.	DATE	REVISIONS	BY	CK.	APVD.
0	11/6/97	ISSUED FOR CONSTRUCTION	LC	CW	BS
C	10/29/97	ISSUED FOR REVIEW	LC	CW	BS
B	9/29/97	ISSUED FOR REVIEW	LC	CW	BS
A	9/19/97	FOR CLIENT REVIEW			

FILE NAME: 97200-M1
FILE DIR: W:\97200\M\
PLOT SCALE: 1:1
PLOT DATE AND BY: 10/22/97 LEC

AMERICAN TAPE
317 KENDALL AVENUE, SEAFORVILLE, MICHIGAN 48040

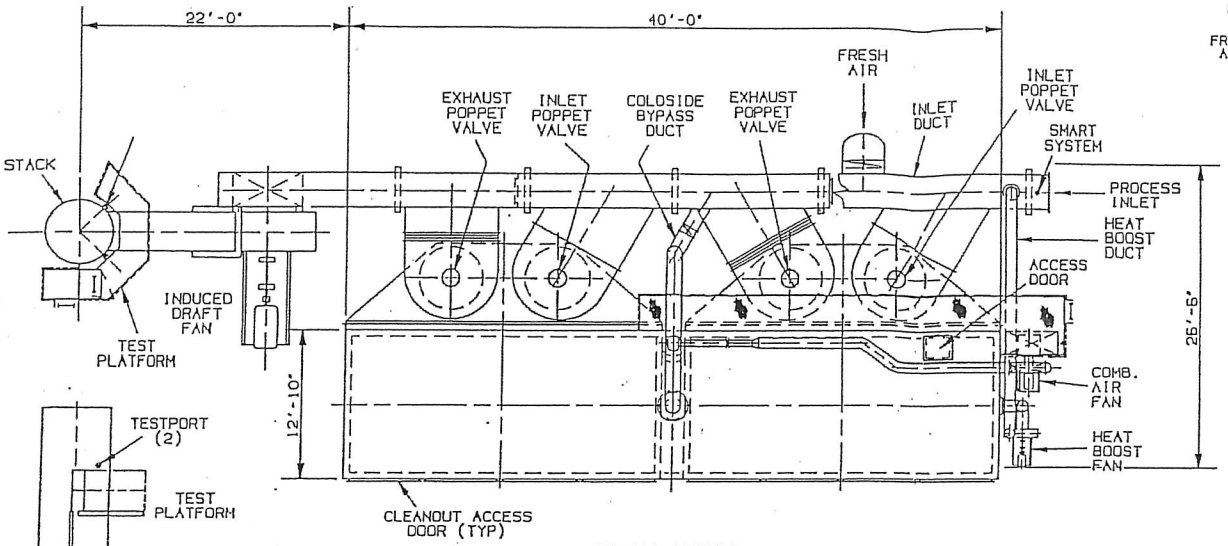
PROJECT MGR: ETL
DESIGNED BY: BMS
DRAWN BY: LEC
CHECKED BY: CLW
APPROVED BY:
APPROVED BY:
DATE: 7/31/97
JOB NO: 97200

100 Verdae Boulevard
PO Box 10726
Greenville, SC 29606
(864) 281-0030

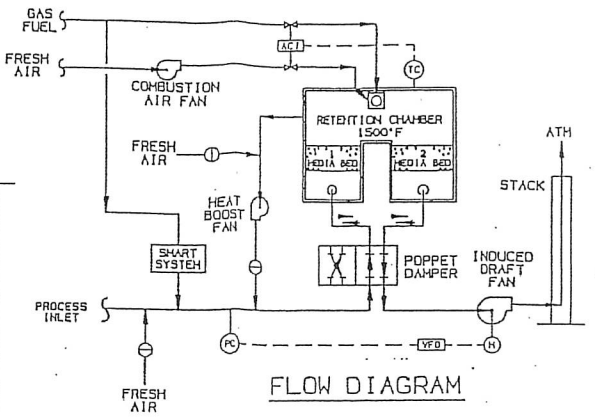
RTO EXHAUST SYSTEM
DUCTWORK PLAN

SCALE: 1/16"=1'-0"
SHEET:
DRAWING NO.: 97200-M01
REV.: 0

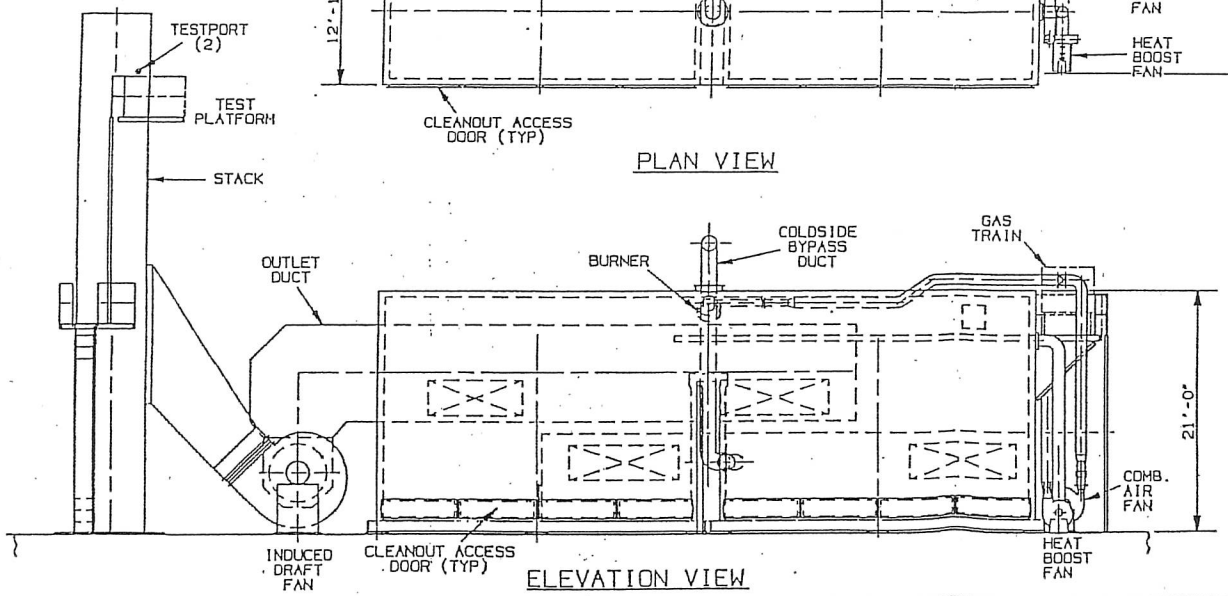
NOT FOR CONSTRUCTION



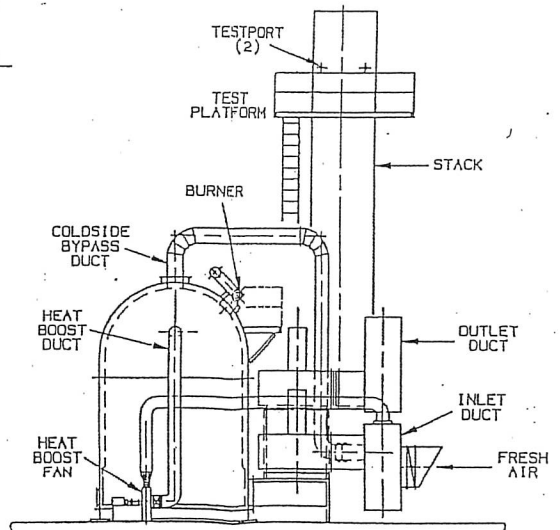
PLAN VIEW



FLOW DIAGRAM



ELEVATION VIEW



NOTE: COMBUSTION AIR FAN NOT SHOWN FOR CLARITY.

END VIEW

PROPOSAL DRAWING

DESIGN BASED ON PRELIMINARY INFORMATION
SUBJECT TO REVISION DURING DESIGN PROCESS..

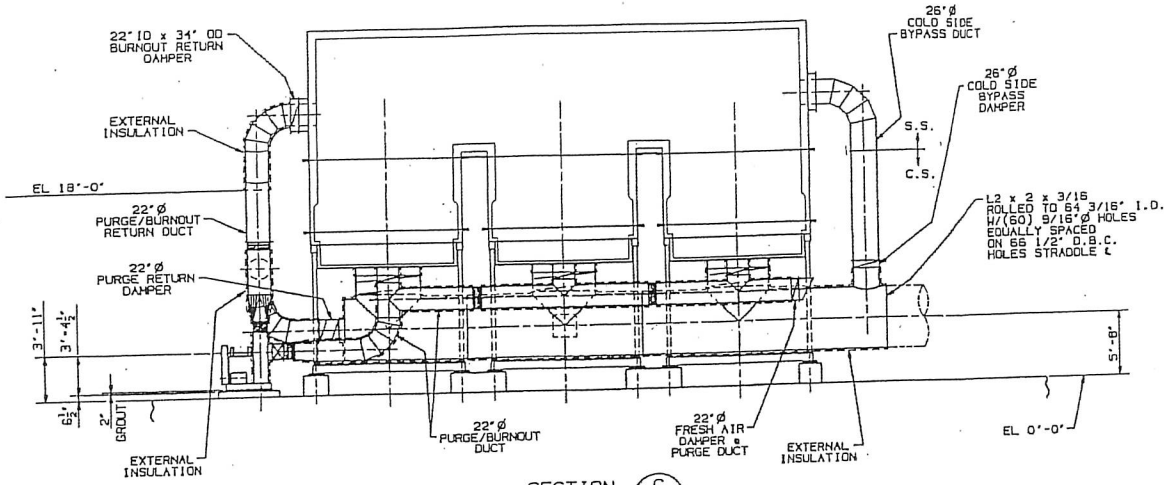
GENERAL ARRANGEMENT
2 CANISTER REGENERATIVE
THERMAL OXIDIZER

RMT/AMERICAN TAPE — MARYSVILLE, MI

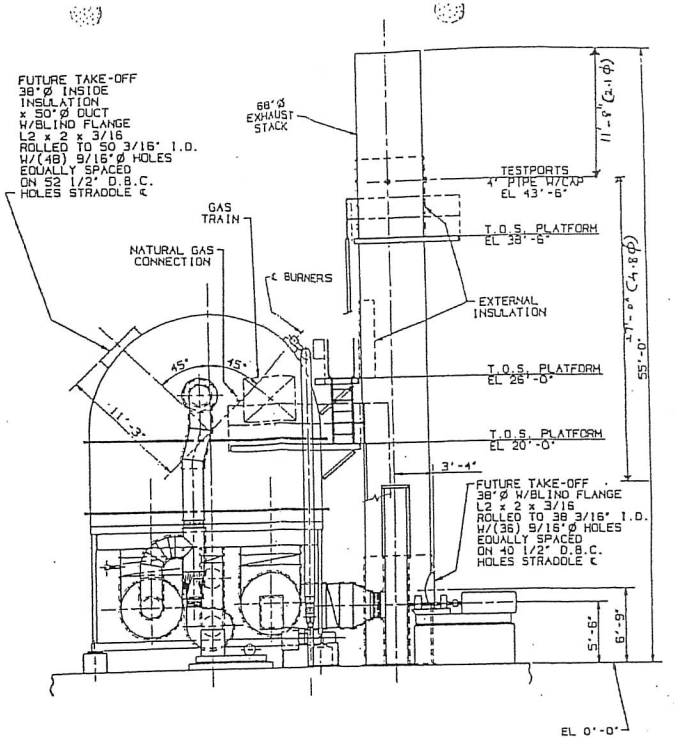
DR. A.S.ALDON	DATE 04-15-97	SCALE
CIO.	APPR.	

SMITH ENGINEERING COMPANY
SMITH ENVIRONMENTAL CORPORATION
2837 Cedar Avenue
Ontario, California 91761

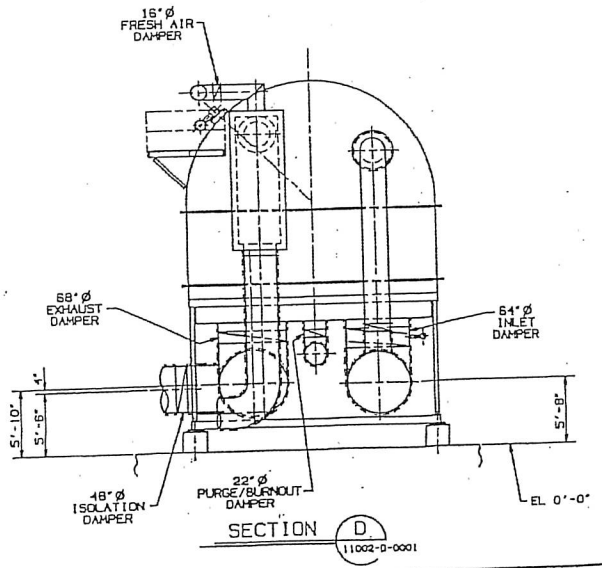
DRAWING NUMBER	REV.	SHEET NO. OF
PR02-97-050-0C		



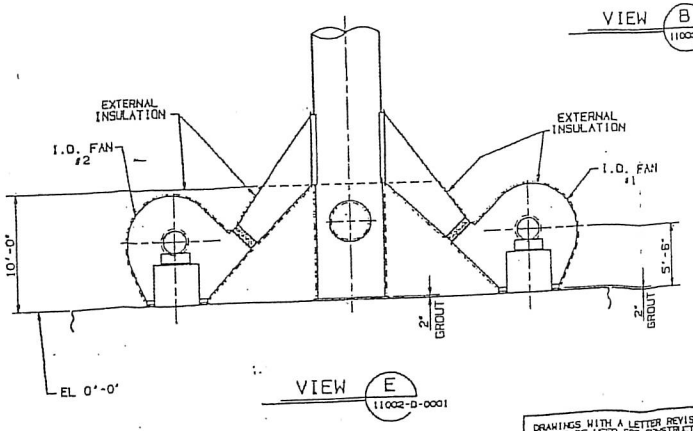
SECTION C
11002-D-0001



VIEW B
11002-D-0001



SECTION D
11002-D-0001



VIEW E
11002-D-0001

NOTES:

1. WORK THIS DRAWING WITH DRAWING 11002-D-0002.

REV. NO.	DRAWN	CHECKED	PROCESS ENG.	I&C ENG.	PROJ. MGR.	DATE	
A							FOR CLIENT APPROVAL PRELIMINARY ISSUE - NOT FOR CONSTRUCTION

DRAWN	CARL 9/8/97
CHECKED	CE 10-16-97
PROCESS ENG.	JE 10-16-97
I&C ENG.	
PROJ. MGR.	CVY 10/16/97
SCALE	1/4" = 1'-0"

SMITH ENGINEERING COMPANY
SMITH ENVIRONMENTAL CORPORATION
2327 East Cedar Street
Ontario, California 91761

GENERAL ARRANGEMENT

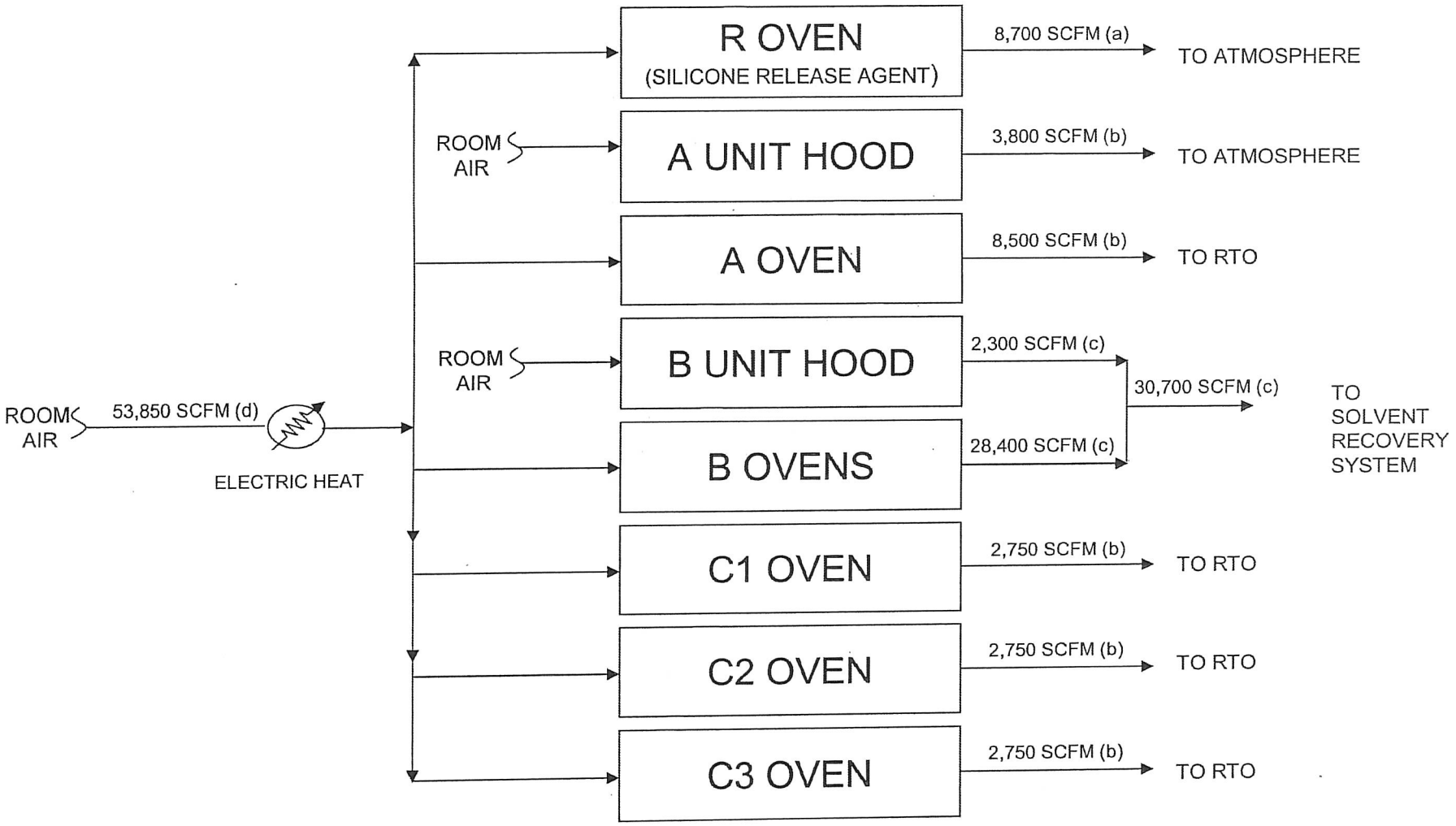
50,000 SCFM REGENERATIVE THERMAL OXIDIZER

AMERICAN TAPE COMPANY
HARYSVILLE, MI

JOB NO.	DRAWING NUMBER	REV.	SHT.
11002	11002-D-0002	1	19

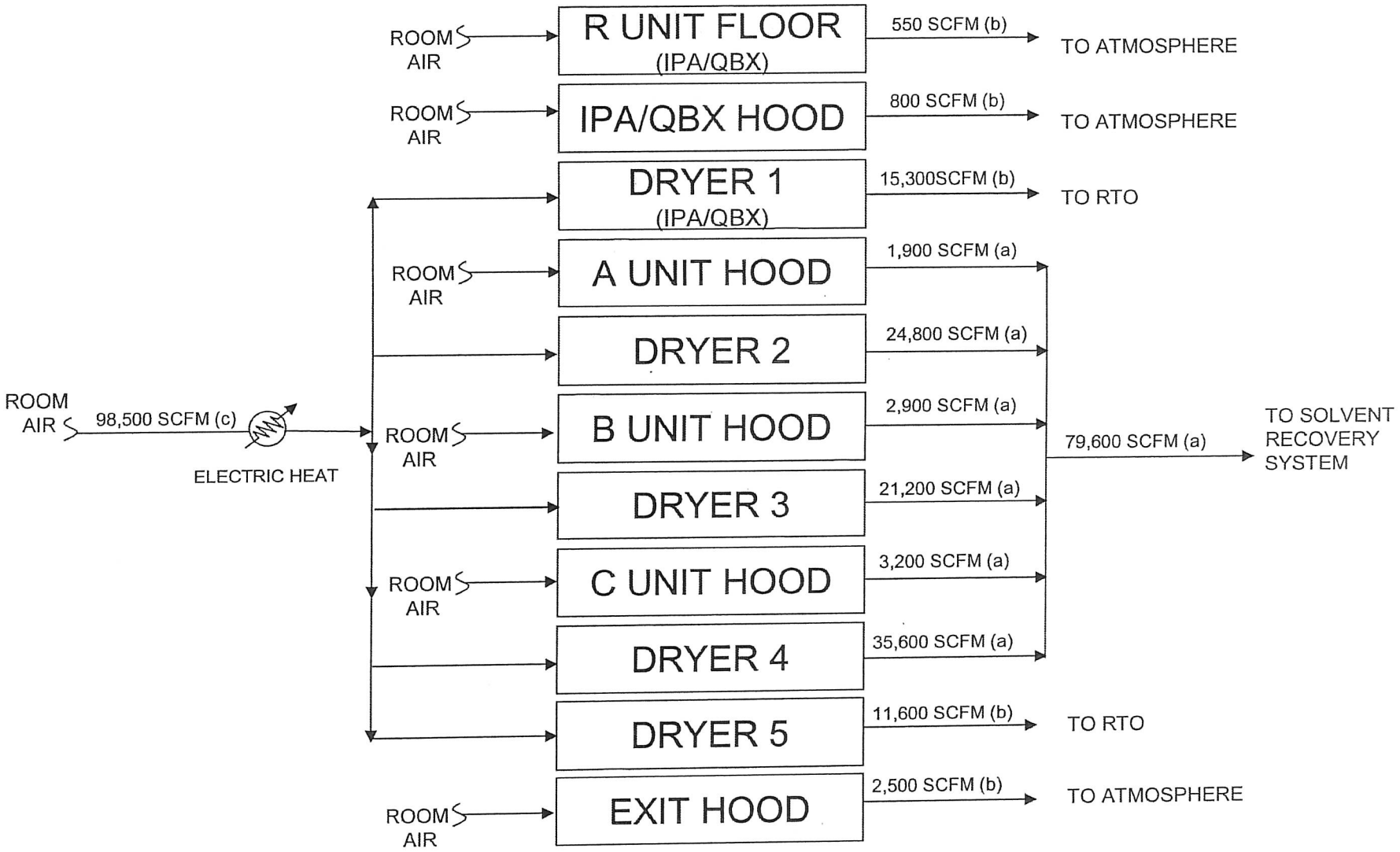
DRAWINGS WITH A LETTER REVISION ARE NOT TO BE USED FOR CONSTRUCTION - ONLY DRAWINGS WITH A NUMBER REVISION ARE FOR FABRICATION

Attachment 5
Regenerative Thermal Oxidizer Process Flow Diagrams



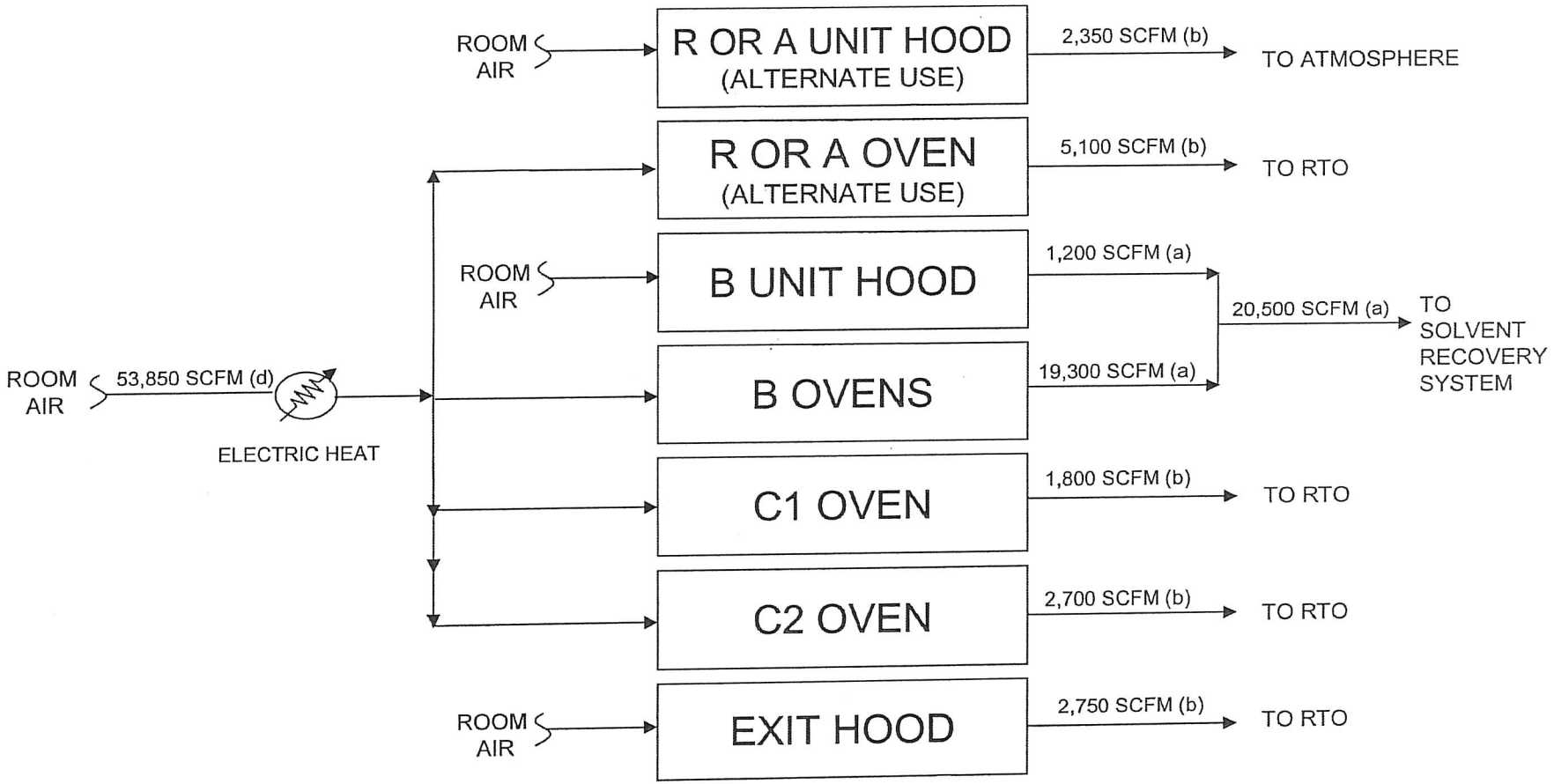
Coating Line 4 - Emission Source Flow Schematic

(a) FLOW RATES ARE ESTIMATED BASED ON EXHAUST FAN DESIGN DATA.
(b) FLOW RATES ARE ESTIMATED BASED ON JUEN AND OCTOBER 1992 MEASUREMENTS.
(c) FLOW RATES ARE ESTIMEATED BASED ON 12-31-81 MEASUREMENTS AT 70 F.
(d) FLOW RATES WERE CLACULATED BASES ON FLOW MEASUREMENTS OFR OTHER STREAMS.



Coating Line 3 - Emission Source Flow Schematic

(a) FLOW RATES ARE ESTIMEATED BASED ON 12-31-81 MEASUREMENTS AT 70 F.
(b) FLOW RATES ARE ESTIMATED BASED ON JUEN AND OCTOBER 1992 MEASUREMENTS.
(c) FLOW RATES WERE CLACULATED BASES ON FLOW MEASUREMENTS OFR OTHER STREAMS.



Coating Line 1 - Emission Source Flow Schematic

(a) FLOW RATES ARE ESTIMEATED BASED ON 12-31-81 MEASUREMENTS AT 70 F.
(b) FLOW RATES ARE ESTIMATED BASED ON JUNE AND OCTOBER 1992 MEASUREMENTS.
(c) FLOW RATES WERE CLACULATED BASES ON FLOW MEASUREMENTS FOR OTHER STREAMS.

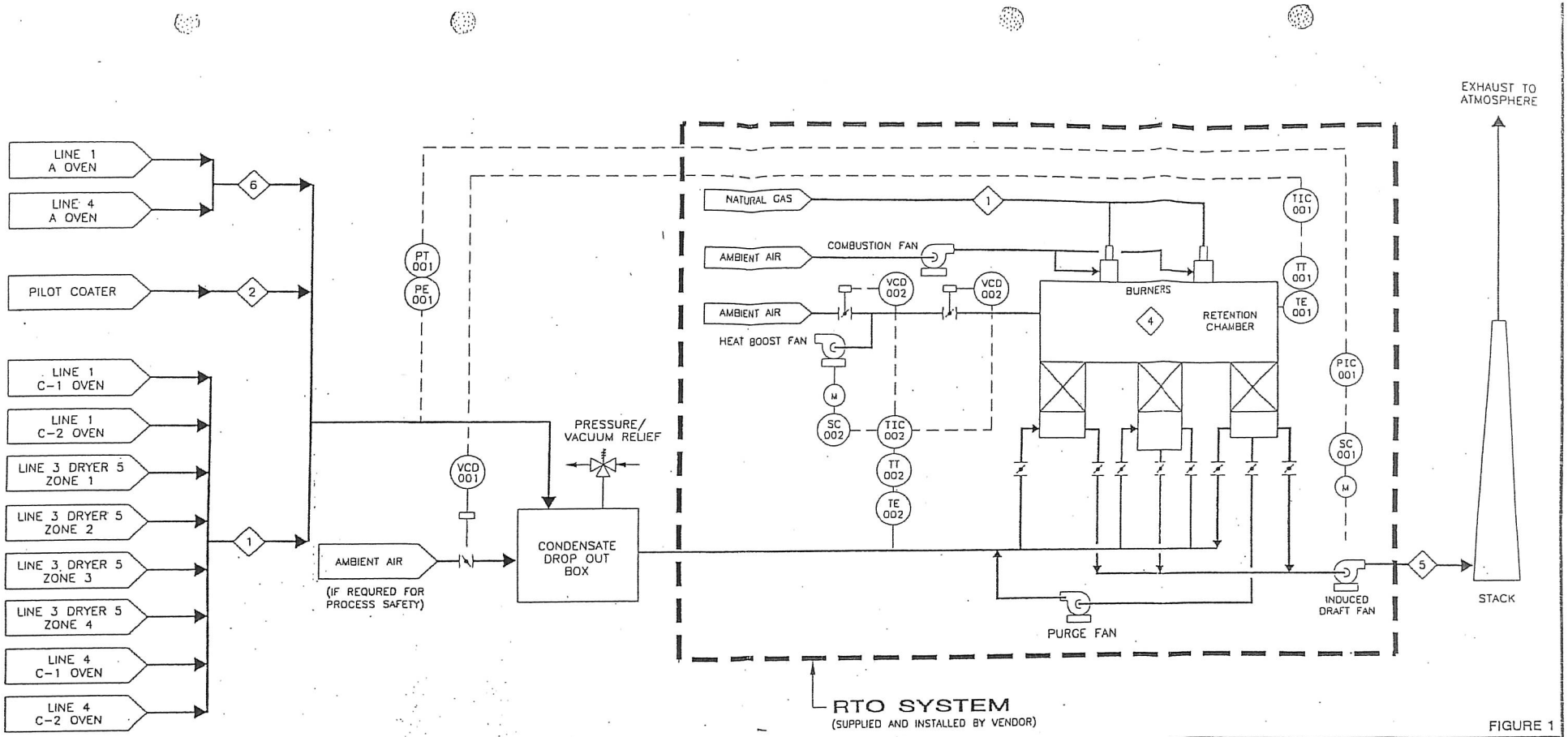


FIGURE 1

AMERICAN TAPE COMPANY	
RTO PROCESS FLOW DIAGRAM	
DRAWN BY: SJL	PROJECT NUMBER: 4010.14
CHECKED BY: GA	FILE NUMBER: 1401.DWG
APPROVED BY:	DATE: MARCH 1998

RMT INC., MICHIGAN
1143 HIGHLAND DRIVE, SUITE B
ANN ARBOR, MI. 48108-2237
P.O. BOX 991 48106-0991
PHONE: 734-971-7080
FAX: 734-971-9022

Drawing Name: J:\04010\14\1401.dwg
Operator name: sami
Scale: 1=1

Dwg Size: 282153 Bytes
Plot Date: Friday, March 13, 1998
Plot Time: 2:42:56:28 PM
Attached Xref's: No xref's Attached.

Attachment 6
Solvent Recovery Daily Inspection Forms

SOLVENT RECOVERY LOG

DATE: _____

ACTIVITY	0030	0430	0830	1230	1630	2030
INITIALS OF PERSONNEL						
VISUALLY INSPECT SWITCHES AND GAUGES ON PANEL						
BOILER: BLOWDOWN TANK TEMPERATURE (80 - 200 °F)						
SIGHT GLASS WATER LEVEL (80%)						
STACK ECONOMIZER IN TEMPERATURE (350 - 375 °F)						
STACK ECONOMIZER OUT TEMPERATURE (250 - 280 °F)						
STEAM PRESSURE (100 - 132 PSI)						
ECONOMIZER WATER TEMPERATURE IN (225 - 235 °F)						
ECONOMIZER WATER TEMPERATURE OUT (240 - 260 °F)						
LWCO TEST (Do not perform while steaming/high fire. Once per 24 hours. Acknowledge alarm on screen and verify burner start)						
ALWCO TEST (Do not perform while steaming/high fire. Once per 24 hours. Reset ALWCO button on panel, acknowledge alarm on screen and verify burner start)						
BOILER BLOWDOWN & CONDUCTIVITY LEVEL (3000)						
DEAERATOR: WATER LEVEL (SP- 18" LAL- 4" LWCO- 3")						
TANK TEMPERATURE (225 - 240 °F)						
ELECTRONIC STEAM PRESSURE (5.0 - 8.5 PSI)						
BOILER FEED WATER: PUMP NUMBER						
HEADER PRESSURE SP-180 PSI (170 - 190 PSI)						
SPRINKLER AIR PRESSURE (50 - 60 PSI)						
CHEMICAL BARREL LEVELS (Note issues & concerns)						

ACTIVITY	0030	0430	0830	1230	1630	2030
RECOVERED SOLVENT STORAGE TANKS: 202 TANK LEVEL (90% MAX. - 10% MIN.)						
203 TANK LEVEL (90% MAX. - 10 % MIN.)						
PRAXAIR SYSTEM RUNNING						
COOLING WATER TOWER: RECIRCULATION PUMP NUMBER						
DISCHARGE PRESSURE (35 - 50 PSI)						
WATER BOOSTER: PUMP NUMBER						
DISCHARGE PRESSURE (90 - 110 PSI)						
COOLING TOWER CHEMICAL SYSTEM: pH METER (7.5 - 8.5)						
CONDUCTIVITY LEVEL (500 - 1500 µS/cm)						

ACTIVITY	0030	0430	0830	1230	1630	2030
COOLING TOWER RETURN WATER: PRESSURE (2 - 15 PSI)						
TEMPERATURE (55 - 125 °F)						
SOFTENER SYSTEM: 'A' UNIT METER READING (0-5 PPM)						
'B' UNIT METER READING (0-5 PPM)						
BAGS OF SALT ADDED						
MAIN CONDENSER: OUTLET PRESSURE (12 - 45 PSI)						
OUTLET TEMPERATURE						
HEAT RECOVERY CONDENSER: STEAM INLET TEMPERATURE (pipe at your right)						
STEAM PRESSURE TO ADSORBERS AFTER FISHER CONTROLLER						
ALL ADSORBERS: COPPER BURSTING DISCS (note leaking discs)						
AIR PRESSURE: field control box (75 - 85 PSI)						
AIR FILTERS/OILERS: at field control box						
AIR RECEIVER TANK: AIR PRESSURE (90 - 115 PSI)						
DRAIN WATER						
CONTAINMENT INSPECTED AND EMPTY						
ACTIVITY	0030	0430	0830	1230	1630	2030
DECANTER TEMPERATURE (50 - 120 °F)						
SLA FAN #2: AIR EXHAUST TEMP. (50 - 105 °F)						
TOP MAGNAHELIC PRESSURE						
BOTTOM MAGNAHELIC PRESSURE						
OIL LEVEL (ROYAL PURPLE SYN. OIL)						
SLA FAN #1: AIR EXHAUST TEMP. (50 - 105 °F)						
TOP MAGNAHELIC PRESSURE						
BOTTOM MAGNAHELIC PRESSURE						
OIL LEVEL (ROYAL PURPLE SYN. OIL)						
SLA INLET TEMPERATURE						
BELOW FREEZING: HYDRAULIC SEAL PIT SIPHON (OPEN)						
COOLING TOWER SCREENS (ICE) DO NOT REVERSE FANS IN STEAM CYCLE						
WESTINGHOUSE 3P & SQ. D 1P CIRCUIT BREAKERS FOR ELECT. HEAT TRACE						
CHECK VALVE ON CONTAINMENT PIT (Circle Condition)	Open / Closed	Open / Closed	Open / Closed	Open / Closed	Open / Closed	Open / Closed
SOLVENT to PLANT From the recently installed MicroMotion	0030		0830		1630	

ACTIVITY	0030	0430	0830	1230	1630	2030
R/O SYSTEM						
Carbon Filters Inlet Pressure						
Carbon Filters Outlet Pressure						
Cartridge Filter Inlet Pressure						
Cartridge Filter Outlet Pressure						
Pump Discharge Pressure						
1st Array Feed Pressure						
2nd Array Feed Pressure						
Concentrate Pressure						
Permeate Pressure						
SCREEN 1						
Feed TDS (PPM)						
Premeate TDS (PPM)						
Rejection %						
Feed Water Temperature (Deg F)						
SCREEN 3						
Feed Flow (GPM)						
Permeate Flow GPM)						
Concentrate (GPM)						
Recycle Flow (GPM)						
System Recovery (%)						
1st Reading Run Hrs						
B/L METER						
OFF/BL METER						
NATURAL GAS						
METER READING						
WATER GAL BOILER						
METER C. TOWER						
ADS STEAM FLOW						
TOTAL STEAM FLOW						
COATING LINES						
FLOW METER			GALLONS		POUNDS	
F-1						
F-2						
			GALLONS		INCHES	
EAST TANK						
WEST TANK						

5S SWEEP SHEET	0030	0430	0830	1230	1630	2030
Boiler Room						
Floor is Clear of Slip, Trip and Fall Hazards						
Safety Equipment Not Obstructed						
Desk is Clean and Organized						
Solvent Pad	0030	0430	0830	1230	1630	2030
IPA Containment Area Inspected and Empty						
Solvent Containment Trench Inspected and Empty						
Water Around USTs Inspected and Empty						
Ground is Clear of Slip, Trip and Fall Hazards						
Solvent Recovery	0030	0430	0830	1230	1630	2030
SRS Equipment Inspected for Leaks						
Walking Surface is Clear of Slip, Trip and Fall Hazards						
Chains up by Adsorber Openings						
Bldg 7/Haz Waste Area	0030	0430	0830	1230	1630	2030
Hazardous Waste Area Locked						
All Hazardous Waste is Inside Containment Area						
Bldg 7 Driveways Clear						
Bldg 7 General Condition Acceptable						
COMMENTS						

Attachment 7
Regenerative Thermal Oxidizer Daily, Weekly, and Annual Inspection Forms and Standard Instructions

RTO DAILY ROUNDS SHEET						
DATE:	XYCOM READINGS					
INITIALS:						
	0:00	4:00	8:00	12:00	16:00	20:00
CHANGE CHART PAPER	XXXXXX	XXXXXXX		XXXXXXX	XXXXXX	XXXXXX
COATERS RUNNING						
PERCENT LEL						
RETENTION CHAMBER TEMP						
1420 - 1480						
STACK TEMPERATURE 280-380						
ID FAN #1 RPM						
ID FAN #2 RPM						
PROCESS AIR TEMP 220-280						
RTO INLET TEMPERATURE						
INLET STATIC PRESSURE						
HEAT BOOST TEMPERATURE						
BED #1 TEMPERTURE 280-380						
BED #2 TEMPERTURE 280-380						
BED #3 TEMPERATURE 280-380						
GAS VALVE PERCENT OPEN						
DRIVE READINGS						
ID FAN #1 Hz						
ID FAN #2 Hz						
STACK FLOW						
HEAT BOOST FAN Hz						
HYDRAULIC PUMPS						
RETURN FILTER INDICATOR						
LEVEL						
SUPPLY FILTER INDICATOR						
HYDRAULIC PRESSURE						
LEAKS						
OUTSIDE						
PURGE BURNOUT FAN						
COMBUSTION AIR FAN						
ID FAN #2						
ID FAN #1						
HEAT BOOST FAN						
HYDRAULIC LEAKS						
HEAT RECOVERY						
OUTSIDE TEMP						
MUA1 SUPPLY AIR TEMP						
RTO OUTLET TEMP						

RTO Weekly Checks		
	DATE	INT:
Check C clips on Hydraulic Cylinders		
Grease Damper Bearings		
Grease Hydraulic Cylinder Pivot Points		
Switch Hydraulic Pumps		
Grease Air /Gas Meter Reading		
Electrical Meter Reading		
Note:		
Damper Bearing Grease Omni Temp 2		
Hydraulic Pivot Point Grease Mobil 2		
Air/Gas Ratio Valve Grease Mobil 2		
Comments:		

SPI Code: RTO-WK

Appl/Usage: RTO WEEEKLY RDS

1. INSPECT HYDRAULIC RESOVIOR LEVEL
2. INSPECT FOR FLUID LEAKS
3. CHECK HYDRAULIC PRESSURE
4. CHECK HYDRAULIC FILTER VISUAL INDICATORS
5. DRAIN RTO DUCTWORK
6. LUBRICATE ALL BEARINGS ON DAMPERS (OMNI TEMP GREASE)
7. LUBRICATE ALL BLOWER BEARINGS (SYNTHETIC GREASE)
8. CHECK BELTS FOR PROPER TENSION
9. CHECK C-CLIPS ON HYDRAULIC CYLINDERS
10. GREASE HYDRAULIC CYLINDER PIVOT POINTS
11. GREASE AIR/GAS RATION VALVE (SYNTHETIC GREASE)

SPI Code: RTO-1

Appl/Usage: RTO ANNUAL INSPECTION

1. REMOVE ALL ACCESS DOORS
2. INSPECT REFRACTORY MATERIALS FOR SIGNS OF DAMMAGE
3. INSPECT EXTERIOR SHELL FOR POSSIBLE SIGNS OF HOT SPOTS CAUSED BY INSULATION FAILURE
4. INSPECT OXIDIZER SHELL FOR CRACKED WELDS AND LOOSE FLANGE BOLTS
5. INSPECT GAS BURNERS FOR CRACKS, PLUGGED ORIFICES OR RESIDUE
6. INSPECT FAN WHEELS AND BEARINGS AND LUBRICATE AS REQUIRED
7. INSPECT ALL DAMPERS FOR CORRECT OPERATION AND LUBRICATE A REQUIRED
8. REPLACE THERMOCOUPLES ANNUALLY
9. INSPECT AND TEST ALL SAFETY DEVICES FOR INTEGRITY AND CORRECT OPERATION
10. CHECK INLET DUCT, OUTLET DUCT, LOWER CANISTERS, AND VALV OF OXIDIZER FOR BUILDUP OF MATERIAL

SPI Code: RTO-2

Appl/Usage: RTO ANNUAL INSPECTION-2

1. INSPECT GAS PILOT ASSEMBLY FOR DETERIORATION AND FUME DEPOSTION
2. INSPECT BURNER FOR DETERIORATION OR ORIFICE PLUGGAGE
3. INSPECT GAS CONTROL VALVES FOR PROPER OPERATION
4. INSPECT U.V. DETECTORS
5. INSPECT SPARK PLUGS AND PILOTS FOR PROPER ADJUSTMENTS
6. INSPECT ALL GUAGES, FLOW AND PRESSURE SWITCHES, CONTROLS, ECT, FOR PROPER OPERATION

Attachment 8
Solvent Recovery System Preventative Maintenance Items

Work Order No (Work Order)	Equipment Code (Work Order)	SOP Code (Work Order Task SOP)	SOP Description (Work Order Task SOP)	SOP Custom Instructions (Work Order Task SOP)
PM1027283	SOL - SOLVENT RECOVERY			ROTATE SHAFT OF SPARE MOTOR IN BLDG. 7, IN WINTER TIME CHECK THAT MOTOR HEATER IS ON
PM1027804	SOL - SOLVENT RECOVERY			ROTATE SHAFT OF SPARE MOTOR IN BLDG. 7, IN WINTER TIME CHECK THAT MOTOR HEATER IS ON
PM1028053	SOL - SOLVENT RECOVERY			ROTATE SHAFT OF SPARE MOTOR IN BLDG. 7, IN WINTER TIME CHECK THAT MOTOR HEATER IS ON
PM1028294	SOL - SOLVENT RECOVERY			ROTATE SHAFT OF SPARE MOTOR IN BLDG. 7, IN WINTER TIME CHECK THAT MOTOR HEATER IS ON
PM1028687	SOL - SOLVENT RECOVERY			ROTATE SHAFT OF SPARE MOTOR IN BLDG. 7, IN WINTER TIME CHECK THAT MOTOR HEATER IS ON
PM1029603	SOL - SOLVENT RECOVERY			ROTATE SHAFT OF SPARE MOTOR IN BLDG. 7, IN WINTER TIME CHECK THAT MOTOR HEATER IS ON
PM1029604	SOL - SOLVENT RECOVERY			ROTATE SHAFT OF SPARE MOTOR IN BLDG. 7, IN WINTER TIME CHECK THAT MOTOR HEATER IS ON
PM1029838	SOL - SOLVENT RECOVERY			ROTATE SHAFT OF SPARE MOTOR IN BLDG. 7, IN WINTER TIME CHECK THAT MOTOR HEATER IS ON
PM1030083	SOL - SOLVENT RECOVERY			ROTATE SHAFT OF SPARE MOTOR IN BLDG. 7, IN WINTER TIME CHECK THAT MOTOR HEATER IS ON
PM1030346	SOL - SOLVENT RECOVERY			ROTATE SHAFT OF SPARE MOTOR IN BLDG. 7, IN WINTER TIME CHECK THAT MOTOR HEATER IS ON
PM1030593	SOL - SOLVENT RECOVERY			ROTATE SHAFT OF SPARE MOTOR IN BLDG. 7, IN WINTER TIME CHECK THAT MOTOR HEATER IS ON
PM1030877	SOL - SOLVENT RECOVERY			ROTATE SHAFT OF SPARE MOTOR IN BLDG. 7, IN WINTER TIME CHECK THAT MOTOR HEATER IS ON
PM1029091	SOL-ADSOR-1 - CHARCOAL ADSORBER BED #1	SRADSB - SOL. REC. ADSORBER BED	A. OPEN AND INSPECTING ADSORBER BEDS 1. LOCK OUT BLOWERS 2. LOCK OUT STEAM FEED TO ADSORBER 3. REMOVE INSPECTION PORTS 4. FILL OUT VESSEL ENTRY PERMIT 5. PUT ON SNOW SHOES 6. ENTER ADSBORBER INSPECT AND PULL SAMPLES	
PM1029092	SOL-ADSOR-1 - CHARCOAL ADSORBER BED #1	SRADSV - SOL. REC. ADSORBER VESSEL	A. INSPECTION OF ADSORBER VESSEL 1. LOCK OUT BLOWERS AND STEAM 2. OPEN INSPECTION PORT BOTTOM WEST END OF ADSORBER 3. FILL OUT VESSEL ENTRY PERMIT 4. ENTRY VESSEL 5. INSPECT BEAMS, WELDS, AND SCREEN 6. IN #3 ADSORBER PULL TEST COUPONS AND INSPECT	

PM1029093	SOL-ADSOR-1 - CHARCOAL ADSORBER BED #1			CAL ACROMAGS TEMP. CONTROLLER MOD# 937-CG-115
PM1029094	SOL-ADSOR-2 - CHARCOAL ADSORBER BED #2	SRADSB - SOL. REC. ADSORBER BED	A. OPEN AND INSPECTING ADSORBER BEDS 1. LOCK OUT BLOWERS 2. LOCK OUT STEAM FEED TO ADSORBER 3. REMOVE INSPECTION PORTS 4. FILL OUT VESSEL ENTRY PERMIT 5. PUT ON SNOW SHOES 6. ENTER ADSBORBER INSPECT AND PULL SAMPLES	
PM1029095	SOL-ADSOR-2 - CHARCOAL ADSORBER BED #2			CAL. ACROMAGS TEMP CONTROLLER MOD #937-CG-115
PM1029096	SOL-ADSOR-2 - CHARCOAL ADSORBER BED #2	SRADSV - SOL. REC. ADSORBER VESSEL	A. INSPECTION OF ADSORBER VESSEL 1. LOCK OUT BLOWERS AND STEAM 2. OPEN INSPECTION PORT BOTTOM WEST END OF ADSORBER 3. FILL OUT VESSEL ENTRY PERMIT 4. ENTRY VESSEL 5. INSPECT BEAMS, WELDS, AND SCREEN 6. IN #3 ADSORBER PULL TEST COUPONS AND INSPECT	
PM1029097	SOL-ADSOR-3 - CHARCOAL ADSORBER BED #3	SRADSB - SOL. REC. ADSORBER BED	A. OPEN AND INSPECTING ADSORBER BEDS 1. LOCK OUT BLOWERS 2. LOCK OUT STEAM FEED TO ADSORBER 3. REMOVE INSPECTION PORTS 4. FILL OUT VESSEL ENTRY PERMIT 5. PUT ON SNOW SHOES 6. ENTER ADSBORBER INSPECT AND PULL SAMPLES	
PM1029098	SOL-ADSOR-3 - CHARCOAL ADSORBER BED #3	SRADSV - SOL. REC. ADSORBER VESSEL	A. INSPECTION OF ADSORBER VESSEL 1. LOCK OUT BLOWERS AND STEAM 2. OPEN INSPECTION PORT BOTTOM WEST END OF ADSORBER 3. FILL OUT VESSEL ENTRY PERMIT 4. ENTRY VESSEL 5. INSPECT BEAMS, WELDS, AND SCREEN 6. IN #3 ADSORBER PULL TEST COUPONS AND INSPECT	
PM1029099	SOL-ADSOR-4 - CHARCOAL ADSORBER BED #4	SRADSB - SOL. REC. ADSORBER BED	A. OPEN AND INSPECTING ADSORBER BEDS 1. LOCK OUT BLOWERS 2. LOCK OUT STEAM FEED TO ADSORBER 3. REMOVE INSPECTION PORTS 4. FILL OUT VESSEL ENTRY PERMIT 5. PUT ON SNOW SHOES 6. ENTER ADSBORBER INSPECT AND PULL SAMPLES	
PM1029100	SOL-ADSOR-4 - CHARCOAL ADSORBER BED #4	SRADSV - SOL. REC. ADSORBER VESSEL	A. INSPECTION OF ADSORBER VESSEL 1. LOCK OUT BLOWERS AND STEAM 2. OPEN INSPECTION PORT BOTTOM WEST END OF ADSORBER 3. FILL OUT VESSEL ENTRY PERMIT 4. ENTRY VESSEL 5. INSPECT BEAMS, WELDS, AND SCREEN 6. IN #3 ADSORBER PULL TEST COUPONS AND INSPECT	

PM1028732	SOL-AIRDRY 1 - AIR DRYER EAST TOWER	GASDRY - GAS DRYER FOR AIR COMPRESSORS	A. CHECKING GAS DRYER 1. CHECK SYSTEM IN OPERATING MODE 2. REPLACE IF REQUIRED ANY BAD PARTS 3. OPEN CAREFULLY BOTTOM OF TOWER FOR SAMPLE BEADS 4. IF REQUIRED CHANGE	
PM1029045	SOL-BFP-1 - SOL. REC. BOILER FEEDWATER PUMP #1	VPUMPS - VARIOUS SOLVENT RECOVERY MOTORS AND PUMPS	INSPECTION OF PUMP AND MOTOR 1. LOCKOUT AS REQUIRED 2. REMOVE GUARDS 3. CLEAN, INSPECT, REPAIR, AND LUBRICATE MOTOR AS NEEDED 4. INSPECT, REPAIR AS NEEDED, AND LUBRICATED MOTOR TO PUMP COUPLING 5. INSPECT PUMP PACKING AND EITHER TIGHTEN OR REPLACE AS NEEDED 6. REPLACE GUARDS 7. REMOVE LOCK OUT	
PM1029046	SOL-BFP-2 - SOL. REC. BOILER FEEDWATER PUMP #2	VPUMPS - VARIOUS SOLVENT RECOVERY MOTORS AND PUMPS	INSPECTION OF PUMP AND MOTOR 1. LOCKOUT AS REQUIRED 2. REMOVE GUARDS 3. CLEAN, INSPECT, REPAIR, AND LUBRICATE MOTOR AS NEEDED 4. INSPECT, REPAIR AS NEEDED, AND LUBRICATED MOTOR TO PUMP COUPLING 5. INSPECT PUMP PACKING AND EITHER TIGHTEN OR REPLACE AS NEEDED 6. REPLACE GUARDS 7. REMOVE LOCK OUT	
PM1028688	SOL-BFP-2 - SOL. REC. BOILER FEEDWATER PUMP #2			SWITCH OVER TO PUMP #2. LET RUN FOR 8 HRS. SWITCH OVER TO PUMP #1.
PM1028237	SOL-BFP-2 - SOL. REC. BOILER FEEDWATER PUMP #2			SWITCH OVER TO PUMP #2. LET RUN FOR 8 HRS. SWITCH OVER TO PUMP #1.
PM1028054	SOL-BFP-2 - SOL. REC. BOILER FEEDWATER PUMP #2			SWITCH OVER TO PUMP #2. LET RUN FOR 8 HRS. SWITCH OVER TO PUMP #1.
PM1027805	SOL-BFP-2 - SOL. REC. BOILER FEEDWATER PUMP #2			SWITCH OVER TO PUMP #2. LET RUN FOR 8 HRS. SWITCH OVER TO PUMP #1.
PM1027284	SOL-BFP-2 - SOL. REC. BOILER FEEDWATER PUMP #2			SWITCH OVER TO PUMP #2. LET RUN FOR 8 HRS. SWITCH OVER TO PUMP #1.
PM1030878	SOL-BFP-2 - SOL. REC. BOILER FEEDWATER PUMP #2			SWITCH OVER TO PUMP #2. LET RUN FOR 8 HRS. SWITCH OVER TO PUMP #1.
PM1030594	SOL-BFP-2 - SOL. REC. BOILER FEEDWATER PUMP #2			SWITCH OVER TO PUMP #2. LET RUN FOR 8 HRS. SWITCH OVER TO PUMP #1.
PM1030347	SOL-BFP-2 - SOL. REC. BOILER FEEDWATER PUMP #2			SWITCH OVER TO PUMP #2. LET RUN FOR 8 HRS. SWITCH OVER TO PUMP #1.
PM1030084	SOL-BFP-2 - SOL. REC. BOILER FEEDWATER PUMP #2			SWITCH OVER TO PUMP #2. LET RUN FOR 8 HRS. SWITCH OVER TO PUMP #1.
PM1029839	SOL-BFP-2 - SOL. REC. BOILER FEEDWATER PUMP #2			SWITCH OVER TO PUMP #2. LET RUN FOR 8 HRS. SWITCH OVER TO PUMP #1.
PM1029605	SOL-BFP-2 - SOL. REC. BOILER FEEDWATER PUMP #2			SWITCH OVER TO PUMP #2. LET RUN FOR 8 HRS. SWITCH OVER TO PUMP #1.
PM1029606	SOL-BFP-2 - SOL. REC. BOILER FEEDWATER PUMP #2			SWITCH OVER TO PUMP #2. LET RUN FOR 8 HRS. SWITCH OVER TO PUMP #1.

PM1028858	SOL-BLOWER-1 - SOL. REC. SLA BLOWER #1	ALINCK - COUPLING ALIGNMENT CHECK	- Lock-out system as required. - Disassemble shell. - Clean coupling. - Check alignment using dial indicator. (See coupling data sheet for tolerances) - Record readings. - Realign if necessary. - Record final readings. - Reassemble coupling. - Lube if necessary.	
PM1028859	SOL-BLOWER-1 - SOL. REC. SLA BLOWER #1	SRBLIV - SOL. REC. BLOWER INLET VAINS	A. CHECKING AND CLEANING BLOWER VAINS 1. LOCK OUT BLOWERS 2. OPEN INSPECTION DOOR 3. SNIFF CHECK 4. REMOVE LINKAGE 5. CLEAN VAINS AND CHECK VAIN MOVEMENT 6. LUBRICATE	
PM1028860	SOL-BLOWER-1 - SOL. REC. SLA BLOWER #1	INSMTR - MOTOR CLEANING, INSPECTION AND LUBRICATION	-LOCK OUT AS REQUIRED -BLOW OUT AND CLEAN MOTOR, USING GOGGLES OR FULL FACE SHIELD -LUBRICATE MOTOR AS NEEDED -CLEAN OR CHANGE FILTERS IF NEEDED - LUBE FAN BEARINGS -CHECK BELTS AND PULLEYS -REMOVE LOCKOUTS	
PM1028861	SOL-BLOWER-1 - SOL. REC. SLA BLOWER #1			REMOVE TRANSITION DUCT FOR CLEANING AND REPAIR PREPARE GASKETS FOR REATTACHING - GREEN GASKET SHEETS SHIFT LOUVRES BACK AND FORTH TO CHECK FOR SEALING - NOTE WHICH ONES ARE NOT SEALING AND REPLACE WITH FRESH BUNA. MAY CLEAN AND RE-USE. REMOVE BUNA LOUVRES - RETAIN HARDWARE - NYLOCK IS OKAY TO USE IN THIS APPLICATION - DOUBLE THE WASHERS STAGE FOR REATTACHING TO TRANSITIONS ONCE CLEAN. CLEAN OUT DUCTS COMPLETELY REASSEMBLE HARDWARE IS NYLOCK
PM1028862	SOL-BLOWER-1 - SOL. REC. SLA BLOWER #1			LOCKOUT BLOWER MOTOR / VIBRATION SENSOR / BEARING COOLING&HEATING ELECTRICAL SOURCES CHANGE OUT BLOWER BEARINGS 22224-EK-C3 TAPERED BORE - NEED QTY 4 USE HIGH-TEMP - RED GREASE - EP2 TYPE SET BEARINGS BY CONTINUE ON WITH SETTING THE MOTOR
PM1028863	SOL-BLOWER-2 - SOL. REC. SLA BLOWER #2	ALINCK - COUPLING ALIGNMENT CHECK	- Lock-out system as required. - Disassemble shell. - Clean coupling. - Check alignment using dial indicator. (See coupling data sheet for tolerances) - Record readings. - Realign if necessary. - Record final readings. - Reassemble coupling. - Lube if necessary.	

PM1028864	SOL-BLOWER-2 - SOL. REC. SLA BLOWER #2	INSMTR - MOTOR CLEANING, INSPECTION AND LUBRICATION	-LOCK OUT AS REQUIRED -BLOW OUT AND CLEAN MOTOR, USING GOGGLES OR FULL FACE SHIELD -LUBRICATE MOTOR AS NEEDED -CLEAN OR CHANGE FILTERS IF NEEDED - LUBE FAN BEARINGS -CHECK BELTS AND PULLEYS -REMOVE LOCKOUTS	
PM1028865	SOL-BLOWER-2 - SOL. REC. SLA BLOWER #2			REMOVE TRANSITION DUCT FOR CLEANING AND REPAIR PREPARE GASKETS FOR REATTACHING - GREEN GASKET SHEETS SHIFT LOUVRES BACK AND FORTH TO CHECK FOR SEALING - NOTE WHICH ONES ARE NOT SEALING AND REPLACE WITH FRESH BUNA. MAY CLEAN AND RE-USE. REMOVE BUNA LOUVRES - RETAIN HARDWARE - NYLOCK IS OKAY TO USE IN THIS APPLICATION - DOUBLE THE WASHERS STAGE FOR REATTACHING TO TRANSITIONS ONCE CLEAN. CLEAN OUT DUCTS COMPLETELY REASSEMBLE HARDWARE IS NYLOCK
PM1028866	SOL-BLOWER-2 - SOL. REC. SLA BLOWER #2			LOCKOUT BLOWER MOTOR / VIBRATION SENSOR / BEARING COOLING&HEATING ELECTRICAL SOURCES CHANGE OUT BLOWER BEARINGS 22224-EK-C3 TAPERED BORE - NEED QTY 4 USE HIGH-TEMP - RED GREASE - EP2 TYPE SET BEARINGS BY CONTINUE ON WITH SETTING THE MOTOR
PM1028871	SOL-BOILER - SOLVENT RECOVERY BOILER	BLRINS - BOILER INSPECTION	LOCKOUT A. Shut boiler down 1. Relieve head pressure by shutting down 15 min. prior to completion of last absorber steaming. 2. Leave combustion blower running for 12 hours to cool down boiler. (6 hours for boiler in Bldg. #41) B. Open boiler 1. REMOVE BOLTS ON REAR DOOR SWING OPEN AND SUPPORT DOOR 2. REMOVE BOLTS ON FRONT DOOR AND SWING OPEN 3. REMOVE BOLTS ON INTER DOOR SWING OPEN BOLT TWO DOORS TOGETHER AND SUPPORT. 4.DRAIN WATER FROM BOILER BE SURE VENT VALVE IS OPEN SO A VACUUM WILL NOT BE CREATED. 5. REMOVE SAFETY SWITCHES CLEAN INSPECT AND SUPPORT. 6. REMOVE COMBUSTION BLOWER AND MOTOR. 7. CLEAN FRONT AND REAR DOORS AND ENDS OF BOILER WITH WIRE BRUSHES. 8. REMOVE HAND INSPECTION PORTS. C. INSPECT BOILER	

PM1028872	SOL-BOILER - SOLVENT RECOVERY BOILER	INSMTR - MOTOR CLEANING, INSPECTION AND LUBRICATION	-LOCK OUT AS REQUIRED -BLOW OUT AND CLEAN MOTOR, USING GOGGLES OR FULL FACE SHIELD -LUBRICATE MOTOR AS NEEDED -CLEAN OR CHANGE FILTERS IF NEEDED - LUBE FAN BEARINGS -CHECK BELTS AND PULLEYS -REMOVE LOCKOUTS	
PM1029047	SOL-BOOSTER1 - BOOSTER PUMP #1 WATER PRESSURE TO 100PSI	VPUMPS - VARIOUS SOLVENT RECOVERY MOTORS AND PUMPS	INSPECTION OF PUMP AND MOTOR 1. LOCKOUT AS REQUIRED 2. REMOVE GUARDS 3. CLEAN, INSPECT, REPAIR, AND LUBRICATE MOTOR AS NEEDED 4. INSPECT, REPAIR AS NEEDED, AND LUBRICATED MOTOR TO PUMP COUPLING 5. INSPECT PUMP PACKING AND EITHER TIGHTEN OR REPLACE AS NEEDED 6. REPLACE GUARDS 7. REMOVE LOCK OUT	
PM1029048	SOL-BOOSTER2 - BOOSTER PUMP #2 WATER PRESSURE TO 100PSI	VPUMPS - VARIOUS SOLVENT RECOVERY MOTORS AND PUMPS	INSPECTION OF PUMP AND MOTOR 1. LOCKOUT AS REQUIRED 2. REMOVE GUARDS 3. CLEAN, INSPECT, REPAIR, AND LUBRICATE MOTOR AS NEEDED 4. INSPECT, REPAIR AS NEEDED, AND LUBRICATED MOTOR TO PUMP COUPLING 5. INSPECT PUMP PACKING AND EITHER TIGHTEN OR REPLACE AS NEEDED 6. REPLACE GUARDS 7. REMOVE LOCK OUT	
PM1029049	SOL-CHEM-F#1 - CHEMICAL FEED PUMP FOR BOILER	VPUMPS - VARIOUS SOLVENT RECOVERY MOTORS AND PUMPS	INSPECTION OF PUMP AND MOTOR 1. LOCKOUT AS REQUIRED 2. REMOVE GUARDS 3. CLEAN, INSPECT, REPAIR, AND LUBRICATE MOTOR AS NEEDED 4. INSPECT, REPAIR AS NEEDED, AND LUBRICATED MOTOR TO PUMP COUPLING 5. INSPECT PUMP PACKING AND EITHER TIGHTEN OR REPLACE AS NEEDED 6. REPLACE GUARDS 7. REMOVE LOCK OUT	
PM1029050	SOL-CHEM-F#2 - CHEMICAL FEED PUMP FOR BOILER	VPUMPS - VARIOUS SOLVENT RECOVERY MOTORS AND PUMPS	INSPECTION OF PUMP AND MOTOR 1. LOCKOUT AS REQUIRED 2. REMOVE GUARDS 3. CLEAN, INSPECT, REPAIR, AND LUBRICATE MOTOR AS NEEDED 4. INSPECT, REPAIR AS NEEDED, AND LUBRICATED MOTOR TO PUMP COUPLING 5. INSPECT PUMP PACKING AND EITHER TIGHTEN OR REPLACE AS NEEDED 6. REPLACE GUARDS 7. REMOVE LOCK OUT	
PM1028873	SOL-CONDUC.M - SOL. REC. BOILER CONDUCTIVITY METER	SRCONM - SOL. CONDUCTIVITY METER	REMOVE METER CLEAN, REPACK CHECK COUPLING AND REASSEMBLY	

PM1029051	SOL-CONPUMP1 - K-1 EAST CONDENSATE PUMP	VPUMPS - VARIOUS SOLVENT RECOVERY MOTORS AND PUMPS	INSPECTION OF PUMP AND MOTOR 1. LOCKOUT AS REQUIRED 2. REMOVE GUARDS 3. CLEAN, INSPECT, REPAIR, AND LUBRICATE MOTOR AS NEEDED 4. INSPECT, REPAIR AS NEEDED, AND LUBRICATED MOTOR TO PUMP COUPLING 5. INSPECT PUMP PACKING AND EITHER TIGHTEN OR REPLACE AS NEEDED 6. REPLACE GUARDS 7. REMOVE LOCK OUT	
PM1029052	SOL-CONPUMP2 - K-2 WEST CONDENSATE PUMP	VPUMPS - VARIOUS SOLVENT RECOVERY MOTORS AND PUMPS	INSPECTION OF PUMP AND MOTOR 1. LOCKOUT AS REQUIRED 2. REMOVE GUARDS 3. CLEAN, INSPECT, REPAIR, AND LUBRICATE MOTOR AS NEEDED 4. INSPECT, REPAIR AS NEEDED, AND LUBRICATED MOTOR TO PUMP COUPLING 5. INSPECT PUMP PACKING AND EITHER TIGHTEN OR REPLACE AS NEEDED 6. REPLACE GUARDS 7. REMOVE LOCK OUT	
PM1028953	SOL-COOLINGT - SOLVENT RECOVERY COOLING TOWER	CTCLDR - COOLING TOWER CLEANING AND DRAINING	1. CONFINED SPACE TRAINING MUST BE COMPLETED 2. CONFINED SPACE PERMIT COMPLETED AND SIGNED - POSTED NEAR AREA 3. PPE - RAIN SUIT - BOOTS - P100 MASK IF NECESSARY - GOGGLES 4. GROUP LOCK OUT PUMPS 5. PUT COMPRESSORS IN 41B, ON CITY WATER 6. DRAIN TOWER 7. LOCK OUT POWER TO IMMERSION HEATERS 8. REMOVE IMMERSION HEATERS AND FLOATS FOR REMAINDER OF CLEANING 9. WASH OUT USING 1-1/2" FIRE HOSE 10. REMOVE THE FILL IF REQUIRED (TO REMOVE FILL REMOVE TURN BUCKLES ON ONE SIDE ONLY THEN REMOVE FILL REINSTALL TURN BUCKLES AND DO THE OTHER SIDE) 11. CLEAN AND REASSEMBLE 12. REMOVE GROUP LOCKOUT	
PM1028954	SOL-COOLINGT - SOLVENT RECOVERY COOLING TOWER	VPUMPS - VARIOUS SOLVENT RECOVERY MOTORS AND PUMPS	INSPECTION OF PUMP AND MOTOR 1. LOCKOUT AS REQUIRED 2. REMOVE GUARDS 3. CLEAN, INSPECT, REPAIR, AND LUBRICATE MOTOR AS NEEDED 4. INSPECT, REPAIR AS NEEDED, AND LUBRICATED MOTOR TO PUMP COUPLING 5. INSPECT PUMP PACKING AND EITHER TIGHTEN OR REPLACE AS NEEDED 6. REPLACE GUARDS 7. REMOVE LOCK OUT	

PM1028955	SOL-CWPUMP#1 - SOL.REC.COOLING WATER RECIRCULATION PUMP	VPUMPS - VARIOUS SOLVENT RECOVERY MOTORS AND PUMPS	INSPECTION OF PUMP AND MOTOR 1. LOCKOUT AS REQUIRED 2. REMOVE GUARDS 3. CLEAN, INSPECT, REPAIR, AND LUBRICATE MOTOR AS NEEDED 4. INSPECT, REPAIR AS NEEDED, AND LUBRICATED MOTOR TO PUMP COUPLING 5. INSPECT PUMP PACKING AND EITHER TIGHTEN OR REPLACE AS NEEDED 6. REPLACE GUARDS 7. REMOVE LOCK OUT	
PM1028956	SOL-CWPUMP#2 - SOL.REC.COOLING WATER RECIRCULATION PUMP	VPUMPS - VARIOUS SOLVENT RECOVERY MOTORS AND PUMPS	INSPECTION OF PUMP AND MOTOR 1. LOCKOUT AS REQUIRED 2. REMOVE GUARDS 3. CLEAN, INSPECT, REPAIR, AND LUBRICATE MOTOR AS NEEDED 4. INSPECT, REPAIR AS NEEDED, AND LUBRICATED MOTOR TO PUMP COUPLING 5. INSPECT PUMP PACKING AND EITHER TIGHTEN OR REPLACE AS NEEDED 6. REPLACE GUARDS 7. REMOVE LOCK OUT	
PM1028874	SOL-DEAERAT - SOL. REC. BOILER DEAERATOR	SRDEAR - SOL. REC. BOILER DEAERATOR	A. OPEN DEAERATOR FOR INSPECTION 1. SHUT STEAM OFF 2. BESURE TEMP. IS BELOW 100 DEG. F. 3. DRAIN DEAERATOR 4. OPEN TOP PORT 5. PULL RACKS AND STACK IN ORDER FOR REINSTALLING. 6. OPEN END PORT 7. OPEN AND PULL OVERFLOW FLOAT 8. REMOVE VACUUM RELEAF VALVE INSPECT 9. REMOVE SEIGHT GLASS	
PM1029841	SOL-F-SYSTEM - FIRE SYSTEM INSIDE AND OUTSIDE			ADD ANTIFREEZE TO FIRE SYSTEM DRIP LEGS
PM1030348	SOL-FHOUSE#1 - FILTER AND COOLING HOUSE	FHAIR - SOL. REC. FILTER HOUSES AIR FILTER SIDE	LOCKOUT A. OPENING AIR FILTER SIDE OF FILTER HOUSE 1. OPEN HINGED DOOR 2. REMOVE COVER PLATES 3. PULL LOCKING HANDLES 4. REMOVE FILTERS 5. INSPECT FILTER HOUSE 6. INSPECT MAGNEHETIC GAUGES AND FEED LINES	
PM1030349	SOL-FHOUSE#1 - FILTER AND COOLING HOUSE	FILTER - FILTER INSPECTION	CLEAN OR REPLACE FILTERS AS NEEDED	
PM1029607	SOL-FHOUSE#1 - FILTER AND COOLING HOUSE	FHAIR - SOL. REC. FILTER HOUSES AIR FILTER SIDE	LOCKOUT A. OPENING AIR FILTER SIDE OF FILTER HOUSE 1. OPEN HINGED DOOR 2. REMOVE COVER PLATES 3. PULL LOCKING HANDLES 4. REMOVE FILTERS 5. INSPECT FILTER HOUSE 6. INSPECT MAGNEHETIC GAUGES AND FEED LINES	
PM1029608	SOL-FHOUSE#1 - FILTER AND COOLING HOUSE	FILTER - FILTER INSPECTION	CLEAN OR REPLACE FILTERS AS NEEDED	

PM1029840	SOL-FHOUSE#1 - FILTER AND COOLING HOUSE	FHAIR - SOL. REC. FILTER HOUSES AIR FILTER SIDE	LOCKOUT A. OPENING AIR FILTER SIDE OF FILTER HOUSE 1. OPEN HINGED DOOR 2. REMOVE COVER PLATES 3. PULL LOCKING HANDLES 4. REMOVE FILTERS 5. INSPECT FILTER HOUSE 6. INSPECT MAGNEHETIC GAUGES AND FEED LINES	
PM1030879	SOL-FHOUSE#1 - FILTER AND COOLING HOUSE	FHAIR - SOL. REC. FILTER HOUSES AIR FILTER SIDE	LOCKOUT A. OPENING AIR FILTER SIDE OF FILTER HOUSE 1. OPEN HINGED DOOR 2. REMOVE COVER PLATES 3. PULL LOCKING HANDLES 4. REMOVE FILTERS 5. INSPECT FILTER HOUSE 6. INSPECT MAGNEHELIC GAUGES AND FEED LINES	
PM1028295	SOL-FHOUSE#1 - FILTER AND COOLING HOUSE	FILTER - FILTER INSPECTION	CLEAN OR REPLACE FILTERS AS NEEDED	
PM1027806	SOL-FHOUSE#1 - FILTER AND COOLING HOUSE	FHAIR - SOL. REC. FILTER HOUSES AIR FILTER SIDE	LOCKOUT A. OPENING AIR FILTER SIDE OF FILTER HOUSE 1. OPEN HINGED DOOR 2. REMOVE COVER PLATES 3. PULL LOCKING HANDLES 4. REMOVE FILTERS 5. INSPECT FILTER HOUSE 6. INSPECT MAGNEHETIC GAUGES AND FEED LINES	
PM1027177	SOL-FHOUSE#1 - FILTER AND COOLING HOUSE	FILTER - FILTER INSPECTION	CLEAN OR REPLACE FILTERS AS NEEDED	
PM1028238	SOL-FHOUSE#1 - FILTER AND COOLING HOUSE	FHAIR - SOL. REC. FILTER HOUSES AIR FILTER SIDE	LOCKOUT A. OPENING AIR FILTER SIDE OF FILTER HOUSE 1. OPEN HINGED DOOR 2. REMOVE COVER PLATES 3. PULL LOCKING HANDLES 4. REMOVE FILTERS 5. INSPECT FILTER HOUSE 6. INSPECT MAGNEHETIC GAUGES AND FEED LINES	
PM1029101	SOL-FHOUSE#1 - FILTER AND COOLING HOUSE	FHCOIL - SOL. REC.FILTER HOUSE COOLING COILS	1. LOCK OUT COOLING WATER PUMPS 2. DRAIN WATER FROM COILS 3. REMOVE PIPING FROM SIDES OF FILTER COOLING HOUSE. 4. PULL SIDE PLATES. 5. REMOVE COIL SIDE CLAMPS. 6. PULL COIL FROM THE BOTTOM.	
PM1029102	SOL-FHOUSE#1 - FILTER AND COOLING HOUSE	SRSLAI - SOLVENT RECOVERY INLET VALVE	A. INSPECTION OF SLA INLET VALVE 1. LOCK OUT BLOWERS 2. LOCK OUT AIR TO VALVE 3. INSPECT VALVE O-RING SEAT REPLACE IF NEEDED 4. INSPECT ALL VALVE BODY PARTS	
PM1029103	SOL-FHOUSE#2 - FILTER AND COOLING HOUSE	FHCOIL - SOL. REC.FILTER HOUSE COOLING COILS	1. LOCK OUT COOLING WATER PUMPS 2. DRAIN WATER FROM COILS 3. REMOVE PIPING FROM SIDES OF FILTER COOLING HOUSE. 4. PULL SIDE PLATES. 5. REMOVE COIL SIDE CLAMPS. 6. PULL COIL FROM THE BOTTOM.	

PM1029104	SOL-FHOUSE#2 - FILTER AND COOLING HOUSE	FHAIR - SOL. REC. FILTER HOUSES AIR FILTER SIDE	LOCKOUT A. OPENING AIR FILTER SIDE OF FILTER HOUSE 1. OPEN HINGED DOOR 2. REMOVE COVER PLATES 3. PULL LOCKING HANDLES 4. REMOVE FILTERS 5. INSPECT FILTER HOUSE 6. INSPECT MAGNEHETIC GAUGES AND FEED LINES	
PM1027178	SOL-FHOUSE#2 - FILTER AND COOLING HOUSE	FILTER - FILTER INSPECTION	REPLACE FILTERS AS NEEDED	
PM1028296	SOL-FHOUSE#2 - FILTER AND COOLING HOUSE	FILTER - FILTER INSPECTION	REPLACE FILTERS AS NEEDED	
PM1030880	SOL-FHOUSE#2 - FILTER AND COOLING HOUSE	FILTER - FILTER INSPECTION	REPLACE FILTERS AS NEEDED	
PM1029609	SOL-FHOUSE#2 - FILTER AND COOLING HOUSE	FILTER - FILTER INSPECTION	REPLACE FILTERS AS NEEDED	
PM1030350	SOL-FHOUSE#2 - FILTER AND COOLING HOUSE	FILTER - FILTER INSPECTION	REPLACE FILTERS AS NEEDED	
PM1028958	SOL-MAINDUCT - DUCT WORK FROM PLANT TO FILTER HOUSES	SRMDT - SOL REC MAIN DUCT FROM PLT. TO SOLVENT REC.	A. INSPECTION OF DUCT 1. LOCK OUT BLOWERS 2. OPEN INSPECTION DOORS 3. CHECK BUILD UP ON SIDE WALLS AND CLEAN AS NEEDED 4. INSPECT ALL BLOW OUT PANELS AND REPLACE AS NEEDED 5. INSPECT EXPANSION JOINTS REPLACE IF NEEDED	
PM1028959	SOL-MAINDUCT - DUCT WORK FROM PLANT TO FILTER HOUSES	SRFLTB - SOL. REC. FLOW DECTOR TUBE	A. INSPECTING AND CLEAANING FLOW DETECTOR TUBE 1. DISCONNECT TUBING 2. REMOVE SENSOR TUBE 3. CLEAN WITH TOLEUNE 4. REINSTALL	
PM1028467	SOL-PLMVAL-1 - PLUM RECIRCULATION VALVE #1	SRRCPV - SOL. REC. RECIRCULATION AND PLUM VALVE	A. INSPECTION OF RECIRCULATION AND PLUME VALVES 1. LOCK OUT BLOWERS 2. BESURE VALVE IS IN CLOSED POSITION 3. LOCK OUT AIR TO VALVE 4 REMOVE AND INSPECT VALVE, REPLACE INSERT IF NEEDED	
PM1028468	SOL-PLMVAL-2 - PLUM RECIRCULATION VALVE #2	SRRCPV - SOL. REC. RECIRCULATION AND PLUM VALVE	A. INSPECTION OF RECIRCULATION AND PLUME VALVES 1. LOCK OUT BLOWERS 2. BESURE VALVE IS IN CLOSED POSITION 3. LOCK OUT AIR TO VALVE 4 REMOVE AND INSPECT VALVE, REPLACE INSERT IF NEEDED	
PM1028469	SOL-PLMVAL-3 - PLUM RECIRCULATION VALVE #3	SRRCPV - SOL. REC. RECIRCULATION AND PLUM VALVE	A. INSPECTION OF RECIRCULATION AND PLUME VALVES 1. LOCK OUT BLOWERS 2. BESURE VALVE IS IN CLOSED POSITION 3. LOCK OUT AIR TO VALVE 4 REMOVE AND INSPECT VALVE, REPLACE INSERT IF NEEDED	
PM1028470	SOL-PLMVAL-4 - PLUM RECIRCULATION VALVE #4	SRRCPV - SOL. REC. RECIRCULATION AND PLUM VALVE	A. INSPECTION OF RECIRCULATION AND PLUME VALVES 1. LOCK OUT BLOWERS 2. BESURE VALVE IS IN CLOSED POSITION 3. LOCK OUT AIR TO VALVE 4 REMOVE AND INSPECT VALVE, REPLACE INSERT IF NEEDED	

PM1029118	SOL-RECVAL-1 - RECIRCULATION VALVE #1	SRRCPV - SOL. REC. RECIRCULATION AND PLUM VALVE	A. INSPECTION OF RECIRCULATION AND PLUME VALVES 1. LOCK OUT BLOWERS 2. BESURE VALVE IS IN CLOSED POSITION 3. LOCK OUT AIR TO VALVE 4 REMOVE AND INSPECT VALVE, REPLACE INSERT IF NEEDED	
PM1029119	SOL-RECVAL-2 - RECIRCULATION VALVE #2	SRRCPV - SOL. REC. RECIRCULATION AND PLUM VALVE	A. INSPECTION OF RECIRCULATION AND PLUME VALVES 1. LOCK OUT BLOWERS 2. BESURE VALVE IS IN CLOSED POSITION 3. LOCK OUT AIR TO VALVE 4 REMOVE AND INSPECT VALVE, REPLACE INSERT IF NEEDED	
PM1029120	SOL-RECVAL-3 - RECIRCULATION VALVE #3	SRRCPV - SOL. REC. RECIRCULATION AND PLUM VALVE	A. INSPECTION OF RECIRCULATION AND PLUME VALVES 1. LOCK OUT BLOWERS 2. BESURE VALVE IS IN CLOSED POSITION 3. LOCK OUT AIR TO VALVE 4 REMOVE AND INSPECT VALVE, REPLACE INSERT IF NEEDED	
PM1029121	SOL-RECVAL-4 - RECIRCULATION VALVE #4	SRRCPV - SOL. REC. RECIRCULATION AND PLUM VALVE	A. INSPECTION OF RECIRCULATION AND PLUME VALVES 1. LOCK OUT BLOWERS 2. BESURE VALVE IS IN CLOSED POSITION 3. LOCK OUT AIR TO VALVE 4 REMOVE AND INSPECT VALVE, REPLACE INSERT IF NEEDED	
PM1029122	SOL-SLAINV-1 - SLA INLET VALVE	SRSLAI - SOLVENT RECOVERY INLET VALVE	A. INSPECTION OF SLA INLET VALVE 1. LOCK OUT BLOWERS 2. LOCK OUT AIR TO VALVE 3. INSPECT VALVE O-RING SEAT REPLACE IF NEEDED 4. INSPECT ALL VALVE BODY PARTS	
PM1029123	SOL-SLAINV-2 - SLA INLET VALVE	SRSLAI - SOLVENT RECOVERY INLET VALVE	A. INSPECTION OF SLA INLET VALVE 1. LOCK OUT BLOWERS 2. LOCK OUT AIR TO VALVE 3. INSPECT VALVE O-RING SEAT REPLACE IF NEEDED 4. INSPECT ALL VALVE BODY PARTS	
PM1029124	SOL-SLAINV-3 - SLA INLET VALVE	SRSLAI - SOLVENT RECOVERY INLET VALVE	A. INSPECTION OF SLA INLET VALVE 1. LOCK OUT BLOWERS 2. LOCK OUT AIR TO VALVE 3. INSPECT VALVE O-RING SEAT REPLACE IF NEEDED 4. INSPECT ALL VALVE BODY PARTS	
PM1029125	SOL-SLAINV-4 - SLA INLET VALVE	SRSLAI - SOLVENT RECOVERY INLET VALVE	A. INSPECTION OF SLA INLET VALVE 1. LOCK OUT BLOWERS 2. LOCK OUT AIR TO VALVE 3. INSPECT VALVE O-RING SEAT REPLACE IF NEEDED 4. INSPECT ALL VALVE BODY PARTS	

PM1028471	SOL-SOLPTP 1 - EAST SOLVENT PUMP ON SOUTH PAD FOR PLANT	VPUMPS - VARIOUS SOLVENT RECOVERY MOTORS AND PUMPS	INSPECTION OF PUMP AND MOTOR 1. LOCKOUT AS REQUIRED 2. REMOVE GUARDS 3. CLEAN, INSPECT, REPAIR, AND LUBRICATE MOTOR AS NEEDED 4. INSPECT, REPAIR AS NEEDED, AND LUBRICATED MOTOR TO PUMP COUPLING 5. INSPECT PUMP PACKING AND EITHER TIGHTEN OR REPLACE AS NEEDED 6. REPLACE GUARDS 7. REMOVE LOCK OUT	
PM1028297	SOL-SOLPTP 1 - EAST SOLVENT PUMP ON SOUTH PAD FOR PLANT			CHECK FOR WATER IN SOLVENT TANK
PM1027808	SOL-SOLPTP 1 - EAST SOLVENT PUMP ON SOUTH PAD FOR PLANT			CHECK FOR WATER IN SOLVENT TANK
PM1028056	SOL-SOLPTP 1 - EAST SOLVENT PUMP ON SOUTH PAD FOR PLANT			CHECK FOR WATER IN SOLVENT TANK
PM1027285	SOL-SOLPTP 1 - EAST SOLVENT PUMP ON SOUTH PAD FOR PLANT			CHECK FOR WATER IN SOLVENT TANK
PM1030352	SOL-SOLPTP 1 - EAST SOLVENT PUMP ON SOUTH PAD FOR PLANT			CHECK FOR WATER IN SOLVENT TANK
PM1029843	SOL-SOLPTP 1 - EAST SOLVENT PUMP ON SOUTH PAD FOR PLANT			CHECK FOR WATER IN SOLVENT TANK
PM1030086	SOL-SOLPTP 1 - EAST SOLVENT PUMP ON SOUTH PAD FOR PLANT			CHECK FOR WATER IN SOLVENT TANK
PM1028690	SOL-SOLPTP 1 - EAST SOLVENT PUMP ON SOUTH PAD FOR PLANT			CHECK FOR WATER IN SOLVENT TANK
PM1029612	SOL-SOLPTP 1 - EAST SOLVENT PUMP ON SOUTH PAD FOR PLANT			CHECK FOR WATER IN SOLVENT TANK
PM1029613	SOL-SOLPTP 1 - EAST SOLVENT PUMP ON SOUTH PAD FOR PLANT			CHECK FOR WATER IN SOLVENT TANK
PM1030882	SOL-SOLPTP 1 - EAST SOLVENT PUMP ON SOUTH PAD FOR PLANT			CHECK FOR WATER IN SOLVENT TANK
PM1030883	SOL-SOLPTP 1 - EAST SOLVENT PUMP ON SOUTH PAD FOR PLANT	VPUMPS - VARIOUS SOLVENT RECOVERY MOTORS AND PUMPS	INSPECTION OF PUMP AND MOTOR 1. LOCKOUT AS REQUIRED 2. REMOVE GUARDS 3. CLEAN, INSPECT, REPAIR, AND LUBRICATE MOTOR AS NEEDED 4. INSPECT, REPAIR AS NEEDED, AND LUBRICATED MOTOR TO PUMP COUPLING 5. INSPECT PUMP PACKING AND EITHER TIGHTEN OR REPLACE AS NEEDED 6. REPLACE GUARDS 7. REMOVE LOCK OUT	
PM1030596	SOL-SOLPTP 1 - EAST SOLVENT PUMP ON SOUTH PAD FOR PLANT			CHECK FOR WATER IN SOLVENT TANK
PM1030597	SOL-SOLPTP 2 - WEST SOLVENT PUMP ON SOUTH PAD FOR PLANT			CHECK FOR WATER IN SOLVENT TANK
PM1030884	SOL-SOLPTP 2 - WEST SOLVENT PUMP ON SOUTH PAD FOR PLANT			CHECK FOR WATER IN SOLVENT TANK

PM1030885	SOL-SOLPTP 2 - WEST SOLVENT PUMP ON SOUTH PAD FOR PLANT	VPUMPS - VARIOUS SOLVENT RECOVERY MOTORS AND PUMPS	INSPECTION OF PUMP AND MOTOR 1. LOCKOUT AS REQUIRED 2. REMOVE GUARDS 3. CLEAN, INSPECT, REPAIR, AND LUBRICATE MOTOR AS NEEDED 4. INSPECT, REPAIR AS NEEDED, AND LUBRICATED MOTOR TO PUMP COUPLING 5. INSPECT PUMP PACKING AND EITHER TIGHTEN OR REPLACE AS NEEDED 6. REPLACE GUARDS 7. REMOVE LOCK OUT	
PM1029614	SOL-SOLPTP 2 - WEST SOLVENT PUMP ON SOUTH PAD FOR PLANT			CHECK FOR WATER IN SOLVENT TANK
PM1029615	SOL-SOLPTP 2 - WEST SOLVENT PUMP ON SOUTH PAD FOR PLANT			CHECK FOR WATER IN SOLVENT TANK
PM1028691	SOL-SOLPTP 2 - WEST SOLVENT PUMP ON SOUTH PAD FOR PLANT			CHECK FOR WATER IN SOLVENT TANK
PM1030087	SOL-SOLPTP 2 - WEST SOLVENT PUMP ON SOUTH PAD FOR PLANT			CHECK FOR WATER IN SOLVENT TANK
PM1029844	SOL-SOLPTP 2 - WEST SOLVENT PUMP ON SOUTH PAD FOR PLANT			CHECK FOR WATER IN SOLVENT TANK
PM1030353	SOL-SOLPTP 2 - WEST SOLVENT PUMP ON SOUTH PAD FOR PLANT			CHECK FOR WATER IN SOLVENT TANK
PM1027286	SOL-SOLPTP 2 - WEST SOLVENT PUMP ON SOUTH PAD FOR PLANT			CHECK FOR WATER IN SOLVENT TANK
PM1028057	SOL-SOLPTP 2 - WEST SOLVENT PUMP ON SOUTH PAD FOR PLANT			CHECK FOR WATER IN SOLVENT TANK
PM1027809	SOL-SOLPTP 2 - WEST SOLVENT PUMP ON SOUTH PAD FOR PLANT			CHECK FOR WATER IN SOLVENT TANK
PM1028298	SOL-SOLPTP 2 - WEST SOLVENT PUMP ON SOUTH PAD FOR PLANT			CHECK FOR WATER IN SOLVENT TANK
PM1028472	SOL-SOLPTP 2 - WEST SOLVENT PUMP ON SOUTH PAD FOR PLANT	VPUMPS - VARIOUS SOLVENT RECOVERY MOTORS AND PUMPS	INSPECTION OF PUMP AND MOTOR 1. LOCKOUT AS REQUIRED 2. REMOVE GUARDS 3. CLEAN, INSPECT, REPAIR, AND LUBRICATE MOTOR AS NEEDED 4. INSPECT, REPAIR AS NEEDED, AND LUBRICATED MOTOR TO PUMP COUPLING 5. INSPECT PUMP PACKING AND EITHER TIGHTEN OR REPLACE AS NEEDED 6. REPLACE GUARDS 7. REMOVE LOCK OUT	
PM1029053	SOL-SOLPUMP1 - J-1 EAST SOLVENT PUMP	VPUMPS - VARIOUS SOLVENT RECOVERY MOTORS AND PUMPS	INSPECTION OF PUMP AND MOTOR 1. LOCKOUT AS REQUIRED 2. REMOVE GUARDS 3. CLEAN, INSPECT, REPAIR, AND LUBRICATE MOTOR AS NEEDED 4. INSPECT, REPAIR AS NEEDED, AND LUBRICATED MOTOR TO PUMP COUPLING 5. INSPECT PUMP PACKING AND EITHER TIGHTEN OR REPLACE AS NEEDED 6. REPLACE GUARDS 7. REMOVE LOCK OUT	

PM1029054	SOL-SOLPUMP2 - J-2 WEST SOLVENT PUMP	VPUMPS - VARIOUS SOLVENT RECOVERY MOTORS AND PUMPS	INSPECTION OF PUMP AND MOTOR 1. LOCKOUT AS REQUIRED 2. REMOVE GUARDS 3. CLEAN, INSPECT, REPAIR, AND LUBRICATE MOTOR AS NEEDED 4. INSPECT, REPAIR AS NEEDED, AND LUBRICATED MOTOR TO PUMP COUPLING 5. INSPECT PUMP PACKING AND EITHER TIGHTEN OR REPLACE AS NEEDED 6. REPLACE GUARDS 7. REMOVE LOCK OUT	
PM1028960	SOL-TRANDUCT - DUCT FROM FILTER HOUSES TO ADSORBER	SRDUCT - SOL. REC. TRANSITION DUCT	A. INSPECTION AND CLEANING OF DUCT 1. LOCK OUT BLOWER 2. OPEN INSPECTION DOORS 3. REMOVE SQUARE INLET DUCT 4. USE SAFETY SOLVENT TO CLEAN	
PM1028239	SOL-INF - SOLVENT INFRARED - MSA			1.) PUT SS FROM "RUN" TO "CALIBRATE" 2.) TAKE SAMPLE LINE OFF SOLENOID CALIBRATE "ZERO" WITH LINE IN FREE AIR USING HAND UNIT 3.) PUT SPAN GAS ON HOSE AND CALIBRATE SPAN NOTE: ADJUST ZERO & SPAN AS NEEDED WITH HAND UNIT 4.) PUT SELECTOR SWITCH IN AMCEC ROOM 5.) SWITCH BACK INTO "RUN" NOTE: FOLLOW INSTRUCTIONS ON HAND UNIT AS YOU GO THROUGH THE PROCESS
PM1028689	SOL-INF - SOLVENT INFRARED - MSA			1.) PUT SS FROM "RUN" TO "CALIBRATE" 2.) TAKE SAMPLE LINE OFF SOLENOID CALIBRATE "ZERO" WITH LINE IN FREE AIR USING HAND UNIT 3.) PUT SPAN GAS ON HOSE AND CALIBRATE SPAN NOTE: ADJUST ZERO & SPAN AS NEEDED WITH HAND UNIT 4.) PUT SELECTOR SWITCH IN AMCEC ROOM 5.) SWITCH BACK INTO "RUN" NOTE: FOLLOW INSTRUCTIONS ON HAND UNIT AS YOU GO THROUGH THE PROCESS
PM1027179	SOL-INF - SOLVENT INFRARED - MSA			1.) PUT SS FROM "RUN" TO "CALIBRATE" 2.) TAKE SAMPLE LINE OFF SOLENOID CALIBRATE "ZERO" WITH LINE IN FREE AIR USING HAND UNIT 3.) PUT SPAN GAS ON HOSE AND CALIBRATE SPAN NOTE: ADJUST ZERO & SPAN AS NEEDED WITH HAND UNIT 4.) PUT SELECTOR SWITCH IN AMCEC ROOM 5.) SWITCH BACK INTO "RUN" NOTE: FOLLOW INSTRUCTIONS ON HAND UNIT AS YOU GO THROUGH THE PROCESS

PM1028055	SOL-INF - SOLVENT INFRARED - MSA			1.) PUT SS FROM "RUN" TO "CALIBRATE" 2.) TAKE SAMPLE LINE OFF SOLENOID CALIBRATE "ZERO" WITH LINE IN FREE AIR USING HAND UNIT 3.) PUT SPAN GAS ON HOSE AND CALIBRATE SPAN NOTE: ADJUST ZERO & SPAN AS NEEDED WITH HAND UNIT 4.) PUT SELECTOR SWITCH IN AMCEC ROOM 5.) SWITCH BACK INTO "RUN" NOTE: FOLLOW INSTRUCTIONS ON HAND UNIT AS YOU GO THROUGH THE PROCESS
PM1027807	SOL-INF - SOLVENT INFRARED - MSA			1.) PUT SS FROM "RUN" TO "CALIBRATE" 2.) TAKE SAMPLE LINE OFF SOLENOID CALIBRATE "ZERO" WITH LINE IN FREE AIR USING HAND UNIT 3.) PUT SPAN GAS ON HOSE AND CALIBRATE SPAN NOTE: ADJUST ZERO & SPAN AS NEEDED WITH HAND UNIT 4.) PUT SELECTOR SWITCH IN AMCEC ROOM 5.) SWITCH BACK INTO "RUN" NOTE: FOLLOW INSTRUCTIONS ON HAND UNIT AS YOU GO THROUGH THE PROCESS
PM1030595	SOL-INF - SOLVENT INFRARED - MSA			1.) PUT SS FROM "RUN" TO "CALIBRATE" 2.) TAKE SAMPLE LINE OFF SOLENOID CALIBRATE "ZERO" WITH LINE IN FREE AIR USING HAND UNIT 3.) PUT SPAN GAS ON HOSE AND CALIBRATE SPAN NOTE: ADJUST ZERO & SPAN AS NEEDED WITH HAND UNIT 4.) PUT SELECTOR SWITCH IN AMCEC ROOM 5.) SWITCH BACK INTO "RUN" NOTE: FOLLOW INSTRUCTIONS ON HAND UNIT AS YOU GO THROUGH THE PROCESS
PM1030351	SOL-INF - SOLVENT INFRARED - MSA			1.) PUT SS FROM "RUN" TO "CALIBRATE" 2.) TAKE SAMPLE LINE OFF SOLENOID CALIBRATE "ZERO" WITH LINE IN FREE AIR USING HAND UNIT 3.) PUT SPAN GAS ON HOSE AND CALIBRATE SPAN NOTE: ADJUST ZERO & SPAN AS NEEDED WITH HAND UNIT 4.) PUT SELECTOR SWITCH IN AMCEC ROOM 5.) SWITCH BACK INTO "RUN" NOTE: FOLLOW INSTRUCTIONS ON HAND UNIT AS YOU GO THROUGH THE PROCESS

PM1029842	SOL-INF - SOLVENT INFRARED - MSA			1.) PUT SS FROM "RUN" TO "CALIBRATE" 2.) TAKE SAMPLE LINE OFF SOLENOID CALIBRATE "ZERO" WITH LINE IN FREE AIR USING HAND UNIT 3.) PUT SPAN GAS ON HOSE AND CALIBRATE SPAN NOTE: ADJUST ZERO & SPAN AS NEEDED WITH HAND UNIT 4.) PUT SELECTOR SWITCH IN AMCEC ROOM 5.) SWITCH BACK INTO "RUN" NOTE: FOLLOW INSTRUCTIONS ON HAND UNIT AS YOU GO THROUGH THE PROCESS
PM1030085	SOL-INF - SOLVENT INFRARED - MSA			1.) PUT SS FROM "RUN" TO "CALIBRATE" 2.) TAKE SAMPLE LINE OFF SOLENOID CALIBRATE "ZERO" WITH LINE IN FREE AIR USING HAND UNIT 3.) PUT SPAN GAS ON HOSE AND CALIBRATE SPAN NOTE: ADJUST ZERO & SPAN AS NEEDED WITH HAND UNIT 4.) PUT SELECTOR SWITCH IN AMCEC ROOM 5.) SWITCH BACK INTO "RUN" NOTE: FOLLOW INSTRUCTIONS ON HAND UNIT AS YOU GO THROUGH THE PROCESS
PM1029610	SOL-INF - SOLVENT INFRARED - MSA			1.) PUT SS FROM "RUN" TO "CALIBRATE" 2.) TAKE SAMPLE LINE OFF SOLENOID CALIBRATE "ZERO" WITH LINE IN FREE AIR USING HAND UNIT 3.) PUT SPAN GAS ON HOSE AND CALIBRATE SPAN NOTE: ADJUST ZERO & SPAN AS NEEDED WITH HAND UNIT 4.) PUT SELECTOR SWITCH IN AMCEC ROOM 5.) SWITCH BACK INTO "RUN" NOTE: FOLLOW INSTRUCTIONS ON HAND UNIT AS YOU GO THROUGH THE PROCESS
PM1029611	SOL-INF - SOLVENT INFRARED - MSA			1.) PUT SS FROM "RUN" TO "CALIBRATE" 2.) TAKE SAMPLE LINE OFF SOLENOID CALIBRATE "ZERO" WITH LINE IN FREE AIR USING HAND UNIT 3.) PUT SPAN GAS ON HOSE AND CALIBRATE SPAN NOTE: ADJUST ZERO & SPAN AS NEEDED WITH HAND UNIT 4.) PUT SELECTOR SWITCH IN AMCEC ROOM 5.) SWITCH BACK INTO "RUN" NOTE: FOLLOW INSTRUCTIONS ON HAND UNIT AS YOU GO THROUGH THE PROCESS

PM1030881	SOL-INF - SOLVENT INFRARED - MSA			1.) PUT SS FROM "RUN" TO "CALIBRATE" 2.) TAKE SAMPLE LINE OFF SOLENOID CALIBRATE "ZERO" WITH LINE IN FREE AIR USING HAND UNIT 3.) PUT SPAN GAS ON HOSE AND CALIBRATE SPAN NOTE: ADJUST ZERO & SPAN AS NEEDED WITH HAND UNIT 4.) PUT SELECTOR SWITCH IN AMCEC ROOM 5.) SWITCH BACK INTO "RUN" NOTE: FOLLOW INSTRUCTIONS ON HAND UNIT AS YOU GO THROUGH THE PROCESS

Attachment 9
Regenerative Thermal Oxidizer
Preventative Maintenance Items

Work Order No (Work Order)	Equipment Code (Work Order)	SOP Code (Work Order Task SOP)	SOP Description (Work Order Task SOP)	SOP Custom Instructions (Work Order Task SOP)
PM1027272	RTO - REGENERATIVE THERMAL OXIDZER	COMBUS - RTO COMBUSTION CHAMBER TEMPREATURE 01-15-2007	Every 90 Days EAST WEST Thermal Couple Reading _____ _____ RTO Panel Reading _____ _____ Wireless Reading _____ _____	
PM1027272	RTO - REGENERATIVE THERMAL OXIDZER			Operational checks of the RTO thermocouples are done quarterly. PROCEDURE: 1. Attach thermocouple wires to the Indicator / Simulator. (RED lead to Negative) 2. Turn ON the indicator simulator using the ON/OFF key pad. 3. The instrument will perform a DISPLAY TEST; it will display the thermocouple type selected; and then will indicate the temperature of the input. (If no thermocouple is connected the display will indicate OPEN). 4. The temperature of the input is the "Thermocouple Reading" 5. The RTO panel reading is the data recorded directly from the RTO control panel. 6. The wireless reading is the output from the system read directly from the laptop.
PM1027696	RTO - REGENERATIVE THERMAL OXIDZER	RTO-WK - RTO WEEEKLY RDS	1. INSPECT HYDRAULIC RESERVOIR LEVEL - DAILY 2. INSPECT FOR FLUID LEAKS - DAILY 3. CHECK HYDRAULIC PRESSURE - DAILY 4. CHECK HYDRAULIC FILTER VISUAL INDICATORS - DAILY 5. LUBRICATE ALL BEARINGS ON DAMPERS (OMNI TEMP GREASE) 6. LUBRICATE ALL BLOWER BEARINGS (SYNTHETIC GREASE) 7. CHECK BELTS FOR PROPER TENSION 8. CHECK C-CLIPS ON HYDRAULIC CYLINDERS 9. GREASE HYDRAULIC CYLINDER PIVOT POINTS 10. GREASE AIR/GAS RATION VALVE (SYNTHETIC GREASE)	

PM1027946	RTO - REGENERATIVE THERMAL OXIDZER	FPQUART - QUARTERLY CO2 SYSTEMS INSPECTION	â€¢ Verify that the pressure gauge shows normal pressure â€¢ Verify that the tank shutoff valve is open, and that the pilot pressure supply valve is open. â€¢ Carbon dioxide storage is connected to discharge piping and actuators. â€¢ All manual actuators are in place and tamper seals are intact. â€¢ Nozzles are connected, properly aligned, and free from obstructions and foreign matter. â€¢ Detectors are in place and free from foreign matter and obstructions. â€¢ The system control panel is connected and showing the â€œnormal-readyâ€ condition.	
PM1028290	RTO - REGENERATIVE THERMAL OXIDZER	COMBUS - RTO COMBUSTION CHAMBER TEMPREATURE 01-15-2007	Every 90 Days EAST WEST Thermal Couple Reading _____ _____ RTO Panel Reading _____ _____ Wireless Reading _____ _____	
PM1028290	RTO - REGENERATIVE THERMAL OXIDZER			Operational checks of the RTO thermocouples are done quarterly. PROCEDURE: 1. Attach thermocouple wires to the Indicator / Simulator. (RED lead to Negative) 2. Turn ON the indicator simulator using the ON/OFF key pad. 3. The instrument will perform a DISPLAY TEST; it will display the thermocouple type selected; and then will indicate the temperature of the input. (If no thermocouple is connected the display will indicate OPEN). 4. The temperature of the input is the "Thermocouple Reading" 5. The RTO panel reading is the data recorded directly from the RTO control panel. 6. The wireless reading is the output from the system read directly from the laptop.

PM1028582	RTO - REGENERATIVE THERMAL OXIDZER	RTO-WK - RTO WEEEKLY RDS	1. INSPECT HYDRAULIC RESERVOIR LEVEL - DAILY 2. INSPECT FOR FLUID LEAKS - DAILY 3. CHECK HYDRAULIC PRESSURE - DAILY 4. CHECK HYDRAULIC FILTER VISUAL INDICATORS - DAILY 5. LUBRICATE ALL BEARINGS ON DAMPERS (OMNI TEMP GREASE) 6. LUBRICATE ALL BLOWER BEARINGS (SYNTHETIC GREASE) 7. CHECK BELTS FOR PROPER TENSION 8. CHECK C-CLIPS ON HYDRAULIC CYLINDERS 9. GREASE HYDRAULIC CYLINDER PIVOT POINTS 10. GREASE AIR/GAS RATION VALVE (SYNTHETIC GREASE)	
PM1029003	RTO - REGENERATIVE THERMAL OXIDZER	RTO-1 - RTO ANNUAL INSPECTION	1. REMOVE ALL ACCESS DOORS 2. INSPECT REFRACTORY MATERIALS FOR SIGNS OF DAMMAGE 3. INSPECT EXTERIOR SHELL FOR POSSIBLE SIGNS OF HOT SPOTS CAUSED BY INSULATION FAILURE 4. INSPECT OXIDIZER SHELL FOR CRACKED WELDS AND LOOSE FLANGE BOLTS 5. INSPECT GAS BURNERS FOR CRACKS, PLUGGED ORIFICES OR RESIDUE 6. INSPECT FAN WHEELS AND BEARINGS AND LUBRICATE AS REQUIRED 7. INSPECT ALL DAMPERS FOR CORRECT OPERATION AND LUBRICATE A REQUIRED 8. REPLACE THERMOCOUPLES ANNUALLY 9. INSPECT AND TEST ALL SAFETY DEVICES FOR INTEGRITY AND CORRECT OPERATION 10. CHECK INLET DUCT, OUTLET DUCT, LOWER CANISTERS, AND VALV OF OXIDIZER FOR BUILDUP OF MATERIAL	
PM1029004	RTO - REGENERATIVE THERMAL OXIDZER	RTO-2 - RTO ANNUAL INSPECTION-2	1. INSPECT GAS PILOT ASSEMBLY FOR DETERIORATION AND FUME DEPOSTION 2. INSPECT BURNER FOR DETERIORATION OR ORIFICE PLUGGAGE 3. INSPECT GAS CONTROL VALVES FOR PROPER OPERATION 4. INSPECT U.V. DETECTORS 5. INSPECT SPARK PLUGS AND PILOTS FOR PROPER ADJUSTMENTS 6. INSPECT ALL GUAGES, FLOW AND PRESSURE SWITCHES, CONTROLS, ECT, FOR PROPER OPERATION	
PM1029005	RTO - REGENERATIVE THERMAL OXIDZER			CHANGE OUT STATIC PRESSURE DEVICE IN RETENTION CHAMBER

PM1029586	RTO - REGENERATIVE THERMAL OXIDZER	FPQUART - QUARTERLY CO2 SYSTEMS INSPECTION	â€¢ Verify that the pressure gauge shows normal pressure â€¢ Verify that the tank shutoff valve is open, and that the pilot pressure supply valve is open. â€¢ Carbon dioxide storage is connected to discharge piping and actuators. â€¢ All manual actuators are in place and tamper seals are intact. â€¢ Nozzles are connected, properly aligned, and free from obstructions and foreign matter. â€¢ Detectors are in place and free from foreign matter and obstructions. â€¢ The system control panel is connected and showing the â€œnormal-readyâ€ condition.	
PM1029587	RTO - REGENERATIVE THERMAL OXIDZER	COMBUS - RTO COMBUSTION CHAMBER TEMPREATURE 01-15-2007	Every 90 Days EAST WEST Thermal Couple Reading _____ _____ RTO Panel Reading _____ _____ Wireless Reading _____ _____	
PM1029587	RTO - REGENERATIVE THERMAL OXIDZER			Operational checks of the RTO thermocouples are done quarterly. PROCEDURE: 1. Attach thermocouple wires to the Indicator / Simulator. (RED lead to Negative) 2. Turn ON the indicator simulator using the ON/OFF key pad. 3. The instrument will perform a DISPLAY TEST; it will display the thermocouple type selected; and then will indicate the temperature of the input. (If no thermocouple is connected the display will indicate OPEN). 4. The temperature of the input is the "Thermocouple Reading" 5. The RTO panel reading is the data recorded directly from the RTO control panel. 6. The wireless reading is the output from the system read directly from the laptop.

PM1029733	RTO - REGENERATIVE THERMAL OXIDZER	RTO-WK - RTO WEEEKLY RDS	1. INSPECT HYDRAULIC RESERVOIR LEVEL - DAILY 2. INSPECT FOR FLUID LEAKS - DAILY 3. CHECK HYDRAULIC PRESSURE - DAILY 4. CHECK HYDRAULIC FILTER VISUAL INDICATORS - DAILY 5. LUBRICATE ALL BEARINGS ON DAMPERS (OMNI TEMP GREASE) 6. LUBRICATE ALL BLOWER BEARINGS (SYNTHETIC GREASE) 7. CHECK BELTS FOR PROPER TENSION 8. CHECK C-CLIPS ON HYDRAULIC CYLINDERS 9. GREASE HYDRAULIC CYLINDER PIVOT POINTS 10. GREASE AIR/GAS RATION VALVE (SYNTHETIC GREASE)	
PM1029974	RTO - REGENERATIVE THERMAL OXIDZER	FPQUART - QUARTERLY CO2 SYSTEMS INSPECTION	â€¢ Verify that the pressure gauge shows normal pressure â€¢ Verify that the tank shutoff valve is open, and that the pilot pressure supply valve is open. â€¢ Carbon dioxide storage is connected to discharge piping and actuators. â€¢ All manual actuators are in place and tamper seals are intact. â€¢ Nozzles are connected, properly aligned, and free from obstructions and foreign matter. â€¢ Detectors are in place and free from foreign matter and obstructions. â€¢ The system control panel is connected and showing the â€œnormal-readyâ€ condition.	
PM1030235	RTO - REGENERATIVE THERMAL OXIDZER	COMBUS - RTO COMBUSTION CHAMBER TEMPERATURE 01-15-2007	Every 90 Days EAST WEST Thermal Couple Reading _____ _____ RTO Panel Reading _____ _____ Wireless Reading _____ _____	

PM1030235	RTO - REGENERATIVE THERMAL OXIDZER			Operational checks of the RTO thermocouples are done quarterly. PROCEDURE: 1. Attach thermocouple wires to the Indicator / Simulator. (RED lead to Negative) 2. Turn ON the indicator simulator using the ON/OFF key pad. 3. The instrument will perform a DISPLAY TEST; it will display the thermocouple type selected; and then will indicate the temperature of the input. (If no thermocouple is connected the display will indicate OPEN). 4. The temperature of the input is the "Thermocouple Reading" 5. The RTO panel reading is the data recorded directly from the RTO control panel. 6. The wireless reading is the output from the system read directly from the laptop.
PM1030480	RTO - REGENERATIVE THERMAL OXIDZER	RTO-WK - RTO WEEEKLY RDS	1. INSPECT HYDRAULIC RESERVOIR LEVEL - DAILY 2. INSPECT FOR FLUID LEAKS - DAILY 3. CHECK HYDRAULIC PRESSURE - DAILY 4. CHECK HYDRAULIC FILTER VISUAL INDICATORS - DAILY 5. LUBRICATE ALL BEARINGS ON DAMPERS (OMNI TEMP GREASE) 6. LUBRICATE ALL BLOWER BEARINGS (SYNTHETIC GREASE) 7. CHECK BELTS FOR PROPER TENSION 8. CHECK C-CLIPS ON HYDRAULIC CYLINDERS 9. GREASE HYDRAULIC CYLINDER PIVOT POINTS 10. GREASE AIR/GAS RATION VALVE (SYNTHETIC GREASE)	
PM1030763	RTO - REGENERATIVE THERMAL OXIDZER	FPQUART - QUARTERLY CO2 SYSTEMS INSPECTION	â€¢ Verify that the pressure gauge shows normal pressure â€¢ Verify that the tank shutoff valve is open, and that the pilot pressure supply valve is open. â€¢ Carbon dioxide storage is connected to discharge piping and actuators. â€¢ All manual actuators are in place and tamper seals are intact. â€¢ Nozzles are connected, properly aligned, and free from obstructions and foreign matter. â€¢ Detectors are in place and free from foreign matter and obstructions. â€¢ The system control panel is connected and showing the â€œnormal-readyâ€ condition.	

PM1028848	RTO COMBUST - RTO COMBUSTION AIR FAN	INSMTR - MOTOR CLEANING, INSPECTION AND LUBRICATION	-LOCK OUT AS REQUIRED -BLOW OUT AND CLEAN MOTOR, USING GOGGLES OR FULL FACE SHIELD -LUBRICATE MOTOR AS NEEDED -CLEAN OR CHANGE FILTERS IF NEEDED - LUBE FAN BEARINGS -CHECK BELTS AND PULLEYS -REMOVE LOCKOUTS	
PM1028849	RTO COMBUST - RTO COMBUSTION AIR FAN	COUINS - INSPECTION OF MOTOR AND GEARBOX COUPLINGS	-LOCK OUT EQUIPMENT AS REQUIRED -PULL GUARDS -CLEAN EQUIPMENT TO ALLOW FOR VISUAL INSPECTION -USING GOGGLES OR FACE MASK IN BLOWING OUT -CHECK COUPLING(S) FOR WEAR AND GENERAL CONDITION REPLACE IF NECESSARY -CHECK GEARBOX FOR SIGNS OF WEAR, LEAKING OIL SEALS, ETC. -ADD OR REPLACE LUBRICANT IN GEARBOX AS NEEDED -DO A COUPLING ALIGNMENT CHECK IF NEEDED -LUBRICATE COUPLING -REMOVE LOCKOUTS	
PM1028850	RTO-HTBOOST - RTO HEAT BOOST FAN	INSMTR - MOTOR CLEANING, INSPECTION AND LUBRICATION	-LOCK OUT AS REQUIRED -BLOW OUT AND CLEAN MOTOR, USING GOGGLES OR FULL FACE SHIELD -LUBRICATE MOTOR AS NEEDED -CLEAN OR CHANGE FILTERS IF NEEDED - LUBE FAN BEARINGS -CHECK BELTS AND PULLEYS -REMOVE LOCKOUTS	
PM1028851	RTO-HTBOOST - RTO HEAT BOOST FAN	COUINS - INSPECTION OF MOTOR AND GEARBOX COUPLINGS	-LOCK OUT EQUIPMENT AS REQUIRED -PULL GUARDS -CLEAN EQUIPMENT TO ALLOW FOR VISUAL INSPECTION -USING GOGGLES OR FACE MASK IN BLOWING OUT -CHECK COUPLING(S) FOR WEAR AND GENERAL CONDITION REPLACE IF NECESSARY -CHECK GEARBOX FOR SIGNS OF WEAR, LEAKING OIL SEALS, ETC. -ADD OR REPLACE LUBRICANT IN GEARBOX AS NEEDED -DO A COUPLING ALIGNMENT CHECK IF NEEDED -LUBRICATE COUPLING -REMOVE LOCKOUTS	
PM1028852	RTO-ID FAN 1 - RTO ID FAN #1	MTRINS - INSPECTION OF MOTOR, GEARBOX, COUPLINGS	-LOCK OUT EQUIPMENT AS REQUIRED -PULL GUARDING AND COVERS -CLEAN EQUIPMENT TO ALLOW FOR VISUAL INSPECTION -CHECK COUPLING(S) FOR SLOP, WEAR, GENERAL CONDITION REPLACE IF NECESSARY -CHECK COUPLING ALIGNMENT - CHECK GEARBOX FOR SIGNS OF WEAR, LEAKING OIL SEALS, ECT. -ADD OR REPLACE LUBRICANT IN GEARBOX AS NEEDED -CHECK MOTOR	

PM1028853	RTO-ID FAN 1 - RTO ID FAN #1	COUINS - INSPECTION OF MOTOR AND GEARBOX COUPLINGS	-LOCK OUT EQUIPMENT AS REQUIRED -PULL GUARDS -CLEAN EQUIPMENT TO ALLOW FOR VISUAL INSPECTION -USING GOGGLES OR FACE MASK IN BLOWING OUT -CHECK COUPLING(S) FOR WEAR AND GENERAL CONDITION REPLACE IF NECESSARY -CHECK GEARBOX FOR SIGNS OF WEAR, LEAKING OIL SEALS, ETC. -ADD OR REPLACE LUBRICANT IN GEARBOX AS NEEDED -DO A COUPLING ALIGNMENT CHECK IF NEEDED -LUBRICATE COUPLING -REMOVE LOCKOUTS	
PM1028854	RTO-ID FAN 2 - RTO ID FAN #2	MTRINS - INSPECTION OF MOTOR, GEARBOX, COUPLINGS	-LOCK OUT EQUIPMENT AS REQUIRED -PULL GUARDING AND COVERS -CLEAN EQUIPMENT TO ALLOW FOR VISUAL INSPECTION -CHECK COUPLING(S) FOR SLOP, WEAR, GENERAL CONDITION REPLACE IF NECESSARY -CHECK COUPLING ALIGNMENT -CHECK GEARBOX FOR SIGNS OF WEAR, LEAKING OIL SEALS, ECT. -ADD OR REPLACE LUBRICANT IN GEARBOX AS NEEDED -CHECK MOTOR	
PM1028855	RTO-ID FAN 2 - RTO ID FAN #2	COUINS - INSPECTION OF MOTOR AND GEARBOX COUPLINGS	-LOCK OUT EQUIPMENT AS REQUIRED -PULL GUARDS -CLEAN EQUIPMENT TO ALLOW FOR VISUAL INSPECTION -USING GOGGLES OR FACE MASK IN BLOWING OUT -CHECK COUPLING(S) FOR WEAR AND GENERAL CONDITION REPLACE IF NECESSARY -CHECK GEARBOX FOR SIGNS OF WEAR, LEAKING OIL SEALS, ETC. -ADD OR REPLACE LUBRICANT IN GEARBOX AS NEEDED -DO A COUPLING ALIGNMENT CHECK IF NEEDED -LUBRICATE COUPLING -REMOVE LOCKOUTS	
PM1028856	RTO-PURGE - RTO PURGE FAN	MTRINS - INSPECTION OF MOTOR, GEARBOX, COUPLINGS	-LOCK OUT EQUIPMENT AS REQUIRED -PULL GUARDING AND COVERS -CLEAN EQUIPMENT TO ALLOW FOR VISUAL INSPECTION -CHECK COUPLING(S) FOR SLOP, WEAR, GENERAL CONDITION REPLACE IF NECESSARY -CHECK COUPLING ALIGNMENT -CHECK GEARBOX FOR SIGNS OF WEAR, LEAKING OIL SEALS, ECT. -ADD OR REPLACE LUBRICANT IN GEARBOX AS NEEDED -CHECK MOTOR	

PM1028857	RTO-PURGE - RTO PURGE FAN	COUINS - INSPECTION OF MOTOR AND GEARBOX COUPLINGS	-LOCK OUT EQUIPMENT AS REQUIRED -PULL GUARDS -CLEAN EQUIPMENT TO ALLOW FOR VISUAL INSPECTION -USING GOGGLES OR FACE MASK IN BLOWING OUT -CHECK COUPLING(S) FOR WEAR AND GENERAL CONDITION REPLACE IF NECESSARY -CHECK GEARBOX FOR SIGNS OF WEAR, LEAKING OIL SEALS, ETC. -ADD OR REPLACE LUBRICANT IN GEARBOX AS NEEDED -DO A COUPLING ALIGNMENT CHECK IF NEEDED -LUBRICATE COUPLING -REMOVE LOCKOUTS	

Attachment 10
Daily Spreadsheet/Maintenance Personnel

MAINTENANCE DEPARTMENT			
Hire Name	Date of Hire	Dept Seniority	Job Title
Campbell, Marshall	3/8/1983	12-Nov-94	Class A
Edie, Thom	9/21/1998	21-Sep-98	Class A
Gelinski, Ken	3/21/1993	29-Nov-99	Class B
Miskell, Dan	5/15/1977	15-Sep-02	Class B
Nelson, Dennis	8/1/1983	17-Sep-07	Class B
Stevens, George	10/25/1999	1-Jul-12	Class B
Swaffield, Jim	10/19/2004	16-Jan-13	Class B
Tetreau, Christopher	12/9/2013	9-Dec-13	Class B
Smith, Harold	6/30/2014	30-Jun-14	Class A
Mugridge, Shawn	6/30/2014	30-Jun-14	Class B
Winans, Craig	7/13/2015	13-Jul-15	Class A
Davis, Jason	4/11/2016	11-Apr-16	Class B
Keefe, Bryan	5/8/2016	8-May-16	Class A
Abbott, Michael	8/15/2016	15-Aug-16	Class A
Davis, John	7/26/1999	4-Dec-16	Class BB
Urban, Todd	5/10/2017	10-May-17	Class B
Tack, Roger	2/9/2019	9-Feb-19	Class B

Attachment 11
ROP Appendix 3 Monitoring Requirements

Approval Signatures:		
Operations Manager		Todd Pepin
Engineering Manager		Rich Clark
Environmental Engineer		Kelly Gossiaux

Section 3
Continuous Monitoring System Quality Control Program

3.1 Applicable Requirement(s)

40 CFR 63.8(d)

3.2 Capture System CPMS – 40 CFR 63.3350(f)

3.2.1 Initial Calibration

The differential pressure monitoring devices that provide static pressure measurements for capture system monitoring were calibrated and certified by the manufacturer, calibrated to devices that are certified by the manufacturer, or calibrated by the use of manometer.

3.2.2 Subsequent Calibration

Every six months, the capture system pressure monitoring devices used to demonstrate compliance with the capture monitoring requirements under 40 CFR 63.3350 (f) will be tested and calibrated according to the calibration procedure in IPG's operation and maintenance procedures.

3.2.3 Determination and Adjustment of Calibration Drift

The calibration of the static pressure monitoring devices will be checked against factory calibrated Magnehelic®, manometer, or other equivalent device according to the preventative maintenance/calibration procedure in IPG's operation and maintenance procedures.

3.2.4 Preventative Maintenance

The facility maintains a preventative maintenance and spare parts inventory computer program that contains the preventative maintenance and spare parts requirements for the CPMSs listed in Table 2.

3.2.5 Data Recording, Calculations, and Reporting

The facility maintains a wireless system for data recording for the CPMSs listed in Table 2 and performs calculations and reporting as required in the POWC MACT.

3.2.6 Accuracy Audit Procedures

The facility maintains all of the installation and operating manuals for the CPMS listed in Table 2. These manuals contain the procedures for ensuring accuracy and auditing, including the inspection of the devices.

3.2.7 Corrective Action for Malfunctioning CMS

The facility maintains a malfunction abatement plan (MAP) for the RTO and SRS and takes corrective action to rectify malfunctioning CPMS.

3.3 Bypass Monitoring CPMS – 40 CFR 63.3350(c)(3)

3.3.1 Initial Calibration

The bypass monitoring devices that indicate the position of the limit switches on the oven exhaust t-dampers (*i.e.*, indicate if the exhaust is collected by the RTO or vented to atmosphere) were validated by the installation contractor. Because these devices are merely capable of indicating either one position (collect) or another (vent), there are no numerical values to calibrate on the limit switches themselves. The bypass monitoring electronic transmission and recording devices were calibrated and verified by IPG upon commissioning and met the manufacturer requirements for calibration and operation.

3.3.2 Subsequent Calibration

The POWC MACT identifies under 40 CFR 63.3350 (c)(3) that the subsequent inspection of these devices should be once every month. The monthly inspection serves the purpose of the subsequent calibration. Again, because there are no numerical values to be confirmed, merely a confirmation that the value of collect or vent is properly monitored by the devices, there is no other calibration performed.

3.3.3 Determination and Adjustment of Calibration Drift

The limit switch and associated electronic transmission and monitoring will be checked as part of the inspect to confirm that the devices are properly indicating the position of the t-damper as "collect" or "vent." This is done by visually confirming the location of the t-damper shaft for each exhaust on the roof.

3.3.4 Preventative Maintenance

The facility maintains a preventative maintenance and spare parts inventory computer program that contains the preventative maintenance and spare parts requirements for the CPMSs that comprise the bypass monitoring system.

3.3.5 Data Recording, Calculations, and Reporting

The facility maintains a wireless system for data recording for the CPMSs associated with the bypass monitoring and performs calculations and reporting as required in the POWC MACT.

3.3.6 Accuracy Audit Procedures

The facility maintains all of the installation and operating manuals for the CPMS for the bypass monitoring devices. These manuals contain the procedures for ensuring accuracy and auditing, including the inspection of the devices.

3.3.7 Corrective Action for Malfunctioning CPMS

The facility maintains a malfunction abatement plan (MAP) for the RTO and SRS and takes corrective action to rectify malfunctioning CPMS.

3.4 Oxidizer CPMS – 40 CFR 63.3350(e)(9)

3.4.1 Initial Calibration

The facility maintains all of the installation and operating manuals for the CPMS that comprises the RTO combustion chamber continuous temperature monitoring system. These manuals contain the procedures for initial calibrations for each monitoring device. The thermocouple temperature monitoring devices that monitor the RTO combustion chamber temperature (TE-2L01 and TE-2L02) were calibrated and certified by the manufacturer. The electronic monitoring and recording devices were validated by the installation contractor.

3.4.2 Subsequent Calibration

The facility maintains all of the installation and operating manuals for the CPMS that comprises the RTO combustion chamber continuous temperature monitoring system. These manuals contain the procedures for subsequent calibrations for each monitoring device. If the thermocouple temperature monitoring devices for the RTO combustion chamber temperature are replaced, the replacement thermocouple temperature monitoring devices that monitor the RTO combustion chamber temperature (TE-2L01 and TE-2L02) are calibrated and certified by the manufacturer. The electronic monitoring and recording devices are also verified according to manufacturer recommendations.

3.4.3 Determination and Adjustment of Calibration Drift

The calibration of the thermocouple RTO combustion chamber temperature monitoring devices will be checked against factory calibrated thermocouple, duplicate temperature

monitoring devices installed near the same monitoring location in the process stream, or other equivalent device according to the preventative maintenance/calibration procedure in IPG's operation and maintenance procedures. These preventative maintenance/calibration procedures contain procedures for determining and adjusting calibration drift for each monitoring device.

3.4.4 Preventative Maintenance

The facility maintains a preventative maintenance and spare parts inventory computer program that contains the preventative maintenance and spare parts requirements for the CPMSs that comprise the RTO combustion chamber temperature monitoring system.

3.4.5 Data Recording, Calculations, and Reporting

The facility maintains a wireless system for data recording for the CPMSs associated with the RTO combustion chamber temperature monitoring and performs calculations and reporting as required in the POWC MACT. As a backup, the facility also maintains the RTO combustion chamber temperature chart recorder in the RTO control room that provides continuous monitoring and recording of the RTO combustion chamber temperature. If necessary, the RTO combustion chamber temperature chart recorder data could be used to compile compliance calculations of the rolling 3-hour average temperatures as required under the POWC MACT.

3.4.6 Accuracy Audit Procedures

The facility maintains all of the installation and operating manuals for the CPMS for the RTO combustion chamber temperature monitoring devices. These manuals contain the procedures for ensuring accuracy and auditing, including the inspection of the devices.

3.4.7 Corrective Action for Malfunctioning CMS

The facility maintains a malfunction abatement plan (MAP) for the RTO and SRS and takes corrective action to rectify malfunctioning CPMS.

Section 2
RTO Capture System Monitoring Plan

2.1 Applicable Requirement(s):

The required elements of capture monitoring are contained in 40 CFR 63.3350(f), and IPG interprets these requirements to apply to the RTO capture system, but not the SRS ductwork collection system.

40 CFR 63.3350(b) requires that following the date on which the initial performance test of a control device is completed to demonstrate continued compliance with the standards, the affected source must monitor and inspect each capture system and control device used to comply with POWC MACT emission standard in 40 CFR 63.3320 (*e.g.*, 0.20 lb HAP/lb solids applied, *etc.*). The affected source must install and operate the monitoring equipment specified in paragraphs (c) and (f) of this section, which include bypass monitoring and capture system monitoring.

These sections and other portions of the POWC MACT identify solvent recovery systems as a distinctly different type of control device that has special monitoring requirements. The POWC MACT identifies that no performance testing is required for solvent recovery systems that use a monthly liquid-liquid material balance to comply with the HAP emission standard under 40 CFR 63.3360 (b)(3). Presumably, this is because the liquid-liquid material balance, while not termed a performance test, is essentially a performance verification that is done on a on-going monthly basis. A solvent recovery system is different from other control systems because it provides positive proof of combined capture and control by the measurement of solvent liquid recovered. Therefore, the measurement of mass of HAPs captured under "capture monitoring" and mass of HAPs potentially bypassed by the control device under "bypass monitoring" for a solvent recovery system are included in the continuous measurement of solvent liquid recovered. Consequently, monitoring a separate capture parameter or bypass condition in

addition to the liquid solvent recovered by the solvent recovery system would be redundant and unnecessary.

While there may be a relevant requirement to have a capture monitoring plan for the SRS, there is no feasible way for IPG to implement the requirements of 40 CFR 63.3350 (f) because no performance test would be required or performed under the performance testing requirements if IPG uses the liquid-liquid material balance compliance monitoring as intended. For example, without a performance test that shows the capture system operating parameter meets a measured performance level (*e.g.*, 90% capture), it would not be possible to verify that a capture monitoring system met a certain performance level, and thereby complied with the capture monitoring system CPMS requirements in 40 CFR 63.3350 (f). Because IPG will be performing no performance test, there are no performance test CPMS data values available for the SRS ductwork collection system (itself) that could be monitored in a feasible or useful way to comply with the capture monitoring as written, except IPG will generate recovered solvent and liquid-liquid material balance data. However, the recovered solvent and liquid-liquid material balance data could be viewed as the "capture monitoring" that confirms that solvent is captured and recovered, thereby meeting the requirements of 40 CFR 63.3350 (f) using the requirements of 40 CFR 63.3350 (d)(2). Therefore, if the capture monitoring provisions of the standard are deemed relevant to the coating line exhausts collected by the SRS, the recovered solvent measurements will be considered the "capture monitoring" performed.

The capture monitoring requirements do apply to the RTO because this type of control device does not provide positive on-going measurement and confirmation of combined capture and control by measurement of recovered solvent. Instead, the RTO and associated capture system must rely upon CPMS and a performance test to demonstrate on-going capture and control performance. This is a critical distinction between the need for capture monitoring in the case of the RTO and no need for capture monitoring in the case of the SRS.

2.2 Capture System Equipment

The RTO controls exhaust air from the cure zone ovens on all four coating lines, as well as the A Ovens on Lines 1 and 4, and the coating hood on the Pilot Coater. These exhaust streams are summarized in Table 1:

Table 1. Coating Line Exhausts Collected by RTO

Line 1	A Oven
	C1 Oven
	C2 Oven
Line 3	Dryer 5 Zone 1
	Dryer 5 Zone 2
	Dryer 5 Zone 3
	Dryer 5 Zone 4
Line 4	A Oven
	C1 Oven
	C2 Oven
Pilot Coater	Coater Hood
	Oven 1
	Oven 2

Each of these ovens contain one exhaust fan that draws air from the oven, discharging the air to the RTO collection ductwork. The locations of the oven zones and the RTO ductwork layout are shown in Figure 8. The RTO induced draft exhaust fan maintains a fairly constant negative pressure in the RTO collection ductwork, making measurement of the oven exhaust fan inlet static pressure a viable measurement location for RTO capture monitoring.

2.3 Operating Parameter

IPG monitors the static pressure at the exhaust fan inlet for each oven zone controlled by the RTO.

2.4 Justification

The RTO induced draft exhaust fan is controlled by a variable speed drive to maintain a constant negative pressure in the RTO collection ductwork. The collection header pressure remains constant, so the discharge conditions for each of the oven exhaust fans should not change significantly from run to run. Because the discharge conditions for each of the oven exhaust fans remains constant, monitoring the static pressure at the inlet to each fan will indicate whether the capture system is operating the same as it did during the capture system performance tests, which established the capture efficiencies that are used in the emission standard compliance calculations.

2.5 Monitoring Procedure

2.5.1 Monitoring Location

The static pressure monitoring locations for each coating line are shown in Figures 10, 11, 12, and 13.

2.5.2 Monitoring Equipment

The static pressure at the exhaust fan inlet for each oven zone controlled by the RTO is measured using pressure transmitters and recorded using a wireless data acquisition system.

2.5.3 Monitoring Frequency

Measurements are recorded using a wireless data acquisition system every 15 minutes while the coating line is operating.

2.6 Operating Ranges

The indicator ranges for each static pressure monitoring location are provided in Table 2. The indicator ranges for the static pressure measurements at the exhaust fan inlets are based on data gathered during capture system performance testing conducted in October 2005. Because these data values must be reviewed and approved as part of the performance test report that is due in

late December 2005, these data values may be adjusted in the future. In accordance with Appendix D ("Monitoring Protocols for the Printing and Flexible Packaging Industries") of the United States Environmental Protection Agency's (USEPA) *Technical Support Document (TSD) for Title V Permitting of Printing Facilities* (January 2005)[2], the indicator range for each location was established by first determining the average static pressure measured during the capture efficiency performance test, then setting the lower bound at approximately 25 percent below the average (*i.e.*, at 75 percent of the average).

[2] While this IPG document is not a Compliance Assurance Monitoring (CAM) plan, the USEPA document titled *Technical Guidance Document: Compliance Assurance Monitoring* (Revised Draft, August 1998) was used as guidance because the POWC MACT monitoring requirements are similar to the CAM provisions, and MACT-specific guidance was not available.

Table 2.
Oven Exhaust Fan Inlet/RTO Capture System Static Pressure Indicator Ranges

Exhaust Description	Monitoring Parameter/Device	Average Static Pressure During Performance Test (in. water)	Indicator Range Lower Bound (3-hr Average) (in. water)
Line 1 - A-Unit Oven	static pressure/ differential pressure	1.21	0.91
Line 1 - C-1	static pressure/ differential pressure	1.18	0.89
Line 1 - C-2	static pressure/ differential pressure	0.49	0.37
Line 3 - Dryer 5 Z-1 Oven	static pressure/ differential pressure	0.79	0.59
Line 3 - Dryer 5 Z-2 Oven	static pressure/ differential pressure	0.80	0.60
Line 3 - Dryer 5 Z-3 Oven	static pressure/ differential pressure	0.71	0.53
Line 3 - Dryer 5 Z-4 Oven	static pressure/ differential pressure	0.40	0.30
Line 4 A-Unit Oven	static pressure/ differential pressure	0.61	0.46
Line 4 C-1 Oven	static pressure/ differential pressure	0.25	0.19
Line 4 C-2 Oven	static pressure/ differential pressure	0.30	0.22
Pilot Coater Hood	static pressure/ differential pressure	1.91	1.44
Pilot Coater North Oven	static pressure/ differential pressure	0.37	0.28
Pilot Coater South Oven	static pressure/ differential pressure	0.25	0.19

Appendix 2. Schedule of Compliance

The permittee certified in the ROP application that this stationary source is in compliance with all applicable requirements and the permittee shall continue to comply with all terms and conditions of this ROP. A Schedule of Compliance is not required. **(R 336.1213(4)(a), R 336.1119(a)(ii))**

Appendix 3. Monitoring Requirements

The following monitoring procedures, methods, or specifications are the details to the monitoring requirements identified and referenced in FG-COATINGPROCESS.

I. MONITORING PROGRAM DESCRIPTION –CARBON ADSORPTION SOLVENT RECOVERY SYSTEM (SRS) ON EUCOATINGLINE1, EUCOATINGLINE3, AND EUCOATINGLINE4.

Monitored Parameter: SRS overall collection and recovery efficiency (R_r), based on a 30 day rolling period.

Monitoring Devices: Solvent recovery meter (flow meter): Install, calibrate, maintain, and operate according to manufacturer's specifications, a device that indicates the cumulative amount of volatile matter recovered by the SRS on a monthly basis. The device must be certified by the manufacturer to be accurate to within +/- 2.0 percent by mass.

Location on Control Equipment: Near solvent recovery tank

Rationale for monitoring approach: Solvent collection and recovery efficiency (R_r) is used to calculate compliance with the applicable emission standard. Solvent recovery shall be directly measured on a daily basis through the use of a meter at the SRS. Solvent recovery is expressed as a percentage when compared to solvent applied at the coating line. Solvent applied is determined each day according to compliance demonstration requirements applicable to the subject emission standard. Consequently, both parameters required to determine solvent recovery efficiency are readily available on a daily basis.

Frequency of measurement: Daily. The source owner or operator shall obtain data each day on the solvent usage (recordkeeping required by Rule 1040 (6), (7) and (8)) and solvent recovery (meter readings) and determine the solvent recovery efficiency (R_r) of the system for each day using a 30 day rolling period.

Calculation: Daily. The recovery efficiency for each operating day is computed as the ratio of the total recovered solvent for that day and the prior 29 consecutive operating days to the total solvent usage on coating applicators controlled by the SRS for the same 30-day period weighted average, consistent with equations A, B, and C in Section II of Appendix 7. The ratio shall be computed within 72 operating hours of each 24-hour period. (Reference R 336.2040 (10)(a)(i)).

Corrective Action Trigger: Overall collection and recovery efficiency averaged over a 30-day period that is below the Corrective Action Trigger specified in the Malfunction Abatement Plan (MAP).

Corrective Action Period: Inspect and isolate problem within 24 hours of discovery. Implement a solution within seven days.

QA/QC Procedures: Calibrate, maintain, and operate instrumentation according to the manufacturer's recommendations. Update Malfunction Abatement Plan based on additional information obtained from actual operation, monitoring and maintenance of the SRS and its associated monitoring equipment.

II. MONITORING PROGRAM DESCRIPTION REGENERATIVE THERMAL OXIDIZER (RTO) DESTRUCTION EFFICIENCY FOR FG-COATINGPROCESS

Monitored Parameter: RTO combustion chamber temperature

Monitoring Devices: Combustion chamber temperature sensor (thermocouple) and continuous recording device: The temperature measurement device shall have an accuracy of greater than +/- 0.75% of the temperature being measured expressed as degree Celsius or +/- 2.5 degrees C. The temperature monitoring device shall be equipped with a recording device so that a permanent, continuous record of the temperature is produced.

Location on Control Device: At the combustion chamber.

Rationale for Monitoring Approach: The VOC emissions from EUCOATINGLINE1, EUCOATINGLINE3, EUCOATINGLINE4, and EUPILOT-LINE are controlled with a RTO. A minimum temperature is required to fully combust the VOC, with the assumption that the oxidizer is designed with adequate turbulence and residence time. A low temperature may indicate incomplete combustion dependant on other parameters such as VOC loading, mixing and residence time. The permittee conducted performance testing of the RTO on October 24–27, 2005 and demonstrated that the acceptable minimum temperature provides adequate destruction efficiency. Thus, temperature is an appropriate monitoring parameter to ensure sufficient control efficiency on a continuous basis.

Frequency of Measurement: Continuous

Corrective Action Trigger: ≤1425° F (calculated as a 3-hour average)

Corrective Action Period: Inspect and isolate problem within 24 hours of discovery. Implement a solution within one to seven days, depending on severity.

QA/QC Procedures: Calibrate, maintain, and operate instrumentation according to the manufacturer's recommendations. Update Malfunction Abatement Plan based on additional information obtained from actual operation, monitoring and maintenance of the RTO and its associated monitoring equipment.

Appendix 4. Recordkeeping

A. To document monthly spray booth coating usage records and other records as required by R336.1287(c) and Table FGRULER287(c), the permittee shall use the DEQ Rule 287(c) Permit to Install Record Form (EQP 3562) or an alternative format as approved by the AQD District Supervisor. The Record Form is available on the MDEQ Website (www.michigan.gov/deq); Air; Clean Air Assistance; Compliance Assistance; Surface Coating Operations; under Additional Forms; Rule 287(c) Permit to Install Exemption Records: Surface Coating Equipment.

B. To document monthly adhesive coating usage records and other records as required by R336.1290 and Table FGRULE290, the permittee shall use the DEQ Rule 290 Permit to Install Record Form (EQP 3558) or an alternative format as approved by the AQD District Supervisor. The Record Form is available on the MDEQ Website (www.michigan.gov/deq); Air; Clean Air Assistance; Compliance Assistance; Surface Coating Operations; under Additional Forms; Rule 290 Permit to Install Exemption Records: Sources with Limited Emission Record.

Appendix 5. Testing Procedures

The permittee shall use the following approved test plans, procedures, and averaging to measure the pollutant emissions for the applicable requirements referenced in FG-COATINGPROCESS.

Specific testing requirement plans, procedures, and averaging times are detailed in the appropriate Requirement Tables.
The permittee shall use the following approved test plans, procedures, and averaging to measure the pollutant emissions for the applicable requirements referenced in FG-COATINGPROCESS as they relate to 40 CFR Part 63-National Emission Standards for Hazardous Air Pollutants: Paper and Other Web Coating (POWC MACT).

The permittee shall conduct performance tests as required by 40 CFR 63.3360, as follows:

For organic HAP content of each coating material, use the procedures of 40 CFR 63.3360(c).
For volatile organic and solids content of each coating material, use the procedures of 40 CFR 63.3360(d).
For oxidizer destruction efficiency, use the procedures of 40 CFR 63.3360(e).
For capture efficiency, use the procedures of 40 CFR 63.3360(f).
For Volatile matter retained in the coated web or otherwise not emitted to the atmosphere, use the procedures of 40 CFR 63.3360(g).
For multiple control devices in series, use the procedures of 40 CFR 63.3360(h).

Appendix 6. Permits to Install

The following table lists any PTIs issued or ROP revision applications received since the effective date of the previously issued ROP No. MI-ROP-A6220-2009. Those ROP revision applications that are being issued concurrently with this ROP renewal are identified by an asterisk (*). Those revision applications not listed with an asterisk were processed prior to this renewal.

Source-Wide PTI No MI-PTI-A6220-2009 is being reissued as Source-Wide PTI No. MI-PTI-A6220-2015.

Permit to Install Number	ROP Revision Application Number	Description of Equipment or Change	Corresponding Emission Unit(s) or Flexible Group(s)
NA	NA	NA	NA

The following ROP amendments or modifications were issued after the effective date of ROP No. MI-ROP-A6220-2015.

Permit to Install Number	ROP Revision Application Number/Issuance Date	Description of Change	Corresponding Emission Unit(s) or Flexible Group(s)
NA	201600112/August 31, 2016	Intertape Polymer Group is removing Consent Order references of Consent Order 10-1997 and Consent Order 28-2008 from the ROP since the Consent Orders were terminated December 9, 2015. Additionally, Special Condition VI.5 in FG-COATINGPROCESS was removed since it was a carry-over condition from the Consent Order when the cure zone was not controlled by the RTO. The cure zone emissions are now controlled by the RTO and the facility calculates and maintains records VOC and HAP emissions. Reporting specific cure zone emissions separately on a monthly basis no longer provides relevant data used to show compliance.	FG-COATINGPROCESS

Appendix 7. Emission Calculations

The permittee shall use the following calculations in conjunction with monitoring, testing or recordkeeping data to determine compliance with the applicable requirements referenced in FG-COATINGPROCESS.

I. The volatile organic compound (VOC) emission rate from each coating line, EUCOATINGLINE 1, EUCOATINGLINE 3, EUCOATINGLINE 4 and EUPILOT-LINE, shall not exceed 4.79 pounds per gallon of solids applied, based on a 24-hour averaging period. This is equivalent to using a coating comprised of not more than 2.9 pounds of VOC per gallon of coating (less water and non-VOCs) as applied with a VOC density of 7.36 pounds per gallon, and with a mass transfer efficiency of 100 percent. The equivalent limit may be used in the following formula as referenced in **R 336.2040(12)(b)(i).**

$$B = \frac{E}{1 - \frac{E}{7.36}}$$

Where: *B = Equivalent emission limit, converted from pounds of VOCs per gallon of coating, less water and non-VOCs, as applied, to pounds of VOCs per gallon of coating solids as applied; and*

E = Emission limit expressed in pounds of VOCs per gallon of coating, less water and non-VOCs, as applied.

II. To calculate the VOC content to compare with the equivalent emission limit, the permittee shall use the calculations below, in conjunction with monitoring, testing, or the recordkeeping data required by Paragraph III.

A. *Weight of VOC (in pounds) applied during the 24 hour averaging period at a coating line "j" (M_j)* ***[R.336.2040(12)(b)(ii) and R 336.2040(6)]***

$$M_j = \sum_{i=1}^{z} L_{ci} P_j$$

L_{ci} = Daily usage (volume) of each coating "i" (gallons of coating, minus water, as applied) on coating line "j" during the 24-hour averaging period;
P_i = VOC content of coating "i" (pounds VOC per gallon of coating i, minus water, as applied) on coating line "j" during the 24-hour averaging period;
z = Total number of coatings used on the line during the 24 hour averaging period

B. *Weight of VOC (in pounds) applied during the 24-hour averaging period at all coating applicators and associated ovens at the facility (M_l) that exhaust to the SRS.*

$$M_l = \sum_{i=1}^{j} Mj$$

x = Total number of coating applicators and associated ovens at the facility that exhaust to the SRS

C. *Solvent Recovery Efficiency (R_r)* ***[R 336.2040(12)(b)(vi), R 336.2040(11)(c),R 336.2040(10)(a)]***

$$R_r = \sum_{l=1}^{30} dv_l \,/\, \sum_{l=1}^{30} M_l$$

d = Density of the solvent (pounds VOC per gallon of solvent)
v_l = Volume (gallons) of the solvent recovered from all coating lines during a 24-hour averaging period, where l =1 for day 1
l = Total number of days in the rolling period (30)

D. *Solvent Recovery Credit (C_s)*

$$C_s = R_r \sum_{i=1}^{v} L_{ci} P_i$$

y = Total number of coatings applied on a coating line during the 24-hour averaging period at an applicator that exhausts to the carbon adsorption solvent recovery system

E. *VOC captured by the Regenerative Thermal Oxidizer (C_T)*

$$C_T = DE\sum_{i=1}^{y} M_{(RTO)di} * N_{(RTO)di}$$

$M_{(RTO)di}$ = The daily amount of VOC in each coating "i" applied at a coating line applicator that exhausts to the regenerative thermal oxidizer (RTO).
$N_{(RTO)di}$ = The RTO capture efficiency of the VOC applied at each coating line applicator.
DE = VOC destruction efficiency of the RTO.

F. *Total daily VOC emitted from the line (W_e)*

$$W_e = M_j - C_s - C_T$$

G. *Total applied coating solid (V_s)*

$$V_s = \sum_{i=1}^{y} L_{ci} f_{si}$$

f_{si} = solid volume fraction of coating "i"

H. *To calculate the equivalent VOC content to compare with the equivalent emission limit (C_a)*

$$C_a = W_e / V_s$$

III. The permittee shall keep records as provided in the Subparagraph below in conjunction with the compliance calculation methods of Paragraph II, monitoring, and testing data, to determine compliance with the applicable requirements referenced in FG-COATINGPROCESS.

A. The permittee shall keep records of the following data elements to demonstrate, on a daily basis, compliance with the equivalent emission limit as determined in Subparagraph I.

1. The name, identification number, volume (L_{ci}) and VOC content, as determined by formulation data or Method 24 testing, (P_i) of each coating
2. The mass of VOCs (M) applied at a coating line during a 24-hour period
3. The VOC density of the solvent recovered (d)
4. The daily volume of the solvent recovered (v_l)
5. The daily amount of VOC in each coating "I" applied at a coating line applicator that exhausts to the RTO ($M_{(RTO)di}$)
6. The RTO capture efficiency of the VOC applied at each coating line applicator ($N_{(RTO)di}$)
7. Daily VOC destruction by the thermal oxidizer (C_T)
8. Solid volume fraction of coating "i" (f_{si})

Appendix 8. Reporting

A. Annual, Semiannual, and Deviation Certification Reporting

The permittee shall use the MDEQ, AQD, Report Certification form (EQP 5736) and MDEQ, AQD, Deviation Report form (EQP 5737) for the annual, semiannual and deviation certification reporting referenced in the Reporting Section of the Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Alternative formats must meet the provisions of Rule 213(4)(c) and Rule 213(3)(c)(i), respectively, and be approved by the AQD District Supervisor.

B. Other Reporting

Specific reporting requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, Part B of this appendix is not applicable.

Appendix 9. Malfunction Abatement Plans

The permittee shall implement and maintain a Malfunction Abatement Plan for **FG-COATINGPROCESS.**

An approved malfunction abatement plan, dated May 21, 1999, was submitted to the District Supervisor. The approved plan covers the Vapor Phase Carbon Adsorption Solvent Recovery System and the Regenerative Thermal Oxidizer air pollution control equipment. Any modifications to the plan shall be submitted to the AQD District Supervisor for approval, and are subject to review by the AQD. Records in support of the activities required by the plan shall be maintained. These records shall be made available upon inspection of the facility, or as otherwise requested by the AQD.

E. NON-APPLICABLE REQUIREMENTS

At the time of the ROP issuance, the AQD has determined that no non-applicable requirements have been identified for incorporation into the permit shield provision set forth in the General Conditions in Part A pursuant to Rule 213(6)(a)(ii).

APPENDICES

Appendix 1. Abbreviations and Acronyms

The following is an alphabetical listing of abbreviations/acronyms that may be used in this permit.

AQD	Air Quality Division	MM	Million
acfm	Actual cubic feet per minute	MSDS	Material Safety Data Sheet
BACT	Best Available Control Technology	MW	Megawatts
BTU	British Thermal Unit	NA	Not Applicable
°C	Degrees Celsius	NAAQS	National Ambient Air Quality Standards
CAA	Federal Clean Air Act	NESHAP	National Emission Standard for Hazardous Air Pollutants
CAM	Compliance Assurance Monitoring	NMOC	Non-methane Organic Compounds
CEM	Continuous Emission Monitoring	NOx	Oxides of Nitrogen
CFR	Code of Federal Regulations	NSPS	New Source Performance Standards
CO	Carbon Monoxide	NSR	New Source Review
COM	Continuous Opacity Monitoring	PM	Particulate Matter
department	Michigan Department of Environmental Quality	PM-10	Particulate Matter less than 10 microns in diameter
dscf	Dry standard cubic foot	pph	Pound per hour
dscm	Dry standard cubic meter	ppm	Parts per million
EPA	United States Environmental Protection Agency	ppmv	Parts per million by volume
EU	Emission Unit	ppmw	Parts per million by weight
°F	Degrees Fahrenheit	PS	Performance Specification
FG	Flexible Group	PSD	Prevention of Significant Deterioration
GACS	Gallon of Applied Coating Solids	psia	Pounds per square inch absolute
GC	General Condition	psig	Pounds per square inch gauge
gr	Grains	PeTE	Permanent Total Enclosure
HAP	Hazardous Air Pollutant	PTI	Permit to Install
Hg	Mercury	RACT	Reasonable Available Control Technology
hr	Hour	ROP	Renewable Operating Permit
HP	Horsepower	SC	Special Condition
H_2S	Hydrogen Sulfide	scf	Standard cubic feet
HVLP	High Volume Low Pressure *	sec	Seconds
ID	Identification (Number)	SCR	Selective Catalytic Reduction
IRSL	Initial Risk Screening Level	SO_2	Sulfur Dioxide
ITSL	Initial Threshold Screening Level	SRN	State Registration Number
LAER	Lowest Achievable Emission Rate	TAC	Toxic Air Contaminant
lb	Pound	Temp	Temperature
m	Meter	THC	Total Hydrocarbons
MACT	Maximum Achievable Control Technology	tpy	Tons per year
MAERS	Michigan Air Emissions Reporting System	µg	Microgram
MAP	Malfunction Abatement Plan	VE	Visible Emissions
MDEQ	Michigan Department of Environmental Quality	VOC	Volatile Organic Compounds
mg	Milligram	yr	Year
mm	Millimeter		

*For HVLP applicators, the pressure measured at the gun air cap shall not exceed 10 pounds per square inch gauge (psig).

DAILY	[redacted]	Web width, yd					Date =	19-May-99								
COMPLIANCE							Line =	4								
ASSURANCE							Overall reduction efficiency (R_T) =	0.67								
							Emission rate (Pb), lb VOC/gal solids =	3.76	COMPLIANT							
							R-COATER (release coat)								A-COATER (base c	
MFG Code	*Line ~~speed~~, yd/min*	*Operating ~~schedule~~, hr/day*	*Adsorb*	*RTO*	*Code*	*Dry wt, lb/yd²*	*Solids weight fraction[a]*	*Density, lb/gal[b]*	*Applic'n rate (L_{ct}), gal/day[c]*	*VOC density (P), lb VOC/gal[d]*	*VOC applic'n rate, lb VOC/day*	*Solids volume fraction (V_{ct})[e]*	*Solids applic'n rate, gal solids/day*	*Control device load fraction (NT_r)*	*Code*	*Dry wt, lb/yd²*
[redacted]		9			na	-	-	-	-	-	-	-	-	-	3060	0.063
					ACRY	0.021	0.990	8.7	175	0.04166	7.3	0.97651	171	0.000	na	-
					SILC	0.027	0.989	8.7	175	0.04427	7.8	0.97497	171	0.000	na	-
					na	-	-	-	-	-	-	-	-	-	na	-
					na	-	-	-	-	-	-	-	-	-	na	-
					na	-	-	-	-	-	-	-	-	-	na	-
					na	-	-	-	-	-	-	-	-	-	na	-
					na	-	-	-	-	-	-	-	-	-	na	-
					na	-	-	-	-	-	-	-	-	-	na	-
					na	-	-	-	-	-	-	-	-	-	na	-
TOTAL		24												0.001		

(a) Solids dry weight fraction, as mass of solids per mass of coating, less water and exempt compounds.
(b) Dry density of coating, as mass of solids per volume of coating, less water and exempt compounds.
(c) Coating volume application rate, as volume of coating, less water and exempt compounds applied per unit time.
(d) VOC dry density of coating, as mass of VOCs per volume of coating, less water and exempt compounds.
(e) Solids dry volume fraction, as volume of solids per volume of coating, less water and exempt compounds.

(a) Solids dry w
(b) Dry density o
(c) Coating volu
(d) VOC dry den
(e) Solids dry vo