U. S. Department of Energy

Finding of No Significant Impact (FONSI)

INSTALLATION AND OPERATION OF THE PLANTWIDE FIRE PROTECTION SYSTEMS AND RELATED DOMESTIC DRINKING WATER SYSTEMS

SAVANNAH RIVER SITE, AIKEN, SC

AGENCY: Department of Energy

ACTION: Finding of No Significant Impact

SUMMARY: The Department of Energy (DOE) has prepared an environmental assessment (EA), DOE/EA-0476, for the proposed installation and operation of the upgraded plantwide fire protection systems and related domestic drinking water supply systems at the Savannah River Site (SRS) near Aiken, South Carolina. The proposed action is needed to ensure a safe working environment and to comply with DOE requirements for environment, safety, and health. In addition this action is needed to comply with the South Carolina Department of Health and Environmental Control's (SCDHEC) Primary Drinking Water Regulation and to make the present facilities consistent with current National Fire Protection Association (NFPA) codes and standards.

Based on the analyses in the EA, DOE has determined that the proposed action does not constitute a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act (NEPA) of 1969, 42 U. S. C. 4321 et seq. Therefore, an environmental impact statement is not required.

PUBLIC AVAILABILITY: Copies of the EA and FONSI may be obtained by writing:

Mr. Karl E. Goodwin
U. S. Department of Energy
Office of Processing and Reactor Facilities
Mail Stop DP-636
Washington, DC 20545
Phone: (301) 353-5498

For further information on the NEPA process, contact:

Ms. Carol M. Borgstrom, Director
Office of NEPA Oversight
Mail Stop EH-25
U. S. Department of Energy
Washington, DC 20585
Phone: (202) 586-4600 or (800) 472-2756

PROPOSED ACTION: The proposed action is for DOE to upgrade fire protection systems across the SRS which will correct those deficiencies identified by inspectors. The proposal includes upgrading related portions of the domestic drinking water supply systems. This action is a long-term project, expected to last at least eight years, to be implemented sequentially beginning with those areas having the greatest need.

The fire protection portion of the project would include installation of new underground fire protection water mains, the addition of fire suppression systems, life safety egress paths, fire barriers, fire detection and alarm systems, and additions to existing fire protection water supply systems.

The domestic water system replacement work, which would be performed only in the reactor areas, would include the replacement

of aging underground domestic water mains, upgrades to individual water supply systems (the addition of storage tanks, pumps, piping, and other related items), and the addition of iron removal and chemical water treatment systems. This upgrading would bring these systems into conformance with state and Federal safe drinking water requirements.

Plantwide fire protection systems development provides for the staged improvement to facilities in several SRS areas. This staged development is currently planned to begin with those elements considered to be the most needed.

The standard plantwide fire protection project fire water supply system installation at each area would consist of two fire water storage tanks, two diesel and one electric fire water supply pumps, a heated pump house, fire water supply pump suction and discharge piping, and a closed-looped outside underground piping system. The closed-loop system would typically include such items as hydrants, branch supply leads to the buildings being served and post-indicator valves strategically placed throughout the system to prevent loss of system function due to any single failure. The supply leads in the building will be connected to automatic fire suppression systems and standpipes.

The proposed domestic water system (from well discharge header) would replace the existing facilities that currently serve both the

existing fire protection systems and the domestic water supply systems in the reactor areas. At each location the installation would include a water storage tank, pumps and pumphouse, distribution piping up to existing building isolation valves, and iron removal and chemical injection to improve water quality. The existing piping will be left in the ground, in most cases, rather than be removed for disposal.

Operation of the plantwide fire protection systems and the related domestic water supply system would include testing of system equipment and training of personnel for emergency situation readiness. Normal operation of the domestic water system in the reactor areas provides the fire protection system with initial fill and with makeup due to system losses and testing. The domestic water system also provides water to reactor area buildings for personnel use. Normal operation consists of degasification, iron removal, chemical treatment to improve water quality, and storage in an elevated tank for later use. Fire system activation results in a calculated reaction based upon the method of fire suppression chosen for the particular plant process and/or location to be protected. Water is the most common agent. Dry chemical, carbon dioxide, and chemical foam are appropriate for certain applications.

ALTERNATIVES: The alternative to the proposed action is to take no action. The no action alternative is included to provide a

baseline condition from which to evaluate potential consequences of DOE taking no action to upgrade the existing plantwide fire protection systems or the domestic water supply systems in the reactor areas and subsequently not meeting DOE objectives and requirements, or being consistent with SCDHEC regulations, or NFPA standards. This would result in a failure to meet both the purpose and need of the proposed action.

ENVIRONMENTAL IMPACTS: Environmental impacts of construction and operation of the plantwide fire protection systems and the related domestic water systems in reactor areas will be insignificant. System installation and use would take place mostly within developed areas and be consistent with the existing industrial land use. No wildlife habitats or wetland areas will be significantly impacted by construction. Additionally, no threatened or endangered species or their habitats will be affected. Cultural resources at SRS are managed under the terms of a Programmatic Memorandum of Agreement (PMOA) among DOE, the South Carolina State Historic Preservation Officer and the Advisory Council on Historic Preservation. DOE will comply with the stipulations of the PMOA for all activities related to the project.

This project does not require the development of new water sources; no surface water supplies or new wells would be required. During construction, erosion and sedimentation control measures would be implemented under a project-specific erosion control plan. Initial

testing and inspection of installed systems would result in water discharges. The water will be treated to comply with SCDHEC requirements for drinking water prior to discharge. These discharges would be in accordance with the SRS National Pollutant Discharge Elimination System permit.

The project would generate about 11,060 tons of solid waste annually over the eight years of construction. Most of this waste (10,800 tons/year) falls within the category of suspect soils and would be tested to determine contamination prior to appropriate disposal on the SRS. The remainder would consist of rubble (168 tons/year), metal (87 tons/year), and domestic solid waste (4 tons/year).

Facility renovation work in radiologically controlled areas would be undertaken in accordance with SRS radiation control procedures and would result in a radiation exposure to workers that falls within established DOE limits and lower SRS administrative guidelines for occupational exposure.

During operation, no significant impact on local or regional air quality is expected from routine testing and operation of the 17 diesel fire water pumps to be installed during the course of the project. Weekly testing and periodic inspection of system equipment would result in water discharges of diesel fire water pump cooling water of about 4.4 million gallons/year to permitted

outfalls. Operational releases would also occur as a result of backwashing the domestic water system filters to existing permitted outfalls.

Suppression efforts would result in operational releases of wastewater during fire emergencies. Holding tanks, diking and other appropriate measures have been incorporated into the design, where needed, to provide for the control and management of such releases. Project design efforts considered each likely fire scenario and took that into consideration when designing the fire protection upgrades. Accidental liquid releases from the chemical storage tanks used in domestic water treatment (sodium hydroxide, sodium hypochlorite, potassium permanganate, and polyphosphate), and from diesel fuel storage tanks would be prevented from reaching the environment by curbing and diking.

Improvements to plantwide fire protection should result in a reduced risk to affected SRS workers as a result of a fire emergency. The introduction of fire detection equipment, alarm systems, fire rated barriers, upgraded emergency egress, improved fire suppression supply, and improved fire water distribution are all expected to reduce the probability of injury and any related effect upon the workforce from fire emergencies. Operation under the proposed action is expected to reduce the potential for radiological consequences from fire related accidents at SRS. Project designs and design reviews would ensure that the fire

protection systems do not adversely impact the capability of the facility to shutdown, the mitigation of a design basis accident consequence, or cause an inadvertent nuclear criticality.

DETERMINATION: Based on the information and analysis in the EA, DOE has determined that the proposed installation and operation of upgraded plantwide fire protection systems and related drinking water systems at SRS does not constitute a major Federal action significantly affecting the quality of the human environment within the meaning of NEPA. Therefore, an environmental impact statement is not required.

Issued this 31st day of December 1991.

for Paul L. Ziemer, Ph.D.
Assistant Secretary
Environment, Safety and Health