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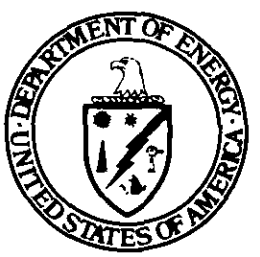
FINAL
ENVIRONMENTAL IMPACT STATEMENT

L-Reactor Operation
Savannah River Plant

Aiken, S.C.

Volume 3



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APPENDIX M

COMMENTS AND DOE RESPONSES ON DRAFT ENVIRONMENTAL IMPACT STATEMENT L-REACTOR OPERATION

During the 45-day public comment period from October 1 through November 14, 1983, the U.S. Department of Energy (DOE) received 140 comment letters and statements on the draft version of this environmental impact statement (EIS). In addition, four comment letters were received after November 14, 1983. Of the total of 144 letters and statements, 7 were from Federal agencies and 7 were from agencies and offices of the States of Georgia and South Carolina. Forty-eight statements were presented at public meetings conducted by DOE at Augusta and Savannah, Georgia, and at Aiken and Beaufort, South Carolina, during the week of October 31, 1983. DOE has prepared a public comment/hearing report (DOE /SR - 5009) that includes transcripts of these public meetings, written statements received at the meetings, and all comment letters received by DOE through the mail. This report has been placed in the DOE public documents rooms in Washington, D.C., and Aiken, South Carolina, and 19 local libraries in South Carolina and Georgia.

This appendix presents the individual comment letters and statements and DOE's responses to them. If a comment or statement has led to a revision to the text of this EIS, the revision is identified by a vertical line in the margin and a comment letter-number designation. Table M-1 lists the comments received, and Table M-2 lists the individual comments and DOE responses.

The comments and statements reflected a number of specific and general issues. The following synopsis summarizes the major issues listed in alphabetical order and DOE's responses.

COOLING-WATER ALTERNATIVES

Comments

One of the most commented-on aspects of the Draft EIS concerned the discussion of cooling-water alternatives, and in particular the Department of Energy's identification of restarting L-Reactor with direct discharge and subsequent mitigation as its preferred alternative. Major categories of comments included:

- Cooling-water alternatives were not seriously considered.
- Mitigation of L-Reactor thermal discharge should be taken prior to L-Reactor restart.
- Direct discharge of cooling-water would violate the State of South Carolina's water quality standards.
- Several of the cooling-water alternatives to direct discharge would also violate state water quality standards.

- The Draft EIS failed to identify the specific cooling-water mitigation measures that would be taken.

- Recirculating cooling-towers are environmentally preferable.

In general, almost all of the comments received on the subject of cooling-water alternatives expressed a desire to see the Department of Energy implement a cooling-water alternative prior to the restart of L-Reactor that would meet the State of South Carolina's water quality standards.

Federal and state agencies commenting on the Draft EIS's discussion of cooling-water alternatives included the U.S. Environmental Protection Agency, the U.S. Department of the Interior, the South Carolina Department of Health and Environmental Control, the South Carolina Water Resources Commission, and the South Carolina Wildlife and Marine Resources Division. These agencies indicated that the restart of L-Reactor with direct discharge would violate existing Federal and state water quality regulations, would reverse the successional recovery of the Steel Creek ecosystem, would result in unsatisfactory and significant effects on ecological resources, and the impacts of direct discharge could be alleviated through the implementation of alternative cooling-water systems. The Environmental Protection Agency rated the Draft EIS as being environmentally unsatisfactory ". . . on the basis of outstanding water quality issues." The Environmental Protection Agency further stated that the Draft EIS ". . . does not not provide sufficient information regarding the corrective measures that will be employed to avoid adverse environmental impacts." The U.S. Department of the Interior stated: "If DOE neither selects mechanical draft cooling towers nor develops a plan to adequately mitigate for impacts to fish and wildlife resources, then the Department of the Interior may choose to refer this project to the Council on Environmental Quality pursuant to 40 CFR 1504."

Response

Based on the Department of Energy's review and evaluation of the comments received, several modifications to the Draft EIS's discussion of cooling alternatives and the Department's preferred alternative have been made in this Final EIS.

Section 4.4.2 of this Final EIS has been modified to provide a detailed discussion of additional combinations of various cooling-water systems. Specifically, Section 4.4.2 now provides an evaluation of thirty-three cooling-water systems, including a discussion of each system's capability to attain the water quality standards of the State of South Carolina. Appendix I of this Final EIS has also been modified to evaluate the potential wetland losses associated with each of cooling-water systems discussed in the revised Section 4.4.2.

The cooling-water systems considered in Section 4.4.2 can be grouped into five major categories--once through cooling lake, recirculating cooling lake, once-through cooling tower, recirculating cooling tower, and direct discharge. Based on this categorization, a new section (Section 4.4.2.6) has been added to this Final EIS that summarizes and compares the engineering and environmental evaluations for the most favorable alternatives for each of these categories of cooling-water systems. The criteria used in selecting the most favorable alternative for each of the categories considered included: ability to meet

South Carolina water quality standards, production considerations, schedule, environmental factors, and cost. The ability to expedite the schedule of implementing the alternatives was also considered as well as the degree that reactor operation would have to be modified to attain water quality standards.

After considering all factors, the Department has identified a once-through 1000-acre lake prior to the restart of L-Reactor as its preferred cooling-water alternative. Although cooling towers would cause fewer environmental impacts, the once-through 1000-acre lake was identified as the preferred system because it would:

- Meet all State and Federal regulatory and environmental requirements, eliminating thermal impacts on the river, swamp, and unimpounded stream while providing a productive balanced biological community in the lake.

- Provide the earliest reactor startup and the maximum plutonium deliveries of any environmentally acceptable cooling-water system that can meet regulatory requirements.

- Have the lowest costs of any environmentally acceptable cooling-water system that can meet regulatory requirements.

- Be amenable to backfitting with precooler systems, if needed, which could improve reactor operational flexibility and production capability.

Based on the identification of implementing a 1000-acre lake prior to L-Reactor restart as the preferred cooling-water system, the Department has modified Section 2.4 of this Final EIS to provide a summary comparison of the most favorable cooling-water system alternatives and a summary comparison of the impacts of the preferred alternative--to restart L-Reactor as soon as practiable after the construction of the 1000-acre lake--and the no-action alternative. Also, the Department has added a new section and appendix--Section 4.5 and Appendix L--to this Final EIS to specifically discuss the environmental consequences of the preferred alternative.

EMERGENCY PLANNING

Comments

Emergency planning comments received during the Draft EIS review period tended to be general in nature, focusing on the ability or inability of local emergency response capability. A few of the more specific comments included:

- The adequacy of a 50-mile ingestion pathway Emergency Planning Zone (EPZ) was questioned.

- There has been a lack of emergency planning by counties surrounding the SRP.

- Accidents used for emergency planning might not be severe enough.

DOE responses

DOE has expanded the EIS, in Appendix H, to include areas served by water systems in Beaufort and Jasper Counties and the Port Wentworth and Savannah areas for the ingestion pathway. These areas will be included in planning for responses to releases of radionuclides that could enter the food or water ingestion pathway to humans.

DOE has signed formal memoranda of understanding (MOUs) with the States of South Carolina and Georgia to provide staff assistance in the preparation of offsite emergency plans for SRP incidents. This planning includes state and county-level responses, training, public education, and coordination activities. The MOUs include agreements with hospitals to accept contaminated patients and processes and procedures for the distribution of information and the notification of responsible agencies and the public. DOE will conduct exercises of these plans to assure appropriate actions and coordination of responses. Separate plans are in place to respond to terrorist attacks or military acts onsite. If such an act resulted in a release of radioactive material offsite, the state and county plans for SRP emergencies would be implemented and other Federal agency support would be activated.

DOE has applied the planning basis and emergency operating procedures for SRP accidents to areas outside the EPZ but within 10 miles of the reactors (the Contingency Planning Zone); they can be extended to more distant areas if necessary.

ENDANGERED SPECIES AND WILDLIFE

Comments

A number of general and specific concerns regarding the L-Reactor restart impacts on endangered species and their habitats were raised during the review of the Draft EIS. Most of these concerns dealt with the impacts from the direct discharge of cooling water to Steel Creek. Specific questions and concerns were raised with respect to the wood stork. Other general categories of comments and concerns included:

- Results of consultations with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service regarding potential impacts on and mitigation measures for endangered species should be presented.

- Radioactive substances released to the environment are incorporated and frequently concentrated in tissues of many organisms. The effects of this radiation are not addressed adequately.

- The effects of chemicals discharged into creeks on the SRP and the Savannah River might be harmful to fishes and wildlife.

DOE responses

In this Final EIS, the Department of Energy has identified its preferred cooling-water alternative as the construction of a 1000-acre lake before

L-Reactor resumes operation, to redesign the reactor outfall, and to operate L-Reactor in a way that assures a balanced biological community in about 50 percent of the lake.

On February 25, 1983, the FWS issued a Biological Opinion on the American alligator (Alligator mississippiensis), which stated that the operation of L-Reactor as proposed (direct discharge of cooling water) would not jeopardize the continued existence of this species. Since the issuance of this opinion, the Department of Energy has identified the discharge of cooling water to a 1000-acre cooling lake as its preferred cooling-water system for L-Reactor. An updated biological assessment that includes the Department's preferred cooling-water system was transmitted to the FWS at the end of March 1984. Currently, the Department is awaiting the review of this updated assessment by the FWS. The Department anticipates that the FWS review will not alter the prior opinion that the operation of L-Reactor would not jeopardize the continued existence of this species.

Listing of the wood stork (Mycteria americana) as an endangered species occurred February 28, 1984, after the Draft EIS for L-Reactor was completed. Beginning in April 1983, studies on the wood stork were initiated. The design of the wood stork study program and preliminary results of the program were provided to the FWS during an informal consultation process. Data from the wood stork program has been included in this Final EIS. A biological assessment for the wood stork was formally transmitted to the FWS at the end of March 1984. The Department is currently awaiting the review of this assessment by the FWS. The Department anticipates that as a result of the FWS review, the FWS will concur in the Department's conclusion that while the operation of L-Reactor might affect portions of the wood stork's SRP foraging habitat, operation of L-Reactor and other ongoing and planned operations will not affect the continued existence of this species.

A Biological Assessment of the impacts of present and proposed operations at the Savannah River Plant (SRP) on the shortnose sturgeon (Acipenser brevirostrum) was provided to the National Marine Fisheries Service (NMFS) in 1983. Following review of the assessment, NMFS issued on November 1, 1983, their Biological Opinion that the population of the shortnose sturgeon in the Savannah River would not be adversely affected by ongoing and planned actions at SRP (including operation of L-Reactor).

Information was provided to the U.S. Fish and Wildlife Service (FWS) in 1982 regarding potential impacts to the red-cockaded woodpecker (Picoides borealis) from the restart and operation of L-Reactor. FWS reviewed the information and provided its Biological Opinion on February 25, 1983, that the proposed restart and operation of L-Reactor would not affect this species.

The Department of Energy is working with the Fish and Wildlife Service to develop a Habitat Evaluation Procedure (HEP) plan for the Steel Creek system with the implementation of the preferred thermal mitigation system for L-Reactor. The HEP will identify the value of habitat to be gained or lost with implementation of the preferred L-Reactor cooling-water alternative for use in assessing further mitigation. If required, the Department of Energy will implement additional mitigative measures that might be identified through the HEP process dependent on Congressional authorization and appropriation.

The dispersion, uptake, and concentration of radioactivity in the environment has been studied for several decades. Based on these studies, predictive methodologies are well established; these methodologies were used to predict the potential environmental consequences of the L-Reactor restart. Similarly, the effects of radiation exposure on many species of fishes, birds, and animals have been studied; the general conclusions are that biota other than man are less sensitive to radiation. The low concentrations of radioactive materials around the SRP are not expected to cause any measurable or observable effects in wildlife.

DOE monitors chemical discharges from the Plant. Results of the extensive SRP monitoring program are published annually and are available to the public. Liquid releases are governed by a permit issued by the State of South Carolina under the National Pollutant Discharge Elimination System; these releases are considered acceptable in relation to their potential effects on water quality and wildlife that use the waterways. This permit and the discharges made under it are monitored by DOE and the State of South Carolina. No effects on marine life in the Savannah River estuary or the Atlantic Ocean have been detected.

GROUND WATER

Comments

One of the most commented-on aspects of the Draft EIS concerned the discussion of potential ground-water impacts. Comments ranged from very broad statements that the restart of L-Reactor would increase ground-water contamination by 33 percent to several very specific comments on ground-water data, analysis methodology, and geohydrologic assumptions. Comments from state and Federal agencies also indicated a concern with respect to jurisdictional responsibilities under the Resource Conservation and Recovery Act (RCRA) and the relationship of proposed clean-up programs to any further contamination due to the restart of L-Reactor. In general, the majority of comments received reflected a concern that the restart of L-Reactor should not increase any existing levels of ground-water contamination. A few of the more specific categories of comments included:

- The protection afforded the Tuscaloosa Aquifer by the upward differential between the Tuscaloosa Formation and the overlying Congaree Formation was assessed inadequately.

- Ground-water withdrawal from the Tuscaloosa Formation in support of L-Reactor operation will affect the water levels in offsite wells.

- The Draft EIS is flawed by the lack of hydrogeological data for the immediate vicinity of L-Reactor and by its reliance, without proper justification, on data for the F- and H-Areas, which are about 10 kilometers away.

- Existing ground-water contamination and cleanup at support facilities for L-Reactor operation were not addressed adquately.

- Results of state-of-the-art mathematical modeling of wastewater flow from seepage basins, including mass balance calculations, should be presented in the Final EIS.

DOE response

The EIS discusses the expected total SRP ground-water withdrawal from the Tuscaloosa Aquifer, including increased pumping to support the operation of L-Reactor and its support facilities. This ground-water usage is about 75 percent of the lower bound estimate of the ground-water flux through the Tuscaloosa calculated in 1974. This usage is not expected to have appreciable effects on water levels in onsite wells. Finally, the EIS shows that the total withdrawal of ground water from the Tuscaloosa, including the withdrawal by L-Reactor and its support facilities, the Fuel Materials Facility, and the Defense Waste Processing Facility, will be about 75 percent of the flux through the Tuscaloosa on and near the SRP.

The head differences between the upper Tuscaloosa Formation and the Congaree Formation (Appendix F) were developed from measurements of the water levels made in monitoring wells, not in production wells. These water measurements were made when the production wells were in operation; thus, the calculated head differences have not been altered. A decline in the upper head differential of about 0.16 meters per year appears to be primarily related to pumping at SRP; however, part of this decline appears to be related to recent drought conditions. Because pumping rates are expected to be relatively stable in the future, this rate of decline is not expected to continue. This EIS separates the data on an aquifer basis to provide a better understanding of the hydrogeology.

Sections in this EIS dealing with M-Area ground-water contamination have been updated to reflect the latest ground-water and analysis data. These sections indicate that the entry of chlorinated hydrocarbons into the Tuscaloosa Aquifer occurred through migration in the Tertiary ground-water system through the defective cement grout of at least one production well. The implementation of the M-Area remedial action program will retard further migration of chlorinated hydrocarbons in the Tertiary ground-water system. Furthermore, DOE will discontinue the use of the M-Area basin by April 1985.

The monitoring of on-site and offsite wells has shown that contaminants have not migrated offsite and that no offsite health risk will exist in the foreseeable future. DOE is determining the effectiveness of a pilot stripper in the removal of chlorinated hydrocarbons from the Tertiary system beneath A- and M-Areas. State and Federal agencies have reviewed the remedial action program of removing the contaminants by the use of a combination of recovery wells and a large production air stripper. This system is expected to be operational by August 1984.

Discharges to the L-Area seepage basin and the incremental increases in discharges to the F- and H-Area seepage basins will impact shallow ground water beneath the basins. The hydrostratigraphic units beneath these seepage basins help protect the Ellenton and Tuscaloosa Aquifers. Waste streams released to the L-Reactor seepage basin are expected to discharge eventually to Steel Creek. Releases to F- and H-Area seepage basins will discharge to low-lying areas along Four Mile Creek. Radionuclide concentrations, when discharged from

these creeks to the Savannah River, will be within DOE guidelines for releases to uncontrolled areas.

The EIS discusses alternatives to the use of the L-Reactor seepage basin. Based on Congressional authorization and approval of a fiscal year 1984 funding request, DOE plans to operate an effluent treatment facility by October 1988 to process wastewater being discharged to the F- and H-Area seepage basins.

The State of South Carolina and the Environmental Protection Agency have reviewed a draft of the "SRP Groundwater Protection Implementation Plan." The plan is being finalized based on the review comments. This plan examines strategies and schedules for implementing ground-water mitigative actions, including the closing and decommissioning of seepage basins. As noted in the EIS, this plan will meet the requirements of DOE Order 5480.2, EPA regulations 40 CFR 260.25, and SCDHEC requirements. The decision on this plan will be the subject of a separate NEPA review.

The Department of Energy is committed to several items related to ground-water monitoring and mitigation at SRP, including (1) continuing and expanding the program of ground-water monitoring and studies; (2) involving the State of South Carolina in onsite and near-site ground-water monitoring activities; and (3) taking mitigation actions to reduce pollutants released to the ground water and establishing a mutually agreed-on compliance schedule for mitigation efforts.

NEED FOR MATERIAL AND PRODUCTION ALTERNATIVES

Comments

During the public review/comment period on the Draft EIS, several comments were submitted on the need for additional defense nuclear materials and several other accelerated production initiatives were suggested as alternatives to the restart of L-Reactor. The types of comments most frequently cited included:

- There was not sufficient information presented in Chapter 1 to provide a basis for supporting the definitive need to restart the L-Reactor in January 1984.
- Retired warhead material should be recycled.
- Because DOE has exceeded production goals for plutonium and there have been decreases in the numbers of new warhead deployments, the need for plutonium has been reduced.
- The early restart of the PUREX Plant will supply plutonium, thereby eliminating the need to restart the L-Reactor immediately.
- The Draft EIS did not consider production alternatives (Chapter 2) in sufficient detail.

DOE responses

The discussion on the need for L-Reactor and production alternatives in Chapters 1 and 2 is, by necessity, qualitative and limited because quantitative information on defense material requirements, inventories, production capacity, and projected material shortages or adverse impacts on weapon system deployment is classified. A quantitative discussion of the need for restarting L-Reactor and of production alternatives is provided for the DOE decisionmaker in a classified appendix (Appendix A) to this EIS.

The development of each annual Nuclear Weapons Stockpile Memorandum (NWSM) is based on detailed analyses of scheduled and planned new weapon systems, scheduled and planned weapon retirements, the current status of legislative actions concerning weapon systems and production capability, the current status of material inventory, material supply from weapon retirements, and material production and weapons fabrication. Each NWSM contains the results of analyses of these factors based on the information available at the time it is developed; therefore, changes in the status and plans for production and deployment of weapons are fully accounted for from one NWSM to the next. The analysis in the classified Appendix A of this EIS uses data consistent with the status of legislative actions and administration plans concerning weapon systems and material production at the time of development of the FY 1984-1989 NWSM, which was approved by President Reagan on February 16, 1984. If significant changes occur after the development of an NWSM, such as Congressional action potentially impacting material supply/demand, DOE factors the impact into the implementation of the NWSM requirements after the Department of Defense formalizes the modified requirements.

Originally, the PUREX Plant on the DOE Hanford Reservation was to resume operation by April 1984; however, the plant started operation 5 months ahead of schedule. The PUREX Plant does not produce plutonium; it separates reactor-produced plutonium from uranium and waste products. Its early restart will have very little effect on the supply of weapons-grade plutonium in the timeframe of concern for L-Reactor because sufficient supplies of fuel-grade plutonium are already available in inventory for blending and the capacity of the PUREX Plant is large in comparison with the backlog of fuel-grade material from N-Reactor available for processing. Furthermore, the early plant startup was factored into the material supply information in the FY 1984-1989 NWSM that was approved recently by President Reagan and was used as a basis for the need for L-Reactor in this final EIS.

In evaluating the need for defense nuclear materials and for restarting L-Reactor, DOE analyzed a delayed restart in Appendix A (classified). The implementation of the potential partial-production options discussed in Chapter 2 was also analyzed as a way to offset production losses associated with such a delay. The results of these analyses concluded that partial production alternatives, individually or in combination, would provide only a small fraction of the required defense nuclear materials that could be produced by L-Reactor.

DOE also analyzed all full-production options that would provide as much plutonium as the proposed restart of L-Reactor. This analysis considered existing production reactors as well as the potential use of spent commercial fuel. However, the conversion of spent commercial reactor fuel into weapons-grade plutonium is prohibited by law; legislative removal of this prohibition is

unlikely in the near future. The restart of other inactive DOE production reactors was also dismissed as unreasonable due to the time that would be required to restore these reactors for plutonium production.

RADIOACTIVE RELEASES

Comments

During the Draft EIS review period, comments were also raised regarding potential radioactive releases. Many of the comments reflected a general concern for potential radioactive contamination or an opinion that no level of radiation was safe. Many commentors also were concerned with the comparability of L-Reactor radiological releases to those of a commercial nuclear power reactor. Other categories of comments included:

- Prior reports on SRP accidents and routine releases should be used as sources for estimated radioactive releases.
- Measures should be taken to prevent the remobilization of radiocesium.
- Release data are not readily available to the public.
- The EIS should present the cumulative impacts of nuclear facilities in the Savannah River Basin.

DOE responses

The estimates of radioactive releases to the environment resulting from L-Reactor startup are based not only on design information but also on the experience and measurement of releases for more than 25 years of operation of the Savannah River Plant. Routine releases from the proposed operation of L-Reactor and the increased releases from associated facilities that will support L-Reactor operation, such as the separations facility, were included. The releases for L-Reactor were based on the average measured releases of the operating C-, K-, and P-Reactors from 1978 through 1980. The analysis of routine and incremental radioactive releases do not include releases from SRP facilities that are not associated with L-Reactor operation; however, the nonassociated releases and the releases from other planned SRP facilities are analyzed in the discussion of cumulative releases.

The radioactive releases from L-Reactor and its support facilities to the aqueous environment result in concentrations in drinking water (e.g., in Beaufort/Jasper and Port Wentworth) that are very small fractions of the EPA drinking-water standard value. Estimates of atmospheric releases from L-Reactor and its support facilities result in small incremental increases in ambient atmospheric concentrations that are within all applicable state and Federal guidelines. The restart of L-Reactor will be in compliance with the DOE radiation protection standards that are comparable to those of the Nuclear Regulatory Commission (10 CFR 20) for a production facility (i.e., 500 millirem to the whole body in one calendar year).

The remobilization and transport of radiocesium and radiocobalt from Steel Creek sediments caused by the direct discharge of L-Reactor cooling water have been studied and assessed in detail. The resulting concentrations in the Savannah River will be very small. The concentrations from these releases in potable water from the Beaufort-Jasper and Cherokee Hill water-treatment plants were calculated to less than 1/2200th (for radiocesium) and less than 1/4160th (for radiocobalt) of the EPA drinking-water standard values. Radiocesium and radiocobalt releases for the Department's preferred cooling-water alternative (1000-acre lake) are estimated to be no greater than those from the direct discharge of cooling water.

DOE measures concentrations of radioactivity in air, water, and soil in the region due to releases from SRP as part of its annual environmental monitoring program. These concentrations, along with the doses to the maximally exposed individual and the general population offsite, are reported to the public in annual SRP environmental monitoring reports. The resulting doses are well within established limits and represent a very small fraction of background radiation doses. No detrimental effects due to SRP radioactive releases have been observed, and analyses indicate that none should be expected. Expanded monitoring, to assess the displacement of radioactive isotopes in Steel Creek and in the Savannah River swamp will be included in future issues of the SRP environmental monitoring report.

Abnormal release information is also reported. Tritium releases and their consequences have been well documented in Environmental Effects of a Tritium Gas Release from the Savannah River Plant on May 2, 1974 (DP-1369), Environmental Effects of a Tritium Gas Release from the Savannah River Plant on December 31, 1975 (DP-1415), and the publicly available 1975 annual report, Environmental Monitoring in the Vicinity of the Savannah River Plant (DPSPU-76-30-1). Abnormal releases are documented in the annual environmental monitoring reports.

The EIS presents and discusses the cumulative radiological effects of all nuclear facilities expected to be operating within an 80-kilometer radius of L-Reactor. Specifically, the EIS considers the potential cumulative radiological releases from all existing and planned SRP operations, the Alvin W. Vogtle Nuclear Power Plant (under construction), the Barnwell Nuclear Fuel Plant (not expected to operate), and the Chem-Nuclear Services, Inc., low-level radioactive disposal site.

RADIOLOGICAL EFFECTS

Comments

In addition to the comments concerning radioactive releases, other comments were received during the Draft EIS review period on the effects of those releases. Major categories of comments on radiological effects included:

- Effects of cumulative low-level exposure are not addressed adequately.
- Method of estimating doses is not presented adequately.

- Bases of estimates of effects (e.g., radiation-induced cancer) are not presented adequately.

- Detrimental effects of radioactive releases on workers and people in the area over the past 25 years are not considered adequately.

DOE responses

Using the radioactive release information discussed in the previous section, standard dosimetry models were used to calculate radiological doses. The dose models are based on recommendation of the International Commission on Radiological Protection. Appendix B of the EIS discusses the methodologies used in calculating the radiological doses and resultant estimates of health effects.

The operation of L-Reactor and its associated support facilities will increase the dose to the population within an 80-kilometer radius and to downstream users of Savannah River water by an amount equivalent to about 0.05 percent of the natural background radiation. The incidents of effects of such exposures are considerably below measurable levels.

The BEIR III report (The Effects on Populations of Exposures to Low Levels of Ionizing Radiation), published by the National Academy of Sciences in 1980, was used as a basis for establishing a relationship between radiological doses calculated in the EIS and any resulting health effects in terms of excess cancer fatalities. Estimates of radiation health effects in this report are based on the observed incidence of cancer-induced fatalities that resulted from exposures to high radiation levels. This data base included information derived from studies of survivors of the atomic bombs dropped on Nagasaki and Hiroshima, and from medical procedures that result in high radiation doses. The basic problem addressed in the BEIR III report was how to extrapolate from health effects observed at high levels of radiation to estimates of health effects that might be associated with very low levels of radiation, such as those resulting from L-Reactor operation. In this sense, the BEIR III report is largely a statistical study of empirical data, rather than a theoretical report.

The BEIR III report was selected for use in the EIS in preference to evidence directly related to SRP because no observable health effects resulting from SRP operations, in terms of excess cancer fatalities, can be quantified or identified.

Exposures of SRP workers to internal and external radiation are carefully monitored and controlled through a health physics program designed to maintain occupational doses "as low as reasonably achievable" (ALARA), as outlined in Environmental Protection, Safety, and Health Protection for DOE Operations, DOE 5484.1a.1, (1981). Occupational doses at SRP to date have been well below DOE limits of 5 rem per year. Furthermore, occupational doses associated with reactor operations have decreased from an average of 200 person-rem per reactor-year during the period from 1960 through 1968 to an average of 69 person-rem per reactor-year during the period from 1976 through 1980, as a result of the ALARA operating philosophy.

Of the 411 production workers who (through October 1983) have shown positive evidence of assimilation of transuranic elements, including plutonium, only 6 have exceeded 50 percent of a Maximum Permissible Body Burden (MPBB), as

defined by the International Commission on Radiological Protection ("Report of ICRP Committee II on Permissible Dose for Internal Radiation," Health Physics, Volume 3, 1960). The maximum individual assimilation was 90 percent of MPBB. During the entire operation of the Savannah River Plant, only one worker has exceeded the occupational exposure limit of 5 rem per year. No biological effects are expected from exposures of this magnitude. An ongoing health study of SRP workers has shown no evidence of unusual health effects that could be attributed to radiation exposure.

A series of health effects studies of the population around the Savannah River Plant has been made by Professor H. J. Sauer, who was originally with the University of Missouri and is now an independent contractor. Epidemiological studies of the SRP workers are being made by Oak Ridge Associated Universities and the Los Alamos National Laboratory. The Centers for Disease Control has also made some studies of the occurrence of a rare blood disease, Polycythemia Vera, in response to newspaper reports, since retracted, that this disease was unusually prevalent in the vicinity of SRP. Further, the Centers for Disease Control, in response to requests from DOE, has formed an independent panel to determine the need for any additional studies that might be desirable. These past and ongoing studies will ensure that reasonable efforts continue with regard to health effects from SRP operations, even though these effects are predicted to be too small to be statistically detectable.

SAFETY ANALYSIS

Comments

Comments on the accident analyses and safety system sections of the Draft EIS included:

- Need for a containment building.
- Comparability of L-Reactor to the NRC's requirements for nuclear reactor site criteria.
- Presentation of a "worst-case" analysis.

For the most part, the comments on the need for a containment building were general, often only citing that commercial reactors are required to have them and L-Reactor is not. Other comments on the need for a containment building concerned the comparability of the accident analyses for L-Reactor to the Nuclear Regulatory Commission's requirements for reactor site criteria (10 CFR 100). Specifically, commentors contended that a postualted 100-percent core-melt accident was the proper basis for assessing the safety comparability of L-Reactor to commercial reactors. They also contended that if the 100-percent core-melt accident were used as the basis, the L-Reactor would not meet the Nuclear Regulatory Commission's site evaluations factors for commercial reactors.

Finally, others contended that the Draft EIS failed to present a worst-case analysis. Specifically, commentors asserted that the EIS, rather than presenting the consequences of a 10-percent postulated core-melt accident, should present the consequences of a 100-percent core-melt accident concurrent with a failure of the confinement system.

DOE responses

The need for containment buildings for commercial reactors is based on their design, site characteristics, and the need for specific engineered safety features to limit radioactive releases in the event of an accident. Reactors of different designs and engineered safety features other than a containment building can also limit radioactive releases to be within acceptable standards for a range of postulated accidents. The Fort St. Vrain reactor, which has been licensed by the Nuclear Regulatory Commission, is an example of a commerical reactor without a containment building; it has a different design and alternative engineered safety features from commercial light-water reactors.

The L-Reactor has several important design features and alternative engineered safety features that must be considered in any comparison with light-water commercial reactors. For example, L-Reactor operates at much lower pressures and lower temperatures than commercial light-water reactors; thus, the stored energy in a postulated loss-of-coolant accident--which is of primary concern in the need for a containment building--is much less. Other important differences exist for operational limits, emergency shutdown systems, the confinement system, the type of fuel, and the distance to the nearest site boundary. These differences, when taken into account in the analysis of credible accident events and resultant consequences, indicate that L-Reactor with its confinement system would meet the Nuclear Regulatory Commission's site evaluation factors.

The regulations in 10 CFR 100 do not assume or require the assumption of "a full-core meltdown." Rather, the footnote to 10 CFR 100.11(a) clearly indicates accidental events, that would result in potential hazards not exceeded by those from any accident considered credible. Such accidents have generally been assumed to result in substantial meltdown of the core with subsequent release of appreciable quantities of fission products. "Full-core meltdown" is not equal to "substantial meltdown;" the 10 CFR 100 reference to TID-14844 particularly notes that: "The calculations described [in TID-14844] may be used as a point of departure for consideration of particular site requirements which may result from evaluation of the characteristics of a particular reactor, its purpose and method of operation. Thus, the source-term assumption cited is not mandated for use, either in 10 CFR 100 or in TID-14844.

The NRC licensing of the Fort St. Vrain reactor is an example of a reactor licensed with recognition of the differences between its design and the design of light-water reactors (LWRs). This reactor does not have a containment building, but has alternative safety features that the NRC considers to be adequate. Recognizing the high heat capacity of this graphite-moderated reactor, no fuel melting was assumed when specifying the source term for use with 10 CFR 100. Release of gases as a result of core heatup (not melting) was assumed over a period of hours, not instantaneously as is commonly assumed for LWRs. Furthermore, release of only 5.5 percent of the halogens in the reactor core was assumed, rather than the 50 percent commonly assumed for LWRs.

The Department of Energy recognizes uncertainties inherent in the predictions and likelihood of extremely low probability but high-consequence accidents. The worst-case analysis required by NEPA is intended to provide the decisionmaker with information to balance the need for the action against the risk of possible adverse impacts if the action were to proceed in the face of uncertainty. The "uncertainty" in this instance, however, does not question the severity of the consequences if this class of accident were to occur, but rather the degree of improbability of its occurrence (i.e., whether once in 10 million years or once in a billion or more years). The detailed analyses of the very-low-probability, 10-percent, core-melt accident, together with available preliminary information on the consequences and probabilities of a spectrum of more severe but even less probable accidents included in the EIS are judged to provide the decisionmaker with sufficient information for this purpose.

Table M-1. Comments and statements received on the L-Reactor Draft Environmental Impact Statement

*Comments or statements received at one of the four public hearings held by DOE on the Draft EIS during the week of October 31, 1983.

Table M-1. Comments and statements received on the L-Reactor Draft Environmental Impact Statement (continued)

*Comments or statements received at one of the four public hearings held by DOE on the Draft EIS during the week of October 31, 1983.

Table M-1. Comments and statements received on the L-Reactor Draft Environmental Impact Statement (continued)

*Comments or statements received at one of the four public hearings held by DOE on the Draft EIS during the week of October 31, 1983.

Table M-1. Comments and statements received on the L-Reactor Draft Environmental Impact Statement (continued)

*Comments or statements received at one of the four public hearings held by DOE on the Draft EIS during the week of October 31, 1983.

Table M-1. Comments and statements received on the L-Reactor Draft Environmental Impact Statement (continued)

*Comments or statement received at one of the four public hearings held by DOE on the Draft EIS during the week of October 31, 1983.

Table M-2. DOE responses to comments on Draft EIS

Comment number	Comments	Responses
	STATEMENT OF TIM LAMBERT Tim Lambert Rt 3 Box 510 Dahlonega, GA 30533 To: M. J. Sires III, I am concerned about the impact the L-Reactor at Savannah River Plant. If you could send me a copy of the Environmental Impact Statement on this issue, it will help me to assess the problem at hand.	
AA-1	From all the information I have so far gathered on the L-Reactor, it seems as though more stringent criteria must be met before it goes on line. For one, cooling towers should be built to reduce thermal pollution. This type of pollution is quite serious, especially when discharged into the delicate swamp ecosystem around the SRP.	Section 4.4.2 of the EIS, which discusses cooling-water mitigation alternatives, has been revised based on public comments received on the draft EIS. Specifically, Section 4.4.2 has been revised to provide a detailed discussion of additional combinations of various cooling-water systems. In Section 4.4.2, each of the cooling-water mitigation systems is evaluated for attaining the thermal discharge limits of the State of South Carolina. Section 4.4.2 and a revised Appendix I, Floodplain/Wetland Assessment, discuss the wetland impacts of each of the systems considered. The Department of Energy has been reviewing and evaluating alternative cooling-water systems for L-Reactor. Based on these reviews and evaluations, and consultations with representatives of the State of South Carolina regarding a mutually agreed upon compliance approach, a preferred cooling-water mitigation alternative is identified in this EIS. The preferred cooling-water alternative is to construct a 1000-acre lake before L-Reactor resumes operation, to redesign the reactor outfall, and to operate L-Reactor in a way that assures a balanced biological community in the lake. The Record of Decision prepared by the Department on this EIS will state the cooling-water mitigation measures that will be taken which will allow L-Reactor operation to be in compliance with the conditions of an NPDES permit to be issued by the State of South Carolina.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
AA-2	I am also concerned about the amount of radioactive wastes, already in the Savannah river when the L-Reactor is put back into use.	The remobilization and transport of radiocesium and radiocobalt from Steel Creek for the direct discharge of L-Reactor cooling water is discussed in Chapter 4 and Appendix D. As discussed in Section 4.1.2.4, the radiological effects from these releases will be very small. The concentrations from these releases in potable water from the Beaufort-Jasper and Cherokee Hill water-treatment plants are calculated to be less than 1/2200th and 1/4160th of the EPA drinking-water standards for cesium-137 and cobalt-60, respectively. The concentrations that might result from the implementation of the Department's preferred cooling-water alternative (1000-acre lake) are estimated to be no greater than those from direct discharge. Based on an average river flow rate of 294 cubic meters per second and tritium release values listed in Table 4-10, tritium concentrations in Beaufort-Jasper and Port Wentworth water will be 39 picocuries per liter and 1034 picocuries per liter from L-Reactor operation in the first and tenth years, respectively. These are 0.2 and 5.2 percent, respectively, of the EPA drinking-water standard of 20,000 picocuries per liter. Section 5.2.6 of the EIS discusses the estimated cumulative radionuclide concentrations in the Savannah River and in Port Wentworth and Beaufort-Jasper drinking water from routine operation. The total radiation exposures from the restart of L-Reactor when added to existing exposures is expected to be about one-twelfth of the EPA drinking water standard for the Beaufort-Jasper system.
AA-3	I believe if the Savannah River Plant had to operate under the same standards as private plants in South Carolina, these two problems would be taken care of.	As discussed in the responses above, the proposed restart of L-Reactor will be in compliance with an NPDES permit issued by the State of South Carolina, and the release of radioactive material will result in radiation doses that are well below natural background radiation or applicable standards. Chapter 7 of the EIS presents the Federal and state environmental protection regulations that are applicable to the restart of L-Reactor. The restart of L-Reactor will comply with all regulations. These regulations include those developed under the Clean Air Act and Clean Water Act that any "private plant" would have to meet, as well as the requirements of the Department of Energy

Comment number	Comments	Responses
		such as those for hazardous waste and radioactive releases. The Department's requirements in these areas do not differ from applicable requirements of other governmental agencies. For example, the SRP hazardous waste management program meets the technical requirements of the EPA hazardous waste regulations, and the Department's radiation protection standards are comparable to those of the Nuclear Regulatory Commission (10 CFR 20) for a production facility (i.e., 500 millirem to the whole body in any one calendar year).
	Please send the Environmental Impact Study to the above address. Thank you. Sincerely, Tim Lambert	

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	STATEMENT OF RUTH THOMAS Environmentalists, Inc. Founded 1972 October 6, 1983 Mr. M. J. Sires, III Assistant Manager for Health, Safety and Environment U. S. Department of Energy Savannah River Operations Office P. O. Box A Aiken, South Carolina 29801 Dear Mr. Sires: PRELIMINARY COMMENTS ON THE L-REACTOR DRAFT ENVIRONMENTAL IMPACT STATEMENT Those of us in Environmentalists, Inc. who are working on a review of the Draft Environmental Impact Statement (Draft EIS) regarding the proposed restart of the L-Reactor have decided to submit two sets of comments related to this Department of Energy report. By sending in preliminary comments now, the preparers of the Draft EIS and their advisors will have more time to incorporate additions and corrections into the Final Environmental Impact Statement. (Final EIS)	
AB-1	It is our understanding that representatives of the Department of Energy (DOE) and state agencies have had meetings to discuss possible changes to the working Draft EIS. We suggest that consideration be given to having meetings between representatives of DOE and representatives of commenting organizations, including Environmentalists, Inc. (E.I.)	As required by the provisions of the Energy and Water Development Appropriations Act, 1984, DOE prepared this Environmental Impact Statement on an expedited basis "...in consultation with State officials of South Carolina and Georgia...." DOE conducted a 45-day public comment period and held four public hearings to receive comments on the Draft EIS. Also see the response to comment AB-21.
AB-2	THE NEED FOR THE L-REACTOR The Draft EIS provides very little information related to the issue of whether the operation of the L-Reactor is needed at this time. Statements regarding the proposal to produce more	The need for the proposed restart of L-Reactor for the Department of Energy to meet its statutory production requirements is discussed qualitatively in Chapter 1. The production alternatives for L-Reactor are discussed qualitatively in Chapter 2.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	plutonium and increase the country's nuclear stockpile are based on classified information (Appendix A).	The discussion on the need for L-Reactor and production options is, by necessity, qualitative and limited because quantitative information on defense material requirements, inventories, production capacity, and projected material shortages or adverse impacts on weapon system deployments is classified. A quantitative discussion of the need for restarting L-Reactor is provided for the DOE decisionmaker in a classified appendix (Appendix A).
AB-3	The Draft EIS does not include a discussion of the different views which exist regarding the question of what role nuclear weapons build up plays in maintaining peace. There are people who believe that increasing our stockpile of atomic weapons is not a beneficial action for this country to take. Senators Hollings, Hart and Cranston are among the U.S. legislators who have voted to reduce nuclear arms stockpiles. John Glenn, a staunch supporter of a strong military, opposes the MX and favors a nuclear freeze.	Under the Atomic Energy Act of 1954, the Department of Energy is responsible for developing and maintaining the capability to produce all nuclear materials required for the U.S. weapons program. In accordance with the Atomic Energy Act, approval of proposals for defense nuclear materials by the President and subsequent authorization and appropriation by Congress constitute the legal authority and mandate for the Department of Energy to provide the required defense nuclear materials. The national policy on nuclear weapons, their deployment, and the need for increased weapons is beyond the scope of this EIS.
AB-4	The Draft EIS does not provide evidence which makes the "systematic" balancing of costs vs benefits possible, yet this is a requirement of the National Environmental Policy Act of 1969 (NEPA). If the DOE is to justify the plan to operate the L-Reactor, the agency must first supply the evidence necessary to support the statement that the benefits offset the environmental costs.	The EIS presents a detailed description of the environmental consequences associated with the proposed restart of L-Reactor operation as well as qualitative and quantitative (Appendix A - classified) discussions of the need for defense nuclear materials and production alternatives to the restart of L-Reactor. In addition, mitigation alternatives are discussed in Chapter 4. The EIS, therefore, presents the information necessary for the decisionmakers.
	PRODUCTION ALTERNATIVES	
AB-5	On page 2-1 in the Draft EIS, the statement is made that none of the production options or combinations of options to the restart of the L-Reactor can provide the needed atomic weapons materials. The information provided on this subject is not adequate to fulfill the requirements of the NEPA, specifically Section 102 (C) (iii) and (D). These provisions in Section 102 of the NEPA refer to alternatives to the proposed action under consideration. In their	Chapter 2 of this EIS contains additional information on production alternatives. Also see the response to comment AB-4 regarding information contained in the EIS on need and production alternatives. Section 104 of the National Environmental Policy Act provides that the Act does not eliminate any duties already imposed by other "specific statutory obligations." The discussion on the need for L-Reactor and production options is, by necessity,

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	decision of July 25, 1971,[1] Circuit Judges Wright, Tamm and Robinson stated that the phrase "to the fullest extent possible" applies to all of the requirements in Section 102 of the NEPA law, and thus inquiry into the subject of production alternatives needs to be more thoroughly carried out in the Final EIS.	qualitative and limited because quantitative information on defense material requirements, inventories, production capacity, and projected material shortages or adverse impacts on weapon system deployments is classified. Disclosure of classified material is not governed by Section 102 of NEPA. Pursuant to the amendments to the National Environmental Policy Act of 1969 in 1975, Section 102(2)(D) is now Section 102(2)(E).
AB-6	The discussions of production alternatives refer to only a few information sources. When a connection is made between the text and a reference listed at the end of a section, the pages in the document are not identified. Of the nine references listed on page 2-30, five of them are du Pont reports and one was done by United Nuclear, Inc. The state agencies we contacted do not have these reference sources. In the past, I have been unable to obtain a majority of du Pont reports related to EIS prepared by DOE. These six references may also be unavailable to the public. We object to the use of reports as references when such reports are not made available to those reviewing draft or final Environmental Impact Statements.	The EIS uses an appropriate format for identifying reference materials. All references are identified clearly in the text and at the end of each chapter. All documents referenced in the EIS are available for public review in the DOE public reading rooms in Aiken, South Carolina, and Washington, DC, as stated in the Federal Register Notice (48 FR 44244) and the Foreword of the EIS.
AB-7	In Volume 2 of the Draft EIS, the testimony and scoping letters of individuals, government agencies and citizens' organizations are printed with information identifying where the responses to comments and questions are located in the Draft EIS. A sampling of these responses showed us that the identified presentations in the text frequently do not adequately address the concerns expressed by those commenting. For example, the Draft EIS only presented information about two of the production alternatives which were recommended for consideration by the Natural Resources Defense Council (NRDC). It is unclear why the remaining four options were not considered.	An intitial scope of the EIS was developed based upon the comments received on the L-Reactor Environmental Assessment, the February 9, 1983 Senate Armed Services Committee Hearing, and during the 90-day extended public review/comment period on the record of the February 9th hearing. Based on the comments received during the scoping period for this EIS, a final scope was determined. All comments received during the scoping period were considered; however, only substantive comments received during the scoping period resulted in changes to the content of the Draft EIS.

[1]United States Court of Appeals for the District of Columbia Circuit, Nos. 24,839 and 24,871, Calvert Cliffs' Coordinating Committee, Inc., et al vs United States Atomic Energy Commission and United States of America, July 25, 1971.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
AB-8	To comply with NEPA, the following production alternatives must be studied and the findings presented in the Final EIS. [NEPA, Section 102, (D)]:	
	"1. Accelerating the recovery of nuclear materials from the retirement of obsolete warheads.	The timing of the retirement of old warheads is the responsibility of the Department of Defense (DOD) and not the Department of Energy (DOE). The availability of material from retired weapons is included in the determination of material supply for new weapons in the NWSM. DOE recovers this material when the old warheads are made available from DOD, and uses this material to meet new material requirements.
	2. Accelerating development of a new production reactor.	Environmental, safety, and design studies are being initiated for a new production reactor (NPR). However, no funds have been appropriated for construction. A site and a reactor concept will be selected following completion of these studies. The NPR, even if built under an accelerated schedule, will not be available to produce the needed plutonium in the time required and is, therefore, not a reasonable alternative.
	3. Accelerating development of special isotope separation	The Department of Energy is currently proceeding with the development of the special isotope separation process as a method to convert fuel-grade plutonium to weapons-grade plutonium. This process has been demonstrated only in the laboratory. A significant period of time (greater than 7 years) will be required to scale from the present laboratory scale process up to a full production facility. Such a scale-up, even in the case of a maximum acceleration (1-2 years savings), would not produce the needed plutonium in the time required. This process, therefore, is not considered a reasonable alternative.
	4. Acquiring plutonium from a foreign source."[2]	The prospect of obtaining plutonium from foreign sources has been explored and is not considered a reliable source for meeting plutonium needs.

[2]The scoping letter of Natural Resources Defense Council, August 9, 1983. Volume 2 of the Draft EIS, pages 103-104.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
AB-9	The classified Appendix A was again cited as a document which contained supporting information. (page 2-22) Either this Appendix needs to be reclassified or another reference or references identified as the basis of statements and conclusions in the Final EIS. In NRDC's comments related to production alternatives, the organization's attorney points out that "the Draft EIS must provide and disclose to the public, to the fullest extent possible, the following information: 1. Identification of each material production alternative through 1995. 2. Identification by year of the Plutonium-equivalent production capability of each alternative. 3. Identification for each year of the Plutonium-equivalent inventory, stockpile, and future requirements. 4. Indication of precisely which, if any, weapons systems or warheads would have to be delayed if the L-Reactor operation was postponed one, two, three or four years. 5. Indication of whether and how a delay in L-Reactor operation of one or two years would affect the production of warheads already scheduled to 1988, or Plutonium contingency needs in the "out years."[3] There appears to be little in the Draft EIS regarding these five subjects, particularly in terms of specific information. The lack of adequate identification of evidence to support the agency's statements and conclusions regarding Plutonium production and related matters needs to be corrected in the Final EIS in addition to providing more detailed information about weapons inventories and production schedules.	See the response to comment AB-2 regarding the disclosure of classified information in Appendix A. The national policy on nuclear weapons, their deployment, and the need for increased weapons is beyond the scope of this EIS.

[3]NRDC's Comments, Volume 2 of the Draft EIS, page 104.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	SAFETY SYSTEM ALTERNATIVES	
AB-10	The Draft EIS includes presentations on five alternatives for mitigating the detrimental effects of accidents. There is, however, no explanation of why the authors did not make use of reports on actual accidents at the Savannah River Plant (SRP) in comparing various systems for reducing the harm which could result from accidents. Since the operation of the L-Reactor would increase the need for reprocessing, for the disposal of low-level radioactive waste, the conversion of liquid waste to a solid, transportation to a repository and permanent disposal of high-level waste, the records of SRP accidents related to all of these are indispensable sources of evidence for those evaluating safety system options and considering the potential which SRP facilities have for damaging the environment. In our Freedom of Information request of August 25, 1983, we asked for materials regarding tritium releases from the SRP, including the most recent leak on July 16, 1983. According to the DOE, there are approximately two hundred documents related to the routine and accidental discharges of this one source of radioactive pollution.[4] Despite the existence of hundreds of reports about tritium and many additional ones related to radioactive gases and fallout originating from SRP facilities, these information sources do not appear to be among the references used in the preparation of the Draft EIS.	Actual reactor accidents are described in Section 4.2.1.2 and Appendix G; they were considered in the evaluation of safety system alternatives. Only once in the history of SRP reactor operation was the confinement system required to function to confine airborne activity; this was the melting of a source rod in 1970 (see Section 4.2.1.2 and Appendix G). The confinement system worked as designed and offsite exposure was negligible. The use of this accident in a comparison of various alternatives for the mitigation of accident consequences would have shown little or no difference in the effectiveness of the alternative concepts. Therefore, the maximum credible accident was selected to measure the benefits attributable to each alternative reactor safety system that is considered. A new Section 5.1.2.9 has been incorporated into this EIS which discusses the most probable incremental risks of non-reactor support facilities due to the increased throughput of L-Reactor product. Hypothetical reactor accidents described in the EIS represent the upper limit of offsite radiological consequences from any process operation at SRP. In the approximately 30 years of operation of SRP reactors, there never has been a release of radioactivity that resulted in offsite doses that exceeded applicable Federal guidelines. The EIS addresses and references accident releases related to reactor operation in Section 4.2.1.2 and Appendix G. Most tritium release incidents at SRP were not related to L-Reactor operation or its support facilities but to other facilities not in the scope of this EIS.

[4]October 4, 1983 letter from Ernest S. Chaput of DOE to Environmentalists, Inc. regarding its Freedom of Information request, FOI-SR-49.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
AB-11	There is no explanation in the Draft EIS of why reports on SRP accidents and routine releases were not chosen as information sources. The Safety System Section as well as other presentations in the Draft EIS lack evidence regarding studies of SRP workers, such as those related to the approximately 400 employees whose urine tests showed that they had the radioactive substance plutonium in their bodies.[5]	The estimates of radioactive releases to the environment resulting from L-Reactor startup and operation under normal operating and accident conditions are, to the extent possible, based on actual SRP operating experience, as documented in the reports cited as references in the EIS. (See EIS, Volume 1, Section 4.1.2; Volume 2, Appendix G.) Exposures of SRP workers to internal and external radiation are carefully monitored and controlled through a health physics program designed to maintain occupational doses "as low as reasonably achievable" (ALARA), as outlined by the U.S. Department of Energy in DOE 5480.1A, Environmental Protection, Safety, and Health Protection Program for DOE Operations. Occupational doses at SRP to date have been well below the DOE limits of 5 rem per year to an individual. Furthermore, occupational doses associated with reactor operations have decreased from an average of 200 person-rem per reactor-year during the period from 1960 through 1968 to an average of 69 person-rem per reactor-year during the period from 1976 through 1980 as a result of the ALARA operating philosophy. Of the 411 production workers who have shown positive evidence of assimilation of transuranic elements (through October 1983), including plutonium, only 6 have exceeded 50 percent of a Maximum Permissible Body Burden (MPBB), as defined by the International Commission on Radiological Protection ("Report of ICRP Committee II on Permissible Dose for Internal Radiation." Health Physics, Volume 3, 1960). The maximum individual assimilation was 90 percent of MPBB. During the entire operation of SRP, only one worker has exceeded the occupational exposure limit of 5 rem per year. No biological effects are expected from exposures of this magnitude. An ongoing health study of SRP workers has shown no evidence of unusual health effects that could be attributed to radiation exposure.

[5] In 1974, Du Pont's supervisor of the Works Technical Department at SRP publicly admitted that employees had been misled about the health effects of plutonium. Allendale County Citizen, Nov. 27, 1974.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
AB-12	I found no discussion of why theoretical reports, such as the BEIR III report, were chosen in preference to evidence directly related to the SRP. When the BEIR report and other general type references were used in the Draft EIS, the preparers failed to identify the pages in them which contained the specific information connected to the text.	The preparers used the BEIR III report as a basis for establishing a relationship between radiological doses calculated in the EIS and any resulting health effects in terms of excess cancer fatalities. Estimates of radiation health effects presented in the BEIR III report are based on the observed incidence of cancer-induced fatalities that resulted from exposure to high radiation levels. This data base included information derived from studies of Japanese survivors of the atomic bombs dropped on Nagasaki and Hiroshima, and from medical procedures that result in high radiation doses. The basic problem addressed in the BEIR III report was how to extrapolate from health effects observed at high levels of radiation to estimates of health effects that might be associated with very low levels of radiation, such as those resulting from L-Reactor operation. The BEIR III report in this sense is largely a statistical study of empirical data, rather than a theoretical report. The BEIR III report was selected for use in deriving the health effects reported in the EIS in preference to evidence directly related to SRP because there have been no observable health effects resulting from SRP operations, in terms of excess cancer fatalities, that can be quantified or identified. Specific page references in BEIR III are not cited in the EIS because the evaluation of health-effects estimators requires a careful review of the entire BEIR III report and an assessment of the alternative approaches presented in relation to the problem of extrapolating high-radiation-level health effects to low-radiation levels.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	COOLING-WATER ALTERNATIVES	
AB-13	Despite recognizing that the discharge of hot water from the L-Reactor would cause environmental damage and despite the fact that this thermal pollution violates the water quality regulations of South Carolina, those preparing the Draft EIS appear to favor the direct discharge to Steel Creek since they have identified this as the "reference case," on page 4-81. It is unclear just what "benefits" are being balanced against destruction of swampland and non-compliance with South Carolina's regulations. The lack of adequate and specific documentation regarding cooling alternatives contributes to the presentation of misleading information.	Section 4.1 of the EIS describes the impacts that would result from the direct discharge of L-Reactor cooling water to Steel Creek, and Section 4.4.2 describes over 30 potential cooling-water mitigation alternatives. In accordance with the Council on Environmental Quality's regulations implementing the procedural provisions of NEPA, this final EIS identifies and discusses the Department of Energy's preferred cooling-water alternative, which is to construct a 1000-acre lake before L-Reactor resumes operation, to redesign the reactor outfall, and to operate L-Reactor in a way that assures a balanced biological community in the lake. Also, see the responses to comments AA-1 and AB-4 regarding cooling-water mitigation alternatives and the balancing of "cost vs. benefits." *Specific information in Section 4.4.2 and Appendix I of the EIS* is provided on cooling-water alternatives. The EIS includes the following topics for each of the cooling-water mitigation alternatives considered: o Capital and operating costs o Schedule o Estimated number of construction personnel o Production efficiency o Conceptual designs, location, areal extent, and requirements for rerouting plant services and roads o Thermal effects at several locations in Steel Creek o Wetland and upland habitat eliminated o Rate of delta growth o Cooling withdrawal rate from the Savannah River and resulting entrainment and impingement losses o Impacts to endangered species o Potential impacts to historic/archeological sites o Release and remobilization of radionuclides o Thermal discharge standards.
AB-14	For example, the mistaken impression is given that Savannah River operations have had little or no effect on reducing the diversity of species, a situation known to reduce the biological stability of an area. On page 4-18, the statement is made that "no major changes in the presence of species have occurred from past Savannah River operations at their stations (7	Section 4.1.1.4 describes the effects of direct discharge of cooling water from L-Reactor on species diversity; these effects concur with findings published by Parker, Hirshfield, and Gibbons (1973).

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	studies by researchers with the Academy of Natural Sciences of Philadelphia-ANSP) or are expected to occur from the addition of heat and cooling water from the L-Reactor." This statement conflicts with the findings of a 1971 survey by Parker, Hirshfield and Gibbons. According to this study, only 8 plant, 5 fish and 2 reptile species remain in the heated area of Pond C whereas the unheated portions of Par Pond has 34 species of aquatic plants, 23 species of fish and 9 species of reptiles.[6] One of the 1971 report's researchers, J. Whitfield, co-authored an article with Rebecca Sharitz which summarizes the research of numerous investigators at the Savannah River Ecology Laboratory over a five year period.[6] The Draft EIS includes this study, "Thermal Alteration of Aquatic Ecosystems" as a reference for Volume 1 (pages 3-70 and 4-144) and Volume 2 (page C-80).	The studies by ANSP were conducted on the Savannah River. The studies by Parker, Hirshfield, and Gibbons were conducted on Par Pond. Because these are two different systems, there is no conflict in the results and conclusions of the different studies.
AB-15	It is important that the Final EIS resolve the problem of conflicting and misleading information on the subject of thermal pollution. Another lesson to be learned from the Gibbons-Sharitz report is that a study which clearly identifies its references is much easier to understand and review. We recommend that a similar type of documentation be used in the Final EIS.	See the responses to comments AB-13 and AB-14 regarding data on thermal discharge contained in the EIS. Also see the response to comment AB-6 regarding EIS references.
	ENVIRONMENTAL IMPACTS More time is needed to review sections of the Draft EIS related to such areas of inquiry as radioactive releases, equipment failures, seepage basins, accidents, worker exposures, etc., before specific and detailed comments can be prepared. The following failures, however, have been identified:	
AB-16	1. Failure to use a method of identifying reference materials so that a connection is made between the text and the passage in the particular document(s) which support statements and conclusions in the EIS.	See the response to comment AB-6 regarding EIS references.

[6]Gibbons, J. W. and R. R. Sharitz, 1974. "Thermal Alteration of Aquatic Ecosystems," American Scientist, Vol. 62, page 663.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
AB-17	2. Preparing dose estimates without adequate consideration for the detrimental effects which people of the area have experienced as a result of the radioactive gases and fallout which have originated from the complex of nuclear facilities at the SRP over the past 25 years or more.	The intent of the EIS is to address the environmental impacts associated with L-Reactor restart and operation as required under NEPA. Concentrations of radioactivity in air, water, and soil in the region due to releases from SRP in the past are measured as part of the annual environmental monitoring program. These concentrations, along with the doses to maximally exposed individuals and the general population offsite due to SRP radioactive releases to the environment, are reported in the annual SRP environmental monitoring reports. The resulting doses are well within established limits and represent a very small fraction of background radiation doses. No detrimental effects due to SRP radioactive releases have been observed, and analyses indicate none should be expected beyond those reported in the EIS for L-Reactor restart and operation.
AB-18	3. Failure to adequately identify the routine releases of K-85, tritium and Carbon-14 which have been discharged from reprocessing plants and the added amount due to the proposed operation of the L-Reactor.	Routine releases of K-85, tritium, and C-14 due to the proposed operation of L-Reactor, including those associated with facilities that support L-Reactor operation, such as the separations facilities, are reported in the EIS (See Volume 1, Sections 4.1.2 and 5.1.2).
AB-19	4. Failure to provide data collected from studies of SRP workers.	See the response to comment AB-11 regarding data from studies of SRP workers.
	CONCLUSION	
AB-20	Lawrence Benedict, in his testimony of August 5, 1983, stated that the Georgia Conservancy and Citizen's for a Clean Environment were concerned about the possibility that the NUS Corporation might work on the EIS related to the proposed restart of the L-Reactor.[7] He pointed out that the NUS Corporation had prepared the Finding of No Significant Impact and the "flawed" Environmental Assessment.	Judge Jackson of the United States District Court for the District of Columbia, in his Summary Judgment decision on July 15, 1983, found "that document, submitted by the contractor to DOE in May 1982, in draft and revised, constituted the basis for DOE's finding of no significant impact; 47 Fed. Reg. 35, 691, on August 23, 1982 . . . The Court finds the conclusion (the finding of no significant impact prepared by DOE) alone to be arbitrary and an abuse of discretion . . . the antecedent studies appear to be both candid and thorough, and as to DOE itself evince the hard look at environmental consequences required of it."

[7]Draft EIS, Volume 2, page K-56.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	Since the Finding of No Significant Impact was denounced by a U.S. District Court Judge as "unreasonable, arbitrary and an abuse of discretion," it is unclear why the NUS Corporation was chosen to prepare the Environmental Impact Statement.	The Decision went on to say "DOE's own environmental homework reflected in and represented primarily by its Environmental Assessment, provides extensive information on the anticipated consequences of the resumption of L-Reactor's operations. Plaintiffs do not object to any paucity of data so much as they do to the fact that, once published with its finding of no significant impact, the EA ends the process . . . " As a point of clarification, DOE contracted with NUS Corporation to assist in the preparation of the Environmental Assessment - L-Reactor Operation, Savannah River Plant (DOE/EA-0195). The EA is a DOE document prepared under DOE guidance, direction, and review. DOE determined its content and approach. The Finding of No Significant Impact on the resumption of L-Reactor operation was a DOE decision document prepared solely by DOE personnel. NUS Corporation played no part in this decision process.
	Please send copies of our Preliminary Comments to the preparers of the Draft EIS, whose names are listed on pages LP-2 through LP-14 in Vol. 2.	
AB-21	On behalf of Environmentalists, Inc., I request that a discussion meeting be arranged as soon as possible between consultants with NUS Corporation, State/Federal officials and representatives of commenting organizations, including Environmentalists, Inc. The purpose of the Meeting would be to address the defects of the Draft EIS which if repeated in the Final EIS would prevent the document from being in compliance with the National Environmental Policy Act. Sincerely, Ruth Thomas, Authorized Representative Environmentalists, Inc. 1339 Sinkler Road Columbia, SC 29206 Tel. 803- 782-3000	As contained in DOE's letter to Ms. Thomas of October 21, representatives of DOE were available at the public hearings on the Draft EIS during the week of October 31, 1983 to discuss any questions following the hearing sessions. Also see the response to comment AB-1 regarding the requirements for consultations with the States of South Carolina and Georgia and the receipt of comments on the Draft EIS.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses

STATEMENT OF ROBERT F. BURNETT

UNITED STATES
NUCLEAR REGULATORY COMMISSION
Washington, DC 20555

October 11, 1983

Mr. M. J. Sires, III
Assistant Manager for Health,
Safety and Environment
U.S. Department of Energy
Savannah River Operations Office
P. O. Box A
Aiken, South Carolina 29801

Dear Mr. Sires:

We have reviewed the draft Environmental Impact Statement for the Savannah River Plant and from a safeguards perspective, have no comments.

Sincerely,

George W. McCershing for,
Robert F. Burnett, Director
Division of Safeguards
Office of Nuclear Material
Safety and Safeguards

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	STATEMENT OF DAVID G. JENNINGS	
	Woodstorks and the L-Reactor: An Evaluation of the Draft EIS	
	Introduction	
AD-1	In the draft Environmental Impact Statement for the startup of the L-Reactor, the Savannah River Plant (SRP) wetlands are mentioned as important feeding sites for a nearby colony of endangered American Woodstorks. No discussion follows of the impact of removing a large percentage of these wetlands (due to thermal pollution of Steel Creek) from use as foraging areas for the Woodstorks. It is my feeling that the wetlands of the Savannah River Plant, including Steel Creek, should be considered critical habitat for the American Woodstork. By critical habitat it is meant that, without these wetlands as a major foraging area, there is a strong possibility that the Birdsville Woodstork Rookery would fail due to lack of a sufficient food base.	Appendix C, Section C.3.2 of this EIS presents more detailed information than was available for the preparation of the draft EIS. According to the U.S. Fish and Wildlife Service, critical habitat is presently considered neither prudent nor determinable for the breeding population of the wood stork in the United States. The basis for this determination is given in 48FR 8403. Critical habitat means (1) the specific areas within the geographical area occupied by a species, at the time it is listed in accordance with Section 4 of the Endangered Species Act, on which are found those physical or biological features (i) essential to the conservation of the species and (ii) which may require special management considerations or protection, and (2) specific areas outside the geographical area occupied by a species at the time it is listed in accordance with the provisions of Section 4 of the Endangered Species Act upon a determination by the Secretary of the Interior that such areas are essential for the conservation of the species (44 FR 47863). Based on existing data, there is no conclusive evidence that the loss of observed wood stork foraging sites in the Steel Creek delta would result in the failure of the Birdsville colony. Prior to the fledging of the 1983 season young of the Birdsville rookery, 64 percent of the observed instances of foraging occurred on the SRP. Thirty-three percent occurred at two sites near Beaver Dam Creek, which is affected by SRP powerhouse operations. The remaining 31 percent of the observed instances of foraging at seven sites occurred at Beaver Dam Creek (11 percent), the Steel Creek delta (14 percent), and Pen Branch (6 percent). These seven sites are not available during periods of plant operations, such as cold-water testing of the L-Reactor. Observed instances of prefledging foraging off the SRP from 18 foraging sites accounted for 36 percent of the total.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
AD-2	This rookery failed to produce young in 1981--probably due to a drought reducing the number of wetlands available. This suggests that adequate foraging sites may be the limiting factor for the colony. If so, the destruction or alteration of what appears to be the best available feeding areas could preclude the future success of this colony.	Nestling abandonment by wood storks in Florida has been associated with periods of high water or extreme drought (Kushlan et al., 1975). The reproductive success of the wood stork is affected by the number of fish per area of wetlands (i.e., the density of prey organisms) or by severe drought that reduces both habitat and food availability (Ogden and Patty, 1981). Storks of the Birdsville rookery abandoned their nestlings at approximately 3 to 4 weeks of age during 1981. The drought at that time is assumed to be responsible for the abandonment at the Birdsville colony. Foraging sites in the Savannah River swamp system at the SRP ranked statistically higher than other sites in a comparison of the mean number of storks observed at all SRP sites (29.8) with those observed at other sites (8.4) before fledging. This comparison used only those sites identified before fledging. After fledging, juveniles were recorded with adults at foraging sites not located at SRP. Juveniles did not use SRP foraging sites.
AD-3	It should be stressed at the outset that all questions and tentative conclusions in this report can be drawn from data presented in the draft Environmental Impact Statement (DEIS), statements (such as the flushing of cold water through Steel Creek) from the Environmental Assessment, and other public documents. More data needs to be gathered--or released if it has already been gathered--in order to make an intelligent decision of the issue.	Listing of the wood stork as an endangered species occurred February 28, 1984, after the Draft EIS for L-Reactor was completed. Beginning in April 1983, studies on the wood stork were initiated. The design of the wood stork study program and preliminary results of the program were provided to the FWS during an informal consultation process. Data from the wood stork program has been included in this Final EIS in Appendix C, Section C.3.2. A biological assessment for the wood stork was formally transmitted to the FWS at the end of March 1984. The Department is currently awaiting the review of this assessment by the FWS. The Department anticipates that as a result of the FWS review, the FWS will concur in the Department's conclusion that while operation of L-Reactor might affect portions of the wood stork's SRP foraging habitat, operation of L-Reactor and other ongoing and planned operations will not affect the continued existence of this species.

David G. Jennings

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	Situation: Woodstorks using the Savannah River Plant (and Steel Creek in particular).	
	Problem: Woodstorks are now or will soon be listed as an endangered species. Will the startup of the L-Reactor have a significant (and negative) impact on the local population of Woodstorks?	
	Answer: UNKNOWN. But, predictions can be made based on data gathered for the required Environmental Impact Statement.	
	Questions and considerations that may reveal how important (or unimportant) the Savannah River Plant (SRP) swamps are to the Birdsville Woodstork Rookery include:	
AD-4	1. Is the average distance to a non-SRP feeding site about the same as to the SRP swamps (45 km)--or are the storks traveling significantly further to the SRP sites? Distance traveled could be an indication of the quality and importance of the feeding site. If the birds are traveling long distances to SRP, in contrast to short distances for alternate off-plant feeding sites, it seems clear that the SRP wetlands are considered a high quality area by the Woodstorks.	The average distance to sites is not necessarily correlated with the importance of the foraging site to the wood stork. Storks travel to sites with available food. At the Birdsville colony, storks travelled an average of 22.8 kilometers before the fledging of young and 25.0 kilometers after the fledging of young. This difference was not statistically significant. Wood storks did not travel farther to feed as the breeding season progressed. It is hypothesized that the elevation of feeding sites (from 30 to 100 meters above mean sea level) and the drought controlled how far the Birdsville storks travelled to feed. That is, foraging sites at higher elevations become unavailable before foraging sites at lower elevations. The wood storks travelled to the higher sites first no matter what the distance from the colony (up to 60 kilometers) and then to lower sites. Low water levels and concentrated fish are probably the principal reason that wood storks forage in the Savannah River swamp wetlands on the SRP. Preferred feeding sites will probably be used as long as they are within the 50- to 60-kilometer daily radius from the wood stork colony.
AD-5	2. Comparison of the average number of Woodstorks seen feeding at a SRP feeding site vs. the average number seen at off-plant sites. If there is a significant difference (DEIS, C-37; 26.4 individuals vs. 6.6) this may also be an indication of the value of the SRP swamps to the local Woodstork population.	See the responses to comments AD-1 and AD-2 regarding the use of wetlands and Steel Creek as foraging sites.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
AD-6	3. Availability (species and numbers of individuals) of prey items in the Steel Creek sites as compared to off-plant sites. If prey items are more abundant, importance of the site as a foraging area should be recognized.	Data on fish are presented in Section 3.6 and Appendix C of the EIS, and will also be presented in the biological assessment submitted to the U.S. Fish and Wildlife Service.
AD-7	4. Total number of Woodstorks using SRP wetlands on any single day. The Draft EIS (DEIS, page C-38) shows 147 individuals using SRP on July 14. One hundred forty seven out of 238 total breeding adults in the rookery is over 60% of the population. Were anywhere near this number seen at any off-plant feeding site?	Ten, 63, and 74 adult wood storks (a total of 147) were recorded feeding at sites 013, 022, and 024, respectively, in swamps near Beaver Dam Creek on July 13, 1983. Site 025, 7.5 kilometers west of the Birdsville colony, had approximately 30 adult wood storks feeding on July 27, 1983. Therefore, approximately twice as many adult wood storks were recorded foraging at site 024 at Beaver Dam Creek on the SRP than the highest number of adult wood storks recorded at off-plant foraging sites.
AD-8	5. Long term (but within a single season) availability of the site for foraging. Many off-plant sites are probably small temporary wetlands that can only be utilized by Woodstorks for a short period of time before drying up. The SRP wetlands and creeks, however, retain a base flow of water throughout the summer making them a dependable foraging area for the entire breeding period.	Most non-SRP foraging sites were dry shortly (1 to 2 weeks) after wood storks were initially observed at these foraging sites. Two of nine SRP foraging sites at Beaver Dam Creek were dry by mid-August 1983. Seven other SRP foraging sites were temporarily lost when plant operations caused water depths to exceed 32 cm.
AD-9	6. Fledgling success rate of this colony[1] in contrast to published fledgling rates for Florida populations. *If the Birdsville colony is able to produce young at a higher* than normal rate then, recognizing that this is an endangered species, it should not be disturbed--nor should its food base be disrupted.	The mean number of young wood storks per nest in the Birdsville rookery ranged from zero in 1981 to 2.19 in 1983. In highly successful years, such as 1983, the Birdsville rookery has *produced more wood storks than colonies of a similar size in* southern Florida (the mean equals 0.7 young per nest).

[1]Unknown, not included in the DEIS.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
AD-10	7. Predicted future land use patterns and their effect on the non-SRP sites. Most of the non-SRP areas used by the Birdsville Woodstork Rookery probably occur on private lands. These sites may be in danger of conversion into agricultural lands over the next decade or so. The SRP swamps, on the other hand, are part of the buffer area around the reactors and should not be affected by changing land use patterns.	The cypress swamp surrounding the Birdsville rookery is privately owned. At present, the Georgia Department of Natural Resources leases the land and patrols the rookery. The ownership and future land use of all habitats used by wood storks of the Birdsville rookery is unknown. However, some habitats will probably be lost due to agricultural or other land-use practices. The SRP does provide isolation and protection from disturbances by the public.
	Additional Questions Generated by Study of the Draft EIS	
AD-11	1. Why were no Woodstorks recorded using the Steel Creek area after July 12? Had the colony dispersed or were cold water releases (as mentioned in the Environmental Assessment as being SOP for the reactor on its "standby" status) responsible for the Woodstorks absence?[1] If raised water levels were created artificially this suggests a strong bias in the data in terms of the actual amount of usage that Steel Creek might have received without the raised water levels. If this is the case, why weren't the fluctuating water levels mentioned in the DEIS as a possible source of bias in the data?	After July 12, 1983, it is hypothesized that wood storks were absent from the Steel Creek delta because of high water. On July 12, 1983, or soon thereafter, the water depth at site 012 in the Steel Creek delta increased to 48 centimeters (from 18 centimeters) due to reactor operations and testing (K- and L-Reactors). Depths at site 012 remained between 44 and 48 centimeters through September 1983. Wood storks abandoned feeding sites at Steel Creek during periods of high water. During these high-water-level conditions, fish that were originally concentrated in shallow pools dispersed from the Steel Creek delta. This condition is taken into consideration in calculating frequencies of foraging (Appendix C, Table C-9). Thus the data are not biased. Variations in water levels are also discussed in the FEIS.
AD-12	2. On page 3-52 of the DEIS it says that the SRP wetlands appear to be important post breeding feeding habitat. Table C-7 shows heavy usage of SRP swamps during June and July. Page C-37 states that birds were nesting in July of 1980. On what data was the "post breeding" conclusion drawn?	The statement in Section 3.6.1.4 of the Draft EIS that "the Steel Creek delta and Beaver Dam Creek appear to represent important feeding habitat for post-breeding wood storks from the rookery" is incorrect. The word "post-breeding" has been deleted.

[1]Woodstorks require areas with lowered water levels, where their prey (fish) have been concentrated. By adding water to Steel Creek, the water levels may have been raised to too high a level for Woodstorks to forage successfully.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
AD-13	3. On page C-37 it states that a total of 386 Woodstorks were seen on SRP wetlands in the summer of 1983, but in Table C-7 a total of 394 birds are listed as being counted on the SRP swamps in the three week period June 23-July 14. What was the total number of Woodstorks seen on SRP in the summer of 1983? Would the number of Woodstorks seen on Steel Creek have been higher if the water level had not been manipulated (assuming for the moment that it was)?	A total of 478 observations of wood storks was recorded on the SRP from June 21 to September 29, 1983, using ground and aerial surveys. This total includes individuals that were observed before and after fledging. Of this total, 66 percent occurred in the Beaver Dam Creek swamp, 21 percent occurred in the Steel Creek delta, and 13 percent occurred in Pen Branch and Four Mile Creek swamp areas. Wood storks were also followed to foraging sites from the Birdsville rookery. Of the 740 observed instances of foraging, 64 percent occurred in non-SRP areas. Of the 36 percent of the observations on the SRP, 22 percent occurred in Beaver Dam Creek, 11 percent occurred in the Steel Creek delta, and 3 percent occurred north of Pen Branch delta. These data have been included in Appendix C of this EIS and will be included in the biological assessment and consultation process with the U.S. Fish and Wildlife Service. Also see the response to comment AD-11 regarding the number of wood storks and water levels.
AD-14	4. Was the low number of Woodstorks seen using the SRP wetlands during 1981 and 1982 due to low numbers of these birds using the area or was it due to the lack of an intensive daily search for Woodstorks.	No aerial surveys were conducted for wood storks during 1981 and 1982. The low numbers of storks observed might be related to the survey methods, which were limited to ground surveys (mostly at Steel Creek) at selected areas in the Savannah River swamp system on the SRP.
AD-15	5. Is it possible that the observed number of Woodstorks seen using the SRP swamps in 1983 is a minimum number, due to variation in the timing of surveys? For instance, if a feeding site is surveyed early in the morning it may show fewer birds than a similar survey conducted in the early afternoon--after thermals[1] have had a chance to develop.	Aerial surveys were conducted for wood storks at SRP between 9:00 a.m. and 8:00 p.m. (one exception was 7:45 a.m. on July 30, 1983, in which three wood storks were recorded) until the Birdsville colony dispersed on August 25, 1983. After the colony dispersed, aerial surveys of the Savannah River swamp system were conducted between 8:30 and 9:30 a.m. (one exception was 6:00 p.m. on September 6, 1983) until September 29, 1983. The time distribution of SRP aerial surveys before the Birdsville colony dispersed was as follows: Time of survey — Percent of surveys 9:01 a.m. - 12:00 noon — 32 12:01 p.m. - 3:00 p.m. — 24 3:01 p.m. - 6:00 p.m. — 40 6:01 p.m. - 9:00 p.m. — 4

[1]Woodstorks, like other soaring birds, use thermals (columns of heated rising air) to make it easier to travel long distances. Thermals do not normally develop until mid to late morning.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	Attributes of the Birdsville Woodstork Rookery which make its individuals more valuable than a comparable number of nesting Woodstorks from a Florida colony:	
AD-16	1. The colony plays an important role in maintaining diversity of the species' gene pool. Congress has recognized that preservation of the world's genetic diversity is an important goal. Preservation of the diversity within a species is also recognized as necessary.[1] The Birdsville rookery is the northernmost colony of Woodstorks in the world. It is a generally accepted fact that populations on the edges of a species' geographic range often contain different genes--or at least different gene frequencies--than similar populations in the center of their range.	The Birdsville rookery was established in 1980 and perhaps as early as 1977. This colony is not recognized as a subspecies of the wood stork. Because wood storks do not breed until they are 4 years old, the adults of this colony probably originated in Florida. If this population is reproductively segregated from Florida colonies, genetic differences might become apparent in the future; however, in 1983 the adult wood storks from Birdsville can be assumed to be genetically similar to storks at the center of their population in Florida.
AD-17	2. There is a definite value in having scattered breeding colonies of a rare species to minimize the impact of a local catastrophe (such as a hurricane wiping out the wintering Whooping Cranes, or a prolonged drought in Florida disrupting breeding of the Florida populations of Woodstorks.	The wood stork colony at Birdsville, Georgia, is 167 kilometers north of the next active stork colony and 140 kilometers inland. Local catastrophes such as hurricanes, tornadoes, and severe thunderstorms can destroy nestlings and eggs during the breeding season. Scattered rather than localized breeding colonies of wood storks will reduce stork mortality due to natural catastrophes.

[1]The Endangered Species Act covers protection of subspecies and local populations.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses

STATEMENT OF JOHN C. SNEDECKER

LYRIC, INC.
John C. Snedeker, President
12 Wilmington Island Road
Savannah GA 31410
912-897-4764

4 November 1983

US Department of Energy
Savannah River Operations Office
PO Box A
Aiken, SC 29801

Att: Mr. M. J. Sires, III
Assistant Manager for Health, Safety and Environment

Re: Draft Environmental Impact Statement
DOE/EIS-0108D, dated September 1983
"L-Reactor Operation---"

Dear Mr. Sires:

We welcome this opportunity to submit comments on the subject Draft EIS.

We understand that the pertinent comments being solicited at this time pertain to the environmental consequences of the re-start of the L-Reactor, and that the need for the re-start has already been established. For the record, however, we feel that it is important to stress that the requirement to increase the output of weapons-grade plutonium and tritium was identified in 1980 by the National Security Council (NSC) in the context of modernizing our defense systems; that the increased requirements were defined in the FY 1981-83 Nuclear Weapons Stockpile Memorandum (NWSM) approved by President Carter in October 1980; and re-affirmed in the FY 1983-88 NWSM approved by President Reagan in November 1982.

We wish to commend the Department of Energy and all of the people who contributed to the Draft EIS for a very thorough and highly professional effort. It addresses all of the environmental concerns in depth, and provides a very adequate basis

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	for concluding that the re-start of the L-Reactor will not have an adverse effect on the environment beyond the parameters inherent in the operation of the Savannah River Plant as a whole. While we understand the desire of the editors of the EIS to cover all possible concerns that might be surfaced by people with a legitimate environmental interest (and that could include the entire population of the affected area), we are somewhat troubled by the inclusion of such detail about the plant operation itself. After all, the Savannah River Plant is a major defense installation, not a research facility, and there are many aspects of its operation that should be revealed only to those with a "need to know". The EIS, in our opinion, goes somewhat beyond that limit.	
AE-1	The radiological impacts, including assessments of the results of various accident scenarios, are obviously the principal concern of people in the affected areas. While the data is voluminous and reassuring, the summaries could have been presented in a more "up-front" manner for the lay reader. This is an editorial rather than a technical comment.	The Summary of the EIS has been revised in an attempt to provide a more readable summation for the lay reader.
AE-2	The non-radiological impacts are very thoroughly discussed, and are certainly acceptable on a cost/benefit basis. Having been trained as an engineer, we are conscious of the desirability of conservation of energy, and/or the use of waste energy wherever possible. The thermal energy discharged from the L-Reactor, and presumably from the other reactors as well, is tremendous. The thermal effect on the Steel Creek drainage basin appears to be the major non-radiological impact, and one that cannot be mitigated within the time-frame of the re-start mandate. The localized scope of the impact is acceptable on a cost/benefit basis, but it should be possible to develop productive uses for the thermal energy. Co-generation is mentioned in the EIS as one way of mitigating the thermal impact in time. We would urge the DOE to explore such ways of using the thermal energy in an economically efficient manner. This suggestion is made on a long term basis, and not as a constraint on the approval of the EIS.	Thermal cogeneration as a cooling-water alternative is discussed in Section 4.4.2. of the DEIS. As discussed in Section 4.4.2, thermal cogeneration as a cooling-water mitigation alternative for L-Reactor is not considered economically or technically feasible at this time.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	In summary, we feel that the environmental impacts of the re-start of the L-Reactor have been very adequately assessed, and that the data does not indicate any unacceptable or potentially dangerous conditions arising from its operation. We sincerely hope that the Draft EIS will be approved expeditiously, and that the present legal and legislative constraints on the re-start of the L-Reactor will be removed in an equally expeditious manner. Very truly yours, John C. Snedeker President of LYRIC, INC., Savannah-based management consultants specializing in the aerospace, defense, and high technology industries.	

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	STATEMENT OF J. KELLY NELSON, JR.	
	J. Kelly Nelson, Jr. Real Estate Appraisal Co. 1940 Blossom St. Columbia, SC 29205	
	YOU DON'T HAVE TO BE AN "EXPERT" TO PLAY A MEANINGFUL ROLE IN THE EIS PROCESS. A valuable contribution at this point would be a letter demanding that: 1. DOE facilities be required to comply with federal and state environmental standards applicable to commercial reactor sites; and 2. Steps be taken to avoid damage to the environment before startup. We urge you to write such a letter to DOE. If you have questions about the hearings, the draft EIS, or the L-Reactor, call me at 803-256-7298. YOUR INVOLVEMENT IS IMPORTANT. I request that:	
AF-1	1. DOE facilities be required to comply with federal and state environmental standards applicable to commercial reactor sites; and	As stated in response to comment AA-3, the restart of L-Reactor will be in compliance with all applicable Federal and state environmental protection requirements. Further, restart of L-Reactor will meet DOE radiation protection standards that are comparable to those of the Nuclear Regulatory Commission (10 CFR 20) for a production facility (i.e., 500 millirems to the whole body in any one calendar year). The need for specific engineered safety features for nuclear reactors varies according to the design and operating differences that exist between different types of reactors. Commercial light-water nuclear reactors that have containment domes, for example, have coolant conditions that are at high-pressure (over 2000 pounds per square inch) and at high temperatures (greater than 500°F). L-Reactor, which is used to

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
		produce defense nuclear materials, is of a different design than commercial light-water nuclear reactors; its coolant conditions are at considerably reduced pressure (5 pounds per square inch) and temperature (212°F). The differences that exist between different types of reactors is illustrated by the the Fort Saint Vrain gas-cooled reactor in Colorado, which has no containment dome ans was licensed by the NRC.
AF-2	2. Steps be taken to avoid damage to the environment before startup.	DOE will take all reasonable steps to mitigate the impacts from L-Reactor operation while meeting its mandate to produce nuclear materials. Compliance with the applicable Federal and state environmental protection requirements will ensure that appropriate mitigative actions are taken. In addition, the Department of Energy is cooperating with the Fish and Wildlife Service to develop a Habitat Evaluation Procedure (HEP) plan for the Steel Creek system with the implementation of the preferred thermal mitigation system for L-Reactor. The HEP will identify the value of habitat to be gained or lost with implementation of the preferred L-Reactor cooling-water alternative for use in assessing further mitigation. If required, DOE will implement additional mitigative measures that might be identified through the HEP process dependent on Congressional authorization and appropriation. Also see the response to comment AA-3 regarding compliance with applicable Federal and state environmental protection regulations.
	Please don't do anything to endanger lives or environment!	
	Don't sacrifice S.C. and GA. for the "good" of others--How about in New England, they would complain too much. I believe in arming the U.S. to keep Russia in its place, but not at the expense of lives, when we can do it correctly. (can do it safely) Should have invaded after WW II.	

Comment number	Comments	Responses
	STATEMENT OF MRS. ELLEN G. S. SPIRES 10-19-83 Mr. Melvin J. Sires, III U.S. Department of Energy Savannah River Operations Office Post Office Box A Aiken, South Carolina 29801 ATTN: EIS for L-Reactor Dear Sir: My name is Ellen G. Slice Spires. I live in Swansea, S.C. off RD 9. I am 22 years old. I have two children and a wonderful husband. At first I wasn't sure I should even write, thinking in terms of it happening anyway, no matter what I or anyone	
AG-1	else does. But then I thought about my first husband James A. Slice. We were married 3 years. He worked at SRP about 2 of these years. He started feeling tired and weak in the last part of May-1980. By June 12th, the doctor told me he had cancer of an unknown origin. He died Sept. 17, 1980. He had turned 24 Sept. 12, 1980.	James A. Slice worked as a carpenter for Du Pont Construction at SRP from December 1977 to February 1979 and from March 1980 to September 1980. He also worked for another construction firm at SRP from March 1979 to May 1979. He had no known exposure to suspect carcinogenic agents during his Du Pont service and had a total measured radiation exposure that was less than natural background radiation. It has not been possible to assign any initiating cause for his cancer, but available evidence makes it highly unlikely that it was work-related.
AG-2	You probably already think you know what I'm thinking and you're right. It really bothers me that the "L-Reactor is going to be started up again." The main reason I am writing this letter is to demand that DOE facilities be required to comply with federal and state environmental standards applicable to commercial reactor sites;	See the responses to comments AA-3 and AF-1 regarding DOE's commitment to comply with applicable Federal and state regulations and the differences between SRP reactors and commercial light-water reactors.
AG-3	and that steps be taken to avoid damage to the environment before startup; because what can you do when it's been done? Doesn't anyone care?	See the responses to comments AA-3 and AF-2 regarding DOE's commitment to comply with applicable Federal and state regulations and to take all reasonable steps to mitigate impacts.
	Mrs. Ellen G. S. Spires Rt. 2, Box 83-AA Swansea, SC 29160	

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	STATEMENT OF MARY LIRA AND WITOLD KOSICKI	
	Mr. Melvin J. Sires, III U.S. DOE Savannah River Oper. Office Aiken, SC 29801	
	Dear Sir,	
	Unless you can give substantive reasons to the contrary we demand that:	
AH-1	1. DOE facilities be required to comply with Federal and State environmental standards applicable to commercial reactor sites.	See the responses to comments AA-3 and AF-1 regarding DOE's commitment to comply with applicable Federal and state environmental regulations and the differences between SRP reactors and commercial light-water reactors.
AH-2	2. Steps be taken to avoid damage to the environment before startup of the facilities.	See the responses to comments AA-3 and AF-2 regarding DOE's commitment to comply with applicable Federal and state environmental regulations and to take all reasonable steps to mitigate impacts.
	Thank you for your attention, and hopefully your cooperation.	
	Mary Lira and Witold Kosicki 109 Ligustrum Lane Columbia, SC 29209	

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	STATEMENT OF MRS. JEAN MAY 935 Law Lane Mt. Pleasant, SC 29464 October 21, 1983 Mr. Melvin J. Sires III Assistant Mgr. for Health, Safety & Environment U.S. Department of Energy P. O. Box A Aiken, South Carolina 29801 Re: EIS for L-Reactor Dear Sir:	
A1-1	I am distressed to hear the possible start-up of the Savannah River Reactor in a manner that may be harmful to many... me included. It is my feeling that not only will its operation be a violation of some South Carolina Laws; but the Federal Government appears to agree to a harmful operation THAT COULD BE AVOIDED.	See the responses to comments AA-1 and AA-3 regarding cooling-water mitigation alternatives and DOE's commitment to comply with applicable Federal and state environmental protection regulations.
A1-2	As I understand it, there would be a direct discharge of about 176,000 gallons PER MINUTE of scalding water; that perhaps involved would be flushing of RADIOACTIVE Cesium into the Savannah River.	See the responses to comments AA-1 and AA-2 regarding cooling-water mitigation alternatives and the relationship of radiocesium and radiocobalt concentrations to EPA drinking-water standards.
A1-3	Please remember that the Savannah River is a source of drinking water for about 70,000 South Carolinians and Georgians down stream. TOXIC CHEMICAL LEAKAGE will be INCREASED in a freshwater that is source for much of the Southeast.	As noted in Sections 4.1.1.5 , 4.1.2.4, 5.1.1.2, and 5.2.6 of the EIS, the operation of L-Reactor will have little impact on the quality (chemical and radiological constituents) of Savannah River water. Nonradioactive discharges will meet the requirements on an NPDES permit issued by the State of South Carolina; radioactive discharges will meet applicable radiation protection standards.
A1-4	Please remember we think some of the impacts ARE AVOIDABLE! We do not think the health of many residents should be sacrificed for Business...maybe mean LARGER PROFITS if safety steps are by-passed.	DOE fully agrees that the health of residents should not be sacrificed. DOE's health standards are consistent with industry requirements (see also the response to comment AA-3). The health and safety of employees and residents are and have always been a primary consideration in operating the Savannah River Plant.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
		The Department of Energy is an agency of the U.S. Government and E. I. du Pont de Nemours and Company operates the SRP for DOE without fee.
	Please consider these comments and AVOID steps that may be detrimental to the health of many. Sincerely yours, Mrs. Jean D. May	

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	STATEMENT OF ROBERT H. DRIGGERS Under the Sun, Inc. P. O. Box 4486 Greenville, SC 29608 803/232-6715 Oct. 22, 1983 Mr. Melvin J. Sires, III U.S. Department of Energy Savannah River Operations Office P.O. Box A Aiken, SC 29801 Dear Mr. Sires: I will not be able to attend any of the public hearings that have been scheduled on the startup of the L-Reactor, but I did want to express my concerns about the effect that it may have on the surrounding environment.	
AJ-1	It is my understanding that the L-Reactor will increase the load on existing seepage basins by about 33%. These basins are currently leaking toxic chemicals into the Tuscaloosa water aquifer and it seems very short-sighted to compound the existing problem rather than working to correct it.	The EIS provides extensive discussions of the ground-water regime at SRP (Section 3.4.2 and Appendix F) and of the potential impacts to ground waters from the operation of L-Reactor and its support facilities in Chapters 4 and 5. This final EIS has been modified to reflect the current wastewater discharges to seepage/settling basins and to more clearly define the incremental impact of the L-Reactor restart on groundwater. The incremental increase--"33 percent"--in discharges to seepage basins does not in and of itself reflect a substantial impact to groundwater. In early 1983, DOE announced the detection of chlorinated hydrocarbons (27 micrograms per liter) in two wells in the A-Area, which produce from the Tuscaloosa Formation. Subsequent investigations of this reported contamination (Geraghty & and Miller, 1983) have concluded that this contamination of the Tuscaloosa Formation did not result from the vertical migration of chlorinated hydrocarbons through the clay units that overlie the Tuscaloosa. Investigations have concluded that the

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
		chlorinated hydrocarbons entered these wells by migration from shallow groundwater through defects in the cement grout of at least one production well and down the well to the Tuscaloosa Formation. The chlorinated hydrocarbons are primarily confined to the Tertiary sediments above the base of the Congaree Formation. Remedial actions to prevent the migration of these contaminants into defective well casings will confine the contaminants to the Tertiary groundwater system. Recent analysis of samples of production and monitoring wells have not detected chlorinated hydrocarbons in the Tuscaloosa Formation above the limit of detection (1 ppb). The absence of the detection of the chlorinated hydrocarbons in the Tuscaloosa Formation evidences the effectiveness of the confining clay units that overlie the Tuscaloosa Formation. The incremental increase in discharge to the M-Area settling basin from the restart of L-Reactor is not expected to further contaminate the Tuscaloosa Formation. Groundwater protection measures at the M- and A-Areas will consist of a remedial action program to remove contaminants in the Tertiary groundwater, and the phaseout of the M-Area settling basin by April 1985. The L-Reactor incremental discharges to the M-Area settling basin are not hazardous except for low pH. The incremental discharges to the settling basin until April 1985 are expected to cause only a minor and localized increase in the concentrations of contaminants that are entering the Tertiary groundwater system. With the implementation of the remedial action program, consisting of recovery wells and an air stripper, this incremental increase will be intercepted and removed. The restart of L-Reactor would also result in radioactive discharges to the L-Area seepage basin that are not hazardous, and incremental radioactive discharges to the existing Separations Area (F- and H-Areas) seepage basins. The present discharges to the F- and H-Area seepage basins are non-hazardous except for frequent periods of low pH and infrequent discharges of hazardous levels of mercury to the H-Area seepage basins. In

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
		addition, recent discharges to the H-area seepage basins have contained hazardous levels of chromium; however, these hazardous levels of chromium were primarily associated with the processing of radioactive waste in H-Area waste tanks and the processing of offsite fuel elements. The incremental increase to the F- and H-Area seepage basins due to L-Reactor operation is not expected to be hazardous except for low pH and occasional discharges of mercury to the H-Area seepage basins that will be less than 8.0 kilograms per year. The discharges to the L-, F-, and H-Area seepage basins are not expected to impact the Congaree and Tuscaloosa groundwaters. The green clay and the thick low permeability clay units at the base of the Congaree and upper Ellenton Formation will act as effective barriers to the downward migration of contaminants. Above the Congaree Formation, contaminants will migrate from the seepage basin to onsite streams. DOE plans to requests fiscal year 1986 Congressional funding for an effluent treatment facility to process the wastewater discharge to the F- and H-Area seepage basins. This final EIS contains a new Section 6.1.6 which discusses the draft "SRP Groundwater Protection Implementation Plan." This plan was recently developed to examine strategies and schedules for sitewide mitigative actions required to protect the groundwaters beneath the SRP. This plan has been reviewed by EPA and the State of South Carolina and is currently being revised. The final plan will be the subject of a separate NEPA review.
AJ-2	I'm also very disturbed that the DOE would choose to ignore and violate state water quality regulations by discharging water in excess of the allowed temperature.	See the responses to comments AA-1 and AB-13 regarding cooling-water mitigation alternatives.
AJ-3	This seeming disregard for the quality of the environment that we all share is one which I can't understand or accept. We all have a responsibility to pass on to our children a safe and healthy place to live. I urge you to use your position of responsibility to work for the improvement of environmental quality instead of contributing to its decline.	The SRP is not only a site for the production of defense nuclear materials, but it is also a National Environmental Research Park providing a significant area of protection from uncontrolled influence. A forest management program was begun in 1952 that consisted of planting old fields with loblolly, slash and longleaf pines. By 1978, more than 100,000,000

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
		trees had been planted. The deer population on the SRP is one of the largest in the Southeast due to the protection afforded by SRP. Additionally, species and vegetation enhancement programs have been undertaken on SRP. DOE is spending more than $50 million a year on environmental activities at SRP.
	Your decision in this matter will affect many people for generations to come. I hope you will think about them and have the courage to speak for their right to a healthy environment. Sincerely, Robert H. Driggers	

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	STATEMENT OF FRED M. REESE, JR. October 21, 1983 Mr. Melvin Sires, III U.S. Dept. of Energy Savannah River Operations Office P.O. Box A Aiken, SC 29801 Dear Mr. Sires:	
AK-1	As a South Carolinian, a patriotic American, a concerned world citizen, I write to express anger, hurt and disappointment for the callous way our environment safety is being compromised by the startup procedures presently underway for the SRP L-Reactor.	DOE has considered environmental safety extensively in L-Reactor restart preparations. Approximately 60 percent of the $204 million spent on L-Reactor renovation went to improve safety and environmental controls. Also, about $5 million has been spent to date on environmental analyses of the impact of the restart. Also see the response to comment AA-3 regarding DOE's commitment to comply with applicable Federal and state environmental protection regulations.
AK-2	It seems incredible to me that DOE policies are permitted to by-pass state and federal standards designed to represent public interest. It scares me to realize that "production schedule demands" can override conclusive evidence of need for further careful study of the environmental impact of L-Reactor start-up.	See the responses to comments AA-1 and AA-3 regarding issuance of an NPDES permit for thermal discharge and DOE's commitment to comply with applicable Federal and state regulations.
AK-3	It is a sad commentary on the democratic process when legitimate public concern and well documented violations of public policy can be put aside by DOE political imperatives. You are our best hope for requiring legitimate recognition of persistent concerns from area residents and all who care about a viable, safe and environmentally productive community. Please insist on consistent uniform standards for all agencies involved. For the sake of all of us.	DOE is following all provisions of the NEPA process.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	Sincerely, Fred M. Reese, Jr. 1732 Crestwood Columbia, SC	

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	STATEMENT OF MRS. R. W. WHISNANT	
	October 21, 1983	
	Dear Mr. Sires,	
	I am against the proposed resumption of operations of the L-Reactor at the Savannah River Plant. This would be very harmful to our environment.	
AL-1	DOE facilities need to be required to comply with federal and state environmental standards that apply to commercial reactor sites.	See the responses to comments AA-3 and AF-1 regarding DOE's commitment to comply with applicable Federal and state environmental regulations and the differences between SRP reactors and commercial light-water reactors.
AL-2	Steps must be taken to avoid damage to our environment before startup.	See the responses to comments AA-3 and AF-2 regarding DOE's commitment to comply with applicable Federal and state environmental regulations and to take all reasonable steps to mitigate impacts.
	Sincerely,	
	Mrs. R. W. Whisnant	

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	STATEMENT OF MRS. ZELDA NOLAND	
	Mr. Melvin J. Sires III	
	Dear Sirs:	
AM-1	I understand that Environmental experts in various fields of S.C. and other fields are now in the process of reviewing drafts of E.I.S. Hopefully they will assess alternatives and suggest the most desirable without regard to alleged Production Scheduling Demands.	The EIS describes two sets of alternatives--production alternatives in Chapter 2 and mitigation alternatives in Section 4.4. The Record of Decision on this final EIS will balance the possible gains from these alternatives against the losses that they entail in delaying or eliminating the plutonium production called for in the Nuclear Weapons Stockpile Memoranda signed by Presidents Carter and Reagan.
AM-2	If we don't insist that D.O.E. take these and all comments into account, if our experts recommendations remain unread and undefended in the appendix of the E.I.S., the progress we've made in forcing the Federal Government to take our interests and health and thoughts into account and to obey their own laws and ours will be called into question. I have worked for the environmentalist Energy Research Foundation and gotten several hundred names and their comments and letters too. I think	The EIS and NEPA process are designed to ensure that all interested citizens can have input into the decision process.
AM-3	every person should be vitally interested in this issue. I'm 68 years old and have a difficult time breathing all the fumes and smogs and etc. now.	Estimates of atmospheric releases from L-Reactor and its support facilities are given in Sections 4.1.1.6, 4.1.2.1, and 5.1.2.2. These releases result in ambient air concentrations that fall within all applicable state and Federal guidelines.
	I feel that if we don't wake up and try to do something about all this impact on our air and land and waters and vegetation we will all be wiped off the face of the Earth by our own indifference and won't have to wait on the Communists to do it.	
AM-4	I for one would like to see people more concerned about anything that harms Gods great world He loans us to use. I do hope you will consider all the things that were discussed and brought to the public's attention. Our fresh water sources are being polluted every day by plants and other industries and getting away with it. What good is a stiff fine if 10 years	See the response to comment AM-2 regarding the EIS and NEPA process.
AM-5	later we still have the pollutant in our water and food? Much of this impact is avoidable and we believe they should be avoided. Thank you for your attention.	Unavoidable and irreversible impacts for the reference case and preferred alternative are considered in Chapter 8 of this EIS. Also see the responses to comments AA-3 and AF-2 regarding DOE's commitment to comply with applicable Federal and state regulations and to take all reasonable steps to mitigate impacts.
	Sincerely,	
	Mrs. Zelda Noland	

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	STATEMENT OF CATHERINE C. BRADSHAW	
	Mr. M. J. Sires, III:	
	I strongly oppose the proposed resumption of L-Reactor operation at the Savannah River Plant in Aiken, S.C. Please include my position in the response to the Draft EIS.	Comment noted.
	Sincerely,	
	Catherine C. Bradshaw 206 Hurt St NE Atlanta, GA 30307 (404) 524-4190	

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	STATEMENT OF MARY EMMA GLEFFE Columbia, S.C. 29209 828 Byron Road Oct. 26, 1983 Mr. Melvin J. Sires III U.S. Department of Energy Savannah River Operations Office Post Office Box A Aiken, South Carolina 29801 Dear Sirs:	
AO-1	I am concerned about the Savannah River Plant reopening and pouring all that contaminated water in the streams. Please take some kind of measures to keep our water supply free of chemicals that is harmful to the fish and wildlife and us human beings. Please take measures to protect us. Sincerely, Mary Emma Gleffe	Liquid nonradioactive releases from SRP operations are governed by a National Pollution Discharge Elimination System (NPDES) permit. This permit limits the nonradioactive releases to limits established by the EPA and State of South Carolina to protect the health and safety of the surrounding population. Wastewater discharges from the proposed L-Reactor restart are discussed in Sections 4.1.1.5 and 5.1.1.2 of the EIS. Radioactive liquid releases are governed by DOE radiation protection standards (DOE Order 5480.1A, Chapter 11) that are comparable to those of the Nuclear Regulatory Comission (10 CFR 20) for a production facility (i.e., 500 millirem to the whole body in any one calendar year). Sections 4.1.2, 5.1.2, and 5.2.6 of the EIS discuss liquid radioactive releases. Also see the response to comment AA-3 regarding DOE's commitment to comply with applicable federal and state environmental regulations.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	STATEMENT OF JANET T. ORSELLI Radiation Awareness Box 81 Folly Beach, SC 29439 October 21, 1983 Mr. M. J. Sires, III Assistant Manager for Health Safety and Environment U.S. Department of Energy Savannah River Operations Office P. O. Box A Aiken, South Carolina 29801 Dear Mr. Sires: COMMENTS ON THE L-REACTOR DRAFT ENVIRONMENTAL IMPACT STATEMENT	
AP-1	Our organization, Radiation Awareness, is very concerned about the numerous omissions, conflicting information and serious defects in the Draft Environmental Impact Statement (DEIS). From the outset, it is unclear to us why the NUS Corporation was chosen to prepare the DEIS, when their initial Finding of No Significant Impact was denounced as defective and unreasonable by a U.S. District Court Judge.	See the response to comment AB-20 regarding the opinion of the United States District Court and the preparation of the Finding of No Significant Impact.
	CUMULATIVE IMPACTS	
AP-2	During the scoping process, numerous individuals and state and federal agencies requested that the DEIS provide information regarding the routine and accidental releases of radioactivity over the 25-30 year operation of the Savannah River Plant. This information is not provided nor even addressed in the DEIS. As we stated in our scoping letter, "without this vital information, it would be impossible to seriously evaluate the total, cumulative health effects of the L-Reactor restart" (K-97). This data must be made available in the Final EIS.	The purpose of the EIS is to evaluate the environemental consequences of the proposed restart of L-Reactor. Routine and accidental releases of radioactivity from past operations at SRP are covered in the references listed in Chapters 4 and 5. In particular, Appendix A of Environmental Impact Statement, Waste Management Operations, Savannah River Plant (ERDA-1537) contains tabulations of radionuclide releases from the startup of the SRP through 1975. Annual releases since 1975 have been published in a series of publicly available annual reports entitled Environmental Monitoring in the Vicinity of the Savannah River Plant.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	THERMAL DISCHARGE	
AP-3	The DEIS's plan to discharge 176,000 gallons per minute of scalding water into Steel Creek, is totally unacceptable, and is a direct violation of state water quality standards. It appears that the DOE continues to assume it can exempt itself from the water quality regulations that it expects private industry to meet. DOE facilities must be required to comply with federal and state environmental standards, and therefore the Final EIS must provide a comprehensive study of viable, legal alternatives to the plan proposed in the DEIS.	See the responses to comments AA-1 and AA-3 regarding issuance of an NPDES permit for thermal discharge and DOE's commitment to comply with applicable federal and state regulations, and the response to comment AB-13 regarding information on cooling-water alternatives contained in the EIS.
	ECOLOGY	
AP-4	The DEIS's plan to destroy 1000 acres of valuable wetlands and turn Steel Creek stream into a non life-producing mudflat is also an unacceptable solution. The DEIS fails to address how the DOE plans to mitigate the fatal effects which the extremely high thermal temperatures will have on the majority of existing forms of aquatic and other endangered species. The DEIS states that forms of aquatic life such as snakes, turtles, fish larvae, will be destroyed and the endangered American alligator's habitat will be eliminated.	The mitigation of thermal impacts to aquatic and endangered species could be attained through the implementation of alternative cooling systems, which are described in Section 4.4.2 and Appendix I of the EIS. Also see the response to comment AA-1 regarding cooling-water alternatives. The National Marine Fisheries Service has concurred in DOE's determination that the restart of L-Reactor operation will not jeopardize the population of the shortnose sturgeon in the Savannah River. On February 25, 1983, the FWS issued a Biological Opinion on the American alligator (Alligator mississippiensis), which stated that the operation of L-Reactor as proposed (direct discharge, of cooling water) would not jeopardize the continued existence of this species. Since the issuance of this opinion, the Department of Energy has identified the discharge of cooling water to a 1000-acre cooling lake as its preferred cooling-water system for L-Reactor. An updated biological assessment that includes the Department's preferred cooling-water system was transmitted to the FWS at the end of March 1984. Currently, the Department is awaiting the review of this updated assessment by the FWS. The Department anticipates that the FWS review will not alter the prior opinion that the operation of L-Reactor would not jeopardize the continued existence of this species. Also, see the response to comment AD-3 regarding the wood stork.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
AP-5	In addition, the DEIS comments that the increase in water temperature could precipitate the onset of red sore, a bacterium-caused disease that would have serious detrimental effects on the already endangered American alligator. And the DEIS's plan for a winter startup would be fatal to adult alligators that overwinter in shallow water areas. The DEIS doesn't explain what mitigation measures it plans to instigate to protect this species.	Red sore disease is caused by the bacterium Aeromonas hydrophilla, a ubiquitous organism in surface waters in the southeast. Any increased incidence of red sore disease is more likely to be a result of stress on the host organism rather than changes in the bacterium. Alligators are expected to avoid the heated effluent by moving to peripheral unaffected wetland areas.
AP-6	The Final EIS must make this information available and provide information regarding the Biological Opinions obtained from the U.S. Fish and Wildlife Service.	Section 7.3 of this final EIS presents the current status of DOE's consultations with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service.
	GROUNDWATER CONTAMINATION	
AP-7	The DEIS fails to address or explain the causes for the serious contamination of the Tuscaloosa aquifer, and how the wastes will be handled in the future to prevent further contamination. Since the L-Reactor startup will increase by 33 percent the load on seepage basins which are currently leaking toxic chemicals into the aquifer, the question of how this problem will be corrected is a very crucial one. The DEIS tells us that the mitigation of this contamination will be the subject of a separate NEPA review. Our organization feels that this issue not be dismissed until a later date, but must be addressed in the Final EIS.	See the response to comment AJ-1 regarding seepage basins and ground-water contamination at SRP.
	THE NEED FOR THE L-REACTOR	
AP-8	The DEIS miserably fails to comply with the requirements of the National Environmental Policy Act in this area. The DEIS fails to adequately address alternatives to the L-Reactor restart and fails to explain why the restart is crucial at this time.	See the response to comment AB-2 regarding the discussion of need and production alternatives in the EIS.
	CONCLUSION	
	Please send copies of our comments to the preparers of the DEIS, whose names are listed on pages LP-2 through LP-14 in Volume 2.	

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
AP-9	On behalf of Radiation Awareness, I request that a discussion meeting be arranged as soon as possible between consultants with NUS Corporation, State/Federal officials and representatives of commenting organizations, including Radiation Awareness. The purpose of this meeting would be to discuss the failures of the DEIS, which if repeated in the Final EIS would prevent the document from complying with the National Environmental Policy Act. Sincerely, Janet T. Orsellf Research Consultant Radiation Awareness Box 81 Folly Beach, SC 29439 Tel. 803-588-2322	DOE conducted a 45-day public comment period and held four public hearings to receive comments on the Draft EIS. Representatives of DOE were available at the public hearings to discuss any questions following the hearing session.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	STATEMENT OF MARY G. DABBS October 25, 1983 Dear Mr. Sires, I oppose strongly the resumption of the L-Reactor operation at the Savannah River Plant in Aiken. Please include my position in your response to the decision. Thank you, Mary G. Dabbs 854 Barton Woods Rd, N.E. Atlanta, GA 30307	Comment noted.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	STATEMENT OF SHERRY W. CLEMENTS	
	Dear Mr. Aiken, I oppose strongly the resumption of the L-Reactor operation at the Savannah River Plant in Aiken! Please include my position in your response to the decision. Yours truly, Oct. 25, 1983 Sherry W. Clements	Comment noted.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	LETTER OF AGNES H. EVERETT AND CHARLES H. EVERETT	
	Mrs. Charles Henry Everett 4211 Devine Street Columbia, South Carolina 29205	
	October 25, 1983	
	Mr. Melvin J. Sires, III DOE U.S.	
	Dear Mr. Sires,	
AS-1	My husband and I strongly urge--we'd like to demand--that DOE facilities be required to comply with Federal and state environmental standards applicable to commercial reactor sites. and	See the responses to comments AA-3 and AF-1 regarding DOE's commitment to comply with applicable Federal and state environmental regulations and the differences between SRP reactors and commercial light-water reactors.
AS-2	That steps be taken to avoid damage to the environment before start up.	See the responses to comments AA-3 and AF-2 regarding DOE's commitment to comply with applicable Federal and state environmental regulations and to take all reasonable steps to mitigate impacts.
AS-3	We do not want to see more pollution and creation of wastelands in our wetlands.	Comments noted.
	Sincerely,	
	Agnes H. Everett Charles H. Everett	

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	STATEMENT OF ROBERT J. MARSHALL LUTHERAN THEOLOGICAL SOUTHERN SEMINARY 4201 North Main Street Columbia, South Carolina 29203 October 27, 1983 Mr. Melvin J. Sires, III U.S. Department of Energy Savannah River Operations Office Post Office Box A Aiken, South Carolina 29801 Attn: EIS for L-Reactor I continue to be concerned about the way the planned start-up of the L-Reactor at the Savannah River Plant is being managed.	
AT-1	The most recent information indicates that hundreds of thousands of gallons of scalding water will be discharged into Steel Creek in violation of state regulations.	See the responses to comments AA-1 and AA-3 regarding cooling-water alternatives and DOE's commitment to comply with applicable Federal and state regulations, and the response to comment AB-13 regarding information on cooling-water alternatives contained in the EIS.
AT-2	A 33% increase in load will occur for seepage basins that are already leaking toxic chemicals into the Tuscaloosa aquifer. These and other facts represent significant impacts which need to be avoided.	See the response to comment AJ-1 regarding seepage basins and ground-water contamination at SRP.
AT-3	I am convinced that the Department of Energy has not considered adequately all of the options to its present plans. The Department must take public, written and detailed notice of the assessment now being made of the Environmental Impact Statement by many experts.	DOE began preparing the L-Reactor EIS based on comments received on an Environmental Assessment (DOE/EA-0195), comments from the public hearing conducted by the Senate Armed Services Committee on February 9, 1983 (Senate Hearing 98-18), and from the 90-day public review period on the hearing record of the Senate Armed Services Committee hearing (DOE/SR-OE-5007). The final scope of the EIS is based on the substantive comments

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
		received during the scoping period, including those received at four scoping hearings (Scoping Report for the Environmental Impact Statement, DOE/SR-OE-5008). In developing the EIS, DOE used standard methodologies and relied on scientific and other sources of information compiled from more than 100 publicly available documents that had been developed during the last 30 years, including data from ongoing studies. This final EIS includes discussions of concerns identified by Federal, state, and local agencies, private organizations, and individuals during the EIS public review process. This EIS is available to all interested agencies and the public. After the final EIS is available, DOE will issue a public Record of Decision based on the EIS.
	Please give careful consideration to the welfare of the people in the Southeast. Sincerely, Robert J. Marshall	

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses

THE TOWN OF JACKSON
Telephone 471-2227
Jackson, South Carolina 29831

October 10, 1983

United States Department of Energy
Savannah River Operations Office
P.O. Box A
Aiken, South Carolina 29801

Gentlemen:

The Town of Jackson, South Carolina, is a close neighbor to the Savannah River Plant located in Aiken County, South Carolina. We have enjoyed very good relations with SRP officials for over thirty (30) years.

We have extreme confidence in the DUPONT Company, the Department of Energy and the United States Government, that all phases of Plant operations will be done safely and economically. Based upon these determinations we would like to propose the following resolution.

RESOLUTION

THE TOWN COUNCIL AND MAYOR DO HEREBY RESOLVE TO GIVE THEIR FULL SUPPORT TO THE STARTUP OF THE L-REACTOR.

BE IT FURTHER RESOLVED THAT THE TOWN OF JACKSON DOES FULLY SUPPORT THE BUILDING OF A NEW REACTOR AT THE SAVANNAH RIVER PLANT.

WE URGE THE UNITED STATES DEPARTMENT OF ENERGY TO GIVE THEIR FULLEST CONSIDERATION TO SRP BEFORE SELECTING A SITE FOR THIS NEW REACTOR.

Comments and resolution noted.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses

Respectfully submitted:

COUNCIL MEMBERS

Hoyt E. Dunsieth, Mayor	Fred Darnell	A. Ellis
CC: President, Ronald Reagan US Dept. of Energy Secretary Senator Strom Thurmond Senator Fritz Hollings Rep. Butler Derrick Governor Richard Riley State Rep. Irene Rudnick Chmn Aiken County Council	Dennis Boring	Jean Collier
	Gurney Wiggins	Russell McKinney

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	STATEMENT OF DORETHEA SMITH October 31, 1983 Mr. Melvin J. Sires, III *U.S. Department of Energy* Savannah River Operations Office Post Office Box A Aiken, South Carolina 29801 Attn: EIS for L-Reactor Dear Mr. Sires: I'm very concerned about the Environment we live in today, we have the Department of Energy (DOE) along with the Environmental Impact Statement. The L-Reactor Operation at the Savannah River Plant should be studied very careful because we are talking about human beings, and the Environment which we live in.	
AV-1	The startup of the L-Reactor will increase by 33% the load on seepage basins currently leaking toxic chemical into freshwater source for much of the Southeast.	See the response to comment AJ-1 regarding seepage basins and groundwater contamination at SRP.
AV-2	The amount of liquid high-level wastes produced at the Savannah River plant will increase by 33%.	Incremental processing by the chemical separations facilities as a result of L-Reactor operation will generate 1150 to 2300 cubic meters of liquid waste per year. This volume will be concentrated to 380 to 760 cubic meters per year. A maximum of three tanks would be required per decade of L-Reactor operation; however, because the Defense Waste Processing Facility is expected to be immobilizing SRP high-level waste into borosilicate glass by 1989, no new high-level radioactive waste tanks are expected to be required for L-Reactor. Section 5.1.2.8 describes the incremental impacts of L-Reactor on the waste-management operations at SRP.
AV-3	The Department of Energy plans involve the flushing of radioactive cesium into the Savannah River. This is not safe and I feel the startup of the L-Reactor should be avoided in South Carolina.	See the response to comment AA-2 regarding the relationship of radiocesium and radiocobalt concentrations to EPA drinking-water standards.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
AV-4	The Department of Energy facilities should be required to comply with Federal and state environmental standards applicable to commercial reactor sites;	See the responses to comments AA-3 and AF-1 regarding DOE's commitment to comply with applicable Federal and state environmental regulations and the differences between SRP reactors and commercial light-water reactors.
AV-5	and very serious steps be taken to avoid damage to the Environment before startup.	See the responses to comments AA-3 and AF-2 regarding DOE's commitment to comply with applicable Federal and state environmental regulations and to take all reasonable steps to mitigate impacts.
	And if proving found not to be safe for our Environment that we live in, I urge you and others not to start up the L-Reactor in South Carolina for the production of plutonium. I would like to have a copy of the Final Draft Environmental Impact Statement, along with any other information you may be able to share with me. Thanking you in advance for your assistance. Sincerely, Dorethea Smith	
	ADDITIONAL COMMENTS MADE AT PUBLIC HEARING ON NOVEMBER 1, 1983	
AV-6	As we can see, when we have public hearings to invite citizens here to meet with you to discuss the issue at hand, it's a time when citizens are at work. Most citizens are at work at 9:00 o'clock, and some of them are at work at 6:00 o'clock.	Hearings were held at both 9 a.m. and 6 p.m. in Augusta, Georgia, Aiken and Beaufort, South Carolina, and Savannah, Georgia, to provide a maximum opportunity for citizen response with minimum interference to work schedules. In addition, written comments were solicited in the EIS and in newspaper advertisements from persons who were unable to attend the hearings or who wished to supplement their oral statements.
AV-7	I'm sure we can't make it available for all that are concerned, but we should do something in the interest of the people that are being -- their lives are being jeopardized by trying to restart the L-Reactor.	As stated in the EIS, DOE will comply with all applicable Federal and state environmental protection regulations.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
AV-8	I'm sure you have people who are saying that the L-Reactor is safe, but we understand that there's very toxic chemical that are being produced at the Savannah River Plant that causes birth defects and causes a lot of effects to human beings. We are asking each of you to please do something about the environment that we live in. We have the EPA; we have DOE; we have all these people who are working that's supposed to be protecting the environment which we live in. And every time you look around, there's something wrong. As you can see, we have people being born with a lot of birth defects, and it's no more than the toxic chemicals that we are drinking from our table.	Toxic chemicals and radioactive materials being produced and/or utilized at the Savannah River Plant are contained and handled in a safe manner. Releases to the environment are maintained within strict limits. The calculated overall reference case health effects to the population within an 80-kilometer radius around SRP and in the downstream population that consumes river water are 0.002 and 0.005 excess cancer death from the first and tenth years of L-Reactor operations, respectively. Risks from a 10-percent core-melt reactor accident are even lower, about 2.4×10^{-6} excess cancer death per reactor-year (Section 4.2.1.5). No detrimental health effects due to releases from the Savannah River Plant have been observed, and none are predicted to occur as a result of L-Reactor operation beyond those already identified in the EIS (Sections 5.1.2.5 and 5.2.7). These conclusions are supported by three health effects studies by Professor H. I. Sauer of the University of Missouri-Columbia (now retired), whose findings show no evidence of unusual cancer or infant death rates near the Savannah River Plant (Section 6.1.5).

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses

STATEMENT OF A. R. JARRETT, PH.D., P.E.

THE PENNSYLVANIA STATE UNIVERSITY
249 AGRICULTURAL ENGINEERING BUILDING
UNIVERSITY PARK, PENNSYLVANIA 16802

College of Agriculture
and
College of Engineering
Department of Agricultural Engineering

October 28, 1983

Mr. Melvin J. Sires
Savannah River Operations Office
P.O. Box A
Aiken, SC 29801

Dear Mr. Sires:

In a letter dated October 27, 1983, I contributed a few comments to the Draft EIS on the L-Reactor Operation at Savannah River Plant. There was one correction necessary in that statement. I would appreciate if you would disregard the earlier comment and replace it with the enclosed statement. Thank you for your consideration.

Sincerely,

A. R. Jarrett, Ph.D., P.E.
Associate Professor

ARJ/sek

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	I have reviewed both Volume 1 and 2 of the draft Environmental Impact Statement (EIS) or the L-Reactor Operation at the Savannah River Plant (SRP). My review was limited to the areas of surface and subsurface hydrology and soils, areas of my expertise. Based on this review, I find this EIS to be in quite good condition, having addressed the necessary issues. I have noted below one or two areas of concern. These areas of concern appear to be based on interpretations of data collected and published in the EIS.	
AW-1	Page 3-25 and Appendix F reveal an extensive review of the total heads existing at various locations within the SRP. These results are summarized several places, partially Fig. 3-8 and 3-9, which show most of the SRP to be in a zone of upward hydraulic gradient from the Tuscaloosa formation to the Congaree formation. The equal potential map, Fig. 3-9, reveals the magnitude of these head differences ranging from an upward head difference of greater than 30 ft. in the swamp region near the Savannah River where the Congaree is drawn down to support the flow in this river. As one moves northward, the upward differential decreases until it reaches an equal head condition near Par Pond and then a reversal implying that there is presently flow from the Congaree into the Tuscaloosa in the area of Par Pond. Figure 3-9 does not quantify the magnitude of this downward gradient but does suggest that Par Pond and the surrounding area is a recharge zone for the Tuscaloosa. This entire analysis is done using well data from the area, but nothing is said about the condition of pumping or the pumping history of wells used in the analysis when the head data were taken. It must be assumed that these data are under conditions of no withdrawal. The only pump drawdown data I could find in the report was on page 3-36 where drawdown values of 6 to 12 meters are suggested as typical for the existing withdrawal rates of the Tuscaloosa. If one superimposes these drawdowns to the stagnant well levels from the Tuscaloosa, the area of downward gradient enlarges as shown in Figures 1 and 2 (Your Figure 3-9 adapted). Even using the 6-m data enlarges the recharge area to include the L-Reactor area and during discharges creating a 12-m drawdown essentially the whole SRP becomes a recharge area.	The head differences between the upper Tuscaloosa and Congaree Formations at SRP (discussed in Sections 3.4.2.4 and F.4.1) were developed from measurements of the water levels that were made in monitoring wells in these formations, not in production wells. Thus, the head relationships shown in the EIS represent conditions during withdrawals of ground water by production wells. Figures 3-9 and F-30 have been modified to more accurately reflect the subtraction of the piezometric surfaces shown in Figures F-9 and F-18. In M-Area, which produces fuel and target assemblies for SRP reactors, the downward gradient between the Congaree and Tuscaloosa Formations was about 5.5 meters in 1982 (Section F.2.3). This is expected to increase to about 8.5 meters because of pumpage increases in support of L-Reactor operation. Sections 4.1.1.3 and 5.1.1.4 describe the long-term drawdowns in the Tuscaloosa beneath seepage and ash basins in L-, K-, F-, H-, and M-Areas. For example, beneath the L-Area seepage basin, the upward head differential would decrease to 1.4 meters in the long-term. Calculations indicate that the decline (about 0.16 meters per year) in water levels in wells used to monitor heads in the Tuscaloosa aquifer are primarily related to increased pumping rates at SRP (Section 3.4.2.5). Because pumping rates are expected to be relatively stable over the next six years with pumping rates less than in 1983 (Sections 5.1.1.4 and 5.2.3) this rate of decline (0.16 meters per year) is not expected to continue. Changes in the equilibrium piezometric surface developed in response to changes in SRP pumping rates occur very rapidly with near equilibrium levels being attained in about 100 days (Section F.4.2). Thus, stabilization of pumping at SRP is expected to stabilize Tuscaloosa water levels at SRP. A key point of the discussions in

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	This concern is further confounded by extrapolating the well water levels shown in Fig. 3-11 into the future. The water level (I assume stagnant) in well P7A has been declining at the average rate of 0.16 m/yr. and at this rate will reach the head levels in the Congaree (55.0 m) in 2012. A similar extrapolation for wells P5A, P54, and P3A shows the gradient reversal will occur in about 1990 for well P5A and that it already has occurred for the other two wells. I feel the key point which needs to be brought out in the EIS is that a closer look at these data reveals a problem which already exists is the area of the Par Pond and will more than likely increase in magnitude with time assuming the water withdrawal rates at SRP continue to remain about constant. The startup of the L-Reactor will have only a very small impact on this rate of change since the increased water for the L-Reactor is small.	Sections 3.4.2 and F.2 is how the characteristics of the hydrostratigraphic units in the central portion of the SRP afford protection against the contamination of the Tuscaloosa aquifers. The clay layer at the base of the Congaree formation and the upper clay layer of the Ellenton formation are effective confining units and tend to protect lower ground-water sands throughout the SRP (see the response to comment AJ-1, Table F-1, and Section 5.1.1.4, which have been revised). Pollutants entering shallow groundwater will migrate to onsite streams. This is not the case in M-Area, as noted in Section 5.1.1.4, and in the response to AJ-1.
AW-2	The remaining data, which makes this evaluation somewhat unimportant is that the EIS does not outline the extent and locations of the waste disposal operations at the SRP. The assumption has been made, and maybe rightfully so, that the restart of the L-Reactor will have no impact on any of the waste disposal operations within SRP. The EIS does, however, mention (p. S-5) the air-stripping clean up of the Congaree formation which is underway in Area M which implies the same waste disposal situation may evolve in Area L. If sedimentation, evaporation or adsorption waste disposal basins are needed as a result of the L-Reactor restart, their location north of the 6-m drawdown line (Figure 1) can be expected to eventually contaminate the Tuscaloosa especially if non-adsorbed species are included in the waste such as tritium.	The amounts of waste generated and the facilities to be used due to the restart of L-Reactor and incremental support facility operation are discussed in Sections 4.1.1.7, 4.1.2.8, and 5.1.2.8 of the EIS. The quantities of nonradioactive and radioactive pollutants that would be released to seepage basins due to the operation of L-Reactor and its support facilities and the locations of these basins are discussed in Section 3.4.2.2 (location of L-Reactor seepage basin), Sections 4.1.2.2 and 4.4.3.2 (discharges to L-Reactor seepage basin), Section 5.1.1.2 (incremental nonradioactive releases to K-, F-, H-, and M-Area basins), Section 5.1.2 (incremental radioactive releases to basins in the Central Shop area and F-, H-, and M-Area seepage basins), and Appendix F (location of L-, H-, and M-Area seepage basins). Changes to this EIS have been made to reflect the wastewater discharge rates to seepage basins and to more completely describe impacts to ground-water quality and surface water quality impacted by ground-water releases. Based on observations in monitoring wells (Appendix F and Du Pont, 1983 (DPST-83-829)), it is very unlikely that the Tuscaloosa Aquifer will become contaminated due to the operation of L-Reactor and its support facilities in the central portion of SRP. In the central portion of the SRP the green clay (which

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
		is discontinuous in A- and M-Areas) and the clays which overly the Tuscaloosa are effective confining units. The green clay supports large head differences and has been an effective barrier to the downward migration of contaminants to the Congaree Formation. In L-Area this clay is 7 meters thick. Contaminants that might reach the Congaree in L-Area would be transported beneath SRP to the Savannah River in about 76 years. In A- and M-Areas, the chlorinated hydrocarbons reported in the Tuscaloosa Aquifer have entered A-Area production wells via defects in the cement grout of at least one production well and Tertiary groundwaters. Also see the response to comment AJ-1 which discusses the entry of chlorinated hydrocarbons into the Tuscaloosa aquifer, remedial action measures, and the F-, H-, and L-Area seepage basins.
AW-3	A second area of concern is about the expanding delta expected to evolve near the outflow of Steel Creek into the Swamp. Nowhere is the cause of this delta growth described. Are the increased flow rates (minor) expected to accelerate the stream bank erosion to produce the delta? Are particulates from the Reactor included in the discharge stream? Or are natural erosion rates in this area sufficient to produce this delta?	Section 4.1.1.4 of the EIS has been expanded to indicate that delta growth will be caused by erosion of the Steel Creek streambed and banks. The flushing of sediments, accumulated in the 186-basin from the withdrawal of water from the Savannah River, to Steel Creek would contribute only small quantities of sediments to the delta area.

Comment number	Comments	Responses

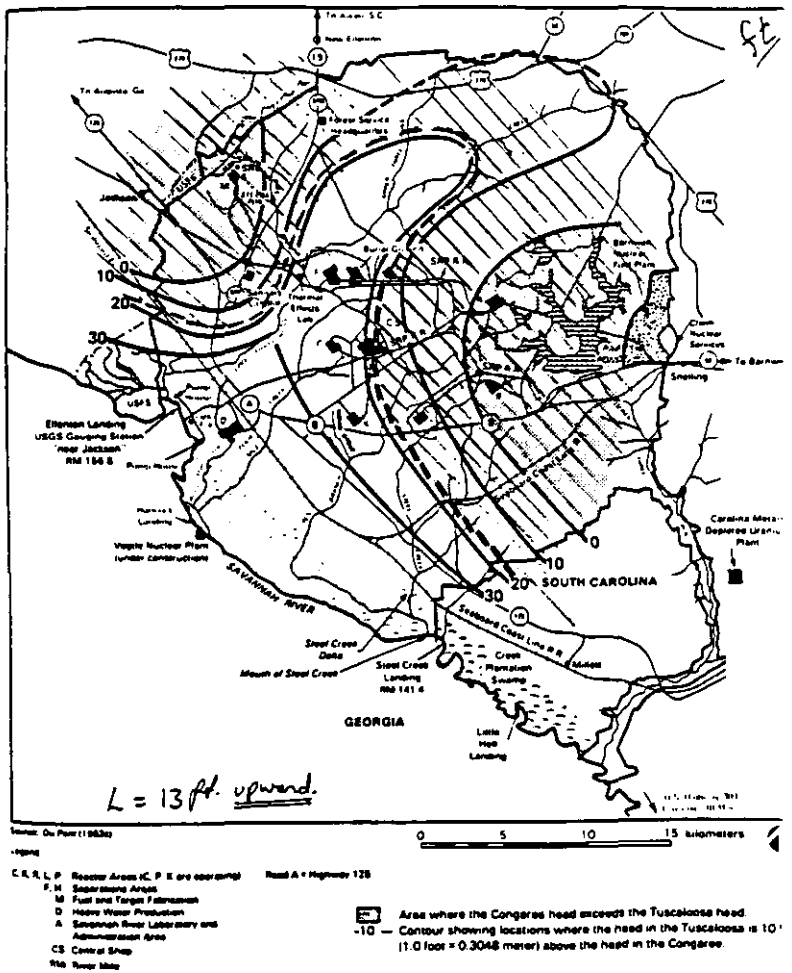

Figure 3-9. Head difference between upper Tuscaloosa and Congaree Formations at SRP.

Figure 1. Equal Head Location Assuming 6-m Drawdown.

Comment number	Comments	Responses

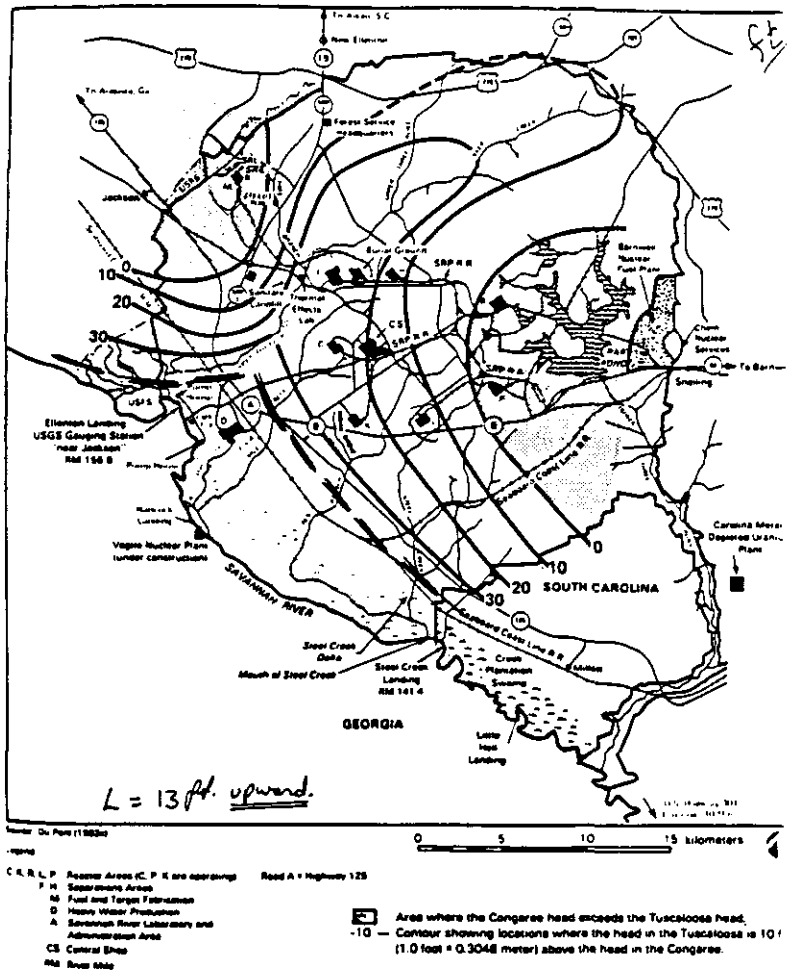

Figure 3-9. Head difference between upper Tuscaloosa and Congaree Formations at SRP.

Figure 2. Equal Head Location Assuming 12-m Drawdown.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	STATEMENT OF IRA DAVIS	
	Mr. Chairman, the Richmond County Property Owners Association wishes at this time to go on record as being heartily in favor of and endorsing the immediate restart of L-Reactor at the S.R.P. without waiting for any more "impact" studies, environmental studies or any other studies. I suggest to you and to this audience that we have already "studied" the subject to death. The most important "study" and the study having the most bearing on the subject is the long successful operation of the entire plant. For thirty years plus it has lived in our midst. There have been no accidents, no babies have been born with three heads and the statistically normal number of people have departed from this world with the usual diseases. How much more proof do we need? L-Reactor is a vital part in upgrading the nation's defense posture. Daily the news swirls around our heads of Red adventurism in every quarter of the globe - Cuba, Grenada, Lebanon - and probably some we don't even know about yet! The only thing that keeps us free from Red attack is the sure and certain knowledge of the men in the Kremlin that an attack would bring a blow down on their own heads in return. No one starts a war they can't win. So let us have done with worrying about what may happen to some obscure species of fish and fowl if we start up L-Reactor. Let us start worrying about what may happen to us if we do not start it up. Let's do it now. It means a better defense, more jobs in our local economy, more money spent in our local business places and increases our chances of sleeping peacefully in our beds at night and dying at a ripe old age in a world at peace. So in conclusion I say to my environmentalist friends. I respect your convictions gentlemen but I am a great deal more worried about what may happen to mankind while we debate the subject than I am worried about some species of fish if we take this step to make ourselves stronger.	Comments noted.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	Thirty years of quite remarkable efficiency should, I think, speak for themselves and deserve to be heard. Let them be heard, here and now. Ira Davis Pres. R.C.P.O.A.	

Comment number	Comments	Responses
	STATEMENT OF JUDITH E. GORDON	
	October 31, 1983	
	SIERRA CLUB South Carolina Chapter ...To explore, enjoy and preserve the nation's forests, waters, wildlife and wilderness...	
	To: Dept. of Energy, Savannah River Plant Operations From: Dr. Judith E. Gordon Re: Draft EIS, L-Reactor Operation, SRP	
	I am here representing the South Carolina and Georgia Chapters of the Sierra Club.	
	This is the fourth time that we, from our opposing points of view, have met to address the environmental problems associated with L-Reactor restart. Speaking for myself, I am thoroughly disheartened with the entire business, particularly when DOE seems determined to proceed with its original plans in spite of all the evidence that contradicts the wisdom of restarting this reactor. It is especially disheartening that few people will know or even care what happens given that press coverage deals more with the general statements made by both sides but seldom covers the evidence that supports these statements. None-the-less, if it is possible to convince even a few persons, then the effort is well made.	
AY-1	Having read the Environmental Assessment, and knowing of its inadequacy, I find it difficult to understand why DOE contracted the EIS to the same corporation that produced the EA found wanting by not only environmental groups, but by the United States judicial system as well. Thirty-seven of the 41 preparers of this questionable document are affiliated with NUS Corporation. I believe an explanation is in order.	See the response to comment AB-20 regarding the opinion of the United States District Court and the preparation of the Finding of No Significant Impact.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	It is indeed difficult to understand how any final conclusion can be drawn from this document when several critical studies have yet to be incorporated, e.g.	
AY-2	1. Studies on the wood stork, an endangered species, are still being completed. Yet even the partial evidence, to quote the EIS, "...indicate that the Savannah River Swamp, particularly the deltas of Beaver Dam and Steel Creek, represents important feeding habitat for wood storks of the Birdsville rookery." Quoting further, "A total of 386 wood storks have been observed on the SRP site in summer 1983. Foraging sites on Savannah River Plant were used by more wood storks than other regional wetlands based on the number of birds per foraging location." (C-37) Need I remind you that once a species is gone, it is extinct forever, and forever is a very long time.	Appendix C, Section C.3.2 of this EIS contains more detailed information on the woodstork than was available for the preparation of the Draft EIS. Section 7.3 of this final EIS presents the current status of DOE's consultations with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service.
AY-3	2. Information on another endangered species, the shortnose sturgeon, is also incomplete. Although larvae have not yet been found in Steel Creek, they have been found in nearby areas.	The shortnose sturgeon is discussed in Appendix C, Section C.4.2.2 of this EIS. Additional data on the shortnose sturgeon from recent fisheries studies has also been included in Appendix C. In 1982, two shortnose sturgeon larvae were collected at River Mile 157.3, which is upstream from the IG canal. In 1983, seven shortnose sturgeon larvae were collected, five in the Savannah River adjacent to SRP (two from the canal and three from the river). Two larvae were also collected at River Miles 79.9 and 97.5, both of which are more than 60 miles downriver from SRP. DOE has prepared a Biological Assessment on the shortnose sturgeon which was provided to the National Marine Fisheries Service (NMFS) on October 28, 1983. On November 1, 1983, NMFS concurred in the DOE determination that SRP operations would not jeopardize the population of the shortnose sturgeon population in the Savannah River. The EIS has been revised to reflect this NMFS concurrence.
AY-4	3. At the scoping hearings I requested that information on wetlands importance be incorporated into the EIS, particularly with input from state agencies. On p. 5-24 a cursory treatment is given with no information on the extent of wetlands loss in Georgia and South Carolina. DOE would have us believe that this is a rather insignificant problem. After all, why get upset about swamps filled with mud, mosquitos, and moccasins? Of course, well-informed people know that	To date, there has been no published comprehensive inventory of wetlands in the contiguous United States. The U.S. Fish and Wildlife Service is in the process of inventorying the Nation's wetlands but current data in South Carolina and Georgia are restricted to coastal ecosystems. Neither South Carolina nor Georgia have an inventory of their wetland resources. Although no comprehensive inventory presently exists for wetlands, from available data, there were about 58 million acres

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	wetlands loss is one of our more important environmental problems in the United States today.	of bottomland hardwood forests in the United States (Clark and Benforado, 1981). Approximately 11.4 percent and 10.1 percent of the total land area of the States of South Carolina and Georgia, respectively, contain bottomland hardwood forests. The Savannah River watershed contains about 258,000 acres of wetlands dominated by bottomland hardwood forests. Of this total, South Carolina contains 138,000 acres and Georgia has 120,000 acres. From 1960 to 1975, South Carolina lost about 30,000 acres and Georgia lost 141,000 acres of bottomland hardwood forests. The overall net loss of bottomland hardwood forest wetlands from 1950 to 1970 was 6 million acres (Frayer et al., 1983). Section 4.4.2 and Appendix I assess cooling-water mitigation alternatives and their effects on wetlands. The purpose of presenting this information is to enable the decisionmaker to formulate a reasoned decision on the implementation of a cooling-water mitigation alternative--including the importance of the wetlands to be affected--in relation to the need for required defense nuclear materials. Also see the response to comment AA-1 regarding revisions to Section 4.4.2 and Appendix I contained in this final EIS.
AY-5	DOE assumes that if the Steel Creek corridor recovered from mistreatment once, it can do so again. This is probably true to a degree, but the next recovery might be made without the wood stork, without the shortnose sturgeon, and at the expense of further depletions in Savannah River fish populations. In the 1950's few people knew anything about thermal pollution. Have we learned nothing in the interim? It would seem so.	See the responses to comment AA-1 regarding cooling-water mitigation alternatives, and the responses to comments AY-2, AY-3, and AY-6 regarding the woodstork, shortnose sturgeon, and fish populations.
AY-6	I wonder how many fishermen in the CSRA are aware of the following: 1. With restart of the L-Reactor, the number of fish eggs and larvae lost to entrainment in water intake canals at SRP will be about 19% of the numbers passing through the river along SRP?	The estimated cumulative percentage of fish eggs and larvae passing the Savannah River Plant in the river that will be lost to entrainment by the combined operation of C-, K-, and L-Reactors is about 19 percent (see Section 5.2.5.2 of the EIS). During periods of high water, the cumulative total fish impinged could reach about 104 fish per day, 31 of which would be due to L-Reactor operation (see Section 5.2.5.3 of the

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	2. With restart of the L-Reactor, total fish losses due to impingement will be about 19 per day but possibly as high as 104/day during high water?	EIS). Of the 1315 fish impinged during these high flow periods, bluespotted sunfish, threadfin shad, and gizzard shad made up the majority of those impinged (60 to 90 percent). The total individuals collected during these peak periods were small, averaging only about 9 grams in weight with an average total length of about 80 millimeters (approximately 3 inches).
AY-7	3. That comprehensive studies of river biology have been underway for only the last few years and that "The flood plain swamp, which includes the Steel Creek delta, bordering the river is the least known aquatic habitat on the Savannah River Plant."? (C-39)	The overall SRP swamp remains a relatively unstudied ecosystem, in sharp contrast to the Steel Creek delta region. The Steel Creek area will be affected by the L-Reactor restart. Intensive studies of the Steel Creek region of the swamp were initiated in 1980 as a component of the L-Reactor environmental studies. The results of these studies are included in Chapters 3, 4, and 5, and in Appendixes C, D, and I of the EIS. Information on the remainder of the swamp is less complete, but extensive ecological studies have been initiated as part of the comprehensive cooling-water study. Additional information from recent fisheries studies has been included in Chapter 4 and Appendix C of this Final EIS.
	There are other areas of concern dealing with wetlands and thermal pollution that contain questionable information, but I will submit written comments later.	
AY-8	I would now like to comment on another area of concern, that of emergency preparedness, particularly at the county level, and particularly given the age of reactors at SRP, including L-Reactor. I was somewhat surprised to learn that counties surrounding SRP are just now beginning to work with DOE to coordinate emergency procedures in the event of a major accident at SRP, one that would release radioactive contamination beyond SRP boundaries. The lateness of this concern is difficult to understand since local officials would likely be the first to deal with such emergencies. Even more surprising, Richmond County, GA, according to the EIS, has not developed any plan. The attitude seems to be that the projected accidents will never be severe enough to endanger the Augusta area and that the probabilities are so low that there is nothing to worry about. Officials at TMI probably said that, too.	Appendix H describes SRP emergency planning. Additional information on the current status of emergency planning and emergency planning zones has been provided in Appendix H of this Final EIS. With respect to Richmond County, the closest boundary lies farther than 10 miles from any SRP reactor and the Augusta city limits are more than 20 miles away. Calculated consequences of the worst credible accident at SRP are lower than EPA protective action guides for emergency planning at this distance, even under extreme meteorological conditions.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
AY-9	In fact, the EIS does not clearly establish how the probabilities are calculated. Also, the accidents suggested could be more severe than projected in the EIS.	Section 4.2.1.4 of the EIS has been modified to include the basis for the probabilities. The accidents analyzed in Section 4.2.1.4 incorporate conservative assumptions: for example, the moderator spill accident considers tritium concentrations that are 30 to 40 percent higher than actual concentrations for current and planned charges; credit is not taken for any spray-system removal of airborne particulates or iodine in the discharge mishap; core-melt accidents consider a power level of 3000 megawatts, which is more than the actual power level at which L-Reactor will operate. Additional failures or more extreme meteorological conditions would be required for the accidents to be more severe than projected in the EIS. Additional failures would result in accident sequences of lesser probability than those considered in the EIS, and, as such, are not considered credible. The EIS provides an analysis of a hypothetical 10-percent core-melt accident that is more severe than any considered credible. The results calculated for credible accidents and the beyond-credible 10-percent core-melt accident assume meteorological dispersion conditions that are taken to be neither the best nor the worst for the site, but rather an average value determined by actual site measurements; they represent realistic values. Calculations to estimate the potential upper bounds for individual exposures from the same initiating accidents in the EIS were calculated in a Safety Analysis Report assuming extreme meteorological conditions rather than average conditions.
AY-10	Perhaps of more crucial concern is the failure of the EIS to deal adequately with another potential problem likely to be encountered by local officials--that of transport accidents. L-Reactor restart will add to the radioactive load already present at SRP. It will add to the processing to be done at the Waste Disposal Facility, and the subsequent shipping of high-level waste to a permanent repository, yet-to-be-designated. Several environmental groups, state officials, and local officials in other areas have questioned the adequacy and safety of the shipping casks and transport routes.	Section 4.3 of the EIS describes transportation requirements and transportation risks associated with L-Reactor operation. Transportation requirements and risks associated with the eventual shipment of high-level waste forms from the Defense Waste Processing Facility (DWPF) to a Federal repository are described in the DWPF EIS (DOE/EIS-082). These analyses made use of the NRC EIS on the transportation of radioactive materials (NUREG-0170). The draft EIS (Table 4-30) estimates a transportation risk of 1.1 person-rem per year with a maximum individual exposure of 0.017 millirem per year from offsite transportation activities associated with L-Reactor operation.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
		The EIS points out that all offsite shipments of hazardous and nuclear materials in connection with L-Reactor will adhere to Department of Transportation (DOT) regulations 49 CFR 170-179. If shipping casks are required, a DOE- or NRC-approved certificate of compliance with the DOT regulations on packaging is issued. DOE Order 5480.1, Chapter 3, requires that DOE certificates be based on requirements that are equivalent to or better than those of the NRC. The response to a transportation accident varies with the material being transported. For shipments involving appreciable quantities of special nuclear materials, DOE couriers maintain constant radio communications with both DOE and local officials. For other shipments, DOE maintains regional emergency teams to respond to accident situations; Savannah River Plant has the response team for the Southeast. Current DOT regulations require that the shipping papers carried by the driver give instructions on how to contact these response teams. The response system is described in Guidance for Developing State and Local Radiological Emergency Response Plans and Preparations for Transportation Accidents (FEMA REPS), Issued in March 1983. As indicated in Section 4.3 of the EIS, the transportation of high-level radioactive waste is regulated by the Nuclear Regulatory Commission and/or the Department of Transportation. Therefore, all persons or companies involved in any aspect of this transportation must be licensed and all activities must meet regulations and guidelines promulgated by these agencies. In addition, all containers and shipping casks are tested and licensed. Many regulations have been promulgated on the subject and many reports have been issued; existing NEPA-related documents describe the radiological impacts to be expected from normal operations and accidents involving high-level waste. A listing of references for many of these documents are contained in Appendix D of the Final Environmental Impact Statement, Defense Waste Processing Facility, Savannah River Plant, Aiken, South Carolina (DOE/EIS-0082). Also see comment letter "DK" and the responses to that letter.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
AY-11	I see no evidence of concern or attempts by DOE to work with local officials on this problem. The public is generally unaware of the potential hazards. In Appendix H, DOE appears more concerned about media communications than alerting and helping local officials.	The States of South Carolina and Georgia have Nuclear Regulatory Commission and Federal Emergency Management Agency-approved emergency response plans that address, among other things, transportation accidents involving high-level radioactive waste. County plans include the identification of responsibilities, resources, and actions necessary to carry out the jurisdictional requirements of the state plans. These state plans include agreements with DOE-SR and DOE Region 3 Interagency Radiological Assistance Plans to coordinate Federal agency resources for a radiological emergency response in the Southeastern United States. As stated in the EIS, notification agreements have been in place for some time; all parties have agreed to the details of coordinations and responsibilities. The details of protective action planning have been completed for the States of South Carolina and Georgia and all counties except Burke County. The Burke County plan will be completed in June 1984. Drills and exercises to appraise the plans and actions are scheduled for November 1984. At that time, the details of notification and protective actions will be revised and modified as necessary to meet state and county public health and safety response needs.
AY-12	In summary, this EIS is insufficient, biased, and unacceptable. There are solutions to many of the restart problems; cooling towers may be expensive, but wetlands losses are too. It is time to be more concerned about our future health and welfare and less concerned about how many jobs are saved. If we can't adequately protect the people of this country and their environment, perhaps we should ask if we really need this reactor or any others planned for the future.	The subject matter covered in the EIS follows the regulations established by the Council on Environmental Quality for the preparation of an EIS. The EIS assesses environmental impacts so they can be balanced against the need for defense nuclear materials that has been established in the FY84-89 Nuclear Weapons Stockpile Memorandum and approved by the President. Along with other documents on the need for materials, DOE will use this EIS in reaching its Record of Decision. Mitigation alternatives, including cooling towers, are discussed in Section 4.4 and Appendix I. All factors, including environmental impacts, socioeconomic considerations, the need for materials, and health and safety will be considered in the decision process.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	STATEMENT OF JOHN STANYARNE WILSON	
AZ-1	My name is John S. Wilson, and I would like to express my concern about a general aspect of the draft EIS. It seemed that the EIS did not give serious consideration to alternative procedures that would enable operation of the L-Reactor to comply with state regulations, and decrease the impact on the environment before restart. For instance, the use of fully recirculating mechanical draft cooling towers is a viable alternative cooling water system for the following reasons: 1. It would bring operation of the L-Reactor into compliance with the state delegated NPDES permits, without reclassifying Steel Creek. 2. It would enable the continued growth and regeneration of the wetlands, wildlife, and ecosystem of the Steel Creek corridor, delta, and floodplains. 3. It would decrease the amount of radiocesium entering the Savannah River, a source of drinking water for many South Carolinians and Georgians. 4. It would decrease the amount of water needed to be withdrawn from the Savannah River. 5. It is economically and technologically feasible to implement the system. 6. The reference case of direct discharge into Steel Creek does not allow for any of these benefits, and seems to be the chosen method only because it allows restart of the L-Reactor according to "production schedules."	Section 4.4 of the EIS discusses mitigation alternatives that could reduce potential environmental effects. The discussion of alternative cooling systems, including mechanical-draft cooling towers, has been expanded in Section 4.4.2 of this final EIS. Also see the response to comment AA-1 regarding cooling-water alternatives and the identification of a preferred cooling-water alternative in this Final EIS.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	I feel that the safety and protection of our citizens and our fragile environment takes priority over the necessity of restart for the production of materials for the nuclear arsenal. Thank you for listening. John S. Wilson	

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	Statement of Karen Arrington on the Draft Environmental Impact Statement L-Reactor Operation Savannah River Plant	
	My name is Karen Arrington. I live in Easley, South Carolina, 20 miles from Greenville. Since moving here seven months ago, I have become aware that this beautiful state has some very serious environmental problems, the crown jewel of which is the	
BA-1	Savannah River Plant. The restart of the L-Reactor will release 33% more emissions and effluents from fuel fabrication and chemical processing and 33% more waste.	See the response to comment AA-3 regarding DOE's commitment to comply with applicable Federal and state regulations, the response to comment AJ-1 regarding seepage basins and groundwater contamination at SRP, and the response to comment AV-2 regarding high-level radioactive waste.
	Instead of mollifying my fears, reading the Draft Environmental Impact Statement has served to greatly sharpen my awareness of the seriousness of radioactive pollution, and has caused me to try to learn something of the nature of what constitutes these silent and invisible rays.	
BA-2	Although the calculations presented in the Draft Environmental Impact Statement are very technical, I seriously question the adequacy of the calculations for concentrations of radionuclides for the first-year and tenth-year operation of L-Reactor. Radioactive substances are concentrated in the lower forms of life and increasingly concentrated as they reach higher forms. A variety of radioactive substances are released from the Savannah River Plant in an environment of many different kinds of living organisms.	The dispersion and concentration of radioactivity released to the environment has been observed and studied for more than 40 years. Pathways and bioaccumulation factors through various ecological chains have been measured for a variety of natural conditions. These data are widely published and subject to intense peer review. The data have formed the basis for radiation exposure models that predict bioconcentrations close to measured values. Actual releases from the Savannah River Plant have been measured for more than 25 years; they have shown a close correlation with predicted environmental concentrations. Thus, concentrations of radioactivity in the environment from expected releases can be predicted with confidence. As more data become available, the models will continue to be refined so predicted values are even more precise.
BA-3	Radiocesium (primarily Cesium-137) is frequently mentioned in the Impact Statement. Radiocesium has already been released in large quantities from the disassembly basins of the L- and P-Reactors to Steel Creek. The Impact Statement traces the radiocesium flow from Steel Creek to the Savannah River downstream more than 10 miles from the confluence of the Steel Creek and Savannah River. Cesium-137 exists in the L-Area	See the response to comment AA-2 regarding the relationship of radiocesium and radiocobalt concentrations to EPA drinking water standards. Because of the relatively high distribution coefficient (K_d) for cesium-137 (up to 3960; see Section D.2.1), the cesium-137 existing in L-Reactor seepage basin soils will not be flushed

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	seepage basin soil. L-Reactor will again release it into Steel Creek. Cesium-137 is known to be one of the more dangerous radioisotopes in existence. It also attacks the reproductive organs of humans.	through the unsaturated zone to the water table by the resumed operation of L-Reactor.
BA-4	In addition to the regular annual releases of tritium by currently operating Savannah River Plant reactors, L-Reactor will release 80,000 curies annually of radioactivity, primarily tritium to the atmosphere and 9,600 curies annually directly and indirectly to surface streams. It is well known that in the past, very large releases of tritium have occurred. By these statements from the Impact Statement, it appears that the problem of tritium release is being shoved under the rug. "No facilities are currently available to remove tritium from the reactor moderator." "As noted in the table, 30% of the tritium discharged to the seepage basin is expected to be released to the atmosphere by evaporation." "Due to the low routine releases expected from the L-Reactor and its support facilities, insignificant short- and long-term health risk is anticipated." According to Peter Alexander in his book, Atomic Radiation and Life, "The dose of atomic radiation needed to produce many types of biological effects is often extremely small."	The doses associated with the L-Reactor releases including tritium are shown in Section 4.1.2 of the EIS to be very low, less than 1 percent of the natural background radiation to the population within 80 kilometers of SRP and the Beaufort-Jasper and Port Wentworth drinking water population. The large releases of tritium referred to have occurred at tritium facilities at the SRP that are not associated with the operation of L-Reactor or its support facilities. These releases and their consequences have been well documented in DP-1639, Environmental Effects of a Tritium Gas Release from the Savannah River Plant on May 2, 1974, DP-1415, Environmental Effects of a Tritium Gas Release from the Savannah River Plant on December 31, 1975, and in the 1975 annual report, Environmental Monitoring in the Vicinity of the Savannah River Plant (DPSPU-76-30-1). The understanding of the biological effects of ionizing radiation is quite substantial, as discussed in Section B.6 of the EIS. The subject has received intense review by the National Academyof Sciences; it continues to receive intense review. The NAS Committee on the Biological Effects of Ionizing Radiation has recently revised downward its earlier assessment of health effects for a given exposure of radiation. From statistical analyses, there is no correlation of actual cancer death rates with radiation for regions of the United States (Denver, western mountain states) in which the background radiation levels are well in excess of the average radiation exposure for the entire nation. The models used in the evaluation of doses and associated health effects in the EIS do not assume any threshold level for health effects due to radiation exposure. The health effects estimators used in the EIS have been applied in a linear manner, implying that health effects are proportional to the dose, no matter how small the dose.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
BA-5	The most frightening pollution produced at the Savannah River Plant is the disposal of high- and low-level radioactive wastes. High-level wastes from fuel reprocessing emit highly *acid and alkaline substances which* make disposal difficult. Leaks definitely have been taking place of high-level waste. Knowing that the Savannah River Plant is storing over 30 million gallons of liquid high-level waste, how can 500,000 gallons more waste each year be allowed to be stored? In 1982, Savannah River Plant officials reported some contamination of ground water. The longevity of radioactive waste allows it plenty of time to seep into the aquifer. *The Defense Waste* Processing Facility sounds like it will help solve the waste disposal problems. Until then, however, it would behoove us to use the money for the L-Reactor restart to clean up present waste and contamination.	DOE has written four Environmental Impact Statements and one Environmental Assessment on SRP's high-level radioactive waste activities within the last six years. A program is presently underway at SRP that is transferring all high-level waste into new Type III double-steel walled storage tanks which have not evidenced any leakage. During the storage of high-level waste in older type tanks, only one tank--Tank 16--experienced cracks that allowed some waste to leak into the soil. Waste material from this tank has been transferred to a newer Type III waste tank. Over 60 monitoring wells have indicated that the waste has *migrated* only a few feet from the tank. As documented in DOE/EIS-0082, DOE is committed to a major program to provide a more permanent storage mode for high-level waste. Site preparation work at SRP has begun on the Defense Waste Processing Facility which will immobilize the high-level radioactive waste in borosilicate glass and store the glass in steel containers for eventual shipment to an offsite repository. Low-level wastes generated at the SRP are buried at an onsite burial ground that has been monitored extensively since operations began in the 1950's. Releases have been confined to the burial ground and its immediate vicinity. The Tuscaloosa aquifer is not subject to contamination since a hydraulic gradient head reversal occurs that greatly limits the depth of circulation of water from the burial ground.
BA-6	Since our wetlands have been disappearing rapidly, it is no small matter that 1000 acres of wetlands will be impacted. The elimination of some of the habitat for the American alligator, waterfowl and wood stork cannot be tolerated. It is bitterly ironic that in order to defend our country we must subject our people to the very effects of radioactivity we are trying to avoid. When we can destroy ourselves so many times, the need for more weapons is dubious. We are planting the seeds of genetic damage with radioactive pollution. I strongly believe we ought to start thinking of our children and the generations of people we will never know before doing anything *so foolish as restarting* the L-Reactor.	The EIS describes impacts to wetlands, the American alligator, waterfowl, and the wood stork in Section 4.1.1.4 from direct discharge, and Section 4.4.2 and Appendix I discuss cooling-water mitigation alternatives and impacts to wetlands. Section 5.2.4.1 of the EIS compares wetland losses for the coterminous United States, as well as those for Georgia and South Carolina, to those of the SRP. Section 7.3 of this final EIS presents the current status of DOE's consultations with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	STATEMENT OF MR. & MRS. JOHN P. SWAIN, IV 30 October '83 Dept. of Energy: It is my belief that each generation is given responsibility for our world's "upkeep." We must all do our very best to keep our environment in the best possible condition, and better than it was when we came to it as our knowledge and technology make this possible. I don't believe any of us would want to leave our sons and daughters less than we were given.	
BB-1	It is for these reasons I wish to speak up and insist that your facilities comply with federal and state environmental standards applicable to commercial reactor sites.	See the responses to comments AA-3 and AF-1 regarding DOE's commitment to comply with applicable Federal and state environmental regulations and the differences between SRP reactors and commercial light-water reactors.
BB-2	I urge you to accept your share of the responsibility for our environment and take a thorough look at all possibilities of damage and avoid it before startup--specifically now of the L-Reactor. Use all feasible protection measures and keep searching for more. Don't take chances that may lead to uncorrectable mistakes. Our quality of living depends on it! Thank you, Mr. & Mrs. John P. Swain, IV 707 Corley St. Lexington, S.C. 29072	See the responses to comments AA-3 and AF-2 regarding DOE's commitment to comply with applicable Federal and state environmental regulations and to take all reasonable steps to mitigate impacts.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	STATEMENT OF MRS. JUDITH G. CATOE 2535 Treeside Drive Columbia, South Carolina 29204 October 26, 1983 Mr. Melvin J. Sires, III U.S. Department of Energy Savannah River Operations Office Post Office Box A Aiken, South Carolina 29801 Re: Comment on L-Reactor Startup Dear Mr. Sires: I wish for my comment on the L-Reactor startup to be for the record.	
BC-1	First, I feel that startup should not occur until steps are taken to avoid damage to the environment.	See the responses to comments AA-3 and AF-2 regarding DOE's commitment to comply with applicable Federal and state environmental regulations and to take all reasonable steps to mitigate impacts.
BC-2	Second, I feel that DOE facilities should be required to comply with federal and state environmental standards that are applicable to commercial reactor sites.	See the responses to comments AA-3 and AF-1 regarding DOE's commitment to comply with applicable Federal and state environmental regulations and the differences between SRP reactors and commercial light-water reactors.
	Very truly yours, (Mrs.) Judith G. Catoe	

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	STATEMENT OF MR. AND MRS. CHARLES F. COOK 829 Whelchel Drive Decatur, GA 30033 October 29, 1983 Mr. M. J. Sires III Assistant Manager for Health, Safety and Environment Savannah River Operation Office Dear Sir:	
BD-1	We are Georgia citizens who are very much concerned about our environment and about the health and safety of people in the Savannah River Plant area.	DOE is concerned with the health, safety, and environment of people in the Savannah River Plant area. DOE will comply with all applicable Federal and state statutes and regulations on environmental and health protection. Regulations and requirements that are applicable to the resumption of L-Reactor operation are summarized in Chapter 7 of the EIS. DOE also has and will continue to maintain an intensive surveillance program to monitor the health and safety impacts of its actions, both onsite and offsite, as discussed in detail in Chapter 6. Section 5.2 describes the cumulative impacts of L-Reactor operation in conjunction with the effects from other SRP facilities and from major facilities near the Savannah River Plant.
	We are opposed to the starting up of the L-Reactor operation at the Savannah River Plant. Mr. and Mrs. Charles F. Cook Decatur, Georgia	

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses

STATEMENT OF BILL CARROLL

Bill Carroll
630 Lewisham Road
Columbia, S.C. 29210

30 October 1983

Sir:

BE-1 The hands that are typing this letter have fired, in training exercises, using inert warheads, and stopping the propagation of the launch signal prior to the EBW circuit, at least 1,000 Polaris and Poseidon missiles in the fourteen years I was active as an engineer in that program. At core all I want to tell you is that for you to consider restarting the "L" reactor at SRP is, in a word - sick!

A SINGLE Poseidon missile launched from a square in the Aegean Sea and programmed to fly northeast from the Volga delta in the direction of its junction with the Kama could extinguish the following cities: Astrkhan, Vogograd, Kamyshin, Sarutov, Syzran, Kazan, Votkinsk, Krasnokamsk, Perm and Berzniki - this would incinerate the industrial core of the Soviet Union and render it an impotent economic and social entity. For you to suggest that a SINGLE Poseidon submarine could not repeat this operation 16 times is to flatly lie!

I know, and you don't know what those missiles are capable of doing - I've taught classes in those weapon systems, you have not and in all probability never will be able to - probably lack the discipline and intelligence requisite to learn anything seriously technical.

In a word to say that starting up that reactor is in some sick way associated with making this country a more secure area of the planet in which we live is a raw lie.

These comments are outside the scope of this EIS.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
BE-2	The potential for contaminating the Savannah River with cesium is very real - to risk activation of that potential is flatly a clear case of criminal irresponsibility. I have two teen-aged daughters who have every right to become 21....things like you and other monsters associated with the Departments of Defense and Energy jeopardize their chances....a fact about which we in the peace movement are continually stunned. Little doubt in my mind that this letter, along with other complaints about your arrogant attitudes in regards to those of us who love our children and the land on which we live, will be trashed and characterized as yet another silly bitch from a peace freak. That will probably happen but know this: (1) I am an honorably discharged ex-naval officer who made some significant sacrifices for you and your family - I have a naked and just right to complain; (2) in October of 1972 the hands that are typing this letter helped to carry a young trooper to a military hospital - he was nineteen - his legs had been blasted off his body - by a mine - in Vietnam! The military aristocracy whom you serve took his legs away from him. You really should think about that. If you should see your children dying, gagging on their own vomit - be assured that you were definitely in the cause chain that was responsible for their horrible deaths. I may be witness to the same horror with regard to my own children but at least I'll know something that you don't; namely that when it became clear to me that I was in the cause chain I quit and began to fight against those whom I had so faithfully served. I doubt if you have the intelligence and courage to do what I did - additionally you might be deterred because you can't find any other kind of work besides being a part of a huge machine that generates lies. Peacefully, Bill Carroll	See the response to comment AA-2 regarding the relationship of radiocesium and radiocobalt concentrations to EPA drinking water standards.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	STATEMENT OF BEATRICE D. JONES	
BF-1	The issue of cumulative low-dose radiation is one in which many people in South Carolina and Georgia have particularly high stakes. *The D.E.I.S. makes it abundantly clear that restarting* the L-Reactor will substantially increase the radiation dose to the public from numerous sources.	The EIS states that the operation of L-Reactor and associated support facilities will increase the dose to the population *within an 80-kilometer radius* by 17.2 person-rem and the dose to downstream consumers of Savannah River water will increase by 18.6 person-rem, a combined total of about 36 person-rem. This dose is only about 0.03 percent of the natural radiation dose received by the population living within an 80-kilometer radius and the Beaufort-Jasper and Port Wentworth drinking water population in 1 year. This is equivalent to saying the population dose from L-Reactor operation will be equivalent to about 3 hours of exposure to natural radiation.
BF-2	It appears that few in government ever questioned by what right, legal or moral, the Department of Energy through its Savannah River Plant operations has been permitted to pollute the air we breathe with radioactive contaminants, the soil in which our food is grown, our water and our wildlife.	As stated in the EIS, DOE will comply with all applicable Federal and state environmental protection regulations that are summarized in Chapter 7 of this EIS. Also see the response to comment AA-3 regarding compliance with applicable regulations.
BF-3	It seems less likely that this would have occurred, at least to the extent that it has, if the promoters of this hazardous technology were not also its monitors. It is a situation that needs to be remedied. There are many complexities involved in assessing the risks to man from low-level ionizing radiation, but nuclear pollution can and should be reduced to a large extent at the Savannah River Plant, and never denied or *belittled with half-truths about its consequences.*	As discussed in Chapter 6 of the EIS, DOE has maintained and will continue to maintain an intensive surveillance program to monitor the composition of effluents from the SRP facilities, to measure radioisotope concentrations in the Plant environs, to assess the ecological health of the overall SRP environment, and to determine SRP compliance with applicable standards. The results of these monitoring programs are reported annually to the public. As also pointed out in Chapter 6 of this EIS, several state and Federal agencies also monitor SRP activities and participate in various studies;these include the Georgia Department of Natural Resources (radioanalysis of fish near SRP and crabs and oysters near the seacoast and monthly analysis of 13 water-quality parameters), South Carolina and Georgia (air-monitoring network, including eight sampling stations near SRP), U.S. Geological Survey (continuous monitoring of river flow and temperature above and below the SRP), National Centers for

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
		Disease Control (epidemiological studies), and the Academy of Natural Sciences of Philadelphia (long-term aquatic and water-quality studies in the Savannah River near SRP). The current reports documenting the radiation monitoring programs of the states are Environmental Radiation Surveillance Report, Summer 1980-Summer 1982, Georgia Department of Natural Resources, and Nuclear Facility Monitoring, South Carolina Department of Health and Environmental Control. Proposed EPA standards for radioactive air pollutants are acknowledged to be well below "safe" limits; the development of these standards was based on SRP's existing best available control technology practices. DOE performs several monitoring studies in compliance with both state and Federal permit requirements. DOE has also initiated a 2-year program to determine the environmental effects of cooling-water intake and discharge of the SRP production reactors. The States of South Carolina and Georgia, the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, and the U.S. Army Corps of Engineers are participating in this program.
BF-4	Recently, while reading the April 18 - July 17, 1983 Hearing Report I came across the statement of a DuPont official. A part of his statement said that offsite radiological impact of the Savannah River operations is less than one percent of normal background. It struck me from things that I have read that his statement may be misleading as well as confusing to the public, since there is no reason to dismiss as negligible any radiation dose from a man-made source simply on the grounds that the dose it delivers is lower than the dose from some combined sources of normal background radiation.	Natural radiation exposes the entire population of the world and has done so since mankind has existed. The effects of man-made radiation do not differ in any manner or degree from the effects of natural radiation. Thus, radiological impacts of nuclear operations are often compared with natural radiation exposure. The intent of the statement that the population dose from the reference case L-Reactor operation would be only about 0.03 percent of natural radiation exposure was included to show that the radiological impact will be very small. The radiological effects of L-Reactor operation are also much smaller than the variation in natural background radiation from one place in the United States to another, or even from one place to another in South Carolina.
BF-5	The Department of Defense started issuing false assurances about radiation in the early 1950's when fallout from American and Soviet bomb testing began to pollute the world. Many false assurances continue today at the Savannah River Plant.	The Department of Energy has not concealed in the past nor will it conceal in the future any information concerning the radiological effects of plant operations on the public. All assurances by DOE concerning radiological effects are based on monitoring data or analytical predictions based on recognized models and guidelines.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
BF-6	I believe I can say without fear of contradiction, that people in South Carolina and Georgia who have taken the trouble to inform themselves as best they could about the Savannah River Plant, are strongly opposed to having their families, themselves or any others become casualties of the D.O.E.'s codified permissible radiation doses, especially when much of it could be mitigated, or even avoided. No standard implies a safe amount of radiation.	The Department of Energy's radiation protection standards are comparable to those of the Nuclear Regulatory Commission (10 CFR 20) for a production facility (i.e., 500 millirem to the whole body in any one calendar year). These standards have been promulgated by the National Council on Radiation Protection (NCRP) and the International Commission on Radiological Protection (ICRP). The National Academy of Sciences BEIR Committee (The Effects on Populations of Exposure to Low Levels of Ionizing Radiation: 1980, National Academy of Sciences, Washington, D.C., 1980) has stated that it cannot determine if the low levels of radiation such as those that will result from L-Reactor and other SRP operations are, or are not, detrimental to man. Thus, the committee conservatively assumes that radiation-induced health effects will occur at all levels of exposure. The risk of health effects at low levels of exposure is extrapolated from observations at high levels of exposure. This approach is taken in the EIS (Appendix B) to calculate the health effects from L-Reactor operation. The EIS states that for the reference case the maximum annual health effects expected in the population living within an 80-kilometer radius and in the downstream water-consuming population from the operation of L-Reactor and its support facilities will be 0.005 excess cancer death and 0.009 excess genetic disorder. This level of health effects will not be detectable statistically in these populations, where the natural cancer death rate currently is about 650 per year and the natural fatal genetic effect death rate is about 100 per year.
BF-7	The Savannah River Plant's acting manager said in a 1980 interview that trying to build an air-tight canopy over an old reactor "is not worthwhile in my view." I agree, it is one of the reasons the L-Reactor should never have been renovated, but since it has, and present day nuclear reactor safeguards dictate the need for a containment dome, one should be installed. From a scoping letter I learned that the Reactor Engineering Division of the Savannah River Laboratory has advanced proposals and designs for containment domes over the years, and that proposals were turned down on the basis of cost.	Commercial light-water nuclear reactors have containment domes because of the need to confine high-energy releases during a potential loss-of-coolant accident from the high-pressure (greater than 2000 pounds per square inch), high-temperature (greater than 500°F) primary coolant. L-Reactor is a heavy-water-moderated reactor and not a commercial nuclear reactor; its design is different from that of commercial light-water reactors. The heavy-water moderator also serves as the reactor coolant. The maximum moderator temperature is 212°F and the moderator is pressurized by a 5-pound-per-square-inch overpressure.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	Excessive considerations of expediency and cost effectiveness have consistently been allowed to override proper considerations of the public health and safety. Containment domes could and should have been put in place long before now. Obviously some engineers in the Savannah River Laboratory must have thought they were needed. The time has come for government to stop placing a low dollar value on human lives.	Engineered safety features for nuclear reactors vary according to the different types of reactors. For example, the Fort Saint Vrain commercial nuclear power plant in Colorado licensed by the NRC has no containment dome, but has alternative safety features that NRC considers to be adequate. Similarly, L-Reactor has an alternative safety system, confinement, which serves a similar purpose as containment. The Savannah River Plant reactor confinement system filters all air leaving the reactor building; it traps particulates and radioiodine in the event of an accident. Although noble gases (e.g., krypton) and tritium would not be trapped, the offsite radiation dose would be within radiation protection guidelines and, as indicated in Section 4.2.1.4 of the EIS, would represent a very low risk to the public health and safety because of the long distance to the SRP boundary. DOE has not refused to consider the desirability of containment domes. The Department has funded containment investigations since the 1960s. A major investigation that began in 1979 is used as a basis for safety-system alternatives discussed in the EIS (see Section 4.4.1). The safety system mitigation alternatives identified in the EIS are for the mitigation of potential consequences from hypothetical reactor accidents, which have a very low estimated probability of occurrence and associated risk. Based on benefit, cost, and technical feasibility, this EIS has identified the reference case confinement system as the preferred safety system alternative. Finally, the NRC rule on the backfitting of licensed commercial reactors also requires interpretation and judgment similar to that to be exercised in the EIS selection process on improved confinement or containment. This rule (10 CFR 50.109) states: "The Commission may ... require backfitting of a facility if it finds that such action will provide substantial, additional protection which is required for the public health and safety or the common defense and security (emphasis added)."

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
BF-8	Eighteen or more years ago the old U.S. Atomic Energy Commission made the observation that "even reactors that make bomb ingredients should be operated under the same basic safety criteria that are presently applied to licensed reactors," the AEC's advisory committee on reactor safeguards told the Commission. It seems pertinent to mention that a number of reports were opened to the only reporter allowed access to S.R.P.'s nuclear safety documents. One 1966 document noted that DuPont's reactors were considered inherently safe since their cooling water flowed at much lower temperatures and pressures than those anticipated in the electrical generating plants then still on the drawing boards. "Hence," the report states "they were not provided with containment enclosures." Interestingly, in 1977, eleven years later the Savannah River Plant released a diagram of its reactors for the first time as part of an E.I.S. statement. The reactor building was--misleadingly--labeled "containment building."	The Savannah River Plant and, therefore, L-Reactor is a DOE-owned, contractor-operated facility. Section 110(a) of the Atomic Energy Act, as amended (42 U.S.C. 21240a), excludes this type of facility from NRC licensing requirements. DOE is responsible for regulating and has established its own comprehensive health and safety programs for its own facilities (see Section 7.8). The radiation protection standards of DOE are comparable to those of the NRC (10 CFR 20) for a production facility (i.e., 500 millirem to the whole body in any one calendar year).
BF-9	The D.E.I.S. states that atmospheric releases containing tritium, carbon-14, krypton-85 and iodine-129 will be released from the L-Reactor and its support facilities. The D.E.I.S. also states that there are studies in progress to determine the effectiveness and feasibility of using solid absorbents for absorbtion of noble gases. It would be in the best interests of South Carolinians and Georgians that the D.O.E. give serious attention to the installation of equipment for the removal of krypton-85. Their program to "assess the technical feasibility *and economic practicality" has the familiar sound of lame* excuses for not installing environmental protection measures because "more research is always needed." The necessary technology for krypton-85 collection, containment and storage has been available for some time.	One of the reactor safety system alternatives discussed in Section 4.4.1.3 is a low-temperature adsorption system; this would be an addition to the existing airborne confinement system. The system uses a hydrogen mordenite (a form of zeolite) adsorbent to trap noble gases (krypton), a silver mordenite adsorbent to trap iodines, a combination hydrogen recombiner-chiller, and a molecular sieve to remove bulk moisture and tritium. Experimental research is in progress to determine the effectiveness and feasibility of the low-temperature adsorption technique. Approximately two years will be required to complete the program. A caustic scrubber is not needed in conjunction with the silver mordenite. Caustic scrubbers would be necessary only if the air flow contained high concentrations of nitrous oxides.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	Similar action should be taken for iodine-129 which is of particular interest because of its 17 million year half-life, and its ability to enter the food chain and subsequently concentrate in the human thyroid. Because of its long half-life discharged iodine-129 becomes a permanent contaminant in the environment, and as a result represents a long term public health problem. I understand that an improved iodine removal system consists of a caustic scrubber followed by a highly efficient silver zeolite absorber. As a layman I don't pretend to understand all the technical aspects of these systems, but I have a fair idea of what it could mean in terms of greater iodine efficiency removal.	
BF-10	Many people have responded in a meaningful way to the Energy Department's hearings. This happens to be my fourth, and I hope, the last. The public responses for the most part contained information which indicated they had done their homework, even though handicapped by a lack of information to which the D.O.E. has access. Intelligent, sensible suggestions have been offered, and for all practical purposes you might say that demands have been made. It remains now to be seen if the Department of Energy plans to rectify with constructive action the most prominently identified needs for containment domes at all reactor sites, the installation of cooling towers, and mechanisms supplied for recycling discharge waters. Beatrice D. Jones The Heritage 1829 Senate Street Columbia, SC 29201	The EIS explicitly identifies the methodologies used and the scientific and other sources of information relied on for its conclusions; it is based on comprehensive environmental information drawn from more than 100 publicly available documents developed over the last 30 years. The public has access to all pertinent unclassified information and reference documents supporting the EIS in the DOE Public Reading Rooms in Aiken, South Carolina, and Washington, D.C. In addition, annual monitoring reports and scientific papers produced as the result of research conducted at SRP are available in open scientific literature. Also see the response to comment AT-3 regarding preparation of this EIS, the response to comment BF-7 regarding containment domes, and the responses to comments AA-1 and AB-13 regarding cooling-water mitigation alternatives.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	Statement by Dr. Mary T. Kelly, First Vice-President and Natural Resources Coordinator for the League of Women Voters of South Carolina, Draft Environmental Impact Statement Hearing for the L-Reactor Operation, Savannah River Plant, Aiken, S.C., November 1, 1983. I am Mary T. Kelly, representing the League of Women Voters of South Carolina. We are one of the groups that sued to force the Department of Energy to prepare an Environmental Impact Statement under the provisions of the National Environmental Policy Act of 1969. We believe that the starting up of the L-Reactor is a major environmental impact and an essentially new activity because of the extensive rebuilding. I would like to thank Senators Hollings, Thurmond and Mattingly and their staffs for their interest and assistance. I would also like to thank the Department of Energy and DuPont representatives for their unfailing courtesy throughout these hearings in dealing with those of us with whom they do not always agree.	
BG-1	As a organization dedicated to the informed participation of citizens in their government, we think that much has been achieved through the process leading to this EIS. However, we are even more aware, after trying to come to grips with the document, of the need for more time to permit review by experts, and the need for the development of information in certain areas. We hope that DOE in the future will not try to short cut the process mandated by the National Environmental Policy Act.	The Department followed the Council on Environmental Quality regulations [40 CFR 1506.10 (c)] for the comment period on the Draft EIS. The Energy and Water Development Appropriations Act, 1984, allowed the Secretary of Energy to reduce the comment period to 30 days. The Secretary chose not to exercise this option and allowed the full 45-day review period as requested by several comment letters submitted during the scoping period.
BG-2	One of the most important elements of an EIS is the assessment of need. We are well aware, and sympathetic with, the need for security. However, we think a report could have been done for public consumption by those with security clearance. Even in the top levels of government, there is not total unanimity on weapons production. A totally blank Appendix A for public consumption is not acceptable.	See the response to comment AB-2 regarding disclosure of quantitative information on need.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
BG-3	We believe that the Savannah River Plant should comply with all state and federal environmental laws, as do commercial nuclear power plants and nuclear operations. Given the magnitude of this (SRP) operation and the size of the military budget, this is a most reasonable expectation. A better informed public is no longer willing to accept threats to health and safety and environmental degradation with potential for tremendous negative impact. We in South Carolina and Georgia are very concerned about the ground water contamination caused by practices which scientists of the caliber employed at SRP should never have permitted. Now that information is available to the public and to the state regulatory agencies, we not only expect but demand that this federal agency cease to contaminate and proceed to cleanup. The information contained in the draft EIS seems to point to the fact that seepage basins will continue to be a form of liquid waste disposal. This method should be discontinued. We know about the contamination due to halogenated hydrocarbon cleaning fluids, but radioactive and metal contaminants are also a threat. According to the Columbia Record of Thursday, October 27, 1983, the U.S. Senate, through the request of Senator Thurmond, has authorized the transfer of $30 million dollars to clean up ground water contamination in the M area. Chances of real success are not certain. Yet the Draft EIS tells us that when the L-Reactor starts withdrawing from the Tuscaloosa aquifer, the downward differential in the M area will be increased, and the upward head differential in the H area will be reduced to zero. It would seem that until the groundwater problems are cleared up, the L-Reactor should not start operation.	See the responses to comments AA-3 and BF-7 regarding DOE's commitment to comply with applicable Federal and state regulations and the differences between SRP reactors and commercial light-water reactors. Existing and potential L-Reactor-related ground-water contamination is related to the use of seepage/settling basins. The disposal of liquid radioactive and nonradioactive wastes via seepage basins has been used at SRP as an alternative to direct discharge to onsite streams. Seepage basins reduce the dose to users and consumers of Savannah River water through radioactive decay during the protracted time it takes ground water to travel through the unsaturated zone to the water table and then to seepline springs along onsite streams. For certain radionuclides and nonradioactive pollutants, the travel time is slowed even more by adsorption and ion-exchange processes along the travel path. In addition, this method of waste disposal has reduced the accumulation of radioactive and nonradioactive pollutants in stream, swamp, and river sediments and in biota. Impacts associated with the use of seepage/settling basins are discussed in response to comment AJ-1. Sections 4.1.2.2, 5.1.1.2, and 5.1.1.4 have been updated with current information on discharges to seepage/settling basins and provide an expanded discussion on impacts from their use. As noted in the opening remarks to the public hearings on the L-Reactor EIS, DOE is committed to several items related to onsite ground-water monitoring and mitigation at SRP, including (1) continuing an expanded program of ground-water monitoring and study; (2) involving the State of South Carolina in onsite and offsite ground-water monitoring activities; and (3) taking mitigative actions to reduce pollutants released to the ground water and establishing a mutually agreed-on compliance schedule for mitigation efforts. Current plans call for discontinuing the use of the M-Area seepage basin and constructing a process wastewater-treatment facility by April 1985. The treated process water would be discharged to an onsite stream under an NPDES permit.
BG-4		

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
		Alternatives to the use of the L-Reactor seepage basin are discussed in Section 4.4.3. The use of seepage basins elsewhere on SRP is being considered on a sitewide basis. A draft "SRP Ground-Water Protection Implementation Plan" was developed recently to examine strategies and schedules to implement mitigative actions, including the closing and decommissioning of the SRP seepage basins under its hazardous waste programs; mitigative actions will be compatible with the State of South Carolina's hazardous waste management regulations. This implementation plan is summarized in Appendix F of this EIS.
BG-5	Information provided by Mr. Arthur Dexter in his letter of August 3, 1983, to Mr. Sires needs to be taken very seriously. I do not believe the questions raised about radioactive iodine release have been adequately answered, nor the need for containment structures negated by the information in the EIS.	All comments received during the scoping period were considered, and several sections were specifically written in the EIS to address Mr. Dexter's comments. Also see the response to comment letter CW, a letter from Mr. Dexter, in this appendix.
BG-6	In particular, my copy does not contain a section 6.3.1.3 as referenced on p. K-75.	The reference on page K-75 referring to Section 6.3.1.3 should read Section G.3.1.3. This typographical error has been corrected in the EIS.
BG-7	South Carolina and Georgia need to be extremely concerned about emergency response plans and procedures. The impact of the Savannah River Plant cannot be limited to a small radius.	See Appendix H, which has been revised to reflect comments received on the Draft EIS.
BG-8	There has been no assessment of the effects of transportation of materials to and from the Savannah River Plant as a result of the added burden due to L-Reactor operation.	Section 4.3 describes the effects of the transportation of materials to and from the Savannah River Plant due to L-Reactor operation. Also see the response to comment AY-10 regarding the assessment of transportation effects.
BG-9	When South Carolina, in the wake of Three Mile Island, examined the emergency response mechanisms in place for a major nuclear accident at a commercial power plant, it became very clear that coordination between reactor operators, state and county officials, and Civil Defense, was an unworkable, underfunded, and badly organized mess. I am not convinced, even having read Section H, that emergency response for an accident with impact beyond a small restricted area under the direct control of DOE-SRP personnel, is in much better shape at this time. It is clear from the summary on p. H-17, that planning is still incomplete. A serious, almost incredible omission is the failure to acknowledge and plan for a military contingency, caused by an enemy or terrorist attack. Surely, the impact of this would be beyond SRP's boundaries, and the responsibility not solely that of state or local officials.	See the response to comment AY-11 regarding emergency response planning. DOE-SR has plans for responding to terrorist attacks on the SRP. These plans are developed and exercised as part of the Plant's Safeguards and Security Plans. The general emergency response plans that are already operational for a comprehensive range of emergency situations at the county level and the more specific radiological emergency response plans for state and Federal agencies provide an adequate base for responses to terrorist attacks. This same base of emergency resources applies in the commercial industry for licensed nuclear power plants.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
		Disasters caused by direct military actions are not used as a basis for emergency planning for nuclear facilities in the United States. The response to such actions would fall under general civil defense planning. In the development of the emergency planning zones, DOE considered the potential for expanding or otherwise modifying its zones based on a range of emergency occurrences. While the actual emergency planning zone represents worst-case predictions calculated for a 3-percent core-melt, the Contingency Planning Zone was designated to ensure that adequate levels of planning were completed (at least) to a 10-mile radius.
BG-10	We continue to support the stand of the SC Department of Health and Environmental Control in refusing to permit degradation of the state's water quality standards for Steel Creek. We thank you for the opportunity to make these remarks. We would like to reserve the right to add additional comments in writing until the comment period ends.	See the responses to comments AA-1 and AA-3 regarding cooling-water alternatives and DOE's commitment to comply with applicable Federal and state regulations.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	Testimony of W. F. Lawless, Nov. 1, 1983 before the L-Reactor Draft EIS public hearing	
BH-1	A. I want to applaud the DOE-Savannah River on the data listed in Appendix F, Vol. II of the draft Environmental Impact Statement L-Reactor Operations, Savannah River Plant, USDOE Draft Rep. DOE/EIS-0108D, Vol. 1 & 2 (1983). The information has heretofore not been found in the open literature. No conclusions have been drawn in either Vol I or Vol II on this data so I would like to offer the following:	Earlier documents (e.g., Langley and Marter, 1973) described the subsurface hydrology and water use at SRP and the surrounding area. In Appendix F of the EIS, the discussion of the relative piezometric heads in the subsurface formations beneath SRP includes information developed since the publication of the Environmental Assessment on the proposed restart of L-Reactor. Most of the ground-water quality data presented in Section F.5 and elsewhere in the EIS represent monitoring information acquired under the RCRA compliance program recently formulated by DOE. Ground-water monitoring data for the RCRA facilities are provided to SCDHEC on a quarterly basis. DOE has published site ground-water monitoring for radionuclides in the annual reports, Environmental Monitoring at the Savannah River Plant (e.g., DPSPU-79-302). As noted in the response to comment AJ-1, the EIS provides extensive discussions of the ground-water regime at SRP and of potential impacts to the ground waters beneath the SRP from the operation of L-Reactor and its support facilities.
BH-2	Of 500 monitoring wells at the SRP plant, detailed data is herein available only on eleven wells up and downgradient around F and H seepage basins (radioactive) over a period of just one year. The data lists approximately 45 categories of pollutants or pollutant signatures. Of these, 29 categories have listed or associated drinking water standards (DWS). Of the DWS standards, 100% of the wells break at least one standard, or stated another way, drinking water standards are broken in about 10 of 29 possible categories over 40 times. The drinking water standards are broken for Fe, Mn, Hg, Pb, NO_3, gross alpha, Ra, Cr, and Iodine. Interestingly, the gross beta contamination in these eleven wells ran to an incredible 8 rem/year, and although the plutonium nuclides are stated to be locked in the soil, gross alpha did exceed a drinking water standard in a downgradient well.	Potential impacts to the ground waters beneath the SRP are conservatively assessed in Sections 4.1.1.3, 4.1.2.2, 4.4.3, 5.1.1.2, and 5.1.1.4 of the EIS. The monitoring well data presented in Appendix F characterize the present environment and reflect past waste management practices. The data for the F-Area seepage basin monitoring wells show that the nonvolatile beta concentration ranged to 8 microcuries per liter. Because this is a controlled area, no one will be exposed to this contamination; thus, the reference to dose rates (rem/year) is incorrect. No drinking water wells produce from these areas of shallow ground water that have been contaminated. Contaminants that seep into the ground water in the Separations area will not reach offsite ground-water users (Section 5.1.1.2). Improvements in liquid waste disposal are continually being made at SRP. Contaminant loads to seepage basins have decreased over the past several years.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
BH-3	Special attention in Vol. I was drawn to mercury pollution (5.1.1.2, Table 5-3, Vol. I) surrounding the F and H radioactive seepage basins, but not the fact that the drinking water standards of 2 ppb were broken on the average by a factor of 10 in the downgradient wells increased to a factor of 15 with L-Reactor in operation. The single highest reading was over 27 times the drinking water standard in one well that is also indicating rapidly increasing readings.	See the response to comment BH-2 above. Significant decreases in releases of mercury to seepage basins have occurred since 1971; the small increases in mercury discharges related to L-Reactor operation will not approach pre-1971 levels. The discussion in Section 5.1.1.2 directs the reader to Appendix F, which compares the measured levels of ground-water contamination with EPA drinking-water standards.
BH-4	Questions resulting from this information are: 1. How long will these standards be broken after plant operations cease? 2. Will this area surrounding F and H seepage basins be recoverable or must it and other plant areas be impounded for perpetuity? 3. What will it cost to repair the damage done and the damage proposed by the L-Reactor restart once plant operations cease?	See the response to comment BG-4 regarding DOE commitments for ground-water protection.
BH-5	Dupont document DPST-77-444 (1977), New Criteria For Seepage Basin Use, by W. L. Marter notes the hundreds of years needed before seepage basin radiation levels decay to inhabitable levels. This document should be included as a companion reference to the Fenimore-Horton DPST-72-548 (1972) reference on the radioactive seepage basins.	The EIS has been modified to include a reference to Marter, 1977 (DPST-77-444).
BH-6	B. ERDA EIS 1537, Waste Management Operations, Savannah River Plant, has been liberally referenced in this L-Reactor draft EIS, but the companion and subsequent EIS on SRP Waste Management Operations, High Level Waste Radioactive Storage, Final EIS, USDOE Rep. DOE/EIS 0062, has not been referenced. EIS 0062 was written to review the SRP high level waste tank safety and it speaks of major design changes in the new generation of SRP high level waste tanks and of enlightened Dupont quality assurance construction procedures. EIS 0062 also spoke of the insignificance of pitting corrosion. What has been the SRP pitting corrosion experience for these new high level waste tanks?	DOE/EIS-0062, which is a supplement to the general waste management EIS for SRP, ERDA-1537, presented the environmental information from which DOE reached a Record of Decision that the new double-wall, high-level waste tanks now in use at SRP are environmentally acceptable; this document is part of the SRP NEPA record and has been referenced in the EIS. As alluded to in the comment, some of these tanks did suffer pitting corrosion when they were temporarily floored with plywood during construction. The reports referenced in the comment expressed concern that this corrosion might limit the lifetime of these tanks, although the referenced independent evaluation by A. D. Little concluded that the tanks could safely enter service.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	Two reports, one by Dupont (Investigation of Pitting in Primary Bottom Plates of Type III Waste Tanks, DPE 3687 (1981)) and the other by A. D. Little (The Effect of Corrosion Pitting on the Integrity of Radioactive Waste Storage Tanks 38 to 51 at the Savannah River Operations (1981)) have been published on the HLW waste tank corrosion pits and they should be referenced in this draft EIS. W. F. Lawless Oct. 31, 1983	The waste chemistry is closely controlled to prevent pitting. The cited documents have been added to the collection in the DOE Public Reading Room in Washington, D.C., and Aiken, South Carolina.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	STATEMENT OF MR. WILLIAM McDANIELS	
	My name is William H. McDaniels, and I live in Aiken, South Carolina. I've only lived here about a year, but some of the things here in regards to this L-Reactor deeply disturb me due to the fact that I have worked in the field of ecology in my spare time since the late 1940's. I am with the Sierra Club, but I am representing the National Council of Senior Citizens Organization in Washington, D.C., which I am starting a chapter in the State of South Carolina.	
B1-1	In reference to some of the things that I read here, I feel, first of all, we don't need to produce more plutonium. I feel that we should try to sit down and reason together as far as the countries that we feel are evil nations, or whatever. We are all human beings. I feel we should work harder for peace. We seem to be driving a wedge between peace that probably will never prevail again. "When the age of industrial" -- this is from a book here on future survival. I'll just read part of it here. "When the age of industrialization came, it seemed to promise man a utopia, the way to improve the quality of life on earth. The need for fuel necessary to run this industrial complex can be the very thing that will destroy man as it eats up all of his natural resources. The human animal is the only animal that fouls its own nest." Quoting from a book on radiation, Radiation in Human Health, by John W. Hoffman, M.D., Ph.D., I'll reference a chapter here, Chapter 5, of a young man who's 24 years old. He's asking questions here. It says there is no better way to determine practicable applications of the whole body cancer, that the dose value -- which we now have available in Tables 21 and 22 to ask a number of concrete questions, the kind of questions which came up again and again bleakly medical and legally and from the general public. It's interesting, the radiation hazards.	See the response to comment AB-2 regarding information in the EIS on need and production alternatives.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	Question No. 1: "I am an industrial photographer working with the gamma ray source through a malfunction in equipment. The source was still present when I moved to an unshielded area. It was estimated that I received 78 rads" -- short for radiation -- "by my 24th birthday." Of course, he refers to himself as a male sex. "Is my risk of developing cancer increasing with exposure? *Just how much? If I do develop cancer from this radiation,* by how much will my life be shortened on an average?" The answer is, "The risk of cancer somewhere in the body is certainly increased in exposure. We can analyze just how much in the following manner: Exposure from the beginning in the 24-year-old life, the whole body dose of 98 rads from Table 21, the whole-body cancer dose equals 200.9 percent rads per cancer." This is in reference to cancer. I was reading an article Senator Thurmond had in the Aiken paper. We all know that the contaminants from the L-Reactor, which was built in 1955, I think, and it was shut down in 1968, *that* it is down to the water table and has been down to the water table for all of these years, shortly probably after starting up the reactor in 1955. Our water table is very fragile, but like our ozones, it moves only two inches per 24 hours.	
BI-2	Now, we have some pretty concrete evidence that the water in all directions for 40 miles from the L-Reactor has been contaminated. I feel here that human lives are not taken under consideration as much as there's a possibility of big business trying to agitate or create wars, and this is what it's all about.	DOE is not aware of any ground-water contamination off the Savannah River Plant that has been caused by SRP operations. Radioactive constituents in municipal water wells in the SRP region are measured and the results reported in the annual reports, Environmental Monitoring in the Vicinity of the Savannah River Plant (DPSPU-Year-30-1).
BI-3	*I don't believe we need additional plutonium.* I don't think we should arm ourselves any further. I believe in peace. I think we should sit down and start talking peace instead of invading islands and spreading ourselves out all over the world. I am also with the Sierra Club. I said here I'm not speaking for the Sierra Club; mostly I'm speaking as a concerned citizen in regards to part of these things I'm bringing out here.	See the response to comment AB-2 regarding information in the EIS on need and production alternatives.

Comment number	Comments	Responses
	Now, this book here, it's about Radiation in Human Health, a Comprehensive Investigation of Evidence Related from Low-Level Radiation to Cancer and Other Diseases, by John W. Hoffman, M.D. I thank you for listening to me, but I am deeply concerned. I'm concerned about people that went out to demonstrate and the manner in which those people were put in jail just because they were going to come out and express their concerns. I am concerned, so that's the reason why I am saying I am a concerned citizen. I have been a concerned citizen; I will continue to be a concerned citizen. I thank you.	

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	STATEMENT OF MS. DORCAS ELLEDGE	
	I am Dorcas J. Elledge, a native South Carolinian. I'm from Columbia, South Carolina; and I'm here because I care about my own health and the health of my fellow South Carolinians and Georgians. I'm not familiar with the EIS Statement per se because I did not know or lost a message somewhere. I am only taking from Mr. Sires a comment or two.	
BJ-1	I do wonder that, after all this assessment of the situation, the two years for groundwater monitoring and all of that, if the L-Reactor will be started in spite of these things that need to be addressed now before it should be started. Are the citizens' comments and the study that was made going to fall on deaf ears or be ignored or become a voice in the wilderness due to what we are told is expediency in building nuclear weapons? This I do wonder about.	The purpose of the EIS hearings was to provide the public the opportunity to comment on the adequacy of the EIS and the merits of alternatives discussed in the EIS. DOE has considered all comments received at these hearings and during the 45-day comment period; responses are contained in this appendix. Transcripts of the EIS hearings and a record of all comments submitted have been placed in local libraries. The the need to restart L-Reactor and production alternatives are discussed in Sections 1.1 and 2.1, respectively, and in Appendix A (classified). The consequences of a delay of the L-Reactor restart is discussed in Sections 2.1.3.
BJ-2	The health and safety of the people of this state and of our neighboring state--and maybe if contamination of the ocean should occur; is this going to be sacrificed to build a weapon that could destroy us all but which, in the meantime, could maybe lead us to a slow death? I really am concerned about this, and I hope that the DOE will not let the expediency of building weapons take this precedent over the life and safety and health and safety of the people of South Carolina and Georgia.	DOE policy has always been to maintain and operate the SRP with the assurance that releases are as low as reasonably achievable and below applicable standards. The operation of L-Reactor will meet all applicable safety and environmental requirements. The health and safety of the residents of South Carolina and Georgia are of paramount importance to DOE.
BJ-3	One thing that I will also wonder about is: I have never heard to what degree on the Richter scale the buildings are built for, the reactor buildings are built for, at Savannah River	Section 4.2.2.3 describes hazards to L-Reactor from earthquakes. Probabilistic and deterministic analyses have determined that the maximum seismic hazard at the SRP is due to a

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	Plant, to what degree they are supposed to stand or collapse. That would cause a great safety problem. I don't remember ever reading that, and I would like to know that in any future documents you might give.	magnitude 5.0 to 5.5 earthquake on the Richter Scale in the immediate vicinity of SRP or a postulated magnitude 6.6 earthquake near Bowman, South Carolina. In both cases, the expected peak free-field horizontal acceleration would be about 0.10 times that of gravity (0.10g). The design-basis earthquake peak acceleration for all SRP production reactors is 0.20g.
BJ-4	I also am concerned about the location of the Savannah River Plant to possible enemy attack. I don't know, as Dr. Kelly pointed out, that this has really been addressed, either. We are a vulnerable state; and I think, if I were a worthy enemy, that might be the first thing I would want to hit. It could be a very, very catastrophic thing for this state and for this nation. I do believe that the citizens of this state do deserve first priority in their health and safety. It should be a first priority. It has been too long ignored. I am a registered nurse. I was in the Army 20 years, and I do know what bad health brings to all people. I would hate to think this would be the condition of the people of this state due to precautionary and preventive measures not being taken. It seems to me we've done cleanup long enough. Let's do a little preventive work. I really feel that very keenly. I do hope the voice of the people would be heard on this issue because I think it's time. Thank you very much.	See the response to comment BG-9 regarding emergency response planning.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	STATEMENT OF MR. JAMES W. HAMMOND	
	I'm Jim Hammond. I represent me. I spent 30 years with the DuPont Company. I didn't have much of a job there, didn't amount to much; but what I did was in safety and fire. It required that I go into most of the facilities once or twice a year there. After 30 years, I spent a good bit of time there. I didn't worry about cancer. If I had I'd have left here. I live within 20 minutes of the place; and if I was afraid, I'd leave. The Environmental Impact Study, seems to me, is very adequate. From working with DOE and AEC and the other agencies through the years, I've found all of them very sincere. They've made detailed studies of everything they've done out there. I think DuPont Company and DOE has all the capabilities and abilities and interests to protect the environment, the people. From my experience, L-Reactor should have been started on schedule. I know these people are sincere. At Michigan State University, I had to do a term paper. It took me back into the early newspapers of America. One area was when we were converting from DC electricity to AC. Very informed people, very alarmed people, were saying: If we have AC electricity, we're going to electrocute the world. We're going to turn our stoves into hot plates. It didn't happen, and I know people are concerned. But from my experience out there, DOE and DuPont Company will do everything possible to see that the environment and the public is protected. Thank you, sir. James W. Hammond	Comments noted.

Comment number	Comments	Responses

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STATEMENT BY DR. THOMAS B. COCHRAN
ON BEHALF OF THE
NATURAL RESOURCES DEFENSE COUNCIL
AT DEPARTMENT OF ENERGY PUBLIC HEARINGS
ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT
FOR PROPOSED L-REACTOR OPERATIONS

Beaufort, South Carolina

November 3, 1983

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Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses

Introduction

My name is Dr. Thomas B. Cochran. I am a Senior Staff Scientist at the Natural Resources Defense Council, Inc. (NRDC). NRDC is a public interest environmental protection organization with extensive technical and policy expertise on nuclear matters, representing over 43,000 members and contributors in the United States and abroad.

I have been a consultant to numerous government agencies on matters related to nuclear energy, including the Department of Energy's (DOE) Energy Research Advisory Board (ERAB), DOE's Nonproliferation Advisory Panel, and the Energy Research and Development Administration's (ERDA) LMFBR Review Steering Committee. I currently serve on ERAB's Technical Panel on Magnetic Fusion, which was established by the Magnetic Fusion Energy Engineering Act of 1980 (P.L. 96-386). I am also a member of the Three Mile Island (TMI) Public Health Fund Advisory Board, the Nuclear Regulatory Commission's (NRC) TMI Advisory Committee, and the NRC's Special Study of Nuclear Quality Assurance. I am the principal technical expert on behalf of NRDC in the licensing proceedings for the Clinch River Breeder Reactor.

I am the author of The Liquid Metal Fast Breeder Reactor: An Environmental and Economic Critique (Johns Hopkins University Press, 1974), co-editor of the Nuclear Weapons Databook series and co-author of Volume I: U.S. Nuclear Forces and Capabilities (Ballinger, 1983, in press).

I have a Ph.D. degree in physics, an M.S. degree in physics, and a B.E. degree in electrical engineering from Vanderbilt University. I was a Health Physics Fellow under the Atomic Energy Commission's radiation training program.

While there are several important issues related to the proposed start-up of the new L-reactor, my statement will be limited to two issues: First, is the L-reactor safe -- does it meet the minimum safety standards imposed by the NRC on licensed commercial power reactors? Second, can the operation of the L-reactor be delayed long enough to incorporate needed environmental and safety technologies without risk to national security?

Comment number	Comments	Responses
	1. The L-Reactor Safety Issue Turning first to the safety issue, it must be recognized that DOE facilities, such as the new L-reactor, are not licensed by the NRC. It is DOE's policy, however, to conform where appropriate to all NRC environmental and safety regulations, or, at a minimum, to meet the intent of these regulations. In DOE's own words: > Although DOE production facilities are not subject to regulation by the Nuclear Regulatory Commission (NRC), DOE and its contractors conform to internally promulgated guides that, where appropriate, parallel or meet the intent of those of the NRC.[1] For reactors licensed by the NRC, the fundamental regulations that determine the adequacy of the site and the design of the containment/confinement system for limiting exposure to the public in the event of a severe accident are embodied in 10 CFR Part 100, Reactor Site Criteria (27 Fed. Reg. 3509 (1962)). These regulations, which were developed prior to the separation of the Atomic Energy Commission (AEC) into ERDA (now DOE) and the NRC, have been used for two decades to judge the adequacy of both NRC and DOE facilities and sites. There is no debate over whether the purpose and intent of these regulations apply to DOE facilities. In fact, DOE and its contractor, DuPont, have used 10 CFR Part 100 on numerous occasions to judge the adequacy of a wide variety of containment/confinement	

[1] E. I. duPont de Nemours & Co., "Safety Analysis of Savannah River Production Reactor Operation," DPSTSA-100-1, Revised Sept. 1983 (hereafter "1983 SAR"), p. 5.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses

alternatives for the production reactors at SRP.[2] Less than three years after 10 CFR Part 100 regulations were promulgated, SRP officials noted with respect to 10 CFR Part 100 dose limits,

"These values do not constitute legal limits....It may be expected, however, that dose limits greater than those shown in the regulation will meet with AEC opposition."[3]

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[2]Memorandum from W. S. Durant to E. C. Nelson, "Proposed Containment Shell for Building 105-C," Tech. Div. Savannah River Laboratory (SRL), DPST-64-423, Jan. 29, 1965.

Roger E. Cooper and Bernard C. Rusche, "The SRL Meteorological *Program and Off-Site Dose Calculations*," SRL, DP-1163, Sept. 1968.

Memorandum from S. P. Tinnes to G. F. Merz, "Airborne Activity Confinement System Base Case Design Basis Accident," Tech. Div. SRL, DPST-79-441, July 19, 1979.

Memorandum from S. P. Tinnes to G. F. Merz, "Airborne Activity Confinement System Performance First Five Hours After Reactor Accident," Tech. Div. SRL, DPST-79-555, Nov. 1, 1979.

Memorandum from S. P. Tinnes to D. A. Ward, "Airborne Activity Confinement System Performance More Than Five Hours After DBA," Tech. Div. SRL, DPST-80-588, Oct. 3, 1980.

Memorandum from A. G. Evans, J. B. Price, and S. F. Petry to D. A. Ward, "Proposed Airborne Confinement System," Tech. Div. SRL, DPST-81-596, July 23, 1981.

Memorandum from W. L. Pillinger to T. V. Crawford, "Radioiodine Releases from Carbon Filter Desorption for Dose Calculations in Reactor SAR," Tech. Div. SRL, DPST-82-960, Oct. 29, 1982.

[3]Memorandum from W. S. Durant to E. C. Nelson, DPST-64-423, op. cit., at p. 3.

Comment number	Comments	Responses

In my statement below, I will demonstrate that the L-reactor does not comply with the requirements of 10 CFR Part 100 as interpreted by the NRC in over 20 years of application. I will then explain how DOE in its draft environmental impact statement has attempted to obfuscate the L-reactor's failure to comply with 10 CFR Part 100 requirements.

A. Requirements of 10 CFR Part 100

The requirements of 10 CFR §100.11 are reproduced in Appendix A to this statement. These guidelines specify reference values for the maximum radiation dose an individual is permitted to receive at the outer boundaries of the plant and the so-called "low population zone." The reference dose values for both boundaries are 25 rem to the whole body and 300 rem to the thyroid. In assessing compliance with 10 CFR Part 100, DOE assumes that the boundaries for the SRP site and the low population zone are identical. Thus, at SRP all doses are computed at the site boundary. The doses are calculated for a 2-hour exposure and for a 120-hour exposure, the latter intended to cover the time period for the entire passage of the "radioactive cloud," as required by the regulation. Since the reactor locations and site boundary are already specified at SRP and thus cannot be altered, this dose assessment is used to test whether the containment/confinement technology at the production reactor is adequate, or whether it must be upgraded to meet minimum safety requirements.

B. Computation of the Maximum Site Boundary Doses

There are three procedures necessary to evaluate compliance with 10 CFR Part 100 requirements. First, the source and amount of radioactivity released to the containment by a particularly severe accident (referred to as the "source term") must be specified. Second, the atmospheric dispersion of radioisotopes, as they are carried by the wind to the site boundary, must be computed. Third, the amount of radiation absorbed by an individual at the site boundary must be computed. In each case, the methodology has been established by two decades of reactor licensing experience and regulatory guidance.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
BL-1	The 10 CFR Part 100 source term for light water reactors (LWRs) assumes a full core meltdown with the release to the containment building of 100% of the noble gases, 50% of the iodine (half of which is assumed to plate out within a short time), and 1% of the remaining fission products (specified in the NRC guidance document, TID 14844). We will concentrate on the noble gases and iodine since these are the most troublesome in terms of the existing L-reactor confinement technology.	The regulations in 10 CFR 100 do not assume or require the assumption of "a full-core meltdown." Rather, the footnote to 10 CFR 100.11(a) clearly indicates "accidental events, that would result in potential hazards not exceeded by those from any accident considered credible. Such accidents have generally been assumed to result in substantial meltdown of the core with subsequent release of appreciable quantities of fission products" (emphasis added). "Full-core meltdown" is not equal to "substantial meltdown"; the 10 CFR 100 reference to TID-14844 particularly notes that: "The calculations described [in TID-14844] may be used as a point of departure for consideration of particular site requirements which may result from evaluation of the characteristics of a particular reactor, its purpose and method of operation (emphasis added). Thus, the source-term assumption cited is not mandated for use, either in 10 CFR 100 or in TID-14844. The NRC licensing of the Fort St. Vrain reactor is an example of a reactor licensed with recognition of the differences between its design and the design of light-water reactors (LWRs). This reactor does not have a containment dome, but has alternative safety features that the NRC considers to be adequate. Recognizing the high heat capacity of this graphite-moderated reactor, no fuel melting was assumed when specifying the source term for use with 10 CFR 100. Release of gases as a result of core heatup (not melting) was assumed over a period of hours, not instantaneously as is commonly assumed for LWRs. Furthermore, release of only 5.5 percent of the halogens in the reactor core was assumed, rather than the 50 percent commonly assumed for LWRs.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
BL-2	An immediate question is raised: Is this LWR source term appropriate for the SRP production reactors given their differences in design? The answer is yes. As noted above, DOE has adopted the identical source term for judging the adequacy of the confinement system for existing SRP production reactors.[4] As shown below, however, DOE has responded to recent controversy by attempting to change this source term for the L-reactor, with only the thinnest of justifications. The second step in the calculation--atmospheric dispersion--is calculated according to NRC Regulatory Guidelines. Since the maximum individual dose calculation is intended to be conservative, the specified meteorology has a low probability of occurrence. At SRP, less favorable meteorology and higher doses are expected only 0.5% of the time.[5]	Although early safety systems analyses did adopt a 100-percent core-melt accident as a basis for assessing SRP reactor confinement systems to assure a conservative upper bound during development of a comprehensive accident analysis program, DOE has never adopted a 100-percent core-melt source term as a requirement for assessing the adequacy of SRP production reactor confinement systems in terms of 10 CFR 100. Furthermore, if subject to NRC licensing requirements, DOE would not necessarily be required to do so (see the response to BL-1). The 1983 Safety Analysis Report (DPSTSA-100-1) compares the consequences of four types of accidents that bound the consequences of credible accidents to 10 CFR 100 reference doses assuming meteorological 95 percent conditions, consistent with those typically used to assess conformance to 10 CFR 100. Of the four accidents, the one yielding the maximum consequences (the accident resulting from a reloading error) is the appropriate accident for comparison with 10 CFR 100 criteria. Previous SARs and other studies, including the cited references, reviewed a spectrum of accidents ranging from the credible to the not credible, including a 100-percent core melt, in assessing the safety of SRP reactor operations. This same approach, including consideration of an 11-percent core melt and a 100-percent core melt was used in the preparation of the 1983 SAR to present again the totality of risks, not just the risk of accidents prescribed by regulations applicable to commercial reactors. Although the types and severity of accidents considered did not change, the method of presenting the results was changed to improve clarity and readability of the report and to put the results in perspective relative to risk.

[4] See references cited at page 3. For licensing the Clinch River Breeder Reactor, DOE and NRC have adopted the usual LWR source term (100% of the noble gases, 50% of the halogens, and 1% of the fission products) plus 1% of the plutonium in the core (NRC, "Site Suitability Report in the Matter of Clinch River Breeder Reactor Plant," NUREG-0786, June 1982, p. III-8). Even for this radically different reactor design, the assumed noble gas and iodine source terms are identical to those for the LWR and the production reactors at SRP.

[5] According to the 1983 SAR, "Doses are computed by two methods. The first method computes, for the entire site (all 16 sectors), a dose (either inhalation or whole body) that would be exceeded only 5% of the time. The result is referred to as the 95th percentile value. The second method computes for each sector a dose value that would be exceeded only 0.5% of the time (a 99.5th percentile procedure). The maximum dose for all sectors is then compared to the 95th percentile dose for the whole site, and the higher of the two values is reported.

For the SRP site, the second method (99.5th percentile worst sector) gives doses (both thyroid and whole body) at the site boundary that are about a factor of two higher than the value obtained with the first method (95th percentile whole site)." Id. at p. 15-74.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
BL-3	Using data presented in the 1983 SRP Production Reactor Safety Analysis Report (1983 SAR), one can compute the maximum individual whole body and thyroid doses at the L-reactor site boundary to test compliance with 10 CFR Part 100. Table 15-4 of the 1983 SAR, reproduced in Appendix B to this statement, reports the whole body and thyroid doses associated with 1% and 3% core damage at the L-reactor. These doses are based on the assumption that 1% core damage would result in airborne release of 1% of the noble gases and tritium and 0.5% of the iodine (1983 SAR, p. 15-69). This source term value for 1% core damage need only be scaled up to 100%, or full core damage, to be consistent with the appropriate 10 CFR Part 100 source term--release of 100% of the noble gases and 50% of the iodine. The resulting doses for the new L-reactor would be:	Consistency with 10 CFR 100 does not require consideration of the release of 100 percent of the noble gases and 50 percent of the iodine. See the responses to comments BL-1 and BL-2.

Accident	Meteorology	Calculated Dose(rem) Whole Body 2-hour	Thyroid 120-hour
10 CFR Part 100 source term (100% noble gas & 50% iodine release from fuel)	99.5th percentile	220	1050
10 CFR Part 100 Reference Values		25	300

As can be seen, the new L-reactor does not meet minimum safety requirements for the control of radioactivity releases in the event of a severe accident. If Congress said tomorrow, "This reactor must be licensed by the NRC," DOE would have no choice but to improve the confinement system in order to trap about 90% of the noble gases released from the reactor core after a severe accident.

Comment number	Comments	Responses
	C. DOE's Efforts to Mask L-Reactor Non-Compliance With 10 CFR Part 100	
BL-4	In response to extensive public criticism questioning the L-reactor's safety and its lack of a containment building, DOE has developed the following argument to deflect attention from the L-reactor's failure to meet 10 CFR Part 100 requirements. DOE now claims that there are no credible L-reactor accidents that could result in fuel melting of more than 3% of the reactor core and, consequently, that one should assume a design basis accident[6] and a source term which are 30 times smaller than DOE and NRC previously assumed. Based on these assumptions, DOE argues, the offsite doses associated with all credible L-reactor accidents are well within 10 CFR Part 100 guideline values. This argument simply cannot withstand scrutiny.	See the response to comment BL-2. The 3-percent core-melt accident was selected for comparison to 10 CFR 100 dose criteria because it is a major accident, postulated from the consideration of possible accident events, that would result in potential hazards not exceeded by those from any accident considered credible. Clearly, the 1-percent design limit for the Emergency Cooling System (ECS) could not be considered limiting for site evaluation because it is not the maximum credible accident. It is incorrectly inferred here and throughout this statement that the ECS is designed to limit core damage to 1 percent in the event of the maximum credible LOCA. For all credible LOCAs, no fuel melting is anticipated (see SAR, page 15-44). The 1-percent design basis referred to is, in fact, a limit applied to the reactor power level to limit core damage to 1 percent in the event of a hypothetical maximum-rate leak (an accident that is not considered credible, as discussed below) accompanied by two other circumstances that render two of the three emergency coolant injection systems ineffective. The hypothetical maximum rate leak is assumed to result from an abrupt, double-ended break of a large pipe. Such a break is not considered credible because stainless-steel pipe in the low-temperature, low-pressure, low-corrosion conditions of SRP reactors would not undergo abrupt catastrophic failure. The two conditions assumed to render two-thirds of the emergency coolant injection system ineffective contend that the break occurs in one of the injection lines and that some unspecified failure of an active component disables one of the two remaining injection lines.

[6]The term "design basis" is used in the context of nuclear licensing to denote the range of postulated accidents for which it is required to provide protection in the form of engineered safety features systems. For purposes of 10 CFR Part 100, the NRC equates "design basis accidents" with "credible accidents." The 10 CFR Part 100 source term must be greater than that resulting from any "credible" or "design basis" accident.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	DOE apparently bases this argument on the fact that the SRP emergency core cooling systems (ECCS) are currently designed to limit core melting to no greater than 1% of the fuel.[7] DOE also points to its estimates that a fuel reloading accident at SRP would result in no greater than 3% core melting (1983 SAR, p. 15-69). DOE's claims that this 1-3% fuel melting figure should be plugged into the 10 CFR Part 100 source term analysis flies in the face of both DOE's own analysis of existing SRP reactors and NRC's treatment of licensed commercial reactors.	
BL-5	To begin with, neither DOE nor NRC has ever used ECCS design criteria as a basis for judging the adequacy of the confinement system under 10 CFR Part 100. For light water power reactors, *and historically for the DOE production reactors, NRC and DOE* have assumed a full-core meltdown and the traditional 10 CFR Part 100 source term as the design basis accident for the confinement system. The 10 CFR Part 100 requirements were intended to provide a substantial additional layer of conservatism above and beyond that provided by emergency core cooling and other safety features designed to mitigate against design basis accidents. In other words, when 10 CFR Part 100 was developed, the AEC decided that, even if the plant were designed to prevent and mitigate against all credible accidents, the possibility for a much more serious, though highly	The ECS performance has no direct bearing on the "adequacy of the confinement system" as evaluated, because the accident causing the greatest core damage is not a loss-of-coolant accident (LOCA); *it is, rather, a fuel melt resulting from a* reloading criticality accident that is not mitigated in any way by ECS performance. The fact that the most severe credible accident at the L-Reactor is a criticality accident (rather than a LOCA for a power reactor) reemphasizes the need to consider "the characteristics of a particular reactor" (10 CFR 100, note) in arriving at appropriate source terms.

[7] DOE has postulated two classes of DBAs for which the SRP ECCS should be capable of providing protection: loss-of-coolant and loss-of-circulation (J. W. Joseph, Jr., and R. C. Thornberry, "Analysis of the Savannah River Reactor Emergency Core Cooling System," SRL, DPST-70-463, Oct. 1970, p. 13). In 1970, DuPont estimated that the maximum amount of core melting for which the ECCS could be maintained was 10%. Id. at p. 17. Today, SRP establishes operating power limits designed to limit core damage from loss-of-coolant and loss-of-circulation accidents to less than 1%. 1983 SAR, pp. 15-51, 15-54.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	improbable, accident could never be completely discounted, and therefore its consequences must be considered when siting the plant and designing the containment system.[8] As implemented, the 10 CFR Part 100 regulations state that the major accident from which the source term should be calculated has "generally been assumed to result in substantial meltdown of the core with subsequent release of appreciable quantities of fission products." [10 CFR §100.11(a), n. 1.][9] Thus, the history of 10 CFR part 100 convincingly demonstrates that the regulation should not be based on ECCS design criteria.	
BL-6	Secondly, DOE's argument, if carried to its logical conclusion and applied to NRC-licensed reactors, would result in a complete anomaly. DOE claims that, since SRP reactor ECCSs are designed to limit fuel melting to 1%, the 10 CFR Part 100 doses should be calculated, and the adequacy of the containment tested, based on the 1% figure. Yet, reactor ECCSs licensed by the NRC are designed to permit no fuel melting whatsoever.[10] According to DOE's logic, NRC-licensed reactors would not even need containment buildings, since there would be no 10 CFR Part 100 offsite doses at all based on the ECCS no-fuel-melting criteria. This absurd result underscores the weakness of DOE's argument and demonstrates the need to assure sufficient conservation by basing 10 CFR Part 100 upon a substantial meltdown accident, rather than on ECCS design criteria.	As indicated in Table 4-22 of the Draft EIS, the limiting accident is derived from a reloading criticality, not a LOCA; therefore, it is unaffected by ECS performance. Section 4.2.1.5 and Table 4-24 of the draft EIS further assess the effectiveness of the confinement system for a postulated 10-percent core melt based on the NRC CRAC2 methodology. Also see the response to comment BL-4 concerning the design of the SRP ECS.
	[8]Atomic Energy Commission Reactor Site Criteria, Report to the Director of Regulation by the Director, Licensing and Regulation, AEC-R 2/39, Appendix D at p. 9.	
BL-7	[9]As noted previously, the precedent with regard to both commercial power reactors and production reactors has been to interpret "substantial meltdown with subsequent release of appreciable quantities of fission products" to mean full core meltdown with the instantaneous release to the containment or confinement system of 100% of the noble gases, 50% of the iodine, and 1% of the remaining fission products.	See the responses to comments BL-1 and BL-2.
BL-8	[10]The NRC assumes as a design basis accident a loss-of-coolant accident caused by a double-ended pipe break. Reactors must be designed to permit no fuel melting from this accident, even assuming the single failure criterion.	See the response to comment BL-4.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
BL-9	Furthermore, even if DOE were somehow correct in basing the 10 CFR Part 100 analysis upon the ECCS design criterion, the 1-3% fuel melt figure is still far too low to be considered the maximum credible accident. The ECCS design criterion of not more than 1% fuel melting is based on the single failure criterion, which assumes that an accident--e.g., a pipe break--is accompanied by the most detrimental failure of a single active component of the system. Common cause failures, which could cause simultaneous failure of two or more active components, could cause fuel melting beyond that established as the ECCS DBA. For example, the accident at Three Mile Island Unit 2 was "beyond the design basis of the ECCS" in that there were multiple failures of active components, resulting in cladding, and possible fuel melting well beyond the ECCS design limits.	See the response to comment BL-4 concerning definition of ECS design criterion. Since the startup of SRP reactors, a continuing effort has been devoted to review of the effectiveness of the reactor safety systems and the upgrading of the systems. These reviews have included analysis of what has come to be known as "common cause" failure modes. Where credible failure modes of this nature have been identified and considered to be of importance, design or operational changes have been implemented to cope with the failure modes. Several examples of the design changes implemented to cope with common cause failures of the ECS are described in Appendix J of the EIS (see the discussion of submersible addition valves, page J-9, isolation valves, page J-11, new sump pumps, page J-11, 36-inch-high dams, page J-12, and automatic incident action sensors, page J-12). The ECS header represented a unique failure point in that a massive leak from the header could flood the reactor basement, possibly causing a "loss of pumping" accident while at the same time possibly rendering the ECS incapable of coping with the accident. To overcome this deficiency, a series of isolation valves were installed in the mid-1970s. The risk analyses discussed in the EIS and 1983 SAR include estimates of recognized credible common cause failures, but do not make an arbitrary allowance for nonspecific common cause failures.
BL-10	The Three Mile Island accident points up another flaw in the DOE analysis of "credible" accidents at SRP. DOE assumes that the percent release of noble gases is directly proportional to the percentage of fuel melted, e.g., 3% fuel melting results in the release of 3% of the noble gases. To the contrary, at TMI Unit 2, the percentage of the noble gas inventory released was several times the percentage of the core damaged.	The assertion that "at TMI Unit 2, the percentage of the noble gas inventory released was several times the percentage of the core damaged" is without foundation. Most recent estimates of TMI-2 core condition suggest that a very large portion is damaged. It is significant to note that despite the large core damage, quantities of radioiodine released from the coolant system were minute compared to the full-core-melt estimate.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
BL-11	In any case, the question of whether fuel melting beyond 3% is "credible" or "incredible," from the standpoint of the ECCS criteria, is irrelevant from the standpoint of the confinement system design requirements. The confinement system must meet 10 CFR Part 100 requirements. It must maintain off-site doses below 10 CFR Part 100 guideline values, assuming the release of 100% of the noble gases, if it is to achieve its "defense-in-depth" objective of limiting the risk to the public if a more serious accident, not normally considered credible, should occur. As shown above, the L-reactor simply does not meet these requirements.	The confinement system for L-Reactor would meet the dose criteria of 10 CFR 100, were they to apply (see draft EIS Tables 4-22 and 4-24; also see the response to comment BL-1).
BL-12	As a separate matter, DOE has attempted to use probabilistic risk analyses to bolster its argument that accidents resulting in more than 1-3% fuel melting are not "credible." In essence, DOE claims that more severe accidents are not credible since the probability of their occurrence is less than one in a million (10^6) per reactor year of operation. The calculations cited in the DEIS (Vol. 1, p. 4-54; Vol. II, pp. G-44 to G-48) refer to estimates made in a recent internal DuPont memorandum (J. P. Church to D. A. Ward, "Risk Estimates for SRP Production Reactor Operation," DPST-83-717, Aug. 26, 1983). This internal document, however, points out that the risk assessment will not be completed for about two years and that	Four accidents which bound the consequences of credible accidents are reviewed and discussed in the EIS and the 1983 SAR. The bounding accidents were selected by following the traditional approach to reactor safety analysis by analyzing the consequences of "worst case credible" and even some "noncredible" accidents based on the single failure criteria. Both mechanistic and probabilistic arguments were used to define the "worst case credible" accidents. Best estimates of the probability of occurrence of these accidents are presented in the EIS in order to define as accurately as possible not only the consequences of these accidents but also the associated risk (consequence multiplied by probability of occurrence) of these accidents.

Comment number	Comments	Responses
	The present study should be viewed as a preliminary estimate of risk. The study is not sufficient for use as a basis for making absolute decisions about improving reactor safety. It is intended as a guide to engineering judgement in establishing priorities for the use of resources in making further improvements in reactor safety, just as the previously estimated risks and probabilities have been used in the past. Even the complete PRA will have limitations and will be used in much the same way. PRA results are inherently subject to uncertainty. In particular, PRA results cannot be expected to quantify risks from accidents or events which cannot or have not been postulated and quantified. Id., pp. 2-3 (emphasis added). In the DEIS, the DOE conveniently fails to mention this cautionary note,[11] and also fails to mention the caveats at the end of the DuPont document, including the following: The estimates of probabilities used in this study for specific accident sequences and consequences should be considered with	As noted in the second quote, the probabilities are the best estimates that can be made at the present time with existing data and resources; and they are judged to be reasonable. The primary deficiency alluded to in the first quote is not with the probabilities but with the fact that some less probable accident scenarios are not yet included as noted in the remainder of the caveat, which was not quoted but is reproduced below: "... They do not include the probability of initiating events which could result in common failures of several safety systems, and which can be postulated, but for which there is no experience based upon which to estimate probabilities. For example, a very large earthquake, well beyond the design basis earthquake for the reactor, might render inoperative several or all of the heat removal systems. *The frequency of occurrence* of such an earthquake is not known--it might truly be zero; it is certainly less than once in 10,000 years. However, when the results of probability calculations yield values as low as 10^{-7} (as in this study) per year, it is appropriate to recognize that there may very well be exceedingly rare events whose risk contributions have been quantified. The important conclusion is that an event so rare as to occur only once in 10^7 years, as in cases discussed above, should be regarded as having, in effect, zero probability. There is no incentive to further reduce its probability or its consequence. An event having a probability of once in 10^4 years might be considered as a significant contributor to risk if the consequence of the event is known or judged to be very large. Thus there is incentive to reduce its probability or consequence." NRC's conclusion concerning risk analysis of sequences initiated by natural phenomena or deliberate acts of sabotage is pertinent and stated below: "Sequences initiated by natural phenomena such as tornadoes or seismic events and those that could be initiated by deliberate acts of sabotage are in a

[11] In the Appendix of the DEIS, DOE indicates that the analysis is "preliminary" (DEIS, Vol. II, p. G-48). In the main text (DEIS, Vol. I, pp. 4-54 to 4-55), the results are presented without caveats and are presented as "fact."

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	careful regard to the assumptions made. First, the estimates of component and system failure rates or failure probabilities used in this study were not obtained by a comprehensive analysis. They are the best estimates that can be made at the present time with existing data and resources. They are judged to be reasonable. Second, the estimated rates are based upon extrapolations of experience. They do not include the probability of initiating events which could result in common failures of several safety systems, and which can be postulated, but for which there is no experience base upon which to estimate probabilities.	large measure taken into account in the design bases and operation. The data base for assessing the probability of events more severe than the design bases for natural phenomena is extremely small. Therefore, accident sequences initiated by such events is considered beyond the state-of-the-art of probabilistic risk assessment." (Reference: Final Environmental Statement on the operation of Bryon Station, Units 1 and 2, NUREG-0848, U.S. Nuclear Regulatory Commission, April 1982.)
	Id., p. 16 (emphasis added).	Of all the types of accidents considered in the preliminary PRA, the LOCA accident and the associated response of the ECS are the most thoroughly studied. Rather comprehensive analysis including common cause failures has been applied to this accident as evidenced by the number of design changes implemented to address common cause failures (see the response to comment BL-9).
	Indeed, the failure to take into account common cause failures results in estimates of fuel melting that are likely to be several orders of magnitude too low. This renders the overall absolute probabilities meaningless for judging whether the probability of accidents resulting in more than 3% fuel melting is 10^{-6} per reactor year, as DOE would have us believe, or closer to 10^{-4} per year, or even higher.	
	DOE has used the same probability analysis as a partial basis for its contention that alternative containment/confinement options are not cost effective (DEIS, Vol. 1, Table 4-31, fn. d, p. 4-80). The absolute probabilities are similarly an insufficient basis for this contention.	
BL-13	The DOE comparisons of the cost effectiveness of alternative containment/confinement options (DEIS, Vol. 1, Table 4-31) contain even more fundamental errors that render them useless. It is perhaps useful to mention several of these errors, although I do not intend to discuss them in detail in this statement.	With respect to the comments on the cost-effectiveness evaluation of alternative safety systems:
	(1) It is inappropriate to include a production loss of $150,000 per reactor-day without including offsetting operating costs that would not be incurred.	1. The value of $150,000 takes into account reduced operating costs.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	(2) The estimated man-rems averted do not include exposures: (a) to persons exposed on site, (b) to persons exposed at a distance greater than 80 km, (c) to organs other than whole body, e.g., thyroid, and bone, (d) associated with fuel-melting beyond 10% of the core. Recognizing these inherent deficiencies, the NRC has decided that this cost-benefit approach should under no circumstances be used as a substitute for existing regulatory requirements. These requirements include ensuring compliance with 10 CFR Part 100, performing adequate site selection, and ensuring that the containment/confinement system is adequate for the protection of public health.	2(a). The estimated person-rem do not consider onsite exposures with any alternative because there is no basis for assuming any difference in onsite exposures to plant workers subject to emergency procedures in the event of an accident. 2(b). As noted in Table 4-24 of the Draft EIS, person-rem exposures at distances as far as 800 kilometers are only about twice those out to 80 kilometers for each alternative and do not alter the cost benefit by more than a factor of two. 2(c). Table 4-24 of the Draft EIS also lists the population thyroid doses for both 80- and 800-kilometer radius zones. Inclusion of these doses would not significantly alter the cost-benefit values, particularly those based on the EPA value per health-effects averted, because thyroid damage is extremely unlikely. 2(d). Values for any desired core-melt hypothesis can be determined by inverse scaling of the cited cost-benefit values with the core-melt percentage.
BL-14	In sum, the L-reactor, as presently designed, is simply unsafe. *It does not meet the minimum standards for design of a* containment/confinement system to protect the public health in the event of a severe accident. Following the recent controversy over the adequacy of the L-reactor confinement system, DOE has attempted to lower its safety requirements--reducing the requirements for confining noble gases by a factor of 30--rather than improve the confinement technology. Simply stated, DOE believes its reactors should be held to the nuclear regulatory requirements of the Truman and Eisenhower administrations rather than today's standards. We disagree.	The L-Reactor is not unsafe and does meet the minimum standards *for design of a containment/confinement system* (see the response to comment BL-11). Rather than lower its safety requirements (see the response to comment BL-2), DOE has continued to upgrade reactor safety systems and explore new methods to further protect the public health and safety.
	II. The National Security Issue I will now turn to the national security issue. Here, the central question is whether DOE can safely defer the restart of the L-Reactor in order to incorporate the technologies needed	

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	to meet today's minimal environmental and safety standards. Can we have both a safe and clean environment and adequate national security, or must the former be sacrificed for the latter, as DOE would have us believe?	
BL-15	In the DEIS (Vol. I, Chapter 1), DOE's emphasis on the "need" issue has been in terms of whether the L-reactor should be restarted at all, rather than the less demanding question of whether restart of the L-reactor can be deferred. A 36-month delay in L-reactor operations is ample time to upgrade the environmental control and safety systems. This period would permit installation of four of the five confinement/containment alternatives (DEIS, Vol. 1, p. 4-80), and would also permit the installation of mechanical draft cooling towers (DEIS, Vol. 1, p. 4-95). The cost of a 36-month delay in terms of foregone plutonium production is approximately 1.5-1.75 MT of plutonium. Thus, the central question here is whether 1.5-1.75 MT of foregone plutonium production is a threat to national security, or, alternatively, whether this amount (or some fraction thereof) can be supplied by other production initiatives without incurring a shortage of plutonium "needed" for nuclear weapons production.	The effects on meeting established needs for defense nuclear materials with a delay of the L-Reactor restart is analyzed in Appendix A (classified). Implementation of the potential combination of partial-production options providing the greatest material production (the accelerated useof the Mark-15 lattice at SRP reactors and the production of less than 6 percent plutonium at the N-Reactor) to compensate for production losses commensurate with these delays in the L-Reactor restart provide only a small fraction of needed defense materials that could be produced by L-Reactor. This is summarized in Section 2.1.3 in the EIS.
BL-16	To place this issue in perspective, it should be noted that the U.S. nuclear weapons stockpile currently contains some 80 to 90 metric tons of plutonium and 600 to 700 metric tons of highly enriched uranium. It is incredible to think that a 2 percent change in the plutonium inventory would be detrimental to national security. Certainly, we cannot estimate the number of Soviet warheads or weapons material production to that level of accuracy. Setting this argument aside, there is strong evidence that restart of the L-reactor can be delayed for at least 36 months without incurring a shortage in plutonium to meet DOE projected weapon requirements.	The national policy on nuclear weapons, their deployment, and the need for increased weapons is beyond the scope of this EIS.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	A. Would a Near-Term Shortage of Plutonium Be Incurred By a Delay In Start-up of the L-reactor?	
BL-17	First, the DEIS fails significantly to give special consideration to a short-term delay in L-reactor operation and the shortages of materials, if any, that this delay would incur, even without alternative production options. The relevant questions that must be asked are: Would a near-term shortage occur, and, if so, could the alternative production options eliminate it?	See the response to comment BL-15.
BL-18	When the 1981-83 Nuclear Weapons Stockpile Memorandum (NWSM) was signed by President Carter in October 1980, DOE projected that, unless the new production initiatives were implemented, there would be a shortage of plutonium in 1985 or shortly thereafter. With the implementation of several planned initiatives, including the restart of the L-reactor (DEIS, p. 1-3), a plutonium shortage was not projected to occur prior to the early 1990s. DOE indicates that "the increased defense nuclear material requirements . . . have been reaffirmed in subsequent Stockpile Memoranda" (DEIS, p. 1-2), but that "Congress has delayed or failed to fund certain nuclear weapons systems" (DEIS, p. 1-2). The effect has been to eliminate the shortage previously projected to occur in the early 1990s. In my view, foregoing plutonium production in the L-reactor for 36 months, even if none were made up through alternative near-term production initiatives, would not create near-term shortages. In the long term (after 1990), shortages that might otherwise appear can be made up by a variety of production initiatives, several of which are identified below. DOE apparently does not dispute this view. Rather, DOE simply asserts that "none of the [alternative] production options, or combinations of options, would provide sufficient material in time to fully compensate for the delay or loss of L-Reactor production" (DEIS, p. 1-6). But this is not the relevant question. As stated above, the questions are: Would a near-term shortage occur, and, if so, could the alternative production options eliminate it?	The quantitative analysis of nuclear material requirements and supply provided in Appendix A (classified) demonstrates the need for the restart of L-Reactor as soon as practicable to meet the the requirements identified in the FY 1984-1989 Nuclear Weapons Stockpile Memorandum. See also the response to comment BL-15.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	B. The Recent Delays in Weapons Systems Have Significantly Reduced the Near-Term Requirements for Plutonium.	
BL-19	This can be seen by comparing the weapons requirements set forth in the Carter FY 1981-83 NWSM against today's requirements. The FY 1981-83 NWSM, signed in October 1980, included a significant increase in warhead production and was the impetus for materials production initiatives. Included in this NWSM were: - the first firm requirements for 700 W84 and W85 warheads for Pershing II and Ground-Launched Cruise Missiles, - some 2000 MX missiles warheads planned for a 200-missile force, - sufficient W76 Trident I warheads (5,520) for backfit into 12 Poseidon submarines and 15 new Trident submarines, - 1200 W-70-3 Lance and W79 8-inch nuclear artillery warheads built as fission warheads with the technical ability to be shifted to enhanced radiation yields, - 460 W80-0 Sea-Launched Cruise Missile warheads, - 3,394 W80-1 Air-Launched Cruise Missile warheads, and - 1000 W-82 155-mm fission artillery warheads. The FY 1983-88 NWSM signed by President Reagan in November 1982 made significant changes to its early assumptions, which were similar to the Carter Administration:[12]	See the response to comment BL-16. As indicated in Section 1.1.1 and Appendix A (classified), the defense nuclear material requirements of the FY 1984-1989 Nuclear Weapons Stockpile Memorandum support the need to restart L-Reactor as soon as practicable. The availability of all recoverable material from retired weapons is included in the determination of material supply for new weapons in the NWSM. DOE utilizes this material in meeting new defense nuclear material requirements. Section 1.1 contains added information on this subject in this final EIS.

[12]Nine warhead types continue in production during 1983:
- the B61-3/4 bomb,
- the W76 Trident I warhead,
- the W79 enhanced radiation artillery warhead,
- the W80-0-0 Sea-Launched Cruise Missile warhead,
- the W80-1 Air-Launched Cruise Missile warhead,
- the B83 Modern Strategic Bomb,
- the W84 Ground-Launched Cruise Missile warhead,
- the W85 Pershing II warhead, and
- the W87 MX warhead.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	- only 1000 MX warheads would be built for 100 MX missiles, - W76 Trident I warhead production would be cut to 3840 in the short term, with a shift to Trident II production in time for fitting the ninth Trident submarine (1989), - the W70-3 Lance and W79 8-inch nuclear artillery warheads would be built as enhanced radiation warheads, - 758 rather than 460 W70-0 Sea-Launched Cruise Missile warheads, - a significant reduction in near-term W80-1 ALCM production from 3,394 to 1,739 with shift to the Advanced Cruise Missile, and - a shift from fission to enhanced radiation yield for 1000 W82 155-mm warheads. Significant reductions in nuclear material requirements have resulted from Reagan's decision to shift the MX warhead from the W78 design to the W87. In addition, DOE has considerable flexibility in the rate of retirement of old warheads.[13] This is the primary source of material for new weapons production. The 1983-88 NWSM also included a number of new retirement initiatives, including retirement of B-52Ds and accelerated retirement of B52Gs (with the reduction in bomb needs), retirement of the Titan II, and accelerated retirement of Polaris. The retirements traditionally account for a large proportion of nuclear materials for new warheads. By the end of the decade, some nine warhead types (W25, B28, W31 Nike Hercules, W33, V43, W50, B53, and W76) will be retired either in part or in full.	

[13]Two significant restraints exist in retiring warheads when scheduled: warhead retirements contingent on replacements (particularly when lack of Congressional funding slows down replacements) and double sets of warheads necessary when enhanced radiation replacements for fission warheads (W70-3, W79, and W82) are kept in the U.S. and a full set of overseas deployed warheads are also kept.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	C. Alternative Plutonium Production Initiatives Are Available to Make Up for a Potential Loss of Some 1.5-1.75 MT of Plutonium Within the Three-Year Period the L-Reactor Is Deferred.	
BL-20	Since 1981, DOE has exceeded its plutonium equivalent production goal. Consequently, part of the 1.5-1.75 MT Pu alternative production requirement has already been met. We estimate that DOE has surpassed its planned production goal at Savannah River by about 0.5 MT in FY 1982-83. At Hanford, the conversion of the N-reactor to the weapon-grade mode of operation was completed in FY 1982, approximately five months ahead of schedule, providing some 0.23 MT of additional plutonium. Thus, the makeup needed from alternative sources is only on the order of 0.8-1.0 MT.	The availability of nuclear material defined in the Nuclear Weapons Stockpile Memorandum includes actual material produced in DOE facilities rather than past production goals and schedules.
BL-21	D. Other Alternatives to L-Reactor Operation (1) Mark-15 Cores. The use of Mark-15 cores could boost plutonium production by at least 25% per reactor. If such cores are installed in two operating SRP reactors, weapon-grade plutonium production (with blending) could be increased by 0.375-0.475 MT per year. Plans exist to install Mark-15 cores in one reactor in late FY 1985 or as late as August 1986. Accelerating introduction of the Mark-15 cores by one year could provide approximately one-half of the plutonium makeup required. (2) Production of 5% Pu-240 Plutonium at the N-reactor. The shift from 6% to 5% Pu-240 production would produce greater quantities of plutonium than a 10% increase in N-reactor power (DEIS, pp. 2-5, 6). Such a shift could therefore increase plutonium production through blending by about 90 kg/yr, or some 0.27 MT over the next three years. (3) Restart of the Purex Reprocessing Plant at Hanford. DOE now plans to restart the Purex Reprocessing Plant at Hanford in April 1984 to process stored and new N-reactor spent fuel to recover both fuel-grade and weapon-grade plutonium. Restart of the Purex plant three months earlier would provide an additional 100 kg of plutonium per month, or 0.3 MT total.	The acceleration of Mark-15 lattice cores and production of 5-percent plutonium-240 at the N-Reactor were considered in the EIS (Sections 2.1.2.2, 2.1.2.3, 2.1.2.4, and 2.1.3). The additional plutonium that would be generated by these partial production options is small compared to the amount needed to offset a delay in L-Reactor restart. The early restart of the PUREX facility will have little effect on the supply of weapons-grade plutonium in the near term because sufficient supplies of fuel-grade plutonium are directly available for blending; the capacity of the facility is large in relation to the backlog of N-Reactor weapons-grade material available for processing. Furthermore, the early plant startup was factored into the material supply information in the FY 1984-1989 NWSM recently approved by President Reagan and used as a basis for the need for L-Reactor in this final EIS. Additional information on implemented initiatives and production options has been included in Sections 1.1 and 2.1 of this final EIS.

Table M-2. DOE responses to comments on Draft EIS (continued)

Comment number	Comments	Responses
	E. Summary: Production Options and Proposed Action	
BL-22	We take issue with the DEIS claim that no combination of production options can fully compensate for the loss of material that would be produced by the L-reactor if restart is delayed (DEIS, p. 2-1). As noted above, DOE has given short shrift to its discussion of the combination of production options by failing to examine quantitatively the effect of a 36-month restart delay. The combination of the following alternatives can make up the 1.5-1.75 MT Pu-equivalent loss prior to a shortage developing in the Pu stockpile: (a) Excess Pu already obtained by exceeding previously planned production goals. (b) Operating N-reactor to produce 5% Pu-240 product. (c) Accelerating Purex by 3 months. (d) Accelerating Mark-15 core by 1 year. This combination of alternatives would permit much needed improvements in L-reactor environmental control technology while still meeting defense nuclear material needs. This concludes my statement. NRDC will be submitting to DOE more extensive comments on the L-reactor DEIS prior to the close of the comment period in two weeks. Thank you.	See the responses to comments BL-15, and BL-19 through BL-21.