

# 1 NEED FOR RESUMPTION OF L-REACTOR OPERATIONS AND PURPOSE OF THIS ENVIRONMENTAL ASSESSMENT

The Savannah River Plant (SRP) produces defense nuclear materials, primarily plutonium and tritium, to meet the nation's requirements for nuclear weapons. Between 1953 and 1964, five production reactors (C, K, L, P, and R) produced these materials. In 1964 and 1968, R- and L-Reactors, respectively, were placed in standby status as a result of a decrease in demand.

## 1.1 NEED

The U.S. Department of Energy's (DOE) responsibilities in the defense programs area stem from the Atomic Energy Act of 1954, as amended. Included in the legislation is the Department's responsibility to develop and maintain a capability to produce all nuclear materials required for the U.S. weapons program.

In undertaking these missions, the Department of Energy works closely with the U.S. Department of Defense in planning and implementing the steps necessary to achieve the defense programs objectives. Annually, the Department of Defense and the Department of Energy jointly propose nuclear materials and weapons production schedules, long-lead procurements, and planning activities. These proposals are forwarded to the President through the National Security Council. In accordance with the Atomic Energy Act, approval of these proposals by the President constitutes the legal authority and mandate to the Department of Energy for U.S. nuclear materials and weapons production.

The Department of Energy has reviewed the options available to meet the recently established program requirements for special nuclear materials, including (1) restarting previously operated reactors at the Savannah River Plant and at the DOE Hanford Reservation near Richland, Washington; (2) constructing a new production reactor; and (3) increasing the supply by changing the operating modes and throughput in reactors that are operational now.

The previously operated reactors on the Hanford Reservation were shut down and the L- and R-Reactors at the Savannah River Plant were placed in standby status in the 1960s because of a decreasing demand for defense nuclear materials. The reactors at the Hanford Reservation and R-Reactor have not been maintained in the same standby status as L-Reactor, which is expected to be capable of restart by no later than October 1983. For example, over the past 17 years, components from R-Reactor have been removed to be used in the currently operating reactors. The reactors at the Hanford Reservation are older generation reactors and upgrading would be more difficult to accomplish. The time needed to upgrade and prepare either the Hanford reactors or the R-Reactor for operation exceeds that for L-Reactor, estimated to be more than 5 years. Therefore, these alternatives cannot meet the production needs established by the President. The costs for upgrading the reactors at Hanford and the R-Reactor would far exceed the costs for restarting L-Reactor. In a similar fashion, the construction of a new production reactor would not meet these requirements.

The Department of Energy continually assesses the potential of its currently operating facilities to increase the production of defense nuclear materials. The methods that are available to increase production would not enable these reactors to meet the material needs.

## 1.2 PURPOSE

The purpose of this environmental assessment is to analyze the potential environmental consequences of both the resumption of L-Reactor operation and the "No-Action" alternative in compliance with Section 102(2)(C) of the National Environmental Policy Act (NEPA) of 1969, as amended. This assessment will be used to determine the significance of the effects of the proposed action on the human environment.

### 1.2.1 Proposed action and alternative

The proposed action is to resume operation of L-Reactor as soon as practicable, now scheduled for October 1983. No reasonable alternative exists to increase the available supply and the current production rate of nuclear materials to meet program requirements. Therefore, the only alternative to the proposed action is "No Action." The no-action alternative would maintain the L-Reactor in a standby status. This will not satisfy the established needs for special nuclear materials.

### 1.2.2 Items considered in this assessment

This assessment describes the proposed action (Chapter 2), the affected environment (Chapter 3), and the potential environmental consequences of the resumption of L-Reactor operation (Chapter 4). In addition, it describes potential incremental effects from other SRP facilities that would occur due to the resumption of L-Reactor operation (Section 4.2) and addresses potential composite effects with nearby facilities (Section 4.4).

Two important reports that address SRP waste-management operations and that are relevant in understanding potential incremental effects have been published in the last 5 years. The Environmental Impact Statement, Waste Management Operations, Savannah River Plant, Aiken, South Carolina (ERDA, 1977) describes waste-management operations at the Savannah River Plant and analyzes the potential environmental effects. The Environmental Impact Statement, Defense Waste Processing Facility, Savannah River Plant, Aiken, South Carolina (DOE, 1982), describes the disposal strategy and the construction and operation of facilities at the Savannah River Plant to immobilize defense high-level radioactive wastes and analyzes the potential environmental effects.

Resumed L-Reactor operations will be similar to its operations before it was placed in standby status. As part of the process of maintaining L-Reactor in standby status, the auxiliary systems currently are being upgraded and modern

safety and operating equipment is being installed. Chapter 5 describes the projected (after 1984) impacts in relationship to those caused by previous (before 1968) operations.

Chapter 6 describes the various environmental permits and approvals necessary for this project.

#### REFERENCES FOR CHAPTER 1

DOE (U.S. Department of Energy), 1982. Environmental Impact Statement, Defense Waste Processing Facility, Aiken, South Carolina, DOE/EIS-0082.

ERDA (U.S. Energy Research and Development Administration), 1977. Environmental Impact Statement, Waste Management Operations, Savannah River Plant, Aiken, South Carolina, ERDA-1537.