



**OAK RIDGE
NATIONAL
LABORATORY**

**Liquid and Gaseous Waste Operations
Department Annual Operating Report
CY 1995**

LOCKHEED MARTIN



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MANAGED AND OPERATED BY
LOCKHEED MARTIN ENERGY RESEARCH CORPORATION
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LIQUID AND GASEOUS WASTE OPERATIONS DEPARTMENT

ANNUAL OPERATING REPORT

CY 1995

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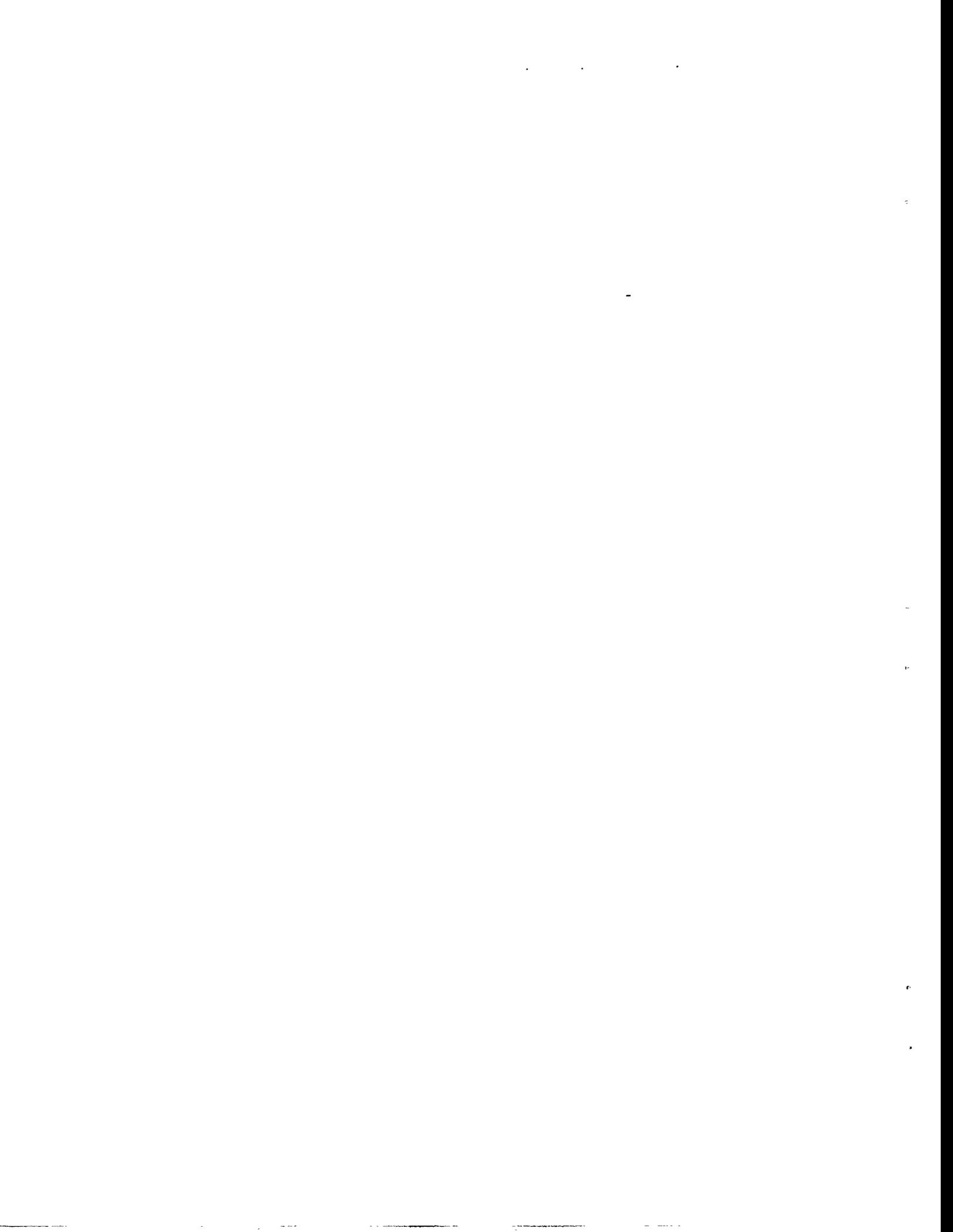
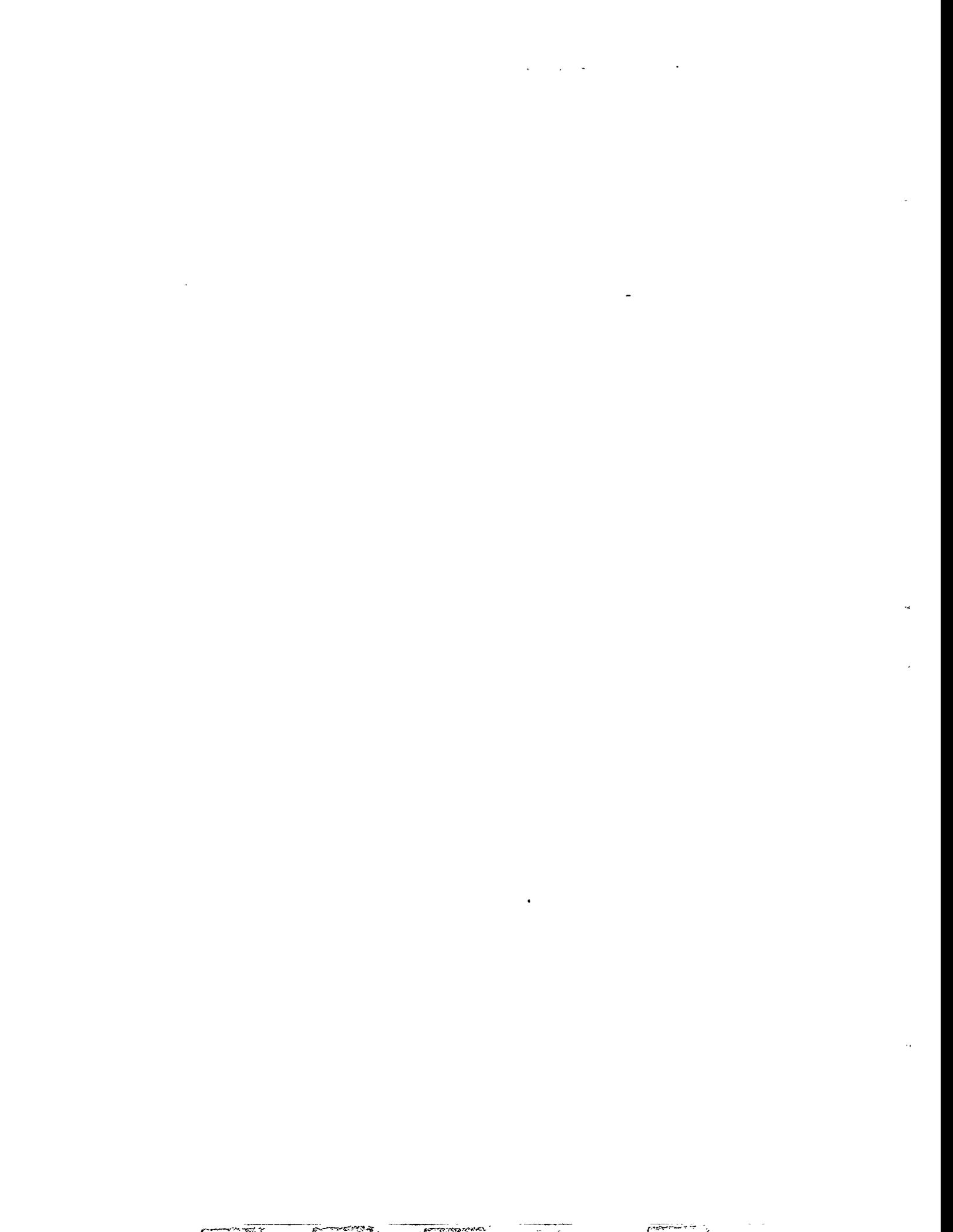


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ACRONYMS

ALARA	- As Low As Reasonably Achievable
BIO	- Basis for Interim Operation
Bldg.	- Building
BVST	- Bethel Valley Storage Tank
CAM	- Continuous Air Monitor
CY	- Calendar Year
DAS	- Data Acquisition System
DCS	- Distributed Control System
DOE-ORO	- Department of Energy - Oak Ridge Operations
EMC	- Environmental Monitoring and Compliance
ER	- Environmental Restoration
ES&H	- Environmental, Safety, and Health
ESWMO	- Energy Systems Waste Management Organization
FFA	- Federal Facility Agreement
FY	- Fiscal Year
gpm	- Gallons per minute
GPP	- General Plant Project
HEPA	- High Efficiency Particulate Air
HFIR	- High Flux Isotope Reactor
HVAC	- Heating, Ventilation, and Air Conditioning
I&C	- Instrumentation and Controls
ITE	- In-Tank Evaporation
LGWOD	- Liquid and Gaseous Waste Operations Department
LLLW	- Liquid Low-Level Waste
LMES	- Lockheed-Martin Energy Systems
LWSP	- Liquid Low-Level Waste Solidification Project
MK-F	- MK-Ferguson
MV	- Melton Valley
MVST	- Melton Valley Storage Tank
NCSA	- Nuclear Criticality Safety Appraisal
NRWTP	- Nonradiological Wastewater Treatment Plant (Bldg. 3608)
ORNL	- Oak Ridge National Laboratory
OSHA	- Occupational Safety and Health Administration
OSR	- Operational Safety Requirements
P&E	- Plant and Equipment
PMT	- Performance Measurement Team
PSET	- Plant Safety Evaluation Team
PW	- Process Waste
PWTP	- Process Waste Treatment Plant (Bldg. 3544)
QE&I	- Quality Engineering and Inspection
RSWOG	- Radioactive Solid Waste Operations Group
SARUP	- Safety Analysis Report Upgrade Program
S/RID	- Standard/Requirement Identification Document

ACRONYMS (Continued)

- SWSA - Solid Waste Storage Area
- TWRF - Transported Waste Receiving Facility (Bldg. 2649)
- WCG - Waste Certification Group
- WCP - Waste Certification Procedure
- WMRAD - Waste Management and Remedial Action Division
- WOCC - Waste Operations Control Center (Bldg. 3130)

**LIQUID AND GASEOUS WASTE OPERATIONS (LGWO) DEPARTMENT
ANNUAL OPERATING REPORT
CALENDAR YEAR 1995**

1.0 OPERATING ACTIVITIES

1.1 PROCESS WASTE SYSTEM

A total of 5.86×10^7 gallons (gal) of liquid waste was decontaminated by the Process Waste Treatment Plant (PWTP) ion exchange system during calendar year (CY) 1995. This averaged to 111 gpm throughout the year. When necessary, a wastewater sidestream of 50-80 gallons per minute (gpm) was treated through the use of a natural zeolite treatment system. An additional 1.24×10^7 gal (average of 24 gpm throughout the year) were treated by the zeolite system. Therefore, the average total flow treated at the PWTP for CY 1994 was 135 gpm. During the year, the regeneration of the ion exchange resins resulted in the generation of 6.12×10^3 gal of Liquid Low-Level Waste (LLLW) concentrate and 5.71×10^3 gal of LLLW evaporator feed. The head-end softening process (precipitation/clarification) generated 591 drums (4.35×10^3 ft³) of solid low-level waste sludge. See Table 1 for a monthly summary of activities at the PWTP. Figure 1 shows a diagram of the Process Waste Collection and Transfer System and Figure 2 shows a diagram of the PWTP treatment process. Figures 3, 4 5, and 6 show a comparison of operations at the PWTP in 1995 with previous years. Figure 7 shows a comparison of annual rainfall at Oak Ridge National Laboratory (ORNL) since 1991.

A total of 1.80×10^8 gal of liquid waste (average of 342 gpm throughout the year) was treated at the Nonradiological Wastewater Treatment Plant (NRWTP). Of this amount, 0.57×10^7 gal was treated by the precipitation/clarification process for removal of heavy metals. Four boxes (3.84×10^2 ft³) of solid sludge generated by the precipitation/clarification process were removed from the filter press room. The NRWTP receives wastewater from the PWTP, the metals/nonmetals pumping station (collects wastewater from the 1505 and 2000 areas), the 190 pumping station (collects wastewater from the 4500 complex area), and the Melton Valley (MV) process waste collection tanks. The NRWTP removes particulates, heavy metals, and organics, as well as adjusts the pH of the wastewater, before discharge to White Oak Creek. See Table 2 for a monthly summary of activities at the NRWTP. Figure 8 shows a diagram of the NRWTP treatment process. Figures 9 and 10 show a comparison of operations at the NRWTP in 1995 with previous years.

1.2 LIQUID LOW-LEVEL WASTE (LLLW) SYSTEM

The A2 and 2A2 evaporator systems operated normally during the year. A total of 2.61×10^5 gal of LLLW was processed through the A2 evaporator system and 2.00×10^5 gal of LLLW was processed through the 2A2 evaporator system. There was 8.08×10^3 gal of concentrate transferred from the A2 system and 2.87×10^3 gal concentrate transferred from the 2A2

system to the waste storage tanks. Figure 11 shows a diagram of the LLLW Collection and Transfer System. See Table 3 for a monthly summary of activities at the evaporator systems. Figure 12 shows a graphical representation of the amount of concentrate presently stored at ORNL awaiting disposal. See Figure 13 (for a graphical comparison of the generation of LLLW at ORNL over the last five years) and Figures 14 through 35 for a comparison of the generation of LLLW by individual sources over the last five years.

In-Tank Evaporation (ITE), an attempt to reduce the LLLW concentrate inventory through the removal of excess water in the Melton Valley Storage Tanks (MVSTs) by bubbling air through them, was shut down in March due to concerns about nitrate concentrations within the MVSTs. Nitrate concentrations are a concern because high concentrations can interfere with the solidification process used to dispose of supernate from these tanks and cause the solidified waste form to crack. Personnel in the Chemical Technology (Chem Tech) Division were contacted to perform a study to determine what the maximum level of nitrates is that can be achieved in the tanks using the ITE process without creating problems for the solidification process.

1.3 GASEOUS WASTE SYSTEM

The gaseous waste system operated normally during the reporting period. Normal operations means that continuous ventilation service was provided to all customer facilities except during scheduled maintenance periods and the system was operated within the conditions set in the Limiting Conditions for Operations Document. A schematic of the Gaseous Waste System is shown in Figure 36.

2.0 UPGRADE ACTIVITIES

Several upgrade activities were underway during the year. Because many of the upgrades were to existing Liquid and Gaseous Waste Operations Department (LGWOD) operating facilities, coordination between LGWOD and construction personnel was a priority; with several LGWOD technical staff personnel being involved in daily planning of construction coordination activities. Upgrades to the PWTP, which is operated 24 hours a day, 365 days per year, were completed with minimal outages of the treatment systems for tie-ins. Descriptions of the various construction activities are given in the following sections, with a month by month description of activities immediately following the project description.

The Liquid Low-Level Waste Solidification Project (LWSP) - Campaign III was conducted during the year with the solidification of approximately 47,300 gallons of LLLW supernate (generating a total of 59 solidified waste forms) in an effort to generate additional storage capacity for future LLLW operations. This project was one of five projects selected in 1995 for an As Low As Reasonably Achievable (ALARA) award due to the LWSP personnel's efforts to reduce exposures during the campaign.

Personnel continued efforts to maintain LGWOD procedures as up-to-date, usable documents. One hundred and eight revisions were approved and issued during the year to existing LGWOD procedures. Four new procedures were issued and one procedure was cancelled.

2.1 PROCESS WASTE (PW) SYSTEM

2.1.1 PROCESS WASTE STORAGE TANK

This new 1,000,000 gallon capacity tank is being built next to the existing Bethel Valley Process Waste Storage Tanks at Bldg. 2600. This tank will allow for the use of three surface impoundments to be discontinued in 1996 that are presently used to provide additional storage capacity during periods of heavy inflow to the Process Waste Collection and Transfer System. At the end of the year the tank construction was being completed in preparation for the resumption of functional testing in early 1996.

January

LGWOD personnel provided comments on the software configuration requirement document for the project.

March

Reviewed the Configuration Requirements Document for the new Bethel Valley Storage Tank (BVST) #3 that is being built adjacent to Bldg. 2600. This review was to ensure that

all previous comments on the programming of the Distributed Control System had been incorporated. This project is installing the new storage tank to provide additional storage capacity during periods of heavy inflow to the Process Waste Collection and Transfer System and to allow three surface impoundments in Bethel Valley to be removed from use under high flow conditions.

Attended a meeting with Plant and Equipment (P&E) personnel to identify how the final tie-in will be made to connect the new BVST #3 being built at Bldg. 2600 to the Process Waste Collection and Transfer System. A walkdown was held with P&E personnel to locate and evaluate installation impacts when the final tie-ins are made to the Process Waste Collection and Transfer System. P&E personnel then began fabrication of tie-in connections in the shop and will begin field installation soon. MK-Ferguson (MK-F) performed a second concrete pour for the new BVST #3.

April

Continued work in preparation to make the tie-ins of the new Bethel Valley Storage Tank (BVST) #3 at Bldg. 2600 to the existing Process Waste Collection and Transfer System. P&E personnel continued fabrication of materials for the tie-ins. MK-F personnel installed piping supports in preparation for the installation of piping in the existing Bldg. 2600 diked area. One section of the existing process water piping was removed to allow for installation of the new pipe supports. P&E personnel completed all tie-in assemblies in the shop. LGWOD personnel performed a lockout/tagout and provided a High Efficiency Particulate Air (HEPA) unit to support field work. By the end of the month P&E personnel had completed three of the six tie-ins between the new tank and the existing Process Waste Collection and Transfer System.

May

Attended two meetings to resolve logistics for testing connections from the new 1,000,000-gal Bethel Valley Storage Tank to the existing Process Waste Collection and Transfer System. Completed the six tie-ins required to be installed by P&E personnel.

June

Provided assistance to Construction this week by coordinating with P&E personnel to relocate an air line which interfered with new piping being installed for the new 1,000,000 gallon process waste storage tank.

July

Participated in several meetings and discussions with Lockheed Martin Energy Systems (LMES) Engineering and MK-F to resolve construction issues and to help develop a

timeline/schedule that includes development of the operating and testing procedures for the new Process Waste Storage Tank and operator training. The piping and structural vendors were on site performing work. A mechanical contractor continued installation of piping at the site and the tank manufacturer arrived on site to begin erecting the tank. Preliminary work on the pre-operational testing document was underway and the initial draft would be completed in August.

August

Piping installation continued and pressure testing of some of the installed piping was initiated. At the end of the month the majority of the piping installation was completed. Final piping would not be completed until the tank is completed since there are piping tie-ins to the tank. The tank manufacturer was working on erecting the new tank. The initial draft of the pre-operational testing document was completed.

September

The majority of work has continued to center around erections of the tank itself, and the tank structure is essentially completed. Work would begin in October to prepare the tank to be filled with water for the construction hydro test. Several meetings were held to address upcoming issues, including whether some of the pre-operational functional testing could occur simultaneously with the construction testing and checkout. It would be early October before all of the pertinent issues could be resolved to determine if the testing could occur simultaneously.

October

Activities included walking down the system to validate piping and instrumentation drawings; hanging valve identification labels; and approval of the phase 1 functional testing plan. Construction personnel then began hydro-testing of the tank and work was coordinated with Instrumentation and Controls (I&C) personnel to ensure the level probes in the tank were calibrated during this test so that the tank would not have to be filled again at a later date for this activity. While the hydro-testing was underway, LGWOD and Engineering personnel tested the transfer pumps and the jet mixers for the new tank. Some problems with the pumps were identified and turned over to construction personnel for resolution. Personnel then emptied the water from the tank that was used during the hydraulic testing of the tank and began insulation of the piping. At the end of the month, the tank's interior had adequately dried so that the contractor could begin applying the tank interior's protective coating.

November

Coating the interior of the tank was completed and the coating must now cure for approximately 30 days. Construction personnel began painting the exterior of the tank, but were slowed due to cold weather. An evaluation of the new transfer pumps installed for the new tank was also performed. Previous testing revealed a significant difference in the volume of water pumped by the two transfer pumps. The evaluation revealed differences in the check valves installed in the discharge line of each pump which caused a greater flow restriction for one pump and this has been corrected. The pumps will be retested later when the remainder of the system undergoes the pre-operational testing. Work was also underway to finalize the pre-operational testing documents in Engineering and in the LGWOD and work was ongoing to prepare the operating procedures to support operations of the new tank. Eleven procedures were identified as requiring revisions and drafts of all eleven procedures were prepared. Preparation of these procedures was being done at this stage of the project in order to facilitate a quick turn over to operations when the construction was completed.

December

The majority of work during early December involved cleaning the site of construction debris. The coating, which was applied in late November, had to cure until the last week in December, at which time personnel began filling the tank with process water so that preoperational testing could resume. Construction personnel installed the lining in the trenches inside the diked area while the tank coating was curing. A final pre-operational functional testing document was prepared and issued for the new installation. Operations personnel then began labelling of the valves to allow them to become familiar with the facility as they walk the facility down and to compare the facility layout to the construction drawings. Additionally, the alarm and control setpoints document, which was developed by Engineering personnel, was reviewed and comments were submitted to them.

2.1.2 PROCESS WASTE TREATMENT PLANT UPGRADES LINE ITEM

The PWTP Upgrades Line Item was a reforecast line item that was a compilation of several General Plant Projects (GPP) that had been identified at the PWTP. This project is being performed in several phases, with the following major activities having been performed during the calendar year:

- Installation of a new chemical unloading station on the east side of Bldg. 3544 for the unloading of sulfuric acid, nitric acid, and sodium hydroxide. The new unloading station was diked and corrected several deficiencies that had been identified during audits of the facility.
- Installation of caustic scrubber upgrades with the installation of a new HEPA filter unit, a new fan, and a new demister and other associated components.

- Began construction at the PWTP and at the NRWTP which involves installation of a new valve box and piping from the south parking lot at Bldg. 3608 to Bldg. 3544. These modifications will increase the throughput treatment capability of the PWTP by having the water-softening process being moved to the spare clarifier at the NRWTP and having the softened water being transferred back to the PWTP for treatment through the ion-exchange system. The effluent pumps at the Bethel Valley Process Waste Storage Tanks will also be modified to increase their discharge capacity.

January

Activities on the second phase of the PWTP Upgrades Line Item continued with personnel completing preoperational testing of the new L-7A tank. Components for a solenoid valve were found during testing to be missing and a punch list item was added for their procurement. This item was installed and formal turnover of the L-7A tank system will be made to LGWOD personnel in February. A draft of the revised operating procedures for eluate recovery using the PWTP evaporator has been prepared and walked down with operating personnel and is now being typed for formal review/approval.

LGWOD personnel participated in a preconstruction walkdown for the construction of the new chemical unloading station at the PWTP. This was done in preparation for the mobilization of MK-F work forces to begin construction activities.

LGWOD personnel attended the construction kick-off meeting for Phase II of the PWTP Upgrades Line Item and reviewed the Site Safety and Health Plan prepared by MK-F for construction of the chemical unloading station. Activities by MK-F during the reporting period included the erection of a temporary cover over the work site to allow for activities during inclement weather and the marking off of the site in preparation for excavation activities.

February

MK-F personnel continued work in support of the new chemical unloading station. MK-F completed erection of a tent enclosure over the entire construction area this month. They almost completed excavation activities in preparation for the concrete pour of the unloading station. MK-F completed a concrete pour for a sump and piping encasement and have begun installation of the new transfer piping. MK-F would begin "forming" and installing steel for the final concrete pour in March after the excavation was completed.

A meeting was held at the beginning of the month with Martin Marietta Energy Systems, Inc., Engineering and MK-F to finalize plans for the caustic scrubber upgrade at the PWTP. MK-F completed a "mock-up" of the new system and announced that it was successful in assuring proper fit-ups, clearances, etc., when they installed the system. MK-F began field

work on Tuesday, February 14, and were allotted nine days to perform the entire installation. The DOP test and flow balancing was completed, and the new system was turned over to the LGWOD ahead of schedule.

A second review of the new Piping and Instrumentation Diagram drawings for Bldg. 3544 was completed and arrangements were made to issue and approve them. This update corrected several inaccuracies on the drawings and supplied additional design information on them that did not previously exist.

March

Completed the excavation and began forming and laying steel for the upcoming concrete pour for the new chemical unloading station. Also began routing piping for the chemical transfer connections at the new station. Removed a portion of the out-of-service piping at Bldg. 3544 which was previously used for transfers from the L-6 tank to the old sludge pond in Melton Valley to allow for construction of the new chemical unloading station at the facility. MK-F personnel completed installation of the rebar for the concrete pour and the steam condensate drain piping was rerouted so that vehicles entering the unloading station would not be obstructed by the piping. Completed the initial and final concrete pours for the unloading station and completed installation of steel for the final pour at the PWTP as part of the PWTP Upgrades Line Item - Phase II activities. MK-F would allow the concrete to cure for approximately 28 days. They would then apply the concrete coating which would complete the project.

Issued Piping and Instrumentation drawings for the PWTP, which had been undergoing review during the last three months. These drawings were updated to provide Engineering personnel with accurate system drawings to support future upgrade work at the PWTP during the PWTP Upgrades Line Item.

April

MK-F personnel completed several minor tasks, including modification of piping, reinstallation of the L-14 Nitric Acid Tank Access Platform, and some general housekeeping. At the end of the month all new lines had been installed (minus their heat tracing and final tie-ins to the active system) and had been pressure tested.

May

MK-F installed heat tracing and insulation on piping at the chemical unloading station. The procedures for operation of this new station have been drafted and are being prepared for review.

June

Assisted Engineering, Quality Engineering and Inspection (QE&I), and Safety personnel in evaluating ladders at the new unloading station at the PWTP (Bldg. 3544). As a result of the installation of the new unloading station at the PWTP, two new ladders were installed. Due to concerns raised by QE&I personnel, the ladders received a safety evaluation. Safety personnel evaluated the installation and determined that any hazard imposed by the nonconformance was "de-minimis" and therefore approved the installation.

July

Finalized work on the new PWTP Unloading Station. MK-F completed the tie-in to the M-8 Sulfuric Acid Tank, "demolished" out-of-service piping, and dismantled the enclosure over the unloading station construction site. The final coatings on metal surfaces in the new diked area were also applied. A walkdown with MK-F, Engineering and Operations personnel was performed and, as a result, the facility was turned over to the LGWOD for use.

August

Provided assistance to Engineering and QE&I personnel by filling the new Bldg. 3544 unloading station with water. This was done so a leak test of the new diked area could be performed. The diked area passed the leak test and the water was then disposed of.

November

Attended a construction kick-off meeting with MK-F and the construction personnel to discuss the schedule and traffic plan for the next phase of the PWTP Upgrades Line Item and participated in a partial walk-down of the upcoming modifications at Bldg. 3544. This phase will make upgrades at the PWTP (Bldg. 3544) and at the NRWTP (Bldg. 3608); and will install a new valve box and piping from the south parking lot at Bldg. 3608 to Bldg. 3544. These modifications will increase the thru-put treatment capability of the PWTP and is a part of Phase II of the PWTP Upgrade Line Item project.

December

Attended two construction meetings to review the schedule submitted for the capacity increase project. In reviewing the schedule, several areas which will require reconsideration to assure outage durations of the PWTP and the NRWTP are not excessive were identified. Engineering, construction, and operations personnel are working this issue. The fixed price subcontractor began work north of Bldg. 3608 by cutting the pavement in preparation for trenching in that area.

2.1.3 MISCELLANEOUS

January

In cooperation with the Department of Energy - Oak Ridge Operations (DOE-ORO), an onsite evaluation of an on-line, real-time alpha monitor for sample analysis of aqueous radionuclides will be conducted by an outside vendor. The vendor will supervise the installation of a test and evaluation alpha particulate monitor at the Diversion Box (located south of the Equalization Basin). Installation was scheduled to begin as soon as vendor personnel could be trained for access to the ORNL facilities. The vendor representative will be assisted by I&C personnel, LGWOD personnel, and Central Engineering personnel in the installation, calibration, and evaluation of the new monitor. This process could result in vastly improved monitoring and detection of suspended alpha contamination in discharge streams at X-10 as well as other DOE facilities.

2.2 LIQUID LOW-LEVEL WASTE SYSTEM

2.2.1 BETHEL VALLEY LLLW LINE ITEM

This line item is replacing several portions of the existing LLLW Collection and Transfer System in Bethel Valley that have been in service for several decades with facilities that meet requirements of the Federal Facility Agreement (FFA) for the LLLW System. This line item consists of the following activities:

- Construction of a Monitoring and Control Station (Bldg. 2099) which will provide a new double-contained collection tank and transfer system servicing Bldg. 2026. During the year readiness assessment activities were completed by Lockheed-Martin Energy Systems (LMES) personnel and DOE-ORO personnel began their assessment of the facility. It is hoped the facility will be declared operational in 1996.
- Construction of a Transported Waste Receiving Facility (Bldg. 2649) which provides a double-contained facility to empty transported LLLW waste containers (both tankers and LLLW bottle packages) to a new collection tank, and also provided a new transfer system to the LLLW Central Collection Header. Construction of the main facility was completed in 1995 and functional testing was performed. A large punchlist of items was generated during testing and was being worked on at the end of the year. In addition, design of an unloading boom to provide top-unloading connections of the LLLW tankers was underway at the end of the year. Completion of this construction will be in 1996 and will be tested when the new LLLW tanker (the LR-56) which is being manufactured in France is received in the spring of 1996. This new tanker will provide LGWOD with the capability to transport certain amounts of LLLW from other sites for treatment in a tanker that meets all Department of Transportation requirements.

- Construction of a new central off-gas scrubber solution tank and associated transfer system that will replace the existing scrubber solution sump at Bldg. 3092. Construction of this phase will be completed in 1996.
- Design of a new LLLW transfer system to the existing chemical unloading station at Bldg. 3544 was underway at the end of the year. This will allow the single-contained LLLW line connecting Bldg. 3544 to the LLLW Evaporator Facility to be taken out of service and replaced with a system meeting FFA requirements. A connection to the existing interconnecting pipeline between Bethel and Melton Valleys was originally planned several years ago but rising construction costs associated with providing a connection to a Category 2 nuclear facility led to a redesign of the connection. Use of the existing unloading station will allow construction costs to be reduced and will allow personnel to not have to perform any excavation work with this project. Construction is planned for 1996.

January

LGWOD personnel participated in a review of the Transported Waste Receiving Facility (TWRP, Bldg. 2649) modifications that would be required for operation of the LLLW Tanker (LR-56) that is presently in the design and fabrication process. Emphasis was placed on instrumentation interfaces between the new tanker and the Distributed Control System located at the facility. The new tanker is being purchased through a joint procurement with personnel at the Hanford, Washington, site to provide a tanker that will meet Department of Transportation requirements for operation on public highways.

LGWOD personnel assisted I&C personnel in the calibration of level instrumentation which is being installed in the new Valve Box #3A. This valve box was constructed as part of the Bethel Valley LLLW Line Item to provide a connection for the TWRP to the Central Waste collection header.

February

LGWOD personnel incorporated comments and approved the Functional Test Plan for the TWRP. The plan was then sent to Central Engineering for project personnel approval. This testing was a joint activity between LGWOD and Central Engineering personnel prior to the system being submitted to the readiness review team for evaluation.

March

Provided comments to Engineering personnel on the revised System Requirements Documents for the upgrades to the TWRP to allow use by the LLLW tanker presently being procured and to Bldg. 3525 to allow it continued access to the LLLW Collection System.

May

Attended the kickoff meeting for construction of the Bldg. 3092 Upgrades. This will install a new off-gas scrubber solution tank and transfer system that meets the requirements of the Federal Facilities Agreement for the LLLW System.

June

Continued work by MK-F on the 3092 Upgrades Project. MK-F excavated to a portion of "Line D". The excavation allowed access to the section of double-contained piping that was installed two years ago along Central Avenue by MK-F to support this project. When the excavation was completed, MK-F personnel installed new double-contained piping from the line at Central Avenue to the construction site at Bldg. 3092 so that the new scrubber solution tank that is being installed could be connected to the Central Waste Collection Header. The excavation from this job was then filled and covered and Central Avenue was reopened to two-way traffic.

Participated in a meeting with Construction and Engineering personnel to review scheduling issues of the 3092 Scrubber Upgrade Project. Concern had been expressed that the project was falling behind schedule, but MK-F personnel provided assurance that the overall project is on schedule.

Provided comments to Engineering personnel on the design drawings for providing a new double-contained piping connection from Bldg. 3544 to the LLLW Collection and Transfer System that meets requirements of the FFA for the LLLW System. As a result of this review, a meeting was held with Engineering personnel to resolve concerns about this new connection. It was agreed at the meeting to look at providing a truck loading station at the facility and trucking the waste instead of providing a hard-piped connection to the LLLW System.

Began a walkdown of the TWRF in preparation for functional testing of the facility with Engineering personnel. Personnel identified changes required in the test plan caused by field changes made during construction. Began testing of the instrument air system, the potable water system, the nitrogen system, and part of the steam distribution system after the walkdowns were completed.

July

Continued functional testing of the TWRF. LGWOD and Engineering personnel completed testing of the sodium hydroxide (caustic) system and the steam distribution system. A punchlist of minor modifications and repairs was generated during the testing. P&E Division personnel began work on the punchlist by repairing several components in the steam distribution system at the TWRF. Pipe supports were added, a steam trap was installed, a

leaking check valve was replaced, and several valves were modified to install extension stem operators. Heating, Ventilation, and Air Conditioning (HVAC) technicians replaced a drive motor on the air handling unit for the control room of the TWRF

Continued work on the Bldg. 3092 Caustic Scrubber Upgrade. Current work at the site is mainly dedicated to hand excavating the area where a new tank will be installed. LGWOD personnel assisted MK-F in identifying piping, wiring etc., and they have provided the required lockouts. Contaminated soil was encountered the week ending July 14, 1995, and consequently the area was upgraded to a "HAZWOPER" site. The extent of the contamination was being evaluated on a continual basis.

August

Issued a lockout/tagout to MK-F personnel working at Bldg. 3092. The discharge lines from tank WC-2 and the central off-gas scrubber solution sump were locked out. Excavation for the new scrubber solution tank and its vault was still the primary activity associated with this project. LGWOD personnel participated in several meetings to help resolve issues which arose as a result of contamination encountered inside the excavation area for the new equipment. A containment tent was completed over the excavation site in late July and the 2" transfer lines from WC-2 and from Building 3038 were cut and capped. Removing these lines allowed personnel to discontinue hand excavation and allows the use of a backhoe on the remainder of the excavation. MK-F would erect a tent over the area to assure contamination control. At the end of the month, due to high contamination encountered in the area, field work ceased until better characterization of the area could be determined. LMES and MK-F worked together to gather soil core samples in the area of the current excavation to better determine what would be encountered when the excavation work continued.

Provided personnel to support the functional testing of the TWRF.

September

Resumed field work in early September on the 3092 Caustic Scrubber Upgrade project. Contamination that was encountered in August appeared to have been removed from the excavation site, and the plan was to continue excavation for the new caustic scrubber vault. The work progressed slowly due to a piece of heavy equipment, which had been needed to help remove rock in the site excavation, taking several days to arrive. Work was still principally dedicated to completing the excavation for the tank vault. Also, in support of the project, assistance was given in revising the Waste Management Plan for the site. The revision was necessary to address the contamination encountered in the excavation.

Provided personnel to support the checkout of the transfer line from the TWRF to Valve Box #3A. The functional testing of this facility was completed during the month. During the

month, the following tasks were performed to resolve problems encountered during the functional testing: modified the stairwells to provide toeboard, modified a pipe to eliminate a potential tripping hazard, replaced 128 HEPA filter bolts which had problems associated with galling, replaced ventilation fan AHU-1's motor with new motor after it failed, installed new nitrogen system relief valve piping, replaced a faulty steam trap, calibrated the LLLW and process waste tank level transmitters, cleaned out the LLLW and process waste tanks and their associated vaults, and completed repairs on the sump pump and it's discharge valve in Valve Box #3A.

October

Coordinated work activities at the TWRF to correct deficiencies and install improvements identified during the recently completed functional testing of the facility. These activities included pouring a concrete step-off pad at the sampler room exit to eliminate a potential safety hazard; repairing the caustic pump check valve; and walking down the valve vault and hanging tags on the valves and installing additional piping identification to assist with future maintenance activities. Personnel also cleaned out construction debris from the tank and demister vaults in preparation for the placement of the concrete vaults lids on October 28.

Provided information on existing LLLW tanker operations and a comparison with the procedures for the new tanker that is under procurement to personnel from Energy Systems Waste Management Organization (ESWMO) Central who were attempting to determine the scope of Readiness Review activities that would be needed for the TWRF.

Continued field work on the 3092 Caustic Scrubber Upgrade project with the replacement piping for the drain line from Bldg. 3038 being installed and radiographed. Upcoming work would have MK-F filling in the excavation around a shoring box which had been installed and then installing the forming for the new tank pit that ws to be installed inside the shoring box.

November

Continued field work on the 3092 Caustic Scrubber Upgrade project. MK-F installed a tent to cover the work area to allow work to continue during bad weather. Work to build the new tank containment vault would then begin. MK-F personnel then worked on installing the new "E" line (a 2" LLW transfer line) and finished installation of the waterproofing for the new tank vault and began installation of the steel rebar for the upcoming vault concrete pour. They also were staging material, piping and components, at the site for the work to be done after the vault was completed.

Provided comments to Engineering personnel and participated in the on-board 50% review of proposed modifications at the TWRF for construction of an unloading boom to assist with transfers from LGWOD LLLW tankers. Also provided personnel to support P&E personnel

at Bldg. 2649 who were repairing items identified on the punch-list during the recently completed functional testing of the facility.

At the TWRF, P&E personnel performed the following activities during the month: (1) installed heavier valve stops on valves in the valve pit in order to reduce failure incidents of the stops, (2) tack welded the universal joints on the valve extension stem operators in the valve pit. This was to reduce the problem of shaft misalignment which was causing valve operator failure, (3) brushed and cleaned welds in the valve pit to eliminate corrosion problems with the liner, (4) replaced the breaker trip unit on the control room air conditioning blower, (5) installed a heater in the sample room vestibule (6) replaced the insulation on several pipes which were stripped during repairs, and (7) poured the electrical seal offs in the process waste tank pit and the valve vault. I&C personnel replaced the Barton transmitters in several locations and LGWOD personnel hung identification tags on valves in the valve vault to assist personnel during future maintenance activities. These repairs and small modifications were identified during the recently completed functional testing of the facility by LGWOD and Engineering personnel.

December

Participated in the DOE-ORO readiness assessment of Bldg. 2099, which was built as part of the Bethel Valley LLLW Line Item. This facility, which provides a LLLW Collection Tank and Transfer System that meets FFA requirements, was completed in mid-1994 and is awaiting DOE-ORO approval to be placed in service.

Continued field work this month on the 3092 Caustic Scrubber Upgrade project. MK-F continued forming and installing rebar steel for the new tank vault. Work was also proceeding on the instrumentation and control panel enclosure which would be located at the SE corner of Bldg. 3092.

2.2.2 MELTON VALLEY LLLW LINE ITEM

This line item project is providing a new collection tank to service Bldgs. 7920 and 7930 and a new double-contained transfer line from the 7900 area to the South Parking lot valve box that meets FFA requirements. This will replace the existing single-contained transfer line and transfer system. Additional work includes upgrades to the LLLW piping at Bldgs. 7920 and 7930 and disconnection of Bldg. 7900 from the LLLW Collection and Transfer System. Work during the year was primarily on the modifications to Bldg. 7900 and installation of the new intervalley transfer line. Personnel also constructed the new tank's vault and valve vault and the new tank was installed in late December. Construction activities are planned to be completed in late FY96.

April

Provided comments on the draft software configuration document for the Melton Valley LLLW Collection and Transfer Line Item to Engineering personnel responsible for the programming efforts.

2.2.3 MELTON VALLEY STORAGE TANKS CAPACITY INCREASE LINE ITEM

This line item will provide LGWOD with an additional 450,000-gallons of usable storage capacity for LLLW concentrate generated at the LLLW Evaporator Facility and from Environmental Restoration activities planned during the upcoming years. The six new 100,000 gallon tanks are being built near the existing Melton Valley Storage Tanks (Bldg. 7830). Activities during the year included the completion of the design package and the beginning of site preparation work. Personnel were also installing a new potable water line to the area to provide adequate water supply to the fire protection system at the new facility.

January

Provided comments to Engineering personnel on the Melton Valley Storage Tanks - Capacity Increase Line Item Site Preparation 90% review package.

February

Provided comments on the 60% Design package for the Melton Valley Storage Tanks - Capacity Increase Line Item Project to Project Engineering personnel.

Participated in a walkdown of the planned construction site with MK-F, Engineering, and Architect-Engineer personnel to identify laydown areas and possible access restrictions for construction personnel.

Participated in the 60% on-board review of the Melton Valley Storage Tanks - Capacity Increase Line Item.

March

Participated in the 60% review of the ventilation system package for the Melton Valley Storage Tanks Capacity Increase Project.

April

Provided comments on the 90% review of the Division 1 specification for the Melton Valley Storage Tanks Capacity Increase Project Line Item. Items addressed were how to minimize the impact of construction activities on the operating facilities during construction.

May

Provided comments to Engineering on the 90% design review for the Melton Storage Tanks - Capacity Increase Line Item.

Participated in the 90% Design Review discussions for the Melton Valley Storage Tanks - Capacity Increase Line Item Project with Engineering and Architect-Engineering personnel.

June

Approved the Division 1 of the Construction Specifications for the Melton Valley Storage Tanks Capacity Increase Line Item Project.

2.2.4 BETHEL VALLEY FEDERAL FACILITY AGREEMENT LINE ITEM

This line item is providing several upgrades to Bethel Valley facilities to meet requirements of the FFA. These upgrades include the following:

- Construction of a new above-ground cell ventilation and off-gas HEPA filter building (Bldg. 2658) for the LLLW Evaporator Facility. This will allow the existing below-grade pits which collect inleakage which must be treated as LLLW to be removed from service. It will also provide a filter system that meets current inspection requirements for in-place testing of the filters.
- Relocation of the steam control station for the evaporator service tanks from inside Bldg. 2537 to the outside east wall of Bldg. 2537. This will prevent steam leaks from damaging instrumentation and control equipment located inside the building. The out-of-service sampler system for the evaporator service tanks will be demolished and the connections to the tanks will be capped, as well as several other out-of-service connections. This will allow the Continuous Air Monitor (CAM) to be removed from the facility.
- Provide a new hot off-gas pot that will collect condensate and inleakage into the off-gas system at the system's lowpoint in the 3500 area and will allow personnel to transfer the wastewater to the Process Waste Collection and Transfer System; instead of to the LLLW System as is done currently. This rerouting, based on sampling of the wastewater, will eliminate having to upgrade the existing system to meet requirements of the FFA for the LLLW System.
- Provide a new collection tank at Bldg. 3025E and a new double-contained transfer system to the Central Waste collection header that will meet FFA requirements and will allow Bldg. 3025E to continue to use the LLLW System.

During the year, design of these various upgrades was completed and construction of the upgrades at Bldg. 2537 was scheduled to begin in early January 1996.

January

Provided comments on the Bethel Valley FFA Line Item 90% review package for upgrades to Bldg. 2537 and for the replacement off-gas and cell-ventilation filter pit for the LLLW Evaporator.

February

LGWOD personnel participated in the 90% Design Review for the work at Bldgs. 2537 and 2658. This project will upgrade the steam station and control panels located at Bldg. 2537 and provide a new aboveground filter pit to replace the existing cell ventilation and off-gas filter pits located at Bldg. 2531.

Provided comments on the 30% Design package for the hot off-gas pot upgrades.

April

Provided comments on the 60% Design Review Package to Engineering personnel for the Building 3025E and the Hot Off-Gas Pot upgrades.

December

Provided a tour of Bldg. 2537 to Engineering and construction personnel in preparation for personnel to begin the removal of the out-of-service sampling system in early January. This is the first field work to be done under the Bethel Valley FFA Line Item Project.

2.2.5 BLDG. 3019 LLLW UPGRADES GENERAL PLANT PROJECT

This General Plant Project (GPP) will provide a new connection from Bldg. 3019 to the Central Waste Collection Header that meets requirements of the FFA for the LLLW System. A new valve box (Valve Box 1B) will be built to provide a tie-in from an existing LLLW line from Bldg. 3019 to Valve Box 1A. Construction of the new valve box and line was underway during 1995 and will be completed in early 1996.

March

Worked with personnel from Engineering and Bldg. 3019 to identify interfaces with existing systems for possible lockout/tagout during the construction of Valve Box 1B in the near future. P&E personnel will be responsible for tie-ins to existing LLLW lines.

April

Held the start of construction for Valve Box 1B due to the unavailability of construction materials. Parts and materials had to be ordered and accepted prior to the start of construction because construction activities would be near several active sections of the LLLW System and LGWOD project personnel wanted to minimize construction delays that could affect the active system.

June

Began excavation of Valve Box 1B after project personnel provided assurances to LGWOD personnel that parts and materials were ordered and would be available as needed by construction personnel.

July

Excavation continued on Valve Box 1B. Pipe trench digging was completed and the new valve box digging was nearly completed. No contaminated dirt had been encountered to date. Shoring around the site for the new valve box was continuing.

September

Excavation was completed for the construction of Valve Box 1B. Shoring was installed and approved. Concrete footers were being poured to be used in the support of the concrete conduit, which must be supported during the construction of the box.

October

Shoring was completed on Valve Box 1B. The mud mat was poured and forms were installed for the box floor and walls. Construction was on hold at the end of the month due to delays in the procurement of construction materials.

November

MK-F personnel finished the forms and poured concrete for the walls of Valve Box 1B.

December

MK-F personnel finished pouring the walls and the top for Valve Box 1B. The stainless steel liner was fabricated and welded in place. The double-contained pipe from Valve Box 1B to Valve Box 1A was installed and covered up. The storm drain that had been damaged during construction was repaired and covered up. The spool piece to connect the new transfer line

to the active header was fabricated. MK-F is scheduled to finish their portion of the construction activities by the end of January 1996.

2.2.6 VALVE BOX UPGRADES

These upgrades include both expense funded and GPP activities. The first activity was an evaluation of the existing valve boxes in Bethel Valley to determine which valves needed replacement was done in early 1995. Based on the physical examinations of these boxes, new valves were ordered and installed by MK-F personnel to assist in the successful leak-testing of the active LLLW transfer lines associated with these boxes as required by the FFA. The other activity was two GPPs to provide stainless steel liners and level detection to valve boxes at the LLLW Evaporator Facility and at valve boxes associated with the interconnecting pipeline between Bldgs. 2537 and 7830. Construction activities at these valve boxes was underway at the end of the year after LGWOD personnel decontaminated the various boxes.

February

Began planning activities by LGWOD personnel and MK-F personnel to begin construction activities to upgrade the Incinerator Drive Valve Box, which provides connections between the Central Pumping Station, the LLLW Evaporator Facility, and the Melton Valley Storage Tanks. A stainless steel liner will be installed in the valve box to meet FFA requirements for double-containment of the LLLW System. A preconstruction checklist was being prepared to ensure personnel were ready to begin this activity.

An inspection and upgrade of the LLLW valve boxes had been underway in support of the FFA. To date all identified valve boxes had been inspected (approximately 7) and as-built documentation provided. Needed maintenance had been identified so that leak testing of active portions of the LLLW System could be completed on schedule. Final arrangements were underway for MK-F to begin reentering these valve boxes to replace worn valves and change configurations as required. A preliminary safety assessment and a configuration change control memo were completed. The new valves were expected on site early next month and work would begin almost immediately after that.

March

Continued work on replacing several old valves in the LLLW system. The valves being replaced were found to be "leaking through" during pressure testing required by the FFA on the LLLW System, and they are being replaced to support the leak testing program. The new L-11 valve at the PWTP passed the required pressure test. Work was completed on the valve boxes at WC-3, WC-19, -7, and -9, W-16, Valve Box 1, and the 2533 sump discharge valve.

Inspected the Incinerator Drive Box Valve Box with Engineering and P&E personnel in preparation to begin the upgrades to bring this valve box in compliance with the FFA on LLLW Systems. A stainless steel liner, a sump and sump pump, and leak detection would be installed during this activity. A lifting plan was developed to remove the valve box plug so that the structure can be decontaminated. Work would commence in late March.

April

The Incinerator Drive valve box (located in the South parking lot) was waiting on materials and parts. Also, this job was waiting on modifications to the design because it was found that the actual piping did not match the design drawings. Corrections were expected in early May.

Decontaminated the Incinerator Drive valve box and the Interconnecting Pipeline valve box. These boxes were ready for MK-F personnel to upgrade them to meet FFA requirements.

Decontaminated the valve box at the Old Hydrofracture site in preparation for construction personnel to enter the valve box and install a sump pump, sump level instrumentation, and a stainless steel liner for secondary containment to meet requirements of the FFA for the LLLW System.

Provided assistance to MK-F personnel working on valve replacements at the WC-9 Pump Pit.

Continued work in support of the leak testing of the singly contained lines for the FFA on the LLLW System. Personnel concentrated on trying to identify potential reasons for leakage during the pressure testing of these lines. Recently the valves on these transfer lines were replaced to assist in the leak testing program. A portion of one line which is no longer in service in the Bldg. 2531 area was disconnected from one line being tested and capped. Valves at Valve Boxes 1 and 2 were rebuilt.

October

Construction continued on the Incinerator Drive Valve Box. The strapping attachment to the inside walls was completed. Welding of sheets to strapping was in progress at the end of the month. The south east penetration (which connects to Bldg. 7567) was difficult to install and would require excavating the ground outside the box in order to install the link seal case. The annulus nitrogen piping was not shown on the engineering drawings and would require excavating outside the box on the north west side. It would also require additional piping to be installed for the nitrogen system.

November

Construction on the Incinerator Drive Valve Box (located in the South parking lot) continued. The stainless steel liner plate was installed and partially welded. Welding was stopped because of ground water inleakage into the valve box. The ground around the box was being excavated with intention of installing a sump pump and to do the tie in from the new double-contained LLLW intervalley transfer line from the 7900 area.

MK-F personnel started construction on the valve box at W-6. The pit was decontaminated and a tent was installed over it. This valve box, which is part of the intervalley transfer system for LLLW, is being lined in order to meet FFA requirements for secondary containment for the LLLW System.

December

Engineering personnel changed the design on the liner for the valve box at W-6 to more accurately match the existing piping. MK-F will resume construction in January 1996.

2.2.7 MISCELLANEOUS

January

Provided comments to vendor representatives on the proposed operation of the LLLW Tanker that is presently being procured. Comments included suggestions to allow troubleshooting of the system and to reduce operator entries/exits from the unloading area. Other comments were provided specifying what type interface was required to provide remote monitoring of tanker operations.

February

The 2A2 LLLW Evaporator was replaced during 1993 and 1994, and was a very successful field project. This project was both technically complicated and politically sensitive. Since the project was accomplished so successfully, it was decided to prepare a report which documented the events of the project in a lessons learned type format. The intent of the report is to provide a good reference document for technical information and lessons learned for future projects of this type. The draft of the report was completed this month. Final issue was expected within the next several weeks.

March

Inleakage to the WC-5, -6, and -8 tanks is transferred to the LLLW Collection and Transfer System using pumps installed in the 1950's. These pumps, in addition to being outdated, are becoming increasingly problematic. These pumps are located in the WC-9 Valve Pit and the

background radiation levels in the pit make maintenance on these pumps a health hazard to workers. A new transfer system, which is identical to systems recently installed in several other tanks, will be installed and will alleviate the ongoing operational, maintenance, and health concerns. Also, the new installation will conform to requirements established in the FFA for the LLLW System. The Environmental Review and Documentation Section completed their draft Project Review Summary on this project. The final issue of this document is expected within the next couple of weeks.

June

Completed configuration change documentation in support of the upcoming WC-5,-6,-8 transfer system upgrade project. This project is being done to replace equipment which is becoming increasingly unreliable.

October

Engineering continued on the design of a vault to be used for the disposal of the transfer pumps at Bldg. 7567. LGWOD personnel also completed the ALARA Plan and the work plan for the replacement of these pumps and obtained approval of both documents. These pumps are used to transfer LLLW from the LLLW collection tanks located at Bldgs. 7567 and 7569 in Melton Valley to the LLLW Evaporator Facility located in Bethel Valley for treatment.

November

Began installation of the Out-of-Tank Evaporator System at Bldg. 7877, with personnel beginning installation of conduits for connection of instrumentation to the monitoring system at Bldg. 7863. This project will be a demonstration project by Chem Tech personnel of the effectiveness of a portable evaporator system for support of on-site decontamination projects.

LGWOD personnel designed a small trolley system to be installed in the pipe tunnels at Bldg. 2531. This system was scheduled to be installed next month. It will eliminate the need to enter a confined space/contamination zone for routine calibrations by Instrumentation and Controls personnel and will result in a significant reduction in the number of personnel required during the source check of radiation monitors located in the pipe tunnels.

Design of the double length concrete box for disposal of the pumps located at Bldg. 7567 was completed. This box is to be used in the replacement of the intervalley transfer pumps at the Central Pumping Station. The box design has been issued for bid and the contract should be awarded near the end of December.

December

P&E Division personnel fabricated a source container to run on a trolley into the LLLW Evaporator Facility pipe tunnels. This device was fabricated to eliminate the need for personnel entry into the pipe tunnels for routine source checks of radiation monitors.

2.3 WOCC DAS AND DCS

January

Reviewed the technical proposal from the 8A subcontractor firm that has been selected to develop software in support of the replacement of the DAS located at Bldg. 3130. Comments on the proposal were submitted to procurement personnel for transmittal to the subcontractor. The DAS is used to monitor LGWOD facilities located in Bethel and Melton Valleys, but is being replaced due to the difficulty in obtaining spare parts for a system which was manufactured over 10 years ago.

2.4 LIQUID LOW-LEVEL WASTE SOLIDIFICATION PROJECT

The LWSP - Campaign III was conducted during the year with the solidification of approximately 47,300 gallons of LLLW supernate (generating a total of 59 solidified waste forms) in an effort to generate additional storage capacity for future LLLW operations. This project was one of five projects selected in 1995 for an ALARA award due to the LWSP personnel's efforts to reduce exposures during the campaign.

January

The Operational Readiness Assessment Team for the LWSP - Campaign III met and approved closure of forty-three readiness assessment criteria in preparation for the upcoming mobilization of the solidification services vendor.

Received acknowledgement from DOE-ORO personnel that the upcoming LWSP-III does not fall under the requirements for a readiness review or assessment as required by DOE Order 5480.31. The internal readiness assessment will continue to be performed to provide a review to ensure that the vendor providing solidification services is ready to be mobilized.

February

The LWSP - Campaign III continued with the internal readiness assessment activities. Nine criteria were approved for closure and the lifting plan for vendor activities at Bldg. 7877 was submitted to the ORNL Hoisting and Rigging Committee for approval.

March

The LWSP - Campaign III continued with the internal readiness assessment activities. Six criteria were approved for closure and the lifting plan for vendor activities at Bldg. 7877 was submitted to the ORNL Hoisting and Rigging Committee for approval.

Erected walls at Bldg. 7863 to segregate the control area for the LWSP from the rest of the facility that is used for the storage of spare parts. Painters then began painting the floor and wall areas of the control area.

Conducted the first meeting of the Readiness Assessment Team that is performing the final review of closure documentation for the upcoming LWSP - Campaign III. All closure documentation developed by the Operational Readiness Team was approved by the responsible Readiness Team members. They were also given a tour of the facility in preparation for the mobilization of the vendor to begin surrogate waste testing. No problems were identified during the meeting and tour.

April

Received the recommendation from the LWSP - Campaign III's internal Readiness Self-Assessment Team and received approval from the ORNL ESWMO Director to mobilize the solidification services vendor to begin equipment setup and surrogate testing. The vendor was mobilized and arrived on site during the last week in April. The vendor was beginning setup of equipment in preparation for the upcoming surrogate testing.

May

Received the approved ALARA plan for the upcoming LWSP - Campaign III.

Performed the surrogate testing of the LWSP process. This test utilized a nonradioactive surrogate that was chemically identical to the LLLW supernate to be solidified so that the system could be given a thorough checkout prior to beginning operations using actual LLLW.

Completed the internal Readiness Self-Assessment for the LWSP - Campaign III and received approval from the Waste Management and Remedial Action Division (WMRAD) Director to begin solidification of LLLW supernate from the Melton Valley Storage Tanks on May 31.

June

Began operation of the LWSP - Campaign III on June 1. During the month, a total of 16 waste forms were generated (each waste form contained approximately 800 gallons of LLLW supernate).

Requested and received approval from the ALARA Steering Committee to raise the ALARA control limits for solidification vendor personnel at the LWSP - Campaign III above the limits the WMRAD Director can approve. This was done to minimize the total dose project personnel will receive and minimize the number of personnel exposed.

July

During the month, a total of 14 waste forms were generated, bringing the total generated during the project to 30.

August

During the month, a total of 18 waste forms were generated, bringing the total generated during the project to 48.

September

Completed the LWSP - Campaign III with the generation of eleven additional solidified waste forms during the month, bringing the total waste forms generated to 59 on September 26. This campaign solidified approximately 47,300 gallons of LLLW concentrate in an effort to provide additional storage capacity for future LLLW operations. Personnel started decontamination of equipment in preparation for the vendor's departure.

October

Completed the demobilization of the solidification vendor for the LWSP - Campaign III. Activities during the month included decontamination of the vendor's equipment and subsequent removal from the site and the decontamination of the solidification facility (Bldg. 7877).

2.5 OCCURRENCE REPORTING

<u>Month</u>	<u>Title</u>	<u>Number</u>	<u>Category</u>	<u>Facility</u>
May	Failure of Diesel	N/A	Non-Routine	3130
June	Leak in Transfer Line	ORO--MMES-X10 WSTEMRA-1995-001	Off-Normal	LLLW System
October	Personnel Contamination	ORO--LMES-X10 WSTEMRA-1995-0001	Off-Normal	Valve Box 2

2.6 SAFETY ANALYSIS REPORT UPGRADE PROGRAM

The Safety Analysis Report Upgrade Program (SARUP) continued activities during the year to develop DOE-ORO approved Safety Analysis Reports for the LGWOD nuclear facilities. During the year the Hazard Screening for the LLLW System and the LWSP were revised to categorize which portions of these facilities are nuclear facilities per the DOE standards. Personnel also continued preparation of a revision to the Operational Safety Requirements (OSR) for the LLLW System to delete nonnuclear segments from the OSR.

At the end of the fiscal year, personnel submitted LMES approved Basis for Interim Operation (BIO) documents for the LLLW System and LWSP to the DOE-ORO for review and approval as required by DOE-ORO personnel. Upon approval of these BIOs, these documents will constitute the DOE approved safety authorization basis for these facilities until the final Safety Analysis Reports are completed and approved.

Personnel during the year also completed all required annual reviews of safety documentation and submitted review documentation to LMES and DOE-ORO personnel as required.

February

The annual review of the following safety analysis report upgrade program documents was completed and submitted to the Office of Operational Readiness and Facility Safety:

- Hazard Screenings for Bldgs. 3518, 7860, 7935, and the PWTP and Process Waste Collection System, and the LLLW System
- Phase 1A report for the LLLW System
- Logic Model for the LLLW System
- Limiting Conditions Document for the LWSP facility.

Provided comments on Revision 2 of the Hazard Screening Report for the LLLW System. This revision addresses chemical hazards associated with the LLLW System.

Distributed the Draft Revision 4 of the OSR for the LLLW System for review within the LGWOD and System Safety Engineering. This revision will delete several facilities that have been determined to be nonnuclear segments of the LLLW System.

March

Distributed the draft revision of the OSR for the LLLW System for formal comment at ORNL.

April

Resolved comments on the revised Limiting Conditions Document for Bldg. 7877 and issued it for approval. At the end of the month, this document had been approved within WMRAD and had been sent to the Office of Operational Readiness and Facility Safety for final approval.

May

Received the approved revision to the Limiting Conditions Document for Bldg. 7877 (WM-LGWO-7877-LCD R1) from the Office of Operational Readiness and Facility Safety.

Received the first draft of the BIOs for Bldg. 7877 and the LLLW System. These documents are presently undergoing an internal review by the Facility Safety Evaluation Team.

June

Completed the annual review of the Phase 1 Hazard Screening Reports for Bldgs. 3130, 3608, and the 3039 Stack Ventilation System with no needed revisions being identified. Approved revised Preliminary Hazard Screening documents for Bldg. 3130, 3608, and the 2nd floor storage area in Bldg. 3001 used by the LGWOD. Also approved cancellation of the Preliminary Hazard Screening document for the high bay storage area in Bldg. 3503 since this is no longer used by the LGWOD.

The draft BIO for Bldg. 7877 was distributed for review. The BIOs for all nuclear facilities were required to be submitted to the DOE-ORO for approval by the end of the fiscal year.

July

Distributed the revised LLLW System's Phase I Hazard Screening Report for approval. The revision was prepared to provide nuclear categorization of the LLLW System's segments per DOE Standard 1027-92.

Provided comments to System Safety Engineering on the System Safety Assessment being prepared for the Out-of-Tank Evaporator Project. A demonstration of this system using actual LLLW supernate will be conducted in FY 1996 in an effort to provide additional capabilities for the reduction of LLLW concentrate in storage.

August

Presented the revised Hazard Screening for the LLLW System to the Plant Safety Evaluation Team (PSET) for approval. The PSET voted to approve the revised Hazard Screening to incorporate categorization of the LLLW System per DOE Standard 1027-92. At the end of the month, the approved revision to the Hazard Screening document for the LLLW System that categorized segments of the LLLW System as nuclear or nonnuclear facilities was received for controlled distribution.

Provided comments on the revised Hazard Screening for the LWSP. The revision is being made to categorize the facility in accordance with DOE Standard 1027-92.

Provided comments on the BIO documents for the LLLW System and the LWSP and the Preliminary Hazard Analysis for the LLLW System. These documents were then distributed for approval.

Completed the annual review of the hazard screening and safety study for Bldg. 7877 and the system safety analysis and limiting conditions document for Bldg. 2099.

Presented the revised LWSP Hazard Screening and BIO documents, along with the BIO for the LLLW System, to the PSET for approval. All three documents were voted for approval.

September

Received the approved revision to the Liquid Low-Level Waste Solidification Facility's Hazard Screening document for distribution. This revision was performed to classify the facility per the requirements of DOE Standard 1027-92.

The BIO documents for Bldg. 7877 and the LLLW System were transmitted to the DOE-ORO for review and approval. Transmittal of the LLLW System BIO document completed Milestone OR320120 for this document to be completed within Lockheed Martin Energy Systems.

Transmitted the annual review of the OSR for the LLLW System document to the DOE-ORO. This review is a requirement of the OSR.

October

The System Safety Analysis and the Technical Safety Requirements for the Out-of-Tank Evaporator Demonstration Project to be conducted at Bldg. 7877 by Chemical Technology Division personnel were distributed for approval.

November

Completed the incorporation of review comments into the draft revision to the LLLW System's OSR document and issued the document for approval. This revision is being done to remove several nonnuclear facilities from the document.

Began a review of the Preliminary Hazards Analysis for the LLLW System that is being done to support the Safety Analysis Report for the LLLW System that is being prepared.

Presented the Out-of-Tank Evaporator Project's System Safety Analysis and Technical Safety Requirements documents to the PSET for approval. The PSET voted for approval of these documents. These documents were then transmitted to DOE-ORO personnel for review and approval. This project is a joint project between WMRAD and Chemical Technology Division personnel to demonstrate the effectiveness of a portable evaporator system to support decontamination and environmental restoration activities.

Completed the annual review of the Phase 1 Hazard Screening Reports for Bldgs. 3518, 7860, 7935, and the Process Waste Treatment Plant and Collection System. As part of this review, three Safety Assessments and one Unreviewed Safety Question Determination were retired. Two Preliminary Hazard Screenings (for Bldg. 7877 and for the LLLW Collection and Transfer System) were also retired based on guidance from the Office of Operational Readiness and Facility Safety.

December

Conducted a walkdown of the LLLW System and Bldg. 7877 for DOE-ORO personnel reviewing the BIO documents for these facilities. An informal meeting was held after the walkdown to answer questions the reviewers had and to get an understanding of the reviewers' comments that will be formally issued to ORNL ESWMO personnel in the near future. No major problem areas or concerns were identified during the walkdown or the meeting. All nuclear facilities are required to have a BIO document developed and approved by DOE-ORO personnel until the final Safety Analysis Report is completed and approved by DOE-ORO.

Completed the review of the first draft Preliminary Hazard Analysis documents for the LLLW System. These documents support the development of the Safety Analysis Report for the LLLW System that is being written.

2.7 CATHODIC PROTECTION UPGRADE

This upgrade is funded by the FFA program to upgrade the cathodic protection on the buried LLLW piping within the LLLW Collection and Transfer System. These upgrades will help to ensure that the existing LLLW piping's will not be compromised by corrosion.

January

Phase I of the Cathodic Protection System Upgrade Project continued. The work on System 6A was 98% complete, System 16 was 90% complete, and System 14 was 10% complete. System 6b, which provides cathodic protection for the transfer line from Central Pumping Station to the valve pit in the South parking lot, was deleted from the project after LGWOD personnel identified that the Melton Valley LLLW Line Item, which is installing a new transfer line near the existing line, would be upgrading the cathodic protection on the old line due to damage to the anode beds during excavation for the new line. This resulted in significant cost savings for this project.

February

Continued work on the Cathodic Protection Upgrade Project. The project is divided into several phases. Phase I consisted of Systems 16, 6a, and 14 which were 98%, 98%, and 30% complete, respectively. Only an inspection was required on Systems 16 and 6a. System 14 work continued but was being delayed by weather and traffic in the work area.

March

Inspected the area for the Cathodic Protection System - Phase II activities with Engineering personnel during the week in preparation of work beginning in late March.

April

Phase I of the Cathodic Protection Upgrade, including Systems 6A, 16 and 14 was 98% complete. Engineering was working on the contract to get a corrosion engineering firm to inspect the systems. This was all that was left to do on Phase I. Phase II of the project was being designed.

July

MK-F personnel had a kick-off meeting for Phase II of the Cathodic Protection Upgrade Project on July 26, 1995. This part of the project would upgrade Systems 9, 19, and 20.

October

System 9 was completed. System 19 started on Monday, October 30. System 21 was on hold due to lack of materials.

November

MK-F personnel continued work on System 19 of the cathodic protection system. System 19 is the area near Bldg. 7830.

December

MK-F personnel finished System 19 of the cathodic protection project. This project is being installed to eliminate cathodic corrosion problems with the LLLW system.

2.8 3039 STACK VENTILATION SYSTEM

2.8.1 3039 STACK AREA TURBINE UPGRADES GENERAL PLANT PROJECT

This GPP is providing upgrades to several of the steam-driven turbines which provide backup cell ventilation and off-gas service to facilities throughout the main ORNL complex in Bethel Valley. It is also providing upgrades to the hot off-gas blower. Much of the equipment being upgraded has been in service for over fifteen years and these upgrades will help to ensure that a reliable backup to the electric driven blowers is available.

January

The 3039 Stack Area Turbine Upgrades continued with MK-F personnel focusing on the T-3 turbine which provides backup cell ventilation services to Bldg. 3025 and 3026. The 3025/3026 cell ventilation customers were notified that the backup steam-driven turbine would be out of service for seven days. Work completed included: removal of the old turbine, scarifying of the concrete, placement of the new turbine, pouring of grout under the sole plate, alignment of the couplings, installation of piping supplying cooling water and oil cooling, hydro-testing and radiography of welded steam piping, and installation of the pressure regulating valve.

February

Installed the new T-3 turbine, performed an alignment, and ran the turbine for approximately 6 hours. Final insulation is currently being installed. This turbine, which provides backup cell ventilation service for Bldgs. 3025 and 3026, would be placed in service early next month. MK-F personnel are also gathering materials for the T-1 turbine (which provides service to the 3500 Area) replacement and were fabricating as much piping as possible.

LGWOD personnel were trying to improve measures concerning cost control and shutdown time.

March

Placed the new cell ventilation turbine for the 3025/3026 system in standby, and generated a punchlist of items that had to be completed.

LGWOD staff met with Engineering personnel to suggest changes to the existing design of the upgrade of the Hot Off-Gas Blower at turbine T-6 as part of the 3039 Stack Turbine Upgrades Project. This blower provides off-gas for most of the Lab. Its service life is near its end and is due to be replaced, however the plan involved an unacceptably long shutdown of the system. Changes were being made to the design to significantly decrease the length of the shutdown.

April

Engineering was redesigning the frame for the roots blower on the hot off gas system for the backup steam turbine T-6. A new design was expected in about a month. This new design was necessary in order to allow the turbine to be replaced in an acceptable period of shutdown time.

July

Engineering continued on redesign of the frame to hold the roots blower and turbine on T-1 (central off-gas fan). The roots blower, along with the electric motor driven blower, provide negative pressure for the central off-gas system. Both units were to be replaced soon. Plans were to minimize the length of the shutdown as much as possible. The outage was planned for 8 hours total shutdown, and 7 days of partial shutdown (no backup).

September

Engineering design continued on the frame of the turbine and roots blower for the central off-gas system (T-6). The turbine-driven blower and the motor-driven blower were both to be replaced during this project. Design of the frames was intended to minimize the shutdown required to install them.

2.8.2 3039 STACK INSPECTION

February

Final arrangements were completed for a vendor to perform an inspection of the 3039 Stack. This inspection was accomplished as a best management practice and will supply data to

evaluate the structural integrity of the stack. A lift plan was completed and the vendor personnel had physicals. They arrived onsite Monday, February 20, for three days of training and started the inspection on Friday, February 24, with personnel scaling the stack and beginning the erection of scaffolding at the top of the stack to assist in the video inspection of the stack's interior. The inspection was completed on Monday, February 27. This inspection involved personnel physically inspecting the exterior of the stack and lowering a camera from the top of the stack so that a video inspection of the interior could be performed. The inspection was a culmination of several years of work to get a qualified and approved vendor to take the necessary training, provide required documentation (both safety and equipment qualification), and to participate in the contract approval process. Preliminary observations concluded that the interior and exterior of the stack have good structural integrity.

2.9 CONFIGURATION CONTROL

During the year, six changes were classified as meeting the requirements of a Configuration Change. In addition, seven changes to LGWOD facilities had been classified as meeting requirements of an Equipment Change (a change that does not meet the ORNL definition of a Configuration Change, but which the LGWOD has determined should be documented).

2.10 MISCELLANEOUS ACTIVITIES

January

Three revised procedures for the NRWTP were approved (WM-LGWO-604.2.4, -604.2.6, and -604.2.10). These revisions were made as a result of recent upgrades underway on the Distributed Control System.

LGWOD personnel began preparation of a summary report of the 2A2 Evaporator Replacement Project, which was completed in the third quarter of FY 94. This will include a description of what difficulties were encountered and their resolution and lessons learned from this activity.

February

LGWOD personnel approved revisions to seventeen existing LGWOD procedures. These procedures covered operations at the PWTP (WM-LGWO-602.2.1 R4 and -602.2.2 R7), the NRWTP Collection System (WM-LGWO-603.2.1.1 R3, -603.2.1.3 R1, -603.2.1.4 R2, -603.2.2.3 R1, -603.2.2.5 R2, -603.2.2.7 R3, -603.2.2.8 R2, -603.2.2.9 R3), the NRWTP (WM-LGWO-604.2.3 R10, 604.2.5 R7, -604.2.9 R6), the process waste tanker (WM-LGWO-607.1 R2), the Bldg. 2099 Monitoring and Control Station (WM-LGWO-610.2.6 R2), the Bethel Valley Process Waste Collection and Transfer System (WM-LGWO-610.2.2 R9), and the WOCC Operator Duties (WM-LGWO-609.2.1 R13).

Procedure WM-LGWO-603.2.3 for the Distributed Control System was canceled and replaced by procedure WM-LGWO-606.7.

Distributed the LGWOD Annual Operating Report for CY 1994 for internal review. This review is required by two milestones to be completed and submitted to the DOE by the end of March to document LGWOD activities during the previous year.

March

Completed the review of the LGWOD Annual Operating Report for CY 1994 and incorporated comments. The report was then transmitted to DOE-ORO personnel. This satisfied Activity Data Sheet Milestones 320115 and 325113 for distribution of the report by March 31, 1995.

Approved revisions to three procedures for operations at the PWTP (WM-LGWO-602.2.2 R8, -602.2.5 R5, and -602.2.12 R5), one procedure at the NRWTP (WM-LGWO-604.2.6 R5), and the procedure for emptying Bldg. 3074's dumpster tank (WM-LGWO-608.2 R5).

April

Completed a draft of the new Waste Certification Procedure for liquid wastes generated by the LGWOD. This is a new requirement scheduled to go into effect at the end of May. Under this procedure all liquid wastes generated by the LGWOD will be certified in a manner similar to the program established for Solid Low-Level Wastes last year within the LGWOD. The certification will be accomplished by completion of Request For Disposal (UCN-2109) forms and the applicable attachments. The draft was issued for formal review and comments were received during the month. The comments are in the process of being addressed prior to approval of the procedure in May.

Approved modifications to twenty-five LGWOD procedures. These included operations at Building 7877 (WM-LGWO-601.2.5 R1, -601.2.7 R6), the PWTP (WM-LGWO-602.2.10 R7), the Process Waste Collection and Transfer System (WM-LGWO-603.2.1.1 R4, -603.2.1.3 R2, -603.2.2.3R2, -603.2.2.4 R2, -610.2.2 R10, -610.2.5 R3), the NRWTP (WM-LGWO-604.2.2 R6, -604.2.3 R11, -604.2.5 R8, -604.2.11 R7), the Equipment Cleaning Facility (WM-LGWO-605.2 R1), the DCS (WM-LGWO-606.7 R2), the ITE System (WM-LGWO-608.1 R3), the LLLW tanker operations (WM-LGWO-608.3 R4, -608.4 R4), the LLLW System (WM-LGWO-610.2.6 R3, -610.3.2 R2, -610.3.3 R2), and the LLLW Evaporator Facility (WM-LGWO-611.2.2 R3, -611.2.4R9, -611.2.5 R7, -611.3.2 R2).

May

Approved revisions to four procedures for operations at Bldg. 7877 (WM-LGWO-601.2.4 R8, R9, R10 and -601.2.4 R7), one procedure for operations at Bldg. 3544 (WM-LGWO-602.2.5 R6), six procedures for operation of the NRWTP Collection System (WM-LGWO-603.2.1.2 R3, -603.2.2.6 R3, -603.3.4 R2, -603.3.5 R2, -603.4.3 R2 and -603.4.4 R1), six procedures for operations at Bldg. 3608 (WM-LGWO-604.2.8 R6, -604.2.11 R8, -604.3.5 R3, -604.3.6 R1, -604.4.3 R4, and -604.4.4 R2), one procedure on shift turnover (WM-LGWO-606.2 R4), one procedure on configuration control (WM-LGWO-606.5 R4), one procedure for operations of Environmental Restoration's process waste treatment systems operated by the LGWOD (WM-LGWO-607.3 R1), two procedures on operations at Bldg. 3130 (WM-LGWO-609.2.1 R14, -609.2.2 R2), and three procedures for operations at the LLLW Evaporator Facility (WM-LGWO-611.2.2 R3, -611.2.5 R8 and -611.3.1 R6).

Completed and approved two new procedures for Waste Certification. Procedure WM-LGWO-606.9 was written to cover "Liquid" wastes and WM-LGWO-606.10 was written to cover "Non-Routine" wastes generated within the LGWOD. Also approved a revision to the Solid Low-Level Waste - Waste Certification Procedure (WM-LGWO-606.8 R1). It was revised to incorporate new requirements being imposed by ESWMO Central. This effort was successfully completed on a tight schedule to support a milestone requirement of the ESWMO Waste Certification Group.

June

Performed an evaluation and calculations to support the annual review of the Waste Certification Program. Each year analyses from waste samples taken during the previous year are evaluated. The results of the evaluation determines if the isotopic information currently being reported should be revised or not. Due to significant changes in the Waste Acceptance Criteria for the Oak Ridge Reservation over the past year, a revision was required and calculations were performed to support the revision. This is necessary to help assure performance assessment limits for Solid Waste Storage Area 6 are not exceeded.

Submitted required "Process Knowledge" documentation to the Radioactive Solid Waste Operations Group (RSWOG) and received approval from them. As part of the Waste Certification Activities, generators must declare if Process Knowledge, Sampling and Analysis, or other means will be used to characterize their wastes. If Process Knowledge is the method used, documentation which provides the basis for this must be provided by the RSWOG. This is done to assure compliance with the requirements of ES/WM-10, and EP-710, "Waste Acceptance Criteria for the Oak Ridge Reservation" and "Oak Ridge Reservation Waste Acceptance Certification Requirements" respectively.

Assisted the Waste Certification Group (WCG) and the RSWOG to help establish isotope reporting requirements. This effort was done to ensure performance assessment limits for the SWSA 6 burial grounds are met. The WCG will submit a variance to address this issue. Current verbiage within ES/WM-10 requires extensive and impractical analysis to assure that numerous isotopes are not present in waste. The above variance will address this verbiage and change it as required. Additionally, personnel within the RSWOG are assisting the LGWOD by developing a sampling plan for LGWOD generated wastes which will meet the above requirements.

Responded to comments provided by the WCG to the Waste Certification Procedures (WCPs) issued by the LGWOD. The WCPs were issued in May to meet commitments to the DOE on the Waste Certification Program. Upon final resolution of the comments, the procedures will be revised accordingly.

Developed a tracking system to help assure actions and commitments are met for the LGWOD.

Approved revisions to the Melton Valley Ventilation System procedure (WM-LGWO-610.3.1 R4) and the LLLW Evaporator Facility operations procedure (WM-LGWO-611.2.5 R9).

July

Approved revisions to one PWTP procedure (WM-LGWO-602.2.8 R5), one NRWTP Collection System procedure (WM-LGWO-603.6 R1), two WOCC procedures (WM-LGWO-609.2.1 R15, -609.6 R2), one Bethel Valley LLLW System procedure (WM-LGWO-610.2.1 R10), and one procedure for the LLLW Evaporator Facility (WM-LGWO-611.6 R2).

Approved a Document Change Directive providing revised procedures for unloading sulfuric acid at Bldg. 3544 using the new chemical unloading station.

August

Approved revisions to two procedures for operations at Bldg. 7877 (WM-LGWO-601.2.4 R11, -601.2.7 R8) and four procedures for operations at Bldg. 3608 (WM-LGWO-604.2.3 R12, -604.3.3 R3, -604.4.1 R3, -604.4.3 R5).

Approved a revision to the Solid Low-Level Waste - Waste Certification Procedure (WM-LGWO-606.8 Rev. 2). This revision was performed to satisfy a request from the Waste Certification Group.

Approved revisions to the 18 conduct of operations guides for the LGWOD. These revisions were made to correct references that had been superseded during the previous year.

Performed a review and provided comments on two sets of documents related to the Waste Certification Program. The first document, a Waste Certification Plan was sent out by Waste Management Environmental Projects personnel and it was reviewed and commented on. The other document reviewed and commented by LGWOD personnel was a package which is intended to provide guidance for generators in completing waste disposal Data Packages.

September

Transmitted three letter reports to the DOE-ORO to document successful operation of the LLLW, process waste, and gaseous waste systems at ORNL with no identified regulatory noncompliances during FY 1995. These reports completed Milestones OR320116 and OR325114 for the Process Waste Collection and Transfer System, Milestones OR320117 and OR325115 for the LLLW System, and Milestones OR320118 and OR325116 for the Gaseous Waste System.

Approved revisions to three LGWOD operating procedures. One revision was on routine operations at the PWTP (WM-LGWO-602.2.10 R8); one revision was on general sampling techniques within the LGWOD (WM-LGWO-606.3 R3); and one revision was to the Melton Valley LLLW System operating procedures (WM-LGWO-610.2.3 R5).

Approved one new procedure for miscellaneous operations at the LLLW Evaporator Facility (WM-LGWO-611.2.7 R0).

Prepared a draft report on the 2A-2 Evaporator Replacement project which occurred in 1993 and 1994. The majority of the report has been completed for some time, but a section of the report dealing with the failure analysis of the old 2A-2 Evaporator could not be completed until the formal analysis was completed recently. The 2A-2 Evaporator Replacement project was complex and sensitive yet it proved to be very successful. It was accomplished both within budget and schedule and the radioactive dose received during the project was less than one-sixth of that predicted by the ALARA Plan. The intent of the report is to objectively document the replacement process in a chronological sequence so readers can step through the project and identify successful approaches as well as be aware of areas where problems occurred.

October

Completed the review of over 7,000 requirement units in the draft Standard/Requirement Identification Documents (S/RIDs) for the LLLW System and provided a substantial number of comments to the authors for resolution. This review was performed on a short turnaround

schedule (less than 3 weeks) to meet commitments by ESWMO Central for the preparation and approval of these S/RIDs.

Completed the two-year review of procedure WM-LGWO-601.2.1 Rev. 1 for setup of the LWSP facility with reviewers indicating no revision was necessary.

Approved a revised procedure WM-LGWO-604.3.2, Rev. 2, for setup of the process water system at Bldg. 3608 after the two-year review indicated minor revisions were necessary.

Approved two revised procedures for LGWOD operations: WM-LGWO-603.2.1.5, Rev. 2, for operation of the Melton Valley Process Waste Collection Tanks and WM-LGWO-610.3.1, Rev. 5, for operation of the Melton Valley Ventilation Systems.

November

Cancelled the Nuclear Criticality Safety Appraisal (NCSA) for the Liquid Low-Level Waste Solidification Project. This was cancelled because the existing NCSA would expire prior to the start of the next campaign. Personnel will develop a new NCSA prior to the start of the next campaign. This minimizes the number of facility authorization basis requirements units that are in effect for this facility until the next solidification campaign is begun.

Drafts of procedure revisions needed to support the new 1,00,000 gallon Bethel Valley storage tank have been completed and turned in to WMRAD Training to begin preparation for required training. Preparation of these procedures is being done at this stage of the project to facilitate a quick turn over to operations when the construction is completed.

December

Reviewed and provided comments on the draft of the new ORNL Site-Wide Waste Certification Procedure.

Approved revisions to ten LGWOD procedures: five procedures dealt with operations at the PWTP (WM-LGWO-602.2.2 R9, -602.2.4 R7 and R8, -602.2.8 R6, and -602.2.12 R6), four procedures for the NRWTP operations (WM-LGWO-604.2.3R13, -604.2.4 R7, -604.2.8 R7, and -604.2.9 R7), and one procedure for standing orders (WM-LGWO-606.6 R2).

Began preparation of the LGWOD Calendar Year 1995 Annual Report.

3.0 MAINTENANCE ACTIVITIES

3.1 NONRADIOLOGICAL WASTEWATER TREATMENT PLANT

January

P&E personnel repaired the low pressure shutdown switch on the J-1025 sodium hydroxide (caustic) transfer pump at the NRWTP. This switch shuts down the caustic transfer pump if a low pressure is detected on the caustic transfer piping system, which would be an indication of a possible leak in the transfer system. Caustic is used for pH adjustment of the wastewater to assist in the metals removal operation and to adjust the pH to proper range prior to discharge to White Oak Creek.

P&E personnel replaced the J-1025A sodium hydroxide (caustic) transfer pump at Bldg. 3608 after the pump developed a seal leak. This pump is used to transfer caustic to various locations at the NRWTP for pH adjustment of the wastewater prior to discharge to White Oak Creek.

February

Replaced the air scour blower isolation valve (HV-551) at the NRWTP under approved configuration change WM-LGWO-CM-1995-6. The old valve was a butterfly valve which did not provide positive isolation of the system.

Repaired the air scour blower at the NRWTP after a check valve leaked and allowed water to reach the blower. The piping arrangement was changed to add an isolation valve that will prevent this from reoccurring. The air scour blower is used during the backwash of the granular activated carbon columns and the dual-media filters.

May

Replaced the J-1025A caustic (sodium hydroxide) pump and inlet valve at Bldg. 3608 after the pump developed a leak. The pump is used to transfer caustic throughout Bldg. 3608 for pH adjustment of the wastewater prior to discharge to White Oak Creek.

June

Performed the quarterly acid washing of the air stripper at Bldg. 3608. This is done to prevent buildup of algae-type growth on the tower's packing material and to prevent growth of bacteria. The air stripper is used for the removal of volatile organics from the wastewater prior to discharge to White Oak Creek.

July

Replaced a broken belt on the fan that supplies cell ventilation for the filter press room at Building 3608.

Assisted the manufacturer's representative in evaluating leaking valves at Bldg. 3608.

August

Replaced the air scour blower discharge valve to dual-media filter F-1009 (HV-337) that had failed due to routine use. Also replaced a remote operated valve (FCV-350) on the dual-media filters at Building 3608 that had failed due to routine wear. The dual-media filters are used to remove particulates from the wastewater prior to discharge to the air stripper for further treatment.

September

Cleaned the air stripper at Bldg. 3608 as a precaution due to an increase in bacteria monitoring samples from the air stripper. The air stripper is used to remove volatile organics from the wastewater prior to discharge to White Oak Creek.

November

Removed plant growth from the top of the air stripper at Bldg. 3608. The air stripper is used to remove volatile organic compounds from the wastewater prior to discharge to the environment.

Performed the quarterly acid wash of the air stripper at Bldg. 3608. The air stripper, which is used to remove volatile organics from the wastewater prior to discharge to White Oak Creek, is cleaned with sulfuric acid quarterly to remove any growth on the air stripper's packing media and to kill any bacteria that may be in the air stripper.

December

Unloaded the media from dual-media filter F-1009 at Bldg. 3608 and reloaded fresh sand and anthracite media after inspection of the filter vessel. This filter, which is used to remove particulates from the wastewater prior to further treatment and discharge to White Oak Creek, had been in service for six years and the media was beginning to get fouled with material that was not being removed during the routine backwashing of the filter.

Repaired the operator for dual-media filter F-1009's drain valve at Bldg. 3608. The valve was operated manually until the replacement parts were received and installed.

Replaced the water block valve at the acid unloading station at Bldg. 3608 after the valve had failed.

3.2 PROCESS WASTE TREATMENT PLANT AND COLLECTION SYSTEM

January

P&E personnel replaced a seal water filter on the jet mixers at Bldg. 7961. The filters ensure a clean water supply for the pump seals.

P&E personnel repaired a seal leak on the L-7 regeneration pump at Bldg. 3544.

P&E personnel replaced a broken fan belt on the spare parts equipment room heater at Bldg. 3127.

P&E personnel repaired the J-4001A pump at the Influent Pump Station. This pump is one of three pumps used to transfer process wastewater from the process wastewater collection and transfer system in Bethel Valley to the Bethel Valley Storage Tanks for treatment at the PWTP.

P&E personnel completed repairs on the agitator in the clarifier (L-1A) at the PWTP after the agitator's motor was found to have a bad control board on the variable speed motor. The agitator is used to assist in the water softening/precipitation operations in the clarifier by ensuring the uniform addition of chemicals to assist in the water softening operation.

P&E personnel replaced the M-8 sulfuric acid addition pump at the PWTP. This pump adds acid to neutralize the wastewater prior to transfer to the NRWTP for further treatment.

LGWOD personnel cleaned out the L-1A clarifier at the PWTP so that P&E personnel could access and repair the agitator. The L-1A clarifier is used to soften the wastewater entering the PWTP so that the treatment capacity of the ion-exchange columns will be extended.

P&E personnel removed calcium deposits from both of the L-2 pumps at the PWTP which were restricting flow. These pumps transfer wastewater from the L-2 surge tank to the L-3A and B filters for removal of particulates prior to entering the ion-exchange columns.

P&E personnel repaired the automatic on/off switch for the 1505 Pump Station. This switch controls the two pumps at this station based on the water level in the station. This station transfers its contents to the Process Waste Collection and Transfer System for treatment at the NRWTP.

P&E personnel installed and calibrated new pressure relief valves on the zeolite columns at Building 3544. These valves are required since the columns are subjected to a minimal pressure during operations.

February

P&E personnel rebuilt the J-4004C pump located at the 3544 Wet Well (F-4004). This pump is one of three pumps that transfer the discharge from the PWTP to the NRWTP for further treatment prior to discharge to White Oak Creek.

March

Replaced the gaskets on the sulfuric acid unloading hose at Bldg. 3544 after a deteriorated gasket was found during the pre-unloading inspection.

Repaired a leak in the process water supply line at Bldg. 2600. This facility serves as the surge tanks for process waste being collected for treatment at Bldg. 3544.

April

Replaced the north pump at Pumping Station #1 after the pump failed (pump was at the end of its service life). This pumping station transfers water runoff from the North and South Tank Farms to the Process Waste Collection and Transfer System for treatment.

Repaired a leaking water seal on the L-7 pump at Bldg. 3544. This pump transfers nitric acid from the L-7 nitric acid tank for use in the regeneration of the ion exchange columns at the facility.

Repaired the hydraulic pump on the filter press at Bldg. 3544. This pump is used to close the filter press plates and keep them closed at a high pressure so that the sludge will be properly dewatered for transfer to Solid Waste Operations personnel.

Repaired a leaking seal on the M-1 caustic (sodium hydroxide) pump at Bldg. 3544. This pump is used to transfer caustic from the M-1 caustic storage tank to the M-3A tank (which supplies caustic to the clarifier system to aid in the water softening process).

Repaired a broken vent line on the jet mixer for the F-2018 tank at the Melton Valley Process Waste Collection Tank Facility (Bldg. 7961). The jet mixer is used to keep solids in suspension until the wastewater is transferred to Bethel Valley for treatment.

May

Repaired the level switches at Pumping Station #1. These switches control the pumps at this pumping station based on the water level at the station. This station transfers water from the North and South Tank Farm Areas to the Process Waste Collection and Transfer System for treatment.

Repaired the level switches at the Metals/Nonmetals Pump Station (F-4005) after the switches failed to start the pumps due to a high level at the station. This station transfers nonradioactive wastewater from the 2000 area and Bldg. 1505 to the NRWTP for treatment.

Unloaded zeolite column #1 at Bldg. 3544 to provide maintenance personnel access to the vessel's internal piping after radiochemical analysis results indicated a problem with the vessel. Personnel found and repaired a diffuser pipe in the vessel that had separated. This vessel is used to provide additional throughput capacity at Bldg. 3544 during periods of heavy inflow and for treatment of the ion-exchange system's effluent during periods of high cesium in the influent.

Repaired leaking drain valves on ion-exchange columns L-4B and L-4C at Bldg. 3544. The ion-exchange columns are used to remove Sr-90 from the process waste prior to discharge to the NRWTP for further treatment.

Assisted I&C personnel performing calibration work at Bldg. 7961.

June

Repaired a leak in the precoat tank at Bldg. 3544 and ordered a replacement tank. The precoat is used to assist in the filter press sludge dewatering operations.

Cleared a plug from a line in the M3-P1 caustic (sodium hydroxide) system at Bldg. 3544. Caustic is used to adjust the pH of the wastewater received at Bldg. 3544 to assist in the water softening process in the clarifier.

July

Emptied the sludge from the L-1 clarifier at Bldg. 3544 to inspect the sludge agitator. The motor had failed on the agitator earlier in the week and had to be replaced. While the agitator was out of service, the sludge blanket settled in the clarifier and prevented proper operation of the agitator. During this activity, the sludge removal pump had a failed diaphragm replaced. The clarifier is used to soften the wastewater entering the PWTP to increase the treatment capacity of the ion-exchange columns.

Repaired a failed valve operator on the discharge valve from Pump J-1008B at Bldg. 3544. This pump is one of two pumps used to transfer the wastewater to the dual-media filters for removal of particulates prior to entering the air stripper and the granular-activated carbon columns.

August

Repaired a leaking flange at Bldg. 3544 on the steam line located on the north side of the L-1 clarifier.

Replaced the precoat container in the filter press room at Bldg. 3544 after the old container developed a leak. The container is used to mix precoat with water before pumping it through the filter press, which increases the efficiency of the sludge drying process.

Replaced the discharge valve on one of the MC-307/312 process waste tankers that had failed during a recent hydraulic test of the tanker.

Replaced the tubing in process waste manholes 114 and 234 to assist I&C personnel with flow rate monitoring at these locations.

September

Performed a second cleanup and decontamination of the South Parking Lot valve box in preparation for MK-F to install a stainless steel liner, sump level instrumentation, and a sump pump to meet requirements of the FFA for the LLLW System.

Assisted I&C personnel in the scheduled checkout of the LLLW Evaporator Facility.

Repaired the instrument air compressor at Bldg. 7569 after a broken valve was discovered in the compressor system.

October

Replaced the motor on the hot neutralization sump's agitator at Bldg. 7961 after the motor failed due to routine service. This sump is used to adjust the wastewater to a basic pH prior to the wastewater being transferred to the collection tanks at the facility.

November

Replaced the section of pipe at Bldg. 3544 that transports the overheads from the L-10 evaporator to the condenser after the pipe developed a leak during routine operations. The evaporator is used for eluate recovery at Bldg. 3544 during the regeneration of the ion-exchange columns.

Replaced the transformer supplying power to Bldg. 3544 after it failed.

Replaced the M-1 pump and its associated piping and valves at Bldg. 3544 due to age of the pumping system. This pump is used to transfer sodium hydroxide at the facility for pH adjustment of the wastewater to aid in the clarification process.

Emptied the sludge blanket from the L-1 clarifier at Bldg. 3544 to allow Plant and Equipment personnel access to the agitator to repair a coupling. The clarifier is used to soften the wastewater entering the facility in an effort to extend the operating time of the ion-exchange columns between regeneration cycles.

December

Cleaned up the Bethel Valley Process Waste Storage Tanks Facility (Bldg. 2600) in preparation for a visit by personnel from the Tennessee Oversight Agreement next week.

Repaired a steam leak at the steam station for Bldg. 3544.

3.3 LIQUID LOW-LEVEL WASTE SYSTEM

January

P&E personnel repaired a valve at Bldg. 2531 that was preventing steam from reaching the heater for the equipment room.

P&E personnel replaced a failed sump pump at the cell ventilation filter pit (Bldg. 2533) for the LLLW Evaporator Facility. This sump pump transfers inleakage and condensation from the pit to the LLLW Collection and Transfer System for treatment.

The vendor for the 100 psig air compressors at Bldg. 7830 and 7860 arrived onsite and performed programmed maintenance on the compressors. These compressors supply instrument air for equipment at the Melton Valley Storage Tanks.

P&E personnel replaced a failed transfer pump at the WC-9 drywell. This pump transfers liquids collected in the WC-9 Tank Farm Drywell to the Process Waste Collection and Transfer System for treatment.

February

P&E personnel installed a test fitting on the transfer line from the HFIR LLLW Tank to the Central Pumping Station so that leak testing for the FFA on the LLLW System can be conducted. This modification was accomplished under an approved configuration change.

P&E personnel completed work on regrouting the rails for the gantry crane located in the bay area at Bldg. 2531. This was done to clear a deficiency discovered when QE&I recently inspected the crane.

Assisted P&E personnel in locating and repairing a nitrogen leak on the annulus of the "K" line at the TWRF.

March

Completed repairs on the air compressor at Bldg. 7860 which supplies air for the In-Tank Evaporation Process at Bldg. 7830. In-Tank Evaporation is a process to reduce the amount of LLLW supernate in storage and thus provide additional storage capacity for future operations.

Received the tent for the worksite and worked on the design of a concrete box to place the pumps at the Central Pumping Station (Bldg. 7567) in when they are replaced in an upcoming maintenance.

Decontaminated Valve Box 2A and had P&E personnel make the following repairs: replaced a failed sump pump; replaced a failed check valve on the sump pump's discharge line to the transfer piping; repaired the isolation valve on the line from LLLW tank W-12; tightened all of the flanges in the system; and replaced the valve stops on the sump pump discharge valve. This valve box is the tie-in point for the discharge of LLLW tank W-12 to the Central Waste Collection Header.

Supplied personnel to support the FFA leak-testing program for the LLLW System. Personnel were performing pressure tests on the transfer lines in the LLLW System that have recently undergone valve replacements in an effort to obtain successful test results.

Removed the plug from the Old Hydrofracture Valve Box in preparation for MK-F personnel to enter the box and install a liner, a sump, and sump level instrumentation. This will upgrade this valve box to meet FFA requirements for the LLLW System.

April

Repaired the insulation on a pipe located on the east side of Bldg. 2531. The damaged insulation was identified during a recent walkthrough of the facility.

May

Placed the new Bldg. 2537 footer drain sump pump in service after P&E personnel completed installation of the pump and its control system.

Completed the decontamination and cleanup of the valve box connecting the original Hydrofracture facility to the Interconnecting Pipeline, which is used for transfers between the LLLW Evaporator Facility and the Melton Valley Storage Tanks. This was done in preparation for MK-F personnel to begin installation of a secondary containment liner and sump level detection instrumentation so that the valve box will meet requirements of the FFA for the LLLW System.

Repaired the sump pump's discharge valve at Valve Box 2A after the valve position stops had broken off. This was causing the valve's position indicator to give an incorrect status indication. During this repair work one tanker load of LLLW was collected from the valve box and transported to the Central Waste Collection Header, where its contents were transferred to the LLLW Collection and Transfer System for further treatment.

Repaired the south rollup door at Bldg. 7877 that provides tractor trailer access to the facility.

Assisted I&C personnel repairing the W-22 level instrument at Building 2537.

June

Supported P&E personnel repairing the LLLW transfer line which services LLLW tanks WC-3, WC-4, WC-19, W-16, -17, and -18. This line was found to have developed a small leak during helium detection tests conducted as part of the FFA leak-testing activities for the LLLW System. A subsequent helium test passed.

Repaired a steam leak in evaporator A2's pipe tunnel at Bldg. 2531.

Supported the scheduled 6-month programmed maintenance on the 100 psi air compressor located at Bldg. 7830, which supplies instrument air for use at the facility.

Replaced the valve from Bldg. 3517 in Valve Box #2A at the request of personnel conducting leak testing for the FFA for the LLLW System.

Replaced the condensate sample pumps at Bldg. 2531 for the two LLLW Evaporator Systems and replaced the tygon tubing with hard piping. These pumps are used to collect condensate samples for monitoring of the condensate discharges to the Process Waste Collection and Transfer System. By making this a closed system, the sample room contamination area postings can be reduced.

Assisted I&C during the monthly calibration and checkout of the LLLW Evaporator Facility.

Replaced two steam traps at the steam station located at LLLW Tanks W-16, -17, and -18. This station provides steam for the steam jets used to transfer the contents of these tanks to the LLLW Collection and Transfer System.

July

Completed installation of new smoke detectors at Bldg. 2537 that were requested by the ORNL Fire Department.

Supported I&C personnel in replacing a failed level instrument on Tank W-24 at Bldg. 7830.

August

Repaired the cooling tower pump (2A9) for the evaporator 2A2's cooling tower (Bldg. 2539). The pump was rebuilt due to routine wear from operations. Also completed work on the tower's drain trays. The tower was then filled with water in preparation for its return to service.

Completed the monthly I&C checks at the LLLW Evaporator Facility.

Completed the inspection of the gantry crane located in the cell bay at Bldg. 2531. The crane failed the inspection due to a crack in the support for the upper sheaves.

September

Assisted I&C personnel in the scheduled calibration of instrumentation located in the 3039 Stack Area. The 3039 Stack provides cell ventilation and off-gas ventilation services to the main ORNL Complex in Bethel Valley.

Replaced belts on the Isotope Area Cell Ventilation blower that had worn due to routine use. This blower provides cell ventilation service to the Isotope Area.

Replaced the monitoring gas cylinders located in the 3039 Stack Area used for tritium monitoring of the air streams entering the 3039 Stack.

Assisted I&C personnel in the scheduled checkout of the off-gas relief valve in the 3039 Stack Area.

October

Supported I&C Controls personnel in repairing the level indicators on LLLW tanks W-24 and W-25 at the Melton Valley Storage Tanks (Bldg. 7830).

November

Began preparation of the crane bay at Bldg. 2531 for painters to repaint the area.

Continued painting the crane bay at Bldg. 2531 in an effort to remove requirements for personnel to routinely frisk upon exit from the bay.

Replaced a failed sump pump in the pump vault at Bldg. 7567 that had failed due to routine use and age.

Supported I&C personnel in testing the high discharge pressure shutdown switches located at Bldg. 7830 for pumps 4P1 and 4P2. These switches prevent the pump discharge pressure in the inner pipe from exceeding the pressure maintained in the annular space of the double-wall pipe for leak detection.

December

Began color coding of piping in the crane bay at Bldg. 2531. The crane bay is being repainted in an effort to bind spots of fixed contamination within the paint coating, which will allow personnel to eliminate the requirement to frisk when exiting the crane bay during routine activities.

Provided a lockout of part of the LLLW System at Bldg. 7830 due to upgrades to the cathodic protection system that are underway at the facility. This upgrade is to ensure that the cathodic protection of the buried LLLW piping is adequate to prevent corrosion of the piping.

Relocated the nitrogen trailer located in the South Tank Farm which is used to pressurize the annulus on the Central Waste Collection Header and the Intervalley Transfer pipeline due to its proximity to the old evaporator Bldg. which is to be torn down in the near future as an EPIC project.

Replaced the sump pump for the pump and valve vault at Bldg. 7567 that had failed.

3.4 GASEOUS WASTE SYSTEM

January

P&E personnel replaced the guards on the steam turbines located in the 3039 Stack Area to correct Occupational Safety and Health Administration (OSHA) deficiencies that had been identified during previous reviews of the facility.

P&E personnel replaced a failed solenoid on the Isotope Area Cell Ventilation steam-driven turbine system. This valve controlled the flow of cooling water to the turbine when in operation. This turbine provides backup cell ventilation services to the Isotope Area.

February

Completed the monthly operational check of the vacuum relief valve located on the central off-gas system at Bldg. 3092. This check is a requirement of the 3039 Stack Limiting Conditions Document.

Repaired the electrical outlet for the 4500 cell ventilation duct sump pump. This pump transfers condensation and any leakage from the duct to the Process Waste Collection and Transfer System.

March

Replaced the sump pump in the 4500 Cell Ventilation Duct System. During the replacement the electrical cable to the pump was found to be the cause of the failures and P&E personnel are making repairs to the electrical cable.

Replaced the south bank of HEPA filters on the off-gas system at Bldg. 2531 due to plugging of the filters. The new HEPA filters were then successfully DOP tested by personnel from QE&I. These filters are used to filter the off-gas from the LLLW Evaporator Facility (Bldg. 2531) prior to discharge to the 3039 Stack.

Replaced the cell ventilation HEPA filters at Bldg. 7863 due to a high pressure drop across the filters. Also replaced the HEPA filter on LLLW Tank WC-9. The new filters were then successfully DOP tested by personnel from QE&I.

April

Replaced the backflow preventer on the process water for the 3039 Stack Area after the backflow preventer failed its annual inspection by QE&I personnel.

Completed the scheduled DOP testing of the HEPA filters at the off-gas scrubber facility (Building 3092). All of the filters passed inspection. These filters are used to remove particulate contamination from the off-gas stream prior to discharge to the 3039 Stack.

Replaced failed steam traps at Bldg. 3092 and at Valve Box #2. These steam traps are located at steam control stations at these facilities.

May

Completed the quarterly DOP testing of the HEPA filters located at Bldgs. 7830, 7860, and 7877. All filters passed the testing except for the west bank of off-gas filters at Bldg. 7830. These have been scheduled for replacement by Plant and Equipment personnel.

Replaced the west bank of HEPA filters on the off-gas system at Bldg. 7830 after they had failed their quarterly DOP testing by personnel from QE&I. The new filters were then successfully DOP tested.

Replaced the south bank of HEPA filters at Bldg. 3092 due to a high pressure drop across the filters. The new filters were then successfully DOP tested. These filters are used to remove particulates from the off-gas prior to discharge to the 3039 Stack.

Removed the tent from the east side of the 3039 Stack that had been used in the recent 3039 Stack Inspection.

June

Repaired a steam leak on the Bldg. 3092 central off-gas scrubber's steam turbine control valve. This turbine provides backup services to circulate scrubber solution in the event the primary electric motor driven pump fails.

Replaced the inlet filters on the cell ventilation and off-gas systems at Bldg. 7830 due to a high pressure drop across the filters.

Replaced the south bank of HEPA filters at the off-gas filter pit (Building 2534) for the LLLW Evaporator Facility due to a high pressure drop across the filters. The new filters were then successfully DOP tested by personnel from QE&I. This filter pit provides off-gas service for the LLLW Evaporator Facility.

Repaired the solenoid valve on the electric leg for the Isotope Cell Ventilation system's steam turbine. This valve, which opens during an electrical outage, provides steam to run the steam turbine which provides backup cell ventilation service to the Isotope Circle Area.

July

Replaced the belts on the Isotope Area cell ventilation blower in the 3039 Stack Area. This blower provides cell ventilation for the Isotopes Area at ORNL.

Supported I&C personnel during the scheduled calibration of the pH probe for the central off-gas scrubber solution. This solution is maintained at a basic pH to remove any acidic fumes that may be in the off-gas prior to discharge to the 3039 Stack.

Successfully completed the quarterly DOP test of the HEPA filters at Bldg. 3092. These filters are used for the removal of particulate contamination from the off-gas prior to discharge to the 3039 Stack.

August

Repaired a leaking flange at the steam station for the 3025/3026 cell ventilation system's steam-driven turbine. This turbine supplies backup cell ventilation for Bldgs. 3025 and 3026.

Completed the routine DOP testing of HEPA filters at Building 2099. All but one HEPA filter passed the test. The filter that had failed at Bldg. 2099 was replaced and the replacement filter was then successfully DOP tested by personnel from QE&I.

Completed the scheduled monthly check of the 3092 off-gas relief valve. The valve was found to not be closing completely and corrective maintenance was performed.

November

Replaced the south bank of HEPA filters at Bldg. 3092. The new filters were then successfully DOP tested by personnel from QE&I. These filters are used to remove particulate contamination from the off-gas prior to discharge to the 3039 Stack.

Replaced the bearings on the Bldg. 3042 cell ventilation fan in the 3039 Stack Area due to routine wear. This fan supplies cell ventilation to Bldg. 3042.

Performed scheduled DOP tests on the cell ventilation and off-gas HEPA filters at Bldgs. 7830 and 7860. All filters passed the test.

Supported Instrumentation and Controls technicians repairing the pH probe at Bldg. 3092. The pH of the caustic scrubber solution is checked daily to ensure it is at a basic pH for proper operation of the scrubber. All off-gas is treated by the scrubber to ensure removal of any acidic fumes prior to discharge to the 3039 Stack.

Supported I&C personnel in the monthly test of the off-gas relief valve located at Bldg. 3092. This valve, which prevents the off-gas system from pulling too high a negative vacuum to the customers' facilities, is required to be tested once per month per the Limiting Conditions document for the 3039 Stack.

Successfully DOP tested the cell ventilation and off-gas HEPA filters at the LLLW Evaporator Facility. These filters remove particulates from the ventilation streams prior to discharge to the 3039 Stack.

December

Repaired the damper on the electric blower for the Bldg. 3042 Cell Ventilation system. This system provides primary cell ventilation to Bldg. 3042.

Repaired a steam leak on heat tracing at the 3092 Scrubber facility (Bldg. 3092).

Assisted I&C personnel with the scheduled monthly checkout of the LLLW Evaporator Facility and replaced a failed pH probe at the 3092 Scrubber facility.

Replaced four failed steam traps in the 3039 Stack Area at the steam stations supplying steam to the backup cell ventilation turbines for the 3039 Stack.

Replaced the demister media at Bldg. 3092. The demister media is used to remove moisture from the off-gas stream prior to passing through the HEPA filters for removal of particulates.

Supported I&C personnel in the monthly check of the off-gas relief valve at Bldg. 3092. This check is a requirement of the Limiting Conditions document for the 3039 Stack System.

Replaced the North bank of HEPA filters at Bldg. 3092. The NE filters were then successfully DOP tested by personnel from QE&I. These filters remove particulates from the off-gas prior to discharge to the 3039 Stack.

4.0 OTHER ACTIVITIES

4.1 TRAINING ACTIVITIES

January

Five LGWOD personnel completed Waste Certification Training.

Two LGWOD personnel completed Solid Low-Level Waste Generator Training.

One LGWOD personnel completed the annual Respirator Fit Retraining.

LGWOD personnel conducted a tabletop exercise on the 3039 Stack Ventilation System.

One LGWOD personnel attended a one-day DOE-EM orientation training module.

Two LGWOD personnel attended the two-day course on conducting Readiness Reviews and Readiness Assessments.

February

Two personnel completed Solid LLW Generator Training.

Two personnel completed the two-day training course on DOE Order 5480.31.

Six personnel completed Radiation Worker II requalification training.

Six LGWOD personnel completed the Supervision Drug Awareness training.

Eighteen LGWOD personnel completed the Employee Drug Awareness training.

One LGWOD personnel completed the annual 8 hour HAZWOPER refresher training.

March

Eighteen LGWOD personnel completed Employee Drug Awareness training.

One LGWOD personnel completed the Supervision Drug Awareness training.

Six LGWOD personnel completed the Waste Certification Training course.

Six LGWOD personnel completed the Radiation Worker II requalification training course.

Two LGWOD personnel attended a training session on recent changes to the DOE order system, with particular emphasis being placed on the impact of the Price-Anderson Amendment Act to the LGWOD's nuclear facilities.

Three LGWOD personnel were whole-body counted.

Conducted two safety documentation classes during the week for two shifts of LGWOD personnel.

One LGWOD personnel completed Solid Low-Level Waste Generator training.

Two LGWOD personnel completed the two-year Unreviewed Safety Question Determination training course (8 hours).

One LGWOD personnel completed the annual HAZWOPER 8-hour refresher course.

April

Two LGWOD personnel attended forklift operator training.

Two LGWOD personnel completed the two-year Radiation Worker II refresher training.

LGWOD personnel completed Facility Authorization Basis Training (except for one operator who was off due to scheduled vacation).

Two LGWOD personnel completed Smoke School training this week.

The LGWOD Head completed the two-day Readiness Review training.

May

Five LGWOD personnel completed the Radiation Worker II refresher training.

All LGWOD personnel completed quality assurance training conducted by the WMRAD Quality Assurance Specialist.

One LGWOD personnel completed the annual HAZWOPER refresher training.

One LGWOD personnel completed Satellite Area and Hazard Characterization training.

Three LGWOD personnel completed the three-day DOE Performance Measurement Training course.

June

Two LGWOD personnel completed the Satellite Area and Hazard Characterization Training courses.

Two LGWOD personnel attended ESWMO Central surveillance training.

Three LGWOD personnel completed the Radiation Worker II refresher training.

Ten LGWOD personnel attended Safety Work Permit training.

Two LGWOD personnel completed the annual HAZWOPER refresher training course.

July

One shift of LGWOD personnel attended the Lockout/Tagout refresher training.

Fourteen LGWOD personnel completed Lockout/Tagout retraining.

One LGWOD personnel completed the annual HAZWOPER refresher training.

One LGWOD personnel completed Solid Low-Level Waste Generator training.

LGWOD personnel attended the quarterly WMRAD Safety meeting.

August

Two LGWOD representatives completed system administrator training and console programmer training for the new distributed control system consoles being procured as part of the Melton Valley LLLW Line Item.

Two LGWOD personnel completed the on-the-job instructor refresher training.

Two LGWOD personnel completed the Lockout/Tagout refresher training.

Seven LGWOD personnel completed Performance Measurement Team leader training.

Four LGWOD personnel completed the annual respirator fit testing.

Two LGWOD personnel attended division procurement training.

Two LGWOD personnel completed supervisor's respirator issuance training.

September

Held five Performance Measurement Team (PMT) flowdown meetings with chemical operators and foremen during the week.

Three LGWOD personnel completed the annual respirator fit testing.

One LGWOD personnel attended a 4-hour training session on PMTs.

Three LGWOD personnel were whole-body counted.

Two LGWOD personnel completed training on changes being implemented to the Internal Time System.

Three LGWOD personnel completed training on S/RIDs.

One shift of LGWOD personnel completed the 4-hour PMT orientation training.

October

One shift completed Performance Measurement Team member training.

LGWOD personnel attended the WMRAD quarterly safety meeting.

Members of the LGWOD PMT attended team membership training.

All LGWOD personnel on day-shift schedule completed the annual ethics training and security refresher briefing.

Five LGWOD personnel completed training on the new internal time system that was implemented in December.

November

All LGWOD personnel completed the annual ethics training and security refresher briefing.

Three LGWOD personnel completed the annual respirator requalification training.

Two LGWOD personnel completed training on the Payroll, Absentee, and Labor System to enter personnel time.

One LGWOD personnel completed training on Windows 95 installation.

One LGWOD personnel completed the two-year General Employee Training.

Two LGWOD personnel completed the annual security refresher training.

One LGWOD personnel completed the annual security refresher.

One LGWOD personnel completed the annual Local Emergency Squad supervisor training.

December

Two LGWOD personnel attended Price-Anderson Authorization Amendment Awareness Training during the month.

Attended the quarterly Pollution Prevention representative meeting.

Three LGWOD personnel completed the Radiation Worker II Requalification Training.

One LGWOD personnel completed Solid Low-Level Waste Training.

Two LGWOD personnel attended an all-day training course on the Management Evaluation Process for FY 98 budget activities. One LGWOD personnel attended the two-hour management overview training of this process.

4.2 AUDITS/REVIEWS/TOURS

January

Provided the FFA Technical Advisory Group a tour of the Transported Waste Receiving Facility.

Provided a tour of the TWRF to vendor representatives of the LLLW Tanker and to personnel from Hanford (who are procuring a similar tanker).

February

Conducted a safety inspection by WMRAD Environmental, Safety, & Health (ES&H) personnel of Building. 2600, 3130, 3518, and 3608. No significant findings were identified.

Performed a housekeeping inspection at Bldg. 2531 and the 3039 Stack Area. No significant findings were identified.

Participated in the corporate audit of Environmental, Safety and Health, Quality Assurance and Management at ORNL during the week.

Participated in the kickoff for a training audit of the ORNL ESWMO Training Program.

March

Performed a safety inspection at the LLLW Evaporator Facility. The WMRAD ES&H personnel also inspected housekeeping at Bldgs. 3518 and 3544. No major findings or concerns were identified.

Walked down the Bldg. 2099 Monitoring and Control Station and the Bldg. 2026 drain upgrades with a DOE-ORO representative who will be heading a DOE readiness review of these facilities. These upgrades were built as part of the Bethel Valley LLLW Line Item.

Conducted the procedure on how to transfer the T-13 tank at Bldg. 7860 to the LLLW Evaporator Facility for DOE-ORO onsite facility representatives auditing the conduct of operations within the LLLW System. No major findings or concerns were identified.

Audited the deficient equipment system at Bldg. 3544 to ensure the system is being used properly by LGWOD personnel. No major problems were discovered.

Audited the 3039 Stack Area using personnel from the ORNL ESWMO ES&H group. No major findings were identified.

Participated in a partial review of Conduct of Operations at Bldgs. 3544 and 3608 by DOE-ORO onsite personnel. No concerns were identified during the review.

Participated in a review of housekeeping at Bldgs. 3105, 3544, and 7853 with personnel from the ORNL ESWMO ES&H group. No concerns were identified during the review.

April

Participated in an audit by ESWMO Central personnel of the LGWOD's Conduct of Operations program. No major findings or concerns were identified.

May

Presented information on the Liquid Low-Level Waste Solidification Project to personnel attending the Nevada Test Site Waste Certification Officials meeting from several DOE facilities across the country.

June

Completed safety inspections by the WMRAD ES&H group of Bldgs. 7567, 7569, 7906, 7907, 7908, 7919, 7935, and 7961. No significant findings or concerns were identified.

August

Participated in a DOE-ORO review of Conduct of Operations within the LLLW System during the month. No major concerns were identified during the review.

September

Participated in surveillances performed by the Waste Certification Group on two LGWOD procedures. Provided documented responses to surveillances performed on two LGWOD procedures dealing with the certification of solid LLW and liquid wastes generated by the LGWOD.

Two LGWOD personnel participated in audit sessions as part of the DOE audit of the Waste Certification Program. Also, received the "Authorization to Certify" memo from the Waste Certification Group for the Solid Low-Level Waste Certification Procedure for the LGWOD.

Conducted personnel from the ORNL ESWMO ES&H group on a safety inspection of Bldgs. 3039, 3125, 3127, 3154, and 3155. No findings were identified.

October

Provided a tour of the WOCC (Bldg. 3130) and the NRWTP (Bldg. 3608) for the Tennessee State Legislative Tour at ORNL.

November

Provided a tour of Bldg. 3130 for visitors from Russia during the week.

Conducted ORNL ESWMO ES&H personnel on a safety inspection in the 7800 area. No findings or concerns were identified.

Participated in an audit of LGWOD waste transportation operations during the week by the ORNL Transportation Committee. No findings or concerns were identified. A recommendation to provide tractor drivers who transport the LLLW tanker a refresher course on LLLW transportation requirements may be made.

December

Conducted two tours of the Bethel Valley Process Waste Storage Tanks (Bldg. 2600) for personnel from the Tennessee Oversight Agreement. The first tour was an informational tour and the second was a surveillance. No findings or concerns were identified during the surveillance.

4.3 ENVIRONMENTAL RESTORATION SUPPORT

January

LGWOD personnel transferred approximately 150,000 gallons from the Bldg. 3513 Settling Basin at the request of Environmental Restoration (ER) personnel to lower the level in this basin. This wastewater was transferred to the Process Waste Collection and Transfer System for treatment.

February

Transferred 10,900 gals from tank TH-4 to LLLW Tank WC-10, and then to the LLLW Collection and Transfer System for treatment. This quick action was done at the request of Remedial Action personnel to meet a commitment to the State of Tennessee.

Transferred 150,000 gals of process waste from the Settling Basin (Bldg. 3513) and 10,000 gals of process waste from the surface impoundments located in Solid Waste Storage Area 5 to the Process Waste Collection and Transfer System for treatment. This was done at the request of Remedial Action personnel.

Pumped the contents of the Seep C zeolite treatment system diked area to the process waste tanker and transferred the contents to the Process Waste Collection and Transfer System for treatment. LGWOD personnel then entered the diked area to check the operation of the zeolite treatment system. All system problems found were remediated. This was done at the request of Remedial Action personnel.

March

Provided assistance to Remedial Action personnel to take pictures in the South Tank Farm for connections to the LLLW System at the W-6 Valve Pit.

Removed the cover from the Seep C Zeolite treatment pit and cleaned the top layer of zeolite within the zeolite treatment drums. This removed a layer of coating that builds up within the drums and prevents proper flow through the zeolite resin. This system is owned by the Environmental Restoration program and the LGWOD provides personnel to monitor and operate the system.

April

Collected approximately 7,000 gals of Process Waste from Environmental Restoration activities and transferred the waste to the Process Waste Collection and Transfer System for treatment.

Removed a buildup of particulates from the top of the zeolite columns located at Seep C. The zeolites are used to treat water from the seep prior to its discharge to the watershed.

June

Transferred approximately 20,000 gallons from inactive tank W-3 to the LLLW Collection and Transfer System for treatment at the request of Remedial Action personnel.

Supported P&E personnel in the cutting of grass in the North and South Tank Farms.

Backwashed the spare zeolite column for the Seep D treatment system in preparation for the removal of the in-service column at Seep D. The spent zeolite column at the Seep D treatment system was then removed and the spare column (loaded with fresh zeolite) was installed. The spent zeolite column was transferred to Bldg. 3544 to have the spent zeolite removed and fresh zeolite loaded. This treatment system is operated by the LGWOD for the Environmental Restoration program.

July

Transferred the contents of the LLLW Tank at Bldg. 3013 to the LLLW Tanker and transported it to the Central Waste Collection Header, where its contents were transferred to the LLLW Collection and Transfer System for treatment.

Transferred the contents of Tank 3004B to the Process Waste Collection and Transfer System at the request of Remedial Action personnel.

August

Transferred approximately 1,040 gallons from tank W-11 to the LLLW Collection and Transfer System for treatment at the request of Remedial Action personnel.

Assisted in the loading of two tanker-loads (approximately 5,000 gallons each) of wastewater for Environmental Restoration personnel at Bldg. 7503. The wastewater was then transferred to the NRWTP Collection System for treatment.

Supported Environmental Restoration personnel working in the North Tank Farm.

Provided support to P&E personnel repairing the transfer pump at the Seep D treatment station. This station treats water from Seep D through a zeolite resin prior to discharge to the environment. LGWOD personnel operate the station for the Environmental Restoration organization.

September

Set up a pumping system and transferred 31,690 gallons of LLLW from Environmental Restoration's LLLW Tank W-8 to the LLLW Collection and Transfer System for treatment as of September 29. A total of 100,000 gallons was to be transferred to the LLLW Collection and Transfer System and an additional 50,000 gallons would then be transferred between two Environmental Restoration LLLW Tanks. This work was being performed to satisfy commitments made by the EER Program to regulatory agencies.

Transported one LLLW Tanker load from the T-30 sump to the Central Waste Collection Header, where its contents were transferred to the LLLW Collection and Transfer System for treatment.

October

Transferred 16,090 gallons of LLLW from Environmental Restoration's LLLW Tank W-8 to the LLLW Collection and Transfer System for treatment. This brought the total transferred to 47,780 gallons as of October 11, which completed the initial transfer from W-8. LGWOD personnel then began setup of the transfer system to transfer LLLW from Environmental Restoration's LLLW Tank W-6 to tank W-8 and also to the LLLW Collection and Transfer System for treatment. A total of 36,040 gallons of LLLW had been transferred from W-6 to the LLLW Collection and Transfer System by the end of the reporting period. An additional 33,000 gallons was transferred from W-6 to W-8.

November

Transferred 12,000 gallons of LLLW from Environmental Restoration's LLLW Tank W-6 to the LLLW Waste Collection and Transfer System for treatment. This completed the transfers to the LLLW Collection and Transfer System. The transfer system used to transfer wastewater from Environmental Restoration tanks W-6 and W-8 was then dismantled. A total of approximately 100,000 gallons was transferred to the LLLW Collection and Transfer System from tanks W-6 and W-8 and an additional 50,000 gallons was being transferred between the two ER LLLW Tanks.

Transferred 3,000 gallons of process waste from the Bldg. 7500 canal to the 5,000 gallon MC-312 tanker and transported it to Bethel Valley, where its contents were transferred to the Process Waste Collection and Transfer System for treatment. This was done at the request of ER personnel.

Transferred 17,000 gallons of nonradiological waste from Bldg. 7503 to the 5,000 gallon MC-312 tanker and transported it to Bethel Valley, where its contents were transferred to the Nonradiological Waste Collection and Transfer System for treatment. This was done at the request of ER personnel.

Cleaned particulate buildup from the top of the zeolite treatment drums at Seep C and pulled samples at the request of ER personnel.

December

Transferred approximately 5,000 gallons of nonradiological waste from Bldg. 7503 to the MC-312 tanker and transported it to Bethel Valley, where its contents were transferred to the Nonradiological Waste Collection and Transfer System for treatment. This was done at the request of ER personnel.

Transferred approximately 3,000 gallons of process wastewater from the 7500 canal to the MC-312 tanker. The tanker's contents were then transferred to the Process Waste Collection and Transfer System for treatment. This was done at the request of ER personnel.

Removed the tank lids at the Old Hydrofracture site for an inspection of the tanks and to determine the level of any liquids present in the tanks. Personnel also checked tank hatch dimensions to determine which camera can be used for an upcoming video inspection of the tanks. This work was done at the request of ER personnel.

Changed the configuration of the zeolite drums at Seep C and pumped the sump in the treatment cell. This was done at the request of ER personnel.

4.4 MISCELLANEOUS ACTIVITIES

January

LGWOD personnel collected five containers of process waste from Bldg. 1505 and transferred them to the Process Waste Collection and Transfer System for treatment.

LGWOD personnel collected three process waste tanker loads of wastewater at Burial Ground #5 and transferred the contents to the Process Wastewater Collection and Transfer System for treatment.

LGWOD personnel transferred the contents of the 190 Ponds (Bldg. 3539 and 3540) to the Process Wastewater Collection and Transfer System for treatment. These ponds, which had filled with rainwater, are maintained at a low level to provide additional storage capacity during heavy inflow events to the Process Waste Collection and Transfer System.

LGWOD personnel transferred a tanker of process wastewater from SWSA 6 to the Process Waste Collection and Transfer System for treatment. This transfer was done at the request of Solid Waste Operations personnel.

LGWOD personnel collected four loads of process wastewater (approximately 20,000 gallons total) from pits at SWSA 5 and transferred the wastewater to the Process Waste Collection and Transfer System for treatment.

LGWOD personnel assisted personnel at Bldg. 3074 with cleanup/decontamination operations after a leak was found in the 3074 LLLW Dumpster tank. The contents of the tank were transferred to the LLLW Collection and Transfer System for treatment.

LGWOD personnel decontaminated a sampling Bldg. located south of Bldg. 3544 at the request of Environmental Monitoring and Compliance (EMC) personnel. The Bldg. is scheduled to be moved to a new location by EMC personnel. The building was previously used to monitor discharges from the PWTP to White Oak Creek, but its use was discontinued in February 1990 after the PWTP began discharging its effluent to the NRWTP for further treatment prior to discharge to White Oak Creek.

LGWOD personnel performed decontamination of an engine for P&E personnel.

LGWOD personnel transferred one tanker load of sulfuric acid to the PWTP. This acid is used to adjust the pH of the wastewater to a neutral range prior to transfer to the NRWTP for further treatment.

LGWOD personnel emptied exhausted zeolite from both zeolite columns at the PWTP and refilled them with fresh zeolite. These columns are used to provide additional treatment capacity during heavy inflow events to the Process Waste Collection and Transfer System and for removal of cesium when elevated levels are detected in the feed to the PWTP.

LGWOD personnel assisted subcontractor personnel in inspections of LGWOD equipment for counterfeit/suspect bolts.

LGWOD personnel began correcting deficiencies that have been identified in recent management-by-walking-around inspections by the LGWOD Facility Manager.

February

Collected one LLLW tanker-load from the sumps at Bldg. 7830 and transferred the wastewater to the LLLW Collection and Transfer System for treatment.

Collected two LLLW Bottle packages (one from 4500N and one from 4500S) and transported them to the LLLW Evaporator Facility, where their contents were transferred to the LLLW Collection and Transfer System for treatment.

LGWOD personnel transferred one tanker-load (5,000 gals) of process wastewater from the 4500 cell ventilation duct sump (located near Bldg. 4507) to the Process Waste Collection

and Transfer System for treatment. The sump pump was then replaced due to an equipment failure.

LGWOD personnel collected twenty-one containers of process wastewater from Bldg. 1505 and transferred them to the Process Waste Collection and Transfer System for treatment.

LGWOD personnel received five containers of process wastewater from monitoring wells located at ORNL and transferred them to the Process Waste Collection and Transfer System for treatment.

Transferred one 55-gal drum of process waste from well drilling activities (well was purged prior to sampling) to the Process Waste Collection and Transfer System for treatment.

Transferred two tanker-loads (approximately 10,000 gals total) of process waste from SWSA 5 to the Process Waste Collection and Transfer System for treatment.

Drained the LE506 off-gas condensate drain line to the process system. This line previously discharged to the LLLW System, but sample analyses showed the waste could be routed to the Process Waste Collection and Transfer System. This was found to be much cheaper than upgrading the system to meet FFA requirements if the system continued to be connected to the LLLW System.

LGWOD personnel received one load of sodium hydroxide (3500 gals) at Bldg. 3544. The sodium hydroxide (caustic) is used to adjust the pH of the wastewater to aid in the water softening process in the L-1 clarifier.

LGWOD personnel received one load of sulfuric acid (3500 gallons) at Bldg. 3608. The sulfuric acid is used to adjust the pH of the wastewater to permit limits prior to being discharged to White Oak Creek.

Transferred one load of sodium hydroxide to the caustic storage tank at Bldg. 7961. The sodium hydroxide is used to maintain the process waste received at a basic pH to prevent corrosion in the collection tanks.

Transferred one load of sulfuric acid to Bldg. 3544. The acid is used for pH adjustment of the wastewater prior to discharge to the NRWTP for treatment.

LGWOD personnel transferred one load of caustic to the 7961 storage tank. The caustic is used to maintain the process wastewater received at Bldg. 7961 at a basic pH to prevent corrosion problems and because of requirements to maintain wastewater received from the High Flux Isotope Reactor (HFIR) at a basic pH in case of an accident at the HFIR.

Added chemicals to the sludge tank (F-1022) at the NRWTP based on recommendations from Chemical Technology Division personnel to aid in the sludge thickening process and then dewater all of the sludge in the filter press using the filter press. Recently, the filter press has had problems dewatering the sludge as effectively as in past years, and it was felt that a residue in the sludge tank might be causing the problem, so the sludge tank was emptied of all materials.

Completed the pressure test of the transfer line from the HFIR LLLW Tank to the Central Pumping Station. This test is a requirement of the FFA for the LLLW System.

Performed cleanup work in the 3039 Stack Area, in the Bldg. 2531 crane bay, outside Building 3047, south of Bldg. 3544, and at Bldg. 7877. This was to clean up the areas after maintenance activities had been completed at these facilities.

Decontaminated a truck for P&E personnel.

LGWOD personnel provided escorts for subcontractors inspecting for suspect/counterfeit bolts at LGWOD facilities. Some suspect bolts were identified in noncritical applications. This completed the inspection of LGWOD facilities for suspect/counterfeit bolts by subcontractor personnel.

Placed tags at all facilities within the LGWOD that contain any bolts that have been identified as suspect during the recent walkdown of LGWOD facilities.

March

Collected two LLLW Bottle Packages (one from 4500N, one from 4500S) and transported them to the LLLW Evaporator Facility, where their contents were transferred to the LLLW Collection and Transfer System for treatment.

Transported one LLLW tanker-load from the Bldg. 7830 sumps and two LLLW Dumpster Tank loads from Bldg. 3074 to the Central Waste Collection Header, where the contents were transferred to the LLLW Collection and Transfer System for treatment. This was the first use of the new dumpster tank which is emptied utilizing a pump with a top penetration instead of a gravity drain tank with bottom unloading.

Transferred approximately 200,000 gal of process wastewater from the Settling Basin (Bldg. 3513) to the Process Waste Collection and Transfer System at the request of Remedial Action personnel. Also transferred the contents of the 190 Ponds (Bldgs. 3539 and 3540) to the Process Waste Collection and Transfer System. These are inactive surface impoundments which collect rainwater that must be transferred to the Process Waste Collection and Transfer System periodically for treatment to prevent the water level exceeding the top of the ponds' berm walls.

Collected two process waste containers at Bldg. 1505 and transferred their contents to the Process Waste Collection and Transfer System for treatment.

Transferred two loads of sulfuric acid to Bldg. 3544. Sulfuric acid is used to adjust the pH of the wastewater prior to discharge to the NRWTP for further treatment.

Transferred one load of sodium hydroxide to the storage tank at Bldg. 7961. The sodium hydroxide is used to maintain the wastewater collected at the facility at a basic pH to prevent corrosion in the tanks.

Decontaminated a truck and a piece of heavy equipment for P&E personnel at Bldg. 7935.

Backwashed the zeolite columns at Bldg. 3544 and returned them to service. The columns are used to provide additional throughput capacity during periods of heavy inflow or to treat the discharge of the ion-exchange columns for cesium removal during periods of high cesium concentrations in the wastewater.

Continued efforts to close out deficiencies identified during recent Facility Manager's Management By Walking Around reports.

Completed the annual Department of Transportation inspection for four MC-312 specification tankers (the 5,000 gal process waste tankers). These inspections are being performed on the three tankers operated by the LGWOD and the two tankers operated by the Environmental Restoration organization. The bottom discharge hydraulic valve on the first tanker procured by the LGWOD is being replaced due to the valve's failure to seat properly. The tanker will then be retested.

Completed the cleanup of the MC-312 tanker that was used by the Bldg. 7920 personnel last year during a contamination incident at their facility. During the incident, paint was applied to a sidewalk to fix some contamination for removal, but a rain event occurred prior to the paint drying, and the paint was washed to a diked area and pumped into the tanker. This cleanup completed the removal of paint residues from the inside of the tanker.

Removed the cover from the valve box in the South Parking Lot in preparation for LGWOD personnel to decontaminate the valve box. This is in preparation of MK-F personnel entering the box to install a stainless steel liner, a sump pump, and sump level detection so the valve box will meet FFA requirements for secondary containment and leak detection for LLLW Systems.

Sampled the storage casks from the previous three solidification campaigns that are located in SWSA 6 at the request of Solid Waste Operations Department personnel to ensure that no liquids are entering the casks.

Cleaned the air stripper at Bldg. 3608 with an acid wash. This is done on a periodic basis to prevent the buildup of algae and bacteria on the internals of the air stripper. The air stripper is used for the removal of volatile organics from the wastewater prior to discharge at the facility.

April

Received eleven 55-gal drums of process waste from operations in Solid Waste Storage Area 6. The contents of the drums were transferred to the Process Waste Collection and Transfer System for treatment.

Transferred rainwater that had collected in Valve Box #3A to the Process Waste Collection and Transfer System so that Instrumentation and Controls personnel could repair the sump level monitoring system that was recently installed and is preparing to undergo functional testing. This valve box is being installed as part of the Bethel Valley LLLW Line Item to provide a connection from the Transported Waste Receiving Facility to the Central Waste Collection Header.

Emptied depleted zeolite resin from two columns at Bldg. 3544 and reloaded them with fresh zeolite. The zeolite columns are used to provide additional treatment capacity during periods of heavy inflow to the Process Waste Collection and Transfer System.

Cleaned out sludge from the L-1 clarifier at Bldg. 3544. This is done periodically to remove older sludge formations which interfere with sludge transfers from the clarifier. The clarifier is used to "soften" the wastewater (by removing calcium and magnesium) prior to treatment through the ion-exchange columns. This extends the service life of the ion-exchange resin and reduces the amount of waste generated from regeneration of the resin.

Completed the annual Department of Transportation testing of all LGWOD MC-312 5,000-gal tankers used to transport process waste. The hydraulic valve on the unloading line failed on one tanker during the initial test and was replaced. The tanker was then successfully tested.

Collected a 15-gal sample of supernate from tank W-27 at the MVSTs and transferred the sample to Chem Tech Division personnel for waste treatment studies.

Assisted Chem Tech personnel with the television inspection of the LLLW line from the Isotopes Area to LLLW Tank WC-10. This was an attempt to determine the location of inflow to tank WC-10 that cannot be attributed to known sources within the Isotopes Area.

Received one load (approximately 3,000 gals) of caustic at Bldg. 3608. This facility serves as the storage point for caustic for use within LGWOD facilities and is also used to adjust

the pH of the wastewater at Bldg. 3608 to achieve allowable discharge limits prior to discharge to White Oak Creek.

Transferred one load of sulfuric acid from the bulk storage tank at Bldg. 3608 to Bldg. 3544. This acid is used to adjust the pH of the wastewater prior to discharge to the NRWTP for further treatment.

Central Engineering personnel continued work on a longer concrete box to store solid waste on the tumulus. This box is needed to store the pumps to be pulled out of the central pumping station. These pumps are used to pump LLLW collected at the Central Pumping Station and LLLW Tank WC-20 in Melton Valley to the LLLW Evaporator Facility in Bethel Valley. Both pumps will be replaced as soon as an adequate disposal plan is approved for the old ones.

Assisted personnel in the Isotopes Area who are performing dye tests to determine if any of the air conditioning units in the buildings have been routed to the Process Waste Collection and Transfer System.

Provided personnel support to P&E personnel cutting grass in the North and South Tank Farms and around the three surface impoundments still under the LGWOD.

Cleaned up the tent that was used during the recent 3039 Stack Inspection in preparation for P&E personnel to remove the tent.

Completed the annual safety inspection of two LGWOD trucks.

Completed the annual inspection of fire extinguishers within all LGWOD facilities.

May

Transferred the liquid from LLLW Tank WC-14 into a B-25 box as an action to prevent the wastewater in the tank that had been identified as having low levels of PCBs from being transferred to the LLLW System. The liquid was absorbed using a solidifying agent in the box and then transferred to Solid Waste Operations. This action was taken after discussions between MMES, DOE-ORO, and TDEC personnel.

Transported the Bldg. 3074 Dumpster Tank twice to the Central Waste Collection Header, where its contents were transferred to the LLLW Collection and Transfer System for treatment.

Transferred the contents of the 4PRS sump at Bldg. 7830 to the LLLW Tanker and transported it to the Central Waste Collection Header, and subsequently transferred to the LLLW Collection and Transfer System for treatment.

Transferred one tanker load of process waste from construction activities to the Process Waste Collection and Transfer System for treatment.

Transferred two loads of sulfuric acid and one load of sodium hydroxide from the storage tanks at Bldg. 3608 to Bldg. 3544. These chemicals are used to adjust the pH of the wastewater prior to discharge to Bldg. 3608 and are also used as part of the water softening process at Building 3544.

Provided support to personnel conducting leak testing of the single-contained LLLW lines in Bethel Valley. This leak testing is a requirement of the FFA for the LLLW System.

Completed the ultrasonic thickness baseline testing of all LGWOD aboveground tanks. These tests will be repeated on a regular basis to determine if any corrosion of the tanks are occurring and so corrective actions may be taken at an early stage.

June

Transferred the contents of the sumps at Bldg. 7830 to the LLLW Tanker and transported it to the Central Waste Collection Header, where it was transferred to the LLLW Collection and Transfer System for treatment.

Transported the Bldg. 3074 Dumpster Tank to the Central Waste Collection Header twice during the month, where it was transferred to the LLLW Collection and Transfer System for treatment.

Transferred one tanker load of process wastewater from operations in SWSA 6 and transferred the tanker's contents to the Process Waste Collection and Transfer System for treatment.

Transferred rainwater that had collected in the 190 Ponds (Bldgs. 3539 and 3540) to the Process Waste Collection and Transfer System for treatment. These surface impoundments have been removed from active service and are now used to supplement storage capacity during periods of heavy inflow to the Process Waste Collection and Transfer System.

Transferred two loads of sulfuric acid from the storage tank at Bldg. 3608 to Bldg. 3544, where the acid will be used for pH adjustment of the wastewater prior to discharge to Bldg. 3608 for further treatment.

Received one load (approximately 3,000 gallons) of sodium hydroxide (caustic) at Bldg. 3544. The caustic is used to adjust the pH of the wastewater to aid in the water softening process at the facility.

Performed the monthly smoke emissions evaluation of the 3039 and the 7877 stacks. This evaluation is performed by certified personnel to assure compliance with state emission regulations for these permitted emission sources.

Decontaminated tools P&E personnel used during the recent repairs to the Central Off-gas Turbine's steam control valve.

Decontaminated a backhoe for P&E personnel at Bldg. 7935 (the Equipment Cleaning Facility).

Supported Insituform personnel who are relining the storm sewer lines located on the west side of the Equalization Basin (Bldg. 3524).

July

Transported the 3074 Dumpster Tank to the Central Waste Collection Header, where its contents were transferred to the LLLW Collection and Transfer System for treatment.

Collected approximately 2,000 gals of process waste at the 7930 Construction Area in the process waste tanker and transferred it to the Process Waste Collection and Transfer System for treatment.

Supported FFA leak testing activities for the LLLW System during pressure testing of the WC-9 and WC-10 transfer line and the WC-7/Bldg. 2533 transfer line to the Central Waste Collection Header.

Received one tanker-load of nitric acid at Bldg. 3544. The new chemical unloading station that was recently completed under the PWTP Upgrades Line Item was used for the transfer. The new chemical unloading station was constructed to correct several deficiencies that had been identified during reviews of the facility. The nitric acid is used during the regeneration of the ion exchange columns at the facility.

Transferred one load of sulfuric acid to Bldg. 3544. The sulfuric acid is used to adjust the pH of the wastewater prior to discharge to the NRWTP for further treatment.

Decontaminated a backhoe at Bldg. 7935 for P&E personnel that had been used to excavate the LLLW line near W-16 to repair a leaking line earlier in the month.

Backwashed the zeolite columns at Bldg. 3544 to prepare them for service. The columns are used to provide additional throughput capacity during periods of heavy inflow to the Process Waste Collection and Transfer System.

August

Transferred the contents of the sumps at Bldg. 7830 to the LLLW Tanker.

Collected one tanker-load of LLLW in the LLLW Tanker truck from the filter pit at Bldg. 2026 and transported the tanker to the Central Waste Collection Header, where its contents were transferred to the LLLW Collection and Transfer System for treatment.

Transferred one-tanker load of process waste from operations in SWSA 6 and transferred the contents to the Process Waste Collection and Transfer System for treatment.

Transferred 72 drums of wastewater to the Nonradiological Wastewater Treatment Plant's Collection System for treatment that were received from generators.

Received one load (approximately 3,000 gallons) of caustic at Bldg. 3544, where it will be used to adjust the pH of the wastewater for the water softening process in the L-1 clarifier.

Transferred two loads of sulfuric acid from Bldg. 3608 to Bldg. 3544. The acid is used to adjust the pH of the wastewater prior to discharge to Bldg. 3608 for further treatment.

Transferred one load of caustic from Bldg. 3608 to the storage tank at Bldg. 7961 for adjustment of the wastewater's pH prior to entering the Process Waste Collection Tanks.

Performed the monthly smoke emissions evaluation of the 3039 and 7877 stacks. This evaluation is performed by certified personnel to assure compliance with state emission regulations contained in the facility air permit.

Cleaned out the laboratory area at Bldg. 3608 and returned unused chemicals to Chemical Technology personnel.

Provided personnel to support FFA leak testing activities at LLLW Tank WC-19.

Supported subcontractor personnel in reviewing procedure series 605, 606, 609, and 612 for the LGWOD.

Completed decontamination work on a backhoe at Bldg. 7935 from P&E Division.

Decontaminated a 50-ton crane at the request of P&E Division personnel.

September

Transported the Bldg. 3074 LLLW Dumpster Tank to the Central Waste Collection Header, where its contents (approximately 300 gallons) were transferred to the LLLW Collection and Transfer System for treatment.

Transferred four drums of wastewater to the Nonradiological Wastewater Treatment Facility Collection System for treatment.

Assisted P&E personnel by pumping water from the telephone manhole at Building 3544 to the Process Waste Collection and Transfer System to allow personnel access to the manhole.

Received one tanker-load (approximately 3,000 gallons) of sulfuric acid at Bldg. 3608. Sulfuric acid is used to adjust the pH of wastewater to within discharge limits prior to discharge to White Oak Creek.

Transferred one load of sulfuric acid from Bldg. 3608 to Bldg. 3544. The sulfuric acid is used to adjust the pH of the wastewater prior to discharge to Bldg. 3608 for further treatment.

Transferred one tanker-load of sulfuric acid from the storage tank at Bldg. 3608 to Bldg. 3544, where the acid will be used to adjust the pH of the wastewater prior to discharge to Bldg. 3608 for further treatment.

Performed housekeeping work at Bldg. 3544 near the L-1 clarifier. Three drums of spent zeolite resin and three drums of celite (used as precoat material for the filter press) were transferred to Solid Waste Operations per procedures.

Coordinated efforts with personnel at MK-F to remove debris from the WC-9 area. The debris was left from an earlier project performed by MK-F.

Provided information in order to support the Columbus Initiative project. The information provided related to a construction project which occurred at one of the LGWOD facilities recently.

Provided the LGWOD's input to the LLW Vulnerability Assessment being performed in response to the Defense Nuclear Facility Safety Board's recommendation 94-2 for the assessment to be performed.

Completed a Radiation Protection survey of the Bldg. 7830 pump vault area at the request of Chemical Technology personnel. This will be used in development of work packages for future modifications to assist in sludge mobilization in the Melton Valley Storage Tanks.

Participated with a committee to develop instructions for completing forms for the waste disposal data packages.

October

Conducted the first session of the LGWOD PMT. Efforts consisted primarily of determining the scope and mission of this PMT and how it will interface with the operations PMT that is being established.

Emptied LLLW tank W-12 at the request of the FFA program. The tank, which was returned to Category D (which does not allow the tank to receive programmatically-generated waste), was then triple-rinsed and the interior of the tank was video-taped to document these activities. Two other LLLW tanks (WC-11 and WC-13) had their contents transferred to the LLLW Collection and Transfer System at the request of the FFA program.

Transferred 22,500 gallons of LLLW from tank W-24 to tank W-29 at the Melton Valley Storage Tanks. This is being done in preparation for the Out-of-Tank Evaporator Demonstration project to be conducted at Bldg. 7877 by Chem Tech Division personnel later in the fiscal year. Personnel also began staging the out-of-tank evaporator system at Bldg. 7877 after the solidification services vendor demobilized and moved the last of his equipment from the facility and Health Physics personnel completed surveys of the main bay area.

Transferred the contents of the south parking lot valve box to the process waste tanker truck and then transferred the tanker's contents to the Process Waste Collection and Transfer System for treatment. This valve box has been undergoing decontamination efforts in preparation for the installation of a stainless steel liner to meet the requirements of the FFA for double-containment within the LLLW System.

Cleaned the valve box located near tank W-6 in preparation for a stainless steel liner to be installed. This upgrade is being performed so that this valve box, which supports intervalley transfers of LLLW, will meet requirements of the FFA for the LLLW System.

Collected one LLLW Bottle package at Bldg. 4505 and transported it to the LLLW Evaporator Facility, where its contents were transferred to the LLLW Collection and Transfer System for treatment.

Transported the 3074 dumpster tank to the Central Waste Collection Header, where its contents were transferred to the LLLW Collection and Transfer System for treatment.

Collected six containers of Process Waste at Bldg. 4500N and transferred their contents to the Process Waste Collection and Transfer System for treatment.

Transferred 28 drums of wastewater to the Nonradiological Wastewater Treatment Plant's collection system for storage and treatment.

Sampled liquid in a monitoring well in Solid Waste Storage Area 5 at the request of Solid Waste Operations personnel.

Transferred sulfuric acid to the acid/caustic tanker at Bldg. 3608 in preparation to fill the sulfuric acid tank at Bldg. 3544. Sulfuric acid is used to adjust the pH of the wastewater at Bldg. 3608 to acceptable limits prior to its transfer to Bldg. 3608 for further treatment.

November

Transported the 3074 Dumpster Tank to the Central Waste Collection Header, where its contents were transferred to the LLLW Collection and Transfer System for treatment.

Triple rinsed LLLW tank WC-7, then sampled and video-taped the interior of the tank. This is being done at the request of the Federal Facility Agreement personnel to document this tank's removal from active service.

Collected a liquid sample from LLLW concentrate storage tank W-23 and deliver it to Bldg. 2026 for analysis. This is being done to support the annual sampling of the LLLW concentrate as required by the department's Solid Low-Level Waste Procedure to meet the Waste Acceptance Criteria for Solid Waste Operations.

Transferred two tanker loads of sulfuric acid from the storage tank at Bldg. 3608 to Bldg. 3544, where it will be used to adjust the pH of the wastewater prior to discharge to Bldg. 3608 for further treatment.

Received one tanker load of sodium hydroxide at Bldg. 3544. The sodium hydroxide is used to adjust the pH of the wastewater to the proper range to assist in the water softening at the clarifier.

December

Continued cleanup of the valve box on the east side of Bldg. 2531 in preparation for construction personnel to begin installation of a stainless steel liner. This work is being done to meet FFA requirements for secondary containment within the LLLW System.

Transferred two tanker loads of sulfuric acid from the storage tank at Bldg. 3608 to Bldg. 3544. The acid is used to adjust the pH of the wastewater at Bldg. 3544 prior to transfer to Bldg. 3608 for further treatment.

Received one tanker load (approximately 3,000 gallons) of sulfuric acid at the storage tank at Building 3608. The acid is used to adjust the pH of the wastewater to an acceptable range prior to discharge from Bldg. 3608 to White Oak Creek and is also used at other LGWOD facilities for pH adjustment.

Decontaminated the floor at Bldg. 7935 due to some minimal contamination from prior activities and then received a small crane from P&E personnel to be decontaminated at the facility.

Removed and disposed of solid Low-Level Waste from the crane bay at Bldg. 2531 that was generated to date during the painting of the crane bay to fix some contamination spots within the paint. When this job is completed, personnel will be able to leave the crane bay during routine operations without having to frisk.

Replaced a failed seat belt on truck 2395.

5.0 APPENDIX

5.1 TABLES

1. Process waste operations.
2. NRWTP operations.
3. LLLW operations.

5.2 FIGURES

1. Diagram of the Process Waste Collection and Transfer System. (ORNL-DWG. 96-3390)
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12. Used storage space versus time. (ORNL-DWG. 96-3401)
13. LLLW generation at ORNL. (ORNL-DWG. 96-3402)
14. Bldg. 2026 LLLW generation. (ORNL-DWG. 96-3403)
15. Bldg. 3019 LLLW generation. (ORNL-DWG. 96-3404)
16. Bldg. 3025 LLLW generation. (ORNL-DWG. 96-3405)
17. Bldg. 3026-C LLLW generation. (ORNL-DWG. 96-3406)
18. Bldg. 3026-D LLLW generation. (ORNL-DWG. 96-3407)
19. Bldg. 3028 LLLW generation. (ORNL-DWG. 96-3408)
20. 3039 Stack Area LLLW generation. (ORNL-DWG. 96-3409)
21. Bldg. 3074 LLLW generation. (ORNL-DWG. 96-3410)
22. Bldg. 3504 LLLW generation. (ORNL-DWG. 96-3411)
23. Bldg. 3508 LLLW generation. (ORNL-DWG. 96-3412)
24. Bldg. 3517 LLLW generation. (ORNL-DWG. 96-3413)
25. Bldg. 3525 LLLW generation. (ORNL-DWG. 96-3414)
26. Bldg. 3544 LLLW concentrate generation. (ORNL-DWG. 96-3415)
27. Bldg. 3544 LLLW feed generation. (ORNL-DWG. 96-3416)
28. 4500 Complex LLLW generation. (ORNL-DWG. 96-3417)
29. Isotopes Area LLLW generation. (ORNL-DWG. 96-3418)
30. Reactors in Bethel Valley LLLW generation. (ORNL-DWG. 96-3419)
31. WC-5 Pump Pit (tank WC-8) LLLW generation. (ORNL-DWG. 96-3420)
32. WC-5 Pump Pit (tank WC-9) LLLW generation. (ORNL-DWG. 96-3421)

5.2 FIGURES (Continued)

33. HFIR (Bldg. 7900) LLLW generation. (ORNL-DWG. 96-3422)
34. Bldg. 7920 LLLW generation. (ORNL-DWG. 96-3423)
35. Abandoned tank W-1A LLLW generation. (ORNL-DWG. 96-3527)
36. Diagram of the Gaseous Waste System. (ORNL-DWG. 96-3528)

TABLE 1 PROCESS WASTE OPERATIONS

	Waste treated by ion-exchange (gal)	Waste treated by zeolite (gal)	Total Process Waste treated (gal)	Sludge generated		PWTP generated LLLW concentrate to storage (gal)	PWTP generated LLLW feed (gal)
				Drums	Ft ³		
January	4.26 x 10 ⁶	2.68 x 10 ⁶	6.94 x 10 ⁶	42	309	490	740
February	3.88 x 10 ⁶	2.45 x 10 ⁶	6.33 x 10 ⁶	42	309	540	160
March	4.78 x 10 ⁶	1.53 x 10 ⁶	6.31 x 10 ⁶	56	412	342	430
April	4.33 x 10 ⁶	0.75 x 10 ⁶	5.08 x 10 ⁶	51	375	715	1,100
May	4.78 x 10 ⁶	2.30 x 10 ⁶	7.08 x 10 ⁶	42	309	361	211
June	4.88 x 10 ⁶	0.12 x 10 ⁶	5.00 x 10 ⁶	50	368	350	920
July	4.66 x 10 ⁶	0.25 x 10 ⁶	4.91 x 10 ⁶	52	382	580	724
August	5.40 x 10 ⁶	0	5.40 x 10 ⁶	53	390	1,120	420
September	4.96 x 10 ⁶	0	4.96 x 10 ⁶	51	375	330	200
October	5.31 x 10 ⁶	0.43 x 10 ⁶	5.74 x 10 ⁶	46	338	340	200
November	5.64 x 10 ⁶	0.92 x 10 ⁶	6.56 x 10 ⁶	57	419	310	200
December	5.70 x 10 ⁶	0.96 x 10 ⁶	6.66 x 10 ⁶	49	360	645	400
1995 Totals	58.58 x 10 ⁶	12.39 x 10 ⁶	70.97 x 10 ⁶	591	4,346	6,123	5,705

TABLE 2 NRWTP OPERATIONS

	Metals Wastewater treated (gal)	Nonmetals Wastewater treated (gal)	Total Wastewater treated (gal)	Sludge generated	
				Boxes	Ft ³
January	4.50 x 10 ⁵	1.49 x 10 ⁷	1.53 x 10 ⁷	0	0
February	2.88 x 10 ⁵	1.37 x 10 ⁷	1.40 x 10 ⁷	2	192
March	2.52 x 10 ⁵	1.48 x 10 ⁷	1.51 x 10 ⁷	0	0
April	3.96 x 10 ⁵	1.28 x 10 ⁷	1.32 x 10 ⁷	0	0
May	5.58 x 10 ⁵	1.56 x 10 ⁷	1.62 x 10 ⁷	0	0
June	6.72 x 10 ⁵	1.43 x 10 ⁷	1.50 x 10 ⁷	0	0
July	5.76 x 10 ⁵	1.36 x 10 ⁷	1.42 x 10 ⁷	0	0
August	6.48 x 10 ⁵	1.42 x 10 ⁷	1.48 x 10 ⁷	0	0
September	3.60 x 10 ⁵	1.38 x 10 ⁷	1.42 x 10 ⁷	0	0
October	3.28 x 10 ⁵	1.54 x 10 ⁷	1.57 x 10 ⁷	0	0
November	4.98 x 10 ⁵	1.56 x 10 ⁷	1.61 x 10 ⁷	1	96
December	6.64 x 10 ⁵	1.52 x 10 ⁷	1.59 x 10 ⁷	1	96
1995 Totals	56.90 x 10 ⁵	17.39 x 10 ⁷	17.97 x 10 ⁷	4	384

TABLE 3 LLLW OPERATIONS

	LLLW treated by Evaporator A2 (gal)	LLLW treated by Evaporator 2A2 (gal)	Concentrate transferred from A2 (gal)	Concentrate transferred from 2A2 (gal)
January	2.50 x 10 ⁴	2.40 x 10 ⁴	0	0
February	3.84 x 10 ⁴	0	1,850	0
March	4.00 x 10 ⁴	0	2,380	0
April	2.45 x 10 ⁴	0	1,880	0
May	1.81 x 10 ⁴	0	0	0
June	3.81 x 10 ⁴	0	0	0
July	1.78 x 10 ⁴	0	0	0
August	2.01 x 10 ⁴	0.44 x 10 ⁴	1,970	0
September	0	5.78 x 10 ⁴	0	0
October	1.21 x 10 ⁴	6.50 x 10 ⁴	0	985
November	1.40 x 10 ⁴	2.66 x 10 ⁴	0	1,880
December	1.32 x 10 ⁴	2.21 x 10 ⁴	0	0
1995 Totals	26.13 x 10 ⁴	19.99 x 10 ⁴	8,080	2,865

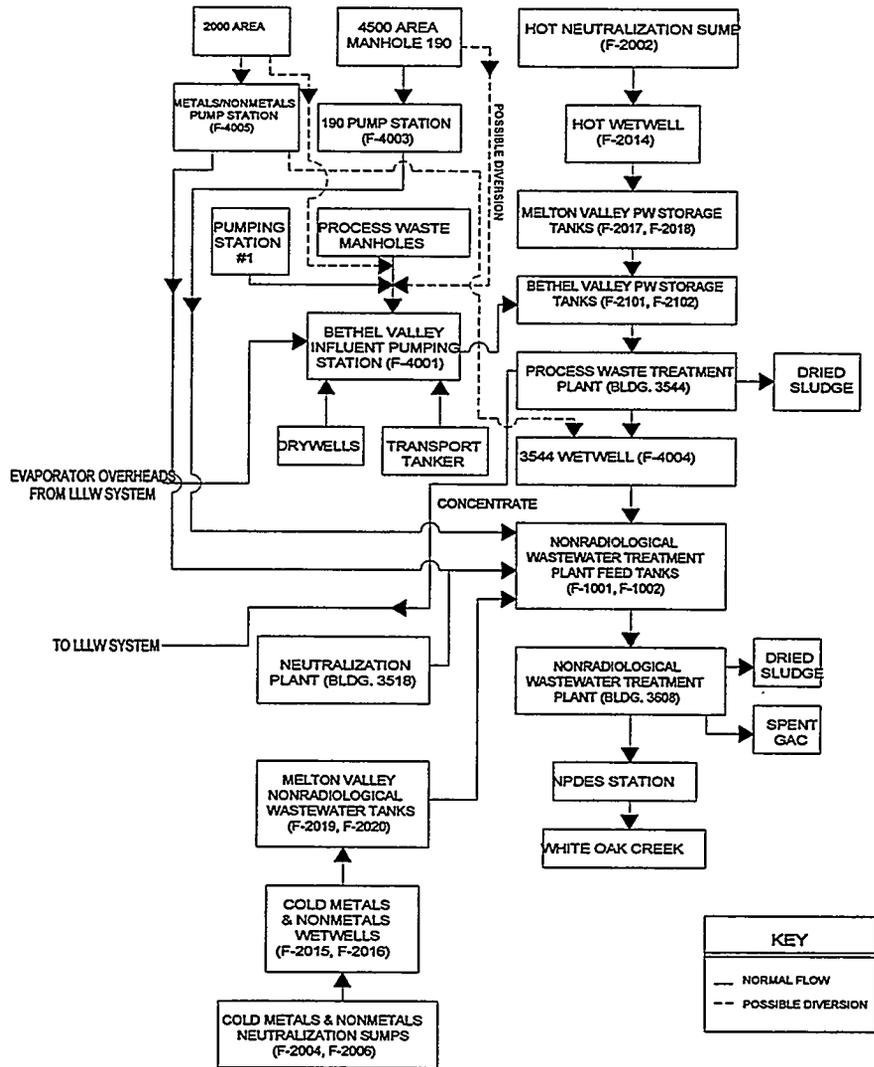


Figure 1. Diagram of the Process Waste Collection and Transfer System.
 (ORNL-DWG. 96-3390)

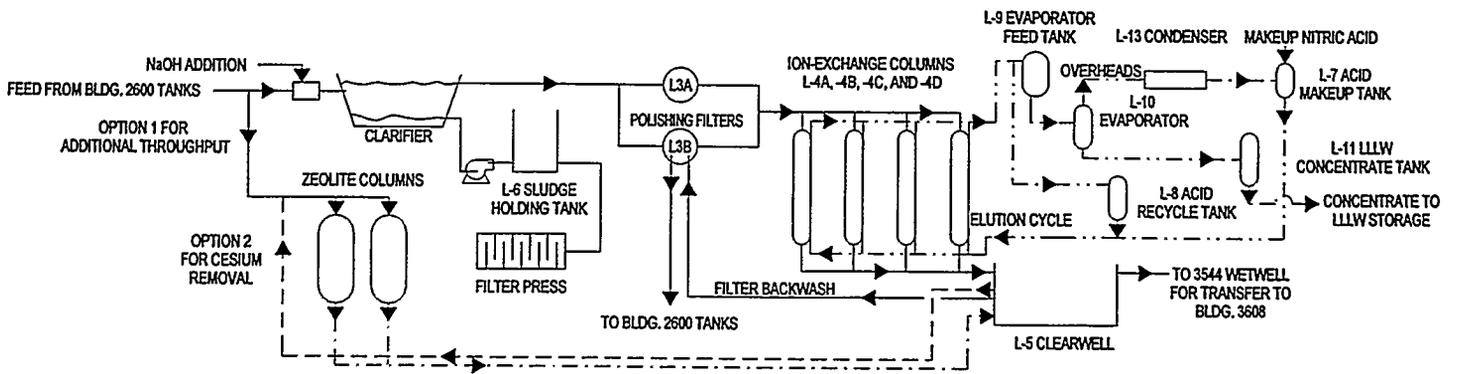


Figure 2. Flow diagram of the PWTP. (ORNL-DWG. 96-3391)

Process Waste Treated at ORNL

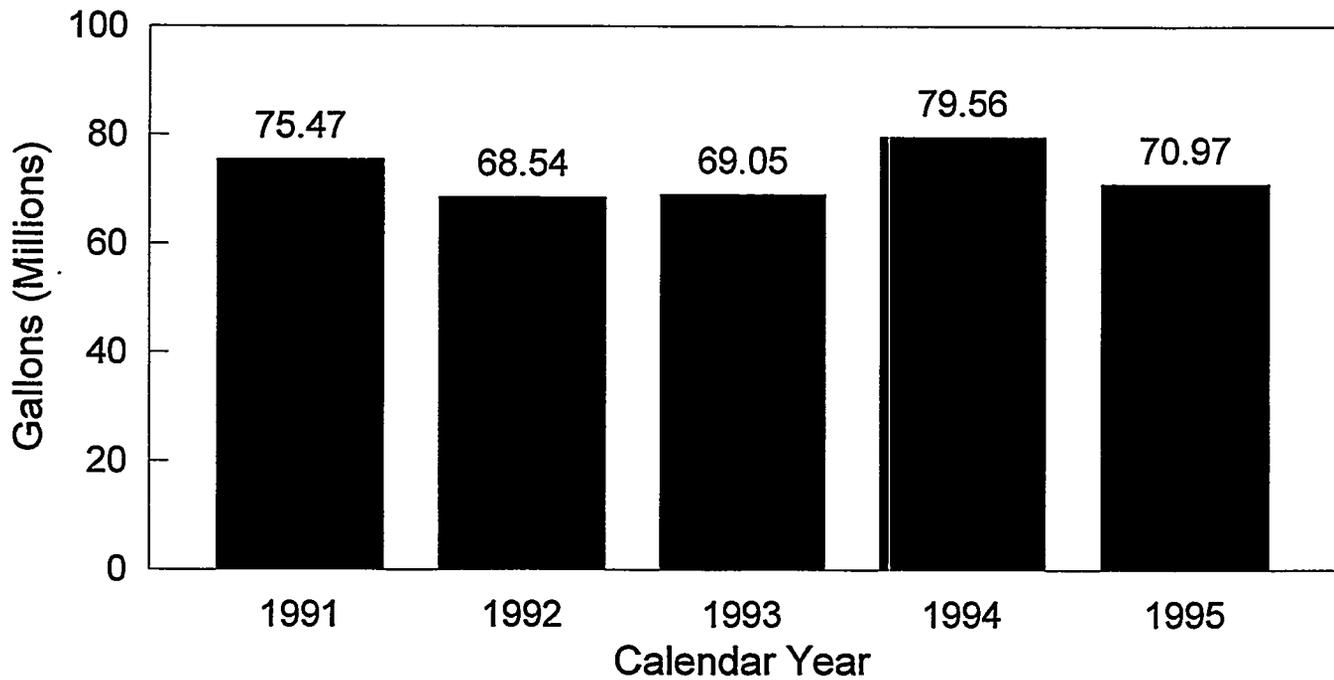


Figure 3. Process waste treated at ORNL. (ORNL-DWG. 96-3392)

Sludge Generation at the PWTP

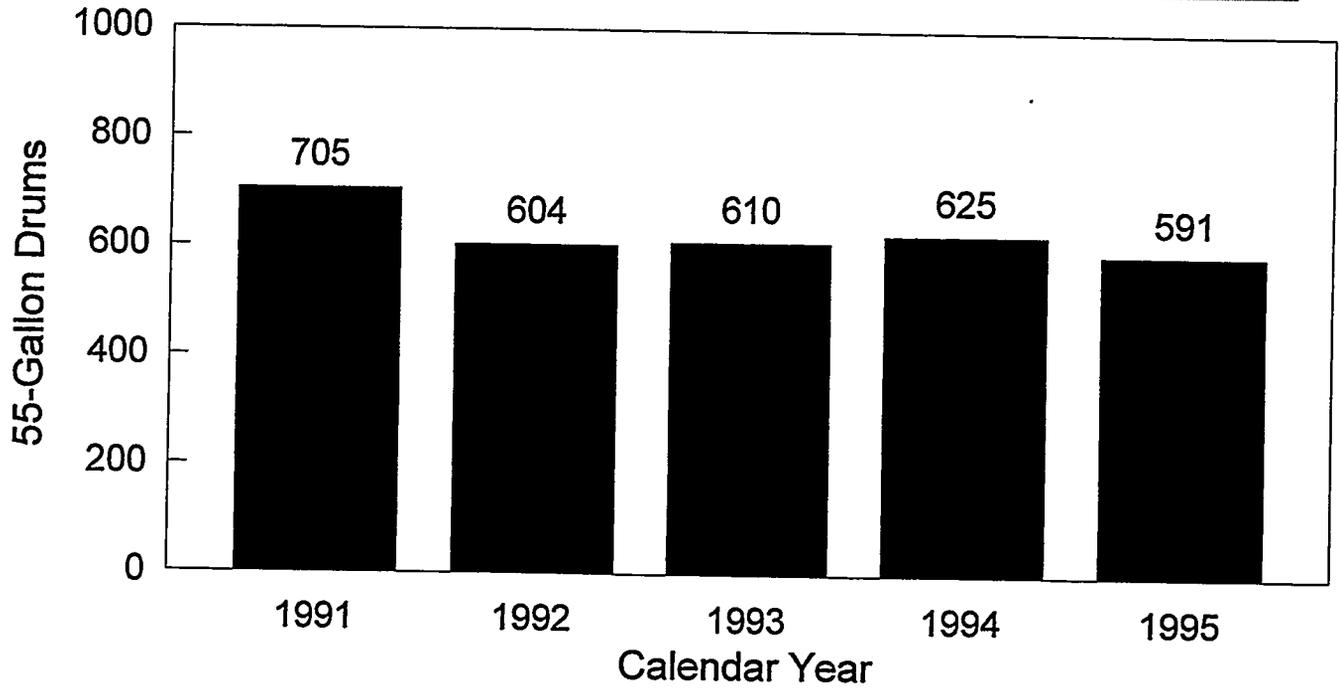


Figure 4. Sludge generation at the PWTP. (ORNL-DWG. 96-3393)

Dilute LLLW from the PWTP

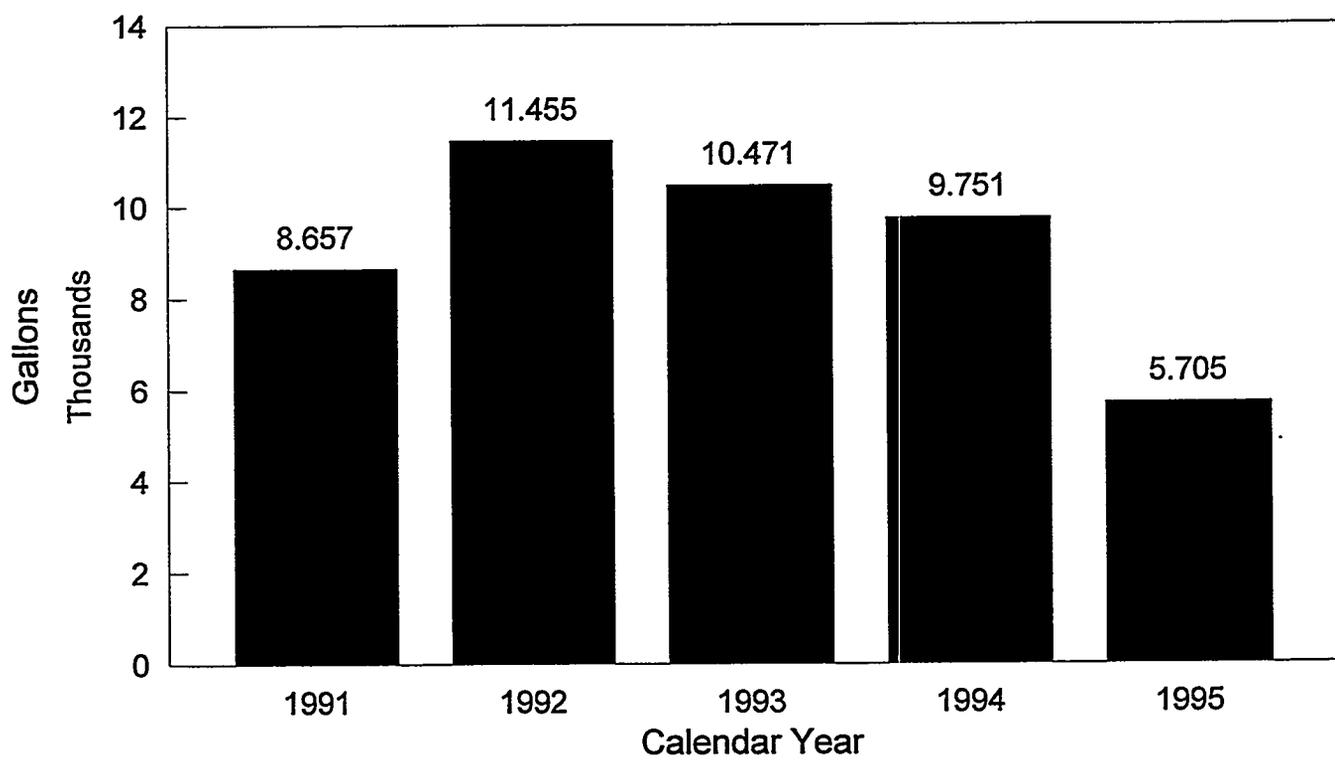


Figure 5. Dilute LLLW from the PWTP. (ORNL-DWG. 96-3394)

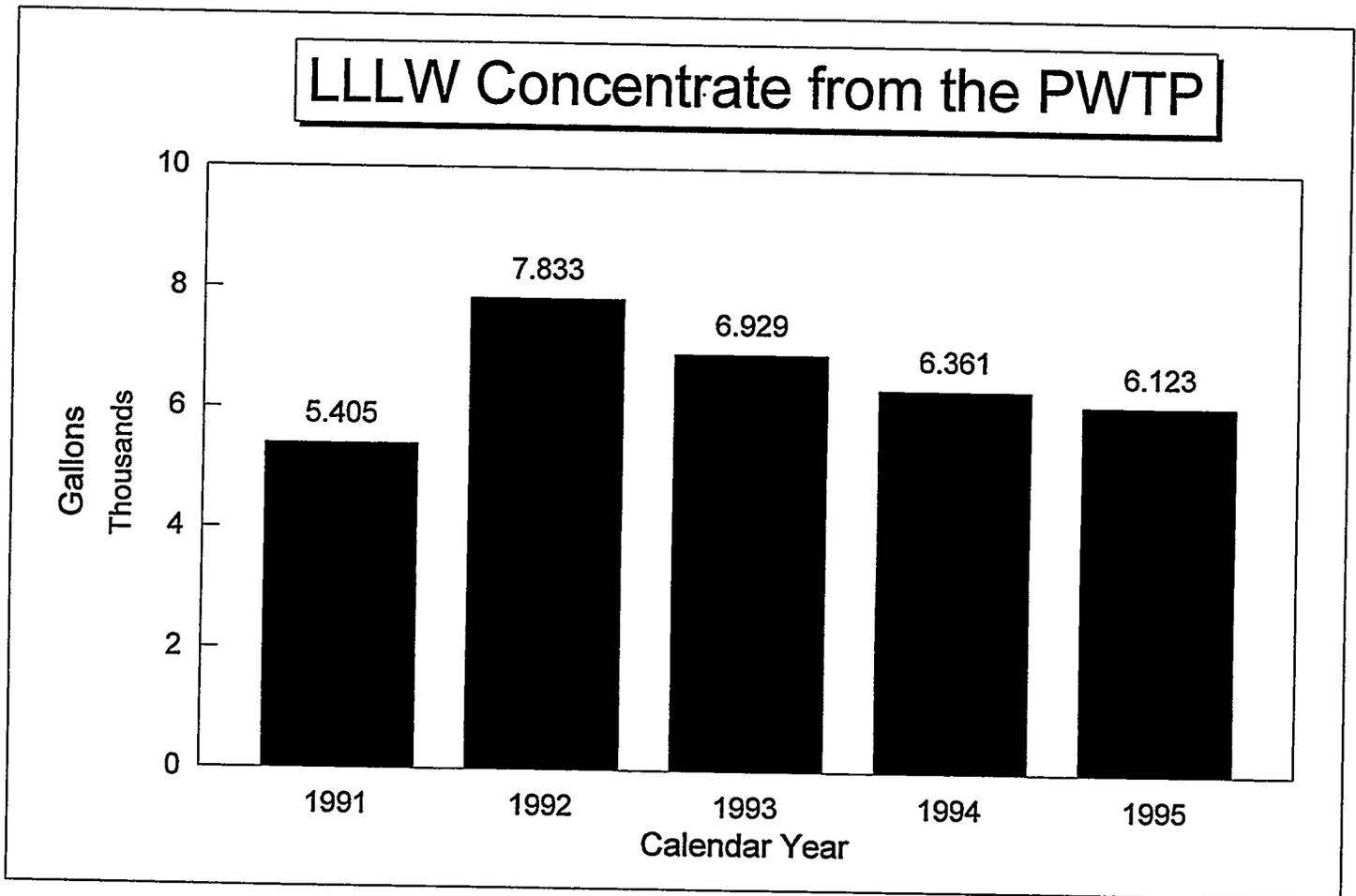


Figure 6. LLLW concentrate from the PWTP. (ORNL-DWG. 96-3395)

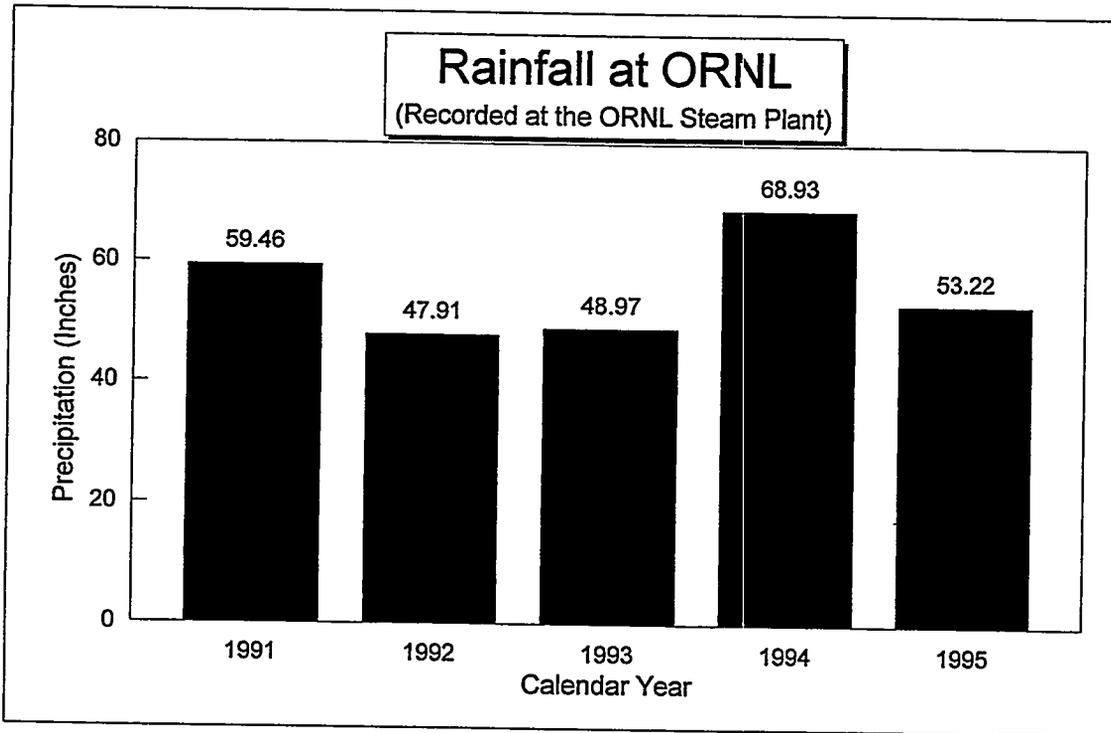


Figure 7. Rainfall at ORNL. (ORNL-DWG. 96-3396)

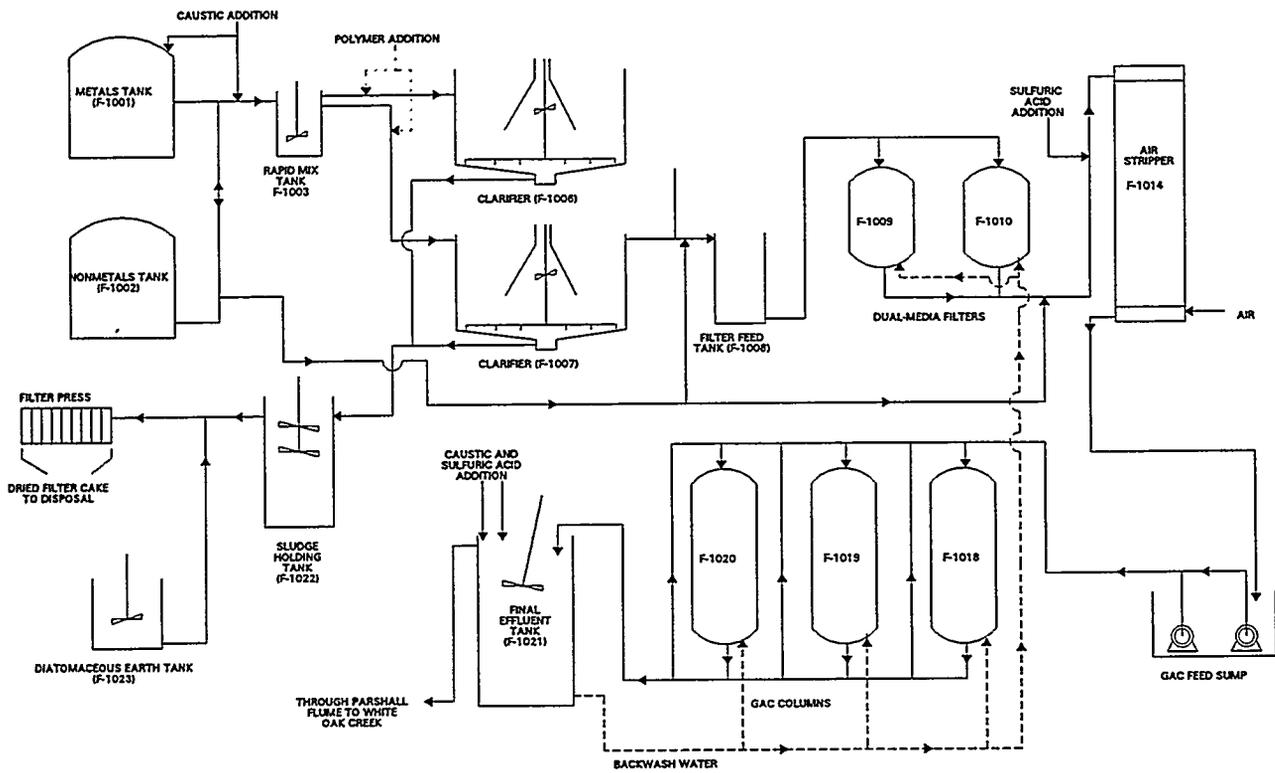


Figure 8. Flow Diagram of the NRWTP. (ORNL-DWG. 96-3397)

Nonradiological Waste Treated at ORNL

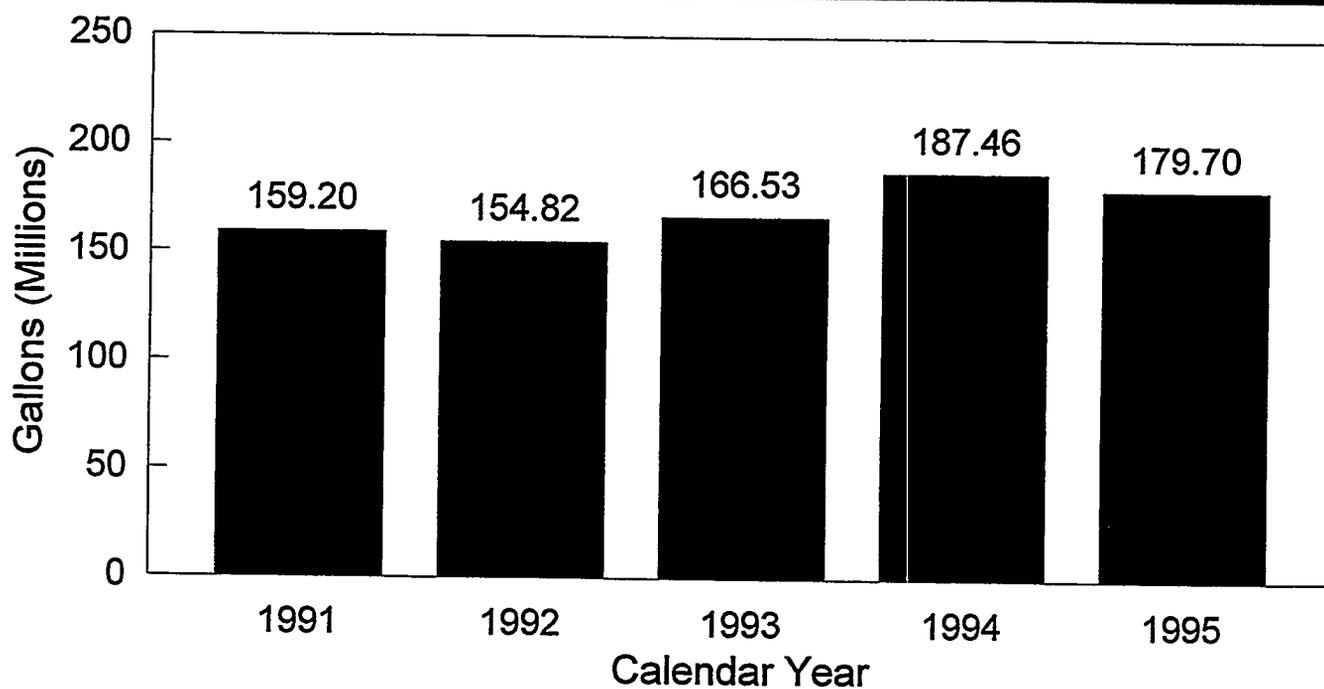


Figure 9. Nonradiological waste treated at ORNL. (ORNL-DWG. 96-3398)

Sludge Generation at the NRWTP

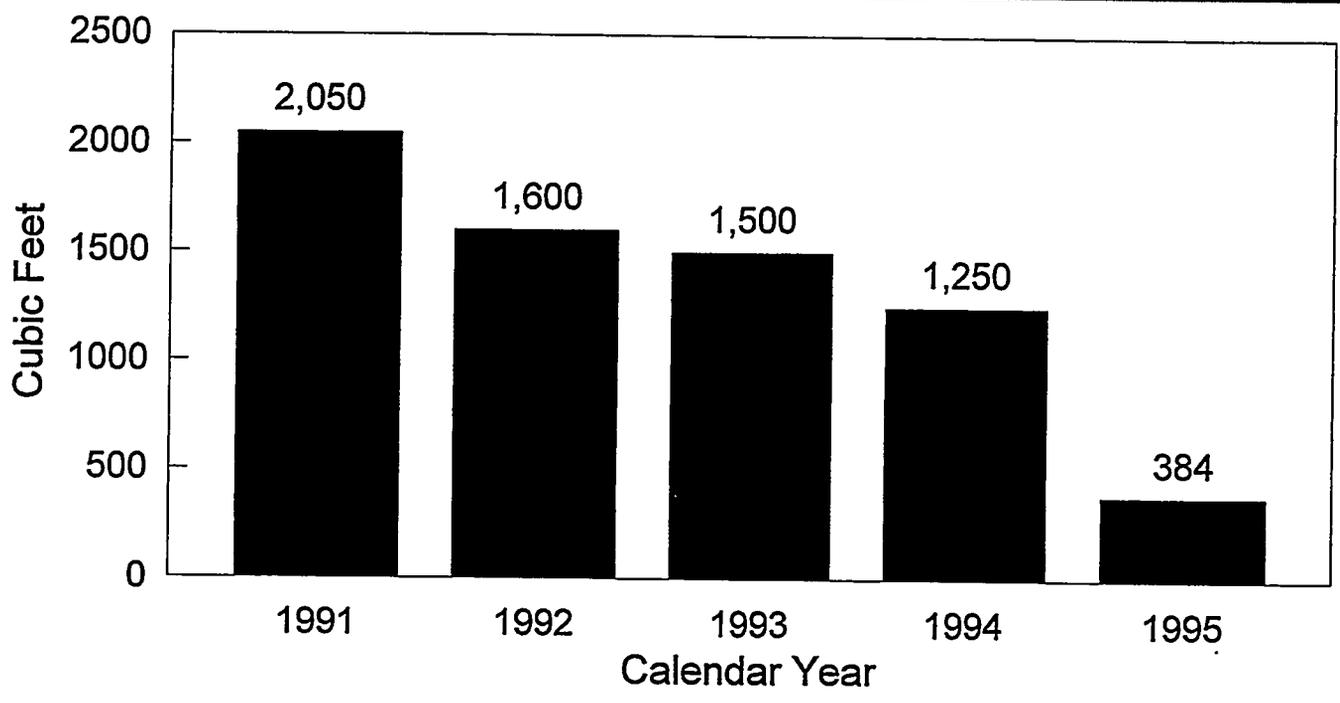


Figure 10. Sludge generation at the NRWTP. (ORNL-DWG. 96-3399)

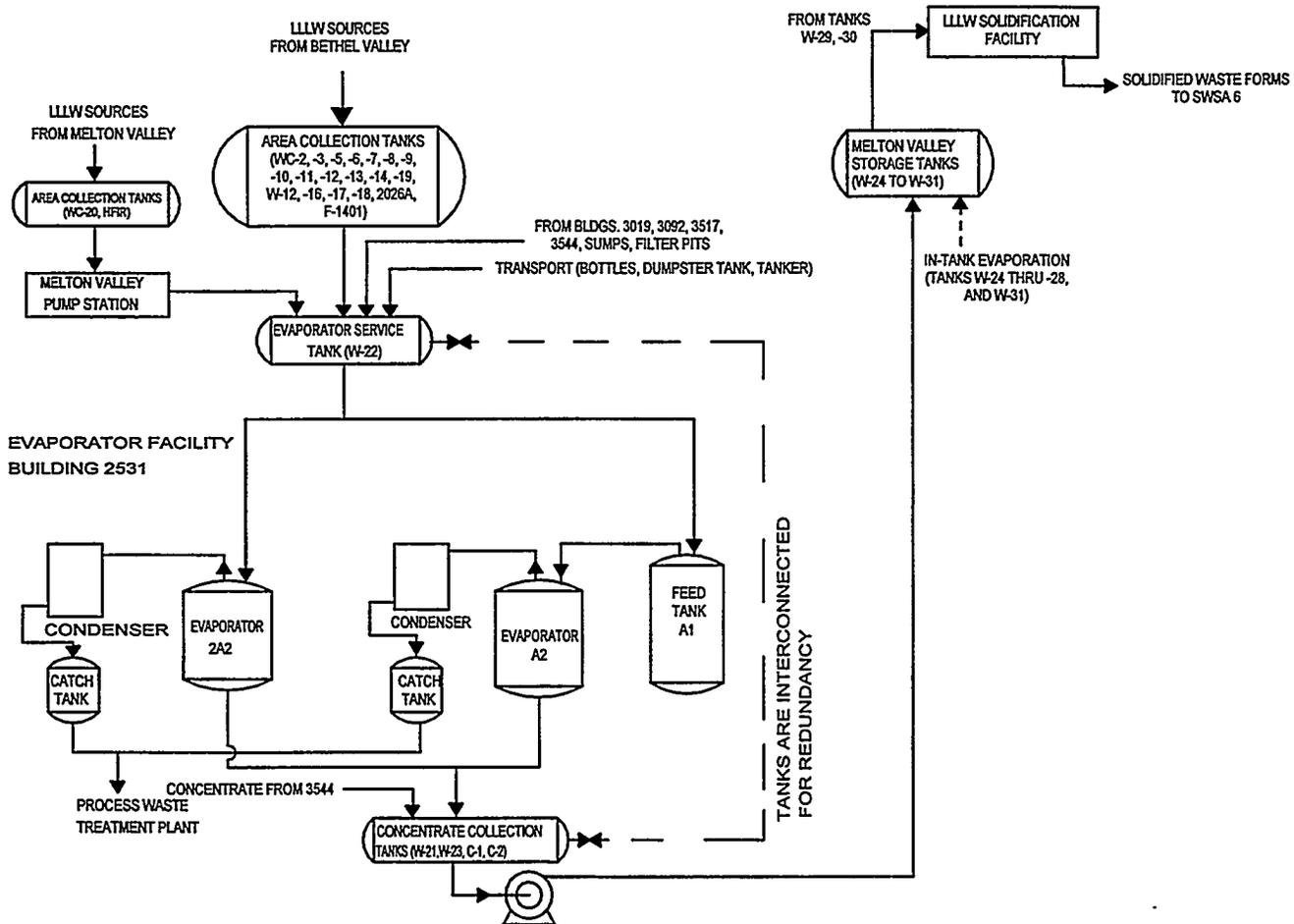


Figure 11. Diagram of the LLLW Collection and Transfer System.
(ORNL-DWG. 96-3400)

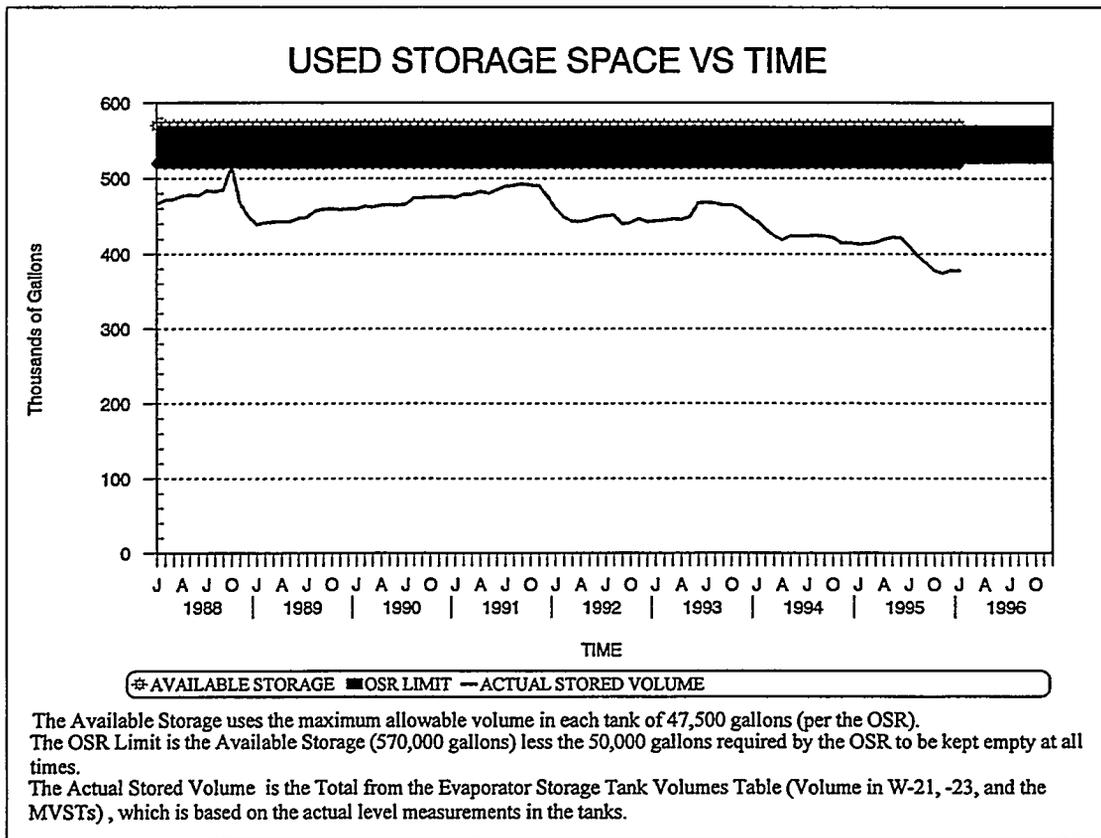


Figure 12. Used storage space versus time. (ORNL-DWG. 96-3401)

LLW Generation at ORNL

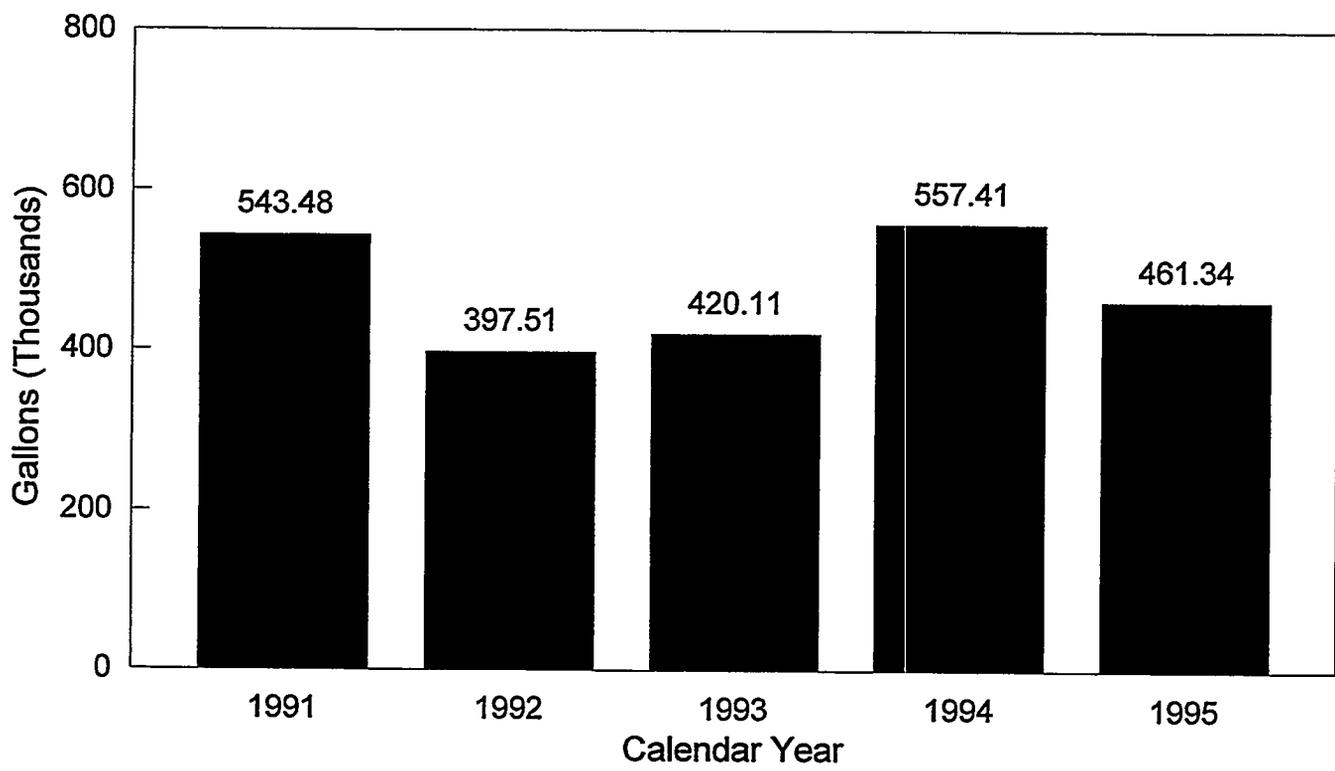


Figure 13. LLLW generation at ORNL. (ORNL-DWG. 96-3402)

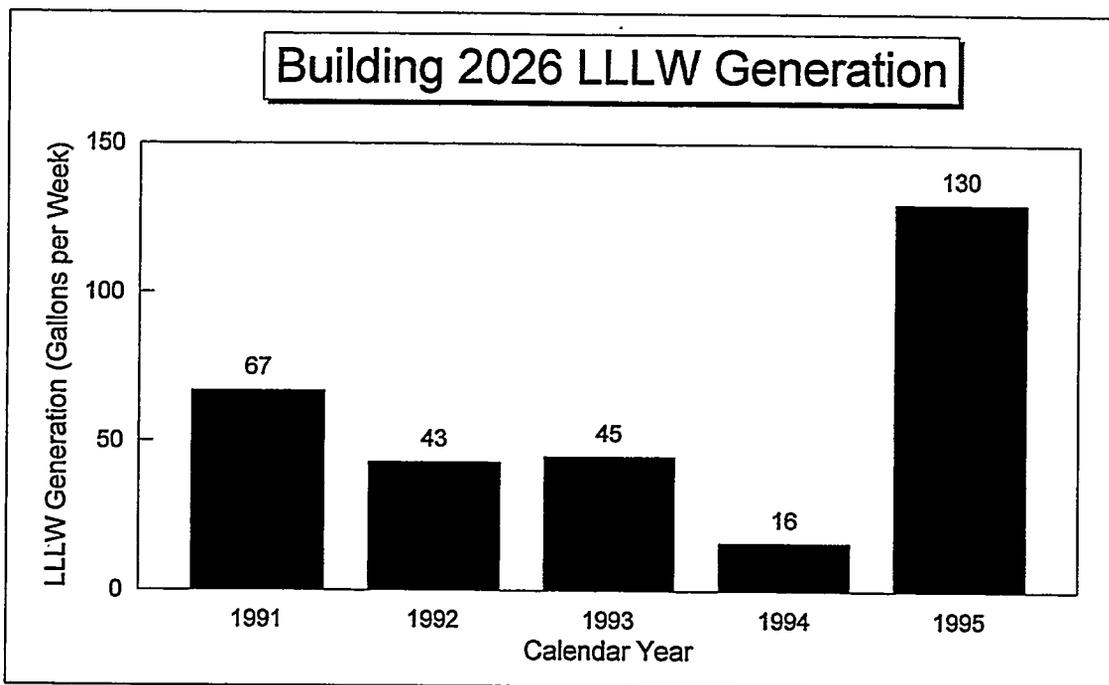


Figure 14. Bldg. 2026 LLLW generation. (ORNL-DWG. 96-3403)

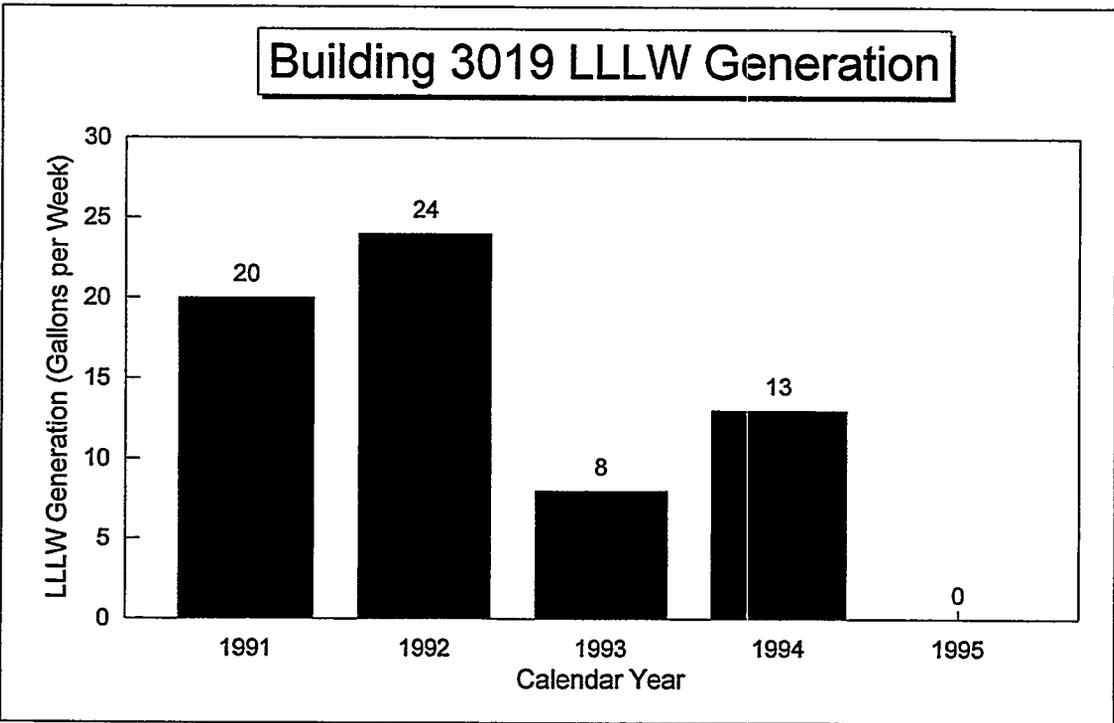


Figure 15. Bldg. 3019 LLLW generation. (ORNL-DWG. 96-3404)

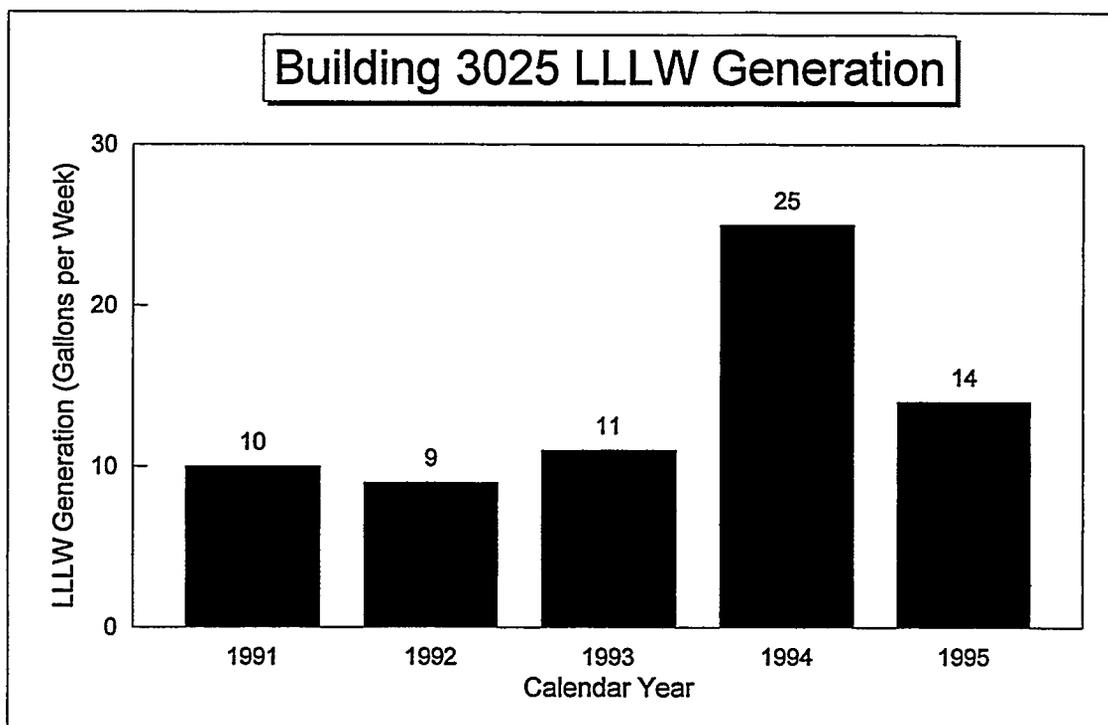


Figure 16. Bldg. 3025 LLLW generation. (ORNL-DWG. 96-3405)

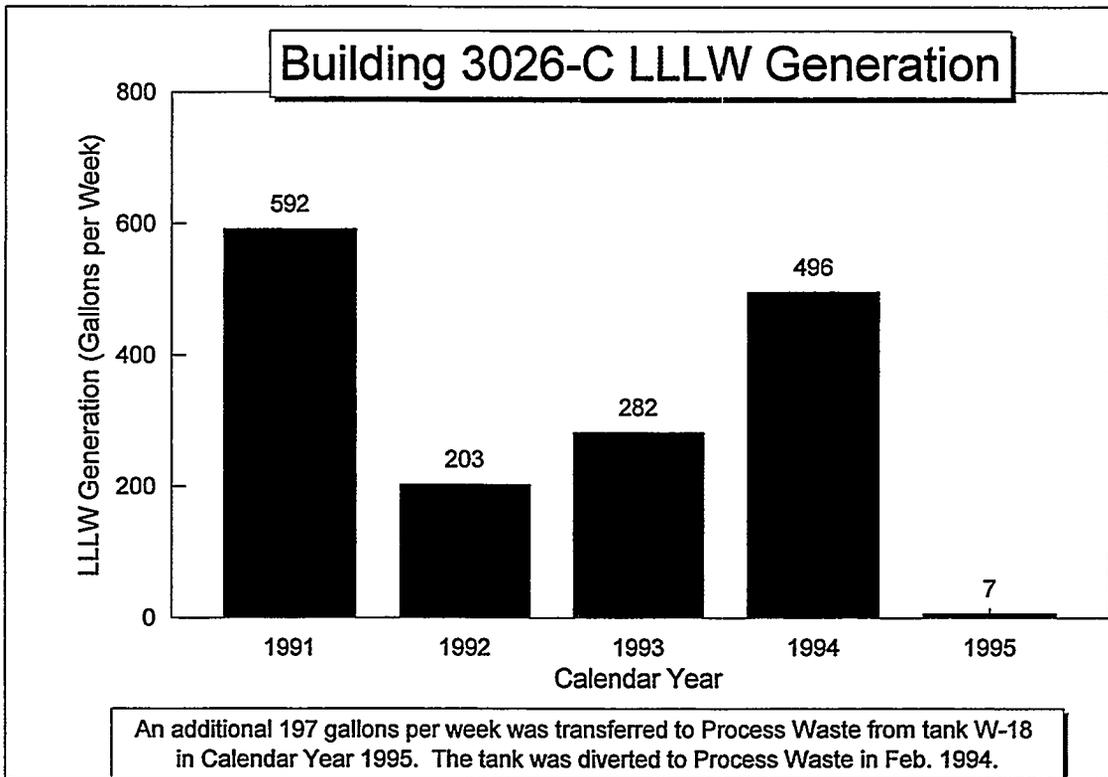


Figure 17. Bldg. 3026-C LLLW generation. (ORNL-DWG. 96-3406)

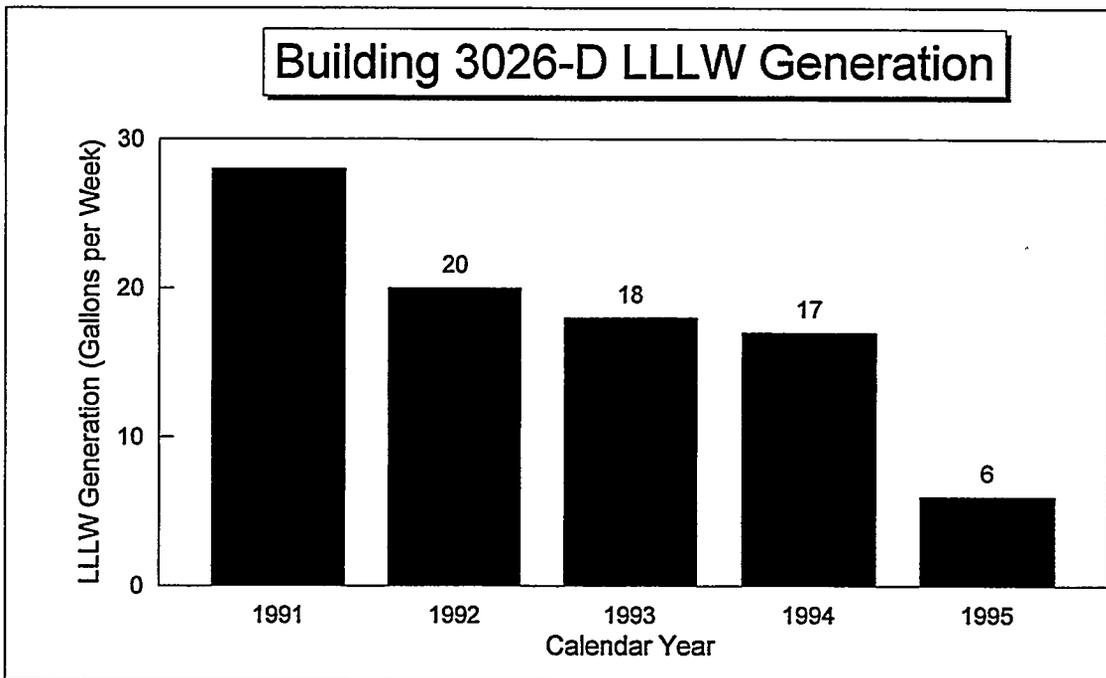


Figure 18. Bldg. 3026-D LLLW generation. (ORNL-DWG. 96-3407)

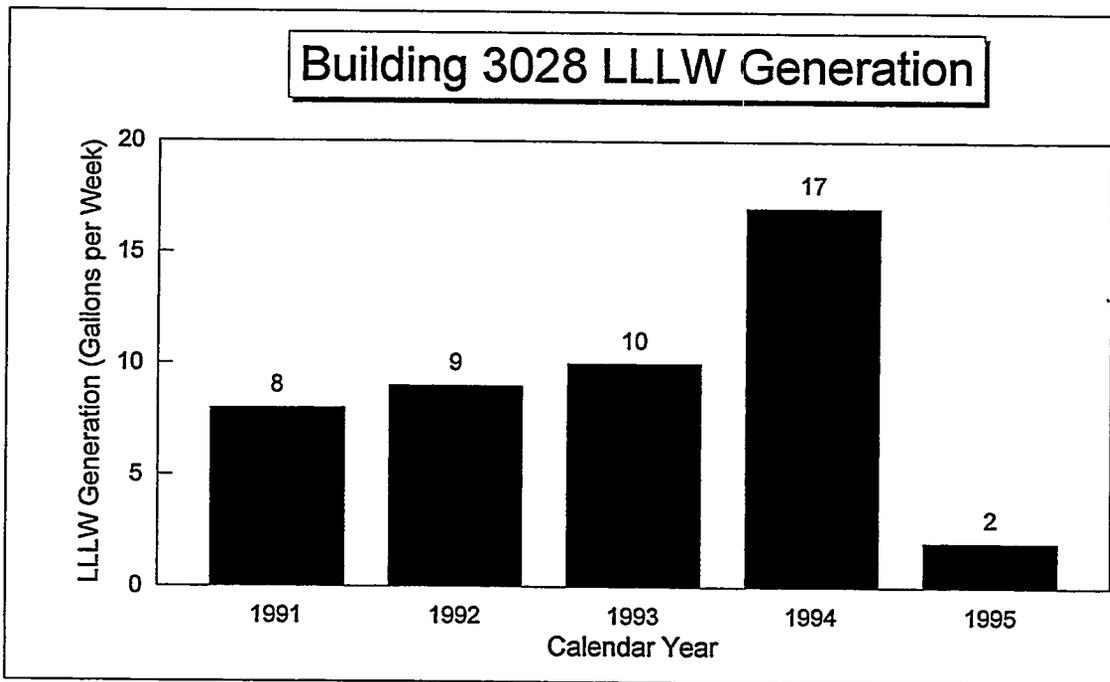


Figure 19. Bldg. 3028 LLLW generation. (ORNL-DWG. 96-3408)

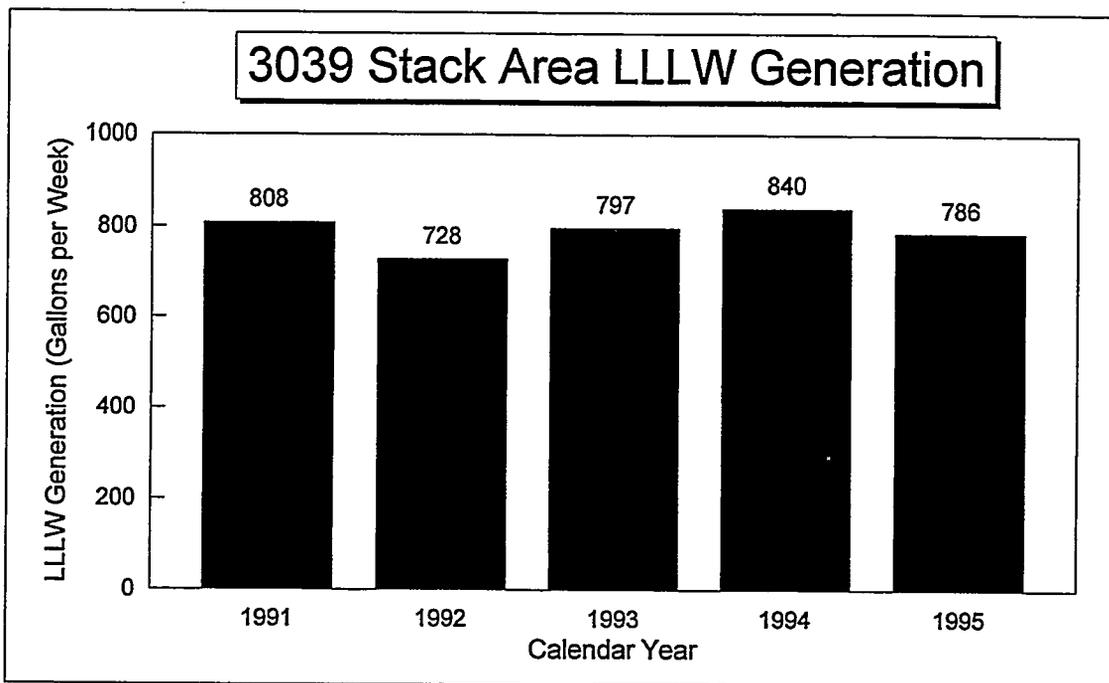


Figure 20. 3039 Stack Area LLLW generation. (ORNL-DWG. 96-3409)

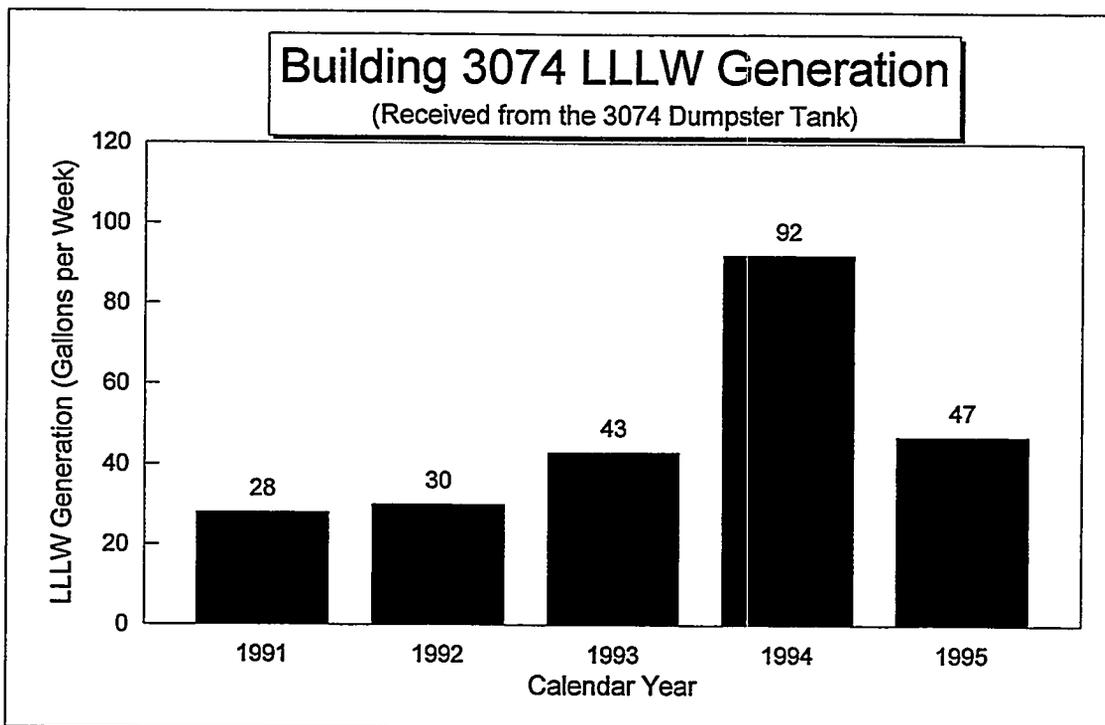


Figure 21. Bldg. 3074 LLLW generation. (ORNL-DWG. 96-3410)

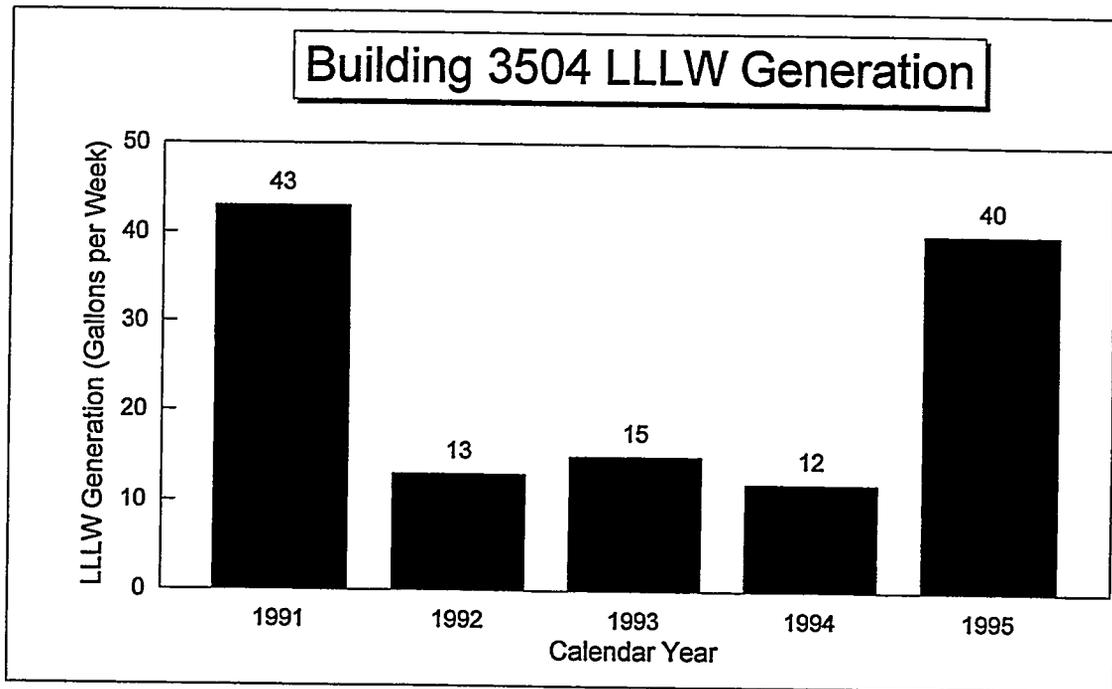


Figure 22. Bldg. 3504 LLLW generation. (ORNL-DWG. 96-3411)

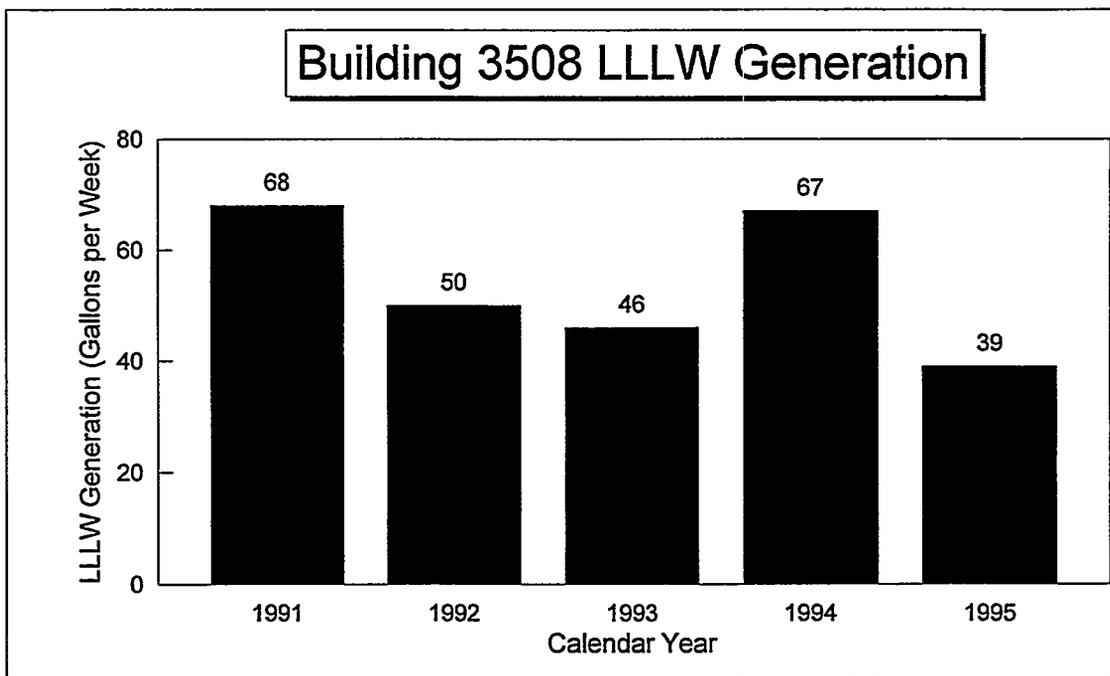


Figure 23. Bldg. 3508 LLLW generation. (ORNL-DWG. 96-3412)

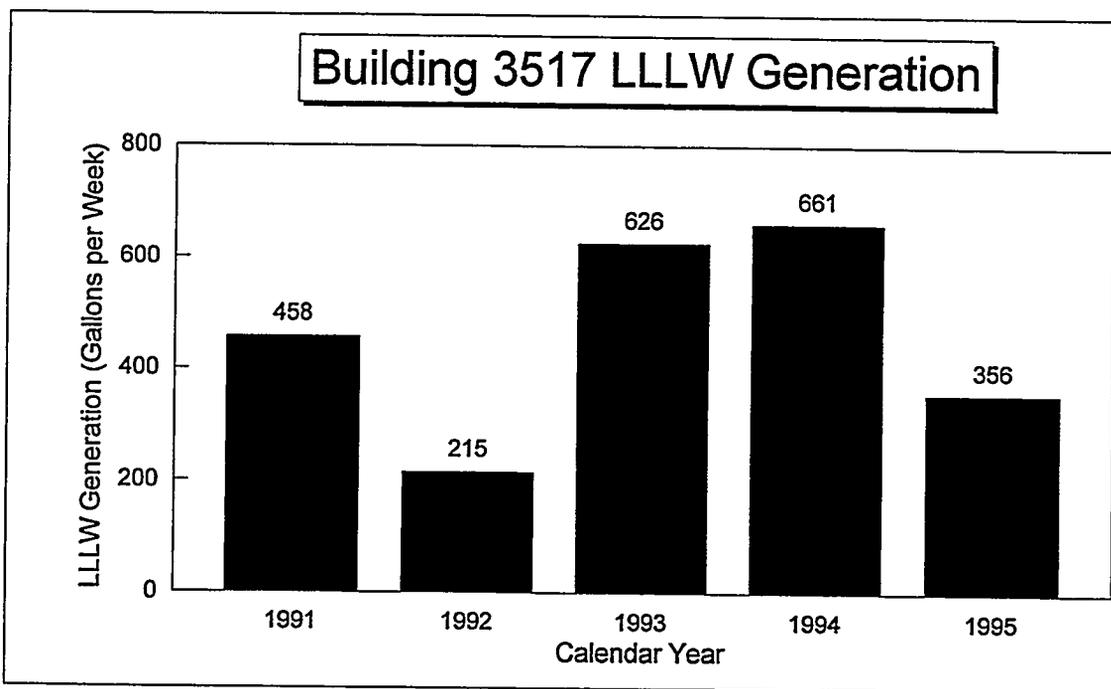


Figure 24. Bldg. 3517 LLLW generation. (ORNL-DWG. 96-3413)

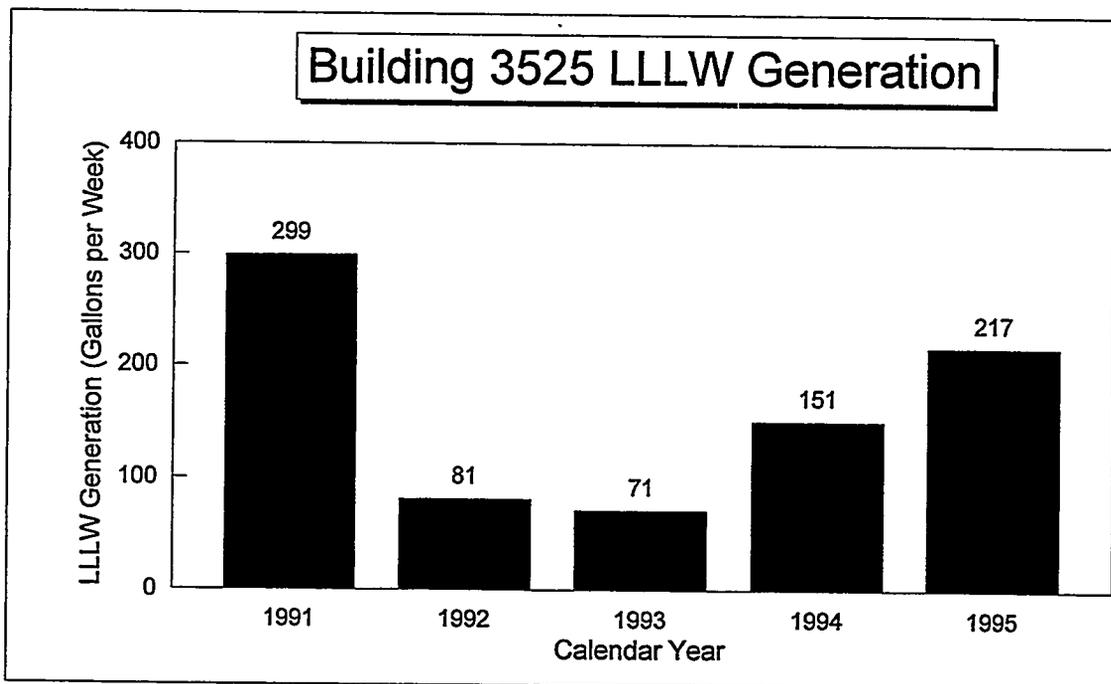


Figure 25. Bldg. 3525 LLLW generation. (ORNL-DWG. 96-3414)

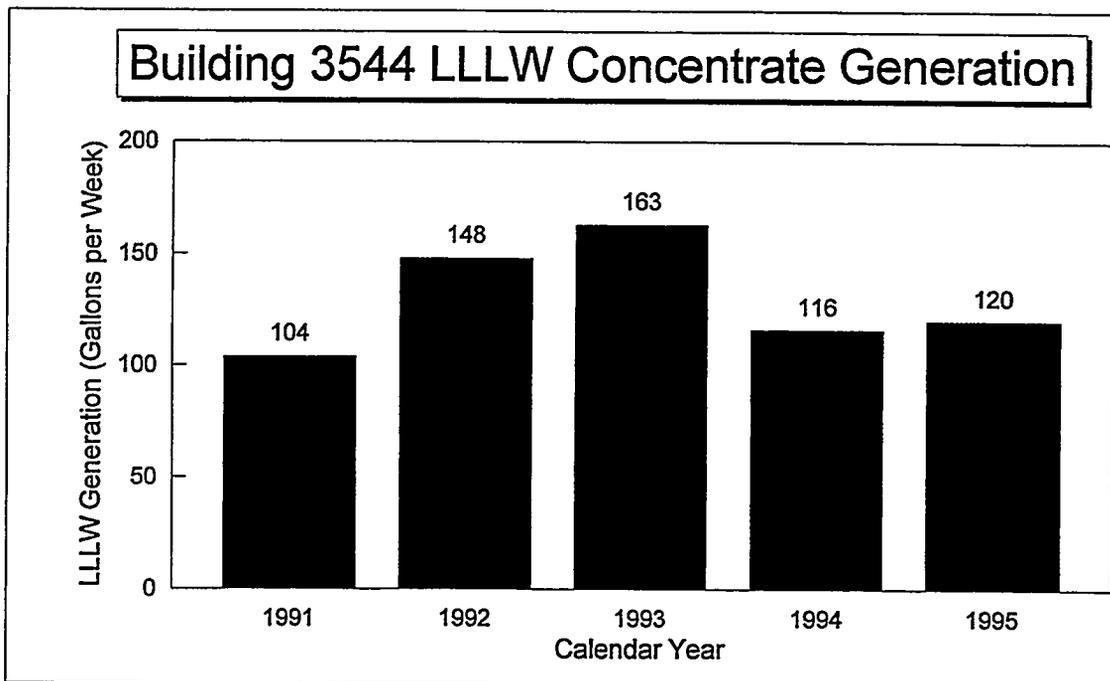


Figure 26. Bldg. 3544 LLLW concentrate generation. (ORNL-DWG. 96-3415)

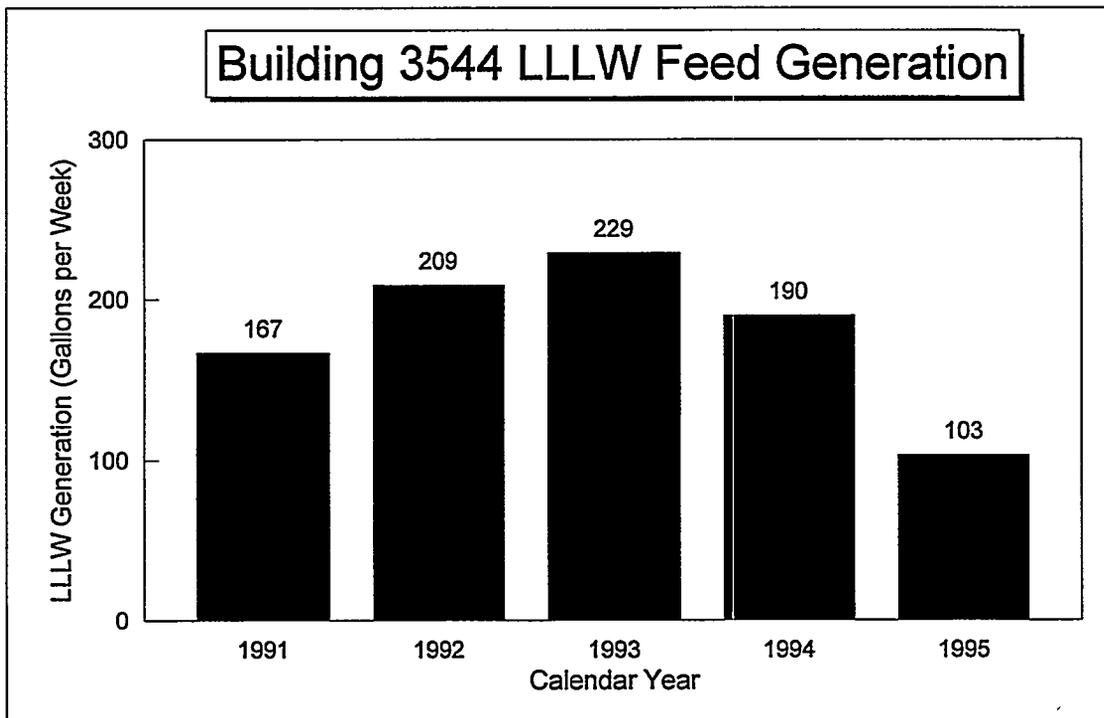


Figure 27. Bldg. 3544 LLLW feed generation. (ORNL-DWG. 96-3416)

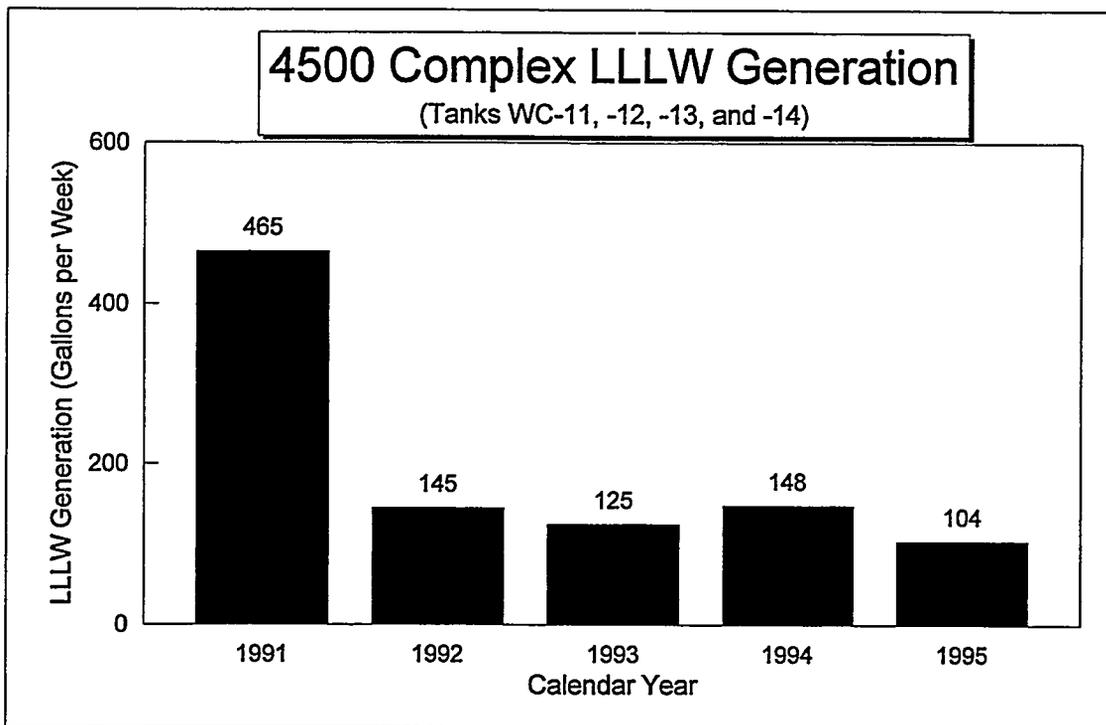


Figure 28. 4500 Complex LLLW generation. (ORNL-DWG. 96-3417)

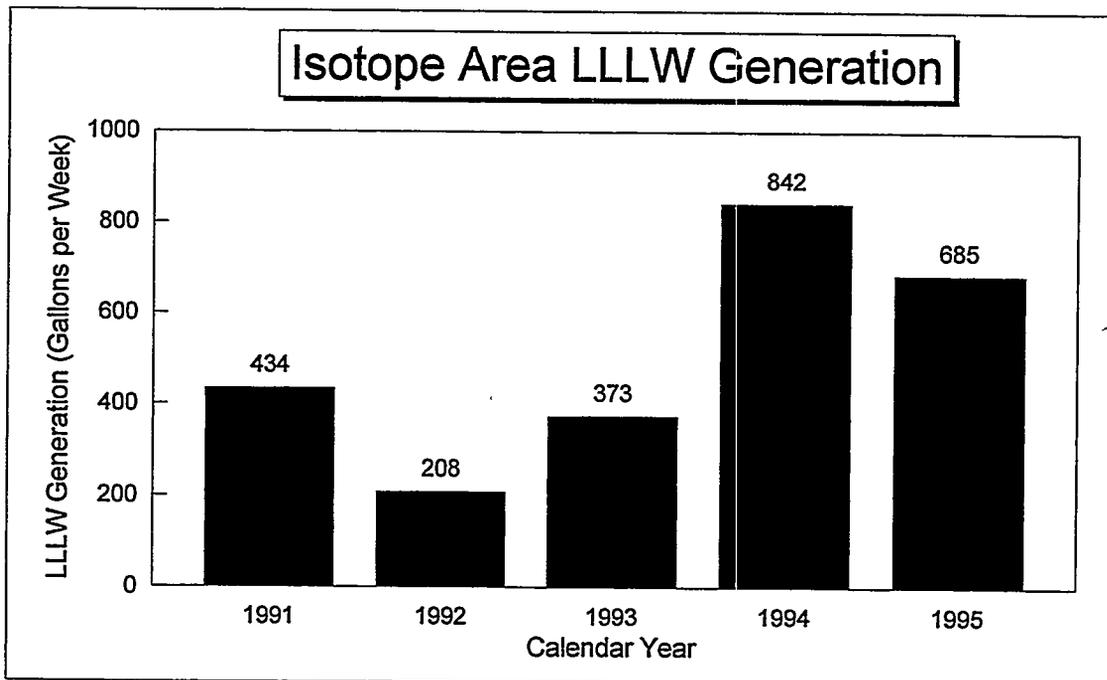


Figure 29. Isotopes Area LLLW generation. (ORNL-DWG. 96-3418)

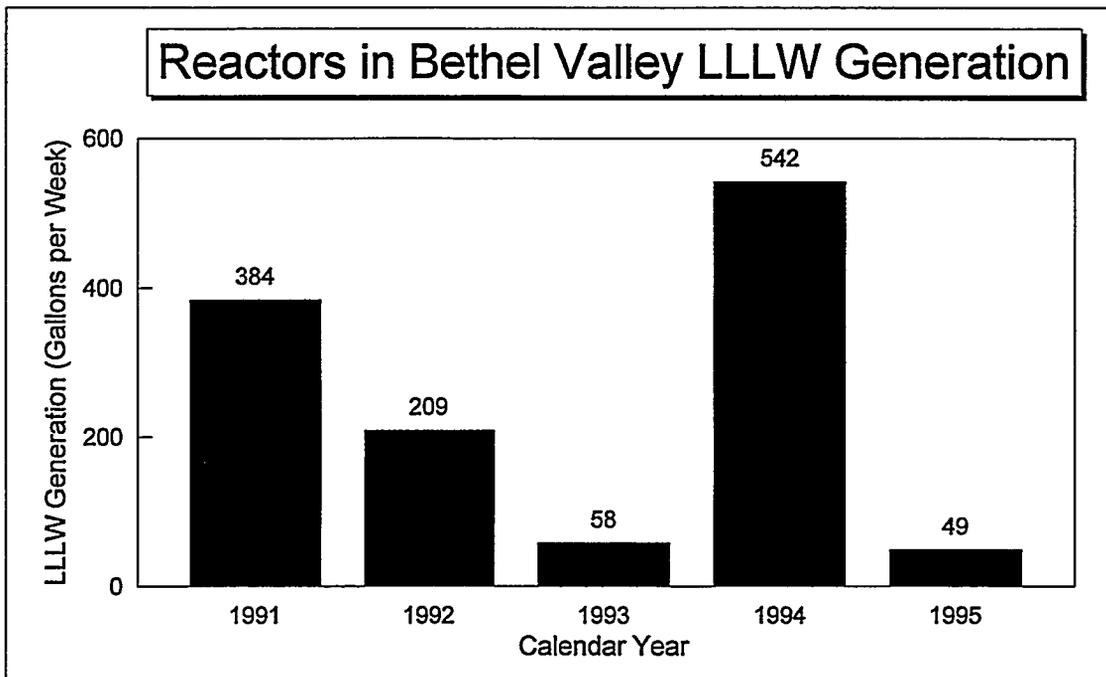


Figure 30. Reactors in Bethel Valley LLLW generation. (ORNL-DWG. 96-3419)

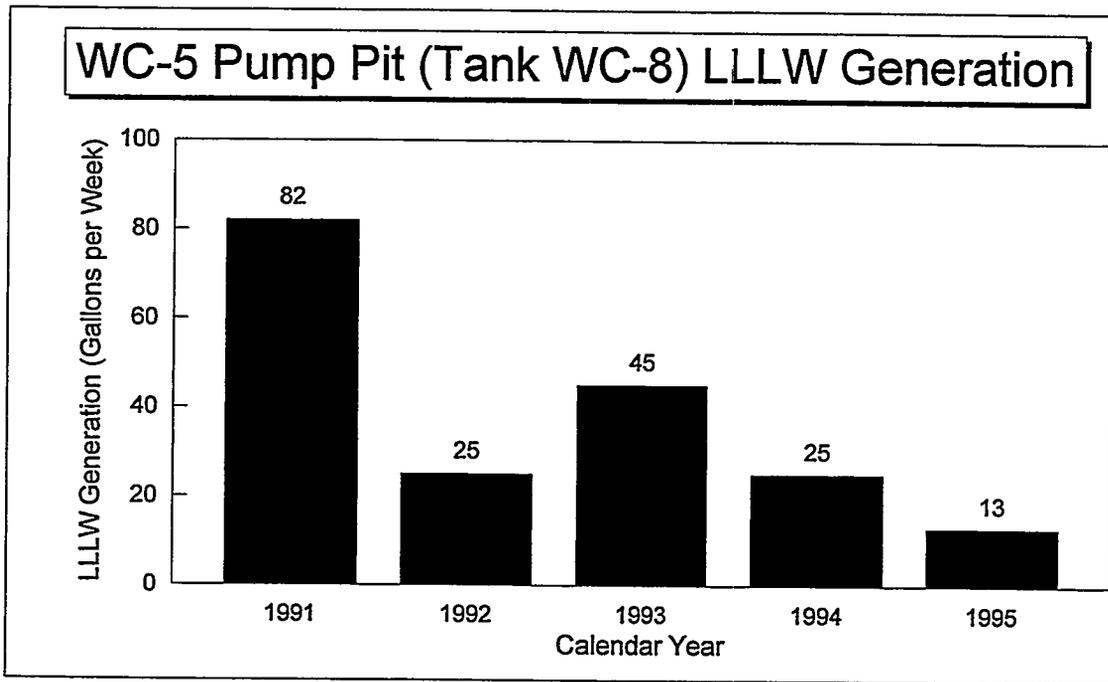


Figure 31. WC-5 Pump Pit (tank WC-8) LLLW generation. (ORNL-DWG. 96-3420)

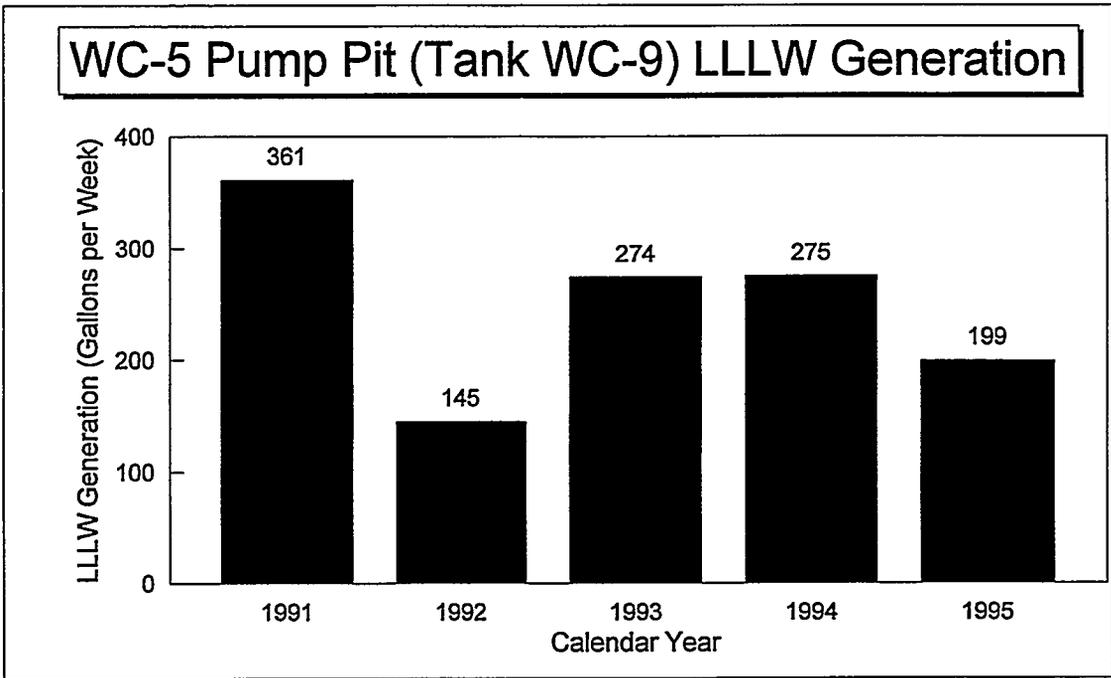


Figure 32. WC-5 Pump Pit (tank WC-9) LLLW generation. (ORNL-DWG. 96-3421)

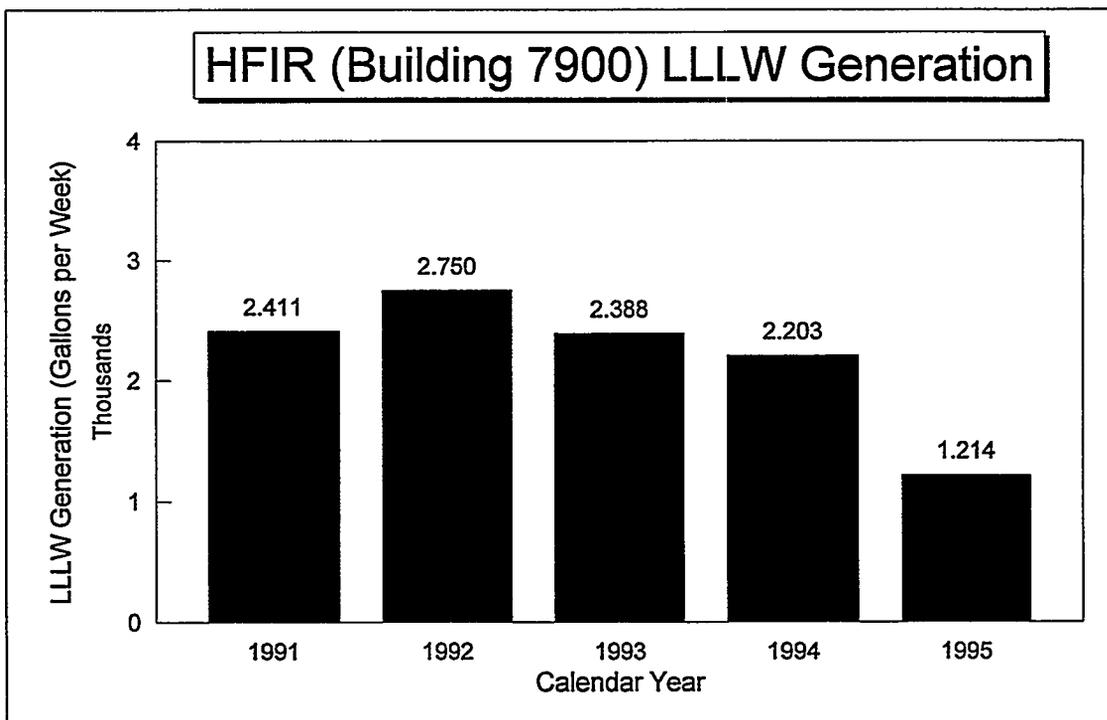


Figure 33. HFIR (Bldg. 7900) LLLW generation. (ORNL-DWG. 96-3422)

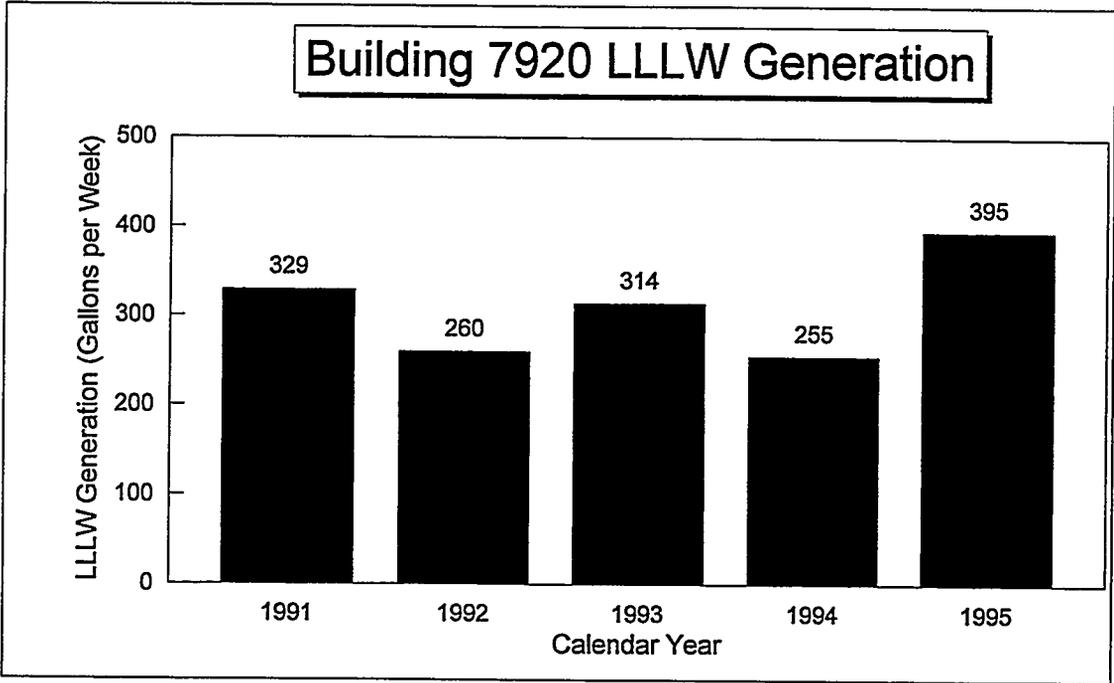


Figure 34. Bldg. 7920 LLLW generation. (ORNL-DWG. 96-3423)

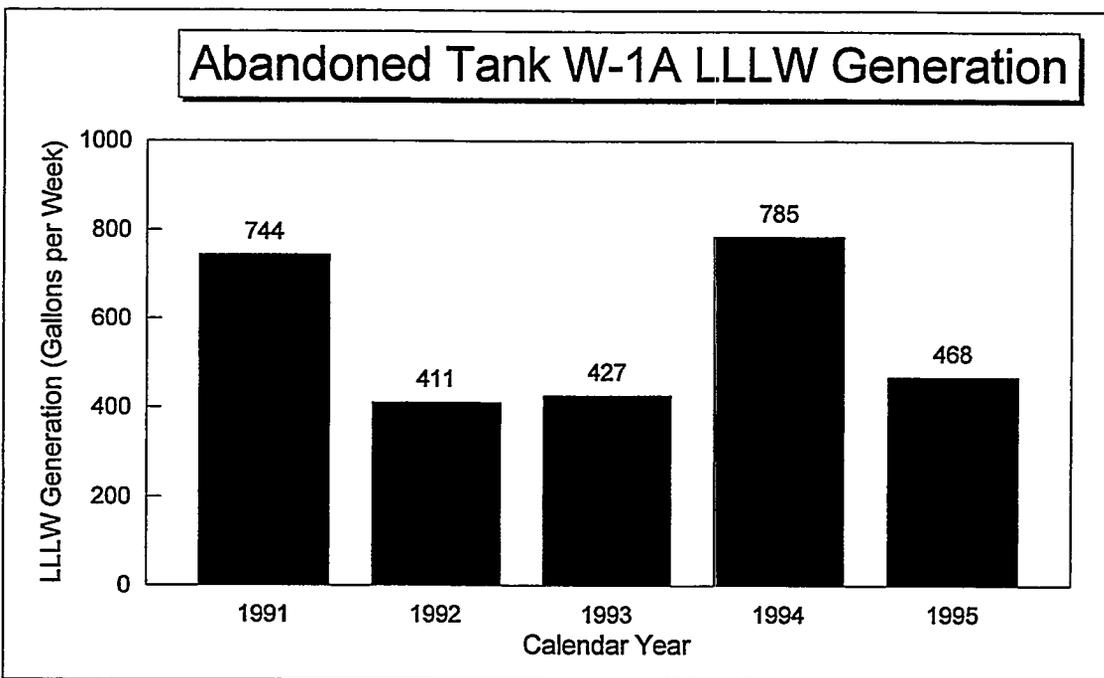


Figure 35. Abandoned tank W-1A LLLW generation. (ORNL-DWG. 96-3527)

3039 STACK CELL VENTILATION SYSTEM

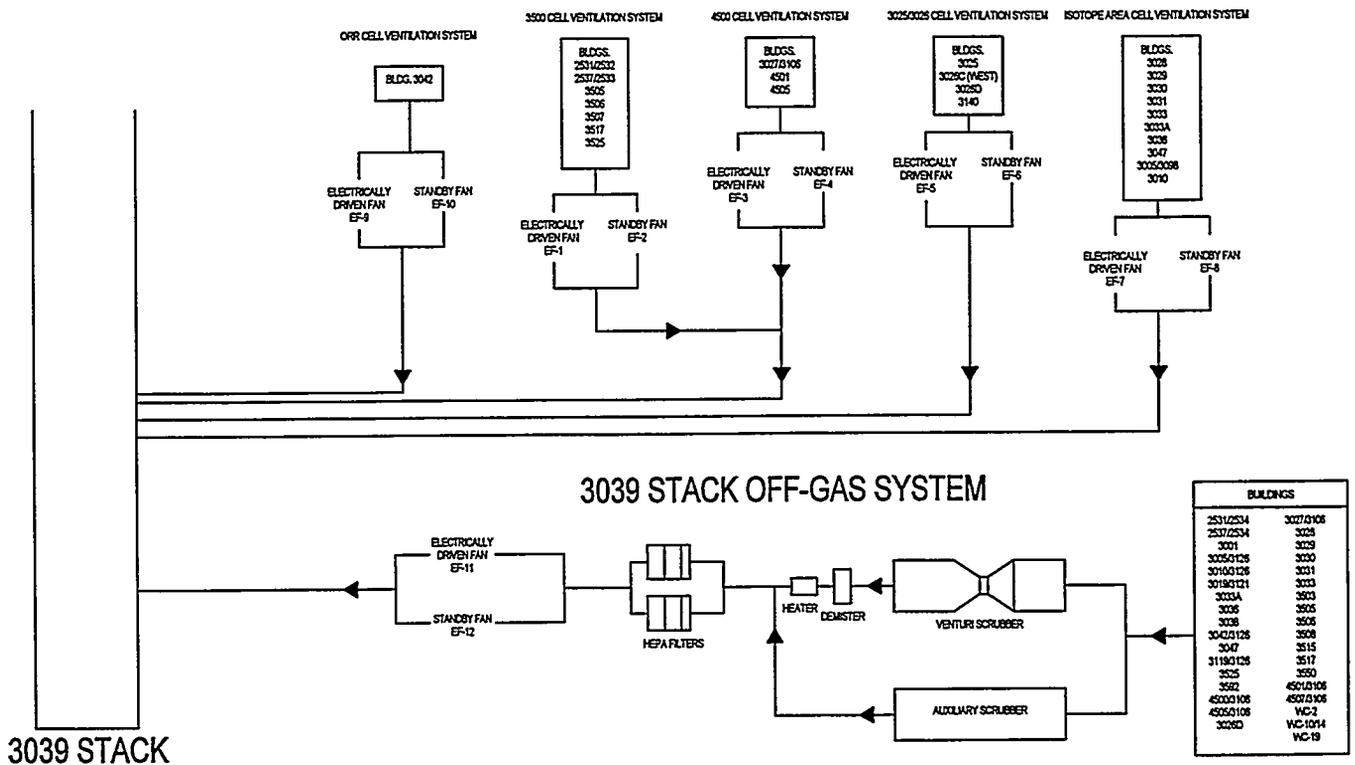


Figure 36. Diagram of the Gaseous Waste System. (ORNL-DWG. 96-3528)



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