NOTICE

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, nor any of their contractors, subcontractors, or their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by tradename, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.
Title: Pinellas Plant Environmental Baseline Report

Number: MMSC-EM-96055

Issue Date: September 1996

DOCUMENT CONTROL

This document will be maintained in accordance with the sitewide document control procedures. Document control measures include unique issue numbers, document identification, numbered pages, document distribution, and a document master copy filing system.

The Pinellas Plant
P. O. Box 2908
Largo, Florida 33779-2908
Prepared By:

Lockheed Martin Specialty Components, Inc.
Environmental, Safety and Health Division for

The U. S. Department of Energy
Pinellas Area Office

REVIEWED FOR CLASSIFICATION:

Date

UNCLASSIFIED
Classification Level
TABLE OF CONTENTS (CONTINUED)

APPENDIXES

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Letter Dated September 12, 1991 - Florida Department of State Division of Historical Resources</td>
<td>B-1</td>
</tr>
<tr>
<td>C</td>
<td>Radiological Disposition Program Plan</td>
<td>C-1</td>
</tr>
<tr>
<td>D</td>
<td>Pinellas Plant Industrial Wastewater Discharge Permit</td>
<td>D-1</td>
</tr>
<tr>
<td>E</td>
<td>Pinellas Plant Hazardous and Solid Waste Amendments Permit</td>
<td>E-1</td>
</tr>
<tr>
<td>F</td>
<td>Pinellas Plant Air Emissions Operating Permit</td>
<td>F-1</td>
</tr>
<tr>
<td>G</td>
<td>Pinellas Plant Hazardous Waste Operating Permit</td>
<td>G-1</td>
</tr>
<tr>
<td>H</td>
<td>Final Radiological Status of the Pinellas Plant</td>
<td>H-1</td>
</tr>
<tr>
<td>J</td>
<td>Health Physics Desk Procedures</td>
<td>J-1</td>
</tr>
<tr>
<td>K</td>
<td>List of Hazardous Substances and Extremely Hazardous Substances</td>
<td>K-1</td>
</tr>
<tr>
<td>L</td>
<td>Generic Area Cleanup Activities</td>
<td>L-1</td>
</tr>
<tr>
<td>M</td>
<td>General Operating Procedure G.7.45, Area Closeout</td>
<td>M-1</td>
</tr>
<tr>
<td>N</td>
<td>Standard Operating Procedure G.7.45-1, Area Closeout</td>
<td>N-1</td>
</tr>
</tbody>
</table>

FIGURES

1-1 Pinellas Plant Site Layout ............................................................................. 1-3
2-1 Map of PCIC Facilities and DOE Leased Facilities ........................................ 2-2
2-2 Pinellas Plant Growth .................................................................................... 2-3
3-1 Pinellas Plant RMMAs in Existing First Floor Layout .................................. 3-3
3-2 Building 100 Layout - First Floor .................................................................. 3-6
3-3 Building 100 Layout - Second Floor ................................................................ 3-7
6-1 On-site Exhaust Stack Ambient Air Sampling Station Locations ...................... 6-2
6-2 Off-site Air Sampling Station Locations ....................................................... 6-3
6-3 Off-site Surface Water Sampling Locations ................................................... 6-4
6-4 On-site Soil Sampling Locations ..................................................................... 6-5
6-5 Off-site Soil Sampling Locations .................................................................... 6-6
6-6 Radiological and Nonradiological Liquid Effluent Sampling Locations ............. 6-7
7-1 Location of the West Stack and its Connecting Ducting .................................. 7-5
TABLE OF CONTENTS (CONTINUED)

TABLES

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-1</td>
<td>Building 100 Areas the Pose No Impact to the Environment</td>
<td>3-4</td>
</tr>
<tr>
<td>6-1</td>
<td>Environmental Radiological Monitoring Program</td>
<td>6-1</td>
</tr>
<tr>
<td>6-2</td>
<td>Environmental Nonradiological Monitoring Program</td>
<td>6-10</td>
</tr>
<tr>
<td>7-1</td>
<td>Asbestos Abatement Projects Completed Since 1992</td>
<td>7-1</td>
</tr>
<tr>
<td>8-1</td>
<td>Pinellas Plant SWMUs Investigated During the RFI</td>
<td>8-1</td>
</tr>
</tbody>
</table>
### ACRONYMS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACM</td>
<td>Asbestos Containing Material</td>
</tr>
<tr>
<td>AHERA</td>
<td>Asbestos Hazard Emergency Response Act</td>
</tr>
<tr>
<td>AHU</td>
<td>Air Handling Unit</td>
</tr>
<tr>
<td>AIP</td>
<td>Agreement In Principle</td>
</tr>
<tr>
<td>ALARA</td>
<td>As Low As Reasonably Achievable</td>
</tr>
<tr>
<td>CAS</td>
<td>Chemical Abstract Service</td>
</tr>
<tr>
<td>CERCLA</td>
<td>Comprehensive Environmental Response Compensation and Liability Act</td>
</tr>
<tr>
<td>CFC</td>
<td>Chlorofluorocarbon</td>
</tr>
<tr>
<td>CFR</td>
<td>Code of Federal Regulations</td>
</tr>
<tr>
<td>CMS</td>
<td>Corrective Measures Study</td>
</tr>
<tr>
<td>CMIP</td>
<td>Corrective Measures Implementation Plan</td>
</tr>
<tr>
<td>CMTS</td>
<td>Chemical Material Tracking System</td>
</tr>
<tr>
<td>D&amp;C</td>
<td>Deactivation and Compliance</td>
</tr>
<tr>
<td>DI</td>
<td>Deionized Water</td>
</tr>
<tr>
<td>DOE</td>
<td>Department of Energy</td>
</tr>
<tr>
<td>DOT</td>
<td>Department of Transportation</td>
</tr>
<tr>
<td>EBR</td>
<td>Environmental Baseline Report</td>
</tr>
<tr>
<td>EPA</td>
<td>Environmental Protection Agency</td>
</tr>
<tr>
<td>EPCRA</td>
<td>Emergency Planning and Community Right-to-Know Act</td>
</tr>
<tr>
<td>ER</td>
<td>Environmental Restoration</td>
</tr>
<tr>
<td>FAC</td>
<td>Florida Administrative Code</td>
</tr>
<tr>
<td>FDEP</td>
<td>Florida Department of Environmental Protection</td>
</tr>
<tr>
<td>FPC</td>
<td>Florida Power Corporation</td>
</tr>
<tr>
<td>GE</td>
<td>General Electric</td>
</tr>
<tr>
<td>GEND</td>
<td>GE Neutron Devices</td>
</tr>
<tr>
<td>HAP</td>
<td>Hazardous Air Pollutant</td>
</tr>
<tr>
<td>HEPA</td>
<td>High Efficiency Particulate Air</td>
</tr>
<tr>
<td>HFC</td>
<td>Hydrofluorocarbon</td>
</tr>
<tr>
<td>HCFC</td>
<td>Hydrochlorofluorocarbon</td>
</tr>
<tr>
<td>HRS</td>
<td>State of Florida Department of Health and Rehabilitative Services</td>
</tr>
<tr>
<td>HSWA</td>
<td>Hazardous and Solid Waste Amendment</td>
</tr>
<tr>
<td>ICP</td>
<td>Inductive Coupled Plasma</td>
</tr>
<tr>
<td>IWNF</td>
<td>Industrial Wastewater Neutralization Facility</td>
</tr>
<tr>
<td>LAC</td>
<td>Lightning Arrester Connector</td>
</tr>
<tr>
<td>LAMB</td>
<td>Lithium Ambient Battery</td>
</tr>
</tbody>
</table>
ACRONYMS (Continued)

M&O  Management and Operating
MCL  Maximum Contaminant Level
MDA  Methylene Diisiline
MSDS Material Safety Data Sheets
NFPA National Fire Protection Association
OC  Organic Compound
OSHA Occupational Safety and Health Administration
PAO Pinellas Area Office
PCB Polychlorinated Biphenyls
PCIC Pinellas County Industry Council
PCU Pinellas County Utilities
PM Particulate Matter
POTW Publicly Owned Treatment Works
RAP Remedial Action Plan
R&D Research and Development
RCRA Resource Conservation and Recovery Act
RFA RCRA Facility Assessment
RFI RCRA Facility Investigation
RMMA Radioactive Materials Management Areas
RTG Radiisotopically-powered Thermoelectric Generator
RTV Room Temperature Vulcanizing Rubber
SARA Superfund Amendment and Reauthorization Act
SDWA Safe Drinking Water Act
SECS Stack Emission Control System
STP Site Treatment Plan
SWMU Solid Waste Management Unit
TCLP Toxicity Characteristic Leaching Procedure
TIG Tungsten Inert Gas
TRS Tritium Recovery System
UPS Uninterruptible Power Source
USFWS U.S. Fish and Wildlife Service
USGS United States Geological Survey
UST Underground Storage Tank
1.0 OVERALL SUMMARY

The Pinellas Plant has been part of the Department of Energy’s (DOE) nuclear weapons complex since the plant opened in 1957. In March 1995, the DOE sold the Pinellas Plant to the Pinellas County Industry Council (PCIC). DOE has leased back a large portion of the plant site to facilitate transition to alternate use and safe shutdown. The current mission is to achieve a safe transition of the facility from defense production and prepare the site for alternative uses as a community resource for economic development. Toward that effort, the Pinellas Plant Environmental Baseline Report (EBR) discusses the current and past environmental conditions of the plant site.

Information for the EBR is obtained from plant records. Historical process and chemical usage information for each area is reviewed during area characterizations. The information obtained is documented in an Area Characterization and Closeout Report. The area characterization and closeout process is described in more detail in Section 7.0. Updated information from area characterizations and closeout reports published through August 31, 1996 is included in this report. New information from upcoming area characterization and closeout reports will be included in future updates of the EBR.

More detailed information can be obtained from the documents referred to throughout the EBR, as well as from the documents listed in the Reference Section of this report. Specifically, the Pinellas Plant Annual Sitewide Environmental Report for Calendar Year 1995, the Pinellas Plant Environmental Monitoring Plan, and the Pinellas Plant Statement of Basis for Twelve Solid Waste Management Units Recommended for No Further Action contain additional environmental information surrounding the Pinellas Plant. These three documents may be requested from Ms. Sarah Hartson, Environmental Compliance Specialist with the DOE’s Pinellas Area Office (PAO), P.O. Box 2900, Largo, Florida, 33779, telephone (813) 545-6139.

The Pinellas Plant EBR is intended to satisfy the Comprehensive Environmental Response, Compensation, and Liability Act’s (CERCLA’s) requirements stated in Section 120(h) for property transferred by Federal Agencies.

1.1 Historical Operation

General Electric (GE) constructed the Pinellas Plant in 1956 for the production of neutron generators for the nation's nuclear weapons program. The Atomic Energy Commission purchased the Pinellas Plant from GE in 1957 and contracted them to manage and operate the site. GE Neutron Devices (GEND) served in this capacity until June 1992, at which time Lockheed Martin Specialty Components, Inc., (Specialty Components) (formerly Martin Marietta Specialty Components, Inc.) assumed operation of the plant. The major product lines at the plant included the following: neutron generators and detectors, Radioisotopically-powered Thermoelectric Generators (RTGs), specialty capacitors, vacuum switch tubes,
electromagnetic devices, thermal batteries, thermal ambient temperature batteries, frequency control devices, quartz digital accelerometers, Lightning Arrestor Connectors (LACs), ceramics, ferroelectric ceramics, foam support pads, and optoelectronics.

1.2 Plant Property

The Pinellas Plant is located on approximately a 100-acre site [Ref. 1] in the center of Pinellas County, Florida. Approximately 35 acres of the plant site are occupied by buildings and other developed areas. The remaining acreage consists of parking lots and undeveloped cleared grassy lands and three man-made ponds. Two of these ponds, the East and West, are identified as designated wetlands on the National Wetlands Inventory by the U.S. Fish and Wildlife Service (USFWS). A USFWS correspondence, dated July 25, 1991 (see Appendix A), identified the Federally listed species that may be on the Pinellas Plant site. These included three endangered and one threatened species. However, during a survey of the site in March 1992, no State or Federally listed threatened or endangered species were observed. The habitat at the Pinellas Plant site is therefore not considered critical to protected species due to their low dependence on the site [Ref. 2]. No historic or archaeological sites are located on the plant site based on correspondence, dated September 12, 1991, from the Florida Department of State Division of Historical Resources (see Appendix B).

1.3 Buildings

Approximately 24 buildings and structures are on the Pinellas Plant site (as shown in Figure 1-1). The plant occupies over 700,000 square feet of interior space, including manufacturing, laboratory, office, and support facilities. Building 100 is the largest of the plant facilities, with a total area of over 550,000 square feet on two stories. The other buildings are smaller, single-story masonry structures. Refer to Sections 2.0, 3.0, and 4.0 for more detailed descriptions of the buildings on the plant site.

1.4 Environmental Monitoring and Protection

The environmental monitoring program is specifically designed to detect radiological and nonradiological releases to the air, soil, and water and to determine the potential impacts to the public and environment. Environmental data are trended to verify progress of contaminated site cleanup and to provide early warnings of problematic operational releases. All monitoring is in accordance with Florida Department of Environmental Protection (FDEP) approved procedures and quality assurance protocols and with the Pinellas Plant Environmental Monitoring Plan [Ref. 3]. Both DOE and Specialty Components review these procedures regularly and update them to incorporate the latest technical and regulatory developments.
1.4.1 Environmental Radiological Monitoring Program

Both on site and in the environment surrounding the Pinellas Plant, the radiological monitoring program includes the sampling and analysis of: 1) air for tritium and plutonium, 2) wastewater and surface water for tritium, and 3) soil for plutonium. Plant personnel use this information to determine potential impacts to the public and the environment from plant operations.

The Pinellas Plant also maintains an active As Low As Reasonably Achievable (ALARA) program for environmental releases of radioisotopes that sets emission goals significantly lower than the amounts permitted by regulations.

In 1990, the DOE executed an Agreement In Principle (AIP) [Ref. 4] with the State of Florida Department of Health and Rehabilitative Services (HRS) for oversight of environmental radiological monitoring at the Pinellas Plant. The HRS operates an on-site sampling station that continuously samples the ambient air for tritium and plutonium and collects and analyzes on- and off-site surface water samples for tritium and on-site soil samples for plutonium.

1.4.2 Environmental Nonradiological Monitoring Program

The nonradiological monitoring program includes routine characterization of chemical emissions. The program is designed to: 1) verify compliance with the plant wastewater discharge permit, 2) detect contamination of groundwater, 3) determine the effectiveness of groundwater cleanup actions, and 4) demonstrate compliance with applicable regulations.

1.4.3 Superfund Amendments and Reauthorization Act (SARA) Title III Reporting

The Pinellas Plant reports annual toxic chemical inventories and release quantities as required by Sections 312 and 313 of the Superfund Amendments and Reauthorization Act (SARA) of 1986, Title III. These reports disclose plant chemical inventories, usage rates, and release quantities and are provided to Federal, State and local emergency planning committees and local fire authorities. Additionally, plant personnel submit Material Safety Data Sheets (MSDSs) to the local emergency planning committee, State Emergency Response Commission, and local fire departments according to Section 311 of SARA.
1.4.4 Quality Assurance

The Pinellas Plant Environmental Monitoring Plan [Ref. 3] identifies the environmental monitoring quality assurance activities that meet the requirements of 10 Code of Federal Regulations (CFR) 830.120 and DOE 5700.6. The Environmental Monitoring Plan identifies specific requirements to manage, perform, assess, and continuously improve environmental monitoring. This plan provides a systematic approach to satisfy DOE and regulatory agency requirements.

1.5 Environmental Restoration

1.5.1 Previous and Present Conditions

Environmental Restoration (ER) has been ongoing at the Pinellas Plant since the mid 1980s. The ER Program is focused on identifying and evaluating all areas of potential environmental concern and remediating those areas that warrant cleanup. The ultimate program goal is to restore the facility to a state suitable for industrial use. The Pinellas Plant is progressing rapidly toward achieving this goal, with activities currently initiated and/or planned at all sites where contaminants are detected above regulatory standards.
2.0 OVERVIEW OF BUILDINGS 400, 1200, AND 1400

Based on the Pinellas Plant's transition to alternate use, parts of the facility will be used by the PCIC, and other parts will be leased by the DOE until the end of its presence at the Pinellas Plant. Figure 2-1 shows the planned facility usage. Section 2.0 includes an overview of Buildings 400, 1200, and 1400. Figure 2-2 shows the historical Pinellas Plant growth and details each building's square footage and the year it was built.

2.1 Building 400

Building 400 is centrally located on the plant site and contains approximately 15,000 square feet. The original building had about 2,500 square feet and was built in 1968. Additions were made in 1978 (1,500 square feet), 1982 (7,000 square feet), and 1986 (3,500 square feet) (see Figure 2-2). It formerly contained facilities for the assembly and testing of RTGs. Production of these devices at the Pinellas Plant was stopped in 1992, and all plutonium heat sources were removed and shipped off site.

During 1994, activities were initiated to prepare Building 400 for occupancy by a commercial tenant. These activities included removing the utilities and communications that supported the building's independent security system, slightly modifying and increasing the size of the parking lot, flushing and characterizing drains, and abating all asbestos in the facility.

To date, Specialty Components personnel have not detected any lead-based paint inside or outside of Building 400. An indoor radon study, from late 1989 to early 1990, showed radon levels in Building 400 to be below the action levels of the Indoor Radon Abatement Act [Ref. 5]. The radiation exhaust ducting and stacks from past manufacturing processes were removed and properly disposed of. Radiological surveys of the building were performed by Specialty Components and HRS, Office of Radiation Control. The results of these surveys show agreement between the two sets of data and radiation levels within regulatory limits. The facility was upgraded to meet Federal, State, and local codes, such as National Fire Protection Association (NFPA) and Occupational Safety and Health Administration (OSHA) codes. There are no electrical transformers containing Polychlorinated Biphenyls (PCBs) in or around the building. Commercial tenants presently reside in Building 400.
Figure 2-2. Pinellas Plant Growth

FEBRUARY 1991
2.2 **Building 1200**

Building 1200 housed the Pinellas Plant security and communications operations, which included the following areas: locker rooms, shower, fitness room, eating/break room, meeting and office areas, indoor firing range and armory, and covered garages. Building 1200 was completed in 1988 and is approximately 28,250 square feet in size. This building formerly provided the security force with centralized operations. A commercial tenant presently resides in Building 1200.

Building 1200 included an armory containing weapons storage lockers, a workstation for the armorer, weapons cleaning equipment and solvents, and an ammunition storage vault. The indoor six-man firing range contains an auxiliary ventilation system, which becomes operational when the range is in use to maintain airborne lead levels below the OSHA personal exposure limit of 50 micrograms per cubic meter. This system has a flow rate of approximately 20,000 cubic feet per minute that exhausts air to the outside through a stack. This stack extends approximately 10 feet above the roof of the building. The ventilation system is considered an insignificant source of air pollution. It has not operated since October 1993. The firing range and ventilation ducts contain some surface contamination from unburned gun powder and lead, and the bullet trap contains lead from spent bullets; however, it is still serviceable as a small arms range.

To date, lead-based paint has not been detected inside or outside of Building 1200. An indoor radon study from late 1989 to early 1990 showed radon levels in Building 1200 to be below the action levels of the Indoor Radon Abatement Act [Ref. 5]. No radiological material has ever been present in Building 1200. In addition, there are no electrical transformers containing PCBs in or around the building. The only sources of asbestos were identified in putty on floor drains and mastic behind the baseboard. These are considered nonfriable and not a hazard to human health [Ref. 6].

The interior of the building also contains an emergency generator and a 30-gallon and a 15-gallon diesel fuel tank for the generator. An exterior 1,000-gallon diesel fuel tank, which currently contains fuel, resides on the north side of the building [Ref. 7].

All drains from the building run into the plant's sanitary drain system. Analyses of the building's discharge to the sanitary drain were within the limits set by the Pinellas County Utilities (PCU).

Building 1200 has been released to the PCIC for occupancy.
2.3 Building 1400

Constructed in 1989, Building 1400 is a 7,175-square foot concrete block facility formerly used for shipping and receiving materials at the Pinellas Plant. This facility was built to enhance plant security by allowing full on-site inspection of incoming material remote from sensitive and secure storage or manufacturing areas. The area around the building has ample parking and turn around space for deliveries.

The building had a conveyor system for automatic routing of packages to designated inspection stations. Building 1400's conveyor system has been removed, and portions of the building were remodeled for occupancy by a commercial tenant. There are no electrical transformers containing PCBs in or around the building.

Specialty Components personnel have not detected any lead-based paint inside or outside of Building 1400. An indoor radon study from late 1989 to early 1990 showed radon levels in Building 1400 to be below the action levels of the Indoor Radon Abatement Act [Ref. 5]. In addition, Building 1400 does not contain any asbestos [Ref. 6].

Also, Building 1400 has a drum storage area that was built to contain any releases from receipt of leaky drums. The containment for this area drains into a holding tank on the outside of the building. According to interviews with employees who worked in Building 1400, this containment system was never used.

Building 1400 has been released to the PCIC for occupancy.
Section 3.0 includes an overall summary of the Pinellas Plant’s Building 100 areas that have been characterized. Building 100 is the largest of the Pinellas Plant facilities, with a total area of 550,000 square feet on two stories. Building 100 area information includes processes and operations, chemical usage, exhausts, drains, and the area’s current and planned status.

3.1 **Building Summary**

Building 100 provides space for manufacturing, engineering, and administrative support services. The basic structure of Building 100 consists of a steel frame with moment resisting trusses; some portions have a cross-braced frame. Perimeter shear walls are vertically reinforced approximately every 4 feet. The roof system is metal deck with insulation and built-up roofing. Interior walls are a combination of concrete masonry unit, metal steel, and gypsum wallboard.

Lead-based paint is also assumed to be present in Building 100. Internal abatement of lead-based paint is performed as it is discovered. All lead-based paint on the exterior of Building 100 was removed in 1991.

An indoor radon study from late 1989 to early 1990, showed radon levels in Building 100 to be below the action levels of the Indoor Radon Abatement Act [Ref. 5]. There are no electrical transformers containing PCBs in or around the building.

Chlorofluorocarbon (CFC) refrigerants are used in heat pumps, air conditioners, freezers, refrigerators, and other similar equipment that support Building 100 operations. The Clean Air Act Amendments of 1990 require a cessation in production of CFCs in the United States by the end of 1995. The affected CFC refrigerants used in the above mentioned equipment are: R-11, R-12, R-13, R-114, R-502, and R-503. As CFC refrigerant shortcomings occur, the Pinellas Plant will use the remaining new and recovered refrigerants and will convert to alternate or approved substitute refrigerants when appropriate [Ref. 8].

Radioactive materials existing in Building 100 are associated with product manufacturing, storage, and testing. Six areas within Building 100 are considered Radioactive Materials Management Areas (RMMAs), which indicate the potential for unconfined radioactive materials or emissions [Ref. 9]. See Figure 3-1, which shows the five RMMAs that are located on the first floor of Building 100. The sixth RMMA is Area 132, Tritium Recovery System (TRS)/Stack Emission Control System (SECS), which is located on the second floor of Building 100. The Wastewater Neutralization Facility (Building 550) is also designated an RMMA, see Figure 1-1.
Area 182 has ceased production and is undergoing closure activities. However, it is considered an RMMA because there is still contamination in the area, and it will be closed out according to the DOE performance objective protocol. Areas 107, 108 and 109 ceased production in 1996, and the last tritium bed (source of tritium for production) was shipped from the plant on June 19, 1996. For more information regarding cleanup of these areas, see Section 3.2.

The following processes were conducted in Building 100:

- Neutron generator manufacturing
- Neutron detector manufacturing
- Thermal battery manufacturing
- Specialty capacitor manufacturing
- Calcium chromate manufacturing
- Crystal resonator manufacturing
- LAC manufacturing
- Vacuum switch tube manufacturing
- Ceramics manufacturing
- Magnetics manufacturing
- Foam support pad manufacturing
- Resonant accelerometer manufacturing
- Clock oscillator manufacturing
- Iron disulfide processing
- Resin casting
- Machine shop operations
- Tool room operations
- Spray painting (in booth)
- Research and development (R&D)
- Test equipment construction
- Metalizing, plating, chemical processing, and furnace firing
3.2 Historical Information and Present Status of Building 100 Areas

Some areas within Building 100 do not warrant a detailed description due to their low hazard activities (i.e., offices, cafeteria, storage, etc.); such areas would not pose any greater impact to the environment than a standard office complex. These nondescript areas include personnel offices, telephone equipment rooms, records storage, food service areas, break rooms, janitorial supply areas, restrooms, conference rooms, and copier and computer rooms. Janitorial supplies include, but are not limited to, detergents, cleaners, bleach, and floor stripper. Standard office supplies used in these areas include, but are not limited to, copier toner and printer cartridges, correction fluid, marker board cleaner, and glue. Area Characterization and Closeout Reports were prepared for these areas, but no detailed information is provided in this report. These areas, however, are identified in Table 3-1.

Table 3-1. Building 100 Areas that Pose No Impact to the Environment

<table>
<thead>
<tr>
<th>Area</th>
<th>Rooms</th>
<th>Closeout Report Date</th>
<th>Report Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>106</td>
<td>JJ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>112</td>
<td>JJ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>113</td>
<td>JJ</td>
<td>July 9, 1996</td>
<td>Final</td>
</tr>
<tr>
<td>114</td>
<td>JJ</td>
<td>September 27, 1996</td>
<td>Final</td>
</tr>
<tr>
<td>119</td>
<td>R1, R2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>123</td>
<td>R1, R2</td>
<td>February 26, 1996</td>
<td>Final</td>
</tr>
<tr>
<td>129</td>
<td>A,B,C</td>
<td>June 24, 1996</td>
<td>Interim</td>
</tr>
<tr>
<td>132</td>
<td>JJ, JK, R1, R2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>133</td>
<td>A-I</td>
<td>July 9, 1996</td>
<td>Interim</td>
</tr>
<tr>
<td>134</td>
<td>A-L, N-W, JJ, R1, R2, V V</td>
<td>August 2, 1996</td>
<td>Interim</td>
</tr>
<tr>
<td>136</td>
<td>A-L, N-AD, JJ, R1, R2, V V</td>
<td>August 2, 1996</td>
<td>Interim</td>
</tr>
<tr>
<td>141</td>
<td>JJ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>145</td>
<td>JJ, R1, R2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>146</td>
<td>JJ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>148</td>
<td>JJ, R1, R2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>149</td>
<td>R1, R2, VV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>153</td>
<td>A-D, R1, R2</td>
<td>July 26, 1996</td>
<td>Final</td>
</tr>
<tr>
<td>154</td>
<td>D</td>
<td>July 26, 1996</td>
<td>Final</td>
</tr>
<tr>
<td>159</td>
<td>B-D</td>
<td>June 7, 1996</td>
<td>Final</td>
</tr>
<tr>
<td>169</td>
<td>A,B,R1,R2</td>
<td>June 19, 1996</td>
<td>Final</td>
</tr>
<tr>
<td>170</td>
<td>A-L, N-Z, R1,R2</td>
<td>August 23, 1996</td>
<td>Interim</td>
</tr>
<tr>
<td>174</td>
<td>A-L, N-AD</td>
<td>March 7, 1996</td>
<td>Final</td>
</tr>
<tr>
<td>Area</td>
<td>Rooms</td>
<td>Closeout Report Date</td>
<td>Report Status</td>
</tr>
<tr>
<td>------------</td>
<td>----------------</td>
<td>----------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>176</td>
<td>R1, R2</td>
<td>February 5, 1996</td>
<td>Final</td>
</tr>
<tr>
<td>179</td>
<td>JJ, R2</td>
<td>November 30, 1995</td>
<td>Final</td>
</tr>
<tr>
<td>189</td>
<td>A-K</td>
<td>February 26, 1996</td>
<td>Final</td>
</tr>
<tr>
<td>190</td>
<td>A-D, O,P,R</td>
<td>June 24, 1996</td>
<td>Final</td>
</tr>
<tr>
<td>190</td>
<td>E-L, N,Q,S,U</td>
<td>March 26, 1996</td>
<td>Final</td>
</tr>
<tr>
<td>190</td>
<td>T</td>
<td>June 26, 1996</td>
<td>Interim</td>
</tr>
<tr>
<td>190</td>
<td>VV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>194</td>
<td>JJ, R1, R2</td>
<td>February 12, 1996</td>
<td>Final</td>
</tr>
<tr>
<td>325</td>
<td>JJ, R1, R2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>351</td>
<td>R1, R2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>357</td>
<td>JJ, R1, R2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>102 Mezzanine</td>
<td>A-F, JJ</td>
<td>May 17, 1996</td>
<td>Final</td>
</tr>
<tr>
<td>103 Mezzanine</td>
<td>A-G</td>
<td>July 16, 1996</td>
<td>Final</td>
</tr>
<tr>
<td>104 Mezzanine</td>
<td>A-F</td>
<td>July 22, 1996</td>
<td>Final</td>
</tr>
<tr>
<td>105 Mezzanine</td>
<td>A-J, VV</td>
<td>June 28, 1996</td>
<td>Interim</td>
</tr>
<tr>
<td>106 Mezzanine</td>
<td>A-G</td>
<td>July 16, 1996</td>
<td>Final</td>
</tr>
<tr>
<td>112 Mezzanine</td>
<td>A-D</td>
<td>July 16, 1996</td>
<td>Final</td>
</tr>
<tr>
<td>150 Mezzanine</td>
<td>A-L, N, South Maintenance Chase</td>
<td>May 23, 1996</td>
<td>Final</td>
</tr>
<tr>
<td>191 Mezzanine</td>
<td>VV</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This subsection provides historical information on the areas that have been characterized, to date, within Building 100. Processes that may impact the environment are discussed. The information regarding the areas is provided for assessment and evaluation of the area. Discussed below is an explanation of, and the sources of information used, for each category describing the areas.

**Area Number** - The area number is the current designation of the area as indicated on Building 100 layout plans (see Figures 3-2 and 3-3). Only areas with environmental impacts are included. Areas Numbered 306 through 353 are located in the former Building 300, which is now considered part of Building 100. Most areas are divided into subareas and are also indicated on the layouts.
Processes and Operations - This is a description of the types of processes and operations performed in the area during years representative of normal production (pre 1992). This is not intended to be a chronological perspective of all activities performed in a given area since it was built. Some areas have changed operations many times, making a chronological history difficult. In general, the operations and process descriptions include the most recent and significant use of the area. This information was obtained primarily through personnel interviews and from the building characterization files.

Chemical Usage - The chemical usage list information is primarily from the building characterization files. It is not intended to be a complete list of all the chemicals ever used in a particular area. However, this report does include a list of all the chemicals known to have been used in significant quantities and those that are known to have the greatest toxicity or hazard associated with their use. Also, the chemicals were not necessarily used at the same time as the processes and operations described above. Knowledge of chemical uses is important for characterization of potential contamination of equipment and area surfaces. For more information regarding chemical usage, refer to the building characterization files.

Exhausts - This information describes the roof openings that were used for discharging air emissions from the area. The information gives a general idea of the number of chemical and radiological exhaust connections present during years representative of normal production. It does not give an accurate description of the current configuration of the chemical and radiological exhaust systems, as these are very dynamic, changing with plant rearrangements and with preparations of areas for future use. Exhaust information was obtained from the Air Construction Permit Application [Ref. 10], which was submitted to the FDEP in October 1992.

Drains - The Pinellas Plant has four drain systems: the storm drains, sanitary drains, chemical drains, and radiological drains (also known as health physics drains). In 1994, an above-ground radiological drain system was installed to replace the old underground system. The east leg of the old radiological drain system has been flushed, sampled, permanently sealed with grout, and labeled. The west leg is in the process of being flushed/abandoned. Chemical drains on the west end of the plant have been flushed, capped and labeled (ABANDONED CHEMICAL DRAIN - DO NOT USE). A project is underway to install an above-ground chemical drain system; the underground chemical drains will be flushed, capped, and abandoned. For more information on chemical and radiological drain decontamination, see Chapter 7. Storm drains collect and drain precipitation from the roofs and paved areas of the plant. All process wastewater discharges to the storm drain and storm water collection systems were eliminated. For more information about the storm drain system, refer to the Pinellas Plant National Pollutant Discharge Elimination System Storm Water Discharge Permit Application submitted to the Environmental Protection Agency (EPA) in 1992 and revised in 1994 [Ref. 11].
Status - Status is a summary of each area, including its current or planned use. For additional information on Deactivation and Compliance (D&CC) activities and the Area Characterization and Final Closeout Report, see Section 7.

3.2.1 Area 103A-G

Processes and Operations

Area 103A-G operations involved subassembly of mechanical and electrical components, including printed circuit boards, for product testers prior to final assembly in Area 150. A portion of the area was also a stockroom for mechanical and electrical components. Processes included electroplating, electroless plating, photolithography developing, drilling, routing, engraving, bead blasting, spray painting, aluminum anodizing (Iridite), etching, and oven curing and drying.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- trichloroethane
- diethanolamine
- sulfuric acid
- nitric acid
- ammonium hydroxide
- flammable liquids
- mercury
- photographic developer
- copper plating solution
- tritium
- ammonia
- solder
- sodium hydroxide
- hydrochloric acid
- chromic acid
- ammonium persulfate
- potassium hydroxide
- lead
- silver vanadate
- alkaline stripper
- methylene chloride
- trichloroethylene
- alcohol

Exhausts

Exhaust from the paint spray booth discharged through a filter to roof opening 535. Other equipment was exhausted through roof opening 285.

Drains

There are connections to the chemical drain system.

Status

In 1996, Area 103A-G (Equipment Fabrication and Test, Areas 103 and 150) was relocated to Areas 325, 327, 330, 331, and 336. Area 103A has been cleaned, characterized, and closed out as part of D&C, and the Area
Characterization and Final Closeout Report was issued July 16, 1996. Subareas 103B-G are available for D&C.

3.2.2 Area 104A-L, N-R

Processes and Operations

The Machine Shop was used to fabricate metal components for many Pinellas Plant product lines. Processes included cutting, milling, grinding, deburring, sandblasting, vapor blasting, solvent degreasing, aqueous degreasing, hydroforming, soldering, brazing, welding, electropolishing, and oven drying. The Machine Shop is presently operating as a Service Center to fabricate parts for other businesses.

In 1988, a trim (machine coolant) treatment process was installed in Subarea 104H to eliminate machine coolant waste. An acid is added to precipitate heavy metals, the pH is adjusted, and then a coagulant is added to bind the metals. The coolant is then filtered and the wastewater is tested and discharged into the chemical drain system. The solid residue is tested for and passes the Toxicity Characterization Leaching Procedure (TCLP) test and is disposed of as a nonhazardous waste.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- sulfuric acid
- methylene chloride
- lead
- methyl ethyl ketone
- phosphoric acid
- hydrofluoric acid
- mercury
- trichloroethane
- sodium hydroxide
- trichlorotrifluoroethane (Freon®)
- boron nitrite
- nitric acid

Exhausts

Chemical exhaust was vented through roof openings 153, 292, 295, 366, 367, 372, and 375.

Drains

There are connections to the sanitary and chemical drain system. Chemical Liftstation Number 9 is located in the area.

Status

The machine shop continues to operate at this time. The area is planned for occupancy by a PCIC tenant by October 1, 1996.

© E.I. du Pont de Nemours and Co. Inc.
3.2.3 Area 105A-K

Processes and Operations
Area 105 had multiple uses. In Subareas A-D, ceramic logs were manufactured for use in other products throughout the plant. Ceramic powders were mixed and weighed in an exhaust hood and processed (mixed with water) in a ball mill. The resulting powder slurry was then pressurized and fed to a spray dryer, where it was atomized, using compressed air and dried to a powder with hot air from a natural gas fired burner. The dry ceramic powder was then formed into pellets and logs, using stokes (punch and die) and isostatic (wet process) presses. Additional processes performed in the area included pre-firing, green machining (machining prior to firing), and oven drying. Further ceramics processing (metalizing, firing, and final machining) was performed in Areas 117, 145, and 146. Subareas E and F were used for incoming test and inspection (mechanical and electrical testing), and Subareas G-K were used for shipping and receiving.

Chemical Usage
A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- silica
- magnesium hydroxide
- amyl acetate
- trichloroethane
- methylene chloride
- butyl carbitol acetate
- aluminum oxide
- calcium carbonate
- Freon®
- trichloroethene (trichloroethylene)
- acetone

These chemicals were used in the ceramics area. Chemicals passing through Shipping and Receiving are not listed.

Exhausts
Equipment was exhausted through roof openings 234 and 393.

Drains
There are connections to the sanitary and chemical drain systems.

Status
Incoming Test and Inspection relocated to Area 116C in 1995. Ceramics operations are being consolidated into Areas 117, 145, and 146. Shipping and receiving activities are expected to continue. Also, a project to temporarily move the maintenance stockroom (Area 118) and the general stockroom (Area 152) into the south end of Area 105 is planned.
3.2.4 Area 106A-C

*Processes and Operations*

The Tool Room was used to store, clean, and repair tools that were utilized throughout the plant. Specific processes included grinding, machining, vapor degreasing, soldering, and brazing.

*Chemical Usage*

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- methylene chloride
- beryllium
- acetone
- trichloroethene (trichloroethylene)
- mercury
- lead

*Exhausts*

Chemical exhaust was vented through roof opening 88A.

*Drains*

There are connections to the chemical drain system.

*Status*

Specialty Components continues to occupy this area. The future use of this area has yet to be determined.

3.2.5 Area 107A-G

*Processes and Operations*

This was the neutron generator tube assembly and component preparation area, and contained a clean room (Subarea 107B) and a downflow room (Subarea 107E). Processes included mechanical assembly, Tungsten Inert Gas (TIG) and plasma welding, x-ray analysis, metal evaporation, and vacuum firing.
Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- alcohol
- oxalic acid
- titanium
- trichlorotrifluoroethane (Freon®)
- acetone
- hydrofluoric acid
- tritium
- amyl acetate
- vanadium pellets
- Fluorinert
- mercury
- nitric acid

Exhausts

Radiological exhaust in the area was discharged through roof opening 82, which is the main radiological exhaust stack. There was a potential for tritium or tritium oxide release.

Drains

There are connections to the chemical and new above-ground radiological drain systems. Connections to the old underground radiological drain system have been flushed, permanently sealed with grout, and labeled.

Status

Operations in this area ceased in 1996. A project is being designed to dismantle and clean the area by September 1997. For additional information, see Section 7.2.5, Area 108 Cleanup Project, and Appendix C, Pinellas Plant Radiological Area Disposition Program Plan.

3.2.6 Area 108A-L, N

Processes and Operations

The Tube Exhaust area performed vacuum processes to tritium load neutron tubes. Processes included tritium film loading, deuterium film loading and bulk sample loading, trace gas analysis, tritium bed loading/tank unloading, tritium bed sample analysis, tritium loaded thin film analysis, loading and unloading of special tritium storage fixtures that contained depleted uranium, uranium bed oxidation, and laser welding.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- alcohol
- scandium
- tritium
- silicone
boric acid
toluene
tapping compound
desiccant silica gel
methylene chloride
trichlorotrifluoroethane (Freon®)
hydrochloric acid
hydrofluoric acid
sulfuric acid
nitric acid
titanium
acetone
mercury
depleted uranium
deuterium

Exhausts

Loaders and other exhaust systems were vented through the TRS to the main radiological exhaust stack. Room air is vented directly through the main radiological exhaust stack. The area is maintained under negative pressure to prevent the spread of radiological contaminants.

Drains

There are connections to the sanitary, chemical, and new above-ground radiological drain systems. Connections to the old underground radiological drain system have been flushed, permanently sealed with grout, and labeled.

Status

Operations in this area ceased in 1996. A project is being designed to dismantle and clean this area by September 1997. For additional information, see Section 7.2.5, Area 108 Cleanup Project, and the Pinellas Plant Radiological Area Disposition Program Plan (Appendix C).

3.2.7 Area 109A-J

Processes and Operations

This area was used for the production of magnetics. Parts and materials manufactured in this area were sent to other areas for assembly and testing. Processes included chemical mixing, vacuum de-aerating, encapsulating, oven curing, machining, laser marking, and component testing. The area was also used for radiological components leak testing.
Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- trichloroethene (trichloroethylene)
- Freon®
- polyurethane encapsulant
- urethane resin
- N-Methylpyrrolidinone
- Isoverre (chemical stripper)
- krypton-85
- tritium
- methylene dianilene (MDA)
- urethane casting elastomer
- toluene diisocyanate
- lead
- thinner

Exhausts

There were chemical and radiological exhausts in the area. The chemical exhaust was discharged through roof openings 527 and 528; the radiological exhaust vented to the main stack.

Drains

There are connections to the new above-ground radiological drain system. Connections to the old underground radiological drain system have been flushed, permanently sealed with grout, and labeled.

Status

Specialty Components continues to occupy this area. Subareas 109 F, G, H, I, and J are being cleaned as part of the Area 108 Cleanup Project.

3.2.8 Area 110A-L

Processes and Operations

This area had multiple uses. Subareas A-D were used as an optoelectronics production facility. Processes included vapor degreasing, ultrasonic degreasing, assembly, laser welding, laser engraving, hydrogen firing, helium leak detection, epoxy encapsulation, and soldering. Subarea 110C contains a downflow tent. Subareas E, F, G, and I were used for magnetics development. Processes included coil winding, lead stripping and timing, lead cleaning of solder residue, soldering, resin casting, curing, assembly, and testing. Subareas H, I, K, and L served as production stockrooms and were used to receive, store, and issue war reserve production parts, explosives, and refrigerated chemicals. Subarea 110F contained a calcium chromate waste tank prior to 1984.
Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- trichloroethane
- polyurethane encapsulant
- polysiloxane
- lithium chloride
- fluorocarbon release agent
- heat powder
- calcium chromate
- hydrofluoric acid
- triethylenetetramine
- diethanolamine
- Isoverre (chemical stripper)
- iron disulfide
- flammable liquids
- trichloroethene (trichloroethylene)
- trichlorotrifluoroethane (Freon®)
- toluene
- methylene chloride
- xylene
- toluene diisocyanate
- mercury

Exhausts

Equipment exhaust discharged through roof openings 522, 521, 524, 528, and 637.

Drains

There are connections to the chemical drain system. One chemical drain connection in Subarea 110F was flushed, capped, and labeled (ABANDONED CHEMICAL DRAIN - DO NOT USE).

Status

Operations have ceased. Subareas 110E, F, and I have been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued February 26, 1996.

3.2.9 Area 111A-H

Processes and Operations

This area was used for magnetics production. Processes included coil winding, encapsulation (resin mixing, de-aerating, mold pouring, and curing), soldering, machining, cutting, laser marking, assembly, spray coating, ultrasonic cleaning, plasma cleaning, lead stripping and tinning, and thermal testing. Processes in Subarea 111H used MDA, a suspected carcinogen.
Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- methylene chloride
- toluene diisocyanate
- halogenated degreasers
- Freon®
- polyurethane coating
- polysiloxane
- acetone
- Fluorinert
- flammable liquids

- Adiprene
- Isoverre (chemical stripper)
- trichloroethene (trichloroethylene)
- methylene dianilene (MDA)
- ammonium bifluoride
- alcohol
- trichlorotrifluoroethane (Freon®)
- toluene

Exhausts

Chemical exhausts discharged through roof openings 528, 532, 533, 584, 585, 586, 587, 588, 590, 591, 645, 646, and 903.

Drains

There are connections to the chemical drain system.

Status

Specialty Components continues to occupy this area.

3.2.10 Area 112A-K

Processes and Operations

This area had multiple uses. Subareas B, C, D, E, F, and H were used for the assembly of neutron generators and for the production of subassemblies for generators. Processes included vapor blasting, pencil blasting, ultrasonic cleaning, ink and epoxy curing, laser engraving, soldering and flame spraying. Subareas A, G, and K served as stockrooms and were used to receive, store, and issue war reserve production parts and for records retention. Subarea I was an employee breakroom.
**Chemical Usage**

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- methyl alcohol
- tritium
- trichloroethylene (trichloroethene)
- toluene diisocyanate
- Freon®
- toluene
- methylene dianilene (MDA)
- acetone
- amyl acetate
- methyl ethyl ketone
- diethanolamine

- Adiprene
- quartz abrasive
- methylene chloride
- flammable liquids
- heat powder
- tin/lead solder
- cyanides
- Sylgard
- triethylenetetramine
- piperdine
- isopropyl alcohol

**Exhaust**

Chemical exhausts discharged through roof openings 82, 108, 202, 244, 245, 344, 443, 541, 641, 530B, and 1263.

**Drains**

Chemical drains in Subarea 112B have been flushed, capped, and labeled (ABANDONED CHEMICAL DRAIN - DO NOT USE).

**Status**

Operations have ceased. Subareas B, D, E, F, and H have been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued May 30, 1996.

**3.2.11 Area 113A-C**

**Processes and Operations**

This second floor area was used as an environmental chemistry laboratory, contamination control laboratory, and later as a solder training facility.
Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- alcohol
- lead solder
- Freon® 113
- asbestos (floor tile mastic)
- acids
- liquid scintillation fluid
- D-limonene
- toluene
- acetone
- tritium
- Plutonium 242 (trace amounts)
- chromerge

Exhausts

Chemical exhausts were discharged through roof openings 1 and 1249.

Drains

There are connections to the sanitary drain system.

Status

Operations have ceased. The area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued July 9, 1996.

3.2.12 Area 114A-J

Processes and Operations

The operation of this area was final inspection and test. Processes included x-ray analysis, film developing, and film reading. Subarea 114E contains a silver recovery unit for processing photographic chemicals prior to release to the chemical drain system. Subarea I was used for product storage and Subarea J was a shelf life room used to store products under the Shelf Life and Stockpile Evaluation Programs.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- explosives
- Freon®

Exhausts

There are chemical exhausts in the area.
Drains

There are connections to the chemical drain system.

Status

In 1995, the Nondestructive Testing Laboratory relocated to this area from Areas 161 and 194. The Industrial Chemistry Laboratory was relocated to this area from Area 160. For additional information on these operations, see Section 3.2.38, 3.2.39, and 3.2.55.

3.2.13 Area 115A-H

Processes and Operations

This second floor area was a laboratory for photographic developing, layout, and photo finishing. Adhesive spray was applied to posters prepared for visual presentation. Equipment included developer tanks, film processors, and an adhesive spray station.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

photographic chemicals

Exhausts

Equipment vents through roof openings 2 and 615.

Drains

There are connections to the chemical drain system.

Status

Specialty Components continues to occupy this area.

3.2.14 Area 116A-I

Processes and Operations

The operations in this area included capacitor production, LAC potting and assembly, and storage retrieval. Processes included capacitor winding, filling, and testing; LAC assembly; resin encapsulation; vacuum curing; contact resistance testing; laser welding; metal spraying; and Freon® vapor degreasing. Subareas 116A and B contain downflow tents. Subarea 116H contains an automatic storage and retrieval system.
Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- ceramic powders
- Freon®
- acetone
- flammable liquids
- alcohol
- titanium dioxide granules
- silane coupling agent
- diethanolamine
- amyl acetate
- trichloroethane
- methylene dianilene (MDA)
- methylene chloride
- polyurethane encapsulant
- Varistor granules
- toluene diisocyanate

Exhausts

Equipment exhaust discharges through roof openings 77, 80, 444, 531, 595, 592, and 1325.

Drains

There are connections to the sanitary and chemical drain system.

Status

In 1995, Incoming Inspection and Test (Area 116C) and Facilities Maintenance were relocated in this area from Areas 105 and 124. For additional information on these operations, see Sections 3.2.3 and 3.2.19.

3.2.15 Area 117C, F, and P

Processes and Operations

This area was used for ceramics production and subassembly. Subarea 117P was a downflow room, where ceramic parts were plated with nickel, gold, and copper. Subarea 117C was for metalizing, a process where liquid slurry is applied to ceramic parts in preparation for plating. Subarea F was the furnace room, where hydrogen firing, vacuum firing, and sintering were performed. Other processes performed in area 117 included gold stripping and screen printing.
Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- methylene chloride
- alcohol
- amyl acetate
- methyl ethyl ketone
- ammonium bifluoride
- potassium gold cyanide
- sulfuric acid
- nitric acid
- potassium hydroxide
- toluene diisocyanate
- trichloroethene (trichloroethylene)
- acetone
- Bright Dip
- potassium permanganate
- nickel cyanide
- hydrochloric acid
- hydrofluoric acid
- flammable liquids
- toluene

Exhausts

Equipment vents through roof openings 136, 381, 385, and 389.

Drains

There are connections to the sanitary and chemical drain system.

Status

Operations in Subareas 117C and 117P have ceased. Furnaces in Subarea 117F have been relocated to Area 140. Area 117 is planned to become part of an area occupied by a PCIC tenant.

3.2.16 Area 118A and MA

Processes and Operations

This area is a maintenance stockroom with a mezzanine (118MA) for additional storage space and it also contains a laundry area. At one time, it was also used for incoming test and inspection. No production activity occurred in the area.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- Freon®
- methyl ethyl ketone

Exhausts

There are no chemical exhausts in the area.
Drains

Connections to the chemical drain system have been flushed, capped, and labeled (ABANDONED CHEMICAL DRAIN - DO NOT USE).

Status

Areas 118 and 124 have been converted into a large storage area occupied by Specialty Components. The mezzanine (118MA) was removed.

3.2.17 Area 122A-E

Processes and Operations

Subarea B was a laboratory involved in air sampling and analysis, particulate identification, and contamination control. Other areas were used for offices and storage.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- Freon®
- acetate
- alcohol
- diethanolamine

Exhausts

Chemical exhaust vented through roof opening 404.

Drains

There are connections to the sanitary drain system. Connections to the old underground radiological drain system have been flushed, permanently sealed with grout, and labeled.

Status

This area has been relocated in Area 348D to support D&C cleanup.

3.2.18 Area 123A-D

Processes and Operations

Subareas A and B were offices for utilities personnel. The Equipment Calibration and Maintenance Shop was located in Subareas C and D. Equipment Calibration and Maintenance repaired, calibrated, and maintained electromechanical and vacuum equipment used throughout the plant.
Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- acid
- mercury
- acetone
- alcohol
- developer
- dimethyl polysiloxne silane
- ethanedianmine
- hydrogen sulfide
- ferric oxide
- adhesive
- potassium hydroxide
- propenoic acid, butyl ester
- sodium hypochlorite
- silicon dioxide
- lead solder
- styrene butadiene copolymer
- toluene

Exhausts

Chemical exhaust discharged through roof opening 307.

Drains

There are connections to the sanitary drain system. Connections to the chemical drain system have been flushed, capped, and labeled (ABANDONED CHEMICAL DRAIN - DO NOT USE).

Status

In 1996, Computer Services was relocated to Area 131. This area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued February 26, 1996.

3.2.19 Area 124A-G

Processes and Operations

Facilities Maintenance was responsible for operation, maintenance, and repair of equipment and systems (air conditioning, piping, electrical, etc.). They also performed small construction projects and plant rearrangements. This area contained a carpentry shop, sheet metal shop, weld shop, electrical shop, and office space for the Facilities Maintenance organization. Processes included cutting, drilling, laminating, painting, metal bending, metal braking, metal shearing, hole punching, pipe cutting and threading, welding (arc, mig, and TIG), metal burning, and soldering. There was also a mezzanine (Areas 124 MA, MB, and MC) above the south end of the shop, which provides office space for maintenance personnel.
Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- lead
- methylene chloride
- Freon®
- trichloroethane
- toluene
- adhesives
- mercury
- methyl ethyl ketone
- various acids

Exhausts

Equipment exhaust was discharged through roof opening 313.

Drains

There are connections to the sanitary drain system. Connections to the chemical drain system have been flushed, capped, and labeled (ABANDONED CHEMICAL DRAIN - DO NOT USE).

Status

This area was converted into a large storage area. The mezzanine was removed. Facilities Maintenance was relocated to Area 116 in 1995.

3.2.20 Area 125A

Processes and Operations

Originally, this area was a health physics laboratory and later a chemistry laboratory. More recently, it has been used as office space for various departments.

Chemical Usage

Many chemicals were used in small quantities when the area served as a laboratory. However, this was many years ago (1957 to 1964), and records identifying specific chemical usage are not available.

Exhausts

There is currently no chemical exhaust in the area.

Drains

There are connections to the sanitary drain system. Connections to the old radiological drain system have been flushed, permanently sealed with grout, and labeled.
Status

Specialty Components continues to use this area for office space.

3.2.21 Area 126A

Processes and Operations

This area was used as a glass shop and for neutron generator tube processing. Processes included vacuum firing, vapor blasting, and ultrasonic cleaning. The operation was moved to Area 107 in 1988, and the area was then used for storage and as a construction staging area for subcontractors.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- alcohol
- acetone

Exhausts

There is currently no chemical exhaust in the area.

Drains

There are connections to the chemical drain systems.

Status

Specialty Components continues to use the area for equipment storage. In 1994, a liftstation was installed in the north east corner, as part of the new above-ground radiological drain system. The liftstation receives radiological wastewater from various sumps on the east end of Building 100 and pumps it to the health physics storage tanks west of Building 100.

3.2.22 Area 127A-C

Processes and Operations

Subarea C was part of the Standards Laboratory and was used for calibrating optoelectronic devices (e.g., laser detectors and photo diodes). Subareas A and B were the mailroom and technical support offices, respectively.
Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- methyl ethyl ketone
- acetone
- photographic chemicals

Exhausts

There is currently no chemical exhaust in the area.

Drains

Connections to the old underground radiological drain system have been flushed, permanently sealed with grout, and labeled.

Status

Specialty Components continues to occupy this area.

3.2.23 Area 128A/131A

Processes and Operations

Final Test and Assembly was used for testing neutron tubes, neutron generators, and electronic components.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- lead
- Freon®
- alcohol
- Fluorinert
- toluene

Exhausts

There were no chemical exhausts in the area.

Drains

Area 131 has connections to the sanitary drain system.

Status

Computer Services was relocated to Area 131 from Area 123. Area 128 is available for D&C.
3.2.24 Area 130A-C

Processes and Operations

Subarea 130A was the Product Tester Support Laboratory for the calibration and maintenance of test equipment. The main radiological exhaust stack is located in the northwest corner of this area. Subareas B and C were support offices.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- toluene
- mercury
- Freon®
- alcohol

Exhausts

There were no chemical exhausts in the area.

Drains

There are no connections to the drain systems.

Status

Specialty Components continues to occupy this area.

3.2.25 Area 132 J, K, L, and N

Processes and Operations

Subareas J, K, and L contain TRS equipment for monitoring Areas 107, 108 and 109 and for monitoring air exhausted through the main (east) radiological stack. Subarea N was the east stack fan/room.

Chemical Usage

There are no records available for chemical usage in this area.

Exhaust

There are connections to the main (East) radiological exhaust stack.

Drains

There are connections to the new above-ground radiological drain system.
Status

This area will be dismantled and cleaned as part of the Area 108 Cleanup Project. For more information, see Section 7.2.5, Area 108 Cleanup Project, and the Pinellas Plant Radiological Disposition Program Plan (Appendix C).

3.2.26 Area 137 A-G

Processes and Operations

This area housed electrical transformers, switchgears, telephone batteries and rectifiers, and the public address support system.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- friable asbestos (in overhead)
- polychlorinated biphenyls
- potassium hydroxide
- transformer oil
- lead/sulfuric acid batteries
- nickel/cadmium batteries

Exhausts

There is currently no chemical exhaust in the area.

Drains

There are connections to the sanitary drain system.

Status

The area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued July 26, 1996.

3.2.27 Area 138A-F

Processes and Operations

There were several operations in this area. Subareas A-C were used for final assembly of neutron generators. Processes included electron beam welding, vapor blasting, adiprene potting (encapsulation), laser engraving, ink stamping, painting, and final machining. Subarea D was used for classified parts production and Subarea F was a liquid nitrogen filling station. Subareas E and G were the defect analysis laboratory for LACs, capacitors, optoelectronics, and electronic component analyses.
Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- alcohol
- methylene dianilene (MDA)
- toluene diisocyanate
- lead
- acetone
- methylene chloride
- flammable liquids
- epoxy resin
- piperidine
- diethanolamine

Exhausts

Equipment was vented through roof openings 85, 274, 648, 922, 923, and 924.

Drains

There are connections to the chemical drain system.

Status

Welding continues to occupy Subarea D, and Defect Analysis continues to occupy Subareas E and G. Operations in all other areas have ceased, and they are being cleaned by Specialty Components personnel prior to closeout for D&C.

3.2.28 Area 139A-S

Processes and Operations

The primary operations were neutron generator and magnetics production. Processes included encapsulation, oven curing, flame spraying, sandblasting, vapor blasting, mold cleaning, timer/driver assembly, support pad assembly, machining, and testing.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- epoxy
- methylene chloride
- butanediol
- toluene diisocyanate
- flammable liquids
- Freon®
- lead
- acetone
- silane
- calcium chromate
- epoxy resin
- explosives
- diethanolamine
Exhausts

Equipment exhaust was discharged through roof openings 75, 119, 120, 229, 365, 368, 478, 651, 652, 655, 852, 854, 857, 849, and 861.

Drains

There are connections to the sanitary and chemical drain systems.

Status

Operations have ceased. The future use of the area is undetermined.

3.2.29 Area 140A/141A/142A and B

Processes and Operations

The operation of these areas was subassembly of metal and ceramic parts. Area 140 is the furnace room, where hydrogen and electric furnaces are used for brazing, vacuum firing, sintering, and annealing of ceramics and other parts. Area 141 was for inspection and testing of subassemblies after firing. Area 142 was the subassembly area, where metal and ceramic parts were assembled prior to firing.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- alcohol
- nitric acid
- trichloroethene (trichloroethylene)
- hydrochloric acid
- acetone
- trichloroethane
- amyl acetate

Exhausts

Furnace exhausts discharge through roof openings 376 and 398. Flow benches in Area 142 discharge through roof opening 72.

Drains

There are connections to the chemical drain system.

Status

In 1995, plant consolidation projects moved ceramics metalizing operations into Area 142A (from 117C), created a metals processing shop (including laser welding) in Area 141A, and consolidated furnace operations from other areas of the plant into Area 140.
3.2.30 Area 143A-D

Processes and Operations

The chemical process area cleaned ceramic and metal parts and subassemblies to support defense production. Processes included ultrasonic cleaning, acid cleaning, cascade rinsing, aluminum etching, alcohol rinsing, and vapor degreasing. Subarea 143 contains a downflow tent.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- trichloroethene (trichloroethylene)
- trichloroethane
- Freon®
- methylene chloride
- sulfuric acid
- alcohol
- hydrochloric acid
- hydrofluoric acid
- toluene
- methyl ethyl ketone
- acetone
- cyanides
- mercury

Exhausts

Equipment in Subarea 143A vents to roof opening 387 and then through Scrubber Number 1. Other equipment exhausts discharge through roof openings 382 and 383. Scrubber Number 2 was relocated to the roof over Subarea 143B (roof opening 382).

Drains

There are connections to the chemical drain system.

Status

In 1995, plating and chemical cleaning operations were relocated from Areas 103, 117, and 163 into Area 143.

3.2.31 Area 145A and B/146A, B, and D

Processes and Operations

These areas are used for the production and testing of ceramic parts. Subarea 145A is a machine shop for slicing, grinding, polishing, degreasing, and ultrasonic cleaning of ceramics. Subarea 145B is for inspection of ceramics after metalizing and plating processes are performed. Subarea 146A is primarily offices and Subareas 146B and D are used for powder batching, powder pressing, air firing, hydrogen firing, and inspecting.
Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- Freon®
- ceramic powders
- butyl carbitol acetate
- nitric acid
- lead
- amyl acetate
- ceramic powders
- trichloroethane
- alcohol
- hydrofluoric acid
- trichloroethene (trichloroethylene)
- acetone
- magnesium hydroxide

Exhausts

Chemical exhaust discharges through roof openings 223, 441, and 673.

Drains

There are connections to the chemical drain system.

Status

A project is underway to consolidate all ceramics operations into areas 117C and P, 145, and 146 for a new PCIC tenant.

3.2.32 Area 150A-C

Processes and Operations

The operation in this area was final assembly and testing of mechanical and electrical product testers. Processes included soldering, milling, drilling, mechanical assembly, and electronic testing.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- tritium
- toluene diisocyanate
- hydrochloric acid
- methylene chloride
- acetone
- trichloroethane
- lead
- alcohol
- hydrofluoric acid
- sodium hydroxide
- Freon®
- sulfuric acid

Exhausts

Chemical exhaust discharges through roof opening 568.
Drains

There are connections to the sanitary and chemical drain systems.

Status

In 1996, Equipment Fabrication and Test (Areas 103 and 150) was relocated to Areas 325, 327, 330, 331, and 336. Operations have ceased. The area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued April 11, 1996.

3.2.33 Area 151A and MA/152A, B, and MA

Processes and Operations

Area 152 was the general stockroom and Area 151 was the war reserve production stockroom. Both areas have mezzanines (151MA and 152MA), which provide additional storage space.

Chemical Usage

A review of Specialty Components records indicated the following chemicals may have been used or handled:

- acetone
- lead
- trichloroethane
- standard office supplies, including toner
- gold cyanide
- methyl ethyl ketone
- metal bar stock

Exhausts

There are no chemical exhausts in either areas.

Drains

There are connections to the sanitary drain system in both areas. Connections to the chemical drain system in Area 151 have been flushed, capped, and labeled. (ABANDONED CHEMICAL DRAIN - DO NOT USE).

Status

The general stockroom (Area 152) is planned for relocation to Area 105. Specialty Components continues to occupy Area 151, which was provisionally accepted in an interim characterization and closeout report, dated May 17, 1996. The final report will be published when the relocation is completed and the remaining DOE-owned barstock and racks are sold.
3.2.34 Area 154A-C

Processes and Operations

This area had two uses, transducer production and testing and model shop activities. The processes included grinding, sanding, cutting, and drilling. In addition, there were two small vaults, where neutron devices were detonated by computer control.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- explosives (HMX and PETN)
- alcohol
- trichloroethane
- tritium
- methyl ethyl ketone
- hydrochloric acid
- lithium niobate
- trichloroethylene (trichloroethene)
- uranium
- friable asbestos (in overhead)
- nitric acid
- acetone
- lead
- methylene dianilene (MDA)
- cyanides
- hydrofluoric acid
- asbestos (floor tile mastic adhesive)
- Freon®
- methylene chloride
- sulfuric acid

Exhausts

Equipment exhaust was discharged through roof openings 139 and 267.

Drains

There are connections to the sanitary drain systems. Connections to the chemical drain system have been flushed, capped, and labeled (ABANDONED CHEMICAL DRAIN - DO NOT USE). Connections to the old radiological drain system have been flushed, permanently sealed with grout, and labeled.

Status

Operations have ceased. Subareas 154 A, B, and C have been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report for these subareas was issued April 26, 1996.
3.2.35 Area 155A-D

Processes and Operations

The chemistry laboratory activities included sample preparation (acid digestion/dilution) and analyses. The lab had an Inductive Coupled Plasma (ICP) unit for analyses of metals. Other equipment was used for titrations, gas chromatography, and atomic absorption spectrophotometry.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- hydrochloric acid
- phosphoric acid
- oxalic acid
- polyurethane encapsulant
- toluene
- potassium hydroxide
- aluminum oxide
- acetic acid
- mercury
- toluene diisocyanate
- ISO - amyl acetate
- trichloroethene (trichloroethylene)
- methylene chloride
- perchloric acid
- phenyl isothiocyanate
- N,N-dimethylformamide
- methyl alcohol
- lead nitrate
- hydrogen peroxide
- nitrous oxide
- zinc
- potassium cyanide
- sulfamic acid
- thallium metal
- uranium (metal)
- asbestos (floor tile mastic)
- carbon tetrachloride
- arsenic trioxide
- chloroform
- acetic anhydride
- ammonium dihydrogen arsenate
- fluoroboric acid
- hydrobromic acid
- nitric acid
- hydrofluoric acid
- silicone
- boric acid
- flammable liquids
- sodium hydroxide
- Conathane
- tritium
- methylene dianilene (MDA)
- Isoverre (chemical stripper)
- trichloroethane
- glacial acetic acid
- sulfuric acid
- phosphoric acid
- phenol
- nitric acid
- magnesium perchlorate
- lead acetate
- acetylene
- argon
- potassium chromate
- pyridine
- tetrahydrofuran
- thorium nitrate
- tritium
- uranium oxide
- chlorobenzene
- bromine
- ammonium metavanadate
- chromium trioxide
- acetone
- cobalt chloride
- formic acid
- acetonitrile
**Exhausts**

Three radiological exhaust hoods were ducted to the west radiological exhaust stack (roof opening 89). The duct work was removed during the West Stack Removal Project. Other chemical exhaust hoods and equipment vented through roof openings 378 and 379.

**Drains**

Connections to the old radiological drain system have been flushed, permanently sealed with grout, and labeled.

**Status**

The chemistry laboratory has been relocated to Area 350. Operations in Area 155 have ceased. The area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued May 3, 1996.

**3.2.36 Area 157A and B/158A and B**

**Processes and Operations**

These areas were used as a gas analyses laboratory and for the disassembly of neutron tubes. Processes included gas analyses, using mass spectrometers, solids analyses, using inert gas fusion, thermal desorption analyses, gas monitor calibration, and various machining techniques for tube disassembly.

**Chemical Usage**

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- hydrochloric acid
- tritium
- methylene chloride
- trichloroethane
- ammonium bifluoride
- magnesium perchlorate
- hydrogen sulfide
- mercury
- trichloroethene (trichloroethylene)
- asbestos (floor tile mastic)
- N-methylpyrrolidinone

**Exhausts**

Radiological exhaust hoods were ducted to the west radiological exhaust stack (roof opening 89). The duct work was removed during the West Stack Removal Project.
Drains

There are connections to the sanitary drain system. Connections to the old radiological drain system have been flushed, permanently sealed with grout, and labeled.

Status

The laboratory has been relocated to Area 350. The area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued May 3, 1996.

3.2.37 Area 159A-D

Processes and Operations

Subarea 159A was used as an advanced analyses laboratory, and Subareas B, C, and D were offices. Processes in the analyses laboratory included nuclear magnetic resonance spectrometry, gas chromatography, and mass spectrometry.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- nitric acid
- hydrochloric acid
- methylene chloride
- phenylene diamine
- chloroform
- mercury
- acetone
- tetrahydrofuran
- n-phenylenediamine
- dioxane
- heptachlor
- hexane
- methyl sulfoxide
- methylene dianilene (MDA)
- napthalene
- p-xylene
- pyridine
- acetonitrile
- dimethylformamide
- toluene
- trichloroethylene (trichloroethene)
- trimethylphosphite
- phosphoric acid
- hydrofluoric acid
- carbon tetrachloride
- chrysene
- benzene
- bismuth
- sodium hydroxide
- n-diethylethanolamine
- endrin
- hexachlorobutadine
- isopropanol
- methyl alcohol
- monoethylamine
- o-xylene
- phenol
- silver nitrate
- acetic anhydride
- Sylon-CT
- toxaphene
- triethylamine
- tritium
- butane
trimethylphosphite  butanone  
cyanides  cyclohexane  
carbon disulfide  diethylamine  
dichlorobenzene  pentafluoropropionic anhydride

Exhausts

Radiological exhaust hoods were ducted to the west radiological exhaust stack (roof opening 89). The duct work was removed during the West Stack Removal Project. Chemical exhaust was vented through roof opening 373.

Drains

There are connections to the sanitary drain system.

Status

The laboratory has been relocated to Area 350. The area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued June 7, 1996.

3.2.38 Area 160A-E

Processes and Operations

The Chemistry Laboratory performed sample analyses using liquid, gas, and ion chromatography. Other processes included thermal analyses of polymers, wet chemistry analyses of plating solutions, and analyses of battery materials.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

methyl ethyl ketone  trichloroethene  
lithium tetrachloroaluminate  methylene chloride  
methylene dianilene (MDA)  acetone  
acetic acid (glacial)  hydrochloric acid  
sulfuric acid  nitric acid  
alcohol  potassium cyanide  
mercuric chloride  tritium  
lithium thionyl chloride  potassium gold cyanide  
acetic anhydride  acetonitrile  
ammonia  ammonium hydroxide  
amyl acetate  arsenic trioxide  
butanol  butyl acetate  
cellusolve acetate  chloroform  
epichlorohydrin  ethyl benzene  
ethylene glycol  hexane
hydrofluoric acid  isopentyl acetate
isopentyl alcohol  m-xylene
magnesium hydroxide  mercury
methyl alcohol  monoethyamine
nonanol  p-xylene
pentyl acetate  perchloroethylene
phosphoric acid  potassium chromate
potassium dichromate  pyridine
nitrobenzene  potassium hydroxide
sodium cyanide  sodium hydroxide
tetrahydrofuran
asbestos (walls, floor tiles, and overhead)

**Exhausts**

Radiological exhaust hoods were ducted to the west radiological exhaust stack (roof opening 89). The duct work was removed during the West Stack Removal Project. Chemical exhaust was vented through roof opening 373.

**Drains**

There are connections to the old radiological drain system. Connections to the chemical drain system have been flushed, capped, and labeled (ABANDONED CHEMICAL DRAIN - DO NOT USE).

**Status**

The chemistry laboratory has been relocated to Area 350. Area 160A has been cleaned by Specialty Components personnel, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report for Area 160A was issued June 7, 1996.

**3.2.39 Area 161A and B**

**Processes and Operations**

This area served as a surface science and x-ray laboratory. Activities included surface analyses, thin film analyses, x-ray analyses, and process development.

**Chemical Usage**

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- tritium
- asbestos (floor tiles, walls, overhead)
- ammonium hydroxide
- amyl acetate
- butyl acetate
- chloroacetate
- acetic acid, glacial
- butanol
- cellusolve acetate
- epichlorohydrin
<table>
<thead>
<tr>
<th>Chemical</th>
<th>Chemical</th>
</tr>
</thead>
<tbody>
<tr>
<td>hydrochloric acid</td>
<td>hydrofluoric acid</td>
</tr>
<tr>
<td>isopentyl acetate</td>
<td>isopentyl alcohol</td>
</tr>
<tr>
<td>lithium thionyl chloride</td>
<td>m-xylene</td>
</tr>
<tr>
<td>mercury chloride</td>
<td>mercury</td>
</tr>
<tr>
<td>methyl alcohol</td>
<td>methylene chloride</td>
</tr>
<tr>
<td>methylene dianiline (MDA)</td>
<td>methyl ethyl ketone</td>
</tr>
<tr>
<td>monoethyamine</td>
<td>nitrobenzene</td>
</tr>
<tr>
<td>nonanol</td>
<td>p-xylene</td>
</tr>
<tr>
<td>pentyl acetate</td>
<td>perchloroethylene</td>
</tr>
<tr>
<td>phosphoric acid</td>
<td>potassium chromate</td>
</tr>
<tr>
<td>potassium gold cyanide</td>
<td>potassium dichromate</td>
</tr>
<tr>
<td>potassium hydroxide</td>
<td>pyridine</td>
</tr>
<tr>
<td>sodium hydroxide</td>
<td>tetrahydrofuran</td>
</tr>
<tr>
<td>toluene diisocyanate</td>
<td>trichloroethylene (trichloroethene)</td>
</tr>
<tr>
<td>hexane</td>
<td>acetone</td>
</tr>
<tr>
<td>acetonitrile</td>
<td>acetic anhydride</td>
</tr>
</tbody>
</table>

**Exhausts**

Vacuum pump exhaust was ducted to the west radiological exhaust stack (roof opening 89). The duct work was removed during the West Stack Removal Project.

**Drains**

There are connections to the sanitary drain system. Connections to the chemical drain system have been flushed, capped, and labeled (ABANDONED CHEMICAL DRAIN - DO NOT USE).

**Status**

The laboratory has been relocated to Areas 350 and 114. The area has been cleaned by Specialty Components personnel, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued June 7, 1996.

**3.2.40 Area 162A-F**

**Processes and Operations**

This area was used as a metallurgy laboratory. Processes performed included potting, grinding, milling, machining, drilling, sanding, cutting, brazing, welding, spectra analyses, metallographic etching, heat treating, hardness testing, tensile testing, electron microscopy, and target/source scanning electron microscopy analyses.
Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- trichloroethene (trichloroethylene)
- hydrochloric acid
- nitric acid
- xylene
- amyl acetate
- alcohol
- copper sulfate
- diethanolamine
- heavy metals (powdered)
- methylene chloride
- nickel chloride
- phosphoric acid
- potassium hydroxide
- sodium hydroxide
- toluene diisocyanate
- acetic acid
- asbestos, nonfriable (in fiberboard wall cores)
- asbestos (floor tile and mastic adhesive)
- acetone
- sulfuric acid
- hydrofluoric acid
- cyanides
- tritium
- alodine
- cyansol
- Freon®
- lead fluoroborate nickel
- mercury
- nickel sulfate
- oxalic acid
- potassium permanganate
- tin fluoroborate
- ammonium bifluoride
- gallium

Exhausts

Radiological exhaust hoods were ducted to the west radiological exhaust stack (roof opening 89). The duct work was removed during the West Stack Removal Project. Chemical exhaust was vented through roof openings 110, 134, and 192.

Drains

There are connections to the sanitary drain system. Connections to the chemical drain system have been flushed, capped, and labeled (ABANDONED CHEMICAL DRAIN - DO NOT USE).

Status

Operations have ceased. The area has been cleaned by Specialty Components personnel, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued June 7, 1996.
3.2.41 Area 163A-K

Processes and Operations

This area was used as a materials and process technology development laboratory. Subarea 163H is a downflow tent. Processes included plating, sintering, brazing, thin film measuring, electron beam welding, vapor blasting, vapor degreasing, aluminum etching, acid cleaning, ultrasonic cleaning, and ink spraying.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- trichloroethene (trichloroethylene)
- nitric acid
- hydrochloric acid
- nickel chloride
- lead fluoroborate nickel
- methylene chloride
- oxalic acid
- chromic acid
- cyanides
- various heavy metals (powdered)
- alcohol
- alodine
- cyansol
- Freon®
- nickel sulfate
- gallium
- asbestos (floor tile, mastic, baseboard)

- sodium hydroxide
- zinc oxide
- copper sulfate
- tin fluoroborate
- phosphoric acid
- tritium
- amyl acetate
- mercury
- diethanolamine
- toluene diisocyanate
- potassium hydroxide
- potassium permanganate
- ammonium bifluoride
- sulfuric acid
- acetic acid
- nickel

Exhausts

A radiological exhaust hood was ducted to the west radiological exhaust stack (roof opening 89). The duct work was removed during the West Stack Removal Project. Chemical exhaust was vented through roof openings 192, 195, 196, 198, 402, 497, 531, 540, 542, 543, and 576. Scrubber Number 2 (roof opening 543) was relocated to the roof over Area 143.

Drains

There are connections to the sanitary drain system. Connections to the chemical drain system have been flushed, capped, and labeled (ABANDONED CHEMICAL DRAIN - DO NOT USE). Connections to the old radiological drain system have been flushed, permanently sealed with grout, and labeled.
Status

Operations have been relocated to Areas 141 and 143. The area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued April 19, 1996.

3.2.42 Area 164A-D

Processes and Operations

This area had multiple uses; Subarea A was a weld shop, Subarea B was a glass shop, and Subareas C and D were encapsulation materials and processing areas. Processes included arc welding, glass blowing, glass forming, glass firing, resin mixing, vacuum de-aeration, grinding, and sanding.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- toluene diisocyanate
- acetone
- alcohol
- trimethylolpropane
- adiprene
- Freon®
- tritium
- methylene chloride
- silane
- butanediol
- mica powdered
- asbestos
- solder

Exhausts

Equipment exhaust discharged through roof openings 536, 537, 545, 546, 547, 548, 549, 560, 570, 571, and 572.

Drains

Connections to the chemical drain system have been flushed, capped, and labeled (ABANDONED CHEMICAL DRAIN - DO NOT USE).

Status

Operations have been relocated. The area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued April 11, 1996.
3.2.43 Area 168A and B

Processes and Operations

The operation in this area was resonator development. Processes consisted of resonator/clock testing, quartz sweeping, hardness verification, parametric measuring, and spin testing. Subarea 168B was a vault, where classified parts were tested.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- alcohol
- lead solder
- mercury
- acetone
- barium-133
- flammable liquids
- methylene chloride
- benzene
- tritium
- epoxy stripper

Exhausts

Chemical exhaust was discharged through roof opening 555.

Drains

There are connections to the sanitary drain system.

Status

Operations have ceased. The area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued April 11, 1996.

3.2.44 Area 175A-C

Processes and Operations

This area served as a quartz devices laboratory to support the design, development, fabrication, and testing of resonators, clocks, sensors, and related products based on the piezoelectric phenomena. Processes included quartz cleaning and etching, plating, photolithography, vapor degreasing, vacuum evaporation, machine welding, laser cutting and trimming, and vacuum sealing.
Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- alcohol
- acid etching solution
- methylene chloride
- potassium hydroxide
- acetone
- Fluorinert
- ferric chloride
- ammonium fluoride
- toluene
- ethylene glycol monoethyl
- potassium hydroxide
- hydrochloric acid
- plating solutions (gold, chrome-gold, and cyanide)
- Oreotemp 24
- layout dye
- plastic polish
- Lyoll Lube
- iodine
- freon 113
- Dyed System 812L Photores
- photoresist
- sulfur dioxide
- Freon®
- trichloroethene (trichloroethylene)
- hydrofluoric acid
- trichloroethane
- methanol
- ammonium bifluoride
- sulfuric acid
- potassium iodide
- xylene
- silicon tetrachloride
- sodium hydroxide
- perchloric acid
- alconox
- solder
- 711 lube
- alkaline liquids (MF 321, 1112A)
- Dyken Steel Blue
- Chromium Photomsk (CR7, CR12, and CR14)
- fomblin
- microposit primer
- resist aid
- microposit photoresist
- Liqui Nox

Exhausts

Chemical exhaust was discharged through roof opening 566.

Drains

There are connections to the sanitary drain system. Connections to the chemical drain system have been flushed, capped, and labeled (ABANDONED CHEMICAL DRAIN - DO NOT USE).

Status

Operations have ceased, and the area has been cleaned, characterized, and closed out as part of D&C. The Final Closeout Report was issued September 21, 1995.
3.2.45 Area 176A-G

Processes and Operations

Area 176 had various uses. Subareas A, I, and H were used for the Environmental Chemistry Laboratory to provide radiological analyses in support of Health Physics, ER, Environmental Compliance, Industrial Hygiene, and Waste Management. In addition, the Environmental Radiological Laboratory performed research to develop new radiological procedures and to insure state-of-the-art analytical capabilities. Subarea B was used for quartz processing (wafer sawing, grinding, lapping, polishing, and cutting). Subarea C was a development area for LACs. Processes included vacuum curing, assembly, and thermal and electrical testing. Subarea D served as an electrical test laboratory. Subareas E and F were offices, and Subarea G was the Technical Information Center.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- alcohol
- hydrofluoric acid
- methylene chloride
- ammonium molybdate
- boric anhydride
- calcium carbonate
- Eriochrome Black T
- glutamic acid
- potassium chloride
- potassium hydrogen sulfate
- potassium sulfate
- sodium chloride
- thydene
- cadmium nitrate
- potassium dichromate
- potassium nitrate
- potassium persulfate
- sodium nitrate
- sodium hydroxide
- ammonium hydroxide
- sodium bisulfite
- nitromethane
- Scintillation Mix (long chain alkylbenzenes)
- 1-Methyl-2-Pyrrolidinone
- pump oil
- nitric acid
- hydrochloric acid
- ammonium iodide
- ammonium sulfate
- Bromthymol Blue
- D Glucose Anhydrous
- ferric chloride
- Methyl Orange
- KCl/AgCl fill solution
- potassium iodide
- sodium bicarbonate
- sodium sulfite
- zinc sulfate heptahydrate
- calcium nitrate
- potassium iodate
- potassium permanganate
- silver nitrate
- lithium hydroxide
- boric acid
- sulfuric acid
- glycerin
- silica gel
- tritium
- plutonium isotopes
- Pu-238, Pu-239
- air dry plastic coat
Resin: Anion exchange
711 Lubricant
Rust-oleum
polyurethane varnish
lead acetate test paper
sodium bisulfate
tetrahydrate
nitrification inhibitor

Balsam Canada
Nyoil
paint
sodium nitrate
resin
acetonitrile
BOD Nutrient Pillows
dextrose

Exhausts

Chemical exhaust was discharged through roof openings 413 and 414. Other chemical exhaust was vented through roof opening 519 and Scrubber Number 4. Scrubber Number 4 was relocated to the roof above area 350 (roof opening 609).

Drains

There are connections to the sanitary drain system. Connections to the chemical drain system have been flushed, capped, and labeled (ABANDONED CHEMICAL DRAIN - DO NOT USE). Connections to the old radiological drain system have been flushed, permanently sealed with grout, and labeled.

Status

The Environmental Chemistry Laboratory was relocated to Area 350, and all other operations have ceased. The area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued February 5, 1996.

3.2.46 Area 179A-C/180A and B

Processes and Operations

These areas were used as a capacitor development laboratory. Subarea 180A contained a downflow tent. Processes included assembly, winding, field testing, cleaning, arc spraying, bead blasting, soldering, baking, leak testing, liquid filling, and field testing capacitors.
Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

Freon®
chlorotrifluoromethane
alcohol
antimony
lead
formaldehyde
toluene diisocyanate
epoxy
diethanolamine
acetone

sulfur hexafluoride
Mylar® film
tin
copper
arsenic
tritium
Fluorinert
RTV
methylenedianilene (MDA)
mercury

Exhausts

Chemical exhaust was discharged through roof openings 249, 252, 321, and 530.

Drains

There are connections to the sanitary drain system. Radiological drain connections in Area 180 have been flushed, permanently sealed with grout, and labeled.

Status

Operations have ceased, and the areas have been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued January 17, 1996.

3.2.47 Area 181A and B

Processes and Operations

The area was used as a surface mounting facility for assembling small electrical parts and for neutron tube development. Processes included wave soldering, printed circuit board cleaning, vapor degreasing, gold and nickel plating, glass/metal bonding, vapor blasting, and ultrasonic degreasing.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

alcohol
methylen chloride
Freon®

D-limonene
trichloroethane
flammable liquids
hydrochloric acid  nitric acid
tritium  sulfuric acid
lead  mold release
potassium per manganate

Exhausts

Chemical exhaust was discharged through roof openings 259, 260, 261, and 761.

Drains

There are connections to the sanitary drain system.

Status

Operations have ceased and the area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued January 17, 1995.

3.2.48 Area 182A-F

Processes and Operations

The mission of the Tube Development, Exhaust, and Assembly Area was to assemble neutron tubes, sources, targets, and special samples. These products were used for weapon reserves, special tests, and evaluations for R&D contract work in association with weapons design and other laboratories inside and outside of the DOE complex. Processes included neutron tube assembly, tube exhaust, vacuum processing, source grinding, hydrogen firing, vacuum firing, brazing, laser welding, testing, and inspection. Subarea 182D contained two downflow tents.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- tritium  alcohol
- Freon®  methylene chloride
- acetone  rare earth metals
- dielectric oil  Fluorinert
- boron powder  chromium trioxide

Exhausts

Radiological exhaust hoods and other equipment were ducted to the west radiological exhaust stack (roof opening 89). The duct work was removed during the West Stack Removal Project. Chemical exhaust was discharged through roof opening 65.
Drains

There are connections to the sanitary and old radiological drain system; connections are being flushed and capped.

Status

Operations have ceased, and the area is being cleaned by Specialty Components personnel prior to closeout for D&C.

3.2.49 Area 183A-E

Processes and Operations

This area was used for ferroelectric generator development and engineering. Tube storage vaults were located in Subareas A and E. Processes included flame spraying, machining, vapor blasting, sandblasting, oven curing, soldering, and ultrasonic cleaning.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- flammable liquids
- methylene chloride
- trichlorophenol
- acetone
- tritium
- lead solder
- methylene dianiline (MDA)
- alcohol
- trichloroethene (trichloroethylene)
- Freon®
- dielectric oil
- curing agent
- Isoverre (chemical stripper)
- epoxy

Exhausts

The paint spray booth was vented to roof opening 1364 and other equipment exhaust was discharged through roof openings 241, 242, 243, 244, 245, 342, and 344.

Drains

There are connections to the sanitary drain system. Connections to the chemical drain system have been flushed, capped, and labeled (ABANDONED CHEMICAL DRAIN - DO NOT USE). Connections to the old radiological drain system have been flushed, permanently sealed with grout, and labeled.

Status

Operations have ceased, and the area has been cleaned, characterized, and closed out as part of D&C. The Final Closeout Report was issued December 21, 1995.
3.2.50 Area 184

Processes and Operations

This area was used for the final inspection and testing of neutron tubes, using a neutron tube tester.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- alcohol
- methylene chloride
- tritium
- Marcel Oil
- Fluorinert
- toluene
- Freon®

Exhausts

There was no chemical exhaust in the area.

Drains

There are connections to the sanitary drain system. Connections to the chemical drain system have been flushed, capped, and labeled (ABANDONED CHEMICAL DRAIN - DO NOT USE).

Status

Operations have ceased, and the area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued January 12, 1996.

3.2.51 Area 185A-F, 185C Pump Shed

Processes and Operations

The mission of the Polymer Technology Laboratory was to provide technical leadership to production and development operations in the area of organic materials technology. Included in this support were the identification and evaluation of organic materials, the development of processes, the transfer of processes to production, and the definition/design of appropriate fixtures and tooling for development and production applications of organic materials. Subarea 185C served as an MDA process area and was isolated from the other 185 areas. Specific processes included encapsulation (MDA and non-MDA), vapor blasting, oven curing, foam encapsulation, foam dispensing, resin mixing, mold cleaning, Tetra-etching, epoxy stripping, vacuum pumping, pellet pressing, hydraulic testing, vapor degreasing, plasma cleaning, cut-off sawing, drilling, belt
sanding, gradient curing, ultrasonic cleaning, pencil blasting, viscosity measuring, potting, and testing.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- methylene dianilene (MDA)
- methylene chloride
- aluminum oxide
- Freon®
- calcium carbonate
- titanium hydride
- molybdenum metal powder
- nickel chloride
- polyurethane foam
- triethylenetetramine
- isoamyl acetate
- sealant (liquid chlorinated parafin with asbestos fibers)
- trichloroethane
- N-methylpyrrolidone
- dimethyl formamide
- methyl ethyl ketone
- vacuum oil contaminated with MDA
- ester alcohol
- toluene diisocyanate
- amyl acetate
- isopentyl alcohol
- acetone
- potassium gold cyanide
- nitric acid
- manganese powder
- ethylcellulose aqualon
- sodium dichromate
- diethanolamine
- hydrochloric acid
- tritium
- RAM 225
- ethylene glycol
- 2-ethoxyethyl acetate
- sulfuric acid
- toluene

Exhausts

The hoods associated with bakeout ovens and MDA were vented through roof opening 530. Other exhaust hoods vented through roof opening 253.

Drains

There are connections to the sanitary drain system. Connections to the chemical drain system have been flushed, capped, and labeled (ABANDONED CHEMICAL DRAIN - DO NOT USE). Connections to the old radiological drain system have been flushed, permanently sealed with grout, and labeled.
Status

Operations have ceased, and the area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report for Area 185A-F was issued January 12, 1996. The Area 185C Pump Shed Characterization and Final Closeout Report was issued June 28, 1996.

3.2.52 Area 186A

Processes and Operations

As an outdoor area, this space was used for radiological decontamination of equipment located in tritium areas. In 1988, the area was constructed as an electrical switchgear room.

Chemical Usage

A review of Specialty Components records indicated the following chemicals had been used or handled:

tritium

Exhausts

There are no chemical exhausts in this area.

Drains

There are no chemical or sanitary drains in this area.

Status

This area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued June 7, 1996.

3.2.53 Area 191A-I

Processes and Operations

The operations in this area were neutron tube development, neutron generator and magnetics engineering, and defect analysis. Subareas A, D, and I were offices, Subarea B was a stockroom, Subarea C was a shelf life vault, Subarea E was for quality assurance inspection, Subarea F was a breakroom, Subarea G was a hood room. Subarea H was a machine shop, and prior to 1984, it was used as a chemical storage pit area.
Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- flammable liquids
- adhesives
- resins
- alcohol
- trichlorotrifluoroethane (Freon®)
- tritium
- Sylgard
- lead
- Curing Agent V-40
- hardeners
- acetone
- methylene chloride
- trichloroethylene (trichloroethylene)
- flux
- silver
- asbestos mastic

Exhausts

There are no chemical exhausts in the area.

Drains

There are connections to the chemical drain system. Connections to the chemical drain system have been flushed, capped, and labeled (ABANDONED CHEMICAL DRAIN - DO NOT USE).

Status

Operations have ceased, and the area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued February 16, 1996.

3.2.54 Area 192A-N

Processes and Operations

This area was the Ceramics and Deposition Technology Laboratory. Processes included alumina machining (milling, drilling, and grinding), powder preparation, powder pressing, tape casting, air and hydrogen firing, spray drying, machining, header assembly (optoelectronics and batteries), particle sizing, injection molding, metalizing, leak testing, vapor degreasing, pencil blasting, and acoustical testing.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- lead
- copper nitrate
- copper metal powder
- alumina
- methyl alcohol
- nickel metal powder
- trichloroethane
- silver powder
asbestos roofing cement  
acetone  
toluene  
trichloroethylene  
Diala Oil  
Freon  
nonchromate  
mercury  
metal powder  
methylene chloride  
ammonia  
amyl acetate  
barium carbonate  
boric acid  
calcium carbonate  
kerosene  
nitric acid  
hydrochloric acid  
iron (III) oxide  
phosphoric acid  
dibutyl phthalate  
sulfuric acid  
barium carbonate  
potassium hydroxide  
barium nitrate  
aluminum nitrate  
manganous nitrate  
radioactive waste*  
Dearicide  
lead oxide  
zinc oxide  
iron disulfide  
sodium nitrite  
calcium chromate  
trichorethane  
diversey brightener  
hydrofluoric acid  
cobalt oxide  
lead (II) oxide  
phosphonate  
gold cyanide  
acetone (high purity)  
hydraulic fluid  
barium oxide  

*Production debris in sealed drums

Exhausts

Chemical exhaust was vented through roof openings 359, 361, 397, 449, 559, 560, 562, 567, 709, 711, and 712.

Drains

Connections to the chemical drain system have been flushed, capped, and labeled (ABANDONED CHEMICAL DRAIN - DO NOT USE).

Status

Operations have ceased, and the area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report for Areas A-E and G-N was issued March 4, 1996. The Area Characterization and Final Closeout Report for Area 192F was issued June 7, 1996.
3.2.55 Area 193A-I

Processes and Operations

Subareas A, B and I were the Magnetics Engineering Laboratory for the design, development, and assembly of magnetics components for weapons reserve and field test systems. Processes included magnetic winding, resin curing, baking mold release agents, thermal cycling, and soldering. Subareas C - H were used for defect analysis (scanning electron microscopy and energy dispersive analysis) of neutron generator tubes.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- methylene chloride
- flammable liquids
- trichloroethene (trichloroethylene)
- epoxy
- RTV
- Isoverre (chemical stripper)
- alcohol
- Freon®
- lead solder
- tritium

Exhausts

Chemical exhaust was vented through roof opening 411.

Drains

Connections to the chemical drain system have been flushed, capped, and labeled (ABANDONED CHEMICAL DRAIN - DO NOT USE).

Status

Operations have ceased, and the area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued January 30, 1996.

3.2.56 Area 194A-K

Processes and Operations

There were three different operations in this area. Subareas A-D were occupied by the Nondestructive Testing Laboratory. Processes included transducer testing, ultrasonic testing, film and image processing, and x-ray analysis. There was a silver recovery unit for processing photographic chemicals located in a metal shed outside of Subarea 194G. Subareas E-H were used by the Active Ceramics Laboratory for research and process development. Processes included chemical preparation powder processing, LAC powder processing, powder calcination, powder pressing, oven drying, pulse testing, and powder firing and sintering.
Subareas I-K were used for components and products evaluation (capacitor acceptance testing, field test products testing, and magnetics testing), environmental testing, and neutron detector monitor acceptance testing. The following testing processes were used in the area: vibration, thermal cycling, thermal shock, mechanical shock, humidity, altitude, and acceleration.

**Chemical Usage**

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- acetone
- alcohol
- lead
- isopropanol
- sodium nitrite
- sodium oxalate
- sodium sulfite
- bismuth metal powder
- buffer solutions
- CoCl₂ hexahydrate
- niobium pentoxide
- metal oxides
- photographic chemicals
- Fluorinert
- lithium chloride
- zinc chloride
- barium chloride
- silver
- RTV
- curing agent V-40
- hydrochloric acid
- asbestos mastic
- butyl acetate
- isobutanol
- lead oxide
- methanol
- solder
- thinner
- trichloroethane
- aluminum metal powder
- Dy-Chek Penetrant
- Dy-Chek Remover
- Mn Cl₂ tetrahydrate
- oxalic acid dihydrate
- various acids
- various ceramic powders
- Freon®
- sodium hydroxide
- ammonium hydroxide
- potassium hydroxide
dental cement hardener and
- base desiccant
- stearic acid
- zirconium titanate

**Exhausts**

Chemical exhaust was discharged through roof openings 514, 515, 516, and 517.

**Drains**

There are connections to the sanitary drain system. Connections to the chemical drain system have been flushed, capped, and labeled (ABANDONED CHEMICAL DRAIN - DO NOT USE).
Status

Equipment from Subareas 194A-D have been moved to Area 114 and environmental testing equipment (Subareas 194I-K) was moved to Building 200. The Area Characterization and Final Closeout Report was issued February 12, 1996.

3.2.57 Area 195A-G

Processes and Operations

This area had several different uses: Subarea A was an instrument and computer maintenance laboratory; Subarea B was a dryroom for processing Lithium batteries; Subarea C was a furnace room; Subareas D and G were storage rooms for facilities maintenance; Subarea 195E was a battery room; and Subarea 195F contained Uninterruptible Power Source (UPS) equipment.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- acid
- dimethyl polysiloxane
- lead-acid batteries (sulfuric acid)
- lithium thionyl chloride
- butanediol
- solder flux

Exhausts

A dehumidifier vented through roof openings 435 and 436, and the remaining equipment vented through roof opening 440 to Scrubber Number 3.

Drains

Connections to the chemical drain system have been flushed, capped, and labeled (ABANDONED CHEMICAL DRAIN - DO NOT USE).

Status

Specialty Components continues to occupy Subareas 195A and B. Subarea C is available for D&C. Subareas D through G and Mezzanines A and B have been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report for Subareas D, G, and Mezzanine A was issued March 22, 1996. Subareas E, F, and Mezzanine B Area Characterization and Final Closeout Report was issued August 30, 1996.
3.2.58 Area 196A-E

Processes and Operations

This area had several different uses: Subarea 196A was for neutron generator testing; Subarea 196B was for clock/resonator testing; Subarea 196C was a computer room; Subarea 196D was an incoming inspection laboratory; and Subarea 196E was an office.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- mercury
- Freon®
- solder
- methylene chloride
- alcohol

Exhausts

Chemical exhaust was vented through roof opening 410.

Drains

Connections to the chemical drain system have been flushed, capped, and labeled (ABANDONED CHEMICAL DRAIN - DO NOT USE).

Status

Operations have ceased, and the area has been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report was issued February 2, 1996.

3.2.59 Area 306A-B

Processes and Operations

This area was used for LAC operations. More recently, it has been used for offices and as a breakroom.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- sealant powder
- hydrochloric acid
- trichloroethene (trichloroethylene)
- hydrofluoric acid
Exhausts

There are no chemical exhausts in the area.

Drains

There are no drain connections in the area.

Status

Specialty Components continues to occupy the area.

3.2.60 Area 307A and 349A and B

Processes and Operations

Both areas contain a dry room for the production and testing of thermal batteries. Thermal batteries are manufactured, using a lithium/silicon (Li/Si) alloy, iron disulfide (FeS₂), potassium perchlorate, and other powder materials. Thermal batteries are reserve sources of power in which the solid-cell electrolyte is nonconducting at ambient temperatures. The battery is activated by melting the electrolyte, thus making it conductive. Activation is achieved by igniting pyrotechnic heat sources within the battery. Processes included powder processing (mixing, fusing, hydraulic pressing (pelletizing), grinding, and vacuum drying), vapor degreasing, header assembly (resistance welding), and final assembly (TIG welding on stainless steel battery casing). Capacitor development testing was also performed in the area.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- iron/potassium perchlorate
- heat paper
- calcium chromate
- trichloroethene (trichloroethylene)
- hydrofluoric acid
- lithium silicon
- alcohol
- heat powder (FeKClO₄)
- flammable liquids
- trichloroethane
- hydrochloric acid
- calcium bimetal
- iron disulfide

Exhausts

Chemical exhaust was discharged through roof openings 688 and 689.

Drains

There are no drain connections in the area.
Status

Specialty Components continues to occupy the area.

3.2.61 Area 313A, 314A, and 315A

Processes and Operations

The operations in these areas were in support of classified component production. Subarea 313A was a chemical cleaning room for glass cleaning and etching, and assembly, and subassembly cleaning. Subarea 314A was an inspection room for visual and dimensional analysis using microscopes and a comparator. Subarea 315A was a staking (mechanical process inserting 1 component inside of another component) room.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- methylene chloride
- acetone
- mercury
- alcohol
- various acids
- trichloroethene (trichloroethylene)

Exhausts

Chemical exhausts were discharged through roof openings 462 and 463.

Drains

There are connections to the sanitary and chemical drain systems.

Status

Specialty Components continues to occupy the area.

3.2.62 Area 316A-C

Processes and Operations

The operation in this area was Lithium Ambient Battery (LAMB) development, assembly, and testing, and double layer capacitor pack development. Processes included mechanical assembly and thermal testing of lithium batteries under varying loads.
Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- lithium hydride
- acetonitrile
- sulfur dioxide
- thionyl chloride

Exhausts

Chemical exhausts were discharged through roof openings 486 and 487.

Drains

There are connections to the chemical drain system.

Status

Operations have ceased. Specialty Components continues to occupy this area.

3.2.63 Area 325A

Processes and Operations

This area was an equipment calibration and maintenance shop. Work performed included mechanical and electrical repair of vacuum pumps, high pressure pumps, hydraulic equipment, leak detectors, and welding machines.

Chemical Usage

A review of Specialty Components records did not indicate the use of any chemicals in this area.

Exhausts

There are no chemical exhausts in the area.

Drains

There are connections to the sanitary drain system.

Status

In 1996, Equipment Fabrication and Test was relocated to this area from Areas 103 and 150. For additional information on area operations, see Sections 3.2.1 and 3.2.31.
3.2.64 Area 327A-C and 330A

**Processes and Operations**

Subarea 327A was a clean room for fabricating glass piece parts and subassemblies. Lathes and torches were used to assist in glass blowing processes. Subareas 327B and C were nonproduction areas. Area 330A was also a clean room and glass shop. Torches and CO₂ lasers were used for further glass processing. Mechanical assembly was also performed to combine glass parts with other components to be sent to Area 331A for welding.

**Chemical Usage**

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- methylene chloride
- acetone
- nitric acid
- mercury
- alcohol
- hydrofluoric acid
- curing agent
- trichloroethene (trichloroethylene)

**Exhausts**

There are no chemical exhausts in the area.

**Drains**

There are no drain system connections.

**Status**

In 1996, Equipment Fabrication and Test was relocated to this area.

3.2.65 Area 331A

**Processes and Operations**

This area was an electron beam welding shop for fabricating parts and subassemblies in support of classified components and neutron generator production. There was also a wire saw workstation used for glass cutting (some glass contained naturally occurring uranium oxide), a vacuum pump, and an electric oven located in the area.
Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- Isoverre (chemical stripper)
- mercury
- hydrofluoric acid
- glass containing naturally occurring uranium oxide
- acetone
- methylene chloride
- nitric acid

Exhausts

Equipment exhaust was vented through roof opening 452.

Drains

There are connections to the sanitary drain system.

Status

In 1996, Equipment Fabrication and Test was relocated to this area.

3.2.66 Area 336 A-Q

Processes and Operations

The area was used for the testing and inspection of classified components. Subareas A-H were test cells constructed with reinforced concrete walls for high-pressure testing. Other testing performed included thermal, mechanical shock, vibration, ultrasonic, and vacuum leak. Subareas Q and L were used for x-ray inspection and x-ray film processing, respectively, with the latter area containing a silver recovery system.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- photographic chemicals
- glycerol
- mercury
- alcohol
- nitric acid
- hydrofluoric acid
- acetone
- trichloroethene (trichloroethylene)
- Freon®
- silver

Exhausts

Equipment exhaust was vented through roof openings 451 and 992.
Drains

There are connections to the sanitary and chemical drain systems. Chemical Liftstation Number 10 is located in the area.

Status

In 1996, Equipment Fabrication and Test was relocated to this area.

3.2.67 Area 347A, B, C, and M

Processes and Operations

This area had three different uses: Subareas A and M (second floor mezzanine) were used for the packaging and shipping of war reserve parts, Subarea B is an electrical switchgear room, and Subarea C is a utilities room.

Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- methylene dianilene (MDA)
- alcohol
- flammable liquids

Exhausts

There are no chemical exhausts in the area.

Drains

There are connections to the sanitary drain system.

Status

Specialty Components continues to occupy this area.

3.2.68 Area 348A-F

Processes and Operations

This area had several different uses. Subareas 348A-C were the optoelectronics development laboratory used to assemble and test prototype devices and to study laser beams. These subareas contained optoelectronic characterization equipment, life test equipment, and lasers. Processes included assembly, soldering, helium leak detection, failure analysis, and visual analysis. Operations in Subarea 348D included production support and process enhancement. This subarea was used primarily for inspecting raw materials, including glass, to be used in other parts of the plant. Lathes and torches were also utilized in this
subarea. Subarea 348E was a storage room, and Subarea 348F was used for product acceptance inspection.

**Chemical Usage**

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- alcohol
- perchloroethane
- methylene chloride
- Freon®
- trichloroethane
- acetone

**Exhausts**

Chemical exhausts were discharged through roof openings 315 and 611.

**Drains**

There are connections to the chemical drain system.

**Status**

Specialty Components continues to occupy this area.

### 3.2.69 Area 350A-Y

**Processes and Operations**

This area had multiple operations. Subareas A, C, and D were occupied by the Equipment Calibration and Instrumentation Laboratory for repairing and calibrating benchtop electronic equipment (i.e., oscilloscopes, digital and analog meters) and instrumentation. Subareas 350B and Q were used for LAMB production and testing. A LAMB battery combines high capacity in a compact size. Processes included lock foam encapsulating, contact assembly deflashing, soldering, resistance welding, cable assembly, cable canister assembly, cell assembly, unit assembly, LAMB cell pack testing, LAMB cell inspection, and LAMB cell storage. There was a walk-in freezer in the southwest corner of the room for storing raw materials. Subarea E was a breakroom and Subarea I was the plant's computer based training room. Subareas R-Y were the Standards Laboratory for high accuracy calibration of other calibration equipment, instrumentation (vacuum gages, temperature gages, thermocouples, pressure gages, flow meters, etc.), tools, and weights used throughout the plant. Processes included soldering and vacuum pumping.
Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- lithium hydride
- methyl ethyl ketone
- acetonitrile
- Freon®
- sulfur dioxide
- alcohol
- methylene chloride
- toluene diisocyanate
- acetone
- flammable liquids
- lead

Exhausts

Chemical exhausts were discharged through roof openings 442, 489, 605, 606, 607, 608, 609, and 699.

Drains

There are connections to the sanitary, chemical, and new above-ground radiological drain systems.

Status

In 1995, plant consolidation projects moved Chemical Laboratory operations from Areas 155 and 157 through 161 to Area 350 B through E, I, and Q (see Sections 3.2.35 and 3.2.37 through 3.2.39). Specialty Components continues to occupy Area 350. A PCIC tenant is scheduled to occupy this area after October 1, 1996.

3.2.70 Area 351A-N

Processes and Operations

There were two operations in this area. Subareas A-H were used for resonator/clock manufacturing and testing. Quartz resonators are high-accuracy timing devices used in weapons production. Processes included quartz etching, quartz cleaning, vacuum firing, polyimide application, resonator/clock assembly, thin film metal deposition, vacuum sealing, epoxy encapsulation, laser marking, laser trimming, soldering, ozone cleaning, and resonator/clock testing. Subareas I-N were occupied by Equipment Calibration and Maintenance. Processes were for repairing, maintaining, and calibrating process and test equipment used throughout the plant. Subarea 351I was used specifically for vacuum maintenance. Five 150-gallon tanks were used to clean vacuum systems and components. The tanks were enclosed, hooded, and exhausted through Acid Scrubber Number 5. Other vacuum maintenance processes included sandblasting to clean parts, vapor degreasing, and ultrasonic degreasing.
Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- nitric acid
- hydrofluoric acid
- trichloroethane
- alcohol
- Freon®
- sulfuric acid
- Sylgard
- toner
- tin/lead solder
- hydrochloric acid
- methylene chloride
- ammonium bifluoride
- diethanolamine
- flammable liquids
- trichloroethene (trichloroethylene)
- asbestos (floor tile mastic)
- acetone
- mercury

Exhausts

Chemical exhausts were discharged through roof openings 488, 596, 614, 618, 628, and 639. Exhaust from the acid tanks were vented through roof opening 690 to Scrubber Number 5.

Drains

There are connections to the sanitary and chemical drain systems.

Status

Operations have ceased. Subareas 351A through H have been cleaned, characterized, and closed out as part of D&C. The Area Characterization and Final Closeout Report for Subareas 351A through H was issued August 26, 1996.

3.2.71 Area 353A-D

Processes and Operations

Iron disulfide used in thermal battery production is processed in this area. The iron disulfide is processed in a vibratory mill to reduce the particle size and then treated with a mixture of acids to remove impurities. The acid treatment is performed in small hooded tanks, which vent to acid-resistant fans on the roof. The tank exhaust is not equipped with a scrubber. There is also a graphite lathe and several other machine tools in the area. Subarea D is an acid storage shed attached to the outside of the building.
Chemical Usage

A review of Specialty Components records indicated that the following chemicals may have been used or handled:

- calcium chromate
- heat powder
- hydrochloric acid
- iron disulfide
- hydrofluoric acid
- acetone

Exhausts

Exhaust from the acid storage shed is discharged through roof opening 83 to Scrubber Number 6. Other chemical exhausts discharge through roof openings 484 (Scrubber Number 7) and 485.

Drains

There are connections to the chemical drain system.

Status

Specialty Components continues to occupy this area.