

Chornobyl Report

A biweekly update of Chornobyl support activities

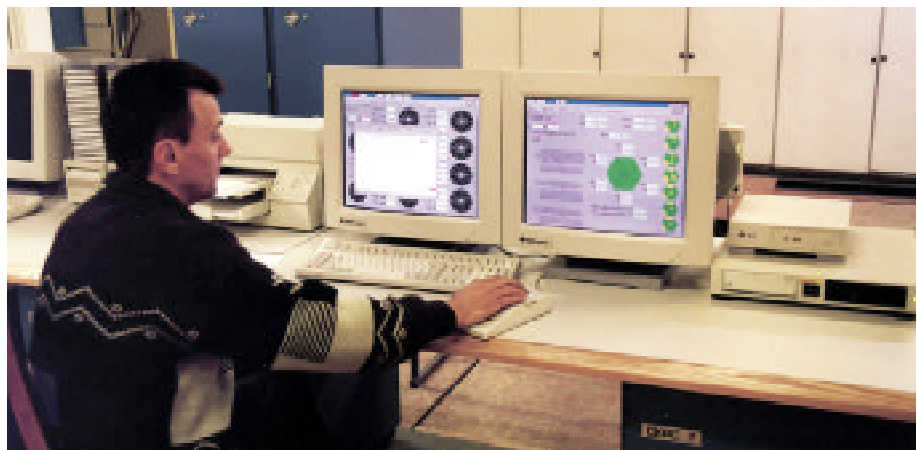
Radiation dose reduction equipment received

Ukrainian Customs officials released some equipment in March including air-monitoring equipment and dosimetry systems. The equipment is part of a project to address immediate health and safety risks at the Chornobyl Shelter and was provided by the United States to track and reduce radiation exposure to Shelter workers. The shipment also included STREAM software, developed by Delphinus Engineering. The United States supplied the software to track worker exposure to radiation and plan work at the site so that the level of radiation exposure to each worker is managed appropriately over time.

On-site training in the calibration and use of dose-reduction equipment and methods is scheduled for April through August 1999. The final activity to be completed in the dose reduction task is to upgrade the whole-body counter in Slavutyach. This represents the last remaining task for the shelter worker safety improvement project, scheduled for completion in September 1999.

Chornobyl Safety Parameter Display System accepted

The safety parameter display system for Chornobyl Unit 3 successfully passed site acceptance tests on January 27. Unit 3 operators began a trial use period after the reactor was restarted following the recent maintenance outage. According to the Ministry of Environmental Protection and Nuclear Safety of Ukraine, restart of Chornobyl Unit 3, under repairs since December 15, was postponed until early March due to the need to complete an increased scope of work.



The safety parameter display system for Chornobyl Unit 3 recently passed site acceptance tests. The work stations are similar to those pictured here at South Ukraine NPP. (Photo courtesy of Energoatom.)



Industrial safety task completed

Plant workers installed the prototype safety parameter display system for plants with RBMK reactors at Russia's Kursk Unit 2 in May 1997. Parsons Power Group, Inc., is the principal contractor for all safety parameter display system projects at participating plants with RBMKs. The U.S. equipment supplier and principal design organization is Westinghouse Electric Company. The Russian organization NIKIET designed the system displays, purchased the alternating-current power supply system, and developed the system-specific software. WESTRON, a Ukrainian organization, was responsible for assembly of the system. Workers at Chornobyl NPP contributed much of the installation equipment and were responsible for the physical installation of the system.

The release of industrial safety equipment from Customs led to the completion and closeout of the industrial safety task in March. The equipment will protect workers at the Chornobyl Shelter and includes hearing protection, first aid equipment, gas bottle carts, welding gloves and curtains, hard hats, a cardiopulmonary resuscitation training mannequin, fall-protection devices, a rebar locator, portable electrical generators, air compressors and jack hammers, ladders and scaffolding, and concrete drilling and sawing equipment.

The United States also provided radiation-hardened video remote surveillance cameras, recorders and video-processing equipment, portable radios, photo processing and printing equipment, and scanning/digitizing software. The United States also delivered instruments for monitoring air quality, temperature and humidity, and wind speed/direction; a Jaws-of-Life rescue device; and other equipment for emergency rescue, treatment, and training, including a full complement of emergency rescue coveralls, harnesses, lanyards, and emergency cabinets and major emergency medical kits.

Unexplained sources of high neutron count rates at the Chornobyl Shelter have perplexed workers for years. Existing monitoring equipment at the Shelter had been inadequate to determine the cause of high neutron count rates that were observed on several occasions.



Researchers at the U.S. Department of Energy's Pacific Northwest National Laboratory developed and provided a prototype neutron monitoring system that was installed in the shelter in December 1998. The new monitoring system consists of eight detector modules, power supplies, and a computerized control and data acquisition system. With U.S. technical support, personnel from the Shelter and Ukrainian scientific organizations have checked out and now are using the new monitoring system. The project was closed out officially in March.

Criticality monitoring task completed

The Chernobyl Shelter's peripheral areas, such as access ways and staging areas, contain radioactive dust and other airborne contaminants. Suppressing dust in these areas is critical in reducing worker exposure to contaminants.

Dust suppression task completed

In late 1998, the United States supplied equipment to help in that effort. Three airless sprayers were provided to periodically apply fixatives and decontamination solutions to frequently occupied areas of the Shelter. Pumps rather than air compressors activate airless sprayers.

Two types of high-efficiency filtered vacuum cleaners capable of absorbing particulates also were provided. The vacuum cleaner shipment included two Nilfisk vacuums and the more complex CavityPlus vacuum, which uses water vapor to clean surfaces as it vacuums.

Fire safety equipment received

On February 4, the Ukrainian organization Niko, with U.S. support, provided Chernobyl NPP with fire-fighting equipment, including 400 fire extinguishers and 100 fire hoses and nozzles.



Updated fire-fighting suits, like the ones pictured above, were part of a shipment of fire and safety equipment delivered to Chernobyl NPP.

A safety review performed by the World Association of Nuclear Operators (WANO) in 1997 identified a number of safety deficiencies at Chernobyl NPP, related particularly to fire safety. The U.S. team already was helping Ukraine address many of the identified deficiencies.

In August 1998, the team visited the plant to determine what additional fire safety measures could be taken to correct the WANO-identified deficiencies.



***Strategic planning
underway for
International Chernobyl
Center***

***Team completes
technology scanning
and assessment
training***

In addition to the fire extinguishers, the United States is helping provide radios and transmitter for the fire brigade, self-contained breathing apparatus equipment, an air compressor for recharging the breathing apparatus, material for roof repair in critical areas, and equipment to identify electrical faults that could lead to fires.

The Pacific Northwest National Laboratory and Westlakes representatives to the International Chernobyl Center (ICC) Council of Members' Working Committee are collaborating to prepare the draft ICC strategic plan. The plan will address ICC organization, capabilities, and infrastructure, and marketing those capabilities within Ukraine and internationally. The plan also will help demonstrate the institutional viability of the ICC to clients, partners, and international funding agencies. The working committee will convene in Slavutyeh in mid-April to review the draft with other working committee members and prepare it for distribution to the steering committee.

Three Ukrainian specialists spent the month of March training with U.S. team members on a system for identifying and evaluating nuclear-related technologies for application at nuclear facilities. The system, called technology scanning and assessment (TSA), is used for making decisions about which technologies are best suited to addressing specific needs. The Ukrainian specialists are preparing to offer such services to nuclear power plants and other organizations in Ukraine and internationally.

The specialists from the International Chernobyl Center (ICC), representing both the Slavutyeh and Kyiv offices, participated in initial training in TSA methodology in October 1998. In March, the three specialists traveled to Seattle and Richland, Washington, to apply the TSA methodology to their selected technology: radiological characterization and surveying for Chernobyl NPP decommissioning.

They reviewed regulations and processes used in the United States and elsewhere and combined that information with a study of the available techniques and instruments used in such surveys. On March 30, they presented the results of their work, "A Recommended Radiological Survey Approach for the ChNPP to Consider Prior to Decommissioning — An Evaluation of Regulations, Methods, and Instruments," to a U.S. audience of professional peers at Pacific Northwest National Laboratory in Richland.

The United States is supporting development of TSA capability at the ICC to enhance the center's proficiency in strategic decision making for business development and to enable center professionals to provide TSA services to other organizations, particularly Energoatom.

***Chornobyl Unit 1 shutdown
program approved***

The Government of Ukraine approved the shutdown program for Chornobyl NPP Unit 1 in November 1998. In December 1998, the Ukraine Nuclear Regulatory Administration issued a license for the shutdown and deactivation of Unit 1. Defueling of Unit 1 began in January, and 105 spent fuel assemblies had been removed from the reactor building by the end of March. Defueling is to be completed in 2004.

Westinghouse PMU update

Phase II of the tendering process for the new spent fuel storage facility at Chornobyl NPP is nearly complete. Proposals from all bidders were received by the closing date of February 19. Award of the contract to construct the new facility is expected by mid-April. The winning contractor will have 130 weeks from contract award date to complete

Phase I construction, which includes a spent fuel processing facility and storage for 2,500 spent fuel assemblies. The contractor will have 195 weeks from contract award date to complete construction of Phase II of the facility. This corresponds to September 28, 2001, for Phase I and December 26, 2002, for Phase II. However, a couple of important issues remain unresolved. First, no site at Chornobyl NPP has yet been approved for the new facility, although a site has been nominated. Second, Chornobyl NPP is to provide design and construction of utility interface connections to the new facility, but funding has not been identified.



Spent fuel is removed from Chornobyl Unit 1.

Phase I of the tendering process for the new liquid radwaste processing facility is nearly complete. The list of qualified bidders was to be decided by the end of March, and invitations to submit proposals extended. The contract for construction of the new facility is scheduled to be awarded by the end of June. The contractor will then have 122 weeks from contract award date to complete construction, which corresponds to December 2001.

***Renovation begins on
International Radioecology
Laboratory***

Crews working under the direction of the Chornobyl NPP have begun renovation of the building selected to house the International Radioecology Laboratory (IRL). Renovation is to be completed by the end of the year. When completed, the IRL will be equipped for research into the effects of radiation on the environment. The International Chornobyl Center (ICC) is working with Savannah River Ecology Laboratory to identify and select an IRL director. The Slavutych Laboratory and the IRL have been combined into a Slavutych Division of the ICC to allow for more direct and cost-effective management of the two facilities.



On-Site Assistance Team activities

The request for proposals for design and construction of the three new solid radwaste management facilities will be issued in mid-April. The three new facilities are a retrieval facility, a treatment facility and a disposal facility, with a capacity of 55,000 cubic meters. Bidders will be required to submit their proposals within three months. Contract award is expected by mid-November to early December, with construction of the facilities to be completed by early April 2002. Sites have been approved for all three facilities.

Comments received on the draft implementation plan for decommissioning-related activities are currently being resolved and incorporated. The final report is expected to be approved and available for distribution by the end of March.

The On-Site Assistance Team (OSAT) is providing technical assistance to Chernobyl NPP to prepare a series of documents for the Unit 1 shutdown and deactivation and for the safety analysis needed to completely defuel Unit 1. Qualified Institute is being contracted to perform the necessary criticality analysis.

The OSAT recently completed a comprehensive review of information available on the radwaste storage/disposal sites located throughout the Chernobyl NPP site and the exclusion zone. A database on waste volumes and characteristics and descriptions of storage/disposal sites, locations and constructions has been compiled. The draft database is currently being reviewed and is expected to be available for distribution by the end of May.

Subsequent to the comprehensive waste inventory, OSAT is implementing an action to relax the waste classification in Ukraine for a practicable and cost-effective waste management strategy.

Ukraine issues Unit 2 shutdown resolution

In March, the Ukraine Cabinet of Ministers formally issued a resolution to permanently shut down and decommission Chernobyl Unit 2. The resolution requires that a decommissioning program for Unit 2 be developed within the next six months. It must then be forwarded to several ministries for approval. Chernobyl Unit 2 was shut down in October 1991 because of a fire in the turbine hall.

Survey program approved

The Chernobyl Unit 1 comprehensive engineering and radiation survey program was approved in November. A total of 114 working programs are being developed to provide the specific instructions for surveying each of the individual systems at Unit 1. By the end of March, the Chernobyl NPP chief engineer had approved 66 of the working programs. In-plant survey activities are to begin in mid-April.