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Liquid and Gaseous Waste Operations Department Annual Operating Report CY 1996

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LIQUID AND GASEOUS WASTE OPERATIONS DEPARTMENT

ANNUAL OPERATING REPORT

CY 1996

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ACRONYMS

ALARA	As Low As Reasonably Achievable
CAM	Continuous Air Monitor
CY	Calendar Year
DAS	Data Acquisition System
DCS	Distributed Control System
DOE-ORO	Department of Energy - Oak Ridge Operations
DOT	Department of Transportation
dpm	Disintegrations per minute
ES&H	Environmental Safety and Health
FFA	Federal Facility Agreement
Gal	Gallons
gpm	Gallons per minute
GPP	General Plant Project
HFIR	High Flux Isotope Reactor (Building 7900)
I&C	Instrumentation and Controls
LCD	Limiting Conditions Document
LERC	Laboratory Emergency Response Center
LGWO	Liquid and Gaseous Waste Operations
LGWOD	Liquid and Gaseous Waste Operations Department
LLLW	Liquid Low-Level Waste
LMER	Lockheed-Martin Energy Research
LMES	Lockheed-Martin Energy Systems
MCS	Monitoring and Control Station
MK-F	MK-Ferguson
MV	Melton Valley
MVST	Melton Valley Storage Tank
NHF	New Hydrofracture (Building 7860)
NRWTP	Nonradiological Wastewater Treatment Plant (Building 3608)
OORFS	Office of Operational Readiness and Facility Safety
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 (Building 3544)
QA	Quality Assurance
QE&I	Quality Engineering and Inspection
REDC	Radiochemical Engineering Development Center (Buildings 7920 and 7930)
SARUP	Safety Analysis Report Upgrade Program
SOW	Statement of Work
S/RID	Standard/Requirements Identification Document

ACRONYMS (continued)

SWSA	Solid Waste Storage Area
TDEC	Tennessee Department of Environment and Conservation
TRU	Transuranic
TWRF	Transported Waste Receiving Facility (Building 2649)
WMRAD	Waste Management and Remedial Action Division
WOCC	Waste Operations Control Center (Building 3130)

LIQUID AND GASEOUS WASTE OPERATIONS (LGWO) DEPARTMENT
ANNUAL OPERATING REPORT
CALENDAR YEAR 1996

1.0 OPERATING ACTIVITIES

1.1 PROCESS WASTE SYSTEM

A total of 6.84×10^7 gallons (gal) of liquid waste was decontaminated by the Process Waste Treatment Plant (PWTP) ion exchange system during calendar year (CY) 1996. This averaged to 130 gpm throughout the year. When necessary, a wastewater side stream of 50-80 gallons per minute (gpm) was treated through the use of a natural zeolite treatment system. An additional 1.88×10^7 gal (average of 36 gpm throughout the year) were treated by the zeolite system. Therefore, the average total flow treated at the PWTP for CY 1996 was 166 gpm. During the year, the regeneration of the ion exchange resins resulted in the generation of 4.22×10^3 gal of Liquid Low-Level Waste (LLLW) concentrate and 2.41×10^3 gal of LLLW evaporator feed. The head-end softening process (precipitation/clarification) generated 679 drums (4.99×10^3 ft^3) 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 1996 with previous years. Figure 7 shows a comparison of annual rainfall at Oak Ridge National Laboratory (ORNL) since 1992.

A total of 2.04×10^8 gal of liquid waste (average of 386 gpm throughout the year) was treated at the Nonradiological Wastewater Treatment Plant (NRWTP). Of this amount, 0.45×10^7 gal was treated by the precipitation/clarification process for removal of heavy metals. Five boxes (4.80×10^2 ft^3) 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 1996 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 1.65×10^5 gal of LLLW was processed through the A2 evaporator system and 2.60×10^5 gal of LLLW was processed through the 2A2 evaporator system. There was 1.58×10^3 gal of concentrate transferred from the A2 system and 3.41×10^3 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 34 for a comparison of the generation of LLLW by individual sources over the last five years.

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. A schematic of the Gaseous Waste System is shown in Figure 35.

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.

Personnel continued efforts to maintain LGWOD procedures as up-to-date, usable documents. Ninety-two revisions were approved and issued during the year to existing LGWOD procedures. Three new procedures were issued and one procedure was canceled.

2.1 PROCESS WASTE (PW) SYSTEM

2.1.1 PROCESS WASTE STORAGE TANK

This new 1,000,000 gallon capacity tank was built next to the existing Bethel Valley Process Waste Storage Tanks at Building 2600 and was placed in service in July. This tank allowed for the use of three surface impoundments to be discontinued in 1996 that had been used to provide additional storage capacity during periods of heavy inflow to the Process Waste Collection and Transfer System.

January

Construction activities were completed with the exception of several punch list items. A majority of the preoperational testing had been completed, but operational problems discovered while testing had to be fixed before the testing could resume. A representative from the pump manufacturer was on site to investigate problems encountered with their pumps during preoperational testing. After the investigation and accompanying remediation was completed on the pumps, preoperational testing would resume. LGWOD personnel also provided Engineering with marked-up piping and flow diagrams to make corrections on the as-built drawings; and walked part of the project down with Plant and Equipment (P&E) personnel to go over several items that they would be performing. Additionally, the large amounts of rain and snow encountered during early January delayed testing in that the increased influent flow rate to the Process Waste Collection and Transfer System kept the two existing Process Waste tanks at Building 2600 full and precluded their use for testing until the end of January. At the end of the month the jet mixers for the new tank had been operated for over two weeks and were operating well. A couple of locations were identified where piping insulation was interfering with valve operation and Engineering was notified. The new tank was being drained of the water that had been transferred to it (~800,000

gallons) at the end of the month after it was tested and cleared for discharge to White Oak Creek.

February

A representative from the transfer pump vendor came on site and corrected a problem with one of the transfer pumps which had not performed up to the specified pump rate during earlier functional testing. After repairs were completed both pumps were successfully retested. The remaining contents of the tank were drained prior to continuing with the final portion of pre-operational testing which consisted of transferring process wastewater into the tank, thus contaminating the system. Draining the tank prior to this test reduced the amount of contaminated water that would have to be treated at a later date. Transfers were then successfully made from the existing Bethel Valley Storage Tanks to the new tank and also from the Influent Pumping Station to the new tank. P&E personnel also provided support during the month by making arrangements to fix a couple of minor safety issues discovered during a recent inspection of the facility and painters arrived on site to perform touch up painting to equipment and to clean the diked area in preparation for installation of the dike coating. Installation of the dike coating was the main outstanding item awaiting closure prior to system turnover to the LGWOD. Vendor documentation was received and was being distributed to the proper organizations.

March

The vendor applied one of the three layers of epoxy coating to the diked area concrete surfaces and had two remaining to be applied in April. P&E personnel were also utilized during this period to relocate the pH probe to the jet mixer inlet pipe, to install toe board to meet Occupational Safety and Health Administration (OSHA) requirements, to insulate drain legs, and to install drain/prime connections on some of the transfer pumps.

April

Finalized construction activities during the month. A painting contractor applied the coating to the diked area. There were still several punch list items to be addressed before construction would be completed. Also all findings discovered during a recent safety walk through were corrected.

May

The management self-assessment activities for the new 1,000,000 gallon surge tank were completed and the facility was reviewed by personnel from the Tennessee Department of Environment and Conservation (TDEC). Permission to place the tank in service was expected in June.

June

Permission to place the tank in service was received from the TDEC.

July

Placed the 1,000,000 gallon Process Waste Surge Tank (F-2103) at Building 2600 in service due to extremely heavy inflow to the Process Waste Collection and Transfer System from heavy rainfall. Also worked with Quality Engineering and Inspection (QE&I) personnel to correct OSHA deficiencies on the ladder on the new tank. Improper clearances were corrected and a suspect bolt was replaced.

2.1.2 PROCESS WASTE TREATMENT PLANT UPGRADES LINE ITEM

The PWTP Upgrades Line Item was a reforcast 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:

- Completed construction activities associated with the Capacity Increase phase of the line item. The work at the PWTP and at the NRWTP involved installation of a new valve box and piping from the south parking lot at Building 3608 to Building 3544 as well as modifications to the existing water-softening process (including the installation of new tanks and pumps) by having the water-softening process being moved to the spare clarifier at the NRWTP and having the softened water then transferred back to the PWTP for treatment through the ion-exchange system. The effluent pumps at the Bethel Valley Process Waste Storage Tanks were also replaced to increase their discharge capacity. At the end of the year system functional testing was beginning with the support of Chemical Technology Division personnel to optimize the water-softening process.

January

This project was proceeding on schedule. Construction personnel completed the excavation for the new piping which runs to Building 3608 and they installed the piping in the excavation. They also backfilled the excavation except where it penetrates the diked area on the east end of Building 3608. As soon as repair work was completed on some electrical conduit inside the excavated area that was damaged during excavation activities, the construction personnel would complete the backfilling and the parking lot and road would be reopened. Until the backfill was completed, construction had relocated the barrier along the parking lot at Building 3608 to free up some of the parking spaces and to allow operational use of the west entrance of Building 3608. Construction personnel also began pouring concrete for one of two new valve boxes that would be installed. Two new pumps

were received by construction personnel and LGWOD allowed the pumps to be stored in Building 3544 until their installation within the next couple of months. A walkdown with P&E personnel was conducted to go over a "wet-tap" that they would be installing to assist in draining an existing process waste line at a system low point at the request of construction personnel.

February

LGWOD personnel spent approximately 2½ days preparing the NRWTP to be shut down in preparation for a tie-in by MK-Ferguson (MK-F) personnel during the month. At the request of MK-F and construction safety personnel, additional isolation of the system was provided by closing several valves and administratively controlling them. After approximately 3 ½ hours, MK-F made a decision to shut the construction for the tie-in down because of contamination encountered on the exterior of the pipe they were tieing into (the level of contamination was 200 - 300 disintegrations per minute (dpm)), and the NRWTP was subsequently returned to service. Due to the effort that was required to perform this shutdown, and the fact that the task scheduled to be done subsequent to the shutdown was not accomplished, a meeting was held with MK-F, construction personnel, and LMES Engineering personnel to assure a similar situation would not occur again. Construction personnel also poured the concrete pads for the pumps and tanks that were to be installed in the diked area at Building 3608 and were working on one of the new valve vaults to be installed to assist in the new transfers between Buildings 3544 and 3608. LGWOD personnel also provided comments to Engineering on the Distributed Control System Configuration Requirements document that was issued for review.

March

The construction contractor placed two of the three new tanks in the NRWTP's diked area and began installation of structural steel in the diked area. They also were working on the new air lock for the filter press room and had done the excavation work for the second valve pit to be installed. Pouring the concrete for the valve pit floor and walls was scheduled for early April. Construction personnel also completed the first of the tie-ins for this upgrade at Building 3608. This tie-in required a 12 hour shutdown of the NRWTP treatment systems and required a large amount of coordination between LGWOD and construction personnel to minimize impacts to operations.

April

Installed and wired in the new J-2101A pump (one of three feed pumps for Building 3544) at Building 2600. At Building 3608, construction personnel poured the concrete for the new air lock entrance pad and also poured the concrete for the new valve box west of the Building 3608 parking lot. Construction personnel then completed the block work for the air locks at the filter press room and installation of the final of three tanks in the diked area.

May

Construction continued work at Buildings 2600, 3608, and in the South parking lot. The work in 3608 was mainly in the diked area with the installation of structural steel and running piping. Also, there had been some work done on the air locks at the filter press room, with the vendor sealing the floor in the air locks. P&E personnel also installed a tap off of the main instrument air header to allow construction personnel to connect the air-operated solenoid valves at the new valve boxes to the main plant air system. At 2600, the final PWTP feed pump was installed (this replaced the 3 existing pumps (J-2101A, B, and C) with higher capacity pumps). Installation of insulation, pressure gauges, and reinstallation of guard rails was then completed at 2600. At the South parking lot, the valve box work was nearly completed. Due to weather constraints, construction personnel still had to complete the tie-ins in the new valve boxes at the end of the month.

June

Construction personnel continued work at the facilities. At Building 3608 personnel had completed the following: tie-in to tank F-1001; installation of new piping and sludge recycle pumps for the clarifier; installation of lighting and a sprinkler system in the new filter press room air lock; and continued installation of piping in the diked area. At the new process waste valve boxes, personnel completed installation of air lines to the new air-operated valves and backfilled and paved the excavation area after the process piping was coated. At Building 3544 personnel continued piping fabrication for a tie-in and pump installation.

Worked with Engineering personnel to obtain a new air conditioning system for Building 3544 as part of the PWTP Upgrades Line Item.

July

At Building 3544 work was on fabricating piping and on installation of the new L-2P pumps (during a 2 day planned construction outage). A lockout/tagout was also performed on the steam heat tracing at Building 3544 to allow construction to proceed with some demolition work at the facility. At Building 3608 work continued on fabricating and installation of piping in the diked area. Also installation of conduit in the bay area and in the diked area occurred. Housekeeping concerns were identified at Building 3608 and were addressed with construction personnel. Work on revision of procedures occurred during the month as well as coordination of testing and checkout responsibilities once the construction activities were completed. Two meetings were held, one with Engineering personnel and one with personnel from the Chemical Technology Division to address testing and checkout of the system. Also reviewed and approved two of Engineering's loop test procedures.

August

Construction personnel primarily worked on punch list items, and they had two subcontractors on site performing heat trace and insulation work. At Building 3544, some more work on the new bathroom was performed. Also the J-1050A, B, and C pumps were connected and "bumped" to check for correct rotation. Personnel also approved the functional test plan prepared by Engineering personnel.

September

Replaced the flow control valve at Building 2600 (FCV-J-2101-1). Both P&E electricians and Instrument and Controls (I&C) personnel supported construction efforts during this work. The primary work construction personnel were concentrating on (other than this valve replacement) was the heat tracing and insulation work at Bldgs. 3544 and 3608. Personnel also began cleaning the northern portion of the diked area at Building 3608 in preparation for personnel to coat the dike surface. P&E personnel also supported water tie-ins to the new restroom facilities at 3544, DCS hook-ups for the new system, and electrical tie-ins. LGWOD personnel also marked up drawings for Engineering personnel so that changes would be incorporated in the as-builts and personnel coordinated activities with P&E personnel to relocate the wet-taps on the two new tanks at Building 3608 where the pH probes were to be located.

October

Work during the month consisted principally of loop testing by Engineering in preparation for system functional testing to begin in November. Personnel drafted the system functional test plan and prepared to issue it for review and comment. Personnel also worked with Chemical Technology Division personnel in preparation for jar testing to support the modified water-softening operations that will be performed at Building 3608.

November

Reviewed and provided comments on the functional testing document for the capacity increase upgrades at Buildings 3544 and 3608. The document was approved at the end of the reporting period and testing was scheduled to begin in early December. Attended a presentation to personnel from the TDEC on the upgrades. Also hung valve tags on the new equipment at these facilities.

December

Completed construction activities and demobilized the fixed-price subcontractor. Initiated pre-operational functional testing in early December. The new system was filled with water from the non-metals surge tank (F-1002) for testing of the new equipment. The software for

operation of the new equipment was loaded on the Distributed Control System to assist in system checkout and for operating personnel to review and comment. The new mixers were all tested and Chemical Technology Division personnel were testing the F-1070 flocculation system to determine the mixing efficiency versus the speed of the L-1070 mixer. Personnel tested the sludge recycle pumps. Although they can be operated from the DCS, some problems with the pumps' low-pressure shut off were identified. I&C and Engineering personnel were working to correct this at the end of the month. P&E personnel also completed final preparation of the ferric sulfate suction line. Ferric sulfate was available at Building 3608 and functional testing of the ferric sulfate metering pumps was ready to proceed at the end of the month. Filling the system with process water allowed Engineering personnel to begin the final stages of their loop testing. Preparation of the draft operating procedure revisions continued. As-built drawing preparation activities continued. Most drawing revisions were completed, but some older manual drawings are in the process of being re-issued as CAD drawings due to reproducibility problems. Remaining activities for this project include: loop testing, equipment testing, and integrated test and checkout.

Coordinated efforts with P&E personnel to determine and correct the source of problems with the restroom at 3544 which was recently installed as part of the PWTP Upgrades Line Item.

2.1.3 MISCELLANEOUS

July

Reviewed and approved a Waste Management Plan from Engineering personnel for the upcoming project at the Building 2600 area to paint tanks F-2101 and F-2102.

August

Obtained data to perform a cost estimate on modifying the two L-3 filter vessels at Building 3544 to provide a larger manway into the vessels. The present manways are extremely small (especially with personnel in a full dressout required for entry) and had resulted in only a few personnel being available that can enter the vessels during changeout of the filter media or for repair activities. This idea was originated within the LGWOD operating group Performance Measurement Team (PMT).

September

LGWOD issued an Engineering Service Order to Engineering personnel to perform the design work for enlarging the manways on the L-3A and L-3B polishing filters at Building 3544.

Began pressure washing of the two 350,000 gallon process waste tanks at Building 2600 in preparation for personnel to repaint the tanks. During this expense funded work, the old grating would also be replaced with galvanized grating.

October

Completed pressure washing and painting of the two 350,000 gallon process waste tanks at Building 2600.

December

Upgrade Sanitary Sewer System Line Item - Construction activities on the Upgrade Sanitary Sewer System Project Line Item were completed. Personnel provided input to Energy Systems Waste Management Organization personnel performing the readiness self-assessment activities for this project.

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:

- (Building 2099 Phase) - Construction of a Monitoring and Control Station (Building 2099) which provided a new double-contained collection tank and transfer system servicing Building 2026. During the year readiness assessment activities were completed by LMES personnel and Department of Energy - Oak Ridge Operations (DOE-ORO) personnel began their assessment of the facility. The facility was declared operational on April 1, 1996.

- (Building 2649 Phase) - Construction activities at the Transported Waste Receiving Facility (TWRF, Building 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 Waste Collection Header, continued during the year. A large punchlist of items that was generated during testing in 1995 was worked on throughout the year. In addition, design and construction of an unloading boom to provide top-unloading connections for the LLLW tankers was completed. The boom was then tested during the summer of 1996 with the new LR-56 LLLW tanker which was received from the manufacturers in France. 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.

- (Building 3092 Phase) - Construction and checkout of a new central off-gas scrubber solution tank and associated transfer system that will replace the existing scrubber solution sump at Building 3092 was completed in 1996 and placed in service.

- (Building 3544 Phase) - Design and construction of a new LLLW transfer system to the existing chemical unloading station at Building 3544 was completed at the end of the year. This will allow the single-contained LLLW line connecting Building 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 allowed construction costs to be reduced and allowed personnel to not have to perform any excavation work with this project.

2.2.1.1 Bethel Valley LLLW Line Item - Building 2099 Phase

March

Participated in the DOE-ORO Readiness Assessment to place this new collection tank system that services Building 2026 in service. No prestart findings were identified and two minor post-start findings were closed by LGWOD personnel prior to the completion of the assessment. Approval was then received from DOE-ORO personnel to place the system in service. Prior to removing the existing tank (2026A) serving Building 2026 from service, the tank was triple-rinsed.

April

On April 1, the new system replaced the existing LLLW collection tank (2026A) that had serviced Building 2026.

2.2.1.2 Bethel Valley LLLW Line Item - Building 2649 Phase

January

P&E personnel performed the following punch list items at the TWRF: installed a new Y strainer in the steam system, installed a door gasket in the door of the sampler room , repaired the valve operators for the sampler glove boxes, and installed new fasteners in the truck air lock valve pit due to these fasteners being identified as suspect fasteners. Engineering personnel continued redesign of the sample ports in the tank vaults in order to

allow maintenance of the sump level probes without personnel having to remove the vault lids, which is a time consuming and expensive process.

Reviewed the 90% design package for the tanker unloading system at Building 2649 and provided the comments to Engineering personnel. Participated in the comment resolution meeting for the review of this design package. These modifications will provide a connection at this facility to use the LR-56 tanker (a top loading/unloading tanker) which is presently being procured for LLLW tanker operations.

February

P&E personnel repaired several valves and fittings at the TWRF which were damaged when the main steam heat valve failed during the cold weather encountered during early February. Engineering personnel completed the design of the new sample ports for the TWRF tank vaults sumps. These ports were redesigned at the request of LGWOD personnel to allow access to the sump level probes for maintenance without expensive removal of the vault lids.

March

P&E personnel performed the following work at the TWRF:

- installed the capillary tube valve controller on the steam preheater in the truck air lock at TWRF. This preheater warms the incoming air to the building to prevent freezing.

- installed wiring for the installation of above-grade sump level probes on the TWRF process and LLLW tank vaults.

- installed duct heater electronic controllers in the TWRF duct heater cabinets. These controllers prevent freezing of incoming cell ventilation air for the TWRF.

- installed a steam valve controller heater box on the main steam control valve at TWRF. This valve provides steam for the steam jets at TWRF. The heater box keeps the controller from freezing.

April

P&E personnel began fabrication of a set of wheel stops to be installed in the tanker unloading bay. These are needed to help in location and coupling and decoupling of the tractor when using the new LR-56 LLLW tanker that was recently procured. P&E personnel also cleaned and sealed the floor areas at the TWRF. LGWOD personnel also reviewed the Plan of Action for the Readiness Assessment to be performed for this project prior to receiving approval from DOE-ORO personnel to place the facility in service.

May

Construction personnel began construction of the unloading arm and installation of the new demineralized water pump to support the operation of the LR-56 tanker that was recently purchased. P&E personnel were also fabricating wheel stops for use in the unloading bay by the LLLW tankers to ensure their correct positioning with respect to the unloading arm and to assist in connecting the tractors to the tank trailers when they are ready to be removed.

June

Construction personnel installed a new demineralized water pump and an unloading arm to support the use of top unloading LLLW tankers at the facility. Construction personnel also modified the air conditioning system in the control room to reduce the amount of noise in the room. P&E personnel also fabricated stainless steel wheel stops for the unloading bay for use with the LR-56.

July

MK-F personnel installed the lid to the valve vault at TWRF. This allowed Engineering personnel to begin balancing of the Cell Ventilation and Off-Gas systems at the facility. MK-F personnel were making final adjustments to the Cell Ventilation and Off Gas Systems based on this balancing.

August

P&E personnel installed wheel stops for the LR-56 tanker in the TWRF. Engineering and LGWOD personnel completed the testing and checkout of the TWRF and verified the LR-56 would interface properly with the TWRF. A punch list of remaining open items was generated and was being worked on by project personnel.

September

Continued to supply support to Engineering and P&E personnel working to correct the deficiencies identified on the facility punchlist to date. Problems with the unloading area door gasket and the facility's air-conditioning system were identified and added to the punchlist.

October

Personnel continued correcting items identified on the functional testing punchlist. P&E personnel installed a safety shower outside the caustic tank room as the result of a safety suggestion by LGWOD personnel.

November

P&E personnel fabricated and installed a platform and ladder in the TWRF unloading bay to provide personnel easier access to the tanker unloading arm.

December

Personnel continued work on the internal management readiness assessment activities. Activities during the month included the beginning of LGWOD personnel training and the review of the mechanical equipment at the TWRF for entry into the P&E programmed maintenance system.

2.2.1.3 Bethel Valley LLLW Line Item - Building 3092 Phase

January

MK-F completed erections of forming for the new tank vault and poured the concrete for the vault. The forms for the pour were then removed. MK-F also began installation and rerouting of the new piping associated with this modification and heat tracing was installed on an exposed potable water line to protect it against freezing.

February

MK-F installed piping to the new tank vault and had back filled most of the excavation area. Since the excavation was back filled, the temporary catwalk that was in place to allow operators access to the pH adjustment station for the existing scrubber solution sump was removed and the operators no longer had to wear personal protective equipment when in this area. MK-F also installed the new scrubber solution tank in the vault.

March

MK-F completed pouring concrete for the new facility's walls and were working on finishing the surfaces. This finishing included smoothing the walls down and painting them. The new safety shower and the new caustic addition tank were installed at the south end of the new central off-gas scrubber solution tank vault. Personnel were also working on the new instrument room and were running conduit and fabricating pipe.

April

Reviewed the functional test plan prepared by Engineering personnel and provided comments. This functional test was a joint test between Engineering and LGWOD personnel prior to LGWOD accepting the facility. At the site, MK-F had been installing piping, conduits and instrumentation. They had also been painting the surfaces of the concrete

structures that they poured for this project. They had also installed most of the electronics in the new monitoring shed.

May

Construction activities continued at Building 3092 and south of Valve Box 2, with activities at 3092 nearing completion (only minor piping and electrical/instrumentation work remained to be completed). At Valve Box 2 MK-F was preparing to excavate and make the tie-in from Building 3092. This activity was scheduled to take approximately 3 weeks. The pre-operational functional test document had approved and issued.

June

Construction personnel continued work at the site, with efforts being directed towards completion of the tie-in of the new transfer line to the Central Waste Collection Header at Valve Box 2.

July

Reinstalled the plugs at Valve Box 2 after construction personnel had completed the tie-in from the new central off-gas scrubber solution tank. I&C personnel began checkout of the new instrumentation installed at Building 3092.

August

Engineering and LGWOD personnel completed the walk down and initial testing of the Building 3092 upgrade. The new double- contained LLLW line from the new tank to Valve Box 2 was tied in and tested. The new scrubber solution recirculation pumps and control panel were tested and found adequate. The internal readiness self assessment was being assembled. Final tie in would be performed after the self assessment was completed in December.

September

LGWOD personnel identified a problem with the steam turbine-driven scrubber solution pump to Engineering personnel. The pump manufacturer was contacted and would on site in early October to troubleshoot the equipment.

October

Personnel completed functional testing of the Building 3092 upgrades. A problem with the steam turbine-driven caustic scrubber solution pump resulted in a delay while the pump vendor was contacted to perform a warranty repair of the pump. At the end of the month the

repair was completed and the pump had been operated for several days to ensure its reliability.

November

MK-F personnel removed and replaced the packing from the bearings on the new 3092 steam turbine. The turbine driven pump and the electric pump were then operated for a 7 day period for pre-operational testing. P&E personnel also made several modifications to the newly installed equipment and facility to meet OSHA requirements. These deficiencies were identified during a walkthrough of the facility by OSHA compliance personnel at the request of LGWOD personnel prior to facility turnover.

December

MK-F personnel completed tie-in work for the new 3092 Caustic Scrubber upgrade. This upgrade included new double-contained piping for the LLLW system, a new caustic addition tank, a new caustic scrubber solution tank and vault, new scrubber solution pumps, and associated piping. The system was put on line Friday, December 27, 1996. The work at Building 3092 provided a new caustic scrubber solution tank and transfer system to the LLLW Collection and Transfer System that meets requirements of the FFA for the LLLW System.

2.2.1.4 Bethel Valley LLLW Line Item - Building 3544 Phase

January

Reviewed the 50% design package for the tanker loading system at Building 3544 and provided the comments to Engineering personnel. Participated in the comment resolution meeting for the review of this design package. These modifications will provide a connection at this facility to use the LR-56 tanker (a top loading/unloading tanker) which was procured for LLLW tanker operations.

October

Construction personnel were mobilized and began preparation work for installation of the new transfer line from the LLLW concentrate tank to the loading/unloading station.

November

Construction personnel continued work during the month, with an emphasis on erecting pipe supports for the new transfer line from the evaporator system at Building 3544 to the tanker loading/unloading facility.

December

Completed construction work at Building 3544 for the waste transfer station upgrade. LGWOD personnel assisted with the development of a punch list of work items to complete construction work and assisted MK-Ferguson personnel by shutting the plant down so punch list items could be worked. This enabled the project to meet a DOE milestone. The modifications included the installation of a new double-contained liquid low-level waste transfer line to the unloading station at Building 3544, the installation of a new nitrogen station and the construction of a dike inside a portion of the 3544 ion exchange room.

2.2.2 MELTON VALLEY LLLW LINE ITEM

This line item project is providing a new collection tank to service Buildings 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 Buildings 7920 and 7930 and disconnection of Building 7900 from the LLLW Collection and Transfer System. Work during the year was primarily on the new collection tank facility (Building 7966) and installation of the new intervalley transfer line. Construction activities were completed in late 96 and I&C personnel began calibration of the instrumentation at Building 7966 in support of functional testing in early CY97.

December

Melton Valley Liquid Low Level Waste Collection and Transfer System Upgrade Line Item (High Flux Isotope Reactor (HFIR) phase) - Three pumps had to be pulled from the new HFIR system and returned to the vendor for repair. This repair is under warranty but will delay the system test by three to four weeks. Construction personnel completed the duct piping for the off-gas filters and Engineering will be connecting the test fan and testing the filters prior to final tie in. The readiness assessment continued at the end of the month. This phase of the line item will upgrade the HFIR's waste systems by decoupling the HFIR from the LLLW Collection and Transfer System and installing a new system to generate solid LLW during regeneration of the demineralizers.

Melton Valley Liquid Low Level Waste Collection and Transfer System Upgrade Line Item (Monitoring and Control Station (MCS) phase) - Construction was complete at the MCS but several punchlist items were being worked by Construction personnel. The I&C personnel worked on the calibration of the instruments in the control room during December but are two weeks behind schedule. Test and checkout at the control room will begin when the calibration is complete. This phase of the line item provides a new collection and transfer system for Buildings 7920 and 7930 that meets requirements of the FFA for the LLLW System.

Melton Valley Liquid Low Level Waste Collection and Transfer System Upgrade Line Item (Radiochemical Engineering Development Center (REDC) phase) - Construction personnel continued the installation of instrumentation and piping in Building 7930 and completed the outside connection to 7930 and filled in the excavated trenches at 7930. The installation of the underground pipeline from 7932 to 7920 continued during December with the excavation for the pipeline complete and two spool pieces remaining to be installed. This completed all excavation required at the REDC. MK-F Direct Hire personnel completed the drain lines in 7920 and will complete the steam stations in January. Installation of lead shielding will begin in January. This phase of the line item provides upgrades of the LLLW drain system within the REDC complex to meet requirements of the FFA for the LLLW System.

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 (Building 7830). Activities during the year included the completion of the site preparation work, construction of the tank vaults, and placement of the new tanks within the vaults.

February

Attended a kickoff meeting in Baltimore with the vendor providing the Distributed Control System equipment being procured for installation at this facility. This equipment is being procured as an add-on to an existing contract with the vendor to ensure a uniform Distributed Control System is installed in LGWOD facilities. Concerns over specific alarm displays and graphic programming were discussed and the vendor was to provide a quote to project personnel on the additional cost to address the areas of concern.

October

Provided comments to Engineering personnel on requirements and the design of a new transfer line to Building 7877 that will provide personnel the capability to transfer supernate from one of the new 100,000 gallon concentrate tanks to the treatment systems within Building 7877.

December

The Main Facility subcontractor continued with construction activities. Prefabrication activities of the pre-cast roof panels for the tank vault continued. Concrete was placed for the west half of the north and center walls for the pump and valve vault. Installation of forms, rebar, and embeds continued for the pump and valve vault walls. Installation of the underground LLLW valve box walls continued with personnel removing the forms for the

valve box walls. Installation of piping activities continued in vaults 35, 36, and 37. Installation of pipe supports in vaults 32, 33, and 34 was underway. Work continued on the installation of grounding and underground electrical runs for the control room.

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 High Efficiency Particulate Air filter building (Building 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 Building 2537 to the outside east wall of Building 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 was demolished and the connections to the tanks were capped, as well as several other out-of-service connections. This allowed 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 Building 3025E and a new double-contained transfer system to the Central Waste collection header that will meet FFA requirements and will allow Building 3025E to continue to use the LLLW System.

During the year, construction of the new filter pit and the upgrades at Building 2537 commenced.

January

Provided a tour of Building 2537 to Engineering and construction personnel in preparation for personnel to begin the removal of the out-of-service sampling system at Building 2537. This sampling system, which was designed to allow personnel to sample the contents of the three evaporator service tanks, had been out of service for several years. The removal of the

sampler system and the capping of the sample lines to the tanks would allow personnel to discontinue monitoring using a continuous air monitor that was located at the facility. In mid-January construction personnel began erection of a containment tent around the sampling system and began removal operations, with completion scheduled for early February. This was the first field work to be done under the Bethel Valley FFA Line Item Project.

February

Construction personnel completed the removal of the out-of-service sampling system at Building 2537.

April

Construction personnel mobilized and set up a trailer at the construction site and installed some conduit at Building 2531 for expansion of the fire detection system at the facility.

May

Construction personnel arrived on site and began excavation activities associated with the installation of the new aboveground filter pit.

June

Construction personnel installed a twelve inch storm sewer drain for the new aboveground filter pit and continued site preparation work.

July

Construction personnel excavated an area around the Evaporator A2 cooling tower for installation of several process waste manholes and installed additional footings for the cooling tower supports. They continued to build up the footers for the overhead steam lines in the construction area in preparation for construction of the new aboveground filter pit.

August

Construction personnel continued excavation activities around the Evaporator A2 cooling tower for installation of several process waste drains and manholes. Two manholes and one 8" stainless pipe to connect them was installed. Pin pile foundation supports were installed for the foundations of the cooling tower and four other above ground steam piping supports due to the extensive excavations in the area. Shoring boxes were installed for the tie in to the existing process waste piping.

September

Construction personnel continued work on rerouting several lines at the site in preparation for installation of the new filter pit.

October

Construction personnel completed tie-ins associated with rerouting an existing process waste line on the east side of Building 2531 in preparation for construction of the new filter pit.

December

Construction personnel continued activities in support of the new above-ground filter pits.

2.2.5 Building 3019 LLLW UPGRADES GENERAL PLANT PROJECT

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

January

MK-F personnel finished all underground wiring for the Building 3019 Valve Box 1B upgrade. This included cathodic protection wiring and wiring for the sump pump and the sump alarm for remote monitoring from the WOCC. Engineering and As Low As Reasonably Achievable (ALARA) personnel also took readings on the outside of the pipe conduit which runs through Valve Box 1B. This information was required for a spectrum analysis to determine isotopes present in the conduit before demolition of the conduit in the valve box by MK-F personnel. P&E personnel also fabricated piping components necessary for the tie-in of piping in Valve Box 1B.

February

MK-F and P&E personnel installed wiring for the sump power and monitor for Valve Box 1B. MK-F personnel cut the concrete conduit in Valve Box 1B and installed the initial pressure test equipment. P&E personnel then performed a pressure and flow test for the section of pipe from Valve Box 1B up to Building 3019. This section of pipe was installed in the 1950's and required testing before proceeding with the upgrade. All tests were successful.

March

MK-F personnel installed the spool piece of piping between the old piping and new LLLW piping at Valve Box 1B, applied final epoxy coating to inside of Valve Box 1B, and cleaned up the site and planted grass around Valve Box 1B. P&E personnel installed the spool piece between Valve Box 1B piping and Valve Box 1A. I&C personnel installed pressure transmitters for monitoring the annulus on the new double-contained piping from Valve Box 1B to 1A and installed and adjusted the sump level probes at Valve Box 1B. Building 3019 personnel also performed a pneumatic pressure test of the primary piping to Valve Box 1A.

April

MK-F and LGWOD personnel repaired and tested the sump pump for Valve Box 1B. I&C personnel also repaired the high level alarm probes in the Valve Box 1B sump. P&E, Engineering, and LGWOD personnel then performed a final checkout of the new LLLW piping from Building 3019 down to Valve Box 1A, with all systems passing the functionality checkout.

May

All construction activities were completed and operating personnel were trained on the new system. The management self-assessment was underway and was expected to be completed in early June so that this project could be declared operational.

June

The new valve box and transfer system was placed in service.

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 Buildings 2537 and 7830. Construction activities at these valve boxes was performed throughout 1996.

January

Engineering personnel were in the process of redesigning the piping in the East Evaporator Valve Box. During decontamination, Operations personnel encountered dose rates which would prohibit the installation of the planned stainless steel liner. Redesign of the upgrades would significantly decrease personnel exposures and cost.

March

MK-F personnel continued installation of the stainless steel liner in the valve box near tank W-6.

April

MK-F personnel finished welding of liner in W-6 valve box. Weld inspections were completed and pressure testing was planned for early next month.

May

Completed work at the W-6 Valve Box. This valve box now has continuous sump level monitoring and a stainless steel liner to provide secondary containment.

June

I&C personnel connected wiring from the W-6 Valve Box over to the data concentrator at Building 2531. This wiring was for the sump alarm for the W-6 Valve Box.

August

MK-F personnel installed piping on the nitrogen system at the South parking lot valve box.

November

Personnel installed the waterproofing to the Incinerator Drive Valve Box.

December

MK-F completed work on the Old Hydrofracture Valve Box upgrade. This included installation of a new sump pump and sump level alarms telemetered to the WOCC. MK-F personnel also completed work on the Incinerator Drive Valve Box. A new stainless steel liner, a new sump pump, and new level alarms telemetered to the WOCC were installed.

2.2.7 MISCELLANEOUS

2.2.7.1 Cesium Removal Demonstration Project

This is a joint project between Chemical Technology Division and LGWOD personnel to demonstrate an effective system to remove cesium from supernate at the Melton Valley Storage Tanks in an effort to reduce worker exposures during future solidification projects.

January

Reviewed draft piping and instrumentation drawings and equipment location drawings and met with project personnel to review the comments.

February

Personnel began evaluation of the equipment layout in Building 7877 to determine if the equipment from the out-of-tank evaporator demonstration project, which was being prepared for operation at the facility, could be left in place during the cesium removal demonstration project. This would eliminate LGWOD personnel from having to find a storage location for the decontaminated evaporator system and would also allow greater operating flexibility in the future by allowing either treatment system to be operated as needed by LGWOD personnel.

March

Provided comments to Chemical Technology Division personnel on the proposed layout of the Cesium Removal System and the Out-of-Tank Evaporator System in Building 7877. Personnel were examining the possibility of leaving both systems at Building 7877 to prevent having to perform decontamination and disassembly when switching between treatment systems.

April

Continued discussions with Chemical Technology Division personnel on which tank's contents should be used during the demonstration project; with the minimization of chemicals to the supernates being of prime concern.

May

Held discussions with project personnel about possible upgrades to the overhead crane located at Building 7877. Due to exposure concerns, the crane will be operated remotely from Building 7863 when moving the exhausted resin containers.

June

Collected a sample of supernate from tank W-27 and then added approximately 800 gallons of caustic (sodium hydroxide) to the tank to adjust its pH in preparation for the upcoming Cesium Removal Demonstration Project.

July

Transferred approximately 22,580 gallons from tank W-27 to W-29 in preparation for the upcoming Cesium Removal Demonstration Project.

August

Chemical Technology Division personnel completed cold-testing of the cesium removal system at Building 7877. Personnel at the end of the month were working to complete the management self assessment required to be completed prior to the start of "hot" operations.

September

Completed the internal management self-assessment for the Cesium Removal Demonstration Project and received approval from the WMRAD Director to begin "hot" operations. Personnel completed the initial run of the Cesium Removal Demonstration Project within a week of receiving this approval.

2.2.7.2 Miscellaneous

January

Out-of-Tank Evaporator Demonstration Project - Sampled the supernate in tank W-29 for Chemical Technology Division personnel in preparation for the commencement of the demonstration project. This was a joint project between Chemical Technology Division and LGWOD personnel to demonstrate the effectiveness of a portable evaporator system in an effort to reduce the volume of LLLW concentrate presently in storage at ORNL.

February

Began work on installation of a new transfer system for LLLW tanks WC-5, -6, and -8. The existing transfer system, which was installed approximately 40 years ago, was being replaced due to increasing problems with the existing system.

The LGWOD Head attended a week-long meeting on the privatization of treatment of transuranic (TRU) Waste sludges.

March

Installed a trolley system in the pipe tunnel for evaporator A2 at Building 2531 that allows for remote calibration of the condensate radiation monitor in the tunnel. This eliminated personnel having to enter the pipe tunnel for routine calibrations. This was identified as a cost savings activity because personnel would no longer have to enter the pipe tunnel, which required Industrial Hygiene and Radiation Protection coverage and which generated solid low-level waste due from personnel protection equipment. A similar system was being installed in the pipe tunnel for evaporator 2A2.

April

Continued work on installation of the new transfer system for tanks WC-5, -6, and -8 with the electrical work being completed during the week.

Completed installation of the trolley system at Building 2531 for personnel to use in inserting a source in the pipe tunnels for calibration of the condensate radiation monitors. This system, which was identified during the LGWOD PMT activities, resulted in a significant cost savings due to personnel no longer having to enter the pipe tunnels for calibrations; which eliminates generation of solid low-level waste from personnel protective equipment; and eliminates the need for Health Physics and Industrial Hygiene coverage during this work.

May

Completed installation of the new transfer system for tanks WC-5, -6, and -8.

October

TRU Program Integration

Neared completion of the first draft of the "Sludge (Slurry)Transfer Request Application" and will be distributing it next week for initial review and comment. This application is being formulated in response to future sludge transfers from inactive and active LLLW tanks to the MVSTs. These transfers are scheduled to start towards the end of FY 97, continue through FY 98 and FY 99, and finish in FY 00.

Made minor revisions to the master schedule for "Nonroutine Activities Affecting Inactive and Active Tanks." These revisions reflected minor schedule changes affecting privatization activities. This schedule tracks activities directly or indirectly related to the transfer of sludge from inactive and active tanks to the MVSTs.

Initiated a Statement of Work (SOW) for the solidification of concentrated LLLW supernate. Four solidification campaigns have been conducted over the last eight years solidifying approximately 190,000 gallons of LLLW supernate. Future solidification campaigns may not be necessary if privatization activities are implemented as planned. This SOW will be released for bid and will only be used to compliment or expedite privatization activities or in the event privatization activities are delayed for any reason.

December

Waste Management Operations Health and Hygiene Support Facility General Plant Project - The testing of the Fire Alarm System and installation of the Plant Address system were completed. Repairs were made to the building heating system in preparation for occupancy. The Waste Management and Remedial Action Division began occupancy of the facility.

New Hydrofracture Facility (NHF) Cell Plugs Enclosures General Plant Project - Returned the welding plans for the NHF Cell Plugs Enclosures GPP to the construction contractor. Fabrication of the enclosures is imminent. These enclosures are being installed to eliminate inleakage of storm water to the cells containing the ventilation filters at Building 7860.

Provided support to MK-F personnel performing cathodic protection work on the new transfer line from Building 2099 to Valve Box 1A.

2.3 WOCC DAS AND DCS

July

WOCC DAS Interim Upgrades - All spare parts and parts to the interim upgrade of the system to a PDP 11-94 were identified for procuring. Some of the spare parts were ordered and received during July. The remainder of the spare parts will be ordered in August. This upgrade is being done to ensure the existing WOCC DAS will remain functional and serviceable until a complete replacement is procured.

WOCC DAS Replacement - The new platform (next generation WOCC DAS), was identified as a DEC Alpha 600 workstation. This workstation will take the LGWOD well into the year 2000 with more computing power than now needed, but with improvements in technology it will be easily adaptable to our ever changing environment and needs. An equipment list for the DEC Alpha Stations and associated hardware was provided to finance personnel to determine the availability of funds. This replacement is due to the fact that the existing WOCC DAS was developed in the early 1980's and that obsolescence of the existing hardware and software as well as a lack of adequately available spare parts is forcing personnel to upgrade the system to ensure its continued reliability.

The operation of the operators console with the PDP11/94 upgrades as well as the new platform will be reviewed with Instrumentation and Controls personnel in August to resolve any outstanding questions.

August

WOCC DAS Interim Upgrades - All components for upgrade and new platform were ordered and were expected to be received in late Sept. 1996. Software and hardware upgrade to a PDP 11/94 system was in the process of being tested for software compatibility.

Distributed Control System Console Replacement - The new system console was ready to be moved from the staging area to the WOCC control room. This was being done since personnel had entered all existing data points into the new console and simulation testing had been successfully completed. Movement to the WOCC would allow personnel to attach the console to the existing fiber-optic data highway and allow personnel to complete system verification and modifications using actual data from the operating facilities in the graphic screens. Contractor personnel began work using the remaining 20 days of support in the contract. The software vendor for the consoles also began work on several requested software upgrades to provide a system more compatible with the existing DCS consoles so that time for personnel familiarization with the new consoles will be reduced to a minimum. Verification of these upgrades remained to be performed. Personnel were also working to familiar additional LGWOD staff members with the DCS's fiber-optic highway and network configuration requirements to ease the burden on the personnel presently overseeing the DCS.

Provided support for several personnel with personal computer hardware and software issues. A HP750C color printer was installed to allow LGWOD personnel to print out full-size color drawings of the liquid and gaseous waste systems on an as-needed basis. Also provided support to software systems for K-25 Property Sales personnel that had been developed while the LGWOD staff member was a member of this organization.

September

WOCC DAS Interim Upgrades - All components for the upgrade and the new platform were ordered and received before October 1, 1996 with the exception of the Storage Works (BA350) enclosures. It was determined that the PDP11/94 will not be used for the interim upgrade but since there is an adequate spare parts and skilled technicians to support the PDP11/44 new storage devices will be installed on this platform first. Due to possible budget constraints, it was requested that the work be halted until the FY 97 budget is defined.

Distributed Control System Console Replacement - The replacement system was ready to be relocated from the staging area to the WOCC control room (Building 3130). All contractual data points had been entered and simulation tests had been performed

successfully. The software subcontractor had approximately 200 hours of programming and testing remaining on the existing contract. Verification of modifications requested to database operations remain to be confirmed. LGWOD personnel continued working with I&C personnel to understand fiber optic network connections, system controls, integration and operation.

October

WOCC DAS Interim Upgrades - Personnel began evaluation of upgrades to the WOCC DAS with consideration being given to constraints imposed by budgetary shortfalls during the fiscal year.

Distributed Control System Console Replacement - Personnel removed the out-of-service OIS-40 console from the WOCC control room in preparation for installation of the replacement console for testing and operator familiarization.

November

WOCC DAS Interim Upgrades - All components for upgrade of the existing system and development of the new platform were received. Due to budget constraints it was decided that LGWOD computer systems personnel will be the primary participants in the setup and testing of the system instead of a collaborative effort between LGWOD and Instrumentation and Controls personnel. At the end of the month personnel were in the process of obtaining all parts and documentation purchased. Personnel decided to use the newer PDP11/94 system for this upgrade.

Distributed Control System Console Replacement - Began relocation of the system furniture to the WOCC so that the test console could be set up for shakedown testing in early CY97.

December

WOCC DAS Interim Upgrades - Obtained all parts and documentation from I&C on the WOCC/LERC Upgrade. LGWOD personnel were in the process of evaluating a monitor card to emulate colorgraphic monitor on the DAS for possible long-term placement with PC's and super video graphic adapter monitors. If the card passes operational requirements, 5 others will be ordered for replacements. Personnel were also looking at subcontracting out the task of preforming a System Generation for the WOCC DAS to support the conversion of the system to a modern platform.

2.4 OCCURRENCE REPORTING

Month	Title	Number	Category	Facility
August	Contaminated Work Clothing	ORO--LMES-X10WSTEMRA-1996-0001	Off-Normal	Building 2523
August	Near Miss WC-19 Tank Level	I0031767	Non-routine	3000 Area
October	Violation of Procedures - Performing Maint. Work Without Radiation Work Permit	ORO--LMES-X10WSTEMRA-1996-0003	Off-normal	Building 7961

2.5 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, LGWOD personnel received the approved Basis of Interim Operations for the LLLW System and Building 7877. Personnel also received the approved revision to the Operational Safety Requirements for the LLLW System, which eliminated several nonnuclear facilities and reduced the level of control of the remaining facilities.

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

January

Presented the revised Operational Safety Requirements (OSR) for the LLLW System to the Plant Safety Evaluation Team (PSET) for approval. PSET personnel had no comments on the document and approved the document. The document was transmitted to DOE-ORO personnel for review and approval. This revision eliminated several nonnuclear segments of the LLLW System from the document and provided clarification of some existing OSR requirements.

February

Issued Notices of Cancellations for the LLLW System Logic Model and the LLLW System Phase IA report. These documents were not identified in the LMES approved Basis for Interim Operations as being part of the facility authorization basis to be maintained to

support the Safety Analysis Report Update Program and were therefore retired. The documents will be maintained as historical documentation for the LLLW System.

Received DOE-ORO comments on the Out-of-Tank Evaporator Demonstration Project System Safety Analysis and Technical Safety Requirements documents. System Safety Engineering and Chemical Technology Division personnel were preparing a response for transmittal to DOE-ORO personnel in early March. This project is a joint project between LGWOD and Chemical Technology Division personnel to demonstrate the viability of the out-of-tank evaporator demonstration system to support decontamination efforts at DOE facilities by using a portable evaporator system.

March

Received approval documentation from DOE-ORO personnel of the System Safety Analysis and the Limiting Conditions Document for Building 2099. DOE personnel had determined in late 1995 that DOE-ORO approval of these documents was required prior to placing the facility in service.

Transmitted the Unreviewed Safety Question Determination information for CY1995 from the LGWOD to the Office of Operational Readiness and Facility Safety (OORFS). This list is required to be submitted to DOE annually and the OORFS provides the transmittal for all ORNL organizations.

Approved the annual review documentation of the Hazard Screening documents for Buildings 3039, 3130, and 3608 and the Limiting Conditions Document (LCD) for Building 7860. As a result of the review the Hazard Screening for Building 3130 was retired and a revision to the LCD for Building 7860 was approved. Revisions to the Preliminary Hazard Screenings for Buildings 3130, 7863A/B/C, and the Process Waste Collection and Transfer System were also approved.

April

Retired the Limiting Conditions documents for the 3039 Stack Area and for Building 7860. These facilities, which are categorized as radiological facilities, are no longer required to maintain Limiting Conditions documents. Retirement of these documents reduced maintenance configuration control requirements and the amount of time spent by shift personnel documenting that the limiting conditions were met each shift. It also eliminated 64 requirement units from the facility authorization basis for these facilities that were required to be assessed annually. Documentation was prepared to submit this as a potential Columbus Initiative activity.

Received approval from the PSET of the LGWOD's responses to the DOE-ORO comments on the Basis for Interim Operations documents for the LLLW System and for the LLLW

Solidification Facility. The revision to the Limiting Conditions document for the LLLW Solidification Facility based on two of the comment responses was also approved. The responses were then transmitted to DOE-ORO personnel.

May

Presented the LGWOD's responses to the DOE review comments on the LLLW System Operational Safety Requirements document (WM-LGWO-LLLW-OSR Rev. 5) to the PSET for approval. Also presented a revision to the Limiting Conditions Document for Building 7877 (WM-LGWO-7877LCD Rev. 3) based on further comments from DOE personnel reviewing the Basis for Interim Operations document for Building 7877. These documents were then transmitted to DOE-ORO personnel.

Approved an Unreviewed Safety Question Determination for removing access plugs at Building 7830 for a radiological survey of the concentrate storage tanks at the facility. The determination showed that this work was within the safety basis of the LLLW System.

June

Provided comments to System Safety Engineering personnel on the System Safety Analysis and the Technical Safety Requirements documents for the upcoming Cesium Removal Demonstration Project, which is a joint project between LGWOD and Chemical Technology Division personnel.

Provided comments to System Safety Engineering personnel on the System Safety Analysis and the Technical Safety Requirements documents for the Melton Valley LLLW Line Item Project.

Provided comments to System Safety Engineering personnel on the Auditable Safety Analyses documents for the LR-56 tanker and the Process Waste Collection and Transfer System.

July

Submitted the Auditable Safety Analysis for the LR-56 to the Plant Safety Evaluation Team for review and approval after WMRAD personnel had completed their final review. This safety documentation is required for radiological facilities.

August

Received the approved revision to the LLLW System Operational Safety Requirements (WM-LGWO-LLLW-OSR, Rev. 5) from DOE-ORO personnel on August 19. Facility personnel, who had 30 working days from receipt by the Facility Manager of the approved

revision, began preparations to implement the revision in Sept. 1996. This revision eliminated several nonnuclear segments of the LLLW System from the Operational Safety Requirements and also reduced the number of requirement units that the LGWOD must meet.

Submitted a response to DOE-ORO personnel comments on the Auditable Safety Analysis for the LR-56 tanker, which is being prepared to allow the tanker to operate as a Radiological facility at ORNL.

Received the approved System Safety Analysis and the Technical Safety Requirements documents for the Cesium Removal Demonstration Project from DOE-ORO personnel.

September

Implemented revision 5 of the Operational Safety Requirements for the LLLW System (WM-LGWO-LLLW-OSR). This implementation required revisions to 11 LGWOD controlled procedures and to 60 checksheets and roundsheets. This revision, which took 2 years from its proposal to approval, eliminated several nonnuclear facilities from the OSR, eliminated several requirements from the OSR as being "defense-in-depth" items, and reduced the level of control of the remaining OSR requirements. The OSR was implemented within 14 working days after receipt by the Facility Manager (well in advance of the 30 working days LGWOD personnel had committed to). This revision also incorporated Building 2099 into the LLLW system OSR and allowed personnel to cancel the Limiting Conditions Document for Building 2099.

Received the DOE-ORO approved Basis for Interim Operations documents for the LLLW System and the Liquid Low-Level Waste Solidification Facility (Building 7877). These documents were required to be approved by DOE-ORO personnel to provide an approved safety authorization basis until their Safety Analysis Reports are completed and approved.

October

Met with DOE-ORO personnel to discuss the format and content of the LLLW System Safety Analysis Report. This informal meeting and review was held to ensure that the DOE-ORO personnel who will be responsible for the review of this document were satisfied with its format and content and will not have major comments during their review. Comments from the meeting indicated that the document met their expectations. A review of the draft report by the Facility Safety Evaluation Team was initiated.

November

Provided comments on the Process Waste Collection and Transfer System Auditable Safety Analysis to System Safety Engineering personnel. This document is being generated in order

to meet established requirements to have an auditable safety analysis in place for all radiological category facilities.

December

Provided comments to System Safety Engineering personnel on the Auditable Safety Analysis document being generated for the Process Waste Treatment Complex (this includes Buildings 3544 and 3608). Data was provided which helped quantify and qualify sludges generated as a result of operations within the Complex.

Received the approved Auditable Safety Analysis document for operation of the LR-56 LLLW tanker as a radiological facility from the PSET.

2.6 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

MK-F personnel continued installation of upgrades to System 21 of the Cathodic Protection System.

February

MK-F personnel continued on the installation of system 21 of the cathodic protection system upgrades.

2.7 3039 STACK VENTILATION SYSTEM

2.7.1 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.

July

MK-F personnel were planning and assembling materials for the replacement of the T-1 (3500 area) turbine. This turbine provides back up cell ventilation for the 3500 area.

September

Removed the 3500 cell ventilation steam-driven turbine from service in preparation for MK-F personnel to install a new turbine as part of a scheduled maintenance upgrade. The turbine was replaced and returned to service during a six-day outage. This turbine provides backup cell ventilation to the 3500 area facilities.

2.7.2 MISCELLANEOUS

February

I&C personnel installed and calibrated a fuel tank level indicator and fuel line leak alarm for the diesel fuel tank supplying the diesel generator at Building 3125. This generator supplies backup electrical power for the 3039 Stack Area.

May

Engineering personnel issued drawings for the replacement of the Roots Blowers in the Central Off-Gas System. The blowers and their respective drivers (a steam-turbine and an electric motor) will be replaced in an effort to upgrade the central off-gas system to provide reliable service to customers in the future. Engineering and LGWOD personnel were making plans for the shut downs required for this job.

July

Assisted personnel in locating the manhole in the 3500 area cell ventilation duct system. This allowed personnel to video inspect the interior of the duct in preparation for an upcoming maintenance activity.

2.8 CONFIGURATION CONTROL

During the year, twelve changes were classified as meeting the requirements of a Configuration Change. In addition, two 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).

2.9 COLUMBUS INITIATIVES

February

Identified a potential cost savings associated with relocation of sump level detectors in LLLW tank vaults at new LGWOD facilities. The relocation allows personnel to perform

maintenance activities without having to remove the tank vault plug, which was time consuming and costly due to the rigging required to remove the plugs. Personnel were developing costs associated with this activity for validation purposes.

Proposed a cost savings associated with consolidation of safety documentation for two LGWOD facilities. The cost savings for this consolidation was approximately $27,000.

August

Presented four Columbus Initiatives originated by LGWOD personnel to the DOE-ORO Columbus Initiative review committee.

September

Began preparation of a potential Columbus Initiative for the retirement of the Limiting Conditions Document for Building 2099 and a reduction in the number of requirement units within the OSR for the LLLW System.

Presented several Columbus Initiatives originated by LGWOD personnel to the DOE-ORO Columbus Initiative review committee. These included initiatives for the following activities:

- Retirement of the Building 3039 and 7860 Limiting Conditions Documents.
- Eliminating a section of LLLW piping from the Cathodic Protection Upgrade Project due to the Melton Valley LLLW CAT Line Item having to perform the same upgrades due to construction activities associated with the Line Item.
- Installation of a Process Waste Tanker unloading connection at Building 3608 instead of constructing an entirely new unloading facility (with a savings of approximately $1,000,000).
- Allow on-site movement of LLLW tankers on day shift to reduce the amount of overtime within the LGWOD.

2.10 MISCELLANEOUS ACTIVITIES

January

Completed the draft text of the calendar year 1995 Annual Operating Report for LGWOD operations.

Filled out "Attachment Fs" for the year end Waste Disposal data packages and submitted them to waste certification personnel as required by approved LGWOD waste certification procedures.

Approved revisions to two LGWOD operating procedures: one procedure was for operation of the Bethel Valley Process Waste System (WM-LGWO-610.2.2 Rev. 11) and the other procedure was for Environmental Restoration Treatment Systems operated by LGWOD personnel (WM-LGWO-607.3 Rev. 2).

February

Completed the review of the calendar year 1995 Annual Operating Report for LGWOD operations. The report was undergoing approval and document clearance prior to its issuance to DOE-ORO personnel.

Approved thirteen revisions to LGWOD procedures: six procedures for operations at Building 3608 (WM-LGWO-604.2.1 R5, -604.2.2 Rev. 7, -604.3.1 R2, -604.3.4 R5, -604.4.2 R3, -604.6 R3), two procedures for the LLLW Bottle Operations (WM-LGWO-608.5 R4, -608.6 Rev. 5), one procedure for operation of the WOCC Data Acquisition System (WM-LGWO-609.2.3 Rev. 1), one procedure for the LLLW and Process Waste Collection and Transfer System (WM-LGWO-610.6 R2), one procedure for the Melton Valley LLLW System (WM-LGWO-610.2.3 R6), and two procedures for the LLLW Evaporator Facility (WM-LGWO-611.2.1 R4, -611.2.6 Rev. 3).

Provided a software copy of the approved configuration control procedure developed by LGWOD personnel to WMRAD personnel for use in establishing configuration control procedures for other departments within WMRAD. This helped to ensure a consistent approach to configuration control within WMRAD by using the LGWOD's configuration control procedure, which was implemented five years ago.

March

Transmitted the LGWOD Annual Operating Report for Calendar Year 1995 to DOE-ORO. This transmittal met two milestones in Activity Data Sheets 3201 and 3251 for the report to be submitted to DOE-ORO by March 31.

Received the new air permit for Building 7877. The permit was reviewed with Environmental Compliance personnel.

Approved two revised procedures for operations at the PWTP (WM-LGWO-602.2.6 R4, -602.2.11 R6).

Completed the review of the revised procedures for operation of the new 1,000,000 gallon process waste storage tank being installed at Building 2600. The comments were being incorporated into the procedures for approval and distribution.

April

Issued nine revised procedures and canceled one procedure for operations at Building 2600. The revisions were made to provide instructions for operation of the new 1,000,000 gallon process waste surge tank which was being placed in service at the facility.

Approved revisions to nine procedures for the 3039 Stack Area based on the retirement of the 3039 Stack Area Limiting Conditions document.

May

Issued a Document Change Directive providing procedures for operation of the new transfer system for tanks WC-5, -6, and -8. The new transfer system replaced an existing system that had become increasingly unreliable due to its age.

Approved a revision to the LLLW tanker procedure (WM-LGWO-608.3 Rev. 5) to allow movement of the LLLW tanker within the ORNL boundaries during day shift operations.

Approved entry of the as-built drawings for the new 1,000,000 gallon process waste storage tank (F-2103 at Building 2600) into the WMRAD Documentation Management Center.

Distributed draft procedures for the LR-56 tanker to LGWOD personnel for review and comment.

June

Approved entry of the instrumentation as-built drawings for Building 2099 into the WMRAD Documentation Management Center.

Approved entry of the revised piping and instrumentation drawings for Building 3608 into the WMRAD Documentation Management Center.

Approved a new procedure (WM-LGWO-608.12) covering the operation of the LR-56 LLLW tanker that was recently purchased and will soon be turned over to the LGWOD for operations.

Completed the annual review/update of the Waste Certification Program for the LGWOD. New calculations were performed and the results were distributed so they can start being used when submitting Waste Identification Description forms.

July

Approved revisions to three LGWOD procedures: one procedure for WOCC Operator Duties (WM-LGWO-609.2.1 R16), one procedure for the Melton Valley Storage Tanks Facility (WM-LGWO-610.2.4 R4) and one for Radiation Monitors at the LLLW Evaporator Facility (WM-LGWO-611.3.2 R3).

Approved entry of the following drawings to the WMRAD DMC for controlled distribution: Building 7860 - Architectural, Civil, Instrumentation, Piping, Structural, and Ventilation; Building 3544 - Mechanical and Ventilation drawings.

August

Approved revisions to several LGWOD procedures for distribution: one procedure for Radiation Monitors (WM-LGWO-610.3.2 R3), four procedures for the FFA Leak Testing program (WM-LGWO-608.8 R1, -608.9 R1, -608.10 R1, -608.11 R1), and one Document Change Directive for the Bethel Valley Process Waste System procedure (WM-LGWO-610.2.2 R11).

Returned several comments to Standard/Requirements Identification Document (S/RID) personnel on approximately 20% of the 5,900 pages of Requirement Units developed for the LLLW System Category (Cat.) 3 nuclear facilities, the LLLW System radiological facilities, the Process Waste System (radiological), and the Gaseous Waste System (radiological). Personnel were continuing to review volumes 2-5 of the draft submittal. During this review, personnel were also conducting a second review of the LLLW System Cat. 2 nuclear facility S/RIDs that were developed last year in an effort to narrow the group of requirement units that had been found to be applicable to these facilities.

September

Completed the review of the final four volumes (approximately 4,800 pages) of S/RIDs prepared by subcontracting personnel for the LLLW System Cat. 2 and Cat. 3 nuclear facilities, the LLLW System radiological facilities, the Process Waste System radiological facilities, and the 3039 Stack Area radiological facilities. Several hundred comments were submitted to WMRAD personnel for transmittal back to the subcontractor for incorporation into the final product.

Approved revisions to nine LGWOD procedures: five procedures for operations at Building 3544 (WM-LGWO-602.2.3 R2, -602.2.7 R2, -602.2.8 R7, -602.2.1 R7, -602.6 R2); two procedures for the Process Waste Collection and Transfer System (WM-LGWO-603.2.1.2 R4, -603.6 R2); and two procedures for the LLLW Collection and Transfer System (WM-LGWO-610.2.6 R4, -610.3.1 R6).

Approved revisions of two LGWOD procedures (WM-LGWO-606.1 R5 and WM-LGWO-606.4 R5) based on comments resulting from their 2-year review.

Approved revisions of the following procedures for implementation of the OSR for the LLLW System: WM-LGWO-609.2.1 R17, -610.2.1 R12, -610.2.3 R7, -610.2.4 R5, -610.6 R3, -611.2.2 R4, -611.2.3 R4, -611.2.5 R10, -611.2.6 R4, -611.3.1 R7, and -611.6 R3.

Approved a revised procedure for the 3039 Stack Area Off-Gas System that provides instructions on how the upgrades being installed by the Bethel Valley LLLW Line Item will be operated. This was issued so that personnel could be trained prior to placing the upgrades in service.

Submitted letter reports to the Contracting Officer documenting completion of milestones OR320129, OR320130, and OR325119 for operating the LGWOD's waste treatment systems without any identified noncompliances during the fiscal year.

October

Approved revisions to eleven LGWOD procedures: one procedure for Building 3544 operations (WM-LGWO-602.2.6 Rev. 5), four procedures for Building 3608 operations (WM-LGWO-604.2.1 Rev. 6, -604.2.5 Rev. 9, -604.2.7 Rev. 6, -604.6 Rev. 4), five procedures for LGWOD LLLW Tanker and Bottle Package operations (WM-LGWO-608.2 Rev. 7, -608.3 Rev. 6, -608.4 Rev. 5, -608.5 Rev. 5, -608.6 Rev. 6), and one procedure for Melton Valley process waste operations (WM-LGWO-610.2.5 Rev. 4).

Issued the first LGWOD Administrative Guide (WM-LGWO-ADMIN-1) covering implementation of the recently approved Nuclear Criticality Safety Approval for the LLLW System.

Distributed draft procedures for Building 2649 operations for LGWOD personnel to walk-down and review.

November

Approved the procedures for operation of Building 2649 and its associated utility systems (WM-LGWO-610.2.7 R0, -610.3.4 R0). This facility was undergoing completion of the construction punchlist items in preparation for personnel training.

Approved revision 3 of the LGWOD Quality Assurance Plan. This revision was done to update terminology and references.

Approved revisions to the following LGWOD procedures: two procedures for operations at Building 2600 (WM-LGWO-603.2.2.4 R3, -603.2.2.5 R4); one procedure on shift

turnovers (WM-LGWO-606.2 R5); one procedure on bottled LLLW operations (WM-LGWO-608.6 R7); two procedures on the LLLW System operations (WM-LGWO-610.2.3 R8 and -610.2.6 R5); and one procedure on the LR-56 tanker (WM-LGWO-608.12 R1).

December

Met with WMRAD Quality Assurance (QA) personnel to discuss revisions to the WMRAD QA Plan. This meeting included a line by line review of the existing plan and suggested revisions by LGWOD personnel.

Approved revisions to seven LGWOD procedures concerning daily checks of radiation monitoring equipment (WM-LGWO-602.2.10 Rev. 9, -602.3.1 Rev. 2, -604.2.5 Rev. 10, -604.2.11 Rev. 9, -606.2 Rev. 6, -610.3.2 Rev. 4, and -611.3.2 Rev. 4).

3.0 MAINTENANCE ACTIVITIES

3.1 NONRADIOLOGICAL WASTEWATER TREATMENT PLANT

March

Repaired several valves at Building 3608 on the dual-media filters system due to age of the valves. These filters are used to remove particulates from the wastewater prior to treatment in the granular activated carbon columns.

Cleaned the air stripper at Building 3608 with sulfuric acid. This cleaning is done to prevent the growth of bacteria within the air stripper and prevent possible Legionnaire's Disease. The air stripper is used to remove volatile organics from the wastewater prior to discharge to the environment.

Replaced the belts on the air stripper blower at Building 3608 due to routine wear from operations.

April

Replaced the discharge and check valves on filter feed pump (J-1008B) at Building 3608 during a routine maintenance activity.

May

Replaced two malfunctioning valves (FCV-337 and FCV-350) on the dual-media filters system at Building 3608. These filters are used to remove particulates from the wastewater prior to treatment in the air stripper and the granular activated carbon columns.

Replaced the rock at Building 3608's NPDES outfall to White Oak Creek.

June

Repaired the J-1002B (nonmetals wastewater) transfer pump at Building 3608 due to a bad coupling and problems with the motor bearings.

July

Repaired the seal on jet mixer J-2102 at Building 3608.

September

Removed vegetation that had grown on the top of the air stripper at Building 3608 during the summer.

November

Treated the sludge at Building 3608 prior to transferring it to the filter press for dewatering. The sludge is generated by precipitation of heavy metals from the wastewater treated at the facility. Also transferred all remaining sludge from the F-1006 clarifier in preparation for testing of the modified water-softening process being set up at Building 3608.

Repaired a leaking flange on the discharge of the Building 3608 diked area sump pump. Personnel also cleaned debris out of the sump area during this maintenance activity.

December

Repaired the drip trays on the filter press at Building 3608. The filter press is used to dewater the sludge from the clarifier operations at Building 3608 so that the dewatered sludge may be packaged for transfer to Solid Waste Operations personnel.

Replaced worn bearings on the air stripper blower at Building 3608. The air stripper is used to remove volatile organics from the wastewater prior to discharge to White Oak Creek.

3.2 PROCESS WASTE TREATMENT PLANT AND COLLECTION SYSTEM

January

Replaced the sample pump at the 7500 Bridge sampler station used for operational monitoring of discharges from ORNL facilities due to a pump failure.

Repaired an electrical problem associated with the sump pumps in the Building 3518 tunnel after water had gotten into the pumps' control systems.

February

Repaired a water leak in the seal water line for the pumps located in the W-1 tunnel at Building 3518. Building 3518 is used as a backup facility to neutralize the Steam Plant's blowdowns in case of problems at the Coal Yard Runoff Treatment Facility.

Repaired the #2 zeolite column at Building 3544 after some of the column's internal distributors became separated during a recent loading operation. The zeolite column is used

to provide additional throughput capacity at Building 3544 during periods of heavy inflow to the Process Waste Collection and Transfer System.

Repaired a faulty control switch on the hot diked area's sump pump at Building 7961. Building 7961 is the Process Waste Collection Tanks for the facilities in the 7900 area.

Replaced a failed rotameter on the sampler at process waste manhole 112.

March

Replaced the failed sample pump at Pumping Station No. 1. This station transfers drainage from the North and South Tank Farms to the Process Waste Collection and Transfer System for future treatment.

Completed the annual Department of Transportation (DOT) inspection of two 5,000 MC-307/MC-312 specification tankers operated by LGWOD for transport of Process Wastewater. Both tankers successfully completed the inspections.

April

Repaired the cold nonmetals transfer pump (J-2020A) at Building 7961 after it failed due to routine wear. This pump transfers cold nonmetals wastewater from the F-2020 tank at Building 7961 to the NRWTP for future treatment.

Completed the annual DOT inspection of a 5,000 MC-307/MC-312 specification tanker operated by LGWOD for transport of Process Wastewater. The tanker successfully completed the inspection after the bottom drain valve was replaced.

May

Installed a pressure indicator on the suction side of the feed pumps for Building 3544 to support testing of the new pumps that are being installed.

Removed excess sludge from the L-1 clarifier. The clarifier is used to soften the wastewater entering Building 3544 in an effort to extend the service life of the ion-exchange columns between regenerations.

Unloaded spent resin from both zeolite columns at Building 3544 and reloaded with fresh resin. The zeolite columns are used to provide additional throughput capacity at the facility during periods of heavy inflow to the Process Waste Collection and Transfer System.

Repaired the sampler system at the 7500 Bridge after the sampler pump was damaged due to a heavy rainfall event earlier in the day.

Repaired zeolite column #1 at Building 3544. The inlet pipe had separated from the column internals during the recent reloading of the column. The zeolite column is used to provide additional throughput capacity at Building 3544 during periods of heavy inflow to the Process Waste Collection and Transfer System.

June

Met with Engineering and a representative of the pump manufacturer to evaluate new pumps recently installed at Building 2600. The three pumps were run for the pump representative so he could evaluate noise they were making. The new pumps were recently installed as part of the PWTP Upgrades Line Item to provide additional throughput capacity at the PWTP.

Removed excess sludge from the L-1 clarifier at Building 3544 during a facility shutdown for tie-ins to be performed associated with the PWTP Upgrades Line Item.

Provided input to Engineering personnel so they can finish preparing a specification to get the F-2101 and F-2102 tanks at Building 2600 painted.

July

Repaired fan EF-1 at Building 7935 that had failed during routine usage.

Repaired the J-2110B pump at the 190 Pumping Station. This is one of three pumps used to transfer process wastewater from the 4500 Complex area to the NRWTP for future treatment.

Completed the four-year programmed maintenance on the motor control center at Building 3544.

Unloaded spent zeolite resin from one column at Building 3544 and then reloaded the column with fresh zeolite. The zeolite columns are used to provide additional throughput capacity at Building 3544 during periods of heavy inflow to the Process Waste Collection and Transfer System.

August

Replaced the J-4004B pump at the 3544 wetwell with a submersible type pump. This pump is one of three pumps used to transfer the effluent from Building 3544 to Building 3608 for further treatment.

Changed out spent zeolite resin from the north column at Building 3544. The zeolite columns are used to provide additional throughput at Building 3544 during periods of heavy inflow to the Process Waste Collection and Transfer System.

Changed out the filter media from L-3A. These filters are used to remove particulates from the process wastewater prior to it entering the ion-exchange columns at Building 3544.

September

Replaced the existing J-2110C pump at the 190 Pumping Station with a submersible type pump. The pump was replaced due to its extended age (approximately 7 years). This station transfers wastewater generated in the 4500 Complex to Building 3608 for treatment prior to discharge.

Replaced the existing J-4004C pump at the 3544 Wetwell with a submersible type pump. The pump was replaced due to its extended age (approximately 7 years). This station transfers the treated effluent from Building 3544 to Building 3608 for further treatment prior to discharge to White Oak Creek.

Removed sludge from the L-1A clarifier at Building 3544 and repaired the sludge agitator. The clarifier is used to soften the wastewater entering Building 3544 in an effort to extend the treatment life of the ion-exchange columns between regenerations.

Replaced the anthracite filter media in filter L-3B at Building 3544. The filters are used to remove any particulates from the wastewater prior to its treatment in the ion-exchange columns.

October

Replaced the heaters and vent fans in the process waste manholes in preparation for the winter freeze protection program.

November

Supported P&E personnel with repairs to the J-2018 jet mixer at Building 7961. This jet mixer is used to keep any particulates in the wastewater received in tank F-2018 suspended until the wastewater is transferred to Bethel Valley for treatment.

Repaired a failed J-2106 sump pump at Building 2600. This pump transfers the contents of the F-2103 diked area sump to the tank for future treatment in the Process Waste Collection and Transfer System.

Repaired a bad bearing on the J-2018 jet mixer at Building 7961. This jet mixer is used to keep any particulates received in the F-2018 tank suspended until the tank's contents are transferred to Bethel Valley for treatment.

Removed leaves and debris that had accumulated in the diked area for tank F-2103 at Building 2600. This tank provides additional surge capacity for the Process Waste Collection and Transfer System during periods of heavy inflow to the system.

December

Completed replacement of pumps J-2110A and B at the 190 Pumping Station. These pumps, which are used to transfer nonradiological process wastewater from the 4500 Complex to Building 3608 for treatment, had been in service for seven years and were replaced as a maintenance item.

Completed replacement of pump J-4004A at the 3544 Wetwell (F-4004). This completed the replacement of the three pumps at this wetwell. These pumps, which are used to transfer the treated wastewater effluent from Building 3544 to Building 3608, had been in service for eight years and were replaced as a maintenance item.

Repaired the agitator in the L-1 clarifier at Building 3544. Two mixing paddles had developed broken bolts due to time in service. The clarifier is used to soften the wastewater received at Building 3544 prior to its treatment by the ion-exchange columns in an effort to extend the service life of the columns.

Replaced the discharge valve for the diked area sump pump at Building 2600 that had failed. This facility serves as the primary collection tanks for process waste in Bethel Valley and as the feed tanks for the treatment process at Building 3544.

Emptied and reloaded two exhausted zeolite columns at Building 3544. These columns are utilized for the removal of radioactive strontium and cesium from process wastewater during periods of high flow.

Replaced the L-9 pump at Building 3544. This pump, which is utilized to transfer column regenerant, had developed a leak.

Repaired the condensate drain line on the L-10 Evaporator at Building 3544.

3.3 LIQUID LOW-LEVEL WASTE SYSTEM

January

Replaced a failed pump in the WC-10 drywell. This pump transfers surface runoff collected in the drywell to the process waste system for future treatment.

Supported I&C personnel with the monthly calibration and checkout of the LLLW Evaporator Facility. LGWOD personnel also tested several valves in the east valve pit to determine problems with some steam jets used for LLLW transfers at the facility.

February

Supported I&C personnel with the monthly calibration and checkout of the LLLW Evaporator Facility.

March

Assisted I&C personnel with repairing the condensate radiation monitor on the A-2 evaporator system at Building 2531. This instrument monitors the amount of activity discharged to the Process Waste System from evaporator A-2.

April

Relocated equipment from the crane bay at Building 2531 and requested Health Physics personnel survey the area to downgrade its posting requirements.

May

Replaced a failed steam trap at LLLW tank W-12's steam station. Steam is used to transfer liquid from the tank to the LLLW Collection and Transfer System for future treatment.

Supported I&C personnel performing maintenance activities on the level detectors at Building 7830.

June

Removed the tank vault access plugs at Building 7830. After removal of the plugs, a video of the tanks and a radiation survey was performed on the tanks and vaults. This is being done to support future waste management projects being proposed for this facility.

Repaired five valves in the Evaporator A2 pipe tunnel at Building 2531 that had failed due to age.

Reworked the source trolley system in the A2 Evaporator pipe tunnel at Building 2531 to make for easier source insertion and recovery during checkout of the evaporator instrumentation systems.

Assisted I&C personnel with replacing the High/High level contact probes on LLLW tanks WC-10 and W-1A.

July

Performed the scheduled testing of the relief valves on the air system at Building 7830. All of the valves passed the testing by QE&I personnel.

Supported I&C personnel with the monthly checkout of the LLLW Evaporator Facility.

August

Repaired the failed sump level probes in the Building 7830 pump module. This was done to support the Cesium Removal Demonstration Project, which will be using this pump module to supply LLLW supernate to their demonstration treatment system.

Drilled penetrations into the vaults for tanks C-1 and C-2 at the LLLW Evaporator Facility (Building 2531) in preparation for a radiological survey in support of potential TRU program work associated with these tanks. The survey is similar to the survey performed for the Melton Valley Storage Tanks (Building 7830) last month.

Started decontamination of the Building 7830 pad in continuing efforts to reduce areas of transferrable contamination within the LGWOD.

September

The annual DOT inspection was completed on the existing LLLW Tanker.

Supported personnel performing the 6-month scheduled maintenance of the 100 psi air compressors at Buildings 7830 and 7860.

Repaired a process water leak in the line servicing the facilities located near Building 7860.

October

Supported I&C personnel in scheduled calibrations of the combustible gas analyzers in the LLLW System and the pressure indicators associated with the intervalley LLLW transfer line.

November

Reduced the contamination area postings in Building 2537.

Repaired two valves located in the pump and valve vault at Building 2537 (the LLLW Evaporator service tanks).

Supported I&C personnel with the monthly checkout of the LLLW Evaporator Facility.

Supported I&C personnel in performing a pressure test of the transfer line from the LLLW Evaporator Facility to Building 7830. This is a scheduled activity to check the calibration of the instrumentation on this line.

December

Repaired the 35 psig steam regulator for the 2A2 LLLW Evaporator at Building 2531. This evaporator is used to reduce the volume of LLLW received from generators prior to its transfer to storage in the concentrate storage tanks.

Repaired a process water leak at Building 2532.

3.4 GASEOUS WASTE SYSTEM

January

Replaced the S-1 sump pump located in the 4500 Cell Ventilation duct twice during the month. The pump was failing due to gravel from construction debris in the area getting into the duct and plugging the bottom intake of the pump. A top suction sump pump was placed in the sump to prevent the debris from entering the pump until it can be removed. This sump collects condensation and inleakage in the 4500 cell ventilation duct and transfers it to the Process Waste Collection and Transfer System for future treatment.

Replaced the sheaves on the Isotope Area Cell Ventilation System blower as part of a maintenance activity on all of the cell ventilation blowers in the 3039 Stack Area. The only blower remaining to be modified is the blower for the 4500 Cell Ventilation System.

Supported I&C personnel performing the monthly testing of the off-gas relief valve at Building 3092 which prevents the off-gas system from supplying too much negative pressure to the generators' facilities at ORNL.

February

Replaced worn belts on the 3025/3026 cell ventilation fan in the 3039 Stack Area. This fan provides cell ventilation services to Building. 3025 and 3026.

April

Repaired two steam supply valves at Building 3092 and one steam supply valve for the 4500 cell ventilation turbine. Steam driven turbines are used to provide backup off-gas and cell

ventilation to facilities serviced by the 3039 Stack System in the event of a failure of the primary electric blowers.

May

Replaced a failed sight-glass on the off-gas system for tank WC-20.

Conducted the quarterly DOP testing of the High Efficiency Particulate Air filters at Building 3092. All tests were successfully completed.

Replaced the High Efficiency Particulate Air filters at Building 2533 and successfully DOP tested the new filters. The cell ventilation for the LLLW Evaporator Facility passes through these filters prior to discharge to the 3039 Stack.

Repaired the 4500 cell ventilation system's steam turbine control system. This turbine provides backup cell ventilation services to the 4500 area.

June

Repaired the vent valve for the Central Off-gas System at Building 3092. This system provides off-gas services for the main ORNL complex.

July

Performed the scheduled DOP testing of the High Efficiency Particulate Air filters at Building 3092. All of the filters passed the testing by QE&I personnel.

August

Replaced the north bank of High Efficiency Particulate Air filters at Building 3092. The replacement filters were then successfully DOP tested by personnel from QE&I. These filters are used to remove particulates from the off-gas from buildings within the main ORNL Complex in Bethel Valley prior to discharge to the 3039 Stack.

Completed repairs of several concrete areas in the 3039 Stack Area where some contaminated concrete surfaces had been identified.

Replaced the belts on the 3500 cell ventilation blower that had become worn due to age and usage. This blower provides cell ventilation service to the 3500 area at ORNL.

September

Supported I&C personnel performing flow checks of the cell ventilation system that services Building 2537.

October

Repaired the wire terminal block for the 4500 Area Cell Ventilation electric blower. The wiring problem was causing the electric blower to trip and the steam-turbine driven blower to start. This blower provides cell ventilation to the 4500 Area at ORNL.

Changed out the High Efficiency Particulate Air filters for the filter press room ventilation system at Building 3608. The new filters were then successfully DOP tested by personnel from QE&I.

Successfully completed the quarterly DOP testing of the High Efficiency Particulate Air filters at Building 3092. These filters are used to remove particulates from the off-gas prior to discharge to the 3039 Stack.

Repaired a small oil leak on the off-gas electric blower at Building 3092. This blower provides off-gas services to the main ORNL Complex in Bethel Valley.

Replaced a failed sample pump on the 3500 area off-gas monitoring system. This system provides additional monitoring of the off-gas discharged from the 3500 area prior to it reaching the 3039 Stack.

November

Repaired several steam leaks in the 3039 Stack Area. The steam is used to provide backup cell ventilation and off-gas services throughout the main ORNL Complex.

Completed the annual preventive maintenance on the electrical equipment in the 3039 Stack Area.

Supported I&C personnel in the operational check of the Central Off-Gas System vacuum break valve at Building 3092. This valve is to prevent pulling too great of a negative pressure on customer facilities.

Supported P&E personnel in rebuilding the Central Off-Gas System blower. This blower provides off-gas for the main ORNL complex in Bethel Valley.

December

Replaced the north bank of High Efficiency Particulate Air filters at Building 2534. These filters, which are used to remove particulates from the LLLW Evaporator Facility's off-gas prior to discharge to the 3039 Stack Ventilation System, were then successfully DOP-tested by QE&I personnel.

Replaced the west bank of cell ventilation High Efficiency Particulate Air filters at Building 7830. These filters, which are used to remove particulates from the Building 7830 cell ventilation system prior to discharge to the atmosphere, were then successfully DOP-tested by QE&I personnel.

Repaired a failed solenoid valve on the 3025/3026 cell ventilation system's electric blower. This blower is used to provide cell ventilation to the 3025 and 3026 area at ORNL.

Supported I&C personnel in the monthly checkout of the vacuum break valve in the off-gas system at Building 3092. This valve is used to ensure that the system does not pull too much of a negative pressure on generator facilities serviced by the off-gas system.

4.0 OTHER ACTIVITIES

4.1 TRAINING ACTIVITIES

January

Nine LGWOD personnel completed training on the new ORNL Waste Certification Procedure that had been planned for issuance in January.

Six LGWOD personnel attended the two-year Radiation Worker II training.

One LGWOD personnel attended Security Refresher training.

Three LGWOD personnel attended a four-hour Clean Water Act - New Directions teleconference.

February

One LGWOD personnel completed the Radiation Worker II requalification training.

Four LGWOD personnel completed emergency squad training.

Fourteen LGWOD personnel completed training on the new Lockout/Tagout procedure.

One LGWOD personnel completed the 2-year Unreviewed Safety Question Determination training.

One LGWOD personnel completed the 2-year Radiation Worker II requalification training.

March

One LGWOD personnel completed the 2-year Radiation Worker II requalification training.

Two LGWOD personnel completed the annual HAZWOPER refresher training.

Twenty-four LGWOD personnel completed training on the new Lockout/Tagout procedure. This completed training for all LGWOD personnel.

Four LGWOD personnel completed Emergency Squad Training. This completes Emergency Squad Training for LGWOD personnel for 1996.

Two LGWOD personnel completed a one-week course on computer system administration.

Three LGWOD personnel completed training on the Task Based Management System, which will be used in budget preparation and performance tracking.

One LGWOD personnel completed Solid Low-Level Waste training.

One LGWOD personnel completed the 40 hour HAZWOPER training course.

April

Received hands-on training for six LGWOD personnel on the new LLLW tanker (the LR-56) which was recently received from France. This training was conducted by the tanker's manufacturer to provide LGWOD personnel the ability to use the tanker in the event of an accident situation on-site.

Two LGWOD personnel completed the Nuclear Criticality Training for Supervisors, which is required to be completed on a two-year basis.

Four shifts of LGWOD personnel completed training on LGWOD safety documentation.

One LGWOD personnel completed the annual respirator fit testing.

Four LGWOD personnel completed the two-year Radiation Worker II requalification training.

Four LGWOD personnel completed training on Price Anderson Amendment requirements.

One LGWOD personnel completed a one-week computer system training course.

May

Completed the training of all LGWOD personnel on the LGWOD's safety documentation.

Two LGWOD personnel completed a two week operator interface programming course for the replacement Distributed Control System consoles presently being procured.

June

Three LGWOD personnel completed the two-year Radiation Worker II requalification retraining.

One LGWOD personnel completed the two-year Nevada Test Site Liquid Certification retraining.

One LGWOD personnel completed a one-week Windows NT training course.

One LGWOD personnel completed the annual HAZWOPER refresher training.

Twenty LGWOD personnel completed the three-year forklift retraining course. This completed forklift retraining for all LGWOD personnel.

July

Seven LGWOD personnel completed on-the-job training for the LR-56 operating procedure (WM-LGWO-608.12).

One LGWOD personnel completed the initial 24 hour HAZWOPER training.

Two LGWOD personnel completed the Radiation Worker II requalification training.

Two LGWOD foremen completed respirator issuing authority retraining.

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

One LGWOD personnel completed Quality Assurance training.

Five LGWOD personnel completed Nevada Test Site training.

One personnel completed his initial training program and was qualified as a LGWOD chemical operator.

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

August

One LGWOD personnel completed a two-day Conduct of Operations practical experience training course at Y-12.

One LGWOD personnel participated in a bench-marking exercise for Waste Management personnel at a DOW Chemicals facility in Baton Rouge, Louisiana.

One LGWOD personnel completed the annual respirator fit testing.

Six LGWOD personnel completed the two-year General Employee training.

One LGWOD personnel began a self-paced training course (VMX Skills for Users) on VAX/VMX operating software after four self-paced training units were purchased. This training is expected to take at least two months to complete.

September

One LGWOD staff member began a self-paced training course on VAX/VMX Operating Software. Four self-paced training units were purchased and personnel estimate it will take at least two months to complete. The first class is titled "VMS Skills for Users."

Two LGWOD staff members completed the 2-year requalification training for Nuclear Criticality Training for Supervisors.

One LGWOD staff member completed the 2-year General Employee Retraining.

Three LGWOD technical staff members completed a two-day Conduct of Operations training course at Y-12.

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

One LGWOD personnel completed the two-year Radiation Worker II requalification training.

October

Three LGWOD personnel attended training on completion of 2109 forms using a computer for data entry.

All LGWOD day shift personnel attended the annual Ethics Awareness training.

One LGWOD personnel completed Solid Low-Level Waste retraining.

One LGWOD Technical staff member completed the two year Nuclear Criticality Safety for Supervisors refresher training.

November

All LGWOD personnel completed the annual ethics training course.

One LGWOD personnel completed a whole-body count.

One LGWOD personnel completed the Local Emergency Supervisor training.

Five LGWOD personnel completed the Solid LLW generator training.

Two LGWOD personnel completed the annual respirator fit testing.

December

Ten LGWOD personnel completed Solid Low-Level Waste refresher training.

Two LGWOD personnel completed the annual respirator requalification training.

One LGWOD personnel completed the written portion of the Radiation Worker II requalification training.

4.2 AUDITS/REVIEWS/TOURS

January

Participated in a surveillance of LGWOD Waste Certification practices by the ORNL WMRAD Waste Certification Group.

March

Participated in a one-week DOE-ORO assessment of Conduct of Operations for the Process Waste Collection and Transfer System.

Performed a safety inspection of Buildings 2099, 3130, 3518, and 3544 with WMRAD Environmental Safety and Health (ES&H) personnel. No major findings or concerns were identified.

Conducted a review of the Deficient Tagging System as part of the LGWOD Conduct of Operations program. No problems were identified.

Reviewed the air permits for LGWOD facilities with personnel from TDEC. No findings or deficiencies were identified.

May

Conducted a safety inspection of Buildings 2600 and 3608 by WMRAD ES&H personnel. No major findings were identified; however some minor comments were made against construction activities at these facilities.

Completed an inspection of all of the 5,000 gallon process wastewater tankers and acid tanker by the Transportation Safety Group. No problems were identified.

Conducted WMRAD ES&H personnel on a safety inspection of LGWOD facilities at Building 7830. No major findings or concerns were identified.

Participated in an internal audit of the Nevada Test Site Waste Certification Program for the LLLW System.

June

Participated in an audit by the Nuclear Material Control and Accountability Department. No findings or concerns were identified.

Environmental Compliance personnel conducted the annual review of all LGWOD air permits. No findings or concerns were identified.

July

Provided a tour of the LLLW Collection and Transfer System to personnel preparing the Safety Analysis Report for the system.

August

Participated in a week-long corporate audit of Waste Management operations activities.

September

Participated in a surveillances of the three LGWOD Waste Certification Procedures by WMRAD Certification department personnel. No findings or concerns were identified.

October

Conducted ES&H Self-assessment Walkdown Inspections of Buildings 3039, 3082, 3092, 3106, and 3158. A few minor deficiencies were noted and identified to facility personnel for correction.

November

Provided support to two personnel from Savannah River in preparation for their upcoming surveillance trip to France for a LR-56 tanker they are procuring. Personnel reviewed the documentation files received with our LR-56 tanker and also toured the on-site LR-56 to prepare for their trip.

4.3 ENVIRONMENTAL RESTORATION SUPPORT

January

Changed out the spent zeolite resin from the spare column at Seep D and loaded fresh resin. This was being done in preparation for the changeout of the in-service column at Seep D, which is nearing exhaustion of its resin. This system is operated by LGWOD personnel at the request of Environmental Restoration personnel to treat the discharge from Seep D for removal of small amounts of radioactive contamination.

Changed out the zeolite resin drums at Seep C at the request of Environmental Restoration personnel. This system is operated by LGWOD personnel at the request of Environmental Restoration personnel to treat the discharge from Seep C for removal of small amounts of radioactive contamination.

Removed the lead column from service at Seep D due to its zeolite resin approaching exhaustion. This system is operated by LGWOD personnel at the request of Environmental Restoration personnel to treat the discharge from Seep D for removal of small amounts of radioactive contamination.

LGWOD personnel working at the Old Hydrofracture Facility completed the video inspection of the interior of tanks T-1, T-2, T-3, and T-4 at the request of Environmental Restoration personnel. LGWOD personnel also collected liquid samples from these tanks in support of planning efforts to remediate this site.

Transferred approximately 275,000 gallons of process wastewater from the settling basin (Building 3513) to the Process Waste Collection and Transfer System at the request of Environmental Restoration personnel.

February

Placed the pumping system to catch the seep at the settling basin (Building 3513) back in service at the request of Environmental Restoration personnel.

Transferred approximately 75,000 gallons from the old Settling Basin (Building 3513) to the Process Waste Collection and Transfer System at the request of Environmental Restoration personnel.

Transferred approximately 5,000 gallons from the Building 7500 canal to the process waste tanker for transfer to the Process Waste Collection and Transfer System at the request of Environmental Restoration personnel.

Serviced the Seep C treatment system zeolite drums at the request of Environmental Restoration personnel. This system, which treats the liquids from Seep C prior to discharge to the watershed, is operated by LGWOD personnel for the Environmental Restoration program.

Provided personnel to support I&C personnel working on Environmental Restoration's LLLW tank W-6.

Collected sludge samples from tanks T-3, T-4, and T-9 at the Old Hydrofracture Facility site. This is being done at the request of Environmental Restoration personnel to assist in planning operations for future activities at this site.

Cleaned buildup of particulates from the top layer of zeolite in the zeolite treatment system located at Seep C. This was done at the request of Environmental Restoration personnel.

March

Collected sludge samples from tank T-2 at the old Hydrofracture site. This is being done at the request of Environmental Restoration personnel to assist in planning operations for future activities at this site.

Collected sludge samples from tank T-1 at the old Hydrofracture site. This completed the sampling being done at the request of Environmental Restoration personnel to assist in planning operations for future activities at this site.

Replaced the failed flow totalizer for the Corehole 8 treatment system operated by the LGWOD for Environmental Restoration personnel.

April

Transferred approximately 120,000 gallons of process waste from the Settling Basin (Building 3513) to the Process Waste Collection and Transfer System for future treatment at the request of Environmental Restoration personnel.

Transferred one tanker load of process waste from the 7500 area to the Process Waste Collection and Transfer System for future treatment at the request of Environmental Restoration personnel.

May

Installed a strainer upstream of the flow totalizer at Corehole 8 in an effort to prevent further damage to the totalizer. The totalizer was also removed for repair during this work. Corehole 8 is operated by the LGWOD for Environmental Restoration personnel.

Supported personnel performing video inspections at Building 7500 for Environmental Restoration personnel.

Transferred 5,000 gallons from the Building 7500 canal to the process waste tanker and transferred the tanker's contents to the Process Waste Collection and Transfer System for future treatment.

Supported personnel in the chemical treatment of the Seep C Zeolite Treatment System in an effort to prevent buildup of particulates on the zeolite resin. This system is operated by the LGWOD at the request of Environmental Restoration personnel.

Switched the zeolite columns at Seep D. The removed column's spent resin was unloaded and fresh zeolite resin was loaded. The zeolite column treatment system at Seep D is operated by the LGWOD for Environmental Restoration personnel.

Pumped the Seep C treatment system sump to the process waste tanker. The tanker's contents were then transferred to the Process Waste Collection and Transfer System for future treatment. The Seep C treatment system is operated by the LGWOD for Environmental Restoration personnel.

Sampled and transferred the contents of the T-30 sump to the LLLW tanker. The tanker's contents were then transferred to the LLLW Collection and Transfer System for future treatment. This was done at the request of Environmental Restoration personnel.

Supported personnel performing video inspections of tank 7560 at Building 7500 for Environmental Restoration personnel.

Reinstalled the covers and level instrumentation on tanks located at the Old Hydrofracture Facility after completion of the sampling program at this facility. This sampling program was conducted at the request of Environmental Restoration personnel.

June

Transferred approximately 605,000 gallons of process wastewater from the Settling Basin (Building 3513) to the Process Waste Collection and Transfer System at the request of Environmental Restoration personnel.

Supported the resin change out at the Tower Shielding facility and dewatered the spent resin after is was removed.

Transferred one tanker load (approximately 5,000 gallons) of Process Wastewater from the 7500 canal to the Process Waste Collection and Transfer System at the request of Environmental Restoration personnel.

Provided support for a filter replacement in the South Tank Farm at the request of Environmental Restoration personnel.

Changed out the spare zeolite resin drums for the Seep C treatment system at the request of Environmental Restoration personnel.

Assisted in camera inspections of tanks in the South Tank Farm area at the request of Environmental Restoration personnel.

Sampled tanks 3002A and W-1A at the request of Environmental Restoration personnel.

Supported Environmental Restoration personnel working at tank W-4 in the North Tank Farm.

Received one tanker load of process wastewater from well decontamination work in SWSA 5.

August

Repaired a failed transfer pump at the Seep D Treatment System. This system is operated by LGWOD personnel at the request of Environmental Restoration personnel.

Transferred the contents of the T-30 sump 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 future treatment. This was done at the request of Environmental Restoration personnel.

Transferred one tanker load of process waste from Building 6559 to the Process Waste Collection and Transfer System for future treatment. This was done at the request of Environmental Restoration personnel.

Transferred process waste from the Settling Basin (Building 3513) for 32 hours (approximately 500,000 gallons) to the Process Waste Collection and Transfer System for future treatment. This was done at the request of Environmental Restoration personnel to maintain the water level in the basin at a specific depth.

Transferred two tanker loads (10,000 gallons total) from Environmental Restoration activities to the Process Waste Collection and Transfer System for future treatment.

Transferred wastewater from the 7500 Canal to the Process Waste Collection and Transfer System for future treatment at the request of Environmental Restoration personnel.

Collected a sample from the 7562 tank at the request of Environmental Restoration personnel.

September

Transferred one tanker load of process waste from grouting project activities in Solid Waste Storage Area 4 to the Process Waste Collection and Transfer System for future treatment. This was done at the request of Environmental Restoration personnel.

Transferred the LLLW from the 7562 tank and then triple rinsed the tank in preparation for remediation activities to isolate the tank. Three loads (over 2,300 gallons) were transported in the LLLW Tanker to the Central Waste Collection Header, where its contents were transferred to the LLLW Collection and Transfer System for future treatment. This was done at the request of Environmental Restoration personnel.

Changed out the primary zeolite column at the Seep D treatment system in preparation for changing out the column resin. This system is operated by the LGWOD for Environmental Restoration personnel.

Transferred approximately 40,000 gallons from inactive tanks W-3 and W-4 to the LLLW Collection and Transfer System for future treatment. This was done at the request of Environmental Restoration personnel.

October

Provided support to Environmental Restoration personnel performing a check of the overflow line from Pumping Station #1 to the Equalization Basin (Building 3524).

Transferred one tanker load (approximately 5,000 gallons) from the 7500 Canal to the Process Waste Collection and Transfer System for future treatment. This was done at the request of Environmental Restoration personnel.

Transferred two tanker loads (approximately 5,000 gallons each) from the SWSA 4 grouting operation to the Process Waste Collection and Transfer System for future treatment. This was done at the request of Environmental Restoration personnel.

Chemically treated the Seep C french drain in preparation for personnel to change out the spent zeolite resin drums with fresh zeolite resin. The Seep C treatment system is operated by LGWOD personnel for Environmental Restoration personnel.

Transferred water from the Seep C treatment system to the LLLW Tanker, which was then transported to the Central Waste Collection Header, where its contents were transferred to

the LLLW Collection and Transfer System for future treatment. This system is operated by the LGWOD at the request of Environmental Restoration personnel.

Transferred one tanker load (approximately 5,000 gallons) of process wastewater from SWSA 6 and from the Building 7500 Canal to the Process Waste Collection and Transfer System for future treatment. This was transferred at the request of Environmental Restoration personnel.

Provided assistance to personnel during the change-out of High Efficiency Particulate Air filters for tank W-10 in the South Tank Farm. This was done at the request of Environmental Restoration personnel.

Transferred one tanker load of process wastewater from the In-situ Vitrification Project to the Process Waste Collection and Transfer System for future treatment. This was transferred at the request of Environmental Restoration personnel.

November

Pressure-tested the transfer pipeline from the Old Hydrofracture pump pit to the Collection Header at the request of Environmental Restoration personnel.

Changed out the spent zeolite resin drums at Seep C. This treatment system is operated by LGWOD personnel for Environmental Restoration personnel.

Transferred one tanker load of Process Wastewater from the 7500 Canal into the 5,000 gallon process waste tanker. The tanker contents were then transferred to the Process Waste Collection and Transfer for future treatment. This was done at the request of Environmental Restoration personnel.

Collected samples from the Seep C and Seep D treatment systems at the request of Environmental Restoration personnel. Personnel also emptied spent zeolite resin from the Seep D treatment column and reloaded fresh resin. LGWOD personnel operate these systems for the Environmental Restoration program.

December

Transferred two tanker loads of process wastewater from the 7500 Canal into the 5,000 gallon process waste tanker. The tanker contents were then transferred to the Process Waste Collection and Transfer for future treatment. This was done at the request of Environmental Restoration personnel.

Transferred ten tanker loads (approximately 5,000 gallons each) of process wastewater from activities in Solid Waste Storage Area 5 to the Process Waste Collection and Transfer for future treatment. This was done at the request of Environmental Restoration personnel.

Pumped approximately 100,000 gallons from Building 3513 (Out of Service Settling Basin) to the process waste system for treatment. This task was accomplished at the request of ER.

Sampled the effluents from the treatment system at Seep C and D. These treatment systems, operated by the LGWOD for Environmental Remediation, are utilized to remove radioactive strontium from contaminated groundwater.

Sampled inactive tanks, T-3 and T-9 from the Old Hydrofracture site at the request of the and Gunite Associated Tanks (GAAT) Project Team.

Changed out the depleted zeolite resin drums at Seep C and replaced them with drums loaded with fresh zeolite. This treatment system is operated by LGWOD personnel at the request of Environmental Restoration personnel.

Transported one tanker load (approximately 800 gallons) of LLLW from the Seep C Treatment System to the Central Waste Collection Header. The tanker's contents were then transferred to the LLLW Collection and Transfer System for future treatment.

Supported Environmental Restoration personnel in disconnecting power from the old South Tank Farm Trailer.

4.4 MISCELLANEOUS ACTIVITIES

January

Sampled the sludge layer in tank W-23 and delivered the samples to personnel for characterization purposes. This was done to assist in the annual update of the LGWOD waste certification program.

Transported the 3074 dumpster tank to the Central Waste Collection Header, where its contents (approximately 240 gallons) were transferred to the LLLW Collection and Transfer System for future treatment.

Collected one LLLW bottle package at Building 4500N and transported the package to Building 2531, where its contents were transferred to the LLLW Collection and Transfer System for future treatment.

Transferred the contents of tank T-13 at Building 7860 to the LLLW Collection and Transfer System. This tank collects water from drains located at Building 7860.

Began transferring liquids from the high range waste storage silos in the Solid Waste Storage Area 5 to the process waste tanker for transfer to the Process Waste Collection and Transfer System at the request of Solid Waste Operations personnel.

Received one load (approximately 3,000 gallons) of sodium hydroxide at Building 3544. The sodium hydroxide is used to adjust the pH of the wastewater entering the facility to assist in the water-softening process in the L-1 clarifier.

Transferred one load of sulfuric acid from the storage tank at Building 3608 to Building 3544. The sulfuric acid is used to adjust the pH of the treated wastewater prior to discharge to Building 3608 for further treatment.

Changed out spent zeolite from zeolite column #2 at Building 3544. The zeolite columns are used to provide additional throughput at the plant during periods of heavy inflow to the Process Waste Collection and Transfer System.

Loaded fresh zeolite resin in zeolite column #1 at Building 3544. The zeolite columns are used to provide additional throughput capacity at the PWTP during periods of heavy inflow to the Process Waste Collection and Transfer System.

February

Assisted P&E personnel in repairing numerous steam and water leaks throughout LGWOD facilities due to the several days of continued below-freezing weather experienced during the first week of February. All LGWOD facilities remained in service during this time.

Collected one tanker load of LLLW at Building 3525. The tanker was then transported to the Central Waste Collection Header, where its contents were transferred to the LLLW Collection and Transfer System for future treatment.

Transferred approximately 5,000 gallons from the hill cut tanks in the Solid Waste Storage Area 6 and the contents of the wells in Solid Waste Storage Area 5 to the process waste tanker for transfer to the Process Waste Collection and Transfer System at the request of Solid Waste Operations personnel.

Continued transferring water collected in wells in Solid Waste Storage Area 5 into containers for transfer to the Process Waste Collection and Transfer System for future treatment. This was done at the request of Solid Waste Operations personnel.

Transferred the contents of the process waste tank at Building 2649 to the Process Waste Collection and Transfer System. This tank, which has not yet been placed in service, was filled due to water lines bursting in the truck unloading bay during the cold weather two weeks ago.

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

March

Sampled the 3074 dumpster tank at the request of the Liquid Waste Certification Official to assist in characterization of the LLLW.

Received 250 gallons of LLLW from Building 3525 in the 1,000 gallon tanker. The tanker was transported to the Central Waste Collection Header, where its contents were transferred to the LLLW Collection and Transfer System for future treatment.

Received 250 gallons of LLLW from Building 3074 in the 3074 dumpster tank. The tank was transported to the Central Waste Collection Header, where its contents were transferred to the LLLW Collection and Transfer System for future treatment.

Transferred the contents of the sumps at Building 7830 to the LLLW Tanker and transported the tanker to the Central Waste Collection Header, where its contents were transferred to the LLLW Collection and Transfer System for future treatment.

Completed the quarterly sampling of the solidified waste form storage casks in SWSA 6 at the request of Solid Waste Operations personnel.

Began processing excess sludge from the L-1 clarifier at Building 3544. The excess sludge was generated due to particulates settling out from the wastewater entering the clarifier. The jet mixers in the process waste surge tanks, which are used to keep particulates suspended in the tanks, had been shut down while a sidestream of wastewater was being treated through the zeolite columns to prevent particulates building up on the zeolite resin and plugging the vessels. With the shutdown of the zeolite columns, the jet mixers were returned to service and the accumulated particulates from the tanks were transferred to Building 3544.

Received a tanker load of sodium hydroxide (approximately 3,000 gallons) at Building 3544. The sodium hydroxide is used to adjust the pH of the wastewater to assist in the water softening process at this facility.

April

Collected two tanker loads of LLLW from the Building 7830 sumps and transported the waste to the Central Waste Collection Header, where the LLLW was transferred to the LLLW Collection and Transfer System for future treatment.

Transported two dumpster tanker loads of LLLW from Building 3074 to the Central Waste Collection Header, where the LLLW was transferred to the LLLW Collection and Transfer System for future treatment.

Transferred two tanker loads of process waste from Building 7877 to the Process Waste Collection and Transfer System for future treatment. This waste was generated by the Out-of-Tank Evaporator Demonstration project being conducted by Chemical Technology Division and LGWOD to demonstrate the usage of a portable evaporator system for decontamination and wastewater volume reduction efforts.

Transferred three tanker loads of process waste from the In-situ Vitrification Project site to the Process Waste Collection and Transfer System for future treatment.

Transferred ten drums of nonradiological waste from the 7000 area to the NRWTP for future treatment.

Received one load of sulfuric acid at Building 3608. Sulfuric acid is used to adjust the pH of the wastewater to within discharge limits prior to discharge to White Oak Creek.

Received one load of sulfuric acid at Building 3544 from the storage tank at Building 3608. The acid is used to adjust the pH of the wastewater at Building 3544 prior to its discharge to Building 3608 for further treatment.

Received one load of sodium hydroxide (caustic) at Building 3544. Caustic is used to assist in the water softening process in the L-1A clarifier at this facility.

Began a cleanup of Building 3594 in preparation for downgrading this facility from a radiological zone.

May

Submitted a proposed Columbus Initiative associated with a revision to operation of the LLLW tankers. A requirement to transport the tankers only on off-shifts was deleted; this allowed LGWOD to eliminate overtime costs associated with movement of the tankers.

Transferred the contents of LLLW tank WC-4 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 future treatment. Also collected a sludge sample from the bottom of tank WC-4. These activities were done in preparation for remediation activities at this tank.

Transferred the contents of the 3074 Dumpster tank to the LLLW Collection and Transfer System for future treatment.

Transferred the contents of the W-6 Valve Box to the Process Waste Collection and Transfer System at the request of construction personnel installing a stainless steel liner in the valve box to meet requirements of the FFA for secondary containment of the LLLW System.

Provided support to MK-Ferguson personnel isolating tank WC-7 from the LLLW System as part of the remediation activities for this tank.

Emptied two tanker loads of process waste generated at the In-Situ Vitrification project into the Process Waste Collection and Transfer System for future treatment.

Collected 500 gallons of process waste in the process waste tanker from activities in Solid Waste Storage Area 6. The tanker's contents were then transferred to the Process Waste Collection and Transfer System for future treatment.

Transported liquid samples collected during the recently concluded Out-of-Tank Evaporator Demonstration Project from Building 7920 to Building 2026 for further analysis at the request of Chemical Technology Division personnel. This project demonstrated the effectiveness of a portable evaporator system to support decontamination and waste reduction during environmental restoration activities.

Prepared samples of the solidification mixture from previous Liquid Low-Level Waste Solidification Project campaigns at the request of the Nevada Test Site Waste Certification Official.

Provided support to MK-F personnel isolating tank WC-7 from the LLLW System as part of the remediation activities for this tank.

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

Inspected the interior of tank WC-4 in preparation for emptying the tank's contents as requested by FFA personnel.

Sampled the filter cake at Building 3544 and delivered the sample to Building 2026 for analysis. This was done at the request of Solid Waste Operations Department personnel to support potential certification of this waste stream for shipment to the Nevada Test Site for disposal.

Cleaned up the 7863A Rubb storage shelter as part of the LGWOD's continuing housekeeping program.

June

Transferred one tanker load of liquid from construction activities in the South Parking Lot area to the Process Waste Collection and Transfer System for future treatment.

Transferred one tanker load of sulfuric acid from Building 3608 to Building 3544. Sulfuric acid is used to adjust the pH of the wastewater at Building 3544 prior to discharge to Building 3608 for further treatment.

Transferred two tanker loads of sodium hydroxide (caustic) from Building 3608 to Building 7961. Caustic is used to maintain the incoming wastewater at Building 7961 at a basic pH while it is waiting transfer to Bethel Valley for further treatment.

Transferred one tanker load of sulfuric acid from the storage tank at Building 3608 to Building 3544. Sulfuric acid is used to adjust the pH of the wastewater at Building 3544 prior to discharge to Building 3608 for further treatment.

July

Collected a sample of supernate from tanks W-28 and W-31. Collected a sludge sample from Melton Valley Storage Tank W-31 and delivered to laboratory personnel for analysis. Collected a sludge sample from Melton Valley Storage Tank W-27 and liquid samples from tanks W-27 and W-28. The samples were delivered to laboratory personnel for analysis.

Collected one LLLW Bottle Package at Building 4501 and transported it to the LLLW Evaporator Facility, where its contents were transferred to the LLLW Collection and Transfer System for future treatment.

Transferred the contents of five 55 gallon drums to the LLLW Collection and Transfer System for future treatment at the request of Solid Waste Operations personnel.

Transferred the contents of tank 3002A to the Process Waste Collection and Transfer System for future treatment and then assisted in the video inspection of the tank's interior. This was done at the request of FFA personnel.

Received one tanker load of process waste from Solid Waste Storage Area #5. The tanker's contents were transferred to the Process Waste Collection and Transfer System for future treatment.

Transferred one tanker load of process waste from the 7500 Area. The tanker's contents were transferred to the Process Waste Collection and Transfer System for future treatment.

Transferred the contents of fourteen 55 gallon drums to the Process Waste Collection System for future treatment at Building 3608. This was done at the request of P&E garage personnel.

Received one tanker load of nitric acid (approximately 3,000 gallons) at Building 3544. Nitric acid is used during the regeneration process for the ion exchange resin columns.

Received one tanker load of sulfuric acid (approximately 3,000 gallons) at Building 3544. Sulfuric acid is used to adjust the wastewater's pH prior to discharge to Building 3608 for further treatment.

Decontaminated a truck at the Equipment Cleaning Facility (Building 7935) at the request of P&E personnel.

August

Collected sludge samples from Melton Valley Storage Tanks W-24, W-25, and W-26 and delivered to laboratory personnel for analysis. These samples were taken to support potential sludge mobilization activities being planned for this facility by the TRU program.

Collected one LLLW Bottle Package at Building 4500S and transported it to the LLLW Evaporator Facility, where its contents were transferred to the LLLW Collection and Transfer System for future treatment.

Transferred the contents of the sumps at Building 7830 to the LLLW Tanker. The tanker was then transported to the Central Waste Collection Header, where its contents were transferred to the LLLW Collection and Transfer System for future treatment.

Transferred one load from the 3074 dumpster tank to the LLLW Collection and Transfer System for future treatment.

Transferred 1,000 gallons of rinse wastewater from a cleaned fuel tank in the 7000 Area by tanker to the Process Waste Collection and Transfer System for future treatment at Building 3608.

Transferred one tanker load of process waste from Building 7877 personnel at the request of Chemical Technology Division personnel to the Process Waste Collection and Transfer System for future treatment. This waste was generated during cold testing of the Cesium Removal Demonstration System being set up at the facility.

Pumped the contents of the South Parking Lot valve box to the process waste tanker and transferred the tanker's contents to the Process Waste Collection and Transfer System for future treatment.

Assisted FFA personnel in the video inspection of the 3002 tank.

Received 3,000 gallons of sulfuric acid at Building 3608. Sulfuric acid is used to adjust the pH of the wastewater to within discharge limits prior to its discharge to White Oak Creek.

Transferred two tanker loads of sodium hydroxide to Building 7961 from Building 3608. The sodium hydroxide is used to adjust the pH of the wastewater received at Building 7961 from the 7900 area prior to its transfer to Bethel Valley for future treatment in the Process Waste Collection and Transfer System.

September

Collected a sludge sample from LLLW Tank W-27 at Building 7830 and transported the sample to lab personnel for analysis. This sample, which completed the sampling campaign at Building 7830, was taken to support potential sludge mobilization activities being planned for this facility by the TRU program.

Collected supernate samples from tanks W-21, W-22, and W-23 and delivered the samples to laboratory personnel for analysis. This was done to support future activities at these tanks.

Collected a sludge sample from tank W-21 and delivered the sample to laboratory personnel for analysis. This was done to support future activities at this tank.

Supported the video inspection of the overflow line from Pumping Station No. 1 to the Equalization Basin (Building 3524) in support of efforts to isolate all potential sources of inflow to the basin prior to its turnover to the Environmental Restoration program.

Supported FFA personnel in pressure testing the transfer lines for LLLW Tanks WC-9 and WC-19.

Supported personnel performing a radiation survey of tanks C-1 and C-2 and their vault at Building 2531. This is being done to support planning efforts for possible sludge mobilization efforts in these tanks in the near future.

Transferred one tanker of process waste from the insitu-vitrification project to the Process Waste Collection and Transfer System for future treatment.

Received one tanker load (approximately 3,000 gallons) of sodium hydroxide (caustic) at Building 3544. Caustic is used to adjust the pH of the wastewater to assist in the water softening process in the L-1 clarifier.

Represented the LGWOD in a meeting of WMRAD Performance Measurement Team (PMT) members which was being held to evaluate the effectiveness of the PMT process and to offer suggestions on improving it.

October

Collected a sludge sample from tank W-22 and delivered the sample to laboratory personnel for analysis. This was done to support future activities at this tank.

Collected a sludge sample from tank W-23 and delivered the sample to laboratory personnel for analysis. This was done to support future activities at this tank.

Collected liquid samples from LLLW Tank W-12 at the request of the FFA personnel and delivered the samples to laboratory personnel for analysis.

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

Collected two tanker loads of LLLW from Building 3525. The tanker was transported to the LLLW Collection Header, where its contents were transferred to the LLLW Collection and Transfer System for future treatment.

Transferred the contents of the Building 7830 sumps 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 future treatment.

Collected a process waste package at Building 1505 and transferred its contents to the Process Waste Collection and Transfer System for future treatment.

Transferred one tanker load (approximately 5,000 gallons) from the construction site at Building 7966 to the Process Waste Collection and Transfer System for future treatment at Building 3608.

Transferred wastewater from the Interconnecting Pipeline Valve Box to the process waste tanker. The tanker's contents were then transferred to the Process Waste Collection and Transfer System for future treatment.

Transferred the contents of six 55-gallon drums from the 7000 Area garage to the NRWTP Collection System for future treatment.

Collected one process waste package at Building 4501 and transferred it to the Process Waste Collection and Transfer System for future treatment.

Collected twelve gallons of process waste at Building 1504 and transferred it to the Process Waste Collection and Transfer System for future treatment.

Transferred rainwater that had collected in the 190 Ponds (Buildings 3539 and 3540) to the Process Waste Collection and Transfer System for future treatment. These ponds were removed from active service in 1990.

Transferred four tanker partial loads of sulfuric acid from the storage tank at Building 3608 to Building 3544. Sulfuric acid is used to adjust the pH of the wastewater at Building 3544 before it is transferred to Building 3608 for further treatment.

Transferred one tanker load of sodium hydroxide (caustic) from the storage tank at Building 3608 to Building 3544. Caustic is used to adjust the pH of the wastewater at Building 3544 to assist in the water-softening operations at this facility.

Performed the quarterly sampling of the Liquid Low-Level Waste Solidification Project solidified waste form storage casks at the request of Solid Waste Operations Department personnel.

Continued relocating spare parts from existing LGWOD facilities to Building 7582. Building 7582 is the recently constructed spare parts facility for LGWOD that provides climate control and a central stocking point for facility spare parts.

November

Completed the annual freeze protection checklists for all LGWOD facilities. Maintenance requests were turned in to P&E personnel for all identified deficiencies.

Transferred the contents of tank WC-14 to a B-25 box containing RadSorb to generate a solid LLW. This was done due to slight amounts of PCBs being in the contents of this tank and therefore not being acceptable for transfer to the LLLW Evaporator Facility.

Transferred water from the South Parking Lot valve box at the request of MK-F personnel in preparation for work to be performed at this location. The water was transferred to the LLLW Collection and Transfer System for future treatment.

Sampled LLLW Tank WC-19 at the request of FFA personnel.

Collected a sample from tank T-14 at Building 7860 at the request of FFA personnel.

Supported FFA personnel in performing a pressure test of the WC-2 LLLW line. This test is part of the leak testing program of the LLLW System.

Supported MK-Ferguson personnel in transferring water from the basement of Building 4501 to the Process Waste Collection and Transfer System for future treatment.

Transferred three partial tanker loads of sulfuric acid from the storage tank at Building 3608 to Building 3544. Sulfuric acid is used to adjust the pH of the wastewater at Building 3544 prior to discharge to Building 3608 for further treatment.

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

Transferred one load sodium hydroxide from the storage tank at Building 3608 to Building 2099. Sodium hydroxide is used to maintain the contents of LLLW tank F-1401 at a basic pH prior to transfer to the LLLW Evaporator Facility for future treatment.

Received approximately 2,000 gallons of sulfuric acid at Building 3608. The acid is used to adjust the pH of the wastewater prior to discharge to White Oak Creek.

December

Transported one dumpster tank load of LLLW from Building 3074 to the Central Waste Collection Header, where the dumpster's contents were transferred to the LLLW Collection and Transfer System for future treatment.

Collected two containers of process waste at Building 4500N and transferred their contents to the Process Waste Collection and Transfer System for future treatment.

Transferred one tanker load of process waste from activities in Solid Waste Storage Area 6 to the Process Waste Collection and Transfer System for future treatment.

Pumped the contents of the 190 ponds (Buildings 3539, 3540) to the 190 Pumping Station. These inactive basins must periodically be emptied of rainwater. The 190 Pumping Station effluent is treated at Building 3608.

Assisted Hazardous Waste Operations Group personnel with the removal of some drums from the WC-10 tent as part of general housekeeping activities.

Videotaped the internals of inactive LLLW tanks T-14 and W-12 at the request of FFA personnel.

5.0 APPENDIX

5.1 TABLES

1. Process waste operations.
2. NRWTP operations.
3. LLLW operations.
4. Rainfall at ORNL.

5.2 FIGURES

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2. Flow diagram of the PWTP. (ORNL-DWG. 96-3391)
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17. Building 3026-C LLLW generation. (ORNL-DWG. 97-5460)
18. Building 3026-D LLLW generation. (ORNL-DWG. 97-5461)
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23. Building 3517 LLLW generation. (ORNL-DWG. 97-5466)
24. Building 3525 LLLW generation. (ORNL-DWG. 97-5467)
25. Building 3544 LLLW concentrate generation. (ORNL-DWG. 97-5468)
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27. 4500 Complex LLLW generation. (ORNL-DWG. 97-5470)
28. Isotopes Area LLLW generation. (ORNL-DWG. 97-5471)
29. Reactors in Bethel Valley LLLW generation. (ORNL-DWG. 97-5472)
30. WC-5 Pump Pit (tank WC-8) LLLW generation. (ORNL-DWG. 97-5473)
31. WC-5 Pump Pit (tank WC-9) LLLW generation. (ORNL-DWG. 97-5474)

5.2 FIGURES (Continued)

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	6.59×10^6	1.13×10^6	7.72×10^6	56	412	310	200
February	6.03×10^6	1.37×10^6	7.41×10^6	53	390	340	220
March	5.87×10^6	1.75×10^6	7.61×10^6	69	507	840	440
April	5.93×10^6	0.98×10^6	6.91×10^6	54	397	460	160
May	6.26×10^6	0.86×10^6	7.12×10^6	51	375	170	290
June	5.52×10^6	2.41×10^6	7.93×10^6	51	375	520	180
July	4.92×10^6	1.34×10^6	6.27×10^6	63	463	380	200
August	6.24×10^6	1.88×10^6	8.12×10^6	53	390	240	120
September	5.21×10^6	0.66×10^6	5.87×10^6	58	426	330	200
October	5.70×10^6	0.17×10^6	5.87×10^6	60	441	320	200
November	4.86×10^6	3.17×10^6	8.03×10^6	56	412	0	0
December	5.29×10^6	3.03×10^6	8.32×10^6	55	404	310	200
1996 Totals	68.42×10^6	18.75×10^6	87.18×10^6	679	4992	4220	2410

TABLE 2 NRWTP OPERATIONS

	Metals Wastewater treated (gal)	Nonmetals Wastewater treated (gal)	Total Wastewater treated (gal)	Sludge generated	
				Boxes	Ft^3
January	3.28×10^5	1.66×10^7	1.69×10^7	1	96
February	3.32×10^5	1.60×10^7	1.63×10^7	2	192
March	5.42×10^5	1.69×10^7	1.74×10^7	0	0
April	4.23×10^5	1.58×10^7	1.62×10^7	0	0
May	4.64×10^5	1.66×10^7	1.71×10^7	0	0
June	3.51×10^5	1.64×10^7	1.68×10^7	0	0
July	3.57×10^5	1.66×10^7	1.70×10^7	0	0
August	4.65×10^5	1.80×10^7	1.84×10^7	0	0
September	2.88×10^5	1.53×10^7	1.56×10^7	0	0
October	3.81×10^5	1.66×10^7	1.70×10^7	0	0
November	1.83×10^5	1.72×10^7	1.74×10^7	0	0
December	3.60×10^5	1.71×10^7	1.75×10^7	2	192
1996 Totals	44.74×10^5	19.91×10^7	20.36×10^7	5	480

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	3.24×10^4	1.02×10^4	0	0
February	3.66×10^4	1.36×10^4	0	0
March	1.80×10^4	1.10×10^4	1,580	0
April	2.13×10^4	2.40×10^4	0	0
May	1.78×10^4	0.22×10^4	0	0
June	0.25×10^4	3.29×10^4	0	0
July	0	1.30×10^4	0	0
August	0	4.77×10^4	0	0
September	1.85×10^4	5.03×10^4	0	2,179
October	0	2.34×10^4	0	0
November	0	1.76×10^4	0	0
December	1.78×10^4	1.40×10^4	0	1,230
1996 Totals	16.49×10^4	25.99×10^4	1,580	3,409

TABLE 4. RAINFALL AT ORNL
(Data collected at the ORNL Steam Plant, all results are in inches)

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total
1989	8.04	5.17	5.36	0.00	6.34	0.00	4.26	4.26	11.02	1.93	5.25	2.96	54.59
1990	6.09	8.08	5.13	3.05	8.53	1.81	8.28	6.54	1.74	4.55	2.20	12.27	68.27
1991	2.93	9.01	7.56	3.56	4.41	6.57	4.20	3.75	2.14	1.73	3.85	9.75	59.46
1992	3.82	3.45	3.64	3.03	6.23	2.70	4.31	6.17	4.06	3.56	2.84	6.82	50.63
1993	4.08	3.65	5.75	4.54	3.35	2.89	1.45	4.42	4.72	2.67	3.74	7.89	49.15
1994	6.94	8.77	10.81	8.86	3.52	7.20	4.75	5.65	3.09	2.54	3.96	2.87	68.96
1995	7.02	4.37	3.53	2.65	6.86	2.78	3.05	2.84	3.41	4.30	6.80	5.62	53.23
1996	7.62	3.40	6.74	4.28	9.30	5.10	8.48	3.29	5.33	1.64	8.32	6.06	69.56
Average	5.82	5.74	6.07	3.75	6.07	3.63	4.85	4.62	4.44	2.87	4.62	6.78	59.23

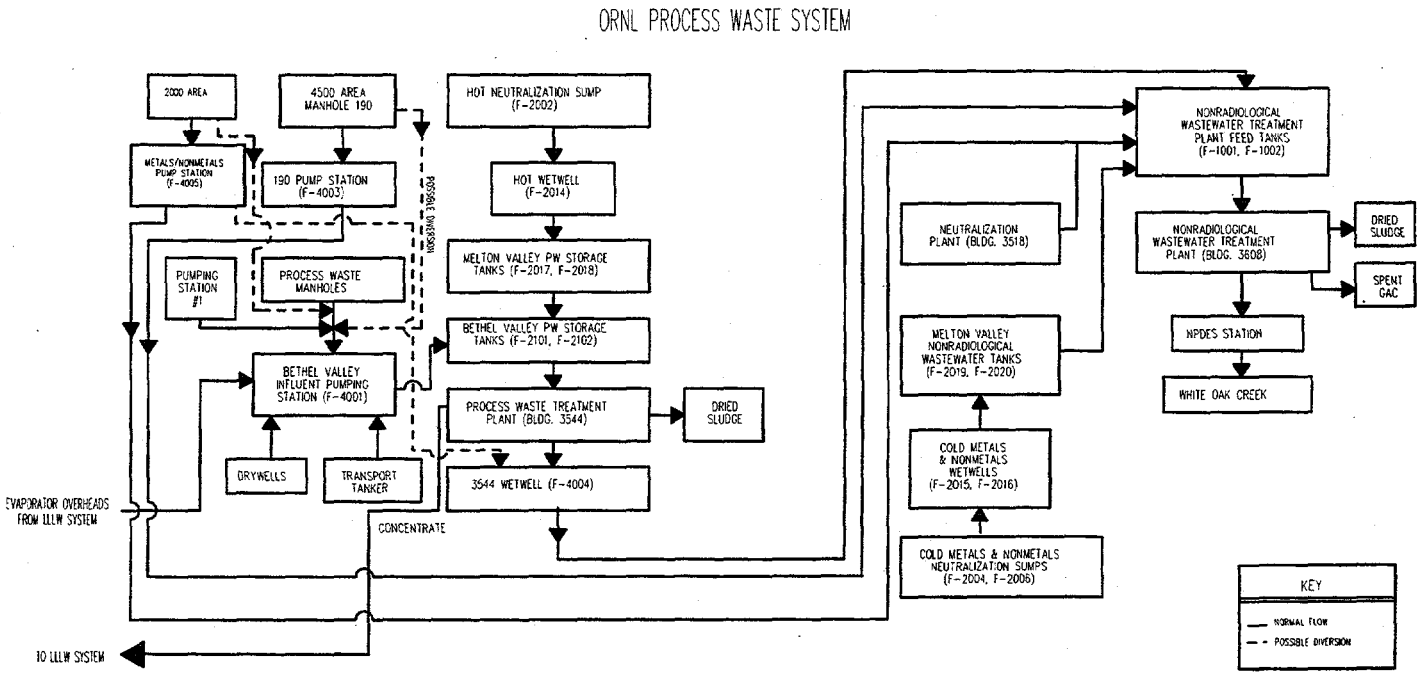


Figure 1. Diagram of the Process Waste Collection and Transfer System. (ORNL-DWG. 96-3390)

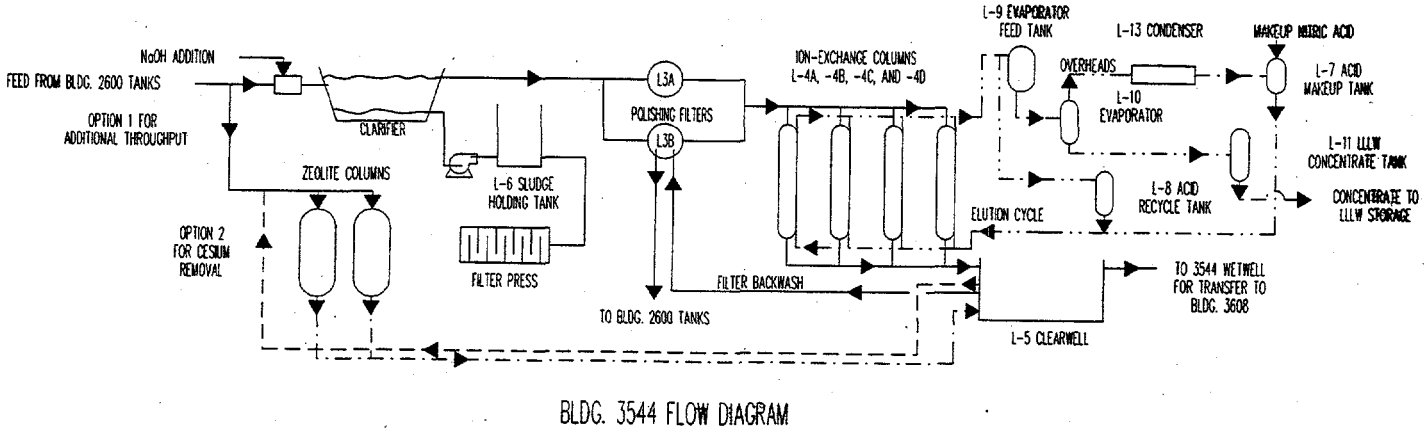


Figure 2. Flow diagram of the PWTP. (ORNL-DWG. 96-3391)

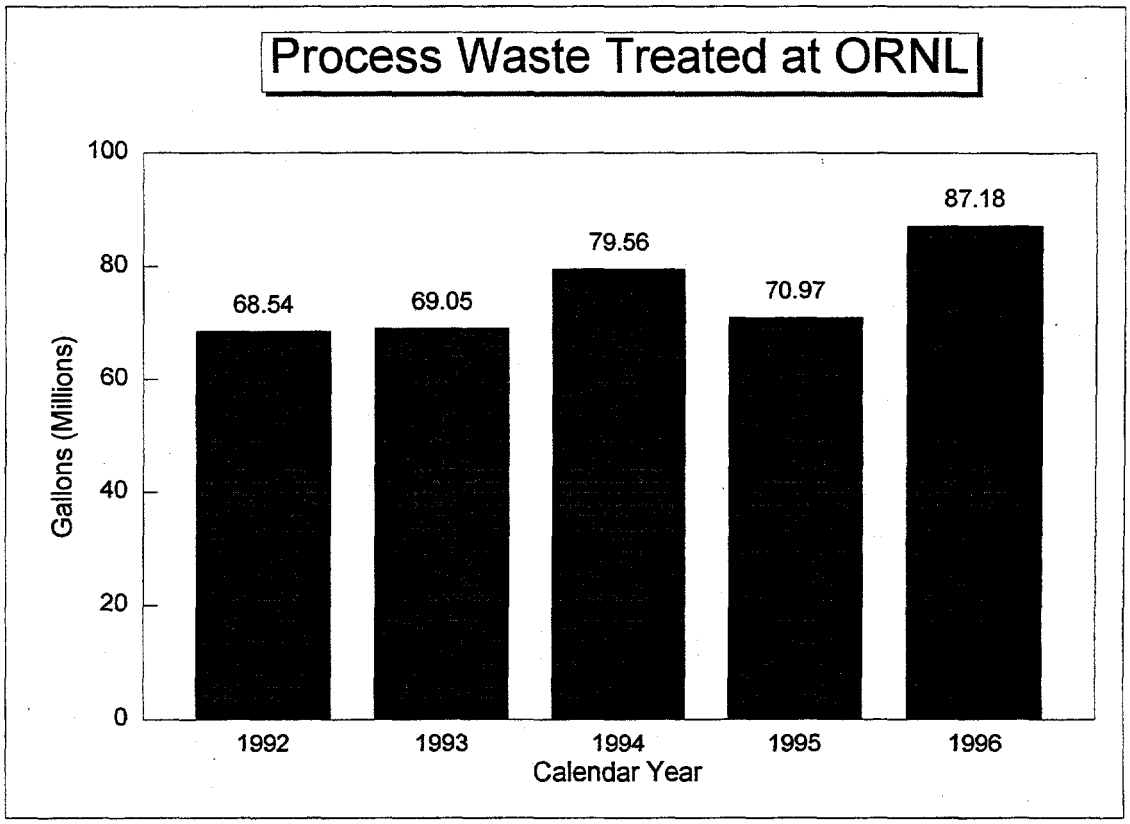


Figure 3. Process waste treated at ORNL. (ORNL-DWG. 97-5448)

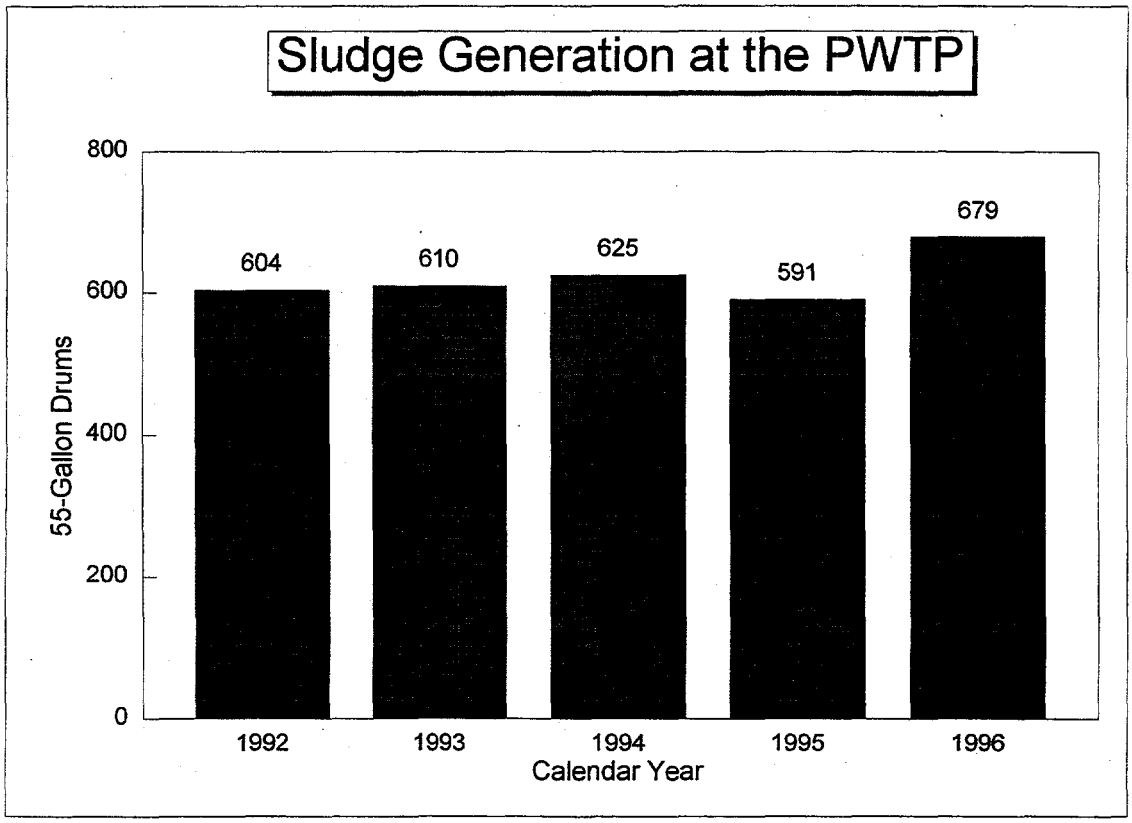


Figure 4. Sludge generation at the PWTP. (ORNL-DWG. 97-5449)

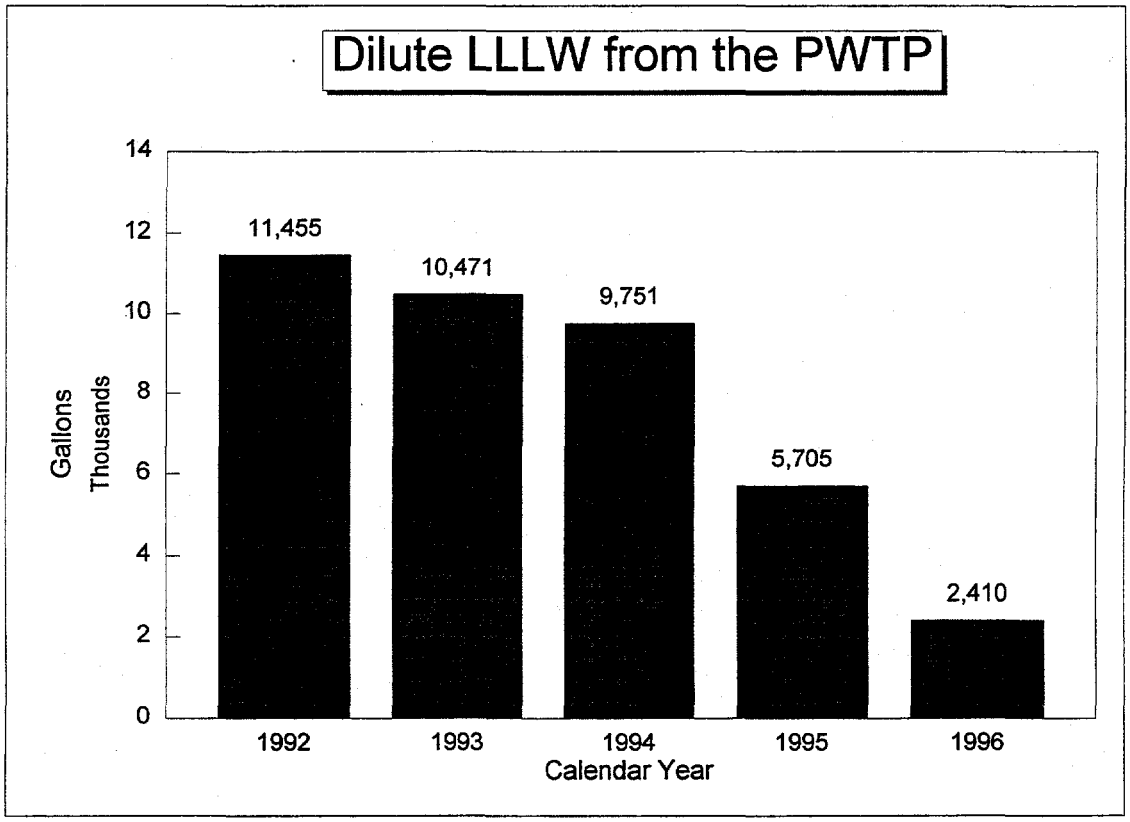


Figure 5. Dilute LLLW from the PWTP. (ORNL-DWG. 97-5450)

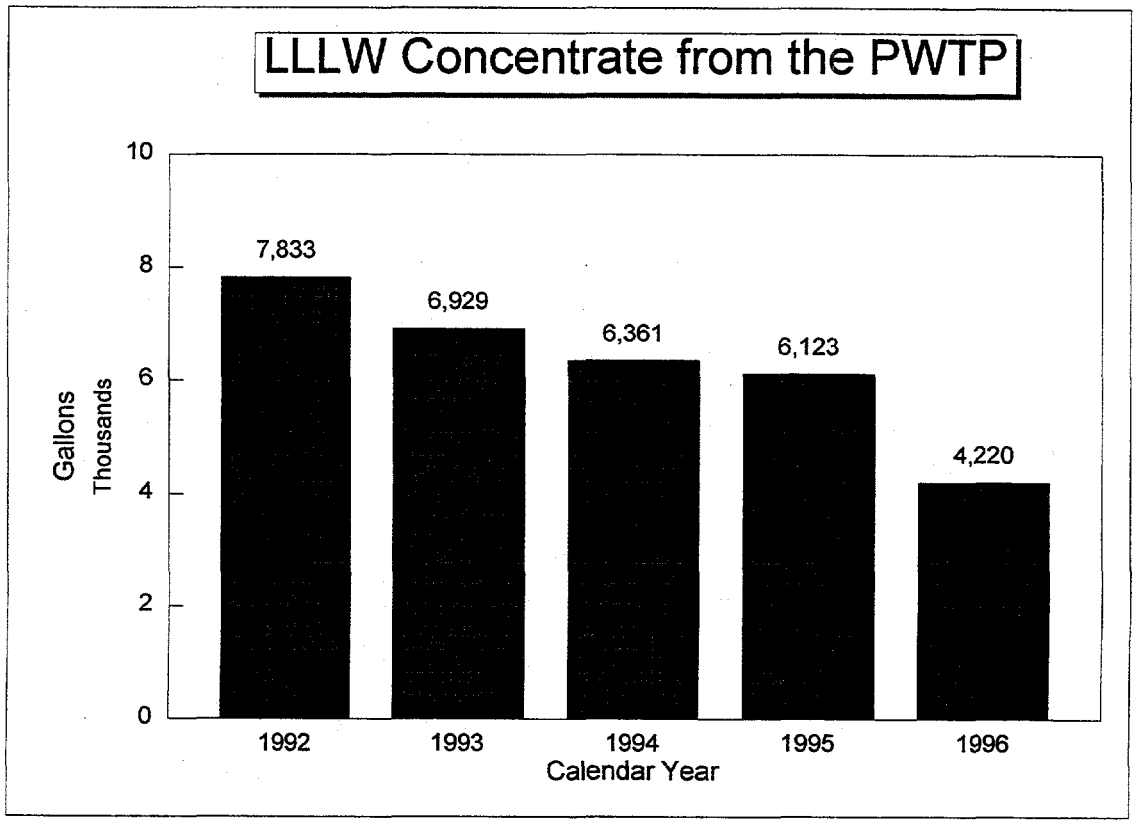


Figure 6. LLLW concentrate from the PWTP. (ORNL-DWG. 97-5451)

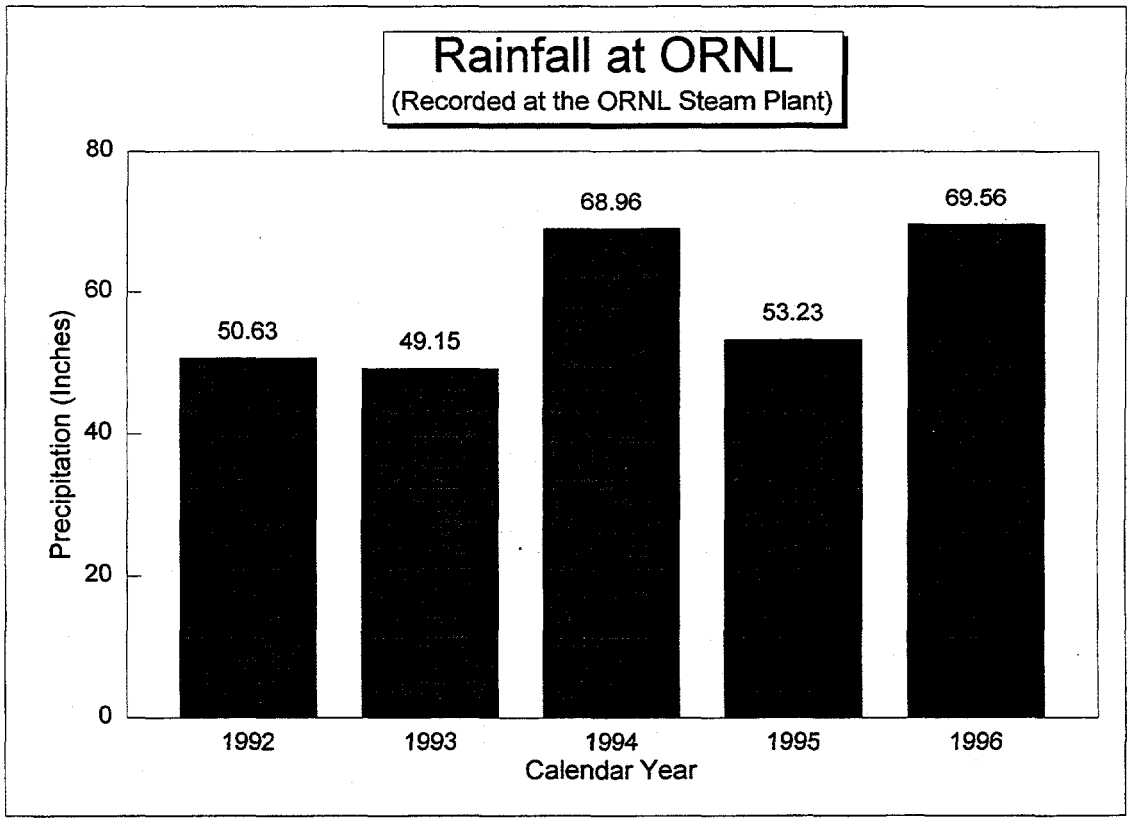


Figure 7. Rainfall at ORNL. (ORNL-DWG. 97-5452)

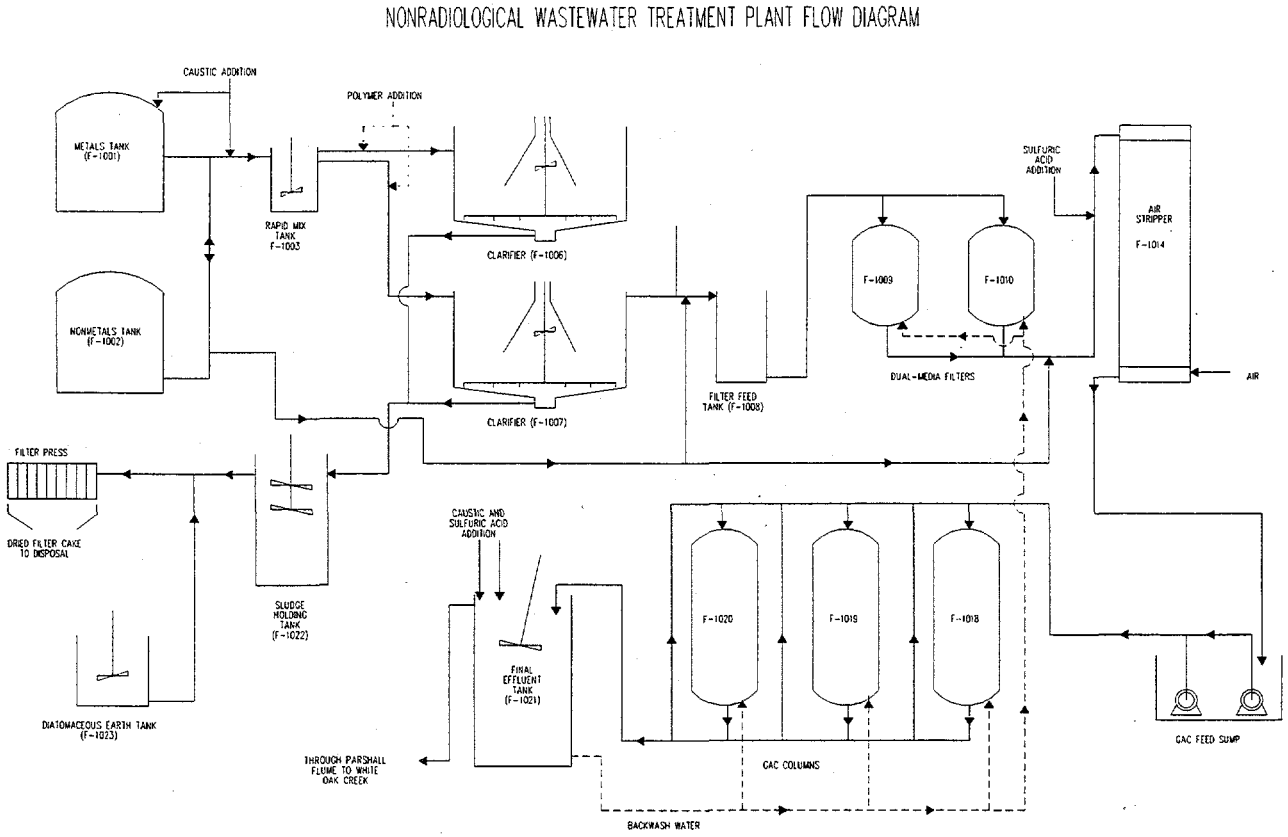


Figure 8. Flow Diagram of the NRWTP. (ORNL-DWG. 96-3397)

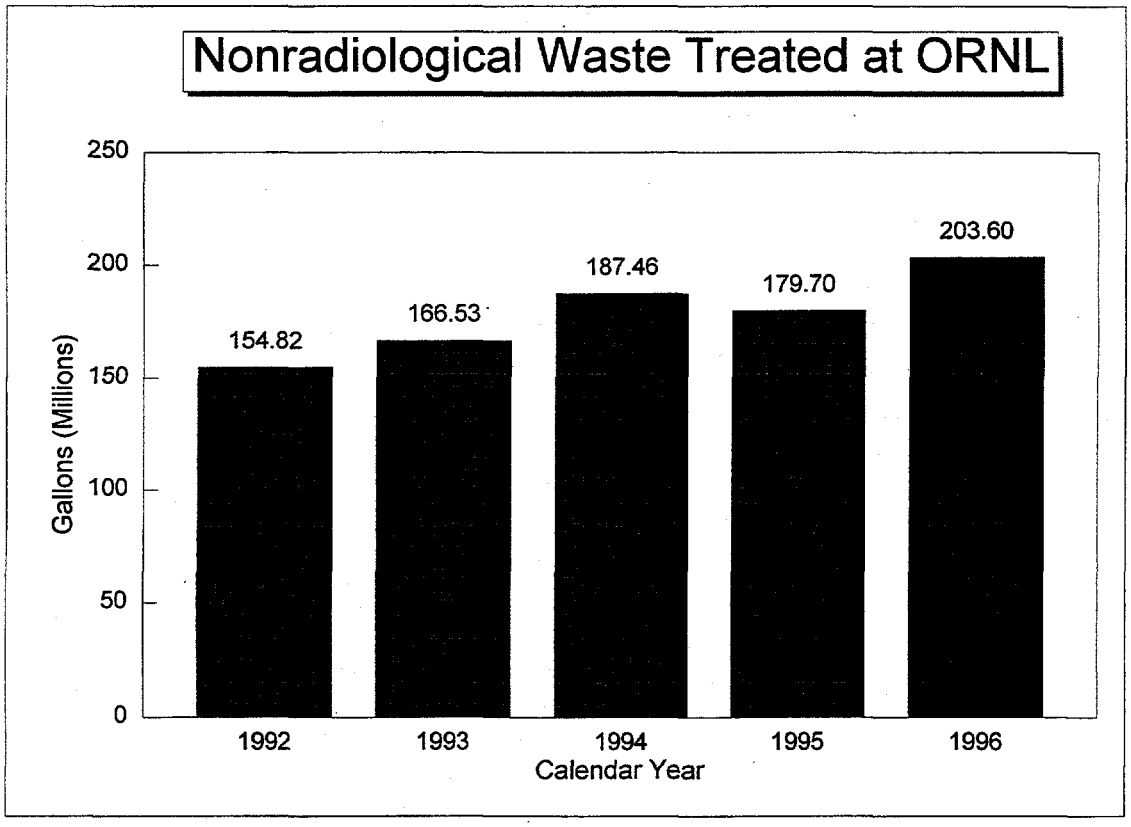


Figure 9. Nonradiological waste treated at ORNL. (ORNL-DWG. 97-5453)

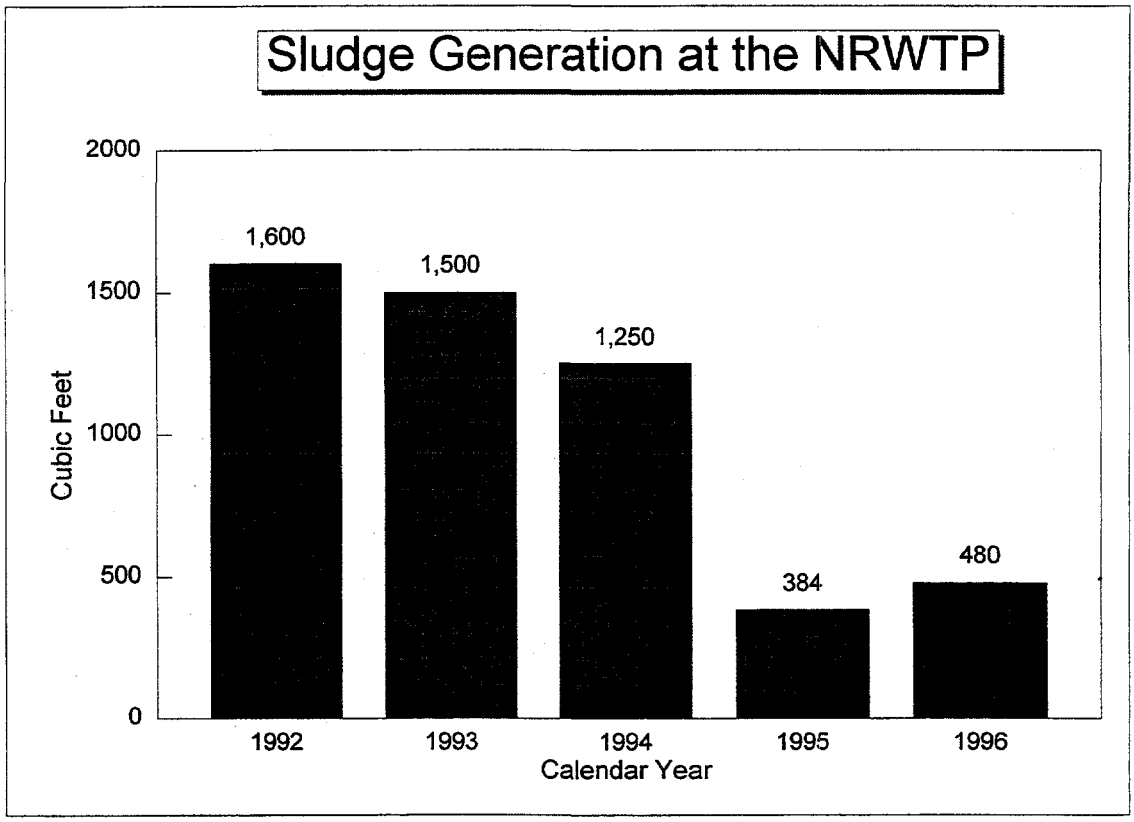


Figure 10. Sludge generation at the NRWTP. (ORNL-DWG. 97-5454)

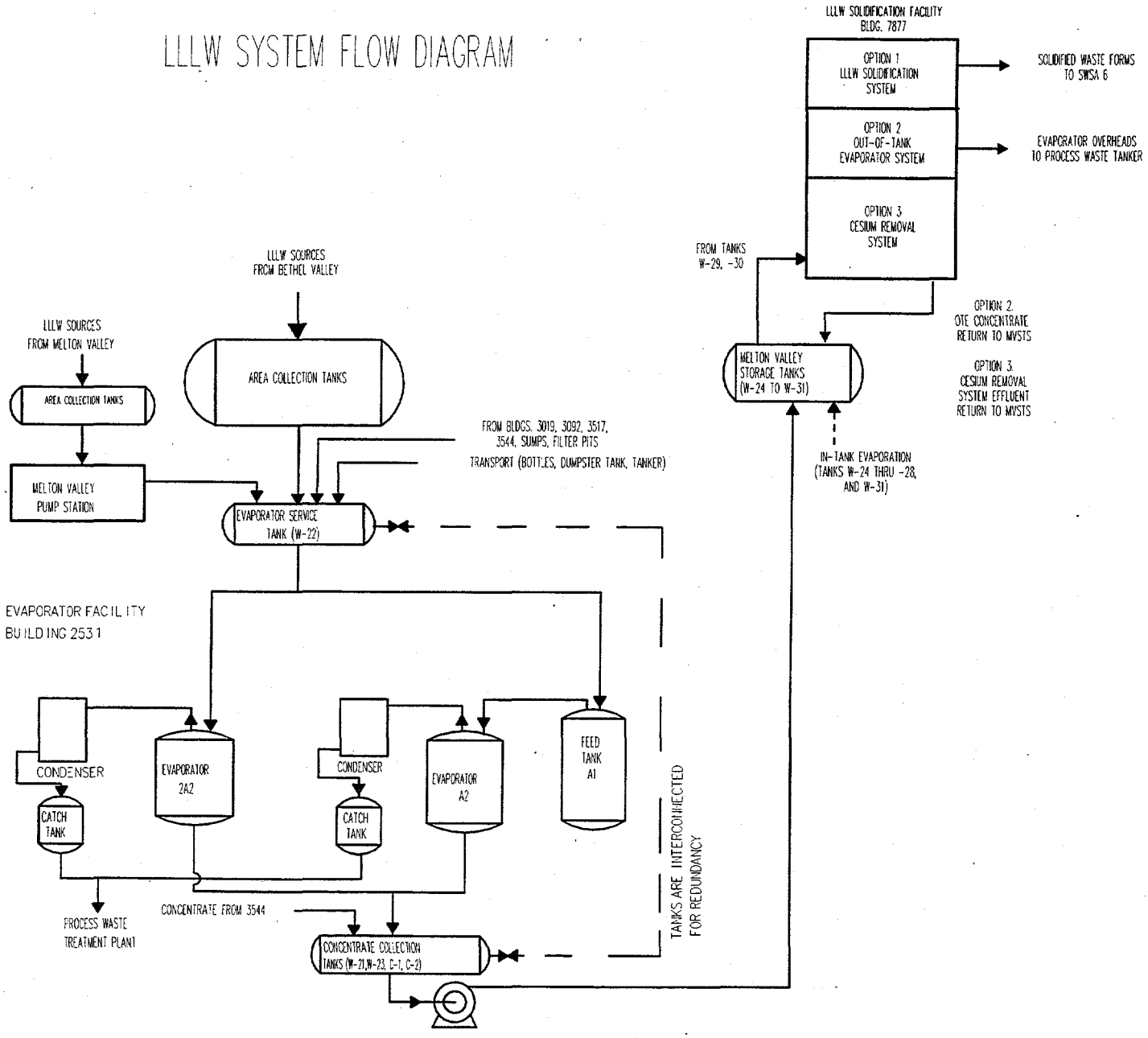
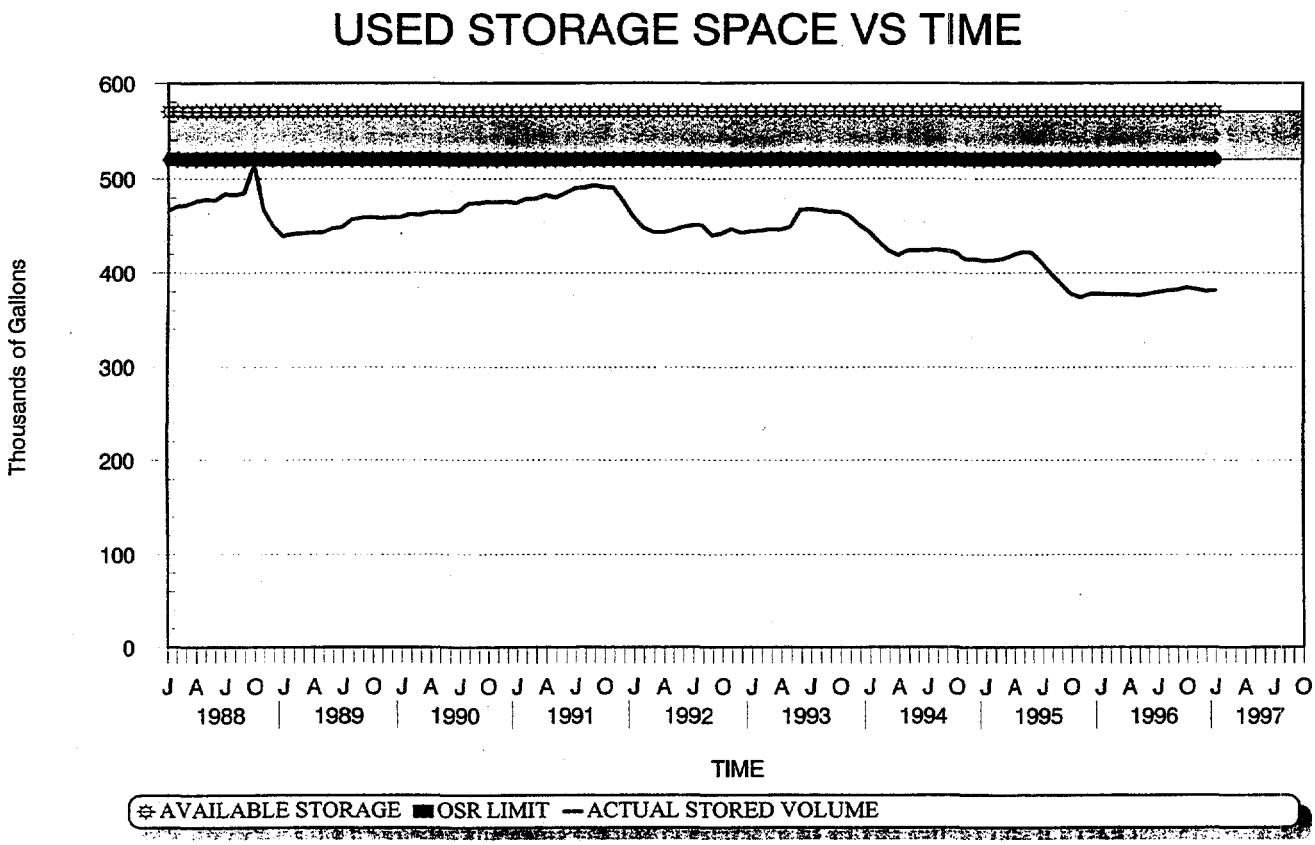


Figure 11. Diagram of the LLLW Collection and Transfer System. (ORNL-DWG. 96-3400)



The Available Storage uses the maximum allowable volume in each tank of 47,500 gallons (per the OSR).
The OSR Limit is the Available Storage (570,000 gallons) less the 50,000 gallons required by the OSR to be kept empty at all times.
The Actual Stored Volume is the Total from the Evaporator Storage Tank Volumes Table (Volume in W-21, -23, and the MVSTs), which is based on the actual level measurements in the tanks.

Figure 12. Used storage space versus time. (ORNL-DWG. 97-5455)

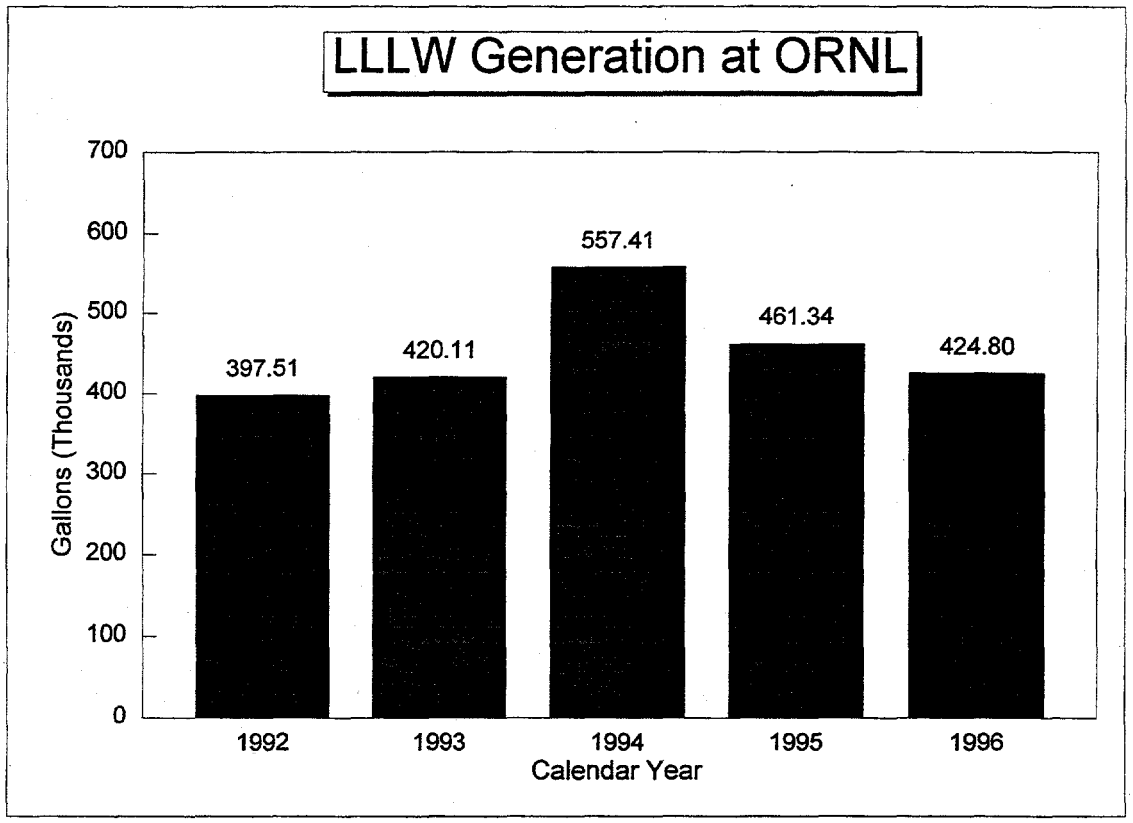


Figure 13. LLLW generation at ORNL. (ORNL-DWG. 97-5456)

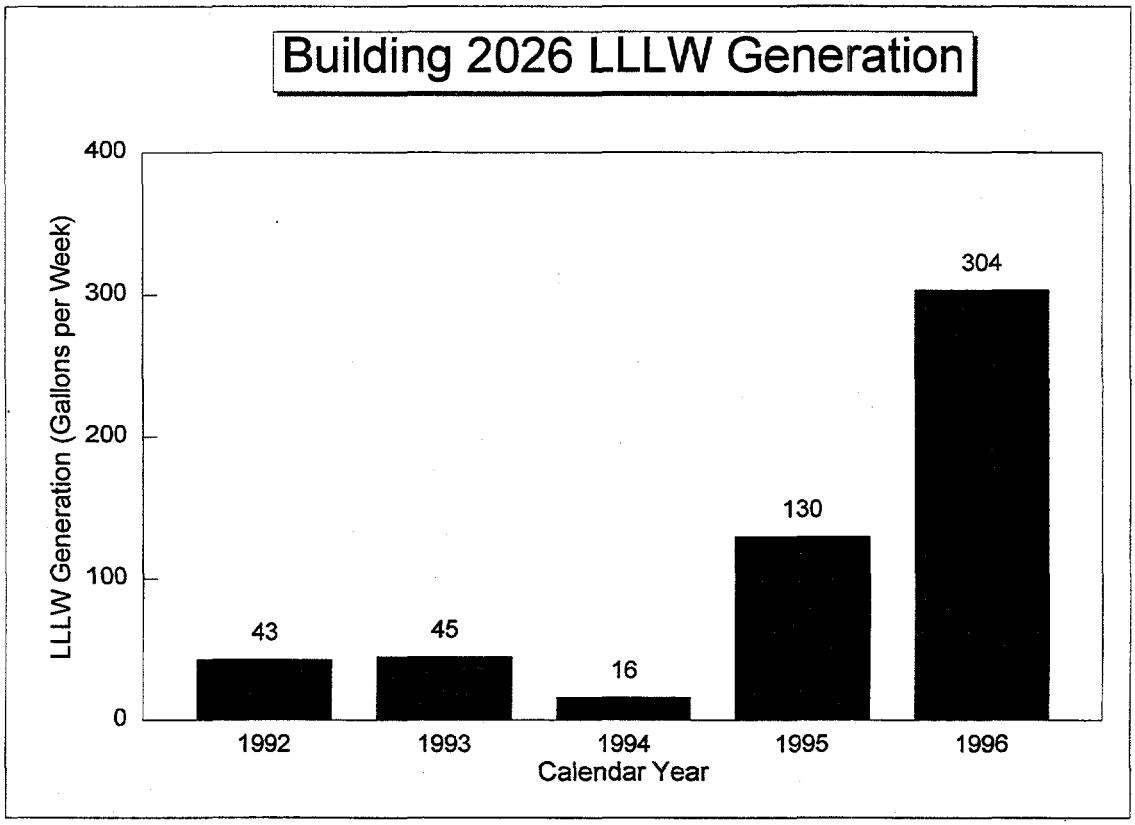


Figure 14. Building 2026 LLLW generation. (ORNL-DWG. 97-5457)

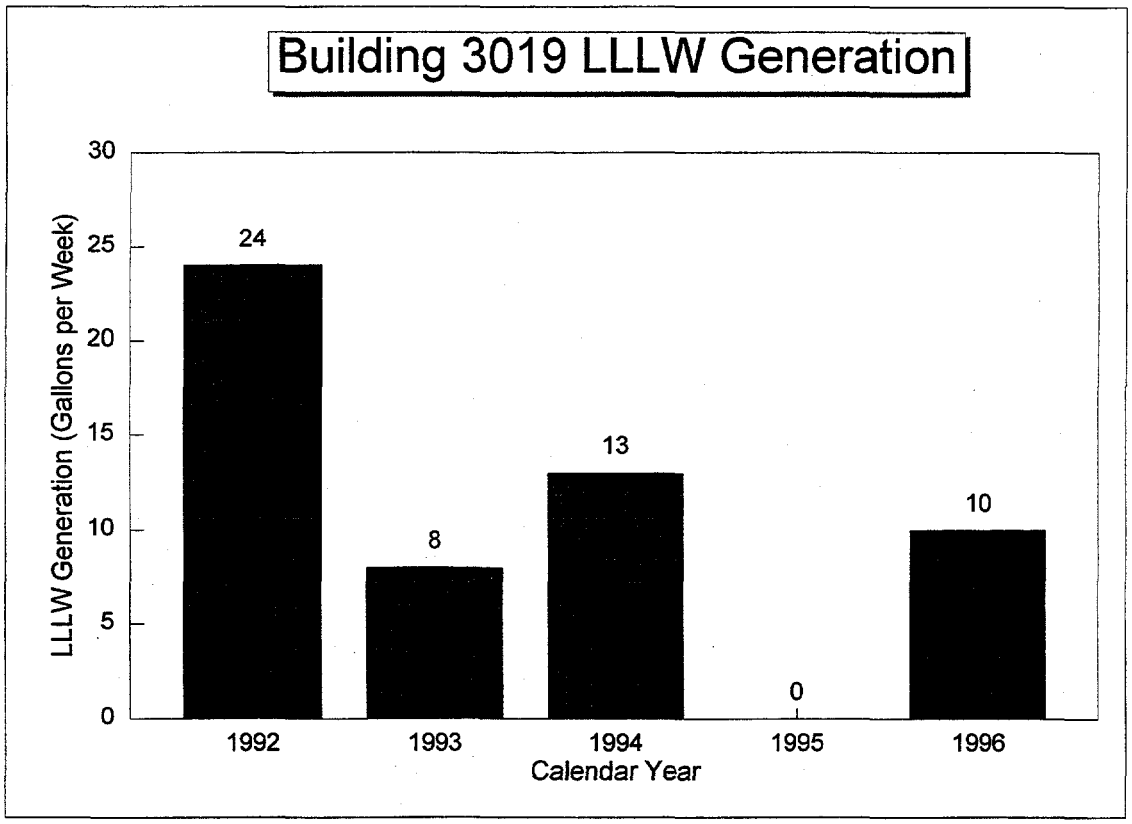


Figure 15. Building 3019 LLLW generation. (ORNL-DWG. 97-5458)

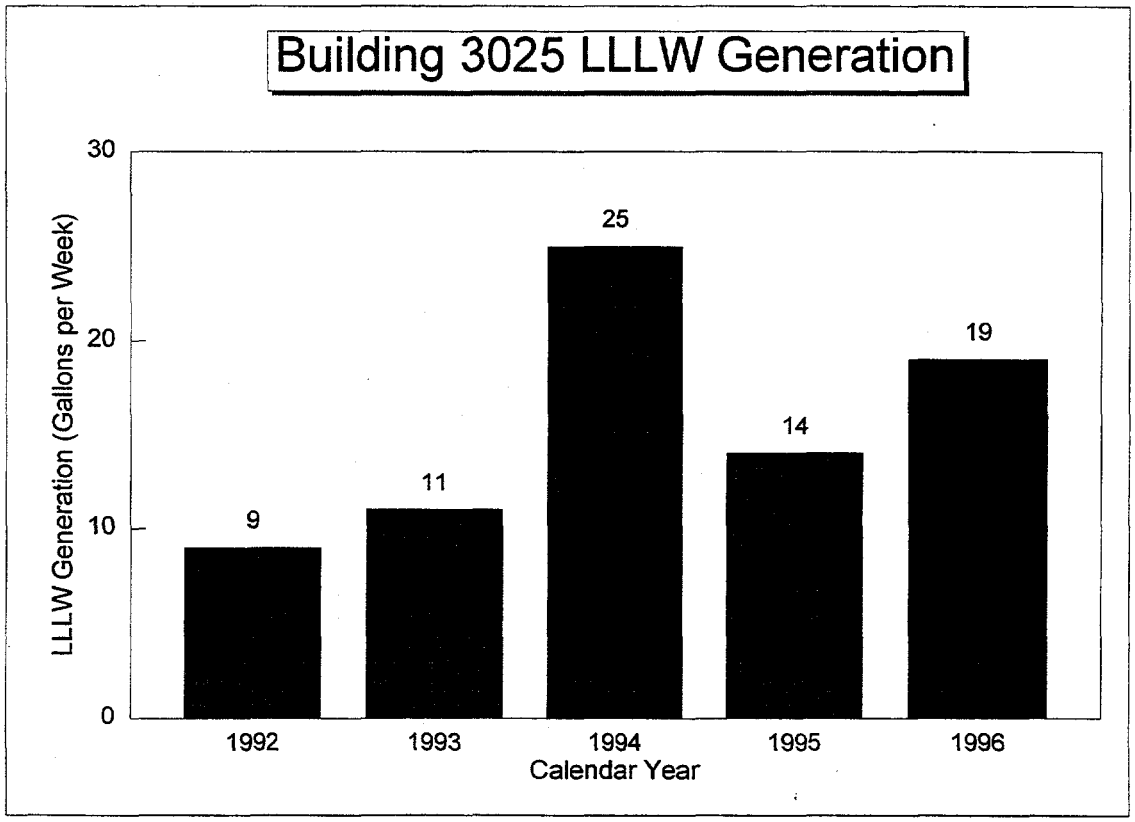


Figure 16. Building 3025 LLLW generation. (ORNL-DWG. 97-5459)

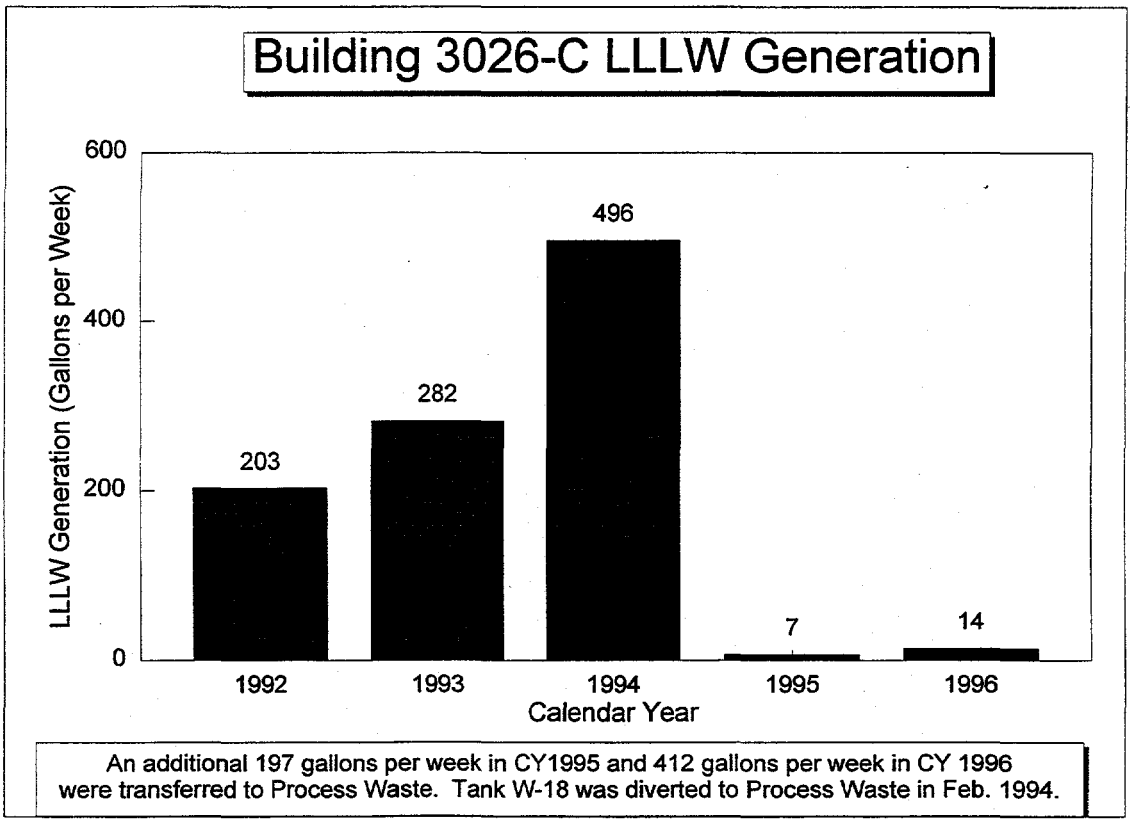


Figure 17. Building 3026-C LLLW generation. (ORNL-DWG. 97-5460)

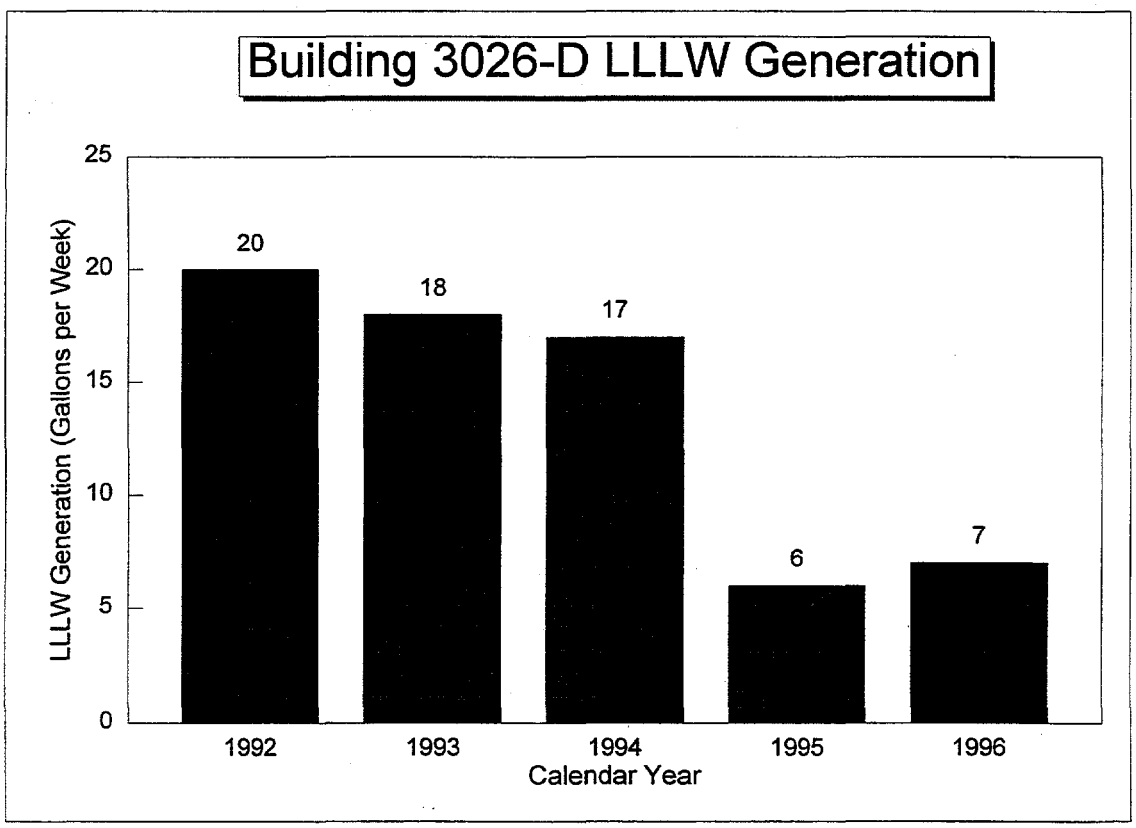


Figure 18. Building 3026-D LLLW generation. (ORNL-DWG. 97-5461)

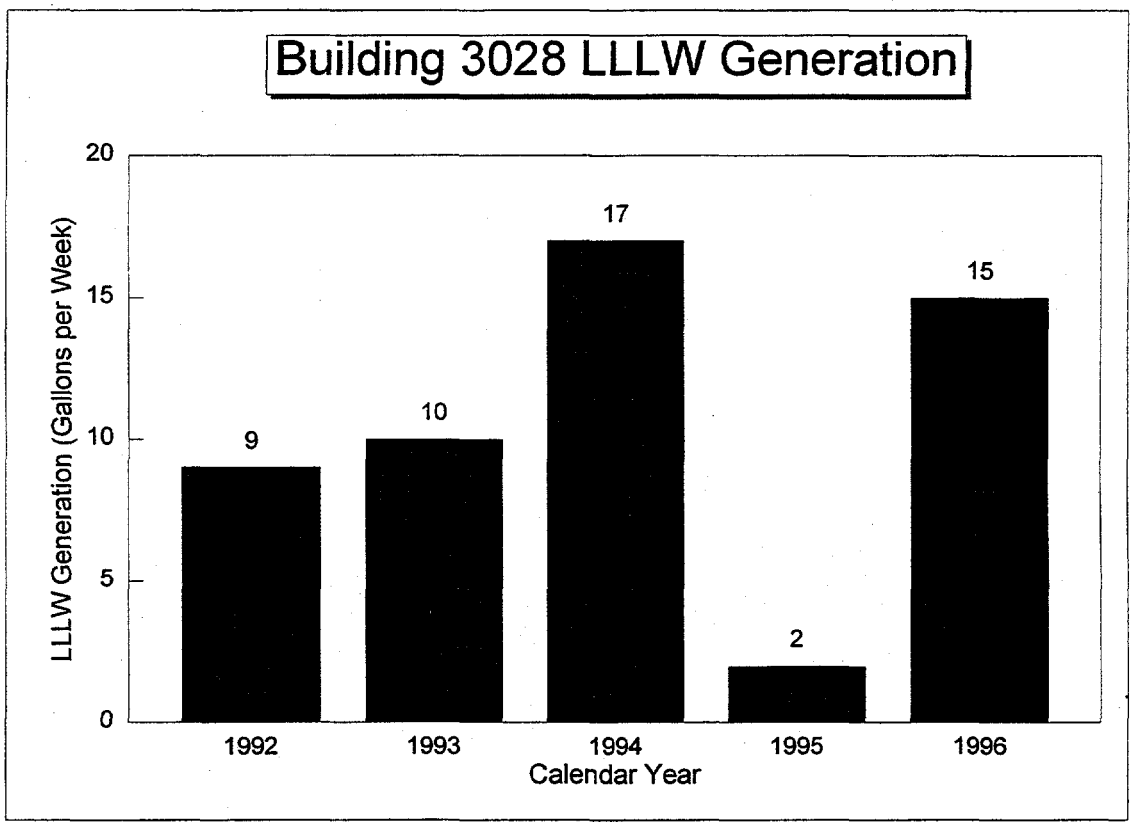


Figure 19. Building 3028 LLLW generation. (ORNL-DWG. 97-5462)

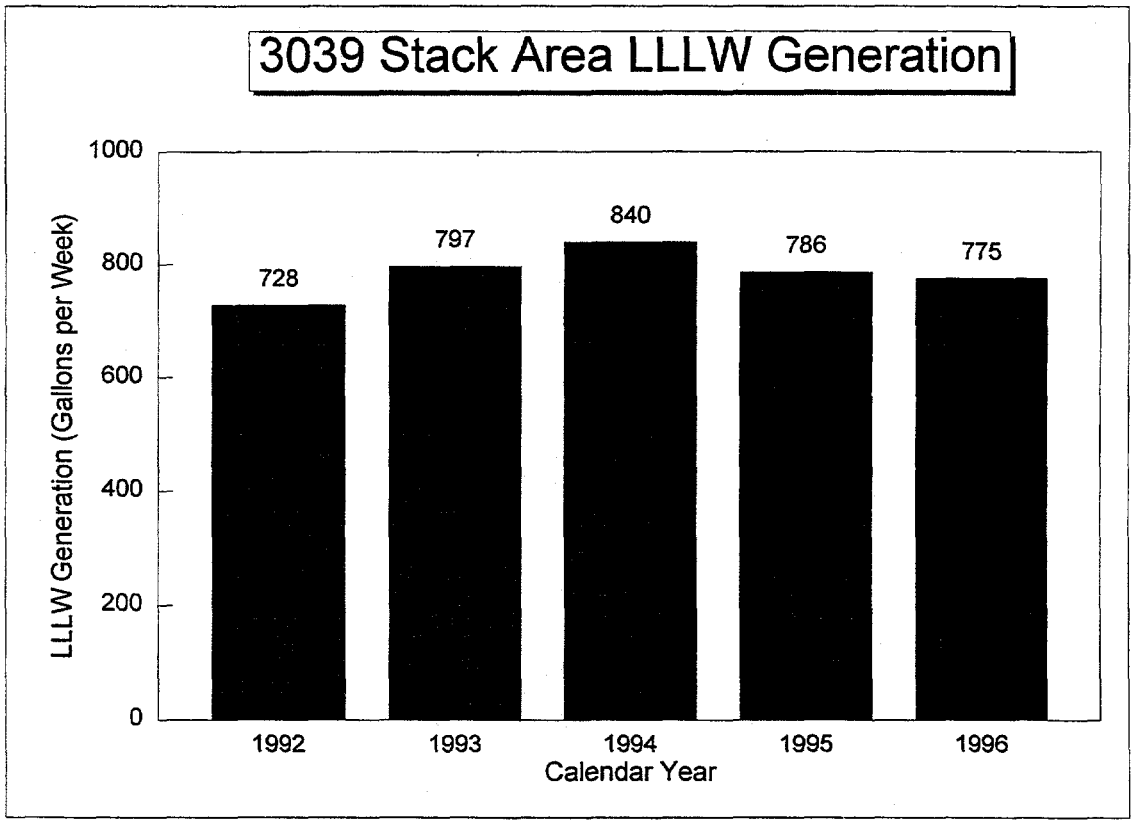


Figure 20. 3039 Stack Area LLLW generation. (ORNL-DWG. 97-5463)

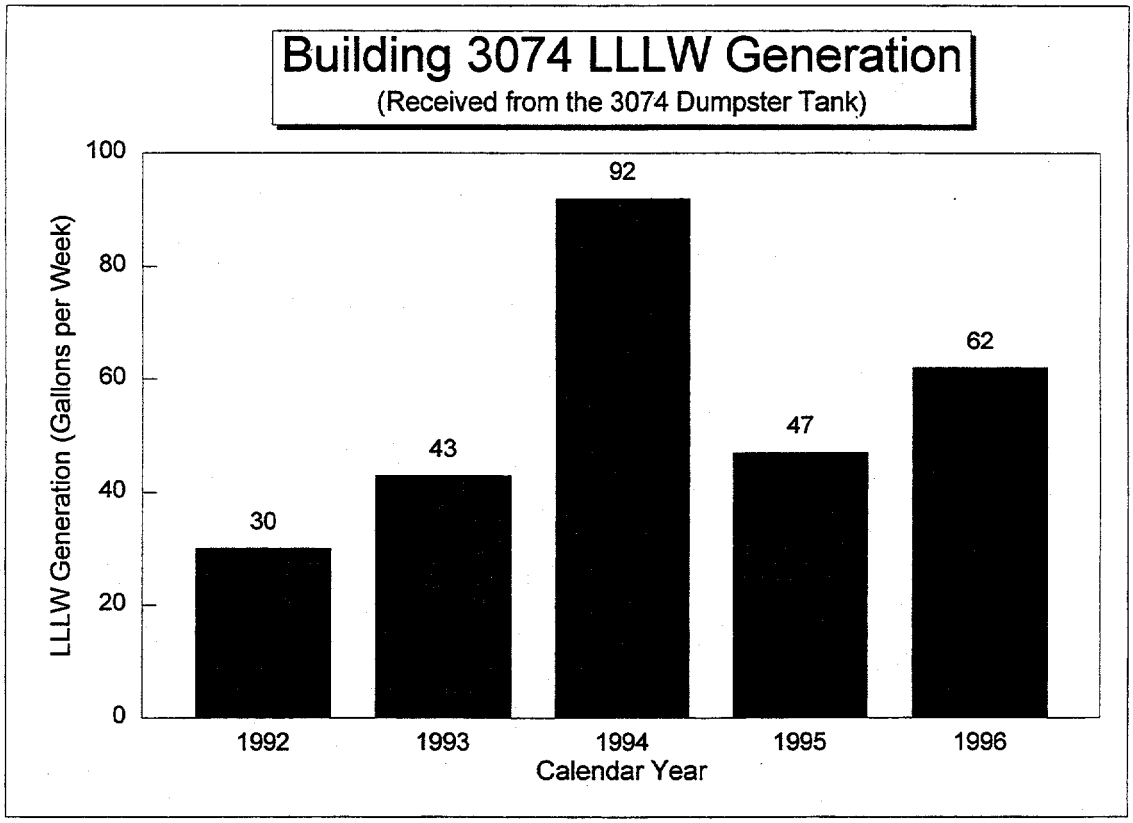


Figure 21. Building 3074 LLLW generation. (ORNL-DWG. 97-5464)

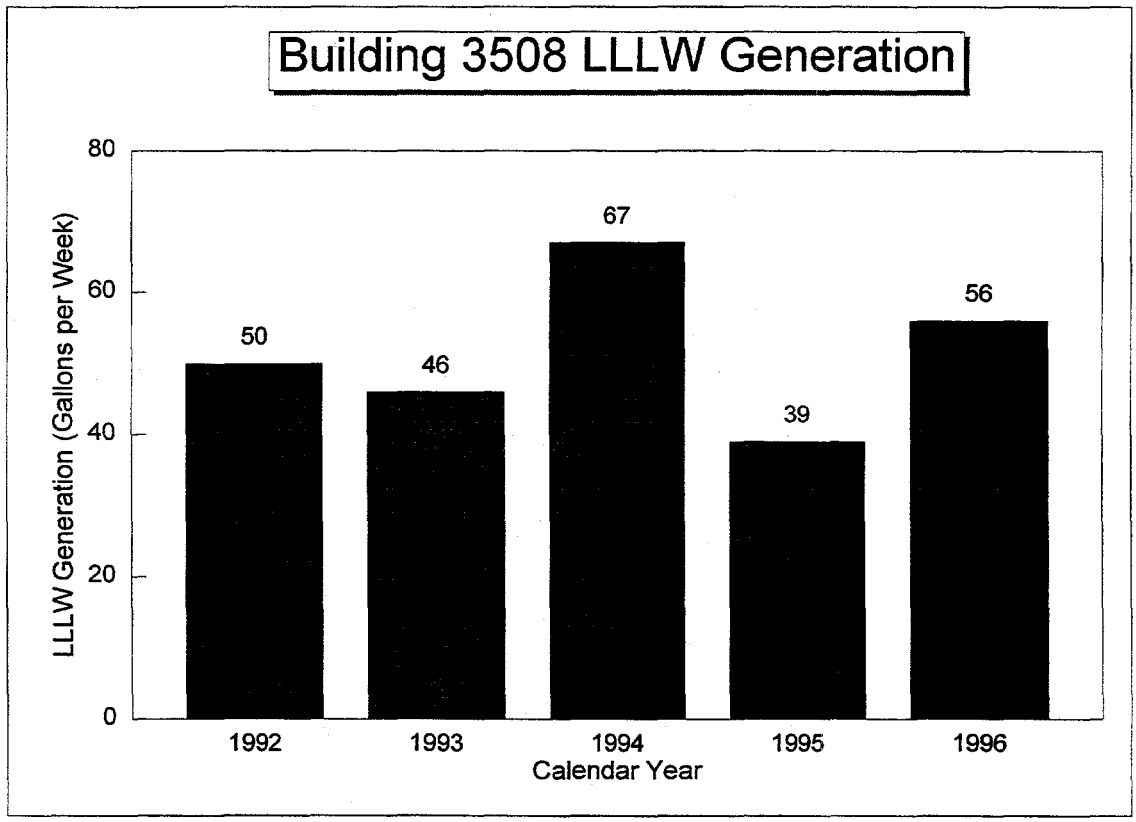


Figure 22. Building 3508 LLLW generation. (ORNL-DWG. 97-5465)

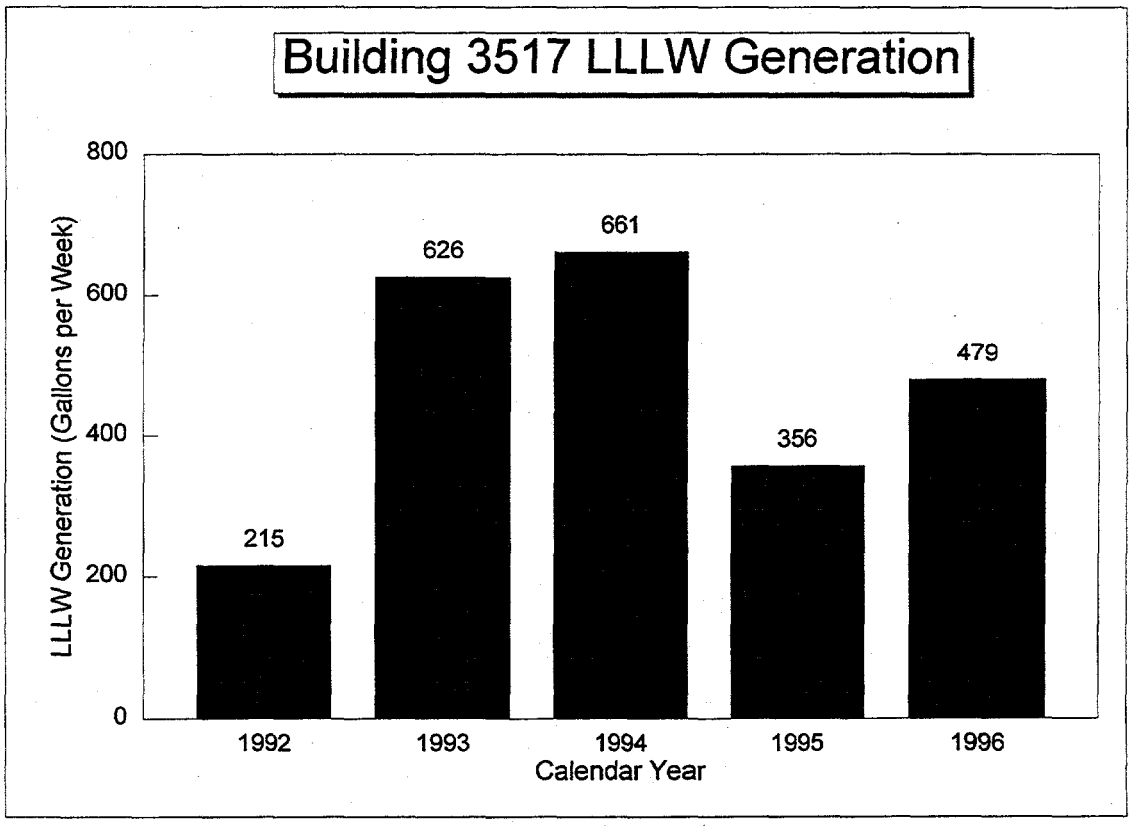


Figure 23. Building 3517 LLLW generation. (ORNL-DWG. 97-5466)

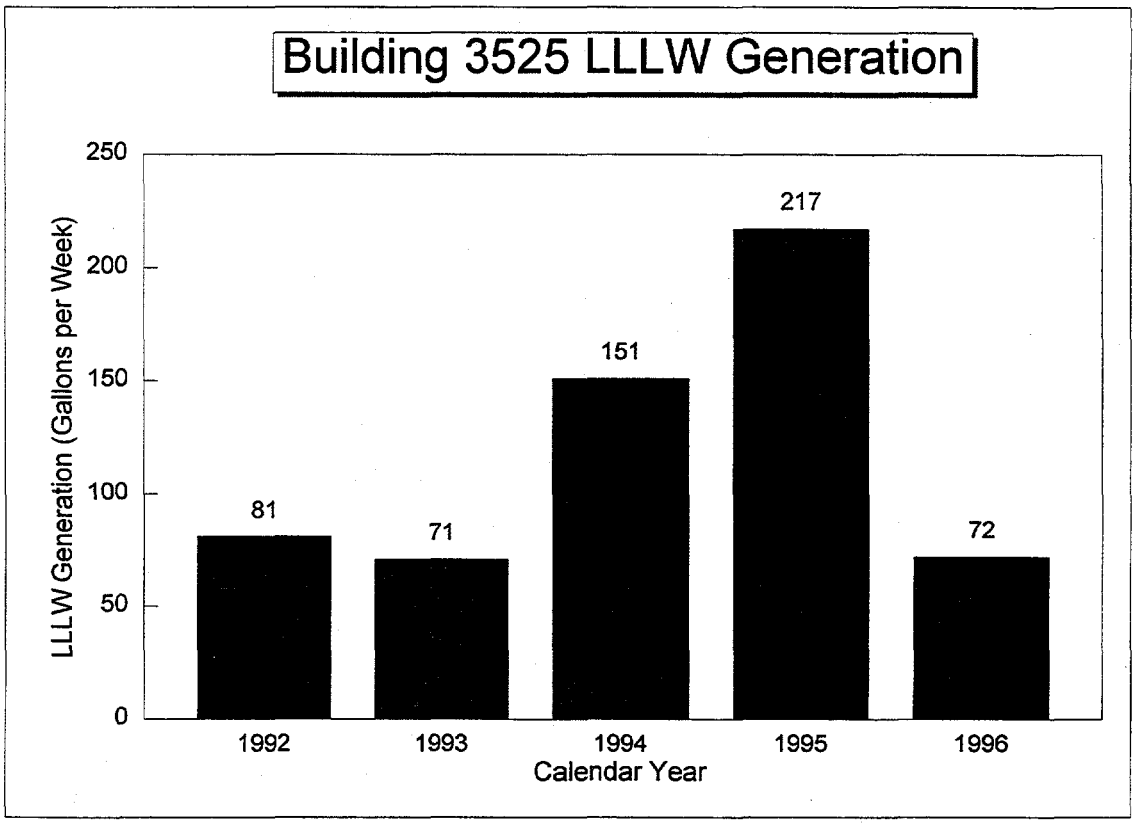


Figure 24. Building 3525 LLLW generation. (ORNL-DWG. 97-5467)

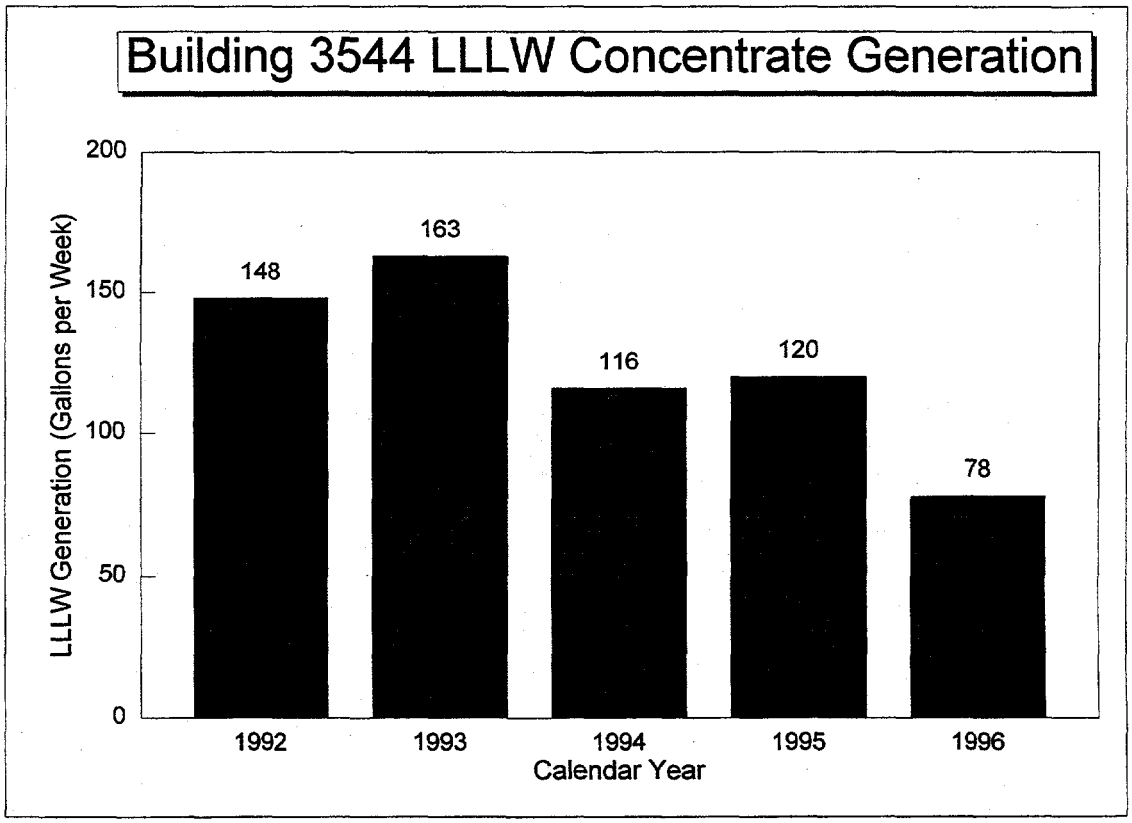


Figure 25. Building 3544 LLLW concentrate generation. (ORNL-DWG. 97-5468)

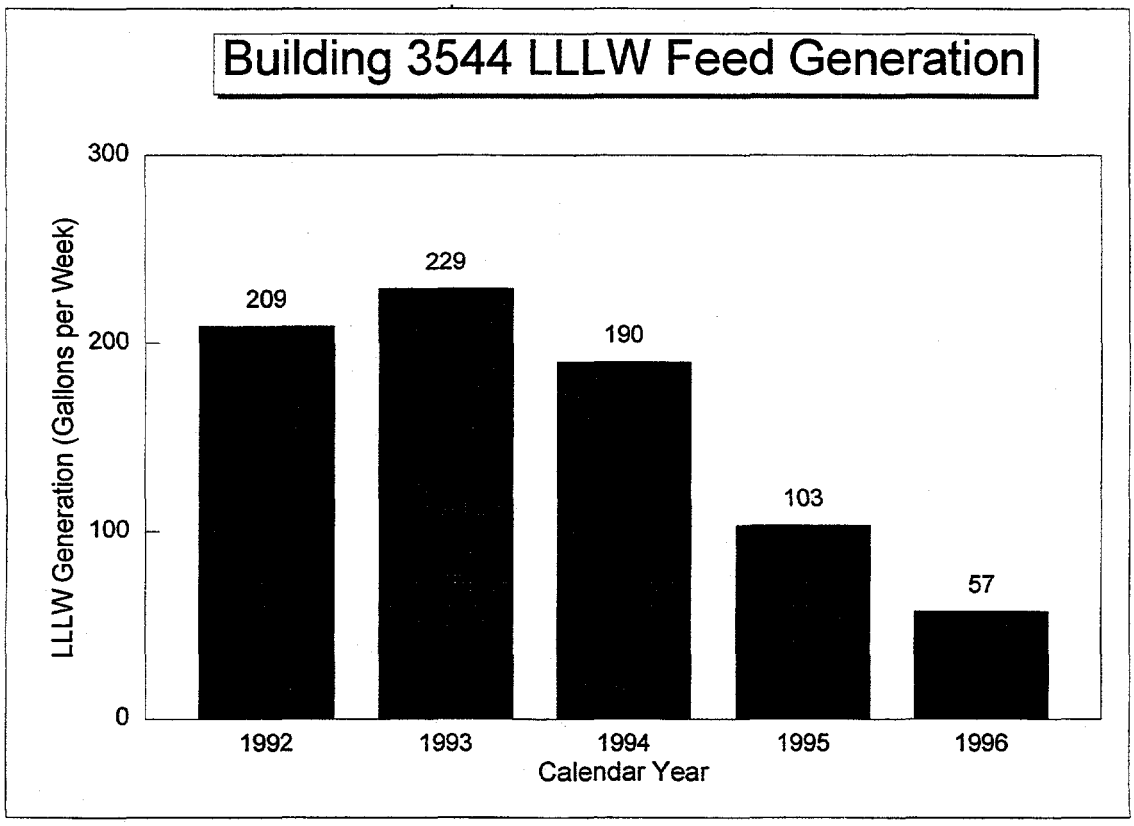


Figure 26. Building 3544 LLLW feed generation. (ORNL-DWG. 97-5469)

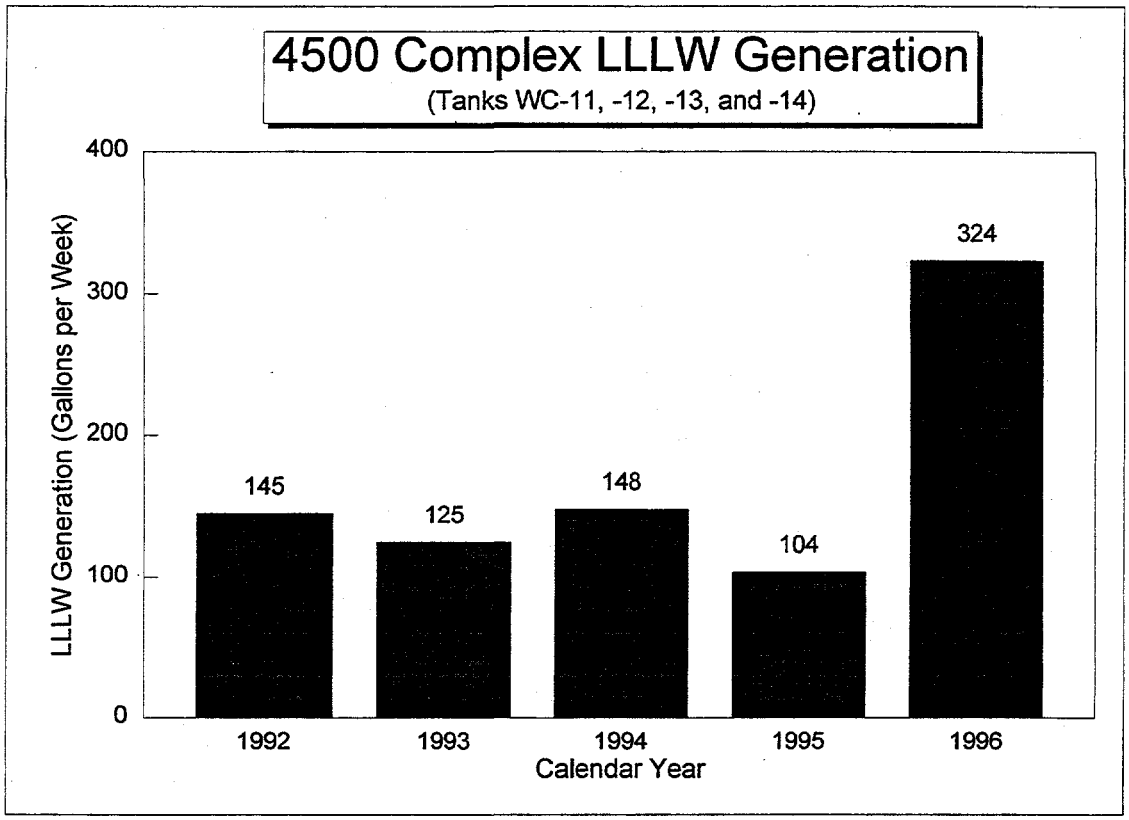


Figure 27. 4500 Complex LLLW generation. (ORNL-DWG. 97-5470)

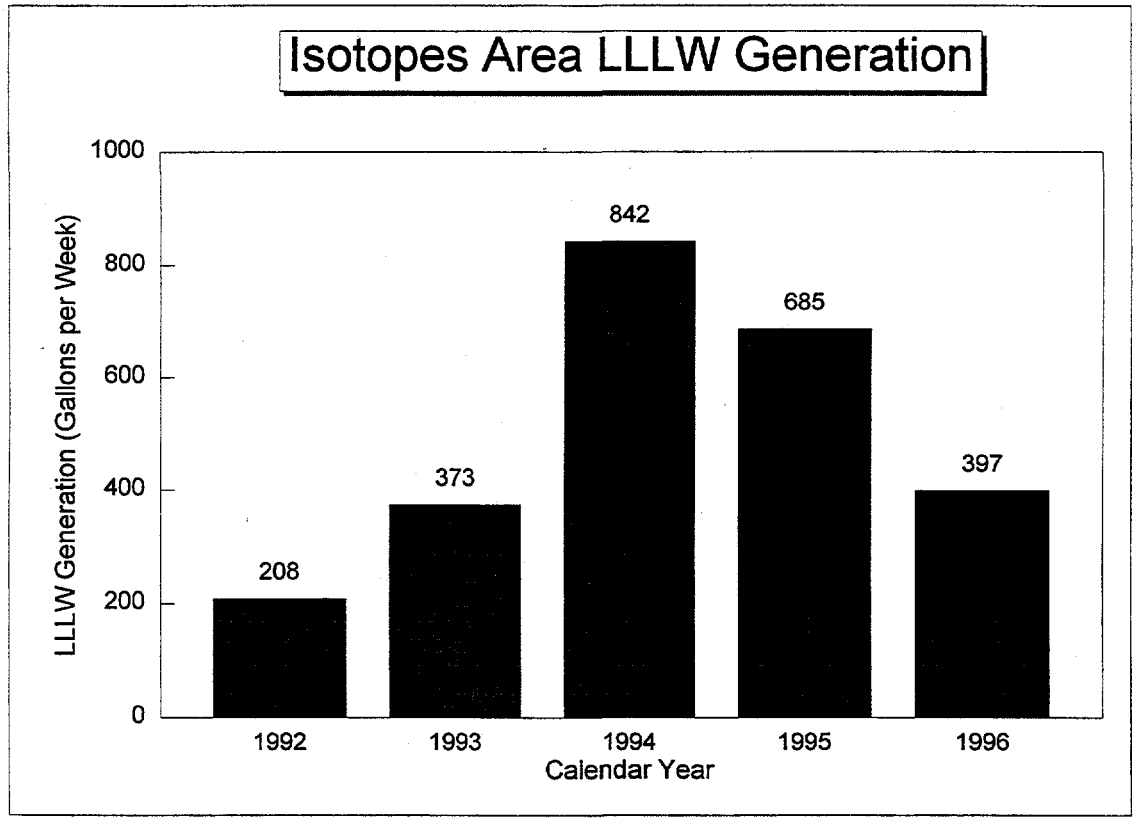


Figure 28. Isotopes Area LLLW generation. (ORNL-DWG. 97-5471)

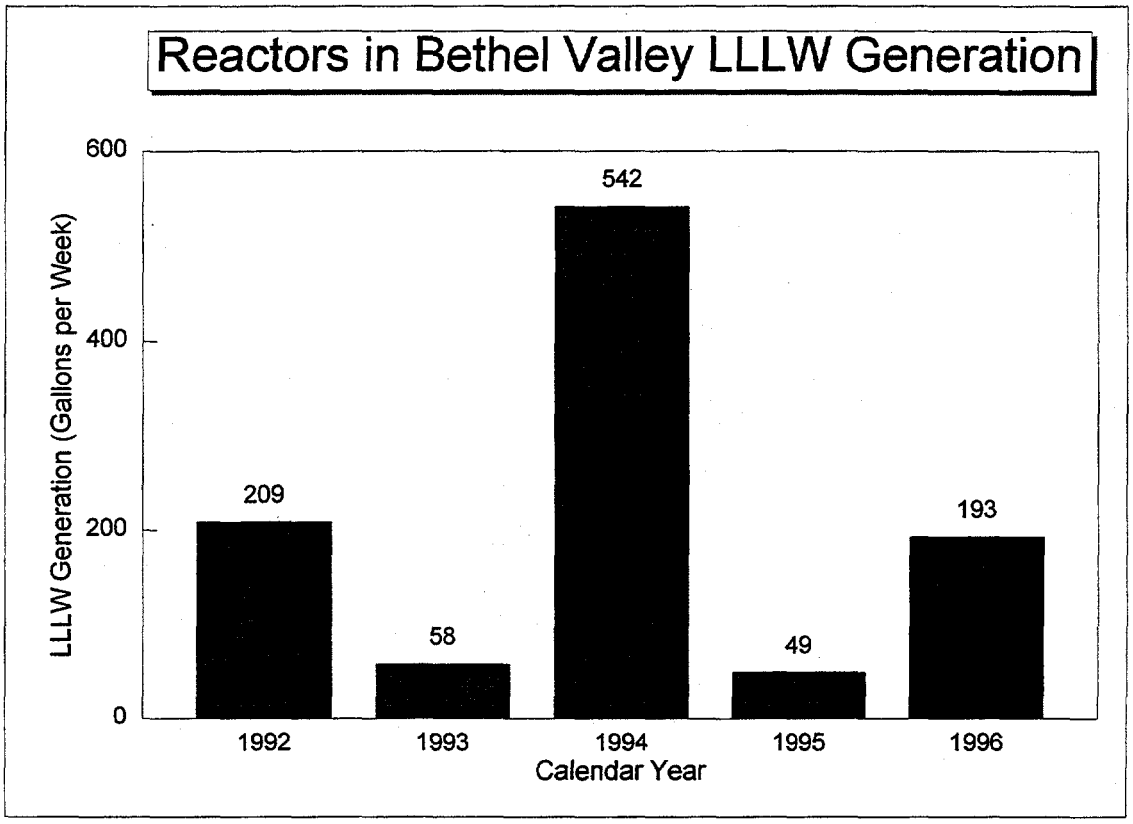


Figure 29. Reactors in Bethel Valley LLLW generation. (ORNL-DWG. 97-5472)

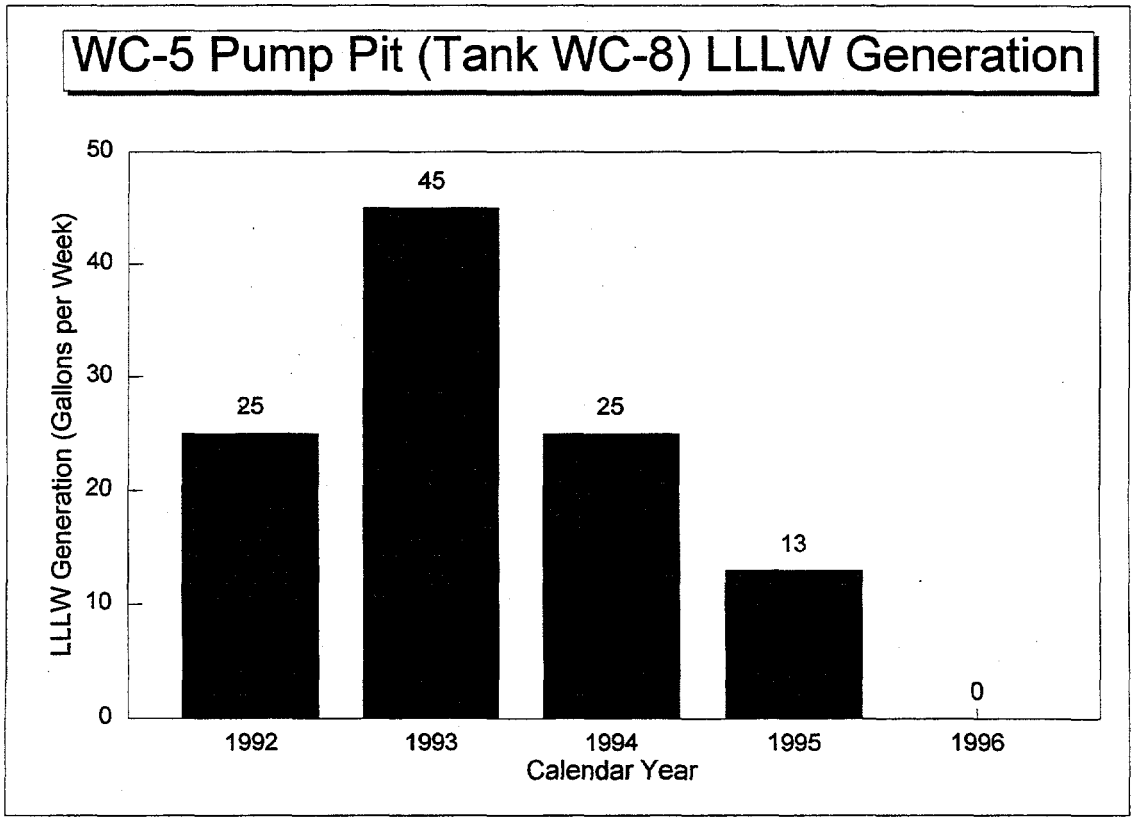


Figure 30. WC-5 Pump Pit (tank WC-8) LLLW generation. (ORNL-DWG. 97-5473)

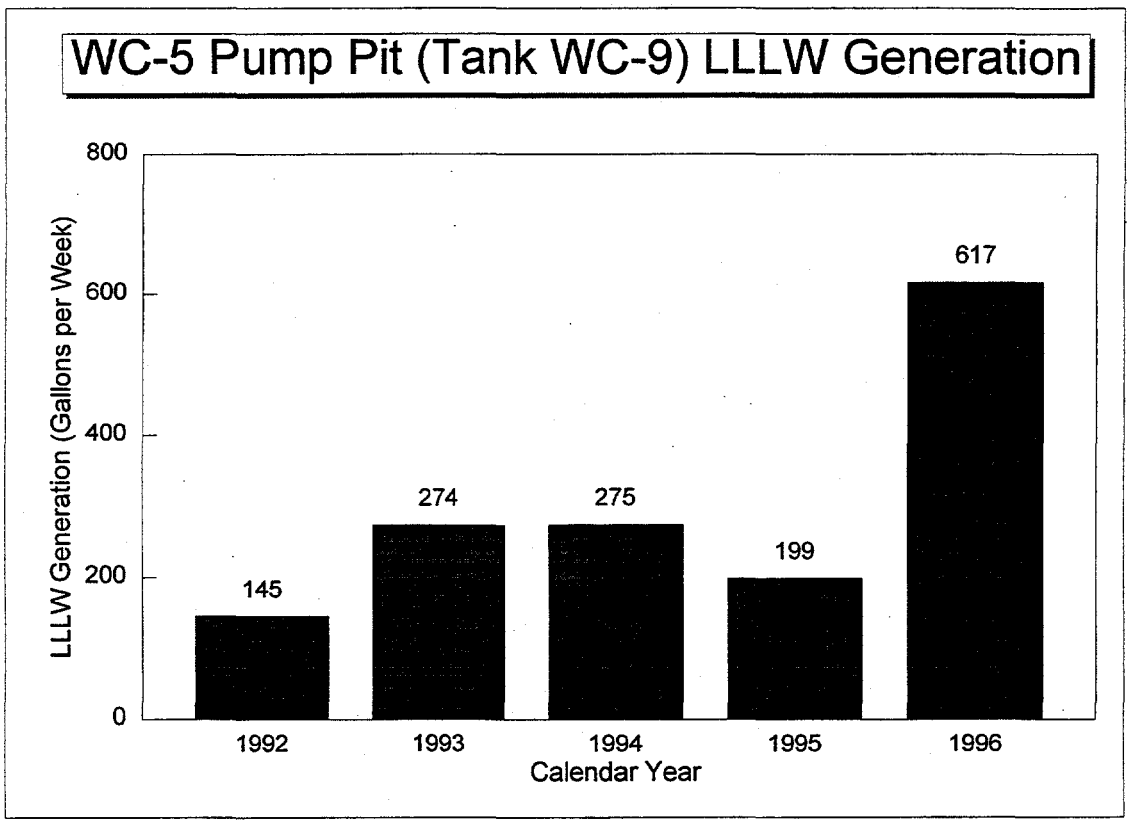


Figure 31. WC-5 Pump Pit (tank WC-9) LLLW generation. (ORNL-DWG. 97-5474)

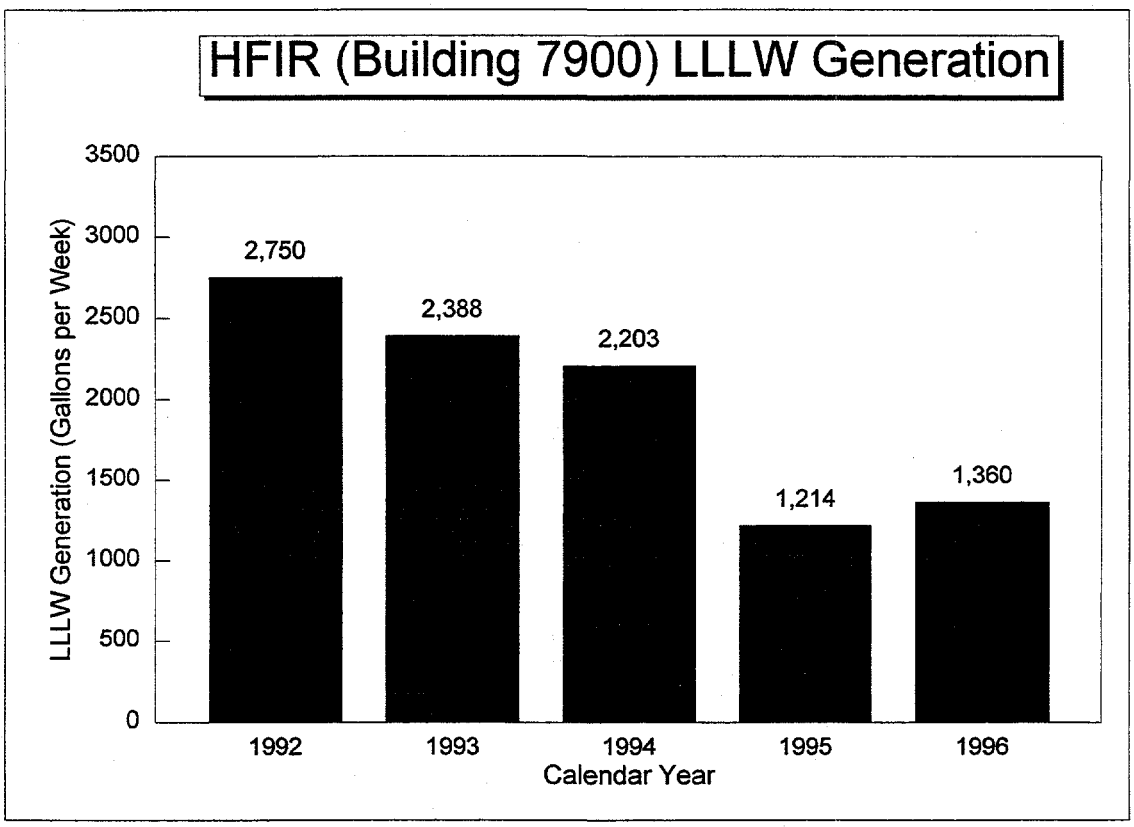


Figure 32. HFIR (Building 7900) LLLW generation. (ORNL-DWG. 97-5475)

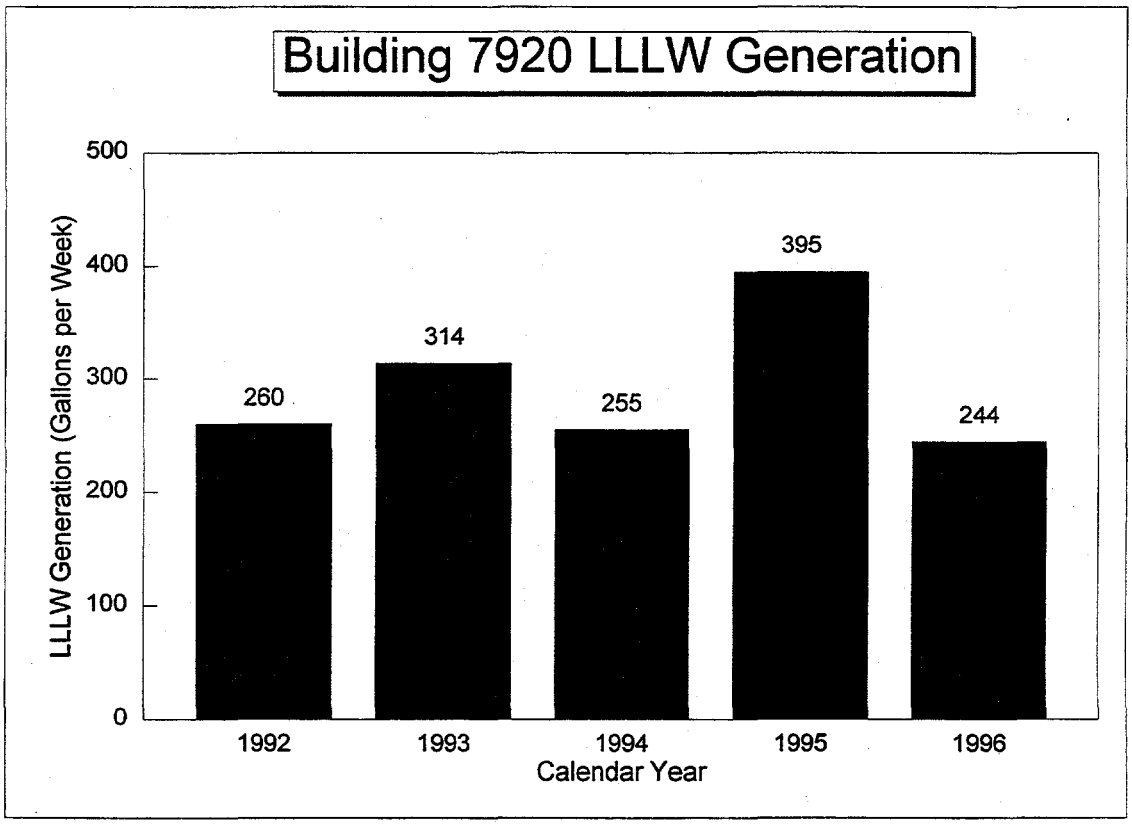


Figure 33. Building 7920 LLLW generation. (ORNL-DWG. 97-5476)

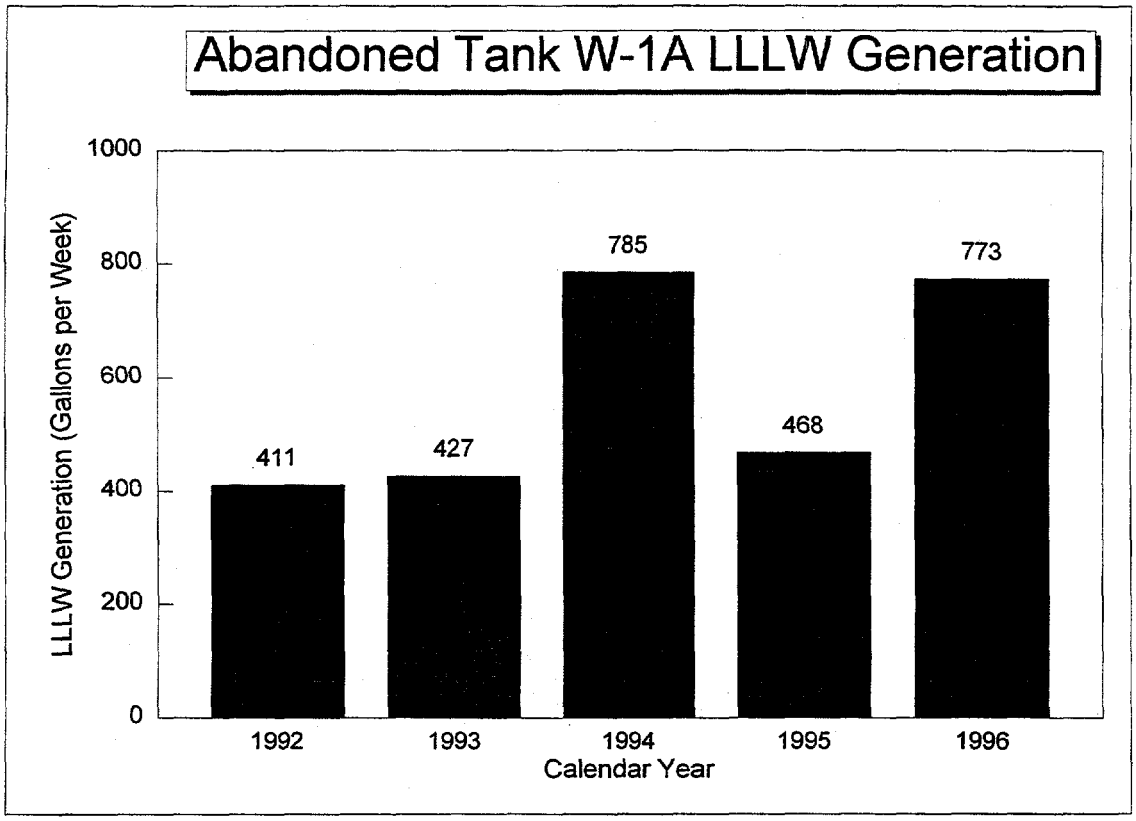


Figure 34. Abandoned tank W-1A LLLW generation. (ORNL-DWG. 97-5477)

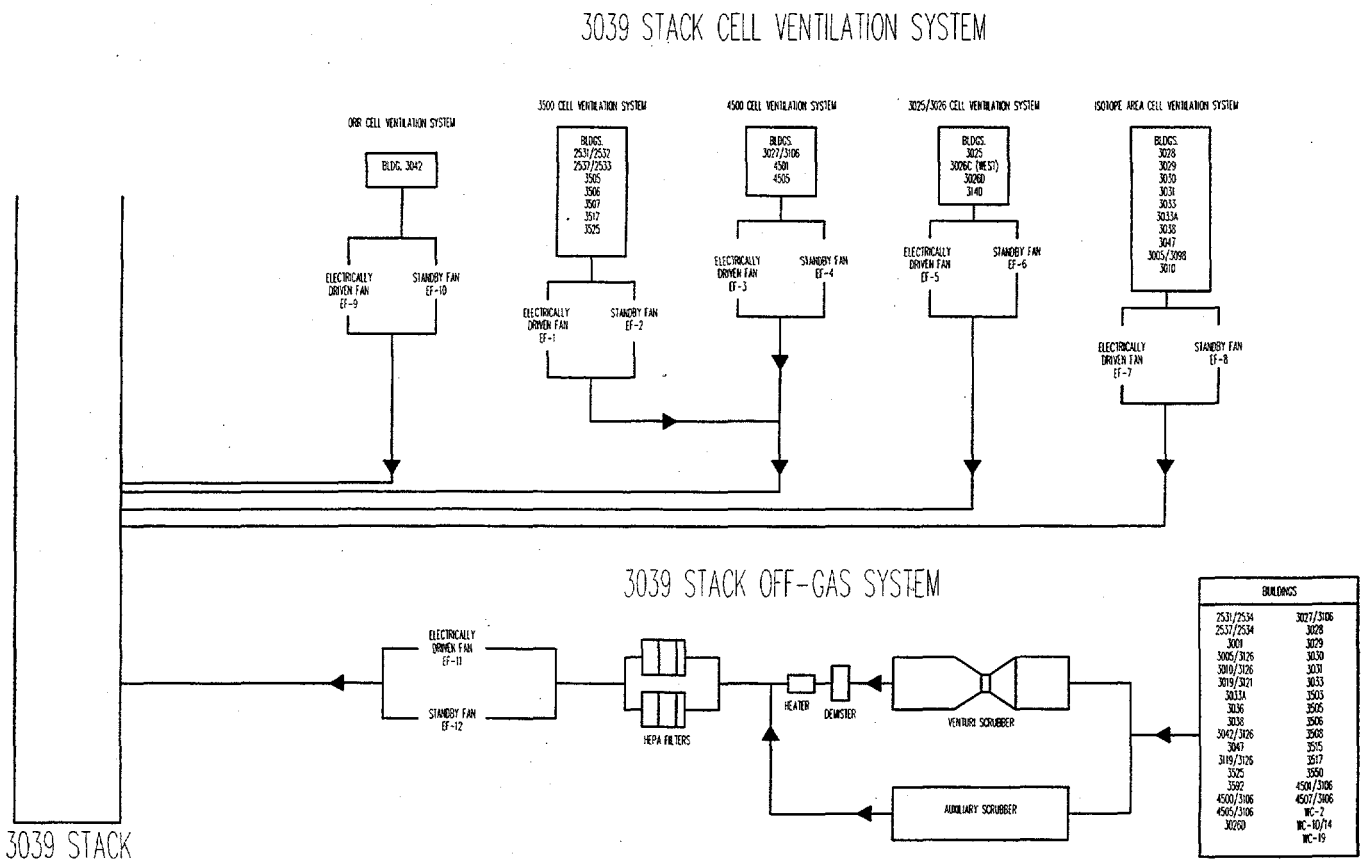


Figure 35. Diagram of the Gaseous Waste System. (ORNL-DWG. 96-3528)

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