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THE COMMUNITY ALLIANCE ON SAVANNAH RIVER SITE

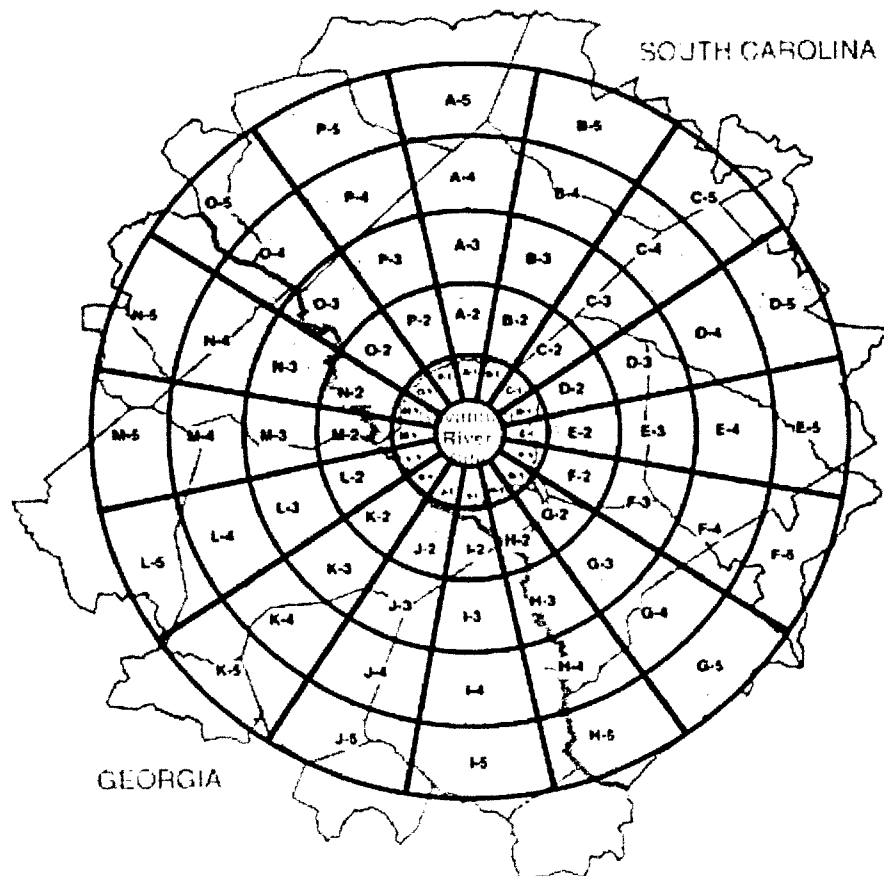
**Report on a Scientific and Technical Review of the
FINAL ENVIRONMENTAL IMPACT STATEMENT PROCESSES
On the Proposed Nuclear Weapons Nonproliferation Policy
Concerning Foreign Research Reactor Spent Nuclear Fuel
And the Surplus Plutonium Disposition Program**

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“Supported by a grant from the Citizens’ Monitoring and Technical Assessment Fund

Analysis of Environmental Justice:

A Scientific and Technical Review of the Final Environmental Impact Statement processes on the Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel and the Surplus Plutonium Disposition Programs



Report Summary (Draft)

**PROJECT: Citizens for Environmental Justice (CFEJ)
Harambee House, Inc., 1115 Habersham Street, Savannah, Georgia 31401**

“Supported by a grant from the Citizens’ Monitoring and Technical Assessment Fund”

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The diagram shown on the front of this document is a depiction of the SRS Region of Influence. It is shown as radial selection centered on SRS with 22.5-degree sectors and concentric rings from 10 to 50 miles out from center at 10-mile intervals (taken from the SNF FEIS, 2000).

Summary

This is a scientific review of the impact of the receipt of Foreign Spent Nuclear Fuel (SNF) and Plutonium Disposition programs at the Savannah River Site (SRS) in Aiken County, South Carolina and its impact on surrounding communities. As it stands, this new initiative is an additional aspect to the current Spent Nuclear Fuel program ongoing at the Savannah River Site and the more inclusive Department of Energy Environmental Restoration and Waste Management Programs (EM). Therefore information and comments contained here takes into consideration all aspects of the spent fuel program dealing with the managing of the department's spent fuel through the year 2035. A discussion of this program can be found in the Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Environmental Impact Statement, DOE/EIS-0203 completed in April 1995. Details of this new policy can be found in U.S. Department of energy Final Environmental Impact Statement on a Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel, DOE/EIS-0218F issued in February 1996. In addition, DOE completed another environmental impact statement (EIS) that takes the two above aspects into consideration. This EIS proposed to implement appropriate processes for the safe and efficient management of spent nuclear fuel and targets at the Savannah River Site. Details of this new program can be found in U.S. Department of Energy Savannah River Site, Spent Nuclear Fuel Management Final Environmental Impact Statement, DOE/EIS-0279F issued in March 2000.

As such, the decision to take back foreign spent nuclear fuel has been debated for several years without the active participation and integral involvement of people of color living near the SRS. The SRS is in west-central South Carolina and occupies an area of approximately 300 square miles (approximately 800 square kilometers) adjacent to the Savannah River, primarily in Aiken and Barnwell Counties. The Site is approximately 25 miles (40 kilometers) southeast of Augusta, Georgia, and 20 miles (32 kilometers) south of Aiken, South Carolina. All alternatives described in this EIS, including the possible construction of new facilities to implement some of the alternatives, would occur within existing industrial areas at SRS. These communities (The Community Alliance on Savannah River Site includes Augusta, Keyville and Savannah, Georgia and Blackville and Beaufort, South Carolina) believe that they have been disenfranchised from the debate, the public involvement activities and the decision making process, as well as accessing information. As a result, they have been left to wonder what the receipt of additional spent nuclear fuel at SRS will mean for their neighborhoods, health and environment.

This Report is a Scientific and Technical Review of the Final Environmental Impact Statement processes on the Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel and the Surplus Plutonium Disposition programs conducted in accordance with the responsibilities and requirements under Section 309 of the Clean Air Act, Section 102 (2)(C) of the National Environmental Policy Act (NEPA), Section 404 of the Clean Water Act (CWA), and Executive Order 12898 and the accompanying Presidential Memorandum, as well as CEQ environmental justice guidelines. In addition, this review takes into consideration the USDOE Environmental Justice Strategy. The purpose of this review is to analyze the adequacy of the environmental impact assessment and public

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participation approaches taken by DOE as part of decision-making on spent fuel and surplus plutonium at the Savannah River Site. Particular emphasis is placed on the aspect of environmental justice to help in understanding DOE practices in implementing the mandates of environmental laws and regulations and the resulting impact on surrounding communities.

Environmental Justice has been defined by a variety of organizations interested in the topic (environmental racism; economic racism etc.). The U.S. Environmental Protection Agency's Office of Environmental Justice uses the following definition: "The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic group should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies." This is the definition that will be considered throughout this document since it's the generally accepted definition used when addressing all federal activities. In the definition, the goal of "fair treatment" does not imply a shift risks from one population to another, but to identify potential disproportionately high and adverse effects and identify alternatives that may mitigate these impacts.

The focus of environmental justice concerns in this report will be broadly viewed from one of four vantage points:

- Whether the proposed project is located in or impacts on a minority or low-income community;
- Whether there exists a potential for disproportionate risk;
- Whether the community currently suffers, or have historically suffered, from environmental and health risks or hazards; and
- Whether the community has been sufficiently involved in the decision-making process.

Any reasonable environmental impact assessment in compliance with the intent of NEPA should detail answers to the above. This review therefore analyzes the adequacy of the environmental impact assessment and public participation approaches taken by Department of Energy (DOE) as part of its decision-making on spent fuel and surplus plutonium. Because this review was initiated at the request of the local communities surrounding the Savannah River Site (SRS) special consideration will therefore be given to that facility. In addition, this facility features prominently in the final decisions of the two programs and therefore makes a good case study.

Relevant Documents

Over the past eight years, the Department of Energy has issued several major Environmental Impact Statements (EIS's) and a number of other documents relating to programmatic management of nuclear materials, nuclear spent fuel, and the management of the surplus plutonium left over from the arms race. Some of those documents were reviewed as part of this scientific and technical analysis of the Environmental Impact Statement (EIS) process for these programs as there are proposed at the Savannah River Site. This report reflects an evaluation of DOE's Environmental Justice strategy as discussed in the following documents:

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Primary Documents

Record of Decision for the Savannah River Site, Spent Nuclear Fuel Management, Final Environmental Impact Statement. Savannah River Operations Office, Aiken, SC, August 2000.

Savannah River Site, Spent Nuclear Fuel Management, Final Environmental Impact Statement, DOE/EIS-0279. Savannah River Operations Office, Aiken, SC, March 2000.

Record of Decision for the Surplus Plutonium Disposition Final Environmental Impact Statement, Office of Fissile Materials Disposition, Washington D. C. January 2000.

Surplus Plutonium Disposition Final Environmental Impact Statement (SPD EIS) (DOE/EIS-0283-F) Office of Fissile Materials Disposition, Washington D. C. July 1999

Supplement to the Surplus Plutonium Disposition Draft Environmental Impact Statement (SPD EIS) (DOE/EIS-0283-DS) Office of Fissile Materials Disposition, Washington D. C. April 1999

Savannah River Site, Spent Nuclear Fuel Management, Draft Environmental Impact Statement, DOE/EIS-0279D, Savannah River Operations Office, Aiken, SC, December 1998.

Surplus Plutonium Disposition Draft Environmental Impact Statement (SPD EIS) (DOE/EIS-0283-D) Office of Fissile Materials Disposition, Washington D. C. July 1998

Record of Decision on a Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel, DOE/EIS-0218F, Assistant Secretary for Environmental Management, Washington, D.C. May 1996.

Final Environmental Impact Statement on a Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel, DOE/EIS-0218F. Assistant Secretary for Environmental Management, Washington, D.C. February 1996. This document outlines alternatives for managing spent fuel from foreign research reactors. DOE is considering storage in the United States, reprocessing in the United States, reprocessing abroad, or some hybrid as the primary management alternatives.

Draft Environmental Impact Statement on a Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel, DOE/EIS-0218D. Assistant Secretary for Environmental Management, Washington, D.C. March 1995.

Environmental Assessment of Urgent-Relief Acceptance of Foreign Research Reactor Spent Nuclear Fuel, DOE/EA-0912. Washington, D.C. April 1994.

Other Documents

Record of Decision for the Storage and Disposition of Weapons-Usable Fissile Materials Final Programmatic Environmental Impact Statement, Washington, D.C. January 1997

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Storage and Disposition of Weapons-Usable Fissile Materials Final Programmatic Environmental Impact Statement (DOE/PEIS-0229-F) Washington, D.C. December 1996.

Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement, DOE/EIS-0203F. Idaho Operations Office, Idaho Falls, ID, April 1996. Outlines DOE's overall spent fuel management plan, the SNF/INEL EIS focuses mainly on where spent fuel should be shipped to for interim storage. It also discusses possible stabilization techniques for DOE spent fuel, including reprocessing.

Plutonium Disposition Education Forum, Proceedings. April 1996.

Facility Utilization Strategy for the Savannah River Site Chemical Separations Facilities. Savannah River Operations Office, Aiken, South Carolina. December 1995.

Final Environmental Impact Statement, Interim Management of Nuclear Materials, DOE/EIS-0220. Savannah River Operations Office, Aiken, South Carolina. October 1995. Discusses options for stabilizing seven types of nuclear materials at the Savannah River Site and for obtaining three types of "programmatic" materials deemed necessary for scientific research and DOE programs.

Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Draft Environmental Impact Statement, DOE/EIS-0203-D. Idaho Operations Office, Idaho Falls, ID, June 1994.

Spent Fuel Working Group Report on Inventory and Storage of the Department's Spent Nuclear Fuel and other Reactor Irradiated Nuclear Materials and Their Environmental, Safety and Health Vulnerabilities, Volume 1, Assistant Secretary for Environmental Management, Washington, D.C. November 1993.

Transporting Radioactive Materials Q&A ...answers to your questions, DOE/EM-0097. Washington, D.C. April 1993.

Transporting Radioactive Materials ...Answers to Your Questions, DOE/EM-0097. Washington, D.C. August 1989.

Principal Findings

- There is practically no effective or adequate environmental justice analysis included in the two primary EIS processes, (i.e. the Spent Nuclear Fuel Management program in general and the Proposed Nuclear Weapons Nonproliferation Policy Concerning the receipt of Foreign Research Reactor Spent Nuclear Fuel in particular and the Surplus Plutonium Disposition) Therefore, the conclusions reached on environmental justice issues are not well justified.

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- The environmental justice strategies and policies at DOE are still very much at the embryonic stage. This is reflected by the efforts made at the characterization and definitions of environmental justice communities.
- A major shortcoming of the DOE process as reflected in the documents is that key assumptions pertaining to the environmental and health impacts are not well explained or justified. For the FRR-SNF, DOE has maintained throughout the process that estimates of the impacts on the environment, workers, and the public from implementing this acceptance program are “small and well within applicable regulatory limits”.
- There is no option for managing DOE spent fuel or for surplus plutonium disposal that is without inherent risks, however, it is DOE contention that all the management technologies considered are proven technology that would have no more than “small” impacts, completely within applicable regulatory limits.
- It is DOE intention to manage/store this additional (~ 68 MTHM) of spent fuel from foreign research reactors at the SRS for a limited period of time. DOE have raised a gray area by using the term “limited” period of time for interim storage. The SRS have been used to store SNF since 1980, given this history; this practice of long-term storage is the most likely scenario that would result.
- For both the spent fuel and surplus plutonium programs some form of interim dry storage, possibly preceded by short-term improvements in wet storage, was evaluated as possible the best management alternative to “chemical treatment” from the points of view of safety, environmental protection, and non-proliferation. DOE has been very careful in not using the word reprocessing.
- The efforts DOE has made up to this point in time to include a meaningful environmental justice policy in their EIS process is somewhat disappointing. For the most part, Public participation process did not meet the level for the requirements of NEPA. While the decision process reflected in the Notice of Intents (NOIs) appear to complies with the requirements of the National Environmental Policy Act (42 U.S.C. 4321 et seq.) and its implementing regulations at 40 CFR Parts 1500-1508 and 10 CFR Part 1021, the distribution of stakeholders actively participating in the process does not appear to reflect the demographics of the impacted community.
- The level of detail is scant when considering that there is a large and growing body of research results and other relevant information pertaining to environmental justice concerns from the standpoint of evaluation for environmental justice, the documents are inadequate from both the point of view of ease of understanding and also methodology and execution.
- DOE concluded that construction under all alternatives (Alternative 2 –12) would pose no significant health risks to the public. The risks would be negligible regardless of the racial or ethnic composition or the economic status of the population. Therefore,

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construction activities at any of the chosen sites (Hanford, INEEL, Pantex, SRS) under all alternatives would have no significant impacts on minority or low-income populations.

- DOE concluded that routine operations conducted under all alternatives would pose no significant health risks to the public. No radiological or nonradiological fatalities would be expected to result from accident-free transportation conducted under all alternatives. Nor would radiological or nonradiological fatalities be expected to result from transportation accidents.
- Thus, implementation of anyone of the alternative evaluated would pose no significant risks to the public, nor would implementation of any alternative pose significant risks to groups within the public, including the risk of disproportionately high and adverse effects on minority and low-income populations.
- DOE has failed to adequately assess the non-proliferation and environmental issues surrounding reprocessing, and
- DOE reprocessing policy is being made in piece-meal fashion in separate documents prepared by separate offices, and the overall impression is of policy incoherence. Each new situation raises new possibilities with new variables and by extension, new risks.
- DOE has not adequately examined its experience with N-reactor spent fuel at Hanford for the environmental lessons it holds for current spent fuel management policy. Given the fact that the facilities at SRS are all aging, K- and L-reactor basins currently poses environmental and health risks. These EIS processes indicate that DOE appears to be drifting back toward doing business the old way—a lack of transparency and public participation-- without a clear-sighted analysis of its drawbacks and risks.

Discussion of Principal Findings

As stated above the focus of environmental justice concerns in this report will be broadly viewed from one of four vantage points:

Whether the proposed project is located in or impacts on a minority or low-income community

The EJ movement argues that poorer people in general, and people of color in particular, face risks—from their proximity to hazardous facilities and waste sites—that are disproportionate to their numbers in the population. As a result, on February 11, 1994 the White House issued Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* which directs Federal agencies to identify and address, as appropriate, disproportionately high and adverse health or environmental effects of their programs, policies, and activities on minority and low-income populations. The Council on Environmental Quality (CEQ) was given oversight responsibility for documentation prepared in compliance with the 1969 National Environmental Policy Act (NEPA). EO 12898 also directs the Administrator of the Environmental Protection Agency (EPA) to convene an Interagency Federal Working Group (IWG) on Environmental Justice. The Working Group, made up of 13

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federal agencies, is directed to provide guidance to its members on criteria for identifying disproportionately high and adverse human health or environmental effects on minority and low-income populations. It also gave federal agencies one year to submit their own environmental justice strategy identifying specific projects that can be promptly undertaken to address particular concerns identified during the development of the proposed environmental justice strategy.

In April 1995 the Department of Energy published its environmental justice strategy, which outlines a structured framework of efforts to integrate feasible environmental justice principles into their operations as required by EO 12898. This document lists the following four goals as the cornerstone of their environmental strategy:

1. Identify and address programs, policies, and activities of the department that may have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.
2. Enhance the credibility and public trust of the department by making public participation a fundamental component of all program operations, planning activities, and decision making.
3. Improve research and data collection methods relating to human health and the environment of minority and low-income populations by incorporating full characterizations of risks, including the identification of differential patterns of subsistence consumption of natural resources among such populations.
4. Further departmental leadership by integrating environmental justice criteria, as appropriate, with activities and processes related to human health and the environment.

The significance of this document lays in the fact that section 1-103 (e) of EO 12898 “each federal agency shall finalize its environmental justice strategy...” when published the DOE document stated that it was an incomplete “living” document. This lack of guidance has translated into a very sluggish effort at addressing environmental justice concerns in the communities where DOE facilities are sited.

This is evident by the fact that in April 1994, U.S. Department of Energy issued the Environmental Assessment of Urgent-Relief Acceptance of Foreign Research Reactor Spent Nuclear Fuel (DOE/EA-0912), and in June 1994, the Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Draft Environmental Impact Statement (DOE/EIS-0203-D), in both instances, environmental justice issues were not considered as a part of the process. By 1996, The IWG had not yet finalized the guidance directed by EO 12898, although it had developed working draft definitions. In the absence of final guidance, the definitions and approaches used by DOE varied. For example, the SNF Final EIS and the Programmatic SNF&INEL EIS present demographic characterizations obtained from the same Census Bureau database, but use different definitions and assumptions. The differences in the definitions and assumptions between the Programmatic SNF&INEL EIS and the Foreign Research Reactor (FRR) Spent Nuclear Fuel (SNF) Final EIS are as follows:

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Although both of these EISs use the same 1990 U.S. Census Bureau database, the Programmatic SNF&INEL EIS uses data aggregated at the census tract level (2,500 to 8,000 persons) while the FRR SNF Final EIS uses data aggregated at the block group level (250 to 550 housing units). This is critical to the results of and analysis.

In some cases, census blocks or tracts lie partly within the area being analyzed (i.e., within the 80-km (50-mi) radius circle around a potential spent nuclear fuel management site). Since the exact distribution of the populations within such blocks or tracts is not available, the data is insufficient to allow a precise count. To address this situation, the Programmatic SNF&INEL EIS includes a low-income or minority population in its analyses if 50 percent or more of the tract falls within an 80-km (50-mi) radius around the site being considered. In similar situations, this Final EIS assumes that the general population and the minority population are distributed uniformly throughout a block group, and includes the fraction of the low-income or minority population that corresponds to the fraction of the census block group area that falls within the 80-km (50-mi) radius circle.

The Programmatic SNF&INEL EIS defines low-income populations as those in a poverty status as determined annually by the U.S. Census Bureau, based on the Consumer Price Index, and aggregated by the thresholds set forth by the Census Bureau (i.e., a group of people and/or a community experiencing common conditions of exposure or impact, in which 25 percent or more of the population is characterized as living in poverty), a method used by the U.S. Environmental Protection Agency. The FRR SNF Final EIS uses the definition of low-income community established by the U.S. Department of Housing and Urban Development. Both definitions are permitted under the draft guidance developed by the Interagency Working Group. These different definitions and assumptions have resulted in differences in the characterization of low-income and minority populations. The two sets of data are summarized and the most significant differences are discussed below.

The minority populations identified are reasonable consistent between the Programmatic SNF&INEL EIS and the FRR SNF Final EIS, except for results obtained at the Nevada test Site (the largest proportional difference) and the Hanford Site (the largest difference in numbers of individuals). The range in the results for both locations is due to the different aggregations of the demographic data used (census tracks vs. blocks), and the differences in the methods used to account for the population of tracks or groups lying only partly within the area being partly within the area being analyzed, as discussed above. For example, both sites are located in rural or sparsely populated regions so that census tracts surrounding the sites are relatively large in geographical area. In addition, the outskirts of Las Vegas, Nevada begin approximately 80 km (50 mi) from the Nevada Test Site, making the analysis particularly sensitive to differences in treatment of census tracts or block groups that lie partly within a circle of an 80-km (50-mi) radius centered at that site. Most areas within the zone of impact of the Nevada Test Site are restricted access and unpopulated land.

As a result of the different definitions used for identification of low-income populations, the results of these analyses are markedly different. Both sets of data are correct. They simply reflect the fact that different definitions and assumptions can result in different characterizations of low-

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income populations. There is sufficient determination that both minority and low-income populations exist within the SRS Region Of Influence (ROI).

It is apparent that DOE recognizes that characterization of minority and low-income populations residing within a geographical area is sensitive to the basic definitions and assumptions used to identify them when conducting environmental justice analysis. However, they seem to have a serious problem with the ability to include this information in their EIS evaluation. This observation is borne out by the fact that the March 2000 Savannah River Site Spent Nuclear Fuel Management document only briefly alluded to an environmental justice analysis. DOE needs to quickly move towards implementing its stated goals.

In December 1997, the CEQ released guidance on environmental justice (CEQ 1997) that included a new set of definitions. The new definitions were more detail and presented better working definitions; therefore, DOE adopted them for the SPD EIS. Those definitions were used in this document and are included below.

Low-income population: Low-income populations in an affected area should be identified with the annual statistical poverty thresholds from the U.S. Bureau of the Census' Current Population Reports, Series P-60 on Income and Poverty. In identifying low-income populations, agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect.

Minority: Individual(s) who are members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic.

Minority population: Minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis. In identifying minority communities, agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a geographically dispersed/transient set of individuals (such as migrant workers or American Indians), where either type of group experiences common conditions of environmental exposure or effect. The selection of the appropriate unit of geographic analysis may be a governing body's jurisdiction, a neighborhood, census tract, or other similar unit that is to be chosen so as to not artificially dilute or inflate the affected minority population. A minority population also exists if there is more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above-stated thresholds.

The selection of a unit of analysis is critical, different analytical units generally result in different findings. Units of analysis can be selected as approximated by data constructs of single observational units (like zip code areas and census tracts), or else composed of observational units aggregated together (e.g., radial zones created by a Geographic Information System (GIS) around a toxic site). Framing an analytical unit for EJ research entails conceptualizing the group that is affected and then operationalizing, or empirically defining how to measure, the impacted group. In the composite observational units aggregated together, the analytical units are not

coextensive with observational units, but are composed from them and thereby can be labeled as composite units of analysis. The EIS Data constructs include radial zones drawn around the hazardous site (DOE's Region of Influence at processing facilities), and aggregated zones made of clusters of observational units that are adjacent to the observational unit in which the hazardous site is located, in this case, the transportation routes would fit this category. The use of the radial zone as an analytical unit is theoretically justified because it enhances the way the effects—especially health effects—of a hazardous site can be probed. It allows for a more focused analysis of how effects might be experienced by the population under study. For example, although a hazardous facility may lie within one census tract or county, it may nonetheless lie closer, radially speaking, to other tracts or counties. The populations from the other areas, thus, might be situated nearer to the facility than many of those in the tract or county in which the facility is actually located. DOE uses the boundary of the circle with an 80-km (50-mi) radius centered at the operating site as the radial unit. For the purpose of determining risks from transportation minority and low-income populations residing within a 1.6-km (1-mi) corridor centered on representative transportation routes were selected.

In all DOE's EIS, radiological health effects due to an accident at one of the disposition facilities or reactor sites are evaluated for persons residing within a distance of 80 km (50 mi) of the accident site. In general, the boundary of the circle with an 80-km (50-mi) radius centered at the accident site will not coincide with boundaries used by the Census Bureau for enumeration of the population in the potentially affected area. Some block groups lie completely inside or outside the area included in the calculation of health effects. However, block groups intersecting the boundary of the potentially affected area are only partly included.

Data for the analysis of minorities were extracted from Table P12 of Summary Tape File 3A published on CD ROM by the Census Bureau (DOC 1992). Data for the analysis of low-income populations were extracted from Table P121 of Standard Tape File 3A. For the purposes of enumeration and analysis, the Census Bureau has defined a variety of areal units (DOC 1992). Areal units of concern in the DOE documents include (in order of increasing spatial resolution): States, counties, census tracts, block groups, and blocks. The "block" is generally the smallest of these entities and offers the finest spatial resolution. This term refers to a relatively small geographical area bounded on all sides by visible features such as streets and streams, or by invisible boundaries such as city limits or property lines. Potentially affected areas examined in the SPD EIS include the areas surrounding proposed facilities for plutonium disposition located at four candidate DOE sites: Hanford (the Hanford Site, Richland, Washington), INEEL (the Idaho National Engineering and Environmental Laboratory, Idaho Falls, Idaho), Pantex (the Pantex Plant, Amarillo, Texas), and SRS (the Savannah River Site, Aiken, South Carolina). Other potentially affected areas examined include the areas surrounding proposed reactor sites for mixed oxide (MOX) fuel irradiation: Catawba Nuclear Station, McGuire Nuclear Station, and North Anna Power Station.

In the SPD EIS, health effects were calculated for populations projected to reside in potentially affected areas during 2010 and 2015. Extrapolations of the total population for individual States are available from both the Census Bureau and various State agencies (Campbell 1996). The Census Bureau also projects populations by ethnic and racial classification in 1-year intervals for the years from 1995 to 2025. Minority populations determined from the 1990 census data were

taken as a baseline. It was then assumed that percentage changes in the minority and majority populations of each block group for a given year (compared with the 1990 baseline data) would be the same as percentage changes in the State minority and majority populations projected for the same year. An advantage to this assumption is that the projected populations are obtained with consistent methodology regardless of the State and associated block group involved in the calculation. The Census Bureau uses the cohort-component method to estimate future populations for each State (Campbell 1996). The Census Bureau does not project populations of individuals who identified themselves as "Other Race" during the 1990 census. This population group is less than 2 percent of the total population in each of the States. In order to project total populations in the environmental justice analysis, population projections for the "Other Race" group were made under the assumption that the growth rate for the "Other Race" population will be identical to the growth rate for the combined minority and White (non-Hispanic) populations. DOE conclude that none of the uncertainties associated with the population projections are large enough to noticeably affect the conclusions regarding radiological health effects or environmental justice. There are problems with these assumptions. First, as DOE points out, the methodology is insensitive to localized demographic changes that could alter the projection for a specific area but, secondly, and more importantly, in any environmental justice analysis there are the questions arising out of process inequity and outcome inequity. What are the factors giving rise to the community current demographic character and how do they influence future projections?

Whether there exists a potential for disproportionate risk

Disproportionately high and adverse effects encompass both human health and environmental effects. The IWG's guidance suggests the need for the analyst to exercise informed judgments as to what constitutes "disproportionate" as well as "high and adverse." This, in turn, suggests some level of comparative analysis with the conditions faced by an appropriate comparison population. Alternatives need to be drawn so that the potentially affected populations under various alternatives are distinctive and allow disproportionality to be assessed.

During the initial "Environmental Assessment of Urgent-Relief Acceptance of Foreign Research Reactor Spent Nuclear Fuel (DOE/EA-0912)" completed in April 1994, DOE identified several applicable environmental justice concerns arising out of the initial Environmental Assessment (EA). These issues were for the most part not considered in the initial EA process. The subsequent Notice of Intent (NOI) filed 12/30/96 (FR Doc. 96-33131) for the preparation of an EIS (DOE/EIS-0279) listed 11 of these issues for further investigation during that subsequent process. Included on that list (issue #5) was the Potential for disproportionately high or adverse human health or environmental impacts on minority and low-income populations and (issue #10) Cumulative impacts from the proposed action and other past, present, and reasonably foreseeable actions at the Savannah River Site. Section 3-301 of Executive Order 12898 provides for agencies to determine if a proposed action will result or has resulted in disproportionately high and adverse effects to minority or low-income populations. It also provides in sect. 3-301 (b) for the analyses of multiple and cumulative exposures. Due to the fact that the characteristics of these populations may differ significantly from the characteristics of the larger affected population, analyses should address both the minority or low-income population and the comparison populations. Therefore, a major criterion for determining whether disproportionate

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risk exist or not would be to compare the affected region to a similar non-affected region. Comparison of the ROI is important so as to establish some kind of reasonable benchmark. In addition, establish a detailed characterization of the affected minority or low-income population. This is a significant aspect missing from all of the Department of Energy Environmental Impact Statements. For this determination of disproportionate risk, the following CEQ definition was used by DOE in the analysis of environmental justice and are adopted here:

Disproportionately high and adverse human health effects: When determining whether human health effects are disproportionately high and adverse, agencies are to consider the following three factors to the extent practical:

- a. Whether the health effects, which may be measured in risks and rate, are significant (as employed by NEPA), or above generally accepted norms. Adverse health effects may include bodily impairment, infirmity, illness, or death.
- b. Whether the risk or rate of hazard exposure by a minority population or low-income population to an environmental hazard is significant (as employed by NEPA) and appreciably exceeds, or is likely to appreciably exceed, the risk or rate to the general population or other appropriate comparison group; and
- c. Whether health effects occur in a minority or low-income population affected by cumulative or multiple adverse exposures from environmental hazards.

Disproportionately high and adverse environmental effects: When determining whether environmental effects are disproportionately high and adverse, agencies are to consider the following three factors to the extent practical:

- a. Whether there is, or will be, an impact on the natural or physical environment that significantly (as employed by NEPA) and adversely affects a minority or low-income population. Such effects may include ecological, cultural, human health, economic, or social impacts on minority communities or low-income communities, when those impacts are interrelated to impacts on the natural or physical environment.
- b. Whether environmental effects are significant (as employed by NEPA) and are or may be having an adverse impact on minority populations or low-income populations that appreciably exceeds, or is likely to appreciably exceed, those on the general population or other appropriate comparison group; and
- c. Whether the environmental effects occur, or would occur, in a minority population or low-income population affected by cumulative or multiple adverse exposures from environmental hazards.

There are several conclusions in DOE EIS pertaining to this area. 1) In the FRR-SNF, DOE has maintained throughout the process that estimates of the impacts on the environment, workers, and the public from implementing this acceptance program are “small and well within applicable regulatory limits”. 2) Even though there is no option for managing DOE spent fuel or for surplus plutonium disposal that is without inherent risks, it is DOE contention that all the management technologies considered are proven technology that would have no more than “small” impacts, completely within applicable regulatory limits. 3) It is DOE intention to manage/store this additional (~ 68 MTHM) of spent fuel from foreign research reactors at the SRS for a limited period of time. DOE have raised a gray area by using the term “ limited” period of time for interim storage. The SRS have been used to store SNF since 1980, given this history; this

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practice of long-term storage is the most likely scenario that would result. 4) that construction under all alternatives (Alternative 2 –12) would pose no significant health risks to the public. The risks would be negligible regardless of the racial or ethnic composition or the economic status of the population. Therefore, construction activities at any of the chosen sites (Hanford, INEEL, Pantex, SRS) under all alternatives would have no significant impacts on minority or low-income populations. 5) that routine operations conducted under all alternatives would pose no significant health risks to the public. No radiological or nonradiological fatalities would be expected to result from accident-free transportation conducted under all alternatives. Nor would radiological or nonradiological fatalities be expected to result from transportation accidents.

Throughout this process, DOE has maintained that estimates of the impacts on the environment, workers, and the public from implementing these programs are non-existent, small, or well within applicable regulatory limits. This is another area where DOE environmental justice analysis is inadequate. For example, in DOE analysis for environmental justice they are required to consider multiple exposure sources and paths of pollutants and health data for populations in question, but there is no evidence that anything remotely close to this was considered. The data DOE used to establish the presence of minority and low-income populations was taken from DOC census records, no further characterization of the populations of interest outside of determining the amounts present in the respective areas of concern was evaluated. Health considerations require an analysis of risk. Because DOE never considered this as a part of the process, detailed dose assessment procedures together with pathway parameters, critical group dose calculations methods and the calculation results of any or all nuclide groups (e.g. tritium, noble gases, Carbon-14, Iodine-131 and particulates) are not included. For example, in the comments received related to the methodologies used in the preparation of the EIS, one commenter asked what environmental impact would result from the release of cesium into the atmosphere in the event that the filtration system does not capture all the cesium. Another commenter stated that DOE had minimized impacts in the Cumulative Impacts Chapter and only used a limited amount of available information regarding actual operating experience. DOE Response was that the Environmental Protection Agency (EPA) had commended it on its method of segregating spent fuel by type and then applying the appropriate treatment methodology as the best way to proceed. Impacts in the EIS are estimated from the best available information, including operational data whenever possible. When operations data do not exist, a practice at SRS was to rely on experience and inventory of material was based on recent studies completed by DOE. While this practice may be true it does not support DOE conclusion above that no disproportionately high and adverse effects would be expected for any particular segment of the population, including minority and low-income populations.

One of the main concerns of this review is the effect of these initiatives on women living in the impacted areas. It is very puzzling and disturbing to see that in the radiological analysis such variables as breast-fed baby, fetus, and pregnant woman in particular, and women in general are not considered to be separate critical receptors. Yet a fetus is known to be more sensitive to radiation than an infant. In fact, a fetus is susceptible to an entirely different category of harm—developmental effects—in addition to the carcinogenic and genetic effects normally ascribed to ionizing radiation.

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Past studies have shown that developmental abnormality such as mental retardation is the most likely type to appear in the human species. The United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR 1988) has stated that the most probable type of developmental effect experienced by a fetus exposed to ionizing radiation in utero, is mental retardation—yet this effect is nowhere mentioned in DOE's Cumulative Effects Assessment. In essence, analysis as a function of time showed that the probability of radiation-induced mental retardation is essentially zero with exposure before 8 weeks from conception, is maximum with irradiation between 8 and 15 weeks, and decreases between 16 and 25 weeks." The U.S. National Academy of Sciences has reported, "In humans, mental retardation is the best documented of the developmental abnormalities following radiation exposure.... In those irradiated between weeks 8 and 15 the prevalence of mental retardation appeared to increase with dose in a manner consistent with a linear, non-threshold response although the data do not exclude a threshold." (BEIR V, 1989, p.362; UNSCEAR, 1988, p.37)

A conclusion of this study "Until an exposure has been clearly established below which even subtle damage does not occur, it seems prudent not to subject the abdominal area of women of child-bearing age to quantities of radiation appreciably above background, unless a clear health benefit to the mother or child from such an exposure can be demonstrated." In light of such findings, DOE conclusion that since the determined impacts resulting from the proposed action under all alternatives present no "significant" risk to the potentially affected populations, no disproportionately high and adverse effects would be expected for any particular segment of the population, including minority and low-income populations may be an example faulty reasoning. The extent of their analysis was to determine radiological risk recorded as latent cancer fatalities (LCF). Under the SPD program, DOE conclusion is that routine operations conducted under all alternatives would pose no significant health risks to the public. The likelihood of a LCF for the MEI residing near Hanford would be approximately 1 in 10 million; whereas, the likelihood for the MEI residing near SRS would be essentially zero. The number of LCFs expected among the general population residing near Hanford and SRS from accident-free operations would only increase by approximately 0.034 and 1.3×10^{-5} , respectively. These results show that the impact is numerically small, but the question remains, how many communities across the nation will be subjected to one cancer death for every million residents from increased radiation exposure over the next 50 years?

Thus, the position that implementation of anyone of the alternative evaluated during all of the EIS processes above would pose no significant risks to the public, nor would implementation of any alternative pose significant risks to groups within the public, including the risk of disproportionately high and adverse effects on minority and low-income populations, for all intents and purposes, cannot be a justifiable one. This is a major shortcoming of the DOE process as reflected in the documents. Key assumptions such as those pertaining to the environmental and health impacts are not well explained or justified. There is simply not sufficient basis for such assumption, because there was no risk analysis on the affected population that took into consideration where individual members of that group were located, direct and indirect impact, cumulative and synergistic impact or any study that takes into consideration the history of exposures and future exposures of the population of interest over the duration of this program.

Whether the community currently suffers, or have historically suffered, from environmental and health risks or hazards.

Any NEPA analyses must consider the cumulative effects on a community by addressing the full range of consequences of a proposed action within the framework of the other environmental stresses, which may be affecting the community at the time of proposed action or may have affected the community in the past. Cumulative impacts are defined in 40 CFR 1508.7, as "the incremental impact(s) of the action when added to other past, present, and reasonably foreseeable future actions...." For example, when considering a project that will have a permitted discharge to the surrounding surface waters, it may be of concern to populations who rely on subsistence living patterns (*i.e.*, fishing) and already receive public water through lead service lines; the cumulative effects associated with both the discharge and the lead service lines must be taken into account. In such cases, mitigation measures need to be developed and analyzed to reduce an adverse cumulative effect. In addition, minority populations and low-income populations are often located in areas or environments that may already suffer from prior degradation.

The analysts need to place special emphasis on other sources of environmental stress within the region, including those that have historically existed, those that currently exist, and those that are projected for the future. Common variables of concern may include:

- Number/concentration of point and nonpoint release sources, including both permitted and non-permitted (*i.e.* facilities covered under CERCLA and RCRA, including included TRI SIC database).
- Presence of listed or highly ranked toxic pollutants with high exposure potential (*e.g.*, presence of toxic pollutants included within EPA's 33/50 program).
- Multiple exposure sources and/or paths for the same pollutant.
- Historical exposure sources and/or pathways.
- Potential for aggravated susceptibility due to existing air pollution (in urban areas), lead poisoning, and existence of abandoned toxic sites.
- Frequency of impacts.

Source data, including historical, existing, and projected sources, yielding projected effects in concert with that from the resulting proposed action should be analyzed with respect to minority or low-income receptors. As noted above, these include cultural, health and occupation-related variables such as:

- Health data reflective of the community (*e.g.*, abnormal cancer rates, infant and childhood mortality, low birth weight rate, blood-lead levels).
- Occupational exposures to environmental stresses which may exceed those experienced by the general population.
- Diets, or differential patterns of consumption of natural resources, which may suggest increased exposures to environmental pathways presenting potential health risk.

Natural resources the IWG key terms guidance describes differential patterns of consumption of natural resources as related to 'subsistence and differential patterns of subsistence, and means differences in rates and /or patterns of fish, water, vegetation and/or wildlife consumption among minority population or low-income populations, as compared to the general population.'

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The analysis may have difficulty in determining the point at which stress levels become too great, exceeding risk thresholds. This lack of a definitive threshold should encourage the NEPA analyst to compare the cumulative effects of multiple actions with appropriate community, regional, state, or national goals, standards, etc. to determine whether the total effect is significant. With respect to natural resources, analysts should look to the community's dependence on natural resources for its economic base (*e.g.*, tourism and cash crops) as well as the cultural values that the community and/or Indian Tribe may place on a natural resource at risk. Further, it is essential for the NEPA analyst to consider the cumulative impacts from the perspective of these specific resources or ecosystems which are vital to the communities of interest.

Several methods for determining cumulative effects are described within CEQ's January 1997 handbook entitled, "Considering Effects Under the National Environmental Policy Act." The NEPA analyst may wish to consider these methods in assessing cumulative effects on low-income and/or minority communities.

In the process of determining future actions, for example, it is essential for the NEPA analyst to apply judgment and experience, to go beyond the number of projects that are funded in the area, and predict which of the actions in the early planning stage have realistic potential to move forward. The NEPA analyst should use the best available information from similar projects in the region and also consult with local government planning agencies which may have master development plans in the region. In addition, private landowners and organizations may be willing to disclose their future land use plans.

Although cumulative effects analyses commonly involve assumptions and uncertainties, exhausting all applicable analyses will provide the greatest likelihood of accurately depicting the possibility of disproportionately high and adverse effects on low-income and/or minority communities. Analysts should be as resourceful as possible in addition to seeking information from traditional sources. Decisions should be supported by the best data currently available and/or the best data gathering techniques in conjunction with all appropriate analyses. EISs and EAs must also address indirect impacts [40 CFR 1502.16(b), 1508.8(b) 1508.9], which are characterized as those that are caused by the action and are reasonably foreseeable, but that occur later in time and/or at a distance. Indirect effects include growth effects related to induced changes in the pattern of land use; population density and/or changes to infrastructure; or growth rates and related effects to the air, water and other natural systems, including ecosystems. Increased urbanization may occur around a new facility due to increased employment or due to transportation system upgrades. This may result in disproportionately high and adverse effects to low-income communities due to increased air pollution, lower housing values, and reduced access to fishing/farming locations. In addition, recreational lands and water may be indirectly affected by government actions. In the case of activities potentially affecting Native Americans, potential impacts, both direct and indirect, can occur to sacred sites and/or other natural resources used for cultural purposes. For example, the loss of a sacred site, or other impacts to larger areas of religious and spiritual importance may be so absolute that religious use of the site abruptly ceases--a direct impact. However, discontinued use may result in other indirect impacts. Proposed actions may also result in business failures, and associated unemployment, erosion of tax bases, and reduced public services. These types of effects may be exacerbated for low-

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income communities and minority communities due to an inability to relocate, to travel long distances to find alternative means of employment, or to attract new industry or commerce. The potential for indirect impacts to affect a community is best understood when the analytical team is thoroughly familiar with the local community. It is important that the NEPA analyst gain a full understanding of potential cultural impacts to the community. This is best accomplished through direct communication using effective public participation and consultation.

Whether the community has been sufficiently involved in the decision-making process.

CEQ regulations require "scoping" following the publication of a notice of intent to prepare an EIS, but before the EIS is prepared. CEQ regulations define scoping as "an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action" (40 CFR 1501.7). In general, scoping has three broad purposes: identifying public and agency concerns with a proposed action, defining issues and alternatives to be examined in detail, and saving time by ensuring that relevant issues are identified early and drive the analyses (see 40 CFR 1500.4(g), 1500.5(d)). A public meeting is held during scoping, with notice of the meeting made in the *Federal Register*, local newspapers, and utilizing other means of announcing public meetings, depending on case-specific circumstances. CEQ has indicated that the scoping process ends "once the issues and alternatives to be addressed in the EIS have been clearly identified," usually "during the final stages of preparing the draft EIS..." (CEQ "Guidance Regarding NEPA Regulations"). It is emphasized that public participation does not end there, but continues throughout the NEPA process.

DOE issued the Draft Spent Nuclear Fuel Management EIS on December 24, 1998, and held a formal public comment period on the EIS through February 8, 1999. In preparing the Final EIS, DOE considered comments received via mail, fax, electronic mail, and transcribed comments made at public hearings held in Columbia, S.C. on January 28, 1999, and North Augusta, S.C. on February 2, 1999. Completion of the Final EIS has been delayed because DOE has performed additional analyses of the melt and dilute technology, discussed in Chapter 2 and Appendix G. Comments received and DOE's responses to those comments are found in Appendix G of the EIS.

The SPD Draft EIS was issued in July 1998 and received public comments. The comment period ran from July 17, 1998, through September 16, 1998, although DOE considered all comments submitted after the close of the 60-day comment period. In August 1998, DOE held five public hearings at locations in the vicinity of the four candidate DOE sites and at one regional location. DOE received comments on the SPD Draft EIS by mail, a toll-free telephone and fax line, the Office of Fissile Materials Disposition Web site, and at the public hearings. Altogether, DOE received approximately 3,400 comment documents from individuals and organizations. All comments are presented in Volume III, Parts A and B, of the Comment Response Document of the SPD Final EIS. Approximately 65 percent of the comments received consisted of mail-in postcard campaigns that expressed either support of or opposition to the use of various sites or technologies. About 12 percent were collected during public hearings, 10 percent were in letters received by mail, 10 percent were received by fax, 2 percent were received by telephone, and 1 percent were received through the Web site.

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In April 1999, DOE issued the *Supplement* and received public comments. The comment period ran from May 14, 1999, through June 28, 1999, although DOE considered all comments received after the close of the 45-day comment period. On June 15, 1999, DOE held a public hearing in Washington, D.C. DOE received approximately 77 comment documents from individuals and organizations, which are presented in Volume III, Part B, of the Comment Response Document of the SPD Final EIS. Approximately 21 percent of the comments received were collected during the public hearing, 34 percent were contained in letters received by mail, 26 percent were received by fax, 5 percent were received by telephone, and 14 percent were received through the Web site.

Public participation is one of the hallmarks of NEPA, and is reflected in CEQ's and EPA's NEPA regulations. According to 40 CFR 6.400(a), "EPA shall make diligent efforts to involve the public in the environmental review process...." There are several clearly defined steps in public participation under NEPA, and these are described below.

Other Findings

- The FRR SNF policy duration is for 10 years, yet the decision is for SNF shipments to take place over a period of 13 years, this would create a three-year period for DOE operation of the SNF program without policy backing.
- Details of SNF shipments from Canada should have been decided by the time the ROD was issued. This would avoid any deviation from the original agreement at a later date. Also, there would be a projected date for completion of the program.
- DOE is unclear about the selection process of overland shipments transport. While DOE is aware of the public preference for rail, they have maintained a preference for truck; therefore, they have left this option open without stated reasons at this time giving them the opportunity to change their mind later. "With anticipation of further discussion at a later time" would indicate an incomplete process. In addition, DOE concluded as stated in the FEIS that the spent fuel and target material could be safely transported overland within the United States by either rail or truck, however, no transportation analysis was done as part of this EIS process. New situations can introduce new variables which can lead to new results.
- After a limited period of interim storage, the spent fuel will be treated and packaged at the Savannah River Site and the Idaho National Engineering Laboratory as necessary to prepare it for transportation to a final disposal repository. The level of operation required by these programs should raise concerns for the communities around them.
- Transportation to a final disposal repository is still years off. To date, there are no final decisions on Yucca Mountain as a final geologic repository. While Yucca Mountain is currently the only site being considered, scientific research does not yet support this location as a geologic repository.

Recommendations

There are several overriding issues that should have been addressed by DOE's EISs for inclusion of environmental justice issues:

The EIS should address how the program will achieve acceptable equity and fairness standards for the key affected communities, states, and participants. This analysis should consider the acceptance of SNF in terms of a burden placed upon state and local governments and citizens. A fundamental requirement for the analysis should address issues of how benefits and risks are distributed, the implications of cumulative impacts from facilities such as the Savannah River Site, and the way in which equity and fairness issues are involved in public responses to the Spent Nuclear Fuel and Surplus Plutonium Disposition programs. The public responses should be assessed in terms of the impact on trust and confidence in DOE as the management entity for Savannah River and how these considerations impact upon intergovernmental relations.

The EIS should assess how the programs will achieve public acceptance for the program plans to handle, transport, and store SNF. This assessment should address issues of public responses to health risks from transportation and the stigma effects of SNF transportation routes including property value impacts.

The EIS should state how the program would improve its technical, scientific, and management performances to meet the issues of scientific legitimacy and increase public trust and confidence.

The Department of Energy should undertake a comprehensive review of current reprocessing proposals and re-evaluate dry storage options for solid spent fuel based on more realistic data for cost and waste generation. In proceeding to address the environmental legacy of fifty years of nuclear weapons production, the Department of Energy needs to clarify its intentions, goals, and methods regarding reprocessing and make these transparent to the public.

The EIS should describe how DOE will provide compensation for and mitigation of negative impacts that may result from the implementation of this policy. This should include clearer descriptions of the goals and objectives of a Savannah River Site mitigation program, the design for identifying potential impacts, and the operational procedures to avoid, mitigate, and compensate for negative impacts and to enhance positive impacts. These issues should be incorporated into U. S. Department of Energy Environmental Justice Strategy.

The EIS should address the multiple conditions of uncertainty that can reasonably be expected to result from these programs. The definition and analyses of uncertainties should recognize that the program is a major national effort, unique and unprecedented as an engineering project, with extremely long time horizons to be accounted for, an uncertain political and financial base to work from, and a long list of important project characteristics that are difficult to define and measure.

DOE should recognize that all of its facilities are point sources for environmental pollution and therefore have some kind of degrading negative impact on the surrounding communities. In light of this DOE should make efforts to carry out a comprehensive study to determine to what extent

has past, present, and future operation impacted on the health and general quality of life of the minority and low-income populations that makes up the communities where their facilities are located.

Conclusions

Any reasonable environmental impact assessment in compliance with the intent of NEPA should detail answers the above. This review analyzed the adequacy of the environmental impact assessment and public participation approaches taken by Department of Energy (DOE) as part of decision-making on spent fuel and surplus plutonium. From the standpoint of environmental justice analyses, the DOE EIS process is a disappointment. The documents are still inadequate. On the basis of these shortcomings, and its review of the limited descriptions of the environmental justice concept presented in the EIS and the supporting primary reference documents, the review disagrees with DOE contention that estimates of the impacts on the environment, workers, and the public from implementing these program are "small and well within applicable regulatory limits". This process is indicative of the fact that DOE is still lacking the necessary transparency required for public involvement and has still not considered NEPA requirements as significant to its daily operations and over the last eight years has done little to incorporate the intent of EO 12898 in their policies.

Introduction to the Full Report

This is a scientific and technical review of the Department of Energy's Final Environmental Impact Statement on the Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (FRR-SNF). The receipt of FRR-SNF adds an additional and important component to DOE's programmatic Spent Nuclear Fuel (SNF) activities. This review also looks at the EIS processes associated with the revised Surplus Plutonium Disposition initiatives. This analysis evaluates the EIS procedures associated with these two programs for consideration of NEPA requirements with particular emphasis on Environmental Justice. This review has identified deficiencies in DOE's EIS procedures and evaluates some of the problems arising there from. This review analyzed the adequacy of the environmental impact assessment and public participation approaches taken by Department of Energy (DOE) as part of decision-making on spent fuel and surplus plutonium.

The decision to take back foreign spent nuclear fuel and to dispose of plutonium has been debated for several years without the active participation and integral involvement of people of color living near the Savannah River Site federal facility under the jurisdiction of Department of Energy. These communities feel that they have been disenfranchised from the debate, the public involvement activities and the decision making process. Therefore they are left to wonder what the receipt of the spent nuclear fuel rods and the disposition of plutonium will mean for their neighborhoods, their health and their environment. It is important to address these two (2) problems because the communities near SRS will have to live with the consequences of activities at the site. They deserve to know and understand what scientific basis DOE have used to make decisions. In addition, the management of nuclear waste is a long-term responsibility and demands community involvement, monitoring and civilian oversight. People must be empowered with the tools, skills and information that will facilitate their significant and substantive

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involvement in not only the decision making process as required by NEPA but in the overall stewardship of these materials. Communities of Color can no longer be kept out of the public participation activities and decision-making processes associated with nuclear waste management. These communities need to improve their understanding of the complex environmental problems created by nuclear weapons production and management.

This Report is a Scientific and Technical Review of the Environmental Impact Statement processes related to the Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel and the Surplus Plutonium Disposition programs at DOE, conducted in accordance with the responsibilities and requirements under Section 309 of the Clean Air Act, Section 102 (2)(C) of the National Environmental Policy Act (NEPA), Section 404 of the Clean Water Act (CWA), and Executive Order 12898 and the accompanying Presidential Memorandum, as well as CEQ environmental justice guidelines. In addition, this review takes into consideration the USDOE Environmental Justice Strategy. The purpose of this review is to analyze the adequacy of the environmental impact assessment and public participation approaches taken by DOE as part of its decision-making process on spent fuel and surplus plutonium, particularly, at the Savannah River Site (SRS). Particular emphasis is placed on the aspect of environmental justice to help stakeholders in the local affected communities in understanding the resulting impacts on their communities and DOE policy and practices for implementing the mandates of relevant environmental laws and regulations.

Collectively, there are five programs that are of significance to the scope of this review, two of these programs are programmatic and the others can be considered as addition tiering of those or new additions to the scope of existing programs. In any case they are concerned with the safe and efficient management of spent nuclear fuel and targets and weapons-grade plutonium at the Savannah River Site. Therefore, this review will focus on the spent fuel and plutonium disposition at SRS as representative of policies and practices of the two programs. A discussion of the programmatic SNF program can be found in the *Department of Energy Final Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Environmental Impact Statement*, DOE/EIS-0203-F completed in April 1995. The Details of the proposed new policy on the nonproliferation of spent fuel can be found in U.S. Department of Energy *Final Environmental Impact Statement on a Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel*, DOE/EIS-0218F issued in February 1996. as decided in the ROD and Notice of Preferred Alternative published in December 1995 (60 FR 65300), This proposed SNF new initiative will add to the current Spent Nuclear Fuel management program ongoing at the Savannah River Site. Therefore building on consideration in the interim Management of Nuclear Materials Final Environmental Impact Statement (DOE/EIS), DOE completed another SNF environmental impact statement (EIS) that takes the two above aspects into consideration. Details of this new program can be found in U.S. Department of Energy *Savannah River Site, Spent Nuclear Fuel Management Final Environmental Impact Statement*, DOE/EIS-0279F issued in March 2000. The information and comments contained here takes into consideration all aspects of the spent fuel program dealing with the managing of the department's spent fuel through the year 2035 but pays special attention to the NEPA EIS processes associated with it.

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Secondly, The Department of Energy (DOE) has decided to implement a new strategy for the disposition of surplus plutonium *Surplus Plutonium Disposition Final Environmental Impact Statement* (DOE/EIS-283-F, 1999). DOE decided to implement this program to provide for safe and secure storage of weapons-usable fissile materials (plutonium and highly enriched uranium [HEU]) and a strategy for the disposition of surplus weapons-usable plutonium, as specified in the Preferred Alternative in the *Storage and Disposition of Weapons-Usable Fissile Materials Final Programmatic Environmental Impact Statement* (S&D Final PEIS, DOE/EIS-229, December 1996). The fundamental purpose of the program is to maintain a high standard of security and accountability for these materials while in storage, and to ensure that plutonium produced for nuclear weapons and declared excess to national security needs is never again available for used in nuclear weapons. DOE's strategy for disposition of surplus plutonium is to pursue an approach that allows immobilization of surplus plutonium in glass or ceramic material for disposal in a geologic repository pursuant to the Nuclear Waste Policy Act, and burning of some of the surplus plutonium as mixed oxide (MOX) fuel in existing, domestic, commercial reactors, with subsequent disposal of the spent fuel in a geologic repository pursuant to the Nuclear Waste Policy Act. Environmental and waste management strategies for all of the above mentioned programs as described in their respective EIS would be conducted within the framework of the revised mission outlined in the Department of Energy Environmental Restoration and Waste Management (EM) Programs (DOE/EM-0013P; 00097P).

Because this review was initiated at the request of the local communities surrounding the Savannah River Site (SRS) special consideration will therefore be given to that facility. In addition, this facility features prominently in the final decisions of both programs under consideration and therefore makes a good case study of DOE activities.

The U.S. Atomic Energy Commission, a DOE predecessor agency, established the SRS in the early 1950s. The SRS is located in west-central South Carolina and occupies an area of approximately 300 square miles (approximately 800 square kilometers) adjacent to the Savannah River, primarily in Aiken and Barnwell Counties. The Site is approximately 25 miles (40 kilometers) southeast of Augusta, Georgia, and 20 miles (32 kilometers) south of Aiken, South Carolina. All alternatives described in the EISs, including the possible construction of new facilities to implement some of the alternatives, would occur within existing industrial areas at SRS (Figure 1). For the past 40 years the SRS mission has been the production of special radioactive isotopes to support national programs. Historically, the primary Site mission was the production of strategic isotopes (plutonium-239 and tritium) for use in the development and production of nuclear weapons. The SRS produced other isotopes (e.g., californium-252, plutonium-238, americium-241) to support research in nuclear medicine, space exploration, and commercial applications. DOE produced these isotopes in the five SRS production reactors. After the material was produced at the SRS, it was shipped to other DOE sites for fabrication into desired forms.

In September 1993 as a part of the U.S. government new nonproliferation policy, DOE made the decision to take back foreign spent nuclear fuel. This decision had been debated for several years without the active participation and integral involvement of people of color living near the SRS. These communities (The Community Alliance on Savannah River Site includes the cities of Augusta, Keyville and Savannah, Georgia and Blackville and Beaufort, South Carolina) believe

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that they have been disenfranchised from the debate, the public involvement activities and the decision making process, as well as accessing information. As a result, they have been left to guess what kind of impact the receipt of additional spent nuclear fuel and the new surplus plutonium disposition program at SRS will have on their neighborhoods, health and environment.