Y-12

Y/TS-1179/R2

OAK RIDGE
Y-12
PLANT

MARTIN MARIETTA

Y-12 PLANT STRATOSPHERIC OZONE PROTECTION PLAN

Clean Air Program
Health, Safety, Environment,
and Accountability Organization
Oak Ridge Y-12 Plant

September 1995

MANAGED BY
MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE UNITED STATES
DEPARTMENT OF ENERGY

Oak Ridge Y-12 Plant
Oak Ridge, Tennessee 37831
managed by
LOCKHEED MARTIN ENERGY SYSTEMS, INC.
for the
U.S. DEPARTMENT OF ENERGY
Under Contract No. DE-AC05-84OR21400

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Clean Air Program
Health, Safety, Environment and Accountability Organization
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APPENDIXES

1.0 INTRODUCTION

The Y-12 Plant staff is required by Lockheed Martin Energy Systems (Energy Systems) (formerly Martin Marietta Energy Systems) Standard ESS-EP-129 to develop and implement a Stratospheric Ozone Protection Program which will minimize emissions of ozone-depleting substances to the environment and maximize the use of ozone-safe alternatives in order to comply with Title VI of the 1990 Clean Air Act (CAA) Amendments and the implementing regulations promulgated by the Environmental Protection Agency (EPA). This plan describes the requirements, initiatives, and accomplishments of the Y-12 Plant Stratospheric Ozone Protection Program.

2.0 SUMMARY OF THE STRATOSPHERIC OZONE REGULATIONS

Title VI, "Stratospheric Ozone Protection," of the 1990 CAA Amendments requires promulgation of regulations to reduce and prevent damage to the earth's protective ozone layer. The regulations identify a list of chemicals that are known or believed to be harmful to the stratospheric ozone layer. The list is divided into two categories of ozone-depleting substances. Class I ozone-depleting substances include those substances with an ozone-depletion potential (ODP) of 0.2 or greater with exception to methyl chloroform. All other ozone-depleting substances are categorized as Class II. Appendix A contains a list of all Class I and Class II ozone-depleting substances and their ODPs, where available.

2.1 PRODUCTION PHASEOUT

The Stratospheric Ozone Protection regulations require a production phaseout of Class I and Class II substances. Initially the regulations required a production phaseout of most Class I substances by January 1, 2000, and Class II substances by January 1, 2030. A Final Rule was issued December 10, 1993, to accelerate the phaseout of all ozone-depleting substances. The effective date for phaseout of Class I refrigerants is December 31, 1995.

2.2 PROHIBITION ON INTENTIONAL VENTING

Effective July 1, 1992, the regulations prohibit intentional venting or releasing of Class I and Class II ozone-depleting substances into the atmosphere during the maintenance, servicing, and disposal of refrigeration and cooling process equipment. This prohibition does not apply to fugitive releases from normal operation or "de minimis" releases associated with good faith efforts to recover the refrigerants. Beginning July 13, 1993, technicians are required to evacuate air conditioning and refrigeration equipment to established vacuum levels. Title 40, Code of Federal Regulations (CFR), Part 82, Subpart F mandates the practice "that all persons opening appliances except for motor vehicle air conditioners (MVAC) for maintenance, service, or repair must evacuate the refrigerant in either the entire unit or the part to be serviced (if the latter can be isolated) to a system receiver or recovery or recycling machine which is certified." Recovered refrigerants may be returned to the same system or other systems under common control without restriction; however, refrigerants which change ownership must be reclaimed to meet minimum standards of purity before transfer to the new owner.

2.3 REFRIGERANT RECYCLING

The refrigerant recycling regulations became effective on June 14, 1993. The purpose of these regulations is to establish a recycling program for ozone-depleting refrigerants recovered during the servicing and disposal of air conditioning or refrigeration equipment. Refrigerant recovered and/or recycled can be returned to the same person without restriction. If refrigerant changes ownership, however, that refrigerant must be reclaimed (i.e., cleaned to the ARI 700 standard of purity and chemically analyzed to verify that it meets the standard).

2.4 MVACs

In addition to the regulations for stationary refrigeration and cooling process systems, specific regulations have been established for the servicing of MVACs. The MVAC regulations require that all personnel servicing MVACs use certified equipment and have completed certified training by January 1, 1992. Existing recovery/recycle equipment will be "grandfathered" if it meets minimum approval requirements. Any persons recovering refrigerant from MVACs for the purpose of disposing of the equipment must reduce the system to or below 102 mm mercury.

2.5 LABELING

After May 15, 1993, 40 CFR, Part 82, Subpart E requires refrigerant contained in (1) containers in which Class I or II substances are stored or deemed for transport into interstate commerce, (2) products containing Class I or Class II substances, (3) products manufactured with Class I or Class II substances, and (4) waste containers be labeled with a warning that they harm public health and the environment by destroying ozone in the upper atmosphere.

Personnel at Department of Energy-Headquarters (DOE-HQ) received a letter of clarification, dated August 25, 1993, from EPA personnel in Washington, D.C., regarding labeling concerns. The clarifications are regarded as Issues 1 through 3:

Issue 1: "Labels must be affixed to containers of class I and II substances only when those containers enter into interstate commerce and are charged with substance. Containers stored on-site or shipped to another DOE site do not require labeling under section 611, because such containers are not intended for commerce. Waste containers only require a label if they too are entering into interstate commerce, via a contract with an off-site waste disposer. If a container was charged before May 15, 1993, that container is not required to be labeled. However, a container charged after May 15, 1993 must be labeled when entering into interstate commerce."

Issue 2: "Containers of controlled substances or wastes, or products containing or made with class I substances need to be labeled only if they are entering into interstate commerce. While products may be transported from one DOE facility to another, even over state lines, they are not entering into commerce, and thus, do not require a label. Also, material being stored on-site does not require labeling. Again, only that which enters into interstate commerce must be labeled."

Issue 3: "Empty containers, although they may contain trace quantities or residual vapors, are considered empty and do not require labeling. Empty containers being shipped to a vendor who recharges the cylinders are responsible to label."

2.6 SAFE NEW ALTERNATIVES PROGRAM

The Safe New Alternatives Program is an EPA program for evaluating and regulating substitutes for the ozone-depleting chemicals being phased out under the stratospheric ozone protection provisions of the CAA. In Section 612 of the amended CAA, the EPA staff is authorized to identify and restrict the use of substitutes for Class I and Class II ozone-depleting substances where other alternatives exist that reduce overall risk to human health and the environment. The intended effect of this program is to expedite movement away from ozone-depleting substances.

3.0 REQUIREMENTS FOR STRATOSPHERIC OZONE COMPLIANCE

3.1 COMMITTEE

All personnel from organizations in the Y-12 Plant who purchase, manage, or use ozone-depleting substances, or materials which contain ozone-depleting substances, shall be represented on the Y-12 Plant Stratospheric Ozone Protection Committee. The committee will be responsible for developing and implementing actions required for maintaining compliance and collecting data required for reporting.

3.2 INVENTORY

All staff from organizations in the Y-12 Plant who purchase, manage, or use ozone-depleting substances, or materials which contain ozone-depleting substances, will maintain an annual inventory. The inventory shall include a list of (1) all equipment containing an ozone-depleting substance, (2) the location of the equipment, (3) the quantity of ozone-depleting substances contained in the equipment, (4) the quantity of ozone-depleting substances in storage, and (5) the amount of ozone-depleting substances released annually to the atmosphere.

3.3 PROCUREMENT

The purchase of Class I and Class II substances, materials which contain Class I or Class II substances, and equipment which requires Class I or Class II substances to operate shall be controlled. This applies to all Energy Systems and non-Energy Systems organizations located at the Y-12 Plant. Procurement specifications and engineering standards will be developed as needed to implement these controls. All purchases of Class I and Class II substances and equipment will be monitored and documented by including such purchases in the inventory developed in accordance with Section 3.2. Procurement of equipment using Class I refrigerants should not occur unless the equipment has a built-in capability of also operating on Class II substances.

3.4 SERVICING EQUIPMENT AND SYSTEMS

Venting or otherwise knowingly releasing or disposing of any ozone-depleting substance to the environment in the course of maintaining, servicing, repairing, or disposing of refrigeration or cooling process equipment is prohibited. Unintentional releases (such as process leaks from normal good faith attempts to recapture and recycle or safely dispose of any such substance) shall be minimized but shall not be subject to the prohibition.

One ozone-depleting substance may be substituted for another in an existing process provided that the equivalent ozone-depleting potential (EODP) of the new substance is less than or equal to the EODP of the existing substance.

A certification which demonstrates that all equipment used for servicing MVACs meets the EPA approval criteria was submitted to the EPA staff by January 1, 1993. A certification for equipment used to service stationary refrigeration and cooling process equipment was submitted to the EPA staff by August 12, 1993.

3.5 TRAINING

The Facilities Management Organization staff will ensure that certified training is provided for refrigeration technicians on proper recycle and recovery techniques used during servicing, maintaining, repairing, or disposal of refrigeration and process cooling systems (including MVACs) in accordance with EPA criteria. A certification which demonstrates that all personnel servicing MVACs have received EPA-approved training was submitted to the EPA staff by January 1, 1993. Certified training is required by August 12, 1994, for refrigeration technicians servicing stationary refrigeration and process cooling equipment. Training will be provided to all refrigeration technicians in all four EPA certification categories. All refrigeration technicians must be certified by November 14, 1994.

Informal training will be provided to the plant supervisory personnel to increase awareness of the stratospheric ozone regulations. This informal training will be in the form of presentations and required readings.

3.6 LABELING

Procedures will be developed for implementation of the warning label program at the Y-12 Plant. Warning labels will be made available to Y-12 Plant personnel involved in activities requiring the usage of warning labels.

3.7 PLANNING

Short- and long-range plans will be prepared to identify activities and the funding necessary to meet the EPA requirements for stratospheric ozone protection. Studies will be performed to identify equipment and funding needs for implementation of projects which minimize Class I and Class II materials emissions and maximize the use of alternative ozone-safe substitutes.

4.0 Y-12 PLANT STRATOSPHERIC OZONE COMPLIANCE PLANS

There are three areas of ozone-depleting substance usage at the Y-12 Plant: solvents, refrigeration, and fire protection. A "Stratospheric Ozone Protection Subpart F Recycling And Reclamation" survey is used to update the Y-12 Plant Stratospheric Ozone Protection Plan that addresses the three areas of ozone-depleting substances.

4.1 SOLVENTS

Personnel at the Y-12 Plant have been active for several years in the substitution of chlorinated solvents used for cleaning operations. From 1988 to 1993, the amount of chlorinated solvents purchased by Y-12 Plant personnel decreased by 98 percent. The substitution effort has been twofold. Large vapor degreasers used throughout the plant have been replaced with ultrasonic cleaning with aqueous detergent. Squirt bottle-type uses have been replaced with other organic solvents. The main solvents now being used are Solvent 140 (a high flash point mineral spirits) and Water Chaser 140 (a solvent blend formulated at the Y-12 Plant which is composed of 95 percent Solvent 140 and 5 percent dipropylene glycol methyl ether). These solvent substitutes have been implemented throughout the machine shops and inspection areas.

Appendix B contains a summary of annual solvent releases to the atmosphere since 1987. Data for 1994 is the same as data in 1993. All solvent releases are based on the amount of material purchased. The following plans have been established for substitution of the remaining solvent usages in the plant.

4.1.1 Metal Cleaning

4.1.1.1 Beryllium Degreasing

Chlorinated solvents were used for degreasing beryllium by the Disassembly and Special Materials Organization staff. Testing was conducted to determine the feasibility of changing to Water Chaser 140. The milestones for this task are as follows:

1. Evaluate Water Chaser 140 for cleaning ability.
   DATE: **Completed.**

2. Conduct necessary compatibility/corrosion testing.
   DATE: **Completed.**

3. If deemed successful, obtain approvals and change procedures for use.
   DATE: **Completed.**

The beryllium degreasing area is currently shut down. Prior to shutdown, the area had changed to Water Chaser 140 for degreasing purposes. However, chlorinated solvents had been used for determining the presence of cracks. Development Organization personnel have found and recommended a perfluorinated compound which should work in this application. If the area becomes operational in the future, testing will be conducted in production to implement this compound.

4.1.1.2 Parts Wiping

Methyl chloroform and other chlorinated solvents are used by the Disassembly and Special Materials Organization staff for wiping parts prior to bonding or welding operations. Solvent 140 has been evaluated for this purpose. Design agency approvals are now being sought for making this substitution.

DATE: **July 1994.** Time changes to implement Solvent 140 are taking place as programs or special builds are begun.

RESPONSIBILITY: Team effort with personnel from Disassembly and Special Materials Organization, Program Management Organization, and Development Organization.

4.1.1.3 Plating Operation Degreasing

Chlorinated solvents were used for degreasing parts prior to plating operations by personnel in the Disassembly and Special Materials Organization. An evaluation for Water Chaser 140 was conducted. The milestones for this task are as follows:

1. Evaluate Water Chaser 140 for cleaning ability.
   DATE: **Completed.**

2. If deemed successful, obtain approvals and change procedures for use.
   DATE: **Completed.**

   Water Chaser 140 has been implemented for this use.

   RESPONSIBILITY: Development Organization and Disassembly and Special Materials Organization personnel.

4.1.2 Miscellaneous Uses

4.1.2.1 Chip-Cleaning Operation

Chlorinated solvents are used as drying agents in the chip-cleaning operations by personnel in the Enriched Uranium Operations Organization. The efforts are twofold. One part of the effort is focusing on alternate solvents which could be used to replace the chlorinated solvents as a drying agent. The second part of the effort is focusing on mechanical equipment, such as vacuum drying for drying the chips. The milestones for this task are as follows:

1. Select proposed process flow sheet for chip cleaning and drying.
   DATE: **Completed.**

2. Test alternative aqueous cleaning processes using prototype ultrasonic cleaning facility.
   DATE: **Completed.**

3. Evaluate candidate organic cleaning-type solvents for storing, dewatering, and/or drying chips.
   DATE: **Completed.**

4. Evaluate/compare the top candidates for chip cleaning and drying.
   DATE: **Completed.**

5. Demonstrate new chip-cleaning and drying process.
   DATE: **Completed.**

6. Process recommendation to production.
   DATE: **Completed.**

7. Initiate safety studies for use of organics in production.
   DATE: **Completed.**

8. Complete modifications to existing chip-cleaning facility.
   DATE: **December 1996.**

9. Complete checkout and start-up of new chip-cleaning process.
   DATE: **When facility modifications are completed.**

10. Monitor boron level and casting yield.
    DATE: **April 1996 or when facility modifications are completed.**

11. Select replacement solvent.
    DATE: **Completed.**

12. Determine necessary modifications to the chip-cleaning facility.
    DATE: **Completed.**

13. Complete short-term modification of the chip-cleaning facility.
    DATE: **December 1996.**

14. Complete demonstration of selected chip-cleaning and drying process.
    DATE: **December 1996.**

15. Complete checkout and start-up of the new chip-cleaning process.
    DATE: **December 1996.**

RESPONSIBILITY: Development Organization staff.

4.1.2.2 Recertification Testing

Chlorinated solvents were used by the Plant Laboratory staff to clean metal chips prior to recertification testing. The cleaning is a multistep operation using several different solvents and detergents. Chlorinated solvents were eliminated from this operation by conducting multiple cleanings using acetone which was already used in the process. The following plans were established for substitution of chlorinated solvents to another organic solvent.

1. Assess the need for the Freon.
   DATE: **Completed.**

2. Evaluate elimination of the Freon step or use of other organic solvents.
   DATE: **Completed.**

3. Implement replacement.
   DATE: **Completed.**

   RESPONSIBILITY: Analytical Services Organization staff.

4.1.2.3 Vacuum Leak Detectors

Chlorinated solvents were used by the Facility Management Organization staff to clean vacuum leak detectors undergoing repair and rebuilding.

This operation has been changed to hand cleaning with acetone to replace the chlorinated solvent vapor degreasing. Other alternatives such as use of ultrasonic cleaning with organic solvents will be evaluated to improve the efficiency of this operation. The milestones for this task are as follows:

1. Assess current operation.
   DATE: **Completed.**

2. Obtain a small explosion-proof, ultrasonic unit for testing.
   DATE: **Completed.**

3. Evaluate the use of ultrasonic cleaning with organic solvents.
   DATE: **Ongoing.**

4. Implement replacement to acetone.
   DATE: **Completed.**

   RESPONSIBILITY: Development Organization staff is evaluating the ultrasonics. Facility Management Organization staff did the change to acetone.

4.1.2.4 High Vacuum Equipment

Chlorinated solvents were used by Facility Management Organization personnel for cleaning high vacuum equipment in the Oak Ridge National Laboratory at Y-12 Plant operations. The vapor degreasing operation, which is no longer used, has been altered and now uses aqueous ultrasonic cleaning within tanks.

RESPONSIBILITY: Facility Management Organization staff completed the alteration to aqueous with assistance from Development Organization staff.

4.1.2.5 Analytical Procedures

Chlorinated solvents are used by the Plant Laboratory staff for analytical procedures specified by the EPA staff. The EPA staff is currently assessing replacements for the Freon in these procedures and is expected to revise the procedures. When the EPA procedures are revised, Plant Laboratory personnel will implement the changes.

DATE: **When EPA procedures are revised (ongoing).**

RESPONSIBILITY: Plant Laboratory staff in coordination with EPA staff.

4.1.2.6 Asilamine Manufacture

Chlorinated solvents are used by personnel in the Development Organization as a solvent extractor in the manufacture of Asilamine, a nontoxic curing agent. Alternative solvents are currently under evaluation for this process.

DATE: **December 1994 (ongoing).**

RESPONSIBILITY: Development Organization staff.

4.1.2.7 Commercial Products

Several commercial products used throughout the Y-12 Plant contain some type of chlorinated hydrocarbon. These include items such as Wasp Killer, Effadusters, Tap Magic, Contact Re-Nu, Kontact Clean, Vacseal, Crown Blue Toolmaker's Ink, Dolph-Spray ER-41, Bernoulli Drive Head Cleaner Solution, and CRC 2-26. Manufacturers of these various products will be contacted to determine if alternatives are being made. These alternatives will then be evaluated and implemented. These items will be evaluated on a case-by-case basis as they are discovered.

DATE: **Ongoing.**

RESPONSIBILITY: Development Organization staff in coordination with users throughout the Y-12 Plant.

4.1.2.8 Inventory

Ongoing efforts will continue to ensure that no new usages of ozone-depleting solvents will occur. Monthly updates will be compiled of the Y-12 Stores and AVID purchases of these solvents. These usages will be distributed to personnel from each of the operating divisions of the Y-12 Plant so that they can determine the solvent use. A letter containing any monthly updated inventories will be issued to the Program Management Organization personnel to inform them of the status on the purchasing of these solvents. They will be asked to ensure that no new procedures which call for the use of these solvents are implemented in the Y-12 Plant.

DATE: **Ongoing.**

RESPONSIBILITY: Development Organization staff in coordination with users throughout the Y-12 Plant.

4.2 REFRIGERATION

Refrigeration and cooling processes are the largest source of ozone-depleting substances in the Y-12 Plant. See Appendix C for an estimated inventory of refrigeration and cooling equipment at the Y-12 Plant. Appendix F is actual compiled inventory usage data obtained from Facilities Management Organization Refrigeration Maintenance Crew logbooks. The data illustrates total

refrigerant usage and extends from 1992 through 1995, with projected usage for 1995. Appendix F also contains percent reductions (and projected percent reductions) in total usage for 1993 through 1995.

4.2.1 Inventory

Personnel in the Facility Management Organization will develop and implement written procedures to maintain an updated inventory of all refrigeration and cooling equipment containing greater than 10 pounds of refrigerant. All inventory data, including refrigerants in equipment, stored in machine rooms, and at the Plant Stores, will be incorporated in the inventory.

DATE: **December 1994. (Ongoing)**

RESPONSIBILITY: Facility Management Organization staff.

4.2.2 Leak Testing and Detection

In reference to small refrigeration and cooling units, hand-held instruments have been procured to detect refrigerant leakage, and a schedule will be established for leak checking. These small units will be repaired or replaced at the end of their service life or when serious leaks occur.

DATE: **Completed.**

RESPONSIBILITY: Facility Management Organization staff.

4.2.3 Recycle

The Facility Management Organization staff has submitted certification to the EPA staff for approval on recycle/recovery equipment and will develop written procedures for the proper usage of the equipment. The certification was submitted to the EPA staff by August 12, 1993, documenting that approved equipment has been acquired and is currently in use.

DATE: **Completed.**

RESPONSIBILITY: Facility Management Organization staff.

The EPA staff has announced plans to enact a program requiring certification of chiller purge units on an unannounced, future date. In the interim, chiller purge units will be specified to exceed the anticipated EPA requirements.

DATE: **Completed.**

RESPONSIBILITY: Facility Management Organization staff.

4.2.4 Recovery/Reclamation

All refrigeration and cooling process equipment that is to be salvaged shall have the refrigerant removed and recycled, properly disposed, or reclaimed and reused in other equipment in the Y-12 Plant. Written procedures have been developed to ensure that no equipment containing an ozone-depleting substance is salvaged without prior removal of the refrigerant.

DATE: **Ongoing.**

RESPONSIBILITY: Facility Management Organization staff in coordination with Waste Management Organization staff.

4.2.5 Training

The Facility Management Organization staff will obtain certified training for the servicing of stationary refrigeration and cooling process equipment by August 12, 1994. Training will be provided to each refrigeration technician in all four EPA certification categories. A management awareness class will be developed for supervisors, engineers, and managers.

DATE: **Completed.**

RESPONSIBILITY: Facility Management Organization staff.

4.2.6 Equipment/Planned Projects

"Retrofit Heating Ventilation and Air Conditioning (HVAC) and Chillers for Ozone Protection" is a fiscal year 1996 line item project for Y-12 Plant buildings. The X-10 buildings located at the Y-12 Plant are not within the scope of this line item project. The project will support the Facility Management Organization personnel in determining necessary modifications or replacements to existing HVAC, refrigeration, and process cooling equipment. Equipment replacements and modifications will be required to comply with the Stratospheric Ozone Protection regulations and, at the same time, improve operating efficiencies. This project is divided into three parts: (1) Chiller Replacements/Modifications, (2) Building and Rooftop Direct Expansion (DX) HVAC Units, and (3) Process and Food Cooler Units. Some HVAC, refrigeration, and process cooling equipment will be shut down to meet the future mission requirements of the Y-12 Plant.

4.2.6.1 Chiller Modifications

A study was performed to assess the current and future capacity requirements for each chiller facility. Based on this study, chillers using R-11, R-12, and R-113 were evaluated to determine if replacement or retrofit was more economical. In consideration of both economic and capacity requirements, a tentative decision has been made to (1) upgrade ventilation systems in all 7 chillers buildings, (2) replace 9 chillers with new high-efficiency chillers operating on R-123 or R-134a, (3) replace 2 low-temperature brine chillers with new high-efficiency chillers operating on R-22 or R-134, and (4) retrofit 19 R-11 chillers to operate on R-123.

DATE: **December 1999.**

RESPONSIBILITY: Engineering Organization and Facility Management Organization personnel.

4.2.6.2 Building and Rooftop DX HVAC Units

A study was performed on DX HVAC units to assess the current and future capacity requirements. Units that are to remain in service will be retrofitted or replaced with a unit using a hydrochlorofluorocarbon or other alternative refrigerant. Retrofit of an existing unit with a new refrigerant shall include replacement of all components and lubricants necessary to ensure compatibility with the new refrigerant and provide equivalent capacity. New DX units shall use an alternative refrigerant that has the lowest achievable ODP and global warming potential (GWP). These units shall be sized to provide the proper capacity and efficiency equal to or better than existing units.

Units that have refrigerant charges of less than 10 pounds will be used until the end of useful service life or until repairs that include refrigerant replacement become necessary. Replacement units will use an alternative refrigerant that has the lowest achievable ODP and GWP. These units shall be sized to provide capacity and efficiency equal to or greater than existing units.

Five DX air conditioners will be replaced with new DX units operating on R-22. Three DX air conditioners will be replaced with chilled water air handlers, and three R-12 DX units will be retrofitted to operate on R-22.

DATE: **December 1998.**

RESPONSIBILITY: Engineering Organization and Facility Management Organization personnel.

4.2.6.3 Process and Food Cooler Units

A third study was performed on process and food cooler units to determine whether a retrofit should be performed or the equipment should continue to be used with the current refrigerant until the end of the service life (or refrigerant replacement becomes necessary). Twenty R-12 process coolers will be retofitted to operate on R-22, seven R-502/R-503 process coolers will be retrofited to operate on HP-62, and six R-12 process coolers will be retrofitted to operate on R-134a.

DATE: **December 1999.**

RESPONSIBILITY: Engineering Organization and Facility Management Organizations personnel.

4.2.6.4 Wall Air Conditioning Units, Drinking Fountains, and Refrigerators

Wall air conditioning units, drinking fountains, and refrigerators will not be retrofitted with new refrigerants. These units will be used with the current refrigerant until they reach the end of their service life or must be replaced due to refrigerant leakage or failure. New units shall use an alternative refrigerant that has the lowest achievable ODP and GWP.

DATE: **Ongoing.**

RESPONSIBILITY: Engineering Organization and Facility Management Organization personnel.

4.2.6.5 Additional Projects

Funding has been approved for the procurement of Refrigerant Pressure Control Units (RPCU). The RPCUs consist of blanket heaters and associated controls which will be installed on 23 low-pressure chillers using Refrigerant -11 (a negative pressure refrigerant). When chillers are shut down for prolonged periods of time, RCPUs will be energized to maintain the refrigeration system in a positive pressure mode. Positive pressure will prevent infiltration of air and other noncondensibles into the refrigeration system. With the prevention of air and other noncondensibles into the refrigeration system, RCPU units will minimize the purge cycle and reduce the amount of refrigerant released to the atmosphere. This project is approximately 15 percent complete as of May 1995.

Funding has been approved for the procurement and installation of new high-efficiency purge units for 23 existing chiller units at the Y-12 Plant. These purge units remove air and contaminants from refrigerants and will extend the life of the existing refrigerant while reducing refrigerant emissions. The new purge units will be approximately ten times more efficient than the existing units. This project is 95 percent complete as of May 1995.

RESPONSIBILITY: Facility Management Organization staff.

4.2.7 MVACs

The Facility Management Organization staff operates two garages: the Y-12 Plant garage and the Transportation Safeguards Division (TSD) garage. Certification was submitted to personnel at the Department of Energy (DOE) on March 13, 1992, documenting that less than 100 MVACs were serviced in 1990 at both the Y-12 Plant and TSD garages. Personnel from DOE submitted the small-entity certification to the EPA staff on March 20, 1992. The equipment certification statement for MVACs was submitted to DOE personnel on December 7, 1992. The DOE personnel submitted the equipment certification to the EPA staff on December 21, 1992. The MVACs will not be retrofitted with new refrigerants. These units will be used with the current refrigerant until they reach the end of their service life or must be replaced due to refrigerant leakage or failure. New MVACs shall use an alternative refrigerant that has the lowest achievable ODP and GWP. The need for a procurement standard will be determined as more MVACs that use an alternative refrigerant become available.

DATE: **Ongoing.**

RESPONSIBILITY: Facility Management Organization staff.

4.2.8 Stockpile and Storage

Storage tanks will be procured to stockpile refrigerants. The tanks will help guarantee HVAC, refrigeration, and process cooling needs until all equipment is retrofitted or replaced. As equipment is retrofitted or replaced, the refrigerant will be stored in the tanks for future usage. Refrigerant that is stored and not expected to be used will be sent to an approved recycler.

DATE: **December 1999.**

RESPONSIBILITY: Facilities Management Organization and Engineering Organization personnel.

4.3 FIRE PROTECTION

There are currently seven halon fire protection systems in the Y-12 Plant. These systems are all fixed fire protection systems; there are no portable halon fire extinguishers in the Y-12 Plant. An inventory of the Y-12 Plant halon fire protection systems, including the systems in storage, is shown in Appendix D. Appendix E contains a summary of the releases of halon to the atmosphere since 1987.

4.3.1 Inventory

The Safeguards and Security Organization staff will establish record keeping measures to ensure that accurate inventory data is available for all halon systems as required by Section 3.2.

DATE: **Ongoing.**

RESPONSIBILITY: Safeguards and Security Organization staff.

4.3.2 Halon Systems Removed

The following halon systems were removed from service during 1992: (1) the DOE National Telecommunications Services were removed from the Y-12 Plant, and (2) two halon systems were removed from Building 9201-5 and placed in storage.

4.3.3 Plans for Removal/Replacement of Halon Systems

All seven fixed halon fire suppression units are ready for use at the Y-12 Plant. These systems are being eliminated or will be replaced with carbon dioxide systems. The following information conveys the conversion plans to nonhalon suppression or elimination for all seven Y-12 Plant units.

1. Building 9212 E-Wing conversion to carbon dioxide.
   DATE: **Ongoing.**

2. Building 9723-14 personnel have disconnected the release mechanism from the halon storage cylinder/sphere, therefore, preventing an accidental discharge. The halon storage cylinder/sphere will be physically disconnected from the fire suppression system.
   DATE: **Completed.**

3. Building 9103 conversion to carbon dioxide.
   DATE: **Ongoing.**

4. Trailer 9824-5 personnel have disconnected the release mechanism from the halon storage cylinder; therefore, preventing an accidental discharge. Halon storage cylinder/sphere will be physically disconnected from the fire suppression system.
   DATE: **Completed.**

5. Manipulator Trailer conversion to carbon dioxide.
   Date: **Ongoing.**

6. No halon elimination or conversion decision has been reached for Building 9201-2 Second Floor Computer Room. Building 9201-2 Thermal Hydraulic Test Facility Computer Room personnel have disconnected the release mechanism from the halon storage cylinder, therefore, preventing an accidental discharge. The halon storage cylinder/sphere will be physically disconnected from the fire suppression system.
   DATE: **Completed.**

   RESPONSIBILITY: Safeguards and Security Organization staff.

5.0 DEFINITIONS

Ozone Depletion: Thinning of the stratospheric ozone (O_3) shield that protects the earth from ultraviolet radiation. Ultraviolet radiation causes chlorine in chlorofluorocarbons and bromine in halons to be released into the stratosphere. The chlorine and bromine then react with the ozone, resulting in ozone depletion.

Ozone-Depleting Substance: Any substance or chemical identified by the 1990 Amendments to the CAA and its implementing regulations as either a Class I or Class II substance. See Appendix A for a list of Class I and Class II substances. Any blend or azeotropic mixture containing a Class I or Class I ozone-depleting substance shall be considered to be an ozone-depleting substance for the purpose of this standard.

Ozone-Depletion Potential (ODP): The factor established by Section 602 of the Amendments which defines the relative ozone-depletion potential of a substance as compared to chlorofluorocarbon-11.

Equivalent Ozone-Depletion Potential (EODP): A measure of the ODP (III.B.) of a substance when the quantity released to the environment is considered. The EODP equals ODP times the annual emissions of the substance to the atmosphere.

Global Warming: (Also called the "Greenhouse Effect.") The heating of the earth by gases that absorb infrared radiation from the sun-warmed surface of the earth and then return that radiation to the earth.

Global Warming Potential (GWP): A factor that defines the relative global warming potential of a substance relative to carbon dioxide (CO_2).

Refrigeration and Cooling Process: Any process or operation where a substance is used as a heat transfer media for cooling or refrigeration purposes (e.g., refrigeration units, chillers, coolers).

Nonrefrigeration and Cooling Process: Any process which is not considered a refrigeration and cooling process (e.g., degreasing, parts cleaning, carrier gases).

6.0 REFERENCES

ESS-EP-129 (DRAFT): Stratospheric Ozone Protection Program.

Title VI of the 1990 Clean Air Act Amendments: Stratospheric Ozone Protection.

"The Montreal Protocol on Substances that Deplete the Ozone Layer."

Title 40, Code of Federal Regulations, Part 82: Protection of Stratospheric Ozone.

"System Requirement Document for Retrofit HVAC and Chillers for Ozone Protection", Y/EN-4667, June 11, 1992.

DOE Order 5400.1: "General Environmental Protection Program."

APPENDIX A

APPENDIX A: OZONE DEPLETING SUBSTANCES

SUBSTANCE	ODP
Class I	
chlorofluorocarbon-11 (CFC-11)	1.0
chlorofluorocarbon-12 (CFC-12)	1.0
chlorofluorocarbon-113 (CFC-113)	0.8
chlorofluorocarbon-114 (CFC-114)	1.0
chlorofluorocarbon-115 (CFC-115)	0.6
halon-1211	3.0
halon-1301	10.0
halon-2402	6.0
chlorofluorocarbon-13 (CFC-13)	1.0
chlorofluorocarbon-111 (CFC-111)	1.0
chlorofluorocarbon-112 (CFC-112)	1.0
chlorofluorocarbon-211 (CFC-211)	1.0
chlorofluorocarbon-212 (CFC-212)	1.0
chlorofluorocarbon-213 (CFC-213)	1.0
chlorofluorocarbon-214 (CFC-214)	1.0
chlorofluorocarbon-215 (CFC-215)	1.0
chlorofluorocarbon-216 (CFC-216)	1.0
chlorofluorocarbon-217 (CFC-217)	1.0
carbon tetrachloride	1.1
methyl chloroform	0.1
Class II	
hydrochlorofluorocarbon-21 (HCFC-21)	
hydrochlorofluorocarbon-22 (HCFC-22)	0.05
hydrochlorofluorocarbon-31 (HCFC-31)	
hydrochlorofluorocarbon-121 (HCFC-121)	
hydrochlorofluorocarbon-122 (HCFC-122)	
hydrochlorofluorocarbon-123 (HCFC-123)	0.02
hydrochlorofluorocarbon-124 (HCFC-124)	0.02
hydrochlorofluorocarbon-131 (HCFC-131)	
hydrochlorofluorocarbon-132 (HCFC-132)	
hydrochlorofluorocarbon-133 (HCFC-133)	
hydrochlorofluorocarbon-141 (HCFC-141)	0.1
hydrochlorofluorocarbon-142 (HCFC-142)	0.06
hydrochlorofluorocarbon-221 (HCFC-221)	
hydrochlorofluorocarbon-222 (HCFC-222)	
hydrochlorofluorocarbon-223 (HCFC-223)	
hydrochlorofluorocarbon-224 (HCFC-224)	
hydrochlorofluorocarbon-225 (HCFC-225)	
hydrochlorofluorocarbon-226 (HCFC-226)	
hydrochlorofluorocarbon-231 (HCFC-231)	
hydrochlorofluorocarbon-232 (HCFC-232)	
hydrochlorofluorocarbon-233 (HCFC-233)	
hydrochlorofluorocarbon-234 (HCFC-234)	
hydrochlorofluorocarbon-235 (HCFC-235)	
hydrochlorofluorocarbon-241 (HCFC-241)	
hydrochlorofluorocarbon-242 (HCFC-242)	
hydrochlorofluorocarbon-243 (HCFC-243)	
hydrochlorofluorocarbon-244 (HCFC-244)	
hydrochlorofluorocarbon-251 (HCFC-251)	
hydrochlorofluorocarbon-252 (HCFC-252)	
hydrochlorofluorocarbon-253 (HCFC-253)	
hydrochlorofluorocarbon-261 (HCFC-261)	
hydrochlorofluorocarbon-262 (HCFC-262)	
hydrochlorofluorocarbon-271 (HCFC-271)	

APPENDIX B

09/24/95

APPENDIX B: Y-12 PLANT RELEASE OF OZONE-DEPLETING SUBSTANCES USED AS SOLVENTS

SUBSTANCE	SOURCE	LOCATION	RELEASES (GALLONS/YEAR)						REDUCTION PLAN	TARGET DATE	STATUS
			1989	1990	1991	1992	1993	1994			
CFC-113 PCA GRADE	WIPING PARTS	9201-5N	330.00	110.00	0.00	0.00	0.00	0.00	REPLACE W/WATER CHASER 140	12/31/90	Y
CFC-113 PCA GRADE	WIPING PARTS	9201-5W	2090.00	660.00	0.00	0.00	0.00	0.00	REPLACED W/WATER CHASER 140	12/31/90	Y
CFC-113 PCA GRADE	WIPING PARTS	9996 A-WING	2750.00	550.00	0.00	0.00	0.00	0.00	REPLACED W/WATER CHASER 140	12/31/90	Y
CFC-113 PCA GRADE	WIPING PARTS	9204-2E SPECIMEN SHOP	110.00	0.00	0.00	0.00	0.00	0.00	REPLACE W/WATER CHASER 140	12/31/90	Y
CFC-113 PCA GRADE	WIPING PARTS	9201-5E	825.00	0.00	0.00	0.00	0.00	0.00	REPLACE W/WATER CHASER 140	12/31/90	Y
CFC-113 PCA GRADE	WIPING PARTS	9201-1 GRAPHITE SHOP	0.00	0.00	0.00	0.00	0.00	0.00	REPLACED W/WATER CHASER 140	12/31/90	Y
CFC-113 PCA GRADE	CLEANING PARTS	9215 O-WING	0.00	0.00	0.00	0.00	0.00	0.00	SHUT DOWN/PLAN TO REPLACE W/WATER CHASER 140	/ /	N
CFC-113 PCA GRADE	CLEANING PARTS	9204-2E	385.00	55.00	0.00	0.00	0.00	0.00	REPLACED W/WATER CHASER 140	/ /	Y
CFC-113 PCA GRADE	CLEANING PARTS	9401-2	0.00	0.00	165.00	55.00	0.00	0.00	REPLACED WITH ALCOHOL	/ /	Y
CFC-113 PCA GRADE	MAINTENANCE OPERATIONS		0.00	0.00	0.00	0.00	0.00	0.00	REPLACED WITH NONCHLORINATED HYDROCARBON SOLVENTS	12/31/89	Y
CFC-113 PCA GRADE	CLEANING PARTS	9204-2E	0.00	0.00	0.00	0.00	0.00	0.00	REPLACED WITH SOLVENT 140	/ /	Y
CFC-113 PCA GRADE	CLEANING PARTS	9204-4	55.00	0.00	0.00	0.00	0.00	0.00	OPERATIONS MOVED TO BLDG. 9204-2	/ /	Y
CFC-113 PCA GRADE	CLEANING,CHEMICAL PREP	9202, DEVELOPMENT	935.00	0.00	0.00	0.00	0.00	0.00	CLEANING REPLACED W/ WC140, CHEM PREP UNDER EVAL	/ /	N
CFC-113 PCA GRADE	WIPING PARTS	9201-1	0.00	0.00	0.00	0.00	0.00	0.00	REPLACED WITH ALCOHOLS & WATER CHASER 140	12/31/90	Y
CFC-113 PCA GRADE	WIPING PARTS	9212 SPECIAL MACHINING	330.00	330.00	0.00	0.00	0.00	0.00	REPLACED W/WATER CHASER 140	12/31/90	Y
CFC-113 PCA GRADE	CLEANING PARTS	9201-5 TOOLING FAB	110.00	0.00	0.00	0.00	0.00	0.00	REPLACED W/WATER CHASER 140	12/31/90	Y
CFC-113 PCA GRADE	CLEANING PARTS	9212 TOOLING FAB	110.00	0.00	0.00	0.00	0.00	0.00	REPLACED W/WATER CHASER 140	12/31/90	Y
CFC-113 PCA GRADE	CLEANING PARTS	9201-5N	0.00	0.00	0.00	0.00	0.00	0.00	REPLACED W/WATER CHASER 140	/ /	Y
CFC-113 PCA GRADE	FINANCE		0.00	0.00	0.00	0.00	0.00	0.00	DID NOT MEET SPEC/REMOVED FROM STORES INVENTORY	/ /	Y
CFC-113 PCA GRADE	CLEANING	9212	8250.00	2640.00	880.00	220.00	220.00	220.00	PFC WILL REPLACE 113	01/01/96	N
CFC-113 PCA GRADE	CLEANING	9206	1870.00	1040.00	0.00	0.00	0.00	0.00	UNDER EVALUATION	/ /	N
CFC-113 PCA GRADE	CLEANING	9212 MET LAB	0.00	0.00	0.00	0.00	0.00	0.00	REPLACED WITH NONCHLORINATED HYDROCARBON SOLVENTS	/ /	N
CFC-113 PCA GRADE	CLEANING PARTS	9204-2	55.00	0.00	0.00	0.00	0.00	0.00	REPLACED WITH SOLVENT 140	/ /	Y
CFC-113 PCA GRADE	MACHINING COOLANT	9204-4 ASSEMBLY	55.00	0.00	0.00	0.00	0.00	0.00	REPLACED WITH TRIMSOL	12/31/90	Y
CFC-113 PCA GRADE	CLEAINING	9201-5	0.00	110.00	0.00	0.00	0.00	0.00	REPLACED W/WATER CHASER 140	/ /	Y
CFC-113 PCA GRADE	CLEANING PIPES		55.00	0.00	0.00	0.00	0.00	0.00	REPLACED W/WATER CHASER 140	/ /	Y
CFC-113 PCA GRADE	CLEANING PIPES	OXYGEN LINES	0.00	55.00	0.00	0.00	0.00	0.00	REPLACED W/WATER CHASER 140	/ /	Y
CFC-113 & ETHANOL	MAINTENANCE		0.00	0.00	0.00	0.00	0.00	0.00	REPLACED W/WATER CHASER 140	/ /	Y
CFC-113 & ETHANOL	CLEANING	9215 GAGE LAB	0.00	0.00	0.00	0.00	0.00	0.00	REPLACED WITH ALCOHOL	/ /	Y

NOTE: ALL RELEASES ARE BASED ON PURCHASE DATA
STATUS INDICATES COMPLETION OF REDUCTION PLAN

09/24/95

APPENDIX B: Y-12 PLANT RELEASE OF OZONE-DEPLETING SUBSTANCES USED AS SOLVENTS

SUBSTANCE	SOURCE	LOCATION	RELEASES (GALLONS/YEAR)						REDUCTION PLAN	TARGET DATE	STATUS
			1989	1990	1991	1992	1993	1994			
CFC-113 & ETHANOL	MAINTENANCE		0.00	0.00	0.00	0.00	0.00	0.00	REPLACED WITH NONCHLORINATED HYDROCARBON SOLVENTS	/ /	Y
CFC-113 & ETHANOL	DEVELOPMENT	9202	0.00	0.00	0.00	0.00	0.00	0.00		/ /	N
CFC-113 & ETHANOL	MAINTENANCE		0.00	0.00	0.00	0.00	0.00	0.00	UNKNOWN USE	/ /	N
CFC-113 & ETHANOL	CLEANING	9998 A-WING	0.00	0.00	0.00	0.00	0.00	0.00	REPLACED W/WATER CHASER 140	12/31/90	Y
CFC-113 & ETHANOL	CLEANING	9204-2E	0.00	0.00	0.00	0.00	0.00	0.00	REPLACED W/WATER CHASER 140	/ /	Y
CFC-113 & ETHANOL	FINANCE		0.00	0.00	0.00	0.00	0.00	0.00	DID NOT MEET SPEC/REMOVED FROM STORES INVENTORY	/ /	Y
CFC-113 & ETHANOL	GENERAL CLEANING IN QE	9204-4	0.00	0.00	0.00	0.00	0.00	0.00	REPLACED W/WATER CHASER 140	12/31/90	Y
CFC-113 & ETHANOL	MAINTENANCE		0.00	0.00	0.00	0.00	0.00	0.00	REPLACED WITH SOLVENT 140	12/31/90	Y
CFC-113 & ETHANOL	MAINTENANCE	9720-13 PUMP SHOP	0.00	10.00	0.00	0.00	0.00	0.00	REPLACED W/TOPERE	12/31/90	Y
CFC-113 & ETHANOL	MAINTENANCE		165.00	20.00	0.00	0.00	0.00	0.00	REPLACED WITH NONCHLORINATED HYDROCARBON SOLVENTS	/ /	Y
CFC-113 & ETHANOL	ASSEMBLY	9204-2	30.00	0.00	0.00	0.00	0.00	0.00		/ /	N
CFC-113 & ACETONE	CLEANING	9202	55.00	0.00	0.00	0.00	0.00	0.00	REPLACED W/WATER CHASER 140	12/31/90	Y
CFC-113	CLEANING	9206	0.00	0.00	0.00	0.00	0.00	0.00	REPLACED W/WATER CHASER 140	/ /	Y
CFC-113	MAINTENANCE/BLDG SERVICES		0.00	0.00	0.00	0.00	0.00	0.00	REPLACED W/SOLVENT 140	12/31/89	Y
CFC-113	CLEANING	9215 GAGE LAB	0.00	0.00	0.00	0.00	0.00	0.00	REPLACED WITH ALCOHOL	12/31/89	Y
CFC-113	CLEANING	9981	0.00	0.00	0.00	0.00	0.00	0.00	REPLACED W/WATER CHASER 140	12/31/90	Y
CFC-113	LAB ANALYSIS	9769	5.25	15.20	3.60	16.00	2.30	2.30	LAB USE	/ /	N
CFC-113	LAB ANALYSIS	9995	0.00	1.75	9.00	16.00	2.30	2.30	LAB USE	/ /	N
CFC-113	CLEANING	GARAGE	0.00	0.00	15.00	0.00	0.00	0.00	REPLACED W/SOLVENT 140	12/31/91	Y
CFC-113	MAINTENANCE	9201-2	115.00	140.00	10.00	0.00	0.00	0.00	REPLACED W/WATER CHASER 140	/ /	Y
CFC-113	MAINTENANCE		0.00	0.00	5.00	0.00	0.00	0.00	REPLACED W/ACETONE	/ /	Y
CFC-113	METAL PREP		15.50	0.00	0.00	0.00	0.00	0.00	UNKNOWN USE	/ /	N
CFC-113 & ISOPROPANOL	FINANCE		7.00	0.00	0.00	0.00	0.00	0.00	DID NOT MEET SPEC/REMOVED FROM STORES INVENTORY	/ /	Y
CFC-113 & ISOPROPANOL	GENERAL CLEANING	9204-2E RUBBER SHOP	14.00	0.00	0.00	0.00	0.00	0.00	REPLACED W/ACETONE	12/31/90	Y
CFC-113 & ISOPROPANOL	CLEANING	9981	0.00	0.00	0.00	0.00	0.00	0.00	REPLACED W/WATER CHASER 140	12/31/90	Y
CFC-113 & ISOPROPANOL	CLEANING	9215 P-WING	0.00	0.00	0.00	0.00	0.00	0.00	REPLACED W/ULTRASONIC CLEANER	12/31/88	Y
CFC-113 & ISOPROPANOL	MAINTENANCE		0.00	0.00	0.00	0.00	0.00	0.00	UNKNOWN USE	/ /	N
CFC-113 & ISOPROPANOL			0.00	0.00	0.00	0.00	0.00	0.00	UNKNOWN USE	/ /	N
CFC-113 & ISOPROPANOL	FINANCE		0.00	0.00	0.00	0.00	0.00	0.00	DID NOT MEET SPEC/REMOVED FROM STORES INVENTORY	/ /	Y
CFC-113 & ISOPROPANOL	MAINTENANCE		0.00	0.00	0.00	0.00	0.00	0.00	UNKNOWN USE	/ /	N
CFC-113 & ISOPROPANOL	CLEANING	9204-4	7.00	0.00	0.00	0.00	0.00	0.00	REPLACED W/WATER CHASER 140	12/31/90	Y

NOTE: ALL RELEASES ARE BASED ON PURCHASE DATA
STATUS INDICATES COMPLETION OF REDUCTION PLAN

09/24/95

APPENDIX B: Y-12 PLANT RELEASE OF OZONE-DEPLETING SUBSTANCES USED AS SOLVENTS

SUBSTANCE	SOURCE	LOCATION	RELEASES (GALLONS/YEAR)						REDUCTION PLAN	TARGET DATE	STATUS
			1989	1990	1991	1992	1993	1994			
CFC-113 & ISOPROPANOL	CLEANING	9202	0.00	3.50	0.00	0.00	0.00	0.00	INCIDENTAL USE	/ /	N
CFC-113 & SURFACTANT	CLEANING	9212	1155.00	0.00	0.00	0.00	0.00	0.00	NOW PURCHASE CFC-113 PCA GRADE & ADD SURFACTANT	/ /	N
CFC-113 & SURFACTANT	CLEANING	9206	0.00	0.00	0.00	0.00	0.00	0.00	NOW PURCHASE CFC-113 PCA GRADE & ADD SURFACTANT	/ /	N
CFC-113 & SURFACTANT	CLEANING	9212	220.00	55.00	0.00	0.00	0.00	0.00	NOW PURCHASE CFC-113 PCA GRADE & ADD SURFACTANT	/ /	N
CFC-113 & SURFACTANT	CLEANING	9206	165.00	165.00	0.00	0.00	0.00	0.00	NOW PURCHACE CFC-113 PCA GRADE & ADD SURFACTANT	/ /	N
METHYL CHLOROFORM	CLEANING PARTS	9215 P-WING	1728.00	462.00	54.00	0.00	0.00	0.00	REPLACED W/ULTRASONIC CLEANER & WATER CHASER 140	12/31/90	Y
METHYL CHLOROFORM	MAINTENANCE		162.00	0.50	0.00	0.00	0.00	0.00	HAVE SUBSTITUTED WATER CHASER 140 IN SOME AREAS	12/31/89	Y
METHYL CHLOROFORM	CLEANING	9204-4 QE	5.00	0.00	0.00	0.00	0.00	0.00	REPLACED W/SOLVENT 140	12/31/90	Y
METHYL CHLOROFORM	CLEANING PARTS	9204-2E ASSEMBLY	59.00	0.00	54.00	0.00	0.00	0.00	EVALUATING SOLVENT 140	/ /	N
METHYL CHLOROFORM	CLASSIFICATION	9731	5.00	0.00	0.00	0.00	0.00	0.00	UNKNOWN USE	/ /	N
METHYL CHLOROFORM	CLEANING	9212	5.00	5.00	0.00	0.00	0.00	0.00	REPLACED W/WATER CHASER 140	/ /	Y
METHYL CHLOROFORM	CLEANING RUBBER GEL MIX	9201-5E	108.00	216.00	0.00	0.00	0.00	0.00	REPLACED W/WATER CHASER 140	12/31/90	Y
METHYL CHLOROFORM	CLEANING PRESSING BAGS	9204-2E	1998.00	1998.00	0.80	0.00	0.00	0.00	REPLACED W/SOLVENT 140	12/31/90	Y
METHYL CHLOROFORM	CLEANING MOLDS	9204-2E RUBBER SHOP	0.00	0.00	0.00	0.00	0.00	0.00	REPLACED W/ACETONE	12/31/90	Y
METHYL CHLOROFORM	GENERAL CLEANING	9201-1	54.00	108.00	0.00	0.00	0.00	0.00	REPLACED W/WATER CHASER 140	12/31/90	Y
METHYL CHLOROFORM	CLEANING	9204-4 ASSEMBLY	0.00	0.00	0.00	0.00	0.00	0.00	OPERATIONS MOVED TO BLDG. 9204-2	/ /	Y
METHYL CHLOROFORM	CLEANING PARTS	9204-2 ASSEMBLY	0.00	5.00	10.00	0.00	54.00	54.00	EVALUATING SOLVENT 140	/ /	N
METHYL CHLOROFORM	LUBRICANT	9201-5N	108.00	0.00	0.00	0.00	0.00	0.00	REPLACED W/GULFCUT	12/31/89	Y
METHYL CHLOROFORM	LAB ANALYSIS	9995	4.00	2.25	0.00	0.00	0.00	0.00	INCIDENTAL USE	/ /	N
METHYL CHLOROFORM	CLEANING GAGES	9215	0.00	0.00	0.00	0.00	0.00	0.00	REPLACED WITH ALCOHOL	/ /	Y
METHYL CHLOROFORM	CLEANING	9202	0.00	0.00	0.00	5.25	0.00	0.00		/ /	N
METHYL CHLOROFORM	CLEANING RUBBER GEL MIX	9201-5W	810.00	216.00	0.00	0.00	0.00	0.00	REPLACED W/WATER CHASER 140	/ /	Y
METHYL CHLOROFORM	CLEANING PARTS	9981	30.00	0.00	0.00	0.00	0.00	0.00	REPLACE W/WATER CHASER 140	12/31/90	Y
METHYL CHLOROFORM	CLEANING TOOLING	9204-2E	756.00	0.00	0.00	0.00	0.00	0.00	REPLACED W/SOLVENT 140	12/31/90	Y
METHYL CHLOROFORM	CLEANING	9204-4	0.00	0.00	0.00	0.00	0.00	0.00	REPLACED W/WATER CHASER 140	12/31/90	Y
METHYL CHLOROFORM	CLEANING PARTS	9201-5 ARC MELT	216.00	0.00	0.00	0.00	0.00	0.00	REPLACED W/WATER CHASER 140 ?	12/31/89	Y
METHYL CHLOROFORM	STEAM PLANT	STEAM PLANT	0.00	0.00	0.00	0.00	0.00	0.00	UNKNOWN USE	/ /	N
		TOTAL RELEASES:	34094.00	26316.75	8973.20	1206.40	312.25	278.60			

NOTE: ALL RELEASES ARE BASED ON PURCHASE DATA
STATUS INDICATES COMPLETION OF REDUCTION PLAN

APPENDIX C

03/08/94

APPENDIX C: Y-12 PLANT ESTIMATED REFRIGERANT INVENTORY

SUBSTANCE	LOCATION	DESCRIPTION	CAPACITY (TONS)	CHARGE (POUNDS)
CFC-11	9767-13	TRANE MODEL CVHB-155N MACHINE NO. M211226	1100.0	2500
CFC-11	9767-13	TRANE MODEL CVHB-155N MACHINE NO. M211227	1100.0	2500
CFC-11	9767-13	TRANE MODEL CVHB-155N MACHINE NO. M211225	1100.0	2500
CFC-11	9767-13	TRANE MODEL CVHB-155N MACHINE NO. M211228	1100.0	2500
CFC-11	9767-13	TRANE MODEL CVHB-155N MACHINE NO. M211224	1100.0	2500
CFC-11	9767-13	TRANE MODEL CVHB-155N MACHINE NO. M211229	1100.0	2500
CFC-11	9767-13	TRANE MODEL CVHB-155N MACHINE NO. M211223	1100.0	2500
CFC-11	9767-13	TRANE MODEL CVHB-155N MACHINE NO. M211230	1100.0	2500
CFC-12	9767-13	N. YORK MODEL 238A6 MACHINE NO. M202464	1350.0	6500
CFC-12	9767-13	S. YORK MODEL 238A6 MACHINE NO. M61748	1350.0	6500
CFC-11	9767-12	CARRIER MODEL 19DK78313CN MACHINE NO. M202462	400.0	1200
CFC-11	9767-12	TRANE MODEL FGD2-GQ-2 MACHINE NO. M211249	200.0	2400
CFC-11	9767-12	YORK MODEL MTD76 MACHINE NO. M61727	200.0	625
CFC-11	9767-11	TRANE MODEL CVHE-089K MACHINE NO. M211232	900.0	2500
CFC-11	9767-11	TRANE MODEL CVHE-089K MACHINE NO. M211231	900.0	2500
CFC-11	9767-11	CARRIER MODEL 19DA MACHINE NO. M61729	200.0	800
CFC-11	9767-11	CARRIER MODEL 19C MACHINE NO. M61753	625.0	3200
CFC-11	9767-10	TRANE MODEL CVHB-155N MACHINE NO. M211051	1200.0	2500
CFC-11	9767-10	TRANE MODEL CVHB-155N MACHINE NO. M211052	1200.0	2500
CFC-11	9767-10	TRANE MODEL CVHB-155N MACHINE NO. M211053	1200.0	2500
CFC-11	9767-10	TRANE MODEL CVHB-155N MACHINE NO. M211054	1200.0	2500
CFC-11	9767-10	TRANE MODEL CVHB-155N MACHINE NO. M211047	1200.0	2500
CFC-11	9767-10	TRANE MODEL CVHB-155N MACHINE NO. M211049	1200.0	2500
CFC-11	9767-10	TRANE MODEL CVHB-155N MACHINE NO. M211050	1200.0	2500
CFC-11	9767-10	TRANE MODEL CVHB-155N MACHINE NO. M202463	1200.0	2500
CFC-11	9767-10	TRANE MODEL CVHB-155N MACHINE NO. M211048	1200.0	2500
CFC-11	9767-8	TRANE MODEL CVHE-100K MACHINE NO. M211234	1000.0	2360
CFC-11	9767-8	TRANE MODEL CVHE-100K MACHINE	1000.0	2360

APPENDIX C: Y-12 PLANT ESTIMATED REFRIGERANT INVENTORY

SUBSTANCE	LOCATION	DESCRIPTION	CAPACITY (TONS)	CHARGE (POUNDS)
		NO. M211235		
CFC-11	9767-8	WORTHINGTON MODEL HJU1000190U MACHINE NO. M61733	400.0	850
CFC-12	9767-8	WESTINGHOUSE PE126KBRLOMV MACHINE NO. M211031	1000.0	3500
CFC-22	9767-4	YORK	625.0	6100
CFC-22	9767-4	YORK	625.0	6100
CFC-22	9767-4	YORK	625.0	6100
CFC-11	9767-4W	CARRIER MODEL 19C-1118 MACHINE NO. M61741	625.0	3600
CFC-113	9767-3	AM. STANDARD MODEL 4CM-4EM-200L MACHINE NO. M61769	250.0	1100
CFC-113	9767-3	AM. STANDARD MODEL 4CM-4EM200L MACHINE NO. M61770	250.0	1100
CFC-11	9767-3	CARRIER MODEL 19C-6M6 MACHINE NO. M61773	500.0	1400
CFC-11	9767-3	CARRIER MODEL 19C-6M6 MACHINE NO. M61774	500.0	1400
CFC-114	9767-3	CARRIER MODEL 19C-8XX6 MACHINE NO. M61777	2000.0	7500
CFC-114	9767-3	CARRIER MODEL 19C-842XX MACHINE NO. M211257	2000.0	7500
CFC-11	9767-3	AM. STANDARD MODEL 90VV235 MACHINE NO. M61775	1000.0	3200
CFC-11	9767-3	TRANE MODEL NX-RK2-SQ2 MACHINE NO. M61776	1000.0	2800
CFC-11	9767-1	CARRIER MODEL 19C-1118 MACHINE NO. M-61778	625.0	3600
CFC-11	9767-1	CARRIER MODEL 19C-1118 MACHINE NO. M-61779	625.0	3600
CFC-12	9220	3 WALK-IN BOXES, 20 EA.	0.0	60
CFC-12	9224	1 WALK-IN BOX	0.0	20
CFC-12	9208	1 WALK-IN BOX	0.0	20
CFC-22	9208	8 CARRIER PKG. UNITS	0.0	80
CFC-22	9208	ROOF VENTILAIRE, 2 EA.	0.0	60
CFC-22	9208	ELECTRIC SHOP AC	0.0	20
CFC-22	9208	4 TRAILERS IN BIOLOGY AREA/INTERTHERMS	0.0	< 40
CFC-22	9208	APPROX. 50 THRU-WALL UNITS	0.0	< 500
CFC-12	9208	MISC. R-12 EQUIP. - APPROX. 150 UNITS	0.0	< 1500
CFC-12	CAFE/BIO	APPROX. 8 PCS. EQUIPMENT	0.0	< 80
CFC-12	9769	SECOND/THIRD FLOORS, WALK-IN BOXES	0.0	40
CFC-12	9769	FIRST/SECOND FLOORS, WALK-IN BOXES	0.0	20
CFC-12	9207	FIRST FLR., 9 WALK-IN BOXES, 20 EA.	0.0	180
CFC-12	9207	SECOND FLR., 18 WALK-IN VOXES	0.0	360
CFC-12	9207	THIRD FLR., 6 WALK-IN BOXES	0.0	120
CFC-22	9207	FOURTH FLR, RADIATION SOURCE	0.0	25
CFC-12	9207	FIFTH FLR, 3 WALK-IN BOXES	0.0	60
CFC-12	9207	FIFTH FLR., 2 WALK-IN BOXES	0.0	40
CFC-22	9211	TRANE, N.SIDE, GROUND LEVEL	0.0	200

APPENDIX C: Y-12 PLANT ESTIMATED REFRIGERANT INVENTORY

SUBSTANCE	LOCATION	DESCRIPTION	CAPACITY (TONS)	CHARGE (POUNDS)
CFC-22	9211	WESTINGHOUSE, N. SIDE, GROUND LEVEL	0.0	200
CFC-12	9211	N. S. CARDOX	0.0	25
CFC-12	9211	FIRST FLR, 5 WALK-IN BOXES	0.0	100
CFC-12	9211	SECOND FLR, 4 WALK-IN BOXES	0.0	80
CFC-12	9211	FOURTH FLR, 3 WALK-IN BOXES	0.0	60
CFC-12	9211	FOURTH FLR, ENVIRONMENTAL CHAMBERS, 9 EA.	0.0	90
CFC-22	9720-44	TRAILER, CARRIER	5.0	10
CFC-22	1501-2	INSULATORS, PKG. UNIT	5.0	10
CFC-22	TRAILUNITS	APPROX. 175 WALL UNITS, 3 TONS EA.	0.0	< 1750
CFC-22	9208	VENTILAIRE	15.0	30
CFC-22	9208	COMP.RM., ACS, LIEBERT, 10 TON EA.	0.0	40
CFC-22	9208	ELECT. SHOP UNIT	5.0	10
CFC-22	9722	WEST TRANES, 1 10 TON & 1 15 TON	0.0	50
CFC-22	9722	EAST TRANES, 1 10 TON & 1 15 TON	0.0	50
CFC-22	9720-6	N. OFFICES, TRANE	50.0	100
CFC-22	9720-6	MEZZ OFFICE AC UNIT	5.0	10
CFC-12	9720-6	RM 110, TRANE	20.0	50
CFC-22	9720-6	BARD & WESTINGHOUSE WALL UNITS, 8 EA.	0.0	< 80
CFC-22	9720-6	REFRIGERATION SHOP	10.0	20
CFC-22	9720-6	L. R. TRANE	15.0	30
CFC-22	9720-6	S. SIDE TRANE	3.0	10
CFC-12	9720-6	CLEAN ROOM	20.0	40
CFC-22	9720-6	S. OFFICES, TRANE	4.0	10
CFC-12	9720-6	ICE MACHINE	0.0	< 10
CFC-22	9720-6	6 EA. THRU-WALL UNITS	0.0	< 60
CFC-22	CCTOWNSITE	APPROX. 240 EA. THRU-WALL	0.0	< 2400
CFC-22	9712	4 EA. THRU-WALL UNITS	0.0	< 40
	9219	S. SIDE, 2 AC PKG. UNITS	10.0	0
CFC-22	9709	ALLEY, VETILAIRE	20.0	50
CFC-22	9709	NE CORNER, TRANE	10.0	20
CFC-22	9709	WEST SIDE, LIEBERT	2.0	10
CFC-22	9709	MEZZ, CARRIER	5.0	10
CFC-22	9709	ROOF TOP, E & W CARRIERS, 20 TON	0.0	40
CFC-12	9709	S. SIDE WELD TEST AREA	5.0	10
CFC-22	9709	APPROX. 12 THRU-WALL AC UNITS	0.0	< 120
CFC-22	9610	3 AC UNITS	0.0	< 30
CFC-22	9728	MINI-MATE UNITS, 2 EA.	0.0	< 20
CFC-502,13	9728	ENVIRONMENTAL WEBBER	0.0	< 10
CFC-12	9720-4	ICE MACHINE	0.0	< 10
CFC-22	9720-4	MAINT. OFFICE, TRANE	7.5	15
CFC-22	9983-17	CARRIER	5.0	10
CFC-22	9401-1	TRANE, 2 EA., 10 TON	0.0	40
CFC-22	9728	W. END, YORK	15.0	30
CFC-22	9728	E. END, YORK	10.0	20
CFC-22	ROBOTTRAIL	ROBOT TRAILER	10.0	20
CFC-22	9720-8	W. END CONF. RM., SANYO	3.0	10
CFC-22	9720-8	US AIRCO, SANYO	20.0	40

APPENDIX C: Y-12 PLANT ESTIMATED REFRIGERANT INVENTORY

SUBSTANCE	LOCATION	DESCRIPTION	CAPACITY (TONS)	CHARGE (POUNDS)
CFC-22	9720-8	TRANE, OFFICE, AREA	30.0	75
CFC-22	9720-8	COMP. RM., EDPAC'S	3.0	10
CFC-22	9720-8	COMP. RM., LIEBERT	10.0	20
CFC-22	9720-8	S. SIDE, FILM, VAULT UNIT	5.0	10
CFC-22	9720-8	APPROX. 15 THRU-WALL ACS	0.0	< 150
CFC-502	9720-8	ICE MACHINE	0.0	< 10
CFC-22	9105	TRANE	20.0	40
CFC-22	9105	APPROX. 6 THRU-WALL UNITS	0.0	< 60
CFC-22	9102-2	APPROX. 20 THRU-WALL UNITS	0.0	< 200
CFC-22	9108	APPROX. 40 THRU-WALL TRANES	0.0	< 400
CFC-22	9202	WEST KATHABAR, CARRIER	80.0	200
CFC-12	9202	ROOF KATHABAR, TRANE	20.0	30
CFC-22	9983-06	H.P., 2, 5 TON PKG.	0.0	20
CFC-502	9983-06	ICE MACHINE	0.0	< 10
CFC-22	9720-20	SHOP, CARRIER	10.0	20
CFC-22	9203	SECOND FLR, COMP. RM.	10.0	20
CFC-22	9105	APPROX. 40 THRU WALL	0.0	< 400
CFC-22	9105	E. SIDE PKG.	5.0	10
CFC-22	9104-1,2,3	6 EA. ROOF TOP ACS	0.0	60
CFC-22	9104-1,2,3	APPROX. 50 THRU WALL AC'S	0.0	< 500
CFC-22	9201-3	TRANE CHILLER	50.0	150
CFC-22	9201-3	US AIRCO	5.0	10
CFC-12	9201-3	FIRST FL., W. LABS, 4 PKGS, 10 TONS EA.	0.0	80
CFC-22	9201-3	MAINT. OFFICE, AC	20.0	40
CFC-22	9201-3	LAB, CARRIER	5.0	10
CFC-22	9201-3	NE OFFICE, YORK	20.0	40
CFC-22	9201-3	NW OFFICE	20.0	40
CFC-22	9201-3	SECOND FL, NE LAB, TRANE	20.0	40
CFC-22	9201-3	SECOND FL, 4 CARRIER H. P. HIGH BAY	0.0	40
CFC-12	9201-3	NW HIGH BAY, ICE MACHINE	0.0	< 10
CFC-22	9201-3	SECOND FL, S. OFFICES, TRANE	15.0	30
CFC-12	9201-3	SE COMPUTER RM, SECOND FL	0.0	30
CFC-12	9201-3	THIRD FL, OFFICES, CARRIER	80.0	200
CFC-22	9201-3	THIRD FL, N. OFFICES, CARRIER	5.0	10
CFC-22	9201-3	APPROX. 40 THRU WALL	0.0	< 400
CFC-22	9201-1	MAINT. OFFICE & LR, CARRIER	5.0	10
CFC-12	9201-1	OIL COOLER	3.0	10
CFC-22	9201-1	12 THRU WALL UNITS	0.0	< 120
CFC-12	9201-1	HANSEN, SUB-BASEMENT	10.0	20
CFC-12	9201-1	FROTSRODE, SUB-BASEMENT, 2 EA	0.0	30
CFC-12	9201-1	MULTI-AXIS HANSEN UNIT	15.0	30
CFC-12	9201-1	EAST END OUTSIDE HANSEN	10.0	20
CFC-12	9201-1	MAINT. SHOP MEZZ	5.0	10
CFC-12	9201-1	APPROX. 6 EA. HIGH BAY OIL COOLERS, 15 EA.	0.0	90
CFC-502	9201-1	2 EA. ICE MACHINES	0.0	< 20
CFC-22	9201-2	CARRIER PKG	7.5	15
CFC-22	9201-2	MAINT. OFFICE, CARRIER	7.5	15
CFC-22	9201-2	LIBRARY UNIT, TRANE	10.0	20
CFC-113	9201-2	TRANE CENTRAVAC	125.0	400
CFC-22	9201-2	TRANE LASER RM	5.0	10
CFC-22	9201-2	CARRIER PKG	5.0	10

APPENDIX C: Y-12 PLANT ESTIMATED REFRIGERANT INVENTORY

SUBSTANCE	LOCATION	DESCRIPTION	CAPACITY (TONS)	CHARGE (POUNDS)
CFC-22	9201-2	CAFE CARRIER	5.0	10
CFC-22	9201-2	CAFE UNIT	3.0	10
CFC-12	9201-2	2 UNITS, ELECT. SHOP	0.0	40
CFC-12	9201-2	ELECT. SHOP, SW CORNER, AM. STD.	0.0	10
CFC-22	9201-2	CARRIER	15.0	30
CFC-22	9201-2	EBT CONT. RM.	15.0	40
CFC-22	9201-2	TRANE LAB N.S. HIGH BAY	5.0	10
CFC-22	9201-2	CHRYSLER, SW, EBT CONT. RM	10.0	25
CFC-22	9201-2	ISX CONT RM CHRYSLER	15.0	35
CFC-22	9201-2	ISX CONT RM, TRANE	15.0	30
CFC-22	9201-2	EHB CONT. RM., EDPAC	10.0	20
CFC-502	9201-2	SCHEDULER LAB. RM 262, 2 SYS.	0.0	30
CFC-22	9201-2	COMP. RM., NE, EDPAC	20.0	40
CFC-22	9201-2	COMP. RM, NE, LISKEY-AIRE	20.0	40
CFC-22	9201-2	SECOND FL, N. RESTROOM, TRANE	15.0	30
CFC-22	9201-2	THIRD FL., N. SIDE US AIRCO	5.0	10
CFC-22	9201-2	SECOND FL. OFFICES, CARRIER	0.0	15
CFC-22	9201-2	RED MACHINE SHOP	5.0	10
CFC-22	9201-2	N. OF RED SHOP, CARRIER	5.0	10
CFC-22	9201-2	S. HIGH BAY PKG. UNIT	5.0	10
CFC-22	9201-2	NW LOW ROOF, CARRIER	15.0	30
CFC-22	9201-2	SE OFFICES, SECOND FL., PKG. UNIT	5.0	10
CFC-22	9201-2	SE OFFICES, US AIRCO	15.0	35
CFC-22	9201-2	SE OFFICES, US AIRCO	10.0	25
	9201-2	NE LOW ROOF - NOT IN SERVICE	0.0	0
CFC-12	9201-2	CAFE EQUIP., VARIOUS, 10 PCS.	0.0	30
CFC-12	9201-2	ICE MACHINE, MAINT OFFICE	0.0	< 10
CFC-22	9204-3	TRANE, NW	100.0	200
CFC-22	9204-3	LAB	5.0	10
CFC-22	9204-3	OFFICES	5.0	10
CFC-22	9204-3	WORTHINGTON	60.0	125
CFC-22	9204-3	VENTILAIRE, 2 EA.	20.0	50
CFC-22	9204-1	MCQUAY, NW	50.0	125
CFC-22	9204-1	MCQUAY, NW	12.0	25
CFC-22	9204-1	MCQUAY, SE	20.0	40
CFC-22	9204-1	CARRIER PKG., SE SECTION	0.0	150
CFC-22	9204-1	EDPAC, 2 EA.	10.0	40
CFC-22	9204-1	EDPAC, LCTF, 1 EA.	5.0	10
CFC-22	9204-1	CARRIER, SW, 2 EA., PKG.	5.0	20
CFC-12	9204-1	TRANE PKG.	20.0	40
CFC-22	9204-1	CARRIER	3.0	< 10
CFC-22	9204-1	US AIRCO	5.0	10
CFC-22	9204-1	US AIRCO	20.0	40
CFC-22	9204-1	TRANE	15.0	30
CFC-22	9204-1	TRANE PKG.	10.0	20
CFC-22	9204-1	CHRYSLER	5.0	10
CFC-22	9204-1	US AIRCO	5.0	10
CFC-22	9204-1	ICE TEST FACILITY, 50 & 75 TON	0.0	2500
CFC-22	9204-1	12 THRU WALL	0.0	< 120
CFC-12	9735	WESTINGHOUSE, RM 18	5.0	10
CFC-12	9735	TRANE	50.0	250
CFC-12	9735	BREEZEWAY, LAB	5.0	10
CFC-12	9735	PACKAGE	20.0	30

APPENDIX C: Y-12 PLANT ESTIMATED REFRIGERANT INVENTORY

SUBSTANCE	LOCATION	DESCRIPTION	CAPACITY (TONS)	CHARGE (POUNDS)
CFC-22	9735	TRANE	7.0	15
CFC-22	9735	LIEBERT, 2 CKTS., CLEAN RM	0.0	40
CFC-22	9735	TRANE	3.0	20
CFC-22	9734	CARRIER	15.0	30
CFC-12	9734	S. LAB, TRANE RECIP.	40.0	75
CFC-22	9734	LIEBERT (VAULT)	5.0	10
CFC-22	9733-1	N. LIEBERT, MULTIPLEXER	3.0	10
CFC-22	9766	W. CONF. RM	10.0	25
CFC-22	9766	15 THRU WALL	0.0	< 150
CFC-22	9766	2 HEAT CONT. (ATTIC)	0.0	< 20
CFC-12	9766	4 REFRIGERATORS	0.0	< 40
CFC-12	9766	2 WATER COOLERS	0.0	< 20
CFC-22	9995 & 9996	9995, RM. 135, EDPAC	5.0	10
CFC-22	9995 & 9996		5.0	10
CFC-22	9995 & 9996	TRANE	5.0	10
CFC-22	9995 & 9996	WATER SOURCE HPS	0.0	< 10
CFC-12	9711-5	2 FREEZERS	0.0	80
CFC-12	9711-5	1 VEGETABLE COOLER	0.0	20
CFC-502	9711-5	3 ICE MACHINES	0.0	< 30
CFC-12	9711-5	ICE MACHINE	0.0	< 10
CFC-12	9711-5	8 (SALAD) BOXES	0.0	< 80
CFC-22	9711-5	2 WINDOW UNITS	0.0	< 20
CFC-22	9711-5	6 THRU WALL	0.0	< 60
CFC-22	9711-5	1 EDPAC	5.0	10
CFC-22	9711-5	CLASSIFIED SHREDDER	0.0	10
CFC-12	9711-5	FILM VAULT	0.0	10
CFC-22	9731	TRANE	5.0	10
CFC-22	9731	4 EA. PKG. UNITS	5.0	40
CFC-22	9731	WESTINGHOUSE	0.0	30
CFC-22	9731	TRANE PACKAGE	0.0	10
CFC-12	9723-14	ICE MACHINE	0.0	< 10
CFC-12	9723-14	2 REFRIGERATORS	0.0	< 20
CFC-12	9723-14	2 WATER COOLERS	0.0	< 20
CFC-14,13,12	9204-2 & 9201-5	POLY COLDS, VARIOUS LOC, 25 EA., MIXED W/ARGON	0.0	< 250
CFC-12	9204-2 & 9201-5	H-P SAMPLE REFRIGERATOR, 15 EA.	0.0	< 150
	9204-2E	WATER COOLERS	0.0	0
	9204-2E	REFRIGERATORS	0.0	0
CFC-22	9110	LIEBERT DRY COOLER	10.0	20
CFC-22	9110	40 THRU WALL FRIEDRICH UNITS	0.0	< 400
CFC-22	9110	LIEBERT DRY COOLER	5.0	10
CFC-12	9110	2 REFRIGERATORS	0.0	< 20
CFC-12	9110	2 WATER COOLERS	0.0	< 20
CFC-22	9710-2	NE TRANE (GRND.)	25.0	60
CFC-22	9710-2	E. ROOF TRANE	5.0	10
CFC-22	9710-2	2 EA. DATAC COMP. RM.	5.0	20
CFC-22	9710-2	LIEBERT	10.0	20
CFC-22	9710-2	24 WALL UNITS	0.0	< 240
CFC-12	9710-2	1 CARDOX UNIT	0.0	30
CFC-12	9710-2	MOBILE CARDOX	0.0	30
CFC-12	9710-2	ICE MACHINE	0.0	< 10
CFC-12	9710-2	6 REFRIGERATORS	0.0	< 60
CFC-12	9710-2	6 WATER COOLERS	0.0	< 60
CFC-22	9710-2	2 TRANE ROOF UNITS	0.0	20

APPENDIX C: Y-12 PLANT ESTIMATED REFRIGERANT INVENTORY

SUBSTANCE	LOCATION	DESCRIPTION	CAPACITY (TONS)	CHARGE (POUNDS)
CFC-22	9983-28	WALL UNIT	3.0	10
CFC-22	9983-39	CARRIER UNIT	3.0	10
CFC-22	9998-39	2 WINDOW UNITS	0.0	< 20
CFC-22	9983-41	WESTINGHOUSE	3.0	10
CFC-22	9983	TRANE	5.0	10
CFC-22	9771	8 THRU WALL	0.0	< 80
CFC-22	9711-1	CARRIER PKG.	15.0	40
CFC-22	9711-1	10 WINDOW UNITS	0.0	< 100
CFC-22	9711-1	TRANE	5.0	10
CFC-22	9711-1	LIEBERT	7.5	20
CFC-22	9711-1	CARRIER PKG.	10.0	30
CFC-12	9711-1	TRANE	0.0	42
CFC-12	9711-1	CARRIER PKG.	15.0	38
CFC-22	9711-1	TRANE	5.0	15
CFC-22	9711-1	TRANE	2.0	< 10
CFC-12	9711-1	4 REFRIGERATORS	0.0	< 40
CFC-22	9764	18 THRU WALL	0.0	< 180
CFC-22	9106	10 EA. 3-5 TON CARRIERS	0.0	100
CFC-12	9106	2 EA. REFRIGERATORS	0.0	< 20
CFC-12	9106	4 EA. WATER COOLERS	0.0	< 40
CFC-22	9109	20 EA. THRU WALL	0.0	< 200
CFC-22	9109	CARRIER PKG.	10.0	20
CFC-12	9109	2 EA. WATER COOLERS	0.0	< 20
CFC-22	9702	CARRIER	5.0	10
CFC-22	9702	2 THRU WALL	0.0	< 20
CFC-12	9702	WATER COOLER	0.0	< 10
CFC-12	9704-1	ICE MACHINE	0.0	< 10
CFC-12	9704-1	4 EA. WATER COOLERS	0.0	< 40
CFC-22	9204-2	N. CONF. RM.	5.0	10
CFC-22	9204-2	VAULT CONF. RM.	7.5	15
CFC-22	9204-2	APPROX. 150 THRU WALL	0.0	< 1500
CFC-12	9204-2	8 WATER COOLERS	0.0	< 80
CFC-22	9204-2	3 SPLIT SYSTEMS	0.0	< 30
CFC-22	9706-2	UMS	5.0	10
CFC-22	9706-2	20 THRU WALL	0.0	< 200
CFC-12	9706-2	ICE MACHINE	0.0	< 10
CFC-22	9706-2	LISKEY-AIRE	5.0	10
CFC-12	9706-2	4 WATER COOLERS	0.0	< 40
CFC-22	9710-3	CARRIER PKG. UNITS, 5 TONS EA.	5.0	20
CFC-12	9710-3	ICE MACHINE	0.0	< 10
CFC-12	9710-3	REFRIGERATORS, 4 EA.	0.0	< 40
CFC-22	9706-1A	TRANE SPLIT SYSTEM	0.0	10
CFC-22	9706-1A	TRANE PACKAGE	7.5	15
CFC-12	9706-1A	CARRIER	20.0	200
CFC-12	9706-1A	WORTHINGTON	20.0	100
CFC-22	9706-1A	DATAIRE	3.0	10
CFC-12	9706-1A	TRANE	25.0	50
CFC-22	9706-1A	THRU WALL	0.0	< 10
CFC-12	9706-1A	4 REFRIGERATORS	0.0	< 40
CFC-22	9204-2	1 PACKAGE UNIT, CARRIER	20.0	40
CFC-12	9204-2	2 WORTHINGTON, DRY RMS.	0.0	40
CFC-22	9204-2	2 20-TON LIEBERTS	20.0	80
CFC-22	9204-2	2 PACKAGE CARRIER, 5 TON EA.	5.0	20
CFC-22	9204-2	10 WINDOW UNITS	0.0	< 100
CFC-12	9204-2	10 WATER COOLERS	0.0	< 100

APPENDIX C: Y-12 PLANT ESTIMATED REFRIGERANT INVENTORY

SUBSTANCE	LOCATION	DESCRIPTION	CAPACITY (TONS)	CHARGE (POUNDS)
CFC-12	9204-2	10 REFRIGERATORS	0.0	< 100
CFC-12	9204-2	ICE MACHINE	0.0	< 10
CFC-12	9744	REFRIGERATOR	0.0	< 10
CFC-12	9744	WATER COOLER	0.0	< 10
CFC-22	9744	2 WINDOW UNITS	0.0	< 20
CFC-12	9206	2 S. ROOF, CARRIER CHILLERS, 25 TON	25.0	150
CFC-22	9206	TRANE PACKAGE UNIT	15.0	30
CFC-22	9206	2 EA. SPLIT SYSTEM (ROOF), TRANE	0.0	20
CFC-22	9206	25 EA. PORTABLE PACKAGE, CARRIER	5.0	150
CFC-22	9206	2 EA. PROCESS COOLERS	0.0	20
CFC-22	9206	2 EA. WINDOW UNITS	0.0	< 20
CFC-22	9206	4 UNITS, ROOF TOP	0.0	40
CFC-12	9206	TRANE	25.0	50
CFC-12	9401-2	DUNMAN-BUSH ACID BATH COOLER	10.0	30
CFC-22	9401-2	3 WINDOW UNITS	0.0	< 30
CFC-12	9401-2	REFRIGERATOR	0.0	< 10
CFC-12	9401-2	WATER COOLER	0.0	< 10
CFC-22	9811	2 WINDOW UNITS	0.0	< 20
CFC-502	9404-11	EDWARDS ENG.	10.0	40
CFC-502	9404-11	EDWARDS ENG.	5.0	20
CFC-22	OFFICE TRAILER	WALL UNIT	3.0	10
CFC-12	OFFICE TRAILER	REFRIGERATOR	0.0	< 10
CFC-12	9805-1	PROCESS REFRIGERATION SYSTEM	0.0	600
CFC-22	9404-9	PACKAGE UNITS, CARRIER, 2 EA.	5.0	20
CFC-12	9404-9	WALK-IN COOLER	10.0	30
CFC-22	9770-1	ZONELINE, MONITORING STA.	0.0	< 10
CFC-22	9623	2 ZONELINES	0.0	< 20
CFC-12	9623	2 REFRIGERATORS	0.0	< 20
CFC-12	9623	2 WATER COOLERS	0.0	< 20
CFC-22	9990-3	MCQUARY, COAL HANDLING FACILITY	20.0	40
CFC-22	9401-3	CARRIER PACKAGE UNIT	7.5	15
CFC-22	9401-3	12 UNITS THRU WALL	0.0	< 120
CFC-12	9401-3	3 REFRIGERATORS	0.0	< 30
CFC-12	9401-3	ICE MACHINE	0.0	< 10
CFC-22	9727-4	1 THRU WALL UNIT	0.0	< 10
CFC-12	9727-4	REFRIGERATOR	0.0	< 10
CFC-12	9727-4	WATER COOLER	0.0	< 10
CFC-22	9112	TRANE GRND. LEVEL, COMP. RM., AC #9	15.0	30
CFC-22	9112	ROOF, AC #5, TRANE	10.0	30
CFC-22	9112	ROOF, AC #6, TRANE	6.0	12
CFC-22	9112	ROOF, AC #7, TRANE	7.5	15
CFC-22	9112	ROOF, AC #8, TRANE	6.0	12
CFC-12	9112	4 WATER COOLERS	0.0	< 40
CFC-12	9112	2 REFRIGERATORS	0.0	< 20
CFC-22	9201-4	CARRIER PACKAGE UNITS, 4 EA., CENTRAL AREA	5.0	40
CFC-22	9201-4	1 THRU WALL UNIT	0.0	< 10
CFC-22	9720-3	ROOF WORTHINGTON	50.0	80
CFC-22	9720-3	CARRIER SPLIT SYSTEM	3.0	10
CFC-22	9720-3	2 THRU WALL	0.0	< 20

APPENDIX C: Y-12 PLANT ESTIMATED REFRIGERANT INVENTORY

SUBSTANCE	LOCATION	DESCRIPTION	CAPACITY (TONS)	CHARGE (POUNDS)
CFC-12	9720-3	REFRIGERATOR	0.0	< 10
CFC-12	9720-3	WATER COOLER	0.0	< 10
CFC-22	9723-18	7 WINDOW UNITS	0.0	< 70
CFC-12	9723-18	2 REFRIGERATORS	0.0	< 20
CFC-12	9723-18	3 WATER COOLERS	0.0	< 30
CFC-12	9113	CAFE EQUIP., 6 PCS.	0.0	< 60
CFC-12	9113	6 WATER FOUNTAINS	0.0	< 60
CFC-22	9111	TRANE, GRND LEVEL	15.0	30
CFC-22	9111	NW UNIT ROOF	10.0	20
CFC-22	9111	SW UNIT ROOF	5.0	10
CFC-22	9111	SE UNIT	7.5	15
CFC-22	9111	WINDOW UNIT	0.0	< 10
CFC-12	9111	4 WATER COOLERS	0.0	< 40
CFC-12	9111	2 REFRIGERATORS	0.0	< 20
CFC-12	9808	3 REFRIGERATORS	0.0	< 30
CFC-12	9808	ICE MACHINE	0.0	< 10
CFC-22	9808	5 THRU WALL AC'S	0.0	< 50
CFC-22	9723-16	3 WEST	10.0	90
CFC-22	9723-16	AMERICAN STANDARD	10.0	30
CFC-22	9723-16	2 ROOF PACKAGE ACS	0.0	20
CFC-22	9723-16	2 THRU WALL ACS	0.0	< 20
CFC-12	9723-16	ICE MACHINE TO BE INSTALLED	0.0	< 10
CFC-12	9723-16	7 REFRIGERATORS	0.0	< 70
CFC-22	9723-21	4 WINDOW UNITS	0.0	< 40
CFC-12	9723-21	ICE MACHINE	0.0	< 10
CFC-12	9723-21	2 REFRIGERATORS	0.0	< 20
CFC-12	9117	REFRIGERATOR	0.0	< 10
CFC-12	9117	2 WATER COOLERS	0.0	< 20
CFC-22	9983-2	BARD	3.0	10
CFC-22	9983-2	2 WINDOW ACS	0.0	< 20
CFC-22	9103	SMALL TRANE	3.0	10
CFC-12	9103	4 WATER FOUNTAINS	0.0	< 40
CFC-12	9103	6 REFRIGERATORS	0.0	< 60
CFC-12	9103	ICE MACHINE	0.0	< 10
CFC-12	9201-5N	4 REFRIGERATORS	0.0	< 40
CFC-22	9201-5W	2 THRU WALL	0.0	< 20
CFC-500	9201-5W	WALL HUNG, 6 EA.	0.0	< 60
CFC-12	9201-5E	2 FROSTRODE (PROCESS OIL COOLER)	0.0	40
CFC-22	9201-5E	ROBOT CONTROL AC UNIT	0.0	< 10
CFC-22	9201-5E	6 WINDOW UNITS	0.0	< 60
CFC-12	9201-5E	ASTRO LAB	5.0	10
CFC-12	9201-5E	10 REFRIGERATORS	0.0	< 100
CFC-12	9201-5E	2 ICE MACHINES (1 PROCESS)	0.0	< 20
CFC-22	9720-5	LENNOX, ROOF	10.0	20
CFC-22	9720-5	SMALL LENNOX	5.0	10
CFC-22	9720-5	SPLIT SYSTEM	3.0	10
CFC-22	9720-5	NEW LENNOX, SMALL	0.0	10
CFC-22	9720-5	NEW LENNOX, LARGE	0.0	20
CFC-22	9720-5	NE TRANE	15.0	30
CFC-22	9720-5	2 WINDOW UNITS	0.0	< 20
CFC-12	9720-5	2 REFRIGERATORS	0.0	< 20
CFC-22	1501-2 INSULAT.	CARRIER	5.0	10
CFC-12	1501-2 INSULAT.	ICE MACHINE	0.0	< 10
CFC-22	9767-13	CONTROL ROOM AC	0.0	< 10

APPENDIX C: Y-12 PLANT ESTIMATED REFRIGERANT INVENTORY

SUBSTANCE	LOCATION	DESCRIPTION	CAPACITY (TONS)	CHARGE (POUNDS)
CFC-12	9767-13	WATER FOUNTAIN	0.0	< 10
CFC-22	TOWERS/PORTALS	SECURITY GUARD TOWERS/PORTALS, PLANT WIDE	0.0	< 650
CFC-12	TOWERS/PORTALS	MISC. REFRIGERATORS, ETC.	0.0	< 200
CFC-22	9213	TRANE	50.0	150
CFC-12	9213	CARRIER	20.0	50
CFC-22	9213	G-5 AREA, TRANE	0.0	25
CFC-12	9213	2 WATER FOUNTAINS	0.0	< 20
CFC-12	9213	ICE MACHINE	0.0	< 10
CFC-22	9107	6 EA., 15 TON CARRIERS	15.0	180
CFC-12	9107	2 WATER FOUNTAINS	0.0	< 20
CFC-22	9983-12	WALL UNITS, 2 EA., BARDS	0.0	20
CFC-22	9983-88	WALL UNITS, 2 EA., BARDS	0.0	20
CFC-22	9722	3 THRU WALL AC'S	0.0	< 30
CFC-12	9722	REFRIGERATOR	0.0	< 10
CFC-22	BURN BLDG	SPLIT SYSTEM, MCQUAY	30.0	60
CFC-22	MOD WEST TRLR	25 3-TON BARDS	3.0	250
CFC-22	MOD WEST TRLR	SPLIT SYSTEM	0.0	10
CFC-12	MOD WEST TRLR	ICE MACHINE TO BE INSTALLED	0.0	< 10
CFC-12	MOD WEST TRLR	WATER FOUNTAIN, 4 EA.	0.0	< 40
CFC-500	9720-13	MOBILE (CHRYLSER)	50.0	200
CFC-22	9720-13	5 7.5-TON TO BE INSTALLED	7.5	75
CFC-12	9720-13	2 ZONELINES	0.0	< 20
CFC-12	9720-13	WATER FOUNTAIN	0.0	< 10
CFC-12	9720-13	ICE MACHINE	0.0	< 10
CFC-22	9616-7	CONTROL ROOM, BOHN	15.0	20
CFC-22	9616-7	EQUIPMENT ROOM, COMFORT MAKER	5.0	10
CFC-22	9616-7	MISC. THRU WALL, ZONELINES, 3 TOTAL	0.0	< 30
CFC-12	9616-7	MISC. WATER FOUNTAINS, REFRIG., ETC., 6 TOTAL	0.0	< 60
CFC-500	9616-7	MOBILE (CHRYSLER)	50.0	200
CFC-22	9714	SHOP AREA, CARRIER	30.0	50
CFC-22	9714	BREAK ROOM & OFFICE, CARRIER	7.5	10
CFC-22	9714	NORTH HIGH BAY, CARRIER	10.0	15
CFC-22	9714	SOUTH HIGH BAY, CARRIER	10.0	15
CFC-22	9714	SOUTH OFFICES, CARRIER	7.5	10
CFC-22	9714	CONF. RM., GE	7.5	10
CFC-22	9714	BATTERY RM. & GUARD RM., 2 TOTAL	0.0	< 20
CFC-12	9714	MISC. WATER FOUNT, REFRIG, ICE MACH, ETC, 7 TOTAL	0.0	< 70
CFC-22	9720-16	4 TRANES TO BE INSTALLED	0.0	60
CFC-12	9720-16	ICE MACHINE AND TWO WATER COOLERS	0.0	< 30
CFC-22	9720-16	2 ZONELINES	0.0	< 20
CFC-22	9720-16	MAINTENANCE OFFICE WALL ACS, 2 EA.	0.0	20
CFC-502,503	9204-4	PRESS AREA HARRIS FREEZER, 30 LB 502, 10 LB 503	0.0	40
CFC-502,503	9204-4	WEBBER FREEZER, 30 LB 502, 10 LB 503	0.0	40
CFC-502,503	9204-4	TENNEY ENVIR. CHAMBER, 20 LB 502, 20 LB 503	0.0	40
CFC-502,503	9204-4	CINNC. ENVIR. CHAMBER, 10 LB	0.0	30

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APPENDIX C: Y-12 PLANT ESTIMATED REFRIGERANT INVENTORY

SUBSTANCE	LOCATION	DESCRIPTION	CAPACITY (TONS)	CHARGE (POUNDS)
		502, 20 LB 503		
CFC-502,503	9204-4	CINNC. ENVIR. CHAMBER, 10 LB 502, 20 LB 503	0.0	30
CFC-502,503	9204-4	QE AREA, WALK-IN WEBBER, 20 LB 502, 10 LB 503	0.0	30
CFC-12	9204-4	ICE MACHINES, 3 EA.	0.0	< 30
CFC-22	9204-4	THRU WALL AC'S, <10 LB EA.	0.0	< 10
			TOTAL CHARGE:	<163824

APPENDIX D

09/11/95

APPENDIX D: Y-12 PLANT HALON INVENTORY

	CONTAINER TYPE	AVERAGE INVENTORY (POUNDS)
Manner of Usage:	FIXED FIRE PROTECTION SYSTEM	
Usage Location:	BUILDING 9201-2 THTF COMPUTER ROOM (DISCONNECTED)	
Storage Location:	BUILDING 9201-2 THTF COMPUTER ROOM	
	SPHERE SOUTH	198
Usage Location:	BUILDING 9201-2 THTF COMPUTER ROOM	
Storage Location:	BUILDING 9201-2 THTF COMPUTER ROOM	
	SPHERE NORTH	196
Usage Location:	BUILDING 9201-2 2ND FLR COMPUTER ROOM	
Storage Location:	BUILDING 9201-2 2ND FLR COMPUTER ROOM	
	MAIN CYLINDER	100
	RESERVE CYLINDER	100
Usage Location:	BUILDING 9212 E-WING EXHAUST SYSTEM	
Storage Location:	BUILDING 9212 E-WING EXHAUST SYSTEM	
	MAIN CYLINDER #1	84
	MAIN CYLINDER #2	84
	MAIN CYLINDER #3	84
	MAIN CYLINDER #4	84
	RESERVE CYLINDER #1	84
	RESERVE CYLINDER #2	84
	RESERVE CYLINDER #3	84
	RESERVE CYLINDER #4	84
Usage Location:	BUILDING 9723-14 COMPUTER ROOM (DISCONNECTED)	
Storage Location:	BUILDING 9723-14 COMPUTER ROOM	
	MAIN SPHERE	15
Usage Location:	BUILDING 9723-14 COMPUTER ROOM	
Storage Location:	BUILDING 9723-14 COMPUTER ROOM	
	RESERVE SPHERE	15

NOTE: Estimated Inventory based on records as of 3/8/94.

09/11/95

APPENDIX D: Y-12 PLANT HALON INVENTORY

	CONTAINER TYPE	AVERAGE INVENTORY (POUNDS)
Usage Location:	MANIPULATOR TRAILER	
Storage Location:	MANIPULATOR TRAILER	
	MAIN SPHERE	46
Usage Location:	BUILDING 9824-5 AUTOCLAVE CONTROL TRAILER (DISCONNECTED & DISMANTLED)	
Storage Location:	BUILDING 9824-5 AUTOCLAVE CONTROL TRAILER	
	MAIN SPHERE	101
Usage Location:	BUILDING 9103 WEST COMPUTER ROOM	
Storage Location:	BUILDING 9103 SW DOCK	
	MAIN CYLINDER #1	118
	MAIN CYLINDER #2	118
	MAIN CYLINDER #3	118
	MAIN CYLINDER #4	31
	RESERVE CYLINDER #1	118
	RESERVE CYLINDER #2	118
	RESERVE CYLINDER #3	118
	RESERVE CYLINDER #4	31
Manner of Usage:	SPARE CYLINDERS AND SPHERES	
Usage Location:		
Storage Location:	BUILDING 9731 BASEMENT SW ROOM	
	CYLINDER	37
	CYLINDER	37
	CYLINDER	226
	CYLINDER	226
	SPHERE	101
	SPHERE	101
	SPHERE	27
	SPHERE	27
	SPHERE	46

NOTE: Estimated Inventory based on records as of 3/8/94.

APPENDIX D: Y-12 PLANT HALON INVENTORY

	CONTAINER TYPE	AVERAGE INVENTORY (POUNDS)
	SPHERE	100
	SPHERE	193
	SPHERE	195
	SPHERE	100
	SPHERE	46
Manner of Usage:	RECHARGE OF CYLINDERS AND SPHERES	
Usage Location:	BUILDING 9731 BASEMENT	
Storage Location:	BUILDING 9731 OUTSIDE SW CORNER	
	STORAGE (TANK) CYLINDER	1650
Manner of Usage:	SPARE CYLINDER SPHERE	
Usage Location:		
Storage Location:	YARD NORTH OF BUILDING 9720-16	
	CYLINDER	375
	TOTAL:	5700

NOTE: Estimated Inventory based on records as of 3/8/94.

APPENDIX E

03/08/94

APPENDIX E: Y-12 PLANT RELEASE OF HALON TO THE ATMOSPHERE

	LOCATION OF RELEASE	DATE OF RELEASE	AMOUNT RELEASED (POUNDS)
Type of Release:	ACCIDENTAL		
	BLDG. 9201-2 2ND FLR COMPUTER ROOM	01/16/90	100
	BLDG. 9201-2 2ND FLR COMPUTER ROOM	04/16/92	100
Type of Release:	RECHARGING		
		01/11/88	1
		11/08/88	1
		02/10/89	2
		02/21/89	4
		09/22/89	1
		06/28/90	2
		07/03/90	1
Type of Release:	ACCEPTANCE TESTING		
	BLDG. 9103 COMPUTER ROOM	10/31/88	354
	BLDG. 9103 COMPUTER ROOM (RE-TEST)	03/31/89	354
	DOENTS	10/31/89	30
		/ /	0
		TOTAL:	950

HALON FOR RECHARGING OF BLDG. 9201-2 CYLINDERS WAS PURCHASED FROM AN OUTSIDE SOURCE.
HALON WAS NOT RELEASED DURING RECHARGING IN 1987 OR 1991.
HALON FOR ACCEPTANCE TESTING WAS CONTRACTOR FURNISHED; NOT PROVIDED BY THE Y-12 PLANT.

APPENDIX F

APPENDIX F: REFRIGERANT USAGE (pounds)

	1992 (Actual)	1993 (Actual)	1994 (Actual)	1995 (Actual)
CFC-11	10,000	1,900	2,350	1,000
CFC-12	90	400	160	150
CFC-13	92	20	7	7
CFC-14	0	0	0	0
CFC-22	3,025	3,700	1,048	1,000
CFC-113	200	800	0	0
CFC-114	5,100	900	2,200	510
CFC-502	15	7	12	12
CFC-503	15	0	0	0
Totals	**18,537**	**7,727**	**5,777**	**2,679**
		58.3% Reduction	68.8% Reduction	85.5% Reduction