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LIQUID AND GASEOUS WASTE OPERATIONS DEPARTMENT

ANNUAL OPERATING REPORT

CY 1992

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M. A. Gillespie
J. J. Maddox
C. B. Scott

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Prepared by
Oak Ridge National Laboratory
Oak Ridge, Tennessee 37831
managed by
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Acronyms

ADS	- Activity Data Sheet
ALARA	- As Low As Reasonably Achievable
Bq/l	- Bacquerels per liter
BV	- Bethel Valley
CADAM	- Computer Assisted Design And Manufacturing
C&TD	- Computer and Technology Development
CDR	- Conceptual Design Report
CFC	- Certified For Construction
CFM	- Cubic Feet per Minute
CYRTF	- Coal Yard Runoff Treatment Facility
CWISE	- Central Waste Information System Environment
CWMD	- Central Waste Management Division
DAS	- Data Acquisition System
DBMS	- Database Management System
DCS	- Distributed Control System
DEC	- Digital Equipment Corporation
DOE	- Department of Energy
EA	- Environmental Assessment
EASC	- Emergency Avoidance Solidification Campaign
EMC	- Environmental Monitoring and Compliance
ER	- Environmental Restoration
ERS	- Environmental Review Summary
ES&H	- Environmental Safety and Health
ESO	- Engineering Service Order
EWS	- Engineering Workstation
FFA	- Federal Facility Agreement
FRD	- Functional Requirements Document
FSD	- Functional System Design
FSET	- Facility Safety Evaluation Team
GAC	- Granular Activated Carbon
GET	- General Employee Training
GPM	- Gallons Per Minute
GPP	- General Plant Project
HASRD	- Health and Safety Research Division
HEPA	- High Efficiency Particulate Air
HFIR	- High Flux Isotope Reactor
HMIS	- Hazardous Materials Inventory System
HWOG	- Hazardous Waste Operations Group
I&C	- Instrumentation and Controls
ITE	- In-Tank Evaporation
IWMF	- Interim Waste Management Facility
IX	- Ion Exchange
LAN	- Local Area Network
LB	- Pound
LCD	- Limiting Conditions Document
LERC	- Laboratory Emergency Response Center
LGWOD	- Liquid and Gaseous Waste Operations Department
LLLW	- Liquid Low-Level Waste
LWSP	- Liquid Low-Level Waste Solidification Project

Acronyms (continued)

MCAS	- Motorized Carrier Automation System
MCS	- Monitoring and Control Station
MMES	- Martin Marietta Energy Systems
MV	- Melton Valley
MVST	- Melton Valley Storage Tank
NPDES	- National Pollution Discharge Elimination Standards
NRWTP	- Nonradiological Wastewater Treatment Plant (Bldg. 3608)
OIS	- Operator Interface Station
OIU	- Operator Interface Unit
OJT	- On-the-Job Training
OR	- Oak Ridge
ORNL	- Oak Ridge National Laboratory
ORR	- Oak Ridge Research Reactor (Bldg. 3042)
OSR	- Operational Safety Requirement
P&E	- Plant and Equipment
PC	- Personal Computer
PIP	- Process Improvement Performance
PMP	- Project Management Plan
PN	- Project Notification
PSET	- Plant Safety Evaluation Team
PSI	- Pounds per Square Inch
PW	- Process Waste
PWTP	- Process Waste Treatment Plant (Bldg. 3544)
QA	- Quality Assurance
QE&I	- Quality Engineering and Inspection
RCRA	- Resource Conservation and Recovery Act
RFD	- Request for Disposal
RDB	- Relational Database
RRB	- Readiness Review Board
ROC	- Radioactive Operations Committee
SARUP	- Safety Analysis Report Update Program
SWSA	- Solid Waste Storage Area
SWIMS	- Solid Waste Information Management System
SWOG	- Solid Waste Operations Group
TDEC	- Tennessee Department of Environmental Compliance
TOA	- Tennessee Oversight Agreement
TQM	- Total Quality Management
TVA	- Tennessee Valley Authority
UPS	- Uninterruptable Power Supply
UST	- Underground Storage Tank
WEAF	- Waste Examination and Assay Facility
WMRAD	- Waste Management and Remedial Action Division
WOCC	- Waste Operations Control Center (Bldg. 3130)
WODMAS	- Waste Operations Data Management and Analysis System
WTS	- Waste Tracking System

WASTE MANAGEMENT OPERATIONS SECTION
LIQUID AND GASEOUS WASTE OPERATIONS DEPARTMENT

Operating Report — Calendar Year (CY) 1992

1.0 OPERATING SUMMARY

1.1 PROCESS WASTE SYSTEM

A total of 6.05×10^7 gal of liquid waste was decontaminated by the Process Waste Treatment Plant (PWTP) ion exchange system during CY 1992. This averaged to 115 gpm throughout the year. When necessary, a wastewater sidestream of 50-80 gpm was treated through the use of a natural zeolite treatment system. An additional 8.00×10^6 gal (average of 15 gpm throughout the year) were treated by the zeolite system. Therefore, the average total flow treated at the PWTP for CY 1992 was 130 gpm. In mid-June, the zeolite system was repiped to allow it the capability to treat the ion exchange system's discharge due to rising Cs problems in the wastewater. While being used to treat the ion exchange system's discharge, it cannot treat a sidestream of wastewater. During the year, the regeneration of the cation exchange resins resulted in the generation of 7.83×10^3 gal of liquid low-level waste (LLLW) concentrate and 1.15×10^4 gal of LLLW evaporator feed. The head-end softening process (precipitation/clarification) generated 604 drums (4.40×10^3 ft^3) of solid low-level waste sludge. The zeolite treatment system generated approximately 8.40×10^2 ft^3 of spent zeolite resin, which was turned over to the Solid Waste Operations Department for disposal. See Table 1 for a monthly summary of activities at the PWTP. Figures 1, 2, 3, and 4 show a comparison of operations at the PWTP in 1992 with previous years. Figure 5 shows a comparison of annual rainfall at Oak Ridge National Laboratory (ORNL) since 1987.

A total of 1.55×10^8 gal of liquid waste (average of 294 gpm throughout the year) was treated at the Nonradiological Wastewater Treatment Plant (NRWTP). Of this amount, 1.40×10^7 gal were treated by the precipitation/clarification process for removal of heavy metals. Twenty-five boxes (1.60×10^3 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), Bldg. 3518 (steam plant demineralizer regenerant neutralization plant), the 190 pumping station, 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.

When the NRWTP was put into operation, the demineralizer regenerant from the ORNL Steam Plant was redirected from the neutralization facility (Building 3518) to the Coal Yard Runoff Treatment Facility (CYRTF), with Building 3518 maintained for backup in the event of heavy rainfall, thus resulting in the low amount of wastewater treated by the precipitation/clarification process. In early September, 1990, permitting problems relevant to the disposal of the CYRTF sludges forced this wastewater stream to be diverted back to Building 3518 for neutralization, with subsequent treatment at the NRWTP. Due to the extremely high amount of solids in this metals wastewater feedstream to the NRWTP, sludge generation from the NRWTP clarifiers increased dramatically (from three boxes (1.92×10^2 ft^3) in 1989 to thirty-two boxes (2.05×10^3 ft^3) in 1991, and twenty-five boxes (1.60×10^3

ft^3) in 1992). This wastestream will be diverted back to the CYRTF when the regulatory concerns are resolved.

1.2 LIQUID LOW-LEVEL WASTE SYSTEM

Both the A2 and 2A2 evaporator systems operated normally during the year. A total of 1.82 x 10^5 gal of LLLW were processed through the A2 evaporator system and 2.20 x 10^5 gal of LLLW were processed through the 2A2 evaporator system. There was 8.20 x 10^3 gal of concentrate transferred from the A2 system and 1.28 x 10^3 gal of concentrate transferred from the 2A2 system to the waste storage tanks. See Table 3 for a monthly summary of activities at the evaporator systems and Fig. 6 for a graphical representation of the amount of concentrate presently stored at ORNL awaiting disposal. See Fig. 7 for a graphical comparison of the generation of LLLW at ORNL and Figures 8 through 29 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 during the reporting period means that continuous ventilation service was provided to all customer facilities except during scheduled maintenance periods and was operated within the conditions set in the Operational Safety Requirements (OSRs) and the Limiting Conditions for Operations Document (which replaced the OSR during the year).

1.4 LIQUID LOW-LEVEL WASTE SOLIDIFICATION PROJECT

The Liquid Low-Level Waste Solidification Project (LWSP) Campaign I, which was started during late 1991, was concluded by February 1992. Sixteen solidified waste forms were generated during January and another nine were generated during the month of February. This brought the total number generated during the campaign to fifty-nine. The last LLLW was transferred on February 12, 1992 and solids were added on the following day. This concluded the campaign to solidify 50,000 gallons of supernate from the Melton Valley Storage Tanks (MVSTs), which was a March 31 Award Fee Milestone.

2.0 UPGRADE ACTIVITIES

The LWSP Campaign I was concluded during February, 1992 (see Section 1.2.4). Efforts were then initiated for LWSP Campaign II, which will solidify another 50,000 gallons of supernate from the MVSTs. This campaign is scheduled to occur during mid-1993. See Section 2.8 for a detailed discussion of activities in support of this campaign.

Work continued on the replacement of LLLW Evaporator 2A2. Planning documentation in support of the replacement project was prepared throughout the year and M.K. Ferguson personnel were brought into the planning phase for the project. The Readiness Review for this maintenance activity is scheduled to be started in January, 1993, with the actual replacement to be carried out during the second quarter of 1993. Procurement documentation for a new spare evaporator vessel was prepared and is scheduled to be released in January, 1993 (see Section 2.9 for a detailed discussion).

The Federal Facility Agreement (FFA) went into effect on January 1, 1992, which requires the removal from active service of any LLLW tank system if it is found to be leaking (including inleakage). Several Liquid and Gaseous Waste Operations Department (LGWOD) LLLW tanks were removed from active service since they had been determined to collect inleakage. These tanks were: WC-5, WC-6, WC-8, WC-9, WC-11, WC-12, WC-13, WC-14, W-12, W-17, and W-18. The FFA Readiness Review Board (RRB) inspected each of the generator's facilities to ensure that the drains leading to these tanks were removed from service (normally capped off). For these facilities serviced by LLLW collection tanks taken out of service, bottling and trucking operations were set up and approved by the FFA RRB before being placed in service. During the year, twenty-one pickups were made of LLLW Bottle Packages (up to 2 gallons each) from three approved generators at ORNL.

Another major undertaking during the previous year has been the Phase I Safety Analysis Report Update Program (SARUP) work for the LGWOD facilities. The SARUP process is required for all ORNL facilities to upgrade facility safety documentation. As a result of this program, twelve facilities were screened out during the Preliminary Hazard Screening Worksheet Phase of the Program. Nine facilities were retained for analysis during Phase I of this program. Seven of these facilities were found to be Generally Accepted, one (LWSP) was found to be a Low Hazard, and one (LLLW System) was found to be a Moderate Hazard. Safety documentation for the facilities found to be screened out for further analysis or Generally Accepted were completed at this point. A Safety Study was required for the LWSP campaign since it was a Low Hazard, and a Safety Analysis Report and Operational Safety Requirements (OSR) were required to be prepared for the LLLW System per requirements for a Moderate Hazard. During 1992, the Logic Model and the revised Operational Safety Requirements for the LLLW System were completed, with the OSR document being submitted to the Department of Energy - Oak Ridge Operations (DOE-OR) for approval during December. Work on Phase II for the LLLW System was initiated, with completion of the safety documentation scheduled for 1998.

Computer activities continued to play a large part in LGWOD activities. The LGWOD computer system specialist continued to oversee setup of the Waste Operations Data Management and Analysis System (WODMAS), which will provide computer services for the Waste Management Section. He also served as Waste Management's representative on a Process Improvement Performance (PIP) team developing a Centralized Waste Tracking System to meet the reporting needs of the Tennessee Oversight Agreement (TOA). This centralized tracking system required a large amount of coordination of comments and ideas from each of the waste organizations at ORNL, as well as negotiations with representatives from the Y-12 and K-25 sites. Other activities included preparations for converting the Distributed Control System (DCS) operator systems to an up-to-date model in 1993, which requires the reprogramming of all of the console software. Other support was given to assisting in the development of the software for the Bethel Valley LLLW Line Item, which will be tied into the DCS.

2.1 NONRADIOLOGICAL WASTEWATER TREATMENT PLANT

July

The installation of dual strainers on the sulfuric acid pumps at the NRWTP was completed. These strainers are utilized to filter out sulfuric acid salts from the acid as it is pumped through the chemical addition system. Dual strainers were put in so that one strainer can be taken off-line and cleaned while the other strainer is on-line, thus avoiding the need to shut down the plant.

The replacement of the iron polymer piping at the NRWTP with polyethylene tubing was completed. The new configuration will allow the operators to change out plugged polymer lines without shutting down the system.

The breakers in the electrical feed system to the NRWTP were upgraded. This upgrade was facilitated due to an alert from the Siemens Company referencing a possible safety problem with the breakers that were initially installed in the electrical feed system.

2.2 PROCESS WASTE TREATMENT PLANT AND THE PROCESS WASTE (PW) SYSTEM

February

The installation of a double-diaphragm pump on the clarifier sludge draw-off system at the PWTP was completed. This pump is utilized to remove heavy sludges from the clarifier and transfer them to the sludge drying system.

March

Two new Process Waste Tankers arrived on site. These MC 307/312 Tankers were purchased for the transport of Process Waste from outlying areas to the PWTP and NRWTP. Each tanker has a capacity of 5000 gallons.

The recirculation sampling pumps at Process Manholes 114 and 234 were fitted with floating intakes to prevent the pumping of sediment through the sampling/monitoring

systems. These manholes are utilized to sample and monitor the process wastewater discharges from the Oak Ridge Research Reactor (ORR) and Isotopes Circle.

June

A new pumping system was installed at the PWTP for the purpose of removing radioactive Cs-137 from the discharge of the PWTP before sending the wastewater to the NRWTP for final treatment. Due to some fugitive waste flows into the process waste collection system which were extremely high in Cs-137 concentrations, the Cs-137 discharges from the PWTP, and therefore the NRWTP, were increasing. The new pumping system allows the facility operators to pump the discharges from the cation exchange columns back up to the zeolite columns at the head end of the plant for final CS-137 removal before transferring the stream to the NRWTP. The discharge concentrations at the PWTP decreased from approximately 800-900 bq/l of Cs-137 to <10 bq/l. One constraint of this system configuration change is that the zeolite columns cannot be used to increase the plant capacity for Sr-90 removal during periods of high flows or maintenance shutdowns when they are being used to treat the discharge from ion-exchange columns.

A bypass vent for the L-14 Nitric Acid Tank at the PWTP was installed and tested. This vent contains an orifice so that the tank will vent much more slowly when being depressurized after a transfer. The slowing down of the venting of the tank results in a much lower venting of nitric acid fumes to the atmosphere.

July

Modifications were made to the Melton Valley caustic addition system due to a failure in the Process Controller. The system is working well at this time.

Plant and Equipment personnel completed the installation of a conductivity probe in the acid tank truck. This probe gives an alarm if the tank is filled past a predetermined set point, thus giving an additional safety feature to compliment the existing float-type level indicator.

An automatic recycle valve was added to the evaporator feed system at the PWTP. This valve will enable the feed to the evaporator to be controlled automatically. By automatically controlling the feed level, the Chemical Operators do not have to adjust the feed valves manually, which was considered a safety hazard.

The following painting was completed as part of the LGWOD Facility upgrade program:

- The PWTP clarifier and support steel was painted.
- The sand filter at the head-end of the zeolite system at the PWTP was painted.
- The breakers and electrical conduit in the compressor room at Building 7830 were painted.

2.3 LIQUID LOW-LEVEL WASTE SYSTEM

January

The contracts for the procurement of the three compressors for In-Tank Evaporation (ITE) were let. The two 100-lb. instrument compressors (to supply instrument air to Buildings 7830 and 7860) were supplied by the Tencarva Machinery Company. These compressors were specified to be rotary type, oil free, and air cooled. The 30-lb. compressor (which supplies the dry air for ITE) was supplied by Air Components and Systems, Inc. It was specified as a single-staged, oil free, centrifugal air compressor with a water cooled closed loop cooling system. Delivery of the compressors took place in February. The old compressors have been removed and the facilities are being upgraded in preparation for the installation of the new compressors. This installation task will take approximately six weeks.

February

The drilling of penetrations to the 4VS-27 and 4VS-28 sumps at the MVSTs' was completed. These penetrations were used to facilitate the installation of a suction pipe directly into the sumps to improve the capabilities for emptying the sumps. These penetrations also allow samples to be taken directly from the sumps.

The compressor pads at Buildings 7830 and 7860 were decontaminated in preparation for installation of the new compressors. Three compressors are to be installed; one 30 lb. high volume compressor to be used as the source for the air bubbled through the MVST tanks during ITE and two compressors which will be utilized for instrument air. The instrument air compressors have arrived on site during the month.

March

A permanent nitrogen line was installed which extends from the East side of Building 7830 to the annulus test station on the West side of the building. The addition of this tubing will facilitate an easier operation for adding nitrogen to the double-contained piping annulus when warranted.

A hose reel was installed on the North side of Building 7830 to improve the aesthetics of the facility.

The liquid level instrumentation used to monitor the levels of LLLW Tanks T-1 and T-2 was upgraded to give more accurate level indications.

The new instrument air compressor at Building 7830 was installed and put into operation. This compressor was one of three compressors being installed in order to restart ITE. Installation of the other two compressors, one an instrument air compressor and one which will be used to supply the sparge air, was initiated.

A locking device was installed on the W-12 Valve Pit to prevent unauthorized entry into the pit. This task was carried out for personnel safety reasons, as the pit was declared a "high

radiation area" by ORNL Health Physics. The W-12 tank is a LLLW tank utilized to collect waste from the Building 3525 area.

The Hot Off-Gas Pot, which is utilized to collect condensate from the Central Off-Gas System, was sampled to determine whether this wastestream could be diverted from the LLLW system to the Process Waste System. The characterization of the waste resulted in the decision to transfer this stream to the Process Waste System. This diversion will take place as part of the Bethel Valley Federal Facility Agreement (FFA) Line Item, which is now at the Conceptual Design Report (CDR) stage.

April

The demisters at Building 7830 were inspected to ascertain what changes could be made in order to increase their efficiency, thus eliminating the wetting of the High Efficiency Particulate Air (HEPA) filters during ITE. It was decided that, due to the configuration of the demister vessels, no changes were plausible. New demister meshes have been ordered and will be installed upon arrival.

The concrete pads which will support the Air Dryer and the Closed Loop Cooling Water System for the air compressor which will supply the air for ITE were formed and poured.

The 90% Draft Facility Test Plan for the Building 2026 Monitoring and Control Station (MCS) was distributed. This MCS is being constructed as part of the Bethel Valley LLLW Line Item.

May

The following were painted at Building 7830:
- Roof Ladder
- Cell ventilation and off-gas fans
- Color coding of piping
- Roof ventilation fan
- Electrical conduits
- Air piping
- Ventilation duct supports
- Valve handles
- Fence posts
- Guard posts

The LGWOD now has two painters assigned full time in order to upgrade the appearance of LGWOD facilities and keep them operational.

The service representative for the supplier of the large air compressor and drying systems to be used for ITE was brought on site to aid in establishing proper operating procedures for the systems. The operating procedures were written.

The east off-gas heater at Building 7830 was replaced in preparation for ITE.

The demister meshes on the demisters in the off-gas system at the Melton Valley Storage Tanks (MVSTs) were replaced. New demister meshes were ordered.

The cooling water system for the large compressor was filled and circulation was initiated. The closed loop system, with the coolant liquid consisting of an ethylene-glycol/water mix, was installed to prevent any chlorinated water from being released to the watershed.

The aftercooler for the compressor supplying sparge air for the ITE process was tested and put on-line.

The installation of the piping, instrumentation, and electrical services needed for the operation of the ITE was completed. The sparge air compressor was scheduled to be checked out in early June and the ITE process was scheduled to be operational by the end of the first week of June.

June

The 100 lb instrument air compressor at Building 7860 was started up and operated for two hours during the first week of June. The compressor system ran well except for a minor problem with one of the purge valves on the air dryer, which was repaired the next week.

The 30 lb compressor, which is utilized for supplying sparge air for ITE, was started up and partially checked out during the first week of June. When started, the compressor caused a large decrease of voltage on the electrical supply leg to the facility. To remediate this problem, a voltage regulator was added to the electrical supply leg over the weekend. The compressor tests were restarted at the beginning of the next week.

The heater on the East bank of the Off-Gas system at the MVSTs was replaced. This heater is utilized to dry the air exiting the tanks to prevent the plugging of the HEPA filters.

The checkout of the ITE air compressors, instrumentation, and supporting equipment was completed and the ITE process was started up during the second week of June. On the first day 20 cubic feet per minute (CFM) of dry air was bubbled through each of six tanks to initiate the process. This flow rate was increased 20 CFM/day until a flow rate of 100 CFM/tank was reached.

The air flow through the six tanks being utilized for ITE was increased to 100 CFM and routine operations were attained. Letter reports for the completion of an Award Fee Milestone and an ORNL Program Execution Milestone entitled "Begin In-Tank Evaporation (ITE) Operations at the Melton Valley Storage Tanks and Submit Letter Report to EM-321" were written and submitted. The milestones were met ahead of schedule.

The painters assigned to LGWOD completed the painting on the ductwork at Building 7877.

The painters assigned to LGWOD completed the painting of the 7860 compressor room. Painting continues at the MVST facility.

July

A light was installed in order to illuminate the area around the gate giving access to the Melton Valley Waste Storage Facility area. New requirements to keep the gates locked for security reasons have necessitated better lighting around the gate for personnel safety.

New doors were installed on the west side of Building 7830 (Melton Valley Storage Tanks control room). These doors were installed so the control room can be locked for security reasons when the area is unoccupied.

The preoperational test plan for the Building 2099 Monitoring and Control Station (MCS) was completed by LGWOD personnel and was approved by Engineering and LGWOD personnel. The testing of the MCS will be a joint venture between LGWOD and Engineering personnel, in early 1993, and will test the functionality of the facility before it is turned over to LGWOD for operation.

Personnel entry was made into Valve Box 2A in order to take measurements for an upgrade task. This upgrade involved the installation of a sump pump into the valve pit sump so that infiltration into the pit can be transferred directly to the LLLW system. Previously, the inleakage was transferred into a tanker truck and transported for disposal. The valve pit sump must be kept empty to meet FFA requirements.

The breakers and electrical conduit in the compressor room at Building 7830 were painted.

September

Personnel entered Valve Box 1A in order to obtain measurements needed to reconfigure the piping system in order to add a means of pumping the sump out into the LLLW system. Prior to the modification, the sump must be emptied into the LLLW tanker truck. A continuous level detector will also be added to the sump. These modifications are being made to assure compliance with FFA requirements.

LGWOD personnel supported Engineering in the leak testing of the WC-10 transfer line. The piping was pressurized with helium and then a "sniffer" was utilized to locate any helium which may have leaked from the pipeline. The data from the test were evaluated during September.

A new sump pump transfer system was installed in Valve Box 2A for the purpose of emptying the sump in Valve Box 2A in a manner which will meet FFA requirements while adhering to As Low As Reasonably Achievable (ALARA) goals and principles. A similar system was being fabricated for Valve Box 1A at the end of the month.

October

LGWOD personnel decontaminated Valve Box 1A in preparation for installation of a sump pump and level probe to enable the sump's level to be monitored and for the sumps to be emptied to the LLLW Collection system when liquid is detected. The decontamination work was also accomplished to support tie-in of the new transfer line from the Bldg. 2026 Monitoring and Control Station, which is being constructed as part of the Bethel Valley LLLW Upgrade Line Item.

Reviewed and submitted comments on draft "Preliminary Results of ORNL Bottling and Trucking Operations" report.

Personnel completed painting of air lines and electric breakers at Bldg. 2537.

Painting continued at Building 7830 (Melton Valley Waste Storage Tanks). The control room floor was painted, resulting in the elimination of a contamination area.

December

Plant and Equipment personnel completed installation of the sump pump and replaced all of the gaskets in Valve Box 1A. The sump pump will provide an easier method for LGWOD personnel to empty the sump in order to comply with the Federal Facilities Agreement.

LGWOD personnel supported M. K. Ferguson personnel at Valve Box 1A as they took measurements to assist in testing of the new transfer line during functional checkout of the new Bldg. 2026 Monitoring and Control Station (MCS). This work is part of the Bethel Valley LLLW Line Item.

Painters continued the painting of the equipment (including the control panels) at the LLLW Evaporator Facility (Bldg. 2531).

2.4 GASEOUS WASTE SYSTEM

January

The Site Design, Development, and Review Committee gave formal approval to proceed with the installation of an above-ground diesel fuel storage vault which will supply fuel to the emergency generator for the 3039 Stack and Ventilation System.

The preparation of a study and estimate for the 3039 Stack Ladder Upgrade task has been initiated. This study was performed in response to findings and recommendations resulting from OSHA surveillance of ORNL facilities.

The second of three tie-ins to the new diesel generator (Building 3125) was completed. This generator supplies power to the 3039 Stack area in the event of a power outage. The generator was replaced to increase its capacity and due to the age of the old generator.

February

A new safety shower was installed at the Central Stack Off-Gas Facility.

A meeting was held to initiate the Study and Cost Estimate for the installation of the above-ground diesel fuel storage tank for the 3039 Stack emergency generator.

April

An estimated list of materials and preliminary design drawings were prepared for the 3039 Stack Ladder Upgrade task. An estimated bill of materials was forthcoming.

May

The 3039 Stack and Ventilation System Limiting Conditions Document (LCD) was approved on May 26, 1992 and transmitted to the Office of Operational Readiness and Facility Safety,

who will retire the 3039 Stack and Ventilation System Operational Safety Requirements (OSR) document, as the facility has been determined to be a "Generally Accepted" facility through the Phase I Hazard Screening process. No OSR is required for a facility with this designation.

July

Received the preliminary draft Risk Assessment for the failure of the 3039 Stack.

September

LGWOD personnel supported modification work being done on the 3039 Stack sampling system. This work was being completed under the direction of the Environmental Monitoring and Compliance (EMC) Department in order to assure compliance with regulatory requirements for stack sampling.

October

The upgrade work at the 50-foot level of the 3039 Stack was completed. This work included the removal of old sample pumps, the relocation of the beta/gamma monitoring cabinet, the rewiring of the equipment, and the painting of the platform and ladder.

November

Excavation work was begun in the Bldg. 3092 area for the off-gas system motor control center upgrade. The new motor control center will provide the ability to safely isolate each piece of electrical equipment at Bldg. 3092.

Continued painting of LGWOD equipment in the 3039 Stack Ventilation System.

2.5 WASTE OPERATIONS DATA MANAGEMENT AND ANALYSIS SYSTEM (WODMAS)

January

Perceptics Corporation representatives developed and installed a software upgrade for the optical disk drive interface. The new interface allows for multiple optical platters to be available to users for simultaneous write overhead.

A data compression utility was installed and tested. The utility is available to all users for conserving disk space.

A temporary network communications bridge between the VAX and the inter-plant broadband network was removed and the permanent bridge was repaired.

The ORNL Waste Tracking System design team technical members completed Generator Training. The training will assist them in becoming familiar with procedures for completing the Request for Disposals (RFDs) associated with waste generated and/or disposed of at ORNL.

February

A Message Router license for the WODMAS VAX was purchased. The Message Router utility allows users transparent access to the plant-wide E-mail system in addition to VTX and the FILETRAN utilities.

A requisition for twelve PCSA end-user licenses and documentation was issued. The PCSA software will allow WOCC local area network users access to the WODMAS VAX file and print services as well as archival storage on the optical jukebox.

The WOCC DAS tape transfer program was initiated. A total of 301 tapes with a total 4.54 gigabytes (X10E9 bytes) were transferred to optical storage for permanent retention.

A call-back modem was installed and tested on the WODMAS VAX. The modem experiences one problem on a sporadic basis. The problem is being investigated. The modem will provide WODMAS access to remote sites such as the Waste Examination and Assay Facility (WEAF).

A demonstration of the Digital Equipment Corporation (DEC) RALLY data base management system (DBMS) was given by personnel from Y-12 Computer and Technology Development (C&TD) as well as by the regional DEC office. The DEC RALLY system is being evaluated for use as the WODMAS DBMS.

The ORNL Waste Tracking System design team met. The agenda centered on the draft data model of the system and its ramifications to operational business rules.

The new release of the Perceptics Corporation Laserstar software was installed on the WODMAS VAX. One minor problem remained. Perceptics sent a correction in March.

March

The WOCC DAS tape transfer task continued. Fifty-three tapes comprising 660 megabytes were transferred to optical storage for permanent retention. To date, 458 tapes with a total of 7.57 gigabytes of data have been transferred to optical storage.

A new version of Perceptics Laserstar software was installed to correct an outstanding problem with the recently delivered software release.

Software was installed on the Solid Waste Information Management System (SWIMS) Personal Computer (PC) in the Documentation Management Center to provide the PC with WODMAS VAX file and print services.

The WODMAS optical storage 'jukebox' and several Documentation Management Center PC's were configured to provide access to the 'jukebox' for document storage and retrieval.

The WOCC DAS tape transfer was completed. Data from 618 tapes with a total of 9.90 gigabytes of data were transferred to six two-sided optical platters for permanent retention. Approximately 40 'condensed' data tapes will be transferred manually for historical purposes only. The data dates from 1985 to the present. An analysis program is being written to

verify the manually recorded start/end time and date of the tape data transferred. Once verified the tape library will be disposed of. Future data will be transferred to optical storage and verified as it is generated.

The TU81 tape drive was repaired.

April

A two day meeting of the Performance Improvement Process (PIP) Team for a Common Waste Tracking System was held in Oak Ridge. The system requirements document was finalized and was to be issued for final review and signature in May 1992.

The ORNL Data Systems Support Team recommended to management that DEC RALLY/RDB be selected as the WODMAS database development system. Alternatives were discussed and a decision to buy was made. Purchase orders were issued the week of April 26, 1992.

Work continued on the WOCC DAS Data Analysis Program. The program will perform an integrity check of WOCC DAS data transferred to the WODMAS for archival storage.

A one day meeting was held with the Waste Tracking System Assessment Team. Presentations and demonstrations were given by a number of WMRAD personnel. The Assessment Team is evaluating existing and planned Waste Tracking Systems at all five Martin Marietta Energy Systems (MMES) sites.

May

Purchase orders for DEC RALLY database development system and associated hardware and software upgrades were issued. DEC RALLY will be used to develop database applications on WODMAS.

A presentation of WMRAD's data system capabilities and strategic plan was given to the Assessment Team for a Common Waste Tracking System. The team is identifying areas for standardization of waste management procedures and waste tracking throughout the MMES sites.

The System Requirements Document of the Central Waste Tracking System was signed by the PIP team members at the monthly PIP team meeting. The document will be routed to management for review and signature.

A demonstration of the Hanford, Washington Solid Waste Information System was given by Hanford personnel. Three ORNL personnel attended.

A meeting was held with the design team of the Motorized Carrier Automation System (MCAS) to discuss the feasibility of applying expert system technology to the future ORNL Waste Tracking System.

An X-10 and Y-12 cooperative training course in DEC RALLY, the WODMAS database management system, was scheduled for the week of June 22, 1992. Five ORNL personnel were scheduled to attend.

June

Message Router software installation on the WODMAS cluster was completed. The software provides WODMAS users with transparent access to the inter-plant E-mail network. Eight users mail was re-routed from other systems.

The WHOS and VTX utilities were installed on the WODMAS cluster. The utilities provide WODMAS users with on-line access to employee phone and mail information and to MMES wide information such as INSIDE LINE.

The ORNL Waste Tracking System technical team and LGWOD computer system support staff attended a five day course in Advanced RALLY Programming.

The VAX station 3100 of the WODMAS cluster was upgraded to a VAX station 4060 in preparation for the installation of the DEC RALLY database development system.

Documentation sets and software licenses and distribution kits for all software necessary to implement the DEC RALLY/VAX RDB database development system were received. DEC RALLY will be used to support multiple database development efforts within WMRAD.

The WODMAS optical storage subsystem experienced repetitive problems. Perceptics Corp. technical support replaced the optical drive.

July

A number of updates and upgrades were made to support current and future operations including:

- The operating system was upgraded to VMS version 5.5.
- Wordperfect for VAX and the Perceptics optical jukebox software was upgraded to be VMS 5.5 compatible.
- PCSA/Pathworks software was upgraded to version 4.1 to support DOS 5.0 clients.
- DEC RALLY database and applications development system was installed.
- DECWindows Motif was installed.

The minimum requirements for a standard PC configuration to provide Local Area Network (LAN) access to the WODMAS cluster were identified and tested. Conversion of LAN users proceeded during August.

August

Six additional users were transferred from other C&TD computers to the WODMAS clusters as their primary computer. A total of fifteen users had been transferred through the end of August.

Work toward completion of a command file which will build the physical database of the ORNL Waste Tracking System (WTS) continued. The command file was approximately 85% complete at the end of the month.

Several meetings were held with the User Group representatives of the Solid Waste Operations Group (SWOG) and the Hazardous Waste Operations Group (HWOG) to clarify and resolve outstanding design issues of the ORNL WTS.

The final version of the system requirements document of the Common Waste Tracking System was issued. Meetings were scheduled with the site representatives, Central Waste Management Division (CWMD), and Tennessee Department of Environmental Compliance (TDEC) to resolve outstanding design issues.

September

Two additional users were transferred from other C&TD computers to the WODMAS clusters as their primary computer. Seventeen users had been transferred to date.

Work toward completion of a command file which will build the physical database of the ORNL Waste Tracking System continued. The command file was approximately 90% complete.

Members of the ORNL Waste Tracking System Technical Design Team toured Hazardous Waste Operations Group facilities to become familiar with container labeling and storage procedures.

Meetings were held with the Central Waste Information System Environment (CWISE) technical team to finalize the site upload requirements document. A draft of the document was scheduled to be issued for review in October.

October

Two additional users were transferred from other Computer and Technology Development (C&TD) computers to the WODMAS clusters as their primary computer. Nineteen users have been transferred to date.

A draft of the CWISE uniform Request For Disposal was reviewed by the ORNL Waste Tracking System technical team. Numerous concerns/issues were raised. The team at the end of the month was drafting an alternate form which would be proposed to the CWISE team.

Meetings were held with the CWISE technical team to finalize the site upload requirements document. A draft of the document was reviewed and comments were provided to the CWISE team.

A laserjet printer capable of two-sided printout and Postscript (TM) compatible was received. The unit was scheduled for installation in November.

A project schedule which synchronizes the ORNL WTS development with the CWISE system development to fulfill Tennessee Oversight Agreement (TOA) compliance was drafted.

November

Two users were added to the Vax System and their mail accounts were transferred also. An existing user's mail was transferred to the System.

Printer queues for driving the LGO2 line printer and the new HP Laserjet were completed. They will allow users to print in compressed mode on the LGO2 printer and access a high sped, high resolution laser printer. PC work stations using DEC Pathworks software will also have access to these printers.

The ORNL Waste Tracking System Team drafted and proposed an alternative uniform RFD design to the CWISE core team. The proposed design was being reviewed.

The final review draft of the CWISE Site Upload Requirements and Functional System Design was completed and distributed for review in December.

Additional support for ORNL Waste Tracking System design and development was provided by the Documentation Management Center. The areas supported include forms design, validation table definition, and report generation.

December

The uniform Functional Requirements Document (FRD) proposed by the ORNL Waste Tracking System Design Team continues to be reviewed by the Central Waste Operations Initiative PIP Team.

Several extended meetings were held with the Central Waste Tracking Systems PIP Team and CWISE representatives to review the final draft of the CWISE Site Upload Requirements and Functional System Design (FSD). Four issues remain to be resolved prior to signature.

Waste Tracking System Design modifications were made to incorporate final draft CWISE FSD requirements. Design and development of a prototype user interface was initiated utilizing the proposed uniform RFD design.

Consolidation and preparation of site specific Waste Tracking System validation tables, such as facility information, was started. The validation table entries will be used to perform

Quality Assurance (QA) checks on waste tracking information as it is entered into the database.

A request for funds was made to provide magnetic disk storage expansion to support current and future projects.

Meeting were held with CWMD, DOE and site representatives to discuss FY-95 Waste Tracking Data System ADS concerns.

Software upgrades were performed on four of the software applications resident on the WODMAS.

2.6 WASTE OPERATIONS CONTROL CENTER DATA ACQUISITION SYSTEM (DAS)

January

A total of 10 updates were made to the database.

One disk drive was repaired after it developed problems with its drive motor.

One terminal was removed for servicing.

New database EPROMS were made for concentrator two to update its auxiliary display database.

February

Several meetings were held between Engineering, VISTA Research, WMRAD and waste generators to discuss strategies for implementing the Leak Testing program for compliance with FFA requirements. It was decided to recommend that all leak testing data be input to the WOCC Data Acquisition System and then transferred to the WODMAS VAX for storage and reporting purposes. VISTA will develop the leak testing program which will execute on a PC connected to the WOCC Local Area Network. The data will be available to the waste generators, who also have the option of having local monitoring via a PC acquisition system to be developed by VISTA.

All the WOCC DAS data concentrator EPROM databases were updated.

A total of 16 updates were made to the database.

March

A meeting was held with management to present the recommendations for implementing the Leak Testing program for compliance with FFA requirements. The recommendation was that all leak testing data be input to the WOCC Data Acquisition System and then transferred to the WODMAS VAX for storage and reporting purposes. VISTA Research Inc. will develop the leak testing program which will execute on a PC connected to the WOCC Local Area Network. The reports/data will be available to the waste generators,

who also have the option of having local monitoring via a PC acquisition system to be developed by VISTA.

Level instrumentation on LLW tanks T1 and T2 was upgraded from Bristol Meta-meters to Foxboro 823 differential pressure transmitters.

A total of 15 updates were made to the database.

April

A total of 17 updates were made to the database.

May

An Engineering Service Order (ESO) was issued for the installation of the instrumentation wiring necessary for compliance with the FFA requirement for leak testing of the active small LLLW tanks.

A total of 8 updates were made to the database.

June

Thirty days of the 3025/26 duct Tritium monitoring data was extracted from the WOCC archives data. The one-minute averages will be used to support a project to clean up surplus tritium sources.

July

The WOCC was shut down in order to make a modification in the fire alarm system (see discussion, next paragraph). In the past, an automatic shutdown feature has caused the inadvertent shutdown of the WOCC when the fire alarm system for Building 3130 was tested. This automatic shutdown feature was taken out of the system. The computer was restarted without incident.

An automatic interlock between the fire alarm control system and the WOCC Control Room uninterruptible power supply (UPS) was disabled. The interlock had been problematic during testing of the fire alarm control system. A manual interlock remains in place to provide emergency shutdown of the UPS power feed in the event of a fire.

Installation of the cables for monitoring the temperature of the tank level instruments is being fast tracked. The contractor is now coming on board and safety issues are being addressed.

October

Five channels were added to the WOCC DAS for monitoring the new manholes from 4500N and 4500S. All operations were normal for the month.

November

A demonstration of the VISTA Research leak test software package was presented for EPA representatives and TDEC officials. A tour of the Waste Operations Control Center, two of the Data Concentrators, and LLLW Tank WC-3 was conducted for the visitors. The attendees gave a favorable response.

December

Installation of the new cables for the LLLW leak test has begun and is progressing as planned.

2.7 WOCC DISTRIBUTED CONTROL SYSTEM

February

The Bailey DCS Operator Interface Unit (OIU) configuration was backed up and distributed to the other OIUs.

One engineering personnel completed a course in Bailey Controls Infi-90 configuration in preparation for the Bethel Valley Liquid Low-Level Waste (BV LLLW) control system upgrade.

The hardware interface drawings for Process Control Unit 6 were completed. The new unit is a component of the BV LLLW upgrade project.

The kickoff meeting of the BV LLLW upgrade project was tentatively scheduled for March 5, 1992 in Atlanta, Georgia.

March

The Bailey Engineering Workstation (EWS) was tested for compatibility with a motherboard upgrade. The test was successful but is dependent on the release of version 5.0 of Bailey's EWS software. The EWS will be used to configure the BV LLLW control system upgrade.

April

Meetings were held with Engineering, Purchasing, and Bailey Controls to resolve discrepancies in the BV LLLW upgrade contract deliverables.

May

Three Operator Interface Stations (OISs) and associated Engineering Workstation Software were received from Bailey Controls. The OISs are components of the Bethel Valley Liquid Low Level Waste Upgrade Line Item.

An initial spare parts list and cost estimate was drafted for the BV LLLW control system upgrade. Expenditures of $116,000 are anticipated.

June

The Bailey Engineering Workstation hardware was upgraded to support the new release of Bailey DCS software. The software upgrade was scheduled to be completed in July, pending receipt from Bailey of the latest release which supports VGA graphics hardware.

July

The Bailey Engineering Workstation (EWS) software was upgraded to allow the EWS access to the WODMAS cluster eliminating the need to maintain two PC's within the WOCC control room.

Progress on the BV LLLW upgrade project was delayed due to incorrect versions of software being shipped by Bailey Controls Company. The correct versions, which were to have been shipped June 1, had still not been received at the end of the month.

August

The factory acceptance test of the Bailey Controls DCS expansion, a component of the Bethel Valley Liquid Low-Level Waste Line Item, was performed in Cleveland, Ohio. The system experienced communications problems during the first attempt which were not fully corrected in the second attempt. In addition the mouse interface remained non-functional. The mouse interface was rejected and the system was accepted contingent upon the communications problems being corrected.

September

The process control software for the Building 2099 MCS process control unit is approximately 50% complete.

A second trip to Bailey Controls, located in Cleveland, OH, was made to confirm that problems discovered in the factory acceptance test were resolved. The system was approved for shipping.

The Building 2099 MCS control cabinets, fabricated at K-25, were completed, checked out, and delivered to the contractor.

October

Software initialization for the Bailey OIS 40 VMS operating system was completed. The Bailey System was attached to the WOCC local area network, and the terminal server for the Bailey System was connected to the network. Configuration of the terminal server was completed and print queues were established on the WODMAS.

November

A problem was observed with time synchronization between the Net 90 loop and the Infi 90 loop. It was temporarily resolved while awaiting complete configuration of the new equipment. Data was archived to diskette at 3608 and 3130.

2.8 LIQUID WASTE SOLIDIFICATION PROJECT (LWSP)

March

The design and construction of the New Interim Storage Cask Facility was behind schedule due to the lack of availability of trained personnel required for engineering support functions and uncertainties related to NEPA documentation. Additional delays impacted plans for conducting the second LWSP campaign scheduled to be initiated in the fall of this calendar year. Contingency plans were being formulated.

April

Plans were established for the procurement of sixty concrete storage casks in FY 93 in anticipation of the second LWSP campaign scheduled to occur in mid FY 93.

June

An Environmental Assessment (EA) was required for construction of the new Interim Concrete Cask Storage Facility. Preparation of this EA was scheduled to be initiated in July. This facility will store Concrete Casks resulting from the Emergency Avoidance Solidification Campaign (EASC) and the LWSP campaigns.

August

The archaeological survey of the site for the new proposed LWSP Interim Concrete Cask Storage Facility has been completed. A site tour of the existing and new proposed facility was given to personnel from the Energy and the Environmental Sciences Divisions. These staff members will prepare the EA required before construction can be initiated at this site. Soil samples were collected at the new proposed site.

September

A tour of the New Interim Concrete Cask Storage site was given to the remaining members of the NEPA documentation team. An EA will be prepared for this site. Preparation of this NEPA documentation has been initiated.

Melton Valley Storage Tanks W-29 and W-30 were sampled to assure that the tank supernatants are not transuranic and therefore suitable for the next solidification campaign. The analytical data resulting from this sampling showed the alpha levels in the supernatants to be well under those for transuranic wastes.

October

The geotechnical site study for the proposed New Interim Concrete Cask Storage Facility was received and distributed for review.

December

Samples from tanks W-29 and W-30 have been collected for characterization and certification testing.

2.9 EVAPORATOR REPLACEMENT AT BUILDING 2531

January

A draft Project Requirements Document, Project Management Plan, and Waste Management Plan were received for review and comment for the Evaporator 2A2 Replacement Project.

February

Revision 0 of the draft Project Waste Management Plan, draft Systems Requirements Document, and the draft Waste Management Plan for the Evaporator 2A2 Replacement Project were reviewed and comments submitted for incorporation into Revision 1. Revision 0 for the Quality Assurance Plan was under review at the end of the month. Preparation of the Risk Assessment Plan is continuing.

March

Two LGWOD personnel met with Engineering and M.K. Ferguson to discuss preliminary plans for replacing one of the LLLW evaporators scheduled to occur in FY 1993. The Environmental Review Summary (ERS) has been prepared for this activity.

April

The kickoff meeting was held for the 2A2 Evaporator Replacement Project team to discuss the scope and schedule. The 2A2 LLLW Evaporator is being replaced due to leaking heating/cooling coils (three out of seven). The replacement will be performed by M.K. Ferguson or a fixed-price subcontractor through M.K. Ferguson.

May

A tour of the LLLW Evaporator Facility was conducted for the Evaporator Replacement Project engineering team members. A model of the evaporator to be replaced will be constructed at a scale of 1.5 inches/foot. The evaporator cell will also be included as part of the model so that clearances for the extraction and insertion of the evaporator can be better visualized. A meeting was held with Health Physics personnel to discuss radiological containment strategies during evaporator/cell decontamination, extraction, and insertion. A meeting was also held with the Waste Management Coordination and Planning Office to discuss characterization alternatives and certification procedures for Evaporator 2A2.

The final Systems Requirement Document, Baseline Planning Document, and Projects Records Plan was completed.

June

The "Original" drawings of the spare evaporator that will be used to replace Evaporator 2A2 were located. This will aid in expediting the process of procuring a replacement evaporator for the spare evaporator. Procurement of a new spare evaporator is scheduled to occur in FY93. Draft criteria for the temporary structure for the Evaporator 2A2 replacement project was issued. The final Project Management Plan and the NEPA documentation for this project were approved. The draft Risk Assessment Plan and the draft Safety Assessment were completed.

July

Members of the Evaporator 2A2 Replacement Team met with personnel from M.K. Ferguson to discuss the proposed schedule for the evaporator replacement. All participants were in agreement that the schedule appears to be reasonable. Staff members from M.K. Ferguson were also given a tour of the evaporator facility. The three dimensional drawings of the evaporator were completed and the scale model was over 50% complete. The Risk Assessment Plan for this task was completed.

August

Final revisions to the Waste Management Plan for the Evaporator 2A2 Replacement Project were completed. The Draft QA Plan for the Evaporator 2A2 Replacement Project was issued for review and comment The scale model for the Evaporator 2A2 Replacement Project was completed. This model will be used by Engineering and M.K. Ferguson to develop a detailed work plan for the removal of Evaporator 2A2 and the installation of the existing spare evaporator. The Certified For Construction (CFC) Package for the Evaporator 2A2 Replacement Project was near completion and it was anticipated that it would be completed by the end of September.

September

The preliminary proposal for the Evaporator 2A2 Replacement Project was sent to the CWMD for forwarding to DOE-OR. The Final QA Plan for the Evaporator 2A2 Replacement Project was issued. The draft "As Low As Reasonably Achievable" (ALARA) Plan, and the draft Criteria for Ventilation System were submitted for review and comment. A meeting was held between the MMES Evaporator Replacement Project team and the M.K. Ferguson construction team to discuss organizational interfaces and tentative schedules in preparation for the replacement of Evaporator 2A2 scheduled for FY 93. M.K. Ferguson will perform the removal of Evaporator 2A2 and the installation of the existing spare evaporator.

October

Reviewed and submitted comments on draft equipment specification for purchase of the new spare evaporator for Bldg. 2531.

Met with DOE/OR to discuss DOE finance policies concerning the replacement of LLLW Evaporator 2A2 and the procurement of a new spare evaporator. Existing DOE policies for this project and the purchase of a new spare evaporator require interpretation and DOE/OR took the action item to make this call. The final Waste Management Plan for the Evaporator 2A2 Project was issued for approval.

December

Equipment specifications for the New Spare 1993 Waste Evaporator have been completed and approved. The procurement process will be initiated in January. The new spare evaporator will be used to replace the existing spare evaporator which will be used to replace LLLW Evaporator 2A2.

Approval and authorization has been received from the DOE-OR Field Office for proceeding with the Evaporator 2A2 Replacement Project.

2.10 HAZARD SCREENING FOR LGWO DEPARTMENT FACILITIES

January

The final Hazard Screening Reports for the 3039 Stack and Ventilation System, and the Waste Operations Control Center (Building 3130) were received for Facility Safety Evaluation Team (FSET) and Plant Safety Evaluation Team (PSET) approval. The draft Hazard Screening Report for the New Hydrofracture Facility (Building 7860) was reviewed and comments returned for incorporation into the final document. Development of the Logic Model for the Liquid Low-Level Waste System was continuing.

February

Presentations of the Hazard Screening Reports for the WOCC (Building 3130), and the 3039 Stack and Ventilation Systems were given to the PSET on February 3 for their concurrence and approval.

The presentation of the LLLW Systems Hazard Screening Report was given to the PSET on February 10. The preliminary hazard class associated with this system was ranked as "High". However, the probability of occurrence of the initiating event which causes the high hazard ranking was expected to be an "Extremely Low" probability level. Thus, the system was assigned an overall risk level of "Extremely Low". The "High" hazard ranking for this system was derived using extremely conservative assumptions regarding the source term. Alternatives had been evaluated for using a conservative but realistic source term. Adoption of this approach was found to be unduly restrictive operationally and was tentatively rejected. Such an approach would result in a "Moderate" hazard ranking but would not affect the overall risk level which was expected to be "Extremely Low", as stated above.

The presentations of the Nonradiological Wastewater Treatment Plant (3608), the Acid Neutralization Facility (3518), and the Equipment Cleaning Facility (7935) Hazard Screening Reports were prepared and were scheduled to be presented to the PSET in early March. Development of the LLLW Systems Logic Model and Risk Reduction Plan were also scheduled to be completed in early March.

March

Results of the Phase 0 Preliminary Hazard Screening Worksheets were presented to the PSET for their approval and concurrence.

The presentations of the Hazard Screening Reports for the New Hydrofracture Facility (Building 7860), the Process Wastewater Treatment and Collection Systems, the Equipment Cleaning Facility (Building 7935), the Acid Neutralization Facility (Building 3518), and the Logic Model and Reduction Plan Assessment for the Liquid Low-Level Waste Systems were presented to the PSET for their concurrence and approval.

Two LGWOD personnel met with System Safety Engineering to discuss detailed plans and responsibility assignments related to implementation of Phase 1A and II.

April

Detailed schedules and cost estimates for completion of Phase IA and II SAR Update Program safety documentation were presented to the PSET for their approval and concurrence.

A meeting was held with Systems Safety Engineering to discuss progress on Phase IA safety documentation. Preparation of this documentation was on schedule. In addition, the natural phenomena (seismic) evaluation of the Liquid Low-Level Waste System was on schedule and revision of the Liquid Low-Level Waste System was on schedule and revision of the Liquid Low-Level Waste Solidification Project (LWSP) Safety Study was initiated.

May

Fifteen events which could lead to the loss of containment within the LLLW system and their probability of occurrence were identified. Those events which may require Safety Class Items and/or Administrative Controls for Safety were tentatively identified.

June

As part of the Phase 1A Safety Analysis Report Update Program (SARUP), revisions were being made to the Operating Safety Requirements (OSR) for the LLLW System. The revised OSR is included as an attachment to the Phase 1A document.

July

A letter from O. B. Morgan to Ronald O. Hultgren entitled "Notification of Change of Documentation at ORNL" was transmitted. This letter notified DOE that the OSR and FSAR for the 3039 Stack Ventilation System have been retired and that the OSR has been

replaced with a Limiting Conditions Document (LCD). This change in the documentation of the facility's surveillance requirements resulted from the lowering of the safety classification of the facility to "Generally Acceptable" during the SARUP process.

Received the Project Records Plan for Safety Documentation being developed for the LLLW system under the SAR Update Program. The seismic evaluation of the LLLW transfer piping system was completed. The seismic evaluation of the LLLW collection tanks was anticipated to be completed by the end of August.

August

Final comments were addressed in the revised OSR for the LLLW System. The revised OSR was provided to the Radioactive Operations Committee (ROC) for their review and comment during August and September. The Seismic Evaluation of the active LLLW collection, feed, and storage tanks was completed, with the exception of a few tanks where insufficient data existed to perform the necessary assessment. All tanks evaluated meet the criteria specified in UCRL-15910 for a "high hazard" facility.

The 30% review for revisions to the Safety Study for the LWSP was completed. Following this review, the draft revised Safety Study for the LWSP was reviewed and comments were submitted. Revisions to this safety study are required before the second LWSP campaign can be initiated.

September

Revision 0 of the Phase 1A-Safety Analysis Report (SAR) Update Program Phase 1A Report was reviewed and comments submitted for incorporation into the next revision. The draft Revision 3 of the OSR for the LLLW System was reviewed by the FSET and comments were submitted for incorporation into the next revision. The draft Revision 3 of the OSR for the LLLW System was being reviewed by the ROC.

October

Submitted updated Phase I SARUP Hazard Screening report and Logic Models for the LLLW System for review and approval. The updated versions reduced the hazard category of the LLLW System from "High" to "Moderate."

December

A summary presentation of the Phase IA Report and the Revised OSR for the LLLW System was given to and approved by the PSET. All Phase IA safety documentation for liquid/gaseous waste operations has been completed. Preparation of Phase II safety documentation for the LLLW System was initiated during November. The revised OSR for the LLLW System was transmitted to the DOE-OR Field Office on December 31.

2.11 CONFIGURATION CONTROL

During the year, fourteen changes were classified as meeting the requirements of a Configuration Change. In addition, ten changes to LGWOD facilities have been classified

as meeting the 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).

2.12 UPDATE OF LGWOD ELECTRICAL DRAWINGS

January

The first phase of the Electrical Drawing Upgrades task for the major LGWOD Facilities was completed. This task consisted of going to each major facility, physically comparing the as-built configurations of the electrical equipment with the existing drawings, marking up the drawings where changes were warranted, and transferring the markups to the drawings. The one line diagrams were transferred to the Computer Assisted Design and Manufacturing (CADAM) system. The drawings were then distributed with configuration control. The facilities for which the as-built were upgraded were Building 3039 (Central Stack Area), Building 3092 (Central Off-Gas System), Building 3544 (Process Waste Treatment Plant), Building 2531 (Evaporator Facility), Building 3125 (3039 Stack Diesel Generator), Building 3130 (Waste Operations Control Center), and Building 2537 (Evaporator Service Tanks). The drawing upgrades included one line diagrams, plan drawings, fire alarm plans and wiring diagrams, and panel schedules.

February

Planning for the second phase of the Electrical Drawing Upgrades task for the LGWOD Facilities was started. This task consists of going to each facility, physically comparing the as-built configurations of the electrical equipment with the existing drawings, marking up the drawings where changes are warranted, and transferring the markups to the drawings. The one line diagrams will then be transferred to the CADAM system.

December

The revised drawings were received by Engineering and were reviewed for accuracy. The drawings are scheduled to be released to LGWOD for use in early 1993.

2.13 CATHODIC PROTECTION UPGRADE

January

The draft Safety Assessment for the Cathodic Protection Upgrade Project was reviewed and comments were submitted for incorporation into the final document. The Quality Assurance Evaluation was completed and preparation of the Quality Assurance Plan was initiated. A draft Project Management Plan and Waste Management Plan were undergoing review. An internal Environmental Assessment was also under preparation.

February

The Final Safety Assessment for the Cathodic Protection Systems Upgrade Project was completed. The hazard class associated with this project is "Generally Accepted".

March

The Cathodic Protection Systems Upgrade task was stalled due to NEPA uncertainties. Impacts related to the delay were being evaluated.

April

A meeting was held with Central Engineering to discuss the status of the Cathodic Protection Systems Upgrade Project. Due to NEPA delays, construction activities would not be initiated this FY. The construction bid package was scheduled to be issued in October and construction is expected to be initiated by March 1993.

May

The draft Project Management Plan and Waste Management Plan for the Cathodic Protection Upgrade Project were issued for review and comment.

June

The draft QA Plan for the Cathodic Protection Systems Upgrade Project was prepared and submitted for review and comment.

July

Received the final Project Management Plan (PMP) and the Project Notification (PN) sheet for the Cathodic Protection Upgrade Project.

September

The Waste Management Plan for the Cathodic Protection Upgrade Project was issued for approval.

October

The final Waste Management Plan for the Cathodic Protection Systems Upgrade Project was issued for approval.

December

This project is on hold pending resolution of budget uncertainties during FY 93.

2.14 MISCELLANEOUS

May

Two areas in the vicinity of Building 7860 were cleaned up in preparation for the erection of two temporary storage buildings (Rubb shelters). These temporary shelters (26 ft. by 40 ft.), constructed of vinyl, shall be used for the storage of large equipment (both new and used).

The construction of the first of two planned "Rubb" shelters was completed in the Building 7860 area.

September

The installation of the second temporary storage building for LGWOD spare equipment was completed. These buildings will be utilized until a permanent support facility can be built (scheduled for completion 7/94).

The piping systems at Buildings 2600 (Bethel Valley Process Waste Collection/Feed Tanks), 3608 (NRWTP), 7961 (Melton Valley Process Waste Collection/Feed Tanks), and 2531 (LLLW Evaporator) were relabeled for easier identification.

3.0 MAINTENANCE ACTIVITIES

3.1 NONRADIOLOGICAL WASTEWATER TREATMENT PLANT

January

The acid pump used for the transfer of sulfuric acid from the storage tank at the NRWTP to the tank truck was replaced due to failure.

Replaced the diaphragm on the drain valve for the F-1010 dual media filter at the NRWTP. The original diaphragm had a hole in it and would only open the valve half-way.

Repaired a broken shaft on the 1008B pump at the NRWTP. The pump shaft broke during normal (steady-state) operations. This has been a recurring problem since the NRWTP went into operation. A system utilizing different pumps is currently being designed.

The filter feed pumps (J-1008A and B) were repaired due to broken pump shafts. This is a recurring problem with these pumps and an ESO has been written for Engineering to select new pumps to eliminate this problem.

The lead Granular Activated Carbon (GAC) column at the NRWTP was sampled. The GAC from the column will be used to see if the carbon is becoming loaded with organics. An analysis for hazardous constituents will also be run on the carbon to give some idea of whether or not the carbon will be classified as a hazardous or non-hazardous waste. The GAC columns are used for the removal of organic constituents from the wastewater.

February

The Air Stripper at the NRWTP and the 2539 Cooling Tower at the Evaporator Facility were given an extra shock treatment to inhibit the growth of the bacteria which cause Legionnaires' Disease.

The pump shaft on the J-1008B pump at the NRWTP broke and was replaced. This is the third time in two months that the shaft on this particular pump had broken.

The required DOP testing was accomplished on the HEPA filters located on the discharge ventilation of the filter press room at the NRWTP. All of the filters successfully passed the testing.

The J-1002 Nonmetals feed pump was repaired. The pump had a leaking oil seal.

The J-1025A caustic pump was rebuilt during the month.

March

A broken shaft was replaced on the J-1008A filter feed pump at the NRWTP.

The hydraulic ram on the filter press at the NRWTP was replaced. The original ram was replaced because it had a hydraulic leak allowing the pressurized system to bleed down and let water seep into the dewatered sludge.

The J-1026 pump, which is utilized for acid transfers at the NRWTP, was replaced due to a leaking seal. The original pump was repaired and stored as a spare part.

The J-1008B filter feed pump at the NRWTP was temporarily taken out of service for maintenance. The pump efficiency had decreased due to a buildup of calcium on the impeller. The pump was dismantled, cleaned, reassembled, and returned to service with no impacts on operations.

April

A broken shaft was replaced on the J-1008A filter feed pump at the NRWTP.

The shaft on the filter feed pump (J-1008A) at the NRWTP broke again while in normal operating mode. The breaking of this pump shaft had become a recurring problem, happening on almost a weekly basis. New pumps, with a different type design, are in the process of being procured. In the mean time, in an attempt to temporarily fix the problem, a pump motor with approximately half of the RPMs (1180 as compared to 1725) of the original motor was purchased and installed. This cut the pump capacity in half (from 760 to 325 GPM), and resulted in a much smoother pumping operation at the normal pump rate of 300-325 GPM. The in-line spare was left at the 760 GPM capacity and will be used when the feed rate exceeds the maximum capacity of the new motor.

The shaft on the Non-Metals feed pump (J-1002A) at the NRWTP broke and was repaired.

A leaking seal was repaired on the Metals Tank jet mixer (J-1001C) at the NRWTP.

May

The repairs on the J-1001C jet mixer at the NRWTP were completed and the pump was put back into service. These repairs consisted of the replacement of the seals between the pump and the pump shaft.

The quarterly acid wash was completed on the air stripper at the NRWTP. This procedure is carried out to inhibit algae growth inside the air stripper and to keep down the presence of Legionnaires' Disease.

The steam hose on the "Hotsy" steam cleaner at the NRWTP was repaired. The hose had split during routine operations. This cleaner is used for decontamination operations in the filter press room.

Pressure indicator PI-1025A was replaced at the NRWTP due to malfunctions.

July

The J-1008B transfer pump at the NRWTP was repaired. The valve seat in the check valve on the pump had broken free and lodged in the pump impeller. The J-1008B pump is utilized to transfer wastewater through the dual-media filters.

The J-1025B caustic addition pump at the NRWTP was rebuilt and returned to service. The pump had lost a portion of its' pumping capability due to wear.

The J-1026C sulfuric acid transfer pump became inoperative due to a faulty relief valve and was repaired.

August

The J-2110C pump at the 190 Pumping Station became inoperative due to a faulty bearing and was repaired.

September

The J-1026C acid transfer pump at the NRWTP was replaced when it became defective and locked up. The pump, which is used to transfer sulfuric acid from the storage tank at the NRWTP to the acid transport truck, was rebuilt and stored as a spare.

The F-1020 Granular Activated Carbon (GAC) column at the NRWTP was sampled to provide samples for analysis to ascertain where the carbon is as far as being saturated with organics to the point where it will have to be changed out. The F-1020 column has been the lead column since the NRWTP was started up. At the same time, a radiation survey was carried out on the exterior of the column to see if the background around the column was increasing due to radioactive cobalt absorbing on the GAC. The survey showed very low levels of increased background. The GAC columns are utilized at the NRWTP for the removal of non-volatile organics and mercury from the wastewater.

The actuator for the FCV-637 valve at the NRWTP failed and was repaired. This valve is a blocking valve on the GAC columns.

The air stripper at the NRWTP was acid cleaned to kill any algae growing on the distributors.

Repairs were completed on the agitator located in the cold metals neutralization sump at the Melton Valley Process Waste Collection Facility (Building 7961). The agitator had bad motor bearings and a bad gear box. The system was restarted without incident after the repairs were completed.

The operator for the inlet valve to the Melton Valley Process Waste Collection Hot Tank #2 (F-2018) was repaired. The valve would not operate properly due to a defective coupling.

October

The J-1008A filter feed pump at Bldg. 3608 was repaired after an oil seal had developed a leak. The J-1008A pump is utilized to transfer wastewater through the dual media filters.

November

The regulator valve for the sodium hydroxide (caustic) system at the NRWTP (Bldg. 3608) was rebuilt after it was discovered to have a bad diaphragm. The caustic is used to neutralize the wastewater prior to discharge to White Oak Creek.

Continued color coding of the pipes at Bldg. 3608 for ease of identification.

December

Plant and Equipment personnel repaired the sludge pump at the NRWTP (Bldg. 3608) after it developed a leak on the suction side of the pump. The pump is used to transfer sludge from the clarifier to the sludge holding tank.

The J-1002A feed pump at the NRWTP was repaired after the pump shaft broke. This pump is used to transfer nonmetals wastewater from the nonmetals feed tank to the filter feed tank.

3.2 PROCESS WASTE TREATMENT PLANT AND COLLECTION SYSTEM

January

The bottom flange of one of the Cation Exchange Columns ("B" Column) at the PWTP was found to be leaking. To repair the leak, the resin and sand had to be removed from the column so that the bottom of the column could be removed and the gasket could be replaced. After the leak was repaired, the column was reloaded with new sand and resin. The Ion Exchange (IX) columns are utilized for the removal of radioactive strontium-90 from the wastewater.

The solenoid valve on the F-4005 Pumping/Diversion Station was replaced. This station diverts the wastewater from the 2000 and 1505 Areas between the Metals and Nonmetals Collection/Feed Tanks at the NRWTP.

The L-9 pump at the PWTP was replaced due to malfunctioning. This pump transfers the IX column regenerant from the L-9 collection tank to the evaporator for acid recovery.

A leaking coil in the PWTP Control Room heater was repaired.

A large amount of sludge was manually removed from the clarifier at the PWTP in preparation for a maintenance shutdown.

February

A relay in the Building 1505 diversion/pumping station was found to be defective and was replaced.

The crane at the Acid Neutralization Facility (Building 3518) was put back into service after extensive repairs. The crane passed Quality Engineering and Inspection (QE&I) inspections before being put back into service.

The diaphragm was replaced on the sludge pump on the L-1A clarifier at the PWTP.

The multiport valves on the L-3A and L-3B filters at the PWTP were replaced. These valves are used to control the wastewater and backwash flows through the filters during normal and backwash operations. The original valves, first put on line in 1975, were worn out. While the filters were down for the valve replacement, the media was inspected. A large amount of sludge was found in the filters and was cleaned out. The clarifier was also cleaned out and several minor repairs were completed.

The evaporator at the PWTP was replaced during the maintenance shutdown. To accomplish this, the roof had to be removed so that a crane could pull the old evaporator out and put the new one in. This evaporator is used for nitric acid recovery, and was replaced due to a leaking coil. Like the multiport valves, this equipment had been on line since 1975. During the replacement task, configuration changes were also made to the evaporator feed system to produce a safer, more efficient feed system.

The spent zeolite resin from one of the zeolite columns at Building 3544 (PWTP) was unloaded and the column was reloaded with fresh resin. These zeolite columns are used to supplement the PWTP treatment capacity during periods of maintenance or high rainfall.

March

The sight glass on the L-12 Scrubber Surge Tank at the PWTP was replaced. It had become fogged up to the point where viewing the liquid-level of the tank was extremely difficult. The L-12 scrubber is utilized to neutralize the acidic fumes from a number of operations at the PWTP.

Oil was added to the sludge transfer pump for the Filter Press at the PWTP. The muffler on the pump was replaced at the same time. This pump, a double-diaphragm air driven pump, is utilized for transferring Clarifier sludge from the L-6 Sludge Holding Tank through the Plate and Frame Filter Press, which dewaters the sludge.

The anthracite in the L-3A filter at the PWTP was changed out. This filter is utilized for the removal of particulates between the clarification and ion exchange treatment processes.

The wastewater feed/backwash distribution header in one of the zeolite columns at the PWTP was repaired and the column was refilled with fresh zeolite. These columns are utilized to expand the treatment capabilities at the PWTP during periods of maintenance shutdowns and heavy rainfall.

The L-2 pump at the PWTP was removed from service and repaired after it locked up due to excess calcium buildup. The pump seal was replaced during this maintenance. The L-2 pump is utilized to transfer the wastewater through the anthracite filters and the ion exchange columns after it passes through the clarifier.

The new In-Line Mixer for the PWTP arrived on site and was installed in place of the old one. This piece of processing equipment is utilized to mix chemicals into the wastewater before the wastewater enters the clarifier for hardness removal. The old mixer had become plugged with calcium deposits.

A heavy layer of sludge was pumped from the L-1A clarifier at the PWTP in an attempt to improve the efficiency of the clarifier operation. This operation had recently been plagued by a large amount of particulate "carryover", thus decreasing the clarifier throughput volume. The clarifier is utilized to remove the hardness from the process wastewater, thus increasing the run time of the cation exchange columns between regenerations.

April

The L-2 P-2 pump at the PWTP locked up during normal operations. The pump was dismantled and calcium deposits were found on the impeller. These deposits were removed and the pump was reassembled. The in-line spare pump, L-1 P-1, was put into service when L-2 P-2 locked up. These pumps transfer the PWTP wastewater through the anthracite filters and ion-exchange columns.

The large M-8A sulfuric acid storage tank at the PWTP was found to have a small amount of acid seepage around one of the welds. The piping for the system used to fill this tank was diverted to the backup tank (M-8), which will be used exclusively in the future. The M-8A tank was in the process of being removed and disposed of. Before the NRWTP was brought into operation, both tanks were needed as more acid was used to bring the pH of the effluent of the PWTP within National Pollution Discharge Elimination Standards (NPDES) discharge limits. As the effluent is now treated at the NRWTP, the effluent pH is released at higher values, thus resulting in less sulfuric acid being used. The large acid tank is therefore no longer required.

Diagnostic testing of the transfer pumps were carried out on the NRWTP collection and transfer pumping stations. These tests are accomplished routinely in order to ascertain trend changes in the vibrations around the pump and/or motor in order to detect parts (bearings, impellers, etc.) going bad before extreme damage is done.

The L-1A Clarifier at the PWTP was shut down in order to repair the agitator. The agitator was not turning due to the shearing of the shear pin located on the coupling between the motor and the agitator shaft. Without the proper operation of the agitator, a sludge blanket could not be formed and sustained in the clarifier, thus causing the clarifier to be ineffective for its designed purpose, which is the removal of hardness from the wastewater feed to the PWTP. To facilitate entry into the clarifier for the repair task, the clarifier had to be drained and all residual sludges had to be removed.

The anthracite in the L-3B filter at the PWTP was in the process of being replaced at the end of April. The anthracite was being replaced because it had become coagulated and was

not properly filtering the wastewater before it entered the ion-exchange columns for radioactive strontium removal. After the anthracite was removed, it was discovered that calcium had built up around the diffusers and the gaskets on several of the diffusers needed replacement. The calcium is being removed by soaking the diffusers in "Lime-away" and the gaskets are being cut. These additional maintenance activities were scheduled for completion in early May, and the vessel would then be reloaded with fresh anthracite.

May

The L-3B filter at the PWTP was repaired and the anthracite media was replaced. The repairs consisted of replacing the gasket material for each diffuser, and the replacement of several of the diffusers. The anthracite fines were then backwashed out of the vessel and the filter was put into service.

June

A valve was replaced on the M-1 NaOH (caustic) tank at the PWTP. The valve was leaking through after it was closed.

Two spent zeolite columns at the PWTP were unloaded and refilled with fresh zeolite resin. The zeolite columns are utilized to remove Cs-137 from ion exchange effluent before its transferred to the NRWTP for further treatment.

Two steam leaks were repaired on the L-10 evaporator at the PWTP.

The M-8 acid tank at the PWTP was removed from the building. The tank was taken out of service due to leakage around the welds.

The alarm on the sump in the diked area around the zeolite columns at the PWTP was repaired. The alarm would not clear when the sump was emptied.

July

Three valves were replaced on the L-3 filters at the PWTP. The valves were replaced due to deterioration from age. The L-3 filters are utilized to filter out particulates between the clarifier and the ion-exchange columns.

The replacement of the backwash valves on the anthracite filters at the PWTP was completed.

LGWOD personnel unloaded spent zeolite resin from a column at the PWTP and reloaded the column with fresh zeolite resin. These columns are being utilized to remove radioactive Cs-137 from the effluent of the cation exchange columns before the wastewater is transferred to the NRWTP for further treatment.

August

Plant and Equipment (P&E) personnel replaced the ferri-floc addition line to the L-1 clarifier. The line had cracked at the addition point prior to the inline mixer. The ferri-floc

is added to aid in the softening of the wastewater prior to its treatment through the ion exchange columns.

The diaphragm pump used to transfer sludge to the filter press at the PWTP for dewatering was replaced after its diaphragm had failed.

September

Calcium buildup was removed from the L-2 pump and discharge piping at the PWTP. This calcium buildup had resulted in a reduced volume of flow being pumped from L-2 through the anthracite filters and ion-exchange columns at the PWTP. Vessel L-2 is the surge tank which collects the overflow from the clarifier before the wastewater is pumped through the filters and ion-exchange columns.

The Pumping Station #1 pumps were repaired after being damaged by lightning. Pumping Station #1 is the collection point for the runoff from the North and South Tank Farms. The pumps are utilized to transfer the runoff to the Process Waste System for treatment at the PWTP.

The agitator on the lime feeder at the Neutralization Facility (Building 3518) was repaired. While working on the system, it was discovered that the electrical controls for the lime feeder needed upgrading. A work request was released to get this work accomplished utilizing P&E work forces.

The sample pump at Manhole 95 failed and was replaced. This pump is used to monitor the radioactivity in a Process Wastestream and divert it to the PWTP if necessary. This wastestream normally goes directly to the NRWTP.

October

The transfer pump located in the basement of Bldg. 3518, which is utilized to transfer wastewater from the W-1 to the T-1 basins, was repaired due to a worn impeller.

Plant and Equipment personnel began modifications to the sodium hydroxide addition system at the Melton Valley Process Waste Collection Tank Facility (Bldg. 7961). The modifications consisted of replacing the existing pump system with a new system that will transfer the sodium hydroxide by gravity to the incoming wastewater streams. The sodium hydroxide is used to maintain the wastewater, collected in the tanks, at a basic pH.

The M-8 acid pump at the PWTP failed and was replaced with a new pump. This pump is utilized to transfer sulfuric acid from the M-8 storage tank to L-5 in order to neutralize the PWTP effluent before it is transferred to the NRWTP.

November

LGWOD personnel unloaded spent zeolite from a zeolite column at Bldg. 3544. The column was then reloaded with fresh zeolite. The zeolite column is used to treat the wastewater for removal of cesium prior to discharge to the NRWTP.

December

Pump J-4001C at the Influent Pumping Station was repaired and reinstalled during the week. This pump is an inline spare used to transfer process wastewater generated in Bethel Valley to the Bethel Valley Storage Tanks.

The heat tracing at the Melton Valley Process Wastewater Collection Tanks (Bldg. 7961) was repaired during the week. The heat tracing provides freeze protection for the process wastewater transfer lines at the facility during periods of cold weather.

The impeller on the pump used to transfer wastewater from the W-1 Surge Basin to the T-1 Treatment Basin at Bldg. 3518 broke and was replaced. An agitator in the T-1 Basin, whose shaft had separated from its motor, was also repaired. Bldg. 3518 neutralizes boiler blow-down and ion-exchange demineralizer regeneration wastewater from the ORNL Steam Plant before it is transferred to the NRWTP for further treatment.

The 2019 tank jet mixer at the Melton Valley Process Waste Collection Tanks was dismantled to replace a leaking seal. After the pump was taken apart, it was discovered that spare parts were not on hand for proper repairs. The parts have been ordered and the pump will be repaired when they arrive. The jet mixer is utilized to mix the contents of the Cold Metals tank to assure a proper pH in the tank so that it will not corrode. The lack of a jet mixer in the 2019 tank causes a lack of flexibility in the LGWOD operations at this tank farm.

One of the zeolite resin columns at the PWTP "broke through" and the exhausted zeolite resin was changed out with fresh resin. These temporary columns are used at the PWTP as a means of increasing the flow capacity at the PWTP for cesium and strontium removal or for removing cesium from the final plant effluent, depending upon how they are valved in. The fresh column resulting from the resin changeout was placed in standby.

3.3 LIQUID LOW-LEVEL WASTE SYSTEM

January

A leak on the backflow preventer at Building 7860 was repaired.

The reach rod on the blocking valve between Building 3019 and the LLLW Central Collection Header was repaired. The rod was broken while preparing for a transfer.

The roughing and HEPA filter banks on the ventilation system at Building 7877 (LWSP Facility) were changed out after partial plugging resulted in a decrease in building ventilation.

The south bank of HEPA filters for the Central off-gas system (Building 3092) were replaced during the month. The new filters were subsequently DOP tested successfully by personnel from QE&I.

A cover was placed over the drain at Building 7860 going to T-14. This was done to comply with the Federal Facilities Agreement (FFA) that went into effect January 1, 1992.

February

Several leaking blocking valves in the A2 evaporator system were replaced.

A leaking valve was replaced on the LLLW Evaporator feed system.

The HEPA filter on LLLW Tank WC-9, which had previously failed its' scheduled DOP testing, was replaced and retested. It passed this test.

March

The blocking valve on the low-pressure side of the 125# reducing station at the Evaporator Facility was replaced due to a leak.

April

The coupling between the motor and the fan on the 4EF-7 ventilation fan at the New Hydrofracture Facility was found to be broken. The keyway was repaired and the fan was put back into service. This fan ventilates the Penthouse Area.

The plastic on the enclosure around the abandoned WC-10 Pump Pit was replaced at the recommendation of the LGWOD Health Physicists.

Repaired a cooling water leak on a flange on the piping to the 2A2 cooling tower at the Evaporator Facility.

The level indicator on the sump at Valve Box #1 was repaired. It was found that the conductivity probe had short-circuited due to moisture getting into the electronics.

May

A failed sump pump in the WC-2 (LLLW Tank) pump pit was replaced.

The Building 2533 (Evaporator Facility Cell Ventilation Pit) sump pump was repaired. An electrical connection had deteriorated and caused the pump to become non-functional.

The quarterly checkout of the LLLW Evaporator Building was completed. This instrument checkout is part of the LLLW System Operational Safety Requirements (OSR).

June

The liquid level indicator on Evaporator Service Tank W-22 was replaced. The level indicator was found to be defective during a volume balance being carried out on the evaporator operations.

The tank level indicator on Evaporator Service Tank W-21 was repaired. The power supply card had gone bad on the instrument and was replaced.

July

The ITE process shut down June 30 due to a problem with a contact for the drying unit for the compressor supplying sparge air for the process. The contact was replaced and the ITE process was restarted early on July 1. The ITE operations ran routinely throughout the long 4th of July weekend. Close surveillance of the High Efficiency Particulate Air (HEPA) filters in the tank off-gas system has shown little increase in differential pressure across the filters. The plugging of these filters was a problem which initially plagued the ITE process. This set of filters lasted five weeks before plugging became a problem, which was considered an acceptable duration.

A broken rotameter was replaced on the 2535 cooling tower at the LLLW Evaporator Facility.

The seals on both of the circulating pumps at the 2539 cooling tower were replaced due to wear. The 2539 cooling tower supplies cooling water to the condenser for the 2A2 evaporator system.

August

The Building 7567 pump vault was decontaminated by LGWOD personnel in preparation for scheduled maintenance activities.

The Atlas Copco air compressor representative was onsite to oversee repairs to the 100 pound per square inch (psi) air compressor at Building 7830. The compressor was found to have a sticking oil pressure control valve. Repairs are scheduled to be completed this week.

The Atlas Copco air compressor representative was onsite to oversee repairs to the Building 7830 100 psi air compressor and the Building 7860 100 psi air compressor. The Building 7830 compressor had a sticking oil pressure control valve and the Building 7860 compressor had a faulty unload pressure switch.

November

The pump pressure sensors for the LLLW transfer pumps at Bldg. 7830 were replaced. These sensors are used to shut the pumps down and prevent over pressurization of the LLLW transfer line.

A representative from Ingersol Rand came on-site to perform programmed maintenance on the 30 psi air compressor located at the Melton Valley Storage Tanks Facility. This compressor supplies instrument air to the instruments at the facility.

The Bethel Valley LLLW Monitoring Cabinet upgrades were completed. The upgrades consisted of replacing the plastic tubing with stainless steel.

December

Instrument and Control personnel repaired the level indicator on evaporator service tank W-21.

Replaced the broken flush valve on the W-29/W-30 pump module. The valve was found to be broken when the tanks were sampled for the upcoming solidification campaign. The flush valve is used to flush the pump module and associated piping with water after LLLW has been pumped from the tanks.

A steam leak on the steam supply line supplying steam to the jets in the W-16, 17, and 18 Tank Farm was repaired. The gasket on the isolation valve to the Tank Farm had developed a leak and was replaced.

The heat tracing system on the Bldg. 7830 Off-Gas System was found to be non-operational and was repaired. The operation of this system is essential to the success of the In-Tank Evaporation Process, which is being operated in order to reduce the LLLW concentrate being stored at the Melton Valley Waste Storage Facility.

3.4 GASEOUS WASTE SYSTEM

January

The governor on the Isotopes Turbine in the 3039 Stack Area was replaced due to a leak. While the turbine was taken out of service, the overspeed trip was also repaired. This turbine supplies backup ventilation to the Isotopes Area in the event of scheduled or unscheduled interruption of the normal ventilation being supplied by the electric fan.

A steam leak on the Isotopes Turbine was repaired. This turbine supplies Cell-Ventilation service to the Isotopes Area in the event of an outage of the electric fan.

Two broken bolts on the 4500 Steam Turbine were replaced when they were found to be broken during the weekly programmed maintenance performed by P&E personnel. Instrumentation and Controls (I&C) personnel performed the scheduled operational test of the Central Off-Gas Relief Valve. This test is an OSR requirement.

The differential pressure switch on the North bank of HEPA filters in the 3039 Stack Area was changed out due to erroneous readings.

Two coils on the oil cooling system were found to be leaking on the 4500 steam turbine located in the 3039 Stack Area. The coils were repaired and the system was returned to normal.

The quarterly load test was completed on the new Building 3125 Diesel Generator. This generator supplies backup electrical power to the 3039 Stack Area in the event of a power outage. The generator was also used to supply power to the stack area for four hours while normal power was disconnected for maintenance work.

February

An electrical short circuit in the temperature sensor on the 4500 Electric Blower was repaired. During the duration of the repair, approximately four hours, the backup steam turbine supplied ventilation to the 4500 Area as designed.

A bad solenoid on the 3025/26's steam turbine's electric leg was repaired during the month.

March

The gaskets on the blocking valve on the 125# steam supply to the 3039 Stack area were replaced due to leaks.

Three HEPA filter banks (#2,5,6) were changed out at Building 3106. This battery of filters services the 4500 area. New HEPA filters were installed and DOP tested. The new filters successfully passed the DOP tests.

A steam leak at the Building 3092 (Central Off-Gas) steam station was repaired.

April

The HEPA filter in the ventilation system which provides ventilation for a Contamination Area at Building 7863 was replaced and subsequently DOP tested. The new filter passes the DOP test.

The demister media for the Building 3092 Central Off-Gas System was replaced due to plugging. The demister is used to assure the HEPA filters do not become wet and plugged.

The annual testing of the pressure switching system in the Central Off-Gas System (Building 3092) was completed. This testing is an Operational Safety Requirement.

The HEPA filters in the Central Off-Gas System (Building 3092) were replaced because of excessive differential pressure across them. Both banks were DOP tested after the filters were replaced and passed testing.

Repaired a steam leak on the 4500 Cell Ventilation turbine steam station located in the 3039 Central Stack Area.

During the weekly programmed maintenance on the Isotopes Area Cell Ventilation Turbine, small pieces of babbitt (metal lining for the bearings) were discovered in the oil. The affected bearings were replaced, and a total bearing repack was completed during the outage (which was performed under the new lockout/tagout procedure). If the damaged bearing had not been discovered in such a timely manner, extreme damage would have been done to the motor/fan shaft, leading to an extremely expensive shaft replacement task.

The bearings on the 3025/3026 Cell Ventilation Turbine were repacked as a part of normal preventative maintenance.

The steam control valve on the electric leg of the Isotopes Area Cell Ventilation Turbine in the 3039 Stack Area was repaired.

The vacuum relief valve on the Central Off-Gas System was cleaned and recalibrated. The valve was found to be sticking during the quarterly calibration, which is an Operational Safety Requirement.

The divider plate on the oil cooler for the 4500 Area Cell Ventilation Steam Turbine had worn to the point where it was allowing water to bypass the cooler, thus decreasing its efficiency. The divider plate was repaired and the oil cooler was put back into service.

The HEPA filter on the EF-7 system at Building 7860 (New Hydrofracture Facility) was replaced due to failure of its scheduled DOP test.

May

Scheduled DOP testing was conducted on the HEPA filters at Building 2531 (LLLW Evaporator Facility) and Building 7830 (Melton Valley Waste Storage Facility). All filters passed testing with the exception of 4 HEPA 10 at Building 7830. This filter was taken out of service and scheduled for replacement. The replacement was completed in late May.

The quarterly load test of the 3039 Stack diesel generator was carried out. All systems tested properly. The diesel generator provides backup power to the electric ventilation blowers in the stack area in the event of an outage of normal (TVA) power.

The monthly operational test of the vacuum relief valve on the 3092 off-gas system was conducted. The valve reacted properly.

June

Filter 4 EF 10, located in the Cell Ventilation system at the MVSTs, was successfully DOP tested. This filter had been replaced after failing a previous DOP test.

The Cell Ventilation intake filters servicing the LLLW Evaporator Facility Crane Bay were changed out.

New gages were installed on the Cell Ventilation and Off-Gas systems at the MVST. The old gages had become difficult to read due to weathering.

The HEPA filters in the South bank of the Central Off-Gas System were replaced. The existing filters had become plugged. Both the North and South filter banks were DOP tested and passed. The Central Off-Gas System supplies off-gas to radiochemical operations and facilities throughout the ORNL main plant area.

The scheduled monthly operational testing of the 3092 vacuum relief valve was completed successfully.

The Off-Gas fan belt on the East fan was replaced due to normal wear.

The alarm on the 3039 stack diesel generator was repaired and a load test was conducted on the generator. This generator provides emergency power to the 3039 stack ventilation system in the event of a TVA power outage.

The HEPA filters on the Off-Gas system at the MVSTs were changed out due to plugging. The new filters were DOP tested and passed the testing. The ITE process was restarted after the filter changeout. The filters were found to be plugged with a powdery substance. Close

surveillance was being made of the pressure drops across the filters to ascertain whether filter plugging would be an ongoing problem.

July

The semiannual Programmed Maintenance on the 3500 and 4500 electric blowers in the 3039 Central Stack area was completed. The maintenance included the greasing of all of the bearings, inspection of all parts, and the replacement of the drive belts between the motor and fan. These electric blowers supply ventilation to buildings, hoods, cells, etc. in the 3500 and 4500 areas where radiochemical work is being completed.

A steam leak on the 3025/3026 steam turbine was repaired. This turbine supplies cell ventilation to Buildings 3025 and 3026 in the event that the electric fan should become disabled.

LGWOD Instrument and Controls support personnel completed the monthly operational checkout of the Building 3092 Off-Gas relief valve. This valve is designed to relieve the pressure in the Central Off-Gas system should the vacuum get too high, thus preventing the ducts from being collapsed.

August

The scheduled operational testing of the 3092 vacuum relief valve was completed.

The HEPA filters in the Building 7830 off-gas system were changed out and the new filters were successfully DOP tested by QE&I personnel. Chem Tech personnel are investigating the cause of the filter plugging.

September

The quarterly load test on the 3125 diesel generator was completed. This quarterly load test is a Limiting Conditions Document (LCD) requirement.

The demisters in the Building 3092 Central Off-Gas System were changed out due to plugging. These demisters remove any droplets of liquid from the off-gas stream before the stream enters the filters downstream of the demister. The demisters prevent the filters from becoming wetted and plugging.

The first stage of HEPA filters on the tank off-gas system at the Melton Valley Storage Tanks (MVSTs) was changed out with new filters and the new filters were successfully DOP tested. The filters which were removed had become plugged with a fine powder during ITE operations. The filters were sampled by Environmental Monitoring and Compliance personnel to determine the constituents of the powder and whether or not the building up of this powder on the filters has any environmental or regulatory impacts.

The North bank of the HEPA filters at Building 3092 was changed out and the new filters were successfully DOP tested. The filters which were removed had become plugged during normal operations.

The Off-Gas filters at the MVSTs were changed out because of plugging. The ITE, which was temporarily shut down while the filters were changed out, was returned to normal operations.

October

The scheduled quarterly DOP test on the Bldg. 3092 filter banks was successfully conducted by personnel from QE&I.

The solenoid valve on the 3500 Area Steam Turbine cooling water system was replaced after the valve malfunctioned. This turbine supplies cell ventilation to the 3500 Area in the event that the electric fan should become disabled.

The HEPA filters on the Bldg. 7830 off-gas system were replaced and successfully DOP tested by personnel from QE&I.

The demister media for the 3092 Central Off-Gas System was changed out due to a high differential pressure across the media. The demisters are used to remove large droplets of moisture from the air stream before it enters the filters, thus preventing the plugging of the filters due to wetting.

November

The motor on the exhaust fan for Bldg. 7863 was repaired after the motor had burned out.

The HEPA filters on the Bldg. 7830 off-gas system were changed out due to plugging of the filters. The filters were replaced and successfully DOP tested by personnel from QE&I. The In-tank Evaporation Project was then returned to service.

Personnel from QE&I DOP tested the HEPA filters at Bldg.s 2534, 2537, 7830, 7863, and 7877. The filters at all of the buildings except for 2534 were successfully tested. The filters at Bldg. 2534 failed and were replaced. They were successfully retested during the next week. The filters at Bldg. 2534 are on the off-gas system for the LLLW Evaporator Facility.

The starter on the 4EF-2 exhaust fan at the New Hydrofracture Facility (Bldg. 7860) failed and was replaced. This fan ventilates the processing cells at the facility.

December

LGWOD personnel completed the monthly check of the Bldg. 3092 off-gas system relief valve. This check is a requirement of the Limiting Conditions for the 3039 Stack Ventilation System.

QE&I personnel successfully DOP tested the HEPA filters for LLLW tank WC-20.

The crane bay exhaust fan (2EF-1) at the LLLW Evaporator Facility was repaired after the motor kept tripping off. This fan ventilates the crane bay at the LLLW Evaporator Facility.

The off-gas HEPA filters at Bldg. 7830 were replaced and the new filters were successfully DOP tested by personnel from QE&I. These filters are on the off-gas system for the Melton Valley Storage Tanks.

The quarterly load test of the 3039 Stack Area Emergency Diesel generator was conducted. This test is a requirement of the 3039 Limiting Conditions for Operations. All equipment tested satisfactorily.

The Off-Gas filters at Bldg. 7830 (Melton Valley Storage Tanks) were changed out because of high differential pressure across the filters which resulted from the ITE process. The new filters were DOP tested and passed the tests.

The demister media at the Bldg. 3092 Central Off-Gas System was changed out due to an excessive pressure drop across the media. The demister is utilized for the removal of small particulates of liquid resulting from the scrubber operations which could plug the filters further downstream from the demister. The purpose of the Central Off-Gas System is to ventilate radiochemically contaminated glove boxes, process vessels, etc. throughout the main ORNL complex.

3.5 WASTE OPERATIONS CONTROL CENTER DATA ACQUISITION SYSTEM AND DISTRIBUTED CONTROL SYSTEM

February

The Data Acquisition System data concentrator one halted for no apparent reason. Normal efforts to re-start the concentrator failed. After several attempts to isolate the failure the concentrator began operating again with no conclusive evidence of what caused the failure. Approximately seven hours of down-time in concentrator one resulted.

March

The auxiliary console on the DAS failed and was repaired.

One disk drive failed and was repaired resulting in approximately 1.5 hours downtime. No archival data was lost.

April

The Uninterruptable Power Supply (UPS) power to the WOCC control room was inadvertently shut off during a test of the fire alarm system resulting in a blown fuse in the UPS, a power supply in one WOCC DAS console being damaged and the disk drive on the WOCC Distributed Control System being damaged. All systems were restored to normal operation with minimal downtime, however approximately 16 hours of Distributed Control System trend data was lost.

One TS-11 magnetic tape drive was repaired.

June

A disk controller failed on the Laboratory Emergency Response Center (LERC) DAS, the WOCC DAS backup system, while maintenance was being performed. The controller was replaced with no significant downtime.

May

A hardware failure occurred in the OIU at the PWTP. The OIU was repaired using one of the cards from the OIU at the WOCC and replacement parts were ordered and installed. This failure was categorized as a Non-Routine Occurrence.

4.0 MISCELLANEOUS ACTIVITIES

4.1 TRAINING ACTIVITIES

January

Five LGWOD personnel successfully completed their scheduled respirator update program.

Three personnel attended On-The-Job Training (OJT) Training.

One personnel attended Positive Discipline Training.

Two personnel attended respirator fitting training and completed necessary requirements to wear respirators.

One personnel attended Total Quality Management (TQM) Training.

One LGWOD personnel attended the DOE Facility Performance Monitoring Course.

One engineering personnel completed the Bailey Controls Engineering Work Station Course in Atlanta.

February

One LGWOD personnel successfully completed their scheduled respirator update program.

One LGWOD personnel attended the DOE Facility Performance Monitoring Course.

Ten personnel attended Sexual Harassment Training.

Eight Procedural Use Exercises were completed by all operating personnel. These are part of the requalification requirements for operators and foremen.

One LGWOD personnel attended a workshop in Basic Radioactive Materials Communications and Packaging (off-site).

Six LGWOD personnel went to computer security training.

Five LGWOD personnel underwent a whole body count as part of the Bioassay program.

March

One LGWOD personnel attended a workshop in Basic Radioactive Materials Communications and Packaging (off-site).

Two LGWOD personnel attended respirator training and were fitted.

Seven LGWOD Supervisory personnel attended a workshop entitled "The Manager's Role as Coach" given off-site by the National Seminars Group.

One LGWOD personnel attended Visible Emission Training in order to recertify as a Visual Emission Observation Certification Officer. This certification is a requirement of the Clean Air Act.

Thirty-six LGWOD personnel attended required Criticality Training.

Seven LGWOD personnel attended Radiation Worker Update Training.

Three LGWOD personnel attended a workshop to discuss milestone schedules and plans for implementing Phase 1A and II of the SAR Update Program.

Two engineering and two LGWOD personnel completed ten days of training on Bailey Controls Operator Interface Station configuration training in preparation for the BV LLLW control system upgrade.

Two LGWOD personnel were whole-body counted.

April

Twenty LGWOD personnel attended required Criticality Training. This completes the LGWOD training for Criticality.

Twenty-eight LGWOD personnel attended Chemical Laboratory Hazard Communications training.

Three LGWOD personnel attended SARA/OSHA Update Training.

Two LGWOD personnel attended respirator training/fitting.

One LGWOD personnel attended Radiation Worker Requalification Training.

Four personnel attended Hazardous Material Inventory Training.

One personnel was whole-body counted.

May

One LGWOD personnel attended SARA/OSHA Update training.

Four LGWOD personnel attended Solid Low-Level Waste training and TRU training.

One LGWOD staff member attended Course No. PC 504 (Harvard Graphics) and one staff member attended PC 220 (Lotus).

One staff member also attended training on the new occurrence reporting system (Energy Systems Action Management System).

One LGWOD staff member attended American Management Association Course No. 4233 - "How to Implement an Activity - Based Cost Management System in Your Company". Material presented in this seminar will be used to define Activity-Based Budget criteria to be used in the next ADS planning cycle by Departments in the Waste Management and Remedial Action (WM&RA) Division.

One LGWOD staff member attended Course No. QA-600, Operational Readiness Team Workshop.

Two LGWOD personnel attended Phase 1A SAR Update Program training.

Two LGWOD personnel attended respirator training and were fitted for respirators.

June

One LGWOD personnel attended Radiation Work Permit training.

Two LGWOD personnel attended 90 Day Storage Area Generator training.

Two LGWOD personnel attended a course on cooling tower treatment technology.

Two LGWOD personnel were whole-body counted.

One LGWOD personnel attended computer training course PC 307-Introduction to Lotus 1-2-3.

One LGWOD personnel completed a two week training course pertaining to the programming of the Bailey Distributed Control System. This system is currently used to control the NRWTP, the feed to the PWTP, and will be used in the future to control the parts of the LLLW system being designed and constructed under ongoing line items and General Plant Projects (GPPs).

One LGWOD staff member attended American Management Association Course no. 04123-004, Activity-Based Budgeting.

July

Four LGWOD personnel received respirator training and were successfully fitted for respirators.

Three LGWOD personnel attended Satellite Waste Generator training.

Two LGWOD personnel attended Criticality training.

Six LGWOD personnel attended SARA/OSHA Update training.

Two LGWOD personnel attended training on DOE Order 5700.6C, Quality Assurance.

One LGWOD personnel attended Radiation Worker Update training.

One LGWOD staff member attended computer training course # PC 110, Introduction to MSDOS.

Six LGWOD personnel were whole body counted.

Three LGWOD personnel completed their General Employee retraining.

Three LGWOD personnel attended Root Cause Training.

August

One LGWOD personnel completed SLLW/TRU Training.

Four new Chemical Operator candidates reported to work and began training for eventual qualification a Chemical Operators.

Thirteen LGWOD personnel completed General Employee Retraining.

One LGWOD personnel completed Safety Work Permit Training.

Nine LGWOD personnel attended "Coaching - Key to Team Success."

Six LGWOD personnel completed the 16 hour SARA/OSHA training; this training will complete the full 40 hour SARA/OSHA training course.

One LGWOD personnel was successfully respirator fit tested.

Five LGWOD personnel completed the annual SARA/OSHA refresher training.

One LGWOD personnel completed Hazardous Materials Inventory System (HMIS) training.

Two LGWOD personnel were whole body counted.

September

Five LGWOD personnel received a whole body count.

Eleven LGWOD personnel attended the final 16 hours of the 40 hour SARA/OSHA training session.

Five LGWOD personnel attended SARA/OSHA update training.

One LGWOD personnel attended "Coaching, the Key to Success".

Three LGWOD personnel attended initial Radiation Worker Training.

Two LGWOD personnel completed their annual respirator training and fitting.

Twelve LGWOD personnel completed their General Employee Training (GET) Update.

All LGWOD weekly and monthly personnel and some hourly personnel attended Total Quality Management Training.

One LGWOD personnel attended 90-Day Accumulation Area training.

Thirteen LGWOD personnel attended Confined Space Refresher training.

One LGWOD personnel attended Root Cause training.

Two LGWOD staff members attended Automated Estimating Systems software training.

One LGWOD staff member attended course No. Pc 111, Intermediate DOS 5.0.

October

Seven LGWOD personnel received Respirator Fitting Retraining.

Five LGWOD personnel completed GET Retraining.

Six LGWOD personnel received a whole body count.

Twenty-one LGWOD personnel received Emergency Squad Training.

One LGWOD staff member attended Course No. 113, System Administrator (DOS 5.0).

Three LGWOD staff members attended the "Overview Cost Accounting System" training course.

Five LGWOD personnel received Criticality Training.

One LGWOD person received Resource Conservation and Recovery Act (RCRA) training.

Seven LGWOD personnel attended Confined Space Update Training.

November

Five LGWOD personnel received Solid Low-Level Waste Training.

Two LGWOD personnel received a whole body count.

Nine LGWOD personnel attended the 16-hour SARA/OSHA training. This additional 16 hours completed the required 40 hours of SARA/OSHA training needed to participate in some non-routine tasks being completed by LGWOD personnel for ER.

Eight LGWOD personnel received Emergency Squad Training.

Five LGWOD personnel received Confined Space Training.

Two LGWOD personnel attended Safety Work Permit Training.

One LGWOD person attended a three-day, off-site seminar covering Environmental Regulations.

Three LGWOD shift foremen attended off-site supervisory training.

Seven LGWOD personnel attended Sexual Harassment Training.

December

Two LGWOD personnel attended Confined Space Training.

Six LGWOD personnel attended Accident Investigation Training.

Eighteen LGWOD personnel attended Lockout/Tagout Retraining.

Seven LGWOD personnel had mask fittings.

One LGWOD personnel had a whole body count.

Two LGWOD personnel attended Solid LLLW training.

Six LGWOD personnel completed the 16 hour SARA/OSHA Training. This additional 16 hours completed the required 40 hours of SARA/OSHA training needed to participate in some non-routine tasks being completed by LGWOD personnel for the Environmental Remediation Section.

Three LGWOD personnel attended Total Quality Management Training.

4.2 AUDITS AND TOURS

January

The internal LGWOD surveillance of Building 2531 was completed. This annual surveillance consists of a walk-through of the facility by the LGWOD Operations Group Leader and the responsible foreman to ascertain what deficiencies relative to Environmental Safety and Health (ES&H) or housekeeping are present.

The internal LGWOD surveillance of Building 7860 was completed. This annual surveillance consists of a walk-through of the facility by the LGWOD Operations Group Leader and the responsible foreman to ascertain what deficiencies relative to ES&H or housekeeping are present.

February

LGWOD personnel met with eight representatives from the Hanford Facility for a discussion of the NRWTP design and operation. Hanford is in the process of designing a treatment facility similar to the NRWTP and want to incorporate ORNL operating experience into their design.

The LGWOD internal surveillance of the outside areas at the PWTP was completed. This is an annual inspection.

The surveillance of the following facilities was conducted by the DOE On-Site WM representative:
WOCC (Building 3130)
PWTP (Building 3544)
190 Ponds (Buildings 3539 and 3540)
Concentrator 2 (Building 3082)
No findings were identified at the surveillance closeout.

April

The Industrial Safety Department, at the request of LGWOD personnel, conducted an OSHA-type inspection of Building 3544. There were no significant findings.

A tour of the 3039 Central Stack Area and the WOCC was conducted for Bill Harrison, Office of Nuclear Safety.

May

LGWOD personnel toured Air Compliance personnel around all of the LLLW tanks which have exhausts directly to the atmosphere through HEPA filters. This task was being carried out as part of an emissions survey.

June

LGWOD personnel supported a group of operators and designers from the Westinghouse Hanford Site. These personnel spent a week at the NRWTP in order to receive an overview of NRWTP plant operations, computer control philosophies and design, configuration and equipment evaluations, and lessons learned during the design, construction, and startup of the NRWTP. This overview was accomplished to support a treatment facility being designed at Hanford.

July

Representatives from the WMRAD Health and Safety Department were given a tour of the 3039 Central Stack area and some of the data concentrators in order to complete a hazard identification/evaluation for the LGWOD facilities.

A follow-up surveillance to an OSHA-type inspection at the PWTP was held by the ORNL Health and Safety representative. All but two items from the initial inspection were either closed or had an action plan for closure. The ORNL Health and Safety representative provided advice on a means of closing the last two items.

LGWOD personnel conducted a tour of the PWTP and the NRWTP for personnel from K-25. Points of interest were the DCS used to operate the NRWTP and the clarification process used at both facilities.

LGWOD personnel toured the DOE surveillance team for Conduct of Operations through various LGWOD facilities.

August

The DOE onsite representative conducted a walk-through of Buildings 3130, 3544, 3518, and the process wastewater ponds (which have been removed from active service). No findings were identified.

Conducted training for one DOE-OR personnel in LGWOD operations. The person spent one day each at the Waste Operations Control Center (Building 3130), the Process Waste Treatment Plant (Building 3544), and the Nonradiological Wastewater Treatment Plant (Building 3608).

The Environmental Compliance Group conducted an inspection of LGWOD's satellite area at Building 3518. No findings were identified.

September

The Radioactive Operations Committee (ROC) review of the LLLW Collection, Transfer, Treatment, and Solidification Systems was conducted. This review lasted approximately three weeks. The ROC closeout meeting identified one new potential finding against Chem Tech personnel providing technical support to the LGWOD. One old finding against LGWOD was closed and a new finding was generated to provide additional clarification.

The Satellite Storage Area at Building 3518 was inspected by Environmental Monitoring and Compliance (EMC) personnel. There were no findings resulting from the surveillance.

The LGWOD Air Permits were audited for compliance by the EMC Air Permitting personnel. There were no findings resulting from this surveillance.

October

LGWOD personnel accompanied DOE, HAZWRAP, and CWMD personnel on the scheduled DOE ES&H walk-through of the 7860 area, the Central Pumping Station (Bldg. 7567), the WC-20 (Bldg. 7569) Area, and a LGWOD Storage Facility (Bldg. 7853).

LGWOD personnel accompanied WMRAD ES&H representatives on a walk-through surveillance involving the Process Waste Collection System.

LGWOD personnel accompanied DOE, HAZWRAP, and CWMD personnel on the scheduled DOE ES&H and Conduct of Operations walk-through of the 3039 Stack Ventilation System and associated equipment.

LGWOD personnel accompanied WM&RA ES&H personnel on the scheduled ES&H walk through of Bldgs. 2651, 3082, 3130, 3558, end 3544.

Environmental Monitoring and Compliance (EMC) conducted a surveillance of LGWOD Satellite Storage Areas. There were no findings resulting from this surveillance.

A DOE/ESH walk-through of Bldgs. 3544, 3518, and a number of Process Waste manholes was completed.

November

LGWOD personnel accompanied WM&RA ES&H personnel on the scheduled quarterly ES&H walk-through of Buildings 7567, 7569, 7906, 7907, 7908, 7922, 7935, 7952, and 7961.

LGWOD personnel accompanied WM&RA ES&H personnel on the scheduled ES&H walk-through of Buildings 7830, 7853, 7860, 7863, and 7919.

LGWOD personnel accompanied DOE and CWMD personnel on the scheduled Conduct of Operations walk-through of Buildings 2600, 3130, and 3608.

4.3 MISCELLANEOUS

January

Completed the inspection of the quarterly archive samples which are being stored from EASC. All of the samples were intact.

Forty drums of waste were emptied at the NRWTP for the Hazardous Waste Group.

Ten bottles of Process Wastewater were picked up at the Whole Body Counter and treated at the PWTP.

A bottle transport package was issued to the Health and Safety Research Division (HASRD).

The first draft of the LGWOD Annual Operating Report, CY 1991 (ORNL/TM-12044) was distributed for review.

All of the bottles to be used in the transport of LLLW were marked with a fill line at which two gallons will be held. This was initiated at the recommendation of the FFA Readiness Review Board.

Two trailers full (10,000 gallons) of wastewater were transferred from Environmental Restoration (ER) drilling operations in Solid Waste Storage Area (SWSA) 6. Two additional trailers of wastewater generated from Solid Waste Operations in SWSA 5 and SWSA 6 were also transferred. All four trailers full of wastewater were emptied into the PWTP collection system.

The quarterly sampling of the EASC casks was completed.

Three thousand gallons of caustic and four hundred gallons of sulfuric acid were received at the PWTP.

The Building 3074 Dumpster Tank was sampled, transported to the LLLW System, and dumped.

The LGWOD Quality Assurance Plan, Rev. 1, was approved and entered into the Documentation Management Center for distribution. This closed a corrective action item from a recent software audit of the LGWOD.

Emptied the 4PRS, 4VS-27, and the 4VS-28 sumps at Building 7830.

Programmed maintenance was performed on the Uninterruptable Power Supply (UPS) at Building 3130.

February

Preparation of the Vulnerability and Risk Assessment for the 3039 Stack is progressing on schedule. This study is being performed in response to recommendations made by the Radioactive Operations Committee. This task will evaluate the probability of stack collapse and other scenarios.

The High Flux Isotope Reactor (HFIR) Access Road and two vehicles between MSRE and the HFIR became contaminated when a vehicle became stuck on the shoulder and contaminated mud was uncovered. LGWOD personnel decontaminated both the road and the vehicles.

Ten drums were received from the Hazardous Waste Group and emptied into the NRWTP for treatment. The Tumulus Pad sumps were emptied and the wastewater was delivered to the PWTP for treatment. Several thousand gallons of wastewater generated by Bechtel operations in SWSA 6 were also collected, transported, and treated.

The Building 3074 Dumpster Tank was transported to the LLLW system and dumped.

The 4VS27 and 4VS28 sumps at 7830 were sampled using the new suction pipes installed to empty the sumps.

The LGWOD Annual Operating Report, CY 1991 (ORNL/TM-12044) was approved and sent to Reproduction for distribution.

Forty drums of waste were emptied at the NRWTP for the Hazardous Waste Group.

March

The locks, tags, and lock boxes needed for compliance with the new Lockout/Tagout procedures were received. This procedure became effective on April 1.

Approximately 600 gallons of LLLW was received into LLLW Tank WC-19 from the 3001 Canal cleanup task during the week ending on March 8, 1992. This wastewater was immediately transferred to W-22.

LGWOD personnel loaded 5000 gallons of wastewater at SWSA 6 for the Solid Waste Operations Group. This wastewater was subsequently transported by the tanker to the NRWTP for treatment.

LGWOD personnel unloaded 16,000 gallons of wastewater generated at the White Oak Creek Embayment Project out in the 0800 area. Personnel also met with the Construction Engineer for this project to advise him on setting up a system to treat the wastewater in order to reduce the pH so that it can be transported as a non-hazardous waste. LGWOD personnel will accomplish the chemical additions and sparging necessary for this pH reduction.

LGWOD personnel completed the pumping of sludges from the 7860A Tank into drums. This pumping operation was part of the closure plan for this hazardous waste tank which had previously been removed from its site.

Process wastewater was pumped from a new silo at SWSA 6 (at the request of the Solid Waste Management Group) and transported to the NRWTP for processing.

Approximately 9000 gallons of water were transported from the Interim Waste Management Facility (IWMF) at SWSA 6 to the NRWTP for treatment.

April

Approximately 48,700 gallons of Liquid Low-Level Waste (LLLW) Concentrate were transferred from W-24 and W-26 to W-29 and W-30. The waste in W-29 and W-30 will be allowed to settle and will then be sampled in preparation for the next LWSP Campaign. Storage tanks W-24 and W-26 will be refilled with concentrate from the Evaporator Service Tanks.

The vault sumps at the Melton Valley LLLW Storage Facility were emptied using the pumping system which was recently installed to facilitate a more efficient emptying of the sumps. The LLLW resulting from this operation was transported to the LLLW Collection System by tank truck.

Two bottles of LLLW was picked up from Building 3592 and disposed of at the Bottle Dump Station located at the LLLW Evaporator Facility. This was the first pickup of bottled LLLW since the signing of the FFA.

The sixty casks in which the sixty waste forms generated during the Emergency Avoidance Solidification Campaign (EASC) are contained were sampled. The casks are sampled on a quarterly basis. Any liquids found in the casks are analyzed for radiochemical constituents.

The IWMF Pad located in SWSA 6 was pumped off for the Solid Waste Operations Group and approximately 5000 gallons of Process Waste was transported to the PWTP Collection System for treatment.

Approximately 10,000 gallons of Process Waste were pumped into the Process Waste Tanker from SWSA 6 and subsequently transported to the NRWTP for treatment.

Two loads of sulfuric acid was transferred into the mobile acid tank at the NRWTP (Building 3608) and transported to the PWTP (Building 3544). This acid is used at the PWTP to reduce the pH of the effluent before it is pumped to the NRWTP for further treatment.

A contaminated drilling rig was decontaminated at the Contaminated Equipment Cleaning Facility (Building 7935).

The LGWOD ALARA Plan for 1992 was approved and distributed.

A demonstration of the WOCC DCS was given to Y-12 Waste Management and Engineering personnel.

May

A meeting was held with Health Physics, Plant & Equipment, LGWOD, and Compliance personnel to discuss pulling various samples from the piping and equipment in the hot cells at the New Hydrofracture Facility (Building 7860). The objective for pulling these samples is to show that RCRA constituents are not present so that a RCRA closure plan for the facility need not be written. After the meeting P&E and LGWOD personnel visited the site to ascertain the feasibility of pulling the samples from the selected locations. All sample locations were identified, and the samples were pulled the next week.

Approximately 4,540 gallons of liquid low-level waste (LLLW) concentrate were transferred from Evaporator Service Tank W-23 to W-21 in preparation for the transfer to the Melton Valley Waste Storage Facility Tanks.

Transferred 30,930 gallons of LLLW from W-21 and 23,570 gallons from C-1 to Melton Valley Waste Storage Facility tanks W-26 and W-24.

Three bottles of LLLW were picked up at Building 3592, transported to the bottle unloading facility at Building 2531, and dumped into the LLLW evaporator system.

One bottle of process waste was picked up at Building 1505 and disposed of at the PWTP.

Ten thousand gallons of process waste was pumped into the process waste tanker at SWSA 6 and transported to the NRWTP for treatment.

Thirty-five hundred gallons of process waste were picked up at the White Oak Creek Embayment Project and transported to the NRWTP for treatment. This was the last of the liquid waste generated from this project.

LGWOD personnel sampled inactive LLLW tanks 3023 and 3003A for the Environmental Restoration (ER) Section.

The mobile acid tank was filled with sulfuric acid at the NRWTP and transported to the PWTP. Sulfuric acid is used at the PWTP to lower the pH of the effluent before it is transferred to the NRWTP.

LGWOD personnel supported the Solid Waste Operations Department in carrying out the task of cutting up the 7860A contaminated oil storage tank so it will fit into a disposal silo. This task is being carried out in the LWSP building to provide containment.

LGWOD personnel decontaminated the tools used in the cutting of the 7860A contaminated oil tank. Building 7877 was used as containment for these operations.

LGWOD personnel pumped water from a telephone manhole to the NRWTP collection system at the request of Construction Engineering personnel.

Inactive tank 3004 B was sampled by LGWOD personnel at the request of ER personnel.

June

In an attempt to locate the source of high levels of Cs-137 entering the Process Waste System, numerous samples were taken along the pipeline draining into process waste manhole MH 149. These samples were then analyzed for their radiological constituents. The source of the high cesium levels was not ascertained.

Approximately 5,000 gallons of Process Waste generated in SWSA 6 were pumped into the Process Waste tanker and transported to the NRWTP for treatment.

Inactive LLLW tank 3003 was sampled by LGWOD personnel for the ER Section.

One bottle of LLLW was picked up at Building 4500N, transported to the LLLW Evaporator, and emptied.

Two bottles of LLLW were picked up at Building 3592, transported to the LLLW Evaporator Facility, and dumped at the LLLW bottling station.

Twelve containers of Process Waste were picked up at Building 1505 and emptied into the Process Waste system.

Twelve 55-gallon drums were picked up at the garage, transported to the NRWTP, and dumped.

LGWOD personnel decontaminated the Personnel Decontamination Room at Building 3550 and disposed of the wastewater generated into the PWTP collection system.

The sulfuric acid truck was loaded at Building 3608 (NRWTP) and transported to Building 3544 (PWTP).

LGWOD personnel completed the decontamination of Building 7877 after the 7860A underground storage tank (UST) was removed. This tank was used for the storage of contaminated oils. Building 7877, which is normally used for Liquid Waste Solidification Project (LWSP) operations, was used to provide containment while cutting up the 7830A UST so it could be disposed of at the SWSA 6 Silos.

One load of sulfuric acid was unloaded at Building 3608 (NRWTP). This acid is used to neutralize the treated waste before releasing it to the White Oak Creek through the NPDES permitted monitoring station.

A load of Sodium Hydroxide (NaOH or Caustic) was received and unloaded at Building 3544 (PWTP). Caustic is used at the PWTP to raise the pH in the clarifier for hardness removal.

A large lawn mower and two weed-eaters were decontaminated at the Equipment Cleaning Facility (Building 7935).

LGWOD personnel transferred wastewater from the new storage pad at SWSA 6 and transported the wastewater to the NRWTP for treatment.

Samples were pulled from the mixing, pump, and well cells at the New Hydrofracture Facility. These samples will be used to identify whether or not the facility is a RCRA facility and will need a closure plan written.

A load of nitric acid was unloaded at the PWTP. Nitric acid is used at the PWTP to regenerate the cation exchange columns.

July

Five hundred gallons of sulfuric acid were loaded into the acid transport truck at the NRWTP and transported to the PWTP for use three times during the month. Sulfuric acid is used at the PWTP to lower the effluent pH before it is sent to the NRWTP for final treatment.

Fifteen thousand gallons of Process Waste were pumped from the tumulus pads in SWSA 6 and transported to the NRWTP for treatment.

One bottle of LLLW was picked up from the generator, transported to the LLLW Evaporator Facility, and emptied at the LLLW Bottling Station.

The IWMF pads in SWSA 6 were pumped off by LGWOD personnel. The wastewater was then transported to the NRWTP for treatment.

Three thousand gallons of sodium hydroxide were delivered to the PWTP and unloaded.

LGWOD personnel assisted in the pulling of a sample from a fugitive wastestream entering LLLW tank W-12. A sample was taken of this stream in an attempt to ascertain where it originates.

LLLW Tank 3001B was sampled by LGWOD personnel for the Environmental Remediation Program.

The LGWOD provided Chemical Operator support to the Remedial Actions Program in replacing the W-1A and W-6 HEPA filters and repairing the W-10 liquid level indicator.

LGWOD personnel sampled the Emergency Avoidance Solidification Campaign (EASC) storage casks at the request of the Solid Waste Operations Department.

The casks used to store the waste forms from the first LWSP campaign were sampled for the first time. The archive samples from both the LWSP and EASC were taken out and surveyed to assure they are not under pressure or containment has not been breached.

LGWOD personnel decontaminated a compressor for the Plant and Equipment Division.

A 50-ton crane was decontaminated by LGWOD personnel at the request of Plant and Equipment personnel.

The animal trapping program around the Building 3524 (Equalization Basin) berm was completed. Thus far, three muskrats, four groundhogs, one opossum, one rabbit, and one rat were trapped. All of the holes and tunnels burrowed by the wildlife were identified and filled with a cement grout. Environmental Sciences Division personnel will continue to monitor the wildlife movement in the berm area and set traps as needed.

August

Five containers of Process Waste from Building 1505 and four from Building 1504 were picked up and transported to the Process Waste System for treatment.

One thousand gallons of waste from the tumulus pads in SWSA 6 were transferred into a tanker truck, transported to the Process Waste System, and treated during the first week of August.

LGWOD personnel decontaminated a bulldozer which had become contaminated at the new HFIR parking lot site.

LGWOD personnel decontaminated a large drill press for the Plant and Equipment Division.

Two bottles of LLLW were picked up at Building 3592 and disposed of at the LLLW Evaporator Facility.

SEG personnel transferred 600 gallons of LLLW to collection tank WC-19 during the last week of August. This waste was generated as part of the 3001 Canal Closure activities.

LGWOD Chemical Operators assisted the Remedial Action group in the clean up of the Lagoon Road area (ditch area located near the old decon building), where some small amounts of contamination were found from previous activities at the site.

LGWOD personnel sampled acid tanks for Oak Ridge Research Reactor personnel to aid them in determining the proper disposal method.

One load of nitric acid (approximately 400 gallons) was transferred into the acid transfer truck and transported from the PWTP to HFIR.

One load of sulfuric acid was transferred into the acid transfer truck and transported from the NRWTP to the PWTP.

The vault sumps at Building 7830 were emptied. This is to meet a FFA requirement that the sumps are to be kept empty.

A volume test was conducted on LLLW tank WC-9. This testing is part of the FFA tank integrity test program.

Four bottles of process waste were picked up at Building 1505 and disposed of in the process waste system.

Five thousand gallons of process wastewater from the silo grouting work and from the pads at SWSA 6 were transferred into a tanker truck, transported to the process waste system, and treated.

LGWOD personnel sampled the cell and sump water in Building 7500 for the Remedial Action Group.

LGWOD personnel sampled Tank 3002 for the Remedial Action Group.

LGWOD personnel participated in the LLLW Bottling cold test for Building 4508 that was conducted as part of their bottling operations's Readiness Review.

September

As part of the ongoing LGWOD Configuration Management program, drawings for the Melton Valley Storage Tanks (Building 7830), the Phase II work at the LLLW Evaporator Facility (Buildings 2531, 2532, 2533, 2534, and 2535), the Waste Operations Control Center (WOCC), LLLW Tank WC-20, LLLW Evaporator Facility (Evaporator System 2A2), the 3039 Stack Area Diesel Generator, the Equipment Cleaning Facility, and the Melton Valley to Bethel Valley Process Wastewater Pipeline were entered into the Documentation Management Center for distribution as controlled documents.

Two 55-gallon drums of sodium hydroxide were added to the storage tank at the Melton Valley Process Waste Collection Tanks, Building 7961. This caustic is used to assure that the tank contents are at a high pH for corrosion control and in order to minimize the release of airborne radionuclides (primarily sodium-24) should the HFIR have a serious accident resulting in a spill to the Process Waste System.

Three thousand gallons of sodium hydroxide were transported to the PWTP and unloaded.

The sludge level in LLLW Evaporator feed tank W-22 was checked to ascertain how quickly the volume of sludge is increasing in the tank. The level of sludge in the tank is at two and one-half feet at the point it was probed. This is very little increase over the sludge level when it was checked two years ago.

In support of Remedial Action Program Activities, LGWOD personnel transferred the contents of inactive tanks WC-1, W-13, and W-14 into the active LLLW system.

LGWOD personnel sampled inactive tank H-209 and inspected inactive tanks W-13, W-14, W-15, and WC-1 to assure they were emptied of all liquids.

LGWOD personnel transferred the contents of TH-1 and TH-2 into the active LLLW system. These abandoned LLLW tanks, which are under the ER program, were transferred to active tank WC-9.

LGWOD personnel assisted ER personnel in the changeout of several filters at the Building 3110 Filter House.

LGWOD personnel picked up one bottle of LLLW at Building 3592, transported it to the bottle receiving facility at the Evaporator Facility (Building 2531), and dumped the waste into the LLLW System.

Approximately 240 gallons of LLLW was picked up at Building 3074 and transported to the LLLW Collection system in the LLLW dumpster tank. The waste was then dumped into the system for subsequent treatment.

A small load of LLLW was transferred into the LLLW tank truck at Building 3525, transported to the LLLW dump station, and transferred into the LLLW Collection System. The load was much smaller than had been anticipated due to problems with the transfer pump at Building 3525.

LGWOD personnel picked up two bottles of Process Waste and one bottle of LLLW, transported the bottles to the proper disposition point, and dumped them for treatment.

LGWOD personnel transferred 22,500 gallons of waste from the Tumulus pads in SWSA 6 into the Process Waste Tanker. The waste was then transported to the NRWTP and treated.

October

Two transfers of LLLW were made from Bldg. 3525 utilizing the LLLW tank truck.

LGWOD personnel picked up one bottle of LLLW at Bldg. 4500N, transported it to the bottle receiving facility at the Evaporator Facility (Bldg. 2531), and transferred the waste into the LLLW System.

The Melton Valley Storage Tank Facility (Bldg. 7830) vaults and pump room sumps were transferred to the LLLW tank truck, transported to the LLLW dump station, and transferred into the LLLW Collection System.

One load of LLLW was received from Bldg. 3074 and emptied into the LLLW system.

LGWOD personnel completed the quarterly checks of the EASC and LWSP archive samples and storage casks.

LLLW Collection Tanks W-17 and W-18 were sampled for sludge content by LGWOD personnel as part of the Waste Characterization of Group 6 Tanks

LLLW tanks WC-5, WC-6, and WC-9 were sampled by LGWOD personnel. These samples will be analyzed for numerous parameters in order to characterize the tank contents for eventual turnover to the ER Program.

LLLW Storage Tanks W-29 and W-30 were sampled in order to obtain liquids for waste characterization and also to provide liquid for waste form certification and testing. These actions are being accomplished in preparation for LWSP II.

LGWOD personnel completed the cleanup of the 3110 Filter Pit site. The filters in the facility were changed out during early September.

The portable acid tank was filled with sulfuric acid at the NRWTP and transported to the PWTP. Sulfuric acid is used at the PWTP to bring the pH of the effluent down before it is sent to the NRWTP. The NRWTP acts as a storage site for sulfuric acid used in LGWOD operations.

Three thousand gallons of sodium hydroxide were transported to the PWTP (Bldg. 3544) and unloaded.

A load of sulfuric acid (3,000 gallons) was unloaded at the NRWTP. Sulfuric acid is used at the NRWTP to adjust the pH of the wastewater prior to discharge to White Oak Creek.

One load of sulfuric acid was transported to the PWTP from the NRWTP.

Decontamination work continued on a large drill press located at Bldg. 7935. These activities are being accomplished at the request of P&E personnel.

As part of the ongoing LGWOD Configuration Management program, drawings for the LLLW Evaporator Facility Annex (Bldgs. 2531, 2537, and 2539) and for the 3039 Stack Area Improvements (Bldgs. 3039 and 3092) were approved for entry into the Documentation Management Center.

LGWOD personnel checked the liquid level in Evaporator Service Tank W-21 to assist I&C personnel in the recalibration of the level detector for W-21.

November

LGWOD personnel sampled LLLW tanks WC-11 and WC-12 as part of the waste characterization of Group 6 tanks.

LGWOD personnel sampled LLLW tanks WC-13 and WC-14 as part of the waste characterization of the Group 6 tanks. The tanks were only sampled for liquids since the laboratory running the analyses was not ready to accept any sludge samples.

LGWOD personnel picked up one bottle of LLLW at Bldg. 3592, transported it to the bottle receiving facility at the Evaporator Facility (Bldg. 2531), and dumped the waste into the LLLW system.

One load of LLLW was received from Bldg. 3525 and emptied into the LLLW system.

LGWOD personnel picked up one bottle of LLLW at Bldg. 4501, transported it to the bottle receiving facility at the Evaporator Facility (Bldg. 2531), and dumped the waste into the LLLW System.

LGWOD personnel transferred 40,000 gallons of Process Waste from the Tumulus Pads at SWSA 6 into the Process Waste Tanker and transferred the waste into the treatment system.

LGWOD personnel transferred 23 drums of wastewater which had collected in the used oil diked area at Bldg. 7002 into the process waste treatment system at Bldg. 3608.

Four thousand five hundred gallons of Process Wastewater were transferred from the Bechtel Well Drilling Staging area to the Process Waste Tanker and transported to the PWTP for treatment.

LGWOD personnel filled the sodium hydroxide tank at the Melton Valley Process Waste Collection Tank Facility (Bldg. 7961) and placed the new sodium hydroxide addition system into service. The sodium hydroxide is used to maintain the wastewater at a basic pH.

LGWOD personnel filled the acid truck with sulfuric acid at Bldg. 3608 for transport to the PWTP (Bldg. 3544). The acid is used to neutralize the wastewater prior to discharge to the NRWTP.

Thirty-five hundred gallons of sodium hydroxide were transported to the PWTP and unloaded.

Completed the monthly visual emissions check of the 3039 Stack. The results were 0% opacity. The air permit for the 3039 Stack requires an opacity of less than 20%.

LGWOD personnel continued to move spare equipment from Bldg. 7863 to the Rubb shelters located in the 7800 area.

LGWOD personnel completed an internal assessment in the area of sign posting. All LGWOD facilities were inspected in order to assess where sign posting was inadequate or non-existent. New signs have been ordered where needed.

December

LGWOD personnel pumped the 4PRS and 4VS-28 sumps at Bldg. 7830 to the LLLW system for treatment.

One load of LLLW was received from Bldg. 3525 and emptied into the LLLW system.

LGWOD personnel picked up one bottle of LLLW at Bldg. 4500N, transported it to the bottle receiving facility at the Evaporator Facility (Bldg. 2531), and transferred the waste into the LLLW System.

LGWOD personnel transferred the contents of inactive tank WC-17 to the LLLW System for treatment per a request from Remedial Actions personnel. After the tank was emptied of all liquid, the interior of the tank was videotaped for inspection. LGWOD personnel will continue to clean the remaining sludges from the tank.

LGWOD personnel continued to measure the level of abandoned tank WC-17 to ascertain how the tank level is dependent upon fluctuations in the depth of the groundwater table. The remaining sludge was removed from the tank and the tank interior will be videotaped to document that the tank was emptied.

The contents of sumps 4PRS and 4VS28 at the Melton Valley Waste Storage Facility were emptied into the LLLW tank truck, transported to the LLLW Central Collection Header, and transferred into the LLLW Collection System.

LGWOD personnel pumped rainwater that had collected in the 190 Ponds to the process wastewater system for treatment. The 190 Ponds have been removed from active service; prior to completion of the NRWTP they collected wastewater from the 4500 Complex.

LGWOD personnel transferred wastewater from the process waste tanker to the PWTP. The wastewater was generated from maintenance activities to repair a leaking water pipeline on Central Avenue.

LGWOD personnel assisted Plant and Equipment personnel in the decontamination of the ventilation duct in Bldg. 2000.

LGWOD personnel collected ten 250 ml samples from each of the two LLLW tanks that will be used during the next Liquid Waste Solidification Project campaign. These samples will be used to characterize the supernate that will be solidified during the next campaign.

LGWOD personnel sampled the Bldg. 2533 Filter Pit in order to characterize the sump contents as LLLW or PW. This characterization is needed to determine if the filter pit must be upgraded to meet FFA requirements (if the contents are determined to be LLLW), or less stringent requirements (if the contents can be tied into the Process Waste (PW) System). The Bldg. 2533 Filter Pit provides filtration for the Cell Ventilation for the Bldg. 2531 Evaporator Facility and supporting facilities.

LGWOD personnel assisted in conducting the WC-9 LLLW line's leak test. This test is part of the requirements of the Federal Facility Agreement.

LGWOD personnel filled four drums with sodium hydroxide and transported them to the Melton Valley Process Wastewater Collection Tank Facility (Bldg. 7961). The drums were unloaded into the storage tank at the facility, where it will be used to maintain the pH of the collected wastewater at a high pH.

The acid transport truck was filled with sulfuric acid at Bldg. 3608 (NRWTP) and transported to Bldg. 3544 (PWTP). Sulfuric acid is used at the PWTP to bring the pH of the plant effluent down before it is transferred to the NRWTP.

Checked the tank levels at Bldg. 7830 for the six tanks participating in the In-Tank Evaporation project. The tank levels will be used to determine the amount of water evaporated from the tanks thus far.

Riggers picked up the old 3039 Stack Area Emergency Diesel generator that had been stored in the Bldg. 7830 area and transported it to Salvage to be disposed of as surplus equipment.

4.5 OCCURRENCE REPORTING

Emergency

None.

Unusual Occurrence

None.

Off-Normal

Report No.	Subject	Facility
MMES-92-116 X10-92-15	Water Leak in Sprinkler System	Building 7877
MMES-92-253 X10-92-39	Contaminated Gloves	Truck #E-7959

Non-Routine

Report No.	Subject	Facility
MMES-92-430 X10-92-72	Unplanned Release of PW into Diked Area	7900 Area
MMES-92-606 X10-92-109	Personnel Contamination	2500 Area
MMES-92-762 X10-92-151	Loss of Building 3544 Distributed Control System	Building 3544
MMES-92-10280 X10-92-8011	Contamination of Constant Air Monitor	Building 3544

4.6 PROCEDURES AND SYSTEM DESCRIPTIONS

One hundred and nine new and revised procedures were prepared for operations throughout the LGWO department during the previous year. These documents are listed in Table 4. In addition, ten other LGWOD procedures were found to have no changes during their mandatory two-year review.

5.0 APPENDIX

5.1 TABLES

5.2 FIGURES

TABLE 1 PROCESS WASTE OPERATIONS

	Process waste treated by ion exchange (gal)	Process waste treated by zeolite (gal)	Total process waste treated (gal)	Drums of sludge generated	PWTP generated LLLW concentrate to storage (gal)	PWTP generated LLLW feed (gal)
January	5.27×10^6	1.46×10^6	6.74×10^6	51	1170	2180
February	4.26×10^6	1.86×10^6	6.11×10^6	41	755	800
March	5.48×10^6	1.67×10^6	7.15×10^6	30	760	1040
April	4.40×10^6	1.58×10^6	5.98×10^6	46	294	610
May	5.04×10^6	0.84×10^6	5.88×10^6	49	1030	1460
June	4.30×10^6	0.59×10^6*	4.89×10^6	49	1320	1990
July	5.19×10^6		5.19×10^6	50	355	620
August	5.26×10^6	———	5.26×10^6	54	330	400
September	4.62×10^6		4.62×10^6	52	504	604
October	4.82×10^6	———	4.82×10^6	56	340	300
November	5.65×10^6		5.65×10^6	62	346	534
December	6.25×10^6		6.25×10^6	64	629	917
1992 Totals	60.54×10^6	8.00×10^6	68.54×10^6	604	7833	11455

*The zeolite system was repiped in mid-June to allow it to treat the ion exchange system's discharge due to rising Cs problems in the wastewater. While in this configuration it cannot treat a sidestream of wastewater.

TABLE 2 NRWTP OPERATIONS

	Metals wastewater treated (gal)	Nonmetals wastewater treated (gal)	Total wastewater treated (gal)	Boxes of sludge generated
January	1.22×10^6	1.41×10^7	1.22×10^7	1
February	1.23×10^6	1.02×10^7	1.16×10^7	3
March	1.26×10^6	1.35×10^7	1.34×10^7	3
April	0.88×10^6	1.18×10^7	1.16×10^7	3
May	1.04×10^6	1.20×10^7	1.27×10^7	1
June	1.06×10^6	1.24×10^7	1.32×10^7	3
July	1.18×10^6	1.31×10^7	1.44×10^7	3
August	1.09×10^6	1.30×10^7	1.35×10^7	1
September	0.99×10^6	1.13×10^7	1.26×10^7	3
October	1.23×10^6	1.08×10^7	1.23×10^7	0
November	1.31×10^6	1.05×10^7	1.29×10^7	1
December	1.49×10^6	1.29×10^7	1.44×10^7	3
1992 Totals	13.98×10^6	14.08×10^7	15.48×10^7	25

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	1.82×10^4	0.67×10^4	3130	--
February	2.41×10^4	1.98×10^4	--	--
March	3.42×10^4	2.28×10^4	--	--
April	0.43×10^4	2.42×10^4	2680	--
May	0	0.95×10^4	--	1280
June	1.05×10^4	1.45×10^4	--	--
July	0.89×10^4	0.19×10^4	--	--
August	2.50×10^4	1.16×10^4	--	--
September	0.49×10^4	1.82×10^4	--	--
October	2.80×10^4	1.86×10^4	2390	--
November	0.21×10^4	4.15×10^4	--	--
December	2.20×10^4	3.02×10^4	--	--
1992 Totals	18.22×10^4	21.95×10^4	8200	1280

Table 4 LGWO Procedures

WM-LGWO-601 OPERATING MANUAL FOR THE LIQUID WASTE SOLIDIFICATION PROJECT

WM-LGWO-601.2.7, Rev. 2

WM-LGWO-602 OPERATING MANUAL FOR THE PROCESS WASTE TREATMENT PLANT

WM-LGWO-602.2.2, Rev. 2, 3
WM-LGWO-602.2.3, Rev. 1
WM-LGWO-602.2.4, Rev. 2
WM-LGWO-602.2.5, Rev. 2
WM-LGWO-602.2.7, Rev. 1
WM-LGWO-602.2.10, Rev. 2
WM-LGWO-602.2.11, Rev. 2
WM-LGWO-602.6, Rev. 1

WM-LGWO-603 OPERATING MANUAL FOR THE NONRADIOLOGICAL WASTEWATER TREATMENT FACILITY COLLECTION SYSTEM

WM-LGWO-603.2.1.1, Rev. 1
WM-LGWO-603.2.1.2, Rev. 1
WM-LGWO-603.2.1.4, Rev. 1
WM-LGWO-603.2.1.5, Rev. 1
WM-LGWO-603.2.2.2, Rev. 1
WM-LGWO-603.2.2.6, Rev. 1, 2
WM-LGWO-603.2.2.8, Rev. 1
WM-LGWO-603.2.2.9, Rev. 1, 2
WM-LGWO-603.2.3, Rev. 1
WM-LGWO-603.3.1, Rev. 1
WM-LGWO-603.3.2, Rev. 1
WM-LGWO-603.3.3, Rev. 0
WM-LGWO-603.3.5, Rev. 1
WM-LGWO-603.4.1, Rev. 1
WM-LGWO-603.5, Rev. 0

WM-LGWO-604 OPERATING MANUAL FOR THE NONRADIOLOGICAL WASTEWATER TREATMENT PLANT

WM-LGWO-604.2.1, Rev. 3
WM-LGWO-604.2.2, Rev. 3, 4
WM-LGWO-604.2.3, Rev. 4, 5, 6
WM-LGWO-604.2.4, Rev. 3, 4
WM-LGWO-604.2.5, Rev. 3, 4, 5
WM-LGWO-604.2.6, Rev. 2
WM-LGWO-604.2.7, Rev. 3, 4
WM-LGWO-604.2.8, Rev. 4
WM-LGWO-604.2.9, Rev. 3
WM-LGWO-604.2.11, Rev. 3
WM-LGWO-604.2.12, Rev. 2
WM-LGWO-604.3.4, Rev. 2, 3
WM-LGWO-604.3.5, Rev. 2
WM-LGWO-604.4.1, Rev. 2
WM-LGWO-604.4.3, Rev. 2
WM-LGWO-604.6, Rev. 2

WM-LGWO-605 OPERATING MANUAL FOR THE EQUIPMENT CLEANING FACILITY

WM-LGWO-605.5, Rev. 0

WM-LGWO-606 LGWO DEPARTMENT-WIDE PROCEDURE MANUAL

WM-LGWO-606.2, Rev. 1
WM-LGWO-606.3, Rev. 1
WM-LGWO-606.4, Rev. 2
WM-LGWO-606.5, Rev. 1

WM-LGWO-607 OPERATING MANUAL FOR THE PROCESS WASTE COLLECTION SYSTEM - MISCELLANEOUS PROCEDURES

WM-LGWO-607.1, Rev. 0

WM-LGWO-608 LIQUID LOW-LEVEL WASTE MANUAL - MISCELLANEOUS PROCEDURES

WM-LGWO-608.1, Rev. 1
WM-LGWO-608.6, Rev. 3
WM-LGWO-608.7.1, Rev. 1

WM-LGWO-609 OPERATING MANUAL FOR THE WOCC

WM-LGWO-609.2.1, Rev. 6, 7
WM-LGWO-609.2.2, Rev. 1

WM-LGWO-610 OPERATING MANUAL FOR THE LLLW AND PW COLLECTION AND TRANSFER SYSTEMS

WM-LGWO-610.2.1, Rev. 3, 4, 5, 6
WM-LGWO-610.2.2, Rev. 3, 4
WM-LGWO-610.2.3, Rev. 3
WM-LGWO-610.2.5, Rev. 2
WM-LGWO-610.3.1, Rev. 1, 2, 3
WM-LGWO-610.5, Rev. 0

WM-LGWO-611 OPERATING MANUAL FOR THE LLLW EVAPORATOR FACILITY

WM-LGWO-611.2.2, Rev. 1
WM-LGWO-611.2.4, Rev. 2, 3, 4
WM-LGWO-611.2.5, Rev. 1, 2, 3, 4
WM-LGWO-611.2.6, Rev. 1
WM-LGWO-611.3.1, Rev. 2, 3
WM-LGWO-611.5, Rev. 0

WM-LGWO-612 OPERATING MANUAL FOR THE 3039 STACK VENTILATION SYSTEM

WM-LGWO-612.2.1, Rev. 1, 2, 3
WM-LGWO-612.2.2, Rev. 1, 2, 3
WM-LGWO-612.2.3, Rev. 1, 2
WM-LGWO-612.2.4, Rev. 1, 2, 3
WM-LGWO-612.2.5, Rev. 1, 2, 3
WM-LGWO-612.2.6, Rev. 1
WM-LGWO-612.2.7, Rev. 2, 3
WM-LGWO-612.3.1, Rev. 0, 1, 2
WM-LGWO-612.5, Rev. 0
WM-LGWO-612.6, Rev. 1

Table 5. LLLW generation.

Bldg./Area Served	Tank	1988 Avg (Gal/week)	1989 Avg. (Gal/week)	1990 Avg. (Gal/week)	1991 Avg. (Gal/week)	1992 Avg. (Gal/week)
Isotopes Area	WC-10	376	244	134	434	208
3039 Stack	W-22	778	852	813	808	728
Reactors	WC-19	329	548	560	384	209
Abandoned	W-1A	295	935	897	744	411
2026	2026	21	21	23	67	43
4500 Complex	WC-11	141	203	68	399	103
4500 Complex	WC-12	42	26	25	18	17
4500 Complex	WC-13	153	51	45	24	21
4500 Complex	WC-14	36	17	16	24	4
3517	W-12,W-22	709	306	226	456	215
Pump Pit	WC-8	126	315	271	82	25
WC-5 Pump Pit	WC-9	83	88	200	361	145
3508	WC-5,WC-6	39	63	78	68	50
3525	W-12	558	439	395	299	81
3544 Concentrate	W-21	87	69	64	104	148
3544 Feed	W-22	165	112	72	167	209
7920	WC-20	388	236	246	329	260
HFIR	HFIR	687	711	1419	2411	2750
3028	WC-2	21	13	8	8	9
3504	WC-7	7	26	11	43	13
3026-D	W-16	91	31	10	28	20
3026-C	W-17,W-18	413	685	605	592	203
3019	W-22	200	23	23	20	24
3025	WC-3	5	13	0	10	9
3074	TRUCK	76	26	24	28	30

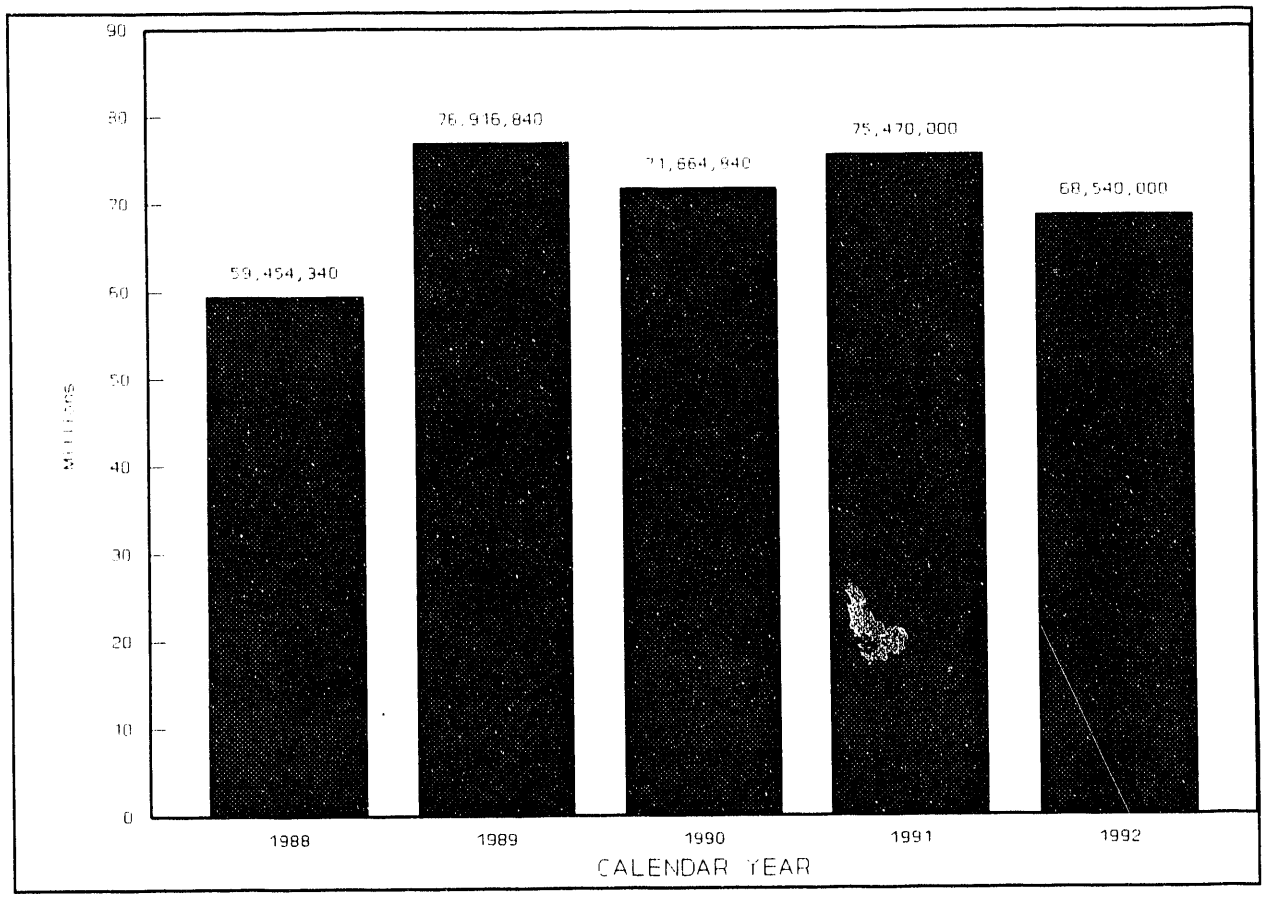


Figure 1. Process waste treated at ORNL. (ORNL-DWG. 93-5632)

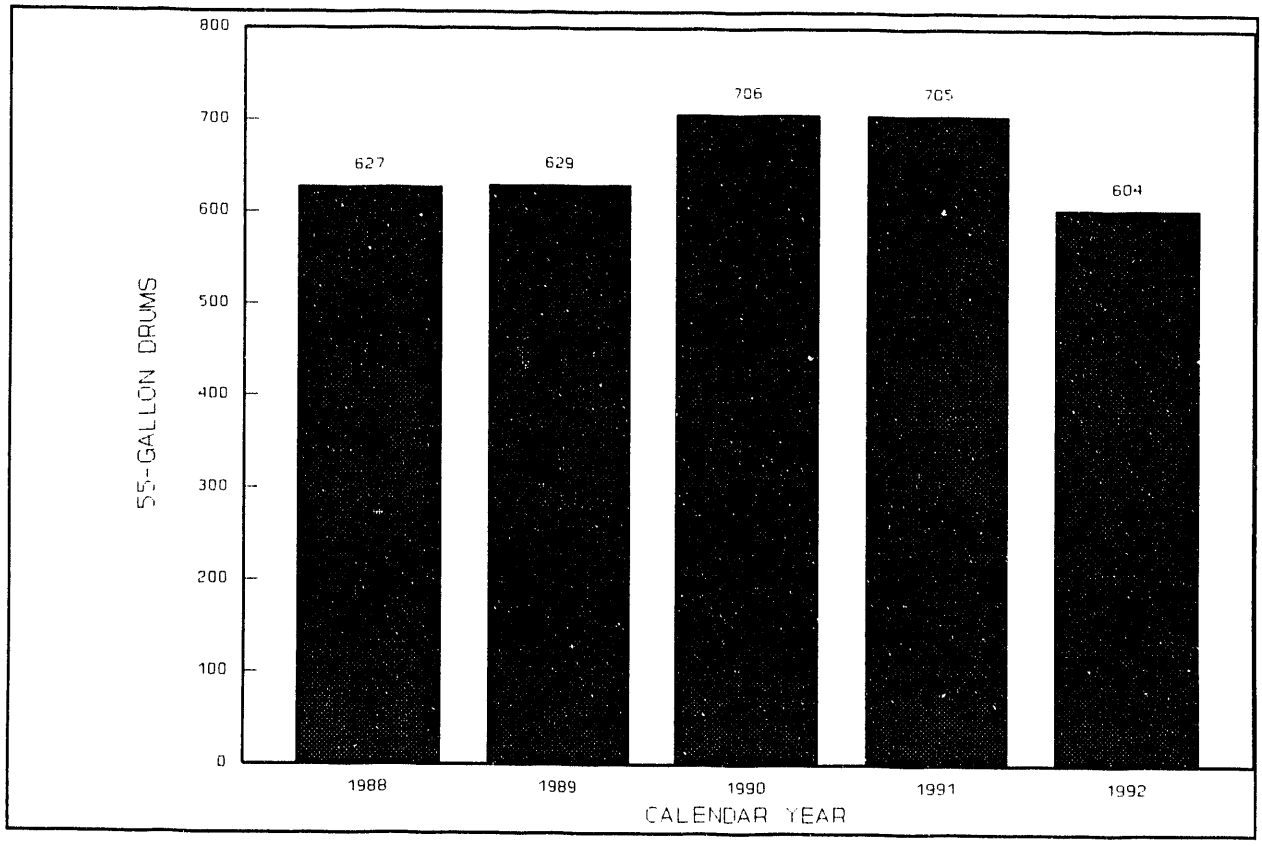


Figure 2. Sludge generation at the PWTP. (ORNL-DWG. 93-5633)

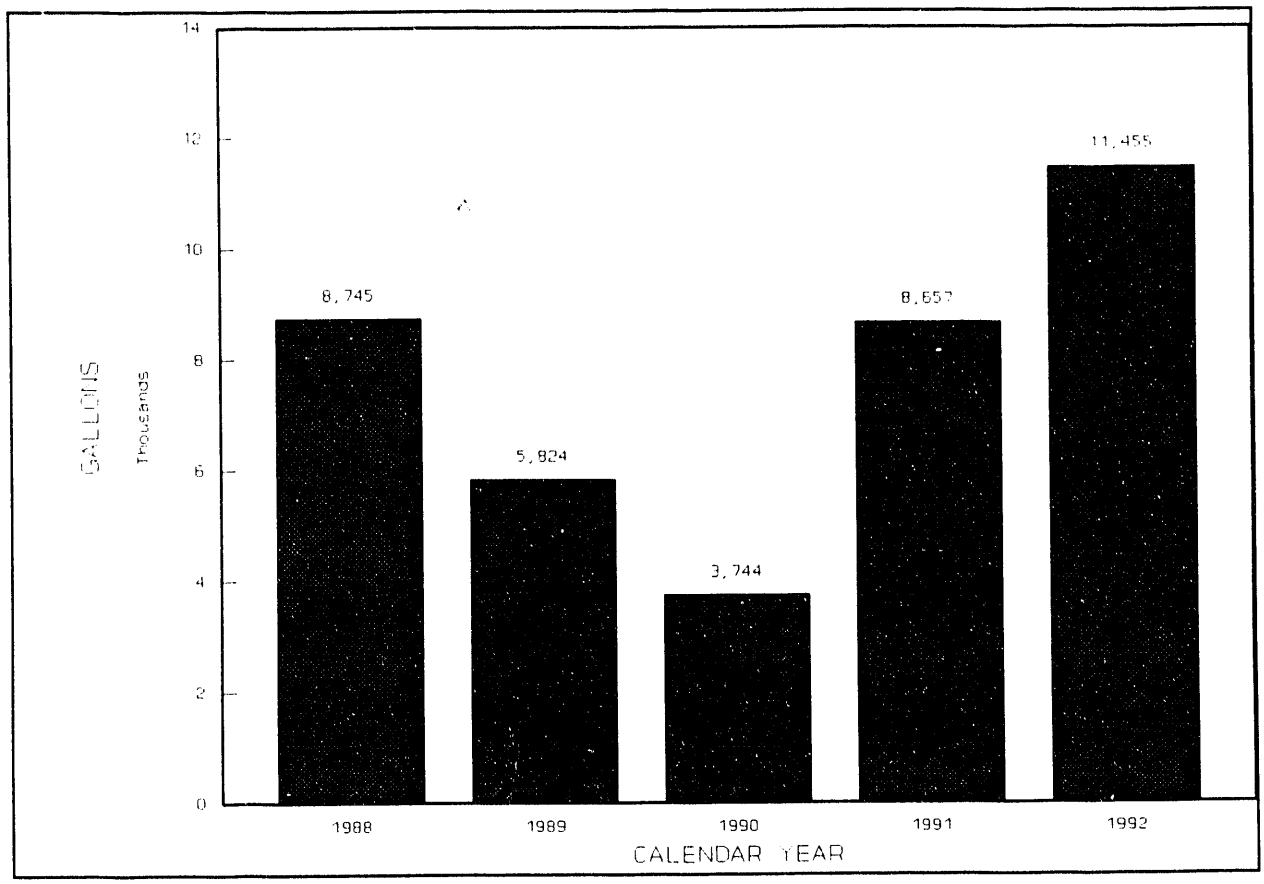


Figure 3. Dilute LLLW from the PWTP. (ORNL-DWG. 93-5634)

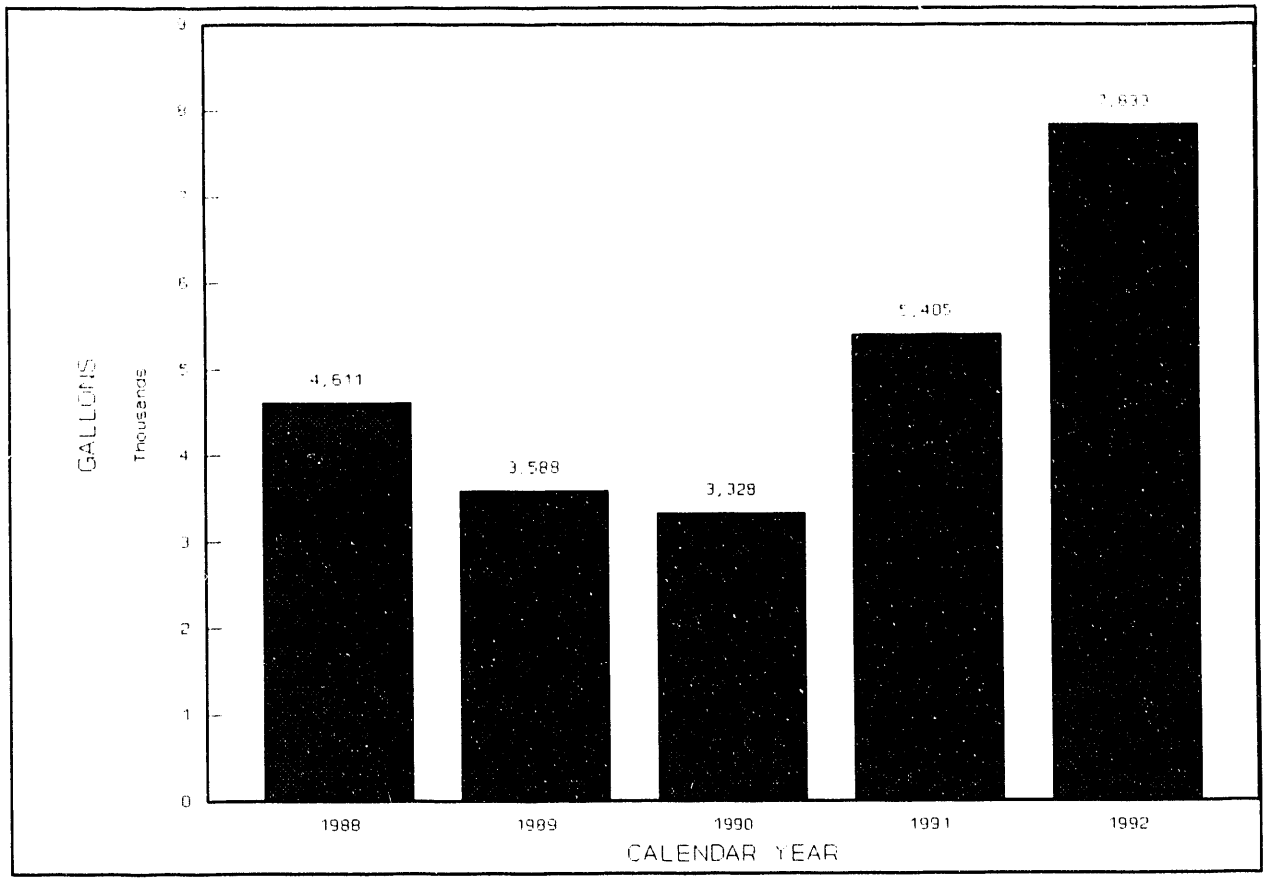


Figure 4. LLLW concentrate from the PWTP. (ORNL-DWG. 93-5635)

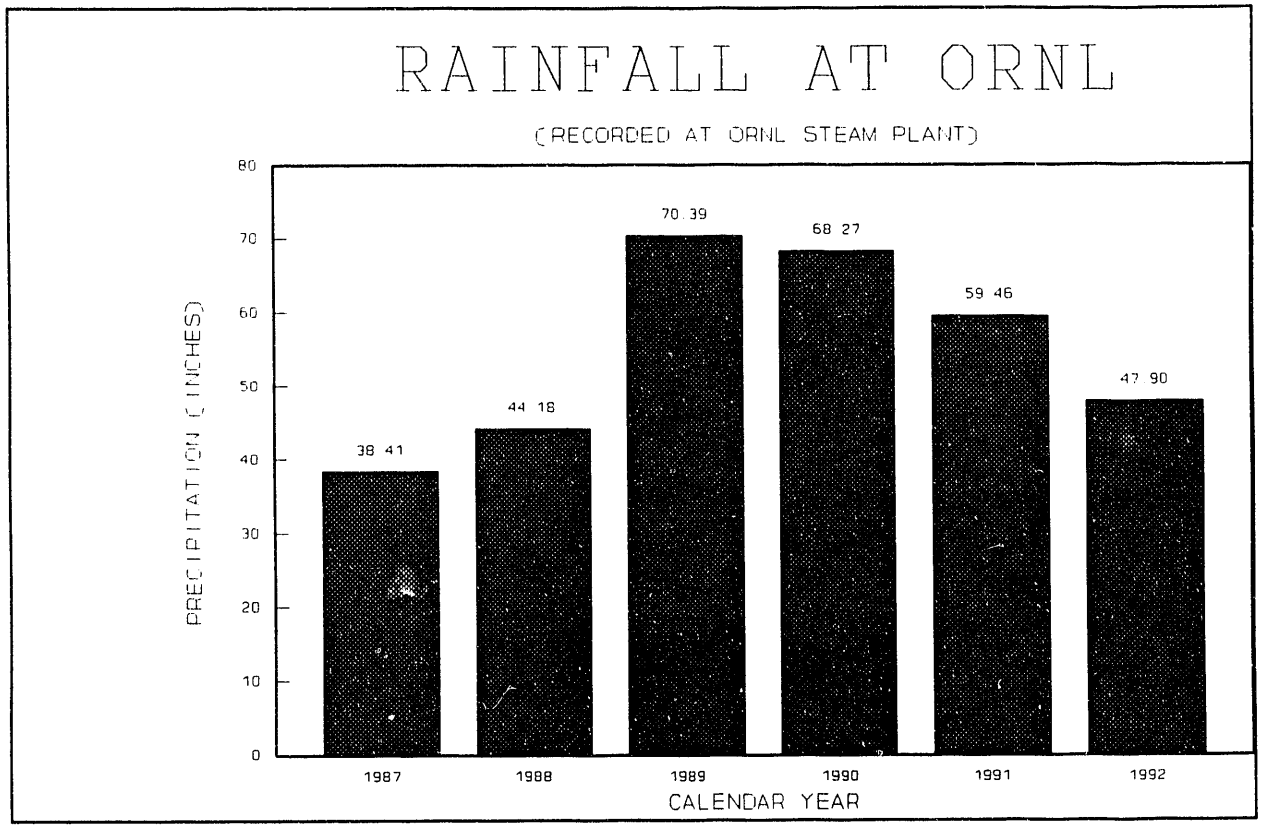
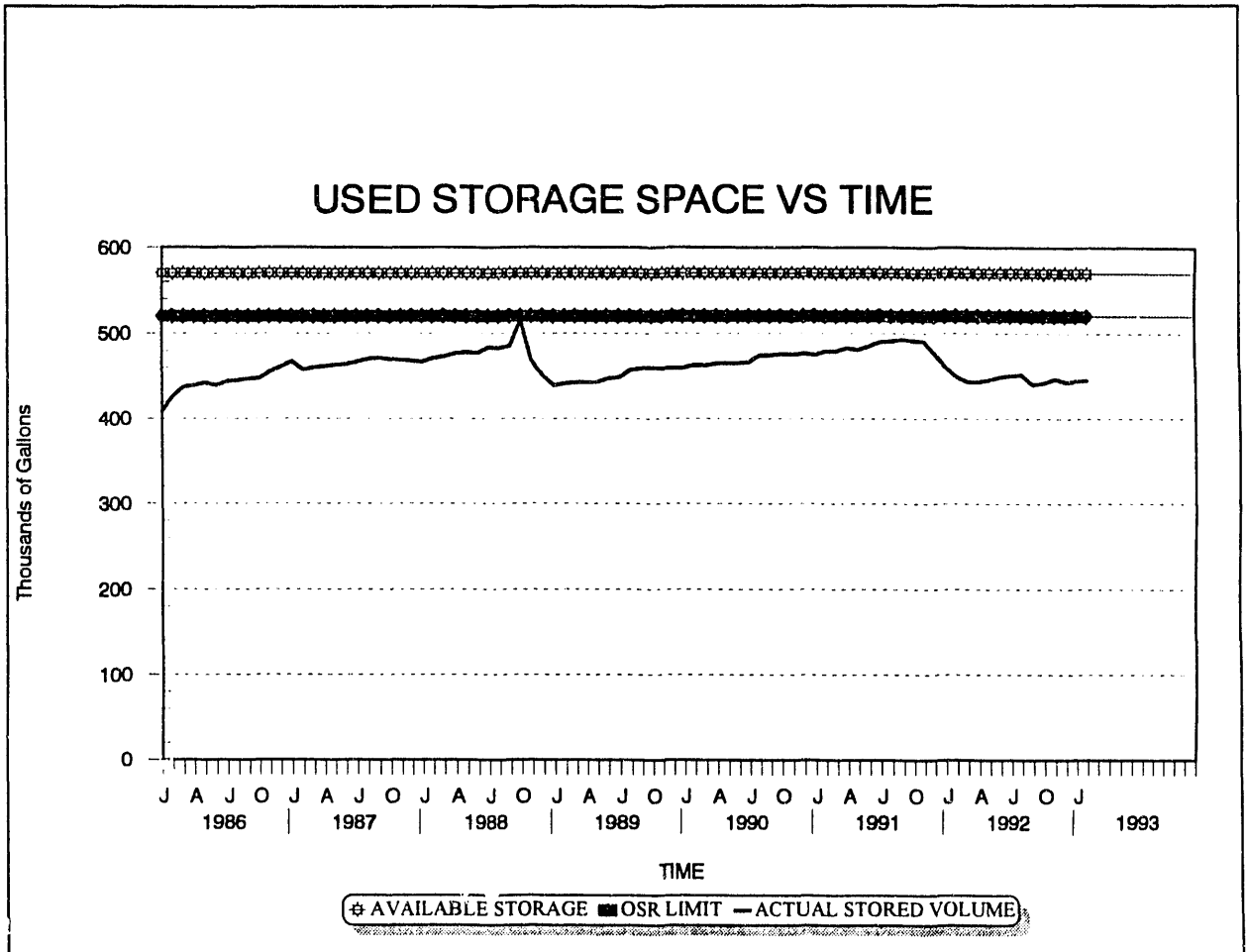


Figure 5. Rainfall at ORNL. (ORNL-DWG. 93-5636)



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.

Figure 6. Used storage space versus time. (ORNL-DWG. 93-5637)

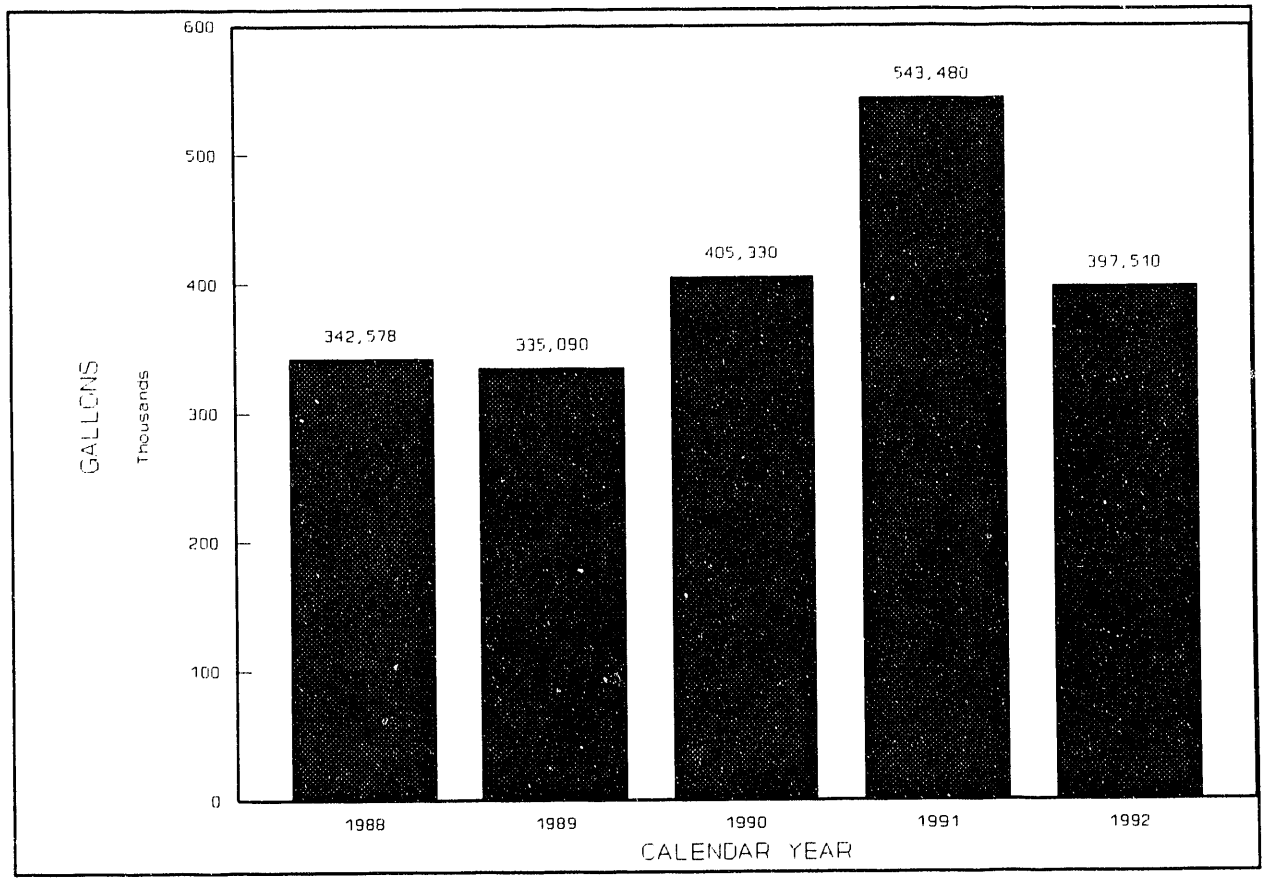


Figure 7. LLLW generation at ORNL. (ORNL-DWG. 93-5638)

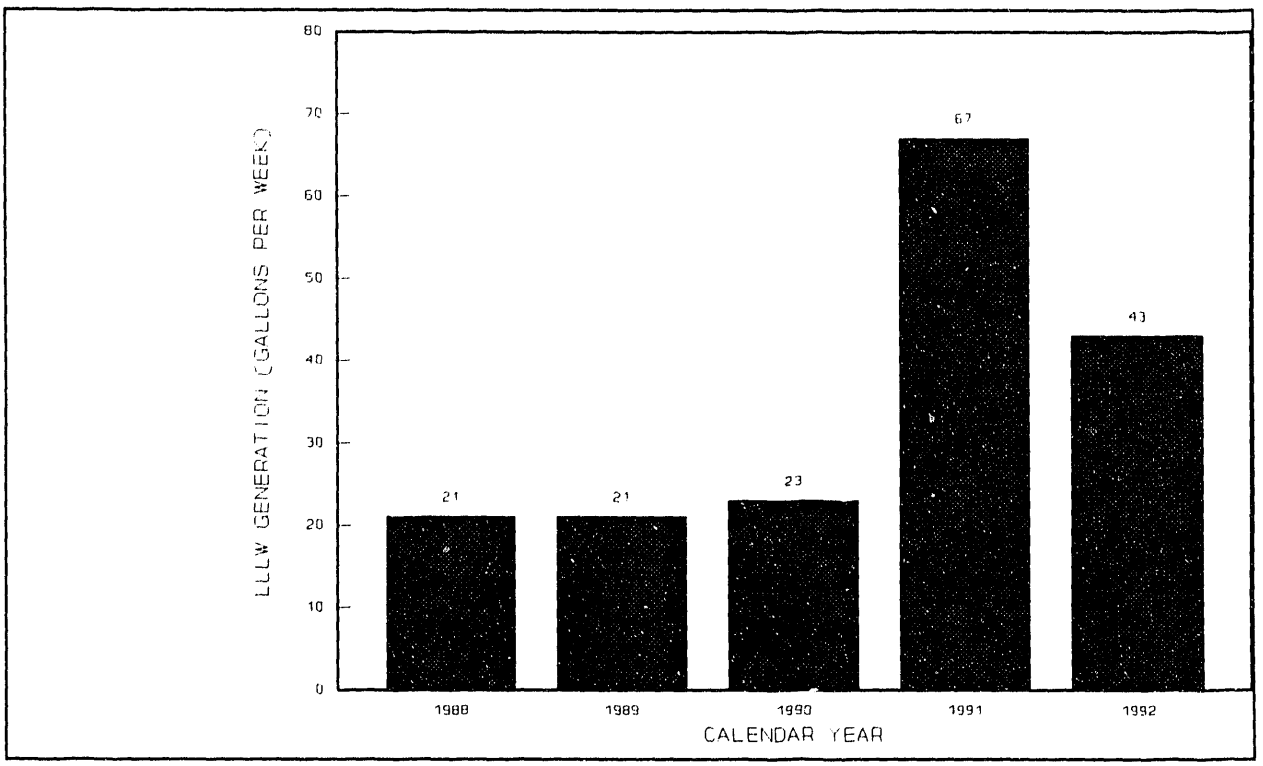


Figure 8. Building 2026 LLLW generation. (ORNL-DWG. 93-5639)

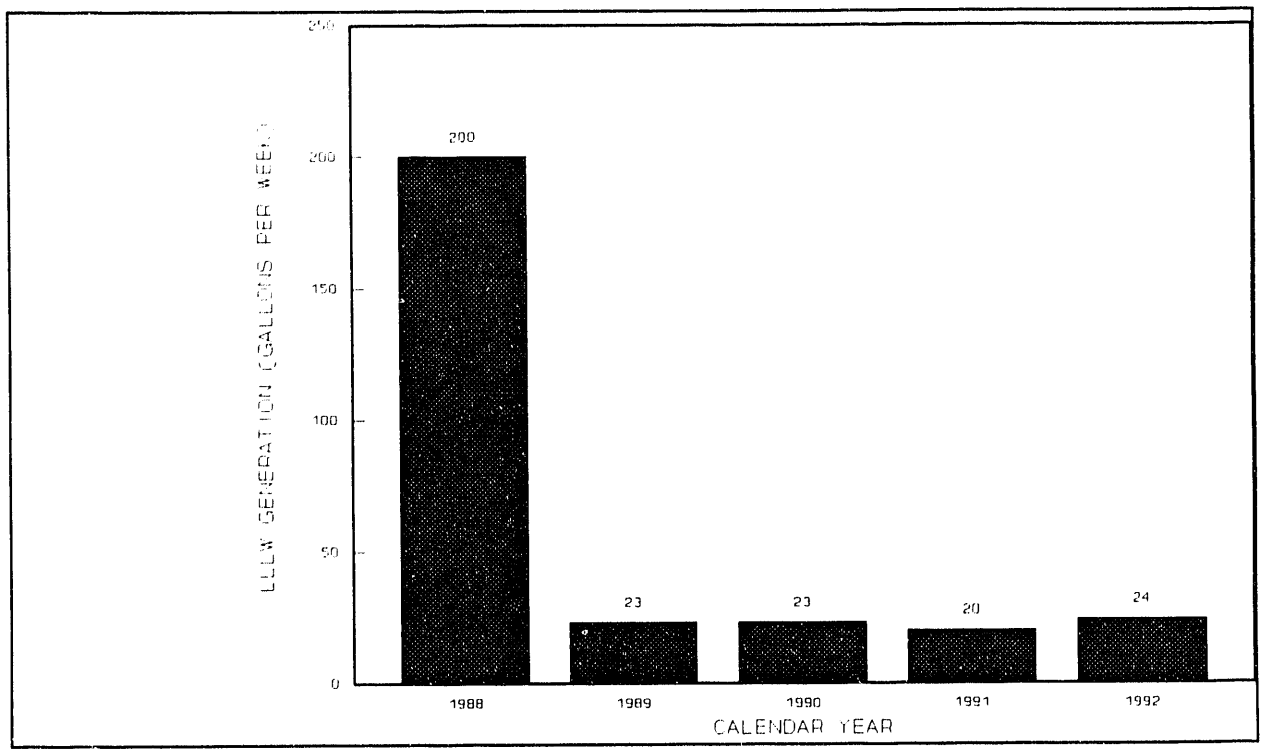


Figure 9. Building 3019 LLLW generation. (ORNL-DWG. 93-5640)

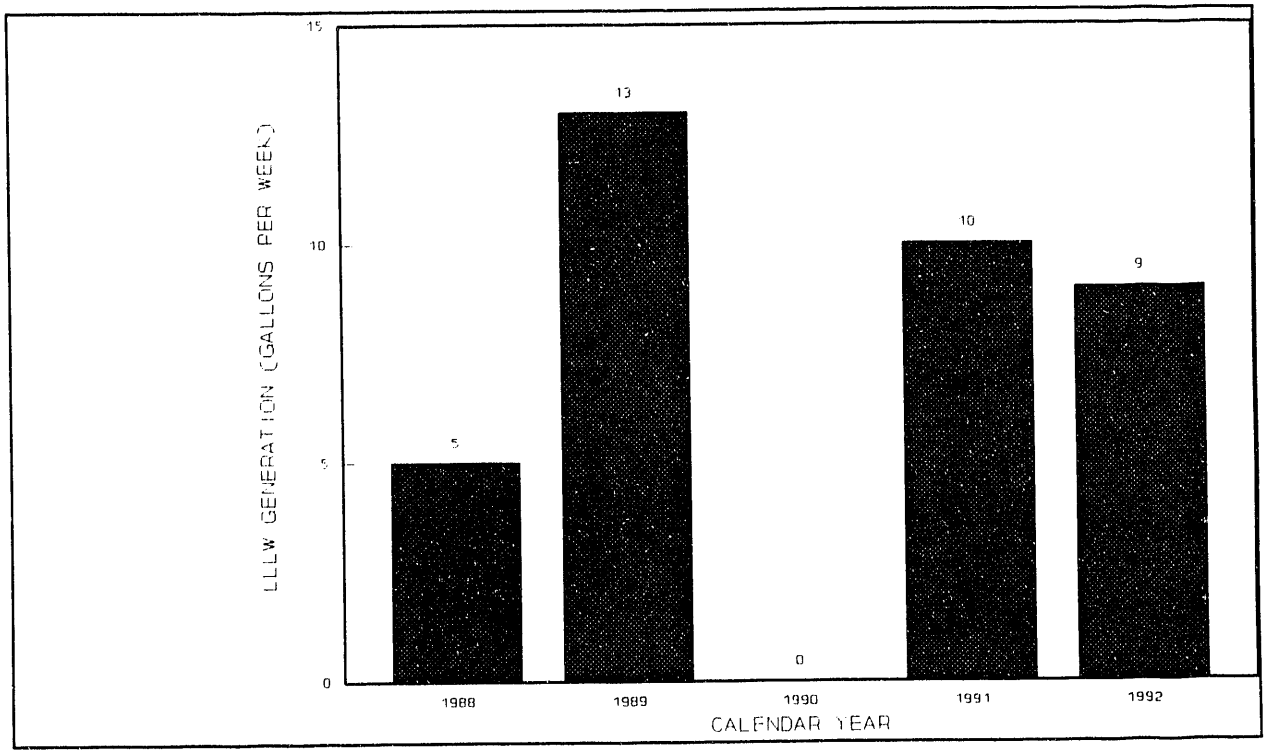


Figure 10. Building 3025 LLLW generation. (ORNL-DWG. 93-5641)

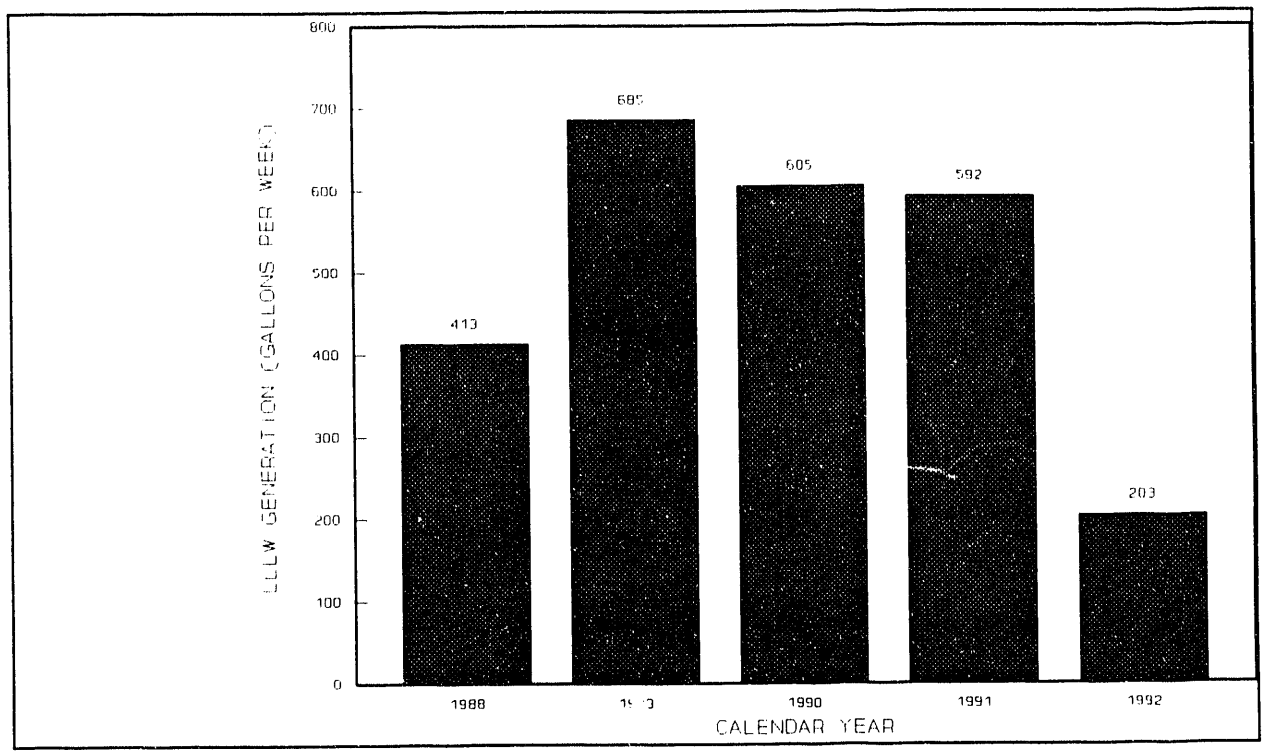


Figure 11. Building 3026-C LLLW generation. (ORNL-DWG. 93-5642)

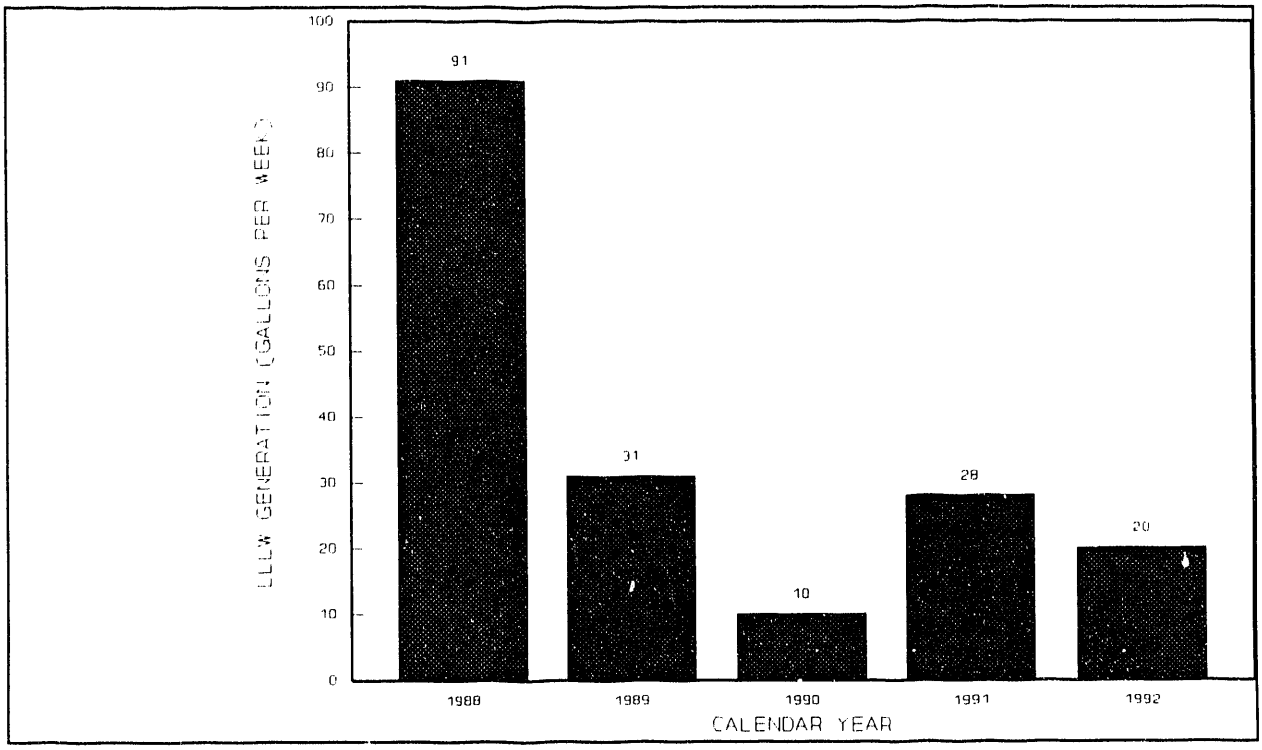


Figure 12. Building 3026-D LLLW generation. (ORNL-DWG. 93-5643)

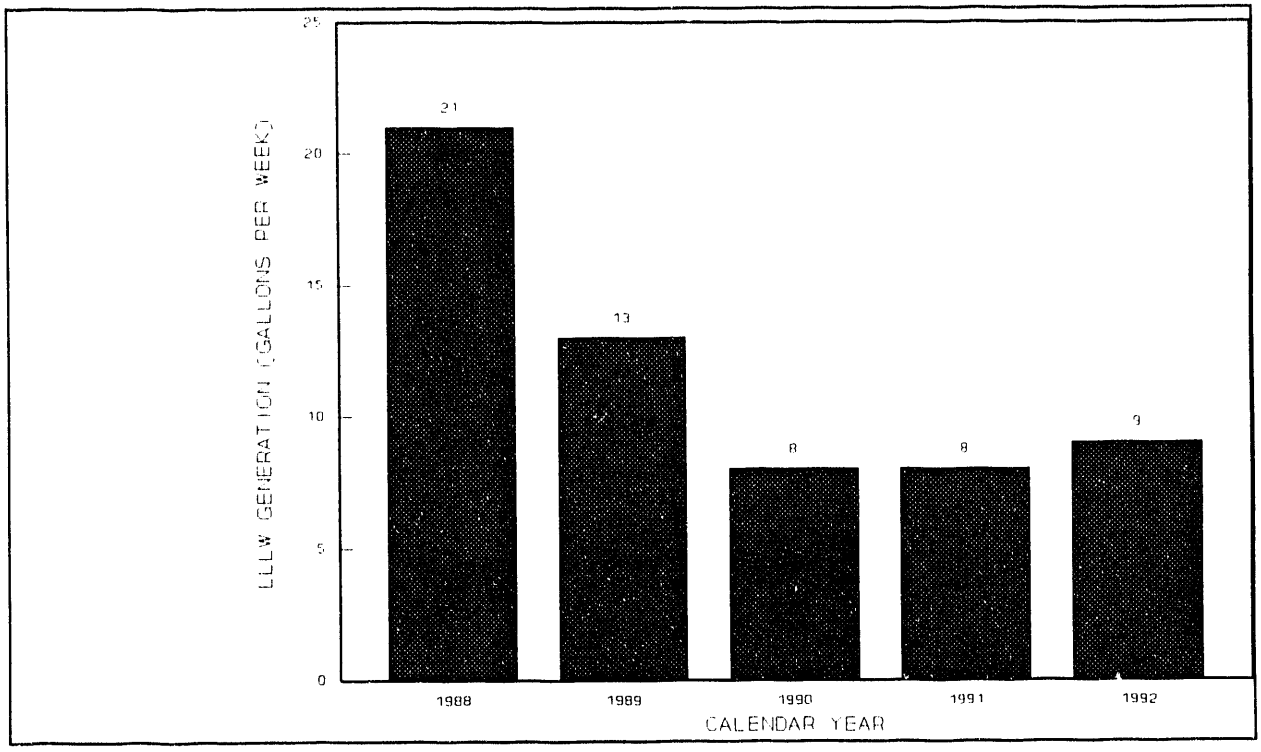


Figure 13. Building 3028 LLLW generation. (ORNL-DWG. 93-5644)

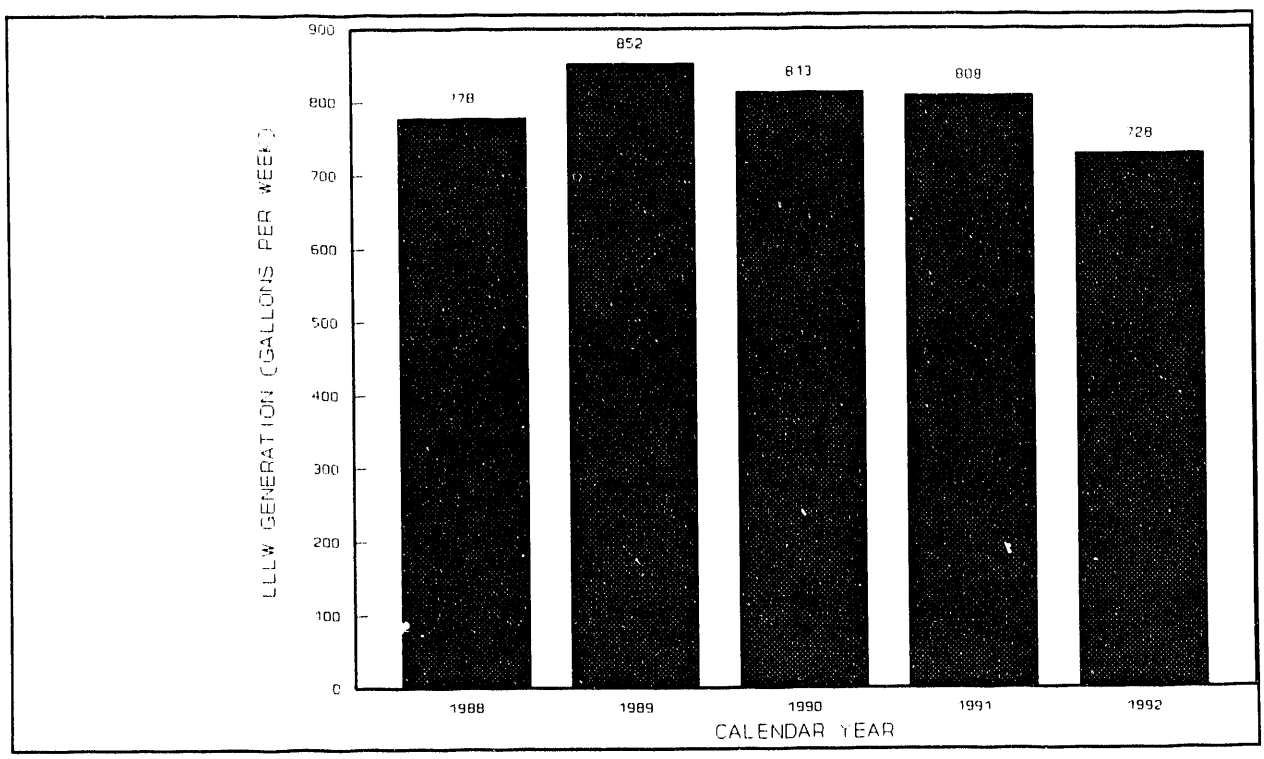


Figure 14. 3039 Stack Area LLLW generation. (ORNL-DWG. 93-5645)

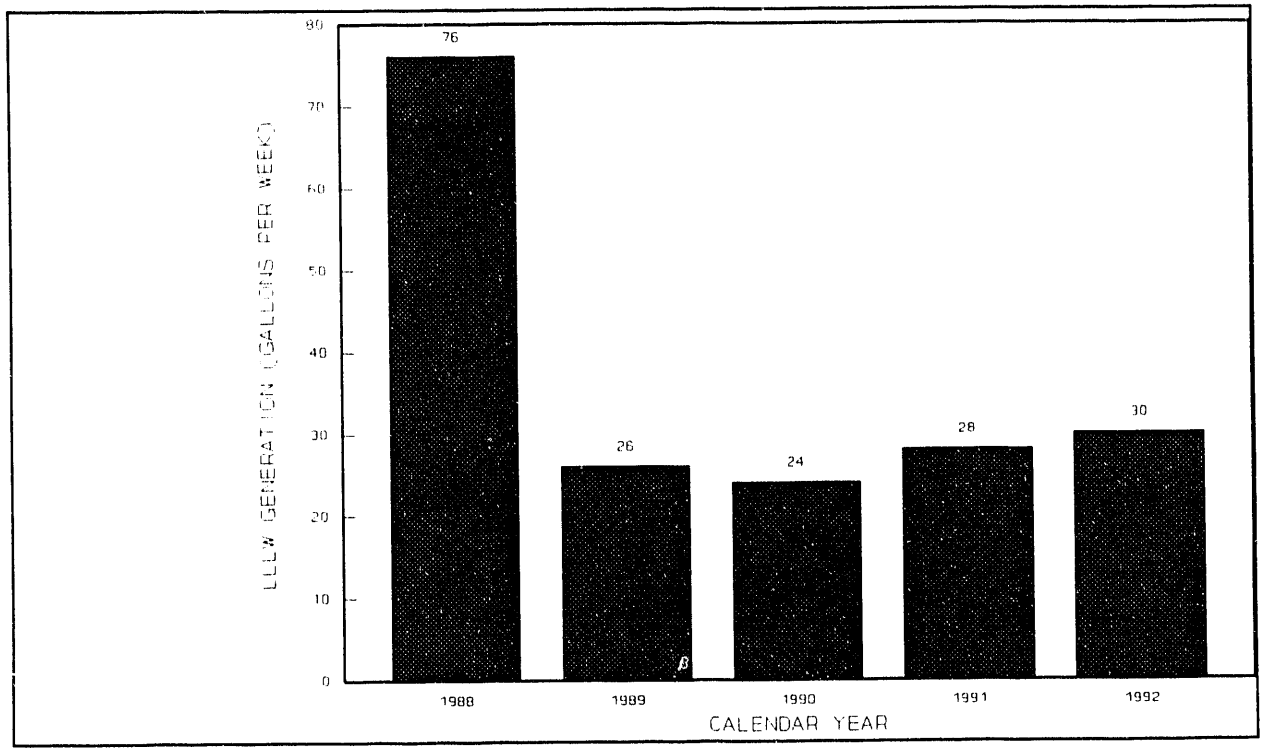


Figure 15. Building 3074 LLLW generation. (ORNL-DWG. 93-5646)

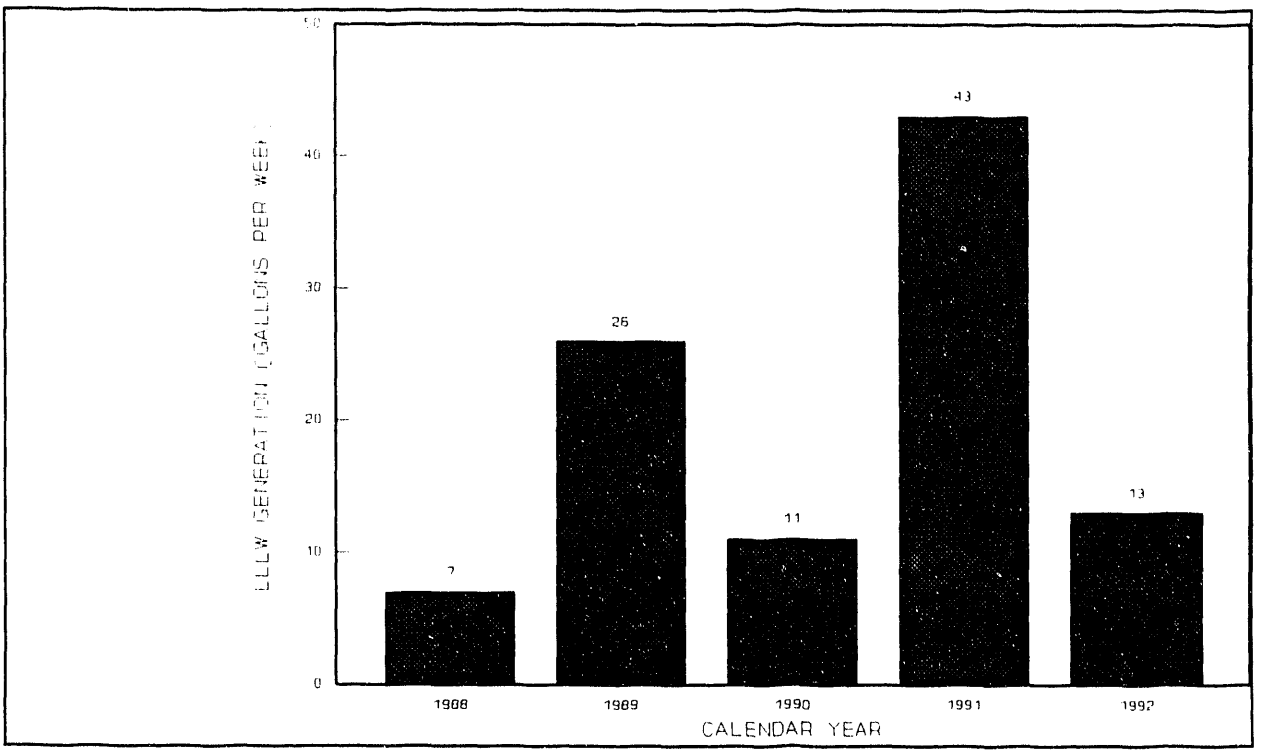


Figure 16. Building 3504 LLLW generation. (ORNL-DWG. 93-5647)

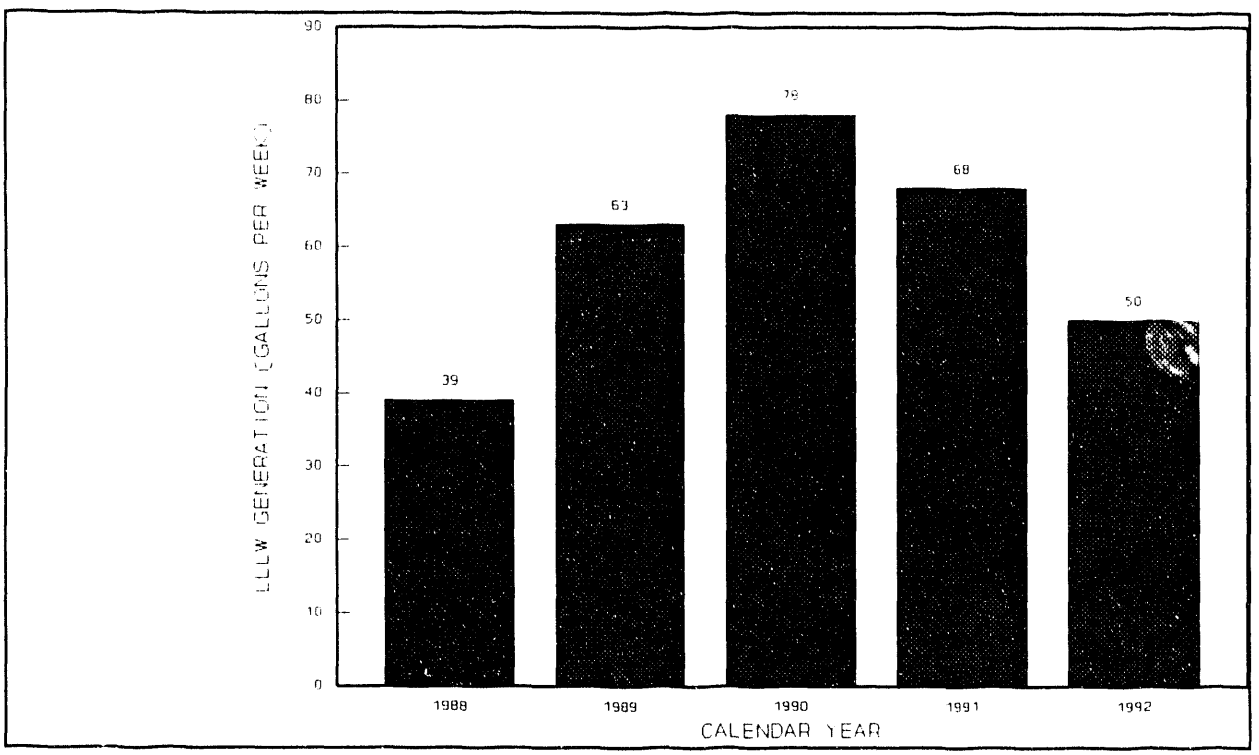


Figure 17. Building 3508 LLLW generation. (ORNL-DWG. 93-5648)

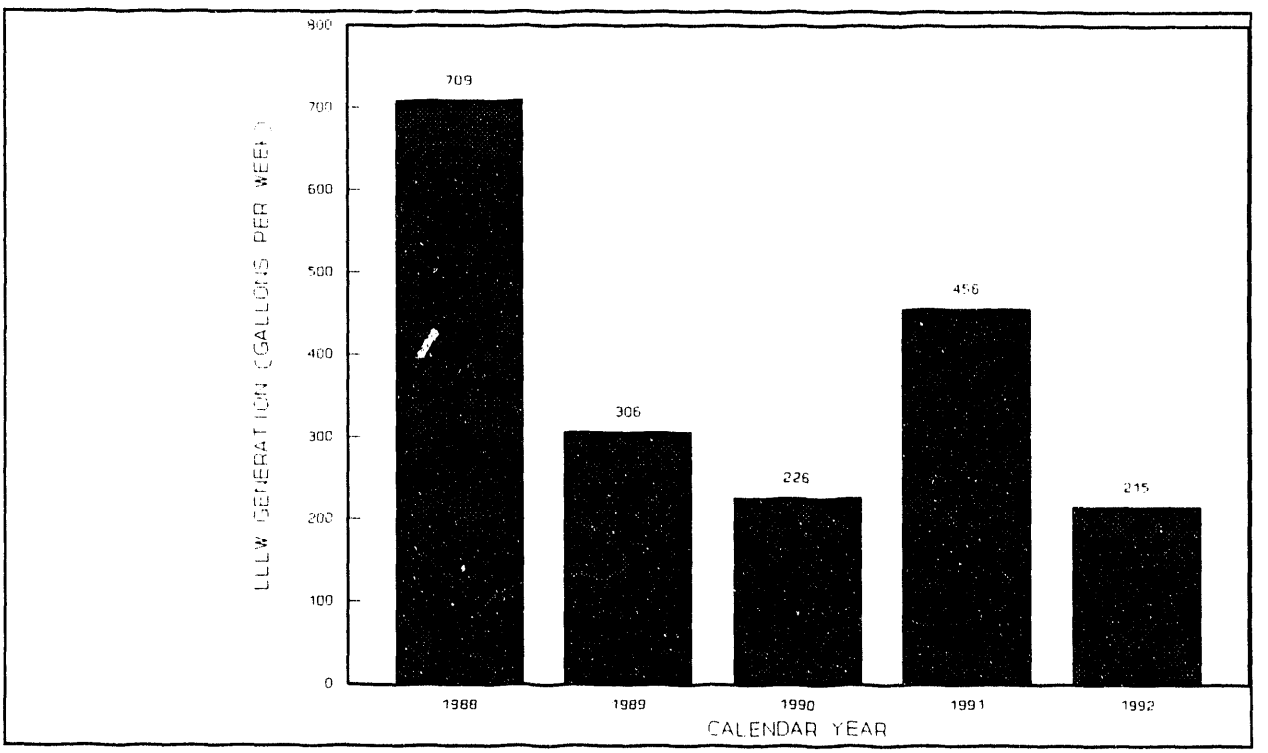


Figure 18. Building 3517 LLLW generation. (ORNL-DWG. 93-5649)

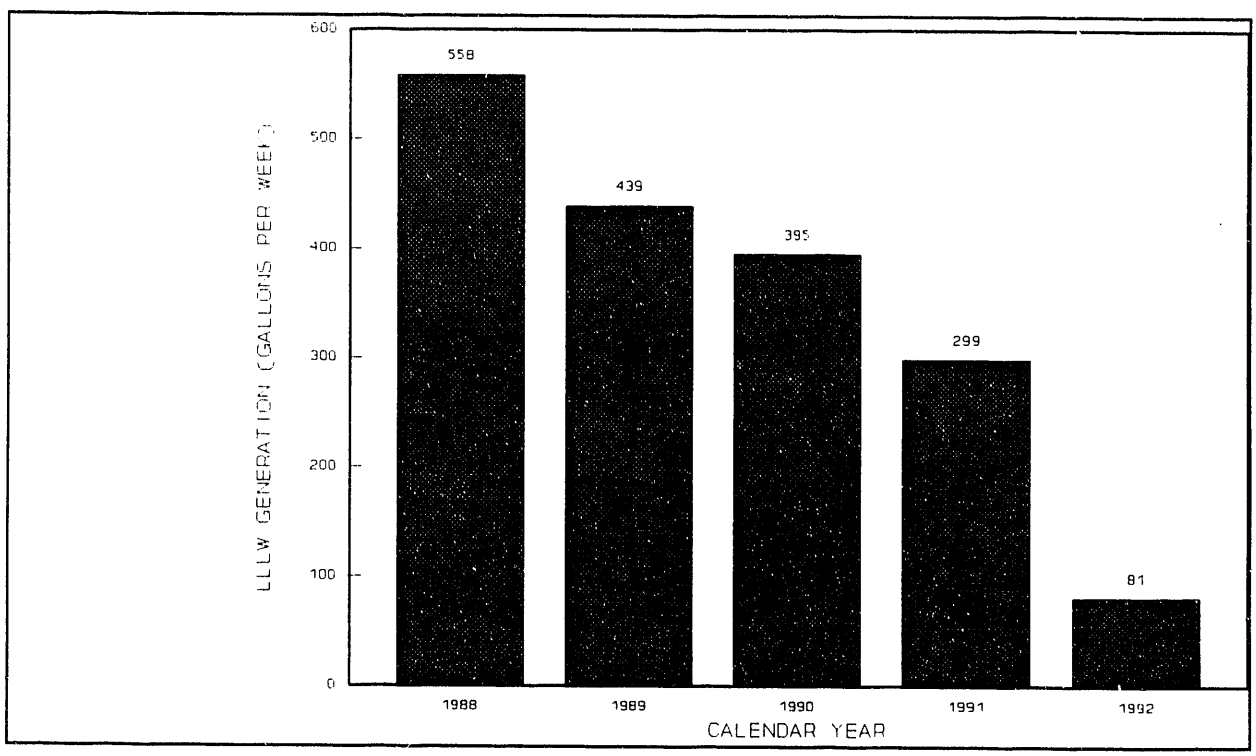


Figure 19. Building 3525 LLLW generation. (ORNL-DWG. 93-5650)

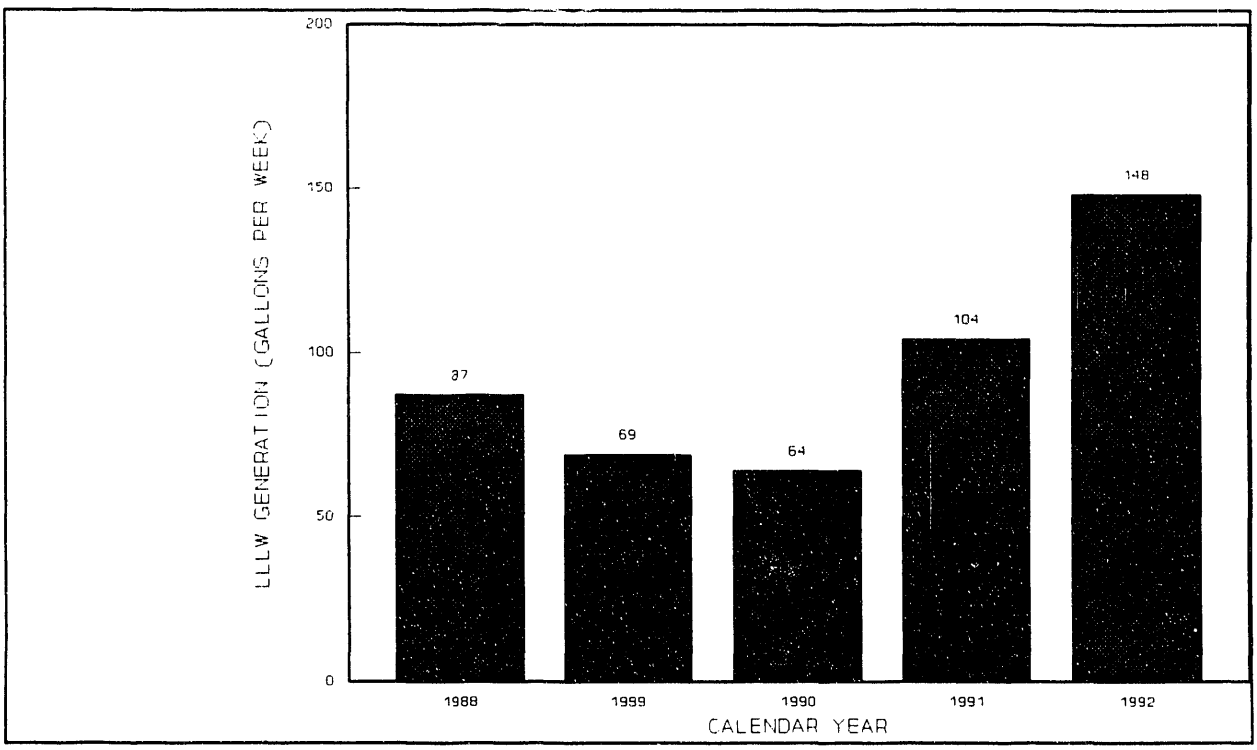


Figure 20. Building 3544 LLLW concentrate generation. (ORNL-DWG. 93-5651)

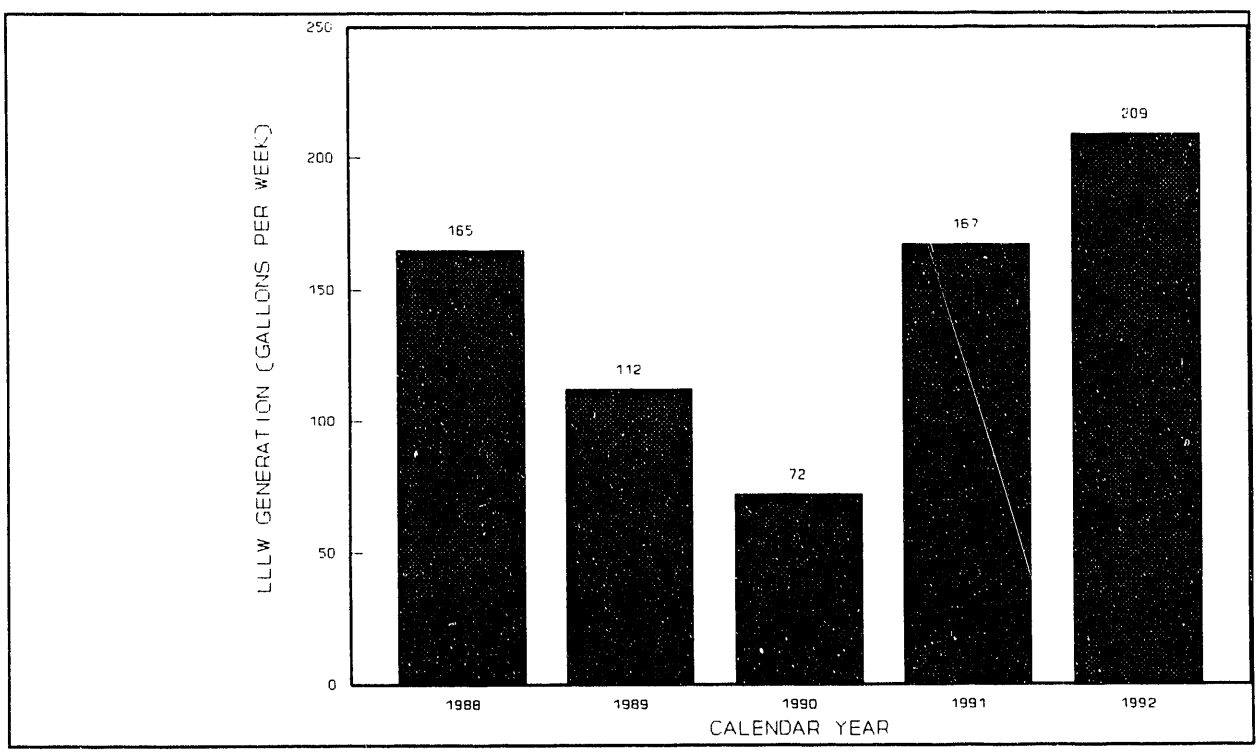


Figure 21. Building 3544 LLLW feed generation. (ORNL-DWG. 93-5652)

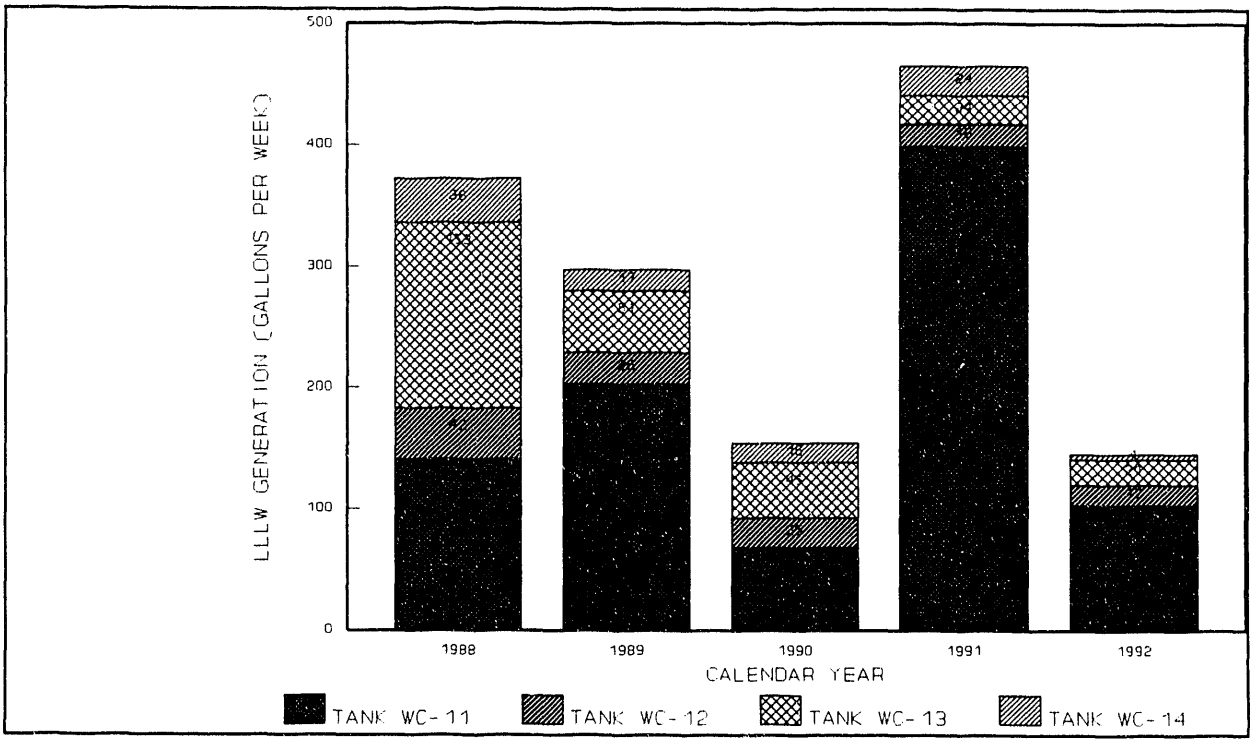


Figure 22. 4500 Complex LLLW generation. (ORNL-DWG. 93-5653)

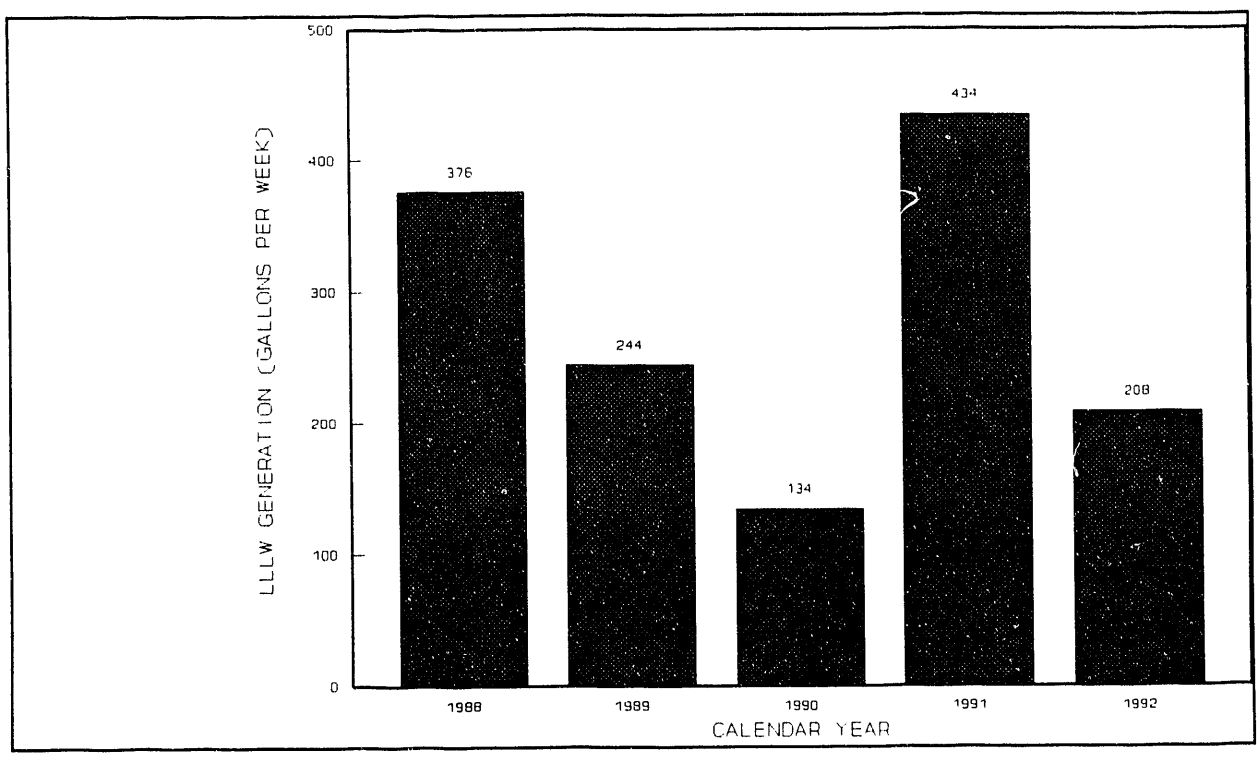


Figure 23. Isotopes Area LLLW generation. (ORNL-DWG. 93-5654)

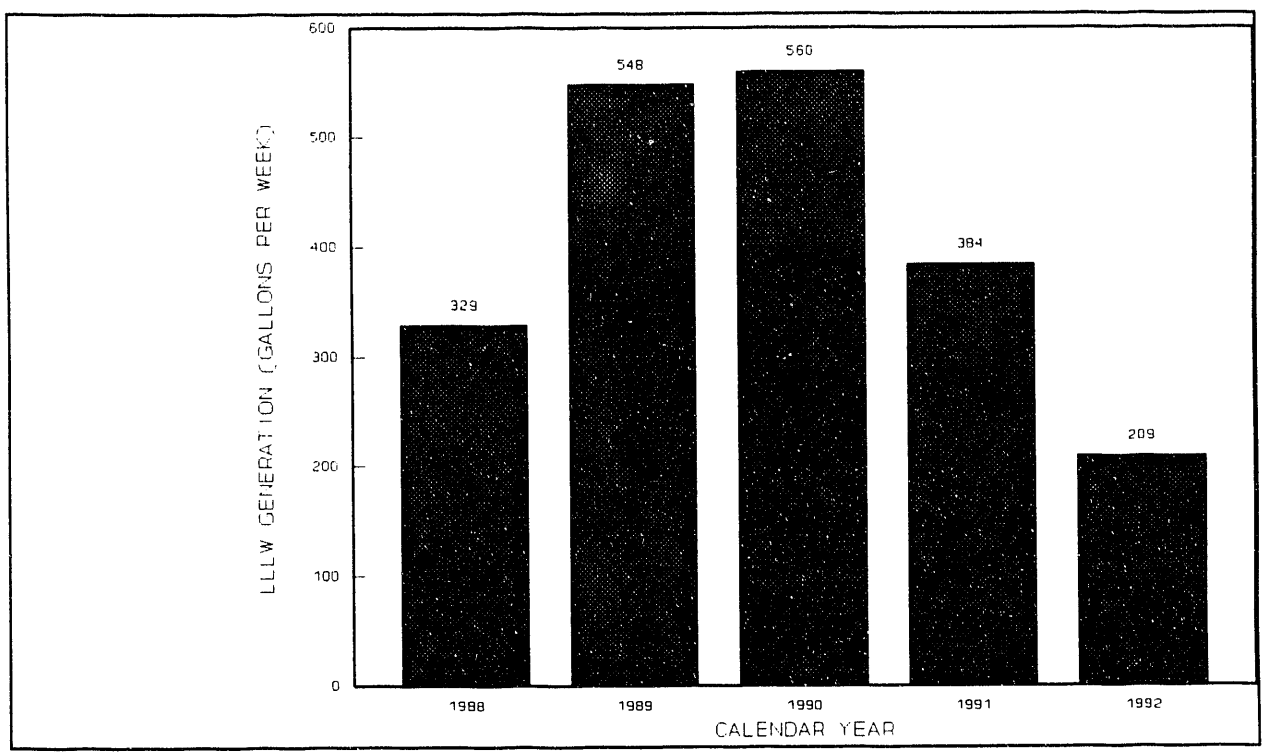


Figure 24. Reactors in Bethel Valley LLLW generation. (ORNL-DWG. 93-5655)

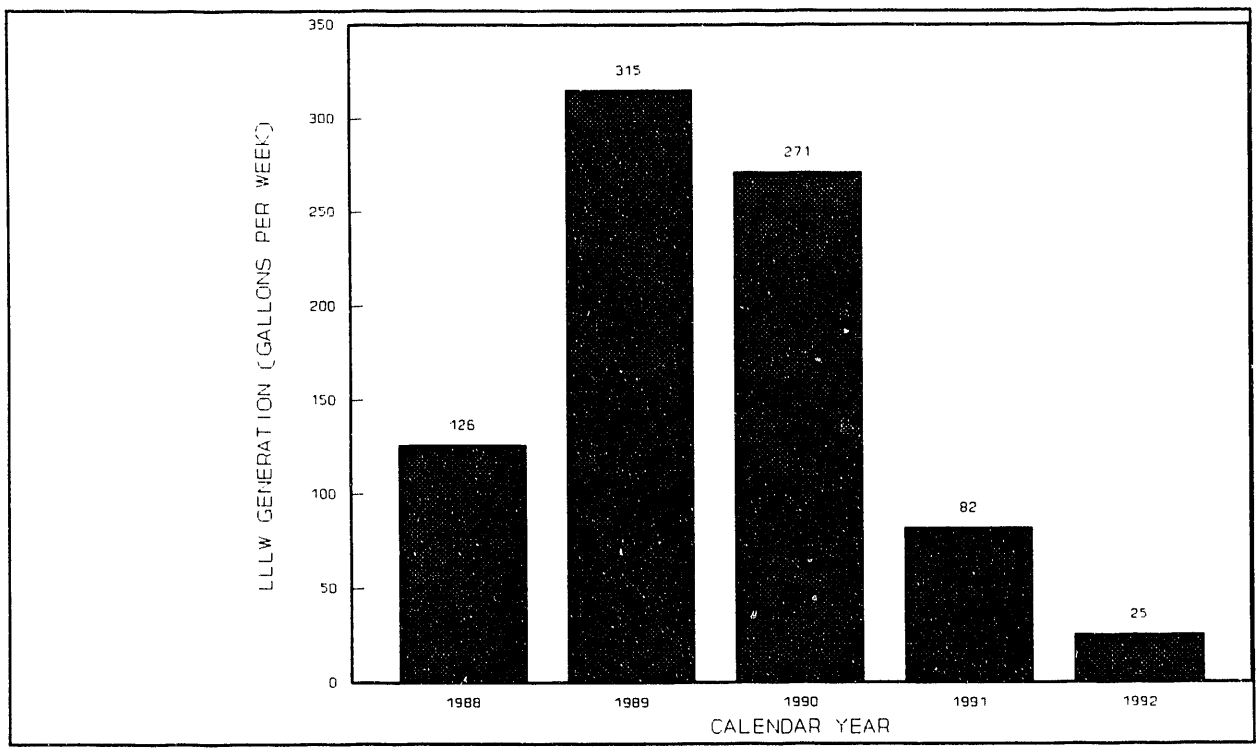


Figure 25. WC-5 Pump Pit (tank WC-8) LLLW generation. (ORNL-DWG. 93-5656)

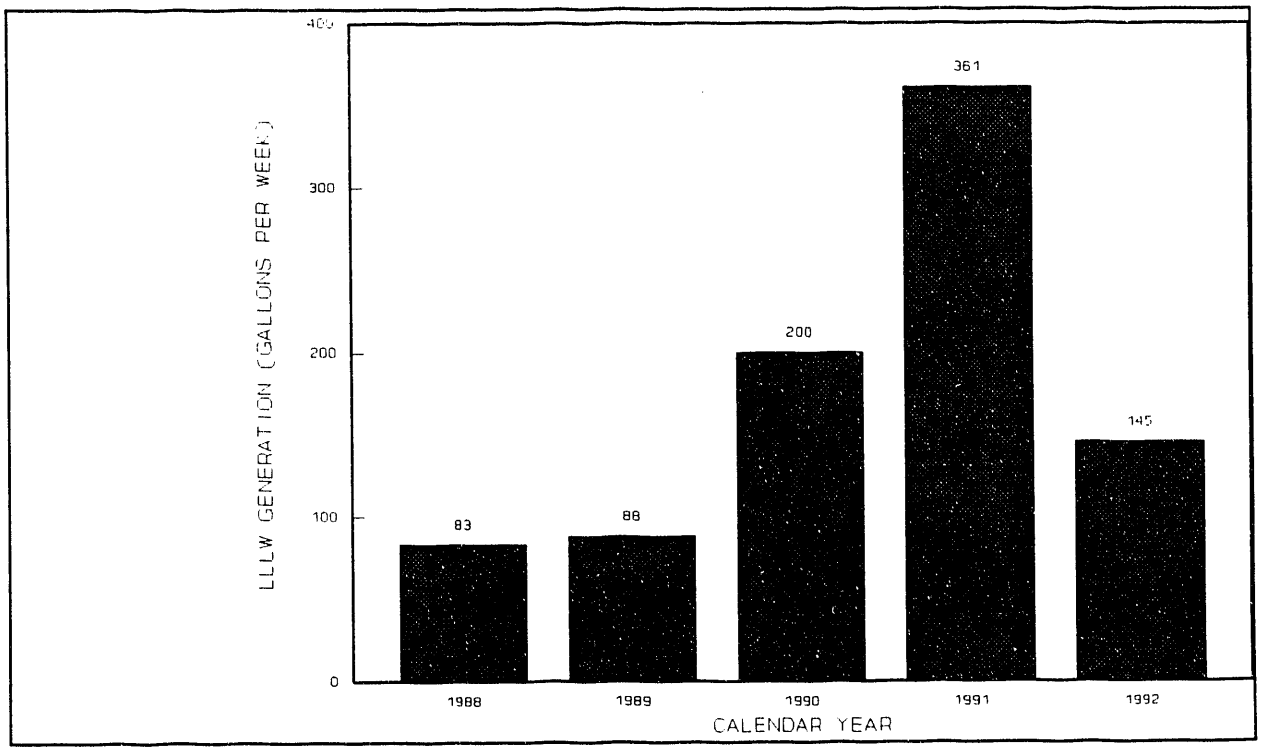


Figure 26. WC-5 Pump Pit (tank WC-9) LLLW generation. (ORNL-DWG. 93-5657)

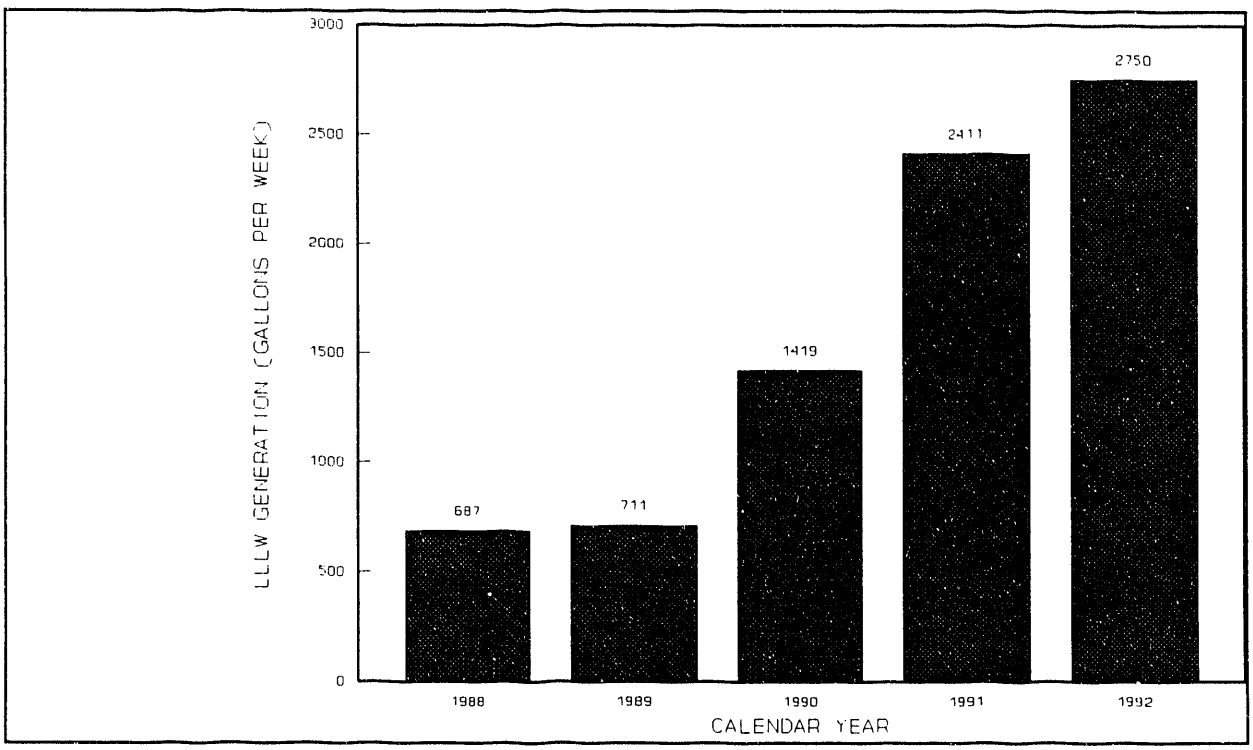


Figure 27. HFIR (Building 7900) LLLW generation. (ORNL-DWG. 93-5658)

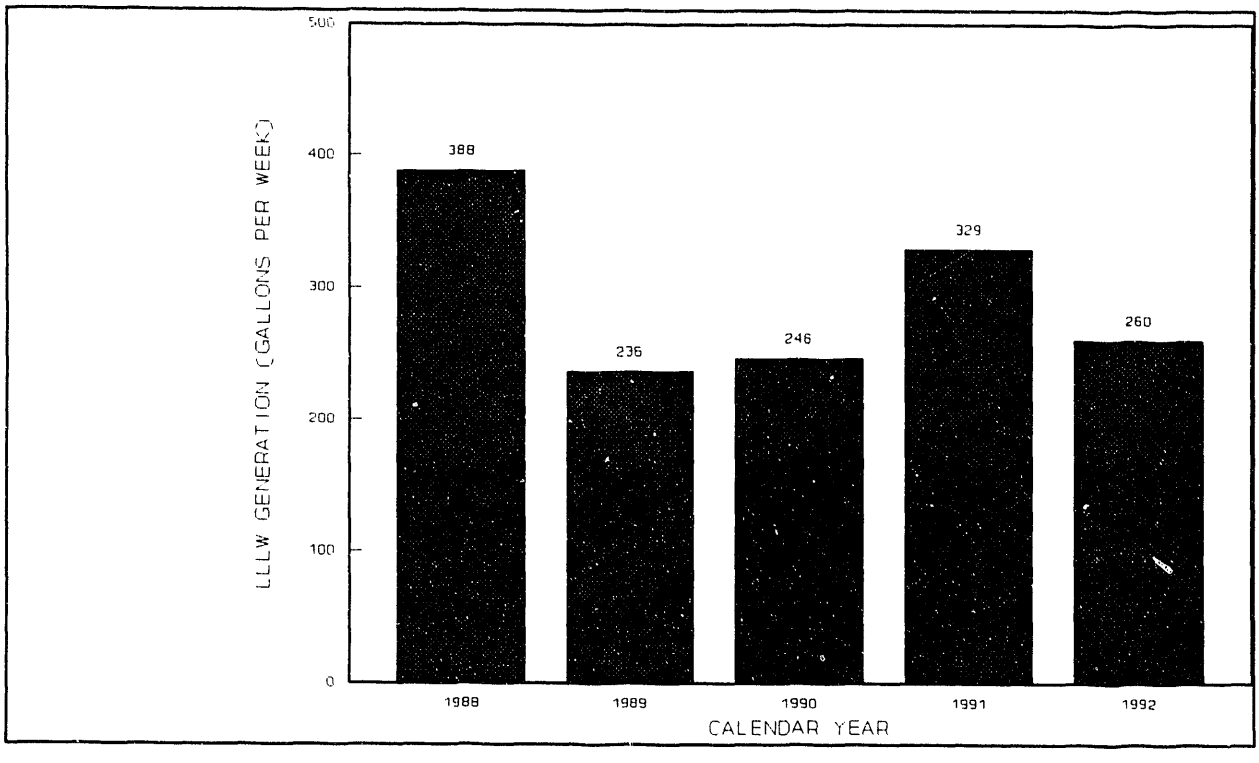


Figure 28. Building 7920 LLLW generation. (ORNL-DWG. 93-5659)

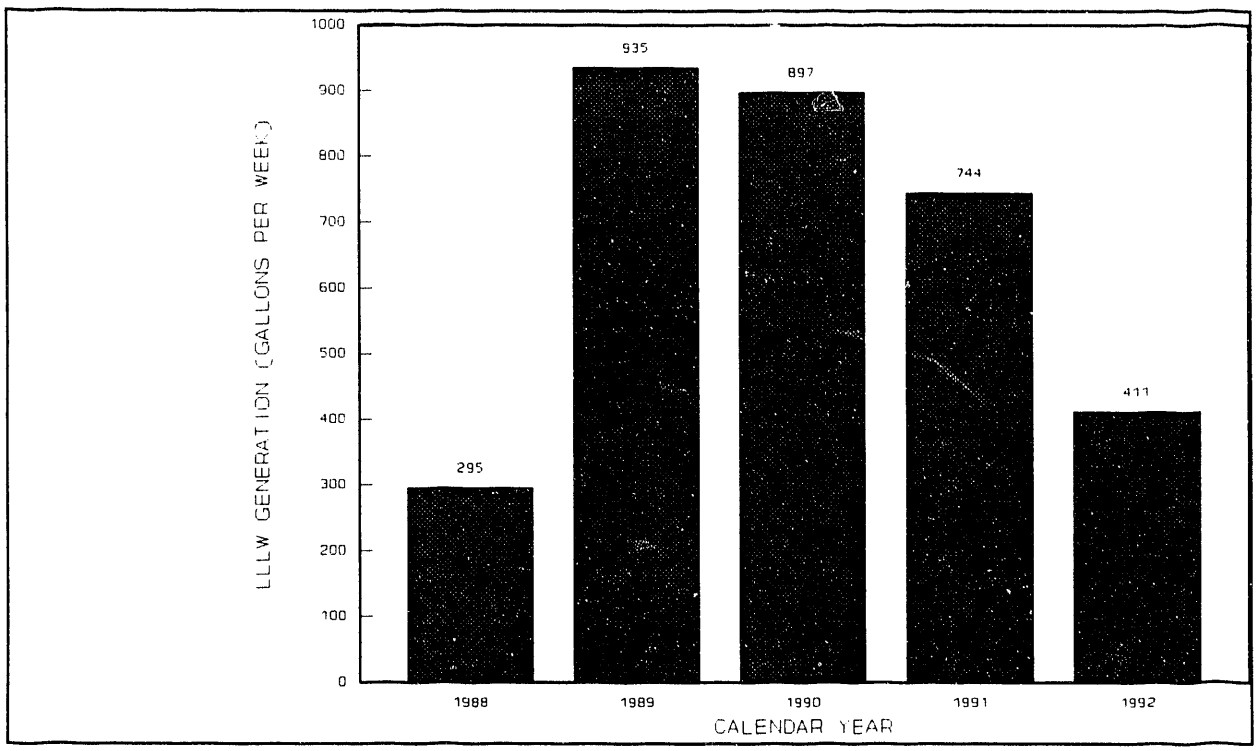


Figure 29. Abandoned tank W-1A LLLW generation. (ORNL-DWG. 93-5660)

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