SECTION 11.0

ORGANIC AIR EMISSION COMPLIANCE

11.1 INTRODUCTION

The following section outlines the steps GLOBALFOUNDRIES will follow to comply with the organic air emission standards for process vents, equipment leaks, and tanks, containers, and surface impoundments.
Provided first is a summary of the standards and a broad overview of the actions that GLOBALFOUNDRIES has implemented to address them. Attachment 11-1 is a detailed compliance plan that outlines the Subpart BB and Subpart CC standards and the actions GLOBALFOUNDRIES will implement to comply with these standards. No detailed compliance plan for the Subpart AA standards for process vents is given because they are not applicable to GLOBALFOUNDRIES' hazardous waste management activities at this time.

11.2 SUMMARY OF THE STANDARDS

On June 21, 1990, EPA promulgated standards effective on December 21, 1990, limiting organic air emissions from specific hazardous waste processes. The rule was the first action of a multi-phased regulatory effort to control organic air emissions from hazardous waste management operations. It established standards limiting organic emissions from 1) process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, and air or steam stripping operations, and 2) leaks from equipment that contains or contacts hazardous waste streams. The standards for process vents are given in 40 CFR 264, Subpart AA, and the standards for equipment leaks are given in 40 CFR 264, Subpart BB.

On November 25, 1996, EPA published the second phase of regulatory standards for air emissions from tanks, containers, and surface impoundments. This rule was clarified and amended by the EPA on December 8, 1997. The requirements for units covered under these standards became effective December 6, 1996, and are contained in 40 CFR 264, Subpart CC.

11.3 SUBPART AA - AIR EMISSION STANDARDS FOR PROCESS VENTS

This section provides a description as required by 40 CFR 270.24 for process vents. 40 CFR 264, Subpart AA gives standards that limit organic emissions from process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, and air or steam stripping operations. Although GLOBALFOUNDRIES has process vents on its storage tanks, these standards do not apply. The rationale for this is provided below.

11.3.1 Tank Vents

EPA excluded emissions from tanks in the June 21, 1990, rule. Emissions from tanks are addressed in the November 25, 1996, Subpart CC rulemaking. Consequently, the standards for process vents

in 40 CFR 264, Subpart AA do not apply to GLOBALFOUNDRIES' tank systems and no action is needed.

11.4 SUBPART BB - AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS

This section provides a description as required by 40 CFR 270.25 for equipment leaks. 40 CFR 264, Subpart BB equipment leak standards apply to emissions from valves, pumps, compressors, pressure-relief devices, sampling systems, and open-ended valves or lines. GLOBALFOUNDRIES has determined through analysis and generator knowledge that its hazardous waste streams contain or may contain greater than 10 percent by weight organic constituents per 40 CFR 264.1050(b)(1). Based on this, Subpart BB equipment standards apply to GLOBALFOUNDRIES hazardous waste handling equipment. GLOBALFOUNDRIES has implemented a system to identify and mark affected equipment, implemented a program to monitor and repair leaks, and developed a recordkeeping system. Records required to meet the Subpart BB standards are compiled in the facility operating record and are described in Attachment 11-1.

Per 40 CFR 270.25(e), Attachment 11-1 provides information regarding closed vent systems and control devices as required by 40 CFR 264.1060. The solvent wastes that GLOBALFOUNDRIES stores are considered light liquids (i.e., their vapor pressure is greater than 0.3 kilopascal at 20 degrees Celsius). Consequently, GLOBALFOUNDRIES's pumps are in light liquid service and are subject to these standards. At this time, GLOBALFOUNDRIES uses a carbon adsorption system for tank vents. Because the Subpart BB Air Emission Standards do not apply to tank vents, GLOBALFOUNDRIES's compliance with tank vent requirements is discussed in the Subpart CC plan in Section 16.0 of Attachment 11-1.

11.5 SUBPART CC - AIR EMISSION STANDARDS FOR TANKS, SURFACE IMPOUNDMENTS, AND CONTAINERS

This section provides a description as required by 40 CFR 270.27 for tanks, surface impoundments, and containers. The 40 CFR 264, Subpart CC air emission standards apply to tanks, surface impoundments, and containers. The Subpart CC standards specify emissions-control measures based on the vapor pressure of the stored waste and the container or tank volume. Using knowledge of the processes and chemicals generating wastes, GLOBALFOUNDRIES has determined that hazardous wastes stored in onsite tanks and containers have an average volatile organic concentration greater than 500 parts per million (ppm) by weight and are therefore subject to 40 CFR 264, Subpart CC. Records required to meet the Subpart CC standards are compiled in the facility operating record and are described in Attachment 11-1.

The requirements for surface impoundments are not applicable as GLOBALFOUNDRIES does not operate any surface impoundments at the Essex Junction facility.

ATTACHMENT 11-1

COMPLIANCE PLAN

AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS

ATTACHMENT 11-1

COMPLIANCE PLAN
AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS

1.0 INTRODUCTION

This section provides a compliance plan for the 40 CFR 264 Subpart BB - Air Emission Standards for Equipment Leaks and 40 CFR Subpart CC- Air Emissions Standards for Tanks, Surface Impoundments, and Containers. GLOBALFOUNDRIES has implemented this plan to comply with these standards. GLOBALFOUNDRIES will continue with the monitoring plan and frequency performed previously by IBM.

2.0 STANDARDS: PUMPS IN LIGHT LIQUID SERVICE

The solvent wastes that GLOBALFOUNDRIES stores are considered light liquids (i.e., their vapor pressure is greater than 0.3 kiloPascal at 20 degrees Celsius). Consequently, GLOBALFOUNDRIES' pumps are in light liquid service and are subject to these standards.

This section 1) describes how GLOBALFOUNDRIES will monitor pumps, 2) defines what constitutes a leak from a pump, 3) provides the schedule that GLOBALFOUNDRIES will follow to repair leaks, and 4) defines pump types that are exempt from some of the monitoring requirements.

2.1 Monitoring Requirements

GLOBALFOUNDRIES' pumps that are not exempt will be monitored monthly for leaks using Method 21 volatile organic compound (VOC) monitoring instrumentation, and will be inspected weekly for liquids dripping from the pump seals.

2.2 Definition of a Leak

A leak is defined as an instrument reading 10,000 parts per million (ppm) or greater with Method 21 VOC monitoring instrumentation.

2.3 Leak Repair Schedule

If a leak is detected, it will be repaired as soon as possible, but no later than 15 days after detection. Also, a first attempt at repairing the leaking pump will be made within five days. There are, however, some exemptions to the repair schedule requirement that allow GLOBALFOUNDRIES to postpone repair work: if it is technically infeasible to do the work, if the pump cannot be put out of service, or if the repair requires the use of a dual mechanical seal. If GLOBALFOUNDRIES postpones repair work, the reason for this will be noted in the facility operating record.

2.4 Exempt Pump Types

Three types of pumps are exempt from the monthly monitoring requirements and weekly inspections: first, pumps equipped with dual mechanical seals that have barrier fluid systems; second, pumps with no external shafts that penetrate the pump housing; and third, pumps equipped with a closed-vent system to capture leaks.

GLOBALFOUNDRIES' diaphragm pumps fall into the second exemption category, as they have no external shafts that penetrate their housing. These pumps will be monitored on an annual basis. Other exempt pumps identified by GLOBALFOUNDRIES will be monitored annually.

3.0 STANDARDS: COMPRESSORS

Compressors in light liquid service must be equipped with a seal system to prevent leaks. Because GLOBALFOUNDRIES has no compressors that are part of the hazardous waste management facility, this standard is not applicable. However, if a compressor is used in the future, it will be equipped with a seal system to prevent leaks.

4.0 STANDARDS: PRESSURE RELIEF DEVICES IN GAS/VAPOR SERVICE

GLOBALFOUNDRIES' pressure relief devices on the tanks will 1) be operated so there are no detectable emissions (demonstrated by a Method 21 instrument reading of less than 500 ppm), and 2) be returned to a condition of no detectable emissions within five days after a pressure release. Pressure relief devices that are equipped with a closed-vent system capable of capturing leaks are exempt from the two requirements listed above.

5.0 STANDARDS: SAMPLING SYSTEMS

Sampling systems must be equipped with a closed-purge or closed-vent system so no emissions occur. In situ sampling systems are exempt.

If GLOBALFOUNDRIES retrofits its tanks for sampling, closed-purge, closed-vent, or in situ sampling systems that meet the requirements of this section will be used.

6.0 STANDARDS: OPEN-ENDED VALVES OR LINES

All of GLOBALFOUNDRIES' open-ended valves or lines were fitted with caps, blind flanges, plugs, or second valves by December 21, 1990.

7.0 STANDARDS: VALVES IN GAS/VAPOR SERVICE OR IN LIGHT LIQUID SERVICE

This section 1) describes how GLOBALFOUNDRIES will monitor valves, 2) defines what constitutes a leak from a valve, 3) provides the schedule that GLOBALFOUNDRIES will follow to repair leaks, and 4) defines valve types that are exempt from the monthly monitoring requirements.

Sections 11.0 and 12.0 below also provide alternative monitoring schedules for valves that GLOBALFOUNDRIES may follow.

7.1 Monitoring Requirements

Valves will be monitored monthly for leaks. If no leaks are detected for two successive months, monitoring may be reduced to quarterly. Alternative monitoring schedules for valves that GLOBALFOUNDRIES may follow are outlined in Sections 11.0 and 12.0.

7.2 Definition of a Leak

A leak is defined as an instrument reading 10,000 ppm or greater with Method 21 instrumentation.

7.3 Leak Repair Schedule

If a leak is detected, it will be repaired by GLOBALFOUNDRIES as soon as possible, but no later than 15 days after detection. Also, a first attempt at repairing the valve will be made within five days.

7.4 Exempt Valve Types

Three types of valves do not have to be monitored monthly. The first type is valves that have no external actuating mechanisms, such as a sealed-bellows valve, that can be operated at emission readings of less than 500 ppm above background. These valves will be monitored annually.

The second type is valves that are considered as unsafe-to-monitor because monitoring personnel would be exposed to an immediate danger. For unsafe-to-monitor valves, GLOBALFOUNDRIES will develop a written plan that provides some alternative monitoring frequency. This plan will be added to the facility operating record.

The third type is valves that are considered difficult-to-monitor because personnel would have to be lifted more than 2 meters above the ground to conduct the monitoring. GLOBALFOUNDRIES will monitor these valves at least annually.

8.0 STANDARDS: PUMPS AND VALVES IN HEAVY LIQUID SERVICE, PRESSURE RELIEF DEVICES IN LIGHT LIQUID OR HEAVY LIQUID SERVICE, AND FLANGES AND OTHER CONNECTIONS

These standards 1) require that monitoring be conducted within five days if there is evidence of a leak, 2) define what is a leak, 3) require that leaks be repaired within 15 days after detection and that a first attempt to repair a leak be made within five days, and 4) describe the leak repair methods that should be used.

GLOBALFOUNDRIES' wastes are not heavy liquids. Therefore, the portions of this section that refer to heavy liquids do not apply. However, this section adds monitoring requirements for pressure-relief devices and flanges and other connectors.

Flanges and other connectors will be monitored for evidence of potential leaks per 40 CFR 264.1058. If there is any evidence of a leak (e.g., solvent odor), monitoring with Method 21 VOC monitoring instrumentation will be completed within five days. However, no routine monitoring with Method 21 VOC monitoring instrumentation will be done. Also, flanges and other connections are not required to be marked. These requirements are also outlined in FAXBACK 11802 and the compliance method descriptions outlined in Attachment 11-2.

9.0 STANDARDS: DELAY OF REPAIR

This section outlines the reasons why GLOBALFOUNDRIES may delay repairs when a leak has occurred. Repair work may be delayed 1) for equipment if it is technically infeasible to do the repair work without shutting down the hazardous waste management unit; 2) for equipment that can be put out of service and that no longer contacts hazardous waste; 3) for valves if the repair work will cause more of a problem than the leak, or if by delaying the repairs, any material that would be purged from the valve can be collected or recovered; 4) for pumps if the repair requires the use of a dual mechanical seal that includes a barrier fluid (in any event the repair must be completed as soon as practicable but not later than six months after the leak is detected); and 5) for valves if a valve assembly replacement is needed but none is available.

If repair work is delayed, GLOBALFOUNDRIES will maintain an appropriate log and retain the records as part of the facility operating record.

10.0 STANDARDS: CLOSED-VENT SYSTEMS AND CONTROL DEVICES

At this time, the only control device that GLOBALFOUNDRIES is using is a carbon adsorption system for tank vents. Because the Subpart BB Air Emission Standards do not apply to tank vents, GLOBALFOUNDRIES' compliance with tank vent requirements is discussed in the Subpart CC plan in Section 16.0.

11.0 ALTERNATIVE STANDARDS FOR VALVES IN GAS/VAPOR SERVICE OR LIGHT LIQUID SERVICE: PERCENT OF VALVES ALLOWED TO LEAK

If no more than 2% of GLOBALFOUNDRIES' valves leak, annual leak detection monitoring can be used.

If GLOBALFOUNDRIES demonstrates that no more than 2% of the facility's valves leak, this alternative annual monitoring program may be used.

12.0 ALTERNATIVE STANDARDS FOR VALVES IN GAS/VAPOR SERVICE OR IN LIGHT LIQUID SERVICE: SKIP PERIOD LEAK DETECTION AND REPAIR

40 CFR Section 264.1062 provides another alternative to the monthly/quarterly monitoring requirements. If two consecutive quarterly monitoring rounds show that no more than 2% of GLOBALFOUNDRIES' valves leak, monitoring can be done every six months, or if five consecutive quarterly monitoring rounds show that no more than 2% of the valves leak, monitoring can be done annually.

GLOBALFOUNDRIES has elected to use this monitoring program for the facility's valves. Valves are currently monitored annually. The previous owner, IBM, demonstrated compliance with the above requirements of no more than 2% of valves leaking for five consecutive monitoring rounds during the original implementation of this program. Each annual report is reviewed to insure that this standard remains applicable. IBM previously submitted the results of these tests to the State of Vermont through the year 2000. Subsequent reports are in the facility operating record. New valves will be monitored after installation and then incorporated into the annual monitoring and review schedule for less than 2% of valves leaking.

13.0 TEST METHODS AND PROCEDURES

This section gives the test methods and procedures that will be followed by GLOBALFOUNDRIES for Subpart BB. This includes the practices that GLOBALFOUNDRIES will follow for 1) monitoring in accordance with Method 21, 2) demonstrating no detectable emissions, 3) identifying equipment that contacts hazardous wastes, 4) determining if a hazardous waste is a light liquid, and 5) performing tests to determine if control devices achieve 95% reductions in emissions.

13.1 Method 21

Method 21 will be used to determine VOC leaks from equipment. The method is from Clean Air Act regulations applied to the synthetic chemical manufacturing industry (40 CFR Part 60) and centers around the use of a VOC instrument detector such as an organic vapor analyzer (OVA).

GLOBALFOUNDRIES will use the appropriate equipment to comply with the Method 21 background using Method 21 instrumentation.

13.2 No Detectable Emissions

No detectable emissions are defined as a reading of less than 500 ppm above background using Method 21 instrumentation.

13.3 Light Liquid Determination

To determine if GLOBALFOUNDRIES' liquid organic wastes are light liquids, ASTM Method D-2879-86, another standard reference method, or process knowledge will be used.

13.4 Equipment Identification

Each piece of affected equipment that comes in contact with hazardous waste and has an organic content of 10% or greater must be identified. To determine if wastes contain greater than 10% organics, GLOBALFOUNDRIES will use process knowledge or testing.

GLOBALFOUNDRIES' solvent waste streams have been determined to be above the 10% organics cut-off; therefore, Subpart BB applies. Using this knowledge, GLOBALFOUNDRIES will only perform testing to demonstrate that a waste stream does not contain 10% organics and is not subject to these regulations. No plans are currently in place to do sampling.

13.5 Emission Reduction Requirement

GLOBALFOUNDRIES has no RCRA-regulated emission reduction equipment; however, if equipment is required on RCRA-regulated units in the future, GLOBALFOUNDRIES will install and monitor emission reduction equipment to achieve at least 95% recovery of organic vapors.

14.0 SUBPART BB RECORDKEEPING REQUIREMENTS

GLOBALFOUNDRIES will implement the following recordkeeping to comply with these leak detection regulations. This includes the following information that, if applicable, will be collected by GLOBALFOUNDRIES and kept as part of the facility operating record:

1. Records for equipment,
2. Implementation schedules for closed-vent and control devices,
3. Test results for closed-vent and control devices,
4. Leaking equipment identification,
5. Leaking equipment recordkeeping,
6. Control device recordkeeping requirements,
7. Special control device recordkeeping requirements,

8. Equipment recordkeeping logs,
9. Unsafe-to-monitor and difficult-to-monitor valves,
10. Records for alternative valve monitoring,
11. Criteria to indicate pump and compressor seal failures,
12. Information to support exemptions,
13. Record retention requirements, and
14. Recordkeeping requirements under the Clean Air Act.

Each of these items and the specific recordkeeping requirements associated with each is presented below.

14.1 Records for Equipment

GLOBALFOUNDRIES will keep the following information for each piece of affected equipment in the facility operating records, if applicable:

1. The equipment and hazardous waste management unit ID numbers,
2. The approximate location of the equipment,
3. Type of equipment,
4. Percent of organics in the waste stream,
5. Physical state of the hazardous waste (e.g., gas, vapor, or liquid), and
6. The method used to comply with the Subpart BB leak detection requirements.

14.2 Implementation Schedules for Closed-Vent and Control Devices

For facilities that are required to install closed-vent or control devices for emissions and cannot do so by the effective date of these regulations, an implementation schedule has to be developed and incorporated into the facility operating record.

Because GLOBALFOUNDRIES is not required to install any closed-vent or other types of control devices at this time, developing an implementation schedule is not needed. However, should a schedule of this type be needed in the future, it will be added to the facility operating record.

14.3 Test Results for Closed-Vent and Control Devices

This provision is not currently applicable. If it becomes applicable in the future, records of test results that demonstrate that regulated closed-vent and other control devices meet the 95% removal performance standard will be kept in the facility operating record.

14.4 Leaking Equipment Identification

When a leak is detected from a piece of equipment, GLOBALFOUNDRIES will identify the leaking equipment in an inspection log according to the recordkeeping requirements of 14.5 below

and take appropriate action to resolve the leak within the required time frame.

14.5 Leaking Equipment Recordkeeping

When a leak is detected, the following information will be recorded by GLOBALFOUNDRIES in an inspection log and kept in the facility operating record:

1. The monitoring instrument and operator identification and the equipment identification number,
2. Date that evidence of a potential leak was found,
3. Date that the leak was detected and the dates of each attempt to repair the leak,
4. Repair methods that were used,
5. A notation of "Above 10,000" if an instrument reading of above 10,000 ppm was recorded after an attempt to repair the leak was made,
6. A notation of "Repair delayed" and the reason for the delay if a leak is not repaired within 15 days,
7. If the repair of a valve is delayed, documentation that shows that the delay was allowed according to the reasons listed in Section 9.0 – Standards: Delay of Repair,
8. A signature by a designated person that a repair could not be made without shutting down the hazardous waste management unit,
9. The expected date that a leak will be repaired if it is not repaired within 15 days, and
10. The date that the leak was successfully repaired.

14.6 Control Device Recordkeeping Requirements

This provision is not currently applicable. If it becomes applicable in the future, design, monitoring, operating, and inspection information for regulated closed-vent systems and control devices will be recorded in the facility operating record.

14.7 Special Control Device Recordkeeping Requirements

The Subpart BB regulations give recordkeeping requirements for thermal vapor incinerators, catalytic vapor incinerators, flares, boilers, process heaters, condensers, and carbon adsorption. For other types of control devices not specified in the regulations, U.S. Environmental Protection Agency (EPA) will provide the necessary recordkeeping requirements.

GLOBALFOUNDRIES has no equipment that would be considered a "special control device;" therefore, this recordkeeping requirement does not apply. However, should

GLOBALFOUNDRIES utilize control equipment that falls into this category, all EPA-specified recordkeeping requirements will be followed.

14.8 Equipment Recordkeeping

For equipment that is subject to the leak detection requirements, the following information will be kept as part of the facility operating record:

1. A list of equipment identification numbers (this will not include flanges and connectors),
2. A list of the equipment identification numbers (that is signed by an GLOBALFOUNDRIES official) for equipment that is designated as having no detectable emissions and that is exempt for certain monitoring requirements,
3. A list of the identification numbers for pressure relief devices,
4. For compliance tests to show no detectable emissions from pumps, compressors, pressure relief devices and valves, the dates of the tests, the background level measured, and the maximum level measured during the test, and
5. A list of equipment in vacuum service.

14.9 Unsafe-to-Monitor and Difficult-to-Monitor Valves

GLOBALFOUNDRIES, as part of the facility operating record, will keep a list of the identification numbers of the unsafe-to-monitor and difficult-to-monitor valves and the reason that they were designated as such.

14.10 Records for Alternative Valve Monitoring

If an alternative monitoring program (i.e., other than monthly) is followed, the schedule of monitoring and the percent of valves found leaking during the monitoring period will be recorded in the facility operating record.

Valves are now monitored annually after previously meeting the skip period leak detection requirements in Section 12.0. IBM previously submitted the results of these tests to the State of Vermont through the year 2000. Subsequent reports are maintained in the facility operating record.

14.11 Criteria to Indicate Pump and Compressor Seal Failure

The criteria that are used to indicate the failure of pump and compressor seals will be developed by GLOBALFOUNDRIES and will be recorded in a log that is kept as part of the facility operating record.

GLOBALFOUNDRIES currently does not have any equipment with these seals and this

information will not be generated unless such equipment is scheduled for installation.

14.12 Information to Support Exemptions

The following information will be recorded by GLOBALFOUNDRIES in a log and kept as part of the facility operating record to support any exemptions to the equipment leak regulations:

1. An analysis determining the design capacity of the hazardous waste management unit,
2. A statement listing the hazardous waste influent and effluent streams and an analysis determining if these hazardous wastes are heavy liquids, and
3. An up-to-date analysis used to determine which equipment is regulated by Subpart BB, and information used to demonstrate exemptions.

This information will not be generated unless an exemption is needed.

14.13 Record Retention Requirements

The records for leaking equipment and control devices will be kept by GLOBALFOUNDRIES for a minimum of three years.

14.14 Recordkeeping Requirements Under Clean Air Act Regulations

The regulations in Subpart BB are similar to regulations for equipment leaks under the Clean Air Act (40 CFR Part 60, Subpart VV and Part 61, Subpart V). If a facility is subject to those Clean Air Act regulations, the documentation that duplicates the RCRA leak detection recordkeeping requirements can be used to comply.

15.0 SUBPART BB REPORTING REQUIREMENTS

In the event that GLOBALFOUNDRIES does not repair its equipment, as required by Subpart BB, or allowable emissions from control devices are exceeded, a report will be submitted to the EPA and State.

The report will give the facility EPA ID number, name, and address; the equipment ID numbers of any valves, pumps, or compressors not repaired as required by the regulations; dates that the hazardous waste management unit was shut down; and records regarding control devices that exceeded allowable emissions.

If equipment is repaired within the time frames allowed by these regulations and control devices operated as required, no report to EPA or the State is required or will be submitted by GLOBALFOUNDRIES.

16.0 TANK STANDARDS

Level 1 tank controls are required for the Chemical Distribution Center (CDC) storage tanks and Building 963 north storage tank based on tank capacity and vapor pressure of the hazardous wastes. The tank capacities are 10,000 gallons each for the CDC tanks and 9,000 gallons for the Building 963 north tank. For tanks with capacities less than 75 cubic meters (m^3) (19,813 gallons), the organic vapor pressure limit for the tank is 76.6 kiloPascals (575 millimeters of mercury). If the vapor pressure of the waste in the tank is less than this limit, Level 1 controls are indicated. Vapor pressures may be reviewed using an EPA-approved test method or knowledge of the waste. GLOBALFOUNDRIES has elected to use the latter method.

GLOBALFOUNDRIES' bulk waste storage tanks are within the criteria for Level 1 controls. GLOBALFOUNDRIES' review of the vapor pressures for the possible types of wastes contained in each of the bulk storage tanks at the CDC is maintained as part of the facility operating record. The Building 963 north tank is a backup tank that, when used, could contain any of the waste streams routinely found in the CDC bulk storage tanks. Vapor pressures are reviewed using generator knowledge per the following methodology:

- Identify all compounds possible in the waste using analytical data and generator knowledge.
- Compare the vapor pressure for each compound at the lowest and highest expected temperatures, approximately 50° F and 110° F, with the vapor pressure limit identified in 40 CFR 265.1085(b)(1)(i)(C).

The CDC and Building 963 north tanks are of fixed-roof design with openings equipped with closure devices. Tank closure devices are inspected annually per 40 CFR 264.1084(c)(4). The CDC tanks are vented through activated carbon canisters; however, the control device for this vent for purposes of Subpart CC compliance is a pressure-relief vent on the discharge from the carbon canisters. Details on the CDC bulk storage tank pressure-vacuum relief vents and their settings are outlined in IBM's May 18, 1998, response to the EPA's request for information on RCRA Organic Air Emissions Standards and in IBM's August 24, 2004, notification to the Vermont Waste Management Division of a Class 1 permit modification documenting replacement of some of these closure devices. A low-flow nitrogen purge was added to the carbon canisters as part of the 2004 modifications. The purpose of this purge is to prevent ignition of the carbon in the event of exothermic adsorption of ketones. The purge discharges through the closure device downstream of the carbon canisters, in compliance with the provisions of 40 CFR 264.1084(c)(3)(ii) / 265.1085(c)(3)(ii).

16.1 Tank Repair Schedule

GLOBALFOUNDRIES will repair any defects detected during an inspection as soon as possible, but no later than 45 days after detection. Also, a first attempt at repairing the defect will be made within five days. There is, however, an exemption to the repair schedule requirement that allows GLOBALFOUNDRIES to postpone repair work if repair requires emptying or temporary removal

from service of the tank and no alternative tank capacity is available at the site to accept hazardous waste normally managed in the tank. If GLOBALFOUNDRIES postpones repair work, the reason for this will be noted in the facility operating record and the repair will be made the next time the process or unit that is generating the hazardous waste managed in the tank stops operation.

17.0 SURFACE IMPOUNDMENT STANDARDS

There are no surface impoundments at the GLOBALFOUNDRIES facility. Therefore, this section of the standard does not apply.

18.0 CONTAINER STANDARDS

Containers at GLOBALFOUNDRIES fall into three categories of control: exempt, Level 1, or Level 2. The containers being stored at the permitted facility are kept in the CDC waste storage room and the CDC flammable waste storage room. Satellite waste generation and accumulation areas and short-term storage areas are located throughout GLOBALFOUNDRIES' main site and offsite leased facilities (should any be utilized in the future).

Containers of less than 0.1 m^3 (26.4 gallons) are exempt from Subpart CC regulation. This includes the trash bags used to accumulate solvent-contaminated trash at the facility and most of the containers awaiting lab pack disposal.

Containers larger than 0.1 m^3 but less than 0.46 m^3 (121.5 gallons) used for hazardous waste accumulation or storage must meet Level 1 standards. These containers all meet the applicable U.S. Department of Transportation (DOT) regulations for packaging and primarily consist of 55-gallon drums. The non-exempt containers awaiting lab packing also all meet the applicable DOT regulations for packaging.

The standards for containers larger than 0.46 m^3 are contingent on whether the container is in "light material service" or not. GLOBALFOUNDRIES currently uses two types of containers larger than 0.46 m^3 for hazardous waste storage: contaminated soil hoppers and 3-foot by 3-foot by 3-foot containers for spent mercury vapor lamps and bulbs, contaminated soil and/or debris, and other wastes.

The soil hoppers are used to collect excavation soils removed during spill response clean-up activities and would be evaluated on a case-by-case basis to determine the applicability of Subpart CC standards.

The 3-foot by 3-foot by 3-foot containers are DOT-approved containers and meet the requirements for both Level 1 and Level 2 container standards. GLOBALFOUNDRIES has not made a formal determination of whether the VOC concentration of the wastes stored in these containers is less than the 500-ppm threshold; therefore, since these containers are greater than 0.46 m^3, they must meet Level 2 standards. If such a determination is made in the future and finds the average VOC

concentration is less than the 500-ppm threshold, GLOBALFOUNDRIES may elect to use containers meeting Level 1 standards.

18.1 Container Repair Schedule

GLOBALFOUNDRIES will repair any defects detected for a container as soon as possible, but no later than five days after detection. Also, a first attempt at repairing the defect will be made within 24 hours. If the defect cannot be repaired within five days, the waste will be removed from the container and the container will not be used to manage hazardous waste until the defect is repaired.

19.0 TEST METHODS AND PROCEDURES

This section gives the test methods and procedures that will be followed by GLOBALFOUNDRIES for Subpart CC. This includes the practices that GLOBALFOUNDRIES will follow for 1) monitoring in accordance with Method 21; 2) demonstration of no detectable emissions; 3) determining the VOC concentration of a hazardous waste; and 4) determining if control devices achieve 95% emission reduction.

19.1 Method 21

Method 21 will be used to determine VOC leaks from equipment. The method is from Clean Air Act regulations applied to the synthetic chemical manufacturing industry (40 CFR Part 60) and centers around the use of a VOC instrument detector such as an OVA.

GLOBALFOUNDRIES will use the appropriate equipment to comply with the Method 21 background using Method 21 instrumentation.

19.2 No Detectable Emissions

No detectable emissions are defined as a reading of less than 500 ppm above background using Method 21 instrumentation.

19.3 Volatile Organic Determination

To determine the volatile organic concentration of GLOBALFOUNDRIES' liquid organic wastes, Method 8260, other standard reference methods, or process knowledge will be used.

19.4 Emission Reduction Demonstration

Emissions control equipment performance may be demonstrated using the methods and procedures identified in 40 CFR 264.1034 or through the use of process knowledge and design data.

GLOBALFOUNDRIES maintains these data on file. However, as the method of compliance with

Subpart CC tank standards for the CDC tanks is conservation vents, this demonstration is not required for the activated carbon vent system installed upstream of the conservation vents.

20.0 SUBPART CC RECORDKEEPING REQUIREMENTS

GLOBALFOUNDRIES has implemented the following recordkeeping to comply with the requirements of Subpart CC. This includes the information that, if applicable, will be kept as part of the facility operating record:

1. Records for tanks,
2. Vapor pressure determinations,
3. Unsafe-to-monitor covers,
4. Defect identification,
5. Defect recordkeeping,
6. Control device recordkeeping requirements,
7. Control device design information,
8. Analysis and monitoring records.

These records required under Subpart CC will be maintained in the facility files for a minimum of three years.

ATTACHMENT 11-2

COMPLIANCE METHOD DESCRIPTIONS

METHOD OF COMPLIANCE FOR SUBPART BB

Valves

1. These valves shall be monitored monthly using Reference Method 21, and must maintain a reading of less than 10,000 ppm. Any valve for which a leak is not detected for two successive months may be monitored the first month of each succeeding quarter until a leak is detected. If a leak is detected, the Permittee must resume monitoring the valve monthly until a leak is not detected for two successive months. All leaks must be repaired and in compliance no later than 15 calendar days after leak detection, and a first attempt at repair must be made no later than 5 calendar days after leak detection. [40 C.F.R. 264.1057(a)-(e)]

2. These valves are considered leakless and achieve a no-detectable emissions limit (<500 ppm above background as measured by Reference Method 21) and must have performance tests conducted initially upon designation, annually, and as requested by the Regional Administrator. [40 C.F.R. 264.1057(f)]

3. These valves are considered to meet a performance level of 2 percent of all valves leaking for a single hazardous waste management unit and must comply with the required notification, monitoring, and repair program. [40 C.F.R. 264.1061]

4. The Permittee must comply with a skip-period leak detection and repair program for these valves. [40 C.F.R. 264.1062]

5. These valves are designated unsafe to monitor or difficult to monitor [40 C.F.R. 264.1057(g)-(h)]. Use 5U for unsafe and 5D for difficult. These valves shall be monitored at the frequencies specified in Table 2 and the Permittee must attach an additional written monitoring plan to meet the requirements of 40 C.F.R. 264.1057(g)-(h).

6. These open-ended valves or lines shall comply with the requirements in 40 C.F.R 264.1056.

7. These valves shall be considered in heavy liquid service and shall be monitored visually, audibly, by olfactory methods, or other detection methods at least monthly, and shall comply with the required repair program if evidence of a leak is found. [40 C.F.R. 264.1058]

Pumps

8. This method applies if the pump is in light liquid service and does not fall under one of the three categories in numbers 9, 10, and 11.

   These pumps shall be inspected weekly and monitored monthly using Reference Method 21, and must maintain a reading less than 10,000 ppm and must comply with the leak repair program as specified in 40 C.F.R. 264.1052(c).

9. These pumps have a dual mechanical seal system that includes a barrier fluid between two seals and they must comply with the inspection and repair requirements of 40 C.F.R. 264.1052(d). The Permittee must attach detailed design, installation, and maintenance specifications and standard operating procedures for these pumps.

10. These pumps are designated for no-detectable emissions limit (<500 ppm above background as measured by Reference Method 21) and must be monitored initially upon designation, annually, and as requested by the Regional Administrator. [40 C.F.R. 264.1052(e)]

11. These pumps are equipped with closed vent systems capable of transporting any leakage from the seal or seals to a control device and must comply with the monitoring and inspection requirements of 40 C.F.R. 264.1060. [40 C.F.R. 264.1052(f)]

12. This method applies if the pump is in heavy liquid service. These pumps shall be monitored visually, audibly, by olfactory methods or other detection methods and comply with the required repair program if evidence of a leak is found. [40 C.F.R. 264.1058]

Compressors

13. This method applies only if the compressor does not fall under one of the two categories in numbers 14 or 15.

    These compressors must be equipped with a sensor that detects failure of the seal system, barrier fluid system, or both, where the sensor is checked daily or has an audible alarm that is checked monthly and the Permittee complies with the specified leak repair program. [40 C.F.R. 264.1053(a)-(g)]

14. These compressors shall be equipped with closed vent systems and control devices that comply with the monitoring requirements of 40 C.F.R. 264.1060. [40 C.F.R. 264.1053(h)]

15. These compressors operate with no detectable emissions. They shall be tested for compliance using Reference Method 21 initially upon designation, annually, and as requested by the Regional Administrator. [40 C.F.R. 264.1053(i)]

Pressure Relief Devices

16. This method applies only if the pressure relief device does not fall under the category in number 17.

    These pressure relief devices must be operated with no detectable emissions (<500 ppm above background, as measured by Reference Method 21) and must be monitored initially upon designation, annually, and at other times as requested by the Regional Administrator. [40 C.F.R. 264.1054(a)]

17. These pressure relief devices shall be equipped with a closed vent system capable of capturing and transporting leakage to a control device that meets the monitoring requirements of 40 C.F.R. 264.1060. [40 C.F.R. 264.1054(c)]

Closed Vent Systems and Control Devices

The Permittee shall monitor these closed vent systems and control devices in accordance with a monitoring schedule specified in a specific monitoring plan that the Permittee shall attach [40 C.F.R. 264.1060 and 264.1033]. The following options for inspection and monitoring are available:

18. These closed vent systems that are designed to be operated with no detectable emissions (<500 ppm above background, as measured by Reference Method 21), which have joints, seams or other connections that are permanently or semi-permanently sealed shall be visually inspected at least once per year to check for defects. [40 C.F.R. 264.1060 and 264.1033(l)(1)]

19. These closed vent systems that are designed to be operated with no detectable emissions (<500 ppm above background, as measured by Reference Method 21) shall be monitored annually and at other times request by the Regional Administrator using Method 21. [40 C.F.R. 264.1060 and 264.1033(l)(1)]

20. These closed vent systems that are designed to operate below atmospheric pressure shall be visually inspected initially and at least once per year. [40 C.F.R. 264.1060 and 264.1033(l)(2)]

21. These closed vent systems have been designated as unsafe to monitor and are exempt from the inspection and monitoring requirements except that all components are required to be monitored as frequently as possible during safe-to-monitor times. [40 C.F.R. 264.1060 and 264.1033(o)]

22. Each control device's monitor readings shall be inspected at least daily. [40 C.F.R. 264.1060 and 264.1033(f)(3)]

Sampling Connection Systems

23. All sampling connection systems shall comply with the standards in 40 C.F.R. 264.1055.

Flanges and Other Connectors

24. These flanges and connectors shall be monitored visually, audibly, by olfactory methods or other detection methods at least monthly and shall comply with the required repair program if evidence of a leak is found. [40 C.F.R. 264.1058]

25. These connectors are inaccessible or are ceramic or ceramic lined and are exempt from monitoring and recordkeeping requirements. [40 C.F.R. 264.1058(e)]

Exempt Equipment

26. This equipment which contains or contacts hazardous waste with an organic concentration of at least 10 percent by weight for less than 300 hours per calendar year is excluded from the requirements of Secs. 264.1052 through 264.1060. [40 C.F.R. 264.1050(f)]

METHODS OF COMPLIANCE WITH SUBPART CC STANDARDS

Tanks

1. These tanks shall comply with Level 1 controls which require tanks to have a fixed roof with no visible cracks, holes, gaps, or other spaces in accordance with 264.1084(c). The tank shall be visually inspected for defects initially prior to the tank becoming subject to the requirements and at least once every year thereafter. [40 C.F.R. 264.1084(c)]

2. These tanks are fixed-roof tanks equipped with an internal floating roof and shall comply with Tank Level 2 controls in accordance with 264.1084(e). The internal floating roof shall be visually inspected for defects at least once every 12 months after initial fill unless complying with the alternative inspection procedures in 40 C.F.R. 264.1084(e)(3)(iii). [40 C.F.R. 264.1084(d)(1)]

3. These tanks are equipped with an external floating roof and shall comply with Tank Level 2 controls in accordance with 264.1084(f). The external floating roof seal gaps shall be measured in accordance with the procedures contained in 264.1084(f)(3)(i) within 60 days and at least once every 5 years thereafter. The external floating roof shall be visually inspected for defects at least once every 12 months after initial fill. [40 C.F.R. 264.1084(d)(2)]

4. These tanks are vented through a closed-vent system to a control device and shall comply with Tank Level 2 controls in accordance with 264.1084(g). The tank shall be equipped with a fixed roof and closure devices which shall be visually inspected for defects initially and at least once every year. The closed-vent system and control device shall be inspected and monitored in accordance with 264.1087. [40 C.F.R. 264.1084(d)(3)]

5. These tanks are pressure tanks which shall comply with Tank Level 2 controls in accordance with 264.1084(h). [40 C.F.R. 264.1084(d)(4)]

6. These tanks are located inside an enclosure that is vented through a closed-vent system to an enclosed combustion control device and shall comply with Tank Level 2 controls in accordance with 264.1084(i). The closed-vent system and control device shall be inspected and monitored in accordance with 264.1087. [40 C.F.R. 264.1084(d)(5)]

7. These tanks have covers which have been specified as "unsafe to inspect and monitor" and shall comply with the requirements of 264.1084(l)(1). [40 C.F.R. 264.1084(f) & (g)]

Surface Impoundments

8. These surface impoundments shall have a floating membrane cover in accordance with 264.1085(c). The floating membrane cover shall be visually inspected for defects initially and at least once each year. [40 C.F.R. 264.1085(b)(1)]

9. These surface impoundments shall have a cover that is vented through a closed-vent system to a control device in accordance with 264.1085(d). The surface impoundment cover and its closure devices shall be visually inspected for defects initially and at least once each year. The closed-vent system and control device shall be inspected and monitored in accordance with 264.1087. [40 C.F.R. 264.1085(b)(2)]

10. These surface impoundments have covers which have been designated as "unsafe to inspect and monitor" and shall comply with the requirements of 264.1085(g). [40 C.F.R. 264.1085(c) & (d)]

Containers

11. These containers have a design capacity greater than 0.1 m^3 and less than or equal to 0.46 m^3 and meet the applicable U.S. DOT regulations under the Container Level 1 standards. The container shall be visually inspected for defects at the time the container first manages hazardous waste or is accepted at a facility. If a container remains at a facility for 1 year or more, it shall be visually inspected for defects at least once every 12 months. [40 C.F.R. 264.1086(b)(1)(i) & (c)(1)(i)]

12. These containers have a design capacity greater than 0.1 m^3 and less than or equal to 0.46 m^3 and are equipped with a cover and closure devices which form a continuous barrier over container openings. The container and its cover and closure devices shall be visually inspected for defects at the time the container first manages hazardous waste or is accepted a t a facility. If a container remains at a facility for 1 year or more, it shall be visually inspected for defects at least once every 12 months. [40 C.F.R. 264.1086(b)(1)(i) & (c)(1)(ii)]

13. These containers have a design capacity greater than 0.1 m^3 and less than or equal to 0.46 m^3 and are open-top containers in which an organic-vapor suppressing barrier is placed on or over the hazardous waste in the container. The container and its cover and closure devices shall be visually inspected for defects at the time the container first manages hazardous waste or is accepted at a facility. If a container remains at a facility for 1 year or more, it shall be visually inspected for defects at least once every 12 months. [40 C.F.R. 264.1086(b)(1)(i) & c(1)(iii)]

14. These containers have a design capacity greater than 0.46 m^3, are not in light material service and meet the applicable U.S. DOT regulations under the Container Level 1 standards. The container shall be visually inspected for defects at the time the container first manages hazardous waste or is accepted at a facility. If a container remains at a facility for 1 year or more, it shall be visually inspected for defects at least once every 12 months. [40 C.F.R. 264.1086(b)(1)(ii) & (c)(1)(i)]

15. These containers have a design capacity greater than 0.46 m^3, are not in light material service and are equipped with a cover and closure devices which form a continuous barrier over container openings. The container and its cover and closure devices shall be visually inspected for defects at the time the container first manages hazardous waste or is accepted a t a facility. If a container remains at a facility for 1 year or more, it shall be visually inspected for defects at least once every 12 months. [40 C.F.R. 264.1086(b)(1)(ii) & (c)(1)(ii)]

16. These containers have a design capacity greater than 0.46 m^3, are not in light material service and are open-top containers in which an organic-vapor suppressing barrier is placed on or over the hazardous waste in the container. The container and its cover and closure devices shall be visually inspected for defects at the time the container first manages hazardous waste or is accepted a t a facility. If a container remains at a facility for 1 year or more, it shall be visually inspected for defects at least once every 12 months. [40 C.F.R. 264.1086(b)(1)(ii) & c(1)(iii)]

17. These containers have a design capacity greater than 0.46 m^3, are in light material service and meet the applicable U.S. DOT regulations under the Container Level 2 standards. The container shall be visually inspected for defects at the time the container first manages hazardous waste or is accepted a t a facility. If a container remains at a facility for 1 year or more, it shall be visually inspected for defects at least once every 12 months. [40 C.F.R. 264.1086(b)(1)(iii) & (d)(1)(i)]

18. These containers have a design capacity greater than 0.46 m^3, are in light material service and operate with no detectable organic emissions as defined in 40 C.F.R. 265.1081. The container and its cover and closure devices shall be visually inspected for defects at the time the container first manages hazardous waste or is accepted at a facility. If a container remains at a facility for 1 year or more, it shall be visually inspected for defects at least once every 12 months. [40 C.F.R. 264.1086(b)(1)(iii) & (d)(1)(ii)]

19. These containers have a design capacity greater than 0.46 m^3, are in light material service and that have been demonstrated within the preceding 12 months to be vapor-tight using 40 C.F.R. Part 60, Appendix A, Method 27. The container and its cover and closure devices shall be visually inspected for defects at the time the container first manages hazardous waste or is accepted a t a facility. If a container remains at a facility for 1 year or more, it shall be visually inspected for defects at least once every 12 months. [40 C.F.R. 264.1086(b)(1)(iii) & (d)(1)(iii)]

20. These containers have a design capacity greater than 0.1 m^3 that are used for treatment of a hazardous waste by a waste stabilization process and are vented directly through a closed-vent system to a control device in accordance with 264.1086(e)(2)(ii). The closed-vent system and control devices shall be inspected and monitored as specified in 264.1087. [40 C.F.R. 264.1086(b)(2) & (e)(1)(i)]

21. These containers have a design capacity greater than 0.1 m^3 that are used for treatment of a hazardous waste by a waste stabilization process and are vented inside an enclosure which is exhausted through a closed-vent system to a control device in accordance with 264.1086(e)(2)(i) & (ii). The closed-vent system and control devices shall be inspected and monitored as specified in 264.1087. [40 C.F.R. 264.1086(b)(2) & (e)(1)(ii)]