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**OAK RIDGE
NATIONAL
LABORATORY**

MARTIN MARIETTA

**Liquid and Gaseous Waste Operations
Department**

**Annual Operating Report
CY 1994**

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C. B. Scott

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

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LIQUID AND GASEOUS WASTE OPERATIONS DEPARTMENT
ANNUAL OPERATING REPORT
CY 1994

Date Published: March 1995

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ACRONYMS

ABC - Activity Based Costing
ACSC - Administrative Computing Steering Committee
ADS - Activity Data Sheet
ALARA - As Low As Reasonably Achievable
Bldg. - Building
C&TS - Computing and Telecommunications Services
CY - Calendar Year
DAS - Data Acquisition System
DCS - Distributed Control System
DOE - Department of Energy
ER - Environmental Restoration
ES&H - Environmental, Safety, and Health
ESWMO - Energy Systems Waste Management Organization
FFA - Federal Facility Agreement
FY - Fiscal Year
GAC - Granular Activated Carbon
gal - gallons
gpm - gallons per minute
HEPA - High Efficiency Particulate Air
HQ - Headquarters
I&C - Instrumentation and Controls
ITE - In-Tank Evaporation
LAN - Local Area Network
LGWOD - Liquid and Gaseous Waste Operations Department
LLLW - Liquid Low-Level Waste
LWSP - Liquid Low-Level Waste Solidification Project
MCS - Monitoring and Collection Station
MK-F - MK Ferguson
MMES - Martin Marietta Energy Systems
MV - Melton Valley
MVST - Melton Valley Storage Tank
NPDES - National Pollutant Discharge Elimination System
NRWTP - Nonradiological Wastewater Treatment Plant
OIU - Operator Interface Unit
OIS - Operator Interface Station
ORNL - Oak Ridge National Laboratory
ORO - Oak Ridge Operations
OSHA - Occupational Safety and Health Administration
PC - Personal Computer
P&E - Plant and Equipment
P&ID - Piping and Instrumentation Diagram
PSET - Plant Safety Evaluation Team

**LIQUID AND GASEOUS WASTE OPERATIONS (LGWO) DEPARTMENT
ANNUAL OPERATING REPORT
CALENDAR YEAR 1994**

1.0 OPERATING ACTIVITIES

1.1 PROCESS WASTE SYSTEM

A total of 6.06×10^7 gallons (gal) of liquid waste was decontaminated by the Process Waste Treatment Plant (PWTP) ion exchange system during calendar year (CY) 1994. This averaged to 115 gpm throughout the year. When necessary, a wastewater sidestream of 50-80 gallons per minute (gpm) was treated through the use of a natural zeolite treatment system. An additional 1.89×10^7 gal (average of 36 gpm throughout the year) were treated by the zeolite system. Therefore, the average total flow treated at the PWTP for CY 1994 was 151 gpm. During the year, the regeneration of the ion exchange resins resulted in the generation of 6.36×10^3 gal of Liquid Low-Level Waste (LLLW) concentrate and 9.75×10^3 gal of LLLW evaporator feed. The head-end softening process (precipitation/clarification) generated 625 drums (4.60×10^3 ft³) of solid low-level waste sludge. 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 1994 with previous years. Figure 5 shows a comparison of annual rainfall at Oak Ridge National Laboratory (ORNL) since 1990.

A total of 1.90×10^8 gal of liquid waste (average of 361 gpm throughout the year) was treated at the Nonradiological Wastewater Treatment Plant (NRWTP). Of this amount, 1.19×10^7 gal was treated by the precipitation/clarification process for removal of heavy metals. Thirteen boxes (1.25×10^3 ft³) of solid sludge generated by the precipitation/clarification process were removed from the filter press room. The NRWTP receives wastewater from the PWTP, the metals/nonmetals pumping station (collects wastewater from the 1505 and 2000 areas), the 190 pumping station (collects wastewater from the 4500 complex area), and the Melton Valley (MV) process waste collection tanks. The NRWTP removes particulates, heavy metals, and organics, as well as adjusts the pH of the wastewater, before discharge to White Oak Creek. See Table 2 for a monthly summary of activities at the NRWTP.

1.2 LIQUID LOW-LEVEL WASTE (LLLW) SYSTEM

The A2 evaporator system operated normally during the year. The 2A2 evaporator system operated normally beginning in May, after the evaporator vessel was replaced (see upgrade activities, Section 2.0). A total of 5.44×10^5 gal of LLLW was processed through the A2 evaporator system and 0.13×10^5 gal of LLLW was processed through the 2A2 evaporator system. There was 1.11×10^3 gal of concentrate transferred from the A2 system and no concentrate transferred from the 2A2 system to the waste storage tanks. See Table 3 for

a monthly summary of activities at the evaporator systems. Figure 6 shows a graphical representation of the amount of concentrate presently stored at ORNL awaiting disposal. See Figure 7 (for a graphical comparison of the generation of LLLW at ORNL over the last five years) and Figures 8 through 29 for a comparison of the generation of LLLW by individual sources over the last five years.

In-Tank Evaporation (ITE), an attempt to reduce the LLLW concentrate inventory through the removal of excess water in the Melton Valley Storage Tanks (MVSTs) by bubbling air through them, was continued during the year (a total of 1.08×10^4 of water was evaporated).

1.3 GASEOUS WASTE SYSTEM

The gaseous waste system operated normally during the reporting period. Normal operations means that continuous ventilation service was provided to all customer facilities except during scheduled maintenance periods and the system was operated within the conditions set in the Limiting Conditions for Operations Document. A schematic of the Gaseous Waste System is shown in Figure 34.

2.0 UPGRADE ACTIVITIES

The LLLW Evaporator Replacement Project was completed during the calendar year (CY). Construction was completed in February and preoperational testing was completed in April. The Readiness Review Board approved closure of all open items from the readiness review and the ORNL ESWMO Director approved the return of evaporator 2A2 to service on May 24. This project was undertaken because of the failure of three of the seven steam heating coils in the 2A2 vessel, which caused a large and unacceptable loss in its treatment capacity. This activity, which involved extensive coordination of construction activities, was completed with workers receiving only 15 percent of the dose predicted in the As Low As Reasonably Achievable (ALARA) Plan. This showed the dedication of the workers and their management. The ORNL ALARA Award was presented to the personnel involved in this project.

The Liquid Low-Level Waste Solidification Project (LWSP) - Campaign II was underway at the beginning of 1994. The campaign was concluded in mid-March, with the generation of an additional thirty-four waste forms in CY 1994 (solidifying approximately 2.95×10^3 gal of LLLW supernate), for a total of fifty-eight waste forms (containing approximately 4.85×10^3 gal of LLLW supernate). See Section 2.5 for a detailed description of LWSP activities. The ORNL ALARA Award was also presented to the personnel involved in this project.

The LWSP - Campaign III project was initiated during the summer of 1994. Sampling and characterization of the supernate in tanks W-29 and W-30 was conducted, and the internal readiness assessment activities began in September. At the end of the year, MMES personnel were completing activities in preparation to mobilize the vendor in early CY 1995. See Section 2.5 for more details of this activity.

The first phase of the Bethel Valley LLLW Line Item was completed by construction forces during the year. This activity provided a new Monitoring and Collection System (MCS) for Bldg. 2026 and provided double-contained transfer piping from Bldg. 2026, the Radioactive Materials Analytical Laboratory, to the MCS and from the MCS to the existing Central Waste Collection Header tie-in at Valve Box 1A. This facility meets requirements of the Federal Facilities Agreement for the LLLW System. LGWOD and Engineering personnel completed functional testing of the facility and the LGWOD subsequently took beneficial occupancy of the facility. At the end of the year, the facility was undergoing a readiness review in accordance with the requirements of DOE 5480.31 and startup was anticipated during the second half of CY 1995. See Section 2.2 for a more detailed description of this activity.

The WC-9 Transfer System Modifications Project was completed in March and then placed in service. This project provided a new transfer pump for LLLW Tank WC-9 and double-contained piping that bypassed the existing pump pit and tied into the existing discharge

pipng to the Central Waste Collection Header. This was done due to increasing problems with the existing transfer system for this tank. The new system was similar to the system that was installed at the WC-10 Pump Pit several years ago.

The T-1 and T-2 Instrumentation Upgrades were completed during the year. This activity installed new instrument lines for the level monitoring instrumentation for tanks T-1 and T-2 located at the Central Pumping Station (Bldg. 7567). This upgrade was performed to eliminate fluctuations in the level instrumentation and allowed tank testing as part of the Federal Facilities Agreement leak-testing program for the LLLW System.

Computer activities continued to play a large part in LGWOD operations. The implementation of the Central Waste Tracking System and the new computerized Requests for Disposal continued during the year. This activity, which provided a centralized database for tracking solid and hazardous waste disposal requests from point of generation until final disposal, was the responsibility of the LGWOD during the first quarter of the year. It was then transferred to a new organization developed to oversee waste tracking computer operations for ORNL ESWMO. Reporting by the LGWOD was discontinued. See Section 2.3 for a more detailed description of this activity.

Other computer activities included completion of the Distributed Control System (DCS) upgrades so that it will be compatible with the new equipment being installed as part of the Bethel Valley LLLW Line Item project. During the year the new database of input and output signals and the graphic display screens were validated to ensure all signals were converted and that all graphic displays indicated the correct state changes to assist in operator monitoring. The new consoles were then placed in service. With the completion of this upgrade, personnel began development of the replacement system for the Data Acquisition System (DAS), which has been in service for the past 10 years. Due to its age, acquisition of spare parts is becoming increasingly difficult. A subcontractor has begun development of software to replace this system and a specification for the replacement system's hardware was being reviewed at the end of the year. The replacement system will be compatible with upgrades being proposed by Central Engineering personnel for the DCS as part of future line item activities. This will allow both the DCS and the DAS to have the same interface for the operators (good human factors engineering) and to share spare parts (resulting in a lower cost for spare parts inventory). The LGWOD provided a subcontract to support software development for the new DCS that will result from this upgrade.

2.1 PROCESS WASTE (PW) SYSTEM

February

LGWOD personnel successfully unloaded spent zeolite from the zeolite demonstration system at Building 2600 and reloaded the system with fresh zeolite. The zeolite

demonstration system is being used to demonstrate sluicing capabilities of the zeolite column and to gather performance data for the design of the zeolite columns that will be installed in the new Process Waste Treatment Facility, which is planned as a FY96 line item. The spent resin was quickly and easily unloaded, showing the design configuration of the vessel internals to be appropriate.

LGWOD personnel provided comments on the 30% design package for the new process waste storage tank that will be built next to the existing tanks at Building 2600. This project will provide an additional 1,000,000 gal of storage capacity for process wastewater during periods of heavy inflow.

Two revised procedures for NRWTP operations were approved during the month. These procedures incorporated the instructions found in the temporary Document Change Directive for the acid/caustic tanker based at the NRWTP.

March

The LGWOD Operating Summary Report for CY 1993 was transmitted to Department of Energy -Oak Ridge Operations personnel on March 9. This transmittal completed Activity Data Sheet (ADS) OR-3201 Milestone OR320109 and ADS OR-3251 Milestone OR325107, to distribute the summary report by March 31.

Personnel from the Chemical Technology Division shut down the Zeolite Demonstration System located at Building 2600 after column breakthrough was detected. LGWOD personnel unloaded the exhausted zeolite resin and reloaded fresh zeolite resin during April. This system is being used to demonstrate the effectiveness of the zeolite treatment system and methods for unloading the spent zeolite resin. This is in support of a FY96 line item project to build a new Process Waste Treatment Facility at Oak Ridge National Laboratory (ORNL).

May

Both the new nitric acid tank and sulfuric acid tank were installed inside Building 3544 this month. Piping fabrication was almost completed and much of the new pipe connecting these tanks to the existing facility was installed. Also, acid-resistant concrete was poured and finished inside the curbed areas around both tanks. This began Phase I of the PWTP Upgrades Line Item.

June

The PWTP Upgrades Line Item - Phase I continued. MK-Ferguson (MK-F) completed piping modifications in the makeup area for the new acid tanks. The scope of work was increased to include replacement of additional piping and valves in the ion-exchange

column room. This increase in scope resulted in approximately three additional days being added to the project. Electrical work was also completed.

July

LGWOD personnel participated in a Value Engineering review to determine the location of the Process Waste Tanker Unloading Station. The LGWOD recommendation to locate the station at the NRWTP was adopted due to the very small number of modifications that would have to be made and their low cost. This replaces the proposal to locate the station at the Transported Waste Receiving Facility and will result in a substantial cost savings.

Provided comments to Engineering personnel on the 90% Design Review package for the clarifier upgrades that will be performed as part of the PWTP Upgrades Line Item.

Phase I of the PWTP Upgrades Line Item continued; however, due to improper torquing of bolts while making final connections of valves in the system, many of the bolts failed. New bolts had to be procured, which resulted in a delay in finishing the installations. This delayed the construction leak tests until August.

A walkdown of the PWTP Upgrades Line Item-Phase 2 (caustic scrubber upgrades) was performed to identify all remaining parts required to complete the job. This job was scheduled to begin in mid-August.

August

LGWOD personnel participated in a Value Engineering Study for the FY 1996 Line Item to build a new Process Waste Treatment Facility.

The installation of the new sulfuric acid storage and transfer system was completed and testing of the new system was also completed. The system was turned over to the LGWOD, completing Phase I of the PWTP Upgrades Line Item.

A waste management plan was prepared and issued for Phase II of the PWTP Upgrades Line Item. Several meetings also occurred in order to continually refine the logistics for the upcoming project.

September

LGWOD personnel participated in a walkdown of the construction site for the sodium hydroxide/sulfuric acid unloading station at the PWTP that would begin construction in late 1994. The walkdown was to identify and review potential safety and operational concerns which could occur during construction. Measures were taken to minimize these problems.

Several meetings occurred during the month to support the upcoming Phase II of the PWTP Upgrades Line Item. Final checks and arrangements continued to begin field work on the Caustic Scrubber Upgrade. Construction activities started in October. Plans were to start on the acid/caustic unloading station within the next one to two months. Following this, the clarifier upgrade, and associated piping, at the NRWTP were scheduled. Finally, the west end addition and cesium removal station will be completed. Scheduled construction time is approximately one year.

October

LGWOD personnel completed a walkdown with Engineering personnel of the PWTP for the rerouting of the existing plant air header and some drain lines in support of the PWTP Upgrades Line Item-Phase II work on the caustic scrubber system. In addition, a mock-up of the Caustic Scrubber Upgrade portion of the project was assembled to assure all components would fit as required. For the remaining work, a Waste Management Plan was approved and work was still scheduled to begin sometime during late 1994.

November

LGWOD personnel conducted a walk-through of the PWTP with Construction Engineering personnel to review the PWTP Upgrades - Phase II work underway at the facility. This will provide upgrades to the scrubber unit located in the ion-exchange column room at Building 3544.

LGWOD personnel began reviewing draft Piping and Instrumentation Diagrams (P&IDs) for Building 3544 that were developed by Engineering. This review consists of a physical walk-down of the facility to confirm all valving and piping arrangements are accurate. When completed these will be provided for LGWOD and Engineering personnel's use during future upgrades.

December

LGWOD personnel provided support to Engineering and Instrumentation and Controls (I&C) Division personnel in calibrating the level instrumentation for tank L-7A at Building 3544. This tank is being installed as part of the PWTP Upgrades Line Item - Phase II activities.

Began pre-operational testing for the L-7A upgrades, but due to the discovery of missing components in the system, the testing was not completed. The components have been ordered and are expected to arrive during the first two weeks of January 1995. Installation of the components and completion of the testing should take approximately 2 days after arrival of the parts.

LGWOD personnel performed a walkdown of the new P&IDs for the systems. Comments were provided to, and reviewed with, Engineering. The P&IDs are in the process of being revised to reflect the comments.

Several meetings occurred during the month on the new chemical unloading station. According to MK-F, all materials had arrived. MK-F is scheduled to mobilize the first week of January to begin this modification.

2.2 LIQUID LOW-LEVEL WASTE SYSTEM

January

The trench for the doubly-contained piping for the WC-9 Transfer System upgrade, was completed. Field measurements were taken to determine the exact lengths of piping required so that Plant and Equipment (P&E) Division personnel could finish the piping fabrication.

LGWOD personnel cleaned up construction debris at the WC-9 tank farm. This debris was from the installation of the new transfer system for LLLW Tank WC-9.

LGWOD personnel participated in the kickoff meeting for Title I work for the Bethel Valley (BV) Federal Facility Agreement (FFA) Upgrade Line Item.

Reviewed and submitted comments on the Melton Valley LLLW Line Item 90% package.

Reviewed and submitted comments on the Certified for Construction package for the Monitoring and Collection Station (MCS) for Building 3525 that is being built as part of the Bethel Valley LLLW Line Item. This review was conducted to incorporate lessons learned from construction that has occurred for the MCS for Building 2026 and from the design of the Melton Valley LLLW Line Item.

March

A Document Change Directive was issued for the LLLW System which provided procedures for the operation of the new transfer system that was installed for LLLW Tank WC-9. Operations personnel performed a required reading on this new procedure and completed the on-the-job training that was done to close out the training requirements in the Readiness Review.

The WC-9 Transfer Modification installation was completed and the new pump and piping were placed in service. Readiness Review meetings were held with the Operational Readiness Team and the Readiness Review Board, and these meetings culminated in the Board approving all Readiness Review Criteria and recommending to the ORNL ESWMO

Division Director to place the new installation in service. He concurred with the Board's recommendation and approved placing the system in service.

April

LGWOD and Engineering personnel began functional testing of the MCS for Bldg. 2026 (Bldg. 2099) on April 18. This testing included functional testing of the building's utility system (instrument air, water, steam distribution) as well as functional testing of the LLLW tank's collection, storage, and transfer operations and the caustic system's ability to adjust the pH of the contents of the LLLW Tank. Activities included walk-downs of the facility by LGWOD and Engineering personnel to identify changes to the piping and instrumentation drawings that occurred during construction, placing identification tags on the valves at the facility, and completion of the functionality testing of the instrument air, steam distribution, caustic storage, plant sumps, and part of the process water systems. Testing was also conducted on the DCS to validate the graphic screens that are used by LGWOD personnel to monitor and operate the facility. This facility was constructed as part of the Bethel Valley LLLW Line Item.

Field work activities began around the middle part of the month on the addition of a new valve box adjacent to the existing Valve Box 3. It will be used to provide connection of the existing LLLW transfer header to the new Transported Waste Receiving Facility (TWRP). The work undertaken was to excavate as necessary to be able to form and pour the new valve box and to gain access to the LLLW Header. Excavating continued into May. For safety considerations, the annulus pressure was removed from the Central Waste Collection Header from Valve Box 1 to Valve Box 3. An Unreviewed Safety Question Determination (USQD) screening was completed on the depressurization of the pipeline and it was determined that a USQ was not applicable. This work was part of the Bethel Valley LLLW Line Item.

May

LGWOD and Engineering personnel completed the functional testing of the MCS for Building 2026 (Building 2099) and began testing of the transfer system from the LLLW tank at Building 2099 to Valve Box 1A, with a process wastewater tanker being used to collect the wastewater from a connection on the discharge of the new transfer header. Personnel began preparation for connecting the new transfer header to the existing collection system at Valve Box 1A after testing was completed. Testing of the tank sampling system at Building 2099 remained to be completed. Connection of the new facility to Building 2026 would not be completed until several readiness review items were closed out. Draft procedures for this facility were completed and distributed for internal review. This facility was built as part of the Bethel Valley LLLW Line Item to provide an LLLW collection system for Building 2026 that meets the requirements of the Federal Facility Agreement for LLLW.

The excavation for the new Valve Box 3A was completed this month and the concrete "mud-mat" was poured. Also, "forming" for the valve box began. This activity was placed on hold due to complications in procurement of required materials by construction forces. This work was being done as part of the Bethel Valley LLLW Line Item to connect the TWRF to the LLLW Collection and Transfer System.

June

LGWOD and Engineering personnel completed the functional testing of the transfer line from Building 2099 to Valve Box 1A. With the exception of the LLLW Tank Sampling system, all of the functional testing was completed. Draft procedures for operations at Building 2099 were distributed for formal review.

MK-F applied the waterproofing for Valve Box 3A. Forming for the concrete wall pours continued. This work was part of the Bethel Valley LLLW Line Item to provide a connection for the TWRF to the LLLW Collection and Transfer System.

July

Provided comments to Engineering on the draft Design Criteria for the MCS for Building 3525. This facility will provide a LLLW Collection and Transfer System for Building 3525 that meets the requirements of the FFA for LLLW operations and was being built as part of the Bethel Valley LLLW Line Item - Phase II activities.

Provided Engineering personnel and the Architect Engineering Designer personnel for the Bethel Valley FFA Line Item a tour of Building 2537 and provided additional information on the control panels located at this facility. This project is providing new control panels and relocating the steam station to the outside of the building, as well as providing signals from the instrumentation to the Distributed Control System for redundant monitoring capability.

Provided the draft functional test plan for the TWRF's utility systems to Engineering personnel for review and comment. This functional test was a joint effort between LGWOD and Engineering personnel to verify the functionality of this facility. This facility was being constructed as part of the Bethel Valley LLLW Line Item.

Provided comments on the 30% Design Review package for the Bethel Valley FFA Line Item Project.

Assisted Engineering personnel in a walk-down of the steam control system for the Evaporator Service Tanks at Building 2537. This was in support of the 30% Design Review of the Bethel Valley FFA Line Item Project.

LGWOD and Engineering personnel removed the cover of the valve box at W-6 to determine the as-built piping configuration. Pictures were taken and drawings modified to incorporate a new design for the stainless steel liner.

Participated in a review of the Melton Valley Storage Tanks Capacity Increase Line Item Project to identify areas for potential cost savings.

Provided design input to Engineering personnel on the next phase of the Process Waste Treatment Plant Upgrades Line Item.

Participated in a meeting with Engineering personnel and Architect Engineering personnel to resolve comments on the 30% Design Review of the Bethel Valley FFA Line Item.

Participated in a meeting with Engineering personnel and Architect Engineering personnel to identify areas for potential cost savings within the Melton Valley Storage Tanks (MVSTs) Capacity Increase Project.

LGWOD personnel placed the new instrument lines for the level instruments on LLLW tanks T-1 and T-2 (located at Building 7567) in service on July 21. These new instrument lines were installed in support of the FFA leak-testing program.

August

LGWOD personnel provided Engineering personnel with a tour of Building 2531 to evaluate electrical modifications that will be performed during the Bethel Valley FFA Line Item. This project will provide above-ground cell ventilation and off-gas filter pits for Buildings 2531 and 2537, and will provide instrumentation upgrades to the evaporator service tanks' control room (Building 2537).

LGWOD personnel met with Engineering and Architect Engineering personnel to finalize the sampling plan for the cell ventilation and off-gas filter pits at Building 2531. This sampling would provide data for the design of the new filter pits that will be built by the Bethel Valley FFA Line Item.

LGWOD personnel participated in a review with Engineering personnel on possible alternatives for a MCS for Building 3525 that was being planned under Phase II of the Bethel Valley LLLW Line Item.

Work resumed early in August on Valve Box 3A. The waterproofing for the valve box base was installed, the valve box walls were formed and poured and waterproofing applied to them. Arrangements to fix the damaged 2" transfer line between Melton and Bethel Valleys were also underway, with repairs expected to occur in September. Additionally, arrangements to have a sump pump installed in the valve box sump occurred. Interface

with design and construction personnel have occurred to support this, and an engineering change to prepare the installation was issued.

Engineering personnel determined that a bilco hatch can be used as the lid for the valve box at W-6. This was determined from on-site dose measurements. This will result in significant savings in construction and future operations.

Construction kickoff meeting was held for start of Valve Box 1B. This valve box will provide double containment piping from Building 3019 to Valve Box 1A which connects to the Central Waste Collection Header. MK-F was gathering materials for the installation at the end of the month. This is part of the 3019 FFA Compliance Project.

September

MK-F personnel entered the WC-19 and WC-3 Pump Pits and created as-built drawings of the valve and piping configuration in support of an upcoming activity to replace the valves on the LLLW transfer lines. MK-F personnel also repaired a leak in the steam system to the transfer jet for the WC-19 tank during this inspection. This was the first of several valve pits that would be inspected in upcoming weeks in support of the FFA leak-testing program for the LLLW System.

P&E Division personnel removed lead shielding from the carrier drain pipe at Building 2531, removed the above-grade pipe, and capped the pipe going into the cell. This pipe was used to transfer the contents of a shielded carrier from the Building 7920 facility to the evaporator for treatment during the early 1970s. This removal was in support of dezoning work underway within LGWOD facilities.

Provided comments to Engineering on the MVSTs-Capacity Increase Line Item 30% Design Package. This line item will provide LGWOD with 450,000 gals of useable storage capacity for concentrated LLLW generated at the LLLW Evaporator Facility.

Received the as-built drawings for the WC-9 Transfer System Modification Project from Energy Systems Engineering. These incorporated the red-lines that were generated at the end of the project.

MK-F personnel erected a containment structure over the 3026-C Valve Box (located on the southwest side of the building) in preparation for personnel to enter the valve box and as-built the piping and equipment in support of a future maintenance activity to replace the valves. This was in support of the FFA leak testing program for the LLLW System.

Work progressed well during the month at Valve Box 3A. Backfilling the excavation was underway and shop fabrication of the required piping was completed. Completion of this job was expected in October.

October

The Out-of-Tank Evaporator Demonstration Project Team reviewed the bid proposals for the evaporator system and made a recommendation to Procurement personnel on the system to be bought. This demonstration will be used to gather data by Chemical Technology Division personnel on the usefulness of a small capacity, portable evaporator system to support decontamination and cleanup efforts at DOE facilities.

A meeting was held with Engineering and MK-F personnel to discuss the remaining work to be performed at Valve Box 3A and plans were prepared for the tie-in to the Central Waste Collection Header. The outer pipe was removed from the double-contained section of pipe now within Valve Box 3A and the tie-in was performed. Plates were installed so that the integrity of the annulus section (the area between the inner and outer pipes) was restored and a cross-over of the nitrogen line between the two sections of double-contained pipe entering and exiting Valve Box 3A was installed. Additional activities included providing electrical wiring for the valve actuator to be installed in the valve box, and backfilling and paving of the parking lot.

LGWOD personnel made arrangements with P&E Division personnel to install a sump pump in Valve Box 3A after MK-F personnel complete construction activities. The sump pump was being added by LGWOD personnel to provide a method of emptying the sump's contents into the Central Waste Collection Header while maintaining the transfer within a double-containment system. An Unreviewed Safety Question Evaluation Screening was completed for this proposed modification and the change was found to be within the scope of the existing safety documentation.

Participated in a meeting with Engineering and Architect-Engineering personnel to develop a design for the coupon-holder for the MVSTs-Capacity Increase Project. This holder will be used for coupons to be located at various heights in the tanks to determine if any corrosion is occurring to the tank material.

LGWOD personnel participated in the 60% on-board review of the Bethel Valley FFA Line Item for the modifications to Building 2537 and the construction of a new cell ventilation and off-gas filter building to replace the existing filter pits servicing Building 2531.

The inspection of the LLLW valve boxes and as-built sketches were completed. All solid LLW generated during this activity was approved for disposal, except for 11 bags in a B-25 box which required rebagging. These inspections were performed in support of a future maintenance activity to replace the valves on the LLLW transfer lines in support of the FFA leak-testing program for the LLLW System.

November

P&E Division personnel installed the sump pump in Valve Box 3A. This valve box was installed by MK-F personnel as part of the Bethel Valley LLLW Line Item Project to provide a connection for the TWRF to the Central Waste Collection Header.

LGWOD personnel attended a meeting on the corrosion coupon enclosure for the MVSTs-Capacity Increase Line Item Project. This consisted of a review of the size and weight requirements for the enclosure to ensure it will be easily transported by LGWOD personnel.

LGWOD personnel attended a meeting with Engineering personnel to discuss the addition of a fiber optic network to the MVSTs-Capacity Increase Line Item Project site. The fiber optic network will allow for remote monitoring of all process variables and alarms instead of providing a general facility alarm to the WOCC. This would be consistent with other Line Item projects that are in planning and construction.

December

A LGWOD technical staff member participated in the Detailed Design Review in Paris, France, for the 1,000-gal LLLW tanker that is being procured for use at the Transported Waste Receiving Facility (Building 2649).

Design for the upgrade of the east evaporator valve pit continued. The plug was removed for a short period of time to take dose readings and photographs (to assist in the production of as-built drawings). The dose was over 500 mr/hr; therefore, the Health Physics personnel required that the plug be replaced. A remote decontamination operation is planned for January 1995.

2.3 WASTE OPERATIONS DATA MANAGEMENT AND ANALYSIS SYSTEM (WODMAS)

January

Two training classes for the Waste Tracking System (WTS) Forms Management PC package were held.

A second meeting was held with the Computing and Telecommunications Services (C&TS) and Electronic Forms Development Group personnel to discuss problems introduced by the un-announced change for the support form filler software product to an upgraded version of the product.

The vendor of the form filler software and the supported desktop e-mail software were contacted to determine if the two systems are to be compatible with each other. The ability for the generators to e-mail validated waste generator data has the potential for significantly easing the data entry workload.

Development of barcode software programs to support inventory, re-labeling, container packing, storage and inspection operations in the field continued. A purchase requisition for 14 additional barcode readers and auxiliary equipment was issued. Eight wand-type barcode/keyboard readers were installed in data entry personnel computers. The wand-type readers are used to read the Waste Pickup Request and Waste Item documentation bar code labels to reduce data entry errors.

Two meetings of the barcode standards committee were held to finalize the draft barcode label standard. The focus of the standard is waste containers' label format, size and placement.

Three copies of a client-server ad-hoc query and reporting tool were ordered for evaluation purposes. One copy of the complete Powerbuilder development kit was ordered for evaluation. The kit was ordered under a one-time only special purchase for approximately \$600 resulting in a cost savings of \$2,700.

Configuration of critical operations personnel's personal computers (PCs) to interface to the Building 3001 local area network expansion/conversion was completed. The 3001 network consists of sixty-two network connections total. Thirty-nine users' PCs were hardware configured. Twenty-one critical operations personnel's PCs were configured with Pathworks to support waste tracking system access. Twenty users had their C&TS e-mail accounts re-routed to WODMAS. Eight Environmental Restoration (ER) personnel were being configured for access to ER-specific systems. The remaining personnel will be configured, if interested, for general access to the new desktop mail and other client-server tools currently being deployed within Energy Systems.

The Novell Netware file server upgrade from 386/20 hardware to 486/66 DX2 with two 500 megabyte disk drives was completed. Software conversion to the upgraded PC was to be completed in February. The Novell Netware file server was used to support the Documentation Management System as well as access to shared software installations.

Two additional PCs destined for salvage were transferred to LGWOD personnel for general purpose use.

RBD version 3.2 was loaded on the system.

February

One training class for the WTS Forms Management PC package was held.

Two copies of the upgraded form development package were received. The software would be used to develop the corresponding upgrade to the ORNL WTS Forms Manager application. A sample of the application which demonstrates the symptoms of the upgrade problems was transferred to the software company for analysis.

The form development package software manufacturer confirmed discussions with the vendor of the Eudora desktop mail package selected as the Energy Systems standard. The form software manufacturer assigned a systems engineer to investigate potential interface capabilities and indicated that the Eudora manufacturer had been very responsive to date.

A presentation of the ORNL WTS was held on January 27 for representatives of Central Waste Tracking System, K-25 Waste Tracking and Reporting System, Y-12 Waste Tracking Project and the Strategic Vision Implementation Plan team member in the ORNL ESWMO training room. The focus of the presentation was information flow and the procedural and database design implications.

A demonstration of the Uniface product was given by representatives of Uniface Corporation for Waste Operations, ORNL WTS and Documentation Management Center personnel. A representative of the Energy System Laboratory Information Management System (ESLIMS) attended to discuss potential interfaces between ORNL WTS and the ESLIMS currently under development.

Two meetings with a subcontractor representative were held to kick off their involvement in the conversion of existing Solid Waste Information Management System (SWIMS) and Hazardous Waste Tracking System data to the ORNL WTS. The subcontractor would be providing a Quality Assurance/Quality Control report on the conversion algorithms and the resulting data.

Two additional Computing and Telecommunications Services programmer analysts were added to the ORNL WTS effort on a temporary basis. The additional personnel focused on external interfaces to the Corporate Information Center personnel and cost accounting systems databases, the Hazardous Materials Inventory Management System and the conversion of existing Hazardous Waste Tracking Systems data to the ORNL WTS.

The ORNL WTS development, testing and import databases were segregated from the migration database and placed on physically separate cluster nodes and devices to minimize conflicts between systems support personnel and data entry staff.

Stress testing of the ORNL WTS continued. The assignment of multiple data entry staff to completing data entry operations has revealed a number of system performance issues as well as errors in application software. Problem resolution continued.

The SWIMS to ORNL WTS conversion procedure was executed against the "MOD 3" SWIMS database, the existing SWIMS database. Of approximately 29,000 container records approximately 50 unique first level exception reports were generated. The exception report listing was provided to Radioactive Solid Waste Operations Group personnel for resolution.

Work orders for networking Building 3047 were issued. The 3047 expansion of the Waste Operations Control Center Local Area Network (WOCC-LAN) will include 64 connections to provide ORNL ESWMO personnel with access to the high speed FDDI backbone and desktop services such as Eudora/POP mail, and Internet access to Gopher, Mosaic and Trumpet news services. Specialty system access such as the financial application being deployed will be provided on an as-needed basis.

Two ORNL ESWMO personnel were designated as representatives on the ORNL Administrative Computing Steering Committee (ACSC). ACSC is a multi-divisional effort to provide leadership in the deployment of several technologies supporting desktop computing, client-server applications and connectivity to the "information super-highway."

Software conversion of the Novell Netware file server to a 486/66 DX2 with two 500 megabyte disk drives was completed. The Novell Netware file server is used to support the Documentation Management System as well as access to shared software installations.

The revised draft of the ESWMO Barcode Label Standard was issued for review. After discussion amongst several site representatives it was decided that the exclusion of waste item and document barcode labels remained an issue. Another meeting was scheduled for March.

Multinet version 3.2B was loaded on the WODMAS VAX.

March

Multinet version 3.2D was loaded on the system and configured. Test versions of an automated system monitoring software package (for monitoring system performance and special even logging), a Netware client-server product for use with tcp/ip and the Multinet software already on the system, and a PC software package for ad hoc queries of the Waste Tracking System database were received. Initial evaluation of the PC package began and seemed promising.

One training class for the WTS Forms Management PC package was held.

The ORNL WTS Forms Manager application upgrade problems were identified. The upgrade problems are due to an incompatibility between the two versions of the product. A feature of the old product which was used extensively in the application was not supported in the upgraded product. The application would be modified to correct the incompatibilities as well as take advantage of many of the advanced features available in the new product, but the new version of the application was not downward compatible.

Applications for two user ids and passwords for subcontractor personnel were made to Computer Access Authorizations. The accounts will provide subcontractor representatives with high speed access to the ORNL WTS in support of the conversion of existing SWIMS and Hazardous Waste Tracking System data to the ORNL WTS. The subcontractor will be providing quality assurance/quality control (QA/QC) support on the conversion algorithms and the resulting data. A draft outline of the QA/QC effort was provided to ORNL ESWMO for review and comment.

The ORNL WTS interfaces to external systems to access cost accounting system, personnel and hazardous material information were completed and underwent initial testing. The interfaces will provide automatic updates to the ORNL WTS validation tables on a periodic basis ensuring that generator-provided data is accurate and current. The interfaces would be fully tested and implemented in April.

Stress testing of the ORNL WTS continued. A significant number of performance and data entry problems discovered in March were resolved and the necessary modifications were completed.

Testing and development of the SWIMS to ORNL WTS conversion procedure against the "MOD 3" SWIMS database continued.

The networking of Building 3047 was initiated. The hardware and cabling effort was approximately 50% complete. The 3047 expansion of the WOCC-LAN will include 64 connections to provide WMRAD personnel with access to the high speed FDDI backbone and desktop services such as Eudora/POP mail, and Internet access to Gopher, Mosaic and Trumpet news services. Specialty system access such as the financial application being deployed will be provided on an as-needed basis.

2.4 WOCC DATA ACQUISITION SYSTEM (DAS) AND DISTRIBUTED CONTROL SYSTEM (DCS)

January

Technical service personnel were on-site during the month to determine the cause for several problems with the configuration and operation of the new Operator Interface Station (OIS) 20 consoles with the existing system in service. It was determined that the

existing system's firmware and software was not compatible with the new equipment, although part of the upgrade procurement package was for the systems to be fully compatible. To correct the problems, the firmware on several of the modules in the old consoles were replaced with up-to-date revisions and a software patch was added to the Operator Interface Units (OIUs) to correct a time synchronization problem between the systems. Documentation of the upgrades was to be provided, along with access to the manufacturer's bulletin board service so our computer personnel will have access to future upgrade announcements. The compatibility problem was not recognized by vendor personnel when they did the initial evaluation of the existing OIUs two years ago.

Conversion of the existing OIU displays to the OIS 20s continued to progress well, with an I&C staff member doing the last of the fine-tuning of the displays so that a 100% validity check of all displays and tag database could be performed.

February

Configuration of the OIS40 began in support of the Bethel Valley LLLW Line Item. Validation of the signal database for Building 2099 was approximately 90% complete, and development of displays to assist in the validation of the Building 2649 database was started.

March

Configuration of the new OIS consoles continued, with efforts being directed to the checkout of the signal database for the MCS for Building 2026, which was being built as part of the Bethel Valley LLLW Line Item.

April

Configuration of the new OIS consoles continued, with efforts being directed to the checkout of the signal database for the MCS for Bldg. 2026, which was being built as part of the Bethel Valley LLLW Line Item. The signal database is being tested as part of the functional testing of this facility.

May

LGWOD personnel began the validation checkout of the new OISs for the DCS. The Nonradiological Wastewater Treatment Facility Collection System was validated during the month. This checkout was required to verify that all of the signals and alarms from the existing system were received properly on the new consoles prior to their being placed in service. In addition, all of the graphic displays that provide color coding to display status of the field equipment were being validated to ensure that all color changes were received properly and that all equipment could be operated from these new consoles. This

validation required checking over 700 signals that are received on the consoles and verification of over 60 display screens. These new consoles were being installed as an upgrade to support the Bethel Valley LLLW Line Item.

June

LGWOD personnel started validation of the new OIS displays and database associated with the NRWTP (Building 3608). These consoles, which were being installed in support of the Bethel Valley LLLW Line Item, required validation of the displays and database that had been used on the existing system.

July

LGWOD personnel met with Engineering personnel to discuss coordination of planned computer upgrades for the Distributed Control System and the Data Acquisition System.

August

LGWOD personnel met with Engineering personnel to finalize specifications for the replacement of the WOCC DAS. This replacement will provide an up-to-date computer system for the monitoring of facilities throughout ORNL. This replacement is being coordinated with Engineering personnel to ensure that the new system will be compatible with upgrades to the DCS that are to be done during Line Item projects during the next few years.

Two new DEC Alpha workstations were received and configured for use by the Waste Tracking team. The performance improvement was very visible.

The operating system on nodes EHP01 and EHP02 were upgraded to VAX VMS Version 5.5-2 to allow clustering with the new Alpha machines. Version 6.1 VMS was installed on the Alpha machines. Additional storage space was added to the cluster for use by the users.

October

A request for an 8A subcontractor firm was submitted to Procurement personnel. The subcontractor will be responsible for developing software drivers so that the selected operating system for the replacement of the DAS can be installed on computer consoles identical to the ones being procured for the replacement of the DCS. The replacement of the DAS is a priority job due to the age of the system and the increasing difficulty in obtaining replacement parts.

2.5 LIQUID LOW-LEVEL WASTE SOLIDIFICATION PROJECT (LWSP)

January

The LLLW Solidification Project (LWSP) - Campaign II continued with "hot" operations during the month, with twelve solidified waste forms being generated during the month. Thirty-six solidified waste forms were generated to date, with an expected total of sixty forms to be generated during this campaign to free up approximately 50,000 gals of storage space for future operations at ORNL.

Responded to DOE-ORO comments on the "draft" Environmental Assessment for the "Construction for a gravel pad to store Solidified LLLW."

February

The LLLW Solidification Project (LWSP) - Campaign II continued with "hot" operations during the month, with fourteen solidified waste forms being generated during the month. Fifty solidified waste forms were generated to date, with an expected total of sixty forms to be generated during this campaign to free up approximately 50,000 gals of storage space for future operations at ORNL.

One revised procedure for the LWSP was approved that incorporated comments from the review of the sampling certification plan for this campaign.

The Environmental Assessment for the New Interim Storage Cask Facility was canceled. Casks from the existing Emergency Avoidance Solidification Campaign Pad would be moved to Solid Waste Storage Area (SWSA) 6 for storage, if necessary.

March

LWSP - Campaign II, which started routine operations on October 25, 1993, generated eight solidified waste forms prior to completion on March 11, 1994. A total of fifty-eight solidified waste forms were generated from approximately 48,500 gallons of LLLW supernatant concentrate. Completion of the LWSP - Campaign II met the Performance Evaluation Committee Milestone for FY 1994-1, IV.C.2.a.7, "complete the solidification of 50,000 gals of liquid low-level waste during the Liquid Waste Solidification Project II Campaign by March 31, 1994."

September

The Nuclear Criticality Safety Approval form was reviewed and extended to cover the upcoming LWSP- Campaign III.

The Operational Readiness Team (ORT) for the LWSP - Campaign III held its first meeting on September 23. The Readiness Review Plan, Readiness Acceptance Criteria, and the Logic Tree were approved at the meeting. Closure of criteria began at the next meeting. The LWSP - Campaign III will solidify 50,000 gals of supernate from the MVSTs to provide additional storage capacity for future LLLW operations at ORNL.

The LWSP-Campaign III ORT held its second meeting. The ORT approved closure documentation for fifteen readiness acceptance criteria. Additional activities included the appointment of the Readiness Assessment Team which will review the ORT's work and make recommendations to the ORNL ESWMO Director on the state of readiness. Notification was transmitted to DOE-ORO personnel on the start of the Readiness Assessment activities.

October

The ORT for the LLLW Solidification Project (LWSP)-Campaign III continued meetings this month. Thirty-one Readiness Assessment Criteria were presented and approved for closure.

November

The ORT continued readiness assessment activities during the month, and vendor personnel began site specific training. Personnel continued to work towards a vendor mobilization date in early January 1995.

December

Four Readiness Acceptance Criteria for the LWSP-Campaign III Readiness Assessment were approved by the Operational Readiness Team.

A transmittal from ESWMO Central was sent to DOE-ORO personnel providing documentation of the nonapplicability of DOE Order 5480.31 and DOE ORIG 5480.31A to this project. ORNL ESWMO personnel will continue to perform an internal readiness assessment.

2.6 EVAPORATOR REPLACEMENT FOR BUILDING 2531

January

Field work continued through the month. All piping connections were completed and passed Quality Engineering and Inspection (QE&I) inspections. One resistive thermal device (RTD) was damaged during construction activities and was being replaced. This would not impact the return to service date for the 2A-2 Evaporator.

Additional field work was assigned to MK-F in the service tunnel at Building 2531. This work consisted of fabricating and installing three manifolds, replacing 28 steam and cooling water valves, and replacing copper tubing and brass valves which provide service air. This work was in addition to the original scope of work assigned to MK-F. It was being done to take advantage of the downtime of the 2A2 Evaporator and to refurbish old components in the service tunnel.

Potential replacement material for the coils of the spare evaporator, which would be ordered soon, was still being investigated by personnel in the Metals and Ceramics Division. A final report/recommendation was expected in February.

February

An RTD that was damaged last month was replaced, the add-on work that MK-F accepted in the service tunnel of Building 2531 was completed, and the plugs were replaced over the evaporator cell and sealed. There was still a minimal amount of demobilization remaining to be done. MK-F expected to have this completed the first week of March.

Checkout of the 2A2 Evaporator System began. The temperature probes and the level transmitters were checked out. I&C Division personnel would complete all required calibrations in early March so that the pre-operational functional testing could begin.

March

As reported for February, the installation of the new 2A2 evaporator vessel was completed. The installation efforts went very well, and the radiation dose received by workers was only approximately 15 percent of that predicted in the ALARA Plan. This was attributed to a dedicated work force which was focused on doing a good job.

Pre-operational testing of the newly installed evaporator began in early March. Overall, the testing went well. However, due to unusually large amounts of rainfall that had occurred recently, additional efforts required to process the accompanying increased amounts of inflowing water took precedence over testing the new evaporator. It was estimated to take approximately one week (of testing time) to complete the pre-operational test during the next month.

April

The preoperational testing was completed on the new evaporator and its support systems this month. Meetings were scheduled for the early part of May to review and complete the remaining Readiness Review Criteria.

May

The Readiness Review Board for the 2A2 Evaporator Replacement Project approved closure of all open Readiness Review Criteria and recommended to the ORNL ESWMO Director that the 2A2 Evaporator System be returned to service. The ORNL ESWMO Director concurred with this recommendation and recommended the return to service on May 24. This system provides the LGWOD two operational LLLW Evaporator Systems, which doubles the treatment capability the LGWOD had during the previous year. The 2A2 Evaporator vessel was replaced due to the failure of three of the seven steam coils in the vessel, which severely restricted its ability to process LLLW.

2.7 OCCURRENCE REPORTING

There were two occurrences categorized and finalized during the year for LGWOD.

<u>Number</u>	<u>Facility</u>	<u>Categorization</u>	<u>Month</u>
I0015321	Fire Sprinkler Header Leak	Non-Routine	January
MMES-X10WSTEMRA -1994-0007	WC-9 Tank	Off-Normal	April

2.8 SAFETY ANALYSIS REPORT (SAR) UPGRADE PROGRAM

January

Reviewed and submitted comments on the draft safety assessment for the "Out-of-Tank Evaporation" Project.

February

The draft "LLLW Source Term Evaluation" report was issued for review and comment. The LLLW source term developed in this report will be used in the development and preparation of safety documentation for Phase II of the Safety Analysis Report Upgrade Program (SARUP).

March

Received the design and analysis and calculation package, "Liquid Low-Level Waste System Natural Phenomena Hazards Analysis." This package documented the natural phenomena resistance evaluations of the existing LLLW system at ORNL. Received the draft "Technical Safety Requirements (TSR) for the LLLW System" document for review and comment. This document brought the existing Operating Safety Requirements for the LLLW system to DOE Order 5480.22 TSR format.

April

LGWOD personnel presented the Safety Analysis Report and the Technical Safety Requirement documents for the TWRP to the Plant Safety Evaluation Team (PSET) for approval. The PSET agreed to approve these documents after a few minor editorial changes were made. These documents were approved and then submitted to DOE-ORO personnel for thier approval.

June

LGWOD personnel presented the quarterly status update on the SARUP for the LLLW System to the PSET.

September

Participated in several meetings with Engineering and subcontractor personnel revising the hazard screenings for ORNL ESWMO facilities in accordance with DOE Standard 1027-92, which was adopted by DOE Waste Management. At the end of this review a list of nuclear facilities for ORNL ESWMO would be developed for use in Price-Anderson Amendment compliance reviews.

October

Provided comments to System Safety Engineering on the revised Preliminary Hazard Screenings and Phase I Hazard Screening Reports being prepared to classify LGWOD facilities as nuclear or nonnuclear for enforcement of the Price-Anderson Amendment.

November

Personnel continued reviewing the revised hazard screenings for LGWOD facilities to characterize them as nuclear or nonnuclear facilities.

December

The Safety Analysis Report and TSR for the Transported Waste Receiving Facility were revised to incorporate DOE-ORO comments and were approved by the PSET, for transmittal to DOE-ORO.

The revised hazard screenings for the LGWOD LLLW facilities were submitted to the PSET for approval. This characterized the LLLW System overall as a Category II nuclear facility, but the Bethel Valley LLLW collection tanks were characterized as a nonnuclear radiological segment of the system.

The revised preliminary hazard screenings for the LGWOD to screen the facilities as nuclear or nonnuclear were approved by ORNL ESWMO management.

2.9 CATHODIC PROTECTION UPGRADE

January

Reviewed and submitted comments on the revised Project Management Plan and the Waste Management Plan for Phase I of the Cathodic Protection Systems Upgrade Project. This is a maintenance project that will upgrade the cathodic protection on active LLLW piping at ORNL.

February

The Project Management Plan for the Cathodic Protection Systems Upgrade was approved and issued. The Waste Management Plan was being revised to incorporate comments received on the first draft.

March

This project was placed on hold pending approval of the Waste Management Plan.

July

The Readiness Review Team for the Cathodic Protection Systems Upgrade Project met on July 13. Team members were assigned tasks to be performed. A tentative readiness review checklist was formed. Approximately 15 of the 24 items on the checklist were completed during the month of July.

August

Several items on the readiness review checklist were closed out after the checklist was approved by the team.

September

The Readiness Review for the Cathodic Protection Upgrades Project was completed during the month and MK-F personnel began excavation work at the first work site near Valve Box 3.

October

Construction continued on the Cathodic Protection System. System 6A was started. A 2-ft deep ditch was being hand excavated for the entire length of System 6A.

December

Work continued on the cathodic protection upgrade project. System 16 was 50% complete. Systems 6a and 6b are 90% complete. Design work continued on Phase II of this project which included Systems 20, 21, and 9.

2.10 THE 3039 STACK AREA

January

A meeting was held the first of the month to identify and resolve questions that several vendors had on the bid for the 3039 Stack Inspection. After this meeting, procurement gathered responses to these questions. The vendors would submit a final bid after receiving responses from Martin-Marietta Energy Systems (MMES) to these questions.

February

The Safety Assessment for the 3039 Stack Ladder Safety Upgrade Project was completed. The 3039 Stack Ladder was being upgraded to meet Occupational Safety and Health Administration (OSHA) standards.

Responses to vendors' questions (from a January meeting on the 3039 Stack Inspection), were finalized and provided to the vendors. The vendors would consider these responses as they prepared their final bids.

March

LGWOD personnel provided comments to Engineering personnel on the Certified for Construction package for the upgrades at Building 3092 that are to be performed as part of the Bethel Valley LLLW Line Item project. The review was performed to incorporate lessons learned from the construction of the first phase of the line item and other lessons learned from the design of the Melton Valley LLLW Line Item, which had just been completed.

The Waste Management Plan for the 3039 Stack Ladder Safety Upgrade project was completed.

April

A new, above-ground diesel fuel tank was installed at Bldg. 3125, which is the backup diesel generator for the 3039 Stack Area. This tank replaced a below-ground tank that was removed two years ago after it had developed a leak.

May

A meeting was held during the month to review safety concerns on the 3039 Stack Inspection Project. It was agreed to award the contract to a vendor and arrangements were being made to set up a pre-award briefing.

June

LGWOD personnel assisted in the camera inspection of the new aboveground diesel fuel tank for the 3039 diesel generator (Building 3125). The inspection was to ensure that the tank was clean of any construction debris prior to transferring diesel fuel to it. The fuel tank was then placed in service. The new tank replaced a below-ground tank that was removed from service to meet Underground Storage Tank Compliance requirements.

July

The contract for the 3039 Stack Inspection Project was awarded during the week ending July 15, 1994. This project required a physical inspection of the 3039 Stack by a qualified stack inspection group to ensure that no problems had developed with its brick masonry structure. The 3039 Stack provides off-gas and cell ventilation services to the facilities at the main ORNL site in Bethel Valley. The signing of this contract culminated a two-year effort in awarding the contract.

The 3039 Stack Area Turbine Replacement Project began construction activities. All materials and equipment were identified for a 2-day shutdown and the piping was rerouted for the T-3 turbine. Buildings resumed operations after the shutdown. MK-F personnel continued demolition on the turbine pad for remainder of month. This was the first of three turbines that would be replaced under a maintenance activity within the 3039 Stack Area to ensure reliable and maintainable equipment is available to provide backup ventilation services to the main ORNL complex.

August

Discussions resumed with a stack inspection contractor to perform the 3039 Stack inspection. As a result of the complexities associated with this inspection, MMES was working on arrangements and processes to qualify an in-house employee to climb stacks. Having this in-house capability would make it possible to obtain more data prior to

contacting potential vendors, thus eliminating some of the issues encountered while trying to set up the inspection for the 3039 Stack.

Demolition continued, on an intermittent basis, on the T-3 turbine foundation. MK-F personnel removed most of the foundation steps. This was part of the 3039 Stack Area Turbine Replacement Project.

The seismic upgrade of the 3039 Stack was evaluated by an outside company who determined that it fell within the DOE seismic qualification requirements. Since the 3039 Stack meets the existing requirements as it is, Engineering recommended that the General Plant Project be canceled.

September

Two meetings took place this month with MMES management to help resolve issues associated with the 3039 Stack Inspection. At management's request, the sole vendor still interested in performing the inspection was contacted and discussions were held to determine if they would perform the inspection with the stack operating. A response was expected the first of November.

A MMES employee was certified/qualified to climb the stack to obtain an Health Physics survey. Getting the employee qualified required legal and plant safety approvals, as well as taking a special physical examination. He was scheduled to ascend the stack in early November.

October

P&E Division personnel rerouted the discharge from the off-gas trap located near Building 3033 from the LLLW System to the Process Waste System. This was done after a sampling program showed the water from the off-gas trap could be treated as process wastewater instead of LLLW.

MK-F personnel finished forming and pouring the pad for T-3 turbine. The pad was acceptable to Engineering and ready for installation of the new turbine. All shop-fabricated piping for the new T-3 was complete. Other activities on T-3 were placed on hold due to the DOE shutdown of construction contractor (MK-F) hoisting and rigging operations. Demolition of the pad for turbine T-1 continued. Condensate drains were rerouted.

The replacement of the 3039 Stack Ladder to the 50-ft level was installed and successfully inspected by personnel from QE&I. .

A presentation was made to personnel from the Environmental, Safety, and Health Compliance directorate on the upcoming 3039 Stack Inspection. This was done to gather

management input as to the continued need for the inspection, which would require a shutdown of the cell ventilation and off-gas services provided by the 3039 Stack.

Significant progress occurred during the month on the 3039 Stack Inspection. A climber scaled the 3039 Stack and performed a health physics survey at the top of the stack. This data, along with other information, was incorporated into a revision to the procurement specification provided to the prospective vendor. Through a cooperative effort with MMES training personnel, spaces were made available in the November Radiation Worker II training session. The inspection was scheduled to occur the week of November 14.

November

The 3039 Stack Inspection Project was delayed because the vendor was unable to make personnel available in November. This caused the inspection to be delayed until CY 1995.

Turbine replacement for the T-3 turbine was ready for the seven-day shut down (at which time the actual turbine replacement would take place) but was placed on hold due to the MK-F Hoisting and Rigging ban.

Concrete demolition continued for the T-1 turbine upgrade. The new process waste drain for temporary draining of the condensate was installed.

December

Communications resumed with the vendor to perform the 3039 Stack Inspection. Training for the vendor personnel was scheduled to occur the week of February 20 and the inspection was scheduled to occur the following week.

MK-F work continued on the T-3 turbine. This turbine supplies backup cell ventilation to Buildings 3025 and 3026. The 7-day shutdown was postponed twice because of lack of materials and/or craft support. It was then scheduled for the second week in January 1995.

The foundation pad for T-1 turbine was poured and underground drains were rerouted. This turbine supplies backup cell ventilation to buildings in the 3500 area of ORNL. All demolition for the start of the 7-day shutdown was completed. The 7-day shutdown for this job would be scheduled later.

2.11 CONFIGURATION CONTROL

During the year, twelve changes were classified as meeting the requirements of a Configuration Change. In addition, six changes to LGWOD facilities had been classified as meeting requirements of an Equipment Change (a change that does not meet the ORNL

definition of a Configuration Change, but which the LGWOD has determined should be documented).

2.12 MISCELLANEOUS ACTIVITIES

April

A Document Change Directive for the Bethel Valley LLLW System (WM-LGWO-610.2.1R8-DCD3) was issued to temporarily depressurize the annulus on the Central Waste Collection Header. This was done as a safety concern due to workers excavating this line in preparation for the construction of Valve Box 3A. An Unreviewed Safety Question Determination (USQD) was completed to document this temporary change would have no impact on the Facility Authorization Basis.

June

The Solid Low-Level Waste Certification Procedure for the LGWOD (WM-LGWO-606.8) was approved. This procedure provided guidelines for the classification of solid low-level waste generated within LGWOD facilities. This procedure was required to be approved by the end of the month. The Waste Certification Group required in the Waste Acceptance Criteria for Solid Waste Storage Area 6 that all generators have approved waste certification procedures.

September

LGWOD personnel completed a compliance review of the department's activities against requirements units from DOE Order 5700.6C. This review was done as part of the on-going implementation of the Price-Anderson Amendment activities for nuclear facilities.

Submitted documentation for the completion of several fiscal year-end milestones for the LGWOD. The LLLW collection, transfer, evaporator, and storage system were operated with no identified regulatory noncompliances which completed milestones OR320125 and OR325119. The process waste collection, transfer, and treatment systems were operated with no identified regulatory noncompliances which completed milestones OR320124 and OR325118. The 3039 Central Stack Area operations were completed with no regulatory noncompliances identified by regulatory agencies which completed milestones OR320126 and OR325120.

Completed the annual review of the LLLW System Operating Safety Requirements (OSR) document and submitted documentation of the review to the Contracting Officer as required by the OSR.

October

LGWOD personnel participated in an information gathering meeting for the development of an Energy Systems-level procedure on the development of technical and standard operating procedures. A follow-up session would be held to review the strong points of the ORNL ESWMO documentation management system, including the development and control of the procedure writing process.

November

Provided updates on LGWOD facilities for the Office of Operational Readiness and Facility Safety databases. This included answering a new request for access requirements for each facility controlled by the LGWOD (54 facilities at that time).

December

LGWOD personnel approved revisions to two Limiting Conditions documents for Generally Accepted facilities (3039 Stack Area and Building 7860). These revisions were to update references to the training program for LGWOD personnel.

3.0 MAINTENANCE ACTIVITIES

3.1 NONRADIOLOGICAL WASTEWATER TREATMENT PLANT

January

P&E personnel replaced valve HV-724 at the NRWTP after the valve had developed a leak. This valve is part of the pressure regulating system for the sodium hydroxide (caustic) transfer system at the NRWTP.

P&E personnel removed the air scour blower (AJ-1029) from service at the NRWTP (Building 3608) after it was found to have failed. A new blower was ordered and was installed upon arrival. The air scour blower is used during the backwash operations for the dual-media filters and the granular activated carbon columns to keep the granular media loose.

March

P&E personnel completed repairs on the air scour system at the NRWTP (Building 3608). The repairs included the replacement of all of the check valves and installation of a water trap in the line.

P&E personnel replaced the rocks located at the pH monitoring point for the National Pollutant Discharge Elimination System (NPDES) permit at Building 3608. These rocks are used to prevent water surges in the plant's discharge to White Oak Creek from damaging the pH probes.

P&E personnel completed repairs on one of the backwash pumps at Building 3608, which had developed a leaking seal. This pump is used to backwash the dual-media filters and the granular activated carbon columns at the facility.

May

P&E Division personnel repaired the relief valve on Granular Activated Carbon Column F-1019. This column is used to treat the process wastewater at the NRWTP for removal of trace amounts of organics prior to discharge to White Oak Creek.

P&E Division personnel replace the failed seal on the J-1001C jet mixer pump at the NRWTP (Building 3608). This pump is used to keep particulates suspended in the wastewater and prevent their settling out in the bottom of the tank.

June

LGWOD personnel completed the quarterly acid wash of the air stripper at Building 3608. This acid wash is used to remove algae buildup on the packing material within the air stripper.

P&E personnel repaired the bearings on the J-1001C jet mixer motor at Building 3608. The jet mixer is used to keep particulates suspended in the wastewater (thus preventing sludge buildup in the metals tank) and to mix sodium hydroxide with the wastewater for pH adjustment.

July

P&E Division personnel replaced a broken relief valve on the air scour blower at Building 3608. This valve is located in the air scour blower's discharge line to the dual-media filters and the granular activated carbon (GAC) columns. The air scour blower is used during the backwash operations for the filters and GAC columns.

P&E Division personnel repaired the check valves on the nonmetals discharge pump (J-1002A) and filter feed pump (J-1008A) at the NRWTP.

August

LGWOD personnel placed the F-1007 clarifier in service at the NRWTP (Building 3608) and began removal of sludge from the F-1006 clarifier. The F-1006 clarifier, which had been in service since February 1990, was being emptied in preparation for personnel to clean the clarifier to remove algal buildup from the vessel.

P&E Division personnel repaired an oil leak on the rake in the L-1007 clarifier at the NRWTP.

September

P&E personnel repaired a faulty overload circuit relay at the Sewage Pump Station for Building 3608 that was preventing the pumps from energizing.

P&E personnel replaced the rupture disks on the three granular-activated carbon columns at Building 3608 as a routine maintenance activity. The rupture disks are used to prevent the overpressurization of the vessels.

November

P&E Division personnel completed repairs on the jet mixer pump (J-1001C) at the NRWTP (Building 3608). This pump is used to assist in mixing sodium hydroxide with

the wastewater for pH adjustment and to keep solids suspended in the tank to prevent their settling in the bottom of the tank.

December

The oval-shaped laminar flow inducers (rocks) at the NPDES permitted flume located at the NRWTP were changed out during this reporting period.

The seal on the J-1001C jet mixer was replaced due to leakage. This mixer assures that the wastewater collected in the NRWTP Metals Collection Tank is properly mixed before it is treated.

The J-1025 pump at the NRWTP was replaced after it became inoperable. This pump is utilized in providing sodium hydroxide (caustic) to the clarifier system, the metals collection tank, and the effluent tank. Sodium hydroxide is used to increase the pH of the wastewater as needed for proper treatment.

3.2 PROCESS WASTE TREATMENT PLANT AND COLLECTION SYSTEM

January

P&E personnel replaced the instrument conduit for the float/level switch for the plant sump (S-1) at the PWTP (Building 3544) after the conduit was found to be allowing water to enter and cause false signals to the sump pump's level controller.

LGWOD personnel backwashed the spare zeolite column at Building 3544 and placed it in service after the in-service column was exhausted. The zeolite column is being used to provide additional treatment capacity at Building 3544 during high inflow periods.

February

P&E Division personnel completed repairs on a process water line at Building 7961 that had frozen during the cold weather earlier in the month.

P&E Division personnel replaced the regulator at the Building 3544 steam control station after it had failed. The steam control station supplies steam for the evaporator used in the eluate concentration and nitric acid recovery operations at the facility.

LGWOD personnel unloaded one of the zeolite columns at Building 3544 after it was discovered that part of the internal piping system was broken. After the vessel was unloaded, P&E Division personnel entered the vessel and repaired the piping system. LGWOD personnel then reloaded the zeolite resin and returned the vessel to service. The zeolite columns are used to provide additional treatment capacity during high inflow events

or for removal of cesium after the wastewater has gone through the ion exchange treatment system at the facility.

P&E Division personnel repaired a leaking flange on ion exchange column L-4B at Building 3544 and a leak on the transfer line from evaporator L-10 to the condensers (L-13A and B). The ion exchange columns are used to treat the wastewater for removal of strontium prior to discharge to the NRWTP (Building 3608), and the condensers are used for nitric acid recovery.

March

P&E personnel completed the replacement of the roof at the Manhole 149 Monitoring Station, which was showing signs of deterioration.

P&E personnel replaced the failed sample pump at Pumping Station 1.

LGWOD personnel changed out the anthracite and replaced the water distributors in filter L-3A at Building 3544. This filter is used to remove particulates from the wastewater prior to the water going through the ion-exchange columns. During this changeout, which required the shutdown of the main ion-exchange treatment system at Building 3544, LGWOD personnel cleaned out the clarifier and P&E personnel performed maintenance on pumps L-1P and L-2P-2. Upon completion of this activity, LGWOD personnel then changed out the anthracite and replaced the water distributors in filter L-3B. During these maintenance activities, a sidestream of 50 gpm was treated through the zeolite column system.

April

P&E personnel completed repairs on the jet mixer pump for tank F-1017 at the Melton Valley Process Wastewater Collection Facility (Bldg. 7961). This mixer is used to keep solids in suspension to prevent their settling in the bottom of the tank.

P&E personnel replaced the L-10P pump at Bldg. 3544 after it was found to be inoperable. This pump transfers concentrated LLLW from the L-10 evaporator to the concentrated waste tank (L-11) at Bldg. 3544.

P&E personnel repaired the seal on pump J-4003B. This pump is used to transfer wastewater from the Acid Neutralization Facility (Bldg. 3518) to the NRWTP (Bldg. 3608).

P&E personnel repaired an instrument air leak at the Bethel Valley Process Waste Storage Tanks Facility (Bldg. 2600).

I&C personnel repaired the level probes at the 190 Pump Station. These probes controlled the automatic on/off operation of the pumps transferring wastewater from the 4500 area to the NRWTP for treatment. While the probes were being repaired the pumps were run in manual mode.

May

P&E Division personnel replaced a check valve that had failed on the discharge of pump J-2110C at the 190 Process Waste Pump Station. This pump station transfers nonradioactive process wastewater from the 4500 Complex to the NRWTP for treatment.

P&E Division personnel repaired the failed motor on pump L-1A at the PWTP. This pump transfers process wastewater from the surge tank to the polishing filters and the ion-exchange system for further treatment.

LGWOD personnel emptied the sludge blanket from the L-1 Clarifier at Building 3544 to provide maintenance personnel access to the agitator to replace its bearings. During this maintenance activity, the main ion-exchange treatment system was shut down and a 100-gpm sidestream was treated through the zeolite columns.

P&E Division personnel repaired the L-2P-2 pump at Building 3544 which had a buildup of calcium deposits in the pump. This pump transfers wastewater to the polishing filters and the ion-exchange columns for further treatment at the PWTP.

I&C Division personnel repaired the level probes at the 3544 Wetwell (F-4004) after the level probes failed to turn the wetwell's pumps on and off automatically based on the water level in the wetwell.

June

LGWOD personnel performed pump capacity tests on the three transfer pumps at the 3544 Wetwell (F-4004). These tests were being done to determine the cause for a loss in pumping capacity since these pumps were placed in service in early 1990. The tests would determine whether maintenance was needed on the pumps or whether some restriction in the wetwell or the transfer piping was causing the loss in capacity. This wetwell transfers the discharge from the PWTP to the NRWTP for further treatment.

P&E personnel replaced the L-1 transfer pump at Building 3544. This pump is used to transfer sludge from the clarifier to the sludge holding tank prior to being dewatered in the filter press.

July

LGWOD personnel collected and disposed of scrap metal from recent maintenance activities at Building 3518, Building 3608, and the 190 Pump Station (F-2110).

P&E Division personnel replaced the pressure indicator gauges on the three pumps at the 3544 Wetwell (F-4004) to ensure accurate readings are obtained during flow tests of these pumps. These pumps had shown a marked reduction in pumping capacity. At the end of the month instrument air was connected to the discharge of the pumps and was used in an attempt to clear any blockages from the flowpath. This did increase the pumps' pumping capacity; however, plans were underway to remove one of the pumps for inspection in an effort to determine the exact cause of the problems.

August

P&E Division personnel began repainting the Melton Valley Process Waste Collection Tank Facility (Building 7961).

LGWOD personnel began the cleanout of the process wastewater tanker that had been loaned to REDC (Buildings 7920 and 7930) personnel to collect water during a contamination event at the facility earlier in the year. The tanker received a load of wastewater that also contained some decontamination paint, which resulted in its removal from service until the interior of the tanker could be cleaned.

LGWOD personnel emptied the L-1 clarifier at the PWTP and removed sludge buildup from inside the vessel. During this activity the main ion-exchange system was shut down and a 50-gpm sidestream was treated through the zeolite columns.

September

P&E personnel continued the painting upgrade of the Melton Valley Process Wastewater Collection Tanks Facility (Building 7961). This action was completed to meet the scheduled 5-year repainting of the facility.

P&E personnel repaired the S-1 sump pump at Building 3544. This sump pump transfers contents of the Building 3544 sump to the Process Waste Collection Tanks for future treatment.

LGWOD placed the new acid tank M-8 in service at Building 3544 during the month. This tank is the first equipment from Phase I of the PWTP Upgrades Line Item to be turned over to LGWOD personnel and placed in service.

P&E personnel repaired the M-1 polymer tank mixer at Building 3544. The polymer is used in the water softening process that is performed in the L-1 clarifier.

P&E personnel rebuilt the J-4001A pump at the Influent Pump Station (F-4001) due to a lower bearing wearing out. This pump is one of three pumps at this station used to transfer process wastewater from the Bethel Valley area to the Bethel Valley Process Waste Collection Tank Facility (Building 2600).

P&E personnel replaced the agitators at the Building 3518 neutralization basin. These agitators were changed out because spare parts were not available for the old agitators.

October

P&E Division personnel repaired agitator L-2006 at Building 7961 and removed agitator L-2004 for maintenance. These agitators are used to mix the process wastewater received at the facility with sodium hydroxide (caustic) for pH adjustment prior to transfer to the collection tanks at Building 7961.

P&E Division personnel repaired the backflow preventor on the process water line at Building 7961, which was then satisfactorily tested by personnel from QE&I.

P&E Division personnel repaired a seal leak on pump J-2102 at Building 2600. This pump is used for intertank transfers and for transfers of process wastewater to the collection facility (Building 7961) located in Melton Valley.

P&E Division personnel repaired backflow preventors at Buildings 2531, 3039, and 3544, which were then satisfactorily tested by personnel from QE&I.

P&E Division personnel repaired the J-4001A pump at the Influent Pump Station (F-4001) after an electrical fault caused it to fail to energize. This is one of three pumps located at this station that transfers process wastewater from the Bethel Valley complex to the collection tanks at Building 2600.

P&E Division personnel completed repairs on the J-2019 jet mixer located at Building 7961. This jet mixer is used to keep the contents of process wastewater collection tank F-2019 agitated and to keep any particulates suspended so that they do not settle out in the tank.

November

P&E Division personnel replaced one of two transfer pumps located at Pumping Station 1 after the pump failed. This pumping station collects potentially contaminated water from the North and South Tank Farms and transfers it to the Process Waste Collection and Transfer System for future treatment.

P&E Division personnel completed repairs on the jet mixers for the "hot" process wastewater collection tanks (F-2017, F-2018) located at Building 7961. These jet mixers

are used to keep any solids in the wastewater suspended until the wastewater is transferred to the Bethel Valley Storage Tanks.

P&E Division personnel completed the scheduled rebuilding of the L-2004 agitator at Building 7961. This agitator is used to mix wastewater received at the facility with sodium hydroxide for pH adjustment prior to the wastewater being transferred to the process waste collection tanks.

LGWOD personnel met with P&E Division personnel to determine the best relocation of the relief valves on Tanks M-8 and L-7A at the PWTP (Building 3544) so that the relief valves can drain by gravity to a selected location in the event they are activated.

P&E Division personnel removed the J-4004B pump from the 3544 wetwell, rebuilt the pump, and then reinstalled it in the wetwell. This was a planned maintenance activity to determine if the pump's performance would improve after the maintenance activity. During the summer this wetwell showed a loss of pumping capacity which could impact future operations at the facility when treatment capacity increases are installed. The pump was then tested and determined to be performing at its original design conditions.

P&E Division personnel replaced the L-9 pump at Building 3544. This pump transfers eluate from the ion-exchange column regeneration process to the L-10 Evaporator at Building 3544 for nitric acid recovery.

December

The bearings on the J-2020A pump were replaced. This pump is located at the Melton Valley Process Waste Collection Tanks which collect waste from HFIR and the REDC, and is utilized to transfer wastewater from the metals collection tank to the NRWTP.

Two double-diaphragm pumps, which are used to change out the zeolite resins at the PWTP, were rebuilt.

The multiport valve was repaired on the L-3B filter at the PWTP. This valve is utilized to switch the flow between the normal, backwash, and rinse cycles. The L-3A and L-3B filters are used to filter particulates from the wastewater leaving the clarifier and entering the ion exchange columns. While the plant was shut down for this maintenance activity, excessive sludge was removed from the clarifier.

The J-4004A transfer pump at the PWTP was removed, rebuilt, and put back into routine operation. This pump is one of three pumps utilized to transfer wastewater to the NRWTP after it is treated at the PWTP. This maintenance resulted in the pump being restored to its original tested pumping capacity.

P&E personnel repaired a steam leak at the Equipment Cleaning Facility (Building 7935) on the building heating system.

P&E personnel repaired the M3-P1 pump at Building 3544 after an oil leak developed. This pump transfers caustic to the L-1 clarifier, which elevates the wastewater pH and aids in the water-softening process.

3.3 LIQUID LOW-LEVEL WASTE SYSTEM

January

P&E Division personnel removed the plug from valve pit 2VP-3 at the LLLW Evaporator Facility (Building 2531) and inspected the discharge valve for the 2A6 sump to ensure the correct replacement valve is ordered for a planned maintenance activity.

February

I&C Division personnel repaired the level indicator for LLLW evaporator service tank W-23.

The vendor completed maintenance on the 100 psig air compressor units at Building 7830 and 7860.

March

P&E personnel replaced the timer motor on the Building 7569 air dryer. This replacement was performed to ensure the instrument air used at the facility is dried properly, and will not contain moisture which can interfere with the performance of the instrumentation.

P&E personnel replaced the sump pump at Valve Box 1A after the pump was discovered to have a failed impeller. This pump is used to transfer the contents of the sump to the LLLW Collection and Transfer System for future treatment.

P&E personnel repaired an air leak on the air dryer located at Building 7860. The air dryer is used to ensure there is no moisture in the instrument air used at Buildings 7860 and 7830.

P&E personnel replaced a failed backflow preventer on the prime water system for the HFIR LLLW Tank Pump Pit.

Under the supervision of vendor personnel, the belts on the spare air compressor located at Building 7830 were replaced. This compressor supplies instrument air for equipment at Building 7830.

April

P&E personnel replaced a non-position indicating valve on the fire water system at Bldg. 2531 with a position indicating valve. The fact the valve did not have a required positioner was discovered during a recent review of the facility.

P&E personnel performed programmed maintenance on the instrument air compressors at Bldgs. 7567 and 7569.

P&E personnel completed repairs on the instrument air dryer at Bldg. 7569 after it was found to have a failed cycle timer. This dryer is used to ensure that no water is in the instrument air supplied to the instrumentation at this facility.

May

P&E Division personnel changed out the desiccant on the air dryer at Building 7569. This air dryer is used to ensure that no moisture is present in the instrument air supply at this facility.

P&E Division personnel repaired the 65-psig steam supply valve for Jet J4 at Building 2531. Steam jets are used to transfer LLLW between the storage tanks and the evaporator system at this facility.

P&E Division personnel tracked down and replaced a faulty relay at Building 2531 (the LLLW Evaporator Facility) that would not remove the facility from containment.

P&E Division personnel repaired a faulty sump pump for the foundation drains at Building 2537.

P&E Division personnel made repairs on several of the steam jets and steam valves in the west pipe tunnel at Building 2531. These steam jets are used to transfer LLLW from the evaporator vessel to the evaporator service tanks.

The 30-psig compressor at Building 7860 was repaired by the manufacturer's representative. This compressor supplies instrument air for use in the In-Tank Evaporation operations at Building 7877.

June

P&E personnel performed maintenance on the crane and rollup door at the LLLW Solidification Facility (Building 7877).

P&E personnel repaired a leak on the fire hydrant at Building 7860.

The revised Site Safety and Health Plan for the instrumentation modifications at the Central Pumping Station for LLLW Tanks T-1 and T-2 was approved and issued. The revision was necessary to change the method of penetration from weld cuts to drilling and adding Fire Protection requirements. This was necessary due to the discovery of an organic layer in the wastewater in these tanks. LGWOD personnel are awaiting sample results from this layer.

LGWOD personnel placed a nitrogen purge on LLLW Tanks T-1 and T-2 at the request of P&E personnel to assure there would be no possibility of explosive atmosphere in these tanks. P&E personnel then made penetrations into tank T-1 for the installation of new instrument lines to these vessels. These instrument modifications are being made to support the Federal Facilities Agreement leak testing program.

P&E personnel completed installation of the new instrument penetrations on LLLW Tanks T-1 and T-2 (located at Building 7567). The excavation has been backfilled and the site is no longer a HAZWOPER site. The above-ground instrument lines will be installed next month.

LGWOD personnel successfully completed the quarterly pressure test of the annulus on the double-contained line from Valve Box 1 to Valve Box 3. This annulus has been depressurized while construction personnel have the line uncovered for the construction of Valve Box 3A. The annulus, which was depressurized as a safety concern for construction personnel, will be tested quarterly during construction to ensure the primary and secondary lines have not lost integrity.

July

The manufacturer's representative arrived on-site and performed programmed maintenance on the 30 psig and 100 psig air compressors at Building 7860 and the 30 psig air compressor at Building 7830. These air compressors supply instrument air for these facilities and also supply the dry air used in the In-Tank Evaporation program at Building 7830.

August

P&E Division personnel replaced the suspect bolts located on the overhead crane system at Building 7877 and turned the suspect bolts over to Quality Assurance personnel.

LGWOD personnel transferred the contents from the valve pit for LLLW Tank WC-19 in preparation for MK-F personnel to enter the pit the following week and take field measurements for a future maintenance task to replace the valves in the pit. During the inspection MK-F also repaired a steam leak that had generated the condensate in the pit. This work was being done to upgrade the valves at several pits within the LLLW System in support of the FFA on LLLW.

P&E Division personnel entered the W-6 Valve Pit and took field measurements to support an upcoming General Plant Project to install a secondary containment system within the Valve Pit. This will upgrade the pit to meet FFA requirements.

P&E Division personnel repaired the fan on the cooling tower (Building 2539) for the 2A2 Evaporator System.

September

P&E personnel repaired a leaking steam supply valve at Building 2531. This valve supplied steam to the transfer jet from tank W-22 to evaporator feed tank A-1.

Participated in the 30% Design Review meeting for the MVSTs Capacity Increase Line Item.

MK-F personnel repaired the double-contained transfer line between the LLLW Evaporator Facility in Bethel Valley and the LLLW Facilities in Melton Valley that had been damaged during the construction of Valve Box 3A.

LGWOD personnel installed direction signs on the Building 7935 overhead crane as required by Quality Engineering and Inspection (QE&I) personnel.

October

The vendor completed programmed maintenance on the Building 7830 air compressor. This compressor supplies instrument air for the equipment at Building 7830.

The air compressor at Building 7860 used for the ITE program was shut down for approximately three weeks after an electric motor failure during the week ending October 8, 1994. P&E Division personnel worked with the vendor to identify what repairs needed to be performed.

December

P&E personnel repaired gasket leaks on the 30 psig air compressor located at Building 7860.

P&E personnel repaired a leaking regulator on the 35 psig steam header located at Building 2531 that services the 2A2 evaporator.

P&E personnel replaced the steam supply valve for the transfer jet at the WC-19 transfer pit after the valve was found to be leaking through.

3.4 GASEOUS WASTE SYSTEM

January

P&E personnel repaired a steam leak at the central off-gas steam control station at Building 3092. This station supplies steam to the backup steam turbine for the central off-gas system.

Personnel from QE&I replaced the High Efficiency Particulate Air (HEPA) filters at Building 7830 due to a high differential pressure across the filters. This was caused by the continuing In-Tank Evaporation process, which was being performed to provide additional storage capacity for LLLW concentrate. The new filters were then successfully DOP tested by personnel from QE&I.

P&E personnel replaced the belts on the 3500 cell ventilation system blower located in the 3039 Stack Area. This blower provides cell ventilation services to the 3500 area facilities.

LGWOD personnel transferred the spare off-gas blower from Building 2531 to Building 7935 to prepare for the replacement of the Central Off-Gas blower. The spare blower will have the seals replaced by P&E personnel and will then be installed in place of the in-service blower. The in-source blower is being replaced due to problems with leaking seals.

I&C personnel completed the monthly test of the vacuum relief valve at Bldg. 3092. This test is a requirement of the Limiting Conditions Document for the 3039 Stack System. This test was completed for each month of the year.

February

P&E personnel replaced the sump pump in the 3500 area cell ventilation duct, after it was found to have failed during the heavy rainfall event that occurred during the week of February 11. This sump pump is used to transfer inleakage from the duct to the process waste collection system for future treatment.

Personnel from Quality Engineering & Inspection performed the routine DOP testing of the North and South banks of High Efficiency Particulate Air (HEPA) filters at Building 3092. Both banks of filters passed the test. These filters are used to remove contamination from the off-gas system prior to discharge to the 3039 Stack.

March

P&E personnel repaired a steam leak at the steam control station for the Building 3092 off-gas system. This facility provides off-gas services to facilities throughout the main ORNL complex in Bethel Valley.

P&E personnel replaced the west bank heater for the Building 7830 off-gas system and returned the In-Tank Evaporation system to service. The heater is used to ensure that moisture in the off-gas does not condense within the system.

LGWOD personnel assisted I&C personnel as they repaired the pH meter located at Building 3092. The pH meter is used to ensure the scrubber solution is kept at a basic pH (this is a requirement of the 3039 Stack Limiting Conditions document).

Personnel from the P&E Division replaced the off-gas High Efficiency Particulate Air (HEPA) filters at Building 7830 due to a high pressure drop across the HEPA filters. The replacement filters were then successfully DOP-tested by personnel from Quality Engineering and Inspection. These filters were replaced due to plugging caused by the In-Tank Evaporation operations underway at Building 7830. The operations are designed to reduce the volume of LLLW concentrate in storage at the facility.

April

LGWOD personnel assisted in the camera inspection of the 3500 area cell ventilation duct. This was done to evaluate the condition of the duct for future maintenance.

Personnel from QE&I successfully DOP tested the HEPA filters on the off-gas system at Bldg. 3092. These filters are used to remove particulates from the off-gas system prior to discharge through the 3039 Stack.

Personnel from P&E replaced the off-gas HEPA filters at Bldg. 7830 due to a high differential pressure drop caused by the In-Tank Evaporation operations being conducted at the facility. The new filters were then successfully DOP tested by personnel from QE&I.

P&E personnel repaired a steam leak at the steam control station for the 4500 cell ventilation turbine. This turbine provides backup cell ventilation service for the 4500 area in case the main blower fails.

P&E personnel repaired a steam leak at the steam control station for the Central Off-gas Scrubber Sump Pump. This steam-driven pump provides backup capability to recirculate caustic scrubber solution to treat off-gas prior to discharge to the 3039 Stack.

May

LGWOD and P&E personnel performed the quarterly load test on the 3039 Stack Area diesel generator (Building 3125). This test is a requirement of the Limiting Conditions of Operation for the 3039 Stack Area.

Personnel from QE&I DOP-tested the HEPA filters at Buildings 2537, 7830, and 7860. All of the filters passed except for one bank of cell ventilation filters at Building 7830.

These filters were changed out by P&E Division personnel, who also replaced the off-gas filters at Building 7830 due to a high pressure drop across the filters which were plugging because of the ITE process. The replacement filters were then successfully DOP-tested by QE&I personnel.

June

Personnel from P&E replaced the north bank of HEPA filters at the off-gas scrubber facility (Building 3092). The new filters and the south bank of filters were then successfully DOP tested by personnel from QE&I.

P&E personnel replaced the off-gas HEPA filters at Building 7877. This facility was where the LLLW Solidification Project - Campaign II was conducted.

P&E personnel changed out the HEPA filters on the off-gas system at Building 7830 during the reporting period due to a high pressure drop across the filters. The new filters were then successfully DOP tested by personnel from QE&I. These filters are replaced on a routine basis due to plugging caused by the In-Tank Evaporation operations underway at this facility, which is an attempt to reduce the amount of LLLW concentrate in storage at this facility.

P&E personnel changed out the Building 3092 off-gas blower. The spare blower had been rebuilt by P&E personnel and was installed so that the previously in-service blower can be rebuilt and stored as the spare blower. This blower provides off-gas services to the main ORNL site in Bethel Valley.

July

LGWOD personnel continued to assist in the video inspection of the 3500 area cell ventilation underground duct. This inspection attempt was started at Fourth Street and was going to go west in the duct; however, the camera was blocked by a formation of what appeared to be a crystalline substance after the inspection of 14 ft of duct. The camera was removed and the inspection was restarted after modifications to the camera were completed which allowed it to move through the obstruction. Other problems with the mobile camera unit were encountered and personnel were making additional modifications at the end of the month so that the inspection can be completed. This inspection was being done to determine the condition of the duct for a future maintenance activity.

P&E Division personnel replaced the HEPA filters at Building 2534, the off-gas filter pit for the LLLW Evaporator Facility. The new filters were then successfully DOP-tested by personnel from QE&I. These filters are used to remove particulate contamination from the off-gas at the LLLW Evaporator Facility prior to its discharge to the 3039 Stack.

P&E Division personnel replaced the HEPA filters on the off-gas system at Building 7830. The new filters were then successfully DOP-tested by personnel from QE&I. These filters are replaced on a routine basis due to a high pressure drop across the filters caused by the In-Tank Evaporation operations underway at this facility, which is an attempt to decrease the amount of LLLW concentrate in storage at this facility.

P&E Division personnel replaced the HEPA filters at the MCS for Building 2026 (Building 2099) at the request of Radiation Protection personnel. The filters that were installed as part of the construction project were replaced with filters that did not have wooden frames. The new filters were then successfully DOP-tested by personnel from QE&I. This facility is presently undergoing a Readiness Review prior to its being placed in service.

P&E Division personnel repaired a steam leak at the steam control station for the Central off-gas steam turbine. This turbine provides backup off-gas service to the main ORNL complex in Bethel Valley in case of failure of the electric blower.

August

P&E Division personnel began decontamination work on the Central Off-Gas System's spare blower at the decontamination booth located at Building 3518. This is in preparation for a scheduled maintenance activity to rebuild this blower.

P&E Division personnel replaced the HEPA filters on the off-gas system at Building 7830 due to plugging caused by the ITE process. The new filters were then successfully DOP-tested by personnel from QE&I.

September

P&E personnel completed programmed maintenance activities on the 4500 area cell ventilation electric blower. This blower provides cell ventilation services to facilities in the 4500 Complex Area.

P&E personnel replaced the HEPA filters at Building 7567. The new filters were then successfully DOP-tested by QE&I personnel.

P&E personnel replaced the off-gas HEPA filters at Building 7830 due to a high pressure differential caused by the In-Tank Evaporation operations at this facility. The filters were then successfully DOP-tested by QE&I personnel.

LGWOD personnel completed the quarterly load test of the 3039 Stack Area's backup diesel generator. This load test is a requirement of the Limiting Conditions Document for the 3039 Stack Area.

P&E personnel installed new belts on the 4500 Area Cell Ventilation fan and replaced a failed solenoid control valve on the 4500 Area Cell Ventilation backup steam turbine.

October

P&E Division personnel replaced the belts on the Isotope Area Cell Ventilation fan which provides cell ventilation services to Isotope Area facilities.

Personnel from QE&I performed the scheduled DOP tests on the Building 3092 HEPA filters.

November

Personnel from QE&I performed the quarterly DOP testing on the HEPA filters at Buildings 2531, 2537, 7830, 7860, and 7863. All of the filters were successfully tested.

The vacuum relief valve at Building 3092 was tested during this reporting period. This test is a requirement of the Limiting Conditions Document for the 3039 Stack Ventilation System.

December

A leak in the instrument air tubing servicing the 3092 Steam Turbine was repaired. This air leak caused a false signal to be delivered to the turbine instrumentation, causing the turbine to run in parallel with the electric fan. The turbine-driven fan is a backup for the electric fan, and they should never run in parallel.

A number of steam leaks were repaired in the 3039 Stack Area.

The North bank of HEPA filters were changed out at Building 3092. These filters are used to remove radioactive particulates from the off-gas generated by the main ORNL Complex before it is released to the atmosphere.

LGWOD personnel assisted in the video inspection of the off-gas duct at Building 7830 to determine if the In-Tank Evaporation operations were having any effect on the duct. Preliminary indications are that some crystallized salt buildup is occurring within the duct. The videotape is being prepared for personnel to review the inspection.

P&E personnel replaced the bearings on the 4500 cell ventilation turbine in the 3039 Stack Area. This turbine provides backup cell ventilation services to the 4500 Area.

The inlet filter to the W-23 tank ventilation system was replaced due to plugging. The ventilation system was then placed back into routine operation. Tank W-23 is utilized to store concentrated LLLW from the LLLW Evaporator System.

3.5 WASTE OPERATIONS CONTROL CENTER DAS AND DCS

May

Multiple failures of the WOCC DAS occurred during this period. A faulty disk drive resulted in several instances of downtime. It was determined that a malfunctioning power supply was causing the problem. The disk drive was temporarily replaced with a loaner from the I&C Division to keep the downtime to a minimum. A specification for the eventual replacement of the WOCC DAS is being prepared. Some new features will be added and an audit concern will be addressed in the specifications.

One failure occurred in the DCS at Melton Valley. It resulted in a temporary loss of communications, but the system continued to operate normally as repairs were made.

August

A problem with the fiber optic communication system was diagnosed and repaired by the I&C Division technicians. The system continued to operate normally.

4.0 OTHER ACTIVITIES

4.1 TRAINING ACTIVITIES

January

Twenty-four LGWOD personnel completed the Lockout/Tagout retraining.

One LGWOD supervisor completed the Family Medical Leave for Supervisors training.

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

Two LGWOD personnel attended the 8th WMRAD Financial Training class.

Two LGWOD personnel attended the 9th WMRAD Financial Training class.

Nine LGWOD personnel participated in a table-top exercise dealing with a large steam leak in the 3039 Stack Area. This exercise is part of the quarterly emergency preparedness training requirement for the LGWOD.

Four LGWOD personnel completed the two-year Radiation Worker II Training update.

February

Five LGWOD personnel completed the two-year Radiation Worker II Training Update.

Five LGWOD personnel completed Lockout/Tagout retraining.

One LGWOD personnel completed the annual respirator training.

Three LGWOD personnel underwent a whole body count.

Five LGWOD personnel completed the Defensive Driving on Unpaved Surfaces training.

March

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

Three LGWOD personnel completed the Lockout/Tagout retraining.

Eight LGWOD personnel completed the WMRAD Administrative Guide training.

Seven LGWOD personnel completed the annual respirator training.

One LGWOD personnel completed the refresher General Employee Training.

One LGWOD personnel attended training on Safety at Steam Stations.

April

Three LGWOD personnel completed the annual respirator training.

Two LGWOD personnel underwent whole-body counts.

One LGWOD personnel completed Conduct of Operations training.

Thirty LGWOD personnel completed Safety at Steam Stations training.

One LGWOD personnel completed Confined Space Entrant/Attendant training.

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

One LGWOD personnel completed the initial Resource Conservation and Recovery Act (RCRA) training course.

May

Two LGWOD personnel completed the two-day Nuclear Criticality Refresher Training.

June

Three LGWOD personnel completed the annual HAZWOPER refresher training.

One LGWOD personnel completed the annual respirator fit testing.

One LGWOD personnel completed Lock-Out/Tag-Out training.

Two LGWOD personnel attended the 12th WMRAD Financial Training Session on capital equipment.

Three LGWOD personnel participated in a cost estimating training session for ESWMO personnel, where one facility's cost estimate from each site was reviewed. The process waste collection and treatment system was reviewed for ORNL ESWMO. Only minor comments were made on the cost estimating methods used by LGWOD personnel.

July

Two LGWOD personnel completed the annual respirator fit training.

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

Two LGWOD personnel completed the 2-year General Employee Training refresher course.

One LGWOD personnel underwent a whole-body count.

August

Eight LGWOD personnel attended the Seven Habits of Highly Effective People Workshop.

Seven LGWOD personnel completed Employee Concern training.

Twenty-one LGWOD personnel completed the Defensive Driving course.

Twenty LGWOD personnel completed the General Employee training refresher.

Four LGWOD personnel completed Radiation Worker II requalification training.

Four LGWOD personnel completed Lockout/Tagout refresher training.

September

Seven LGWOD personnel completed the General Employee training refresher.

Three LGWOD personnel completed the 2-year Radiation Worker II Requalification.

Thirty-four LGWOD personnel completed Defensive Driving training, which completed training for all LGWOD personnel.

One LGWOD personnel underwent a whole-body count.

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

Four LGWOD personnel attended the WMRAD Occurrence Report training.

Eight LGWOD personnel attended the Seven Habits of Highly Effective People Workshop.

October

Two LGWOD personnel underwent whole-body counts.

One LGWOD personnel completed training on the new LLLW disposal procedures that were developed for the Nevada Test Site certification program.

The health physics personnel assigned to the LGWOD were given Conduct of Operations training and Criticality Safety Documentation Awareness Training by LGWOD personnel.

Four LGWOD technical staff personnel completed the two-day Nuclear Criticality Training for Supervisors course.

November

Four LGWOD personnel attended the Seven Habits of Highly Effective People training course.

Seven LGWOD personnel attended the annual Security refresher training course.

December

Three LGWOD personnel attended Radiation Worker II Practical Factors Training.

One LGWOD personnel attended Radiation Worker Training.

Two LGWOD personnel attended an information session on Performance Measurement Teams (PMTs). The LGWOD is the pilot organization for PMTs at ORNL ESWMO.

Two LGWOD personnel underwent whole-body counts.

One LGWOD personnel completed the annual respirator training.

One LGWOD personnel completed the refresher Solid Low-Level Waste training.

4.2 AUDITS AND TOURS

January

The process wastewater monitoring buildings and ponds were inspected by the ORNL ESWMO Environmental, Safety, and Health Department personnel. No problems were identified during the inspection.

February

An OSHA baseline inspection was performed at the Melton Valley Process Waste Pumping Station (Building 7562). This facility is out of service and awaiting decommissioning.

Reviewed the maintenance program for Building 3608 with DOE-ORO personnel who are doing an evaluation of the efficiency of operations at Building 3608 with similar type facilities at Y-12 and K-25.

An OSHA compliance review of Buildings 7567, 7569, and 7922 was conducted. This review is being done to establish a baseline for OSHA compliance at ORNL facilities.

Personnel from ESWMO Central conducted a review of Buildings 3608, 7860, and 7877 against the requirements of the DOE order on Conduct of Operations. No findings or concerns were identified.

DOE personnel conducted a review of Conduct of Operations at Building 2531, 2537, 7830, and 7877. No findings were identified during the review.

Personnel from ESWMO Central conducted a review of Conduct of Operations in the LLLW System. No concerns were identified during the review.

March

Personnel from the ORNL ESWMO Environmental, Safety, and Health Protection Department conducted a review of Buildings 2600, 3130, 3608, and 7877. No findings or concerns were identified during the review.

Personnel from the ORNL ESWMO Environmental, Safety, and Health Department performed a review of Buildings 2082, 2651, 2658, 3145, and data concentrator 4 (located on the south side of Building 3502). No findings or concerns were identified during the review.

Personnel from ESWMO Central, Y-12 ESWMO, and K-25 ESWMO performed a week-long surveillance on the Process Waste Collection and Transfer System, the Process Waste Treatment Plant (Building 3544), the Nonradiological Wastewater Treatment Plant (Building 3608), and the Waste Operations Control Center (Building 3130). No significant findings or concerns were identified during the daily closeouts for this surveillance.

A housekeeping surveillance was performed by DOE-ORO personnel. This surveillance covered Buildings 3039, 3092, 3106, 3130, and 3608. No significant findings or concerns resulting from this surveillance were conveyed to the Facility Manager.

An OSHA compliance inspection was conducted at the out-of-service surface impoundments in Melton Valley (Buildings 7907 and 7908) and at the Melton Valley Process Waste Collection Facility (Building 7961).

The DOE-ORO onsite facility representative performed an oversight review of operations at Buildings 3544 and 3608. No major findings or concerns were identified.

April

A week-long audit (ending on April 8) of the liquid waste operations within the LGWOD was conducted by personnel from DOE headquarters EM-25 office and assisted by other DOE-ORO and DOE headquarters personnel, along with representatives from Martin Marietta Energy Systems, Inc. (approximately 35 auditors total). The audit was primarily concerned with conduct of operations and RADCON and involved all LGWOD personnel (including reviews of shift operations on off-shifts).

A review of LGWOD air permit compliance was conducted by personnel from Environmental Compliance. No findings or concerns were identified.

The DOE-ORO on-site representative for LGWOD conducted a review of Bldgs. 2600, 3518, 3544, 3594, 7935, 7952, and 7961 for housekeeping issues. No findings were identified.

Personnel from DOE Radiation Protection reviewed radiation protection issues at Bldg. 2531. No findings or concerns were identified.

May

Personnel from the ORNL ESWMO Environmental, Safety, and Health (ES&H) Department performed a review of Buildings 3518, 3544, and 7877. No findings or concerns were identified during the review.

Two debriefing meetings were held for the LGWOD and support personnel to give personnel an overview of the results of the DOE-HQ EM-25 Assessment of Conduct of Operations and RADCON within the LGWOD.

Personnel from the ORNL ESWMO ES&H Department completed a walkthrough of LGWOD facilities located in the 7900 Area and also reviewed Buildings 7567 and 7569. No major concerns were identified.

LGWOD personnel provided tours of Buildings 2099, 2531, 3130, 3608, and 7830 to personnel from other national laboratories that were attending an information exchange meeting on tanks being held in Oak Ridge.

June

DOE-ORO and ORNL Radiation Protection personnel reviewed radiation postings and radiological practices at Buildings 3039, 3092, and 7860. No concerns were identified.

Personnel from the Architect-Engineering firm performing the Title I and II work for the Bethel Valley FFA Line Item were given a tour of the LLLW Evaporator Facility, where new, above-ground filter pits for the cell ventilation and off-gas system for the facility will be constructed.

LGWOD personnel participated in the kickoff meeting for the Plutonium Vulnerability assessment at ORNL by DOE-Headquarters personnel.

LGWOD personnel provided support to the ORNL Waste Certification Official during the audit by Nevada Test Site personnel to determine if the waste forms generated during the recently concluded LLLW Solidification Project - Campaign II meet the Waste Acceptance Criteria for shipment and disposal at the Nevada Test Site.

July

A Conduct of Operations review was conducted by personnel from ESWMO Central for Building 3130, 3518, and 3594. No findings or concerns were identified.

Personnel from Martin Marietta Energy Systems, Inc., conducted a review of Conduct of Operations within the LGWOD. This is part of a review of Conduct of Operations activities at all three Oak Ridge sites.

The DOE-ORO on-site facility representative conducted a review of Conduct of Operations within the LGWOD. No significant findings or concerns were identified.

July

Personnel from the ORNL Energy Systems Waste Management Organization (ESWMO) Environment, Safety, and Health Department conducted the annual review of hoisting and rigging with the LGWOD.

Personnel from ESWMO Central conducted a review of Conduct of Operations Chapters I, V, VI, and VII at Buildings 3608, 7860, 7877, and 7935. No findings or concerns were identified.

September

Provided a tour of the Transported Waste Receiving Facility (Building 2649) to the DOE-ORO personnel reviewing the safety documentation for the building.

Engineering personnel were given a tour of Building 7877 to identify equipment and shielding locations for the Out-of-Tank Evaporation demonstration project that is scheduled to be performed in late 1995.

The DOE-ORO On-Site Facility Representative conducted a review of Chapters IV, IX, and X of the Conduct of Operations Order at Buildings 3544 and 3608. No concerns were identified during the review.

Provided a tour of Building 7860 to cost study group personnel who are evaluating the use of its cells for future activities at ORNL.

October

LGWOD personnel participated in an independent review of the Operational Safety Requirements and the Limiting Conditions Documents for LGWOD facilities. No violations of the documents were identified.

November

LGWOD personnel provided Chemical Technology Division personnel and representatives from the vendor company constructing the Out-of-Tank Evaporator System equipment a tour of the Building 7877 site where the equipment will be located. The vendor representatives are onsite to conduct preliminary reviews of design assumptions with project personnel.

December

The LGWOD operations were reviewed by the ORNL Criticality Safety Committee. The only open recommendation from past reviews was closed and no new recommendations were opened.

4.3 MISCELLANEOUS ACTIVITIES

January

LGWOD personnel assisted Chem Tech personnel from Building 7920 in the mitigation of the LLLW spill that occurred 01/24/94. LGWOD personnel provided a process waste tanker to collect contaminated water and prevent it from entering the storm drain system. After some decontamination materials were transferred to the tanker, it was decided to route this waste stream to tank F-2017 at the Melton Valley Process Waste Tank Farm.

LGWOD personnel monitored the level in the 7562 tank and transferred three tanker loads (approximately 2,400 gals total) of LLLW from the 7562 tank to the Central Waste Collection Header, where it was transferred to the LLLW System for treatment and storage. This was done at the request of Remedial Action personnel.

LGWOD personnel collected two LLLW bottle packages at Building 3592 and one package at Building 4500N. The packages were transported to the LLLW Evaporator Facility, where they were transferred to the LLLW Collection System for treatment.

LGWOD personnel collected thirteen bottles of process wastewater from Building 1505 and transferred them to the process waste collection system for treatment.

LGWOD personnel loaded fresh zeolite resin in both zeolite columns at the PWTP. One of the zeolite columns is being used to provide additional treatment capacity for the PWTP; while the other column is being used to treat the wastewater for cesium removal after it has been through the facility's primary ion exchange process (for strontium removal).

LGWOD personnel transported a load of sulfuric acid from Building 3608 to Building 3544. The acid is used to adjust the pH of the wastewater prior to discharge to the NRWTP.

LGWOD personnel assisted Chem Tech personnel in the resumption of operations for the zinc bromide solidification project. A four-drum test was performed during the week ending 01/14/94 to ensure the scaled-up operations would perform as planned. Eight solidified zinc bromide waste forms were generated during the week ending 01/28/94.

February

LGWOD personnel assisted Remedial Action personnel in setting up transfer pumps around the Building 3513 Settling Basin to transfer possibly contaminated water back to the basin. This surface impoundment, which belongs to the Remedial Action program, had water levels over its normal capacity due to the heavy rainfall event that occurred earlier in the month and it was determined that some of the basin's contents might have leaked through areas of the berm that are normally above the water level. The pumps were placed at the basin to collect any possible leaks until some of the contents of the basin can be transferred to the process waste system and get the water level below the leak points.

LGWOD personnel continued to provide support to Remedial Action personnel by monitoring the level and transferring three loads of LLLW from the 7562 tank into the LLLW tanker and transporting it to the Central Waste Collection Header, where it was transferred to the LLLW System for treatment and storage. LGWOD personnel also assisted in the video inspection of the 7562 tank to see if the source of the inflow to the tank could be determined.

LGWOD personnel transferred one LLLW dumpster tank load of LLLW from Building 3074 to the Central Waste Collection Header, where it was transferred to the LLLW System for treatment.

LGWOD personnel collected one container of process wastewater at Building 1504 and transferred it to the process waste collection system for treatment.

LGWOD personnel collected sixteen containers of process wastewater at Building 1505 and transferred them to the process waste collection system for treatment.

Due to the large amount of rainfall during the week ending on February 11, seven tanker loads of water (approximately 35,000 gals total) were transported from the diked area at Building 2600 to the NRWTP, where they were transferred into the equalization tanks for future treatment. Because this was rainwater, it was treated at the NRWTP. The heavy rainfall that entered the process waste system will require several weeks to lower the pretreatment storage inventories to their normal levels.

LGWOD personnel unloaded spent zeolite from one zeolite column and reloaded it with fresh zeolite. The zeolite system is used to provide additional treatment capacity during periods of heavy inflow or to treat the discharge of the ion exchange treatment system for removal of strontium prior to discharge to the NRWTP.

LGWOD personnel transferred one load of sulfuric acid from the storage tank at Building 3608 to Building 3544. The sulfuric acid is used to adjust the pH of the wastewater treated at Building 3544 to a neutral range prior to transferring it to Building 3608 for further treatment.

LGWOD personnel sampled six tanks at the Melton Valley Storage Tank Facility (Building 7830) to determine which tanks can be transferred to tanks W-29 and W-30 for use in a future solidification campaign.

LGWOD personnel continued to provide support to Chem Tech personnel in the zinc bromide solidification project. Approximately eight drums of solidified zinc bromide were generated during each week.

The LGWOD Annual Operating Report of CY 1993 was completed at the end of the reporting period and is presently going through the approval process so that it may be sent to Lab Records for external distribution.

LGWOD submitted the draft plan for FY 1994 cost savings/avoidance. This plan outlined several methods for reducing/avoiding costs totaling approximately \$1.9 million dollars with a resultant increase in scope of approximately \$1.3 million dollars.

LGWOD submitted a proposal for testing Activity Based Costing (ABC) techniques at the facility level. This effort will be coordinated at the DOE-HQ level. LGWOD recommended the PWTP and Collection Systems be used as a test case.

March

LGWOD personnel collected one tanker load of LLLW (approximately 800 gals) at Building 7562 and transported it to the Central Waste Collection Header, where it was transferred to the LLLW Collection and Transfer System for treatment.

LGWOD personnel collected three LLLW bottle packages at Building 4500N and transported them to Building 2531, where they were transferred to the LLLW Collection and Transfer System for treatment.

LGWOD personnel received one tanker load of LLLW from Building 3525 and transported it to the Central Waste Collection Header, where it was transferred to the LLLW Collection and Transfer System for treatment.

LGWOD personnel collected 31 containers of process wastewater at Building 1505 and transferred them to the process waste collection and transfer system for treatment.

LGWOD personnel collected one tanker load of process wastewater in Solid Waste Storage Area (SWSA) 6 at the request of Solid Waste Operations personnel and transferred it to the process waste collection and transfer system for treatment.

LGWOD personnel collected two containers of process wastewater at Building 1504 and transferred them to the process waste collection and transfer system for treatment.

LGWOD transferred eleven 55-gal containers of process wastewater from operations in SWSA 6 to the process waste collection and transfer system for treatment.

A load of sodium hydroxide (approximately 3,000 gals) was received at Building 3544. The sodium hydroxide is used to adjust the pH of the wastewater prior to the clarifier so that the water softening process can be performed.

LGWOD personnel received 3,000 gals of sulfuric acid at Building 3608. The sulfuric acid is used to adjust the pH of the wastewater at Building 3608 to discharge limits prior to discharge to White Oak Creek.

LGWOD personnel used the decontamination booth located at Building 3518 to attempt the decontamination of the beveling tool which MK-F personnel had used during the 2A2 Evaporator Replacement project.

LGWOD personnel continued to provide support to Solid Waste Operations personnel performing some decontamination work in SWSA 5.

Baseline drawings for Buildings 2650, 3105, 3106, 7567, 7863, and 7952 were approved for entry into the Documentation Management Center. This is part of the ongoing effort

by LGWOD personnel to place all LGWOD facilities under configuration control. These drawings will now be issued as controlled drawings to facility personnel.

LGWOD reviewed the final plan for cost savings/avoidance during FY94. This plan outlined several methods for reducing/avoiding costs totaling approximately \$1.9 million with a resultant increase in scope of approximately \$1.3 million.

April

LGWOD personnel transferred three tanker loads (approximately 2,600 gallons total) to the LLLW tanker from the 4PRS sump at the Melton Valley Storage Tanks and transported it to the Central Waste Collection Header, where it was transferred to the LLLW Collection and Transfer System for treatment.

LGWOD personnel transferred two tanker loads (approximately 1,600 gallons) of wastewater from the 7562 LLLW tank to the LLLW tanker at the request of Remedial Action personnel and transported it to the Central Waste Collection Header, where it was transferred to the LLLW Collection and Transfer Systems for treatment.

LGWOD personnel transferred approximately 46,700 gallons from LLLW tanks W-24 and W-25 to LLLW tanks W-29 and W-30 at Bldg. 7830. This wastewater was allowed to rest undisturbed until it could be sampled later in the summer to characterize it for an upcoming solidification campaign.

LGWOD personnel collected 23 containers of process wastewater at Bldg. 1505 and transferred them to the Process Waste Collection and Transfer System for treatment.

LGWOD personnel transferred two tanker loads of process wastewater from Solid Waste Storage Area 5 and transferred them to the Process Waste Collection and Transfer System for treatment.

LGWOD personnel transferred one tanker load of process wastewater from Solid Waste Storage Area 6 at the request of Solid Waste Operations personnel and transferred it into the Process Waste Collection and Transfer System for treatment.

LGWOD personnel unloaded spent zeolite from a zeolite column at Bldg. 3544 and reloaded the vessel with fresh zeolite. The zeolite column is used to treat the discharge from the ion-exchange treatment system for removal of cesium or to provide additional throughput capacity at the facility depending upon the piping configuration.

LGWOD personnel transferred a load of sodium hydroxide (caustic) from the vendor's tanker to the storage tank at Bldg. 3608. Caustic is used to adjust the pH of wastewater at this facility to proper limits prior to discharge to White Oak Creek.

A contaminated backhoe from P&E was decontaminated at the Equipment Cleaning Facility (Bldg. 7935) by LGWOD personnel.

One compressed gas cylinder was received at the Equipment Cleaning Facility (Bldg. 7935) to be decontaminated.

May

LGWOD personnel picked up one LLLW bottle package at Building 4500N and transported it to the LLW Evaporator Facility, where it was transferred to the LLLW Collection and Transfer System for treatment.

LGWOD personnel transported one LLLW tanker-load of LLLW from Building 3525 to the Central Waste Collection Header, where it was transferred to the LLLW Collection and Transfer System for treatment.

LGWOD personnel transported one LLLW tanker-load of LLLW from Building 7500 to the Central Waste Collection Header, where it was transferred to the LLLW Collection and Transfer System for treatment.

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

LGWOD personnel transferred eleven drums of process waste from well drilling operations in Solid Waste Storage Area (SWSA) 6 to the Process Waste Collection and Transfer System for treatment.

LGWOD personnel transferred 210,000 gals of process wastewater from the Building 3513 Settling Basin to the Process Waste Collection and Transfer System at the request of Remedial Action personnel.

LGWOD personnel transferred one tanker-load of process wastewater from operations underway in SWSA 6 to the Process Waste Collection and Transfer System for treatment.

LGWOD personnel emptied and rinsed a truckload of drums at Building 3544 that had been generated by the remediation activities underway near the CSX railroad located near Y-12.

LGWOD personnel received one tanker-load of process wastewater from Building 7601 and transferred it to the NRWTP (Building 3608) for treatment.

LGWOD personnel received three drums of process wastewater from the 7000 Area and transferred them to the NRWTP for treatment.

LGWOD personnel received a load (approximately 20,000 pounds) of Granular Activated Carbon (GAC) at the NRWTP and reloaded column F-1020, which had been emptied after the GAC had been exhausted.

LGWOD personnel received 3,000 gals of sodium hydroxide (caustic) at the PWTP (Building 3544). Caustic is used to adjust the pH of wastewater at this facility to aid in the clarifier's water softening operation.

LGWOD personnel unloaded an exhausted zeolite column at Building 3544 and then reloaded the column with fresh zeolite. The zeolite columns are used to provide additional throughput capacity at the facility or to treat the discharge from the ion-exchange system for cesium removal prior to discharge to Building 3608, based on the valving arrangement.

LGWOD personnel started decontamination operations at Building 7935 on a backhoe used by P&E Division personnel during the WC-9 Transfer System modification project.

LGWOD personnel collecting samples from the WC-10 drywell discovered four dead opossums located within the drywell. The dead opossums were successfully removed by the LGWOD's inhouse opossum expert so that the weekly samples could be collected.

LGWOD personnel completed a Plutonium Vulnerability Assessment on the LLLW concentrate storage tanks at Buildings 2531, 2537, and 7830 and provided a copy of the assessment to the subcontractor who is reviewing the results for ORNL prior to their submission to DOE. This assessment is being done at the request of DOE-HQ.

LGWOD personnel had tags mounted on all removable plugs at LGWOD facilities giving the weight of the individual plug. This was to get the LGWOD in conformance with new requirements from the ORNL Safety Department that all plugs will be identified with their weight to assist personnel when they have to use a crane to lift the plugs. There were approximately 150 plugs labeled by the LGWOD.

June

The LGWOD ALARA Plan and the Exposure Summary for CY 1993 operations was approved by ORNL ALARA personnel. The plan sets ALARA goals for LGWOD personnel and maintenance personnel working at LGWOD facilities.

LGWOD personnel transferred the sumps at Building 7830 to the LLLW Tanker and transported it to the Central Waste Collection Header, where it was transferred to the LLLW Collection and Transfer System for treatment.

LGWOD personnel transferred eleven LLLW tanker loads from the 7562 tank to the Central Waste Collection Header, where the wastewater was transferred to the LLLW

Collection and Transfer System for treatment. This waste was collected at the request of Remedial Action personnel.

LGWOD personnel transferred two LLLW tanker loads from Building 3525 to the Central Waste Collection Header, where the wastewater was transferred to the LLLW Collection and Transfer System for treatment.

LGWOD personnel attempted to identify the source of Cs-137 entering the process wastewater collection system upstream of monitoring manhole 149, which services the 3025/3026 area. Activities included sampling of upstream manholes, sampling and analysis of small streams inleaking into the system, and video inspection of the process wastewater transfer line. Over the weekend of June 18 and 19, the water supply to the facilities in the vicinity of the process wastewater transfer line going to manhole 149 was shut down to see if water leaks in the area were causing the cesium movement. Some reduction in the amounts of Cs-137 in the wastewater at manhole 149 was seen during this test. A water jet system was then used to clear an obstruction in the line and the line was then video-inspected and samples were collected at various points within the line to determine where the Cs-137 is entering the line. Arrangements were being made to set up a temporary zeolite treatment system at process waste manhole 149 for removal of the cesium prior to its transfer to the process wastewater collection tanks and the PWTP.

LGWOD personnel transferred eight containers of process wastewater from Building 1505 to the Process Wastewater Collection and Transfer System for treatment.

LGWOD personnel collected one process waste tanker load of wastewater from the construction site for the new Process Waste Surge Tank and transferred the wastewater to the Process Waste Collection and Transfer System for treatment. This new tank will provide an additional one million gallons of storage capacity for LGWOD operations during heavy inflow and system upset conditions.

LGWOD personnel sampled LLLW Concentrate Storage Tanks W-29 and W-30 as a prescreening for a possible upcoming Liquid Low-Level Waste Solidification Project - Campaign III.

LGWOD personnel sampled the liquid in LLLW Tanks T-1 and T-2 to ensure that no organics or other materials are present that could present problems during welding operations to install new level instruments for these tanks. An organic layer was found in each tank, and samples were submitted for analysis to identify the organics. These instrument modifications are being made to support the Federal Facilities Agreement leak testing program.

LGWOD personnel unloaded the depleted zeolite resin and reloaded fresh resin in the zeolite test demonstration system located at Building 2600. This system is being used to gather data in support of the 1996 PWTP Line Item, which is to build a new PWTP.

One load of sodium hydroxide (approximately 3,000 gallons) was received at Building 3544. Sodium hydroxide is used to adjust the pH of the wastewater, which aids in the water softening process in the clarifier.

July

LGWOD personnel transported one LLLW dumpster tank load from Building 3074 to the Central Waste Collection Header, where the wastewater was transferred to the LLLW Collection and Transfer System for treatment.

LGWOD personnel transported one LLLW tanker load from the sumps at Building 7830 to the Central Waste Collection Header, where the wastewater was transferred to the LLLW Collection and Transfer System for treatment.

LGWOD personnel collected one LLLW Bottle Package from Building 3017 and transported it to the LLLW Evaporator Facility, where it was transferred to the LLLW Collection and Transfer System for treatment.

LGWOD personnel emptied wastewater from an abandoned LLLW line near Building 2600 at the request of MK-F personnel prior to their removal of the line. The line is being removed as part of the site preparation work for the new 1,000,000 gal Process Waste Surge Tank which is to be installed just west of the two existing tanks at Building 2600. This new tank will provide additional surge capacity during periods of heavy inflow and will allow the LGWOD to end use of the surface impoundments in Bethel Valley for additional surge capacity during heavy inflow periods. The wastewater was subsequently packaged, transported, and disposed of per LGWOD procedures.

LGWOD personnel collected one container of process wastewater at Building 1504 and transferred it to the Process Waste Collection and Transfer System for treatment.

LGWOD personnel transferred a load of caustic (sodium hydroxide) from the storage tank at Building 3608 to the caustic tank at Building 7961. The caustic is used to adjust the pH of the wastewater from the 7900 Area Complex to a basic pH value prior to being stored in the collection tanks at Building 7961.

LGWOD personnel unloaded spent zeolite from two test columns at the Bethel Valley Process Wastewater Storage Tanks (Building 2600). These columns were used as part of the zeolite demonstration system that was used to develop performance information in support of the 1996 Process Waste Treatment Facility Line Item, which will replace the existing PWTP (Building 3544).

LGWOD personnel completed decontamination work on the 2A2 sample room at Building 2531 in preparation for P&E Division personnel to paint the room.

LGWOD personnel decontaminated a front-end loader at the Equipment Cleaning Facility (Building 7935) at the request of P&E Division personnel.

LGWOD personnel continued work preparing some drums and boxes for disposal because they showed signs of deterioration. These containers, which were to be used for the disposal of solid low-level waste, were found to be in a deteriorated condition during a recent inspection of LGWOD facilities. The containers were disposed of as scrap waste.

LGWOD personnel completed general housecleaning activities at Buildings 3518, 3544, 3594, 3608, 7853, and 7863. Much of the housecleaning was done after maintenance and construction work had been completed at the treatment facilities.

One LGWOD personnel participated in a Pollution Prevention Continuous Improvement Workshop with representatives from DOE-ORO and the Y-12 and K-25 facilities.

August

LGWOD personnel collected nine LLLW Bottle Packages at Building 4500N and transported them to the LLLW Evaporator Facility, where the contents were transferred to the LLLW Collection and Transfer System for treatment.

LGWOD personnel transported one LLLW tanker load from the sumps at Building 7830 to the Central Waste Collection Header, where the wastewater was transferred to the LLLW Collection and Transfer System for treatment.

LGWOD personnel collected eight containers of process waste at Building 1505 and transferred them to the Process Wastewater Collection and Transfer System for treatment.

LGWOD personnel transferred one tanker load of process wastewater from the 7500 area and transferred it to the Process Wastewater Collection and Transfer System for treatment.

LGWOD personnel assisted in the video inspection of the 2013 storm drain line. This was to support a future maintenance activity on this line.

LGWOD personnel assisted in the final planned video inspection of the 3500 cell ventilation duct. This is to support a future maintenance activity on this duct.

LGWOD personnel assisted sampling personnel from the Environmental Compliance organization in taking measurements on the air streams through the cell ventilation and off-gas filter pits at Building 2531. These measurements will be used to support the design of the above-ground replacement filter systems that are being built under the Bethel Valley FFA Line Item. These measurements were taken at the request of the Architect-Engineering design team.

LGWOD personnel sampled LLLW Tanks T-1, -2, -3, -4, and -9 at the original Shale Fracture Facility at the request of Remedial Action personnel.

LGWOD personnel received one load of sulfuric acid (approximately 3,000 gals) at Building 3608 during the month. The sulfuric acid is used to adjust the pH of the wastewater to discharge limits prior to its discharge to White Oak Creek.

LGWOD personnel transferred two loads of sodium hydroxide (caustic) to the caustic tank at the Melton Valley Process Wastewater Collection Tank Facility (Building 7961). Caustic is used to maintain the wastewater at a basic pH prior to its transfer to a treatment facility in Bethel Valley.

LGWOD personnel transferred one tanker load of process wastewater from the 7500 area and transferred it to the Process Wastewater Collection and Transfer System for treatment.

LGWOD personnel unloaded spent zeolite from two columns at the PWTP (Building 3544) and reloaded them with fresh zeolite. The zeolite columns are used to provide extra throughput capacity during periods of heavy inflow or to remove cesium from the discharge of the ion-exchange columns prior to discharge to the NRWTP (Building 3608), based on the valving arrangement.

September

LGWOD personnel transferred the contents of the WC-3 Pump Pit sump to the process waste system in support of an inspection by MK-F personnel to generate as-built drawings of the valve and piping configuration inside the pit.

LGWOD personnel collected 14 bottles of process wastewater at Building 1505 and transferred them to the Process Wastewater Collection and Transfer System for treatment.

LGWOD personnel collected one container of Process Wastewater from Building 1504 and transferred it to the Process Wastewater Collection and Transfer System for treatment.

LGWOD personnel collected two LLLW bottle packages at Buildings 4500N and 4500S and transported them to the LLLW Evaporator Facility, where they were transferred to the LLLW Collection and Transfer System for treatment.

LGWOD personnel sampled the sludge layer in Evaporator Service Tank W-22 and submitted the sample for analysis. The tank was sampled for characterization purposes and to provide data for criticality analysis.

LGWOD personnel supported Environmental Restoration personnel in sampling activities in the North Tank Farm.

LGWOD personnel performed the routine sampling of the storage casks from the Emergency Avoidance Solidification Campaign and the LWSP - Campaign I at the request of Solid Waste Operations Department (SWOD) personnel.

LGWOD personnel performed the routine sampling of the storage casks from the LWSP - Campaign II at the request of SWOD personnel.

One load (3,000 gals) of sodium hydroxide (caustic) was delivered at Building 3544. Caustic is used to adjust the pH of the wastewater for the water softening operation in the clarifier at this facility.

LGWOD personnel supported P&E personnel in the removal of brush from the banks of inactive surface impoundments in the 7900 area (Buildings 7906, 7907, and 7908).

LGWOD personnel conducted a housekeeping improvement campaign at Building 7830.

October

LGWOD personnel transferred approximately 85,000 gals of LLLW concentrate from the LLLW Evaporator Facility to the Melton Valley Storage Tanks, where the waste will undergo further volume reduction using the ITE Process.

LGWOD personnel collected four containers of process wastewater from Building 1505 and transferred them to the process wastewater collection and transfer system for future treatment.

LGWOD personnel received a load of sulfuric acid at Building 3544. Sulfuric acid is used to adjust the pH of the wastewater prior to discharge to the NRWTP (Building 3608).

LGWOD personnel transferred one load of sodium hydroxide (caustic) from the chemical storage tank at Building 3608 to the tank at Building 7961. Caustic is used to maintain the process wastewater stored at Building 7961 at a basic pH until it is transferred to the PWTP or NRWTP for treatment.

LGWOD personnel received a load of nitric acid at Building 3544. Nitric acid is used in the regeneration process for the ion-exchange columns, which remove Sr-90 from the wastewater prior to discharge to the NRWTP.

The 3039 Stack Area was deregulated by health physics personnel and the area is now a Restricted Access area. This eliminates the need for routine monitoring by personnel exiting the area during routine operations. Temporary zoning will be set as required by health physics during maintenance activities that require access to potentially internally-contaminated equipment.

LGWOD personnel rinsed out the out-of-service sodium hydroxide (caustic) tank located on the east side of Building 3092 and P&E Division personnel then demolished the vessel for disposal. This tank had been out of service for several years.

LGWOD personnel decontaminated a crane for P&E Division personnel during the month.

November

LGWOD personnel located one of the Process Wastewater tankers at Steam Pit 2 (located across from the west gate at ORNL) and transferred four tanker loads (approximately 4,000 gals each) of process wastewater to the process waste collection and transfer system for treatment.

LGWOD personnel set up a zeolite resin drum at Steam Pit 2 to treat contaminated process wastewater seeping into the pit. This allowed for source treatment of the wastewater.

LGWOD personnel provided pumps and assistance in transferring water at Building 7503 for Remedial Action personnel. This transfer was done as a corrective action to alleviate criticality concerns at this facility.

LGWOD personnel collected 10 containers of process wastewater at Building 1505 and transferred them to the Process Waste Collection and Transfer System for treatment.

The pump and valve vault pad at Building 2537 were deregulated by Health Physics personnel and changed to a restricted access area as part of a continuing effort to eliminate regulated areas within LGWOD facilities.

LGWOD personnel completed the decontamination of a crane for P&E Division personnel.

LGWOD personnel began decontamination work at Building 7830 valve pad in preparation to rezone the valve pad. This rezoning will remove the restriction to frisk routinely on exit from the pad.

December

Approximately 300 gals of LLLW were transferred from LLLW Collection Tank F-501 at Building 3525 to the LLLW tanker and transported to the LLLW Collection System for treatment at the LLLW Evaporator Facility.

The wastewater from the pump room sump at the MVSTs was emptied into the LLLW tanker and transported to the LLLW Collection and Transfer System for treatment at the LLLW Evaporator Facility.

LGWOD personnel transferred one LLLW dumpster tank load from Building 3074 to the LLLW Collection and Transfer System for future treatment.

Approximately 10,000 gals of Process Wastewater were removed from temporary storage in SWSA 5, pumped into tankers, transported to the Process Waste Collection and Transfer System, and treated for radionuclide removal through the PWTP.

Several containers of process waste were picked up at Building 1505 and transported to the PWTP for treatment.

LGWOD personnel pumped 675,000 gals of wastewater from the Building 3513 basin into the Process Waste System for treatment at the PWTP. The level of the 3513 basin was lowered at the request of Remedial Action personnel to reduce the flow of a seep found in the berm until repairs could be made.

LGWOD personnel transferred one tanker load (approximately 4,000 gals) of process wastewater from the construction site for the new 1,000,000 gal process waste surge tank at the request of construction personnel. The wastewater was transferred to the Process Waste Collection and Transfer System for treatment.

The wastewater level in the Equalization Basin (Building 3524) was reduced by transferring several feet of liquid into the Process Waste Collection and Transfer System.

LGWOD personnel transferred one tanker load of sodium hydroxide from the storage tank at Building 3608 to the small tank at Building 7961. The sodium hydroxide is used to maintain the process wastewater collected at Building 7961 at a basic pH.

LLLW Tank WC-14 was sampled for further characterization of the tank contents.

A sludge sample was pulled from the filter press at the NRWTP to be used for pilot studies to ascertain why the drying efficiency of the filter press has recently decreased.

LGWOD personnel sampled the 3047 LLLW Tank at the request of Federal Facilities Agreement personnel.

LGWOD personnel collected the routine monitoring samples from 60 of the storage casks for the solidified waste forms generated during the LLLW Solidification Project (LWSP) - Campaign II. This sampling is done routinely for Solid Waste Operations Department personnel.

LGWOD personnel collected liquid samples from the six MVSTs that are not used for the LWSP. These samples were taken for Chemical Technology Division (ChemTech) personnel to evaluate the contents of the tanks after the recent transfers to this facility for future solidification operations.

LGWOD personnel collected drywell samples from the North and South Tank Farms at the request of Remedial Action personnel. These samples were submitted for analyses to aid in future remediation activities at these sites.

The liquid in the collection sumps at the MVSTs was pumped into the LLLW tanker and transported to the LLLW Collection System for treatment at the LLLW Evaporator Facility. The MVSTs are utilized to store concentrated LLLW from the LLLW Evaporator Facility. The collection sumps are located in the vaults at the MVSTs.

LGWOD personnel removed the filter media from the Seep D treatment system, cleaned it, and replaced it. This filter removes particulates from the wastewater before it is treated for Strontium-90 removal through a set of zeolite treatment columns. Without this filter, the zeolite columns would become non-functional due to plugging. The filter was becoming plugged (as shown by a high pressure differential across the filter media), thus necessitating the removal and cleaning of the media. After the filter media was cleaned, the differential pressure was reduced approximately 90%.

5.0 APPENDIX

5.1 TABLES

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

5.2 FIGURES

1. Process waste treated at ORNL. (ORNL-DWG. 95-5501)
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3. Dilute LLLW from the PWTP. (ORNL-DWG. 95-5503)
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29. Abandoned tank W-1A LLLW generation. (ORNL-DWG. 95-5529)

TABLE 1 PROCESS WASTE OPERATIONS

		Waste treated by zeolite (gal)	Total Process Waste treated (gal)	Sludge generated		PWTP generated LLLW concentrate to storage (gal)	PWTP generated LLLW feed (gal)
				Drums	Ft ³		
January	5.74×10^6	1.66×10^6	7.40×10^6	48	353	1,100	1,160
February	4.99×10^6	2.23×10^6	7.22×10^6	39	287	510	900
March	5.21×10^6	1.99×10^6	7.20×10^6	53	390	543	880
April	6.26×10^6	1.95×10^6	8.21×10^6	51	375	1,050	930
May	5.07×10^6	1.12×10^6	6.19×10^6	51	375	300	360
June	4.34×10^6	2.03×10^6	6.37×10^6	54	397	330	240
July	4.32×10^6	2.71×10^6	7.03×10^6	53	390	750	1,220
August	5.22×10^6	1.55×10^6	6.77×10^6	67	493	200	850
September	4.32×10^6	1.26×10^6	5.58×10^6	48	353	308	550
October	5.59×10^6	0	5.59×10^6	54	397	260	530
November	5.14×10^6	0.14×10^6	5.29×10^6	55	404	1,010	1,070
December	4.44×10^6	2.28×10^6	6.73×10^6	52	382	0	1,060
1994 Totals	60.64×10^6	18.92×10^6	79.56×10^6	625	4,596	6,361	9,750

TABLE 2 NRWTP OPERATIONS

	Metals Wastewater treated (gal)	Nonmetals Wastewater treated (gal)	Total Wastewater treated (gal)	Sludge generated	
				Boxes	Ft ³
January	4.99 x 10 ⁵	1.43 x 10 ⁷	1.48 x 10 ⁷	1	96
February	4.98 x 10 ⁵	1.46 x 10 ⁷	1.51 x 10 ⁷	1	96
March	17.3 x 10 ⁵	1.43 x 10 ⁷	1.60 x 10 ⁷	1	96
April	22.8 x 10 ⁵	1.46 x 10 ⁷	1.69 x 10 ⁷	1	96
May	4.26 x 10 ⁵	1.43 x 10 ⁷	1.47 x 10 ⁷	0	0
June	10.6 x 10 ⁵	1.59 x 10 ⁷	1.70 x 10 ⁷	1	96
July	9.34 x 10 ⁵	1.70 x 10 ⁷	1.79 x 10 ⁷	1	96
August	13.6 x 10 ⁵	1.68 x 10 ⁷	1.82 x 10 ⁷	2	192
September	9.91 x 10 ⁵	1.41 x 10 ⁷	1.51 x 10 ⁷	3	288
October	10.9 x 10 ⁵	1.42 x 10 ⁷	1.53 x 10 ⁷	0	0
November	8.39 x 10 ⁵	1.29 x 10 ⁷	1.37 x 10 ⁷	1	96
December	1.80 x 10 ⁵	1.46 x 10 ⁷	1.48 x 10 ⁷	1	96
1994 Totals	118.87 x 10 ⁵	17.76 x 10 ⁷	18.95 x 10 ⁷	13	1,248

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	5.65×10^4	0	0	0
February	6.90×10^4	0	2,550	0
March	8.08×10^4	0	0	0
April	6.70×10^4	0	2,050	0
May	2.55×10^4	0	0	0
June	3.99×10^4	0	0	0
July	2.54×10^4	0	1,800	0
August	2.33×10^4	0.05×10^4	0	0
September	3.96×10^4	1.14×10^4	0	0
October	5.30×10^4	0	2,160	0
November	3.61×10^4	0	2,490	0
December	2.82×10^4	0.12×10^4	0	0
1994 Totals	54.43×10^4	1.31×10^4	11,050	0

Figure 1. Process waste treated at ORNL. (ORNL-DWG. 95-5501)

Figure 2. Sludge generation at the PWTP. (ORNL-DWG. 95-5502)

Figure 3. Dilute LLLW from the PWTP. (ORNL-DWG. 95-5503)

Figure 4. LLLW concentrate from the PWTP. (ORNL-DWG. 95-5504)

RAINFALL AT ORNL

(RECORDED AT ORNL STEAM PLANT)

Figure 5. Rainfall at ORNL. (ORNL-DWG. 95-5505)

The graph displays three data series over time from January 1988 to January 1995. The Y-axis represents volume in thousands of gallons, ranging from 0 to 600. The X-axis shows time in months, with labels for each year from 1988 to 1995.

- AVAILABLE STORAGE (Dotted line):** Remains constant at approximately 570,000 gallons throughout the entire period.
- OSR LIMIT (Thick solid line):** Starts at approximately 520,000 gallons, remains constant until mid-1991, then drops to approximately 420,000 gallons and remains constant until mid-1993, after which it slightly increases to approximately 430,000 gallons.
- ACTUAL STORED VOLUME (Thin solid line):** Starts at approximately 470,000 gallons, peaks at approximately 510,000 gallons in mid-1988, then drops to approximately 440,000 gallons. It fluctuates between 440,000 and 490,000 gallons until mid-1991, then drops to approximately 440,000 gallons and remains relatively stable until mid-1993, after which it decreases to approximately 410,000 gallons.

Legend:
 ○ AVAILABLE STORAGE
 ■ OSR LIMIT
 — ACTUAL STORED VOLUME

Figure 6. Used storage space versus time. (ORNL-DWG. 95-5506)

Figure 7. LLLW generation at ORNL. (ORNL-DWG. 95-5507)

Figure 8. Building 2026 LLLW generation. (ORNL-DWG. 95-5508)

Figure 9. Building 3019 LLLW generation. (ORNL-DWG. 95-5509)

Figure 10. Building 3025 LLLW generation. (ORNL-DWG. 95-5510)

Figure 11. Building 3026-C LLLW generation. (ORNL-DWG. 95-5511)

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Figure 13. Building 3028 LLLW generation. (ORNL-DWG. 95-5513)

Figure 14. 3039 Stack Area LLLW generation. (ORNL-DWG. 95-5514)

Figure 15. Building 3074 LLLW generation. (ORNL-DWG. 95-5515)

Figure 16. Building 3504 LLLW generation. (ORNL-DWG. 95-5516)

Figure 17. Building 3508 LLLW generation. (ORNL-DWG. 95-5517)

Figure 18. Building 3517 LLLW generation. (ORNL-DWG. 95-5518)

Figure 19. Building 3525 LLLW generation. (ORNL-DWG. 95-5519)

Figure 20. Building 3544 LLLW concentrate generation. (ORNL-DWG. 95-5520)

Figure 21. Building 3544 LLLW feed generation. (ORNL-DWG. 95-5521)

Figure 22. 4500 Complex LLLW generation. (ORNL-DWG. 95-5522)

Figure 23. Isotopes Area LLLW generation. (ORNL-DWG. 95-5523)

Figure 24. Reactors in Bethel Valley LLLW generation. (ORNL-DWG. 95-5524)

Figure 25. WC-5 Pump Pit (tank WC-8) LLLW generation. (ORNL-DWG. 95-5525)

Figure 26. WC-5 Pump Pit (tank WC-9) LLLW generation. (ORNL-DWG. 95-5526)

Figure 27. HFIR (Building 7900) LLLW generation. (ORNL-DWG. 95-5527)

Figure 28. Building 7920 LLLW generation. (ORNL-DWG. 95-5528)

Figure 29. Abandoned tank W-1A LLLW generation. (ORNL-DWG. 95-5529)

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