

FOREWORD

The purpose of this Environmental Impact Statement (EIS) is to provide environmental input into the proposed decision to restart L-Reactor operation at the Savannah River Plant (SRP). The Savannah River Plant is a major U.S. Department of Energy (DOE) installation for the production of defense nuclear materials. The proposed restart of L-Reactor would provide defense nuclear materials (i.e., plutonium) to meet current and near-term needs for national defense. L-Reactor operated originally from 1954 until 1968, when it was placed in standby status due to a decreasing demand for defense nuclear materials. In March 1981, activities were initiated to renovate and upgrade L-Reactor to the same condition as that of the currently operating SRP Reactors. Renovation and upgrading activities were essentially complete in October 1983.

DOE published an environmental assessment (DOE/EA-0195) on the proposed restart of L-Reactor, and a Finding of No Significant Impact on August 23, 1982 (47 FR 36691). After the publication of the Finding of No Significant Impact in the Federal Register, a number of environmental concerns were raised, and a lawsuit seeking to enjoin the restart of L-Reactor prior to issuance of an environmental impact statement was filed in November 1982.

DOE issued a Floodplain/Wetlands notice regarding the proposed reactivation of L-Reactor on July 14, 1982 (47 FR 30563). A determination regarding no practical alternative was published in the Federal Register on August 23, 1982 (47 FR 36691-2). The Floodplain/Wetlands assessment has been updated and modified in this EIS, and a new determination will be made following completion of the final EIS.

At the request of Senator Strom Thurmond, the Senate Armed Services Committee scheduled a public hearing on February 9, 1983, to provide an opportunity for the public to express their views on the environmental consequences of the proposed restart of the L-Reactor (Senate Hearing 98-18). Subsequently, at the request of Senators Thurmond and Mack Mattingly, the DOE held a 90-day comment period on the Senate hearing record and conducted a series of four additional hearings between May 23 and 27, 1983.

In July 1983, Congress enacted and the President approved the Energy and Water Development Appropriations Act, 1984, which states:

None of the funds appropriated by this Act, or by any other Act, or by any other provision of law shall be available for the purpose of restarting the L-Reactor at the Savannah River Plant, Aiken, South Carolina, until the Department of Energy completes an Environmental Impact Statement pursuant to section 102(2)(C) of the National Environmental Policy Act of 1969 and until issued a discharge permit pursuant to the Federal Water Pollution Control Act (33 U.S.C. 1251, et. seq.) as amended, which permit shall incorporate the terms and conditions provided in the Memorandum of Understanding entered into between the Department of Energy and the State of South Carolina dated April 27, 1983, relating to studies and mitigation programs associated with such restart. For purposes of this paragraph the term "restarting" shall mean any activity related to the operation of the L-Reactor that would achieve criticality, generate fission products

within the reactor, discharge cooling water from nuclear operations directly or indirectly into Steel Creek, or result in cooling system testing discharges which exceed the volume, frequency and duration of test discharges conducted prior to June 28, 1983.

Consistent with the National Environmental Policy Act of 1969, and in consultation with State officials of South Carolina and Georgia, the preparation and completion of the Environmental Impact Statement called for in the preceding paragraph shall be expedited. The Secretary of Energy may reduce the public comment period, except that such period shall not be reduced to less than thirty days, and the Secretary shall provide his Record of Decision, based upon the completed Environmental Impact Statement, not sooner than December 1, 1983, and not later than January 1, 1984.

In response to the November 1982 suit, the Federal District Court of Washington, D.C., in July, also directed DOE to prepare an EIS on the restart of L-Reactor as soon as possible.

A Notice of Intent to prepare this EIS was published in the Federal Register on July 19, 1983 (48 FR 32966). That notice solicited comments and suggestions for consideration in preparing the EIS. The preliminary scope was included in the Notice of Intent; this scope was based on public comments received at the Senate Armed Services Committee hearing held in February 1983 and the 90-day comment period on the record of this hearing.

In response to the Notice of Intent, 42 individuals, organizations, and governmental representatives provided comments to assist in the preparation of the Final EIS. Appendix K provides the issues raised at four scoping meetings and cross references to the appropriate Draft EIS sections. In this Final EIS, Appendix K has been revised to correct typographical errors.

On September 23, 1983, DOE began the public distribution of the Draft EIS to all interested individuals, agencies, and groups for review. On September 28, 1983, a Federal Register Notice (FR 48 44244) announced the availability of the Draft EIS and the conduct of a 45-day review/comment period on the document from October 1 to November 14, 1983. During the comment/review period, DOE conducted four public meetings--in Augusta and Savannah, Georgia, and Aiken and Beaufort, South Carolina.

More than 100 comment letters were received during the 45-day period. Many have led to revisions in this Final Environmental Impact Statement. Appendix M (Volume 3) of this statement contains the comments received during the public comment/review period and DOE's responses to these comments. A copy of the transcripts of the public meetings, public notification procedures used for the public comment/review period, and a copy of all the comments as received during the public review/comment period are contained in the Public Comment/Hearing Report (DOE/SR-5009), which has been placed in local libraries.

In this Final EIS, changes from the draft have been indicated by a vertical line in the margin of each page. Minor typographical and editorial corrections are not identified. Changes that are the result of public comments are identified by the specific comment numbers that appear in Appendix M. A change that is the result of an error (typing error, etc.) in the draft is identified with

the letters "TE," and one made to clarify or expand on the draft statement is identified with the letters "TC." Other changes in this Final EIS are identified by an alphanumeric marginal notation (e.g., AA-1); these notations refer to comments in Appendix M (Volume 3). The responses to these comments also provide additional information and clarification. In this Final EIS, Sections 2.4, 4.4.2, and Appendix I have been extensively revised, and Sections 4.5, 5.1.3, and 5.2.8 and Appendix L have been added to provide a more detailed discussion of cooling-water alternatives and the Department of Energy's preferred alternative. Because of these revisions and additions, no vertical change lines are included for these sections.

The Environmental Assessment (EA) and the Draft EIS contained temperatures for L-Reactor secondary cooling-water discharges and for downstream Steel Creek, based on the reactor operating year-round at 2400 megawatts-thermal. The actual operating power is lower than 2400 megawatts-thermal in the summer and is higher during the other seasons. The operating power is limited by the cooling-water supply temperatures from the Savannah River. The discharge-water temperatures and the resulting temperatures downstream in Steel Creek have been calculated for the actual operating power for each season, and are reflected in this Final EIS.

The estimated remobilization of radioisotopes (primarily cesium-137) in Steel Creek will occur via three mechanisms: (1) desorptive transport, (2) transport in biota, and (3) suspended sediment-water transport. The estimates of the quantities transported via desorption and in biota have remained the same in the EA, the Draft EIS, and this Final EIS (i.e., 1.7 and 0.4 curies, respectively, during the first year). The estimates for the suspended sediment-water transport have been revised. Earlier estimates were based on a 3-day test program and assumed an average concentration of suspended solids and an initial peak transport during the first year. These estimates were 7.7 curies of cesium-137 transported via suspended sediment-water transport during the first year, 7.2 curies transported in the second year, and an annual 20-percent reduction thereafter. The revised estimates are based on a field test program, in which samples were taken at the mouth of Steel Creek during secondary cooling-water system tests over a 53-day period in the spring of 1982; these tests used ambient river water at a flow of about 6 cubic meters per second, which is about half of the full cooling-water flow from L-Reactor. These revised estimates, using the larger data base, are 2.3 curies during both the first and second years, with an annual 20-percent reduction thereafter.

The Savannah River Plant has instituted a program to reduce the amount of process wastewater from the various facilities; the particular emphasis of the program is on reducing discharges to the seepage basins in the Separations (F- and H-) Areas and the Fuel and Target Fabrication (M-) Area. Rearrangements of rinse tanks and procedures, the recycling of evaporator "overhead" water, and other changes in operational procedures have been initiated. In M-Area, for example, the discharge rate to the seepage basin has been reduced since the release of the Draft EIS from 0.85 cubic meter per minute to the present (February 1984) rate of 0.48 cubic meter per minute. By the end of 1984, this discharge is expected to decrease to about 0.05 cubic meter per minute.

Since the preparation of the Draft EIS, the rates of ground-water withdrawn from the Tuscaloosa Aquifer by SRP facilities have changed from those measured

in 1982. In 1983, the sitewide pumping rate was about 27 cubic meters per minute, about 3.2 cubic meters per minute greater than in 1982. This increase is related in part to the increased use in L-Area (from 0.28 to 0.94 cubic meter per minute) and to the increased use in A- and M-Areas (from 5.0 to 6.8 cubic meters per minute); M-Area is producing fuel and targets that could be used in L-Reactor. Ground-water use in F-Area also increased.

More changes in pumping rates are expected in 1984. The M-Area ground-water remedial action project is scheduled to start in August 1984. The effluent from the air stripper will be used to augment the process-water supply used by the A-Area powerhouse; this could reduce A-Area consumption by about 1.1 cubic meters per minute. In September 1984, the F-Area powerhouse will be placed in standby. This will reduce the consumption of ground water from the Tuscaloosa Aquifer by about 1.9 cubic meters per minute.

Considering all factors, DOE has selected a once-through 1000-acre lake as its preferred cooling-water alternative. The impacts of this alternative were bracketed in the Draft EIS by the 500-acre and 1300-acre cooling ponds.

This EIS was prepared in accordance with the Council on Environmental Quality NEPA regulations (40 CFR 1500-1508) and DOE's NEPA guidelines (45 FR 20694, March 28, 1980) by DOE and by DOE's contractors under the direction of DOE. Methodologies used and scientific and other sources of information relied upon for conclusions are explicitly identified in this EIS; it is based on comprehensive environmental information drawn from over 100 publicly available documents developed over the last 30 years. In addition, available results of ongoing studies have been used.

The discussion on the need for L-Reactor is, by necessity, qualitative in nature because quantitative information on defense material requirements and production capacity is classified; detailed quantitative discussion on need is contained in a classified appendix, Appendix A. This appendix is not available for public review.

Referenced material in the EIS has been reviewed for classification and sensitivity and is available for review in the U.S. Department of Energy Public Reading Rooms: 211 York Street, N.E., Aiken, SC 29801, and 1000 Independence Ave, S.W., Washington, DC, between the hours of 8:30 a.m. and 4:30 p.m., Monday through Friday.