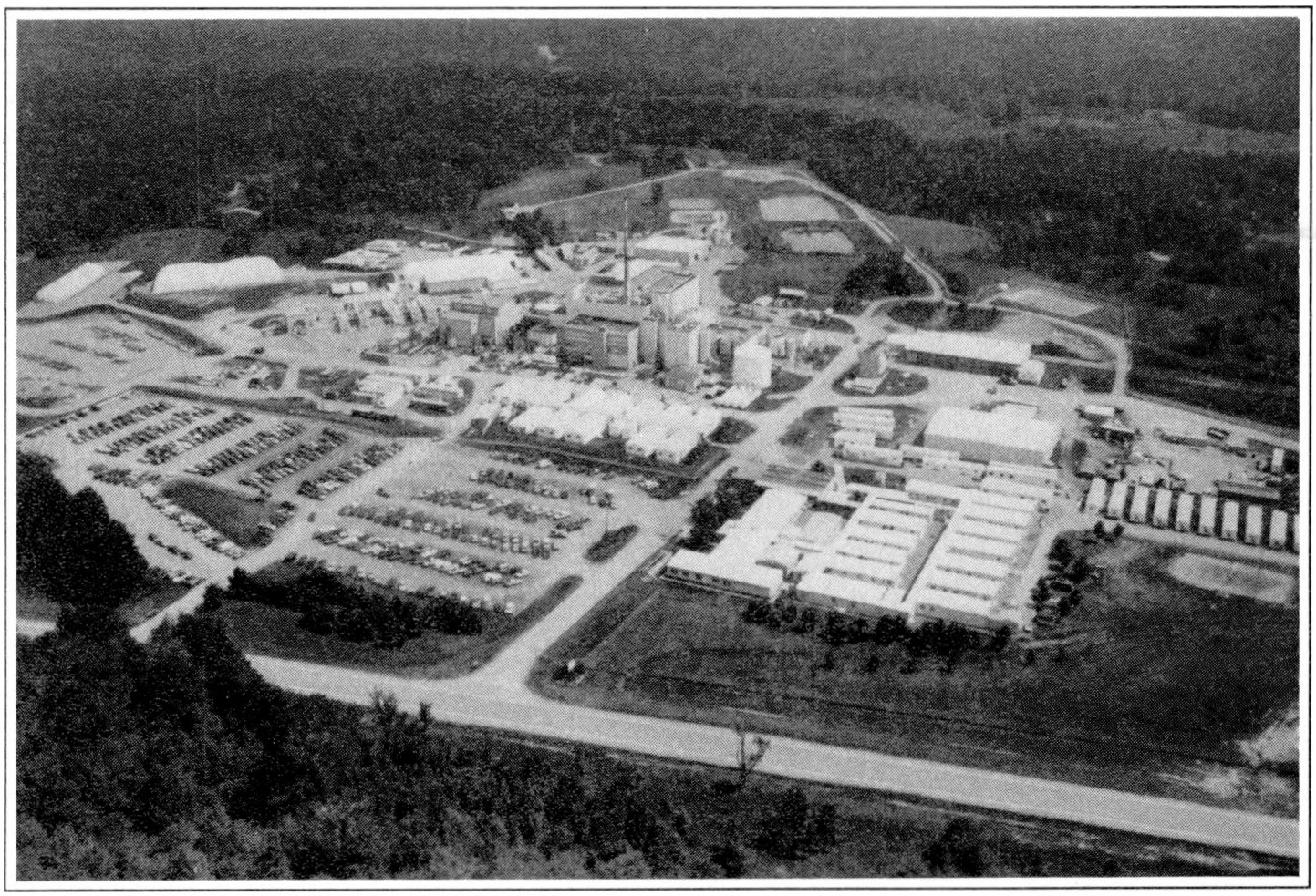
WVDP/90AR

WEST VALLEY DEMONSTRATION PROJECT

West Valley, New York



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WEST VALLEY DEMONSTRATION PROJECT

ANNUAL REPORT TO CONGRESS

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EXECUTIVE SUMMARY

The West Valley Demonstration Project

Under the West Valley Demonstration Project Act, Public Law 96-368, liquid high-level radioactive waste stored at the Western New York Nuclear Service Center in West Valley, New York, is to be solidified in borosilicate glass and transported to a federal repository for geologic disposal. The waste material resulted from spent nuclear fuel reprocessing operations conducted between 1966 and 1972. The site is owned by New York State. Project costs are shared by the Department of Energy (90 percent) and the New York State Energy Research and Development Authority (NYSERDA; 10 percent).

Accomplishments in Fiscal Year 1989

By the end of the fiscal year, the West Valley Demonstration Project had processed 757,000 litres (200,000 gallons) of liquid high-level waste, removing most of the radioactive constituents by ion exchange. The radioactive ion exchange material is being stored in an underground tank pending its incorporation, along with sludge still in the tank, into borosilicate glass. The decontaminated salt solution was solidified into a cement low-level waste form which has been reviewed and endorsed by the Nuclear Regulatory Commission.

Five tests of the waste glass melter system were completed. The tests continued to confirm equipment operability and control system reliability, and provided samples of the waste glass for durability testing.

A Notice of Intent was published to prepare a joint federal/state Environmental Impact Statement. The EIS is to provide environ-

mental information for consideration in federal and state decision-making related to West Valley Demonstration Project completion activities by the Department, and state decision-making on closure of the Western New York Nuclear Service Center by NYSERDA.

Design of the Vitrification Facility, a major milestone, was completed and construction of the facility enclosure has begun.

A Department of Energy Tiger Team and Technical Safety Appraisal of the Project found no undue risks to worker or public health and safety or the environment.

Planned Activities in Fiscal Year 1990

Reducing the volume of liquid waste and solidification of the resulting low-level waste in cement will continue. By the end of the fiscal year, a cumulative total of over 10,000 cement drums will be produced.

Testing for the waste glass melter system will be completed, as will construction of the Vitrification Facility's enclosure.

The implementation plan for the Phase II Environmental Impact Statement will be submitted for DOE Headquarters approval.

Planned Activities in Fiscal Year 1991

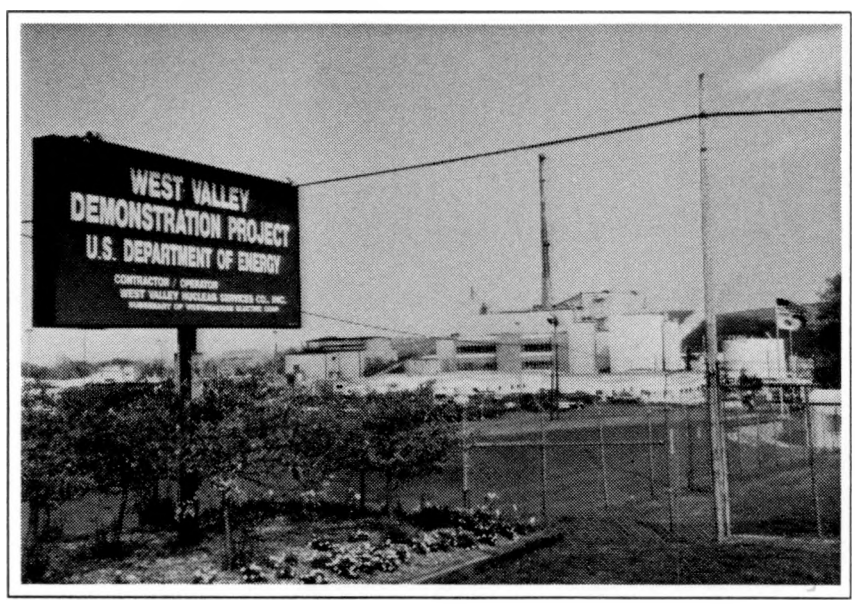
The remainder of liquid high-level waste will be processed to remove most of the radioactive constituents; the decontaminated solution will be processed into a cumulative Project total of 13,000 cement drums. The sludge remaining in the high-level waste tank will be washed and the resulting liquid will be decontaminated.

INTRODUCTION

Background

Owned by NYSERDA, the Western New York Nuclear Service Center near West Valley, New York was the site of the only commercial nuclear fuel reprocessing facility to have operated in the United States. Nuclear Fuel Services Company was the facility operator under a long-term lease from NYSERDA.

The plant reprocessed spent nuclear fuel assemblies from various nuclear power plants from 1966 to 1972. Reprocessing operations generated approximately 2 million litres (560 thousand gallons) of highly radioactive liquid waste. The liquid waste was stored in underground steel tanks, the method of the day.



The West Valley Demonstration Project is located on a 3345-acre site in West Valley, New York, 35 miles south of Buffalo.

In 1972, Nuclear Fuel Services closed the plant in order to expand it. However, increased federal and state regulations applicable not only to the planned expansion but to the entire facility made the required capital investment much more costly than had been anticipated. In 1976, the company decided not to proceed with its plans and notified NYSERDA of its intent to terminate the lease, leaving the liquid waste in the storage tanks.

West Valley Demonstration Project Act

In 1980, the United States Congress passed the West Valley Demonstration Project Act (PL96-368) authorizing the Department of Energy (DOE) to carry out a nuclear waste management project at West Valley. The West Valley Demonstration Project was established to demonstrate that liquid waste from reprocessing of spent nuclear fuel can be managed safely in the United States. The principal activities mandated by Congress for the Project are:

- Solidification of the high-level radioactive waste by vitrification or by such other technology determined to be the most effective for solidification;
- Development of containers suitable for permanent disposal of the high-level radioactive waste;
- Transportation of the waste to an appropriate federal repository for permanent disposal;
- Disposal of low-level radioactive waste and transuranic waste produced by the solidification of the high-level radioactive waste under the Project; and
- Decontamination and decommissioning of the tanks and other facilities in which the high-level radioactive waste solidified under the Project was stored, the facilities used in the solidification of the waste, and any material and hardware used in connection with the Project, in accordance with requirements of the Nuclear Regulatory Commission.

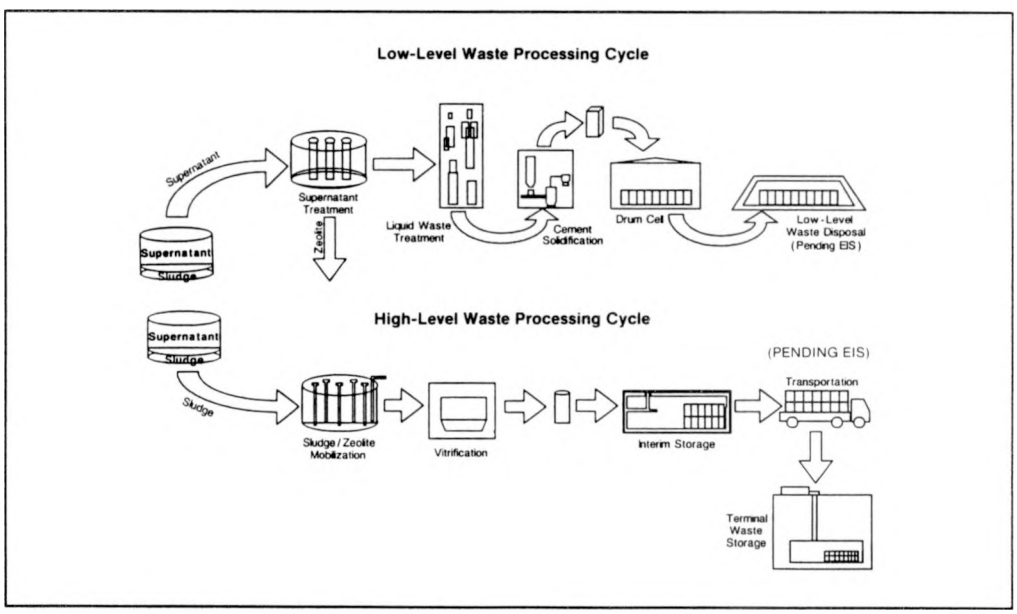
Further, the Act directed that a cooperative agreement be entered into with New York State to require state payment of 10 percent of the Project's costs. This agreement was finalized in 1981.

Project Approach

The DOE assumed control of the West Valley site from Nuclear Fuel Services in February 1982. West Valley Nuclear Services Company, Inc., a subsidiary of Westinghouse Electric Corporation, was chosen as the site's prime contractor.

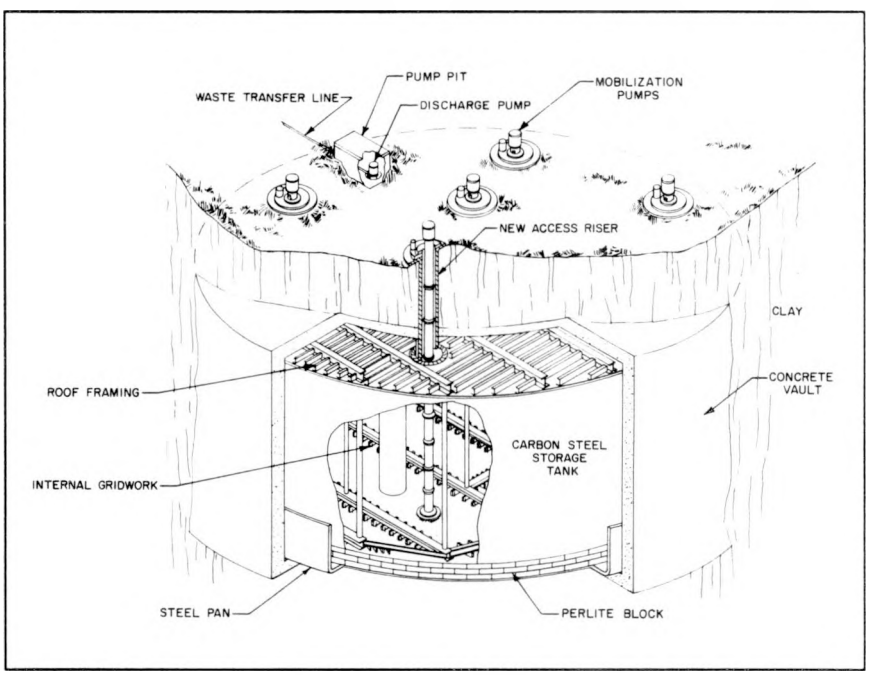
During early Project planning, it was determined that the technology base for waste solidification was available through existing DOE programs. The best "demonstration" at West Valley, therefore, would be the expeditious adaptation of this existing technology. The Project would make the maximum feasible use of on-site facilities, minimizing new construction and demonstrating the feasibility of re-using the former nuclear fuel reprocessing facilities.

The West Valley Demonstration Project is being conducted in two phases. Phase I, currently under way, includes processing the liquid high-level waste into cement, solidification of the high-level waste sludge, development of the glass containers, and decontamination of existing facilities required to support the



The waste consists of a sludge on the bottom of the tank and a supernatant liquid over the sludge. About half the radioactivity is in the sludge, about half in the supernatant. The supernatant is being treated to remove most of the radioactivity. Decontaminated solution from this treatment is immobilized in cement and placed in storage. The radioactivity removed from the supernatant will be mixed with the sludge and glass-forming chemicals to be made into borosilicate glass in the Vitrification Facility.

solidification activities. Phase II includes activities associated with transport of high-level waste canisters to a federal site, disposal of Project low-level waste and transuranic waste, and decontamination and decommissioning of facilities used in the solidification process (final Project closure). To provide a logical, smooth transition to Phase II, activities related to Environmental Impact Statement preparation, site characterization and initial Phase II strategic planning documentation have begun in Phase I.



When the Department of Energy assumed control of the site in 1982, approximately 2 million litres (560,000 gallons) of liquid high-level nuclear waste were stored in an underground tank.

Most of the volume of liquid high-level waste stored in an underground steel tank (tank 8D-2) at West Valley is a supernatant liquid. Half of the radioactivity, which was approximately 35 million curies at the start of waste processing in 1988, is contained in the supernatant and the other half is contained in the sludge located at the bottom of the tank. The supernatant is comprised primarily of sodium and potassium salts; dissolved radioactive cesium makes up greater than 99 percent of the total activity of fission products in the supernatant. Most of the radioactivity in the sludge is due to the decay of strontium. The largest chemical constituent in the sludge is iron hydroxide.

The Integrated Radwaste Treatment System processes the liquid high-level waste, removing most of the radioactive constituents by ion exchange. This system will remove approximately 90 percent of the initial volume of liquid waste.

The Integrated Radwaste Treatment System is made up of four subsystems: the Supernatant Treatment System; Liquid Waste Treatment System; Cement Solidification System; and Drum Cell. In the Supernatant Treatment System, four ion exchange columns filled with zeolite remove more than 99.9 percent of the radioactive cesium from the supernatant. The liquid salt solution remaining from this system is then volume reduced by evaporation and concentrated in the Liquid Waste Treatment System, encapsulated into cement at the Cement Solidification System and stored in the Drum Cell. The Drum Cell is a large shielded structure designed to store 15,000, 268-litre (71-gallon) drums of cement from the Cement Solidification System.

After the Drum Cell is filled, the stored low-level waste may be removed for disposal or the building may be dismantled and the shielded structure converted into an aboveground tumulus for final disposal. A decision on final disposal of low-level waste will be part of the Environmental Impact Statement for the post solidification phase (Phase II) of the Project.

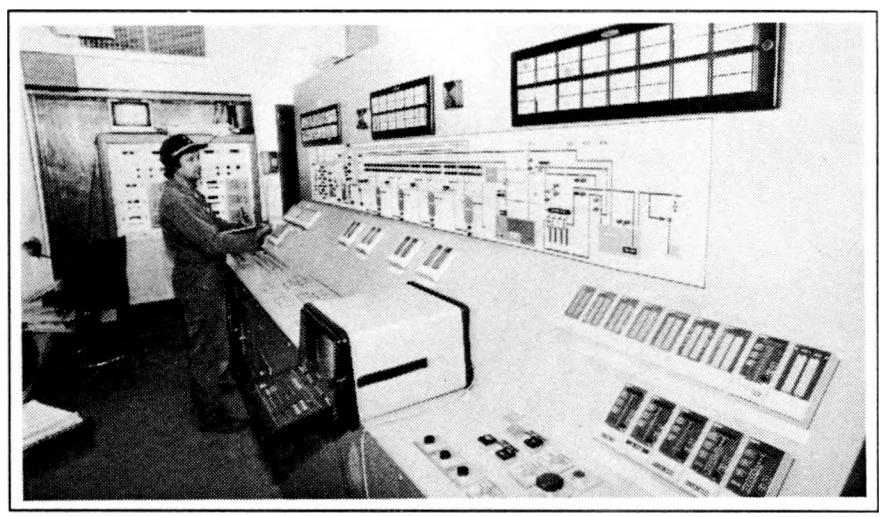
The Integrated Radwaste Treatment System began operating in May 1988. By the end of September 1989, more than 757,000 litres (200,000 gallons) of supernatant were decontaminated and over 5200, 268-litre (71-gallon) drums of low-level cement waste were produced for temporary storage in the Drum Cell. The cement product from the Integrated Radwaste Treatment System has been reviewed and endorsed by the Nuclear Regulatory Commission, providing one demonstration of the Project's capability to manage high-level radioactive waste in a sound manner.

Beginning in Fiscal Year 1994, the West Valley Demonstration Project will begin vitrification of the high-level waste sludge from the bottom of the supernatant tank, which will be combined with the cesium-loaded zeolite and additional waste from tank 8D-4. Key activities completed for the vitrification program are outlined in this report.

The 1990 Annual Report for the West Valley Demonstration Project provides highlights of accomplishments at the Project during fiscal year 1989--October 1988 through September 1989. A brief review of planned accomplishments for Fiscal Years 1990 and 1991 also is provided, along with Department of Energy milestones the Project anticipates accomplishing during those fiscal years.

Fiscal Year 1989 Accomplishments

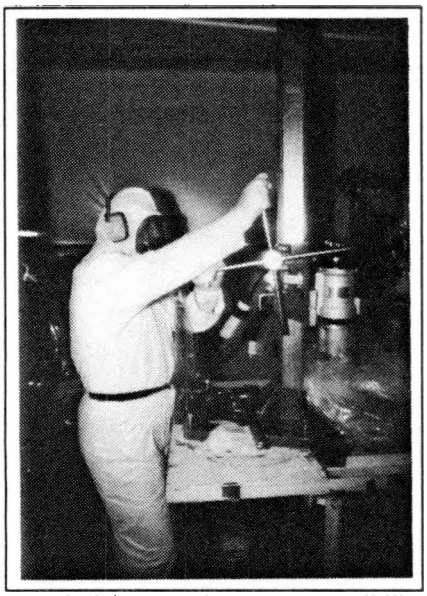
Integrated Radwaste Treatment System



Treatment of supernatant in the Integrated Radwaste Treatment System began in May 1988. Through September 1989, 205,491 gallons of liquid high-level waste had been decontaminated and 5269 drums of cemented low-level waste produced.

Significant achievements were made with the Integrated Radwaste Treatment System in Fiscal Year 1989. By the end of September 1989, a cumulative total of 778,000 litres (205,491 gallons) of supernatant was decontaminated and 5269 268-litre (71-gallon) drums of low-level cement waste were produced for storage in the Drum Cell. Tank 8D-2 waste was diluted to maximize zeolite efficiency and usage in the Supernatant Treatment System.

Three drums of cemented waste from the Integrated Radwaste Treatment System were core drilled for compressive-strength testing. All 14 samples taken demonstrated strengths that were much better than expected by the Project and the Nuclear Regulatory Commission. Of the 5269 drums processed through September 1989, only four drums did not meet required process



A technician conducts compressibility tests on a sample of low-level waste cement product. The Class C cement waste form has been reviewed and endorsed by the Nuclear Regulatory Commission.

control plan specifications. This represents a product acceptance rate of 99.92 percent. Tests that will provide additional data to justify acceptance of the suspect drums are underway.

In addition to producing a waste form that has been endorsed by the Nuclear Regulatory Commission, the decontamination achieved in the Supernatant Treatment System was such that the concentration of radionuclides in the liquid waste was reduced, as of last year, to a level below the minimum performance goal of 1/1000 of the initial concentration. The Cement Solidification System supported the supernatant treatment operations and produced cement-filled drums with a range of 5 to 90 millirem per hour (mr/hr) of surface radiation, better than the design limit of 700 mr/hr.

The system for treating the supernatant is located in an underground tank adjacent to tank 8D-2. Corrosion coupons installed in tank 8D-1 in December 1988 to determine the conditions of the tank were removed in September 1989. While no extensive corrosion is expected, the coupons will serve to monitor the tank integrity during Integrated Radwaste Treatment System operations and beyond. The Project's on-site laboratory will decontaminate the coupons and perform analyses to determine the amount of corrosion that has occurred in the tank. Four corrosion tests performed under simulated tank service conditions were completed by Pacific Northwest Laboratories, a Project subcontractor, in September 1989. A preliminary, visual examination of the coupons was completed and no indications of stress corrosion cracking were found.

Environmental Health and Safety

Public and worker health and safety are important aspects of operations at the West Valley Demonstration Project. The Project's Environmental Monitoring Program is an integral part of operations because it provides one way to ensure that maximum health and safety measures are being maintained.

In 1988, 2681 samples of air, surface water, groundwater, plants and animals, and direct radiation collected at and around the Project were analyzed for more than 13,000 parameters. The maximum predicted doses to individuals from air and water discharges were a fraction of one millirem. The established annual DOE radiation limit, in contrast, is 25 millirem for airborne releases and 100 millirem for all pathways, including dairy, meat and fish.

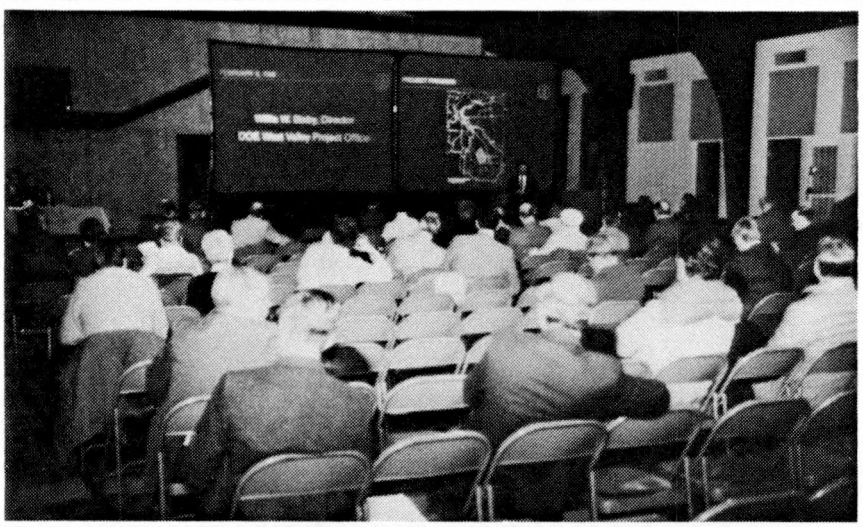
A variety of samples were shared with New York State's Departments of Environmental Conservation and Health, as well as the Nuclear Regulatory Commission to verify the consistent results obtained by the Project.

An Environmental Compliance department, established at the Project to provide a central coordination point for compliance activities, provides added assurance that all Project operations and activities continue to be conducted in compliance with applicable local, state and federal regulations, procedures and directives. This group is working to accelerate implementation of the Project's Resource Conservation and Recovery Act (RCRA) hazardous and mixed waste generator program. A pattern has been established for regular meetings with the regional Environmental Protection Agency office and appropriate State offices to discuss regulatory matters. In particular, the Department is holding discussions with the New York State Department of Environmental Conservation and the U. S. Environmental Protection Agency on mixed waste compliance issues at the Project. This may lead to a Federal Facilities Compliance Agreement.

Nearly 7000 man-hours of hazardous materials training were completed during the fiscal year in the areas of worker Right-to-Know, emergency spill response, hazardous waste operations, hazardous materials transportation, handling of hazardous waste, and chemical safety and hazardous material for on-site transport personnel.

A significant accomplishment of the Project was the publication in December in the Federal Register of a Notice of Intent to prepare a joint federal/state Environmental Impact Statement. The EIS is to provide environmental information for consideration in federal and state decision-making related to West Valley

Demonstration Project completion activities by the Department, and state decision-making on closure of the Western New York Nuclear Service Center by NYSERDA. The scope of the Environmental Impact Statement includes potential impacts to the general public, on-site workers and the environment; waste disposal both on-site and off-site; concentration limits for transuranic waste disposal; characterization of waste previously disposed on site; transportation to interim storage facilities or



The Project conducted two formal public scoping meetings as a first step in preparing the Phase II Environmental Impact Statement. Nearly 100 residents neighboring the Project site attended the meetings.

final repositories; decontamination and decommissioning of facilities; and post-closure maintenance and monitoring. A draft implementation plan for preparation of the Environmental Impact Statement was also completed in Fiscal Year 1989. The plan provides a record of the scoping process and the resulting Statement scope, the proposed action to be addressed in the Environmental Impact Statement and the alternatives to that action, and other important issues to be evaluated. A joint agreement between the Department and NYSERDA on execution of the Environmental Impact Statement will soon be presented to the sponsors for approval.

In conjunction with the Environmental Impact Statement and in compliance with the National Environmental Policy Act for Phase II of the process, two formal public scoping meetings were held in February 1989. The meetings provided an opportunity for the general public to provide comments and suggestions on

preparation of the Statement. Nearly 100 community residents neighboring the Project site attended the meetings.

A formal hazardous waste management program has been established. Three shipments of hazardous material were removed from the site during Fiscal Year 1989 by a licensed hazardous waste transporter. Recyclable hazardous materials such as lead, mercury and mercury compounds, lead storage batteries and waste oils were shipped off site in accordance with applicable regulatory requirements. (The Department conducted several assessments of waste management practices and the Federal Bureau of Investigation began an investigation of alleged criminal violations of federal environmental laws at the site. These are discussed on page 21 under "Project Assessments.")

Field activities were initiated and completed in the Nuclear Regulatory Commission Licensed Disposal Area to characterize the area where slightly radioactive kerosene was found last year during routine environmental sampling. The characterization program involved digging trenches, installing wells, and locating tanks in which the solvent had been disposed previously by Nuclear Fuel Services. At the end of the fiscal year, the Project staff was compiling field data and preparing a report on the program.

The first full-scale site evacuation exercise was conducted in an orderly and timely manner. Federal, state and local agencies were notified of the exercise; some agencies also participated. Within seven minutes after declaration of the site evacuation, 350 employees were evacuated to the site parking lot; accountability at the central evacuation point was completed in 50 minutes.

It is the policy of the West Valley Demonstration Project to maintain radiation doses to personnel and the public below regulatory limits and "As Low As Reasonably Achievable." The Project continued to have excellent performance in the area of radiological and industrial safety during Fiscal Year 1989. The collective radiation exposure through September 1989 was 12 person-rem, only 42 percent of the dose expected to be received based on advanced planning for radiological and industrial activities.

Radioactive Waste Management

Shallow land disposal of Class A low-level waste at the Project was stopped in 1987 in response to an out-of-court settlement reached with two citizens groups. Under the settlement, all low-level waste must be stored on site pending a final decision regarding location and mode of disposal. In the settlement, DOE was required to begin preparation of the Environmental Impact Statement for post solidification (Phase II) of the Project.

Low-level radioactive waste at West Valley is categorized by the Nuclear Regulatory Commission into three classes--A, B and C--by radionuclide content. Class A low-level waste, the least contaminated, continues to be stored in on-site storage buildings. Additional structures are being added as required. These structures also will protect steel boxes and high-integrity containers isolating Class B/C waste from the environment during interim storage. The cemented waste going to the Drum Cell is Class C waste.

In an effort to reduce the quantity of radioactive waste material on site, more than 538 cubic metres (19,000 cubic feet) of low-level waste was reduced in volume at the Project during Fiscal Year 1989. The material--old equipment and piping removed from main plant cells used by Nuclear Fuel Services--was packaged and placed in on-site waste buildings, specifically designed for the material, for temporary storage.

The Project completed an implementation plan which establishes the requirements for managing radioactive, mixed and hazardous wastes. The plan includes actions to characterize waste and to minimize the amount of waste generated.

A plan was formulated and implemented to address the handling of byproduct solid wastes from the Low-level Waste Treatment Facility, which is designed to treat wastes resulting from on-site operations. In support of the actions outlined in the plan, a drum inspection and remediation program was implemented; sampling plans were completed for unprocessed and processed waste streams; sludge, resin and free liquid samples were obtained from facility operations and analyzed; solidification recipes for facility materials were developed at the on-site analytical laboratory; and bench-scale solidification tests using sludge from the facility and

Portland cement were conducted for a 10-drum demonstration effort scheduled for early Fiscal Year 1990.

Site Operations

The Project issued a set of qualification standards for on-site maintenance mechanics in compliance with DOE orders. The standards, developed at West Valley, are being implemented to ensure that proper training opportunities are provided for maintenance personnel. Training to meet the standards began during the fiscal year. Similar standards are also being developed for on-site electricians, and instrument and control technicians; these will be implemented in Fiscal Year 1990.

A Long-Term Utility Upgrade program was established to ensure that systems and equipment used in support of the Project are maintained or upgraded as necessary. Plant maintenance and occasional upgrading are required since the main site facilities were constructed in the mid-1960s. Some of the upgrades made in Fiscal Year 1989 were: replacement of the boiler control system; installation of a new process analytical laboratory; instrumentation to control effluent to state regulatory permit requirements; new sludge tanks, surge tanks and an analytical lab for the Sewage Treatment Plant; and implementation of energy conservation projects such as a reduction in the use of natural gas. Several fire protection system upgrades also were made.

A task force is being developed to assess the main plant's ventilation system, which still contains radioactivity from prior reprocessing activities. The task force will review the suitability of continued service of these systems through the end of Phase II of the Project. The group will make recommendations for necessary repairs, equipment replacements, decontamination programs, changes in system balance or operation, and possibly major system reconstruction.

The on-site Fuel Receiving and Storage pool contains 125 spent fuel assemblies awaiting shipment to Idaho National Engineering Laboratory as part of a demonstration under the Nuclear Waste Policy Act. The casks planned for transporting the assemblies are awaiting certification by the Nuclear Regulatory Commission.

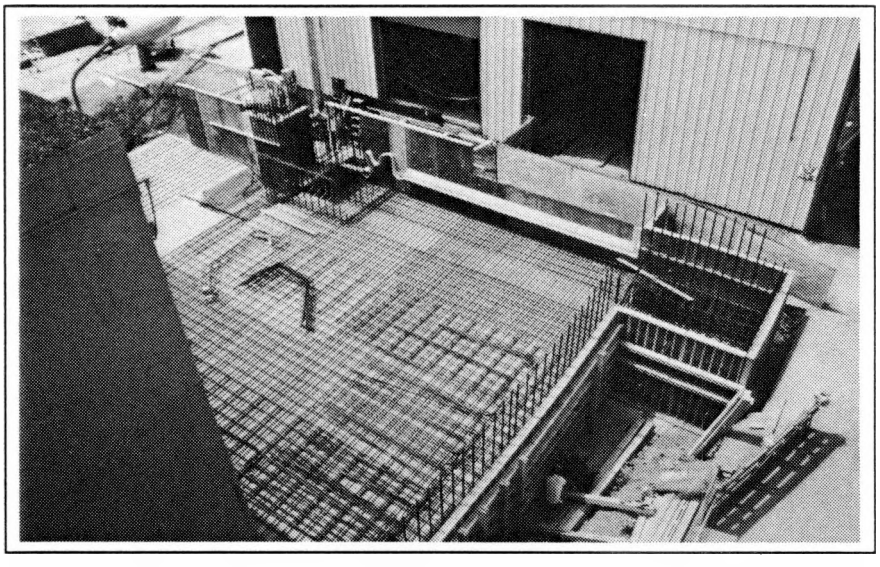
High-level Waste Management

Design of the Vitrification Facility, a major Project milestone, was completed. This design, which includes a total of 1345 drawings, completes the civil, mechanical and electrical portions of the building.

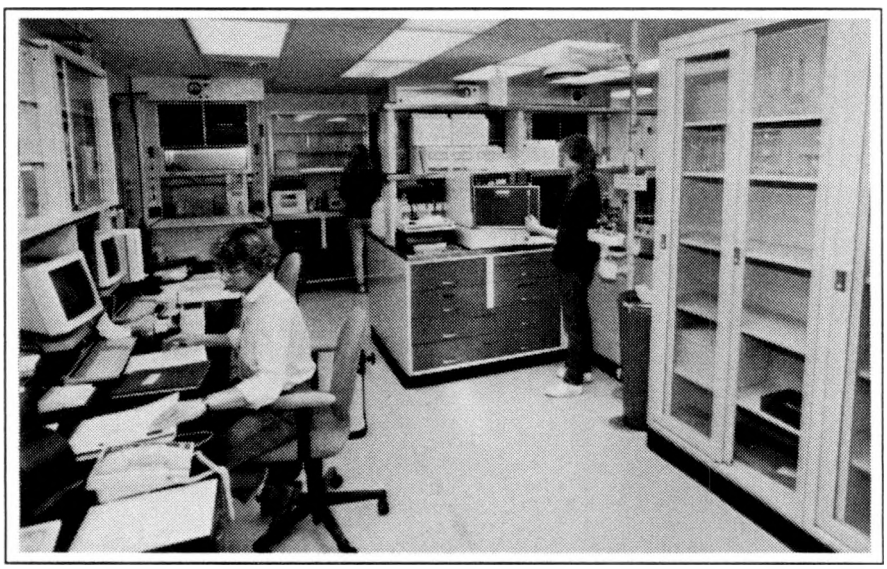
A major contract was awarded to erect the wall modules which will shield the melter and equipment during radioactive operations. For convenience of assembly and subsequent removal, the shield walls are being prepared in modular form. Two such modules already have been completed off-site, and the remaining 5 are expected to be completed by December 1989.

Two Vitrification Facility cranes, intended to support the construction and process testing now and material handling later during radioactive operations in the cell, were installed.

Two meetings of the Technical Review Group were held. The group, which consists of top technical experts from all similar high-level waste vitrification projects in the United States, France, and the Federal Republic of Germany, meets at the Project semi-annually to review the vitrification program.



This picture, taken from the top of the Vitrification Facility, shows an early stage of construction for the tunnel through which the borosilicate glass canisters will move from the Vitrification Facility to interim storage in the existing former main reprocessing cell.



The Vitrification Facility radiochemistry laboratory, completed this year, allows efficient on-site analysis of radioactive samples of waste feed and borosilicate glass product.

The civil/structural contract for the Vitrification Facility was awarded. This construction contract includes the vitrification structural cell, secondary filter and crane maintenance rooms, transfer tunnel from the Vitrification Facility to the High-level Waste Interim Storage Facility and the cold chemical building. In support of this contract, Project personnel completed kerf cutting (using high-pressure water to cut through concrete) of the Equipment Decontamination Room. This will provide access to the Equipment Decontamination Room and Chemical Process Cell for glass canisters from the Vitrification Facility. Also, eight 1- by 4-metre (4- by 14-foot) concrete slabs from the scrap removal pad were removed and transported on site for storage. Removal of the pad was the first step in excavating the area located between the Vitrification Facility and Equipment Decontamination Room. Included in the construction accomplishments the Project subcontractor made by the end of Fiscal Year 1989 were: excavation of the 15- by 21-metre (50- by 70-foot) area between the Vitrification Facility and the Equipment Decontamination Room; pouring of new concrete in several floor areas of the facility and completion of the first concrete placement for the walls; and placement of conduit, rebar, piping, and embedments.

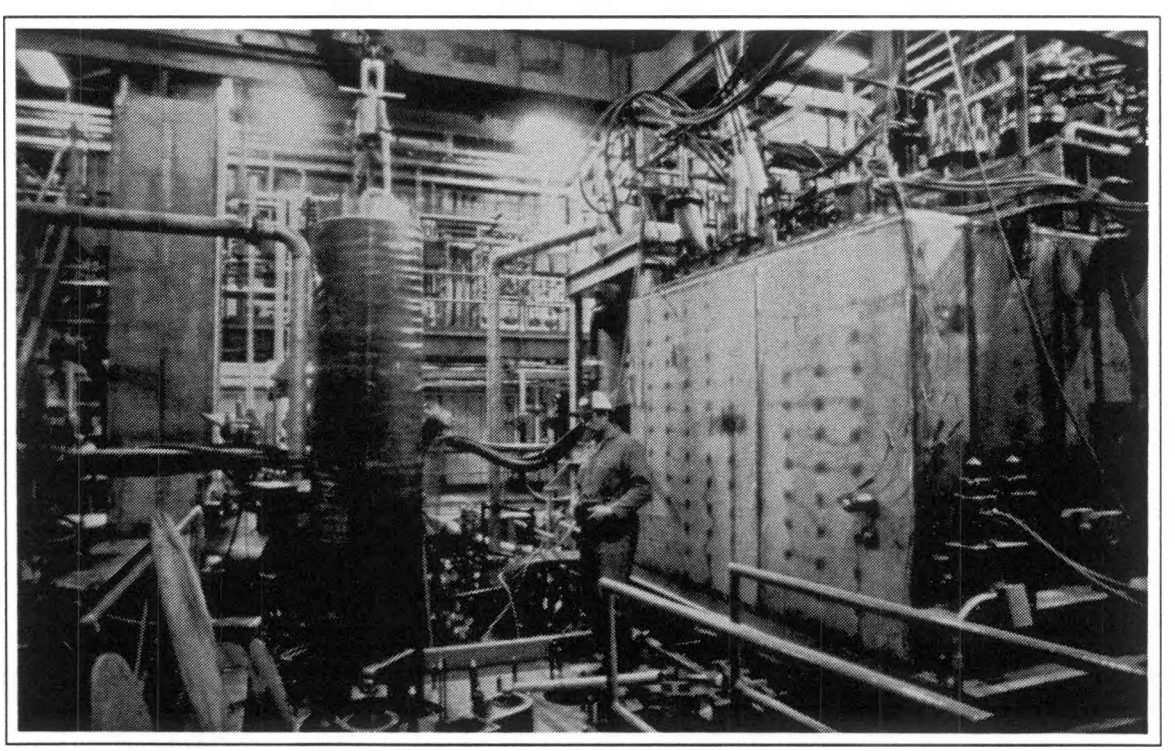
Installation of the slurry sample station for the Vitrification Facility also was completed. The station will serve as the sampling point for the slurry before it is fed into the melter. The samples,

to be tested by the Project's analytical chemistry department, will provide personnel with precise information on the makeup of the feed material.

Construction of the vitrification radiochemistry laboratory, to be used to analyze radioactive samples in support of the vitrification project, was completed. The lab is equipped with hoods, glove boxes, computer work stations, an atomic absorption instrument, total carbon analyzer and ion chromatograph. Lead sheeting was installed in the 12- by 6-metre (40- by 20-foot) facility to decrease personnel exposure to radiation. The lab will be staffed by 5 to 7 technicians; it was constructed because the former laboratory was too small for Project needs.

All three cold chemical tanks for the Vitrification Facility were delivered and installed. These tanks will contain the nonradioactive chemicals needed for the vitrification melter runs.

Five nonradioactive test runs of the Vitrification Facility were completed in Fiscal Year 1989. The system was tested for consistent performance and reliable operation, and demonstrated efficiencies of 98 to 100 percent. This test program is scheduled



High-level waste, made into glass in the Vitrification Facility, will be poured into stainless-steel canisters, one of which is shown here.

to be completed in Fiscal Year 1990.

The 9 shield doors for the Vitrification Facility were delivered. The doors, which were in various stages of installation by the end of the fiscal year, will provide radiation shielding at the transfer tunnel location, crane maintenance room, equipment decontamination room, secondary filter room, heating/ventilation control room, and the emergency diesel generator room.

Fabrication of the Vitrification Facility jumpers, which will transfer a variety of materials within the facility's in-cell system, began. A total of 219 jumpers will be made. One "first article" jumper was built, shipped and installed at the end of the fiscal year. This jumper was made to validate the design, fabrication and delivery process by allowing Project personnel to track and make modifications to the process when necessary. This procedure will ensure the correct manufacture and delivery of all remaining jumpers.

Project personnel extracted four samples of sludge material from different locations of the bottom of tank 8D-2, which contains the high-level liquid waste. The purpose of the sampling campaigns is to characterize the sludge physically, chemically and radiochemically, to verify the depths of the sludge in the tank, and to simulate the sludge wash to ensure that sulfates, which are detrimental to the vitrification process, are removed.

Taking the samples will also allow laboratory personnel to determine the number of sludge washes that will be required before feeding the material into the vitrification melter, and to qualify the cement product that will be produced from treated sludge wash waters. Nearly 900 grams of sludge were collected. The largest quantity of sludge collected from a single location was 277 grams (0.6 pounds).

The Waste Acceptance Preliminary Specifications, the requirements the Project must meet on its glass product and canister for acceptance in the federal repository, was approved during the fiscal year. The Waste Compliance Plan, which describes how the Project will meet the same specifications outlined above, was issued to the Department of Energy's Office of Civilian Radioactive Waste Management for review.

Design of the Sludge Mobilization System's mobilization operation was completed. This system will allow the sludge remaining from the Supernatant Treatment System process in tank 8D-2 to be pumped from the tank to the Vitrification Facility. A total of 80 drawings were involved in this design effort.

The Project's 6th Open House attracted nearly 1500 visitors, most of whom toured the facility. Shown here is the control room for the Cement Solidification System.

Project Management

The Phase I Project completion date is forecasted for 1995 and the Total Project Cost Estimate is at $890 million. This forecast is predicated on Fiscal Year 1991 funding levels consistent with the Department's Five-Year Environmental Restoration and Waste Management Plan issued in September 1989. The Project will be rebaselined in early Fiscal Year 1990.

The semi-annual Project Review was conducted for DOE-Idaho and NYSERDA in April. Discussions centered on Integrated Radwaste Treatment System operations, progress on vitrification design and construction, outyear funding uncertainties, radiological and environmental safety, and low-level waste management. The next Project Review is scheduled for early Fiscal Year 1990.

Briefings, tours and presentations were conducted throughout the year for national and international visitors, the news media, community, environmental and educational groups, and legislators. The Project's Sixth Open House was conducted in June. Nearly all 1,500 area residents who attended toured the facility. Surveys and comments showed that visitors were impressed with

the cleanliness of the facility, the quality of exhibits and the attitude of employees. Local television coverage of the event was positive. Six meetings were held at which local residents were advised of the status of Project activities and at which they could ask questions. During Fiscal Year 1989, 2477 domestic and 58 foreign visitors came to the West Valley Demonstration Project.

Project Assessments

Project assessments conducted in the summer of 1989 addressed environmental health and safety issues. No risks to public/worker health or the environment from Project activities were identified.

West Valley was the first DOE-operated facility to be evaluated under a new initiative announced in June by the Secretary of Energy. A Technical Safety Appraisal was combined with an environmental and a management assessment into the first DOE "Tiger Team" assessment. A National Environmental Policy Act compliance review was also conducted as an integral part of the broad environmental assessment. The Team found no indications of releases to the environment or potential impacts to public health and safety.

A formal Tiger Team report identified 47 findings, 15 of which represented actual or potential noncompliance with DOE orders and regulations. In conjunction, 60 Technical Safety Appraisal concerns were identified, all of which can be addressed within the framework of daily operations. A Task Force of Project personnel was established to determine the root causes of noncompliance items found by the DOE Tiger Team. An Action Plan to correct the causes, approved by the Secretary of Energy, is being implemented.

Six Federal Bureau of Investigation agents visited the West Valley Demonstration Project in July 1989 to investigate allegations of criminal violations of federal environmental laws. The Federal Bureau of Investigation and the Department of Justice stated that the allegations being investigated posed no threat to public health and safety. At the end of December, the investigation was continuing.

Fiscal Year 1990 Planned Accomplishments

Integrated Radwaste Treatment System

Processing of high-level waste from tank 8D-2 will continue during all of Fiscal Year 1990. The goal is to process, by the end of the year, a cumulative total of 406,110 gallons of supernatant (73 percent of the original 560,000 gallons). The resulting low-level waste will be solidified in cement. A cumulative total of about 10,000 drums will be completed by the end of the fiscal year. The wastes will continue to be stored in the Drum Cell.

Environmental Health and Safety

The Project will continue to meet the requirements of the applicable DOE orders and federal and state regulations. Environmental documents will be prepared as needed to support this goal. Specific continuing activities include implementation of the environmental and effluent monitoring program; preparation of all safety analysis and environmental reports; preparation of all permit requests, permit reports, and regulatory compliance activities; support of the emergency preparedness and response program; preparation of monthly, quarterly, annual and special safety and environmental reports; reviews; critiques; and analyses.

Other activities scheduled for Fiscal Year 1990 include development of a Waste Determination Plan and Waste Minimization Plan, procurement and installation of new storage buildings for hazardous materials, modification of the on-site warehouse to provide a shipout area for waste materials, and the drilling of 62 new monitoring and sampling wells to verify compliance with RCRA requirements for groundwater.

The West Valley Demonstration Project will maintain a transuranic waste certification program in accordance with DOE hazardous and mixed waste management requirements. Also, the Project will monitor and maintain the existing Low-level Waste Treatment Facility, Nuclear Regulatory Commission Licensed Disposal Area, and lagoon pumping and processing according to DOE requirements.

Industrial health and safety programs will continue to be developed and implemented to support the DOE-approved environmental safety and health plan. All plans and procedures will be approved to assure that adequate protection is maintained with respect to radiation, contamination control, and nuclear and industrial safety. Environmental monitoring assessments will be made, personnel dosimetry maintained, and required emergency drills will be performed.

Radioactive Waste Management

Radioactive operations of the Contact Size Reduction Facility and waste compactors will continue. Repackaging of existing contact-handled transuranic wastes that do not meet waste acceptance criteria will be initiated. Contact-handled transuranic wastes will be packaged as they are removed from the plant.

Off-site shipment of 2406 cubic metres (85,000 cubic feet) of low-level waste will be pursued. Low-level waste volume reduction in amounts of 71 cubic metres (2500 feet) per month is planned.

Site Operations

The existing facilities to be utilized in the Project will continue to be operated safely and upgraded as needed. Planned facility and site utility upgrades for Fiscal Year 1990 are: installation of a new diesel generator, continuation of testing and inspection of electrical systems, site erosion control, replacement of instrumentation in the Low-level Waste Treatment Facility, and an increase of cooling water supply for the Vitrification Facility.

The Physical Security and Safeguards Program for the Project will continue to provide protection of the site perimeter, waste

disposal areas, and all other project property and premises inclusive of the entire 3345-acre site.

High-level Waste

Procurements for the Vitrification Facility will include a new melter, off-gas system, high-level waste canister transfer system, storage racks, decontamination station, and systems that will allow viewing of the remote operations in the cell. Procurements for equipment outside the shielded cell will include coolers, sample cell and instrument racks.

The Vitrification Facility's walls will be completed, shield doors installed, the first of several wall modules installed, and the cold chemical building (for storage of nonradioactive chemicals required for the vitrification process feed) completed.

Procurement of sludge wash equipment will be completed in Fiscal Year 1990. Installation of sludge washing equipment is scheduled to be ready for sludge washing operations in Fiscal Year 1991.

Construction of pits and trenches for the Vitrification Facility will begin in late Fiscal Year 1990; delivery of transfer pumps will be complete by the end of the year. Contracts for installation of high-level waste and utility piping will be awarded in anticipation of work starting in early Fiscal Year 1991.

The Vitrification Facility's nonradioactive testing program will be completed. The data produced will be part of the Waste Qualification Report.

Project Management

The maintenance and coordination of top-level Project policies and procedures, along with implementation of DOE directives will continue. The Public Information program will include continued contact with the media and community groups through meetings, tours and presentations, continuation of speakers bureau training, production of an annual accomplishments videotape and organization of an open house program for the general public. Project Quality Assurance will continue to con-

duct comprehensive audits, the administration and operations of analytical chemistry services will also continue, and the "As Low as Reasonably Achievable" program to minimize exposure of Project workers to radiation will be maintained.

Fiscal Year 1991 Planned Accomplishments

The focus of WVDP activities in Fiscal Year 1991 will be the completion of the liquid high-level waste processing and initiation of sludge washing.

Installation and testing of sludge wash equipment will be conducted as liquid high-level waste processing is completed. Processing of supernatant liquid from tank 8D-2 will be completed in March 1991. Washing of tank 8D-2 sludge will begin in April 1991 and the liquid resulting from this process will be treated.

The Safety Analysis Report modules for sludge washing, vitrification and the High-Level Waste Interim Storage Facility will be completed. The initial draft of the Waste Qualification Report, one part of the formal process for approval by the Department to begin vitrification radioactive operations, is scheduled for issuance to the DOE and Nuclear Regulatory Commission by September 1991.

Many of the Project's programs will continue to support these objectives. For example, environmental documentation will be provided in compliance with any new DOE and federal or state regulatory requirements. Environmental effluent monitoring will continue and the Environmental Health and Safety program will be responsive to changes in regulations for hazardous and mixed waste disposal, industrial safety, and radiological programs.

As in Fiscal Year 1990, reduction of the volume of Project-generated low-level waste will continue to be a priority. Monitoring of the groundwater wells will continue. As needed, new equipment will be purchased to ensure that the Project is operating efficiently and reliably through its completion. Programs that are necessary for the daily administration of the Project will be maintained and upgraded as necessary, such as the Project Management Control System, public information program, and quality assurance program.

APPENDIX A
SIGNIFICANT PROJECT MILESTONES

Fiscal Year 1989	Actual Completion Date
Begin Phase II NEPA process with Notice of Intent in Federal Register	December 1988
Submit final post solidification Decontamination and Decommissioning report	February 1989
Complete melter run SF-10C	May 1989

Fiscal Year 1990	Forecasted Completion Date
Start construction and checkout of sludge/zeolite/THOREX transfer facilities	October 1989
Complete full-scale Vitrification Facility cold testing	November 1989
Complete SF-12 full-scale melter run	November 1989
Submit Phase II EIS implementation plan to DOE-HQ for approval	December 1989
Develop draft strategic plan for the post solidification phase of the Project	March 1990
Process cumulative 9226 drums through the Integrated Radwaste Treatment System	July 1990
File RCRA Part A for mixed waste with NYSDEC	August 1990

Fiscal Year 1991	Forecasted Completion Date
Complete supernatant processing	March 1991
Begin sludge washing	April 1991
Issue initial Waste Qualification Report (WQR) to DOE/NRC for approval of vitrification hot operations	September 1991

APPENDIX B
PROJECT BUDGET SUMMARY

(Dollars in Thousands)

	Budget Authority by Fiscal Years		
	Actual Prior Years	BA 1989	Estimate BA 1990
Department of Energy Contribution			
HLW Solidification	$ 89,090	$ 35,110	$ 42,670
Decontamination and Decommissioning	18,450	0	0
Site Operations	62,610	12,040	14,920
Program Management	50,820	11,190	12,510
Low-level Waste and Transuranic Waste	82,510	8,160	17,260
Total DOE	$ 303,480	$ 66,500	$ 87,360
New York State Energy Research and Development Authority Contribution:			
Direct Cash	$ 12,980	$ 6,400	$ 8,600
Credits			
• Authority Services	4,820	600	600
• Facility Credit	15,130	0	0
• General and Administrative	790	380	507
Total NYSERDA	$ 33,720	$ 7,380	$ 9,707
Total Project Funding:	$ 337,200	$ 73,880	$ 97,067

APPENDIX C
ACRONYMS

Department of Energy.....DOE
Environmental Impact Statement.....EIS
High-level Waste.....HLW
Low-level Waste.....LLW
National Environmental Policy Act.....NEPA
New York State Department of Environmental Conservation.....NYSDEC
New York State Energy Research
& Development Authority.....NYSERDA
Nuclear Regulatory Commission.....NRC
Resource Conservation and Recovery Act.....RCRA
Western New York Nuclear Service Center.....WNYNSC
West Valley Demonstration Project.....WVDP