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.

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

Comment number	Comments	Responses

APPENDIX A

Requirements of 10 CFR §100.11

10 CFR §100.11 states, in relevant part:

(a) As an aid in evaluating a proposed site, an applicant should assume a fission product release[1] from the core, the expected demonstrable leak rate from the containment and the meteorological conditions pertinent to his site to derive an exclusion area, a low population zone and population center distance. For the purpose of this analysis, which shall set forth the basis for the numerical values used, the applicant should determine the following:

(1) An exclusion area of such size that an individual located at any point on its boundary for two hours immediately following onset of the postulated fission product release would not receive a total radiation dose to the whole body in excess of

[1]The fission product release assumed for these calculations should be based upon a major accident, hypothesized for purposes of site analysis or postulated from considerations of possible 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.

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

Comment number	Comments	Responses
	25 rem[2] or a total radiation dose in excess of 300 rem[2] to the thyroid from iodine exposure. (2) A low population zone of such size that an individual located at any point on its outer boundary who is exposed to the radioactive cloud resulting from the postulated fission product release (during the entire period of its passage) would not receive a total radiation dose to the whole body in excess of 25 rem or a total radiation dose in excess of 300 rem to the thyroid from iodine exposure.	

[2]The whole body dose of 25 rem referred to above corresponds numerically to the once in a lifetime accidental or emergency dose for radiation workers which, according to NCRP recommendations may be disregarded in the determination of their radiation exposure status (see NBS Handbook 69 dated June 5, 1959). However, neither its use nor that of the 300 rem value for thyroid exposure as set forth in these site criteria guides are intended to imply that these numbers constitute acceptable limits for emergency doses to the public under accident conditions. Rather, this 25 rem whole body value and the 300 rem thyroid value have been set forth in these guides as reference values, which can be used in the evaluation of reactor sites with respect to potential reactor accidents of exceedingly low probability of occurrence, and low risk of public exposure to radiation.

Comment number	Comments	Responses

APPENDIX B

TABLE 15-4

Calculated Radiation Dose to a Person at the SRP Site Boundary Following Four Specific Accidents

Accident	Operating and Meteorological Conditions*	Calculated Dose, rem Whole Body (2 hr)	Thyroid (2 hr)	Thyroid (120 hr)
Reference values for reactor siting in 10 CFR 100.[3]		25	300	300
D_2O Spill	Typical	0.007		
	Very Unlikely	0.14		
Discharge Mishap (one fuel assembly melts)	Typical	0.0038	0.0078	0.018
	Very Unlikely	0.055	0.12	0.29
Misloading Criticality (3% core damage)	Typical	0.39	0.48	1.4
	Very Unlikely	6.6	11.1	31.5
Hypothetical LOCA (1% core damage)	Typical	0.13	0.16	0.46
	Very Unlikely	2.2	3.7	10.5

*Typical conditions are 2500 MW reactor power, average (50%) meteorology, and 19-month service age carbon filters (carbon filter age is discussed in Section 15.3.2.2). Very unlikely conditions are maximum anticipated reactor power of 3000 MW, very unfavorable meteorology as specified in NRC Regulatory Guide 1.145 (95% site, 99.5% worst sector), and 19-month aged carbon filters. Values shown are maximum for any of the P, L, K, and C Reactors. The core inventory of tritium is included in the whole body calculations.

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

Comment number	Comments	Responses

APPENDIX C

Evolution of the Confinement Technology at SRP Production Reactors

The production reactors at SRP were constructed in the early 1950s. The L-reactor, the third of five, began operating in July 1954. SRP originally controlled airborne radioactive releases by dispersion via tall stacks (DEIS, Vol. II, p. J-1). SRP also relied on the fact that the site extended over 300 square miles, thus permitting greater dispersion of radioactivity prior to reaching the site boundary. The L-reactor is some 9 km from the SRP site boundary (DEIS, p. 2-10). In 1958, the AEC's Advisory Committee on Reactor Safeguards (ACRS), after performing an extensive review of the SRP safety philosophy, concluded:

> The buildings in which the SR reactors are housed do not possess any significant containment features, such as those now being provided for power reactors located in more populated areas. In the event of a serious accident that would breach the reactor tank and shield, the building shell in itself could not be expected to provide a third line of defense of any consequence on restraining the volatile fission products.
>
> It was recommended that the Du Pont Company explore alternative paths toward obtaining a higher degree of confinement that is now in effect.

DEIS, Vol. II, p. J-7.

Also in 1958, the capacity of the SRP primary coolant pumps was approximately doubled (from 78,000 gpm to 150,000 gpm) which permitted a doubling of each reactor's power from about 1000 megawatts thermal (MWt) to approximately 2000 MWt (DEIS, Vol. II, pp. J-3 and J-6). Since the fission product inventory of noble gases and iodine is proportional to reactor power, this

Comment number	Comments	Responses
	change effectively doubled the magnitude of the consequences of a serious fuel meltdown accident. Since 1958, the power level of the production reactors has been further increased, and the L-reactor is currently expected to operate at 2350 MWt* (DEIS, Vol. I, p. 2-14). In 1960-61, in response to the ACRS criticism, SRP began a major confinement system improvement project. This system would remove airborne contamination, particularly iodine-131, through moisture separators, particulate filters, and halogen absorbers (carbon) in the process area ventilation exhaust stream (DEIS, Vol. II, p. J-7). This filtration system, while lowering the thyroid dose from halogen releases, was, however, incapable of removing noble gases, the primary contributors to the whole body dose. In the 1950s, there were no criteria specifying the degree of site isolation or reactor containment considered desirable for mitigating the consequences of severe reactor accidents. In 1962, after extensive public comment, the AEC promulgated the 10 CFR Part 100 site suitability regulations for licensed power reactors. Throughout the remainder of the 1960s, DuPont and the AEC examined a number of alternative containment/confinement proposals. Although some of these proposals, if adopted, would bring the SRP production reactors into compliance with 10 CFR Part 100, they were rejected because of their expense. Improvements were made in the confinement system in the 1970s, including the installation of a Confinement Heat Removal System to avoid overheating the filter system in the event of a full core meltdown. This system was needed because overheating the filters would reduce their retention capacity and cause desorption of the collected iodine (DEIS, Vol. II, p. J-13), thus defeating the purpose of the filters. This and other improvements, however, offered no reduction in the whole body dose due to accidental noble gas releases.	

*The highest power level achieved at SRP was 2915 MWt.

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

Comment number	Comments	Responses
	ADDITIONAL COMMENTS MADE AT PUBLIC HEARING ON NOVEMBER 3, 1983	
BL-23	Now, let me add one or two other things. I just came, day before yesterday, from a conference in Washington, D.C. on the global effects of nuclear war which was where some of the top scientists from this country and also from the Soviet Union met to release their findings, principally on the thermal effects following the nuclear exchange. And they pointed out that the debris and soot that would be picked up by an exchange between the Soviet Union and the United States would lead to blockage of the sunlight for a month or more, several months before it cleared up, a year before it cleared up completely, and the temperature at the surface of the earth, average, over the Northern Hemisphere, would drop about 40 to 50 degrees Centigrade, and the loss of light would lead to the loss of photosynthesis. And, in effect, beyond the billion or so people you killed outright in a nuclear exchange, it would be credible that an equal number or larger number of the remaining survivors could not survive the aftereffects. Well, another thing they pointed out was that because the principal blockage of the sunlight comes from the soot that is produced by fires, that as little as 100 megaton exchange, say, from a thousand weapons of a tenth of a megaton each, would have similar effects. I mean, most of the effects could be produced by this small of an exchange. I just did a back-of-the envelope calculation, weapons stockpiled has about, oh, in the neighborhood of 7,000 megatons in weapons, in itself. This is in some twenty-six or so thousand weapons, and these are produced from about 80 to 90 tons of plutonium and six or seven hundred tons of highly enriched uranium. The L-Reactor, over a ten-year period, would produce somewhere on the order of five tons, more or less.	These comments are outside the scope of the EIS.

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

Comment number	Comments	Responses
	Just scaling those numbers, you can argue that the L-Reactor would effectively produce over a ten-year period about 400 megatons, give or take a few hundred megatons of warhead yield, which is more than the minimum needed to essentially produce this newest catastrophe that has been identified. I raised that because I think that DOE has an obligation to discuss all foreseeable facts in the Environmental Impact Statement, and the effects of misuse of these warheads or use of them eventually is certainly one foreseeable impact that they must discuss.	

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

Comment number	Comments	Responses
	STATEMENT OF FRANCES CLOSE HART ENERGY RESEARCH FOUNDATION I am Frances Hart and I represent the Energy Research Foundation. We have not yet had time to analyze the draft environmental impact statement as thoroughly as we intend, and will submit more extensive written comments before November 15th. I would just like to make some very general observations now. The point of an EIS - as we're all aware by now - is to provide for an assessment of the environmental impacts of a particular project as part of the planning to avoid environmental damage where possible.	
BM-1	Whether by design or mistake, DOE has given the impression that startup of L-Reactor will follow almost immediately upon completion of this EIS. That schedule would preclude implementation of any of the protective alternatives mentioned in the draft and by other sources. There are a number of technical experts analyzing the draft and possible environmental protection measures, and we expect DOE to seriously consider comments and suggestions for action. It is their legal obligation to do so and we consider it to be a substantive obligation to the states of South Carolina and Georgia as well. Those of us who have participated in this process find it disturbing that DOE seems not to be entertaining the possibility that plans could change in response to comments. Although renovation of the L-Reactor is completed, it is certainly not too late to make changes and reassess schedules, and we would remind DOE that it is incumbent upon them to consider the comments with an open mind. The protective measures described in the draft are generally dismissed because it is claimed that their implementation before startup would not allow production schedules to be met.	The EIS does not "dismiss" production alternatives or potential mitigative measures. Information with respect to meeting established needs and the technical feasibility of implementing mitigative measures are factors along with environmental consequences that are essential to making a "reasoned" decision. In accordance with the Council on Environmental Quality's regulations implementing the procedural provisions of NEPA, the Department's preferred alternatives are identified in this final EIS. The Department will base its Record of Decision on this final EIS, including the public comments. The Record of Decision will address alternatives considered in reaching the decision, the environmentally preferable alternatives, preferences for alternatives based on the technical, economic, and statutory missions of the agency, and whether all practicable means to avoid environmental effects from the selected alternative have been adopted.

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

Comment number	Comments	Responses
BM-2	But recent statements from Dr. George Rathjens of the Massachusetts Institute of Technology and Dr. Thomas B. Cochran of the Natural Resources Defense Council have cast doubt on this assumption. According to Dr. Cochran, delay in startup of the L-Reactor for 36 months to implement necessary environmental control and safety systems would have no effect on national security. Dr. Cochran's comments on the draft EIS provide a detailed justification of this claim. And Dr. Rathjens stated that the draft "is totally unconvincing in justifying the need for increased production," and that "there is not likely to be any need for reactivation of the L-Reactor in the near future, and possibly ever." Given that the evidence to which we have access strongly suggests that delay of L-Reactor startup to allow implementation of protective alternatives would not have detrimental effects on national security, we would suggest that the following changes be made in DOE's plans for operation of that reactor. I repeat that we are not yet finished with our analysis of the draft EIS and that these recommendations are general ones which are by no means a comprehensive reflection of our concerns. However, we believe them to be sound and justifiable.	See the responses to comments AB-2 and AB-5 regarding information in the EIS on need and production alternatives, and the responses to comments AB-8, BL-15, BL-19, BL-20, and BL-21 regarding suggested production alternatives and need.
BM-3	First, DOE should implement some kind of cooling water discharge alternative to the presently planned direct discharge into Steel Creek. Some of the alternatives described in the draft would cause as much damage as would direct discharge and we would oppose any plan which would in effect make Steel Creek into a thermal mitigation zone. We would also oppose any alternative which does not result in compliance with state NPDES regulations in Steel Creek. The benefits from implementation of such a protective measure before startup would include the avoidance of severe thermal damage and of cesium remobilization.	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

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

Comment number	Comments	Responses
		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. This 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.
BM-4	Secondly, we believe that DOE should complete the phaseout of all seepage basins at SRP before startup of the L-Reactor.	See the responses to comments AJ-1 and BG-4 regarding seepage basins and ground-water contamination at SRP and DOE ground-water protection commitments.
BM-5	According to the draft EIS, normal operations of L-Reactor will involve the routine discharge of liquids contaminated with radioactivity from the disassembly basin at the reactor to an on-site seepage basin. This basin is now empty but remains contaminated from releases made during previous operation of the L-Reactor. According to DOE, the routine discharges "will cause contamination of the uppermost layer of the water-table aquifer (Barnwell Formation)." (DEIS, 4-26) DOE is assuming that this contamination will move laterally into Steel Creek rather than vertically into the lower aquifers. But DOE projections about groundwater movement have proven to be inaccurate in the past, as was the case in the M-area where the Tuscaloosa aquifer was contaminated by solvents from seepage basins despite DOE's claims that the aquifer was protected. Questions about increased groundwater use resulting from L-Reactor operations and the effect on head differentials under the L-Reactor (which I will discuss in more detail in a moment) make the reactivation of this presently dried-up and still irradiated seepage basin an option to be avoided.	Section 4.4.3 discusses alternatives to the use of the L-Area seepage basin that are under consideration. Studies of the hydrostratigraphic units show that conditions at L-Area are different from those at M-Area (Sections 3.4.2.1 and 5.1.1.4). If the L-Area seepage basin is used, the analyses indicate that the filtered deionized disassembly-basin wastewater will seep into the shallow ground water and flow laterally to seepline springs along Steel Creek. The upward head differential between the Tuscaloosa and Congaree Formations at L-Area is presently about 3.7 meters. Projections indicate that this an upward head differential will continue to be present for 10 or more years after L-Reactor operation resumes; this includes the effects of increased pumping at SRP in support of L-Reactor. This head differential and the clay layers beneath L-Area tend to protect the Tuscaloosa Aquifer (see Section 4.1.2.2 of this final EIS). The SRP has discharged contaminated wastewater to seepage basins in the central part of the plant site since the mid-1950s. To date, there has been no contamination of the Tuscaloosa Aquifer in this area. Also, see the response to comment AJ-1 regarding seepage basins and ground-water contamination at SRP.

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

Comment number	Comments	Responses
BM-6	There is known to be serious contamination of groundwater from seepage basins presently in use at a number of support facilities whose workload will increase with L-Reactor startup. The M-area I just mentioned and the chemical separations areas face a 33% increase in activity. It is presently planned to phase out use of seepage basins over a period of time, estimated in the case of the M-area basins to be by March 1985. To increase the load on these basins before protecting our groundwater from further contamination is unacceptable environmental practice - as is the use of seepage basins for waste disposal in general. Increased use of groundwater following L-Reactor startup adds to our concern in that possible impacts on head differentials at various places under the Savannah River Plant raise questions about deeper aquifer contamination in the future. According to the draft EIS: "Incremental ground-water pumping from the Tuscaloosa Formation, required to support the resumption of L-Reactor operation, will occur in five areas on SRP... The incremental withdrawal of water from the Tuscaloosa Formation at K-Area and the Central Shops will not affect the protection of the Ellenton and Tuscaloosa aquifers afforded by the upward head differential between the Tuscaloosa and Congaree Formations. In F- and H-Areas, this head differential no longer exists at the producing wells, and the downward head differential at these wells will be increased when the incremental pumping for L-Reactor starts. However, the hydrostratigraphic properties of the overlying wells will continue to offer protection to the Ellenton and Tuscaloosa aquifers at the pumping wells. At the seepage basins the head differential between the Tuscaloosa and Congaree Formations will be reduced by drawdown to about 3.6 meters in F-Area and to near zero in H-Area." "This is not the case in M-Area where the hydrostratigraphic characteristics of the subsurface materials are different from those in F- and H-Areas. In addition, the downward head differential between	DOE is committed to perform mitigative actions at SRP to reduce pollutants released to the ground water and to establish with the State of South Carolina a mutually agreed-on compliance schedule. Studies are being conducted on the phaseout of seepage basins at SRP. Also, see the responses to comments AJ-1 and BG-4 regarding seepage basins and ground-water contamination at SRP and DOE ground-water protection commitments. Sections 5.1.1.2 and 5.1.1.4 have been expanded to include a more thorough discussion of incremental ground-water impacts and the protection of public health and safety.

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

Comment number	Comments	Responses
	the Congaree and Tuscaloosa Formations will be increased by about 2.6 meters at the M-Area seepage basins as the result of increased pumping to support the L-Reactor." (DEIS, 5-9, 5-12)	
BM-7	According to Dr. A. R. Jarrett of the Department of Agricultural Engineering at Pennsylvania State University: "Page 3-25 and Appendix F [of the draft EIS] reveal an extensive review of the total heads existing at various locations within the SRP. These results are summarized several places, particularly Figures 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, Figure 3-9, reveals the magnitude of these head differences ranging from an upward head difference of greater than 30 feet 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	See the response to comment AW-1 which addresses Dr. Jarrett's remarks.

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

Comment number	Comments	Responses
	Figures 1 and 2.... Even using the 6 meter data enlarges the recharge area to include the L-Reactor area and during discharges creating a 12 meter drawdown essentially the whole SRP becomes a recharge area." I am not a hydrologist, but I do know that such considerations are vital to an understanding of groundwater flow and therefore possible aquifer contamination. It is obvious that questions about hydrology remain unanswered.	
BM-8	In conclusion, the priority assumed in the following illustrative statement from the draft EIS is most disturbing: "If an engineering alternative cooling-water system is implemented after the restart of L-Reactor, successional recovery of the Steel Creek system would begin as soon as the alternative is implemented. Any alternative that postulates a delay of the restart necessarily results in a loss of production that cannot be recovered." Let us make it clear that we South Carolinians consider the protection of our environment to be a vitally important priority; indeed, it is part of our national security. We are very aware that damage to the environment cannot be undone easily, frequently not at all. We are being asked to accept the destruction of a large area of wetlands, the remobilization of curie amounts of cesium, further contamination of the groundwater and possibly of our sources of drinking water - all severe and essentially irreversible impacts. In expressing concern about the impacts we have frequently been told that the incremental dangers they represent are small and that we shouldn't worry. DOE also wants us to accept without question the assumption that a two percent increase in the plutonium inventory is worth the damages we must pay. We submit that the burden of proof is theirs; that it is to DOE to prove their case much more convincingly than has been done so far.	In Section 4.4.2, the EIS compares the implementation of cooling-water alternatives before and after restart. This comparison encompasses a number of factors. A loss of production is a factor that will be considered in preparing the Record of Decision. The Record of Decision will state the decision and any mitigation measures DOE will undertake. Also see the responses to comments BM-1 and BM-3 regarding the Record of Decision on this EIS and cooling-water mitigation alternatives.

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

Comment number	Comments	Responses
	NATIONAL AUDUBON SOCIETY Southeast Regional Office P.O. Box 1268, Charleston, S.C. 29402 (803) 723-6171 STATEMENT OF TERRENCE C. LARIMER SOUTHEASTERN REGIONAL REPRESENTATIVE FOR THE NATIONAL AUDUBON SOCIETY ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR L-REACTOR, SAVANNAH RIVER PLANT AIKEN, SOUTH CAROLINA AT THE DEPARTMENT OF ENERGY PUBLIC HEARING BEAUFORT, SOUTH CAROLINA November 3, 1983 My name is Terrence Larimer. I am the southeastern regional representative for the National Audubon Society. Previous to my employment with Audubon I worked with the University of Georgia's School of Forest Resources, U.S. Forest Service and the U.S. Fish and Wildlife Service. The National Audubon Society is a private, nonprofit membership organization. We are dedicated to the conservation of wildlife and other natural resources and for the sound protection of our natural environment. Audubon has roughly 500,000 members and nearly 500 local chapters. We operate 75 wildlife sanctuaries and we publish AUDUBON magazine and AMERICAN BIRDS. Our concern with the Draft Environmental Impact Statement (DEIS) on the Savannah River Plant L-Reactor centers primarily	
BN-1	on its possible effects on wildlife habitat. Specifically, we are concerned with its effect on wood stork foraging habitat in Beaver Dam and Steel Creak Swamps. The DEIS acknowledges that *wetlands in the Savannah River Plant* (SRP) *are important foraging* sites for the nearby Birdsville Rookery of the endangered wood stork. However, the effect of the loss of these foraging areas, due to L-Reactor plant operation (high, hot, polluted water), on the colony is not discussed. We believe that these areas are critical to the continued success of the Birdsville Rookery and that this problem has not been adequately addressed.	See the response to comment AD-1 regarding the wood stork and foraging sites.

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

Comment number	Comments	Responses
	It is a known fact that wood storks have high food requirements during the nesting season, 201 kilograms per nesting pair. It is also known that wood storks will abandon nests when food becomes a limiting factor.	
BN-2	The DEIS acknowledged the swamps of Beaver Dam Creek and Steel Creek are important foraging areas for the wood stork. Is it not likely that elimination of these foraging areas will reduce the food resource to a point where colonies might be abandoned during what would have previously been only moderately adverse natural conditions? That is, will not the colony fail much more often during periods of moderate stress after the loss of an important feeding area than it would have before that loss?	See the response to comment AD-1 regarding incidences of foraging at SRP locations and inclusion of more detailed data in Appendix C, Section C.3.2 of this EIS, and the response to comment AD-2 regarding abandonment of colonies.
BN-3	Along these same lines, not only are foraging areas along Beaver Dam and Steel Creek in jeopardy but current management practices on the SRP may be reducing other nearby foraging areas. Last year nearly 200 beavers were trapped in a three-month period on the SRP at a cost of $15,000. Essentially all beavers were killed on the area. No information on the number of beaver traps, the number of trap sites, or trap site relation to actual beaver damage to railroad bed or roadway beds is mentioned.	Due in part to a lack of natural predators, the beaver population on the SRP has increased markedly in recent years. Because beaver activity has had adverse impacts on (1) 750 acres of timber, (2) environmental monitoring of streams, and (3) damaged roads and railroads, consultations were held with the U.S. Fish and Wildlife Service and the South Carolina Wildlife and Marine Resources Department. An evaluation of several alternative actions recommended that a selective trapping program be implemented at 34 areas. During a 3-month period, 196 beaver were trapped and removed at a cost of $16,231.50. This management approach has not eliminated the entire beaver population on the SRP.
BN-4	I raise these questions because of the concern over the relationship between beaver ponds and foraging areas for wood storks. It is a well known fact that beaver ponds provide valuable wildlife habitat for many species. It is likely that they provide excellent foraging habitat for wood storks. This is a question that has not been addressed and should be.	Wood storks from the Birdsville colony commonly used black gum (Nyssa sylvatica) and cypress swamps for foraging. Black gum swamps comprised 33 percent of the foraging sites. Beaver probably used many of these sites sometime in the past. The most productive stork foraging site in terms of fish resources (biomass per square meter) was a recent beaver-dammed black gum swamp. Wood storks probably benefit from foraging habitat created by beaver dam construction.
BN-5	The question of mitigating loss of critical foraging areas is not adequately discussed in the DEIS. It should be. How will this habitat be replaced?	Mitigation of foraging areas in the Steel Creek swamp might be accomplished through the implementation of the alternative cooling systems discussed in Section 4.4.2.

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

Comment number	Comments	Responses
BN-6	Surrounding foraging areas are primarily on private lands which are under increasing pressure to drain and clear for agricultural use. Indeed, the annual flooding and concurrent resupply of forage fishes to the waters associated with the Savannah River Swamp System make the Beaver Dam Creek and Steel Creek areas especially valuable to foraging wood storks. More valuable than nearby wetland areas which are not annually flooded by the river. The supposition that wood storks will simply move into "other" areas if Beaver Dam Creek and Steel Creek are lost to them is at best wishful thinking. Cumulative loss of wetlands to agricultural use and L-Reactor operation will likely prove fatal to this important segment of endangered species population. This question should be more carefully examined in the final Environmental Impact Statement.	See the response to comment AD-10 regarding habitats for the wood stork.
BN-7	Indeed the entire question of the effect of L-Reactor start-up *of the Birdsville Rookery needs further examination. The* majority of the DEIS information on wood storks is based on data gathered during less than half of last year's breeding season. This is obviously not a large enough data base to form any sound conclusions.	See the response to comment AD-3 regarding inclusion of more *detailed data in Appendix C, Section C.3.2 of this EIS.*
BN-8	In conclusion the DEIS for L-Reactor operation on the Savannah River Plant is woefully inadequate in its handling of possible impacts on the wood stork population of the Birdsville Rookery. The importance of foraging habitat in Beaver Dam Creek and Steel Creek and the effect of their loss on the rookery needs further examination. Possible mitigation schemes should be explored and enhancement of alternative feeding areas considered.	See the response to comment AD-2 regarding the use of foraging sites at SRP versus sites not located on the SRP.

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

Comment number	Comments	Responses
	R. I. (BOB) NEWMAN 388 Wahoo Drive Fripp Island, S.C. 29920 PREPARED STATEMENT PUBLIC HEARING DRAFT ENVIRONMENTAL STATEMENT, L-REACTOR OPERATION, SAVANNAH RIVER PLANT November 3, 1983	
	I am Robert I. Newman, residing on Fripp Island, here in Beaufort County and a consumer of water from the Beaufort-Jasper water system. I am a Chemical Engineer, registered in South Carolina and New Jersey. I worked for Allied Chemical Corp. for 37 years--the last 15 in various nuclear-related projects (including 7 years with Allied-General Nuclear Services). I was elected a Fellow of the American Institute of Chemical Engineers and a Diplomate of the American Association of Environmental Engineers. I served one year on the Clemson University Board of Visitors.	Comments noted.
	Before endeavoring to counter some of the most often voiced objections to the restart of the L-Reactor, I would like to put forth several basic considerations. I, personally, feel these are factors which should be taken into account in the making of any decision affecting, among other things, our environment. I think they are important to the future of the nation. I hope they are considered important to the DOE in this matter. I wish they were in the reasoning process of those opposing the restart.	
	First, our resources of both money and people (both technically trained and leaders) have a finite limit. Any wastage of either must divert resources away from other, maybe more important, activities. We hear often that other countries are getting ahead of us in technology. We all know our government is running with enormous deficits. I think we would all like to see our people in Congress spend more time constructively acting to stop the arms race; but there are only 24 hours in a day	

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and unnecessary time spent on one matter is time not available for other matters.

Second, we can never achieve the "best" solution to any problem. Regardless of what remedy is developed, some ambitious research person is going to come up with an idea that might be better. What we must strive for is solutions which are adequate to serve the necessary purpose--not the most elegant. Our decision process must consider the alternatives and their costs in dollars, time (which often equates to dollars) and other resources.

Third, try as we may, we can never achieve perfection or an activity in which there is no risk. Yet, we see time and time again the spending of enormous resources to avoid miniscule risks because of emotion or unfounded cries of concern.

Fourth and finally, one must compare one risk (both magnitude and likelihood) with others we may better understand and accept. I, personally, cannot accept the argument that nuclear risks are different because they are not our personal choice, while flying in an airplane (for instance) is an activity in which we do not participate unless we choose to do so. When I walk down the sidewalk, if a drunken driver swerves off the street and hits me, that is not by my choice, but I am sure statistics show more people have been killed by such an accident than by the handling or manufacture of nuclear materials.

Now I would like to comment on several of the objections to the restart of L-Reactor as voiced in the record I have seen. These are not necessarily in order of importance but rather in the order I noted them as I read the absurdly lengthy transcripts and letters on this matter.

LOSS OF WETLANDS HABITAT AND DANGER TO ENDANGERED SPECIES

This may be the most picayune objection raised against the restart. Of the SRP area, only some 12% of the wetlands will be affected. Looking at it another way, only some 2.5% of the site will be affected by the hot water from the operation of the L-Reactor. Maybe those objecting do not know that wildlife can walk or fly to unaffected areas. Maybe they do not want to realize that the SRP area is probably the finest

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wildlife refuge in South Carolina--keeping even the "econuts" from disturbing the wildlife. Do they know about the Savannah River Ecology Laboratory which is doing such a fantastic job because of the efforts funded by the DOE and the lack of people on the site? There is an artificial lake on the site--Par Pond. This lake receives hot water from reactor operations. When I lived in Barnwell, I heard many times of local fisherman sneaking into Par Pond (sometimes caught) to catch the large fish in the pond--thermal pollution? To carry out many additional studies, to build cooling towers to avert a non-problem is a lovely example of waste of resources.

IMMEDIATE OR CUMULATIVE RADIATION EFFECTS

I have no quarrel that an excess dose of radiation will harm me--or anyone. But I compare this with being hit with a wheeled vehicle. I'd be dead if it were a 10 ton truck going 50 miles an hour. I would not be hurt so much if it were a tricycle ridden by a four-year-old. Similarly, a radiation dose of 500,000 millirem might kill me. One millirem won't! I touched above on comparisons. Let's look at some here. The estimated impact on nearby residents from airborne releases will be less than 0.5 millirem per year. The dose to consumers of Beaufort-Jasper water might reach less than 0.05 millirem per year. These are above background radiation levels--the natural radiation we are all exposed to in this area. Now let's look at the comparisons. Should the Rocky Mountain area (like Denver) be posted "TO ENTER THIS AREA IS DANGEROUS TO YOUR HEALTH"? Its radiation level is 100 millirem higher than the good people of South Carolina will be exposed to because of L-Reactor restart--and Denver does not have a high cancer incidence. Our worthy Legislators spend a lot of time in the State House in Columbia. Columbia itself has a higher background radiation level than Barnwell or Beaufort because of higher altitude (cosmic radiation) and the composition of the ground (more radioactive). But also, a radiation survey of the State House has shown that, because of the radioactive granite used in its construction, radiation levels are quite high--as much as 500 millirem above background outside the Governor's Office. There are many areas of South Carolina where radiation levels are higher than those to which the good people of Beaufort might be exposed from the restart of L-Reactor because of altitude or rock (radioactive) outcropping. I cannot

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understand why some people of Beaufort will travel to Aiken or take so much other time to protest an activity which might subject them to an exposure to a carcinogen (radioactive material) at a level of, say, 1% of the federal limit when they are silent on the fact that their water company regularly delivers water to them with trihalomethane (another carcinogen) content exceeding the federal limits--over 100%! Such misdirected concern can only lead--or try to lead--to a real waste of resources if this miniscule exposure is required to be reduced.

CONSEQUENCE OF ACCIDENTS

One fundamental consideration in the assessment of the consequence of an accident in nuclear activities is the "stored energy" which can disburse radioactive material. Unlike a nuclear power plant, L-Reactor will operate at low pressures and temperatures. Accordingly, there is not the high temperature nor the high pressure potential to spread fission products into the environs as one might believe. However, there is a real consideration that most people like to overlook. There are natural processes, not a function of engineering or construction that cannot be ignored, though they have occurred repeatedly in nuclear mishaps. There have been reactor accidents in the U.S., in Canada, in England. In every case, the actual release was a factor of 1,000 to 100,000 times less than what had been predicted to result (using models similar to those on which the minimal releases from L-Reactor were calculated). This is really not surprising when one appreciates the natural phenomena such as agglomeration, condensation, impingement, etc. which take place regardless of design. Another factor which comes into play--and certainly did at TMI--is that two of the radionuclides of most concern, cesium and iodine, are both volatile. However, they also have a great affinity for each other and promptly combine chemically to form cesium iodide, which is not volatile and settles out on surfaces or is caught in the filter system.

CONTAMINATION OF THE TUSCALOOSA AQUIFER

I was responsible for the hydrology studies for the Barnwell nuclear plant, downstream from the SRP above the Tuscaloosa. Our studies clearly showed that the Tuscaloosa was under a

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hydraulic head higher than the overlying aquifers, so that any flow between them would be from the Tuscaloosa up, not from the upper aquifers down into the Tuscaloosa. The L-Reactor Environmental Assessment supports this on page 3-16. Granted there are holes in the aquiclude above the Tuscaloosa, but that aquifer is so immense that any loss of its water through these holes, or abandoned wells, is insignificant.

NEED FOR PUBLIC PARTICIPATION

When NEPA was enacted over a decade ago, I cheered it because I perceived that it would require that decision makers would have to take into consideration some of the basics I earlier listed like weighing of alternatives and conservation of resources in a realistic manner. My current perception is that NEPA has been prostituted and is being used by those opposing any action they do not favor to delay and delay the action--in many cases killing it just by the passage of time, not for any real, proven or demonstrated reason. Here, with L-Reactor restart at stake, the public record of operations at the Savannah River Plant--especially the reactors--clearly refutes the cries of opposition. Publishing of the Environmental Assessment gave further support. Yet poorly founded objections have resulted in the expenditure of large sums of money (some of it supplied by me in taxes), the waste of many hours of time of highly qualified people who could have been working productively, and the diversion of the efforts of Members of Congress, State leaders and federal and state regulatory agency people. I can see no evidence that any objector has shown and proved there will be any significant impact from the operation of L-Reactor when judged against rational criteria. In this regard, it is notable that, with no exception I have found, the people of nearby communities give full support to the restart-opposition coming from those with less familiarity with SRP operation. Nearby residents work at the SRP, have relatives or friends working there or have retired, in good health, from working there. If any objector wishes to counter this by saying they are doing this, knowing there is danger, let them say so, face to face, to these people, telling them they are deliberately jeopardizing the future of their friends or their children. Many of the Health Physics professionals working at the plant are parents, they know the effects of radiation. Does anyone

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really think they are disregarding the future of their own children?

CONCLUSION

This has not, obviously, been a technical presentation. The record is replete with technical facts. But many people either do not understand or they prefer to ignore facts in preference to emotion.

Let me close by mentioning an article I wrote which was published last December in THE STATE and in THE BEAUFORT GAZETTE. It compared many of the objectors to nuclear activities to Chicken Little--the misguided creature which, after being hit on the head, went around saying, "The sky is falling." While unfounded, its cries alarmed many others. The article led off, "Why can't South Carolina get away from the 'Chicken Little Syndrome' (the sky is falling)? Many reporters and editorial writers grossly distort the picture of nuclear activities from the factual situation. The same goes for a number of our leading politicians."

Thank you for letting me participate in this waste of time.

R. I. Newman, P.E.

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

Comment number	Comments	Responses
	STATEMENT OF REPRESENTATIVE HARRIET KEYSERLING BEFORE THE DEPARTMENT OF ENERGY HEARING NOVEMBER 3, 1983	
	I appreciate the opportunity to appear before you today. I do not have a scientific background, so as I read the Draft Environmental Impact Statement, I was examining the process by which you will make your decisions more than the scientific data. I am glad that others here will speak with knowledge and authority on the technical and scientific aspects of the EIS.	
BP-1	At your May 27, 1983 hearing, I stated that it was my opinion that nuclear hazards are nuclear hazards, whether they be related to commercial or defense facilities; and therefore, nuclear safety criteria and standards should be the same for all. For that reason I supported an EIS for the L-Reactor. For the same reason I urge you again, as you listen to the responses and testimony submitted to you this week, to make decisions which will require of the L-Reactor the same standards for the protection of health and safety as are required of commercial facilities.	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 of these regulations. For example, the proposed restart of L-Reactor will be in compliance with an NPDES permit issued by the State of South Carolina, and the restart of L-Reactor will be in compliance with 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 any one calendar year). With respect to engineered safety features such as a containment dome, the need for specific engineered safety features is based upon limiting potential radiological consequences. The potential radiological consequences are related to the design and operation of the specific type of reactor being considered; for example, the Fort St. Vrain reactor, which is a gas-cooled commercial reactor in Colorado, has no containment dome and was licensed for operation by the NRC.
BP-2	As I read through the Draft EIS I had an uneasy feeling that, as alternatives were evaluated and weighed, the overriding considerations were time and expense, and that alternatives which could not meet the January 1, 1984 start-up were not seriously considered. I sincerely hope this is not so, for the health and safety of the people of South Carolina and Georgia, now and for future generations, must be considered equally.	The purpose of the EIS is to evaluate the environmental consequences of the proposed restart of L-Reactor. In accordance with the Council on Environmental Quality's regulations implementing the procedural provisions of NEPA, the Department's preferred alternative (including mitigation alternatives) are identified in this final EIS.

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

Comment number	Comments	Responses
		The Record of Decision on this EIS will state the alternatives to be implemented. The Record of Decision will address the alternatives considered in reaching the decision, environmentally preferable alternatives, and preferences for alternatives based on technical, economic, and statutory missions of the agency, and whether all practicable means to avoid environmental effects from the selected alternative have been adopted.
	I would like to say, in closing, that I was pleased to read of the broadening of the health studies of cancer and infant death, a subject of great concern here. We will be waiting anxiously to learn the results.	

Comment number	Comments	Responses

STATEMENT OF THE LEAGUE OF WOMEN VOTERS OF NORTHERN BEAUFORT COUNTY AT A DOE HEARING ON THE DRAFT EIS OF THE L-REACTOR AT THE SRP
Nov. 3, 1983

I am Dr. Zoe Tsagos. I appear before you for the third time as the representative of the LWVNBC where I hold the Energy Chair.

Since today's meeting is about the Draft EIS on the restart of the L-Reactor at the SRP, we have decided that we would concentrate on the Draft EIS response to the five recommendations which we presented at the Scoping meeting in August. Having read all the presentations made by individuals and by organization representatives at the four scoping meetings as published by DOE, we feel sure that other aspects of the L-Reactor start-up will be covered, either here or at the other hearings.

At the scoping meeting our fourth recommendation concerned itself with safety planning and the steps to be taken during a serious accident at the SRP, onsite and offsite. We stressed the importance of letting people know how an emergency would be handled.

Both in the body of the EIS (4.2.1.3.) and in Appendix (H) a carefully delineated program of safety measures is presented. We quote from Appendix (H.2.1.) the following two statements: "The DOE-SR is developing a set of 11 Emergency Management Plans for managing emergencies on and off the SRP (DOE, 1983 a-k)" and "DOE-SR has recently entered into agreement with lead agencies of South Carolina (DOE, 1983m) and Georgia (DOE, 1983n) to prepare such plans."

The point we wish to stress here is that although in the thirty years of operation there was apparently some liaison with key persons in Georgia, South Carolina and the South Carolina counties within 80 kilometers of the SRP in case of an emergency, the concept of carefully developed step by step action apparently is a recent program from the dates cited above. We find this clear cut response encouraging. There was no indication of any of this in the EA.

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

Comment number	Comments	Responses
BQ-1	We are disappointed that nothing is planned before start-up about the problems of ground water usage and contamination. We had presented as our one recommendation that the seepage basins be replaced by other means of containment of radioactive and nonradioactive chemical wastes. Instead, we have the following (Draft EIS 5.1.1.2.): "The chemical separations of product and waste from the irradiated L-Reactor fuel and target assemblies will result in additional effluent discharges to the seepage basins at the chemical separations areas. Based on past experience, about 1.5 kilograms per year of mercury ... and larger quantities of other chemicals ... are expected to be discharged to seepage basins in the F- and H-separations areas due to the operation of the L-Reactor ... In addition, approximately 7 kilograms per year of the chlorinated degreasing solvent (1,1,1 trichloroethane) and quantities of other chemicals ... will be discharged to the seepage basin in the fuel and target fabrication area ..." In an interview on July 1, 1983 with Roger E. Davis, Assistant Deputy Commissioner of Environmental Quality Control at the South Carolina DHEC by a member of the staff (see Research Exchange published by Energy Research Foundation, July-August 1983, pp. 4, 5, 6, 12) Mr. Davis spoke of the Clean Water Act of 1977 and about the permitting system which passed into the jurisdiction of the states. Before April 1, 1983 the SRP permits had been issued by EPA. When SCDHEC was asked for permit renewal, it was found that SRP was in violation of water quality standards. Asked about his main concern, Mr. Davis named ground water contamination through seepage basins, lagoons, and other disposal sites. SRP is asking for a variance so that it can operate the L-Reactor while at the same time develop a study on alternative means for nuclear and non-nuclear waste storage. Until the study is completed, the ground water pollution will worsen.	See the response to comments AJ-1 and BG-4 regarding seepage basins and DOE's commitments for ground-water protection, and the response to comment BA-5 regarding disposal of high- and low-level radioactive waste.

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

Comment number	Comments	Responses
BQ-2	We are also disappointed that no cognizance has been given to our third recommendation to the need for an outside, independent group to oversee SRP operations along with government agencies such as DHEC and others. There are universities and colleges in both South Carolina and Georgia from where knowledgeable, good citizens can come to perform this public service. There are other citizens' groups which can be called upon. There is one other factor which must be taken in consideration--the lack of funds to do an effective job of monitoring such as installations at SRP. In the aforementioned interview with the DHEC Deputy Commissioner, Mr. Davis responded to a question on funding the work of DHEC at the SRP by saying that it has been hampered by lack of funds because the South Carolina Legislature feels that part of the money should come from the federal government and added, "So far we have not received any indication that the federal government is going to provide these resources." (reference as above p. 12.) A dedicated group with scientific know-how could be of assistance to augment the limited forces that DHEC now commands.	DOE-owned, contractor-operated facilities, such as the Savannah River Plant are excluded from NRC licensing requirements under Section 110(a) of the Atomic Energy Act as amended. DOE is therefore responsible for protecting the safety and health of the public and the environment from the effects of activities at DOE nuclear facilities. To assure the health and safety of the public and to protect the environment, DOE provides an effective, independent health and safety overview function through the Assistant Secretary for Policy, Safety and Environment, who has no program responsibilities with respect to the nuclear programs of DOE. The health, safety, and environmental protection requirements and programs of the Assistant Secretary are implemented through a series of Orders and regulations by DOE program personnel. The DOE program personnel are then responsible for assuring contractor compliance. Within DOE, the health, safety and environmental protection responsibilities are a line management responsibility assuring clear lines of authority in implementing requirements, and also assuring that health, safety and environmental protection is an integral part of each program maximizing the sensitivity of all program personnel to requirements. In addition to the health, safety and environmental protection programs of DOE, oversight is also provided through the monitoring of SRP activities and joint participation in studies by several state and Federal agencies as discussed in Chapter 6 of this EIS. These programs and studies 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 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.

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

Comment number	Comments	Responses
		Other independent oversight activities initiated by DOE include long-term aquatic and water-quality studies in the Savannah River near SRP by the Academy of Natural Sciences of Philadelphia, epidemiological studies by the Los Alamos National Laboratory and by the Oak Ridge Associated Universities, independent environmental studies of the SRP site by the University of Georgia's Savannah River Ecology Laboratory, and the conduct of consultations with the U.S. Fish and Wildlife Service and National Marine Fisheries Service on endangered species. 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. See also the response to comment CX-3 regarding DOE's response to the GAO report entitled "Better Oversight Needed for Safety and Health Activities at DOE's Nuclear Facilities."
BQ-3	We still would like to see the L-Reactor on a stand-by basis, as we indicated in our fifth recommendation, until the vitrification of high level radioactive waste be made possible. It is a pity that the building of the Defense Waste Processing Facility had not been started earlier to perform this very needed operation. The Draft EIS states that it will be put on stream in 1989. (Draft EIS 5.1.2.8.)	As stated in Section 5.1.2.8, the volume of high-level radioactive waste to be generated by chemical processing of L-Reactor material was considered in the EIS for the Defense Waste Processing Facility (DWPF); this facility is presently under construction at SRP. This waste will be stored temporarily in Type-III double-walled tanks, which have experienced no leakage, until the DWPF begins to immobilize SRP high-level waste. Also see the response to comment BA-5 regarding high-level waste disposal.
BQ-4	Finally, we come to our first recommendation made at the Scoping Hearing; a recommendation of particular importance to us who drink the Savannah River water. This has to do with thermal effluent which will further degrade the Savannah River as soon as the L-Reactor goes in production.	See the response to comment AA-1 regarding cooling-water mitigation alternatives and issuance of an NPDES permit for L-Reactor.

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

Comment number	Comments	Responses
	We here quote our recommendation, in part, as we presented it in August. "... we strongly recommend that a method of cooling the reactor effluent be introduced either by recycling, by cooling pools or by any other acceptable method which will cool the emissions to the standard of 90°F acceptable to South Carolina DHEC." Since 1977 with the passage of the Clean Water Act there has been further enabling legislation. One of these laws is connected with permit issuance to companies that are not polluting and qualify under the Clean Water Act. This is the National Pollutant Discharge Elimination System (NPDES). Since SRP does not qualify under NPDES, it has asked DHEC to allow the L-Reactor start-up and to run for five years during which time an alternative method of cooling the effluent would be worked out. It is our understanding that DHEC with some modifications will grant the permit, or at least that was Mr. Davis' position in July before the issuance of the Draft EIS.	
BQ-5	We wish to end this presentation with a quotation from a draft position paper which was prepared by the staff of the Natural Resources Defense Council and was to be sent to DOE in its final form in July. On page 5 under "Production Alternatives" occurs the following statement: > The Draft EIS should consider as a reasonable alternative a delay in the operation of the L-Reactor for an extended period to allow the implementation of "mitigative alternatives" combined with, if necessary, the alternatives of (1) boosting throughput at the SRP reactors and the N-Reactor and (2) Accelerating the recovery of nuclear materials from the retirement of obsolete warheads. In regard to the first, DOE now plans to install the Mark 15 core in one of the SRP reactors, which will increase its plutonium production by approximately 25%. The Draft EIS should address the possibility of the use of such cores in one or more additional reactors. Although the Draft EIS shows no inclination on the part of DOE to delay in starting the L-Reactor, perhaps a reconsideration may be possible at what is proposed above.	See the responses to comments BL-15, BL-19, and BL-21 regarding production alternatives.

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

Comment number	Comments	Responses
BQ-6	We do not find what we have learned from the Draft EIS reassuring. We are aware that with the start-up of the L-Reactor there will be four polluting sources in the SRP rather than three and they will be under less rigid control than say the commercial Georgia Power Vogtle plant nearby. Thank you, Mr. Chairman.	See the response to comments AA-1 and AA-3 regarding issuance of an NPDES permit and DOE's commitment to comply with all applicable Federal and state environmental protection requirements, and the response to comment BQ-2 regarding independent monitoring and studies.

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

Comment number	Comments	Responses
	STATEMENT OF SISTER ELLEN ROBERTSON	
BR-1	I'm Sister Ellen Robertson. I'm an Adrian Dominican sister, and I speak as an individual. I would like to briefly address a couple of concerns on the environmental aspect, and basically I believe that the whole thing is being rushed, and with the knowledge we have of things that have happened in other parts of the world concerning nuclear--the materials that go into making nuclear arms.	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. DOE has made every effort to involve the public in the NEPA process for L-Reactor through several public hearings and public comment periods, including the opportunity to comment on the adequacy of the EIS and the merits of the alternatives discussed in the EIS before it issues the final EIS. DOE will consider all substantive comments before it issues its Record of Decision on this EIS.
BR-2	The rushing into something that can potentially have an impact on people's lives, I believe, has to have serious consideration, and I would hope that the time would be given to study particularly those areas that were brought up in the study and have been brought up by other people as being very questionable concerning the effects on the groundwater and the Savannah River water and the environment that affects the people in the Savannah River Plant area, not just in the immediate area, but downwind.	As stated in Chapter 6 of the EIS, DOE has maintained an intensive surveillance program both onsite and offsite, including beyond the mouth of the Savannah River. DOE maintains sampling stations for air quality, sediment, soil, ground water, vegetation and food, drinking water, aquatic biota, and radionuclide and heavy-metal concentrations downriver from SRP to the mouth of the Savannah River and in several cities and counties in both South Carolina and Georgia to assure compliance with both state and Federal statutes and regulations in environmental protection.
BR-3	There has been a recent study on the effect this has on the unborn, and I would just like to make that recommendation.	See the response to comment AV-8 regarding health effects studies of the population around SRP.
BR-4	My other concern has to do with the need, which is addressed in the document, the need for reopening the L-Reactor. I believe it's a moral question, and the bishops, the National Council of Catholic Bishops in the peace pastoral, "God's peace and our	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

response," I would like to briefly read from the peace pastoral regarding the use of nuclear weapons for which the L-Reactor is being restarted in order to provide plutonium for more weapons that are going to be made.

This is a direct quotation.

> "We do not perceive any situation in which the deliberate initiation of nuclear warfare on however restricted a scale can be morally justified. Nonnuclear attacks by another state must be resisted by other than nuclear means. Therefore, a serious moral obligation exists to abolish nuclear defense strategies as soon as possible."

Thank you.

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

Comment number	Comments	Responses
	STATEMENT OF SISTER MIRIAM BAUERLIN	
	I'm Sister Miriam Bauerlin, a Franciscan, from Maryland.	
	I just want to speak to two points. They are in the area of health and safety.	
BS-1	I read in the newspaper that materials from nuclear weapons that are either unused and will always be unused because they are outmoded can be used for future weapons. I just would like to see that commented on, if that is a possibility.	See the response to comment BL-19 regarding utilization of material from retired weapons to meet new defense nuclear material requirements.
	The person who spoke, and I don't remember his name, was a person who is involved in nuclear weaponry.	
BS-2	Secondly, in regards to the environmental safety, what attention has been given to the security and safety of the states of South Carolina and Georgia in light of the recent Beirut tragedy this country has suffered from a terrorist attack? It would seem to me that although it may be somewhat far reaching to think about that, it could be a possibility of an air, Kamikaze-type suicidal attack or other modes that the terrorists can dream up, and therefore, really put Georgia and South Carolina and a few other states totally out of commission.	See the response to comment BG-9 regarding emergency response planning.
	That's it.	

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

Comment number	Comments	Responses

THE GEORGIA CONSERVANCY

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STATEMENT OF HANS NEUHAUSER
AT THE DEPARTMENT OF ENERGY'S PUBLIC HEARING
ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT
ON THE PROPOSED RESTART OF THE L-REACTOR
AT DOE'S SAVANNAH RIVER PLANT

Savannah, GA
November 4, 1983

Mr. Chairman, I am Hans Neuhauser, Coastal Director of The Georgia Conservancy. I appreciate the opportunity to present additional testimony on the proposed restart of the L-Reactor. These comments are being made on behalf of The Georgia Conservancy. They are also intended to supplement comments made earlier at previous hearings on this issue and in other communications.

Central to the final decision on the restart of the L-Reactor is the question of need. We would like to make it clear that we are not debating the issue of whether there is or is not a need for all the products of the L-Reactor at this time. Nor are we debating the United States' foreign policy, particularly in regard to the role that nuclear weapons play in determining the credibility of this country's relationship with the Soviet Union. We can only assume that the needs are legitimate and that appraisals independent of the Department of Energy and the Administration will verify the conclusions presented in the classified Appendix A.

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

Comment number	Comments	Responses
BT-1	Assuming that the needs truly exist, then we have to ask whether the immediate restart of the L-Reactor is the only means by which those needs can be met. Are there other ways in which the needs can be met and have less impact on the health, safety and welfare of the citizens of Georgia and South Carolina, and which will have less adverse impact on the environment?	See the responses to comments AB-2 and BL-15 regarding need and production alternatives.
BT-2	After all, we should not have to accept the contamination of our surface and ground water with cesium, cobalt, tritium, and other radioactive and toxic materials if there is a reasonable alternative.	DOE is committed to conducting its operations in a way that ensures the health and safety of the public and the protection of the environment. Thus, considerations affecting the decision to restart L-Reactor operation will include practicable mitigation measures to minimize adverse effects and still meet national defense needs. As noted in Section 4.1.1.5, water quality samples from the Savannah River indicate little variation in measured indicator parameters and chemical constituents between monitoring stations upstream, adjacent to, and downstream from SRP. The EIS assesses nonradiological liquid releases directly to onsite streams and those released to onsite streams via a ground-water path from seepage basins (Sections 4.1.1.5 and 5.1.1.2). Section 5.1.2.7 of the EIS discusses the doses to the public from L-Reactor-related radiological liquid releases. Any radiocesium and radiocobalt that is remobilized in Steel Creek and transported to the Savannah River will be within EPA drinking water standards (Section 4.1.2.4). Also see the response to comment AA-1 regarding cooling-water mitigation alternatives, the response to comment AA-2 regarding radiocesium and radiocobalt concentrations, and the response to comment AJ-1 regarding seepage basins.
BT-3	We should not have to accept the destruction of 1000 acres of wetlands and important, if not critical, habitat for at least three endangered species if there is a reasonable alternative.	Impacts to wetlands and endangered species are addressed in Sections 4.1.1.4, 4.4.2, 5.2.4, and Appendix I of the EIS. None of the habitats that will be impacted by the restart of L-Reactor have been designated as "critical" by the U.S. Fish and Wildlife Service. Also see the response to comment AA-1 regarding cooling-water mitigation alternatives and the response to comment AY-2 regarding presentation of current information on the status of endangered species in this EIS.

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

Comment number	Comments	Responses
BT-4	We should not have to accept the release of radioactive substances into the air we breathe if there is a reasonable alternative.	The radioactive materials produced and utilized at SRP are contained and handled in an environmentally safe manner. Any radioactive releases to the environment that do occur as a result of normal operations are maintained well below allowable limits. The SRP operating philosophy is to reduce such releases to levels "as low as reasonably achievable" in accordance with DOE guidelines contained in DOE 5480.1A, *Environmental Protection, Safety, and Health Protection Program for DOE Operations*.
BT-5	We should not have to accept increased risks to our health, our safety and our environment if there is a reasonable alternative.	The EIS contains thorough discussions of risks to the public health and safety and to the environment as a result of the restart of L-Reactor. As contained in the EIS, any exposure of the public to radiation resulting from L-Reactor restart would be minimal compared to the exposure from natural or other manmade radiation sources. The risks due to possible reactor accidents are also small.
BT-6	Is there such a reasonable alternative? The Draft EIS, which is supposed to thoroughly discuss alternatives, does not provide enough information on the viability of alternative approaches. Several alternatives have been presented by others that appear to be able to meet, or approximate, production needs while simultaneously reducing the environmental impacts and risks. One promising alternative is that presented by Dr. Thomas Cochran, a senior staff scientist with the Natural Resources Defense Council. Dr. Cochran's alternative, presented earlier in this sequence of hearings, has four major components: (1) accelerate the timetable for the use of the Mark-15 fuel lattice at SRP by one year, (2) initiate production of "less than 6 percent plutonium 240" at the Hanford, Washington N-Reactor, (3) accelerate the starting date for the Purex reprocessing plant at Hanford, Washington by two months and (4) include in production calculations the excess plutonium that has been produced over and above goals.	See the responses to comments BL-15, BL-20, and BL-21 regarding production alternatives. Section 2.1.2.2 of the EIS provides additional information on the environmental effects of N-Reactor operating at a 5-percent plutonium-240 content.

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

Comment number	Comments	Responses
	Would this or some other combination of production programs meet the needs? The Draft EIS is insufficient in that it does not discuss these alternatives thoroughly enough to allow a prudent judgement. (For example, the Draft EIS notes that the environmental impact of the Hanford N-Reactor operation would have no incremental effect (p. 2-5). Is this true or is this statement made in the same spirit as the "no significant impact" due to the restart of the L-Reactor, which was rejected by all three branches of our government? The details necessary to decide are lacking.)	
BT-7	The Draft EIS is also insufficient because it is contradictory. Examples: The Draft claims (page S-5) that the withdrawal of water for SRP will not affect the availability of water for offsite users. But data presented later (e.g., page 3-28) clearly indicate the growth of a cone of depression in the aquifers under SRP. Savannah has a cone of depression and citizens are well aware that the cone of depression affects the availability of water.	Every pumping well, onsite or offsite, has a local cone of depression. At SRP, these local cones for wells pumping from the Tuscaloosa Aquifer might reach depths of about 12 meters. However, the cones at SRP diminish in depression very rapidly with distance from the pumping wells (Section F.4.3); they are reduced to very small levels before reaching the nearest offsite consumers of Tuscaloosa ground water. As noted in this EIS, the ground-water flux flowing through the Tuscaloosa Formation at and near the Savannah River Plant (Sections F.3.1 and F.4.2) has been conservatively calculated to be 51 cubic meters per minute (Section F.4.2). The total pumpage rate for this area in 1989, including the withdrawal for L-Reactor operation, the FMF and DWPF would be about 37.9 cubic meters per minute (Section 5.2.3). The expected ground-water usage in the area will not exceed available inflow in the forseeable future. Thus, the SRP usage is unlikely to appreciably affect water levels in offsite Tuscaloosa wells. The declines in water levels in Tuscaloosa monitoring wells are related primarily to increased pumping at SRP, although some of these declines are apparently associated with reduced winter precipitation. Because pumping rates at SRP are expected to be relatively stable over the next six years [23.8 cubic meters per second in 1982, compared to 25.4 and 26.4 cubic meters per second projected for 1985 and 1989, respectively (Section 5.1.1.4 and 5.2.3)] the declines in water levels in the Tuscaloosa Aquifer at SRP are expected to be arrested. As pumping rates change at SRP, new equilibrium piezometric surfaces will develop very rapidly; near equilibrium levels are expected to occur in about 100 days. Thus, pumping at SRP does not appear to have been depleting the aquifer.

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

Comment number	Comments	Responses
		Ground-water withdrawal due to L-Reactor restart, including incremental pumping by support facilities and other SRP facilities, is expected to decrease the water levels in municipal wells at Jackson and Talatha below 1982 levels by 0.4 and 0.1 meter respectively. These projected declines are about one-half the water level fluctuations in Tuscaloosa wells that were observed in 1973 due to increases in winter precipation. Long-term cyclic changes in Tuscaloosa Aquifer water levels of 2 meters have been observed in wells near SRP (Section F.2.3.2).
BT-8	Likewise, the Draft EIS claims (p. 4-4) that safety considerations override production considerations. Yet, on page S-9, safety system alternatives are rejected because their application will not allow production schedules to be met.	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 final EIS has identified the reference case confinement system as the preferred safety system alternative.
BT-9	The Draft EIS is insufficient because it does not contain adequate data. Examples: the impact of a major accident on water quality downstream is not adequately described.	The impact of potential accidents is discussed in Section 4.2. of the EIS.
BT-10	Nor are the operating details of the Reactor Safety Advisory Committee. Who are they? Are they independent or are they toadies of DOE? What authorities do they have?	The Reactor Safety Advisory Committee is comprised of two members of the corporate management of E. I. du Pont de Nemours and Company from the Wilmington, Delaware, offices, two members of the management of the Savannah River Laboratory who are not directly responsible for SRP reactor operations, and three independent consultants who are knowledgeable in the field of nuclear reactor safety. The committee meets several times a year to advise du Pont management on policies and practices related to the safety of SRP reactor operations.
BT-11	The Draft EIS is inadequate because it makes assertions and reaches conclusions without adequate justification. Examples: the adequacy of protection of the public from transportation accidents (p. 4-68) is asserted but without sufficient detail to justify the conclusion.	Section 4.3.1 of the EIS discusses the transportation of material to and from the L-Area, and to and from the SRP site as a result of L-Reactor operation. Safety of the public is ensured through attention to (1) containment of radioactive material, (2) control of radiation loads, (3) prevention of criticality, and (4) protection against theft or sabotage. Criteria vary according to the material being shipped and are covered in the appropriate Department of Transportation, NRC and DOE regulations. Also see the response to comment AY-10 regarding transportation of radioactive materials.

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

Comment number	Comments	Responses
BT-12	Details of the cost and time requirements for building cooling towers are not presented.	The EIS in Section 4.4.2 provides data with respect to costs and implementation schedules for all cooling-water mitigation alternatives considered. The cost and schedule data presented are the best estimates currently available.
BT-13	The Draft EIS is inadequate because it does not consider all the prudent and logical alternatives. Examples: the alternative sources of production has already been mentioned.	Alternative sources of weapons grade plutonium are assessed in Section 2.1 of this EIS. As discussed in this section, no production options or combinations of options can provide the needed defense nuclear materials in the near-term time frame. See also the response to comment BL-15 regarding the L-Reactor restart and partial production options.
BT-14	Alternative oversight mechanisms and authorities are not identified or discussed.	See the response to comment BQ-2 regarding existing oversight mechanisms.
BT-15	These and other inadequacies of the Draft EIS clearly indicate to us that DOE has not done its job. Perhaps things would be different if DOE believed in th legitimacy of the EIS process instead of having to be dragged into it kicking and screaming by Congress, the Administration and the Courts.	DOE has prepared this EIS in compliance with the requirements of the Energy and Water Development Appropriations Act, 1984, and the National Environmental Policy Act of 1969, as amended.
* BT-16	What would we like to see in the Final EIS? In addition to the correction of the above-mentioned deficiencies, we would recommend the following commitments be adopted by DOE. (1) Accelerate production from other alternative sources, assuming that the environmental risks are negligible. (2) Defer the restart of the L-Reactor until such time as the following can be implemented: (i) construction of a cooling water alternative such as cooling towers that would eliminate scalding water discharge into Steel Creek and the numerous environmental impacts that such a discharge creates. (ii) Increase the level of containment at the L-Reactor, especially to provide containment for radioactive gases that can currently escape unaffected by existing controls.	See the response to comment BM-1 regarding the Department of Energy's Record of Decision on this EIS. All of the commitments suggested will be considered by the decisionmaker in arriving at the Record of Decision. Sufficient information on environmental impacts of the alternatives and options is provided in this EIS to enable the decisionmakers to make a reasoned decision. Also see the responses to comments AB-2 and BL-15 regarding need and production options, the response to comment AA-1 regarding cooling water mitigation alternatives, the response to comment BF-7 regarding containment, and the response to comment BQ-2 regarding existing oversight mechanisms.

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

Comment number	Comments	Responses
	(iii) accelerate the closure of all the seepage basins and provide alternative treatment for the L-Reactor waste, so as to avoid further contamination of the ground water and (iv) establish an independent oversight group consisting of Federal, State and citizen representatives who would work to insure that both the L-Reactor and SRP as a whole would operate in the safest and most environmentally benign method possible.	
BT-17	In conclusion, let me state some of our disappointments. We are disappointed in the inadequacy of the Draft EIS. The present one is not adequate to make wise judgements. We are disappointed in the continuation of the double standard for the L-Reactor. Safety and environmental control standards for the commercial nuclear power industry are not required for the government's L-Reactor. This is especially ironic when one realizes that plans for a new production reactor include cooling towers and a containment dome, but the ancient L-Reactor is deemed not to need them.	See the responses to comments AF-1 and BF-7 regarding differences between SRP and commercial nuclear reactors
BT-18	We are disappointed in the continued desire of DOE to restart the L-Reactor right away when other alternatives appear to be available. And finally, we are disappointed that DOE has not participated in the EIS process in good faith. Many citizens with many different viewpoints have participated in good faith. Is it too much to ask that our government, as represented by DOE, do the same? We do not seek to delay for the sake of delay. We seek delay only until such time as needed safety and environmental quality controls can be implemented. *Thank you.*	See the response to comment BT-13 regarding production alternatives.

Comment number	Comments	Responses
	SAVANNAH AREA CHAMBER OF COMMERCE "We Mean Business" 301 West Broad Street Savannah, Georgia 31499 (912) 233-3067 STATEMENT FOR THE DEPARTMENT OF ENERGY PUBLIC HEARING ON DRAFT ENVIRONMENTAL IMPACT STATEMENT ON REACTIVATION OF L-REACTOR OF SAVANNAH RIVER PLANT BY KEN MATTHEWS for SAVANNAH AREA CHAMBER OF COMMERCE November 4, 1983 I am Ken Matthews, a member of the Natural Resources and Energy Management Committee of the Savannah Area Chamber of Commerce. On behalf of our organization, I want to thank you for this opportunity to react to the Draft Environmental Impact Statement prepared by the Department of Energy for the proposed restart of the L-Reactor at the Savannah River Plant near Aiken, South Carolina. As we have told you on previous occasions, we have grave concerns over the Department of Energy's plans for the reactivation and expansion of facilities of the Savannah River	
BU-1	Plant. As lay people, however, we feel that we may be unable to adequately evaluate the detailed scientific and technical information contained in the draft Environmental Impact Statement.	In accordance with the requirements of the Council on Environmental Quality DOE has attempted to make this EIS as readable as possible for the lay reader, given the technical complexity of the subject. In addition, the Summary has been revised specifically to be readable by the lay public.

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

Comment number	Comments	Responses
BU-2	Clearly, an independent, credible analysis is needed to allay our concerns. As you will recall, these concerns centered around the cumulative effects of the present and proposed facilities of the Savannah River Plant as well as those of contiguous operations such as Georgia Power Company's Plant Vogtle and the Allied General Nuclear Processing Facility in Barnwell, South Carolina.	Section 5.2 of the EIS describes the cumulative effects of present and proposed SRP facilities and those of other nuclear operations in the vicinity of SRP.
BU-3	We are also concerned about the effective control of radioactive substances in the existing facility as they might affect the quality of groundwater, riverwater, and the air.	Releases of radioactive materials from L-Reactor and its support facilities are described in Sections 4.1 and 5.1 of this EIS. Releases from the entire Savannah River Plant are controlled to the extent practicable. Materials that are released have a very small radiological impact on the offsite population. The amounts of releases and their radiological impacts on the population within an 80-kilometer radius and on downstream consumers of Savannah River water are published in an annual series of reports available to the public, entitled: Environmental Monitoring in the Vicinity of the Savannah River Plant. The most recent of these reports, for 1982, is DOE document DPSPU-83-30-1.
BU-4	We have therefore asked that the Georgia Environmental Protection Division and the federal Nuclear Regulatory Commission be requested to review the draft Environmental Impact Statement. We feel that these organizations have the technical expertise and political independence to make an informed evaluation of the EIS that could be accepted by lay people as well as political leadership. Until these agencies have had the opportunity to conduct the independent analysis of the EIS that we have proposed to allay our concerns, we would ask that the reactivation of the L-Reactor be delayed. Once again, we appreciate this opportunity to express our views and assure you that we recognize and fully support the interests of the United States with regards to national defense. However, we ask that the nuclear development in and around the Savannah River Plant not be expanded further without a very thoughtful, independent analysis of the issues that have been raised and their potential effects on the communities and people of the Savannah River Basin.	The Georgia Department of Natural Resources, the South Carolina Department of Health and Environmental Control, the Nuclear Regulatory Commission, and other Georgia, South Carolina, and Federal agencies received copies of the EIS. As required by the Energy and Water Development Appropriations Act, 1984, the EIS was developed in consultation with the States of Georgia and South Carolina. DOE provided working drafts of the EIS to the states, met with their representatives, and incorporated their comments into the EIS.

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

Comment number	Comments	Responses

STATEMENT OF

SISTER CHARLENE WALSH, R.S.M.
207 E. Liberty St.
Savannah, GA

DRAFT ENVIRONMENTAL IMPACT STATEMENT,
L-REACTOR OPERATION, SAVANNAH RIVER PLANT
November 4, 1983

I would like to make two comments under the heading: Health and Safety.

In the DRAFT ENVIRONMENTAL IMPACT STATEMENT, L-REACTOR OPERATION, SAVANNAH RIVER PLANT-Vol. 1, September, 1983, there is a twelve (12) page section devoted specifically to STUDIES AND MONITORING PROGRAMS connected with the Savannah River Plant.

Here are listed hundreds of monitoring sites and programs for tracing the radionuclide content of air, water from five streams that flow to the Savannah River, ground water, soil, grass samples, other vegetation, milk, food, drinking water for Port Wentworth and two South Carolina counties, atmosphere, rainwater...

Besides these hundreds of checks for radionuclide content, there are federal and state monitoring programs for harmful nonradiological materials in the air, surface water, aquatic organisms, and ground water.

There is mention of ongoing studies relating to cooling-water intake and discharge, wetland effects, effects on fisheries, endangered species, and five archeological sites.

All this and more to reassure us that we have Mother Nature well under control. I am not reassured! Why this great expenditure of money, time, and scientific expertise, I ask, unless the dangers to us are equally great?

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

Comment number	Comments	Responses
BV-1	One paragraph from this section of the Environmental Impact Statement stays in my heart and contributes to my opposition to the restart of the L-Reactor and to the SRP. The last paragraph on 6-8 refers to two studies being conducted on SRP workers--a morbidity and mortality study of radiation workers and a health effects study of plutonium workers. I quote: "Both ... are in the early data collection and validation phase. Because these are comprehensive studies, results will not be available for several years." When the studies are complete, the damage will have been done! Citizens of Georgia and South Carolina need only recall the reassurances given the citizens of Nevada, Utah, and Arizona, and the errors exposed by a subsequent Congressional Oversight Committee. I call for such an oversight committee to be assigned this project. My second point relates to Health and Safety also. It has to do with the daily health and safety of the poor. The plutonium produced by the restart of the L-Reactor will be used to carry out the Pentagon's plans for producing weapons with first strike capability. Billions of dollars will continue to be spent as the arms race continues! The virtue of patriotism causes me to challenge the restart of the L-Reactor with the words of the Pope and Catholic Bishops of the world at the Second Vatican Council: "The arms race is one of the greatest curses on the human race and the harm it inflicts upon the poor is more than can be endured."	At the levels of radiation exposure received by Savannah River Plant radiation workers, no detectable health effects are expected; this belief is based on studies by the National Academy of Sciences Committee on the Biological Effects of Ionizing Radiation (The Effects on Populations of Exposures to Low Levels of Ionizing Radiation, National Academy of Sciences, Washington, DC, 1980). However, to ensure that no unexpected health effects are overlooked, studies are under way of the morbidity and mortality of SRP workers and of health effects of plutonium workers. Appendix B of the EIS addresses the effects of low-level exposure to radiation. DOE has asked the Centers for Disease Control, Atlanta, Georgia, to convene a panel to review the SRP epidemiological studies. This panel, which includes epidemiologists from the health departments of Georgia and South Carolina, held its first meeting to review ongoing studies on October 25 and 26, 1983. DOE plans to continue the ongoing studies and to implement any additional studies recommended by the panel.

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

Comment number	Comments	Responses

STATEMENT OF CHARLES MILMINE, INDIVIDUAL

Good morning. I am here this morning to address this hearing because I feel it is the responsible thing for me to do. I am afraid that I do it with the feeling that the DOE will little note nor long remember what I and some others will try to contribute to the decision-making process.

I address you again with a feeling of inadequacy. I make no claim to being a nuclear physicist. That is not to say that I do not seek better understandings and truth in this area.

Education and communication are two of my interests. As one vitally interested in the decisions you make, I am perhaps as interested in the decision process as I am in the decisions themselves.

We live in a time of great technological change. Quite often decisions regarding the use of this technology are made by men and women like yourselves who have been entrusted with the authority, whether by political design or political default.

The assumption of this authority carries with it the assumption of implied power. It is the arrogant display of this power that promotes my interest in the environmental consequences of the restart of the L-Reactor. I am still of the belief that our government is instituted among men deriving its power from the consent of the governed. I am concerned that as a result of our actions and inactions we may become a government of technocrats, by technocrats and for the people.

I find that I must repeat my request for a genuine effort on your part to reach the technologically disenfranchised. The citizens who are not here because they have little comprehension of the start up of the L-Reactor are the critical mass I wish you would concern yourselves with.

I am not suggesting that you continue to passively respond to requests for information. I maintain that most citizens are

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

Comment number	Comments	Responses
BW-1	either too intimidated by that process or just don't know how to formulate a question. I would like to see an active educational effort using existing facilities, such as science centers, schools and public television. The objective of your educational efforts would be to achieve a critical mass of people that is capable of asking intelligent questions and providing constructive suggestions. I feel that this educational effort has to be a positive one. Sitting back and answering requests for information is certainly the path of least resistance. However, it is bound to lead to frustration within the critical mass and the result could be counterproductive from your point of view. I wonder if the return on your investment would not be greater on an active education program than on the passive investment in education you are now making.	To the extent practicable, due to cost and security, DOE has attempted to distribute information to the public about the activities of the Savannah River Plant. During the last 6 years, DOE has published four EISs and two EAs with numerous references that are publicly available, as well as many studies by the Savannah River Ecology Laboratory and the Savannah River Laboratory.
BW-2	To avoid the criticism you fear from people who think you are "promoting nuclear energy and promoting nuclear matters," whatever they are, I repeat my suggestion for the formation of a citizen's committee given the responsibility of overseeing the educational effort.	See the response to comment BQ-2 regarding existing oversight mechanisms.
BW-3	I also believe that this or another citizen committee should be involved in reviewing your environmental monitoring program. I see too much in-house or closely-controlled monitoring proposed. I also see the names of a select few outside organizations doing repetitive monitoring. I understand that some of the data from the monitoring find their way into scientific journals where sampling techniques and results are scrutinized. I am more concerned about those data that do not make it to the journals for, perhaps, national security reasons. I am also concerned that the monitoring of the citizens (health, etc.) is not done on a regular scientific basis. You have said that you did not think it was a wise use of the taxpayers' money to have one government agency review the work of another. One person commented here back in May that she did not mind her money being used for that purpose, and I concur.	The States of South Carolina and Georgia and the EPA conduct monitoring in the vicinity of the SRP . The results of their monitoring are consistent with SRP data. Section 5.2 describes cumulative effects from SRP facilities and other plants within the immediate vicinity of SRP. All documents referenced in this EIS are available for public review in the DOE public reading rooms in Aiken, South Carolina, and Washington, D.C. Also see the response to comment BW-1 and the response to comment AB-2 regarding disclosure of classified information. DOE will comply with all applicable Federal and state regulations on environmental protection. DOE is committed to consider, evaluate, and implement measures to improve safety and health protection at SRP; this includes long-term

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

Comment number	Comments	Responses
	I always thought that a system of checks and balances was a good idea in our government.	epidemiological studies that currently are being evaluated by the Centers for Disease Control, Atlanta. Also see the response to comment BQ-2 regarding existing oversight mechanisms.
BW-4	I wonder if the citizen's committee could not assist in reviewing the data from the monitoring program. I'm talking about reviewing field sampling techniques and interpretation of data. I notice, for instance, that you say that the Environmental Assessment listed a figure of 46 curies of cesium that would be washed out of Steel Creek in the first 14 years of operation. Now, improved estimates indicate there would be on the order of 14 curies. I would like to know why the estimate was changed. I would also like to know how and why the estimate was changed. I would feel better that there will not be similar changes in estimates in the future. I would just feel better if an independent reviewing authority was involved.	See Section D.4.3 of the EIS.
BW-5	In sum, I remain concerned about the critical mass of people who are not here today. I have two constructive suggestions to remedy the situation. One: Embark on an active and balanced educational effort aimed at involving more intelligent people in the decisions you are entrusted to make. Two: I repeat my suggestion of a citizen's committee with oversight responsibilities for some of your operations with the objective of lending credibility to your decisions.	See the response to comment BW-1 regarding publicly available information and the response to comment BQ-2 regarding independent monitoring by the States of South Carolina and Georgia.

Respectfully Submitted,

Charles E. Milmine

2427 Easy St.
Savannah, GA 31406-4229
(912) 355-5522

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

Comment number	Comments	Responses
	STATEMENT BY JAMES D. HOWARD P.O. Box 13687 Savannah, Georgia 31416 4 November 1983 Concerning The L-Reactor Environmental Impact Statement	
	I am deeply troubled as are many others in coastal Georgia with the operations at the Savannah River Plant (SRP). Although I am speaking in response to immediate concerns about the restart of the "L" reactor, this also relates to the overall SRP operation.	
BX-1	I do not believe the present modus operandi of SRP is as safe an operation as it easily could be. Specifically, I believe the L-reactor and all other reactors should be retrofitted with containment domes and cooling towers and an adequate permanent waste storage facility. You of the Department of Energy (DOE) claim the towers and domes are not needed because of the size and type of reactors at SRP. However, we both know that if any agency other than the federal government put a reactor in operation they would be forced to take these safety precautions. Surely if it is necessary to have a multi-billion dollar defense budget, part of which will create more nuclear weapons material and associated high-level nuclear wastes, it is reasonable to expect that the production of that material be done in the safest way possible.	See the responses to comments AA-1 and AB-13 regarding information provided in the EIS on cooling-water mitigation alternatives, the response to comment BA-5 regarding high-level radioactive waste, and the response to comment BF-7 regarding differences between SRP and commercial nuclear reactors.
BX-2	A second point that concerns me is the propensity of your agency (DOE) and its predecessor organization (AEC and ERDA) for not telling the truth to the American people. In the case of the SRP operation you claim the operation is safe and clean but there is very little in your past history to justify believing you can be trusted to tell the truth or to believe	See the response to comment BQ-2 regarding independent monitoring.

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

Comment number	Comments	Responses
	that you will not mislead us if it is more convenient. For this reason I believe there should be an independent oversight committee established to oversee and monitor the present and future operations of the SRP.	

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

Comment number	Comments	Responses

Statement of the League of Women Voters of Georgia
at the Public Regional Review of

DRAFT ENVIRONMENTAL IMPACT STATEMENT
L-REACTOR OPERATION, SAVANNAH RIVER PLANT
AIKEN, S.C.

Held at the DeSoto Hilton Hotel
Savannah, Ga. November 4, 1983
9:00 a.m. and 6:00 p.m.

GENTLEMEN:

Introduction of myself

I am Geraldine LeMay, chairman of the Natural Resources Committee of the League of Women Voters of Savannah-Chatham County and formerly chairman of the Energy Committee of the League of Women Voters of Georgia. Mrs. Lee Wash, president of the Georgia League, has asked me to represent her in speaking for the state League at this hearing. Care for the environment is a major concern of the League, and the League of Women Voters of the U.S. in its policy toward energy development and implementation takes the position that "environmental protection is a primary consideration."

My previous appearances at Savannah River Plant hearings

This is my fourth time to represent the Georgia League of Women Voters at a public hearing on the proposed reactivation of the L-Reactor at the Savannah River Plant. My earlier comments were concerned with the need for an Environmental Impact Statement (EIS) and recommendations on the process of its development and desirable goals for the EIS. Today I am pleased that the draft EIS has now been issued. I have some comments on its findings.

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

Comment number	Comments	Responses
	Comments on the findings of the DEIS	
	1. Need for the operation of the L-Reactor	
BY-1	The report provides very little information related to the need for the operation of L-Reactor at this time. Statements regarding the need to produce more plutonium are based on classified information contained in Appendix A, which is not available to the general public, so no definite substantiation of need is provided by the DEIS.	See the response to comment AB-2 regarding information on need for defense nuclear materials in the EIS and the information available to decisionmakers.
	2. Production alternatives	
BY-2	The study of production alternatives was not adequate. The draft did not even consider such an alternative as speeding up the recovery of obsolete warheads, a proposal advanced by Sen. Nunn and Rep. Thomas and approved by President Reagan. Recovery of plutonium from commercial power reactor spent fuel also was not considered as a viable alternative because of timing considerations and legislation prohibiting such use of fuel produced in commercial reactors. These alternatives deserve consideration since they might help to alleviate two problems connected with the nuclear energy program, by 1) increasing the supply of weapons grade materials and 2) reducing the size of the nuclear waste now in storage.	The conversion of spent commercial reactor fuel into weapons-grade plutonium is currently prohibited by law [Atomic Energy Act of 1954, as amended, 42 USC Section 2077(e)]. Legislative removal of this prohibition is not considered a reasonable alternative to the restart of L-Reactor as a source of weapons-grade plutonium. This policy determination was passed by Congress in December 1982 which reaffirmed the position of strict separation of nuclear defense and commercial activities established by the Atomic Energy Act in 1954. Moreover, when the House of Representatives was specifically asked in December 1982 to reject the prohibition drafted by the Senate, the House overwhelmingly refused to do so by a vote of 281 to 107 (U.S. Cong. Rec., Volume 128, pages H8816-8817, December 2, 1982). The anticipation that such a strong and recent statement of policy would be reversed in the near future is unreasonable. The recovery of material from retired warheads is included in the annual Nuclear Weapons Stockpile Memorandum. Additional information on production options has been added to Sections 1.1 and 2.1 of this EIS.
	3. Water pollution at the SRP	
BY-3	The DOE states that organic solvents have seeped from chemical settling basins at the SRP and have contaminated groundwater supplies at the plant and that traces of the contaminants have also been found in the Tuscaloosa Aquifer, a major source of drinking water for Georgia and South Carolina. The Senate, with Senator Thurmond as principal sponsor, has ordered the expenditure of funds to clean up the pollution, to phase out some	See the responses to comments AJ-1 and BG-4 regarding the use of seepage basins and DOE commitments for ground-water protection.

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

Comment number	Comments	Responses
	seepage basins now in use and to build a new treatment plant properly to process waste water, this to be done within twenty-four months of the final approval of the project. In line with this directive, if it is decided to place the L-Reactor back in operation, the DOE, with proper concern for the health of the people of the area, should delay its start-up, with the added volume of waste water this will bring, until after the waste water treatment plant is operable and the use of seepage basins is reduced.	
	4. Public safety and environmental protection	
BY-4	The DOE is required by law to consider seriously all options to minimize damage to the public health and to the environment. To this end it has been suggested that cooling towers and a containment dome should be built at L-Reactor, and Senator Mattingly earlier expressed concern about an L-Reactor without such safety features. The draft EIS dismisses such suggested alternatives, saying either they will not allow DOE to meet production schedules or that they are too costly. Congress has, however, shown by its action on the wastewater treatment plant that it considers justifiable the expenditure of funds to enhance public safety and environmental protection.	The EIS presents the analyses for all mitigation alternatives, including cooling and safety systems, in Sections 4.4.1 and 4.4.2 of the EIS. Also see the responses to comments AA-1 and AB-13 regarding information contained in this EIS on cooling-water mitigation alternatives, the response to comment BF-7 regarding a containment dome, and the response to BM-1 regarding the Department of Energy's Record of Decision on this EIS.
	Requests for action	
BY-5	1. To provide the protection which is due to all citizens in South Carolina and Georgia living in an area where air and water quality could be affected by the L-Reactor reactivation the DOE facilities should be required to meet the federal and state environmental standards which apply to commercial reactors.	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.
BY-6	2. If the final decision is to reactivate L-Reactor, before start-up all feasible steps to avoid damage to the environment should be taken.	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 environmental protection regulations.
BY-7	3. To avoid the criticism or the actuality of a biased approach DOE should establish an independent oversight committee in line with the recommendations made by the plaintiffs in a lawsuit about the EIS. Such a committee would oversee studies and mitigation measures. The need for such a committee is made	See the response to comment BQ-2 regarding independent monitoring by the States of South Carolina and Georgia, and the response to comment AB-20 regarding the opinion of the U.S. 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
	especially desirable because the DOE used for the preparation of the DEIS the same company which conducted the earlier environmental assessment, whose conclusion of no significant impact from the reactivation of the L-Reactor was termed by U.S. District Judge Thomas P. Jackson "unreasonable" and an "abuse of discretion." My conclusion	
BY-8	If the EIS does point to the likelihood of serious harm to people and to the physical environment, the L-Reactor should not be put back into operation. The health and safety of the people who live and work in the area should be accepted as infinitely more valuable than the millions of dollars invested in an idle nuclear reactor. The L-Reactor should not again be placed in operation if doing so will lower the quality of life for the people who live in its immediate area in South Carolina and Georgia and along the Savannah River below the plant site. Geraldine LeMay	See the response to comment BM-1 regarding the Department of Energy's Record of Decision on this EIS.

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

Comment number	Comments	Responses
	Statement of Virginia Brown, citizen, before the Department of Energy at a Public Hearing at Savannah, Georgia, November 4, 1983, on the Environmental Impact Statement regarding the restart of the L-Reactor at the Savannah River Plant, Aiken, South Carolina.	
BZ-1	I am not reassured by the message in the recently released EIS on the reactivation of the L-Reactor. It seems to me to accept the fact that reactivation will damage the surrounding environment; to send the message that little can be done about it; and to say that, even if something could be done, nothing will be.	The purpose of the Environmental Impact Statement is to analyze the environmental consequences of the proposed restart of L-Reactor in accordance with the Energy and Water Development Appropriations Act, 1984, and the National Environmental Policy Act (NEPA) of 1969, as amended. DOE will prepare its Record of Decision based on the EIS and on other studies on the need for defense nuclear materials. DOE will consider all alternatives in reaching its decision, including environmentally preferable alternatives and preferences for alternatives based on the technical, economic, and statutory mission of the agency; DOE will also determine whether all practicable means to avoid environmental effects from the selected alternative have been adopted. DOE will comply with all applicable Federal and state regulations on environmental protection.
	Recently, I read, in the Christian Science Monitor, a page and half of interview[1] with a modern American farmer. Better than I can, myself, his words express my consternation with the drift of philosophy that is evidencing itself in recent years among certain segments of United States society.	

NOTE 1: Letters from an American farmer, 1983, Wendell Berry, Port Royal, KY, to Christian Science Monitor staff writer, Robert Marquand, Jr.

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

Comment number	Comments	Responses
BZ-2	This farmer was assessing the impact that an energy producing plant would have on his locality. He said, in part, "(The people who are in charge of the plant) activities do not live here and so do not have to worry about its safety. Their indifference to its impact, and their indifference to its safety has been a matter of public record from the beginning. "Safe use of any technology should be personally guaranteed by the members of the board of trustees and directors--that is, they should be personally liable to prosecution if their guarantees fail. "(The fact) that dangerous power--nuclear and otherwise--can be used without such guarantees not only constitutes an intolerable threat to public health and welfare, but is a kind of technological politics that is totalitarian in implication. "Free enterprise is defensible only when used by people wholeheartedly committed to the welfare of their neighbors, neighbors being any who live within reach of the consequences of one's acts. The interest of neighbors should take precedence over the interests of stockholders, business partners and allies, preferred customers, etc. One of the duties of our government, as constituted, is to assure that precedence."	The Savannah River Plant is owned by the U.S. Government and operated by Du Pont without fee. Ninety-seven percent of the SRP employees, including DOE and Du Pont management personnel reside in the 13 counties surrounding the Plant. Safety and environmental factors are major components of operating the SRP. The SRP is operated in the safest possible manner with releases controlled to as low as reasonably achievable levels that are well within applicable standards. The owners/operators understand the responsibility for safety and prudent operation of the SRP.

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

Comment number	Comments	Responses
	THE LEAGUE OF WOMEN VOTERS OF SAVANNAH-CHATHAM 321 E. York St. Savannah, Georgia 31401 STATEMENT BEFORE THE DEPARTMENT OF ENERGY AT A PUBLIC HEARING AT SAVANNAH, GEORGIA, NOVEMBER 4, 1983, ON THE ENVIRONMENTAL IMPACT STATEMENT REGARDING THE RESTART OF THE L-REACTOR AT THE SAVANNAH RIVER PLANT, AIKEN, SOUTH CAROLINA I am Virginia Brown, member of the Environmental Quality Committee of the League of Women Voters of Savannah-Chatham. The League of Women Voters "believes that government should be responsive to the will of the people...allowing them to share in the solution of...problems which affect the general welfare."[1]	
CA-1	The Savannah-Chatham League believes that, in the case of the Savannah River Plant, the original decision to build this plant in our area was not made locally; that the decision was made *without the participation of those who would be directly* affected environmentally. That lack of citizen input on decision-making should not continue, the League believes. Further development of the plant, such as reactivation of the L-Reactor should only be accomplished after local people have shared in that decision.	Any decision to operate L-Reactor will be made in accordance with the provisions of the National Environmental Policy Act including those which involve public participation.
CA-2	The League also wonders if the manufacture of additional nuclear fuel for weapons of war is conducive to the promotion of world peace to which principle the League is committed.	The national policy on nuclear weapons, their deployment, and the need for increased weapons is beyond the scope of this EIS.
CA-3	In April of 1982, a national public opinion poll reported that 58 percent of the sample surveyed agreed with this statement: "Protecting the environment is so important that requirements and standards cannot be too high, and continuing environmental improvements must be made regardless of cost."	The Department of Energy will consider all factors--cost, schedule, environmental impacts including health and safety, national security, and DOE's statutory mission in formulating its Record of Decision.

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

Comment number	Comments	Responses
	The League urges decision makers to heed this expression of concern.	
CA-4	The League of Women Voters believes that "special attention must be given to solving waste disposal problems associated with nuclear energy sources."[1] We are concerned about the "waste" that is to come out of the plant as heat in water discharges to pollute nearby streams; the "waste" that comes out of the plant of both chemical and radioactive discharges to pollute the air and water; and the "waste" that comes out as radioactive solids with no proved, safe storage techniques to keep it from eventually polluting the environment. To lessen the impacts of the above listed environmental impacts, the League supports the use of adequate safeguards including containment of air and water pollution; cooling of discharged hot water before being channeled into the natural water courses; and, delaying of the restart until some reliable, safe way is found to store nuclear wastes.	The impacts of nonradiological and radiological releases from L-Reactor are described in detail in Sections 4.1.1 and 4.1.2 of the EIS. The "wastes," in the form of heat in water discharges and chemical and radioactive discharges, are regulated by state and Federal permits. As noted in Section 5.1.2.8, the volume of high-level radioactive waste to be generated by chemical processing of L-Reactor material was considered in the EIS for the Defense Waste Processing Facility (DOE, 1982). DOE will comply with all applicable state and Federal regulations on environmental protection. Also see the response to comment AV-2 regarding high-level radioactive waste.

[1] IMPACT ON ISSUES, 1982-1984, the League of Women Voters of the United States, copyrighted 1982.

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

Comment number	Comments	Responses
	STATEMENT OF WOLFGANG BENGTSSON	
	The Savannah River Plant doesn't have to restart L-Reactor operations. My reasons for this statement are:	
CB-1	The plutonium produced during L-Reactor operations is supposed to be used as nuclear explosive in mostly middle range Euro-missiles. To me the resumption of L-Reactor operations means an intimidating attempt during the still lasting Geneva negotiations. It anticipates a failure in those negotiations between the United States of America and the USSR. The responsible party for the restart of the L-Reactor, currently the Reagan administration, seems to prepare a build up of nuclear warheads to hasten the deployment of missiles in case of a failure of the US-USSR-negotiations on Euromissiles. This might--in my opinion--harden the position of the Russian party and goad them to prepare similar action to produce more warheads. This path is well known as a part of the so called arms race and might well precipitate an evitable disaster.	The national policy on nuclear weapons, their deployment, and the need for increased weapons is beyond the scope of this EIS.
CB-2	Even after a temporal failure in Geneva in serious and genuine negotiations there is no need, in my opinion, to restart L-Reactor operation. By the way, from my point of view, there is neither a sign of failure nor one of genuine negotiations at Geneva. But nuclear material might be gained by reworking discarded warheads and reprocessing the aged nuclear explosives. Reprocessing nuclear waste of working nuclear power plants will give an additional amount of plutonium. From my knowledge all the requirements to match this scenario are fulfilled. Therefore enough nuclear explosives for truly necessary missiles are available without restarting a very special plutonium producing reactor.	See the responses to comments BL-19 and BY-2 regarding utilization of material from retired weapons and commercial reactors.
CB-3	Another factor might provide against the L-Reactor's restart. The more "fresh" plutonium is produced for nuclear warheads the more aged material due to the radioactive decay has to be taken care of. Care in this case means storage over centuries. But there is no secure storage possibility. Even after glassification--which by now is still in a process of research and approval and has led to no reassuring results--the radioactive waste still produces heat and, thus, is able to change geological properties of the storage site. Storage in water basins or	The plutonium from retired weapons systems is routinely reused in new weapons systems. As described in Section 5.1.2.8 of the EIS, the high-level radioactive wastes associated with L-Reactor operation will be stored temporarily in existing multibarrier waste tanks at the Savannah River Plant. The concentration of fissionable material in SRP waste is below that required to produce a critical mass. Beginning in 1990, this waste will be solidified into

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

Comment number	Comments	Responses
	artificial pools is not a secure possibility, either. This is obvious because of its dependence on stirring and cooling which again may fail related to electrical and other problems. If the cooling and stirring system or either of them fails to work properly, the critical mass of radionuclides is readily achieved.	borosilicate glass waste forms in the Defense Waste Processing Facility. The engineering design and assessment for the waste forms and for the DWPF are essentially complete; groundbreaking for the DWPF was held on November 8, 1983. The borosilicate glass waste forms will be placed in temporary storage onsite and then placed in a deep-mined Federal geologic repository. Heat production from the relatively dilute SRP high-level wastes is quite low, about 100 to 500 watts for each ton-and-a-half DWPF borosilicate glass waste canister.
	All this leads to my opinion that a restart of L-Reactor operations in general and especially at this very crucial period of this century is unnecessary and might even be disastrous.	

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

Comment number	Comments	Responses
	STATEMENT OF WIEBKE BENGTSSON	
	I am worried about the environmental aspects and the affection on public health, that a restart of the L-Reactor would have. Moreover I am very concerned about the emergency plans which will come into action after a reactor accident.	
CC-1	A high radiocaesium concentration in surface sediments of the Steel Creek down to the delta are reported in the EIS (>10 pCurie per square meter). At the Savannah River, sediments have essentially higher concentration of radiocesium downstream of the SRP than upstream. It is not very reasonable to believe that the concentration will drop with the resumption of L-Reactor operations. In natural habitats there is an enrichment of radionuclides in plants and animals as passing along the food chain. As a mother of a three month old baby I am worried about the effects of radioactive nutrition on my children and	Bioaccumulation is discussed in Appendixes B and D and is also taken into account in the dose calculations presented in Section B.3. According to the practice of the Nuclear Regulatory Commission, infants are assumed to eat small amounts of fish and should receive a negligible dose from this pathway.
CC-2	on their children. Our knowledge about the critical level of radionuclides in food equals almost zero, but we know that nuclear radiation has a powerful impact on lethal and sublethal mutations in animals. Moreover the authors of the EIS admit that the radiation released from SRP at normal operation without a working L-Reactor is more than double the amount of *all other nuclear facilities. After a restart of the* L-*Reactor* the level of radiation is not likely to decrease. Although this is so-called low level radiation there is no proof that this radiation is not dangerous. In the very few research studies on this subject there is an indication, that long term exposure to low level radiation affects the genotype of animals. The alteration in chromosomal appearance and behavior during cell division may occur not until the first generation after the exposure. In a situation when we do not know if low level radiation.....another low radiation source.	See the response to comment BF-6 regarding radiation protection standards and the estimated maximum annual health effects associated with L-Reactor and its support facilities.
CC-3	I think there is still another very important reason to--at least--postpone the restart of the L-Reactor. What I learned from EIS about the emergency plans which come into action after a reactor's failure is that they are classified or at least not easy to get for the public. In case of an accident people will panic if they do not know the proper emergency plan. If there should be the need of an evacuation authorities might not be	All emergency plans developed for offsite responses to SRP incidents are readily available from cognizant Federal, state, and local agencies. Federal plans encompassing the responsibilities of the Federal Emergency Management Agency, the Interagency Radiological Assistance Plan, and Emergency Management Plans for the Department of Energy can be obtained from the DOE Savannah River Operations Office. State general and

Comment number	Comments	Responses
	able to handle the throng. According to the EIS there is only one hospital where the personnel might be able to deal with radioactive decontamination.	site-specific plans for the SRP can be obtained from the Georgia Emergency Management Agency or the South Carolina Emergency Preparedness Division. County plans can be obtained from each county emergency preparedness director. None of these plans is classified. Persons residing within the emergency planning zones will be informed of the planning for responses to radiological emergencies in their areas. Workshops will be conducted to delineate responsibilities and appropriate actions to be taken. Each plan will include the identification of services available, including decontamination, first aid, shelters, hospitals, and security. Agreements with and training for organizations providing special services are part of the plans. Several hospitals in the SRP area are capable of handling contaminated patients.
CC-4	But I want to stress the fact that there is no possibility of dealing with radiation diseases. There is no cure from exposure to radiation in case of an SRP-accident. How are people supposed to be treated who have a radiation disease? They should know it. But by now there are almost no information about that according to the EIS.	No acute offsite effects should result from either routine operation of L-Reactor or hypothetical accidents. See Section G.3.3.1 of the EIS.
CC-5	The public should have full access to all emergency and evacuation plans. As long there is no full information about those plans the restart of the L-Reactor should be put off. ... and how a possible accident may affect their personal health.	See the responses to comments AY-11 and CC-3 regarding emergency response plans and where these can be obtained.

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

Comment number	Comments	Responses
	STATEMENT OF WILLIAM McLAUGHLIN ON DRAFT ENVIRONMENTAL IMPACT STATEMENT L-REACTOR OPERATION DeSoto Hilton Hotel November 4, 1983 My name is William McLaughlin. I have presented testimony on the need for a complete and environmentally sound Environmental Impact Statement on the L-Reactor in Augusta, and here in Savannah. I congratulate the Department of Energy for its thoroughness in complying with the letter of the law. That law being the National Environmental Policy Act of 1969-NEPA. I continue to be impressed at the great amount of effort that has gone into the rebuttal of those speaking in favor of the Environmental Impact Statement, as well as those speaking in favor of specific Environmental Impact Statement recommendations.	
CD-1	But I am very frustrated and angry at what I perceive as a *total violation and disregard for the spirit of this same law.* I feel as if the Department of Energy has decided that the L-Reactor will re-commence operation as soon as humanly possible--with no real regard for its effects on the land and people of South Carolina and Georgia. All of the legitimate, public generated, environmental and health concerns have been negated and nullified on paper, in the Draft Environmental Impact Statement. I am sorry to inform this committee that it is not going to be that easy.	The Department of Energy has prepared the EIS to analyze the environmental impacts of the proposed restart of L-Reactor. Subjects for the scope of the EIS that were substantive and relevant to the proposed action were included in the EIS. Comments that were outside the scope of the EIS or not related to the NEPA process were not included. Also see the response to comment BM-1 regarding the preparation of the Department of Energy's Record of Decision on this EIS.
CD-2	The results and recommendations of the Environmental Assessment were not adequate. Neither are the results and recommendations of the Environmental Impact Statement, which are remarkably similar to the Environmental Assessment. *Once again, I come before this committee.* Now, however, I feel completely powerless and disenfranchised from the act of presenting any seriously considered environmental input into the proposed decision to restart the L-Reactor.	Many areas of discussion in the Environmental Assessment have been expanded in this EIS, including production alternatives and need, a delay of L-Reactor restart, current fisheries data, data for accident calculations, safety mitigation alternatives, and detailed data on cooling-water alternatives. DOE will base its decision on the restart of L-Reactor on the final EIS and on other studies on the need for defense nuclear materials. The decision process will consider the environmentally preferable alternatives and preferences for alternatives based on the technical, economic, and statutory missions of the agency.

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

Comment number	Comments	Responses
	With that in mind, I present the following, within the context only of the letter of the 1969 NEPA law.	
CD-3	I feel that the environmental integrity of the ecology of SRP demands 1) cooling towers, 2) a containment dome, 3) proper waste storage facilities, and 4) an independent oversight committee of total SRP operations. The Department of Energy has not found any of these to be necessary for a safe startup. On that last point, an oversight committee, I would like to publicly offer myself as a potential member of that committee. Representative Lindsey Thomas first proposed this committee and I have personally made this same request of him. I shall be waiting to hear from both of you.	See the response to comment AA-1 regarding cooling water alternatives, the response to comment BF-7 regarding containment, the response to comment BA-5 regarding waste storage facilities, and the response to comment BQ-2 regarding existing oversight mechanisms.
	We are all here to face up to a responsibility. A responsibility to ourselves and future generations. We must not allow the L-Reactor to commence operations without adequate safety precautions.	

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

Comment number	Comments	Responses
	STATEMENT OF MIRIAM LITCHFIELD	
CE-1	My name is Miriam Litchfield. I testified at the last hearing in Savannah concerning the Environmental Assessment of the L-Reactor startup. This evening I find myself having the same doubts, fears, and frustrations as I had last May. It seems little has changed. Yes, you did comply with the law and complete a draft Environmental Impact Statement, but what major changes did you make after hearing our concerns? You made no provisions for cooling towers, a containment dome, waste storage facilities, or an independent oversight committee. An Environmental Impact Statement is not just a formality made to appease concerned citizens. I congratulate you for finally submitting a draft Environmental Impact Statement, but wish I could also congratulate you for taking our concerns and making them a part of that statement.	See the responses to comments AA-1 and AB-13 regarding cooling-water mitigation alternatives, the response to comment BF-7 regarding containment, the response to comment BA-5 regarding waste storage facilities, and the response to comment BQ-2 regarding existing oversight mechanisms.

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

Comment number	Comments	Responses
	STATEMENT OF L. NOREENE PARKER November 3, 1983 I, L. Noreene Parker, strongly object to the restarting of the L-Reactor.	
CF-1	I believe that at least the responsibility & the accountability of the DOE on this project, should be to strictly adhere to the present regulations governing nuclear facilities, since even these are, at best questionable and poor in protecting and informing innocent citizens.	See the responses to comments AA-3 and AF-1 regarding DOE's commitment to comply with applicable Federal and state environmental protection requirements and the differences between SRP and commercial reactors.
CF-2	The environmental and health damage that we know will occur is totally unacceptable and inexcusable, but the admitted projected damage that will occur is only the tip of the iceberg. The unadmitted and unmonitored accidents, the lack of proper inspections, and the total unwillingness to properly inform the public and to adhere to even the necessary precautions for ensuring environmental and public safety is an ongoing horror that should not be forced on to the people of this or any other area.	Routine and accidental radioactive releases have been documented, and potential radiation doses to the public have been calculated. In all cases, the radiation doses have been within radiation protection standards. Over the years, increased instrumentation, improved mitigation devices, and stricter procedural controls have reduced the magnitude and frequency of such releases. An annual report on the magnitude and dose effects of both routine and accidental releases is made available to the public.
CF-3	There is no acceptable excuse for such a harmful and dangerous development to be given any exemption or any lenient considerations when it comes to precautionary measures regarding release of contaminants, containment domes, or cooling towers. In reopening even the simplest of commercial facilities, the current building codes and regulations must be adhered to; and old facilities must be brought up to standard. This simple rule should not allow for the release of harmful contaminants, the destruction of the environment and the needless endangering of the public on a slow and continuous basis.	See the response to comment AA-1 regarding cooling-water mitigation alternatives, and the response to comment BF-7 regarding containment and radiation protection standards. Although L-Reactor was constructed about 30 years ago, the thick concrete walls of the main reactor building and the stainless-steel equipment inside have shown little or no deterioration. About 60 percent of the 204-million-dollar restart cost is for improvements in the safety and operating

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

Comment number	Comments	Responses
		systems and effluent controls that have been developed and installed in the other SRP reactors since L-Reactor was placed on standby. These improvements, along with the restoration and upgrading work, will bring L-Reactor up to the standards of the other reactors. Inspections and testing before startup will verify equipment performance and reliability.
CF-4	I urge you to live up to your public responsibilities to protect the public from this type of intentional, irreversible destruction that we are powerless to protect ourselves *against. We are struggling to protect and build on our natural* resources in this prolific marine area. Building contaminants in our rivers, reefs, fish, and wildlife is not only harmful and ignorant; but also very dangerous to the economy of this area which depends on the aquifer for its water, and the rivers and ocean here for seafood and recreation.	The Department of Energy will take all reasonable measures to assure that the environment is protected. The releases from L-Reactor operation, as identified in Chapter 4 of the EIS, are *well within applicable standards and are monitored by DOE,* the EPA, and the States of South Carolina and Georgia. No effects on the marine life in the Savannah River estuary, or the Atlantic Ocean, and no offsite contamination of ground-water aquifers have been detected. The ground-water protection program at SRP is being extensively studied; a separate NEPA review for this program will be undertaken.
	I wish to continue to live in this area and I believe that it is the responsibility of all of us to protect and rebuild our environment for future generations and not to create incurable contaminants and horrors for future generations to face because of our negligence and lack of concern for the future.	
	ADDITIONAL COMMENTS MADE AT PUBLIC HEARING ON NOVEMBER 4, 1983	
CF-5	Another thing I would like to ask is: What will happen in case of an accident? Do we know in case something should occur? Will we have to pay for an accident, should it occur? What is the DOE doing to educate the public?	Indemnification of liability resulting from nuclear accidents involving DOE contractors would be in accordance with Section 170 of the Atomic Energy Act as amended. See also the response to comment AY-11 regarding emergency response planning.
CF-6	I am a scuba diver. I am not pleased with the solution. I would like to find out exactly what happens to the sediment when it is pumped out into the ocean? What happens to the low level radiation and to the low level waste if they are dumped in the ocean?	An evaluation of the fate of radioactivity released from SRP to the Savannah River upon reaching the ocean can best be done by examining the fate of fallout radioactivity resulting from past nuclear weapons testing. The amount of radioactivity from SRP reaching the ocean is only a very small fraction of that due to fallout. The total input of Cs-137 and Pu-239/240 to the Savannah River watershed from fallout is estimated to be 2800 and 55 curies, respectively, while the amounts of Cs-137 and Pu-239/240 released from SRP operations in the past are approximately 500 and 0.3 curies, respectively. Most of this radioactivity is retained by the watershed bound to soil or

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

Comment number	Comments	Responses
		sediment, and only a small fraction reaches the ocean. Measurements of radioactivity in water, sediments, and marine life along the coast of the eastern United States indicate that radioactivity associated with the Savannah River outflow is similar to that of other rivers, reflecting the dominance of fallout radioactivity. Off-shore corings reveal sediment profiles of radioactivity that parallel the periods during which nuclear weapons testing occurred. The natural sedimentation processes occurring at the outflow of a river into the ocean and the associated delta formation tends to continuously cover older sediments with the newer sediments. Additional information has been included in Section 3.7.1.1 of this Final EIS.
CF-7	I believe this will continue up the food chain and could possibly harm us, defintely harm us, according to many biologists, in the future. I don't want to see this occur.	The dose models used at SRP are generally accepted by agencies involved in dose calculations--EPA, DOE, NRC, and ICRP. These mathematical models trace the dispersion of radioactivity into the atmosphere and waters until the radioactivity is taken up by a plant or animal (or directly by man) The models then account for any biological reconcentration that occurs through subsequent food chain elements to man, and any human organ discrimination factors. Also 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 AMY DARDEN	
	My name is Amy Darden. I am speaking tonight as a concerned citizen and as a biologist. The Department of Energy has been blatantly negligent in assessing the environmental impacts of restarting the L-Reactor.	
CG-1	In the entire history of the Savannah River Plant there has never been an independent study of the environmental and health effects of the radioactive isotopes released in the forms of gases and effluents. The Environmental Impact Statement is largely based on data collected by the DuPont Company. How can citizens be assured of the accuracy of data collected by the operating concern?	As discussed in Section 6.1.5 of the EIS, a series of health effect studies of the population around the Savannah River Plant have 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. The potential health effects due to SRP operations are predicted to be too small to be statistically detectable by health effects or epidemiological studies, particularly in the population outside SRP. Hence, primary reliance is placed on radiation monitoring and the calculation of expected health effects from monitored exposures. The States of South Carolina and Georgia and the EPA provide independent radiation monitoring offsite (see the response to comment BQ-2 for titles of the states' publications). As described in Appendix B, radiation doses are determined on the basis of the International Council on Radiation Protection Guides ICRP-2 and ICRP-30, while expected health effects are determined from those doses using the National Academy of Science's BEIR II and BEIR III reports. Similarly, the computer codes used to make necessary calculations are the XOQDOQ, GASPAR, and CRAC2 codes developed by the U.S. Nuclear Regulatory Commission.

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

Comment number	Comments	Responses
CG-2	Nuclear facilities, whether bomb plants, commercial power plants, or government-owned reactors, have never been known for voluntarily releasing accurate and prompt information regarding accidents. The DuPont Company has been involved in the weapons industry since the early days of our nation's history when the manufacture of gunpowder was the primary defense industry. Savannah River Plant is operated to produce a capital gain for the operating concern. Can we entrust the safety of life in Georgia and South Carolina to self-inspection by the operating company? Isn't that a little like asking the fox to guard the chicken house? But it isn't chicken that is at stake; it is the well being of Life in this area.	See the response to comment BQ-2 regarding independent monitoring. The Savannah River Plant is owned by the U.S. Government and operated by Du Pont without fee.
CG-3	Savannah River Plant is known to release more radioactive material per year than has been released by all commercial nuclear power plant accidents in all of time. Why is a facility that makes weapons grade material exempt from the same safety guidelines that commercial power plants are held to? Since 1968, when the L-Reactor was decommissioned, what new safety measures have been introduced and what new safety measures have been applied to the L-Reactor? Why are cooling towers and a containment dome deemed unnecessary?	Appendix J in the EIS describes the evolution of safety systems for SRP reactors. See the response to comment BF-7 regarding the need for a containment dome, the response to comment BF-6 regarding radioactive releases and standards, the response to comment CF-3 regarding restoration and upgrading of L-Reactor, and the responses to comments AA-1 and AA-3 regarding cooling-water mitigation measures and DOE's commitment to comply with all applicable Federal and state environmental protection regulations.
CG-4	The draft Environmental Impact Statement states that the radiation exposure to people from the L-Reactor operation is less than exposure from natural sources. The increase of cancer is insignificant. Yet according to the South Carolina Bureau of Vital Statistics infant mortality rates and cancer rates in counties adjacent to Savannah River Plant are four to ten times higher than other areas of the State.	Analysis of 1980 South Carolina fetal and neonatal death rates by counties demonstrated that the extreme high and low values observed occurred in counties with low populations and are, therefore, statistical anomalies not associated with distance from the Savannah River Plant. Studies conducted by Professor H. I. Sauer of the University of Missouri-Columbia (now retired) have revealed no evidence of unusual death rates from cancer or genetic effects, either for areas near SRP or for counties using downstream Savannah River water. Also see the response to comment CG-1 regarding prior health effects studies, ongoing epidemiological studies, and a review of these studies by an independent panel formed by the National Centers for Disease Control.
CG-5	What is an acceptable dose of radiation for plants, animals, or people? It takes only one radioactive particle, one cell, and one gene to initiate the cancer and/or the genetic mutation	See the response to comment CF-7 regarding radiation dose methodologies and biological reconcentration and the response to comments CG-1 regarding health effects and epidemiological studies.

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

Comment number	Comments	Responses
	cycle. Can the Department of Energy assure the citizens that there will be no increased incidence of genetic mutations and cancer from the radioactive matter released by the L-Reactor? With a half-life in the hundreds of years these particles are a direct threat to all types of life--whether they are inhaled or ingested. As humans, we are high on the food chain--is there any guarantee that the food produced in this area, the fish and shellfish in the Savannah River, will be free from cancer causing contaminants?	
CG-6	The Savannah River Plant has been described as "the bomb that has already been dropped." Indeed, it is a disaster area and we are in the contaminated zone. We go through each day wondering how much more radioactive gases have been released into the air we breathe, how much is in our water, in the food we eat; how much cesium, plutonium, and other harmful elements have made their way into our bodies and the bodies of others. The L-Reactor has produced plutonium and tritium for nuclear warheads to defend our nation's citizens from foreign aggression. BUT WHO WILL PROTECT THE CITIZENS FROM THE L-REACTOR?	See the response to comment BF-6 regarding radioactive releases and standards.
	ADDITIONAL COMMENTS MADE AT PUBLIC HEARING ON NOVEMBER 4, 1983	
CG-7	Since 1968, when L-Reactor was decommissioned what new safety measures have been introduced and what new safety measures have been applied to the L-Reactor? Why are cooling towers and containment domes deemed unnecessary? What about the integrity of the reactor vessel itself?	Appendix J of the EIS summarizes the evolution of SRP reactor safety. About 60 percent of the upgrading and restoration costs for L-Reactor has been expended for improvements in the safety and operating systems and effluent controls that have been developed and installed in other SRP reactors since L-Reactor was placed on standby. Stainless steel equipment, including the reactor vessel, have shown little or no deterioration. Also see the responses to comments AA-1 and AB-13 regarding cooling-water mitigation alternatives, and the response to comment BF-7 regarding containment.

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

Comment number	Comments	Responses
	I would like to quote just a little bit about plutonium itself. This from Dr. Helen Caldicott's book, Nuclear Madness. I highly recommend it to the DOE. "Plutonium is one of the most carcinogenic agents in the world, named after the god Pluto, god of the underworld. Less than one-millitonth of a gram is enough to cause cancer." To put this into perspective, a gram is 1/252nd of a pound. In other words, 252 grams to a pound, and one-millionth of a gram is carnogenic. "Because plutonium has properties similar to those of iron, it combines readily with the iron-transporting proteins in the blood and is conveyed to the storage cells in the liver and bone marrow. Here, too it irradiates nearby cells, causing liver and bone cancer and leukemia."	
CG-8	It is essential an independent oversight committee be established to monitor the operation of the L-Reactor, not only to restore public confidence in the DOE, but also to assure the safety of people and the ecosystem of South Carolina and Georgia. The decisions made by our generation regarding the startup of the L-Reactor will undoubtedly outlive us. It's a legacy that requires our complete and most sincere and deliberate attention.	See the response to comment BQ-2 regarding existing oversight mechanisms.

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

Comment number	Comments	Responses
	STATEMENT ON THE REACTIVATION OF THE L-REACTOR	
	My name is Carolyn Tucker. I'm a resident of this city and am very concerned about the quality of life here, in particular, as well as about the quality of our entire environment in general.	
CH-1	It seems to me that the reactivation of the L-Reactor can in no way be advantageous to the residents of Savannah. If the L-Reactor begins operation, I can't help but think that the radioactive pollution in our river will ultimately increase. I also don't think that this additional reactor will in any way improve our groundwater supply. Since the L-Reactor has no cooling towers or containment domes, I can't help thinking that, in the event of an accident, our air quality will surely not be helped. Probably not many people in our area, if any, will find employment at the plant. In short, it seems that we have nothing to gain and quite a bit to lose if this restart begins as scheduled.	See the responses to comments AA-1 and AB-13 regarding cooling-water mitigation alternatives, the response to comment AA-2 regarding concentrations of radiocesium and radiocobalt, the responses to comments AJ-1 and BG-4 regarding seepage basins and DOE commitments for ground-water protection, the response to comment BA-5 regarding radioactive waste disposal, and the response to comment BF-7 regarding containment.
CH-2	But these are small considerations in the large scheme of things. The reason we're here tonight is because the L-Reactor is scheduled to be restarted after a decade and a half of moth-ball time. The reason the Reactor is being restarted is because we need more plutonium. We need more plutonium because we need newer and more modern nuclear weapons. We need more weapons because.... This is where the line of reasoning breaks down. Is there a need for bigger and better bombs? Don't we have more than enough now? It seems to me that the question of genuine need for additional plutonium should be addressed. The outrageous expense of the arms race and the cataclysmic results of nuclear war are two facts that should be dealt with when thinking about the L-Reactor, in addition to cooling towers and containment domes. Because in this instance, too, it seems that we have nothing to gain and everything to lose.	The national policy on nuclear weapons, their deployment, and the need for increased weapons is beyond the scope of this EIS.
	Thank you for your attention.	
	Carolyn A. Tucker	
	November 4, 1983	

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

Comment number	Comments	Responses

Statement to the
Department of Energy
on the
Draft Environmental Impact Statement
on the restart of the L-Reactor, SRP

Savannah, Georgia
November 4, 1983

I am Steve Johnson, a resident of Savannah, Georgia. I appreciate the opportunity for public comment and opinion in the decision-making process to restart the L-Reactor at the Savannah River Plant (SRP). I take very seriously my rights and responsibilities as a United States citizen. I see today's opportunity to comment as a privilege. I hope to offend no one today but I am compelled to speak out against the Department of Energy's handling of this major Federal action, which may have a very significant, long standing environmental impact without additional safeguards.

Thanks to an act of Congress, specifically in my opinion to the actions of Senator Mack Mattingly, the DOE has conducted an "expedited" environmental impact statement in accordance with NEPA, 1969. Citizens of Georgia and South Carolina, who, like myself, have contributed so much to U.S. defense efforts throughout history, have always recognized what is involved in maintaining a sound defense posture. I agree wholeheartedly with Senator Sam Nunn who stated that "defense posture must be built on a firm foundation of public support and understanding." The previous actions of DOE to initially forego an EIS has not served this goal. My trust and confidence in their assurances of public safety is simply not there. There are too many questions which people who are experts in the field are not in agreement on, in terms of some of the public health and safety aspects of the proposed L-Reactor restart. This clearly erodes the tenuous support for the current Administration's desire to build up the nation's supply of nuclear defense

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

Comment number	Comments	Responses
	materials in an effort to demonstrate to the Soviet Union, our resolve to defend freedom.	
C1-1	Precedence does exist demonstrating that our national security requirements and our public health and safety/environmental concerns can be met simultaneously. However, there are widely published historical examples to the contrary. The DOE has broken with its traditions of self regulation. In the EIS, it seems to say that the SRP operations do not have to by law comply with public health and safety regulations of the Nuclear Regulatory Commission, as commercial nuclear facilities do. Therefore, to use a euphemism, the cook cleans his own kitchen.	See the response to comment AA-3 regarding DOE's commitment to meet all applicable Federal and state environmental protection requirements, the responses to comments BF-7 and BF-8 regarding the differences between SRP and commercial reactors, and the response to comment BQ-2 regarding existing oversight mechanisms.
C1-2	Informed public confidence must be restored. Continued debate on alternatives within the existing proceedings will fail as long as DOE argues alternatives with the overriding considerations on production goals--"time and expense" to quote S.C. State Rep. Harriet Keyserling. Clearly, even the need for such production is now open for question. And why not? Sen. Sam Nunn talks about a "build down" proposal for arms control negotiations. As I understand it, two nuclear warheads (made of plutonium) will be disassembled for every one modernized warhead built. What would happen to that plutonium? I do not have the classified information to make an educated opinion; does Sen. Nunn?	The national policy on nuclear weapons, their deployment, and the need for increased weapons is beyond the scope of this EIS. Also see the response to comment BL-19 regarding use of material from retired weapons.
C1-3	I have been to each of these public hearings and reviewed the published records. I am proud to see that State and Federal officials representing the citizens of Georgia have voiced their concerns, and suggestions as to how to restore public confidence. I strongly support Congressman Lindsay Thomas' proposal for an independent oversight task force. The current proceedings certainly aid in the examination and assurance of public safety but too much, much too much doubt has been cast onto the reliability of existing mechanisms that assure national security requirements (production goals) and public safety concerns are and can be simultaneously met. Furthermore, Congressman Thomas is right in his concern that there is no long range plan for the study of the cumulative effects of all the nuclear facilities within the Savannah River Basins. I have the hope to settle in this region, raise a family and invest my money in business here. I believe I have a right to	See Section 5.2 of the EIS. These are the known plans for additional nuclear facilities in the Savannah River Basin.

Comment number	Comments	Responses
	know about the L-Reactor's impact. I intend to ask Congressman Thomas to follow through with his proposal, and I will ask Senators Nunn and Mattingly to back such efforts. My trust, confidence and understanding in this matter of national defense is confused by and lacking in the DOE's own evaluation of its operation's impact on my safety and surrounding environment and more importantly my children's.	
CI-4	Independent oversight is essential in my opinion. Why else would we be sitting here listening to such public and expert concern and objection to the restart of the L-Reactor at SRP. Thank you for your time and again I hope I did not insult anyone here today with my comments. Respectfully, Steve A. Johnson, Ph.D. 608 East 57th St. Savannah, GA 31405	See the response to comment BQ-2 regarding existing oversight mechanisms.

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

Comment number	Comments	Responses
	STATEMENT OF EDWIN LONGWATER	
	Let me begin by saying that I do not feel the least bit honored to be speaking to DuPont via the Department of Energy.	
	I testified on May 26, 1983 and stated that I was a life time resident of Chatham County. I did consume a lot of shellfish and fish from near the mouth of the Savannah River at Tybee Island.	
	In response DOE asserted that fish and crabs near the coast are routinely sampled for radioactive contamination as contained in the 1982 Annual Report.	
CJ-1	Looking through this report, shellfish were omitted! Why? Were they too radioactive all too often? It also gave the whole body dose for an adult in 1982. I was an infant in 1952 and grew up along this coast. What about my contamination? In this report it stated that these studies included 8 crab and four (4) oyster samples. Are you trying to get me to believe that this small of a sample along our twisted Savannah River is representative of all oysters along the river or were these samples picked because lower radiation would be found in some areas? I want a larger study done not by DuPont or DOE but an independent agency. After all, over and over in the Draft EIS are the words: "The responsibilities of DOE...to develop and maintain a capability to produce all nuclear materials required for the Defense programs of the U.S....As a matter of policy, national security requirements, not arbitrary constraints... shall be the limiting factor.	Current levels of radioactivity in oysters and crabs taken from the Savannah River Estuary are summarized in the 1982 annual report (Environmental Monitoring in the Vicinity of the Savannah River Plant, DPSPU 83-30-1, page 12). As stated in the report, cesium-137, other gamma emitters, and strontium-90 were below detection limits. The oysters were collected at Fort Pulaski, about 5 kilometers from the mouth of the Savannah River at Tybee Island, and the crabs were purchased from a shrimp boat that operated in the mouth of the Savannah River. Relatively large sample sizes were required because of the low levels of radioactivity. Each of the four oyster samples contained about 500 grams of oysters (approximately 400 oysters per sample). Fourteen crabs were combined into the eight crab samples. The results of the 1982 analyses on shellfish from the Savannah River Estuary are the same as for previous analyses on shellfish published in earlier annual reports of this series. The 1982 annual report referred to above (DPSPU 83-30-1, page 11) gave the whole body dose to a hypothetical adult who consumed fish containing 0.57 picocurie per gram of cesium-137 (the average cesium concentration in fish taken from the river just below SRP). The calculated doses to hypothetical teenagers and children eating fish with this same concentration of cesium-137 are smaller than for the hypothetical adult by factors of about 2 and 5, respectively. Shellfish taken from the

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

Comment number	Comments	Responses
		Savannah River Estuary in 1982 contained less than one-fifth as much cesium-137 as the river fish assumed in the dose calculations.
CJ-2	Are we to allow DOE to clean their own kitchen? When DOE begins to talk about their environmental consequences why does the second paragraph deal with the 420 new jobs the L-Reactor will provide and the increase in money coming through the surrounding area around SRP? I feel the people of Georgia and South Carolina do not deserve to have more contamination pushed down our throats.	The 400 jobs discussed in the second paragraph of the Environmental Consequences Section of the Summary is only a part of the National Environmental Policy Act requirements to discuss the impact of this project. SRP operations are closely monitored by both state and Federal agencies to ensure compliance with all applicable statutes and regulations concerning environmental protection. See the response to comment BQ-2 regarding existing oversight mechanisms.
CJ-3	Going back to this study if that 98% of the 300 fish had no measurable amounts of radiation. What about those other 6 fish? Where were they found and how much did they contain? I might have eaten their brother or sister for lunch last year!	The 1982 edition of the Environmental Monitoring in the Vicinity of the Savannah River Plant provides the data concerning the measured levels of concentration in fish including the 2 percent for which there were detectable concentrations. As contained in Chapter 6 of the EIS, fish provided by the Georgia Department of Natural Resources are also analyzed.
CJ-4	In previous testimony I also stated that in 1974 in a single day 479,000 curies of tritium were released into the atmosphere. An Arizona facility 5 years later released a little more than half this amount; its license was revoked. Furthermore, between May 30 and June 3, 1961 SRP released the single largest amount of radioiodine ever reported in scientific literature for a U.S. facility, a release of 10 x that of TMI. What did DOE say to make me feel secure? "Some additional radioactive releases have occurred from reactor support operations. These have been documented and potential radiation doses to the public have been calculated. IN ALL CASES THE RADIATION DOSES HAVE BEEN WITHIN DOE STANDARDS--WHICH MEANS THAT RADIOLOGICAL HEALTH EFFECTS HAVE BEEN NEGLIGIBLE. EITHER DOE STANDARDS NEED REVISING OR DOE IN MY ESTIMATE IS NEGLIGIBLE. Thank you. Edwin Longwater	See the response to comment BA-4 regarding the releases of tritium.

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

Comment number	Comments	Responses
	ADDITIONAL COMMENTS MADE AT PUBLIC HEARING OF NOVEMBER 4, 1983	
CJ-5	DOE then goes on to assure us, "which means that radiological health effects have been negligible." I state this not in agreement with all scientists. There are many scientists who feel that these effects are not negligible, that they are not safe at all.	See the response to comment BF-6 regarding radiation protection standards.
CJ-6	Either DOE standards need revising or the DOE, in my estimate, is in itself negligible. The EIS represents nothing more than an invalid conclusion *based on unproven assumptions* and faulty documentation and data collection, gross generalizations. In short, the Draft EIS is not sufficient. In talking with several individuals at the document table tonight, I asked about studies done on shellfish in this area, particularly oysters, since they are stationery along the riverbank. They don't move around such as crab and things like that. I found out three things: Either the studies were not conducted; their results were not published; or they did not know where I could find this information.	The purpose of this EIS is to analyze the potential environmental consequences of the L-Reacator restart and its alternatives. The assumptions used in the DEIS for relevant standards and for data collection and analysis are based on existing Federal regulations; almost all were derived outside DOE. Chapter 7 discusses these laws and regulations. Appendix B discusses the assumptions for radiation exposure and radiation dose analysis; it points out that exposure standards are based on recommendations of the International Council on Radiation Protection, the former Federal Radiation Council, EPA, and NRC; health effects assumptions are based on the recommendations of the National Academy of Sciences; and computer analysis assumptions are based on computer codes developed by NRC. An extensive reference list backs up the EIS. Except for a small amount of classified material, all the documentation has been made available. See also the response to CJ-1 regarding the sampling and analysis of shellfish.

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

Comment number	Comments	Responses
	STATEMENT OF JANIECE BRODHEAD November 4, 1983 9677 Whitefield Ave. Savannah, GA 31406 To whom it may concern, As a mother of one child and another on the way, I feel it is my personal responsibility to speak out against the restart of the Savannah River Plant L-Reactor. We are already dealing	
CK-1	with the severe ecological implications that nuclear buildup has placed on our environment with nuclear waste and storage. Restarting the L-Reactor will escalate these problems especially to those living downstream from Barnwell and drinking water in the Jasper-Beaufort, South Carolina area. The continued buildup of nuclear arms is insane when you realize that in nuclear war nobody wins. I'm sure that a world in which a nuclear bomb has been dropped, no matter what hemisphere or country, will be virtually uninhabitable, considering radiation fallout, temperature change, mutation of the food chain, etc. Please, for the sake of my children's safe future do not restart the L-Reactor and add to an arms race where everyone will lose. Sincerely, Janiece Brodhead	See the responses to comments AA-2 and BT-2 regarding radiocesium and radiocobalt concentrations and water quality, and the response to comment BA-5 regarding radioactive waste disposal. 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
	Statement on the L-Reactor Draft Environmental Impact Statement November 4, 1983	
CL-1	As a citizen and business person from Savannah, Georgia, I wish to register my concern with the Draft EIS. I feel that there is a great need for an independent study of the effects of starting the L-Reactor on the environment of the surrounding area. There needs to be an assessment done by people who do not have a vested interest in this reactor's operation. There are grave questions to be answered about the unusually high incidence of some health problems in the area surrounding the Savannah River Plant as it now operates. There is too great a risk to the population and the environment to start the reactor without such an independent study.	See the response to comment CG-1 regarding health effects and epidemiological studies, and the response to comment BQ-2 regarding existing oversight mechanisms.
CL-2	I am very concerned that there be adequate cooling towers, a containment dome and waste storage facilities before the reactor is started again. I have heard the Savannah River Plant called "the bomb that has already been dropped on South Carolina" because of the amount of radiation that the SRP already releases into the environment and I have every reason to believe that those of us down river could make the same statement. It is very important that there not be an increase in the pollution being released and something needs to be done about what already is coming our way. Again I ask that the seriousness of the potential problems of the restart of the reactor be given the most careful and reliable study and that the health of the living things, humans, animals, and plants, of our area be given the value we deserve. Sincerely, Linda M. Jeanne 103 S. River Street Savannah, Georgia 31401	Radiation levels and doses in the vicinity of SRP and down to Savannah are given in Sections 4.1.2, 5.1.2, and 5.2.6 and in Appendix B of the EIS. They are shown to be a very small percentage of background radiation. Also see the responses to comments AA-1 and AB-13 regarding cooling-water mitigation alternatives, the response to comment BF-7 regarding containment, the response to comment BA-5 regarding radioactive waste disposal, the response to comment BQ-2 regarding existing oversight mechanisms, and the response to comment BM-1 regarding DOE's Record of Decision.

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

Comment number	Comments	Responses
	STATEMENT OF DEBBIE KEARNEY	
CM-1	"Since the splitting of the atom, everything has changed save our mode of thinking ... and thus we drift towards unparalleled catastrophe." I'm paraphrasing Albert Einstein. He obviously recognized the dangers inherent in nuclear power. Yet DOE treats the reconstruction and restart of the L-Reactor like it's the opening of a shoe store. No big deal. What's the public uproar about?! I'm testifying at this hearing because I think it is a big deal. I'll refrain from a repetition of the major concerns I have, like health and safety hazards and ecosystem losses. I've delineated them in other testimony. You're aware of my concerns and I suspect you give the same pat answers. And then say "Trust us." Well--you've given me no reasons to trust you and many reasons to doubt you.	From the outset, DOE has emphasized the protection of the public health and safety in conjunction with the restart of L-Reactor. As described in the EIS, DOE has expended about $204 million in modernizing and renovating L-Reactor. The Department has also spent more than $5 million in environmental studies and reports. Twelve public hearings have been held in South Carolina and Georgia, to elicit public comments. Also see the responses to comments AA-1, AA-3, and AB-13 regarding cooling-water mitigation alternatives and DOE's commitment to comply with all applicable state and Federal environmental protection regulations, the response to comment BF-7 regarding containment, and the response to comment BQ-2 regarding existing oversight mechanisms.
CM-2	My understanding of the conclusions drawn in the draft EIS is that greater safety features and better cooling alternatives cannot be implemented because they cost too much in time and money. In other words, the health and safety of thousands of people downriver and downwind from SRP aren't worth such and so million $ and a few years. I strongly object to a value system that puts time and money considerations before people considerations!!	See the response to comment BM-1 regarding DOE's Record of Decision on this EIS.
CM-3	What's even more outlandish is that we discuss this issue as if we know exactly what the costs of restarting the L-Reactor will be--I mean costs in terms of environmental damage and subsequent consequences, human health and safety, as well as time and money. The fact is that we don't. We DO NOT KNOW what the cumulative effects of the nuclear operations at SRP are and will be. We continue to produce more plutonium and tritium without knowing what to do with the radioactive waste we	Section 5.2 of the EIS describes the cumulative effects of present and proposed SRP facilities and those of other nuclear operations in the vicinity of SRP. Also see the response to comment AV-2 regarding radioactive waste disposal, and the response to comment CG-4 regarding infant mortality rates.

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

Comment number	Comments	Responses
	already have. We allow SRP to continue production without questioning the fact that the counties south of SRP have an infant mortality rate 5 times greater than the rest of S.C. and S.C. has the highest infant mortality rate in this country!!	
CM-4	If the L-Reactor is going to be restarted (and it seems that no matter what we do, it will go on-line), I feel I have a right as a citizen to ask--demand--that certain protective actions be taken first. I'd like the restart contingent upon a cooling alternative like cooling towers, greater safety mechanisms (I'd like to see a containment dome built), and an independent oversight committee composed of government officials and concerned citizens as suggested by Rep. L. Thomas. Most important, I want a long-term study of the cumulative effects of SRP on the environment and on the people. Please spare me the argument that there's no time. There are *alternatives if the plutonium and tritium must be produced* immediately which I also question. If you think I'm angry you're right. And if you detect cynicism and a sense of futility, you're right about that too. I desperately want Savannah and this coastal area to be a safe, healthly, beautiful and bountiful place. The SRP is a major threat. If we must start new reactors, let's at least require that they have the maximum health and safety features. And give consideration to the <u>real</u> costs of starting a reactor.	See the responses to comments AA-1, AA-3, and AB-13 regarding cooling-water mitigation alternatives and DOE's commitment to comply with all applicable state and Federal environmental protection requirements, the response to comment BF-7 regarding containment, and the response to comment BQ-2 regarding existing oversight mechanisms.

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

Comment number	Comments	Responses
	STATEMENT OF MS. JAY	
	I come here because I am a health care worker and a parent and a concerned citizen of southeastern Georgia.	
CN-1	The startup of the L-Reactor is a concern of those from the surrounding counties because we know nuclear accidents are possible, as was learned from the Three Mile Island incident. A similar accident at the Savannah River Plant L-Reactor would be catastrophic to this area because of the lack of the cooling tower and containment domes in the aging facilities, and the release of increased temperature water would change the local ecosystem of the streams and riverbeds in the area of the plant.	Cooling towers are not related to the mitigation of potential reactor accidents. See the response to comment BF-7 regarding containment domes and safety system mitigation alternatives.
CN-2	I am of the first generation who have had to live our entire lives with the threat of the ultimate annihilation of humankind due to nuclear weapons. Now, a second generation is coming into the world with this over their heads. In some ways, I feel guilty for bringing my daughter into a world where a computer foulup or a flock of geese could cause a full-scale nuclear war.	The national policy on nuclear weapons, their deployment, and the need for increased weapons is beyond the scope of this EIS.
CN-3	To me, the ultimate question of the L-Reactor startup is: Do we need more nuclear weapons...? I request the formulation of an oversight committee for the operation of the Savannah River Plant L-Reactor and the installation of containment domes.	See the response to comment BQ-2 regarding existing oversight mechanisms, and the response to comment BF-7 regarding containment domes.

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

Comment number	Comments	Responses
	STATEMENT OF JUDY JENNINGS	
	November 4, 1983	
	My name is Judy Jennings. I am a housewife and I have lived in Savannah, Georgia, for six years.	
CO-1	I appreciate the opportunity to speak to you but I admit I am somewhat puzzled. I read every day that many citizens and many Congressmen oppose further build-up of nuclear weapons and support alternatives such as the Build Down Proposal and the Nuclear Freeze. If we are really dedicated to reducing the threat of nuclear war, why do we need another facility such as the L-Reactor at the Savannah River Plant to produce more fuel for more nuclear weapons?	The national policy on nuclear weapons, their deployment, and the need for increased weapons is beyond the scope of this EIS.
CO-2	However, if it is inevitable that the L-Reactor operate and if it operates as indicated in the draft Environmental Impact Statement, I feel that my health and life, my friends' and family's health and lives, and the environment will be in constant jeopardy. I would feel safer if the L-Reactor had a containment dome and cooling towers and if an independent oversight committee were established to oversee L-Reactor operations.	See the responses to comments AA-1, AA-3, and AB-13 regarding cooling-water mitigation alternatives and DOE's commitment to comply with all applicable state and Federal environmental protection regulations, the response to comment BF-7 regarding containment, and the response to comment BQ-2 regarding existing oversight mechanisms.
CO-3	Basically, I would like to see the EPA or NRC review the draft Environmental Impact Statement. Thank you.	The Georgia Department of Natural Resources, the South Carolina Department of Health and Environmental Control, the Nuclear Regulatory Commission, and other Georgia, South Carolina, and Federal agencies received copies of the EIS. As required by the Energy and Water Development Appropriations Act, 1984, the EIS was developed in consultation with the States of Georgia and South Carolina. DOE provided working drafts of the EIS to the states, met with their representatives, and incorporated their comments into the EIS.

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

Comment number	Comments	Responses
	COASTAL CITIZENS FOR A CLEAN ENVIRONMENT 4405 PAULSEN ST., SAVANNAH, GA 31405 STATEMENT BEFORE THE DEPARTMENT OF ENERGY BY REBECCA R. SHORTLAND FOR COASTAL CITIZENS FOR A CLEAN ENVIRONMENT ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT ON THE RESTART OF L-REACTOR Savannah, GA. November 4, 1983 My name is Rebecca R. Shortland and I am here on behalf of Coastal Citizens for a Clean Environment (CCCE). This is the third occasion during which CCCE has presented testimony in response to the Department of Energy's (DOE) mandate - to restart the L-Reactor at the Savannah River Plant without certain safeguards, which we feel, and have felt since August 1982, are vehemently necessary. Our comments are directed to the Draft Environmental Impact Statement (DEIS), which exists because it was required by an act of Congress and the courts, not because DOE chose to voluntarily follow the NEPA process.	
CP-1	In reviewing this document, we find that the overall attitude is precisely that which was the result of the Environmental Assessment (EA) conducted by DOE and released in 1982 - no significant impact as the result of the proposed operation of L-Reactor. Our concerns have been expressed many numbers of times since the EA was released, and echoed by many others including our Congressmen, local officials and various organizations and individuals in both Georgia and South Carolina. The concerns and questions remain the same.	See the response to comment BM-1 regarding DOE's Record of Decision on this EIS.
CP-2	Again, we reiterate the need for an alternative and adequate system for recycling of the cooling waters other than that proposed by DOE (direct discharge into Steel Creek). The resulting destruction of 1000 acres of wetlands, the subsequent ruin of wildlife habitat (including that of endangered species), and the resuspension of radioactive cesium and cobalt into the Savannah River are unacceptable. The construction of an alternative, such as cooling towers with complete recycling, is	See the responses to comments AA-1, AA-3, and AB-13 regarding L-Reactor cooooling-water mitigation alternatives and compliance with applicable environmental protection requirements, and the response to comment AA-2 regarding resuspension of radiocesium and radiocobalt. The EIS has been revised to reflect the current status of consultations on endangered species.

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

Comment number	Comments	Responses
	necessary and possible in order to eliminate this ruinous impact and the threat that it poses to human health.	
CP-3	Additionally, an alternative and adequate system for containment of L-Reactor is mandatory. The existing containment would not shield the environment and its people from distribution of radioactive gases in the event of an accident at L-Reactor. The DEIS emphasizes the "low" probability of such an incident. However, that low probability is a far cry from no probability when so much is at stake.	The existing SRP airborne activity confinement system is designed to trap more than 99 percent of the iodine and particulates that would be released as a result of a reactor accident. Noble gases and tritium releases would not be trapped but would be dispersed by a 61-meter stack. With the SRP confinement system, the consequences of all credible accidents are well within the NRC reference values for reactor siting (10 CFR 100). Also, see the response to comment BF-7 regarding containment. Neither a containment nor improved confinement system would be capable of eliminating potential consequences from all very-low-probability accidents.
CP-4	Because there is a demonstrated conflict of interest between DOE's production and safety goals, we believe an independent oversight committee should be established. "Independent" is defined as outside of DOE, DuPont or NUS Corp.; however, a representative would be included in the Committee. Other proposed participants could include representatives from the states of Georgia and South Carolina, the U.S. EPA, the Nuclear Regulatory Commission (NRC), as well as citizen representation. This later element could, perhaps be filled by choosing representatives from the plaintiffs (those involved in the legal action over L-Reactor's restart), and representatives of regional community organizations or local officials. We believe that such a committee could succeed in improving the public's confidence in DOE's operations and create needed guidelines.	See the response to comment BQ-2 regarding existing oversight mechanisms.
CP-5	We also call for the cessation of the use of seepage basins at SRP as the method for disposal of highly toxic and radioactive substances, which then leak into our water supplies, both surface and ground water. And, in particular, we object to the initiation of yet another seepage basin for use with L-Reactor. The above points are but a few of the concerns which we have expressed to date, but those which we believe must, and can, be implemented prior to the restart of L-Reactor. The DEIS does address many of the variety of points posed by CCCE and	See the responses to comments AJ-1 and BG-4 regarding the use of seepage basins and DOE commitments for ground-water protection.

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

Comment number	Comments	Responses
CP-6	others. However, we believe the DEIS is inadequate. One example is the material gathered in the scoping process. The DEIS scope is based upon information from hearings in February and May of this year, as well as other sources. However, there are errors and deletions of oral testimony in these documents, which lead us to believe the scoping process is incomplete.	DOE based its preparation of the draft EIS on comments received in the Environmental Assessment from August 1982 to August 1983; on the February 9, 1983, Senate Armed Services Committee Hearings; on the 90-day public review and comment period on the record of the Senate Armed Services Committee hearing from April 18 through July 17, 1983; and on a 22-day scoping comment period and hearings on the DEIS that ended August 14, 1983. This EIS addresses the substantive comments that were received. All hearings and meetings conducted by DOE in May and August were recorded by certified court reporters verbatim and published in hearing records/scoping reports. DOE knows of no errors or deletions of oral testimony.
CP-7	As the DEIS stands, DOE's conclusions can be summarized in one statement (p. 4-82) - "Any alternative that postulates a delay of the restart necessarily results in a loss of production that cannot be recovered." The loss in question is the production of nuclear materials, plutonium and tritium, for our country's nuclear weapons program. We dispute DOE's claim for the need based on available documents and occurrences since the mandate was determined in the Carter Administration. But, further, should we accept these claims, whether the "need" is in the form of actual deteriorating warheads, surplus, or in the form of a statement to the Soviet Union, there are alternatives. This administration and DOE directly have proposed the increase of output of nuclear materials through several alternatives to be implemented in the near future, one of which is L-Reactor. We believe it is possible to shift the focus of implementation which would create the drastically needed time to affect the above safeguards, so that the impacts on our lives in this region would be less detrimental.	The statement given on page 4-82 of the draft EIS represents an "impact" from the implementation of a mitigation alternative and is one factor in evaluation of the alternatives. Also see the response to comment BL-18.
CP-8	Because the DEIS does not adequately investigate all of the alternatives, we view this document as insufficient and incomplete. We request that DOE reevaluate the feasibility of combined and expedited sources so that initiatives toward the proper control mechanisms can begin as soon as possible, and thereby avoid the possibility of even further delays in restarting L-Reactor.	See the responses to comments AB-2 and BL-15 regarding information contained in the EIS on need and production alternatives.

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

Comment number	Comments	Responses
CP-9	Throughout the DEIS, as was the case in the EA, the inflexible "need" for nuclear materials is repetitively pitted against our health, our safety and the quality of our environment. Assuming that the above requirements for proper controls could indeed be met without the immediate restart of L-Reactor, and the DOE chooses to turn its back on this possibility, can they justify the probability of accelerated contamination of our air and water supplies, the destruction of our vital wetlands (which are being eliminated worldwide at an alarming rate), and the impacts on the health and safety of the people in this region. And, further, can you justify the cost with which we the taxpayers will be charged in the aftermath of your decisions.	See the response to comment BL-15 regarding the need for defense nuclear material, the response to comment BM-1 regarding DOE's Record of Decision on this EIS, and the response to comment AA-3 regarding DOE's commitment to comply with all applicable Federal and state environmental protection requirements.
CP-10	For example: How is it possible to justify the use of a seepage basin for L-Reactor when this same method of disposal (in the M-Area) has led to contamination of the aquifer and a clean-up price tag well in the millions of dollars? If these damages can be avoided, how can DOE choose otherwise?	As noted in response to comment BG-4 and in EIS Section 4.4.3, use of the L-Area seepage basin would reduce the radiological dose to users and consumers of Savannah River water. Section 4.4.3 describes alternatives to the use of the L-Area seepage basin. Studies of the hydrostratigraphic units show that conditions at L-Area are different from those at M-Area (Sections 4.1.1.3, 4.1.2.2, and 5.1.1.4). If the L-Area seepage basin is used, analyses indicate that the filtered and deionized disassembly-basin wastewater will seep into the shallow ground water and flow laterally to seepline springs along Steel Creek.
	In conclusion, I again urge DOE and the current Administration to seriously consider the concerns expressed here tonight. These past 15 months of scrutiny of L-Reactor and SRP operations have produced only more intense concerns, not less, despite the mounds of documents produced by DOE and DuPont Corp. We believe the time has long been overdue for DOE to take the positive steps of implementation of the preceding safeguards in order to meet their mission and relinquish the questions of its overall operations. Thank you.	
	ADDITIONAL COMMENT MADE AT PUBLIC HEARING OF NOVEMBER 4, 1983	
CP-11	And I would like to point out the cost of cooling towers is only estimated at some 39 million. That seems to be rather unequivocal in some terms.	Comment noted. Also see the response to comment CP-2.

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

Comment number	Comments	Responses
	Statement Provided by The U.S. Environmental Protection Agency Region IV, Atlanta, Georgia U.S. Department of Energy L-Reactor Restart Savannah River Plant Savannah, Georgia November 4, 1983	
	My name is Arthur G. Linton and I am the Federal Activities Coordinator for Region IV, U.S. Environmental Protection Agency. I am presenting this statement on behalf of Charles R. Jeter, Regional Administrator, Region IV, in Atlanta. It should be recognized that our comments address only environmental concerns and do not attempt to rationalize the need for additional weapons grade nuclear material or the need for the restart of this facility in view of other overriding national concerns.	
CQ-1	The Environmental Protection Agency has a long history of involvement with the environmental affairs at the Savannah River Plant and has been intensely involved in the assessment of environmental concerns during the past year. The Regional Administrator has, for example, presented testimony to the Armed Services Committee chaired by Senator Thurmond on the restart of the L-Reactor on February 9, 1983. Our most recent action in EPA has been the review of the Draft Environmental Impact Statement which was required for the restart of the L-Reactor and we are formally responding to the Department of Energy concerning our position. We have expressed concern over a number of significant environmental issues which remain unresolved or are still under study in an effort to effect mitigation. The most important of these matters are groundwater contamination, discharge of heated effluent into Steel Creek (which will result in the destruction of extensive wetlands) and the uncertainty involving the disposal of various potential and actual hazardous wastes generated from reactor operations.	See the DOE response to the entire EPA comment letter included as comment letter "DA" in this appendix.

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

Comment number	Comments	Responses
	On the basis of these concerns, we have rated the Draft EIS as EU-2, that is, we have determined that the L-Reactor restart is environmentally unsatisfactory in its currently proposed design in that the document does not provide sufficient information regarding the corrective measures that will be employed to avoid adverse environmental impacts. We know that the DOE is presently working on developing these measures, in cooperation with the regulatory agencies. We believe that much of the additional information that we have requested is already available to you and should be included in the Final EIS. Of special concern to us is the development of a proper permit under the National Pollutant Discharge Elimination System (which is administered by the State of South Carolina), and the methods to control the contamination of groundwater, and the treatment and disposal of various potential and actual hazardous wastes generated from reactor operations. We will continue to coordinate with the state agencies and DOE with respect to utilizing the regulatory mechanisms that are in place, to insure that the environmental concerns addressed above can be satisfactorily resolved.	

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

Comment number	Comments	Responses
	STATEMENT OF MS. HELEN BLOOM	
	I'm Helen Bloom, and I come as a citizen of Savannah. The Draft of the EIS makes for very scary reading.	
CR-1	In addition to the continuing concern about the contamination of drawn water, about the adverse impact on one thousand-plus acres of wetland, and because of the discharge of thermal effluents, about the deterioration of the Savannah River and the surrounding atmosphere, and the questions on the safe disposal of the high-level waste, there are other areas of concern regarding the Savannah River Plant L-Reactor.	DOE will comply with all applicable Federal and state requirements concerning environmental protection. Section 4.1.1.5 of the EIS compares liquid effluent chemical loads with the corresponding water-quality or drinking-water standard and with concentrations measured in Steel Creek and in the Savannah River above and below the SRP. Available measurements from the Savannah River indicate little variation in measured quantities between upstream and downstream locations from present SRP operations; L-Reactor operation is not expected to alter this situation significantly. As stated in Section 4.1.1.6 of the EIS, the operation of L-Reactor will not violate any ambient air-quality standard. L-Reactor thermal effluent impacts in the river for the reference case are expected to be small; a zone of passage for anadromous fish and other aquatic organisms will exist in the river. The thermal impact to wetlands for the reference case is expected to be similar to conditions that occurred during earlier L-Reactor operation. About 1000 acres of wetlands will be affected over a number of years of reactor operation from the reference case thermal discharge. The impacts on wetlands are described in Section 4.1.1.4 and mitigation alternatives are described in Section 4.4.2 and Appendix I of the EIS. Also see the response to comment AA-1 regarding cooling-water mitigation measures. The volume of high-level radioactive waste to be generated by chemical processing of L-Reactor material was considered in the Defense Waste Processing Facility EIS (Section 5.1.2.8 of the EIS).
CR-2	By restarting the L-Reactor to produce plutonium in an area where there are already three other nuclear reactors in operation, and another reactor on the way, we may be providing terrorists with an exceptionally attractive target area.	See the response to comment BG-9 concerning terrorist attacks.

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

Comment number	Comments	Responses
	What would be the consequences to the more than half-million people living within the 80 kilometer and beyond the vicinity of the reactors if suicidal-type terrorists cause severe damage to or destroy any one of the five nuclear reactors?	
CR-3	Would it precipitate a chain reaction of nuclear reactor destruction?	An accident at one reactor site would not lead to an accident at another site.
CR-4	And finally, we ought to delay restarting of the SRP L-Reactor to study further the very need for plutonium.	The national policy on nuclear weapons, their deployment, and the need for increased weapons is beyond the scope of this EIS.
	Just a few days ago Dr. Carl Sagan and Paul Erhlich, representing the views of many scientists and biologists, have said the latest scientific findings indicate that the United States by itself already has, and in fact has had for several years in its nuclear power arsenal, enough nuclear power armament to destroy all life on earth.	
	Thank you.	

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

Comment number	Comments	Responses
	STATEMENT OF ANDREAS NISSEN	
	I have read from the Draft Environmental Impact Statement, and I am not satisfied with the safety and environmental protection measures in place at the Savannah River Plant. Because many people do not have the technical expertise to determine from that document the damage that will be done to the communities surrounding the Savannah River Plant, I would like to point out something in a very nonsensical way, a down-to-earth way. Insurance companies are some of the largest and most successful institutions in the world. They got that way by professionally assigning risks. For instance, they do not ensure people with bad driving records. They do not ensure hazardous dwellings, or they do not ensure suicidals.	
CS-1	They also will not ensure nuclear facilities, such as the Savannah River Plant. Does this not indicate that these plants must be made safer? It does to me.	An insurance pool in the United States currently provides $160 million of liability insurance for commercial nuclear facilities and nuclear materials transportation in addition to insurance they offer to cover property damage to the facilities themselves. Individual private insurance policies (such as homeowners policies) usually exclude "nuclear damage" because that is covered on essentially a "no-fault basis" by the liability insurance described above. The Federal government is financially responsible for damage caused by its operations.
CS-2	In Savannah River Plant's case, we, the citizens who live here, as has already been stated by several speakers, we need a proper containment dome. We need adequate effluent water decontamination and cooling devices, and because of past experience with nuclear accidents, we need an independent oversight committee to act as a watchdog over this extremely hazardous facility. Thank you for allowing me my comments.	See the responses to comments AA-1, AA-3, and AB-13 regarding cooling-water mitigation alternatives and DOE's commitment to comply with applicable Federal and state environmental protection regulations, the response to comment BF-7 regarding containment, and the response to comment BQ-2 regarding existing oversight mechanisms.

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

Comment number	Comments	Responses
	STATEMENT OF MR. JOHN MACLEAN	
CT-1	My name is John Maclean, and I'm speaking for myself. I have several points, the first being that I have waded through the EIS and "waded through," I think, is the appropriate description, and among several of the facts that I found were not clarified or clear to me were the percentages of cancer deaths that would result from the startup of the L-Reactor and also the percentage of the mutations or deformities in children being born in the area, within the 80-mile area, of the Aiken plant. The rates, as stated in the EIS, were three per thousand cancer deaths and four per thousand for deformities. The problems with these rates is that, if, in fact, they are true, you are talking about a city, say, for example, Savannah, of 100,000 people, you would be talking about 300 people per year dying of cancer because of the L-Reactor or 400 people per year having deformities when they are born, because of the L-Reactor. These levels, of course, are unacceptable. It would be hard to tell your wife or child that they were being sacrificed for the L-Reactor. I think, in fact, that these figures are wrong, that what you mean to say -- I hope you mean to say -- that it's three per thousand, or .003 excess cancer deaths above the ones that you would normally have. The problem is that is not spelled out in the EIS. I think you have to clarify that. It would certainly ease my mind if you would clarify that so that I don't leave the permanent EIS, thinking that I'm going to see my wife or child suffer because of the L-Reactor. I can't believe that the percentages are that high, and I think this should be clarified because it's not clear in the EIS.	The calculated potential excess cancer fatalities and genetic disorders (not the percent of increase) are presented in Section 4.1.2.6 for L-Reactor operation, in Section 5.1.2.5 for support facilities, and in Section 5.2.7 for all nuclear facilities within 80 kilometers. The increased incidence of health effects is expressed in terms of effects (cancer or genetic effects) per 1,000,000 person-rem. The risk estimator factors used in the EIS were 120 cancers and 257 genetic effects per 1,000,000 person-rem. The potential health effects from L-Reactor operation are much less than one excess cancer fatality and much less than one genetic disorder for the entire population living within 80 kilometers of the Savannah River Plant. The pertinent sections of the EIS have been rewritten to clarify how the calculations of health effects were determined. To summarize, the potential health effects from L-Reactor operation are much less than one excess cancer fatality and much less than one genetic disorder for the entire population living within 80 kilometers of the Savannah River Plant.

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

Comment number	Comments	Responses
CT-2	The second point I would like to make is that in the alternatives discussed for the production of plutonium, weapons grade plutonium, one of the alternatives, that being using commercial waste from commercial reactors, is very quickly reviewed and dismissed. It is dismissed because the Atomic Energy Act states that you cannot use commercial waste to make weapons grade or use for military purposes, and therefore, with one sentence, you state in the EIS that this alternative is not feasible. The problems with that is you have spent two hundred-some-odd million dollars. We have rented a room, in four other different places, time and time again, and we have booklets, and we have people with all that money, and with President Reagan stating that, as a matter of policy, and I'm quoting now from Page S-1 of the EIS: "As a matter of policy, national security requirements, not arbitrary constraints on nuclear material availability, shall be the limiting factor in the nuclear force structure." It seems to me that, as a taxpayer, I would like to save my 200 million dollars, and I think that President Reagan's attitude would certainly help the DOE in simply amending the Atomic Energy Act so that you can in fact, use the commercial waste to make plutonium that you need. If you were able to do that, you would be able not to have the L-Reactor. You would not have any problems with cooling towers, you would have any questions about containment domes because you wouldn't be having a reactor. Instead, you would be taking the commercial waste that is being built up and that nobody has any idea what they are going to do with. You can take it straight from a commercial reactor, take it over to either Barnwell or take it to the L-Reactor chemical separator itself and go ahead and process it. You are going to have to cook it longer because you are going to have higher degree of Plutonium 240, but you can do it, and you can do it and save all this money, and all you have to do	See the response to comment BY-2 regarding the use of material from commercial reactors. Additional information on this subject has been added in this final EIS in Section 2.1.1.2.

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

Comment number	Comments	Responses
	with one stroke of a pen is amend Atomic Energy Act, and bingo, you have got it. I think that alternative should be considered a lot more than it has been, and certainly should have been considered before the 200-some-odd million dollars was spent, and I believe the DOE should at least really look to its own lobbyists to try to get that act amended because that would solve everybody's problem. It would help the commercial people getting rid of their waste, and it would help us down here because we wouldn't have a reactor. It would just solve a lot of problems.	
CT-3	The last point is about the cooling tower. The cooling tower would take about 39 million dollars to build. You can build it now and also keep the L-Reactor on line and on time, and in the 18 months that it would take to build it, you could simply cut it in. Your own EIS states this is an alternative. You can build it and cut it in, and you won't lose any time or any plutonium because the L-Reactor would be on line. I think that is an alternative that everyone can live with. I think it's a good compromise. People down here get their cooling tower and the L-Reactor, and the DOE gets their plutonium, all at the same time, and I don't think 39 million dollars is all that much to spend, considering you have already spent 200 million dollars, and considering it's just a drop in the bucket of the deficit. So I think those three things, clarification of the cancer and deformity rates, genetic disorder rates, should be made clear in the permanent EIS, and I think the alternative of amending the Atomic Energy Act should be discussed a little further than it has been, and, thirdly, the alternative of the cooling tower being built and then being cut in while the L-Reactor is already on line, I think, it is a good alternative and should also be further discussed. Thank you.	See 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 OF MR. SPRAGUE	
	My name is Larry Sprague, and I'm speaking for myself. There are several specific questions that I believe should be addressed or addressed more fully by the Environmental Impact Statement.	
CU-1	First off would be the dosage tables, particularly, that are found in Exhibit 4-25, and this is the dosage table that shows the amount of dose of radiation that people outside of the Savannah River Plant might receive. The EIS does not make clear how these figures were arrived at. For instance, were they historical measurements of radiation coming from the L-Reactor? Well, if this is so, then, from my reading of the EIS, it seems that the measuring instruments were on the perimeter of the plant site and therefore, the concentration of radiation would be very slight and very difficult to monitor or detect accurately. Furthermore, the measuring instrument was a thermoluminescent dosimeter, or TLD, for short, which is a relatively insensitive instrument for measuring some type of radiation. Therefore, the cumulative dosage could, in fact, be higher than the table indicates. Furthermore, what standards of maximum dosage will be used? The EIS indicates that the limits will be per DOE regulations. However, I would like to make two points on that. One, in the EIS nowhere are the DOE regulations set out, so the public can have an idea of what the difference is between the NRC regulation and the DOE regulation, and secondly, if the DOE regulations allow a higher dosage than those found in 10 CFR 50, why is that so? Why is it that the DOE deems it all right for the surrounding community to be subjected to this higher level of dosage on the DOE regulations than under 10 CFR 50?	Exhibit (Table) 4-25 in the Draft EIS presents the environmental risk from a hypothetical 10-percent core-melt accident. Section 4.2.1.5 presents the method of calculating this risk. These calculated values are the product of dose consequence and probability per year for the accident. Table 4-22 in the Draft EIS lists the offsite doses from credible accidents. These doses are less than the DOE standards for normal operations (DOE 5480.1a., Chapter 11), which are essentially the same as those used by NRC for regulating the nuclear power industry (10 CFR 20). The dose from a range of accidents is treated probabilistically and compared in Figure 4-11a of the Draft EIS with the NRC design goal for power reactors (10 CFR 100) of 25 rem at the site boundary. The offsite doses from L-Reactor operation (Table 4-19 in the Draft EIS) are based on the average releases of radioactivity for 1978, 1979, and 1980 for the operating C-, K-, and P-Reactors. The releases of radioactivity from these reactors are measured at the point of release to the environment. All radionuclides released are measured quantitatively by a system that includes continuous monitoring plus sampling and analysis in analytical laboratories. The environment is comprehensively monitored by a program described in Section 6.1 of the EIS. This program includes sampling and analysis of drinking water, rainwater, river water, food, fish, vegetation, animals, soil, etc. During normal operations, tritium is the only radionuclide of SRP origin that is detectable in environmental samples by routine monitoring techniques. Thus, it is necessary to calculate offsite doses by a model that accounts for movement of radioactivity in the environment and exposure of man by

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

Comment number	Comments	Responses
		known exposure pathways. This environmental dosimetry model is described in Appendix B of the EIS. The expected releases of radioactivity from L-Reactor given in Sections 4.1.2.1 and 4.1.2.2 was used to calculate the offsite doses shown in Table 4-19 of the Draft EIS.
CU-2	My second point has to do with the radiocesium found in Steel Creek. I understand that the original source of the cesium was from a leak in the primary cooling system to the secondary cooling system. I would like to see in the EIS what has been done to prevent a recurrence of this. In particular, I believe the following steps should be taken. First, a radiation detector should be put in the secondary cooling system to determine when, in fact, you do have a leak, and not only that, but it should indicate present radiation and shouldn't just be detecting cumulative amounts. Secondly, the secondary cooling system should be a closed loop with a demineralizer in it, so that in the event of a leak, the reactor can be operated for a while without the radiocesium being admitted into the environment. Third, a third loop in the cooling system should be added.	As discussed in Section 3.7.2.1 of the EIS, the primary source of radiocesium was leaking fuel elements stored in the disassembly basins in P- and L-Areas, not a leak in the primary cooling system. See Section 3.7.2.1 of the EIS concerning steps taken in the late 1960s and early 1970s to reduce further releases of radiocesium. Also see Sections 2.2.3 and G.3.1.5.3 of the EIS concerning radioactivity monitoring of the secondary cooling water discharged from the reactor heat exchangers. A closed second cooling loop with demineralizer or a third cooling loop is not necessary because the primary loop is continuously deionized and filtered and leakage between the primary and secondary loop is small. Leakage between the primary and secondary loops is continuously monitored and limited to a value that would result in a radiological release that is only a small fraction of acceptable release limits. Should this limit be exceeded, operating procedures require that the reactor be shut down and the heat exchanger be isolated to prevent further leakage. The radiological impact of leakage is a small fraction of the impact of total reactor wastewater discharges to the process sewer, which are well within acceptable limits.
CU-3	My third area of concern is metal fatigue of the reactor vessel. Radiation over a period of time can lead to metal fatigue in the area of the highest neutron influx in the reactor vessel. Now, this reactor vessel was actually in operation for about 12 years. I would like to see this question addressed: First, what is the effect that this has had on the strength of the reactor vessel; have any studies been done, and what are their conclusions; and if no studies have been done, why not?	The effects of neutron irradiation on the stainless steel SRP reactor vessels have been studied (Extended Service Life of Savannah River Plant Reactors, D. A. Ward, et al., DPST-80-539), and it has been concluded that no significant deleterious metallurgical effects have occurred. Furthermore, no future deleterious effects are expected because neutron fluence has been accumulating very slowly since operation with lithium-blanketed charges started in 1968. At the temperatures and

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

Comment number	Comments	Responses
		neutron fluences experienced by SRP reactors, yield strength and tensile strength increase; ductility and impact strength decline with increasing neutron fluence. The temperature of the SRP reactor tank walls is too low for significant swelling to occur from voids or gas bubbles resulting from neutron irradiation. In addition, experimental evidence has demonstrated that a relaxation of preirradiation stresses also results from fast neutron fluence. The reactor tanks are not expected to be affected by fatigue damage because the stresses encountered in the low-temperature, low-pressure system are well below endurance limits, and vibration from process-water circulation has been reduced to a low level.
CU-4	Lastly, I would like to take the DOE to task for the lateness of the Environmental Impact Statement. I realize this is somewhat futile, but it does upset me to see the whole purpose of the Environmental Impact Statement defeated. The whole purpose is for the federal government, before it spends huge sums of money, to take a look at all the facts and possibilities. Well, the government has already spent the money. It has already spent around 200 million dollars. What do we have? A plant that is supposed to produce plutonium, but it is not in operation. It hasn't produced one ounce. Part of the reason is because you haven't produced an EIS, but secondly, there are still serious questions raised about its safety, and these questions could have perhaps been answered, and the answers to these questions incorporated in the rebuilding of the L-Reactor and perhaps the L-Reactor would be in business today, or alternatives such as the Barnwell plant could have been chosen, and three years ago, it might have been possible to amend the Atomic Energy Act and thereby use the Barnwell plant. So, if instead of ramming the L-Reactor down our throats, the government had gone ahead and done an EIS, which was almost self-evident on its face that they had to, and the other alternatives looked at, the L-Reactor might have been made safer in the first instance, might be in operation now, because it was safer, and all these problems would have been taken care of and we wouldn't be under the time constraints we are now, or possibly a cheaper and safer alternative, such as the Barnwell plant, might have been possible. Thank you.	This EIS has been prepared in accordance with the Energy and Water Development Appropriations Act, 1984, and the National Environmental Policy Act of 1969, as amended. The potential environmental consequences of upgrading and renovating L-Reactor--as opposed to operating L-Reactor--were reviewed and determined to be insignificant.

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

Comment number	Comments	Responses
	STATEMENT OF PAUL S. DRAPER, L. R. CASTILIAN, LOUISA GREEN, RANDY (CHILL), A. L. WEEKS, CHARLES H. RAWLINSON, THOMAS M. COMBS, STEVE HIERS, WILLIAM OLIVE, JOHN GRIFFIN AND CECIL PRYOR	
CV-1	It is our opinion that the L-Reactor should not be reactivated until further ecological studies have been made.	The EIS included comprehensive ecological information drawn from more than 100 documents developed over the past 30 years by recognized research organizations (the Savannah River Ecology Laboratory, the Savannah River Laboratory, the Academy of Natural Sciences of Philadelphia, the U.S. Geological Survey, and the University of South Carolina, among others). Extensive ecological studies, both onsite and offsite, are described in Sections 3.6, 4.1.1.2, 4.1.1.4, 4.4.2, 5.2.4, 5.2.5, Chapter 6, and Appendix C. For example, the Academy of Natural Sciences of Philadelphia has monitored the water quality and aquatic biota of the Savannah River for the past 30 years; also, an intensive comprehensive cooling-water study (Section 6.1.3) is monitoring water usage and quality, and wetland, fisheries, and endangered species impacts in Par Pond, the SRP onsite streams, the Savannah River swamp, and the Savannah River from Augusta downstream to near Savannah, Georgia. Section 7.3 of this EIS has been revised to reflect the current status of 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
	LETTER OF ARTHUR H. DEXTER	
	Rt. 1, Box 80A Aiken, S.C. 29801 November 4, 1983	
	Mr. M. J. Sires, III Assistant Manager for Health, Safety and Environment U.S. Dept. of Energy Savannah River Operations Office P.O. Box A Aiken, S.C. 29801	
	Dear Mr. Sires:	
	I was disappointed to find that the Draft EIS had failed to treat, in a technically honest manner, the concerns that I raised in my letter of August 3, 1983. I offer the following additional comments:	
CW-1	1) The Draft EIS fails to cite the technological breakthrough that now permits the ultra-conservative assumption that core melting can be limited to 1% (or is it 3%?) of the fuel. During the several years that I was associated with these concerns, it was commonly assumed that fuel melting would be so extensive that the fuel would melt through the bottom of the reactor tank and come to rest in the pin room, i.e., the room immediately beneath the reactor. That scenario was obviously closer to 100% meltdown than to 1%.	See the responses to comments BL-2 and BL-4 regarding loss-of-coolant accidents.
CW-2	2) I find it curious that the Draft EIS chooses to ignore the research that A. G. Evans and I performed which shows that essentially 100% of radioiodine is released in the volatile form, from water in the presence of a background of ambient radiation. The Draft EIS contention, that the radioiodine would stay dissolved in the water, is completely at odds with these findings.	In analysis of loss-of-coolant accidents resulting in fuel damage, 50 percent of the iodine in the damaged fuel is assumed to become airborne within the process room (see Section 4.2.1.4). No credit is taken for condensation on various building structures and all of the airborne iodine is assumed to reach the carbon filters of the airborne activity confinement system. The remainder of the iodine would be contained in

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

Comment number	Comments	Responses
	It is interesting that while the EIS tries on the one hand to outdistance itself from commercial power reactors when matters pertaining to containment vessels are discussed, it is quick to cite TMI-2 results on radioiodine, (which may or may not have any application to SRP), in preference to in-house results! This matter of the volatility of the iodine, in the presence of ionizing radiation, is a very critical concern as regards the safety of CSRA residents. Obviously the framers of the EIS do not wish to acknowledge that radioiodine is released from the water since this would be an acknowledgment of the contentions of my letter and the inadequacies of present SRP measures for dealing with a meltdown accident.	the reactor, reactor building, moderator, or emergency cooling water. Moderator and emergency cooling water containing radioactivity would be retained in two tanks as discussed in Section 4.2.1.4. Only a small fraction of radioiodine in these tanks would be volatilized. The tanks as originally designed were vented to the atmosphere but were subsequently modified to vent back through the airborne activity confinement system so that no unfiltered radioiodine compounds would be released. The research referred to in the comment is applicable to volatilization of iodine from these tanks. The purpose of the research was to investigate the use of additives to prevent or retard volatilization of iodine from water in the presence of a radiation field. The results of their research were published (A. H. Dexter et al., 1977, "Iodine Evaporation from Irradiated Aqueous Solutions Containing Thiosulfate Additive," 14th ERDA Air Cleaning Conference) and do not support the statements made in this comment. The research showed that after exposure to 10^8 rads, 14.6 percent of the iodine was evaporated with no additives, some additives increased evaporation up to 96 percent while other additives were found to reduce evaporation to as low as 0.044 percent. After modifying the tanks to vent them to the confinement system, concerns regarding volatilization of iodine from the tanks were alleviated.
CW-3	3) I am frankly skeptical about the Draft EIS claim that SRP has developed impregnants that will permit the absorption of organic iodide compounds on carbon. If such is the case, then a major breakthrough of this kind should be extensively documented in the EIS.	Appendix B of the EIS describes the effectiveness of the impregnated carbon filters. The references listed in this appendix, especially the Safety Analysis Report (Du Pont, 1983), contain more details.
CW-4	4) While the Draft EIS fails to provide a technically honest treatment of the concerns raised in my previous letter, I suggest that the 50-million gallon basin is, in effect, a "smoking gun" in that its very existence is confirmation of the scenario that I cited in my letter: It is there to receive the huge volumes of radioactively contaminated cooling water that will flow to it during the aftermath of a *meltdown. There is no other reason for the existence of* this 50-million gallon basin. Lest anyone should experience difficulty in envisioning the volume of this huge	Section 4.2.1.4 describes the design functions of the 225,000-liter underground tank, the 190-million-liter emergency earthen basin, and the 1.9-million-liter tank in the earthen basin. This system was designed to contain radioactive materials resulting from accidents ranging from a spillage of the moderator to fuel melting. See the response to comment BL-4 for further discussion of loss-of-coolant accidents.

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

Comment number	Comments	Responses
	basin, an equivalent basin could be created by excavating a regulation football playing field to a depth of 129 ft. Sincerely, Arthur H. Dexter	

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

Comment number	Comments	Responses
	STATEMENT OF R. EILEEN BULLER	
	October 27, 1983	
	Mr. M.J. Sires, III Assistant Manager for Health, Safety and Environment U.S. Dept. of Energy Savannah River Operations Office P.O. Box A Aiken, S.C. 29801	
	Re: DOE/EIS 0108D	
	Dear Sir:	
	I have completed reviewing the above EIS and wish to have my comments entered in the public record. Living on the edge of the Hanford Nuclear Reservation with its N-Reactor operations, I have developed some strong opinions about such facilities.	
CX-1	First, I believe that containment domes should be installed on all reactors. The possibility of accidental release is of great concern. To argue that such a containment is not cost effective ignores that well known fact (per Three Mile Island) that accidents do happen. All commercial reactors are required to have this design and it is reasonable to want military reactors to have the same.	See the response to comment BF-7 regarding containment domes.
CX-2	Secondly, the closed loop design with its direct discharge into rivers must be stopped. If it were not for the extensive lobbying efforts of two of Washington state's Senators long ago, the hot discharge into the Columbia would not have happened. I believe that this practice must be stopped.	See the responses to comments AA-1, BM-3, and CP-2 regarding cooling-water mitigation alternatives.
CX-3	Thirdly, these DOE managed facilities lack independent oversight when it comes to safety and health. It is imperative that our government restructure this inadequacy and apply independent oversight. The GAO Report on DOE managed facilities showed glaring mistakes at all facilities continually over the past years of operation. That report should be used as further	See the response to comment BQ-2 regarding existing oversight mechanisms. In DOE's comments on the GAO report (which had not been provided by GAO to DOE for review prior to publication), it was indicated that the "...GAO fundamentally misunderstood the

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

Comment number	Comments	Responses
	evidence that the public needs better protection and cannot rely on present DOE management to provide it.	philosophy of DOE's approach to safety and health, and failed to recognize the positive results of this approach." Also, "...many of the specific examples used to support GAO's recommendations were taken out of context, were inaccurate or reflected a misunderstanding of DOE's approach to its Safety and Health Program." These comments, which were provided to Congress on October 7, 1981, also identified the following points, which refute the GAO contentions: o Although not regulated by the Occupational Safety and Health Administration (OSHA), the DOE Health and Safety Program historically has resulted in a much better safety record for DOE facilities than the total OSHA-regulated industries or similar industries regulated by OSHA, such as the chemical industry. o Having health and safety as a line management responsibility ensures clear lines of authority in implementing health and safety requirements, assures that health and safety is an integral part of each program and is properly considered in all phases of a program, assures that the greatest expertise on a specific program is brought to bear on health and safety matters, maximizes the sensitivity of all program personnel to health and safety requirements, and permits utilization of health and safety performance criteria in assessing and motivating program personnel. o DOE provides an effective, independent health and safety overview function through the Assistant Secretary for Environmental Protection, Safety and Emergency Preparedness, who is a Presidential Appointee and who has no nuclear program management responsibilities. o DOE, as part of its continuing internal efforts to improve and strengthen its Health and Safety programs had initiated modifications to improve its programs as a result of the internal evaluation published in March, 1981. This was not taken into consideration in the GAO report.

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

Comment number	Comments	Responses
		o The GAO report failed to identify important disadvantages of potential NRC regulation of DOE facilities including the fact that NRC expertise is primarily with high-pressure light-water cooled reactors as opposed to the low-pressure, heavy-water production reactors at SRP for which the main expertise resides in DOE. In summary, the GAO report does not provide a balanced review of DOE Health and Safety programs, and the effectiveness of these programs relative to those regulated by such agencies as OSHA is demonstrated by the excellent safety record as compared to records for regulated industries engaged in similar activities.
	The thought of further contamination at Savannah River by bringing up the L-Reactor is most distressing. Although I live in Washington, I know how it feels to be at the whim of the DOE and its well-paid contractors. Past mistakes of handling waste, of leakers, of direct river contamination, of slowly moving plumes of tritium and other isotopes into the river and aquifers all evidence that this decision is incorrect. It is time to clean up 40 years' worth of enormous contamination, not to produce more waste. Reprocessing is a filthy process and the health and safety of all of us should be of paramount concern.	
CX-4	Finally, the need of the L-Reactor is in question. From my knowledge of new programs at Hanford such as the Laser Isotope Separation Process and the modification of the head-end of the PUREX plant, it appears that plutonium production is not being neglected and certainly does not need additional L-Reactor product.	See the response to comment AB-8 regarding need. Construction of a shear-leach head-end on the PUREX facility is discussed in this EIS in Section 1.1.2 and Appendix A.
CX-5	If tritium is needed, and I doubt we need any plutonium bombs at all, then use the N-Reactor. These pro-nuclear advocates at Hanford would delight in that thought, as their built-in pork barrel would be guaranteed. By doing this, the N-Reactor's life would be shortened much to my delight. Yours truly, R. Eileen Buller, 1703 West 15th Ave., Kennewick, WA 99336	The need and production of tritium is outside the scope of this EIS. The purpose of the L-Reactor restart is the production of plutonium.

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

Comment number	Comments	Responses

STATEMENT OF MAXINE M. WARSHAUER

3526 Boundbrook Lane
Columbia, S.C. 29206
Nov. 1, 1983

Mr. Melvin J. Sires, III
U.S.D.O.E.
S.R. Operations Office
P.O. Box A
Aiken, S.C. 29801

Dear Mr. Sires:

I would like to submit a personal comment for the Environmental Impact Statement concerning the L-Reactor at SRP. As a South Carolina resident, I am concerned with the effects of

CY-1 re-starting the L-Reactor. I understand that the water to be discharged into Steel Creek is hotter than state safety regulations allow. Flushing cesium into the Savannah River would contaminate drinking water downstream. Furthermore the seepage basins would leak more toxic chemicals into the Tuscaloosa aquifer. And high-level toxic wastes produced at SRP would be raised by 33%.

I am opposed to re-starting the L-Reactor until these environmental hazards can be effectively neutralized.

Yours truly,

Maxine M. Warshauer

See the response to comment AA-1 regarding cooling-water mitigation alternatives, the response to comment AA-2 regarding the relationship of radiocesium and radiocobalt concentrations to EPA standards, and the response to comment AJ-1 regarding ground-water and seepage basins.

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

Comment number	Comments	Responses

STATEMENT OF FRANK VON HIPPEL

Princeton University School of Engineering/Applied Science
Center for Energy and Environmental Studies
The Engineering Quadrangle
Princeton, New Jersey 08544
Phone (609) 452-5445

October 31, 1983

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

Dear Mr. Sires,

Please find attached my comments on the Draft Environmental Impact Statement, L-Reactor Operation, Savannah River Plant (DOE/EIS-0108D).

Sincerely yours,

Frank von Hippel

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

Comment number	Comments	Responses
	November 1, 1983 Comments on the Department of Energy's Draft Environmental Impact Statement on L-Reactor Operation, Savannah River Plant (DOE/EIS-0108D) Frank von Hippel Princeton University Summary Because of time constraints, these comments are limited to the treatment in the Draft EIS of: o the risk from reactor accidents, and o the need for additional weapons-plutonium.	
CZ-1	With regard to the risk from reactor accidents, the final EIS should include an estimate of the consequences of a full-core meltdown followed by a failure of the radioactive gas filtration system. Accidents of this severity are routinely considered in the Nuclear Regulatory Commission's (NRC) risk analyses for civilian power reactors. The DOE's belief that such catastrophic accidents are impossible at the L-Reactor may be due to the apparent neglect of common-mode failures in its accident probability estimates. Since, in any case, such probability estimates are known to be unreliable as predictors of the likelihood of catastrophic accidents at nuclear reactors, the DOE's risk assessment should focus principally on the degree of "defense-in-depth" designed into the L-Reactor's safety systems. From this perspective, the lack of a passive containment building, a standard safety feature of all US civilian power reactors, must be a source of serious concern.	As discussed in Section 4.2.1.3, the airborne activity confinement system is assumed to operate for all accidents considered because of its high reliability and the extremely low probability of a concurrent accident and system failure. Section 4.2.1.4 of this final EIS has been modified to present the basis for the probability criteria used to select accidents for further analysis including those caused by common mode failures. Since startup of SRP reactors, a continued effort has been devoted to the to the review of the effectiveness of reactor safety systems and upgrading of systems. These reviews have included analysis of what has come to be known as "common cause" failures as noted in the response to comment BL-9.

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

Comment number	Comments	Responses
		DOE has focused on the degree of "defense-in-depth" designed into the L-Reactor safety systems by describing these systems and accident experience and analysis in this EIS. Concerns regarding a passive containment building for the L-Reactor are addressed in Section 4.4.1 of this EIS as well as in its detailed description of the benefits of the alternate confinement system in Section 4.2.1. Also see the responses to comments BF-6, BF-7 and BL-11 concerning the adequacy of the L-Reactor confinement system.
CZ-2	With regard to the need for the L-Reactor plutonium, the unclassified discussion offered in the Draft EIS is unnecessarily vague. Essential information has been omitted despite the fact that this information has previously been made public or is easily derivable from public information. Such information, which should appear and be discussed in the final EIS includes: the approximate amount of plutonium already in the US nuclear weapons stockpile, the approximate plutonium production rate of the L-Reactor, and the amount of plutonium in the Nagasaki bomb. The reader of the unclassified EIS would learn from these three numbers that the plutonium already in the US nuclear weapons stockpile is sufficient to make at least 20,000 nuclear warheads and that the L-Reactor would increase this stockpile by only about 0.4 percent a year. These facts are certainly relevant to the L-Reactor restart decision and indeed make implausible assertions that plutonium shortages could delay the deployment of any high-priority US nuclear weapon systems. To further clarify the matter, the DOE should include in the final EIS a list of the weapons systems which it believes would be delayed if the restart of the L-Reactor were postponed or cancelled.	See the response to comment AB-2 regarding information in this EIS on need and production alternatives. 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
	Reactor Accident Consequences People living near the Savannah River plant are entitled to know the potential consequences of a worst-case accident at the L-Reactor. Furthermore, frankness and honesty about this possibility is likely to be in the long-term interests of the government. The traditional AEC-ERDA-DOE public-relations approach to concerns about reactor safety has not done civilian nuclear power any good in the past and is unlikely to do the nuclear weapons production complex any good in the future. More often than not, such a policy seems to backfire and convinces concerned citizens that the risks are greater than they really are.	
CZ-3	The worst-case accident at the L-Reactor would be a full core meltdown with the radioactive gases driven off by the core escaping unfiltered to the human environment. Although the DOE may believe that such an accident has a negligible probability, it is well-known that such probability estimates are unreliable.	See the response to comment CZ-1 and the response to comment BL-12 regarding probability estimates.
CZ-4	The unreliability of estimates of the probabilities of catastrophic nuclear reactor accidents became clear as a result of the many review of the Nuclear Regulatory Commission's Reactor Safety Study (RSS). This study included estimates of the probabilities of catastrophic accidents at two civilian nuclear power plants. The work underlying these estimates was both much more sophisticated and more complete than the L-Reactor risk assessment described in the Draft EIS. Nevertheless, following a prolonged debate and a commissioned outside review by a group on which I served, the NRC concluded in 1979 that "the Commission does not regard as reliable the Reactor Safety Study's numerical estimate of the overall risk of reactor accident." [NRC Press Release, January 18, 1979.]	The probability estimates for the L-Reactor are not derived from those developed for the Reactor Safety Study, WASH-1400, although the basic methodology is similar. However, it should be noted that the Risk Assessment Review Group found in part: "o Despite its shortcomings, WASH-1400 provides at this time the most complete single picture of accident probabilities associated with nuclear reactors." And, "o The Commission accepts the Review Group Report's conclusion that absolute values of the risks presented by WASH-1400 should not be used uncritically...." DOE has not used the probability estimates uncritically.

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

Comment number	Comments	Responses
CZ-5	A measure of the incompleteness of the L-Reactor risk assessment is the fact that it does not even include accident scenarios which could lead to a full core meltdown with failure of the radioactive gas filtration system. In the RSS, such catastrophic accidents were estimated to have a much higher probability (30 times higher for a pressurized water reactor) than the probability given in the Draft EIS for the most severe L-Reactor accident considered there (a relatively benign event involving the melting of only 3 percent of the core with the radioactive gas filtration system effectively preventing a large release of radioactivity to the atmosphere - see Table S-2 of the Draft EIS). Although the probability estimates in both reports must be considered unreliable, the absence in the L-Reactor risk analysis of an accident sequence which would lead to a catastrophic release requires explanation.	See the responses to comments BL-1, BL-2, BL-4, CZ-1, and CZ-4 regarding consideration of a full core meltdown.
CZ-6	The most likely explanation for the missing catastrophic accidents in the L-Reactor risk assessment is not the relative safety of the L-Reactor design - which after all does not even have the passive radioactive gas containment building required at all civilian reactors - but the apparent neglect in the L-Reactor risk assessment of "common-mode" safety system failures. This is the class of failures which would include accident sequences which would simultaneously incapacitate all the L-Reactor emergency cooling systems and the radioactive gas filtration system. It is well-known, from both the RSS and accident experiences such as those at Brown's Ferry and Three Mile Island, that common-mode failures are the most likely cause of catastrophic reactor accidents. A severe earthquake; errors in design, construction or maintenance; and sabotage are only some of the many potential causes of such common-mode failures which should have been considered.	See the response to comment CZ-1, and the responses to comments BL-9 and BL-12 regarding "common mode" failures.
CZ-7	In any case, in the final EIS, the DOE should discuss the consequences of a core melt-down at the L-Reactor with subsequent bypass or failure of the radioactive gas filtration system. As I show below, the seriousness of such accidents can be estimated from results obtained by the RSS.	See the response to comment CZ-1.
CZ-8	For simplicity, I will consider below only radiation doses at a distance 12 km (7.5 miles) downwind from a worst-case L-Reactor	It is not reasonable to apply the results of the Reactor Safety Study to L-Reactor because of the significant differences in

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

Comment number	Comments	Responses
	accident. This is the average distance from the L-Reactor to that part of the site boundary which lies to the south of the reactor (see Fig. 3-2 of the Draft EIS). According to Table B-1 of the Draft EIS, the wind blows in these directions approximately one half the time. The predictions of the Reactor Safety Study whole-body and thyroid doses as functions of downwind distance may be found in the NRC report, Examination of Offsite Radiological Emergency Protective Measures for Nuclear Reactor Accidents Involving Core Melt (NUREG/CR-1131, 1978). It is reasonable to compare these results directly to those in the Draft EIS because the thermal power of the pressurized water reactor considered in the Reactor Safety Study (3200 MWt) is approximately the same as that assumed by the DOE in calculating the consequences of L-Reactor accidents (3000 MWt, according to Table S-2 of the Draft EIS). The accumulation of long-lived fission products in the L-Reactor core is somewhat lower than in a power reactor, but, as is shown in Fig. VI 13-1 of the RSS, the most important contributors to the 2-hour offsite dose are short-lived isotopes which would be present in comparable amounts of the two reactors. (The radioactive inventory assumed for the L-Reactor core is given in Table G-10 of the Draft EIS. That assumed for the pressurized-water power reactor considered in the RSS, is given in Table VI 3-1 of that report.)	design. See the response to comment BF-7 regarding these differences.
CZ-9	Given a 10 mph wind and a 3 hour delay before evacuation, the RSS calculated a "mean projected whole body dose" outdoors, 12 km downwind from a core-melt-containment-failure accident of approximately 10 rems. (See curve E of Figure 5.9 of NUREG-CR-1131.) The corresponding thyroid dose was estimated to be about 1000 rems [Ibid, Fig. 5.12]. These numbers are respectively 25 and 2000 times higher than the largest values shown in Table S-2 of the Draft EIS for the 2-hour whole-body and thyroid doses. Doses of this magnitude would not be associated with a large risk of early death from radiation illness, but they would bring with them a significant increase	Based on the doses presented in the comment from a catastrophic accident, the individual so exposed to 10 rems would suffer an average increase in likelihood of death from cancer from about one in five to about 1.01 in five, equivalent to the risk from smoking 1/2 a cigarette per week for 30 years, hardly a "significant increase in cancer risk over the longer term." Similarly, a 1000 rem thyroid dose would yield a total risk of thyroid malignancy in the order of one in 250, with a negligible risk of fatality, a comparatively low consequence of a very low probability accident categorized as "catastrophic."

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

Comment number	Comments	Responses
	in cancer risk over the longer term. Furthermore, if evacuation were delayed or the meteorological conditions were adverse, whole-body doses could rise above the levels (200-300 rems) where fatalities from radiation illness would begin to occur (NUREG/CR-1131, Figs. 5.10 and 5.221. Land contamination from atmospheric releases of radioactivity on the scale of the worst accidents considered in the Reactor Safety Study would also be much more severe than for those accidents considered in the Draft EIS. For example, the RSS estimated that, even if techniques existed which could be used to reduce the radioactive contamination of thousands of square miles by 95 percent, residents would typically have to vacate for years areas up to 30 miles downwind from a core-meltdown-containment-failure accident (WASH-1400, Fig. VI 13-27). In the absence of such effective decontamination techniques, this interdicted area would extend about 100 miles downwind.*	
CZ-10	Not even considered in the Draft EIS are the potential releases of the much larger inventories of radioactive waste elsewhere on the Savannah River site which might occur as an indirect result of an accident at the L-Reactor. What would happen, for example, to the huge inventories of Cesium-137 in the high level waste tanks in the F- and H-areas, if, as a result of radioactive contamination by an accident at the L-Reactor, it became impossible to maintain the cooling of these tanks?** All these consequences should be carefully discussed in the final EIS.	The waste storage tanks are equipped with cooling coils which are supplied with water from a closed-loop cooling system, which in turn, is cooled by heat exchangers supplied with well water. Loss of cooling in a waste tank containing fresh high-heat waste, a tank with a maximum rate of heat generation, would cause the temperature of the waste to increase to the boiling point over a period of about a week unless corrective action were taken. The maximum sludge and supernate temperature for each waste storage tank is recorded daily so that adequate time would be available to identify a cooling deficiency and to restore full cooling or to initiate supplementary cooling to avoid overheating. In addition to backup cooling water supply, each cooled waste tank is provided with a condenser as a backup for its cooling coils. There is presently no known accident that would occur at L-Reactor and cause a concurrent failure of the waste tank cooling system. In addition, the distance to the waste tanks from L-Reactor are sufficiently far that access and all necessary maintenance to the waste tanks would continue to be performed in the unlikely event of an accident at L-Reactor.

*See also Jan Beyea and Frank von Hippel, "Containment of a Reactor Meltdown, Bulletin of the Atomic Scientists, August/September 1982, p. 52.

**See Waste Management Operations, Savannah River Plant, (ERDA, Draft Environmental Impact Statement, ERDA-1537, 1976), pp. III-96 and III-97 for a suggestive although incomplete discussion of the problem of loss-of-cooling in Savannah River high level waste storage tanks.

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

Comment number	Comments	Responses
	The Urgency of Additional Plutonium Production for Weapons	
CZ-11	Although the reactor accident risk assessment in the Draft EIS is obviously inadequate, it is at least accessible for independent peer review and will hopefully be improved as a result. In the case of the claimed need for the L-Reactor plutonium, however, the DOE appears to have used the excuse of classified information to avoid a public critique of its analysis. As will be shown below, it was unnecessary for the DOE to adopt this position. The principal numbers required to judge the need for the L-Reactor plutonium are in the public domain. Furthermore, these numbers tend to cast doubt on any claims of urgency for the restart of the L-Reactor. One can easily estimate, for example, from the published numbers for the quantities of Strontium-90 and Cesium-137 in the accumulated radioactive wastes at the DOE's Savannah River and Hanford sites, how much U-235 was fissioned in the AEC-ERDA-DOE production reactors and therefore how much plutonium these reactors produced. If one does this, one arrives at an estimate of approximately 120,000 kilograms of plutonium in the U.S. nuclear weapons stockpile. One can also easily calculate from the 2350 MWt nominal thermal power of the L-Reactor given in Table G-5 of the Draft EIS that it will be able to produce about 500 kg of weapon-grade plutonium per year - or approximately 0.4 percent of what the U.S. already has in its weapons inventory. Finally, we know from a declassified memorandum from General Groves (dated 18 July 1945) to the then Secretary of War, that the nuclear bomb which destroyed Nagasaki contained approximately 6 kg. of plutonium. This means that, even in the absence of the advances in nuclear weapons technology since 1945,	See the response to comment AB-2 regarding information in this EIS on need and production alternatives. 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
	the amount of plutonium currently in the U.S. weapons stockpile would be sufficient to make 20,000 Nagasaki weapons.* The explosive yield of these weapons could, of course, be enormously increased by using them to trigger a second stage thermonuclear reaction. The bare facts above by themselves make implausible that the lack of future plutonium production from the L-Reactor would delay any high priority U.S. nuclear weapons system. The DOE could, however, further clarify the issue by including in the final EIS a list of the weapons systems which it believes would be delayed if the restart of the L-Reactor were postponed or cancelled. Conclusion As a result of the review documented above, I conclude that the DOE has not provided in the Draft EIS an analysis of the quality which should be required for a federal action as significant as the L-Reactor restart decision.	

*The U.S. also has in its nuclear weapons stockpile sufficient highly enriched uranium to make additional tens of thousands of nuclear warheads. The detailed documentation of this fact, along with the estimates given above for the U.S. weapons-

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

Comment number	Comments	Responses

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30365
November 4, 1983

4PM-EA/GM

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, S.C. 29801

Dear Mr. Sires:

In accordance with Section 309 of the Clean Air Act and the National Environmental Policy Act, the Environmental Protection Agency has reviewed the Draft Environmental Impact Statement, and appendices, on the proposed resumption of L-Reactor operation at the Savannah River Plant (Barnwell County) South Carolina. Our evaluation reveals that there are a number of significant environmental issues resulting from this action which remain unresolved or are still under study in an effort to effect mitigation. The major issues are groundwater contamination associated with certain of the reactor's support facilities, discharge of heated effluent into Steel Creek which will result in the destruction of extensive wetlands within the creek and its delta with the Savannah River, and uncertainty involving the treatment and disposal of various potential and actual hazardous wastes generated from reactor operations.

The enclosed comments address all the issues which we have determined or suggest require additional assessment in the Final EIS. Nevertheless, the information in the document, coupled with our extensive dialogue with your staff members and this agency's long-term association with the Savannah River Plant,

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

Comment number	Comments	Responses
	allow us to make a reasoned decision on the proposal's overall environmental acceptability. On the basis of the outstanding water quality issues, a rating of EU-2 was assigned. That is, we have determined important ground and surface water impacts resulting from the facility's operation will be environmentally unsatisfactory in its currently proposed design in that the document does not provide sufficient information regarding the corrective measures that will be employed to avoid adverse environmental impacts. We know that the DOE is presently working on developing these measures, in cooperation with the regulatory agencies. We believe that much of the additional information that we have requested is already available to you and should be included in the Final EIS. If we can be of any assistance to you on this matter or you wish to discuss any of our observations/suggestions, Howard D. Zeller (FTS 257-3476) will serve as our point of contact. Sincerely yours, Charles R. Jeter Regional Administrator Enclosure	

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

Comment number	Comments	Responses
	L-REACTOR SAVANNAH RIVER PLANT GENERAL OBSERVATIONS AND SPECIFIC COMMENTS	
DA-1	o The Draft EIS describes the major environmental effects of the project. However, the final EIS could be improved by the inclusion of a more complete description of the deficiencies in the present reactor and attendant support system, and indicating what will be done to correct these conditions. A survey of the projected improvements and new items required for the overall facility to meet air and water quality standards reveals the shortcomings of the present system. It also reveals certain of the cleanup items that are necessary to meet requirements of the Resource Conservation and Recovery Act (RCRA) and Comprehensive Environmental Response Compensation and Liability Act (CERCLA), or DOE equivalent standards. o Most of the improvements necessary to meet the desired standards are adequately described in Chapter 5, "Incremental, and Cumulative Impacts from L-Reactor Operation." However, we suggest that they be summarized in the first chapter, "Summary." Individual detailed coverage could then be given under "Environmental Consequences" in each of the chapters covering items which need mitigation or improvement. The major items in this regard involve addressing surface water discharges of certain contaminants, mitigation of thermal discharges, and better techniques for handling of hazardous materials. A clean-up/monitoring plan, to assess the present zone of contamination, is of special interest. Particular care must also be taken in regard to potential/actual groundwater supplies in those areas already determined to be contaminated or anticipated to become so. o The Draft EIS contains a summary of projects which are being planned or are underway to correct the major deficiencies noted above. These facilities/cleanup measures are vital to any restart effort since they are necessary for the safe operation of the plant and subsequent attainment of air and water quality standards. This should be made clear in the Final EIS.	All applicable Federal and state requirements for air and water quality will be met by L-Reactor, including NPDES permit conditions. In this final EIS, an expanded discussion of cooling-water mitigation alternatives and the SRP groundwater protection and remdial action programs have been included. Pursuant to the suggestions contained in these comments, the summary to Volume I of this EIS identifies the mitigative actions to be taken by DOE, as well as the commitments with respect to other environmental protection programs.

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

Comment number	Comments	Responses
DA-2	o The Draft EIS fails to address the impact on the groundwater system from the increase in effluent and waste volumes which will be generated at supporting facilities when the L-Reactor restarts. The report does state (Table 2-2) that there will be a 33% increase in effluent volume at the Fuel Fabrication Facility and at the Chemical Processing Facility, together with a 33% increase in waste volume to the Waste Management Facility. Yet, the Draft EIS omits any further discussion of the implications of the increased volume on the planned remedial actions. It also fails to develop alternative strategies to deal with the additional material. Development of alternatives to deal with this issue was one of the essential suggestions EPA made in its previous coordination efforts on this facility. These options need to be included in the Final FIS.	The EIS contains discussions of potential impacts to the ground waters beneath the SRP from the operation of L-Reactor and its support facilities (Sections 4.1.1.3, 4.1.2.2, 4.3.3, 5.1.1.2, and 5.1.1.4). These sections have been expanded to provide a more thorough discussion of groundwater impacts. As noted in the EIS, the incremental impacts to the shallow aquifers beneath the central shops, burial ground, and M-, F-, H-, and K-Area basins, and impacts beneath L-Area are expected to be minor. Alternatives to the use of the L-Reactor seepage basin are discussed in Section 4.4.3. Use of seepage basins elsewhere on SRP and the use of the SRP burial ground are all being evaluated on a sitewide basis. These facilities were used when L- and R-Reactors were operating. The incremental effects of L-Reactor operation are not likely to appreciably affect planned remedial actions. Alternative strategies to deal with the incremental releases of liquid wastewater and low-level radioactive wastes are discussed in the "SRP Ground-Water Protection Implementation Plan." This plan has been reviewed by the State of South Carolina and EPA and is currently being revised based on their comments. This plan will be the subject of a separate NEPA review (Section F.6). The DOE's commitment to the protection of ground-water quality are discussed below. As noted in the opening remarks to the public hearings on the L-Reactor DEIS, the DOE is committed to (1) an expanded program of sitewide ground-water monitoring and study; (2) the involvement of the State of South Carolina in onsite and offsite ground-water monitoring activities; and (3) mitigative actions at SRP to reduce pollutants released to the ground water as needed. Additional details are provided in Sections 6.1.6 and F.6 of this EIS. Current plans call for discontinuing the use of the M-Area seepage basin before April 1985 and operating a process wastewater-treatment facility at that time. Based on Congressional authorization and approval of a FY 1986 funding request, DOE plans to operate an effluent treatment facility by October 1988 to process wastewater and discontinue the use of the F- and H-Area seepage basins (Section 5.1.1.2).

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

Comment number		Comments	Responses
DA-3	o	According to DOE's "Groundwater Protection Implementation Plan," the proposed restart comes at a critical stage in the management of SRP's groundwater problem. Three facilities, Fuel Fabrications, Chemical Processing and Waste Management, are scheduled for decommissioning in the near future since they have been responsible for significant groundwater contamination.	As mentioned in response to comment DA-2, the "SRP Ground-Water Protection Implementation Plan" was recently developed to examine strategies and schedules to implement mitigative actions required to protect the quality of the groundwaters beneath SRP. Implementation of mitigative actions would be accomplished under DOE's Resource Conservation and Recovery Act requirements, and would be compatible with the State of South Carolina's hazardous waste management requirements. The small incremental discharges due to L-Reactor restart will be accounted for in the design of effluent treatment facilities that will replace existing seepage basins. The sitewide ground-water protection plan will be the subject of a separate NEPA review (Section F.6). This NEPA review on the ground-water protection plan will cover such topics as seepage basin decommissioning, cleanup levels, costs and schedules, and need for institutional controls.
DA-4		To comply with the Congressional mandate, the Fuel Fabrication Facility basin will be closed out by June 1985. At that time, wastewater will be routed to a wastewater treatment unit. At present, the seepage basin which receives effluent from the Fuel Fabrication Area is impermeable to downward percolation. This results in effluent overflows in a southwesterly direction to a lake down gradient. Severe contamination in the upper aquifer poses an imminent threat to a deeper aquifer that supplies drinking water to plant employees and off-site communities. Even though this could only be a short-term situation, the potential health and safety implications should be addressed in the Final EIS.	Pollutants, principally chlorinated hydrocarbons used as degreasers, that were released to the M-Area basin, leaked from the process sewer, and spilled from the M-Area solvent tank in the early 1960's, have migrated into the Tertiary sediments. This contamination is discussed in Sections 5.1.1.2. The sewer line to Tims Branch no longer receives process wastewater and the line to the M-Area basin has been repaired; discharges to the M-Area basin will be discontinued by April 1985. Although seepage basins have been in service at SRP since the mid-1950s, drinking water from the Tuscaloosa wells in the central portion of the SRP does not appear to be contaminated by radionuclides or chlorinated hydrocarbons. However, in 1983, two wells producing from the Tuscaloosa in A-Area were found to have low concentrations of chlorinated hydrocarbons; concentrations in water samples from these wells ranged from less than 3 to less than 27 micrograms per liter. Based on recent investigations by Geraghty & Miller (1983) the following findings have been made with respect to the entry of chlorinated hydrocarbons into the Tuscaloosa Aquifer: "The presence of trichloroethylene in well 53-A indicates that contaminants most likely are migrating from the shallower Tertiary zone downward along the outside of the well

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

Comment number	Comments	Responses
		casing into the gravel pack outside of the well screen section. The contaminants appear to enter the well in the upper part of the screened section between approximately 400 and 500 feet bls. An alternate interpretation considered is that the contamination is entering the well from the upper Tuscaloosa itself. However, this zone is free of contamination only 250 feet away, as shown by the analyses of water samples from monitor wells MSB-34 TA and TB." Public health and safety will be protected by the extensive monitoring program and plume management and remedial action strategy that is planned for M-Area. When monitoring first confirmed the presence of chlorinated hydrocarbons in water from A-Area Tuscaloosa wells, the contaminated wells were shut down to protect onsite personnel. The monitoring in A- and M-Areas and neighboring municipal water wells has shown that the contaminants have not migrated offsite and that no offsite health risk will exist in the foreseeable future. The M-Area ground-water remedial action project, scheduled for implementation in August 1984, is being designed to prevent chlorinated hydrocarbons from reaching the Tuscaloosa Aquifer and any offsite well producing from the Tertiary ground-water system (Steele, 1983). The remedial program will arrest further migration of the present contaminant plume in the Tertiary ground-water system. State and Federal agencies are reviewing plans for impeding the growth of the contaminant plume and the removal of the chlorinated hydrocarbons using a combination of recovery wells, and a large air-stripper with a capacity of at least 9 times the incremental discharges to the M-Area seepage basin. Pilot and prototype air-strippers are currently operating in M-Area with capacities of 0.075 and 0.18 cubic meter per minute,respectively. In addition, the health of onsite personnel will be protected by changes in the water distribution system, which will obtain potable water only from the A-Area Tuscaloosa wells, which are unlikely to receive contamination from Tertiary aquifers. DOE has recently conducted a workshop to discuss and review the M-Area remedial action program. Participants included the EPA, SCDHEC, SC Water Resources Commission, USGS, DuPont, and Geraghty & Miller. All agreed that the planned program is sound technically.

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

Comment number	Comments	Responses
		The L-Reactor incremental releases to the M-Area seepage basin are currently projected to be 0.16 cubic meter per minute; they are expected to be substantially smaller by the end of 1984. The incremental releases will not contaminate the groundwater within the Tuscaloosa Formation, nor will drawdown of the Tuscaloosa Formation by pumping in A-Area increase the movement from the seepage basin and Lost Lake areas to the watertable. The A- and M-Area ground-water remedial action project is scheduled to be operating by August 1984. The recovery wells will intercept seepage from the M-Area seepage basin and Lost Lake areas when it reaches the water table in about 10 to 17 years. Use of the M-Area seepage basin is scheduled to be discontinued by April 1985, when a wastewater treatment facility will be in service. Additional details are provided in Section 5.1.1.2, which has been expanded.
DA-5	Decommissioning of the Chemical Processing Facility basins is planned for late 1988. The effluent will then be routed to a wastewater treatment unit, with subsequent discharge to surface water. The present effluent, which is discharged to seepage basins, meets the definition of a hazardous waste based on pH and chromium. Groundwater in the area has been contaminated by both of these constituents, as well as radionuclides. As a result of seepage, surface streams and adjacent wetlands are receiving contaminated discharge from the groundwater system. Any additional discharge volume (i.e., the 33% additional volume from L-Reactor operation) can only contribute to the existing problem. Again, the health and safety implications of this issue need to be addressed in the Final EIS.	The amount of mercury and chromium released to the Separations Areas seepage basins has decreased since the early and mid-1970's. Before 1972, approximately 7.9 and 9.4 kilograms of mercury were released per reactor to the F- and H-Area basins, respectively. More recently, the average contribution per reactor has been about 0.7 and 2.1 kilograms, respectively. Releases of mercury to these basins is currently 0.5 and 8.0 kilograms per reactor. The addition of a second evaporator to process radioactive waste in the H-Area waste tanks has caused a small increase in the amount of mercury added to the H-Area seepage basin since mid-1982. In 1975 approximately 120 and 2310 kilograms of chromium were discharged to the F- and H-Area seepage basins respectively. The discharge of chromium to the H-Area seepage basin since 1982 was principally due to the processing of radioactive waste produced prior to 1982. After processing by the waste evaporator, the concentrated fractions are sent to the high-level radioactive waste storage tanks. Newly generated chromium that comes from the RBOF facility, which processes offsite fuels and removes oxide from onsite target assemblies, is processed through a waste evaporator. This process step greatly reduces the amount of chromium released to the H-Area seepage basins. Incremental releases of chromium to the H-Area seepage basin from SRP reactor support operations are currently about 0.2 kilogram per year per reactor and are not expected to be hazardous.

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

Comment number	Comments	Responses
		On an annual average basis the releases of mercury and chromium to the F- and H-Area seepage basins are expected to remain at levels below those considered hazardous. Weekly composite analyses showed that the influent streams to these seepage basins were not hazardous with respect to mercury and chromium in 1982 (J.D. Spencer letter to G.A. Smithwick of 13 May 1983); these waste streams could be frequently classified as hazardous on the basis of low pH. In 1983, however, the waste streams to the H-Area basins exceed the hazardous limits of mercury and chromium about 10 percent of the time. Most of the chromium entering the basin is related to the processing of non-SRP fuel elements. In 1983 mercury exceeded the 200 microgram per liter hazardous limit in 6 weekly composite samples, reaching a maximum of 640 micrograms per liter. The source of mercury to the basins is waste tank evaporator overheads. Although more mercury will go to tanks as a result of L-Reactor restart, discharges of mercury should not increase significantly. Also, fewer exceedances of the mercury limit are expected because the amount of mercury being released has been reduced. The continued use of the F- and H-Area seepage basins is being evaluated on a sitewide basis (Section 6.1.6. and F.6 of the FEIS) Waste treatment facilities for the F- and H-Areas are being studied and bench scale demonstrations are being performed. The draft SRP Groundwater Protection Implementation Plan discusses the schedule for completion of the waste treatment facilities in the Separations Areas (October 1988) provided Congressional authorization and appropriation is obtained. The L-Reactor incremental releases to the Separations Areas seepage basins are projected to be 0.04 cubic meters per minute and 0.09 cubic meters per minute to the F-Area and H-Area seepage basins, respectively. The incremental releases are expected to increase the concentrations of constituents in the contaminant plume by about 7 percent. The water quality ofFour Mile Creek will be impacted as the ground water flows into the creek through seepline springs in lowlying wetland areas. Concentrations of constituents in the creek water will be increased by about 7 percent. However, drinking water standards are not expected to be exceeded, and the quality of the creek water is expected to be similar to that of the Savannah River below the outfall of C-Reactor. Radioactive constituents will meet DOE criteria for releases to uncontrolled areas when Four Mile Creek flows into the Savannah River. The direction of

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

Comment number	Comments	Responses
		ground-water flow and the ground-water islands make it highly unlikely that any contaminated shallow ground water will reach offsite ground-water users (Du Pont, 1983; DPST-83-829). Beneath the central portion of SRP, the predominant flow directions in the Congaree and Tuscaloosa are toward the Savannah River; these formations discharge to the Savannah River. Also see the responses to comments DA-2 and DA-4.
DA-6	The draft "Groundwater Protection Implementation Plan" proposes to decommission the Low Level Waste Burial Ground in the late 1990's; however, EPA has requested that the decommissioning and alternate disposal plan be expedited. The present practice of disposing of low level radioactive waste, in combination with chemical waste, into trenches in the ground does not represent state-of-the-art technology and may violate RCRA requirements. To increase the volume of waste which must be handled by this facility before the decommissioning plan has been developed, is out of logical phasing. Practically speaking, SRP needs to develop a proper disposal facility to handle the present volumes of waste materials before any additional waste is generated. Impacts on the groundwater system from the discharge of contaminated water from the disassembly basin to a seepage basin located near the L-Reactor, have been discussed in the Draft EIS. Wastewater discharged to this basin is primarily contaminated with radionuclides which contaminate the upper aquifer and eventually discharge to Steel Creek. Alternatives to seepage basin disposal were discussed and evaluated in the EIS, with the subsequent conclusion that seepage basin disposal is the preferred alternative. As stated before, seepage basins do not represent state-of-the-art disposal technology and may violate RCRA requirements. Every attempt should be made to develop an appropriate alternative to replace the seepage basin, or to improve	SRP operating procedures do not allow hazardous wastes to be disposed of at the SRP burial ground. An implementation plan is being developed at SRP to assure compliance with DOE requirements (DOE Order 5480.2) for the management of hazardous and radioactive mixed waste. A groundwater protection plan and a RCRA program management plan have been formulated by DOE for SRP. Research programs at SRP are investigating new methods for immobilizing and improving methods of low-level radioactive waste disposal at SRP. These programs include (1) wastewater treatment processes; (2) beta-gamma waste incineration; (3) immobilization and stabilization of waste in cement grouts (saltcrete and ashcrete); and (4) greater confinement disposal technologies. Effluents discharged to F-, H-, and M-Area seepage basins frequently meet the definition of hazardous waste because of low pH. Typically, these waste streams can contain 1,1,1-trichloroethane (M-Area), chromium (H-Area), and mercury (F- and H-Areas). In 1982 the concentrations of these substances were below levels considered to be hazardous (J. D. Spencer letter to G. A. Smithwick dated May 13, 1983). However, in 1983 the waste streams to the H-Area seepage basin exceeded the hazardous limits for mercury and chromium about 10 percent of the time. As noted in response to comment DA-4, almost all of the chromium entering the H-Area seepage basin is related to the processing of non-SRP reactor fuel elements. In 1983, mercury exceeded the 200 microgram per liter hazardous limit in 6 weekly composite samples, reaching a maximum of 640

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

Comment number	Comments	Responses
	water quality before discharge to the groundwater, to minimize impact on the groundwater system and associated discharge areas. In the meanwhile, the range of potential consequences of this situation should be discussed in Final EIS.	micrograms per liter. The total discharge (including the L-Reactor incremental releases) of chromium and mercury are expected to be below their respective hazardous limits on an annual average basis. The contaminant plumes from the F-, and H-Area basins will be confined to the Tertiary groundwater systems. DOE Order 5480.2, "Hazardous and Radioactive Mixed Waste Management," was issued on December 13, 1982, to regulate the generation, transportation, treatment, and/or disposal of hazardous wastes at DOE defense-related facilities. As noted in Chapter 7 of this Final EIS, DOE is implementing--under the 22 February 1984 Memorandum of Understanding with EPA--a Hazardous Waste and Radioactive Mixed Waste Management Program which is comparable to the design and performance criteria, other technical requirements, and record keeping and reporting requirements of the regulations adopted by EPA to implement RCRA. The SRP hazardous-waste management program will meet the technical requirements of the EPA hazardous-waste regulations (40 CFR 260-266 and 270) and is compatible with SCDHEC requirements. DOE is also working closely with SCDHEC on all activities related to hazardous-waste management. The remedial actions proposed in the draft "SRP Ground-Water Protection Implementation Plan" are consistent with the DOE RCRA compliance program; initiatives will be compatible with SCDHEC hazardous-waste management regulations. DOE is formulating closure plans for seepage basins and the burial ground on a sitewide basis. The NEPA review of the ground-water protection plan will, when applicable, address the decommissioning of certain facilities to the extent practicable. The consequences that might result from the use of the L-Reactor seepage basin or one of the alternatives to its use have been discussed in Sections 4.1.2.2 and 4.4.3. Sufficient details are provided to assist the decisionmaker in formulating a reasoned decision relating to the disposal of deionized and filtered disassembly purge water.

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

Comment number	Comments	Responses
DA-7	o Control and disposal of hazardous wastes generated by the operation of the L-Reactor are not adequately addressed. The types and quantities of hazardous wastes produced and how those wastes are handled in terms of storage, treatment and ultimate disposal need to be detailed. The Final EIS should address the type of technical standards which DOE will use for the storage, treatment, and disposal of hazardous wastes, as well as how DOE will comply with state and federal environmental permitting requirements for hazardous waste facilities under RCRA. In a letter to EPA in November 1980, DOE stated that it considered its hazardous waste activities at the Savannah River Plant to be exempt from regulation under RCRA. However, a June 22, 1983, opinion from A. James Barnes, EPA General Counsel, states that RCRA applies to DOE facilities except in instances where application of those regulations would be inconsistent with the requirements of the Atomic Energy Act. From the limited information on page 5-2, it appears that the facility does generate some wastes which will be regulated under RCRA. Therefore, the Final EIS should provide a list of those waste chemicals which are considered hazardous under RCRA, and a description of how these wastes will be handled in compliance with RCRA. During the permitting process, EPA will evaluate all groundwater quality data, the design and operating procedures for those basins/ponds, and any other hazardous waste activities. Section 5.1.1.2 describes the increase in contamination of the groundwater as a result of the L-reactor operation but does not discuss any remedial action for cleaning up the groundwater. This contamination is coming mainly from seepage basins in the F and H areas, Since the "SRP Groundwater Implementation Protection Plan" is mentioned in the response to DA-2, and since the corrective action for the seepage basins in areas F and H would be accomplished under that plan, a tentative schedule for its implementation should be developed. This schedule would take into consideration the the uncertainties of the review process. If Order DOE 5480.2 incorporates the provisions of RCRA by reference, as stated, then it contains requirements for corrective action for groundwater contamination.	Sections 4.1.1.5, 4.1.1.7, 4.1.2.1, 4.1.2.2, 5.1.1.2, 5.1.2.1, 5.1.2.2, and 5.1.2.8, which have been expanded, discuss discharges from L-Reactor and the incremental discharges in the F- and H-Areas and M-Area. The handling of these wastes will be in accordance with DOE Order 5480.2 and the 22 February 1984 Memorandum of Understanding with EPA. DOE will cooperate with and coordinate these activities with SCDHEC. Effluent treatment facilities that would take the place of the F- and H-Area seepage basins are scheduled to be completed by October 1988, and the seepage basins are scheduled to be decommissioned by the end of 1990, pending Congressional authorization and appropriation. Current plans call for discontinuing the use of the M-Area seepage basin before April 1985 and operating a process wastewater-treatment facility at that time. The M-Area ground-water remedial action project is scheduled for implementation in August 1984. Also see the response to comment DA-6.

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

Comment number	Comments	Responses
DA-8	o The effect on groundwater of material leaving the seepage basins poses some further environmental concerns involving RCRA. F&H area studies have shown that chemicals, e.g., mercury, 1,1,1,-trichloroethane and chromium from the seepage basins have entered the shallow groundwater system and are migrating through the saturated soil to outcrop zones and springs near Four Mile Creek. Although water quality in the Savannah River is expected to meet the criteria for a Class B waterway below Four Mile Creek, there is no mention of how these groundwater discharges affect Four Mile Creek. This appears to demonstrate a method of discharging pollutants to a stream without a permit by using the groundwater as the medium of transport. Furthermore, RCRA requires that all hazardous wastes be contained or, if a treated by the land treatment method, that the contaminant not go beyond the treatment zone. Since there is a definite relationship between reactor operations and waste products generated and stored in all areas of SRP, this matter needs to be resolved in the Final EIS. o Likewise, contaminants discharged to the seepage basin in M area have entered the groundwater. Methods to remove these contaminants are presently being investigated. Nonetheless, the basin will be deactivated in 1985. The resultant mitigation plan developed from these studies should be expeditiously formulated and made available for interagency review in a supplemental document. We recommend that closure plans for M area be developed immediately and that these closure plans contain enforced schedules. Post closure plans describing groundwater monitoring and corrective action for groundwater contamination, should also be developed. The closure and post closure plans should be submitted to EPA and the South Carolina Department of Health and Environmental Control for review. o In a related matter, there is concern that the resumption of L-Reactor operation will result in increased groundwater withdrawal. This could cause additional drawdown of the groundwater level beneath adjacent seepage basins, thereby increasing the tendency of contaminants to enter the groundwater and migrate. This possibility should be factored into any mitigation study with the range of potential impacts discussed in the Final EIS.	RCRA considerations are discussed in the responses to comments DA-6 and DA-7. Gas chromatograph scans for hydrocarbons in the effluent released to F- and H-Area seepage basins show concentrations of less than 66 micrograms per liter. These concentrations are similar to those measured in upgradient and downgradient ground water (Section F.5.3; Du Pont 1983, DPST-83-829). As noted in Sections 5.1.1 and 5.1.2 discharges of chemicals and radioactivity have migrated from the ground water beneath the F- and H-Area seepage basins to outcrop zones near Four Mile Creek. As a result, concentrations of chloride, nitrate, sulfate, sodium, and calcium are substantially higher in Four Mile Creek upstream of C-Reactor cooling-water effluent than in Upper Three Runs Creek; the concentrations of these chemicals in Four Mile Creek are similar to those in the Savannah River (Table 4.17 in DOE, 1982, DOE/EIS-0082). Tritium and nonvolatile beta activities are also elevated in this stretch of Four Mile Creek, (Ashley et al., 1982, DPSPU 80-302), but do not exceed DOE concentration guides for uncontrolled areas. Incremental impacts to the water quality due to L-Reactor operation are expected to be small. At most, the concentrations will increase by 7 percent. The water quality of Four Mile Creek above the C-Reactor outfall will remain similar to that of the Savannah River. Tritium and other radionuclides in Four Mile Creek will not exceed DOE concentration guidelines for releases to uncontrolled areas. The DOE commitment to ground-water quality protection and remedial actions in relation to M-Area are discussed in response to comment DA-2. The migration of contaminants from seepage basins into the shallow groundwater systems and the protection of public health and safety are discussed in the revised Sections 4.1 and 5.1 of this EIS as well as in response to comments DA-4 and DA-5. Several hydrogeologic systems exist beneath the SRP seepage basins. A thick clay unit of the basal Congaree and upper Ellenton formations overlies the Tuscaloosa sands and separates this unit from overlying units. Other clays hold intermediate positions between the Tuscaloosa and the surface. Thus,

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

Comment number	Comments	Responses
		drawdowns in the Tuscaloosa will not tend to increase the movement of pollutants from seepage basins to the groundwater. In A-Area the cone of depression in the Tuscaloosa Formation is not reflected in the water level of the overlying Tertiary groundwater system even though the green clay is discontinuous in this area. The green clay in the Separations Area is about 2 meters thick and has a very low permeability; it supports a head difference of as much as 24 meters. Measurements at the H-Area seepage basins indicate that the underlying Congaree Formation has not been contaminated by tritium migrating from these basins. The green clay also supports a large head difference at the Par Pond pumphouse well. Tritium concentrations in this well are below background levels even though Par Pond water exhibits tritium concentrations of 27,000 pCi/l. At the pumphouse and in L-Area the green clay is about 7 meters thick and very impermeable. Groundwater withdrawal from the Tuscaloosa Aquifer for L-Reactor and incremental use is expected to be only a few percent greater than in 1982. The green clay and other clay units above the Tuscaloosa Formation will continue to offer protection to Tuscaloosa groundwater in areas where the upward head differential between the Tuscaloosa and Congaree Formations becomes zero or downward.
DA-9	o The large, uncontrolled, thermal discharges pose major regulatory problems. Since 1980, when President Carter decided to increase production of nuclear materials, there has been an apparent presumption that the L-Reactor could be restarted without any control of the thermal discharge. This presumption was apparently based on the prior operation of the plant and did not account for pollution laws enacted subsequent to the reactor being placed on "stand-by" in 1968. The Draft EIS recommends discharge of untreated cooling water to Steel Creek. Steel Creek is presently classified as a Class 'B' stream in South Carolina. Such a classification means that the stream is suitable for fishing, survival and propagation of fish and other fauna and flora. The proposed action would allow eleven cubic meters/sec of effluent, at 80°C, to be discharged to the stream. Such action will effectively eliminate the present life forms from the stream. As such, we determine that the proposed action is not compatible with the established water use classification assigned to Steel Creek. We noted that Steel Creek was	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. This 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

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

Comment number	Comments	Responses
	previously subjected to a thermal effluent and suffered adverse impacts similar to these noted above. However, since the discharge was terminated habitat/species succession has occurred such that the area has recovered, to a great extent. The proposed discharge would reverse the recovery and, in our evaluation, would be a violation of the State water quality standards. In a related matter, we believe the discussion of the NPDES permit action avoids a major issue. Namely, what alternatives will the Department of Energy consider if the permit is not granted under the conditions anticipated in the Draft EIS?	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.
	o EPA has been performing various modeling analyses to estimate the radiological impact of current and future releases at the SRP. The results of these analyses compare closely with the calculated values which were generated by DOE and presented in the Draft EIS. In addition, field surveys were conducted by EPA to determine radioactivity in air emissions from the plant site by direct measurement. Although the report of this data is still in preparation, EPA's monitoring data appear to be within a few percent of DOE's results. These surveys and analyses were conducted not only for comparative purposes to verify EPA's analysis against DOE's models, but to establish an additional data base for EPA's standard setting effort under Section 112 of the Clean Air Act (CAA). Considering the dose and risk numbers which EPA generated for DOE facilities as a part of proposing standards for CAA, we find that the proposed L-Reactor operations will comply with the standard which EPA is proposing.	
	o The total occupational doses which DOE expected from the operation of L-Reactor were also reviewed. "The total expected occupational dose from operation of L-Reactor and its support facilities is 360 person-rem (i.e., 69 person-rem for L-Reactor and 291 person-rem from support facilities). The average work force in each reactor area is about 375 people; thus, the average annual individual dose to workers in the L-Area will be about 185 millirem per year." Comparing these numbers to EPA's proposed Radiation Protection Guides (Federal Register Vol. 46, No. 15, Friday, January 23, 1981), which proposed 5 rem whole body, we found that L-Reactor will be below EPA's proposed Radiation Protection Guides for occupational workers.	

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

Comment number	Comments	Responses
	An assessment of the health impact from resumed operation of the L-Reactor indicates an estimated individual lifetime fatal cancer risk of 1.0E-4. The estimated collective cancer risk per year of operation is 5E-3, with 85 percent of the risk due to tritium. Ingestion is also the major contributing liquid pathway to health risk (72 percent). We can conclude from the above that the risks to the general public, off-site, should be considerably less than the estimated on-site risks. The EPA National Interim Primary Drinking Water Regulations, promulgated under the provisions of the Safe Drinking Water Act, became effective in June 1977, and apply to the community water supply systems such as those at Beaufort-Jasper, South Carolina, and Port Wentworth, Georgia, downstream of the Savannah River Plant. These regulations include limits for radionuclides, such as tritium, radiocesium, cobalt, and strontium, that will limit radiation doses to water users to less than 4 millirem per year. Both of these water supplies have been monitored by the states. Radiation exposures in recent years have been about 0.28 mrem/year. Based on the expected releases from the restart of the L-Reactor, its contribution has been estimated at up to .04 millirem per year from tritium, radiocesium and cobalt from the L-Reactor, or a contribution of about one-seventh of the total. The total dose of about 0.32 mrem/year is about one-twelfth (1/12) of the EPA Drinking Water Standard.	
DA-10	Further radiological and monitoring data should be presented at scheduled intervals, perhaps as supplements to the Final EIS, or as monitoring and data reports. This supplemental information should include any observed displacement of radioisotopes, which are now contained in Steel Creek sediments, together with and monitoring data from the seepage basins and surrounding wells, until such time that these seepage basins are discontinued.	Radiological monitoring of Savannah River water, water supplies at Beaufort-Jasper and Port Wentworth, and aquatic food supplies from the river and the estuary are reported annually in a series of reports entitled Environmental Monitoring in the Vicinity of the Savannah River Plant; the most recent issue, for calendar year 1982, is DPSPU-83-30-1. 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 this report. Onsite monitoring of wells and seepage basins is reported annually in a series of reports entitled Environmental Monitoring at the Savannah River Plant. This report is an internal report for DOE and its contractors for use in reviewing the effects of ongoing SRP operations. DOE is considering placing this report in the DOE Public Reading Room in Aiken, South Carolina.

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

Comment number	Comments	Responses
	Specific Comments	
	2.2 *Proposed Action -- Restart of L-Reactor*	
DA-11	p. 2-11, Fig. 2-2 - The release data summary for SRP (Ashley, Zeigler, and Culp, DPSPU 81-25-1) refers to radionuclides seeping from the L Oil and Chemical Basin. Where is it and why is this source of radionuclides not mentioned in the DEIS?	The L-Area oil and chemical pit, which is approximately 70 meters northeast of the L-Reactor seepage basin, received low levels of radioactive oil and chemical waste from 1961 to 1979. This pit is no longer in use; it will not be used when L-Reactor operation is resumed. The pit will be included in the overall hazardous waste management program under DOE Order 5480.2.
	3.7 Radiation Environment	
DA-12	p. 3.57, para. 6 - Radiation exposure from dental prostheses and cardiac pacemakers are medical sources rather than environmental sources.	The statement on p. 3.57 of the draft EIS has been modified to delete dental prosthesis and cardiac pacemakers.
DA-13	p. 3-58, para. 4 - Internal dose may be site dependent. Individuals living near the SRP boundary may receive a higher internal dose from eating contaminated foods (H-3) than individuals living farther away from the plant. Also, the chemistry of different soil types will yield differing radionuclide uptakes by plant foods. p. 3-61, para. 2 - The 1982 release of radioactivity from L-Area to Steel Creek produced concentrations below that which would be considered harmful. In fact, the concentrations reported to have been measured in the canal were less than the EPA limits for drinking water.	The internal dose referred to in this paragraph was the natural internal radiation dose (see Table 3-15 of the draft EIS). Such a dose, received primarily from natural radioactivity in the diet, is generally considered to be independent of a site because of the wide distribution of food and fertilizers.
DA-14	p. 3-63, Table 3-18 - The data in this table do not reflect the true contribution L-Reactor has had on the Cs-137 build-up in the sediments of Steel Creek. Referral to Table D-3 (p. D-8) shows that the area affected between L-Reactor and Road A is about 7 times greater than between P- and L-Reactor. Table 3-18 should be expanded to include this information or, at least, reference should be made to Table D-3 in a footnote.	Reference in the text of Section 3.7.2.1 has been made to Table D.3.

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

Comment number	Comments	Responses
DA-15	p. 3-65, Figure 3-14 - How many of the 55 unexplained curies of Cs-137 can be explained by the uncertainty in the estimates? That is, what are the + values on the 284 Ci released and on the 229 Ci sediment inventory. Although only a minor contribution, the 0.4 Ci estimated to be in Steel Creek biota seems low. An estimate of the mass of vegetation along Steel Creek from L-Reactor to the Savannah River is apparently not included in the DEIS.	Inventory estimates were made using three different techniques based on stratified random sampling, aerial gamma spectroscopy, and a "weighted" analysis of radiocesium contents (microcuries per square meter) of individual soil cores. Error estimates could be calculated only for the stratified random sampling estimate: 56.89 ± 8.86 Ci (± 95 percent confidence limit). This estimate provided the lowest estimate (mean) of the radiocesium inventory. The highest inventory estimate was derived from the "weighted" soil core analysis (67.09 Ci). This highest estimate was used as the inventory in Steel Creek. Greater detail on these analyses is presented in Smith et al., 1982, Chapter VI). Section 3.7.2.1 and Appendix D provide possible explanatins for the unaccounted for cesium-137. The transport calculations were made independent of the inventory estimates. The transport during the first year attributable to biotic transport is based on a surficial biomass inventory of 304 grams per square meter. Based on Tables D-3 and D-10 of the Draft EIS and the biomass estimate of 304 grams per square meter, the transport estimate is about 0.13 curie, some 3 times less than the 0.4 curie used in the total transport estimate of 4.4 ± 2.2 curies during the first year.
	p. 3-66 - Concentrations of Cs-137, Co-60, and Sr-90 in water where there is a possibility for consumption are presently at levels that present no health hazards.	

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

Comment number	Comments	Responses
DA-16	p. 3-66, 3.7.2.3 - This section is vague and should be improved on the basis of measured Sr-90 concentrations in Steel Creek sediments and vegetation. DPSPU 81-25-1 records suggest that the 63 Ci are now in Steel Creek or downstream. The fact that kaolin has little sorptive capacity for strontium does not assure its absence in Steel Creek; nor does its absence in the Swamp downstream. Clay soils do not have quite the same ion-exchange characteristics for cobalt as they have for cesium. Thus, transport to the Savannah River may be more rapid for Co-60 than for Cs-137. However, Co-60 levels do not appear to be significant.	Approximately 0.5 curie of strontium-89 and 40.8 curies of strontium-90 were released to Steel Creek from L- and P-Areas (Ashley, et. al., 1982). Because of its short half-life (50.5 days), no measurable quantities of strontium-89 are likely to exist inthe creekbed sediments. Strontium-90 has a half-life of about 28 years. About 14.3 curies of strontium-90 have been lost by radioactive decay. Based on ERDA (1977) and Marter (1974), another 20.8 curies have been transported to the Savannah River. Thus, about 5.7 curies of strontium-90 might still remain in the sediments of Steel Creek. Soil coring in Steel Creek at Road B, Cypress Bridge, and near its mouth has detected strontium-90 concentrations ranging from 0.11 to 0.14 picocurie per gram in 1978 to 0.12 to 0.24 picocurie per gram in 1979. At the SRP control station, strontium-90 concentrations of soil samples were 0.06 picocurie per gram in 1978 and 0.14 picocurie per gram in 1979 (Ashley et al., 1982). These soil coring studies suggest that the inventory might be much less than 5.7 curies. It is not surprising that most of the strontium-90 has been transported from Steel Creek, because the kaolin clay particles of the creekbed sediments have little sorptive capacity for strontium. The distribution coefficient for strontium-90 in SRP kaolinitic soils might be as low as 20 (Oblath et al., 1983), at least 35 times less than that for cesium-137. Strontium-90 has not been detected above background levels in Creek Plantation swamp sediments. However, this radionuclide has been detected in composited swamp vegetation samples at concentrations of a few picocuries per gram (Marter, 1974).

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

Comment number	Comments	Responses
	4.1.2 Radiological Impacts of L-Reactor Operation	
DA-17	Page 4-24, Figure 4-6 - Some environmental transport models will include consumption of contaminated water by meat and milk producing animals. The authors may wish to recognize this potential pathway and comment on its relevance to the SRP in the text.	There is no known use of downstream Savannah River water to supply milk- or meat-producing animals or for farm crop irrigation. Assuming that irrigation of 1000 acres of farmland could potentially occur in the future, the dose to the consuming population would range between 0.005 percent of natural background radiation for leafy vegetation and 0.05 percent of natural background for vegetation. The dose for consumption of milk and meat would be between this range.
DA-18	p. 4-25, 4.1.2.2 - The earlier belief that lower-lying aquifers (Ellenton, Tuscaloosa) would not be contaminated by seepage has been undermined by observations of chlorocarbons in these aquifers at other locations on site. Can the statement in the third paragraph "tend to preclude contamination" be made more specific by groundwater quality data analysis at this location? "Mitigation" should probably be "migration" in the second paragraph.	The text of the EIS has been changed to reflect the information in this response and to correct the typographical error noted in the comment ("mitigation" to "migration").
DA-19	p. 4-27, Table 4-11 - Values listed in this table were computed and found to be correct. The radionuclides Mn-54, Fe-55, Fe-59, Co-57, and Ni-63, are not mentioned although they are common activation products. Were attempts made to measure them?	Most of the radionuclides listed in Table 4-11 are those that will be released to the environment after filtration and deionization. These expected releases are based on radionuclide analyses of effluents from existing operating reactors. Manganese-54, iron-55, iron-59, cobalt-57, and nickel-63 are not normally detectable in treated reactor effluents at SRP.
	p. 4-28 - NRC codes and parameters (Reg. Guide 1.109) were used to compute individual and population doses (Appendix B). Although these methods may not exactly duplicate those in use by EPA, they are comparable.	
	Dose equivalents listed in Tables B-7 to B-10 for atmospheric releases from L-Reactor appear reasonable based on a 1982 EPA study of the airborne releases from P-Reactor.	

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

Comment number	Comments	Responses
DA-20	p. 4-29, Table 4-14 - If these dose equivalents are 100-yr dose commitments (p. B-35, para. 2) the table should so state.	All population doses shown in the EIS are 100-year dose commitments, as described in Appendix B. This has been clarified in the EIS.
DA-21	Page 4-28, 4-29 and Figure 4-6 - The pathways described in the text for liquid releases do not include use of river water for irrigation of human food crops or animal feed crops. However, Figure 4-6 shows irrigation as a pathway. In some dosimetric and risk calculations, irrigation has proven to be a major pathway to man. The authors should state their reasons for not including irrigation as a pathway in their individual and their population dose equivalent and risk calculations.	Figure 4-6 of the draft EIS is a generic exposure pathway description (not specific to SRP) that is covered in models recommended by the Nuclear Regulatory Commission (Regulatory Guide 1.109). There is no known use of downstream Savannah River water to supply milk- or meat-producing animals or for farm crop irrigation.
DA-22	Page B-14, last paragraph (continued on page B-31) - Since special models have been used for H-3, C-14, Kr-85, and I-129, the final EIS should provide the references for these models in the bibliography.	The Final EIS has incorporated the applicable references in the bibliography to Appendix B.
DA-23	p. 4-29, last para. - How does the drinking water concentration of tritium at the Beaufort-Jasper and Port Wentworth water intakes compare with the EPA drinking water limit? What does 0/yr water consumption mean in Table B-20? 1/yr?	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. The "0/yr" water consumption in Table B-20 was a typographical error; the entry should read "1/yr." This has been corrected in the Final EIS.
DA-24	Page B-32, Table B-18 - For some nuclides, limiting the environmental dose commitment (EDC) calculations to a 100-year integration period and to consideration of the U.S. population, may cause the major portion of the infinite EDC to the world population to be left unreported. For example, Fowler predicts the total body EDC to the world population for a release of 1 Ci of C-14 to the atmosphere (as CO_2) to be 28 man-rem/Ci	A 100-year environmental dose commitment (EDC) was used in the EIS rather than an infinite EDC; this provides more meaningful results by accounting for impacts over a period of time comparable to the maximum lifetime of an individual (Section B.5). Thus, it provides the measure of risk to an individual. Longer integrating periods or an infinite time integral would require extremely speculative predictions about man's environment for thousands of years into the future.

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

Comment number	Comments	Responses
	released with a 100-year integration period, 120 man rem/Ci released with a 1,000-year integration period, and a 537 man rem/Ci released with an infinite integration period (Fowler and Nelson, "Health Impact Assessment of C-14 Emissions From Normal Operations of Uranium Fuel Cycle Facilities," EPA 520/5-80-004, June 1979, Figure 5). Using Fowler's results to estimate the EDC to the world population during the 100-year period following release of 12 Ci of C-14 from the L-Reactor, one obtains 336 man rem (total body) compared to the SRP estimate of 8.4 (for the U.S. population). The infinite EDC due to the release of 12 Ci of C-14 to the atmosphere would be 6,440 man rem, using Fowler's data.	
DA-25	p. B-35 - The bioaccumulation factor used for Cs-137 in fish is 3000. According to the document this is a measured value, but it is much larger than values generally used that range between 40 and 1300 for freshwater fish. The use of 3000 probably overestimates the Cs-137 concentration in fish.	Section D.2.2 presents details on the selection of the cesium-137 bioaccumulation factor of 3000.
DA-26	p. 4-30, para. 4 - A discussion on pages D-31 and D-32 indicates that the estimated first-year sediment/water transport of Cs-137 after L-Reactor start-up was reduced from a 1981 estimate of 7.2 Ci to 2.3 Ci based on a recent estimate. The latter appears reasonable, but not having the references describing the first estimate (DuPont, 1982a) and considering the importance of this pathway, it would be useful to explain in Appendix D the reason for the 5.4 Ci/yr reduction.	Early estimates of radiocesium transport were based on modeling predictions (Du Pont, 1982, DPST-81-241). The transport estimates used in this EIS were based on measurements of radiocesium during cold flow tests. Using empirical data is believed to be the better method for determining annual activity that will be transported. The 1981 estimate of sediment-water transport was obtained by assuming (1) that the suspended solid concentrations in the secondary cooling water flowing in Steel Creek would be equal to that supplied from the Savannah River (15 milligrams per liter); and (2) that the suspended creek silts and clays would have a cesium-137 concentration of 1200 picocuries per gram of suspended sediment. Bed load transport was not considered. Thus, the 1981 estimate for sediment-water transport for the first and second years after restart was calculated to be 7.2 curies per year (0.015 gram per liter x 4.0×10^{11} liters per year x 1200 picocuries per gram x 1.0×10^{-12} curie per picocurie).

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

Comment number	Comments	Responses
		To refine these estimates, cesium-137 sediment-water transport was studied during the March 1982 testing of the secondary cooling-water system with discharges of Savannah River water at near-ambient temperatures and at flows as high as 6.2 cubic meters per second (more than half that expected during L-Reactor operation). These test results showed that the sediment-water transport would be 2.3 ± 1.8 curies (Section D.4.3.1) during the first and second years after the restart of L-Reactor. Subsequent monitoring results for 1983 support this estimate.
DA-27	p. 4-34, Table 4.17 - What radionuclide is responsible for the relatively high dose to the liver? Is it assumed to be Co-60?	The radionuclide responsible for the relatively high dose to the liver is cesium-137. Cobalt-60 contributes less than 1 percent to the liver dose to all age groups.
DA-28	From a comparison of liquid pathway doses, that due to the mobilization of Cs-137 and Co-60 from Steel Creek sediments exceeds the impact of all other pathways many times. This is clearly illustrated in Table 4-19. This is a very significant fact that should greatly influence the surveillance program initiated when L-Reactor begins operation.	See the response to comment DA-10.
DA-29	p. 4-35, para. 1 - It states in the text that the maximum population dose is 27.6 person-rem in the tenth year of operation, whereas Table 4-19 lists a value of 14.3 person-rem for that period. Is the 27.6 person-rem a committed dose, or why the apparent disagreement?	The 27.6 person-rem in the tenth year is the sum of the 80-kilometer population dose (14.3 person-rem) and the Port Wentworth and Beaufort-Jasper population dose (13.3 person-rem) listed in Table 4-19 of the draft EIS.
	p. 4-35, para. 2 - The health effects listed here are correctly computed using the values of 120.3 fatal cancers per million person-rem given in Table B-49 for low-LET radiation, and 257 genetic effects per million person-rem given in Section B.6.	